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Canadian Atlas of Bird Banding

**Volume 1:
Doves, Cuckoos, and Hummingbirds
through Passerines,
1921–1995**

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Abstract

This volume is part of a series intended to summarize, for the first time, bird-banding results for Canada. The series will include data on birds banded in Canada or encountered in Canada. Although limited in geographic scope, the data depict movement patterns that are typical for North America as a whole. The current volume deals with small landbirds (passerines and near passerines). Raptors and water birds such as rails and herons are excluded.

A full species account is given for each species with at least one record of an individual moving more than 100 km; banding and encounter statistics for all species banded in Canada are summarized in an appendix. Species accounts consist of 1) one or more encounter maps showing lines joining points of banding and encounter; 2) a narrative discussing results and movement patterns and recapping any major analyses of band encounters already published for the species; 3) a list showing details of selected encounters; 4) a table giving summary statistics such as encounter rate and mean distance moved; and 5) an effort map showing frequency of banding by geographic location.

Most of the results for rarely encountered species have not been published before. Results for more frequently encountered species indicate geographic differences in movement patterns, which are often consistent across many species. The information presented here should be of interest not only to banders and students of migration, but also to managers and conservationists wanting to know more about the wintering destinations and migration routes of Canada's birds.

Résumé

Ce volume fait partie d'une série dont le but est de résumer, pour la première fois, les résultats du baguage des oiseaux au Canada. La série présentera des données sur les oiseaux bagués ou repris au Canada. Malgré leur couverture géographique limitée, les données révèlent un modèle migratoire type pour l'Amérique du Nord dans son ensemble. Le présent volume traite des petits oiseaux terrestres (les passereaux et les espèces voisines). Les rapaces et les oiseaux aquatiques comme les râles et les hérons n'y figurent pas.

On y trouve un compte rendu sur chaque espèce pour laquelle on a enregistré au moins un déplacement individuel de plus de 100 km; les statistiques sur le baguage et les reprises pour toutes les espèces baguées au Canada sont résumées en annexe. Les comptes rendus sur les espèces comportent 1) une ou plusieurs cartes géographiques de reprises traçant les lignes de convergence des points de baguage et de reprise; 2) un exposé qui examine les résultats et les modèles migratoires, en plus de récapituler les principales analyses des reprises de bagues déjà publiées sur les espèces en question; 3) une liste détaillant des reprises choisies; 4) un tableau résumant des statistiques comme le taux de reprise et la distance moyenne parcourue; 5) une carte géographique décrivant la fréquence des initiatives de baguage par région géographique. Les comptes rendus des espèces sont en anglais seulement, mais l'Introduction du volume est présenté en français, et les enregistrements de reprises et les cartes géographiques des reprises ne requièrent aucune traduction.

La plupart des résultats relatifs aux espèces rarement reprises n'ont jamais été publiés auparavant. Les résultats concernant les espèces plus souvent reprises montrent des différences géographiques en ce qui concerne les modèles migratoires, différences souvent régulières chez de nombreuses espèces. L'information présentée devrait intéresser non seulement les bagueurs et les personnes qui étudient les migrations, mais aussi les gestionnaires et les conservationnistes qui veulent en savoir davantage sur les destinations d'hivernage et les voies de migration des oiseaux du Canada.

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Finally, we want to acknowledge the uncountable hours of effort that hundreds of banders have put into amassing the database on which this summary is based. This atlas is for you.

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1. Introduction

This publication is part of an atlas series that will present, for the first time, a comprehensive overview of bird-banding results involving Canada. This volume covers small land-birds (passerines and near passerines); it excludes raptors and water birds such as rails and herons. The full series will cover all species except waterfowl (although the latter may be added at a later time).

Bird banding involves placing a metal band with a unique serial number on a bird's leg, so that the bird can be individually identified when it is found again. An "encounter" is any subsequent observation of the banded bird, dead or alive. (The term "recovery" refers only to encounters of dead birds.)

Bird banding in Canada was begun by private individuals in the early years of this century. Following the 1916–1917 implementation of the Migratory Birds Convention between Great Britain (for Canada) and the United States, bird banding became a public undertaking. The Canadian Bird Banding Office, established in 1923, was originally part of the Dominion government's Parks Branch but is now administered in Ottawa by the Canadian Wildlife Service (CWS) of Environment Canada. The Office works closely with the Bird Banding Laboratory of the U.S. Geological Survey's Biological Resources Division (formerly part of the U.S. Fish and Wildlife Service), which was established in 1920. These two agencies jointly administer the North American bird-banding scheme for all wild species except upland game birds, which in Canada fall under provincial rather than federal responsibility.

In Canada, as in most countries with vigorous banding programs, bird banding has included a great deal of volunteer activity. While many professional biologists use banding in their research, and government biologists have done much of North America's banding of game birds, interest in the spectacular migrations of birds has led scores of unpaid enthusiasts to spend much of their spare time banding birds. However, analyses of band encounters have largely been limited to species with numerous records, particularly species of economic importance. For other species there is an enormous body of encounter data that has never been compiled, covering many decades of effort. This atlas series is intended to fill that gap.

We expect the series to prove useful to wildlife managers seeking data to guide the development of policies and programs for the conservation of migratory birds. It should also be of interest to banders, who previously have had no comprehensive source from which to draw to compare their experiences and results with those of other banders.

2. Overview of the series

The bulk of this atlas series consists of individual species accounts that depict movement patterns and summarize data to indicate what is available for further analysis. Although species accounts range from those reporting a single encounter to those summarizing 10 000 or more, each is presented in a consistent format that is described in detail in the next section. Here we provide a brief overview of our treatment of the data and point out the limitations of our analyses.

Full accounts are included for species for which there was at least one encounter over 100 km from the banding site; banding statistics for other species banded or encountered in Canada are included in Appendix 1. Each species account provides one or more maps showing movement patterns, followed by a narrative and a listing of selected encounters reported in detail. Each account concludes with a summary table of standard information and a map showing the distribution of bandings for that species in Canada.

The movements or survival of species for which there are 100 or more encounters have often been analyzed in published works. In such cases, we provide a précis of the results in our narrative. When there is little or no literature, we have tried to highlight the most important patterns indicated by the encounters.

The list of selected encounter records in each account includes examples of typical movements, but also includes cases that will interest banders; for example, records showing unusually long-lived or far-travelled birds, movement outside the normal range of distribution, and cases of apparent "reverse" migration. We recognize from our own experience as banders that it is often the unusual or spectacular encounter that stimulates a bander's interest, and we hope that some of those listed will serve this purpose.

The database used in preparing this atlas series includes all records of birds banded under the North American scheme that were 1) banded in Canada and encountered anywhere, and 2) banded elsewhere (usually in the U.S. but a few in Central America or on Pacific islands) and encountered in Canada. Encounters in Canada of birds banded under other banding schemes (chiefly in northwestern Europe and Greenland) are also included to the extent we could find out about them, because these records add so much to our knowledge of the distribution and movements of Canadian birds (Tuck 1971, Dennis 1981). Encounters of this sort from the period prior to 1975 were extracted from European banding reports and other published sources, but those from 1975 to 1995 were obtained solely from EURING (recognizing that this source gives an incomplete picture of European-banded birds encountered in Canada). At some modest risk

of creating a diplomatic incident, we have also included in this series a few records from the French islands of St. Pierre and Miquelon (located off the south coast of Newfoundland) that did not involve Canadian territory.

The most obvious limitation of this atlas series is that it deals only with bandings or encounters occurring within Canadian boundaries and the seas immediately offshore. U.S. records that did not involve Canadian territory had to be excluded because the sheer volume of data for North America as a whole was simply beyond our means to handle. (The project was well underway before the dawn of the computer age.) Nevertheless, we felt that the Canadian database was sufficiently large and geographically representative to justify restricting our coverage. We hope that this atlas series will stimulate our American colleagues to collaborate in a more comprehensive continental assessment of banding and encounter data.

Banding data can be misleading if not interpreted carefully with a full understanding of biases and limitations. There is always uncertainty about specific records. The person reporting an encounter has to provide accurate information on the band number (which is usually the means of identifying the species); but band numbers are easily misread, and only rarely is the actual band returned with the report of finding. In addition, the finder must accurately report date, place, and other details. Data entry is another common source of mistakes. Given the qualifications necessary to get a banding permit, bander error is a less likely source of problems. However, occasional odd encounters are most plausibly explained as mistaken species identification on the part of the bander. This can occur, for example, when chicks are banded in mixed colonies of gull or tern species.

Although we could not check every record, we have checked the details of the most striking encounters. In most cases, there are no data-entry errors and no clue as to whether the band number was read correctly. We therefore had to use our judgment as to whether to include certain odd records. When a record was clearly in error we excluded it, but when it was merely suspicious we retained it, usually calling attention to it in the species account. Readers should take all individual records with a grain of salt, however, and give greatest credence to overall patterns of movement. Although it was sometimes discouraging (though hardly surprising) to see that errors had crept into this large database, we are convinced that the value of the data set as a whole justifies our summarizing all the available data for public scrutiny.

3. Overview of Volume 1

This volume covers the 227 species of small landbirds that were banded or encountered in Canada from 1921 through 1995 (see full listing in Appendix 1). Of these, 133 species are treated with a full species account (these are species for which there was at least one encounter more than 100 km from the banding site).

For the 227 species covered in this volume, 2 502 063 individuals were banded in Canada between 1955 and 1995. (Numbers of birds banded prior to 1955 have not been entered into the electronic database.) Of these, 11 390 were later encountered, for an overall encounter rate of 0.5%. The encounter rate for individual species varied from less than 0.1% (e.g., Ruby-crowned Kinglet) to rates in the order of 3–5% for larger species (e.g., jays), to a maximum of 8% for Common Ravens. Small birds are encountered less often, in part because they are small (and therefore difficult to see) and are quickly eaten by scavengers, but also because the smallest bands have the return address on the inside of the band where few finders are likely to look for it (Hussell et al. 1993).

The amount of small bird banding has increased greatly since 1975 (see Appendix 1), particularly for the smallest birds (band size 0), of which more than 450 000 were banded from 1986 to 1995 compared with about 150 000 from 1966 to 1975. This increase is largely due to the adoption of mist nets as a bird-catching device in North America, but it may also reflect the growing number of high-volume migration monitoring stations in Canada.

In addition to the 11 390 encounters of birds banded in Canada between 1955 and 1995, this volume covers encounters of birds banded between 1921 and 1955 — but this adds only 1923 additional records (another indication of the rise in banding volume over time). On top of the 13 313 encounters of Canadian-banded birds from 1921 to 1995, this volume also includes 7294 cases of birds banded in other countries but encountered in Canada during the same time period.

The encounter maps show that small landbirds are broad-front migrants that tend to follow the same flyways as waterfowl (Lincoln 1935). Migratory birds breeding in British Columbia tend to move west of the Rocky Mountains and along the Pacific coast. Forest birds from the Prairie Provinces tend to move on a southeast–northwest axis, heading toward the southeastern U.S. in fall; open-country species such as bluebirds and sparrows have a somewhat more southerly heading. Ontario is in a transition zone, with

birds tending to move more directly north–south, but with migrants passing over from more western and more eastern breeding areas. There is also some suggestion that individual migrants may take different routes through the Great Lakes in different years. Quebec and Maritimes birds have a more southwest–northeast axis of movement, generally moving parallel to the Atlantic coast.

The maps for the American Robin illustrate these typical patterns particularly well, but birds with far fewer encounters can show the same pattern (see maps for other thrush species and the American Redstart, for example). A few species show somewhat different patterns, as pointed out in the species accounts (e.g., White-crowned Sparrow, European Starling).

Although overall patterns of songbird migration are well illustrated by band encounters, it is clear that there are still enormous gaps in our knowledge of the migration and wintering areas of particular breeding populations, even after more than 75 years of nongame-bird banding in Canada. Over half the 227 species covered in this volume have 5 or fewer encounter records, and 75% have fewer than 30 records (Appendix 1). In many cases the available records are inadequate for defining wintering area or migration routes for the species as a whole, let alone for regional populations. Only 15% of the species have more than 100 encounter records.

This volume lists many individual records of birds encountered at some distance within a few days of banding, including a White-throated Sparrow that travelled 673 km in a single day. The maximum distance between the banding and encounter location of any individual of a species included in this volume was 7764 km for a Bank Swallow banded in Saskatchewan and recovered six years later in Bolivia.

4. Detailed explanation of species accounts

4.1 Species name

The first items in each account are the species' common and scientific names, for which we follow the seventh edition of the *Check-list of North American birds* (American Ornithologists' Union 1998). These are followed (for full species) by the AOU number. In some cases we give the number assigned by the U.S. Bird Banding Laboratory for recognizable subspecies.

4.2 Encounter maps

Encounter maps show lines joining banding locations with encounter sites for birds encountered more than 100 km from the banding site. The symbol at the end of each line marks the encounter location.

Prior to mapping, data were screened to delete records showing encounters within 100 km of the banding site (the latter being relatively uninteresting for depiction on maps). Encounters with inexact location codes or coordinates were also excluded except as follows. Records providing degrees of latitude and longitude but lacking the exact 10' block were assigned coordinates at the southeast corner of the 1° block. Some of the older bandings and encounters from Mexico report the state but do not give any coordinates; in such cases we assigned coordinates for the centre of the state. To ensure that scarce long-distance encounters would be mapped, we also assigned coordinates for inexact locations within Central or South American countries, giving coordinates for the centre of the relevant country.

For species with few band encounters, every record of movement greater than 100 km could be mapped individually. However, this was not possible for species with high numbers of encounters, since even maps with as few as 50 lines can appear too cluttered. We therefore reduced the complexity of the maps using several methods. For example, for a few species (noted in the text) we omitted encounters within 200–400 km of the banding site, as opposed to the usual 100 km. A second approach was to produce several maps for a species to allow depiction of more cases.

Most commonly, we used a thinning process. First, groups of records were identified that shared the same banding and encounter coordinates (i.e., all the birds were banded within one 10' latitude-longitude block and encountered within another 10' block). Then a single line was plotted with a larger symbol to indicate the number of encounters represented by that line (see key on each map). If further thinning was required, coordinates were rounded to form larger degree blocks (instead of 10' blocks), and new (larger) groups of records were formed that shared the new banding and encounter coordinates. From each group, a single record was randomly chosen to represent the group on the map, and these lines were plotted using their original coordinates. Again, the size of the symbol at the end of the selected line shows the number of records represented. If the map was still too crowded, the process was repeated with larger block sizes until the maps became clear. Block size in degrees (in decimal format) is shown with each map for which block

size was enlarged above 10' of latitude and longitude for the purposes of thinning. Reference maps in Appendix 2 give the reader an idea of the area encompassed by large degree blocks.

The number of encounters represented by each symbol is consistent across all maps, with only two sets of frequency classes being used: one for large data sets (map symbols are triangles) and one for smaller data sets (map symbols are squares).

The result of the thinning process is a set of lines joining banding and encounter locations that summarizes geographic patterns of movement, rather than showing every encounter separately. The advantage of this system is that sparse or outlier records are not eliminated in the thinning process, whereas dense areas of repetitious records are rigorously weeded to reduce clutter. The disadvantage is that many individual records (sometimes hundreds) are not shown on the maps. When block size is large (over a few degrees), the text draws attention to that fact and notes any distortions of pattern that may result.

4.3 Narrative

Each narrative begins with a clarification of taxonomy if taxa traditionally recognized by banders do not coincide with those in current use by systematists. A short description of the North American breeding distribution and each species' wintering area follows, based mainly on Peterson (1980), the American Ornithologists' Union (1983 and subsequent supplements), Godfrey (1986), and DeGraaf and Rappole (1995).

The main body of the text discusses movement patterns revealed by the encounters and refers to specific records (by number) that are listed below the text. If there are major published analyses of band encounters for the species, relevant results are summarized briefly in the account.

4.4 List of selected encounter records

The encounter records are listed in a standard format. Each one occupies two lines, the upper containing mostly the banding information and the lower, the encounter details. The band number is given first. Below it, on the second line, appear either the initials of the bander or, if these cannot be traced, the bander's permit number. (This is the only banding information that appears on the second line rather than the first.) A key to banders' initials appears in Appendix 3.

We tried to obtain permission from all the banders whose encounter records we listed, and essentially all respondents responded enthusiastically (we cite no records that a bander expressly asked us not to). In a few cases, chiefly for older encounters, we did not receive replies. In these cases we listed the records anyway, because the time limitations for confidentiality of encounter records had elapsed.

All codes in the encounter listings are from *The North American bird banding manual* (Gustafson et al. 1997; see Appendix 3 for keys). These codes are used in preference to the "international" symbols because they contain more information (Brewer and Salvadori 1978). Following the band number and the initials or permit number of the bander are two sets of codes: on the upper line, the alphabetic versions of the codes for age (first) and sex (second) of the bird at banding; on the lower line, the numeric codes for "present status of bird and band" and "how obtained" from the encounter data. Together the latter two codes give some indication of the completeness of information for the particular record.

Next are the dates of banding (above) and encounter (below). Note that these are in the order day/month/year (not month/day/year as they are in the computer files), to conform with common Canadian usage. Special codes indicate inexact dates of encounter (see details in Appendix 3).

Dates are followed by the names of the places of banding (above) and encounter (below). Most place names were obtained from the gazetteer of banding and encounter localities on file at the U.S. Bird Banding Laboratory. The location names in the gazetteer were assigned by Laboratory personnel and frequently differ from the names that banders assign to their own sites. We have changed site names to those more recognizable by banders in the few cases where we knew which names were more appropriate, but in many cases we were not able to do so. When locations were not given in the gazetteer, we used atlases to find nearby place names. Maps of Canadian provinces, U.S. and Mexican states, and Central and South American countries are shown in Appendix 2 for reader reference.

The next data in the encounter records are the latitude and longitude of banding (upper line) and encounter (lower line), expressed as the coordinates of the southeast corner of the appropriate 10' geographic block (Gustafson et al. 1997). Question marks indicate inexact locations. Where we assigned coordinates (see section 4.2), the distance travelled (see below) is given as approximate. In a few specific cases

for which revelation of the breeding locations might be deleterious to the bird, precise banding locations have been omitted. In these cases we have identified only the province or state and rounded the geographical coordinates and the distances travelled.

The last data given are not extracted from the standard computer files but have been calculated separately. On the upper line is the time elapsed between banding and encounter and on the lower is the calculated distance and direction between banding and encounter locations (see Appendix 4).

Most encounters listed in detail are specifically cited in the text, but often the bird with the longest period between banding and encounter is listed at the end without any comment.

4.5 Summary of banding statistics

Data are arranged in three columns: birds banded in their first calendar year of life (hatch year), those banded in their second or subsequent calendar year of life (after hatch year), and the total banded regardless of age (including birds of unknown age when banded). An explanation of each line in the summary table is given below.

No. of Canadian bandings (1955–1995):

Banding numbers were not handled by computer prior to 1955, so this item and the next (“No. encountered per 1000 banded”) are restricted to the 1955–1995 period. These two lines are italicized in the table to emphasize that they are a restricted subset of the numbers appearing in the remainder of the table.

No. of encounters per 1000 banded (1955–1995):

$$\frac{(\text{No. of encounters of birds banded in Canada, 1955–1995}) \times 1000}{\text{Total no. banded in Canada (1955–1995)}}$$

The number of encounters includes birds killed, found dead, or captured alive, as well as sight records (i.e., band read from a distance). If a single bird was encountered multiple times, it was tallied only once.

The encounter rate is influenced by such factors as the size and conspicuousness of a species, density of human population, and whether the species is hunted, as well as by the geographic distribution of bird banders and the number of individuals of the species they handle. The encounter rate is also affected by the number of reports of birds encoun-

tered in the same 10' block in which they were banded. Prior to 1958, encounters within 90 days at the site of banding were incorporated into the database (although the numbers are not large), but in 1958 this practice was discontinued. Encounters at the site of banding more than 90 days after banding can still be submitted to the banding office; however, some banders do not submit such encounters, and not all of those sent in are actually entered into the database (L. Métras, pers. comm.).

Total no. encountered (1921–1995):

No. of encounters of birds banded in Canada (1921–1995) + no. of Canadian encounters of birds banded elsewhere (1921–1995)

All further calculations in this table are based on this set of encounters.

No. encountered from foreign bandings:

No. of the above encounters (1921–1995) that involved birds banded in another country but encountered in Canada

Maximum period from banding to encounter (mo.):

Maximum for any individual, rounded to the nearest month

Note that this figure does not represent longevity, except for birds banded as very young chicks. No attempt has been made to estimate the true age of the bird.

No. of Canadian-banded birds moving > 0 km:

This number gives the sample size for the calculation below.

Mean movement > 0 km of Canadian-banded birds:

$$\frac{\text{Sum of km moved for all encounters of Canadian-banded birds that moved > 0 km}}{\text{No. of Canadian-banded birds moving > 0 km}}$$

The distance between the banding and encounter locations of each record was computed using a great-circle distance, that is, the shortest distance that could be travelled between the two coordinates allowing for the curvature of the earth (Cowardin 1977; Appendix 4). Birds may sometimes use great-circle routes but probably more commonly follow constant compass directions (Alerstam 1990,

Kerlinger 1995), so our calculations likely underestimate real distances moved. Distance travelled is shown as approximate in records for which we assigned encounter coordinates (see explanation in section 4.2).

Maximum movement from all encounters (km):

Maximum calculated distance moved for any individual

Unlike the calculation for mean movement of Canadian-banded birds (above), the maximum distance is given for any encounter in the database, regardless of banding location.

% recovered (encountered dead):

$$\frac{(\text{Total no. encountered dead}) \times 100}{\text{Total no. encountered}}$$

Birds with “unknown” present condition codes (see Appendix 3) were treated as dead for this calculation and the next one (“% direct recoveries”), as were birds banded in their hatch year and encountered in the same 10' block within three months of banding.

Birds encountered before 1965 and birds banded outside the North American banding scheme (mainly in Europe and Greenland) did not have true “present condition” codes to indicate whether the encountered bird was alive or dead. We assigned codes to these records based on available information to enable their inclusion in this calculation (see Appendix 3).

% direct recoveries:

$$\frac{(\text{Total no. of direct recoveries}) \times 100}{\text{Total no. of encounters}}$$

A direct recovery is an encounter with a bird “killed or found dead before, during, or immediately after the first period of migratory movement following banding and before return migration would be likely to have occurred”

(Gustafson et al. 1997). Appendix 4 shows how this designation was assigned; see also notes above on “% recovered.”

The % direct recoveries is used chiefly as a measure of the hunting pressure on species in which most of the mortality is inflicted by hunters. In un hunted species this figure is a rough guide to the magnitude of annual mortality. In the majority of species, this figure will be much higher for birds banded in their hatch year than for those banded in later years, reflecting the high mortality of juveniles typical of most birds.

% encountered during banding operations:

$$\frac{(\text{Total no. encountered in banding operations}) \times 100}{\text{Total no. of encounters}}$$

The number of birds encountered during banding operations was the sum of birds with “How obtained” codes of 89 or 99 (see Appendix 3).

4.6 Banding effort map

The banding effort map shows the numbers of individuals for each species that were banded from 1955 to 1995 in each location (compiled by 10' block, with blocks combined if too close to be shown separately on the map). This map helps the reader interpret the distribution of encounters, because it shows where banding effort has been concentrated. Under each map there is a list of the five master permit holders responsible for the most bandings of the species in Canada from 1955 to 1995 (in descending order). One to many individuals may band under a single master permit, so this listing does not necessarily identify the most prolific individual banders.

1. Introduction

Cette publication fait partie d'une série d'atlas qui présentera, pour la première fois, un tour d'horizon complet des résultats concernant les activités de baguage des oiseaux auxquelles participe le Canada. Elle porte sur les petits oiseaux terrestres (les passereaux et les espèces voisines), mais exclut les rapaces et les oiseaux aquatiques comme les râles et les hérons. La série complète portera sur toutes les espèces sauf la sauvagine (quoique cette dernière puisse être ajoutée plus tard).

Le baguage des oiseaux consiste à placer une bague de métal dotée d'un numéro de série exclusif autour de la patte d'un oiseau pour que celui-ci puisse être identifié quand il sera repris. On appelle « reprise » toute observation ultérieure d'un oiseau bagué, vivant ou mort. (Le terme « récupération » ne désigne que la reprise d'oiseaux morts.)

Au Canada, le baguage des oiseaux a été amorcé par quelques personnes du secteur privé au début du siècle. Après la mise en œuvre, en 1916 et 1917, de la Convention concernant les oiseaux migrateurs, entre la Grande-Bretagne (pour le Canada) et les États-Unis, le baguage des oiseaux devint une initiative publique. Le Bureau de baguage des oiseaux du Canada, établi en 1923, faisait partie à l'origine du Service des parcs du gouvernement fédéral, mais est maintenant administré à Ottawa par le Service canadien de la faune (SCF) d'Environnement Canada. Le Bureau travaille en étroite collaboration avec le Bird Banding Laboratory de la Biological Resources Division de l'U.S. Geological Survey (anciennement du U.S. Fish and Wildlife Service), établi en 1920. Ces deux organismes administrent conjointement le projet nord-américain de baguage des oiseaux pour toutes les espèces, sauf celles des hautes terres considérées comme gibier qui, au Canada, sont la responsabilité des provinces plutôt que du fédéral.

Au Canada, comme dans la plupart des pays ayant un solide programme de baguage des oiseaux, l'initiative peut compter sur une forte participation de bénévoles. Il est vrai que de nombreux biologistes professionnels utilisent le baguage dans leurs recherches et que les biologistes du gouvernement ont effectué la grande partie du baguage des oiseaux considérés comme gibier de l'Amérique du Nord, mais l'intérêt qu'engendrent les migrations spectaculaires des oiseaux a poussé une multitude d'amateurs non rémunérés à passer la majeure partie de leurs loisirs à baguer des oiseaux. Cependant, les analyses des reprises de bagues ont été largement limitées aux espèces faisant l'objet de nombreux enregistrements, surtout les espèces qui représen-

tent un intérêt économique. Quant à d'autres espèces, une énorme quantité de données sur leurs reprises, représentant bon nombre de décennies de travail, n'a jamais été dépouillée. La présente série d'atlas entend bien combler ce vide.

Nous nous attendons à ce que cette série s'avère utile aux gestionnaires des espèces sauvages qui recherchent des données pour les guider dans l'élaboration de politiques et de programmes concernant la conservation des oiseaux migrateurs. Elle devrait aussi intéresser les bagueurs qui, auparavant, ne disposaient d'aucune source solide complète permettant de comparer leurs expériences et leurs résultats avec ceux d'autres bagueurs.

2. Aperçu de la série

L'essentiel de cette série d'atlas se compose de comptes rendus sur des espèces individuelles décrivant les modèles migratoires et faisant un résumé des données connexes afin de montrer ce qui est disponible aux fins d'analyses plus poussées. Même si les comptes rendus peuvent aller d'une seule reprise à 10 000 ou plus par espèce, chacun est présenté dans un format cohérent tel qu'il est détaillé dans la prochaine section. Dans le présent document, nous donnons un bref aperçu du traitement des données et signalons les limites de nos analyses.

Des comptes rendus complets sont inclus pour les espèces qui ont fait l'objet d'au moins une reprise à plus de 100 km du site de baguage; les statistiques de baguage concernant les autres espèces baguées ou reprises au Canada se trouvent à l'annexe 1. Chaque compte rendu fournit une ou plusieurs cartes géographiques montrant les modèles migratoires de l'espèce, suivi d'un exposé et d'une liste de reprises choisies décrites en détail. Chaque compte rendu se termine par un tableau récapitulatif de renseignements normalisés et une carte géographique montrant la répartition des sites de baguage de cette espèce au Canada.

Les déplacements ou la survie des espèces qui ont fait l'objet de 100 reprises ou plus ont souvent été analysés dans des travaux publiés. Dans ces cas-là, nous fournissons un précis des résultats des analyses dans notre exposé. Quand il n'y a pas de documentation sur le sujet, ou presque pas, nous avons essayé de faire ressortir les modèles migratoires les plus importants relatés dans les rapports de reprises.

La liste des enregistrements de reprise choisis qui se trouve dans chaque compte rendu comprend des exemples de déplacements types, mais comporte aussi des cas qui intéresseront les bagueurs. Par exemple, des enregistrements

qui font état d'une longévité ou d'une distance parcourue exceptionnelle pour un oiseau, des déplacements effectués en dehors de l'aire de répartition habituelle et certains cas de « migration inversée ». Il nous faut reconnaître, d'après notre expérience, que ce sont souvent les reprises inhabituelles ou spectaculaires qui stimulent l'intérêt d'un bagueur, et nous espérons que certains des cas indiqués dans la liste auront cet effet.

La base de données utilisée pour la préparation de cette série d'atlas comporte tous les enregistrements d'oiseaux bagués dans le cadre du projet nord-américain de baguage, qui ont été : 1) bagués au Canada et repris partout ailleurs; 2) bagués ailleurs (habituellement aux É.-U., mais quelques-uns en Amérique centrale ou dans les îles du Pacifique) et repris au Canada. Au Canada, les reprises d'oiseaux bagués dans le cadre d'autres projets (surtout dans le Nord-Ouest de l'Europe et le Groenland) sont aussi incluses dans la mesure où des renseignements étaient disponibles à leur sujet, car ces enregistrements enrichissent énormément nos connaissances de la distribution et des déplacements des oiseaux canadiens (Tuck 1971, Dennis 1981). Avant 1975, les enregistrements de reprises de ce genre ont été extraits de rapports de baguage européens et d'autres publications, mais ceux de 1975 à 1995 proviennent exclusivement de la EURING (même si cette source brosse un tableau incomplet des oiseaux bagués en Europe qui sont repris au Canada). Au risque, minime, de causer un incident diplomatique, nous avons également inclus dans la série quelques enregistrements sur les îles françaises de St-Pierre et Miquelon (situées au large de la côte Sud de Terre-Neuve) qui allaient au-delà du territoire canadien.

La limite la plus évidente de cette série d'atlas réside dans le fait qu'elle ne traite que des activités de baguage et de reprise menées à l'intérieur des frontières du Canada et dans les eaux au large de ses côtes. Les dossiers des É.-U. qui ne touchaient aucun territoire canadien ont dû être mis de côté ne serait-ce qu'en raison de la quantité de données existant pour l'Amérique du Nord, quantité simplement au-dessus de nos moyens de traitement. (Le projet était déjà bien amorcé longtemps avant le début de l'ère de l'informatique.) Néanmoins, il nous a semblé que la base de données canadienne était suffisamment importante et géographiquement représentative pour justifier une couverture restreinte. Nous espérons que cette série d'atlas incitera nos collègues des É.-U. à collaborer à une évaluation plus complète des données continentales sur le baguage et la reprise des oiseaux.

Les données sur le baguage peuvent être trompeuses si elles ne sont pas interprétées prudemment avec une compréhension totale des distorsions et des limites inhérentes. Il existe toujours de l'incertitude concernant certains enregistrements. La personne qui enregistre une reprise doit fournir le chiffre exact se trouvant sur la bague (par lequel on identifie habituellement l'espèce), mais les chiffres qui apparaissent sur les bagues peuvent facilement être mal lus, et les bagues ne sont que très rarement retournées avec le rapport de reprise. De plus, la personne qui trouve l'oiseau doit enregistrer correctement la date et l'endroit, ainsi que d'autres détails. La saisie des données constitue une autre source fréquente d'erreurs. Étant donné les compétences nécessaires à l'obtention d'un permis de baguage, il est moins probable que les bagueurs fassent des erreurs. Cependant, les occasionnels rapports de reprise étranges tendent plutôt à s'expliquer par des erreurs d'identification de l'espèce de la part du bagueur. De tels cas se produisent, par exemple, quand il faut baguer des oisillons dans des colonies mixtes d'espèces de goélands et de sternes.

Même si nous n'avons pas pu vérifier tous les enregistrements, nous avons examiné les détails des reprises les plus frappantes. Dans la plupart des cas, il n'y a pas d'erreur de saisie de données et rien ne permet de déterminer si le numéro de bague a été lu correctement. Il a donc fallu que nous fassions preuve de jugement pour décider d'inclure ou non certains enregistrements étranges. Quand un enregistrement comportait une erreur évidente, nous le rejetions, mais lorsqu'il subsistait un doute, nous le gardions tout en prenant soin de signaler sa nature étrange dans le compte rendu de l'espèce. Les lecteurs devraient cependant considérer chaque rapport individuel avec circonspection et accorder plus d'importance aux modèles migratoires en général. Même si ce fut parfois décourageant (mais peu surprenant) de voir que des erreurs s'étaient glissées dans cette grande base de données, nous sommes convaincus que la valeur globale de cet ensemble de données justifie notre travail de synthèse de toutes les données disponibles pour que le grand public puisse en faire un examen minutieux.

3. Survol du volume 1

Ce volume prend en considération les 227 espèces de petits oiseaux terrestres qui ont été bagués ou repris au Canada entre 1921 et 1995 (voir liste complète à l'annexe 1). Parmi ces espèces, 133 font l'objet d'un compte rendu complet. (Il s'agit des espèces pour lesquelles il y a eu au moins une reprise à plus de 100 km du site de baguage.)

En ce qui concerne les 227 espèces dont il est question dans ce volume, 2 502 063 individus ont été bagués au Canada entre 1955 et 1995. (Les données sur les oiseaux bagués avant 1955 n'ont pas été entrées dans la base de données électronique.) Parmi ces individus, 11 390 ont été repris plus tard, pour un taux global de reprise de 0,5 p. 100. Le taux de reprise pour chaque espèce variait de moins de 0,1 p. 100 (p. ex. le Roitelet à couronne rubis), à des taux de l'ordre de 3 à 5 p. 100 pour les plus grandes espèces (p. ex. les geais), jusqu'à un maximum de 8 p. 100 dans le cas du Grand Corbeau. Les petits oiseaux sont moins souvent repris, en partie parce qu'ils sont de petite taille (donc plus difficiles à voir), et qu'ils sont rapidement mangés par des prédateurs, mais également à cause que sur les plus petites bagues, l'adresse de retour se trouve à l'intérieur, là où les personnes qui les trouvent n'iront probablement pas voir (Hussell et al. 1993).

Le nombre de petits oiseaux bagués a beaucoup augmenté depuis 1975 (voir annexe 1), surtout pour les oiseaux minuscules (taille de bague de zéro). De ce nombre, plus de 450 000 ont été bagués de 1986 à 1995, par rapport à environ 150 000 de 1966 à 1975. Cette augmentation est grandement attribuable à l'adoption du filet japonais en Amérique du Nord pour attraper les oiseaux, mais correspond probablement aussi au nombre croissant de stations de surveillance des migrations à volume élevé au Canada.

En plus des 11 390 reprises d'oiseaux bagués au Canada entre 1955 et 1995, le présent volume porte sur les reprises d'oiseaux bagués entre 1921 et 1955 — ce qui n'ajoute que 1923 enregistrements (un autre indice de l'augmentation du baguage avec le temps). En plus des 13 313 reprises d'oiseaux bagués au Canada de 1921 à 1995, l'ouvrage comporte aussi 7294 cas d'oiseaux bagués dans d'autres pays, mais repris au Canada durant la même période.

Les cartes géographiques de reprises des oiseaux montrent que les petits oiseaux terrestres migrent sur un front large en suivant à peu près les mêmes voies de migration que la sauvagine (Lincoln 1935). Les oiseaux migrateurs qui nichent en Colombie-Britannique ont tendance à se déplacer à l'ouest des montagnes Rocheuses et le long de la côte du Pacifique. Les oiseaux forestiers des provinces des Prairies se déplacent selon un axe sud-est/nord-ouest, se dirigeant vers le sud-est des États-Unis à l'automne; les espèces qui habitent en terrain découvert, comme les merles-bleus et les bruants, se dirigent plus au sud. L'Ontario constitue une zone de transition, et les oiseaux ont plus tendance à se déplacer directement du nord au sud, certains migrateurs traversant depuis des aires de reproduction plus à l'ouest vers d'autres

plus à l'est. D'après certaines sources, quelques oiseaux migrateurs individuels peuvent adopter des routes différentes au-dessus des Grands Lacs d'une année à l'autre. Les oiseaux du Québec et des Maritimes se déplacent davantage selon un axe sud-ouest/nord-est, en un mouvement généralement parallèle à la côte de l'Atlantique.

Les cartes géographiques relatives au Merle d'Amérique illustrent particulièrement bien ces modèles migratoires types, mais des oiseaux ayant fait l'objet de beaucoup moins de reprises peuvent faire voir les mêmes modèles (p. ex. voir cartes relatives aux autres espèces de grives et à la Paruline flamboyante). Quelques espèces montrent des modèles migratoires quelque peu différents, comme il en est question dans les comptes rendus d'espèces (p. ex. Bruant à couronne blanche, Étourneau sansonnet).

Même si les modèles migratoires globaux des oiseaux chanteurs sont bien illustrés par les reprises de bagues, il est clair qu'il reste encore d'énormes lacunes à combler dans notre connaissance des aires de migration et d'hivernage de certaines populations d'oiseaux nicheurs, même après plus de 75 ans de baguage des oiseaux non gibiers au Canada. Plus de la moitié des 227 espèces comprises dans cet ouvrage ont à leur actif cinq enregistrements de reprise ou moins, et 75 p. 100 en ont moins de 30 (annexe 1). Dans bien des cas, les enregistrements disponibles ne donnent pas de renseignements convenables sur les aires d'hivernage ou les voies de migration pour les espèces dans leur ensemble, sans parler des populations régionales. Seulement 15 p. 100 des espèces comptent plus de 100 enregistrements de reprise.

Dans ce volume, on trouve de nombreux enregistrements individuels d'oiseaux repris à une bonne distance, quelques jours après le baguage, notamment un Bruant à gorge blanche qui avait voyagé 673 km en un seul jour. La distance maximale, inscrite dans cet ouvrage, parcourue par un membre d'une espèce entre le lieu de baguage et celui de la reprise, est de 7764 km. Il s'agit d'une Hirondelle de rivage, baguée en Saskatchewan et reprise six ans plus tard en Bolivie.

4. Explication détaillée des comptes rendus sur les espèces

4.1 Le nom de l'espèce

Les premiers éléments trouvés dans chaque compte rendu est le nom commun et le nom scientifique de l'espèce, que l'on trouve dans les *Noms français des oiseaux du monde*, 1993, aux éditions MultiMondes; [en anglais : la *Check-list of*

North American Birds (American Ornithologists' Union 1998)]. Cet élément est suivi (pour les espèces complètes) du numéro de l'AOU. Dans certains cas, nous donnons le numéro attribué par le U.S. Bird Banding Laboratory pour les sous-espèces reconnues.

4.2 Cartes géographiques des reprises

Les cartes géographiques des reprises montrent des lignes qui rattachent les sites de baguage aux points de reprises pour les oiseaux repris à plus de 100 km du site de baguage. Le symbole apparaissant à la fin de chaque ligne désigne le lieu de la reprise.

Avant la production de la carte géographique, les données ont été triées afin d'enlever les enregistrements des oiseaux repris à moins de 100 km du lieu du baguage (ceux-ci n'étant pas assez intéressants pour être cartographiés). Les reprises dont le code ou les coordonnées de l'emplacement étaient inexacts ont aussi été rejetées, sauf dans les cas suivants : aux enregistrements qui fournissent les degrés de latitude et de longitude mais pas l'emplacement exact du quadrilatère de dix minutes, on a attribué arbitrairement des coordonnées dans le coin sud-est du quadrilatère de 1°. Quelques-uns des plus vieux enregistrements de baguage et de reprise du Mexique indiquent l'État, mais ne donnent pas les coordonnées. Dans de tels cas, nous avons attribué les coordonnées du centre de l'État. Pour nous assurer que les rares reprises de longue distance soient cartographiées, nous avons aussi attribué des coordonnées aux emplacements inexacts dans les pays d'Amérique centrale et d'Amérique du Sud, en leur attribuant les coordonnées du centre du pays concerné.

Pour les espèces baguées ayant fait l'objet de peu de reprises, chaque enregistrement de déplacement de plus de 100 km pouvait être cartographié individuellement. Cependant, ce n'était pas possible pour les espèces ayant fait l'objet d'un grand nombre de reprises parce que même les cartes géographiques ayant à peine 50 lignes peuvent paraître encombrées. Nous avons donc réduit la complexité des cartes à l'aide de plusieurs méthodes. Par exemple, pour quelques espèces (mentionnées dans le texte), nous avons mis de côté les reprises effectuées entre 200 et 400 km du site de baguage, contrairement aux reprises habituellement effectuées à 100 km. Une deuxième approche consistait à produire plusieurs cartes pour une espèce afin de permettre l'illustration d'un plus grand nombre de cas.

La plupart du temps, nous avons utilisé un processus de réduction. D'abord, on a regroupé les enregistrements qui

avaient les mêmes coordonnées de baguage et de reprise (c.-à-d. tous les oiseaux qui ont été bagués dans un quadrilatère de dix minutes de côté et ont été repris dans un autre quadrilatère de dix minutes). Ensuite, une seule ligne a été tracée avec un symbole plus gros indiquant le nombre de reprises représentées par cette ligne (voir légende de chaque carte). S'il fallait réduire davantage, les coordonnées étaient arrondies pour former des quadrilatères plus grands (au lieu de quadrilatères de dix minutes), et de nouveaux groupes (plus grands) d'enregistrements étaient établis de façon à correspondre aux nouvelles coordonnées de baguage et de reprise. De chaque groupe, un enregistrement a été choisi au hasard pour représenter le groupe sur la carte, et les lignes ont été tracées en fonction de leurs coordonnées originales. Encore une fois, la taille du symbole indiqué à la fin de la ligne choisie indique le nombre d'enregistrements représentés. Si la carte géographique était encore trop encombrée, on répétait le processus jusqu'à ce que celle-ci devienne claire. Sur les cartes où les quadrilatères ont été agrandis au-delà de dix minutes de côté dans le but d'en clarifier les détails, leur taille en degrés (décimaux) est indiquée. Des cartes géographiques de référence, situées à l'annexe 2, donnent au lecteur une idée de la zone couverte par les quadrilatères agrandis.

Le nombre de reprises représentées par chacun des symboles est cohérent sur toutes les cartes; il n'y a que deux classes de fréquences utilisées, une pour les grands ensembles de données (le triangle), et l'autre pour les plus petits ensembles de données (le carré).

Comme résultat, le processus de réduction donne un ensemble de lignes reliant les sites de baguage et de reprise et évoquant les modèles géographiques migratoires plutôt que chaque reprise. Cette méthode a l'avantage de ne pas éliminer les enregistrements clairsemés ou discordants, alors que les zones denses ayant des enregistrements répétitifs se trouvent rigoureusement expurgés pour réduire l'encombrement. Toutefois, elle a également l'inconvénient de mettre de côté de nombreux enregistrements individuels (parfois des centaines). Quand le quadrilatère est grand (plus de quelques degrés), le texte le mentionne les inexactitudes schématiques qui en résultent.

4.3 Exposé

Chaque exposé commence par une clarification taxinomique au cas où les taxons traditionnellement reconnus par les bagueurs ne correspondraient pas à ceux qui ont cours chez les taxinomistes. Une brève description de la répartition des

aires de nidification d'Amérique du Nord et des aires d'hivernage de chaque espèce s'ensuit, principalement d'après Peterson (1980), l'American Ornithologists' Union (1983 et suppléments), Godfrey (1986), et DeGraaf and Rappole (1995).

La partie principale du texte étudie les modèles migratoires qu'ont fait ressortir les reprises et fait référence à des enregistrements particuliers (par leur numéro) qui sont inscrits au bas du texte. Si d'importantes analyses de reprises de bagues ont été publiées pour l'espèce, les résultats connexes sont résumés dans le compte rendu.

4.4 Liste d'enregistrements de reprises choisis

Les enregistrements de reprises sont inscrits dans un format normalisé. Chacun s'inscrit sur deux lignes, la première donnant l'essentiel des renseignements sur le baguage et la deuxième, les détails sur la reprise. Le numéro de la bague est donné en premier. Juste en dessous, sur la deuxième ligne, il y a soit les initiales du bagueur ou, s'il n'est pas possible de les retrouver, le numéro de permis du bagueur. (C'est la seule information sur le baguage qui apparaît sur la deuxième ligne plutôt que sur la première.) Une légende des initiales des bagueurs se trouve à l'annexe 3.

Nous avons essayé d'obtenir l'autorisation de publier auprès de tous les bagueurs dont nous avons utilisé les enregistrements de reprises; essentiellement, tous ont répondu avec enthousiasme. (Nous n'utilisons aucun enregistrement qu'un bagueur nous aurait explicitement défendu de publier.) Dans quelques cas, surtout pour les plus anciennes reprises, nous n'avons pas reçu de réponse. Pour de tels cas, nous avons quand même inscrit les enregistrements puisque la période de confidentialité des enregistrements de reprise était terminée.

Tous les codes dans la liste des reprises proviennent du manuel du programme nord-américain de baguage des oiseaux (Gustafson et al. 1997; voir annexe 3 pour la légende). Ces codes sont utilisés de préférence aux symboles « internationaux » parce qu'ils contiennent plus d'information (Brewer and Salvadori 1978). Après le numéro de la bague et les initiales ou le numéro de permis du bagueur, il y a deux ensembles de codes : sur la ligne supérieure, la version alphabétique du code d'âge (d'abord), puis du sexe (ensuite) de l'oiseau lors du baguage; sur la ligne inférieure, les codes numériques pour le « statut présent de l'oiseau et de la bague » et les « codes de circonstance » des données de la reprise. Ensemble, ces deux codes donnent une idée de l'intégralité de l'information pour l'enregistrement.

Ensuite apparaissent les dates du baguage (en haut) et de la reprise (en bas). Elles sont indiquées dans le format « jour/mois/année » (et non « mois/jour/année » comme on les trouve dans les fichiers informatiques), pour se conformer à l'usage canadien. Des codes spéciaux indiquent les dates inexactes de reprise (voir détails à l'annexe 3).

Les dates sont suivies du nom des lieux de baguage (en haut) et de reprise (en dessous). La plupart des noms d'endroits ont été obtenus dans le répertoire des lieux de baguage et de reprise sur fichier au U.S. Bird Banding Laboratory. Les noms de lieux du répertoire ont été attribués par des employés du laboratoire et diffèrent souvent des noms que les bagueurs ont inscrits pour leurs propres sites. Nous avons changé les noms pour ceux que reconnaissent les bagueurs dans les quelques cas où nous savions quels noms étaient les plus appropriés; mais dans bien des cas nous n'avons pas pu le faire. Lorsque les endroits n'étaient pas indiqués dans le répertoire, nous avons eu recours à des atlas pour trouver les noms d'endroits voisins. Les cartes géographiques des provinces canadiennes, des É.-U., des États du Mexique et des pays de l'Amérique centrale et de l'Amérique du Sud sont présentées à l'annexe 2 à titre de référence.

Les données qui suivent dans l'enregistrement de reprise sont la latitude et la longitude du site de baguage (ligne supérieure) et de reprise (ligne inférieure), exprimées sous forme de coordonnées du coin sud-est du quadrilatère géographique de dix minutes approprié (Gustafson et al. 1997). Les points d'interrogation désignent les lieux inexacts. Là où nous avons attribué des coordonnées (voir notes à la section 4.2), la distance parcourue (voir ci-dessous) est approximative. Dans quelques cas précis où la divulgation du lieu de nidification peut nuire à l'oiseau, les lieux de baguage précis n'ont pas été donnés. Dans ces cas-là, nous avons seulement mentionné la province ou l'État et arrondi les coordonnées géographiques, ainsi que les distances parcourues.

Les dernières données indiquées ne proviennent pas des fichiers informatiques habituels, mais ont plutôt été calculées séparément. Sur la ligne supérieure se trouve le temps écoulé entre le baguage et la reprise, et sur la ligne inférieure, la distance et la direction calculées entre les lieux de baguage et de reprise (voir annexe 4).

La plupart des reprises inscrites en détail sont explicitement indiquées dans le texte, mais l'oiseau détenant la plus longue période entre le moment du baguage et celui de la reprise est souvent inscrit à la fin sans aucun commentaire.

4.5 Résumé des statistiques de baguage

Les données sont placées en trois colonnes : les oiseaux bagués durant leur première année (année de l'éclosion), ceux qui ont été bagués durant leur deuxième année (année suivant l'éclosion) et les autres, bagués à n'importe quel âge par la suite (y compris les oiseaux dont on n'a pas l'âge au moment du baguage). Chaque ligne du tableau sommaire est expliquée ci-dessous.

Nombre de baguages au Canada (1955–1995) :

Le nombre de baguages n'était pas pris en charge par un ordinateur avant 1955; cet article-ci et le prochain (nombre de reprises par 1000 baguages) ne sont donc valables que pour la période de 1955 à 1995. Ces deux lignes sont en italique dans le tableau dans le but de souligner le fait qu'il s'agit d'un sous-ensemble réservé des nombres apparaissant dans le reste du tableau.

Nombre de reprises par 1000 baguages (1955–1995) :

$$\frac{(\text{N}^{\text{bre}} \text{ de reprises d'oiseaux bagués au Canada, } 1955\text{--}1995) \times 1000}{\text{N}^{\text{bre}} \text{ total d'oiseaux bagués au Canada (1955--1995)}}$$

Le nombre de reprises comprend les oiseaux tués, trouvés morts ou capturés vivants, de même que les enregistrements d'observation (c.-à-d. les bagues lues à distance). Si le même oiseau a été repris plusieurs fois, il n'a été inventorié qu'une fois.

Le taux de reprise est influencé par des facteurs comme la taille et la visibilité d'une espèce, la densité de la population humaine, le fait que l'espèce soit chassée ou non, la répartition géographique des bagueurs d'oiseaux et le nombre d'individus de l'espèce dont s'occupent ces derniers. Le taux de reprise est aussi influencé par le nombre de rapports d'oiseaux repris dans le même quadrilatère de dix minutes que celui où ils ont été bagués. Avant 1958, les reprises effectuées dans les 90 premiers jours sur le site du baguage étaient incorporées à la base de données (il s'agit d'un petit nombre), mais en 1958, cette pratique a été interrompue. Les reprises effectuées sur le site de baguage plus de 90 jours après le baguage peuvent toujours être soumises au bureau de baguage. Cependant, certains bagueurs ne tiennent pas compte de telles reprises, et quand ils les envoient, elles ne sont pas toutes entrées dans la base de données (L. Métras, comm. pers.).

N^{bre} total de reprises (1921–1995) :

$$\text{N}^{\text{bre}} \text{ de reprises d'oiseaux bagués au Canada (1921--1995)} + \text{n}^{\text{bre}} \text{ de reprises au Canada d'oiseaux bagués ailleurs (1921--1995)}$$

Tous les calculs dans ce tableau sont fondés sur cette série de reprises.

N^{bre} de reprises de bagues faites à l'étranger :

$$\text{N}^{\text{bre}} \text{ de reprises au Canada (1921--1995) d'oiseaux bagués à l'étranger}$$

Période maximale entre le baguage et la reprise (en mois) :

Maximum concernant tout individu, arrondi au mois

Il faut noter que ce chiffre ne fait aucunement référence à la longévité, sauf dans le cas du baguage de très jeunes oisillons. L'intention n'a jamais été d'évaluer l'âge exact des oiseaux.

N^{bre} d'oiseaux bagués au Canada qui se déplacent à > 0 km :

Ce nombre donne une taille étalon pour effectuer le calcul ci-dessous.

Déplacement moyen des oiseaux bagués au Canada > 0 km :

$$\frac{\text{Somme des km parcourus pour toutes les reprises d'oiseaux bagués au Canada qui se sont déplacés à > 0 km}}{\text{N}^{\text{bre}} \text{ d'oiseaux bagués au Canada qui ont franchi > 0 km}}$$

La distance entre les sites de baguage et de reprise de chaque enregistrement a été informatisée selon une distance orthodromique, c'est-à-dire la plus courte distance possible entre les deux coordonnées en tenant compte de la sphéricité terrestre (Cowardin 1977; annexe 4). Les oiseaux peuvent parfois emprunter des routes orthodromiques, mais ils se dirigent probablement plus souvent d'après une direction de compas constante (Alerstam 1990, Kerlinger 1995); nos calculs sous-estiment donc probablement les vraies distances de déplacement. Dans les enregistrements auxquels nous avons attribué des coordonnées de reprise, la distance parcourue est approximative (voir explication à la section 4.2).

Déplacement maximal lié à toutes les reprises (km) :

Distance maximale de déplacement calculée pour tout individu

Contrairement au calcul de la moyenne des déplacements des oiseaux bagués au Canada (plus haut), pour toute reprise, on indique la distance maximale dans la base de données, indépendamment du lieu de baguage.

% des récupérations (reprises d'oiseaux morts) :

$$\frac{(\text{N}^{\text{bre}} \text{ total de reprises d'oiseaux morts}) \times 100}{\text{N}^{\text{bre}} \text{ total de reprises}}$$

Les oiseaux ayant des codes de conditions actuelles « inconnus » (voir annexe 3) ont été traités comme s'ils étaient morts aux fins de ce calcul et du suivant (% des reprises directes), ainsi que les oiseaux bagués durant leur première année (année d'éclosion) et repris dans le même quadrilatère de dix minutes dans les trois mois suivant leur baguage.

Les oiseaux repris avant 1965 et les oiseaux bagués en dehors du programme de baguage de l'Amérique de Nord (surtout en Europe et au Groenland) n'avaient pas de vrai code de « conditions actuelles » pour indiquer si l'oiseau repris était mort ou vivant. Nous avons attribué des codes à ces enregistrements d'après les renseignements disponibles afin de pouvoir les intégrer aux calculs (voir annexe 3).

% des récupérations directes :

$$\frac{(\text{N}^{\text{bre}} \text{ total de récupérations directes}) \times 100}{\text{N}^{\text{bre}} \text{ total de reprises}}$$

Une récupération directe désigne la reprise d'un oiseau « tué ou trouvé mort avant, pendant ou immédiatement après la première période du déplacement migratoire qui suit le baguage et avant que la migration de retour probable n'ait eu lieu » (Gustafson *et al.* 1997). L'annexe 4 montre comment cette désignation a été attribuée; voir aussi notes plus haut concernant le « % des récupérations ».

Le pourcentage des récupérations directes est surtout utilisé pour mesurer la pression exercée par la chasse sur les espèces dont le taux de mortalité est en grande partie imputable aux chasseurs. Pour les espèces qui ne sont pas chassées, ce chiffre constitue un guide approximatif de la portée de la mortalité annuelle. Pour la plupart des espèces, ce chiffre sera beaucoup plus élevé dans le cas des oiseaux bagués durant leur première année (année d'éclosion) que

pour ceux qu'ils l'ont été plus tard au cours de leur vie, ce qui témoigne du haut taux de mortalité des juvéniles, situation type pour la plupart des oiseaux.

% des reprises durant les opérations de baguage :

$$\frac{(\text{N}^{\text{bre}} \text{ total de reprises lors d'opérations de baguage}) \times 100}{\text{N}^{\text{bre}} \text{ total de reprises}}$$

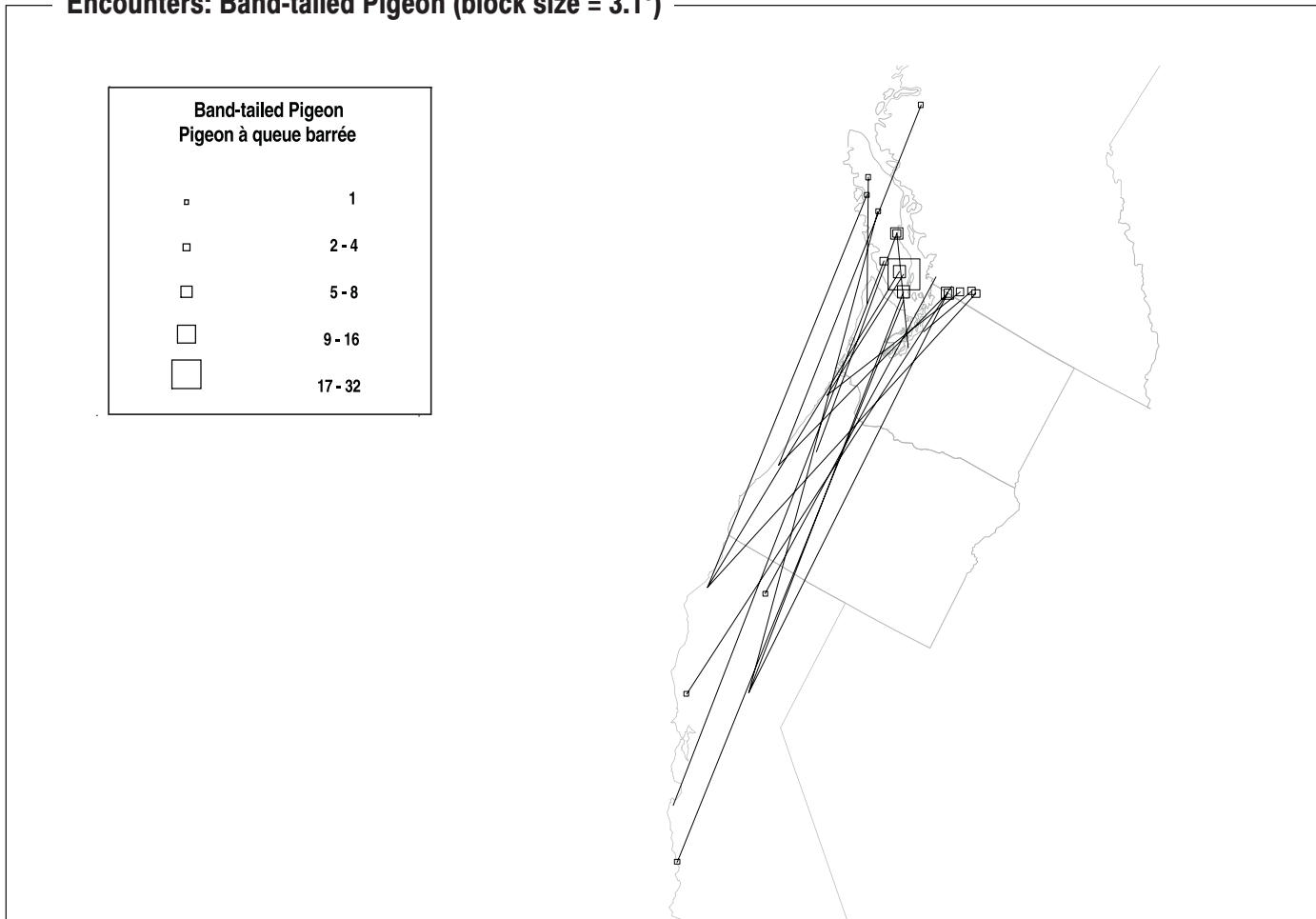
Le nombre d'oiseaux repris lors d'opérations de baguage était la somme des oiseaux qui avaient des codes de circonstance de 89 ou de 99 (voir annexe 3).

4.6 Carte géographique des initiatives de baguage

La carte géographique des initiatives de baguage montre les nombres d'individus de chaque espèce qui ont été bagués de 1955 à 1995 à chaque endroit (groupés par quadrilatère de dix minutes, certains quadrilatères étant combinés lorsqu'ils sont trop rapprochés pour figurer séparément sur la carte géographique). Cette carte aide le lecteur à interpréter la répartition des reprises, car elle montre où les initiatives de baguage ont été concentrées. Au bas de chaque carte géographique figure une liste de cinq titulaires de permis principaux, responsables de la plupart des initiatives de baguage d'espèces au Canada de 1955 à 1995 (en ordre décroissant). Un seul permis principal permet à une personne ou plus de baguer; la liste ne mentionne donc pas nécessairement les bagueurs individuels les plus productifs.

Band-tailed Pigeon (*Columba fasciata*) 312.0

Encounters: Band-tailed Pigeon (block size = 3.1°)



The Band-tailed Pigeon breeds in the U.S. Southwest and along the Pacific coast; in Canada it breeds only in southwestern British Columbia, west of the Cascade–Coast mountains, north to Alta Lake (formerly farther north; Campbell et al. 1990). It winters mainly from central California (see record 1) southward into Central America and western South America to northern Argentina, and in small numbers north to southern Vancouver Island (record 2).

Fifty-seven encounters involved birds banded in the U.S. and encountered in British Columbia; most were banded in winter or during spring migration and were encountered in August and September, reflecting the start of the hunting season (records 3–5). States of banding were Washington (16 cases, including record 6), Oregon (22 birds, e.g., record 3), and California (19 cases, e.g., records 4, 5, and 7).

A few birds that evidently bred in California and Oregon moved north after breeding and were encountered in Canada that same summer or fall (record 8).

This species is regularly hunted, so it is not surprising that most encounters were of birds that had been shot. The mapped encounters in British Columbia probably reflect the distribution of people (and pigeon hunters) more than the real distribution of the birds. Samples are too small for estimating survival rigorously, but the relatively low proportion of birds recovered within a year of banding (see “% direct recoveries” in summary table) suggests low hunting pressure and good survival compared with most other game birds. The longest period between banding and encounter was for a bird shot more than 10 years after banding (record 3).

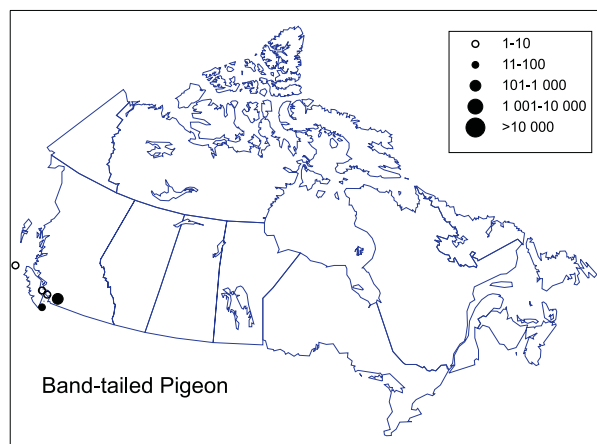
Encounter records: Band-tailed Pigeon

1	505-29971 EDW	HY U 00 01	27/05/56 20/12/57	Beacon Hill, BC Cambria, CA	48°20'N 123°20'W 35°30'N 121°00'W	1 yr. 7 mo. 1441 km S9°E
2	0635-86891 WDW	AHY U 02 98	15/05/68 28/01/72	Fox Island, WA Victoria, BC	47°10'N 122°30'W 48°20'N 123°20'W	3 yr. 8 mo. 144 km N25°W
3	0515-58591 CAL	AHY U 05 01	25/04/57 LT/08/67	Florence, OR South Bentinck Arm, BC	43°50'N 124°00'W 52°10'N 126°50'W	10 yr. 4 mo. 951 km N12°W
4	0515-72728 CDFG	AHY F 00 03	05/04/55 10/09/55	Monterey Beach, CA Annacis, BC	36°30'N 121°50'W 49°10'N 122°50'W	5 mo. 1412 km N3°W
5	0515-62660 CFY	AHY F 05 01	15/04/63 05/09/65	Arcata, CA Hope, BC	40°50'N 124°00'W 49°20'N 121°20'W	2 yr. 5 mo. 969 km N12°E
6	0715-21235 WDW	AHY U 05 03	30/05/68 27/06/71	Forks, WA 18 km west of Moss, BC	47°50'N 124°20'W 50°10'N 126°50'W	3 yr. 1 mo. 317 km N34°W
7	0505-83993 CDFG	U F 00 01	17/03/53 28/06/56	Bangor, CA Sechelt Pena., BC	39°20'N 121°20'W 49°40'N 125°50'W	3 yr. 3 mo. 1204 km N16°W
8	0655-76793 FW	AHY M 05 01	08/06/74 05/09/74	Pebble Beach, CA Franklin Camp, BC	36°30'N 121°50'W 48°50'N 124°40'W	3 mo. 1392 km N9°W

Summary of banding statistics: Band-tailed Pigeon

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			199
No. encountered per 1000 banded (1955–1995)			30
Total no. encountered (1921–1995)	1	54	63
No. encountered from foreign bandings	1	48	57
Maximum period from banding to encounter (mo.)	12	124	124
No. of Canadian-banded birds moving > 0 km	0	5	5
Mean movement > 0 km of Canadian-banded birds	–	710	710
Maximum movement from all encounters (km)	167	1441	1441
% recovered (encountered dead)	100	98	98
% direct recoveries	0	14	12
% encountered during banding operations	0	1	1

Banding effort: Band-tailed Pigeon



Top banders: WAM, RDH, CWS-BC, EDW, DAH

Mourning Dove (*Zenaida macroura*) 316.0

Encounters (west): Mourning Dove

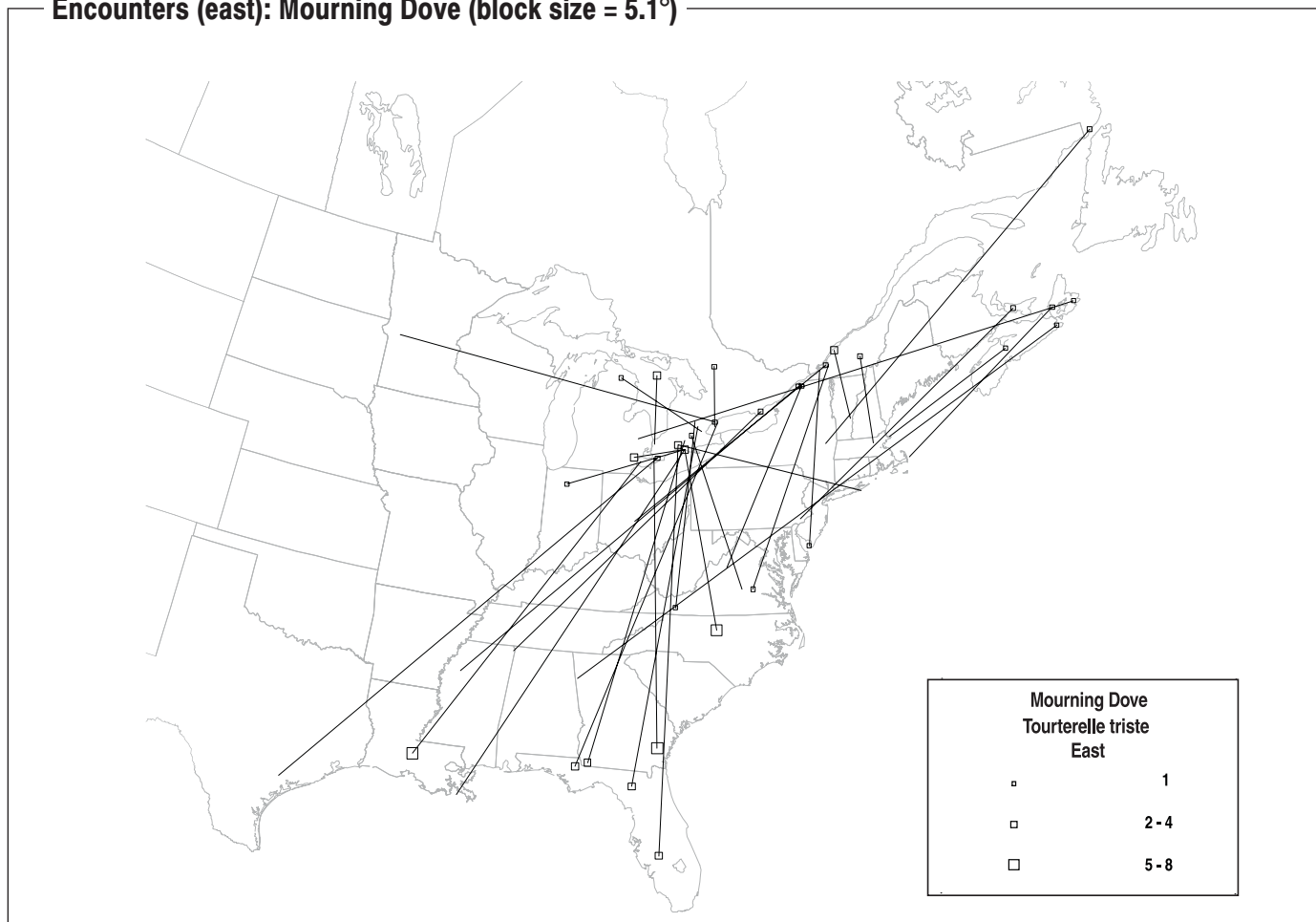


The Mourning Dove breeds across most of southern Canada and all of the U.S. It winters throughout the U.S. and Mexico to Panama, but also in the Maritimes and southern British Columbia, Ontario, and Quebec. It occurs sparsely but regularly in Newfoundland north of most published range maps (B. MacTavish, pers. comm.; see record 1).

Although protected in Canada (except in some parts of British Columbia), three to four times more Mourning Doves are shot annually in the U.S. than all species of waterfowl combined, producing thousands of encounters (Dunks et al. 1982). Analyses (reviewed by Tomlinson 1993) showed that adult males may winter farther north than females and immatures. Breeding populations tend to winter in sectors directly south of the breeding range, but U.S. birds from north-central states fan out more. Most birds winter in the southern tier of U.S. states, except for New England breeding populations, which do not go as far south.

The relatively small number of Canadian encounters (127 in total) generally fits this picture well. Western birds winter in the southwestern U.S. (record 2), while doves from the Prairie Provinces appear to winter from coast to coast (records 3–5; see also records 6–8 for additional evidence of wintering across the southern U.S.). Most recoveries were of Ontario birds shot in winter in the southeastern U.S. (record 9). Other probable Ontario breeders were encountered predominantly in Louisiana (nine birds, including record 10), Georgia (seven birds), Florida (seven birds, e.g., record 9), and South Carolina (five birds); however, a few wintered farther west (record 11). (Note that the eastern map does not depict all these encounters because of the thinning process used in mapping; see section 4.2 for explanation.) Quebec and Maritimes birds, like New England populations, appear not to winter as far south as doves from the Great Lakes.

Encounters (east): Mourning Dove (block size = 5.1°)



No Canadian doves have been encountered in Mexico despite regular hunting there. Mid-winter encounters in Canada increased substantially after 1975, in keeping with the growing tendency for eastern Canadian birds not to migrate (Mirarchi and Baskett 1994).

A surprising number of birds wintered farther north than where they were banded in summer. Two moved to Nova Scotia from Alabama (record 12) and Michigan (record 13), and two adults banded in Nevada in summer

were encountered in British Columbia later the same fall. Also noteworthy are encounters of birds spending different summers in very distant localities, for example, Arizona and British Columbia, New York and Newfoundland (record 1), and Ontario and Mississippi (record 14). The latter bird (record 14) showed the longest period between banding and encounter.

Mourning Dove

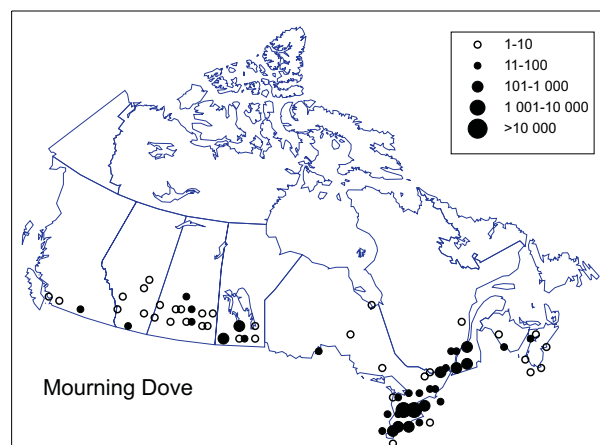
Encounter Records: Mourning Dove

1	0803-33690 RPY	HY M 05 00	08/05/73 10/06/74	near Albany, NY near West St. Modiste, Labrador, NF	42°40'N 73°50'W 51°40'N 56°40'W	1 yr. 1 mo. 1634 km N46°E
2	0703-96761 LHB	AHY M 03 01	02/02/64 28/09/66	near Pantano, AZ Osoyoos, BC	32°00'N 110°40'W 49°00'N 119°20'W	2 yr. 7 mo. 2026 km N18°W
3	0633-49970 PM	HY U 05 01	23/06/68 06/09/68	near Chin, AB near Napa, CA	49°50'N 112°30'W 38°20'N 122°10'W	3 mo. 1493 km S35°W
4	0803-77176 WKM	AHY M 03 12	14/02/65 99/10/65	Brawley, CA near Instow, SK	33°00'N 115°40'W 49°30'N 108°20'W	8 mo. 1934 km N18°E
5	0523-54512 FGB	HY U 00 01	01/10/56 02/12/56	Regina, SK Abbeville, LA	50°20'N 104°30'W 29°50'N 92°00'W	2 mo. 2510 km S29°E
6	0593-67406 DRH	U U 03 01	23/08/65 29/09/65	Union Point, MB near Utley, TX	49°50'N 97°10'W 30°20'N 97°30'W	1 mo. 2171 km due S
7	0593-67511 CSH	L U 03 01	01/07/63 01/09/66	near Rush Lake, SK near Tatum, NM	50°30'N 107°30'W 33°10'N 103°00'W	3 yr. 2 mo. 1964 km S13°E
8	0653-82504 LLH	AHY U 05 12	02/04/61 05/06/66	St. Petersburg, FL near Saskatoon, SK	27°40'N 82°30'W 52°00'N 106°30'W	5 yr. 2 mo. 3365 km N30°W
9	0623-20464 GP	L U 00 01	09/06/62 11/10/63	Toronto, ON near Altha, FL	43°40'N 79°10'W 30°40'N 85°10'W	1 yr. 4 mo. 1541 km S22°W
10	0513-24006 LDWF	AHY U 00 98	03/11/50 ??/08/65	Rose Pine, LA near Point Pelee Marsh, ON	30°50'N 93°10'W 41°50'N 82°30'W	1546 km N44°E
11	0973-01591 TTPWD	AHY M 05 14	14/02/67 28/05/68	near Victoria, TX near Merlin, ON	28°50'N 97°00'W 42°20'N 82°10'W	1 yr. 3 mo. 2009 km N38°E
12	1133-05298 ADC	HY U 05 01	05/08/68 15/12/68	near Cedartown, AL Chedabucto Bay, NS	34°00'N 85°20'W 45°20'N 61°20'W	4 mo. 2399 km N51°E
13	1193-37210 MDNR	HY U 05 12	20/07/70 10/12/70	Attica, MI near Louisburg, NS	43°00'N 83°10'W 46°00'N 60°10'W	5 mo. 1850 km N72°E
14	0613-94502 MDWFP	L U 07 89	18/07/58 31/08/67	Greenwood, MS Chase Mills, ON	33°50'N 90°20'W 44°50'N 75°00'W	9 yr. 1 mo. 1795 km N43°E

Summary of banding statistics: Mourning Dove

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			6528
<i>No. encountered per 1000 banded (1955–1995)</i>			12
Total no. encountered (1921–1995)	49	70	127
No. encountered from foreign bandings	13	27	40
Maximum period from banding to encounter (mo.)	109	92	109
No. of Canadian-banded birds moving > 0 km	28	21	53
Mean movement > 0 km of Canadian-banded birds	1332	637	1039
Maximum movement from all encounters (km)	2571	3365	3365
% recovered (encountered dead)	95	91	92
% direct recoveries	40	34	37
% encountered during banding operations	2	5	5

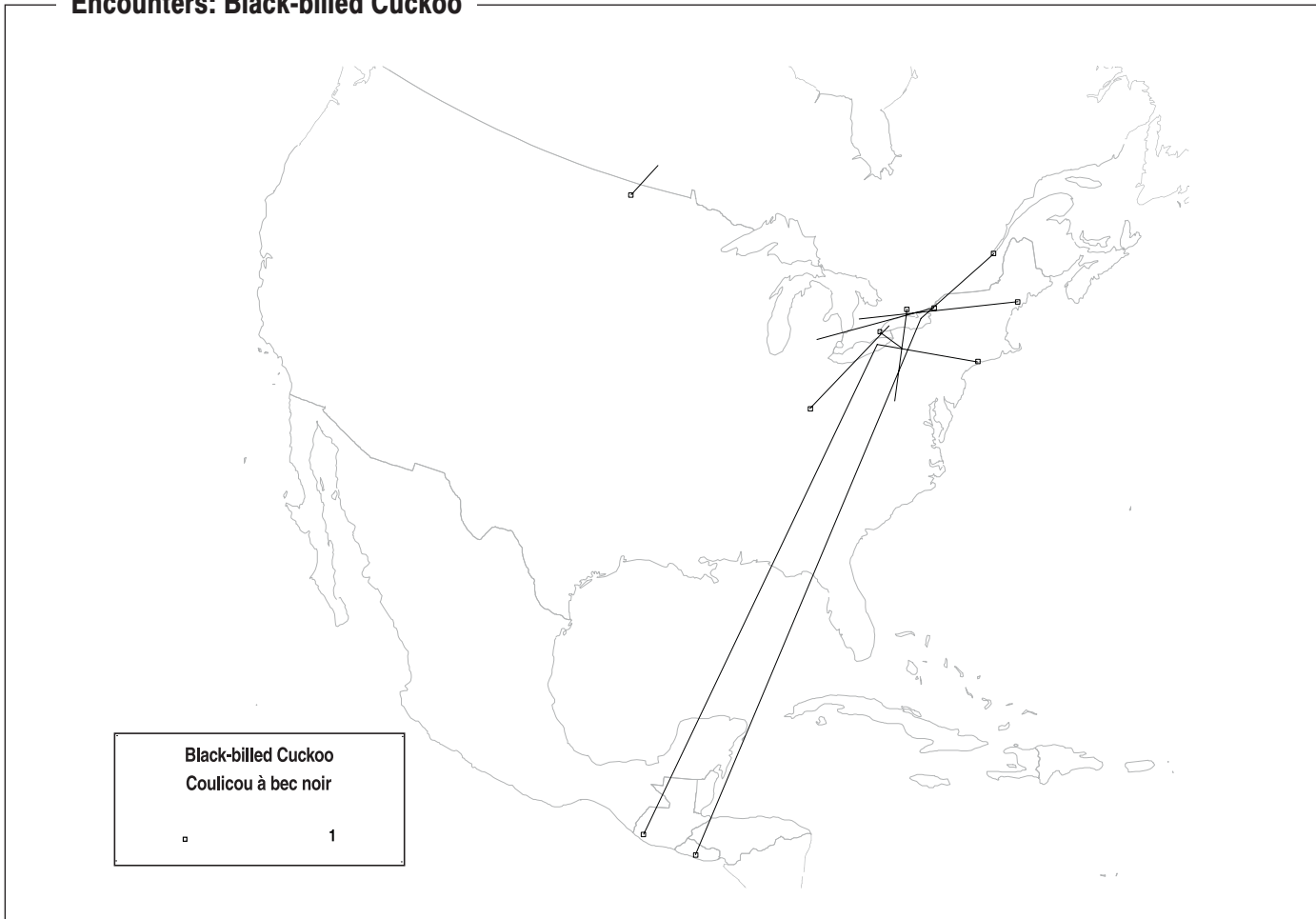
Banding effort: Mourning Dove



Top banders: DRL, DGD, TBO, ADB, LPBO

Black-billed Cuckoo (*Coccyzus erythrophthalmus*) 388.0

Encounters: Black-billed Cuckoo



The Black-billed Cuckoo breeds in the northern U.S. and in southern Canada east of the Rocky Mountains, from Alberta east to Nova Scotia. It winters in northwestern South America from northern Colombia and Venezuela (including Trinidad) to Ecuador and northern Peru.

All encounters are listed below. Although several are quite long distance (records 1 and 2), none involves the winter range. Abundance in breeding areas (and presence in peripheral areas) varies with the abundance of tent

caterpillars, a major food. Although three birds banded in June in southern Ontario were encountered in June of later years in Connecticut (record 3), Maine (record 4), and Quebec (record 5), this does not necessarily indicate lack of breeding site fidelity, because cuckoos are very late migrants.

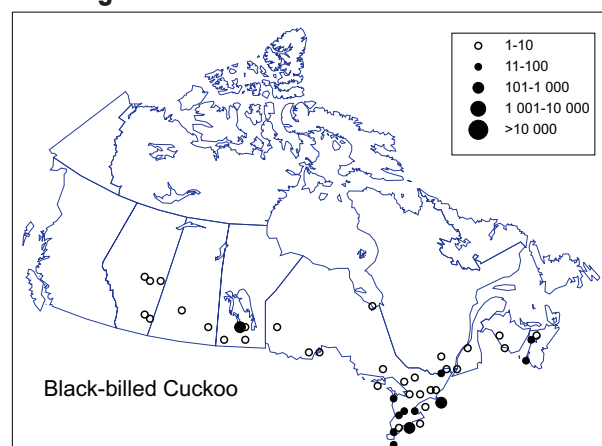
Encounter records: Black-billed Cuckoo

1	0552-90593 LPBO	U U 00 01	31/05/62 ??/10/64	Long Point, ON Mazatenango, GUATEMALA	42°30'N 80°00'W 14°30'N 91°40'W	3312 km S23°W
2	0832-43791 PEPO	AHY U 05 01	24/06/79 ??/07/83	Prince Edward Point, ON inexact location, EL SALVADOR	43°50'N 76°50'W 13°??'N 89°??'W	c. 3571 km S23°W
3	0552-98476 LPBO	U U 05 00	10/06/65 14/06/69	Long Point, ON Ansonia, CT	42°30'N 80°00'W 41°20'N 73°00'W	4 yr. 0 mo. 594 km S80°E
4	0722-68050 JBMi	AHY U 05 00	11/06/78 25/06/81	Whitechurch, ON Hallowell, ME	43°50'N 81°20'W 44°10'N 69°40'W	3 yr. 0 mo. 934 km N84°E
5	0832-48513 PEPO	AHY U 05 12	18/06/81 26/06/81	Prince Edward Point, ON L'Ange-Gardien, QC	43°50'N 76°50'W 46°50'N 71°00'W	0 mo. 565 km N52°E
6	0502-78737 PMB	AHY U 05 00	02/09/66 19/06/69	Crystal Beach, ON Agincourt, ON	42°50'N 79°00'W 43°40'N 79°10'W	2 yr. 9 mo. 94 km N8°W
7	0712-82449 DFC	HY U 05 13	14/10/67 23/05/68	Elton, NY Cootes Paradise, ON	42°20'N 78°20'W 43°10'N 79°50'W	7 mo. 154 km N52°W
8	0762-35830 UM	AHY U 03 13	20/08/76 26/05/77	11 km east of Delta, MB Rugby, ND	50°10'N 98°20'W 48°20'N 99°50'W	9 mo. 231 km S29°W
9	0782-78123 JBW	AHY U 05 14	28/08/78 13/07/79	Eckhart, MD Trent River, ON	39°30'N 78°50'W 44°20'N 77°50'W	11 mo. 544 km N8°E
10	0862-93335 TBO	AHY U 05 00	02/06/88 10/04/89	Toronto, ON Cincinnati, OH	43°30'N 79°10'W 39°00'N 84°30'W	10 mo. 671 km S43°W
11	0792-12201 BBu	AHY U 03 00	07/08/76 01/07/77	Muttonville, MI Alexandria Bay, NY	42°40'N 84°20'W 44°20'N 75°50'W	11 mo. 711 km N72°E

Summary of banding statistics: Black-billed Cuckoo

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			1115
No. encountered per 1000 banded (1955–1995)			7
Total no. encountered (1921–1995)	1	8	11
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	7	36	48
No. of Canadian-banded birds moving > 0 km	0	6	8
Mean movement > 0 km of Canadian-banded birds	–	1010	1246
Maximum movement from all encounters (km)	153	3570	3570
% recovered (encountered dead)	100	100	100
% direct recoveries	0	12	9
% encountered during banding operations	0	0	0

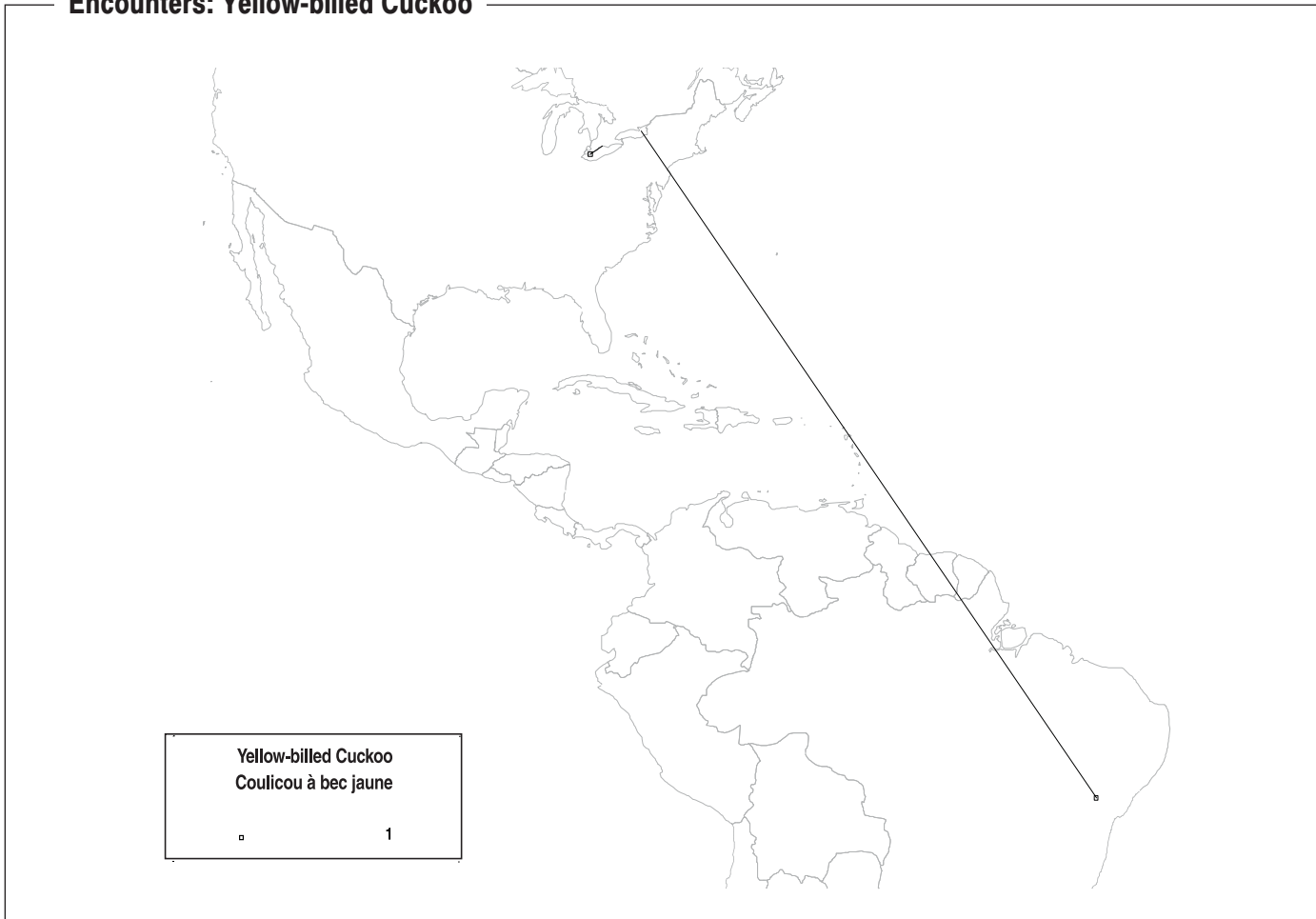
Banding effort: Black-billed Cuckoo



Top banders: LPBO, UM, PEPO, JBMi, IPBO

Yellow-billed Cuckoo (*Coccyzus americanus*) 387.0

Encounters: Yellow-billed Cuckoo



The Yellow-billed Cuckoo breeds over much of eastern and central North America; in Canada it breeds in southern Ontario, the extreme southwestern parts of Quebec, and (possibly) New Brunswick. It is a frequent northeastward vagrant on the east coast in fall (see records in Nova Scotia on banding effort map), but it winters from northern Venezuela southwestward in a band east of the Andes to Bolivia and northern Argentina, and southeastward through eastern Brazil.

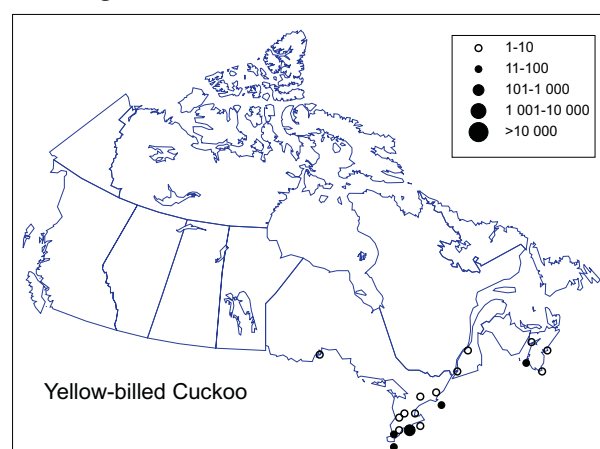
Only two encounters of Canadian-banded Yellow-billed Cuckoos were recorded up to the end of 1995, but one of these is a spectacular encounter linking breeding and wintering areas (record 1). That bird was shot, whereas the bird encountered in Ontario (record 2) was killed by a cat.

Encounter records: Yellow-billed Cuckoo

1	0832-48226	AHY U	23/05/80	Prince Edward Point, ON	43°50'N 76°50'W	7 mo.
	PEPO	05 01	27/12/80	near Utinga, BRAZIL	12°00'S 41°00'W	7198 km S39°E
2	0472-05657	AHY U	31/05/49	St. Thomas, ON	42°40'N 81°10'W	2 yr. 3 mo.
	MHF	00 12	10/08/51	Leamington, ON	42°00'N 82°30'W	132 km S56°W

Summary of banding statistics: Yellow-billed Cuckoo

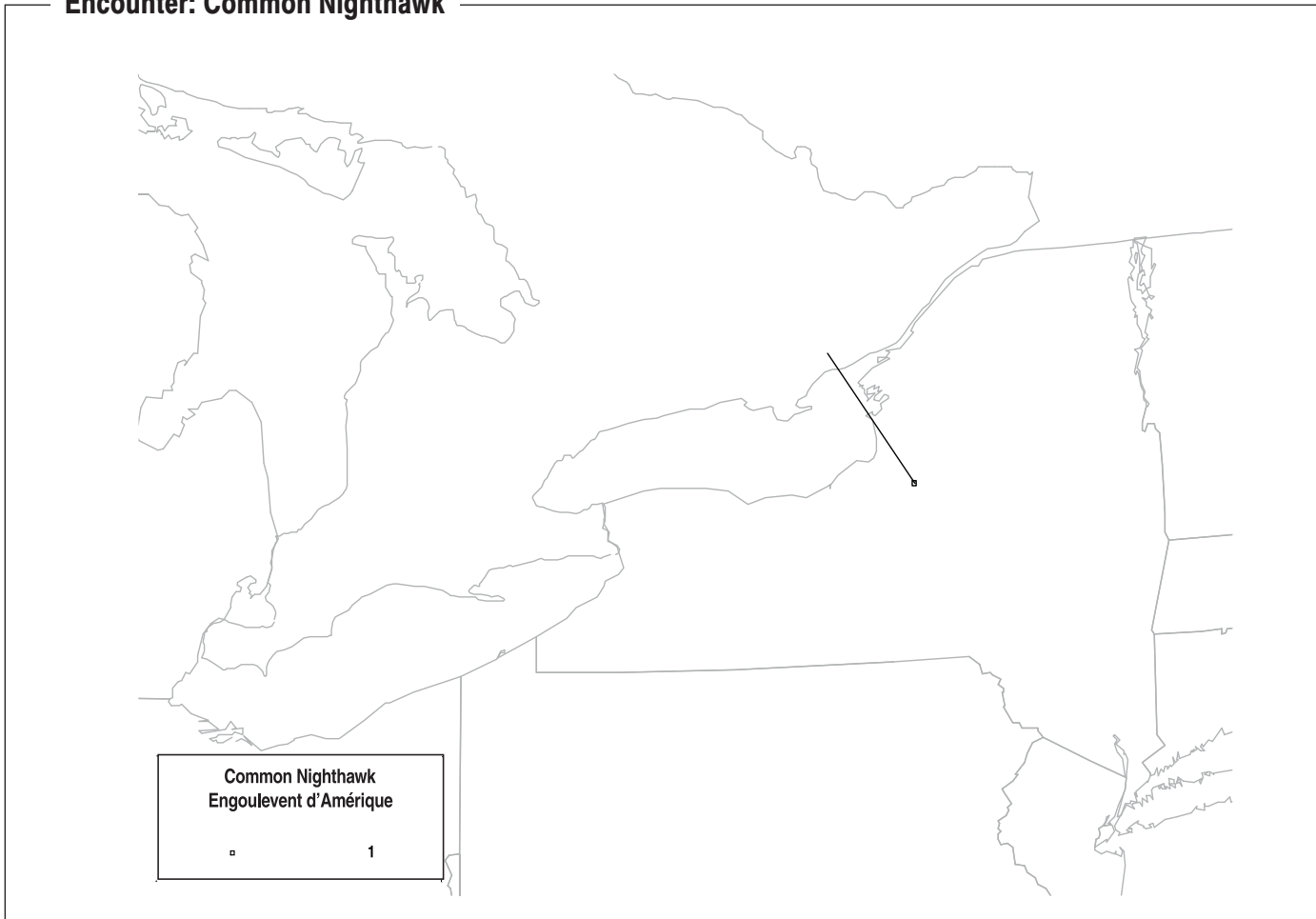
	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			323
No. encountered per 1000 banded (1955–1995)			3
Total no. encountered (1921–1995)	0	2	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	27	27
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds	–	3664	3664
Maximum movement from all encounters (km)	–	7197	7197
% recovered (encountered dead)	–	100	100
% direct recoveries	–	50	50
% encountered during banding operations	–	0	0

Banding effort: Yellow-billed Cuckoo

Top banders: LPBO, PEPO, GGa, DDD, MJW, BC

Common Nighthawk (*Chordeiles minor*) 420.0

Encounter: Common Nighthawk



The Common Nighthawk breeds all across the U.S. and southern Canada from Vancouver Island to Cape Breton Island, and from southwestern Yukon to southern interior Labrador. It is not known to breed in insular Newfoundland but is an almost annual visitor there. The species winters mainly in northern and central South America. Specimen evidence suggests Canadian birds (mostly *C. m. minor*) occur throughout most of the winter range.

Nighthawks are late to arrive and early to depart from the breeding grounds (Poulin et al. 1996). The only Canadian-banded bird encountered away from its banding area

(record 1) was migrating south from Ontario a month later than most local departures, though within the known extreme dates (Quilliam 1973). At the date when this bird was banded, most nighthawks have already passed through Virginia (Blem and Blem 1986). However, this bird was banded by a rehabilitator and may have been held for some time prior to release.

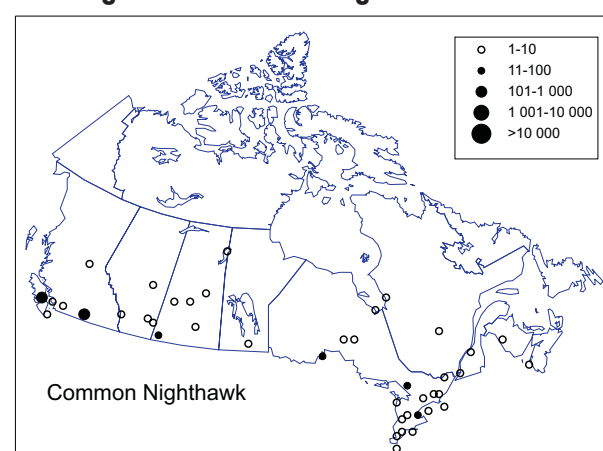
Two birds recaptured near an Okanagan Valley banding location survived nearly five years (records 2 and 3).

Encounter records: Common Nighthawk

1	0852-06907 ERC	U U 05 00	14/09/81 03/10/81	Yarker, ON Amboy Center, NY	44°20'N 76°40'W 43°20'N 75°50'W	1 mo. 129 km S31°E
2	0912-57773 PJW	U F 07 99	30/07/87 05/07/92	Penticton, BC Penticton, BC	49°20'N 119°30'W 49°20'N 119°30'W	5 yr. 0 mo. 0 km
3	0912-57768 PJW	U F 07 99	15/07/87 28/06/92	Penticton, BC Penticton, BC	49°20'N 119°30'W 49°20'N 119°30'W	4 yr. 11 mo. 0 km

Summary of banding statistics: Common Nighthawk

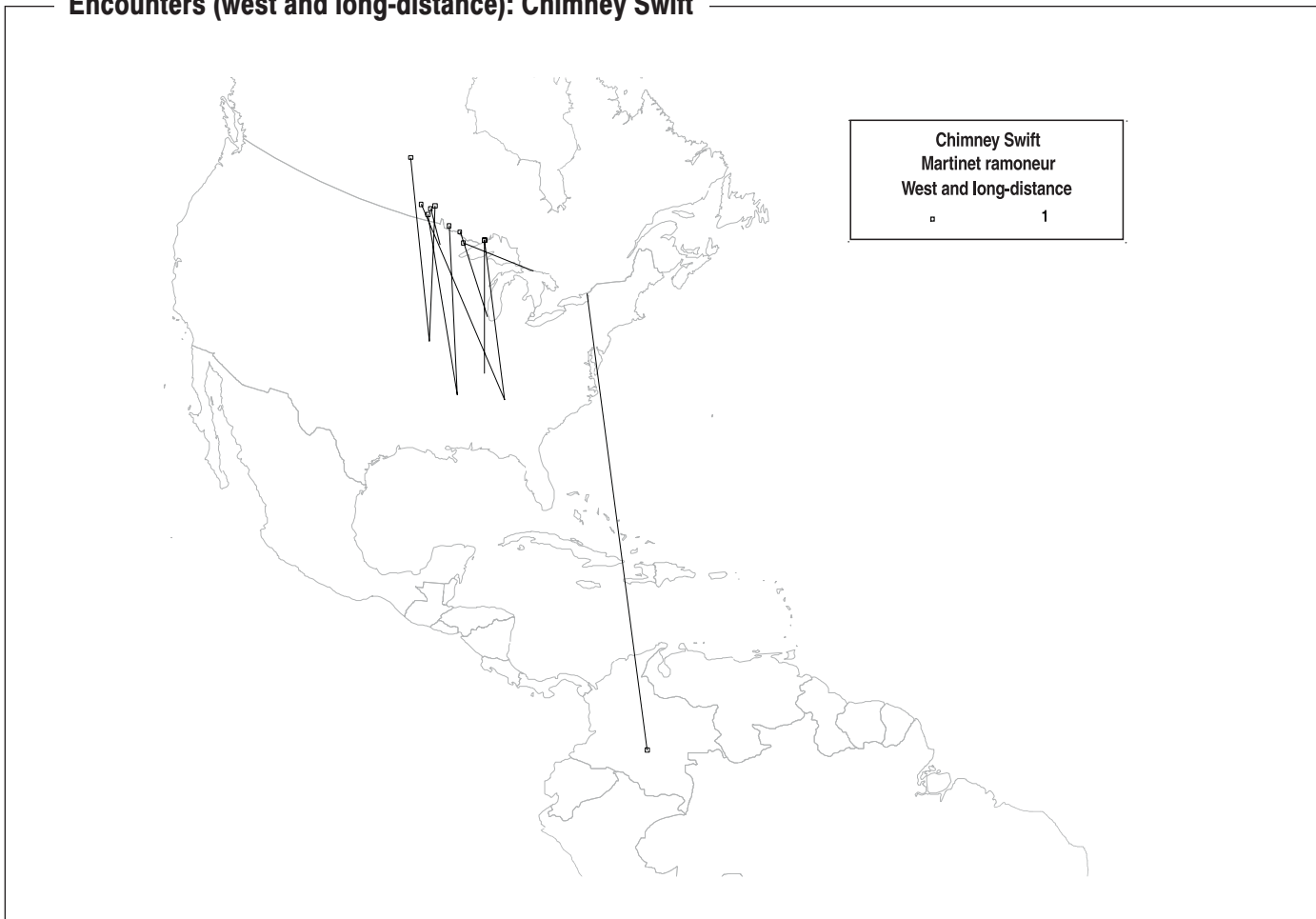
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			511
<i>No. encountered per 1000 banded (1955–1995)</i>			7
Total no. encountered (1921–1995)	1	1	5
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	25	60
No. of Canadian-banded birds moving > 0 km	0	0	1
Mean movement > 0 km of Canadian-banded birds	–	–	129
Maximum movement from all encounters (km)	0	0	129
% recovered (encountered dead)	100	0	40
% direct recoveries	100	0	40
% encountered during banding operations	0	100	60

Banding effort: Common Nighthawk

Top banders: MKM, RMB, PJW, JBMi, LPBO

Chimney Swift (*Chaetura pelagica*) 423.0

Encounters (west and long-distance): Chimney Swift



The Chimney Swift breeds from east-central Saskatchewan across southern Canada to the Gaspé Peninsula and Nova Scotia, as well as throughout the U.S. It winters in northern South America, including eastern Peru, Colombia, and northwestern Brazil.

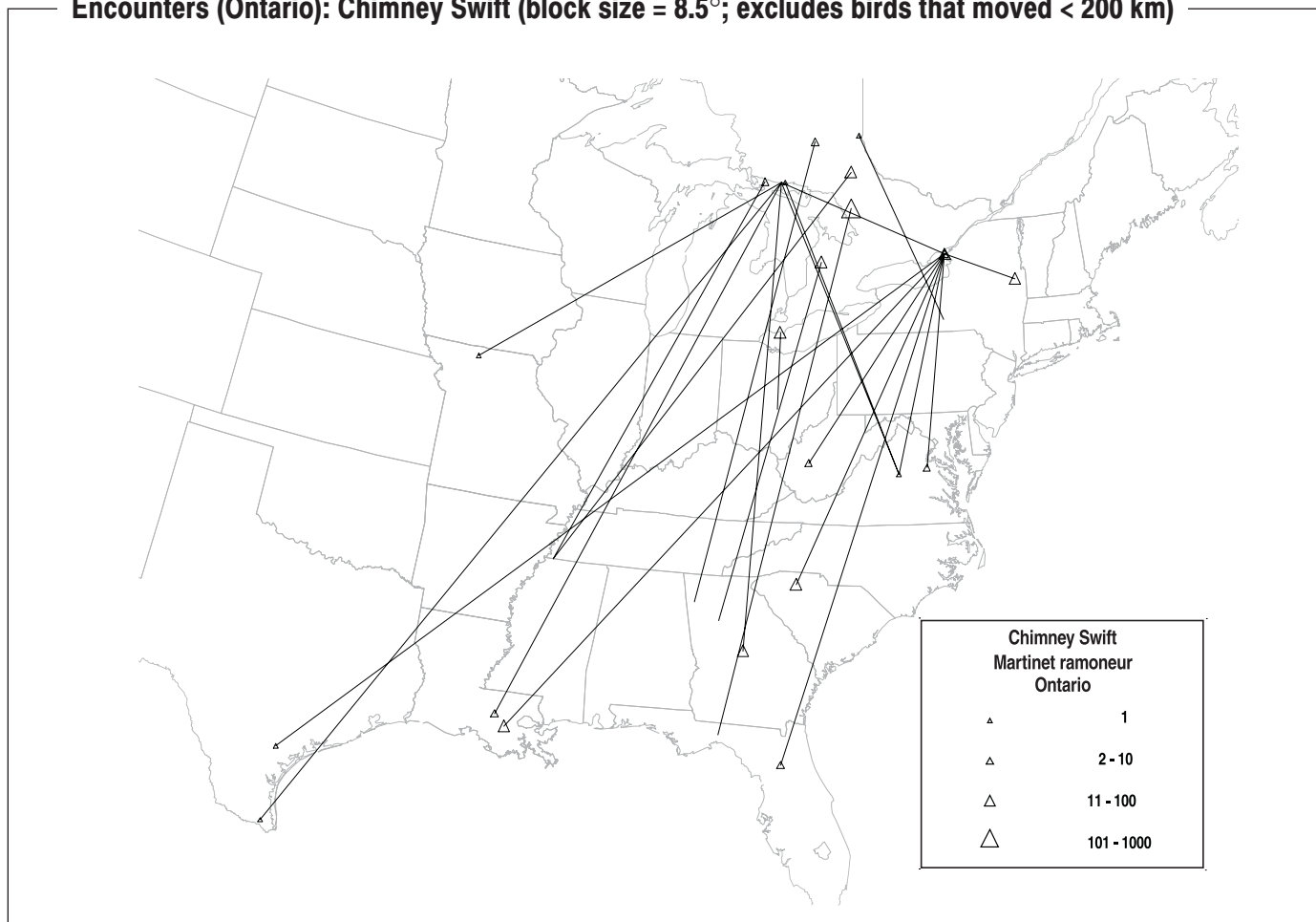
This species roosts in huge flocks in chimneys during migration, which encouraged large-scale banding from the 1920s to the 1940s (e.g., Bowman 1952), mainly in the U.S. Thousands of encounters contributed to studies of breeding biology and population dynamics (Dexter 1969), but there was little study of movement (Hitchcock 1945). Few swifts have been banded since 1950; the latest encounter in Canada up to 1995 was in 1964 of a bird banded in 1961.

Vast flocks of migrating swifts have long been a conspicuous feature of city life in eastern North America, but knowledge of the species' whereabouts in winter is quite recent. The first information on winter quarters came in

May 1943, when the U.S. embassy in Lima, Peru, obtained 13 bands from "swallows" killed by Indians "about 6 months before" in the highlands of Peru, close to its border with Colombia. The bands had been placed on Chimney Swifts in North America, one of them (record 1) in Kingston, Ontario (Lincoln 1944, Hitchcock 1945).

The pattern of encounters is strongly affected by banding activity. Nearly 70% of encounters were returns to the original banding site, and 83% of encounters were of birds recaptured during banding activities (e.g., record 2, the bird with the longest period between banding and encounter). Over 80% of Canadian bandings and encounters were in Ontario (e.g., records 1–7). Many Ontario encounters were of birds banded in Tennessee (record 6), whereas a large proportion of birds encountered in Quebec and the Maritime Provinces were banded in Georgia (record 8).

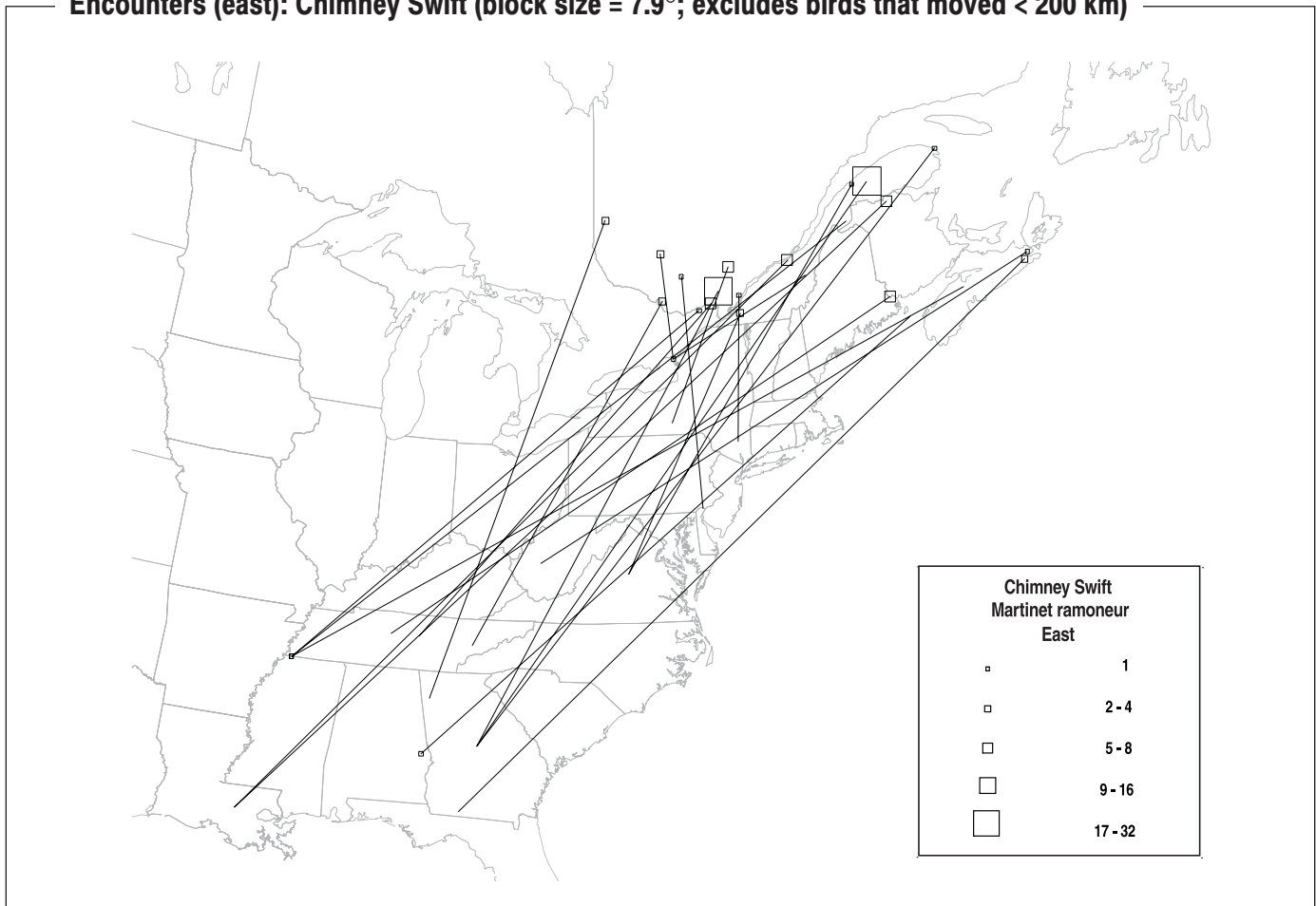
Encounters (Ontario): Chimney Swift (block size = 8.5°; excludes birds that moved < 200 km)



Swifts encountered in the Prairie Provinces moved on a southeast–northwest axis, evidently staying west of the Appalachians (records 9 and 10). Ontario swifts have been encountered on migration all across the Gulf Coast (records 2–6) and evidently overlap with birds from Quebec and the Prairie Provinces (e.g., compare records 6, 9, and 11). Possibly, swifts move on a broad front across the Gulf of Mexico and western Caribbean.

Repeated trapping of banded birds at the same sites has yielded much information about longevity and survival. Dexter (1969) recorded 19 birds aged 10 years or older (as in records 2, 7, and 8) and calculated the “average age” as 4.6 years. The maximum recorded age is 14 years (Clapp et al. 1983).

Encounters (east): Chimney Swift (block size = 7.9°; excludes birds that moved < 200 km)



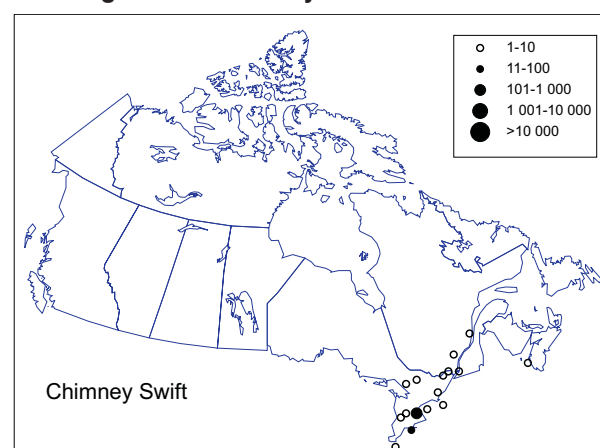
Encounter records: Chimney Swift

1	0380-87399 RWS	AHY U 00 01	19/05/40 99/12/43	Barrie/field, ON unknown site, PERU	44°10'N 76°20'W 2°??'N 73°??'W	3 yr. 7 mo. c. 4706 km S5°E
2	0380-87838 RWS	U U 00 89	19/05/40 21/09/52	Barrie/field, ON near Rome, GA	44°10'N 76°20'W 34°10'N 85°10'W	12 yr. 4 mo. 1347 km S37°W
3	0021-13469 HLS	U U 00 89	11/10/28 07/05/32	Tallahassee, FL Wolfe Island, ON	30°20'N 84°10'W 44°10'N 76°20'W	3 yr. 7 mo. 1687 km N22°E
4	0381-45329 ISS	AHY U 00 89	23/07/38 27/09/38	Blind River, ON Baton Rouge, LA	46°10'N 82°50'W 30°20'N 91°10'W	2 mo. 1905 km S25°W
5	0421-44604 ISS	AHY U 00 12	15/07/43 04/05/44	Blind River, ON Harlingen, TX	46°10'N 82°50'W 26°10'N 97°40'W	10 mo. 2585 km S36°W
6	0400-80786 BBC	HY U 00 89	29/09/40 25/05/45	Memphis, TN Barrie/field, ON	35°00'N 90°00'W 44°10'N 76°20'W	4 yr. 8 mo. 1551 km N45°E
7	0380-87340 RWS	AHY U 00 00	19/05/40 ST/06/50	Barrie/field, ON Barrie/field, ON	44°10'N 76°20'W 44°10'N 76°20'W	10 yr. 1 mo. 0 km
8	0001-99067 HLS	U U 00 89	12/04/27 10/07/38	near Ochlocknee, GA Hudson Heights, QC	30°50'N 84°00'W 45°20'N 74°10'W	11 yr. 3 mo. 1826 km N25°E
9	0050-14123 WRG	U U 00 21	05/10/30 25/05/32	East Chattanooga, TN Delta, MB	35°00'N 85°10'W 50°10'N 98°10'W	1 yr. 7 mo. 1990 km N28°W
10	0381-45055 ISS	AHY U 00 89	17/06/38 28/06/38	Richmond, MO Stead, MB	39°10'N 93°50'W 50°20'N 96°20'W	1 mo. 1258 km N8°W
11	1390-15329 BBC	HY U 00 20	08/10/38 30/05/40	Memphis, TN near Repentigny, QC	35°00'N 90°00'W 45°40'N 73°20'W	1 yr. 7 mo. 1840 km N45°E

Summary of banding statistics: Chimney Swift

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			153
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	17	1723	2036
No. encountered from foreign bandings	10	109	311
Maximum period from banding to encounter (mo.)	58	121	148
No. of Canadian-banded birds moving > 0 km	0	224	294
Mean movement > 0 km of Canadian-banded birds	–	853	886
Maximum movement from all encounters (km)	1840	4646	4646
% recovered (encountered dead)	47	10	16
% direct recoveries	11	5	6
% encountered during banding operations	52	89	83

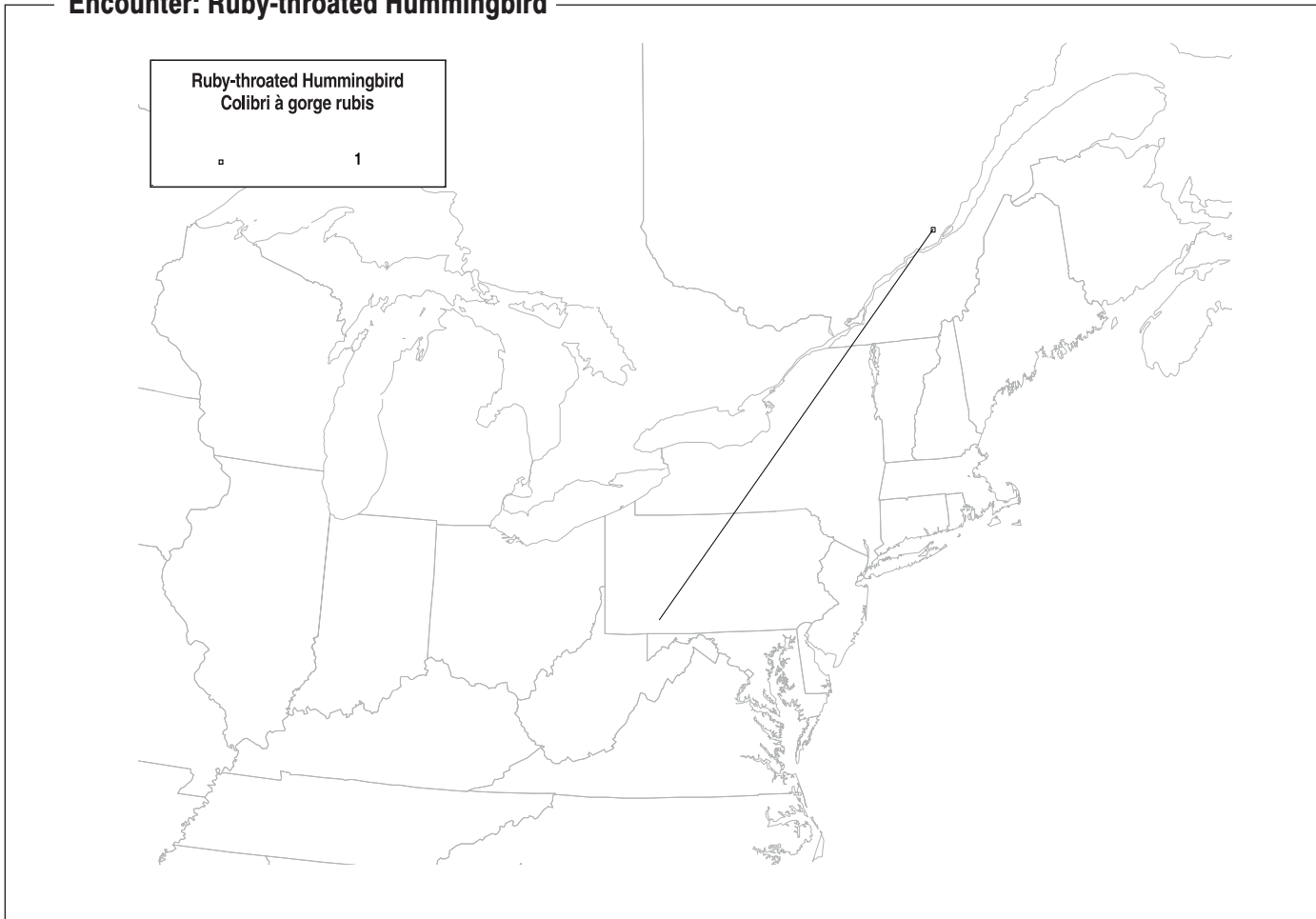
Banding effort: Chimney Swift



Top banders: HHS, LPBO, JBMi, RBG, LAG

Ruby-throated Hummingbird (*Archilochus colubris*) 428.0

Encounter: Ruby-throated Hummingbird



The Ruby-throated Hummingbird breeds across southern Canada from west-central Alberta to eastern Nova Scotia, and in the eastern U.S. west to Nebraska and eastern Texas. It winters from the extreme southern U.S. through Mexico and Central America to Costa Rica and Panama.

All three encounters are listed below. The only distant encounter to or from Canada (record 1), which is also the longevity record in Canada, was of a bird found in early June near the northern known limit of the breeding range. Observations demonstrate that males precede females in

both migrations, and juveniles of both sexes lag behind adults in the fall (Robinson et al. 1996). The two sight records below (records 2 and 3) indicate that two adult males had not yet left the breeding area in early September.

Long-term banding sites report annual survival (based on recaptures) of 25–60% (Mulvihill et al. 1992), which is quite high for such a small bird.

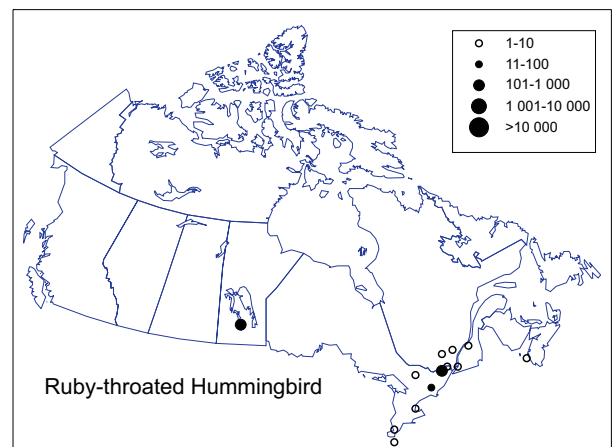
Encounter records: Ruby-throated Hummingbird

1	7000-22259 CMNH	HY M 05 00	04/09/80 05/06/82	Stahlstown, PA 11 km east of Lake Tantaré, QC	40°00'N 79°10'W 47°00'N 71°20'W	1 yr. 9 mo. 1003 km N36°E
2	7000-00003 JS	AHY M 00 29	26/05/51 10/09/51	Thorold, ON Thorold, ON	43°00'N 79°10'W 43°00'N 79°10'W	4 mo. 0 km
3	7000-00004 JS	AHY M 00 29	31/05/51 03/09/51	Thorold, ON Thorold, ON	43°00'N 79°10'W 43°00'N 79°10'W	4 mo. 0 km

**Summary of banding statistics:
Ruby-throated Hummingbird**

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			675
No. encountered per 1000 banded (1955–1995)			0
Total no. encountered (1921–1995)	1	2	3
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	21	4	21
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	1002	0	1002
% recovered (encountered dead)	100	0	33
% direct recoveries	0	100	66
% encountered during banding operations	0	0	0

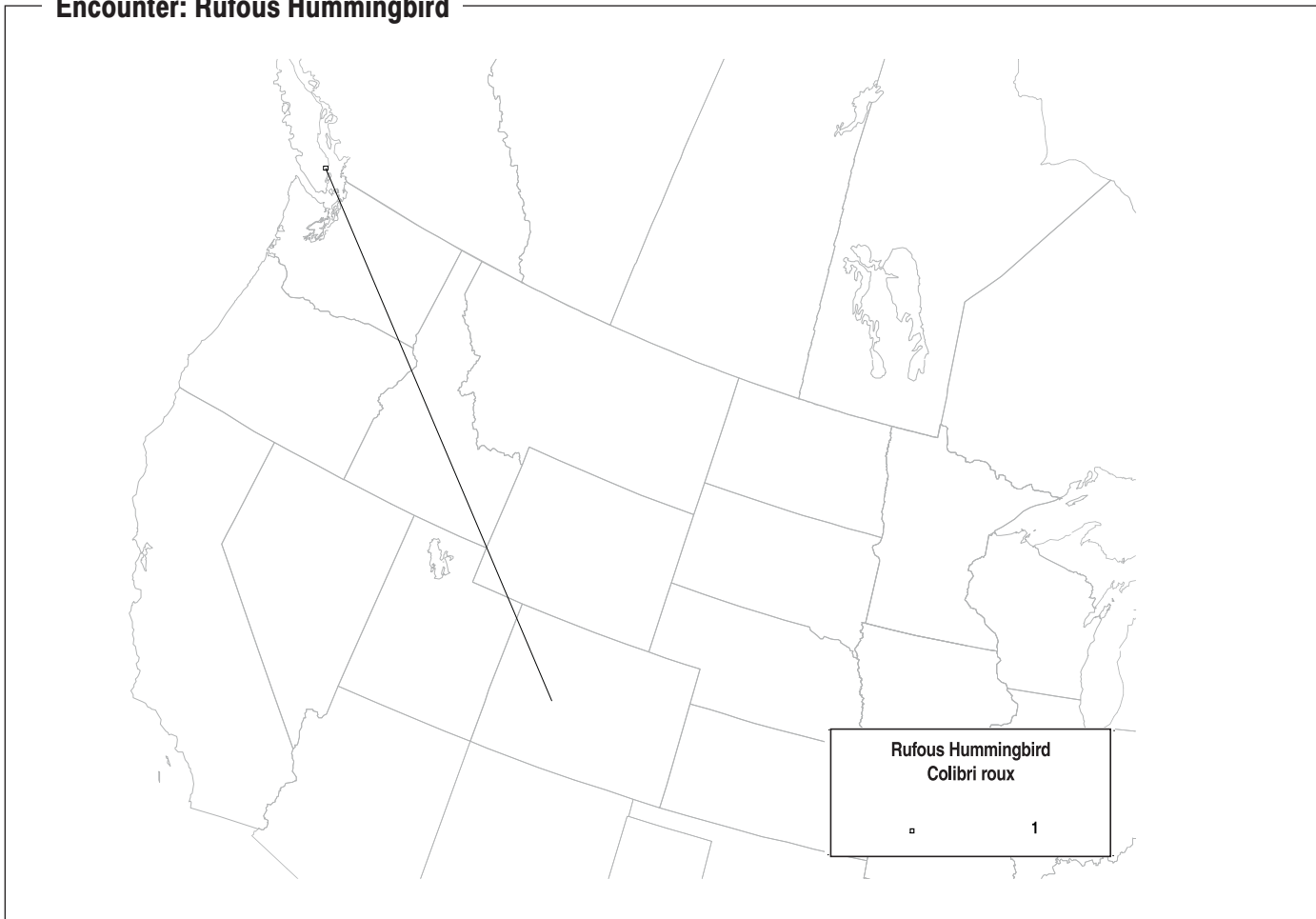
Banding effort: Ruby-throated Hummingbird



Top banders: IPBO, UM, MBi, MB, BC

Rufous Hummingbird (*Selasphorus rufus*) 433.0

Encounter: Rufous Hummingbird



The Rufous Hummingbird breeds in British Columbia west of the Rocky Mountains and probably in southwestern Yukon; it also breeds in southeastern Alaska and in the coterminous U.S. south to northern California and southern Idaho. The species winters in Mexico south to Guerrero and Veracruz, and along the Gulf Coast of the U.S.

This northernmost-breeding hummingbird species has an elliptical pattern of migration (Calder 1993). The birds move north along the Pacific coast in early spring, feeding on flowers there while the Rocky Mountains are still covered

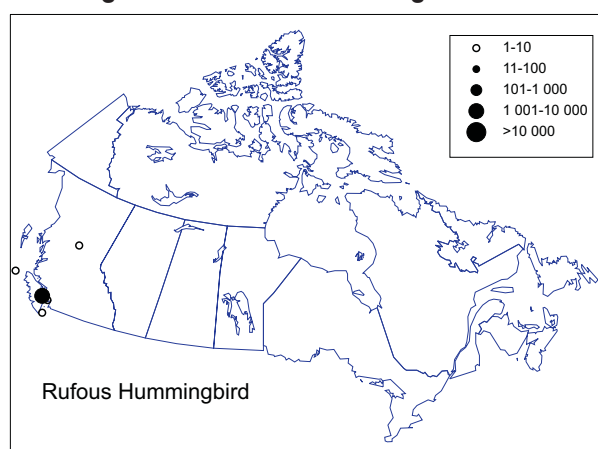
in snow. By July, they are heading south again, but this time many head east of the Rockies taking advantage of montane flowers as they move through Colorado and the Grand Canyon states. The only Canadian encounter of this species (record 1) fits this pattern well. The bird was banded in Colorado in mid-July and encountered in British Columbia in the next breeding season.

Encounter record: Rufous Hummingbird

1	8000-31618	AHY F	16/07/90	Crested Butte, CO	38°50'N 106°50'W	11 mo.
	WC	05 23	19/06/91	Cassidy, BC	49°00'N 123°50'W	1764 km N45°W

Summary of banding statistics: Rufous Hummingbird

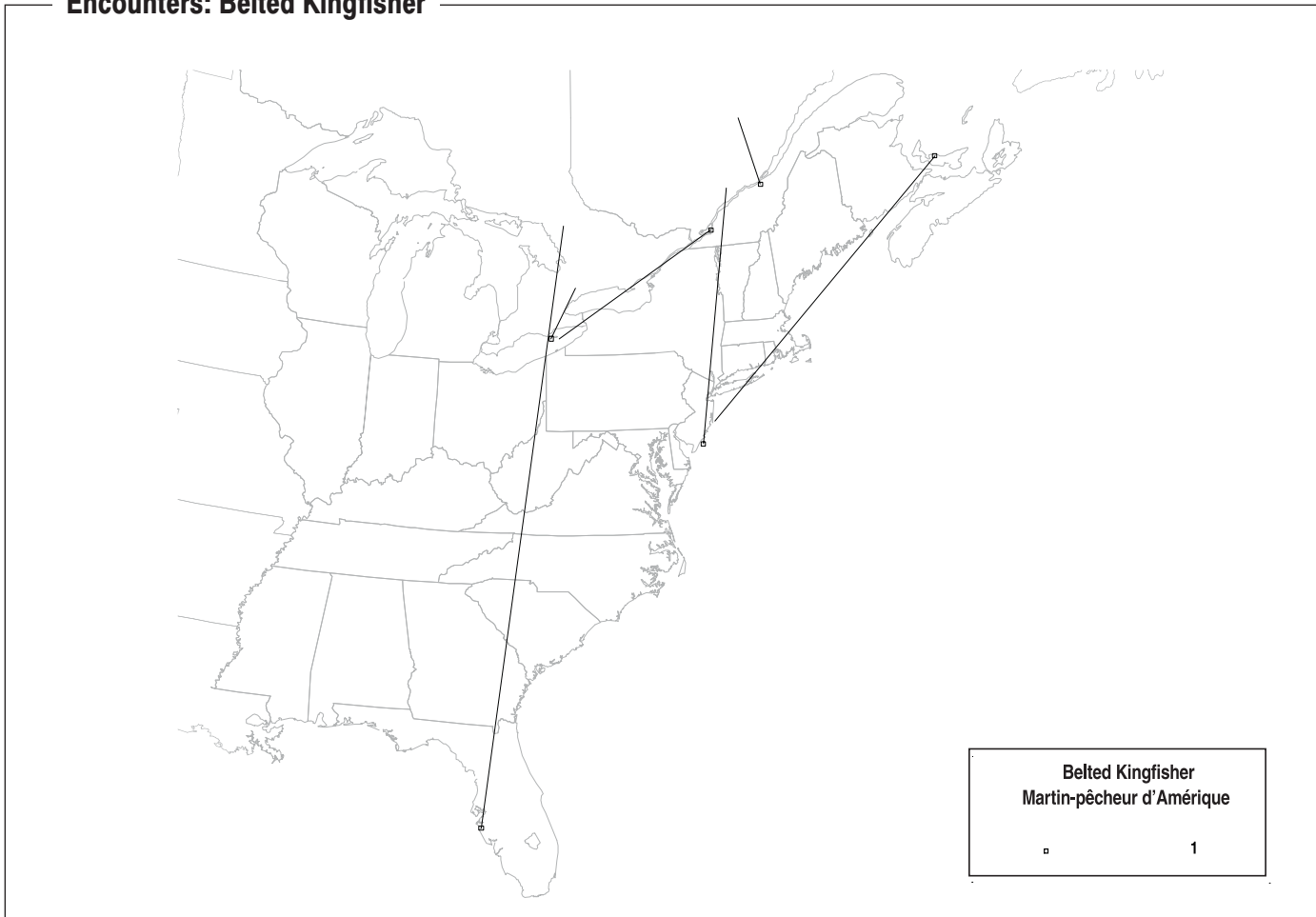
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			911
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	–	11	11
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	–	1764	1764
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

Banding effort: Rufous Hummingbird

Top banders: GB, UBC, BBO, FC, GPK

Belted Kingfisher (*Ceryle alcyon*) 390.0

Encounters: Belted Kingfisher



The Belted Kingfisher breeds throughout the U.S. and across Canada approximately to the limits of dense boreal forest. It winters from southern British Columbia and Ontario south through much of Central America and the West Indies, occasionally to northern South America (Colombia, Venezuela, Guyana, and Trinidad).

All records that appear on the encounter map are listed below (records 1–6). Most encounters are not mapped, because they occurred within a few months at or within 100 km of the banding location (e.g., record 7). Most of these involved Ontario or New Brunswick and include many encounters of kingfishers banded in New Brunswick in 1948. The banding effort map does not reflect this intensive banding, because it summarizes the effort for 1955–1995 only.

The longest period between banding and encounter was only one year and nine months (record 8). However, 15 of the 32 encounters were of birds released alive after recapture, and these birds, of course, lived on.

Not all birds migrate out of Canada in winter. An observer in Ontario noted that all wintering kingfishers that he was able to see well enough to sex were males (Pittaway 1994), suggesting differential migration by sex. The only banded kingfisher encountered in Canada in the winter months was also a male (record 7).

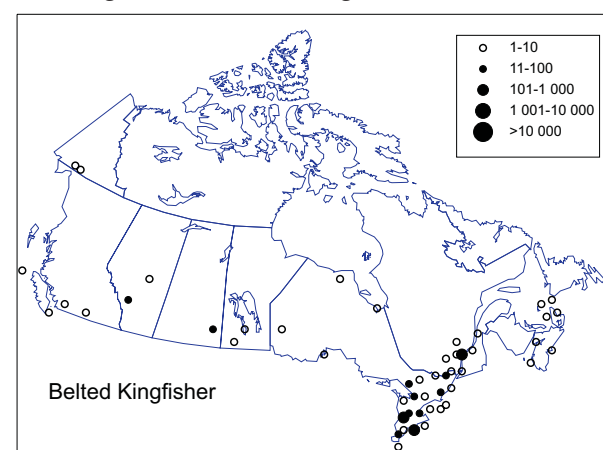
Encounter records: Belted Kingfisher

1	0374-17646 FH	U U 00 89	24/06/48 16/06/49	Saint-Coeur-de-Marie, QC Lévis, QC	48°40'N 71°50'W 46°40'N 71°10'W	1 yr. 0 mo. 228 km S13°E
2	1143-63420 CWS-QC	L U 03 00	22/06/80 28/09/81	Grandes-Piles, QC Ocean City, NJ	46°40'N 72°40'W 39°10'N 74°30'W	1 yr. 3 mo. 848 km S11°W
3	1143-36507 MED	AHY F 03 00	25/04/81 04/05/81	Island Beach, NJ Darnley, PEI	39°50'N 74°00'W 46°30'N 63°30'W	1 mo. 1129 km N45°E
4	0374-04708 FHP	HY U 00 97	02/07/39 09/09/39	Newmarket, ON Port Rowan, ON	44°00'N 79°20'W 42°30'N 80°20'W	2 mo. 186 km S26°W
5	0533-03612 DWW	HY M 03 13	05/07/66 17/10/66	Arnstein, ON Bradenton, FL	45°50'N 79°50'W 27°20'N 82°30'W	3 mo. 2073 km S7°W
6	0593-67944 LPBO	HY U 05 00	22/08/72 11/05/73	Long Point, ON Hampstead, QC	42°30'N 80°00'W 45°30'N 73°30'W	9 mo. 618 km N55°E
7	0394-34752 NB	U M 00 01	25/06/48 99/12/48	Hamilton, ON Stoney Creek, ON	43°10'N 79°50'W 43°10'N 79°10'W	6 mo. 54 km N90°E
8	0513-10905 GHP	AHY F 00 56	17/08/57 06/05/59	Smithville, ME Woodwards Cove, NB	44°30'N 67°50'W 44°40'N 66°40'W	1 yr. 9 mo. 94 km N78°E

Summary of banding statistics: Belted Kingfisher

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			813
<i>No. encountered per 1000 banded (1955–1995)</i>			8
Total no. encountered (1921–1995)	24	5	32
No. encountered from foreign bandings	1	3	4
Maximum period from banding to encounter (mo.)	15	5	15
No. of Canadian-banded birds moving > 0 km	13	0	18
Mean movement > 0 km of Canadian-banded birds	329	–	287
Maximum movement from all encounters (km)	2072	1128	2072
% recovered (encountered dead)	45	80	53
% direct recoveries	83	60	75
% encountered during banding operations	0	20	6

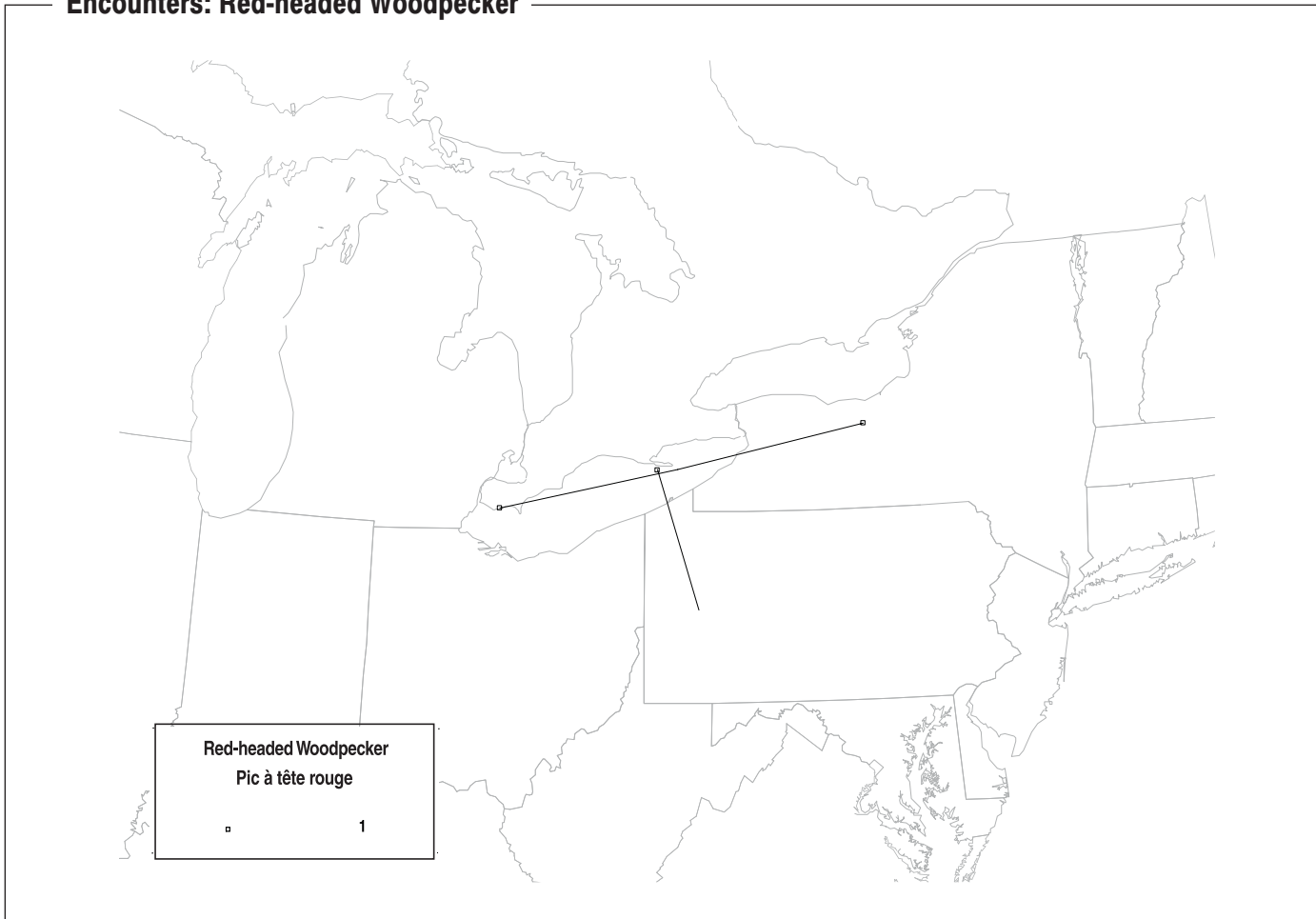
Banding effort: Belted Kingfisher



Top banders: JBMi, LPBO, CWS-QC, ADB, DW

Red-headed Woodpecker (*Melanerpes erythrocephalus*) 406.0

Encounters: Red-headed Woodpecker



The Red-headed Woodpecker breeds east of the Rocky Mountains in the U.S. and in the extreme south of Canada from Saskatchewan and Manitoba (rarely and locally) to New Brunswick. It winters in the eastern U.S. (and rarely in southern Ontario and southern Manitoba). It is somewhat migratory in the northern parts of its range (Godfrey 1986).

All three encounters showing movement of over 100 km are listed and mapped. Record 1 is of a bird found on spring migration in two different years. Records 2 and 3 are of birds

banded during spring migration and found at possible breeding locations in the following year. There were three additional encounters showing shorter-distance movements, two involving short hops across Lake Erie and one within southwestern Ontario.

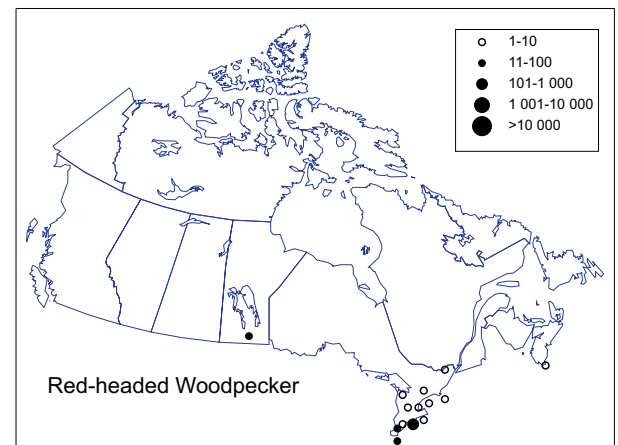
Encounter records: Red-headed Woodpecker

1	0532-68034 RCR	AHY U 00 21	19/05/56 ??/05/60	Fenelton, PA Big Creek Marsh, ON	40°50'N 79°40'W 42°30'N 80°20'W	194 km N16°W
2	0542-06770 LPBO	U U 00 14	14/05/60 17/06/61	Long Point, ON Newark, NY	42°30'N 80°00'W 43°00'N 77°00'W	1 yr. 1 mo. 251 km N76°E
3	0692-14676 LPBO	AHY U 05 00	21/05/68 99/06/69	Long Point, ON Harrow, ON	42°30'N 80°00'W 42°00'N 82°50'W	1 yr. 1 mo. 240 km S78°W

**Summary of banding statistics:
Red-headed Woodpecker**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			902
<i>No. encountered per 1000 banded (1955–1995)</i>			5
Total no. encountered (1921–1995)	0	7	8
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	–	13	13
No. of Canadian-banded birds moving > 0 km	0	3	4
Mean movement > 0 km of Canadian-banded birds	–	126	157
Maximum movement from all encounters (km)	–	239	251
% recovered (encountered dead)	–	71	75
% direct recoveries	–	14	12
% encountered during banding operations	–	28	25

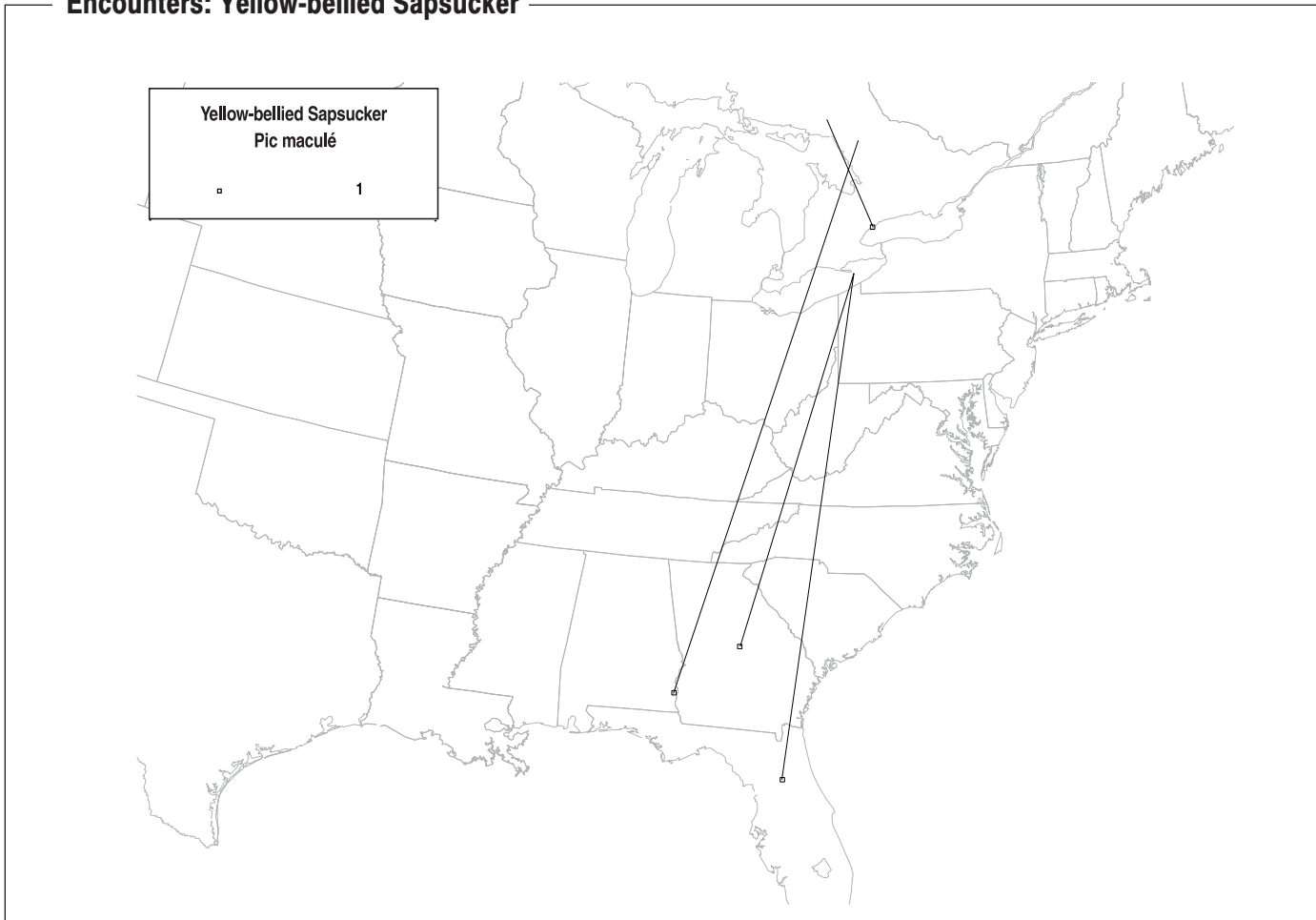
Banding effort: Red-headed Woodpecker



Top banders: LPBO, DDD, LTS, WCa, FAD

Yellow-bellied Sapsucker (*Sphyrapicus varius*) 402.0

Encounters: Yellow-bellied Sapsucker



Red-breasted and Red-naped Sapsuckers, formerly considered subspecies of the Yellow-bellied Sapsucker, are now treated as separate species (American Ornithologists' Union 1998). This account deals only with Yellow-bellied Sapsuckers.

The Yellow-bellied Sapsucker breeds from southern Yukon and eastern British Columbia across the rest of Canada north to the limits of dense forest, except for the southern Prairie Provinces and southeastern Quebec; it also breeds in the northeastern U.S. and in the western U.S. east of the Rocky Mountains. It winters from southern California, the Gulf Coast, and Florida south to western Panama, and in small numbers in the West Indies.

Movement was shown only by the eastern populations, but this may merely reflect the preponderance of banding in southern Ontario (see effort map). Three sapsuckers banded in Ontario wintered in Florida (record 1), Georgia (record 2), and Alabama (record 3). Record 4 is of a bird that was probably heading south when it fell prey to a domestic animal, after travelling at least 40 km per day for over eight days.

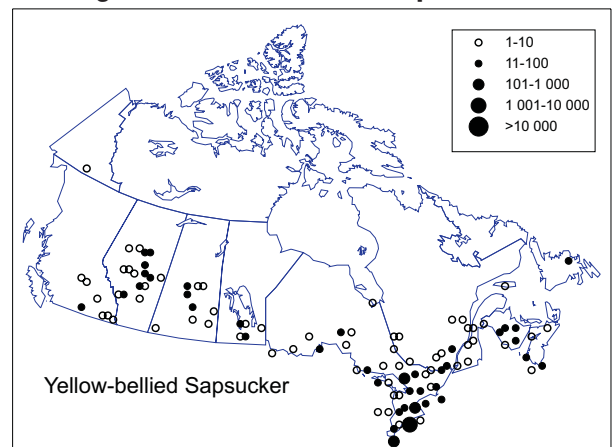
Encounter records: Yellow-bellied Sapsucker

1	0271-36021 LPBO	U M 00 01	15/04/61 19/02/62	Long Point, ON Black Sink Prairie, FL	42°30'N 80°00'W 29°20'N 82°00'W	10 mo. 1477 km S8°W
2	0291-03540 LPBO	U M 00 00	28/09/63 07/01/64	Long Point, ON Gordon, GA	42°30'N 80°00'W 32°50'N 83°20'W	4 mo. 1115 km S16°E
3	1201-36984 DW	HY U 05 00	16/07/80 15/03/81	Arnstein, ON Abbeville, AL	45°50'N 79°50'W 31°30'N 85°10'W	8 mo. 1661 km S18°W
4	0741-78775 JGL	HY U 05 12	22/09/74 30/09/74	near Sudbury, ON Don Mills, ON	46°20'N 81°00'W 43°40'N 79°20'W	8 dy. 325 km S24°E
5	0461-00945 LdeK	AHY M 00 99	12/05/49 17/04/54	Rutherglen, ON Rutherglen, ON	46°10'N 79°00'W 46°10'N 79°00'W	4 yr. 11 mo. 0 km

**Summary of banding statistics:
Yellow-bellied Sapsucker**

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			3715
No. encountered per 1000 banded (1955–1995)			1
Total no. encountered (1921–1995)	4	12	18
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	20	59	59
No. of Canadian-banded birds moving > 0 km	2	0	4
Mean movement > 0 km of Canadian-banded birds	992	–	1144
Maximum movement from all encounters (km)	1660	0	1660
% recovered (encountered dead)	50	0	22
% direct recoveries	50	0	22
% encountered during banding operations	50	100	77

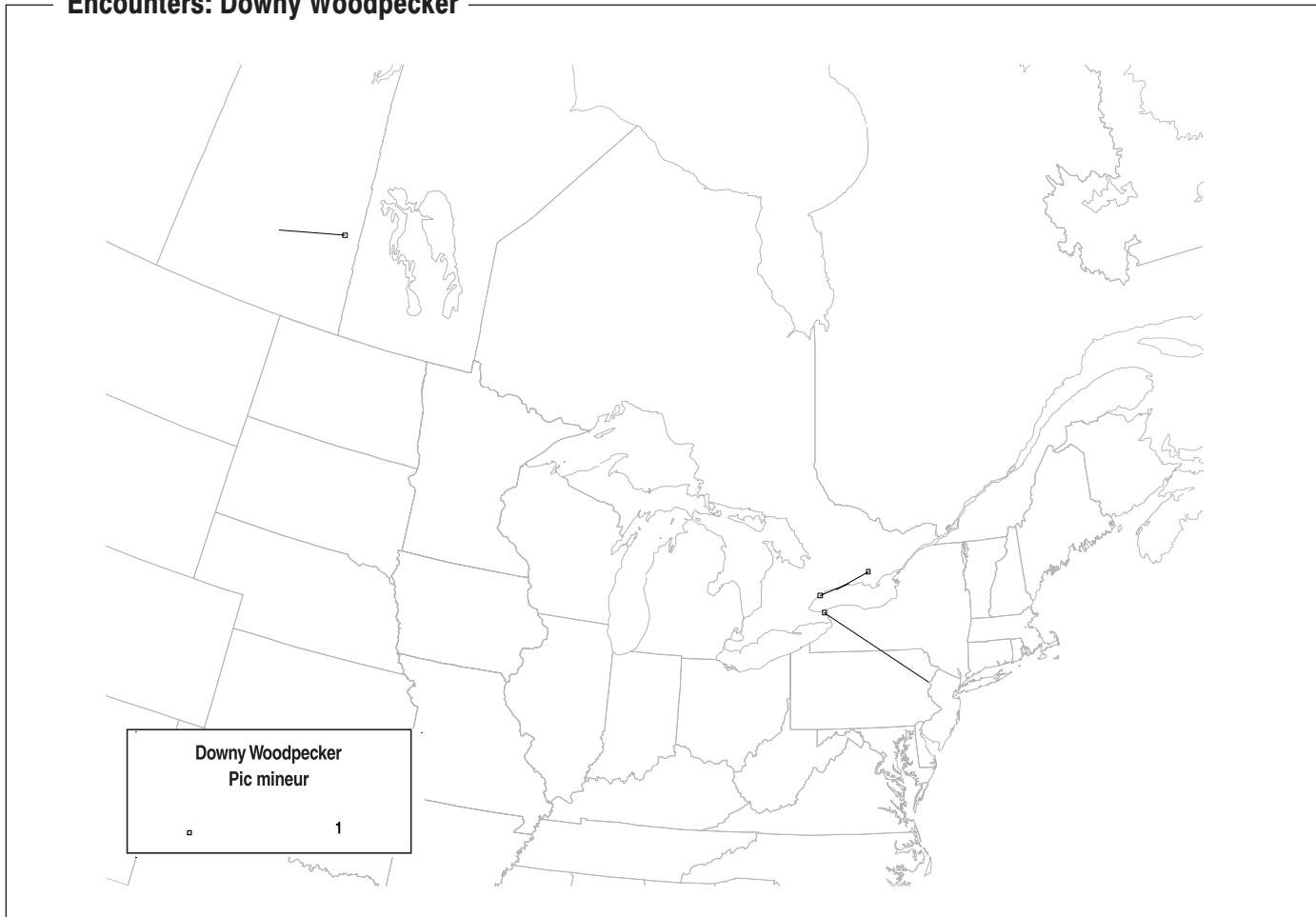
Banding effort: Yellow-bellied Sapsucker



Top banders: LPBO, DW, JBMi, ETJ, TBO

Downy Woodpecker (*Picoides pubescens*) 394.0

Encounters: Downy Woodpecker



The Downy Woodpecker breeds in most of the U.S. and to the northern limit of boreal forest across Canada. The species is generally resident, although there are occasional southward irruptions from the northern part of the range.

Ninety percent of encounters showed no movement (e.g., record 1, showing the longest period between banding and encounter), and only six birds moved more than 50 km (records 2–4). Browning's (1995) analysis of all North

American encounters showed that 99.7% of encountered birds had not moved. Those that did were primarily females (e.g., records 2 and 3), which were probably dispersing. Record 3 is well supported, because the band was returned by the finder.

Encounter records: Downy Woodpecker

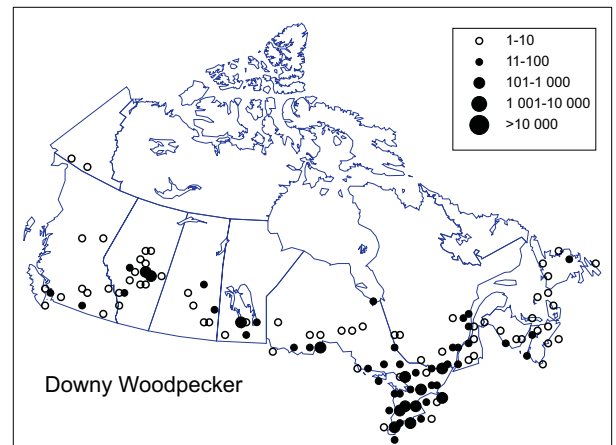
1	0221-12405 WA	U M 08 99	21/02/59 03/03/68	west of Canora, SK west of Canora, SK	51°30'N 102°30'W 51°30'N 102°30'W	9 yr. 1 mo. 0 km
2	0201-89237 LdeK	AHY F 00 00	05/04/60 26/10/60	Bowmanville, ON Ivanhoe, ON	43°50'N 78°40'W 44°20'N 77°20'W	6 mo. 120 km N62°E
3	0321-52053 GWC	AHY F 05 00	03/07/65 09/03/66	near Swift Water, PA Henley Island, ON	41°00'N 75°10'W 43°10'N 79°10'W	8 mo. 409 km N53°W
4	0032-61019 MrsFW	AHY U 00 98	24/02/38 10/01/41	Imperial, SK Stenen, SK	51°20'N 105°20'W 51°50'N 102°20'W	2 yr. 11 mo. 215 km N74°E



Summary of banding statistics: Downy Woodpecker

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			6605
<i>No. encountered per 1000 banded (1955–1995)</i>			13
Total no. encountered (1921–1995)	14	155	187
No. encountered from foreign bandings	1	1	3
Maximum period from banding to encounter (mo.)	48	77	109
No. of Canadian-banded birds moving > 0 km	7	10	12
Mean movement > 0 km of Canadian-banded birds	27	62	56
Maximum movement from all encounters (km)	84	409	409
% recovered (encountered dead)	35	14	19
% direct recoveries	50	20	23
% encountered during banding operations	50	82	77

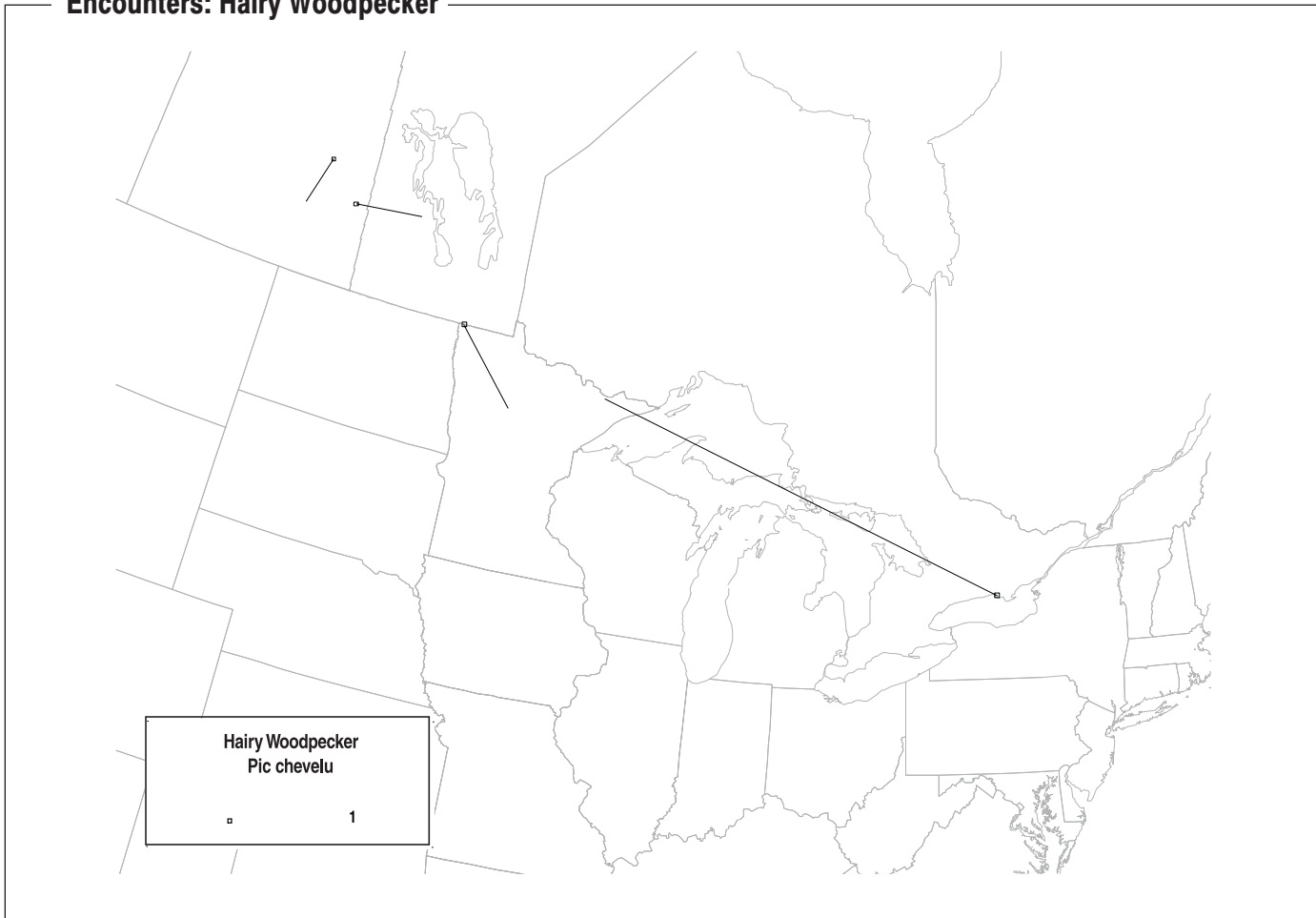
Banding effort: Downy Woodpecker



Top banders: LPBO, IPBO, JBMi, ETJ, LGL

Hairy Woodpecker (*Picoides villosus*) 393.0

Encounters: Hairy Woodpecker



The Hairy Woodpecker breeds across the U.S. and Canada to the northern limits of dense boreal forest. It winters mainly within the breeding range, with some migratory movement in the more northern populations and those in the Prairie Provinces.

The majority of encounters (89%) showed no movement (e.g., record 1). Only five moved more than 50 km (records 2–6), and a few moved very small distances (e.g., records 7 and 8, the latter showing the greatest time between banding and encounter). More than half of all encountered birds were

banded in Ontario, yet four of the five longer-distance records are of birds banded or encountered in the Prairie Provinces (records 2–5). The longest-distance encounter (record 6) is extraordinary for a normally sedentary bird, but the band was returned to the banding office by the finder, and the record appears to be valid.

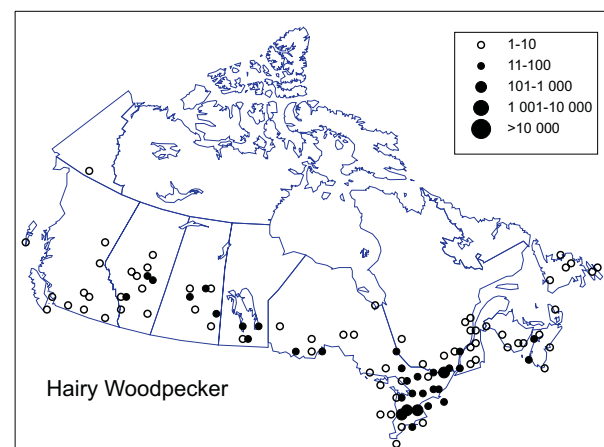
Encounter records: Hairy Woodpecker

1	0442-00280 LdeK	L F 00 99	18/08/52 31/12/60	Rutherglen, ON Rutherglen, ON	46°10'N 79°00'W 46°10'N 79°00'W	8 yr. 4 mo. 0 km
2	0043-27284 EdR	AHY F 00 01	12/01/35 15/08/38	Methley Beach, MB northeast of Regina, SK	51°10'N 99°30'W 51°??'N 102°??'W	3 yr. 7 mo. c. 300 km
3	0642-24042 JEM	U F 05 00	01/11/64 12/02/67	Bemidji, MN Dominion City, MB	47°20'N 94°50'W 49°00'N 97°00'W	2 yr. 3 mo. 246 km N40°W
4	0023-63992 WMLW	AHY M 00 00	17/12/31 99/01/39	Hyas, SK Lintlaw, SK	51°50'N 102°10'W 52°00'N 103°10'W	7 yr. 1 mo. 71 km N74°W
5	0002-59105 RHC	AHY F 00 01	13/01/25 ST/05/26	Muscow, SK Kuroki, SK	50°40'N 103°50'W 51°50'N 103°20'W	1 yr. 4 mo. 134 km N15°E
6	0722-01334 WSB	AHY M 05 00	16/06/74 31/12/74	northeast of Ely, MN Canadian Forces Base Astra, ON	48°00'N 91°30'W 44°00'N 77°30'W	6 mo. 1168 km S73°E
7	0422-09169 GGO	AHY F 00 98	27/02/43 ??/??/46	Montréal, QC Hudson, QC	45°30'N 73°30'W 45°20'N 74°00'W	43 km S65°W
8	0043-27282 EdR	AHY M 00 12	12/01/35 99/05/45	11 km east of Dauphin Lake, MB 18 km north of Dauphin Lake, MB	51°10'N 99°30'W 51°20'N 99°40'W	10 yr. 4 mo. 22 km N32°W

Summary of banding statistics: Hairy Woodpecker

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			1999
<i>No. encountered per 1000 banded (1955–1995)</i>			24
Total no. encountered (1921–1995)	23	137	164
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	100	124	124
No. of Canadian-banded birds moving > 0 km	1	8	9
Mean movement > 0 km of Canadian-banded birds	22	66	61
Maximum movement from all encounters (km)	22	1168	1168
% recovered (encountered dead)	0	15	14
% direct recoveries	4	13	12
% encountered during banding operations	91	81	81

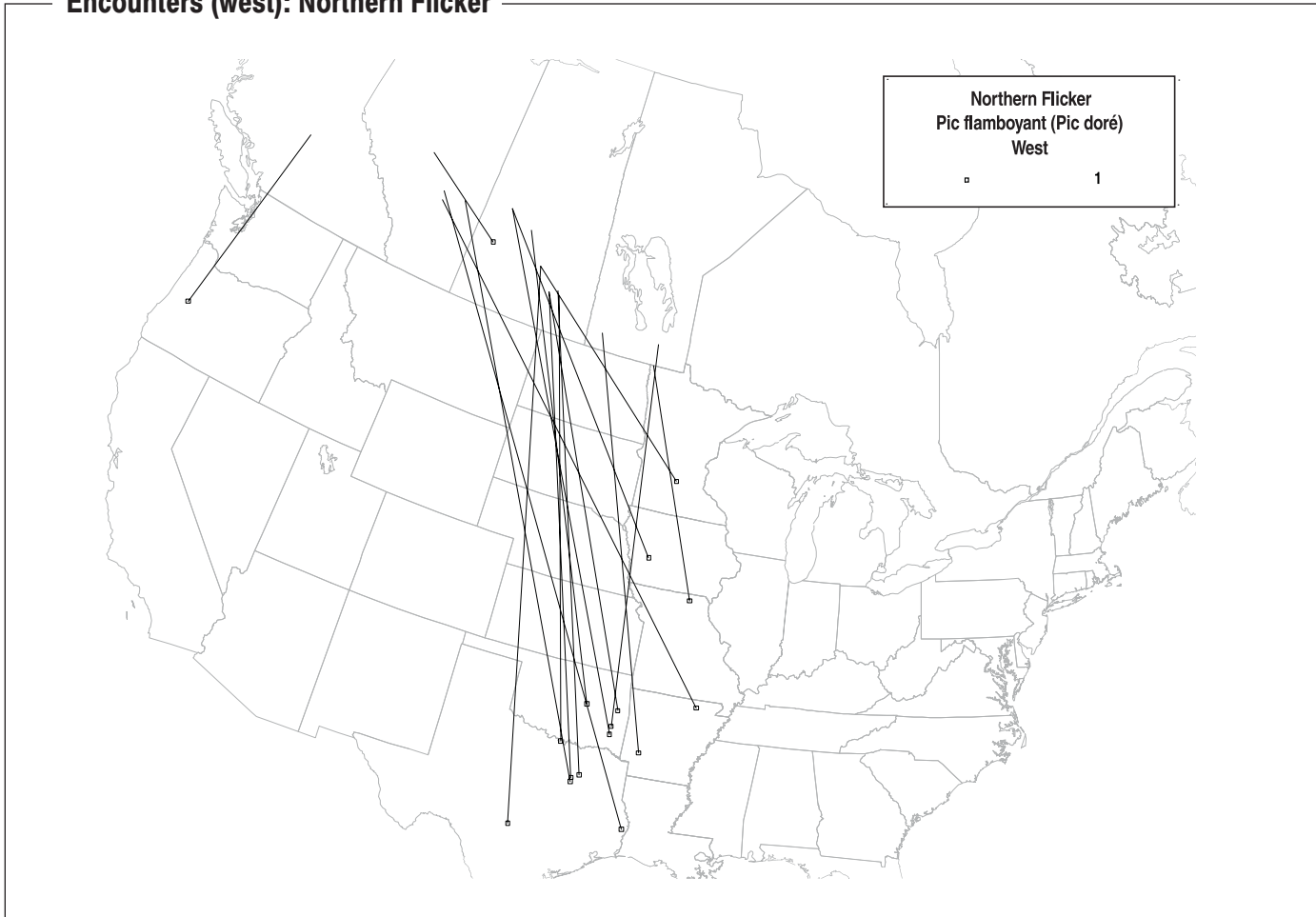
Banding effort: Hairy Woodpecker



Top banders: IPBO, JBMi, LPBO, LGL, SCT

Northern Flicker (*Colaptes auratus*) 412.0 and 413.0

Encounters (west): Northern Flicker



The Northern Flicker breeds across the U.S. and Canada, north virtually to the treeline; it winters from southern Canada south to the Gulf Coast and southern Florida. The Red-shafted subspecies (*C. a. cafer*, AOU 413.0), which replaces the Yellow-shafted subspecies (*C. a. auratus*, AOU 412.0) in southern British Columbia and southwestern Alberta, winters throughout its breeding range and eastward to eastern Kansas and Oklahoma and southern Texas. Northern (i.e., Canadian) populations are largely migratory, but less so in the Red-shafted subspecies (Moore 1995). Although these two taxa are now treated as one species (American Ornithologists' Union 1998), they are recorded separately for banding purposes. This account covers the two, as well as intergrades.

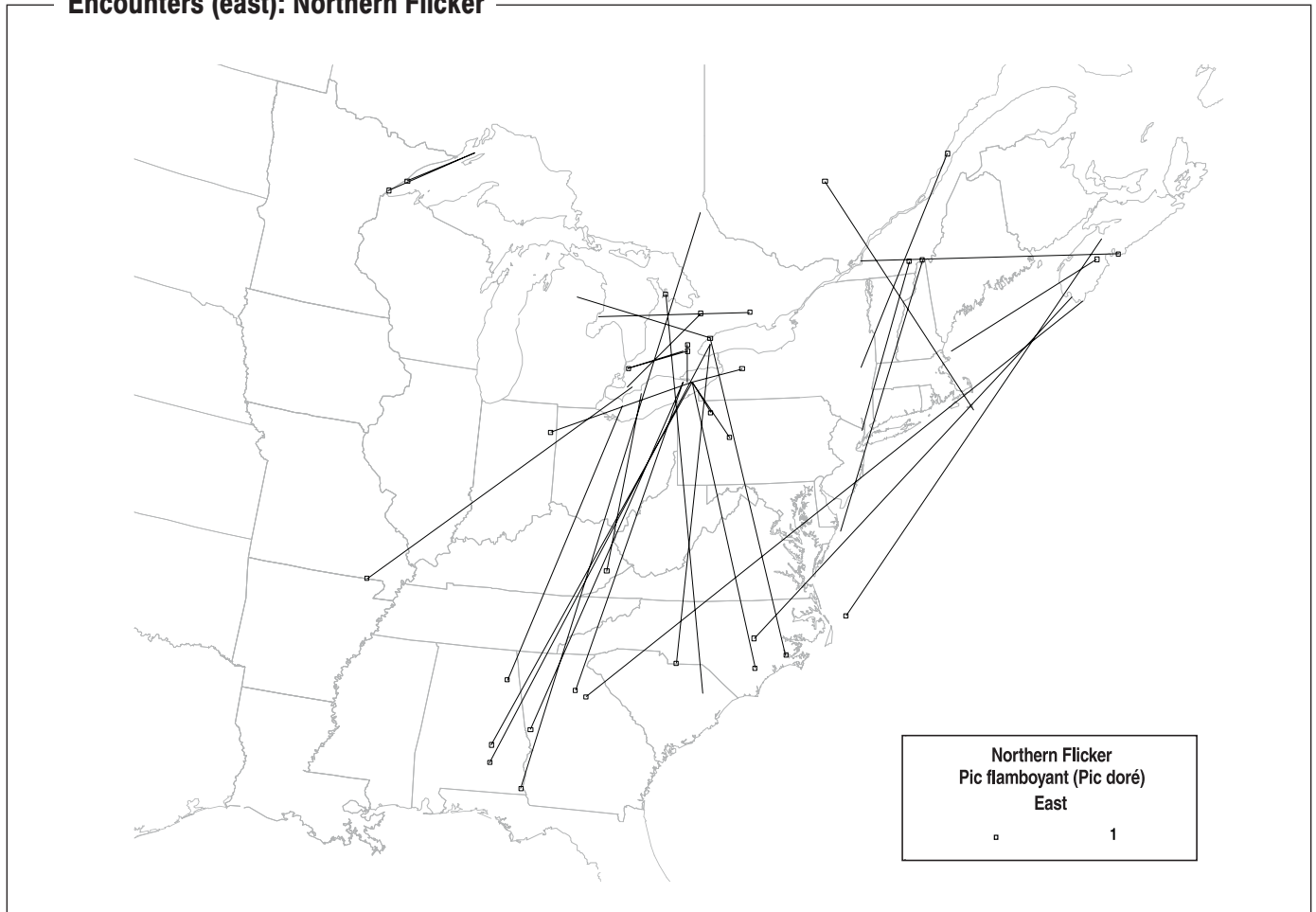
Twenty of the encounters involved Red-shafted Flickers, mostly banded in the Vancouver–Victoria area and encountered in mid-winter in the same area. The one bird that

moved (record 1) was banded as a nestling in central British Columbia, where the winters are more severe. One bird of this subspecies was banded and encountered at the same site in Manitoba, several hundred kilometres east of the usually accepted range for this form.

All 47 Yellow-shafted Flickers that were either banded or encountered in the Prairie Provinces were banded during May–July; most of these were encountered in winter (December–February). All showed substantial movement, primarily on a southeast–northwest axis, and wintered in Iowa (one bird), Arkansas (two birds, including record 2), Oklahoma (two birds, including record 3), and Texas (five birds, including records 4–6).

The 62 records for flickers banded or encountered in Ontario and Quebec are mainly of birds banded in migration seasons. Of the flickers from southern Ontario that were

Encounters (east): Northern Flicker



encountered in December–February, two were wintering in North Carolina and one each was encountered in Ontario, South Carolina, Alabama, Missouri (record 7), and Georgia (record 8). Ontario and Quebec birds move more north–south or southwest–northeast than birds encountered in the Prairie Provinces, and the two groups appear to winter on different sides of the Mississippi River. (The only encounter involving Quebec that is listed below, record 9, is the one involving the longest period between banding and encounter.) The southwest movement of birds banded on the north shore of Lake Superior (see eastern map) may be due to the

reluctance of this diurnal migrant to fly over water. It remains to be learned whether northern Ontario flickers winter west or east of the Mississippi River.

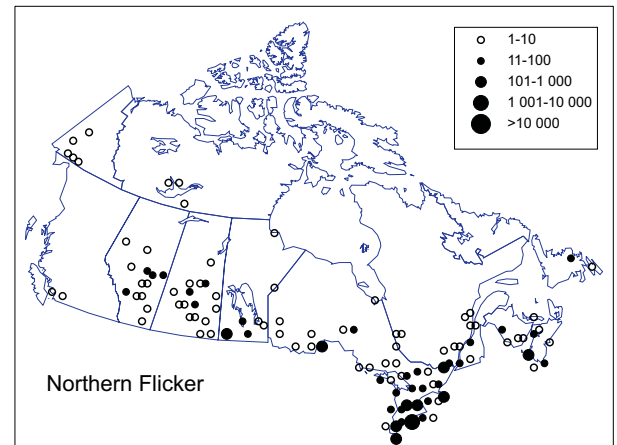
All nine encounters from the Maritimes involved Nova Scotia. Flickers from this area move southwest along the Atlantic coast as far south as Georgia (record 9), overlapping in winter with birds from Ontario and Quebec.

Encounter records: Northern Flicker

1	0523-56524 WDMcL	L M 00 01	26/06/58 LT/12/60	near 100 Mile House, BC Cobourg, OR	51°50'N 122°00'W 44°00'N 123°00'W	2 yr. 6 mo. 875 km S5°W
2	0394-20918 RHC	J U 00 01	07/07/39 01/01/40	near Big Valley, AB near Hardy, AR	52°10'N 112°40'W 36°10'N 91°20'W	6 mo. 2447 km S52°E
3	0033-89660 FGB	AHY M 00 01	27/05/35 24/01/36	Meota, SK Tuskaoma, OK	53°00'N 108°20'W 34°30'N 95°10'W	8 mo. 2307 km S32°E
4	0353-26416 TAH	J U 00 00	28/06/36 20/12/37	Last Mountain Lake, SK Fredericksburg, TX	51°20'N 105°20'W 30°10'N 98°50'W	1 yr. 6 mo. 2417 km S15°E
5	0043-11727 GP	J U 00 01	16/06/34 ST/01/35	Bashaw, AB Jasper, TX	52°30'N 112°50'W 30°50'N 93°50'W	7 mo. 2864 km S40°E
6	0003-99739 GLa	HY U 00 98	13/07/26 15/01/27	Indian Head, SK Durant, TX	50°30'N 103°40'W 33°50'N 97°20'W	6 mo. 1926 km S18°E
7	0623-20241 MJW	AHY M 05 45	07/09/63 09/02/68	near Tilbury, ON Doniphan, MO	42°20'N 82°10'W 36°30'N 90°40'W	4 yr. 5 mo. 977 km S51°W
8	0663-55743 LPBO	U M 03 03	29/04/65 19/11/65	Long Point, ON Braselton, GA	42°30'N 80°20'W 34°00'N 83°40'W	7 mo. 990 km S18°W
9	0443-04761 MB	AHY M 00 99	15/06/49 08/06/55	Hampstead, QC Hampstead, QC	45°30'N 73°30'W 45°30'N 73°30'W	6 yr. 0 mo. 0 km
10	0373-00555 MH	J U 00 00	23/06/37 13/10/40	near Barrington, NS Athens, GA	43°30'N 65°30'W 33°50'N 83°20'W	3 yr. 4 mo. 1881 km S61°W

Summary of banding statistics: Northern Flicker

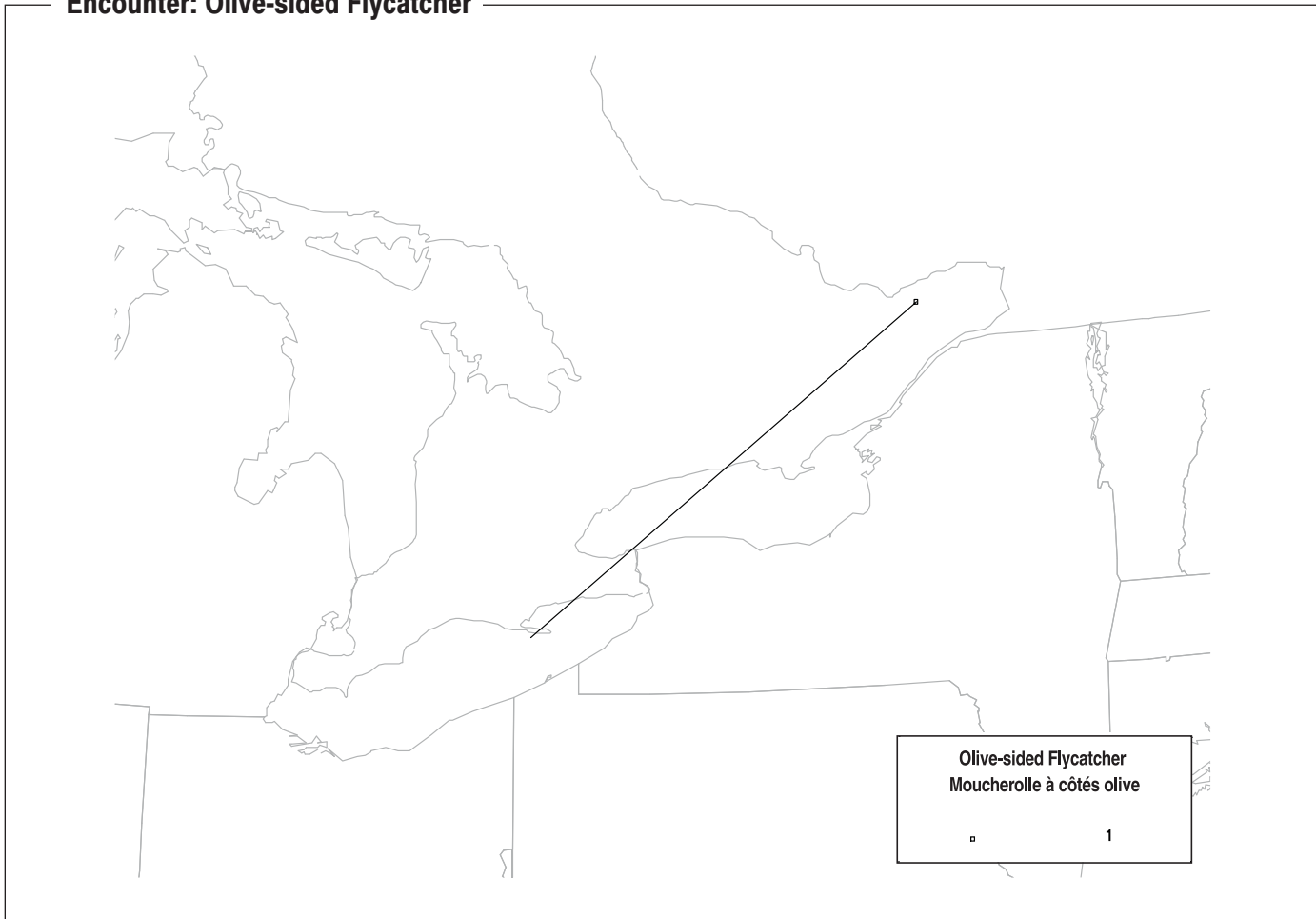
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			8447
<i>No. encountered per 1000 banded (1955–1995)</i>			5
Total no. encountered (1921–1995)	45	76	141
No. encountered from foreign bandings	4	4	9
Maximum period from banding to encounter (mo.)	40	72	72
No. of Canadian-banded birds moving > 0 km	24	36	68
Mean movement > 0 km of Canadian-banded birds	1228	389	753
Maximum movement from all encounters (km)	2863	2307	2863
% recovered (encountered dead)	88	68	78
% direct recoveries	51	36	44
% encountered during banding operations	6	28	19

Banding effort: Northern Flicker

Top banders: LPBO, DRH, PEPO, PPBO, IPBO

Olive-sided Flycatcher (*Contopus cooperi*) 459.0

Encounter: Olive-sided Flycatcher



The Olive-sided Flycatcher breeds through much of the western U.S. and across Canada, except for the Queen Charlotte Islands, northern Yukon, northeastern Northwest Territories, extreme northeastern Manitoba, extreme northern Ontario, and northern Quebec; it is also absent as a breeder from the southern Prairie Provinces (Godfrey 1986). This species winters in northwestern South America from western Venezuela and Colombia to Peru.

The sole record, below, is notable for the age of the bird (at least six years and nine months), close to the seven years and one month record for a banded Olive-sided Flycatcher (Klimkiewicz and Futcher 1989).

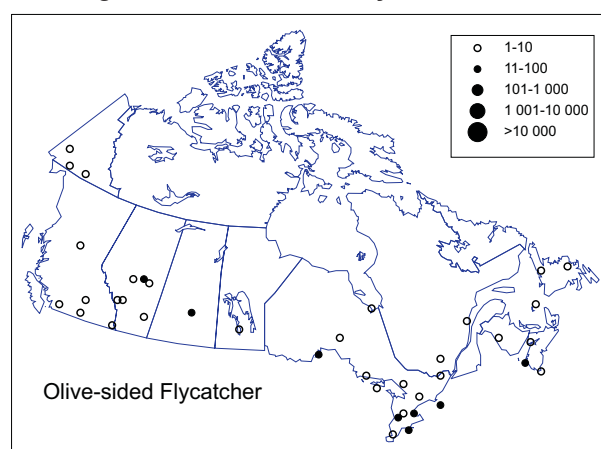
Encounter record: Olive-sided Flycatcher

1	2051-83955	AHY U	24/05/87	Long Point, ON	42°30'N 80°20'W	6 yr. 0 mo.
	LPBO	05 00	26/05/93	Ramsayville, ON	45°20'N 75°30'W	500 km N49°E

**Summary of banding statistics:
Olive-sided Flycatcher**

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			237
No. encountered per 1000 banded (1955–1995)			4
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	72	72
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	499	499
Maximum movement from all encounters (km)	–	499	499
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

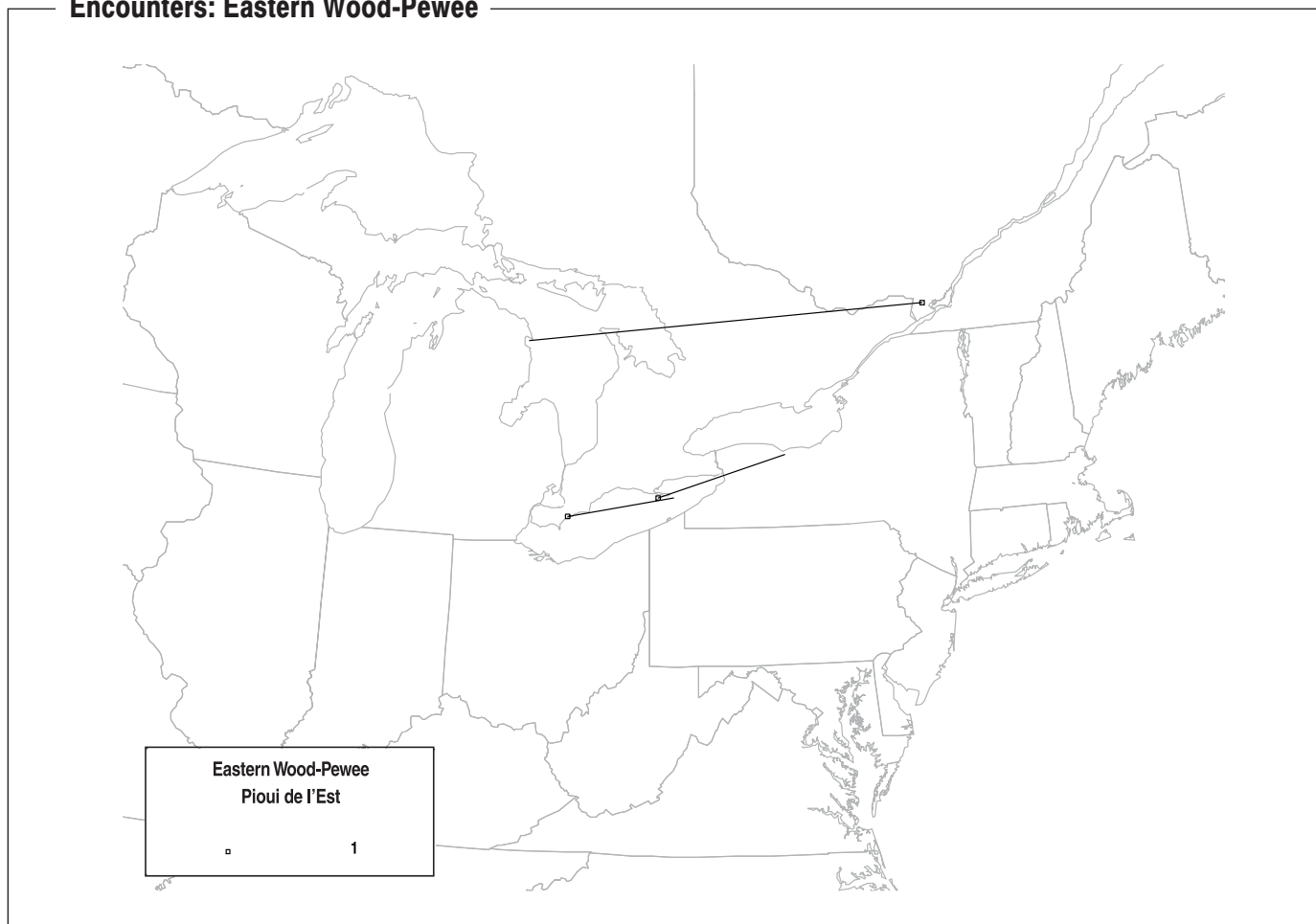
Banding effort: Olive-sided Flycatcher



Top banders: LPBO, ETJ, RRA, JBMi, ARS

Eastern Wood-Pewee (*Contopus virens*) 461.0

Encounters: Eastern Wood-Pewee



The Eastern Wood-Pewee breeds in the eastern U.S. and southern Canada, from southeastern Saskatchewan across southern Ontario and Quebec, through the Maritimes (excepting Newfoundland). It winters primarily in northern South America (Colombia and Venezuela south to Peru and western Brazil), but it may occur rarely during winter in Central America (Belize, Costa Rica, and El Salvador; McCarty 1996).

All four Canadian encounters are shown below. The rare short-term encounter (record 1) provides insight into the rate of fall migration. Based on 243 km covered in five days, this bird averaged 49 km per day. The bird in record 2 was

captured during the fall migration almost exactly two years after being banded only 196 km away on a previous fall migration.

Little information is available on breeding site fidelity (McCarty 1996), but the bird in record 3 is a male that appears to have been faithful to its previous year's breeding site. By contrast, record 4 suggests movement between nesting seasons.

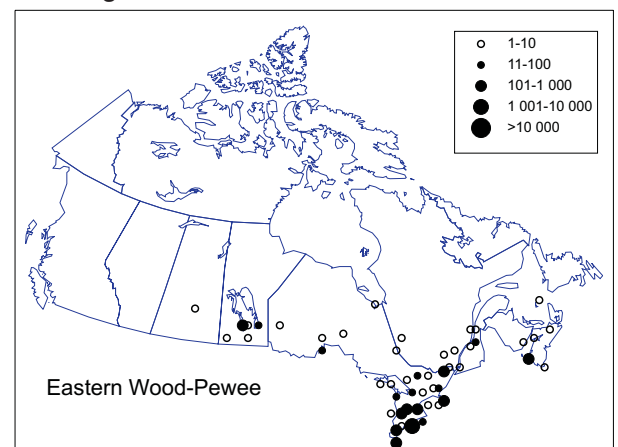
Encounter records: Eastern Wood-Pewee

1	1580-62005 RGMcK	U U 07 89	13/09/84 18/09/84	Irondequoit Bay, NY Long Point, ON	43°10'N 77°30'W 42°30'N 80°20'W	5 dy. 243 km S73°W
2	0320-13891 LPBO	U U 00 89	04/09/61 01/09/63	Long Point, ON Tilbury, ON	42°30'N 80°00'W 42°10'N 82°20'W	2 yr. 0 mo. 196 km S80°W
3	1470-00416 ABo	AHY M 07 99	13/06/77 05/06/78	Saint-Pascal, QC Saint-Pascal, QC	47°30'N 69°40'W 47°30'N 69°40'W	1 yr. 0 mo. 0 km
4	1270-94278 AEV	AHY U 05 14	27/05/72 28/05/74	Alpena, MI near Saint-André-Est, QC	45°00'N 83°20'W 45°30'N 74°10'W	2 yr. 0 mo. 720 km N82°E

Summary of banding statistics: Eastern Wood-Pewee

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			5035
No. encountered per 1000 banded (1955–1995)			0.4
Total no. encountered (1921–1995)	0	2	4
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	–	24	24
No. of Canadian-banded birds moving > 0 km	0	0	1
Mean movement > 0 km of Canadian-banded birds	–	–	195
Maximum movement from all encounters (km)	–	720	720
% recovered (encountered dead)	–	50	25
% direct recoveries	–	0	25
% encountered during banding operations	–	50	75

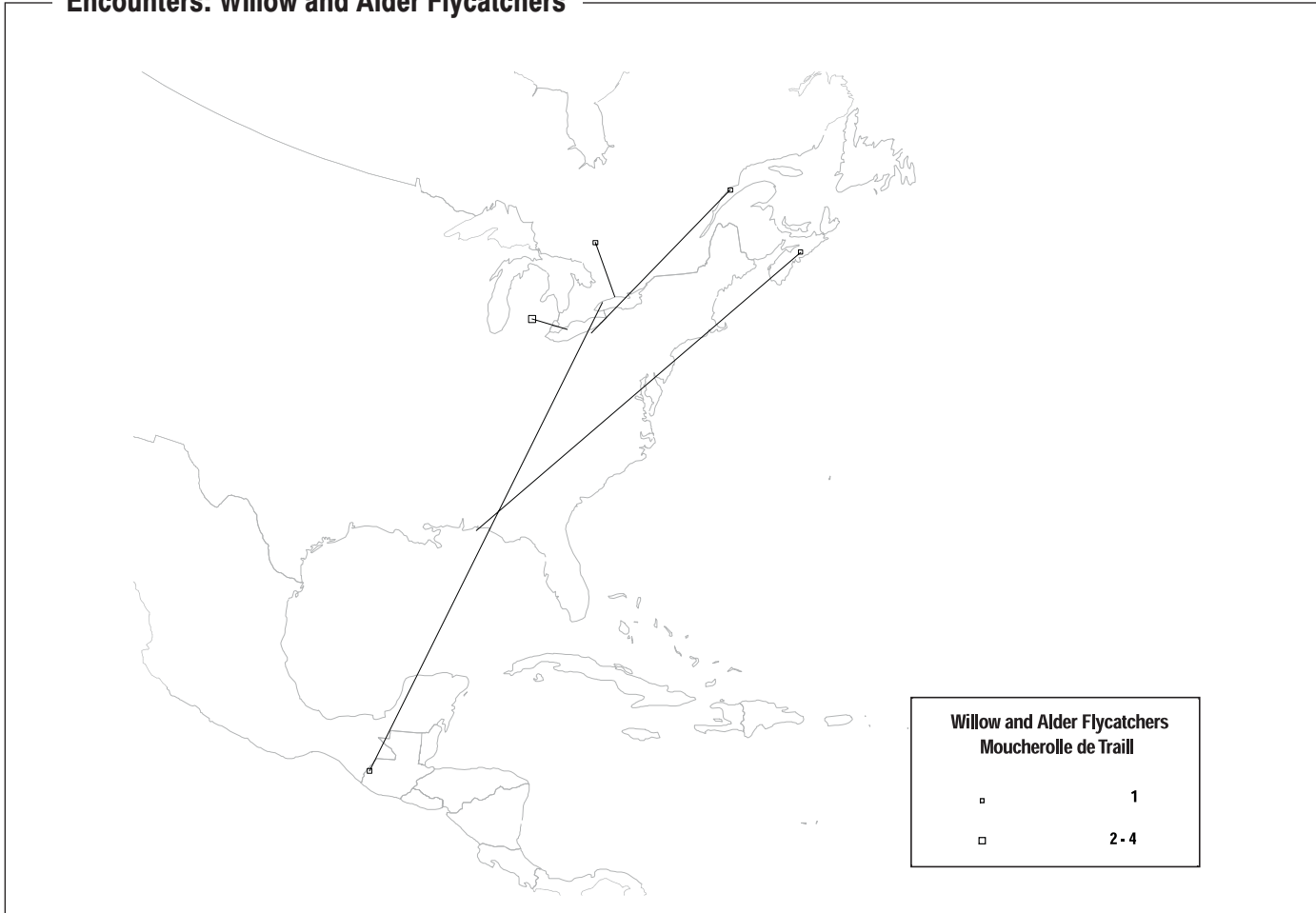
Banding effort: Eastern Wood-Pewee



Top banders: LPBO, PEPO, JBMi, MJW, IPBO

Willow Flycatcher (*Empidonax traillii*) 466.0
and
Alder Flycatcher (*Empidonax alnorum*) 466.1

Encounters: Willow and Alder Flycatchers



The Willow and Alder Flycatchers (Stein 1963, American Ornithologists' Union 1983) are two distinct species that breed sympatrically over parts of their ranges. Separation of the two species is exceptionally difficult in the hand, so most bandings refer to birds identified merely as "Traill's" Flycatcher.

The Alder Flycatcher breeds all across Canada to the treeline (except in southern British Columbia and the southern Prairie Provinces) and into the Appalachian Mountains in the U.S. Willow Flycatchers are more southerly in distribution, breeding across the northern U.S. and in Canada only in southern British Columbia,

the extreme south of the Prairie Provinces, and southern Ontario (Godfrey 1986).

The Alder Flycatcher apparently winters mainly in western South America east of the Andes, probably from Colombia and northwest Venezuela south to northern Argentina. In contrast, the wintering range of the Willow Flycatcher extends only from southern Mexico to Panama. Both species occur in northern Central America on migration, so record 1 below could belong to either. All the Canadian encounters not involving Ontario (records 2–5) are likely to be of Alder Flycatchers, given the breeding range of that species.

The rare short-term encounter (record 2) suggests rapid spring migration, with this bird averaging at least 123 km per day over 10 days. Support for breeding site fidelity comes from record 4 and two other birds banded at that same site and recaptured there two years later.

Of the 11 birds encountered, nearly half were recaptured alive. Cause of death was recorded for four birds: two were killed in collisions with vehicles (record 5), and two were killed by cats (records 3 and 6).

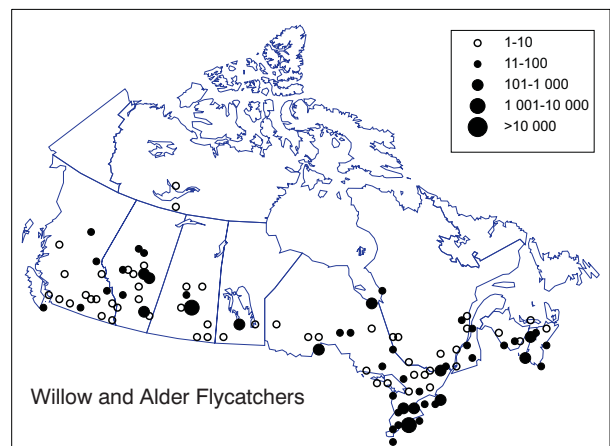
Encounter records: Willow and Alder Flycatchers

1	0290-64929 GP	L U 00 97	14/07/62 ??/09/63	near Markham, ON Near Cuilco, GUATEMALA	43°40'N 79°10'W 15°20'N 91°50'W	3375 km S25°W
2	1540-47685 JHS	AHY U 04 00	29/05/82 08/06/82	Erie, PA Baie-Comeau, QC	42°00'N 80°00'W 49°10'N 68°00'W	10 dy. 1226 km N45°E
3	1550-05532 LRD	HY U 03 12	19/09/80 18/07/81	Pensacola, FL Shubenacadie, NS	30°20'N 87°10'W 45°00'N 63°20'W	10 mo. 2643 km N45°E
4	1300-02379 ADS	U U 07 99	30/07/73 05/08/76	11 km east of Sackville, NB 11 km east of Sackville, NB	45°50'N 64°10'W 45°50'N 64°10'W	3 yr. 1 mo. 0 km
5	1280-26181 DLK	HY U 05 14	31/08/73 03/08/74	Perryville, RI unknown site, NS	41°20'N 71°30'W ????°N ???°W	1 yr. 0 mo.
6	0220-48757 FS	U U 00 12	16/09/58 ??/07/64	Bewdley, ON Temagami, ON	44°00'N 78°10'W 47°00'N 79°40'W	354 km N19°W
7	0220-38054 FTL	AHY U 06 89	03/06/56 27/07/61	Erieau, ON East Lansing, MI	42°10'N 81°50'W 42°40'N 84°30'W	5 yr. 1 mo. 226 km N75°W

**Summary of banding statistics:
Willow and Alder Flycatchers**

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			12 970
No. encountered per 1000 banded (1955–1995)			0.6
Total no. encountered (1921–1995)	3	6	11
No. encountered from foreign bandings	2	1	3
Maximum period from banding to encounter (mo.)	12	61	61
No. of Canadian-banded birds moving > 0 km	1	2	4
Mean movement > 0 km of Canadian-banded birds	3 375	226	1 045
Maximum movement from all encounters (km)	3 375	1 226	3 375
% recovered (encountered dead)	100	33	54
% direct recoveries	0	33	18
% encountered during banding operations	0	66	45

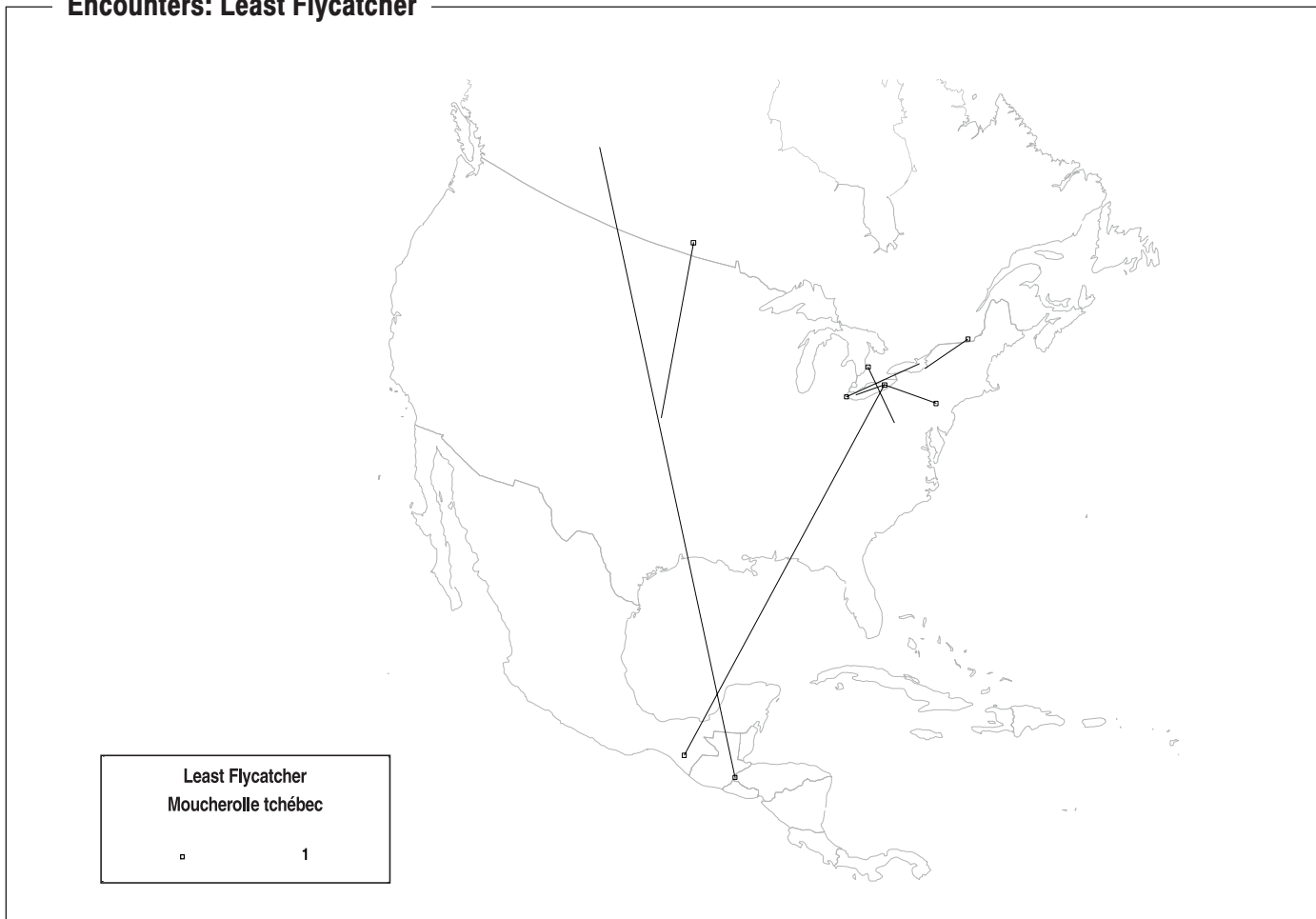
Banding effort: Willow and Alder Flycatchers



Top banders: LPBO, ETJ, ARS, BBO, RIGM

Least Flycatcher (*Empidonax minimus*) 467.0

Encounters: Least Flycatcher



The Least Flycatcher breeds across the northern U.S. and southern Canada, north to the limits of forest, except in the Pacific Northwest (including western British Columbia) and much of Newfoundland. It winters from central Mexico south to Honduras and northern Nicaragua (records 1 and 2), as well as casually to Costa Rica and east to the Canal Zone in central Panama. It also winters regularly on the southern Florida mainland (Briskie 1994).

Spring migration is relatively early; the median date in southern Ontario is 18 May, or about two weeks earlier than for Traill's Flycatchers. Adults spend fewer than 64 days on the Ontario breeding grounds, because their median date of fall migration in southern Ontario is 22 July (versus 29 August for immatures). Least Flycatchers reach Guatemala as early as 13 August (Hussell 1981). Many

banding stations do not begin fall coverage in time to handle adults as migrants, and all the records of birds banded as adults show that these birds were banded in the breeding season.

Three of the records below indicate rate of migration: record 2 shows a bird that travelled 3188 km in 32 days from Ontario to Mexico, for a minimum rate of 100 km per day (Hussell 1984), and record 3 shows a bird that travelled 73 km per day over three days. Record 4 appears to be an example of reverse spring migration; that bird travelled 402 km in 11 days for a minimum rate of 37 km per day.

Natal philopatry is low (4.2% at Delta Marsh, Manitoba), whereas breeding and wintering site fidelity both appear to be high (Briskie 1994). Three of the records below illustrate breeding site fidelity (records 5–7).

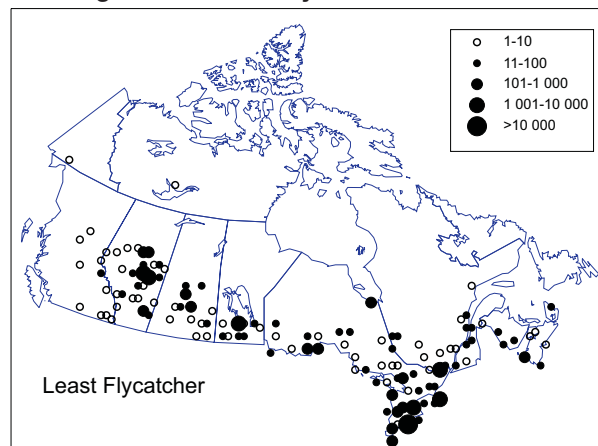
Encounter records: Least Flycatcher

1	1780-41439 BBO	U U 02 98	13/08/89 15/04/91	Beaverhill Lake, AB Zacapa, GUATEMALA	53°20'N 112°30'W 14°40'N 89°20'W	1 yr. 8 mo. 4760 km S34°E
2	1630-02421 NG	HY U 05 01	17/08/82 18/09/82	Long Point, ON Las Rosas, Chiapas, MEXICO	42°30'N 80°00'W 16°00'N 92°40'W	1 mo. 3188 km S26°W
3	0260-90378 PPBO	AHY U 06 89	21/05/61 24/05/61	Point Pelee, ON Long Point, ON	41°50'N 82°30'W 42°30'N 80°00'W	3 dy. 219 km N69°E
4	1160-50672 LPBO	AHY U 02 98	12/05/69 23/05/69	Long Point, ON near Daleville, PA	42°30'N 80°00'W 41°10'N 75°30'W	11 dy. 402 km S70°E
5	1850-62442 BBO	AHY F 08 99	27/05/90 19/06/91	Beaverhill Lake, AB Beaverhill Lake, AB	53°20'N 112°30'W 53°20'N 112°30'W	1 yr. 1 mo. 0 km
6	1300-17341 ADS	AHY U 07 99	24/06/74 14/06/76	11 km east of Sackville, NB 11 km east of Sackville, NB	45°50'N 64°10'W 45°50'N 64°10'W	2 yr. 0 mo. 0 km
7	0260-02268 MGS	AHY U 00 99	02/06/57 27/05/58	White Fox, SK White Fox, SK	53°20'N 104°00'W 53°20'N 104°00'W	11 mo. 0 km
8	1260-58728 EFM	AHY U 07 28	21/09/72 99/05/74	Cheyenne Bottoms, KS Brandon, MB	38°20'N 98°40'W 49°50'N 99°50'W	1 yr. 8 mo. 1284 km N4°W
9	1580-21301 CMNH	SY F 03 00	22/07/83 16/05/88	Stahlstown, PA Auburn, ON	40°00'N 79°10'W 43°40'N 81°30'W	4 yr. 10 mo. 452 km N25°W

Summary of banding statistics: Least Flycatcher

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			37 916
No. encountered per 1000 banded (1955–1995)			0.3
Total no. encountered (1921–1995)	6	10	17
No. encountered from foreign bandings	0	3	3
Maximum period from banding to encounter (mo.)	58	58	58
No. of Canadian-banded birds moving > 0 km	4	4	9
Mean movement > 0 km of Canadian-banded birds	805	303	1 021
Maximum movement from all encounters (km)	3 187	1 283	4 759
% recovered (encountered dead)	33	30	35
% direct recoveries	50	20	29
% encountered during banding operations	66	60	58

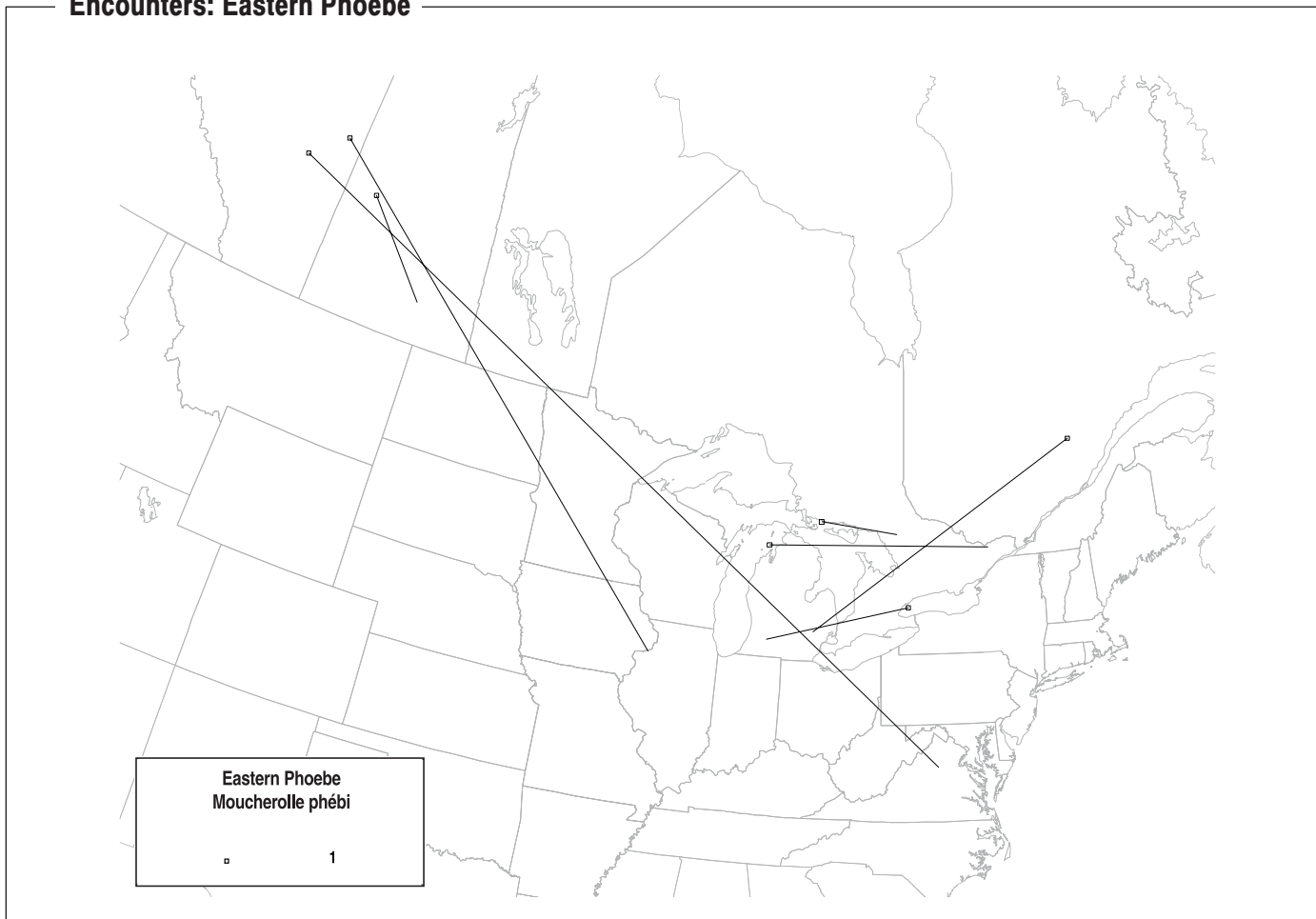
Banding effort: Least Flycatcher



Top banders: LPBO, ETJ, BBO, UM, PEPO

Eastern Phoebe (*Sayornis phoebe*) 456.0

Encounters: Eastern Phoebe



The Eastern Phoebe breeds in the eastern U.S. and southern parts of eastern Canada to Nova Scotia; it also breeds through the Prairie Provinces into the southern Northwest Territories. It winters principally in the southern U.S., with peak numbers along the Gulf Coast and especially heavy concentrations in east-central Texas and northern Florida; the species also winters as far south as southern Mexico.

There have been no encounters of Canadian birds in winter. The most southerly records (1 and 2) are for birds encountered in the U.S. in October, at the height of the fall migration (Weeks 1994).

Natal philopatry is generally low, with record 3 providing a striking example of the distance a nestling may

move to breed in subsequent years (1136 km, assuming the encounter information is correct). On the other hand, there are records of birds returning to sites very close to their natal area (record 4). Several records provide evidence of a pre-migratory dispersal by juveniles before August (records 5 and 6), so record 7 (banded in this dispersal phase) sheds no light on the degree of natal philopatry.

Adult fidelity to breeding sites is strong both within and between years (record 8, Weeks 1994), which can help produce encounters of long-lived birds. However, the longevity record for this species (record 2; Klimkiewicz 1997) is held by a bird both banded and encountered on migration.

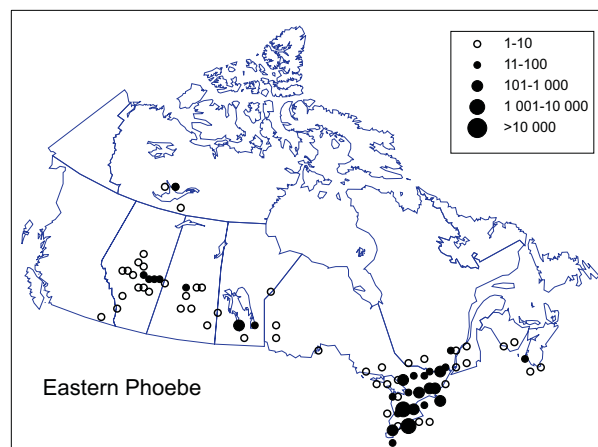
Encounter records: Eastern Phoebe

1	1850-52417 EHS	HY U 07 89	13/10/89 16/06/92	Madison, VA Beaverhill Lake, AB	38°20'N 78°10'W 53°20'N 112°30'W	2 yr. 8 mo. 3098 km N46°W
2	0930-36226 PCP	HY U 05 00	10/10/79 15/10/89	Davenport, IA Bonnyville, AB	41°30'N 90°30'W 54°20'N 110°50'W	10 yr. 0 mo. 2070 km N39°W
3	0580-13543 RAOR	L U 00 87	06/07/58 01/03/61	Davisburg, MI near Saint-Bruno, QC	42°40'N 83°30'W 48°30'N 71°30'W	2 yr. 8 mo. 1136 km N51°E
4	0340-38901 WAC	J U 00 00	23/06/34 05/05/35	Tuelon, MB Balmoral, MB	50°20'N 97°10'W 50°10'N 97°10'W	11 mo. 19 km S0°W
5	0031-42271 FGB	J U 00 21	14/06/35 02/08/35	Regina, SK Meota, SK	50°20'N 104°30'W 53°00'N 108°20'W	2 mo. 398 km N40°W
6	0000-11626 PF	J U 00 00	11/07/21 04/08/21	Ottawa, ON North Fox Island, MI	45°20'N 75°40'W 45°20'N 85°40'W	1 mo. 782 km N86°W
7	0820-21467 DW	HY U 05 00	05/08/74 03/06/76	Arnstein, ON Sowerby, ON	45°50'N 79°50'W 46°10'N 83°20'W	1 yr. 10 mo. 273 km N81°W
8	0341-74854 FHP	AHY F 00 33	23/05/35 26/07/36	Glenevis, AB Glenevis, AB	53°40'N 114°30'W 53°40'N 114°30'W	1 yr. 2 mo. 0 km

Summary of banding statistics: Eastern Phoebe

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			6318
No. encountered per 1000 banded (1955–1995)			1
Total no. encountered (1921–1995)	16	8	27
No. encountered from foreign bandings	4	0	4
Maximum period from banding to encounter (mo.)	120	61	120
No. of Canadian-banded birds moving > 0 km	6	2	8
Mean movement > 0 km of Canadian-banded birds	250	11	191
Maximum movement from all encounters (km)	3098	11	3098
% recovered (encountered dead)	75	25	51
% direct recoveries	37	37	33
% encountered during banding operations	18	62	40

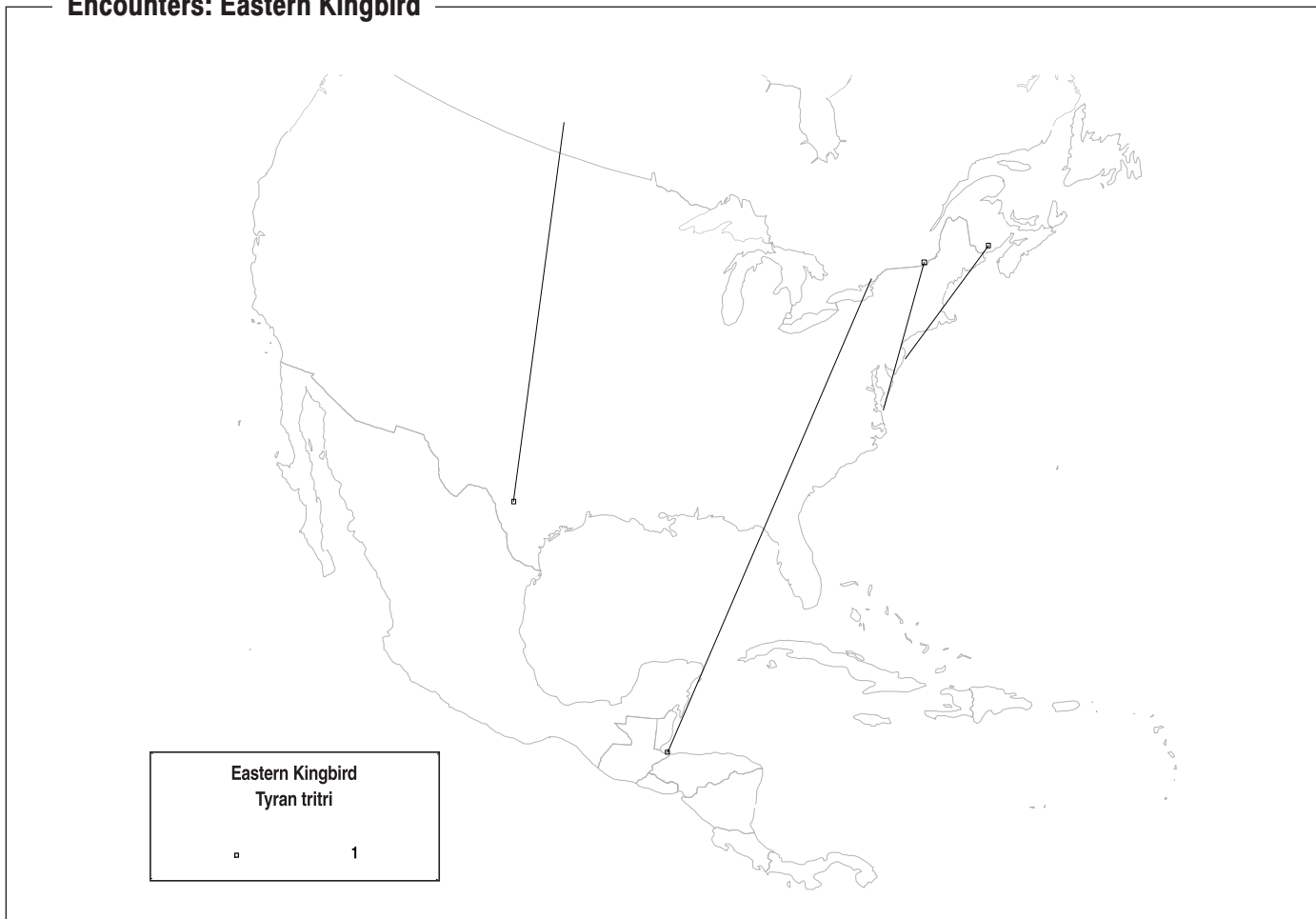
Banding effort: Eastern Phoebe



Top banders: JOLR, LPBO, RJRo, IPBO, PPBO

Eastern Kingbird (*Tyrannus tyrannus*) 444.0

Encounters: Eastern Kingbird



The Eastern Kingbird has the most extensive breeding range of all North American flycatchers, breeding across most of the U.S., except for California and part of the Southwest; it breeds across Canada north to the limits of dense forest, except in western British Columbia, eastern Quebec, and southern Newfoundland. It also breeds locally along the southern coast of Hudson Bay and the southwestern coast of James Bay (Murphy 1996). The species winters in northwestern South America from Colombia (occasionally Honduras) south to the northern parts of Chile and Argentina.

Spring migrants move north through Central America by mid-March, with the first strong wave arriving in the southern U.S. by early to mid-April (Murphy 1996).

The 5 March encounter of a kingbird of Saskatchewan origin in Texas (record 1) may represent a very early migrant.

Only four records indicate movement of more than 100 km; these are shown on the encounter map and are listed below (records 1–4), together with one that was at least seven years old when recovered (record 5).

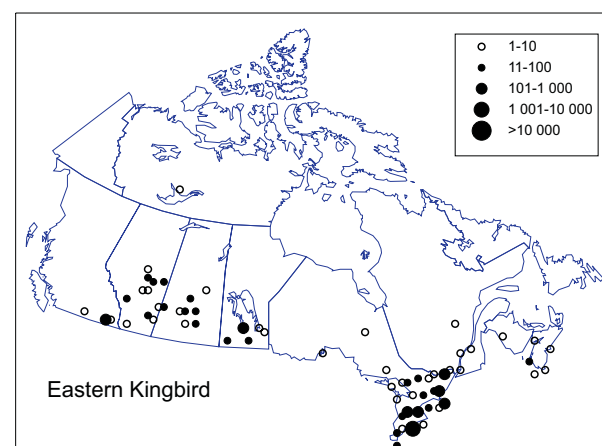
Breeding site fidelity is high (over 90% for males and over 70% for females), but the degree of fidelity to the wintering site is unknown (Murphy 1996). The only bird encountered south of the U.S. was shot in Guatemala (record 4).

Encounter records: Eastern Kingbird

1	0021-94538 JRC	HY U 00 00	27/07/50 05/03/53	Muscow, SK Reagan Wells, TX	50°40'N 103°50'W 29°30'N 99°40'W	2 yr. 8 mo. 2382 km S10°E
2	0671-78942 JCM	HY U 05 03	30/08/67 04/08/68	Island Beach State Park, NJ Hoyt Station, NB	39°50'N 74°00'W 45°30'N 66°30'W	1 yr. 0 mo. 879 km N42°E
3	1091-20332 FRS	HY U 05 00	11/09/70 13/07/71	Adams Island, VA North Hatley, QC	37°00'N 75°50'W 45°10'N 71°50'W	10 mo. 969 km N19°E
4	1231-01539 RJRo	L U 05 01	16/06/79 ??/09/80	Jones Falls, ON Puerto Barrios, GUATEMALA	44°30'N 76°10'W 15°50'N 88°30'W	3396 km S24°W
5	0581-18363 LPBO	AHY U 06 00	03/08/67 08/08/73	Long Point, ON near St. Williams, ON	42°30'N 80°00'W 42°40'N 80°20'W	6 yr. 0 mo. 33 km N56°W

Summary of banding statistics: Eastern Kingbird

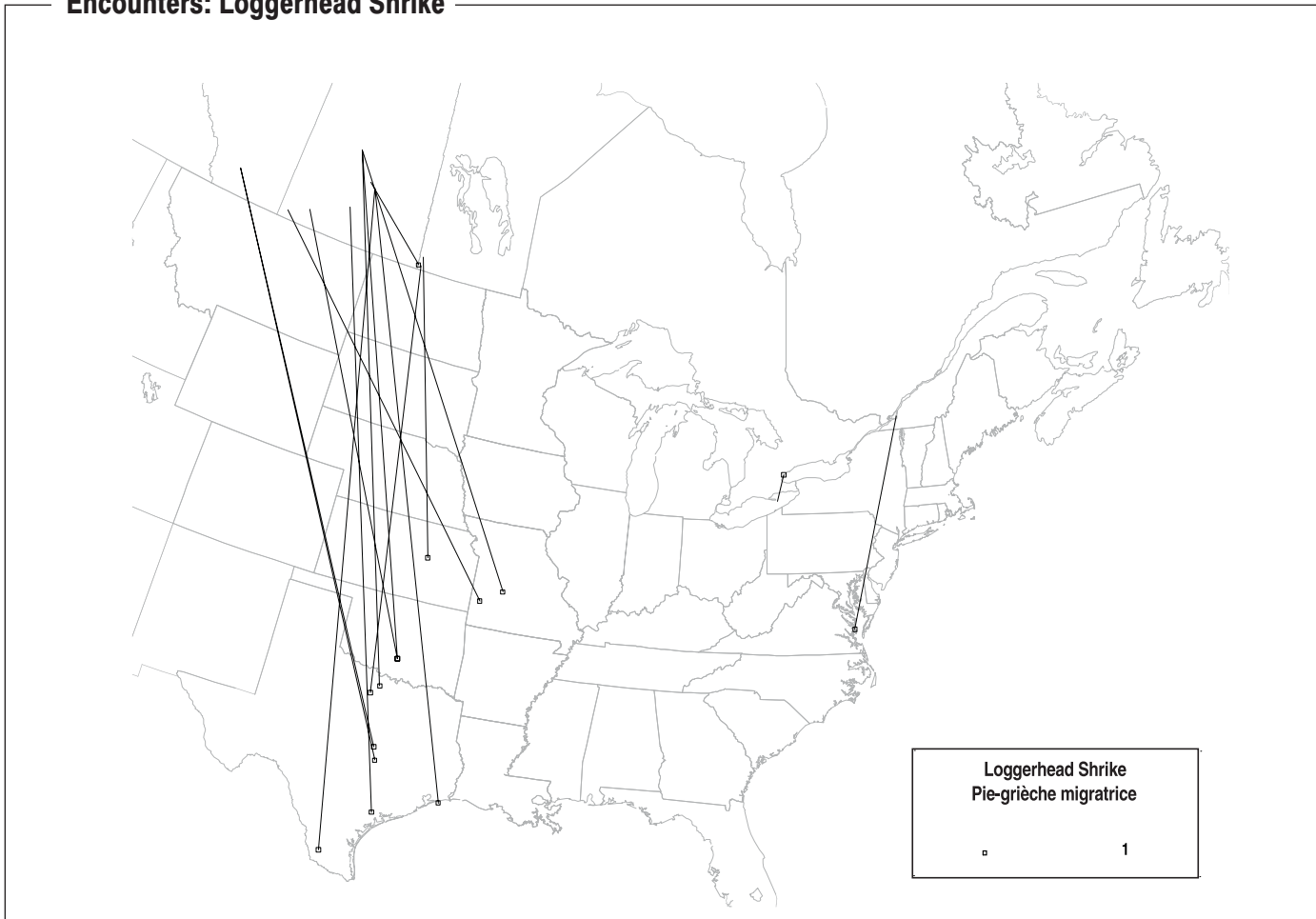
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			4213
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	9	4	15
No. encountered from foreign bandings	2	0	2
Maximum period from banding to encounter (mo.)	32	72	72
No. of Canadian-banded birds moving > 0 km	4	2	7
Mean movement > 0 km of Canadian-banded birds	1464	25	846
Maximum movement from all encounters (km)	3395	33	3395
% recovered (encountered dead)	100	50	86
% direct recoveries	33	0	26
% encountered during banding operations	0	50	13

Banding effort: Eastern Kingbird

Top banders: LPBO, RJRo, PEPO, UM, IPBO

Loggerhead Shrike (*Lanius ludovicianus*) 622.0

Encounters: Loggerhead Shrike



The Loggerhead Shrike breeds in southern Canada from central Alberta to southwestern Manitoba (*excubitorides* subspecies) and southern Ontario (*migrans* subspecies), as well as in most of the U.S. The eastern breeding range formerly extended east to southern Nova Scotia. It winters mainly south of the range of Northern Shrikes, from Washington State in the west to New Jersey in the east, south to southern Mexico, the Gulf Coast, and Florida. COSEWIC (1993) listed the eastern Canadian population as “endangered” and the western as “threatened.”

Encounters of birds banded in western Canada are consistent with the overall pattern of a north–south migration to wintering grounds south of 40°N (Burnside 1987, Yosef 1996; see records 1–7). Very few birds from eastern Canada have been banded, and there is only a single winter encounter for this endangered population (record 8). Establishing the wintering grounds of the different breeding populations is key to developing appropriate conservation policies, because loss of wintering habitat is considered an important factor limiting population size (Telfer 1993).

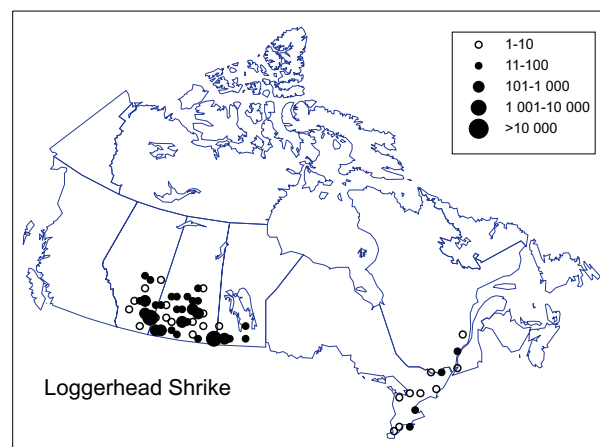
Encounter records: Loggerhead Shrike

1	0022-14218 PS	J U 00 00	04/07/31 23/09/31	Hepburn, SK near Edwards, MO	52°30'N 106°40'W 38°00'N 93°10'W	2 mo. 1923 km S38°E
2	0031-66224 JEH	HY U 00 01	25/06/33 22/12/33	Carmangay, AB near Belton Lake, TX	50°00'N 113°00'W 31°10'N 97°30'W	6 mo. 2461 km S37°E
3	0032-52535 JEH	J U 00 01	16/07/33 06/10/34	Carmangay, AB Granger, TX	50°00'N 113°00'W 30°40'N 97°20'W	1 yr. 3 mo. 2518 km S37°E
4	0382-08085 ASL	U U 00 15	23/06/38 08/04/42	Hepburn, SK Bowie Lake, TX	52°30'N 106°40'W 33°30'N 97°50'W	3 yr. 10 mo. 2230 km S22°E
5	0382-49031 FJHF	AHY U 00 00	21/08/38 20/12/38	Hepburn, SK Antioch, OK	52°30'N 106°40'W 34°40'N 97°20'W	4 mo. 2119 km S24°E
6	0762-22446 CSH	L U 05 01	23/07/72 22/11/72	south of Venn, SK Barrows Ranch, TX	51°20'N 105°10'W 29°30'N 94°20'W	4 mo. 2592 km S24°E
7	8011-19342 WCH	L U 04 11	25/06/88 06/06/93	Consul, SK Stockton, MO	49°20'N 109°30'W 37°30'N 94°10'W	5 yr. 0 mo. 1802 km S49°E
8	0442-04868 MB	HY U 00 01	19/08/45 19/02/46	Hampstead, QC Bland Point, VA	45°30'N 73°30'W 37°30'N 76°20'W	6 mo. 921 km S16°W

Summary of banding statistics: Loggerhead Shrike

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			7336
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	22	2	27
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	60	25	60
No. of Canadian-banded birds moving > 0 km	20	2	24
Mean movement > 0 km of Canadian-banded birds	1157	1065	1151
Maximum movement from all encounters (km)	2779	2118	2779
% recovered (encountered dead)	72	50	74
% direct recoveries	45	50	44
% encountered during banding operations	27	50	25

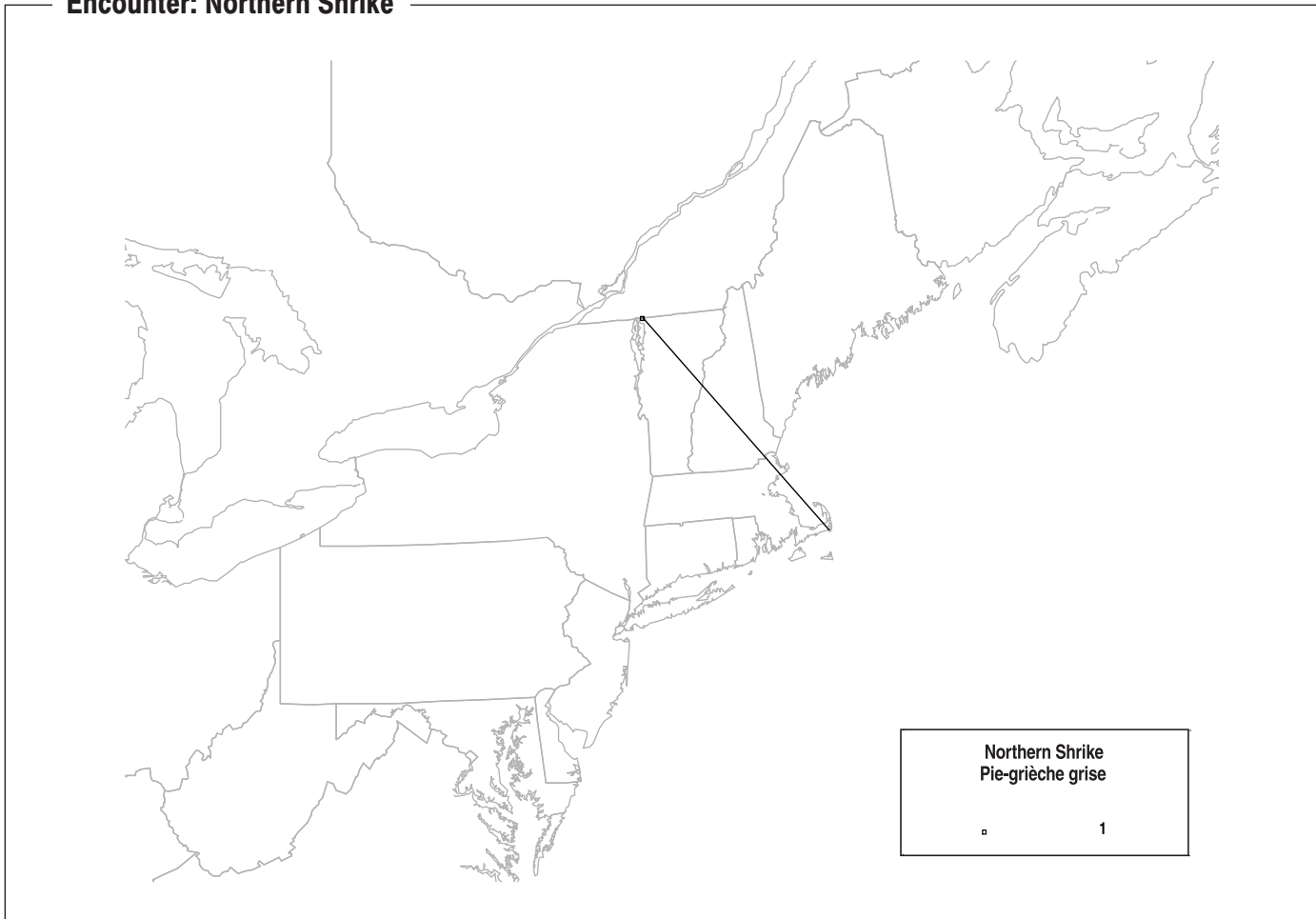
Banding effort: Loggerhead Shrike



Top banders: MNR, WCH, DC, CSH, JKSc

Northern Shrike (*Lanius excubitor*) 621.0

Encounter: Northern Shrike



The Northern Shrike breeds in Alaska and across Canada in a narrow band along the treeline adjacent to the tundra. It winters from southern Canada south through the U.S. to California in the west and New Jersey in the east.

Very few Northern Shrikes have been banded in Canada, and these were banded mostly south of the breeding range (see effort map). None of the encounters of these birds showed any significant movement. One bird banded in the

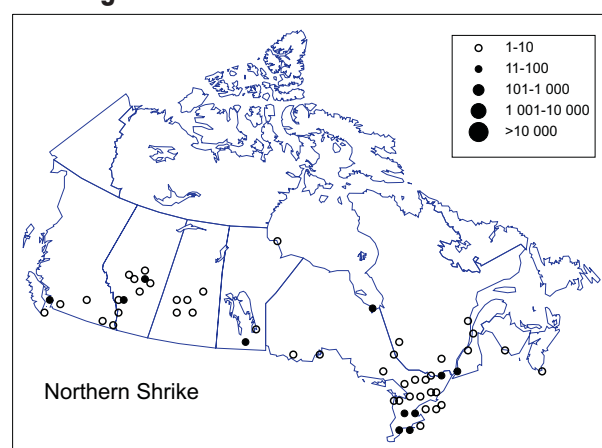
eastern U.S. has been encountered in Canada (record 1). Although the encounter date for record 2 is inexact, Rimmer and Darmstadt (1996) indicate that this species is faithful to winter territories and possibly also to migration stopover sites.

Encounter records: Northern Shrike

1	0032-71756 OLA	HY U 00 00	08/11/34 FT/04/36	Brewster, MA Clarenceville, QC	41°40'N 70°00'W 45°00'N 73°10'W	1 yr. 5 mo. 451 km N34°W
2	0502-29893 GGO	AHY F 00 03	06/02/54 ??/02/58	Saint-Lazare, QC Saint-Lazare, QC	45°20'N 74°00'W 45°20'N 74°00'W	0 km

Summary of banding statistics: Northern Shrike

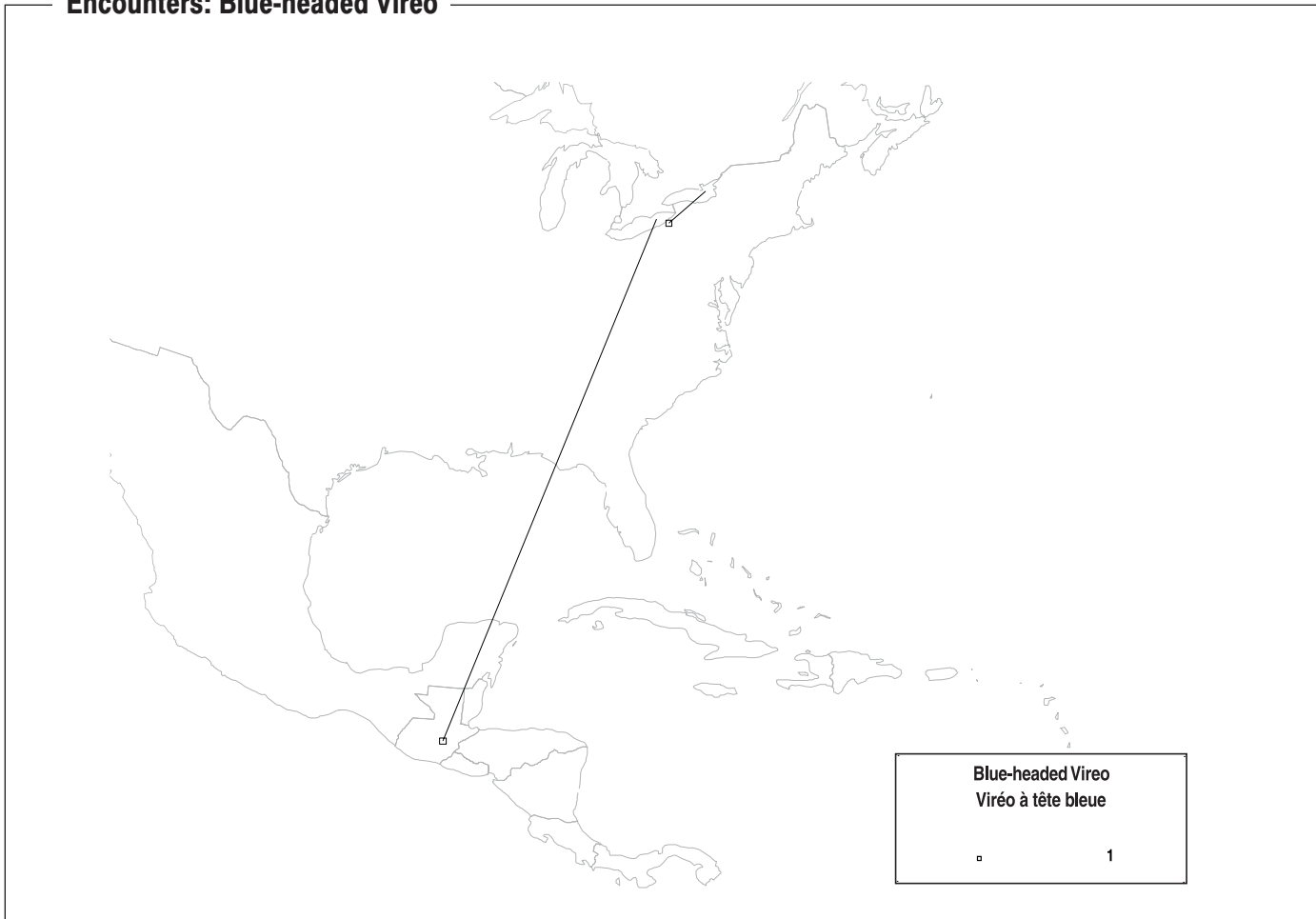
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			371
<i>No. encountered per 1000 banded (1955–1995)</i>			18
Total no. encountered (1921–1995)	6	5	12
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	17	3	17
No. of Canadian-banded birds moving > 0 km	2	2	4
Mean movement > 0 km of Canadian-banded birds	15	18	17
Maximum movement from all encounters (km)	450	18	450
% recovered (encountered dead)	66	80	75
% direct recoveries	33	80	58
% encountered during banding operations	33	20	25

Banding effort: Northern Shrike

Top banders: DRL, LPBO, AS, LTS, DC

Blue-headed Vireo (*Vireo solitarius*) 629.0

Encounters: Blue-headed Vireo



The Blue-headed Vireo is one species in a complex of three that used to be considered a single species, the Solitary Vireo (American Ornithologists' Union 1998). Although Blue-headed, Cassin's, and Plumbeous Vireos have now been separated, all Canadian bandings are within the range of the Blue-headed Vireo (see effort map), and both encounters below are virtually certain to be of this species.

The Blue-headed Vireo breeds in northeastern British Columbia, the southwestern Northwest Territories, and north-central Alberta east to Nova Scotia. It winters in the

Gulf states, through eastern and southern Mexico to Central America and, rarely, Cuba.

The longevity record for the species is seven years and five months (record 1) (Klimkiewicz et al. 1983). The assumption in determining minimum age was that the bird must have been after-hatch-year at banding, on the basis of date. The bird was shot in Guatemala, on or near its wintering grounds.

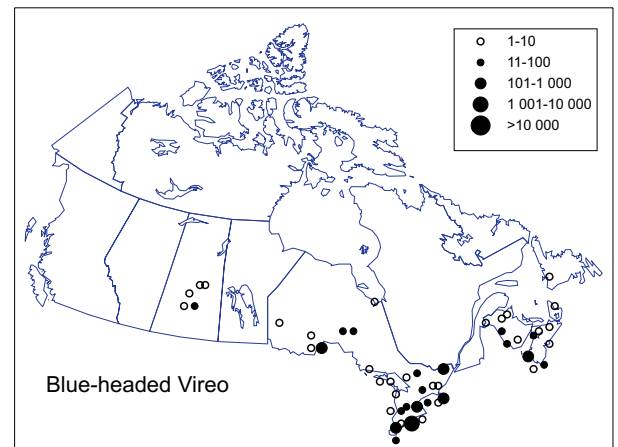
Encounter records: Blue-headed Vireo

1	1020-00711	U U	15/05/62	Long Point, ON	42°30'N 80°10'W	6 yr. 6 mo.
	LPBO	03 01	01/11/68	unknown site, GUATEMALA	15°??'N 90°??'W	c. 3203 km S20°W
2	0890-55713	U U	27/09/81	Prince Edward Point, ON	43°50'N 76°50'W	8 mo.
	PEPO	07 89	23/05/82	Lamberton, NY	42°20'N 79°20'W	263 km S51°W

Summary of banding statistics: Blue-headed Vireo

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			3098
No. encountered per 1000 banded (1955–1995)			0.6
Total no. encountered (1921–1995)	0	0	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	–	78
No. of Canadian-banded birds moving > 0 km	0	0	2
Mean movement > 0 km of Canadian-banded birds	–	–	1732
Maximum movement from all encounters (km)	–	–	3202
% recovered (encountered dead)	–	–	50
% direct recoveries	–	–	0
% encountered during banding operations	–	–	50

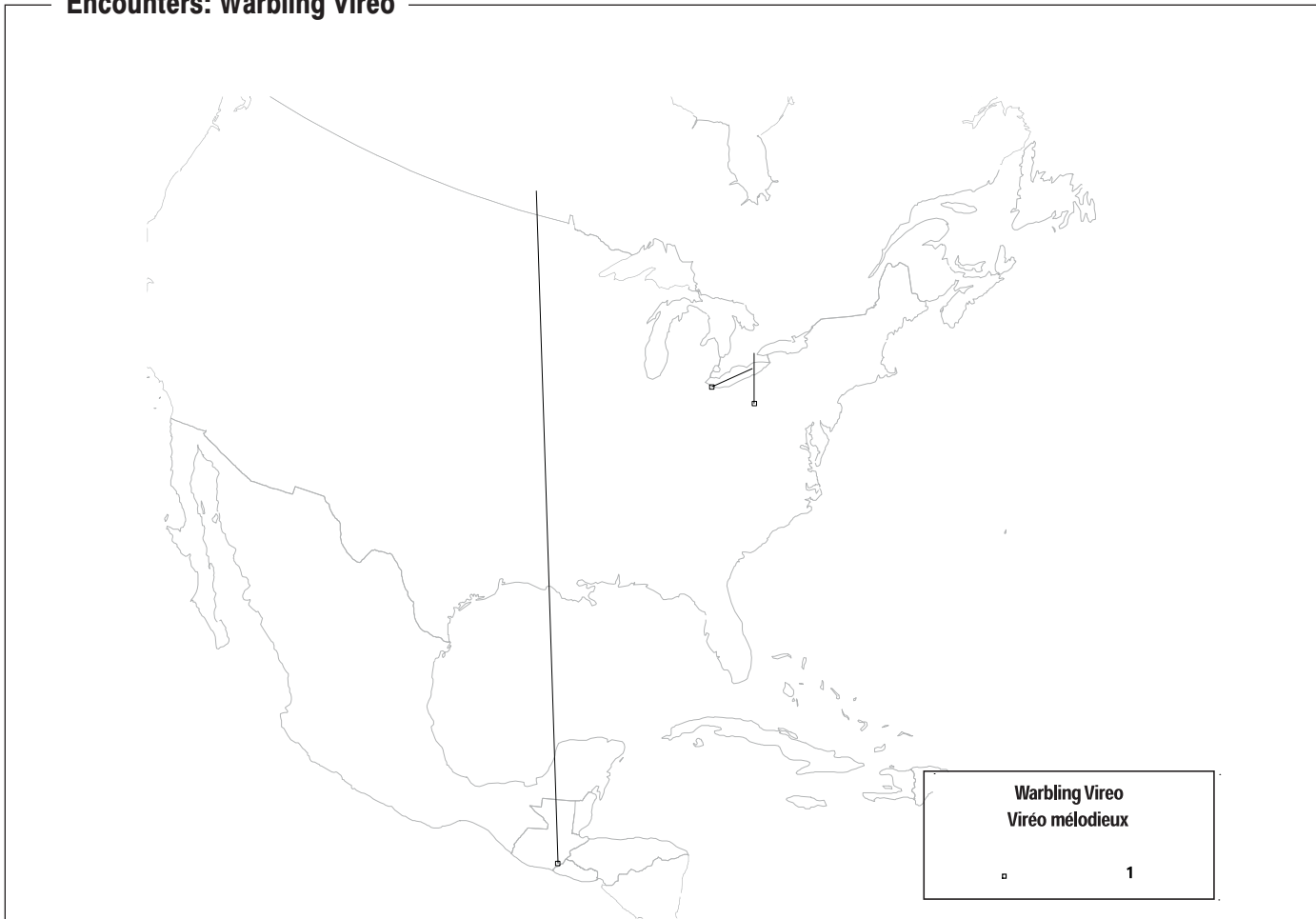
Banding effort: Blue-headed Vireo



Top banders: LPBO, PEPO, RRA, MJW, IPBO

Warbling Vireo (*Vireo gilvus*) 627.0

Encounters: Warbling Vireo



The Warbling Vireo breeds in British Columbia, the southwestern Northwest Territories, northern Alberta and Saskatchewan, southern Manitoba through southern Quebec, and the Maritimes (except Newfoundland); it also breeds in most of the U.S. The species winters mainly from Mexico to Guatemala and El Salvador, with a few individuals wintering in Gulf Coast states.

For the three birds banded as adults in the breeding season and encountered in a subsequent breeding season, the distances moved were 0 km, 0 km, and 14 km, suggesting fidelity to breeding sites (e.g., record 1). Two hatch-year-banded vireos were encountered in subsequent

spring migration seasons 259 km and 297 km away from their probable natal sites (records 2 and 3), but they could have moved closer to those natal areas before nesting.

The only long-distance encounter was of a bird near or on its wintering grounds, in Guatemala (record 4). Two records documented reverse spring migration (records 5 and 6).

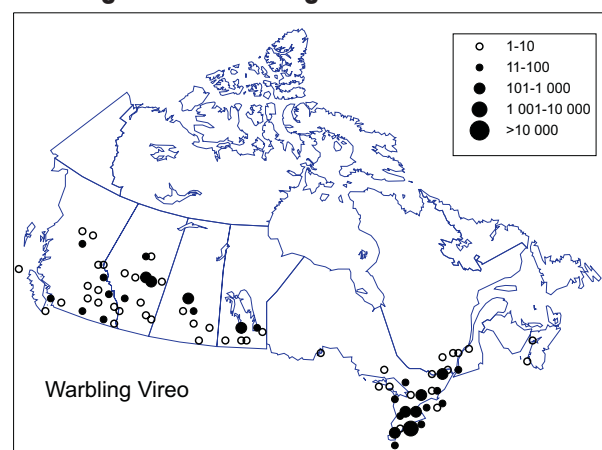
Encounter records: Warbling Vireo

1	2061-50642 BBO	AHY F 08 99	26/05/90 07/07/91	Beaverhill Lake, AB Beaverhill Lake, AB	53°20'N 112°30'W 53°20'N 112°30'W	1 yr. 2 mo. 0 km
2	1890-53135 LPBO	HY U 07 89	07/08/91 07/05/93	Long Point, ON Lacarne, OH	42°30'N 80°10'W 41°30'N 83°00'W	1 yr. 9 mo. 259 km S66°W
3	1470-34820 AS	HY U 05 00	17/08/78 17/05/79	Mountsberg, ON Evans City, PA	43°20'N 80°00'W 40°40'N 80°00'W	9 mo. 297 km S0°W
4	0880-27980 UM	AHY U 05 01	26/06/77 02/11/78	Delta Marsh, MB Jutiapa, GUATEMALA	50°10'N 98°20'W 14°10'N 89°50'W	1 yr. 5 mo. 4081 km S14°E
5	2121-56728 ARS	AHY U 03 00	29/05/94 22/06/94	Last Mountain Lake, SK 7 km east of Penzance, SK	51°20'N 105°10'W 51°00'N 105°10'W	23 dy. 37 km S0°W
6	0620-69536 LPBO	U U 00 00	10/05/63 19/05/63	Long Point, ON 13 km west of Shawnville, PA	42°30'N 80°00'W 42°00'N 80°00'W	9 dy. 56 km S0°W
7	1910-52290 DC	AHY F 07 99	28/07/92 04/08/95	Calgary, AB Calgary, AB	51°00'N 114°00'W 51°00'N 114°00'W	3 yr. 1 mo. 0 km

Summary of banding statistics: Warbling Vireo

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			5178
No. encountered per 1000 banded (1955–1995)			1
Total no. encountered (1921–1995)	2	6	9
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	21	37	37
No. of Canadian-banded birds moving > 0 km	2	3	6
Mean movement > 0 km of Canadian-banded birds	278	1377	790
Maximum movement from all encounters (km)	296	4080	4080
% recovered (encountered dead)	50	33	44
% direct recoveries	0	16	22
% encountered during banding operations	50	66	55

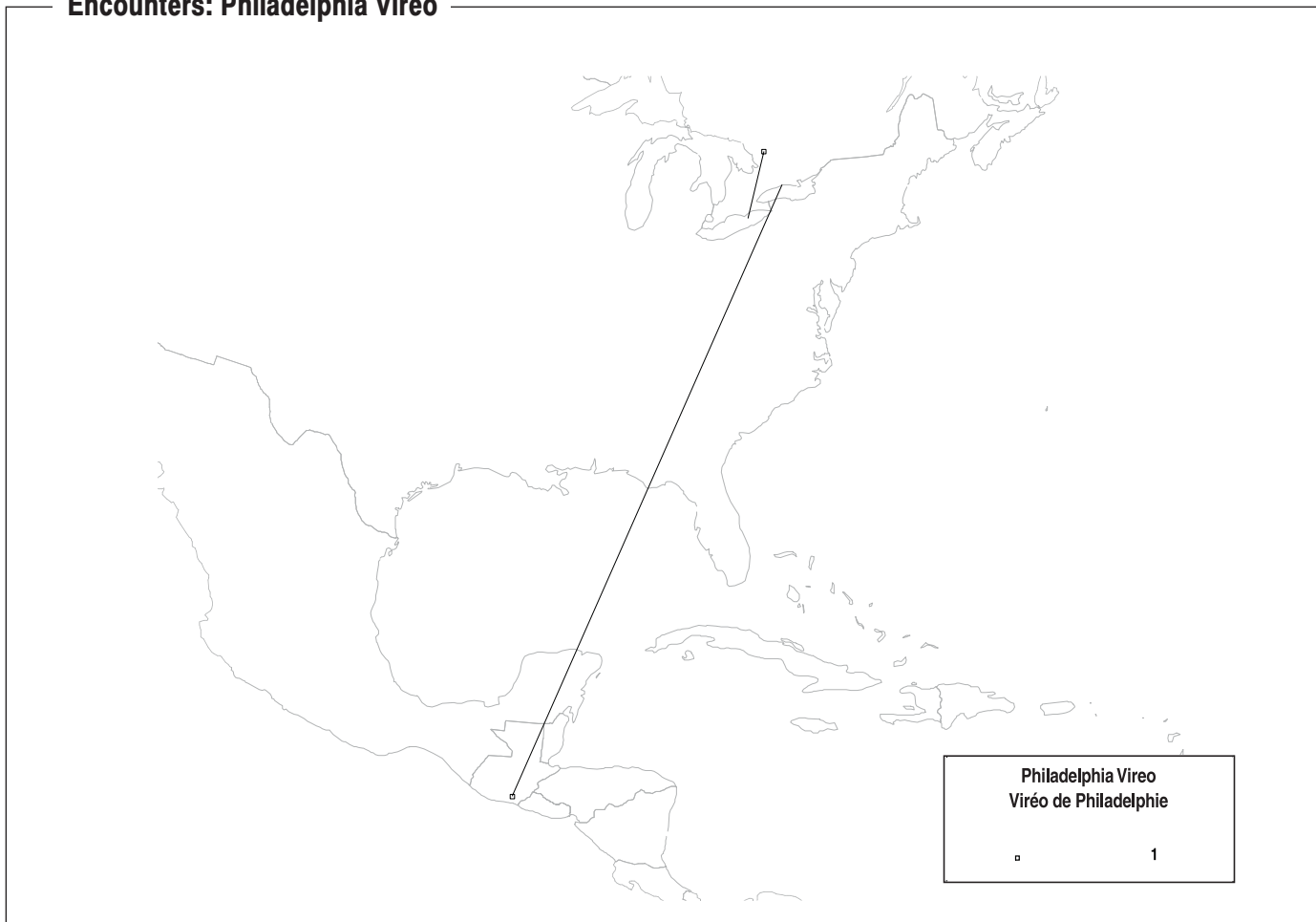
Banding effort: Warbling Vireo



Top banders: LPBO, UM, ETJ, BBO, IPBO

Philadelphia Vireo (*Vireo philadelphicus*) 626.0

Encounters: Philadelphia Vireo



The Philadelphia Vireo breeds from northern Alberta east through forested zones to New Brunswick and Maine; it does not breed in the southern Prairie Provinces. The species winters (October–April) in southern Central America primarily in southern Guatemala, Belize, Honduras, northern Nicaragua, Costa Rica, and western and central Panama (Moskoff and Robinson 1996).

During spring migration, Philadelphia Vireos depart the winter range relatively late (mid- to late April), arriving on the Canadian breeding range in late May and early June. Record 1 shows an example of a bird still on or near its

wintering site on 13 April. This bird also holds the longevity record for Philadelphia Vireos, with a minimum age of eight years and 10 months (Klimkiewicz et al. 1983).

Adults have been detected on previous years' breeding sites (Moskoff and Robinson 1996). The second encounter below suggests movement between nestings, but in late May the bird could still have been migrating.

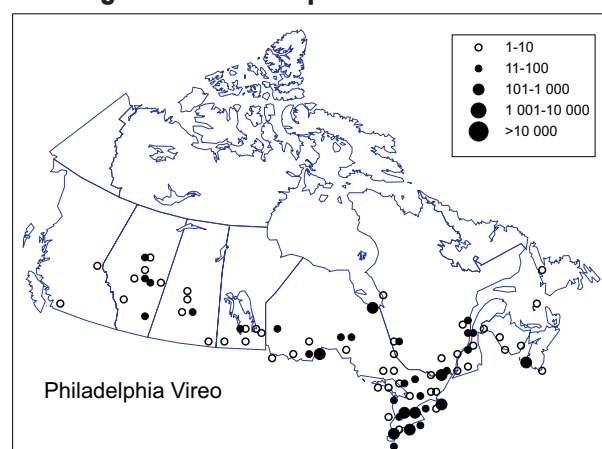
Encounter records: Philadelphia Vireo

1	0620-75810 FS	AHY U 05 01	28/08/62 13/04/70	Bewdley, ON Chiquimulilla, GUATEMALA	44°00'N 78°10'W 14°10'N 90°20'W	7 yr. 8 mo. 3517 km S23°W
2	1780-45131 LPBO	AHY U 00 14	18/05/87 23/05/90	Long Point, ON Burks Falls, ON	42°30'N 80°20'W 45°30'N 79°20'W	3 yr. 0 mo. 343 km N13°E

Summary of banding statistics: Philadelphia Vireo

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3366
<i>No. encountered per 1000 banded (1955–1995)</i>			0.6
Total no. encountered (1921–1995)	0	2	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	92	92
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds	–	1930	1930
Maximum movement from all encounters (km)	–	3516	3516
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

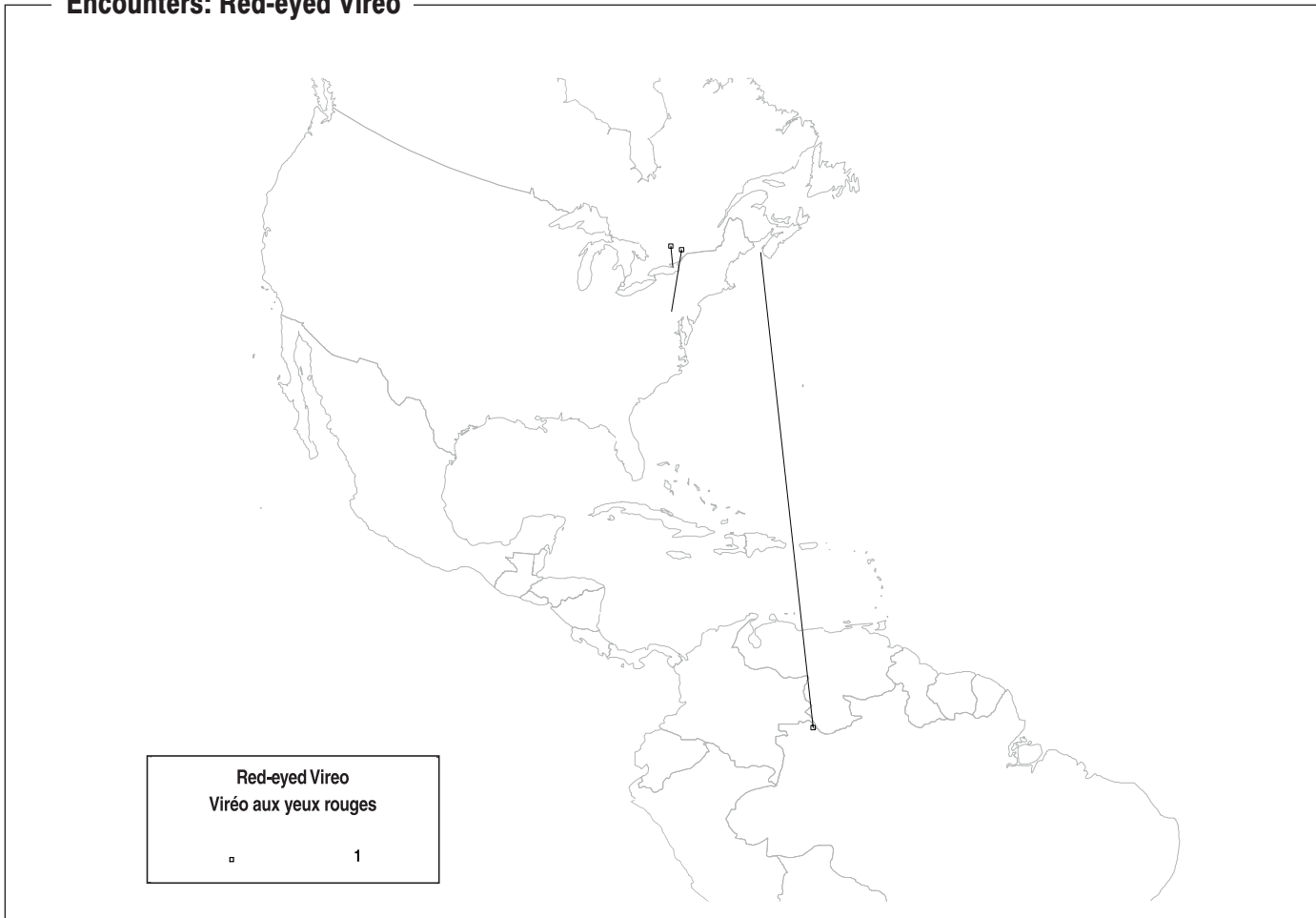
Banding effort: Philadelphia Vireo



Top banders: LPBO, PEPO, RIGM, MJW, JBMi

Red-eyed Vireo (*Vireo olivaceus*) 624.0

Encounters: Red-eyed Vireo



The Red-eyed Vireo is a forest breeder in the northeastern and northern U.S. and from Vancouver Island across central Canada to Newfoundland. It winters from eastern Mexico south through the northern two-thirds of South America.

Breeding site fidelity appears to be high in this species, because 16 (73%) of the encounters involved adult birds returning to the same breeding site in subsequent years (e.g., record 1).

The oldest Canadian bird (record 2) also appears to have been site-faithful, but it was both banded and encountered during fall migration. Two other birds banded

during migration are shown in record 3 (a bird banded in Pennsylvania and encountered the next summer in Ontario) and record 4 (the only long-distance encounter). The latter bird was banded in Nova Scotia and encountered 86 days later in Brazil, presumably on its wintering range. At a minimum, this vireo had to have travelled 54 km per day (4769 km in 86 days).

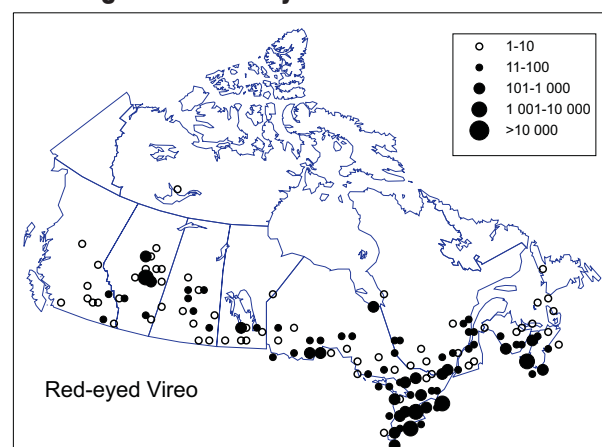
Encounter records: Red-eyed Vireo

1	0500-12922	AHY U	03/06/59	near Rivière-Ouell, QC	47°20'N 70°00'W	2 yr. 0 mo.
	RMcN	00 99	10/06/61	near Rivière-Ouell, QC	47°20'N 70°00'W	0 km
2	0520-47032	HY U	09/09/65	Clover Bar, AB	53°30'N 113°20'W	7 yr. 0 mo.
	ETJ	07 89	13/09/72	Edmonton, AB	53°30'N 113°30'W	11 km N90°W
3	0840-87667	HY U	20/09/74	Carlisle, PA	40°10'N 77°10'W	11 mo.
	CJR	04 14	06/08/75	Ottawa, ON	45°20'N 75°40'W	588 km N12°E
4	0890-56127	AHY U	21/09/79	Westport, NS	44°10'N 66°20'W	3 mo.
	RRA	05 01	16/12/79	near Uaupés, BRAZIL	1°20'N 67°10'W	4769 km S1°W

Summary of banding statistics: Red-eyed Vireo

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			19 325
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	5	13	22
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	84	36	84
No. of Canadian-banded birds moving > 0 km	1	1	3
Mean movement > 0 km of Canadian-banded birds	11	204	1 661
Maximum movement from all encounters (km)	588	204	4 768
% recovered (encountered dead)	40	7	18
% direct recoveries	20	0	9
% encountered during banding operations	60	84	77

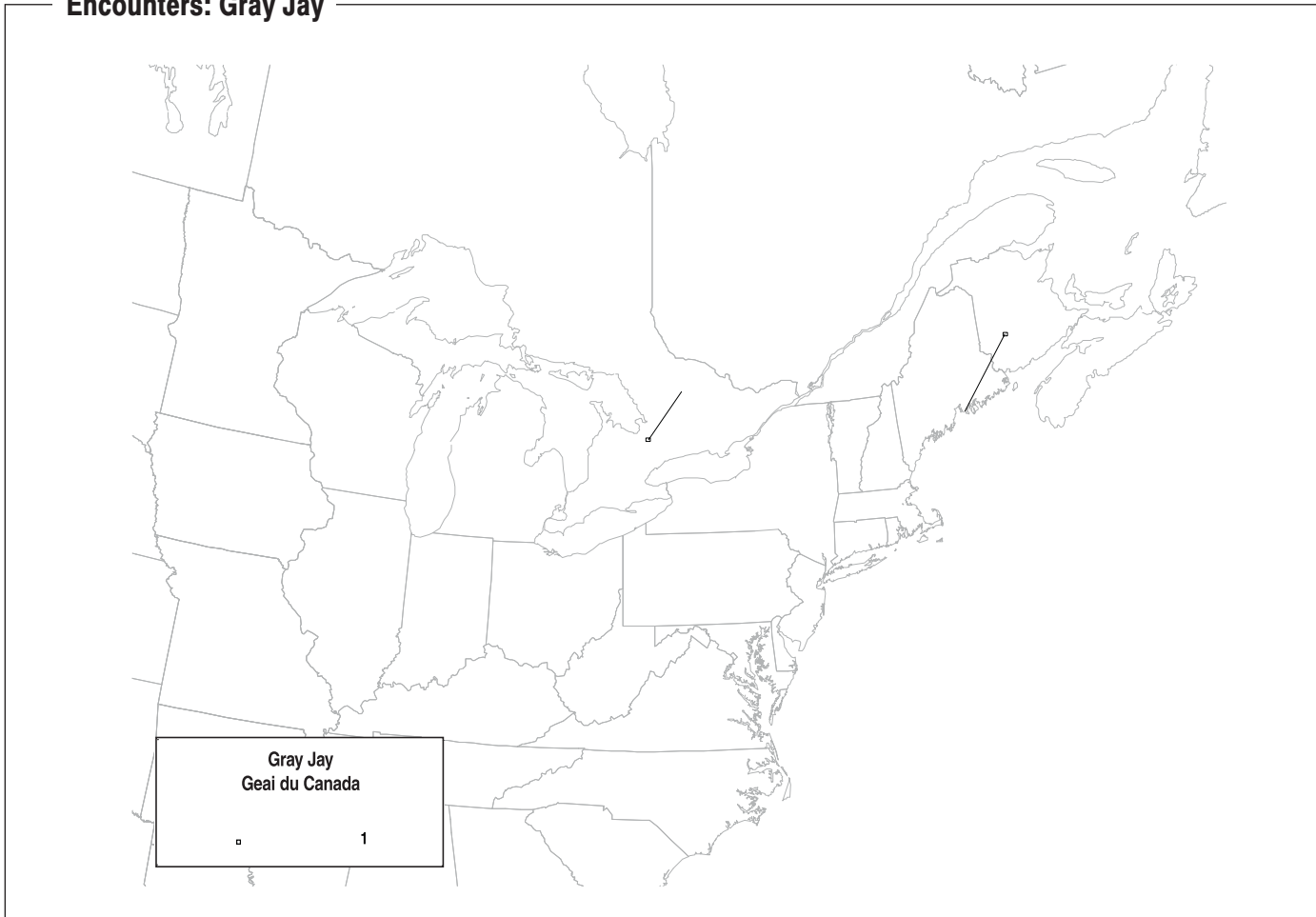
Banding effort: Red-eyed Vireo



Top banders: LPBO, PEPO, RRA, ETJ, JBMi

Gray Jay (*Perisoreus canadensis*) 484.0

Encounters: Gray Jay



The Gray Jay is a permanent resident across Canada except in the Prairie Provinces and southern Ontario. It breeds north to about the treeline and in the northern Pacific and Rocky Mountain states. It winters mostly within the breeding range.

Most of the Canadian banding of this species has been at a long-term study site in Algonquin Park, in Ontario (see effort map).

Most encounters show zero or trivial movement (e.g., records 1 and 2, with record 2 representing the longest period between banding and encounter). The bird in record 3 (the

encounter is not mapped because the exact location is missing) was found dead south of the normal range of the Gray Jay; the encounter probably resulted from one of the irregular winter movements to which the species is occasionally prone (see also records 4 and 5). Unusual numbers of encounters are reported from southern Ontario about once every 20 years (Tozer and Richards 1974). Record 5 indicates that adults may take part in these irruptions.

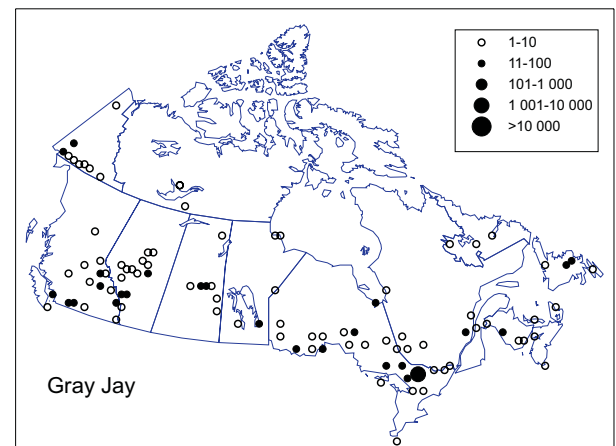
Encounter records: Gray Jay

1	0006-43977 TTMcC	HY U 00 99	10/08/35 22/09/40	Bowron Lake Provincial Park, BC Bowron Lake Provincial Park, BC	53°10'N 121°10'W 53°10'N 121°10'W	5 yr. 1 mo. 0 km
2	0693-83647 RJR	U U 07 89	31/10/68 22/10/77	Algonquin Park, ON Whitefish Lake, ON	45°30'N 78°30'W 45°30'N 78°20'W	9 yr. 0 mo. 13 km N90°E
3	0442-07625 RBL	AHY U 00 00	26/10/51 18/10/53	Iroquois Falls, ON Niagara Region, ON	48°40'N 80°40'W 42°??'N 79°??'W	2 yr. 0 mo.
4	0693-83654 RJR	U U 05 50	11/12/68 24/11/71	Algonquin Park, ON Barrie, ON	45°30'N 78°30'W 44°20'N 79°40'W	2 yr. 11 mo. 159 km S36°W
5	0552-00798 MCM	AHY U 00 04	17/10/60 30/11/63	Brooksville, ME Zealand, NB	44°20'N 68°40'W 46°00'N 66°50'W	3 yr. 1 mo. 235 km N37°E

Summary of banding statistics: Gray Jay

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			2197
<i>No. encountered per 1000 banded (1955–1995)</i>			20
Total no. encountered (1921–1995)	9	48	80
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	73	86	108
No. of Canadian-banded birds moving > 0 km	2	5	17
Mean movement > 0 km of Canadian-banded birds	21	141	66
Maximum movement from all encounters (km)	24	632	632
% recovered (encountered dead)	22	31	32
% direct recoveries	44	25	27
% encountered during banding operations	44	64	60

Banding effort: Gray Jay



Top banders: RDS, RJR, MRL, LPBO, RBCM

Steller's Jay (*Cyanocitta stelleri*) 478.0

Encounters: Steller's Jay

Steller's Jay Geai de Steller	
◻	1
◻	2-4



Steller's Jay is resident in the western U.S. and in western and southeastern British Columbia and southwestern Alberta. Steller's Jays occasionally wander east of their summer range as far as Saskatchewan (Salt and Salt 1976).

Most encounters (47 or 65%) indicated no movement. Only 11 (15%) showed movements of more than 50 km; the more interesting of these are listed below (records 1–5). Adult Steller's Jays usually stay on territory year-round (e.g., record 6); however, there are occasional irruptions, presumably in periods of low food supply, in which birds

move up to several hundred kilometres (Morrison and Yoder-Williams 1984, Stewart and Shepard 1994). Presumably the more distant encounters are of birds either banded or encountered during irruptions.

Twenty birds were encountered due to trapping or shooting, and another 22 were returns to the banding site (e.g., record 6, the record with the longest period between banding and encounter).

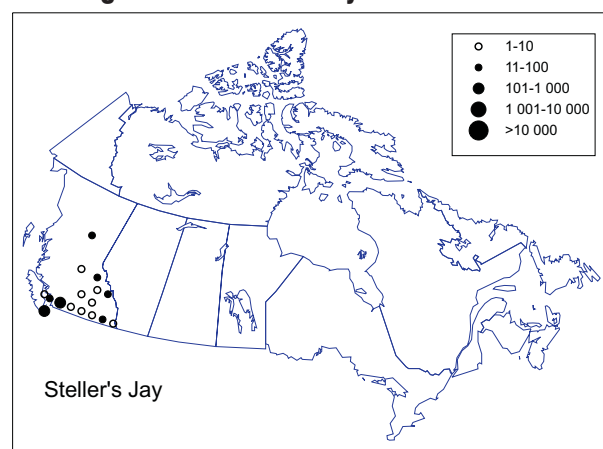
Encounter records: Steller's Jay

1	0005-06927 TTMcC	HY U 00 98	22/09/28 01/10/28	Barkerville, BC near 100 Mile House, BC	53°00'N 121°30'W 51°40'N 120°50'W	1 mo. 155 km S17°E
2	0005-89157 SAL	AHY U 00 20	06/10/32 ST/03/34	Summerland, BC near Lake Adams, BC	49°30'N 119°40'W 51°10'N 118°50'W	1 yr. 5 mo. 195 km N17°E
3	0023-91554 IRG	AHY F 00 00	05/11/36 27/08/37	Burrard Inlet, BC Darrington, WA	49°10'N 123°00'W 48°10'N 121°30'W	9 mo. 157 km S45°E
4	0393-02046 FAD	AHY U 00 04	09/12/40 12/05/41	Port Hardy, BC Burrard Inlet, BC	50°40'N 127°30'W 49°10'N 123°00'W	5 mo. 363 km S64°E
5	1383-67342 CWS-BC	HY U 03 00	08/06/89 11/09/89	Cloverdale, BC Horse Lake, BC	49°00'N 122°40'W 51°30'N 121°10'W	3 mo. 298 km N20°E
6	0364-01502 GH	AHY U 00 99	17/11/35 05/10/40	Cowichan Station, BC Cowichan Station, BC	48°40'N 123°40'W 48°40'N 123°40'W	4 yr. 11 mo. 0 km

Summary of banding statistics: Steller's Jay

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			635
<i>No. encountered per 1000 banded (1955–1995)</i>			29
Total no. encountered (1921–1995)	21	43	73
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	31	59	59
No. of Canadian-banded birds moving > 0 km	8	13	26
Mean movement > 0 km of Canadian-banded birds	75	105	83
Maximum movement from all encounters (km)	298	363	363
% recovered (encountered dead)	71	55	61
% direct recoveries	66	58	60
% encountered during banding operations	9	41	29

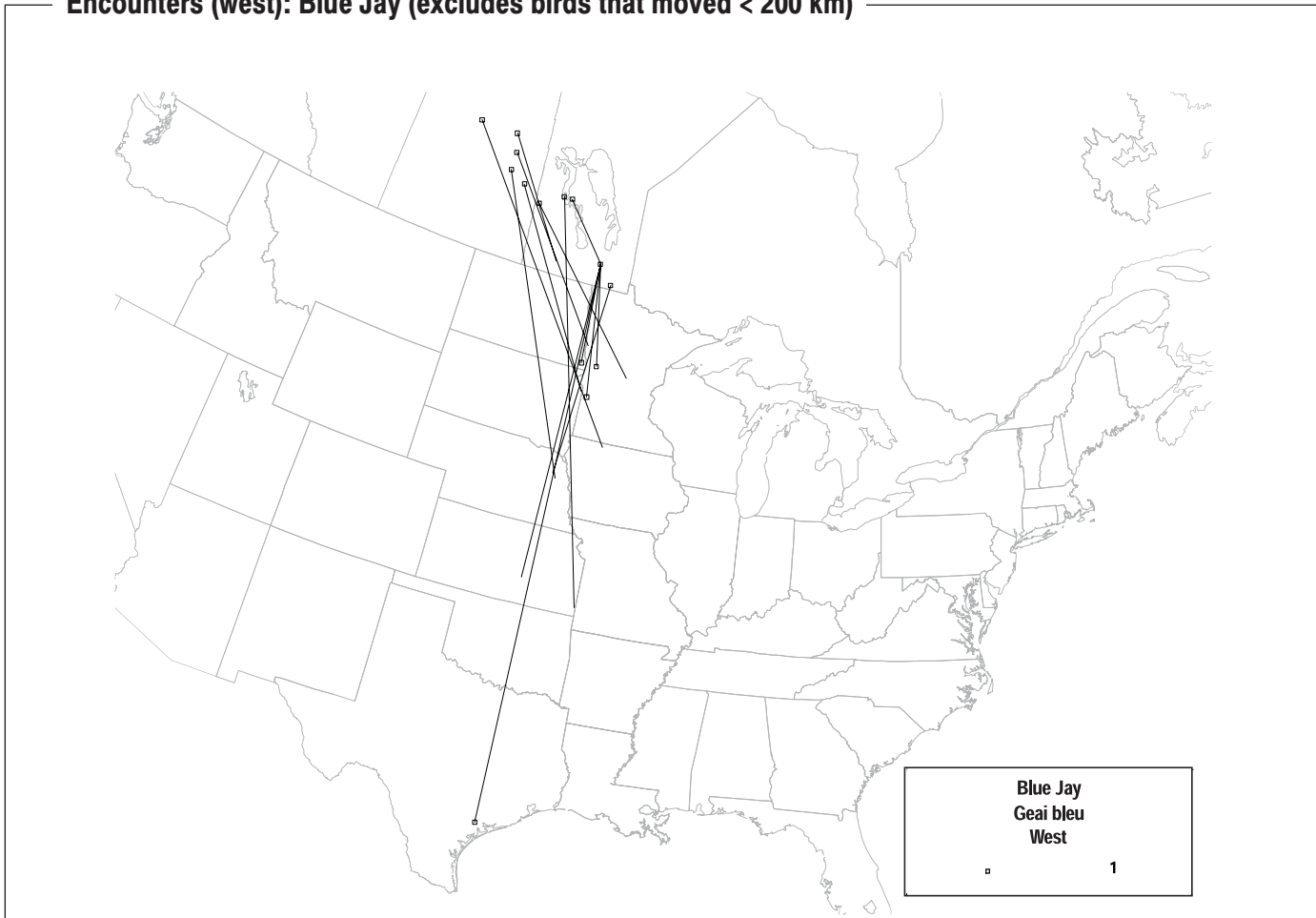
Banding effort: Steller's Jay



Top banders: CWS-BC, JGW, RFH, BCWB, HMi

Blue Jay (*Cyanocitta cristata*) 477.0

Encounters (west): Blue Jay (excludes birds that moved < 200 km)



The Blue Jay breeds across southern Canada from west-central Alberta east to Newfoundland, as well as in the eastern two-thirds of the U.S. It winters within the breeding range. Northern populations are partly migratory to the southern U.S. and Pacific Northwest.

Because there are so many encounters for this species, the maps exclude all birds that moved less than 200 km (the normal cut-off is 100 km). (See also block size with eastern map and section 4.2 for explanation.)

Movements were largely north–south or northwest–southeast for birds from the Prairie Provinces and southwest–northeast for eastern Canadian jays. There were five examples of jays banded in winter (December–February) that were encountered in a different state or province in another winter, including an adult banded in Ontario and shot the following winter in Tennessee

(record 1). Many more birds banded in winter or travelling to or from a wintering area in the U.S. in one year were found in a different wintering area in Canada in a subsequent year (133 in all, e.g., record 2). This suggests irregular migration (movement in some winters but not in others), probably in response to year-to-year changes in natural food supplies (Smith 1979, Stewart 1982, and references therein). One bird heading north in spring moved at least 151 km per day (record 3).

The cluster of birds moving northeast from eastern Lake Superior (see eastern map) included 10 birds banded as part of an intensive spring migration study at Whitefish Point, Michigan, and subsequently captured in fur traps in northern Ontario and Quebec (Carpenter et al. 1990). Only one was encountered on James Bay (record 4, the encounter shown on the map to represent this group of records); the rest of the birds were found farther south.

Encounters (east): Blue Jay (block size = 6.1°; excludes birds that moved < 200 km)



Excluding birds that were both banded and encountered during the breeding season and summer (June–August), half of the encountered jays banded in their first year of life were encountered in a different state or province (e.g., record 5), while only 30% of encountered jays banded as adults moved between jurisdictions (records 1–4, 6–9). In addition, hatch-year-banded birds moved farther: 51% moved over 100 km and 32% moved over 500 km (versus 30% and 14% respectively for after-hatch-year-banded birds). All these differences are statistically significant, suggesting that young

birds are more mobile. (Note: The table of banding statistics shows equal movement of age groups in Canadian-banded birds; the evidence for longer-distance movement by hatch-year birds is based on U.S. bandings of Canadian-breeding jays on migration and in the winter.) The age of the jay that moved the farthest (record 10) was not determined.

The longest period between banding and encounter was nearly 14 years (see record 11).

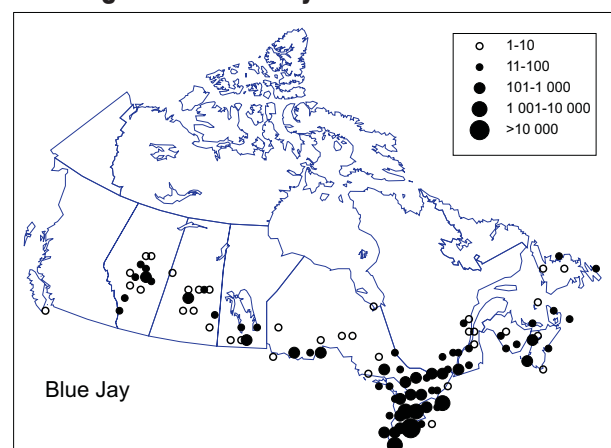
Encounter records: Blue Jay

1	0523-58411 LdeK	AHY F 00 01	03/01/56 18/12/57	Rutherglen, ON Henderson, TN	46°10'N 79°00'W 35°20'N 88°30'W	1 yr. 11 mo. 1445 km S37°W
2	0523-28582 FSW	ASY U 05 04	15/03/72 15/12/72	18 km south of Keene, VA Causapschal, QC	37°40'N 78°30'W 48°20'N 67°10'W	9 mo. 1500 km N34°E
3	1163-79460 TMS	AHY U 03 00	20/03/79 99/03/79	Pittsburg, KS 11 km east of Duck River, MB	37°20'N 94°40'W 51°50'N 100°00'W	max. 11 dy. 1667 km N13°W
4	0732-40460 TWC	AHY U 07 89	24/05/85 29/06/85	11 km east of Grand Marais, MI 27 km northeast of Moosonee, ON	46°40'N 84°50'W 51°20'N 80°20'W	1 mo. 614 km N31°E
5	0813-21205 LGL	HY U 05 56	25/07/65 ??/04/66	Scarborough, ON Mosleys Pond, KY	43°40'N 79°10'W 36°40'N 87°00'W	1024 km S43°W
6	0763-01391 JDC	ASY U 05 00	27/04/71 99/11/71	Donalds, SC near Moncton, NB	34°20'N 82°20'W 45°50'N 64°40'W	7 mo. 1967 km N44°E
7	0553-52244 MLJ	AHY U 00 01	31/01/56 99/10/56	Superior, IA Cookson, SK	43°20'N 94°50'W 53°30'N 106°10'W	9 mo. 1404 km N32°W
8	0963-05765 CHR	AHY U 03 04	06/08/68 25/11/68	Toronto, ON Mer Rouge, LA	43°40'N 79°20'W 32°40'N 91°40'W	3 mo. 1629 km S45°W
9	0842-88392 REL	AHY U 05 00	23/04/86 09/03/87	Ooltewah, TN Sherbrooke, QC	35°00'N 85°00'W 45°20'N 71°50'W	11 mo. 1601 km N40°E
10	1013-61350 LTS	U U 07 20	06/08/76 30/12/76	Winnipeg, MB Rasin, TX	49°50'N 97°00'W 28°40'N 97°00'W	4 mo. 2356 km S0°W
11	0523-56724 WJM	AHY U 05 00	18/11/55 30/10/69	Armdale, NS Armdale, NS	44°30'N 63°30'W 44°30'N 63°30'W	13 yr. 11 mo.

Summary of banding statistics: Blue Jay

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			27 007
No. encountered per 1000 banded (1955–1995)			12
Total no. encountered (1921–1995)	72	480	695
No. encountered from foreign bandings	11	126	160
Maximum period from banding to encounter (mo.)	154	167	167
No. of Canadian-banded birds moving > 0 km	18	108	171
Mean movement > 0 km of Canadian-banded birds	252	259	286
Maximum movement from all encounters (km)	1 114	1 967	2 356
% recovered (encountered dead)	66	58	62
% direct recoveries	22	24	22
% encountered during banding operations	30	37	33

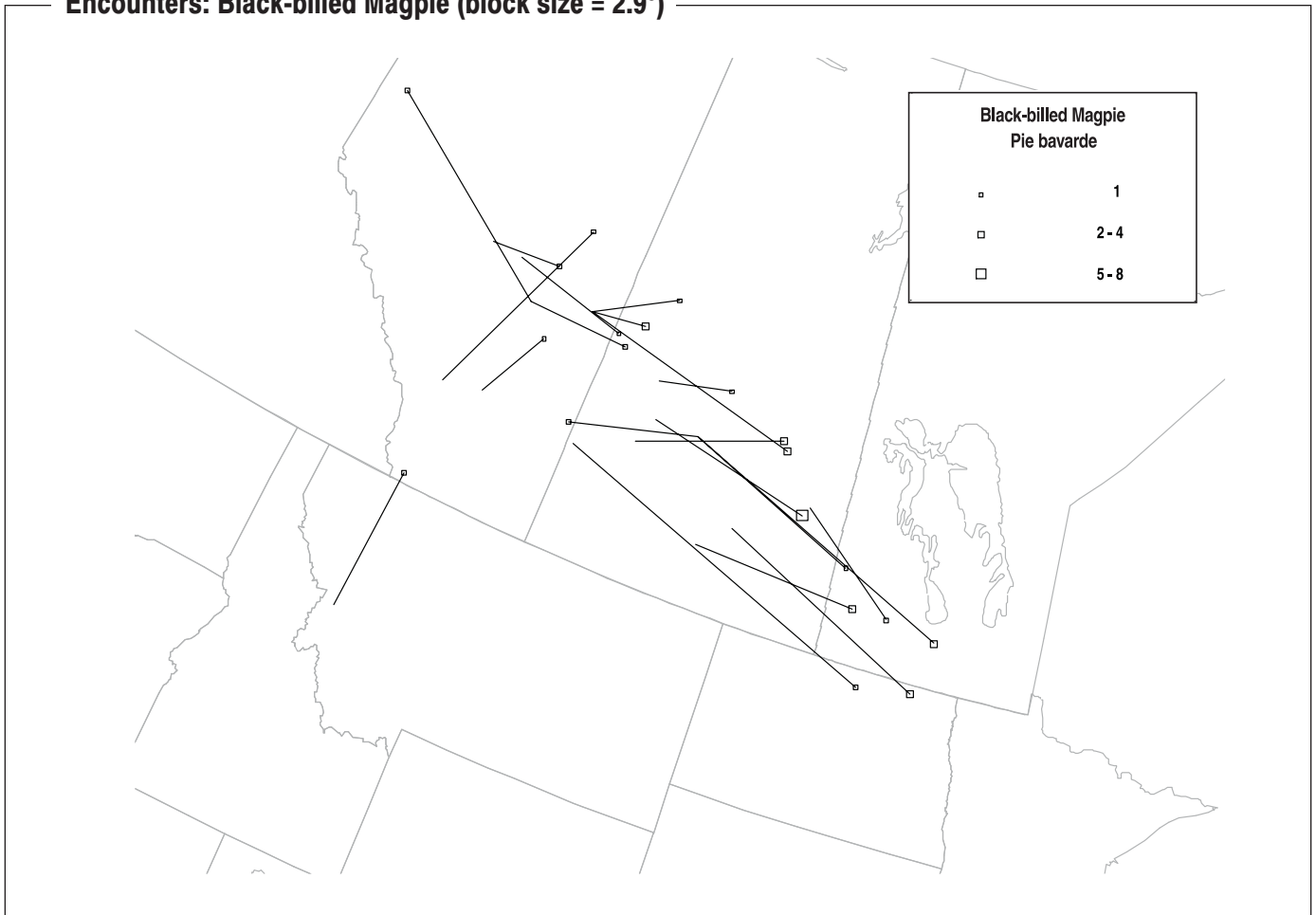
Banding effort: Blue Jay



Top banders: LPBO, CHR, PPBO, LTS, CKC

Black-billed Magpie (*Pica pica*) 475.0

Encounters: Black-billed Magpie (block size = 2.9°)



The Black-billed Magpie breeds in western Canada, from southern Yukon through northern and eastern British Columbia, Alberta, Saskatchewan, and southwestern Manitoba; it also breeds in southern Alaska and south through the western U.S. to California, New Mexico, and Kansas (and in Eurasia and northwest Africa). It winters mainly within the breeding range; however, it apparently moves north and east of the breeding range and has expanded the wintering range in those directions over the last 50 years.

Over 99% of encounters were of birds banded in Alberta or Saskatchewan; only the bird in record 1 came north from a U.S. banding site. Many encounters were close to the banding site, including records 2 and 3 (the latter shows the

longest period between banding and encounter). Three birds banded as locals were encountered in North Dakota (records 4–6), and one banded in Montana was encountered in fall in Alberta (record 1). Two of 12 Alberta birds (record 7) and the one from Montana (record 1) moved northward, but most of the magpies that moved had a strong west–east component in their movements and remained within Canada (records 8–12).

Over 60% of encountered birds were reported shot (e.g., records 3, 5, and 12); another 14% that were found dead or injured may also have been shot.

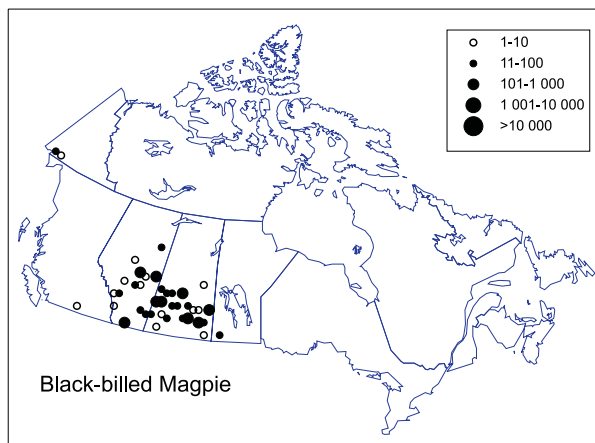
*Black-billed Magpie***Encounter records: Black-billed Magpie**

1	0653-07422 MCWURU	HY M 00 47	28/12/60 13/10/61	Stevensville, MT Twin Butte, AB	46°30'N 114°00'W 49°10'N 113°50'W	10 mo. 297 km N2°E
2	0374-04706 FHP	HY U 00 0	07/06/37 LT/01/42	Edmonton, AB east of Edmonton, AB	53°30'N 113°30'W 53°30'N 113°20'W	4 yr. 7 mo. 11 km N90°E
3	0524-81846 CSH	L U 05 01	23/06/67 20/06/72	Speers, SK Hafford, SK	52°40'N 107°30'W 52°40'N 107°20'W	5 yr. 12 km N90°E
4	0694-25934 CSH	L U 05 00	20/06/91 15/12/91	32 km south of Alsask, SK 11 km east of Overly, ND	51°00'N 109°50'W 48°40'N 100°00'W	6 mo. 752 km S74°E
5	0494-67086 CSH	L U 00 01	18/06/61 29/10/61	18 km south of Markinch, SK Milton, ND	50°40'N 104°20'W 48°30'N 98°00'W	4 mo. 517 km S65°E
6	0564-08906 LS	L U 05 04	17/06/75 05/12/76	Craven, SK Wales, ND	50°40'N 104°40'W 48°50'N 98°30'W	1 yr. 6 mo. 488 km S68°E
7	0344-01139 WRS	AHY U 00 05	30/04/49 21/09/49	Calgary, AB Lac La Biche, AB	51°00'N 114°00'W 54°40'N 111°50'W	5 mo. 433 km N19°E
8	0494-69811 MCH	L U 00 04	01/06/58 17/01/59	Vermilion, AB Archerwill, SK	53°20'N 110°50'W 52°20'N 103°50'W	7 mo. 484 km S80°E
9	0524-75405 JBM	L U 00 04	26/06/62 26/11/62	Flat Lake, SK near Dauphin, MB	52°20'N 108°40'W 51°00'N 100°20'W	5 mo. 594 km S79°E
10	0524-81506 CSH	L U 11 04	09/06/65 19/11/67	west of Saskatoon, SK north of St. Claude, MB	52°00'N 106°40'W 49°40'N 98°20'W	2 yr. 5 mo. 640 km S69°E
11	0363-39277 ALW	J U 00 98	30/05/39 FT/04/42	Dinant, AB Lake Glace, AB	53°00'N 112°40'W 55°20'N 119°10'W	2 yr. 11 mo. 497 km N56°W
12	0524-81867 CSH	L U 05 01	23/06/67 02/11/69	Saskatoon, SK 11 km west of Sibbald, AB	52°00'N 106°30'W 51°20'N 110°10'W	2 yr. 5 mo. 264 km S75°W

Summary of banding statistics: Black-billed Magpie

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3020
<i>No. encountered per 1000 banded (1955–1995)</i>			28
Total no. encountered (1921–1995)	109	39	156
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	60	33	60
No. of Canadian-banded birds moving > 0 km	73	10	86
Mean movement > 0 km of Canadian-banded birds	161	83	148
Maximum movement from all encounters (km)	751	433	751
% recovered (encountered dead)	95	97	96
% direct recoveries	65	89	70
% encountered during banding operations	1	2	1

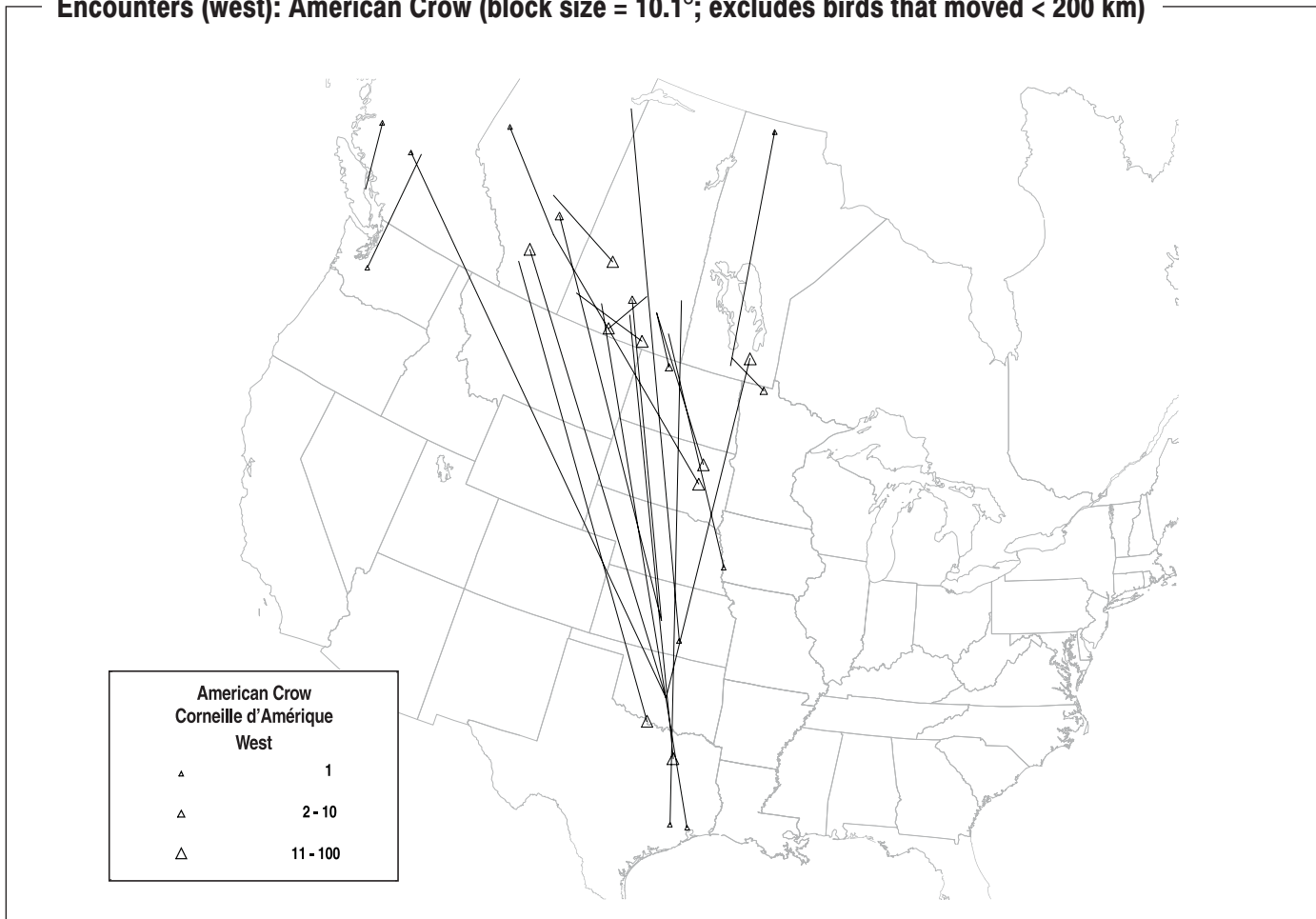
Banding effort: Black-billed Magpie



Top banders: CSH, JBM, AFWD, LS, MCH

American Crow (*Corvus brachyrhynchos*) 488.0

Encounters (west): American Crow (block size = 10.1°; excludes birds that moved < 200 km)



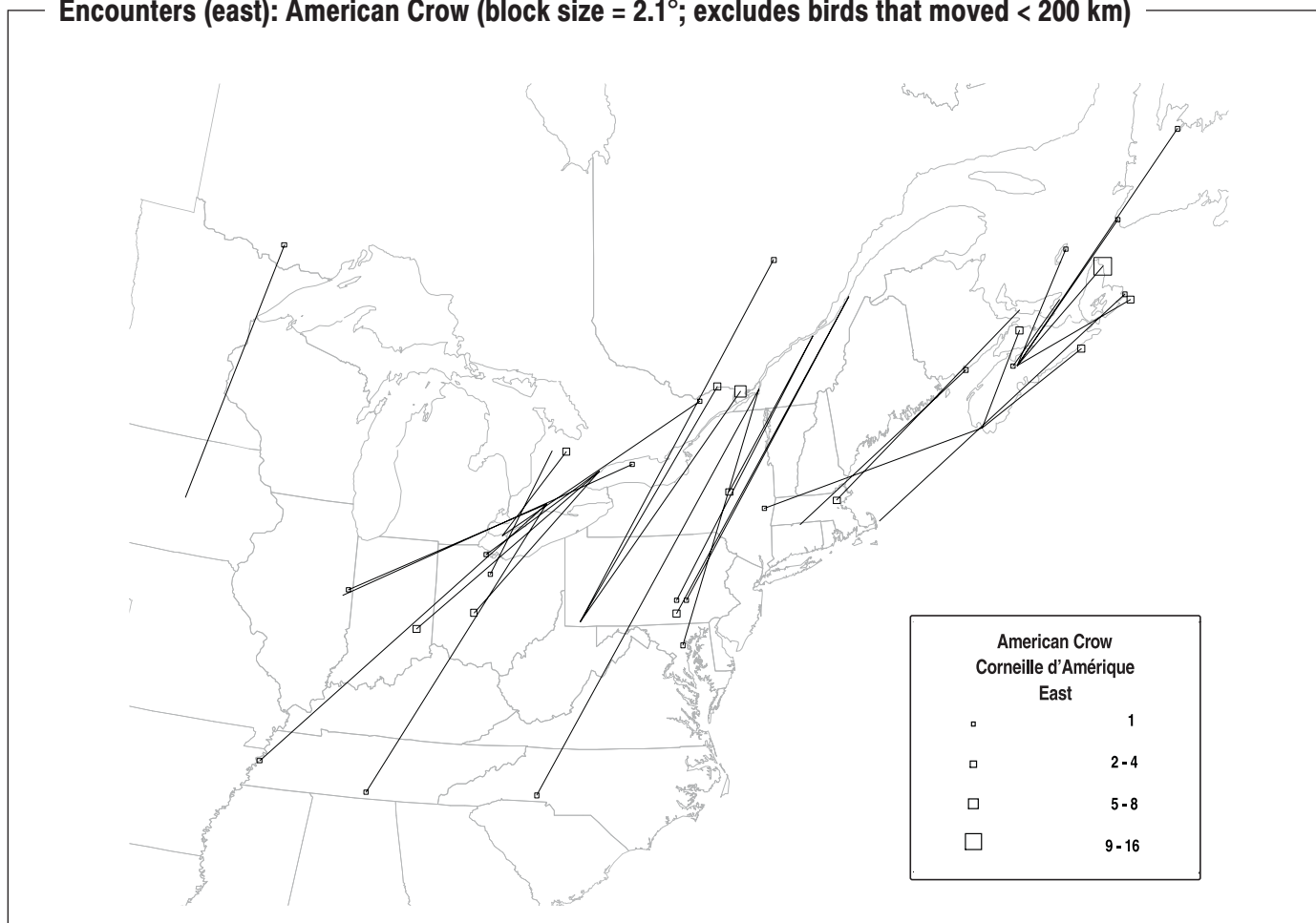
The American Crow breeds across most of the U.S. and Canada, from the southwestern Northwest Territories and eastern British Columbia east throughout the provinces, except for Labrador and north-central Quebec. It winters from southern Canada south, virtually throughout the U.S.

The encounter maps show only those birds moving more than 200 km (the normal cut-off point is 100 km) and greatly condense the encounters, particularly in the west. There, each line representing multiple records shows data from banding and encounter sites combined within 10° blocks of latitude and longitude — wider than the southern border of Saskatchewan (see section 4.2 for further details). The map depicts typical direction and distance of movement quite well, but many of the longer-distance encounters are not shown individually.

Over 70% of the encounters were of birds banded in the Prairie Provinces; over half were banded in May and June.

Encounters were spread fairly evenly through the year with a preponderance in June and July. Nearly 75% of the encountered birds were shot, which accounts for the relatively high encounter rate of this species.

There have been substantial banding efforts targeted at American Crows on their wintering grounds, and these have resulted in large numbers of Canadian encounters. A major project centred on Norman, Oklahoma, in the 1930s produced almost 60 encounters in the Prairie Provinces, which almost exactly paralleled the records showing southward movement of birds banded in the breeding area (except for record 1). Prairie-breeding crows wintered in a remarkably narrow corridor from South Dakota through Nebraska and Kansas to Oklahoma (records 2 and 3); a smaller number penetrated as far as central and eastern Texas (records 4–6). Birds banded in British Columbia, in marked contrast, were almost sedentary, with a few exceptions (records 7 and 8).

Encounters (east): American Crow (block size = 2.1°; excludes birds that moved < 200 km)


Crows encountered from Ontario eastward generally moved on a southwest–northeast axis, again with a remarkable consistency of heading. Birds originating in the lower Great Lakes region, those from the St. Lawrence Valley, and those from the Maritimes do not appear to mingle on the wintering grounds. The average displacement of eastern birds was substantially less than that of birds from the Prairie Provinces (but more than that of B.C. crows) — only two birds from Ontario went as far south as Arkansas (record 9) and Tennessee (record 10), and one from Quebec went to North Carolina (record 11). The longer-distance Maritimes encounters were of birds moving only between Nova Scotia and northeastern U.S. states (records 12 and 13) and between Nova Scotia and Newfoundland (record 14).

The migratory movement of Canadian crows (excepting those in British Columbia) contrasts with the more sedentary habits of crows in the U.S., which are more likely to be year-round residents (Stouffer and Caccamise 1991). Possibly the distance moved by the different populations is related to the harshness of winter weather.

Clapp et al. (1983) cited the bird in record 2 as the oldest American Crow on record (with a minimum age of 14 years and seven months). A crow banded in Ontario in 1954 was reported dead 28 years later (in 1983), but because no details on the date of encounter were included, this cannot be accepted as the longevity record.

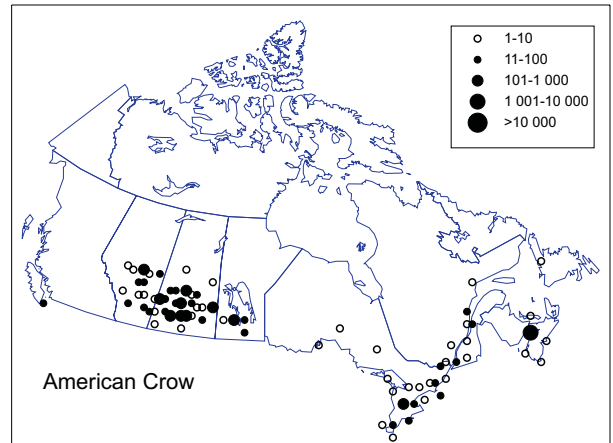
Encounter records: American Crow

1	0354-04157 SEA	AHY U 00 01	05/02/36 11/04/40	Norman, OK near Williams Lake, BC	35°10'N 97°20'W 52°00'N 123°40'W	4 yr. 2 mo. 2804 km N40°E
2	0002-11123 ALH	AHY U 00 01	16/04/24 13/01/38	Otto, MB Sherman, SD	50°40'N 98°00'W 43°40'N 96°20'W	13 yr. 9 mo. 789 km S10°E
3	0396-68397 DU	HY U 00 03	02/07/40 07/04/41	Fort Chipewyan, AB Wichita, KS	58°20'N 111°00'W 37°40'N 97°20'W	9 mo. 2505 km S29°E
4	0004-53019 WR	U U 00 00	25/08/33 22/03/34	Beaverhill Lake, AB Merit, TX	52°30'N 112°30'W 33°10'N 96°10'W	7 mo. 2593 km S37°E
5	0345-07243 GP	J U 00 01	18/06/39 07/01/40	Bashaw, AB Hewitt, TX	52°30'N 112°50'W 31°20'N 97°10'W	7 mo. 2677 km S34°E
6	0375-10193 FGB	AHY U 00 01	09/06/37 24/02/38	Lanigan, SK Greenville, TX	51°50'N 105°00'W 33°00'N 96°00'W	8 mo. 2219 km S23°E
7	0002-20223 TP	AHY U 00 01	28/01/32 29/06/32	Cape Lazo, BC near Bella Coola, BC	49°40'N 124°50'W 52°20'N 126°30'W	5 mo. 319 km N21°W
8	0485-19268 IMC	L U 00 01	17/06/50 99/11/50	near Alexis Creek, BC inexact location, WA	52°10'N 123°00'W 47°??'N 122°??'W	5 mo. c. 425 km
9	0375-19969 WL	J U 00 01	05/05/38 06/01/39	Belmont, ON Luxora, AR	42°50'N 81°10'W 35°40'N 89°50'W	8 mo. 1092 km S46°W
10	0366-51335 WL	J U 00 01	07/05/38 01/01/40	near Delaware, ON Fayetteville, TN	42°50'N 81°10'W 35°10'N 86°30'W	1 yr. 8 mo. 970 km S30°W
11	0376-13563 MRC	L U 00 01	15/05/50 02/12/50	Hampstead, QC Cherryville, NC	45°30'N 73°30'W 35°20'N 81°20'W	7 mo. 1311 km S33°W
12	0025-51217 IJP	AHY U 00 01	26/11/33 12/02/34	Argyle Harbour, NS Albany, NY	43°40'N 65°50'W 42°30'N 73°40'W	3 mo. 650 km S81°W
13	0505-56901 SEV	L U 05 01	30/05/66 24/12/66	Alexandra, PE Boylston, MA	46°10'N 63°10'W 42°20'N 71°40'W	7 mo. 812 km S61°W
14	0805-57589 AU	AHY U 05 00	29/12/78 99/04/82	Hantsport, NS Springdale, NF	45°00'N 64°10'W 49°30'N 56°10'W	3 yr. 4 mo. 784 km N47°E

Summary of banding statistics: American Crow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			4867
<i>No. encountered per 1000 banded (1955–1995)</i>			39
Total no. encountered (1921–1995)	294	332	811
No. encountered from foreign bandings	2	57	86
Maximum period from banding to encounter (mo.)	148	148	165
No. of Canadian-banded birds moving > 0 km	209	214	551
Mean movement > 0 km of Canadian-banded birds	725	330	498
Maximum movement from all encounters (km)	2703	2803	2803
% recovered (encountered dead)	97	97	97
% direct recoveries	51	47	53
% encountered during banding operations	0	0	0

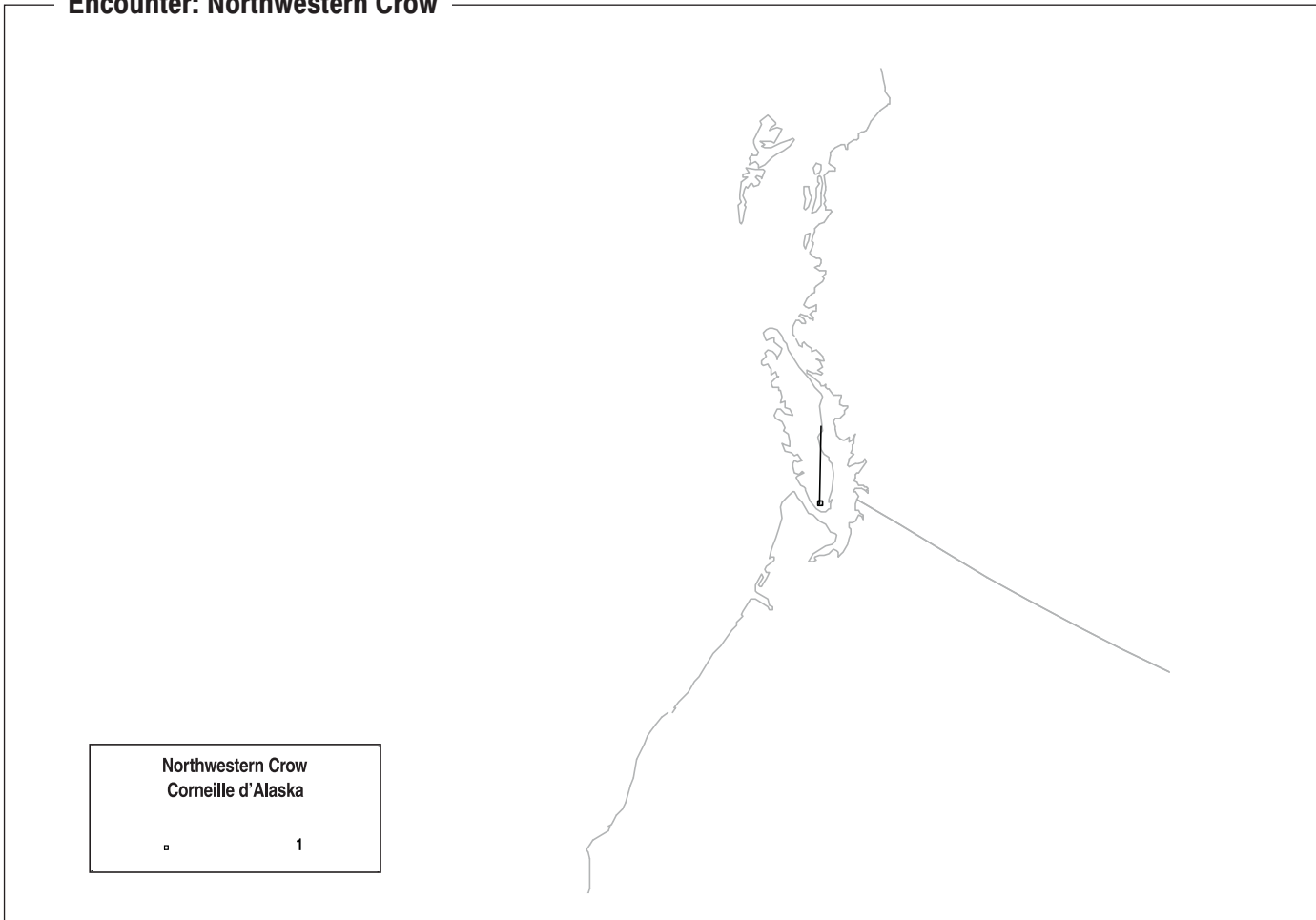
Banding effort: American Crow



Top banders: JBM, AU, CKC, JA, CSH

Northwestern Crow (*Corvus caurinus*) 489.0

Encounter: Northwestern Crow



The Northwestern Crow breeds along the Pacific coast from Kodiak Island, Alaska, to northwestern Washington State (Puget Sound area). The breeding range and winter range are essentially the same, but there are local movements following the breeding season.

The Northwestern Crow can be hunted at any time of the year. Of the 57 birds encountered, 25 (44%) were shot and 21 (37%) died of unknown causes. Motor vehicles took the lives of two birds (record 1).

Dispersal from the natal site is minimal. Four adults were encountered during the breeding season (from about April to mid-August) in the same area where they were banded

as nestlings (record 2). Four others had moved to other breeding sites, but the maximum distance moved was 22 km (record 3; the bird in record 4 may also have been on its breeding site in March, in which case it also moved a short distance). Mean movement for all ages combined was only 25 km. The dispersal distance shown in record 5 was exceptional: banded as a nestling on Mitlenatch Island, Georgia Strait, this crow was encountered 177 km away near Victoria, Vancouver Island, British Columbia.

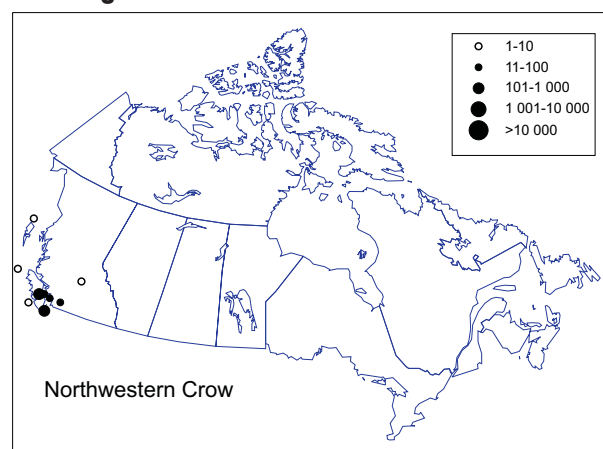
Encounter records: Northwestern Crow

1	0704-03697 SFU	L U 05 14	11/06/82 23/09/82	18 km north of Merville, BC Willow Point, BC	49°50'N 125°00'W 49°50'N 125°10'W	3 mo. 12 km N90°W
2	0704-21287 SFU	L U 05 00	13/06/86 03/08/94	18 km north of Merville, BC 18 km north of Merville, BC	49°50'N 125°00'W 49°50'N 125°00'W	8 yr. 2 mo. 0 km
3	0704-03733 RBCM	L U 05 21	30/05/78 03/06/82	18 km south of Duncan, BC Victoria, BC	48°30'N 123°10'W 48°20'N 123°20'W	4 yr. 1 mo. 22 km S34°W
4	0704-03557 RBCM	L U 05 12	01/06/79 99/03/84	18 km north of Merville, BC Willow Point, BC	49°50'N 125°00'W 49°50'N 125°10'W	4 yr. 9 mo. 12 km N90°W
5	0704-03582 RBCM	L U 03 03	11/06/79 26/11/80	18 km north of Merville, BC 18 km south of Duncan, BC	49°50'N 125°00'W 48°30'N 123°40'W	1 yr. 5 mo. 177 km S34°E
6	0025-06262 JAF	AHY U 00 01	27/01/33 15/04/45	Duncan, BC Duncan, BC	48°40'N 123°40'W 48°40'N 123°40'W	12 yr. 3 mo. 0 km

Summary of banding statistics: Northwestern Crow

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			834
No. encountered per 1000 banded (1955–1995)			59
Total no. encountered (1921–1995)	45	6	57
No. encountered from foreign bandings	0	0	1
Maximum period from banding to encounter (mo.)	139	147	147
No. of Canadian-banded birds moving > 0 km	33	2	38
Mean movement > 0 km of Canadian-banded birds	26	18	25
Maximum movement from all encounters (km)	177	18	177
% recovered (encountered dead)	97	100	98
% direct recoveries	44	50	43
% encountered during banding operations	0	0	0

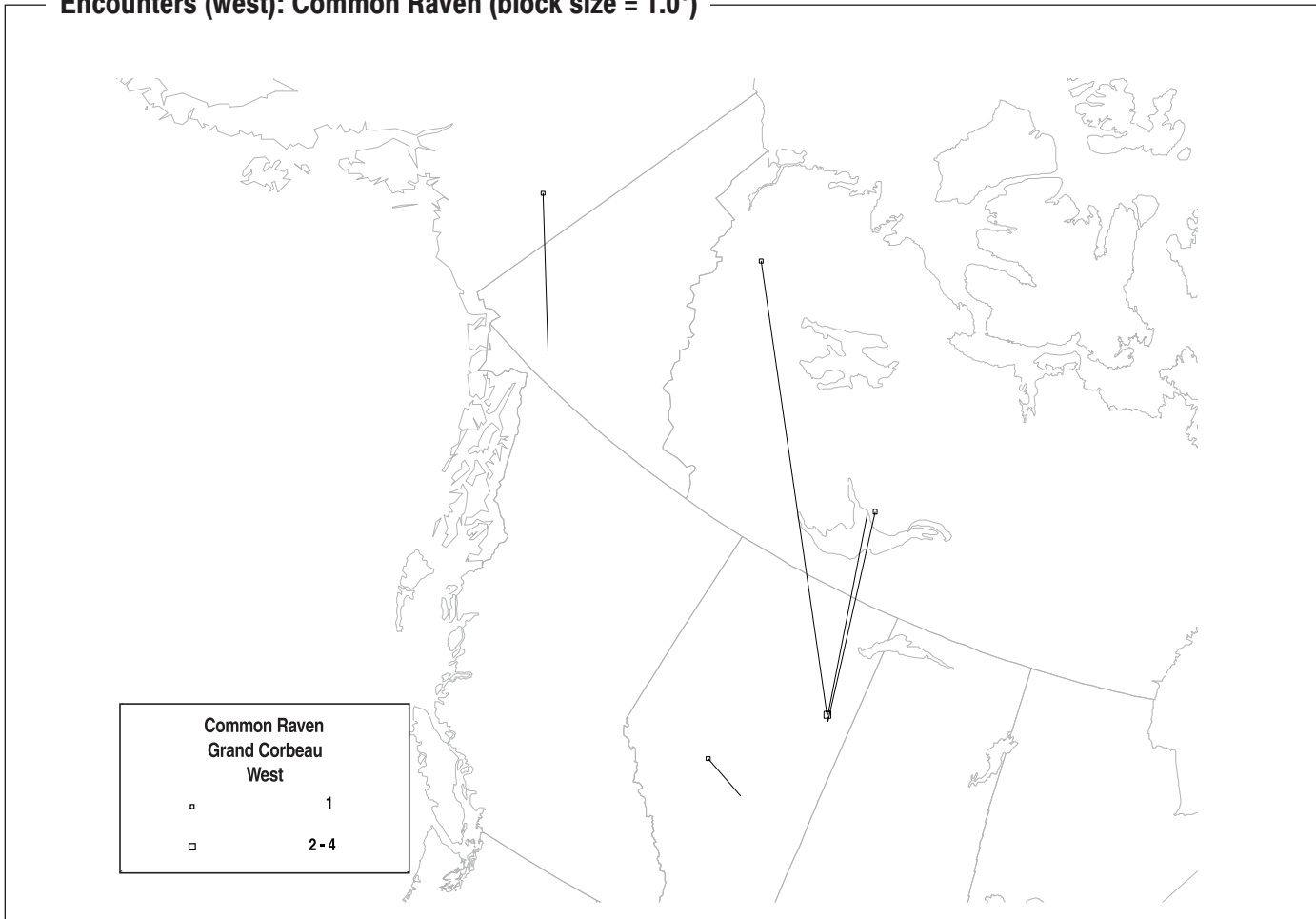
Banding effort: Northwestern Crow



Top banders: SFU, RBCM, CWS-BC, GFVT, RWC

Common Raven (*Corvus corax*) 486.0

Encounters (west): Common Raven (block size = 1.0°)



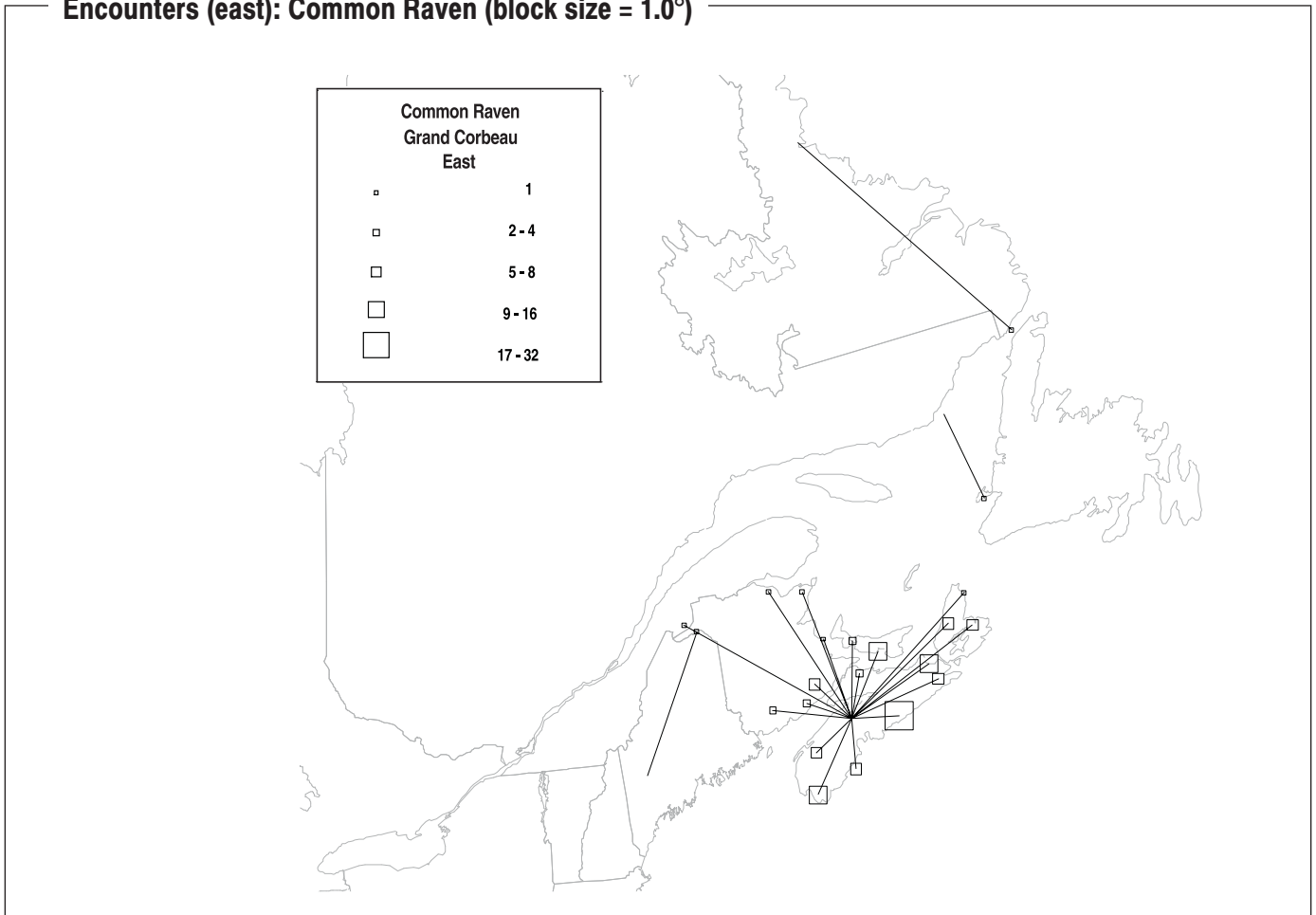
The Common Raven breeds from the high Arctic islands (locally) south throughout Canada, except on the central Prairie Provinces and in extreme southern Ontario; it also breeds through the western U.S. The Common Raven is mainly a permanent resident, wintering within the breeding range but wandering sporadically south into the northeastern U.S.

Nearly all of the encounter records for ravens (96%) are for birds banded in Nova Scotia, and 88% are for birds encountered in that province. Nearly half the birds had been shot (43%), contributing to the relatively high encounter rate for this species. Movements were relatively short in the eastern populations, as might be expected for a species

classified as a permanent resident. Although one bird from Labrador moved more than 500 km (record 1), only 7% of other eastern birds moved more than 200 km (e.g., records 2–4). Over 75% of eastern encounters were within 100 km of the site of banding.

By contrast, western ravens appear to be more mobile. The mean distance moved by these birds was 283 km (15 birds), and one (record 5) moved over 1500 km. Four encounters between the Northwest Territories and Alberta suggest that ravens may move south in some winters (record 6) but stay north for others (record 5).

Encounters (east): Common Raven (block size = 1.0°)



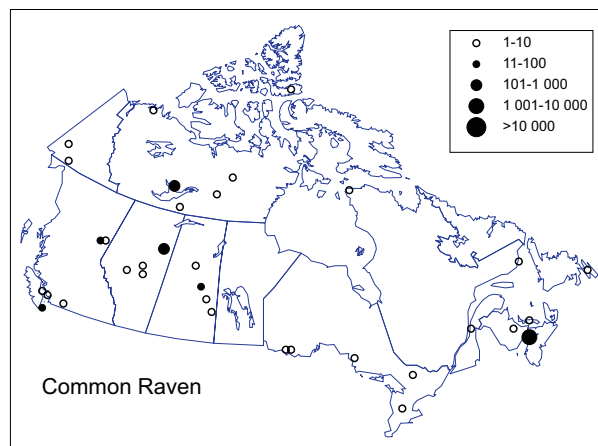
Encounter records: Common Raven

1	0005-60892 DM	U U 00 01	18/07/28 FT/12/28	near Nain, Labrador, NF near Pinware Bay, Labrador, NF	56°20'N 62°00'W 51°30'N 56°40'W	5 mo. 641 km S35°E
2	0666-39001 JBe	L U 00 05	30/06/62 27/11/62	south of Harrington Harbour, NF near Three Rock Cove, NF	50°20'N 59°30'W 48°30'N 59°00'W	5 mo. 207 km S10°E
3	0706-21322 UV	SY U 11 03	19/01/87 21/04/88	Weld, ME 11 km west of Madawaska, NB	44°40'N 70°20'W 47°20'N 68°20'W	1 yr. 3 mo. 335 km N27°E
4	1087-19939 CKC	AHY U 05 00	06/03/78 24/06/82	Wolfville, NS 11 km east of Saint-Eusèbe, QC	45°00'N 64°20'W 47°30'N 68°40'W	4 yr. 3 mo. 434 km N49°W
5	1437-80400 BDA	AHY U 07 89	16/01/89 17/02/92	27 km southeast of Fort McMurray, AB near Fort Good Hope, NT	56°30'N 111°10'W 66°40'N 130°20'W	3 yr. 1 mo. 1508 km N34°W
6	0876-60844 SC	L U 05 00	02/06/86 24/12/86	Yellowknife, NT Fort McMurray, AB	62°20'N 114°20'W 56°40'N 111°20'W	6 mo. 653 km S16°E
7	0637-40997 CKC	AHY U 05 00	5/02/67 9/10/79	Wolfville, NS Grafton, NS	45°00'N 64°20'W 45°10'N 64°40'W	12 yr. 8 mo. 32 km N55°W

Summary of banding statistics: Common Raven

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			5680
<i>No. encountered per 1000 banded (1955–1995)</i>			84
Total no. encountered (1921–1995)	109	327	485
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	113	152	152
No. of Canadian-banded birds moving > 0 km	96	287	424
Mean movement > 0 km of Canadian-banded birds	103	92	97
Maximum movement from all encounters (km)	653	1507	1507
% recovered (encountered dead)	95	93	94
% direct recoveries	31	13	18
% encountered during banding operations	1	0	0

Banding effort: Common Raven



Top banders: CKC, NTG, WNL, BDA, AU

Horned Lark (*Eremophila alpestris*) 474.0

Encounters: Horned Lark



The Horned Lark breeds throughout the U.S. and Canada except in the northernmost Queen Elizabeth Islands. It is absent or extremely local in a broad belt of forested country stretching from Alberta to Quebec, because the species prefers terrain with a minimum of ground cover. It winters in the southern parts of most provinces, south through most of the U.S. to Mexico.

The many races of this species allow the identification of wintering areas for different populations. Most Canadian larks are of the three wholly migratory races (*E. a. arctica*, which breeds in Alaska, Yukon, and mountains in British Columbia; *hoytii*, which breeds in the central Canadian

Arctic; and *alpestris*, which breeds from western Ontario east to Newfoundland). These races winter primarily in southern Canada and the northern U.S. (Beason 1995).

Eighteen of the 20 encounters of this species involved birds banded in Canada and encountered at the place of banding (apart from one showing a movement of 9 km) after intervals of up to three years and eight months (record 1). The latter bird is undoubtedly *E. a. hoytii*. The bird in record 2 is likely *E. a. alpestris*, returning to its breeding area after wintering in Massachusetts, while the identity of the bird in record 3 is uncertain. Both of the long-distance encounters were of birds banded in the U.S.

Horned Lark

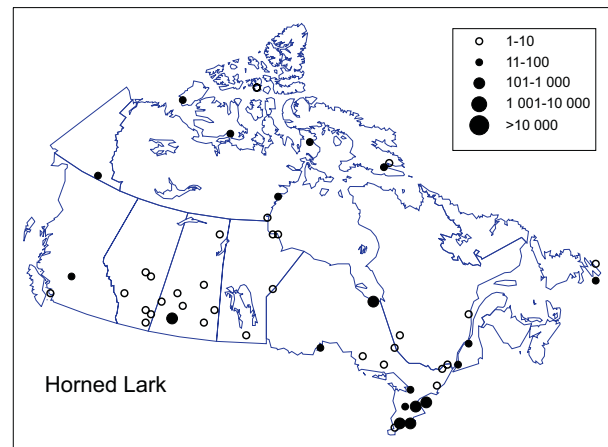
Encounter records: Horned Lark

1	0221-45966	AHY M	06/09/62	Cambridge Bay, NT	69°00'N 105°00'W	3 yr. 8 mo.
	DFP	05 01	24/05/66	Cambridge Bay, NT	69°00'N 105°00'W	0 km
2	0000-67763	U U	18/02/23	East Chop, MA	41°20'N 70°30'W	2 mo.
	AKe	00 98	18/04/23	near Stephenville, NF	48°??'N 58°??'W	c. 1235 km N49°E
3	0051-32697	U U	27/12/33	Jamestown, ND	46°50'N 98°40'W	5 yr.
	CEB	00 00	99/SP/38	near Raymore, SK	51°20'N 104°30'W	657 km N38°W

Summary of banding statistics: Horned Lark

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			2544
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	5	13	20
No. encountered from foreign bandings	0	0	2
Maximum period from banding to encounter (mo.)	24	44	44
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds	8	–	8
Maximum movement from all encounters (km)	8	0	1234
% recovered (encountered dead)	100	7	40
% direct recoveries	80	0	25
% encountered during banding operations	0	92	60

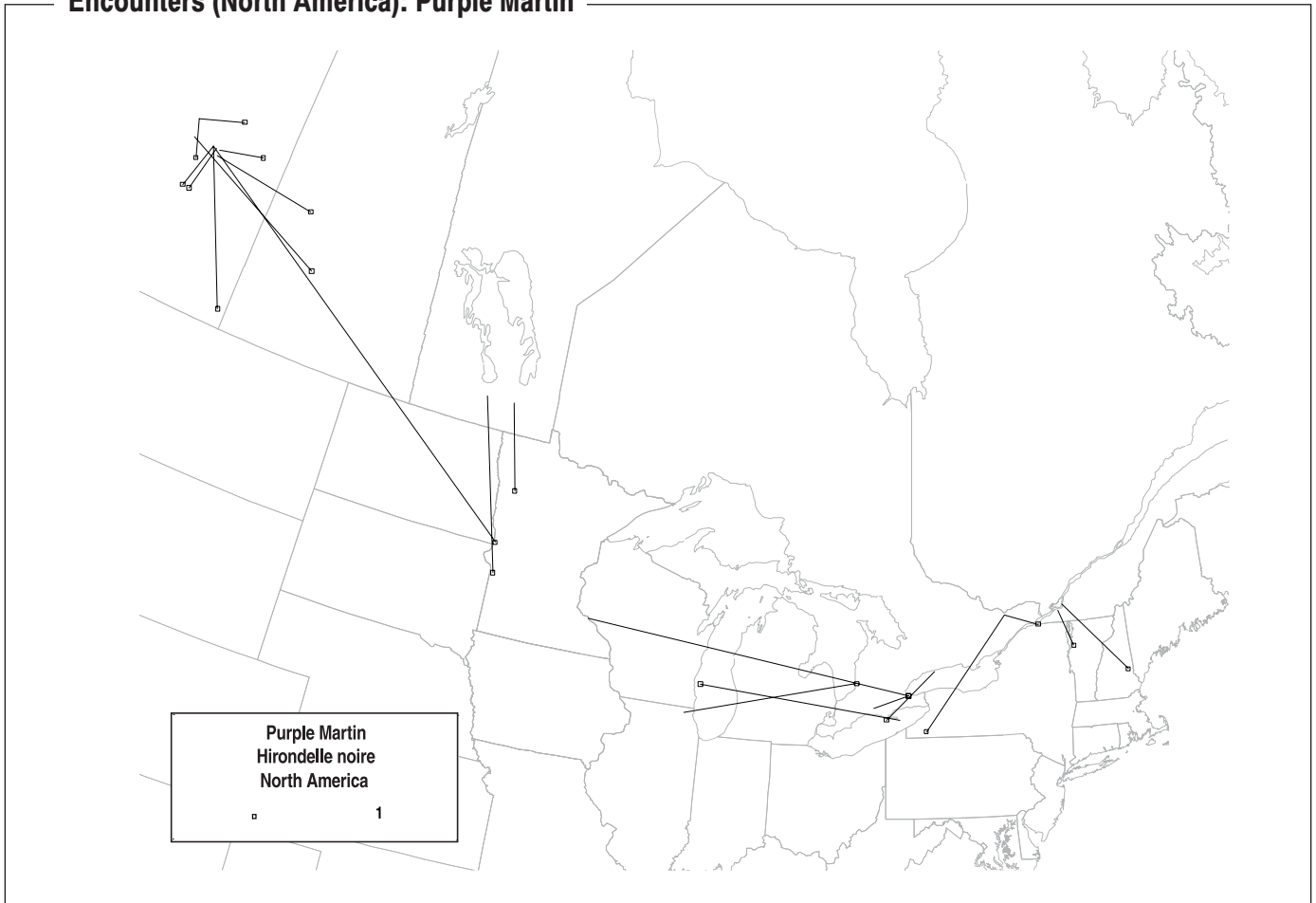
Banding effort: Horned Lark



Top banders: WJM, RAH, PL, DJTH, LPBO

Purple Martin (*Progne subis*) 611.0

Encounters (North America): Purple Martin



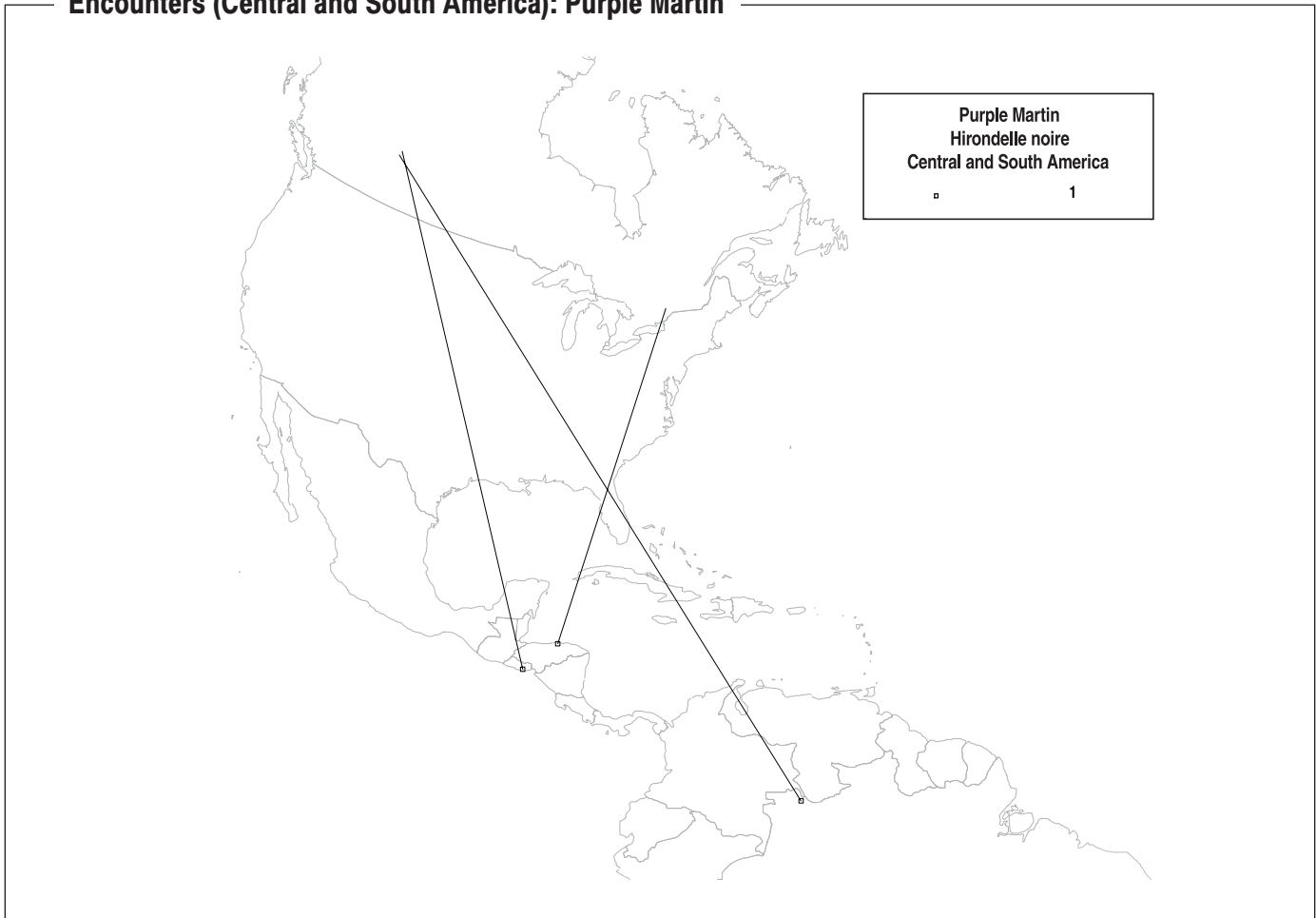
The Purple Martin breeds in the eastern, southwestern, and Pacific states in the U.S.; it breeds in southern Canada from Manitoba to Newfoundland and throughout much of Saskatchewan and Manitoba. The species winters through most of South America east of the Andes to central Argentina.

As shown on the effort map, banding has been highly concentrated, largely at nesting colonies. Almost half of the encounters were of birds banded as locals and encountered in a subsequent breeding season. Of these, about a third were encountered at the natal site, about a third within 100 km (e.g., record 1, also the record with the longest period between banding and encounter), and about a third farther

away (e.g., records 2 and 3). Nearly all were found dead. Adult-banded birds were much more likely to be encountered at the same site as banding, often through recapture (e.g., record 4). One adult that appeared to have moved over 1000 km between breeding seasons (record 5) may have died on migration, because the exact date of encounter is unknown.

No Canadian martins have been encountered in mid-winter (December–February), and the longest-distance encounters (records 6–8) may have been migrating to or from more distant points in South America.

Encounters (Central and South America): Purple Martin



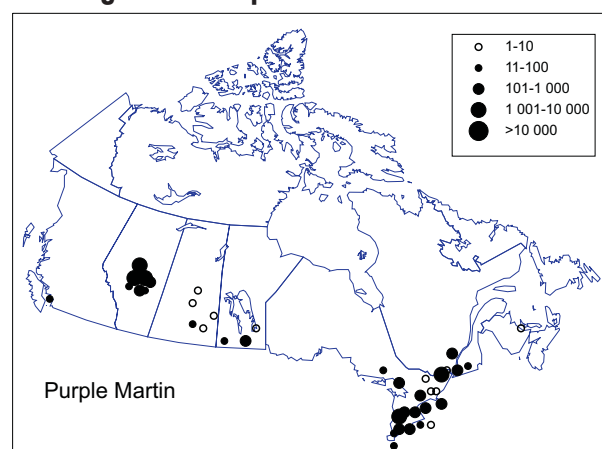
Encounter records: Purple Martin

1	0791-33356 JCF	L U 05 03	11/07/77 11/07/84	Clover Bar, AB St. Albert, AB	53°30'N 113°20'W 53°30'N 113°30'W	7 yr. 0 mo. 11 km N90°W
2	0741-82234 LPBO	L U 05 00	14/07/71 21/05/74	Long Point, ON Cedarburg Swamp, WI	42°30'N 80°00'W 43°10'N 87°40'W	2 yr. 10 mo. 630 km N81°W
3	0392-10167 FJW	J U 00 00	15/07/39 26/08/40	Portage La Prairie, MB Klages Game Management Area, MN	49°50'N 98°10'W 45°10'N 96°20'W	1 yr. 1 mo. 537 km S16°E
4	0201-53177 FS	AHY F 00 99	19/07/52 25/07/57	Bewdley, ON Bewdley, ON	44°00'N 78°10'W 44°00'N 78°10'W	5 yr. 0 mo. 0 km
5	0561-78361 FVS	AHY F 00 13	16/07/59 ??/05/60	Bay City, MN Burlington Beach, ON	44°30'N 92°20'W 43°10'N 79°40'W	1027 km S86°E
6	0761-58164 JCF	L U 03 20	25/07/75 25/09/75	Clover Bar, AB near Jiquilisco, EL SALVADOR	53°30'N 113°20'W 13°20'N 88°30'W	2 mo. 4977 km S36°E
7	0991-12690 EP	L U 03 00	16/07/87 22/04/89	Leduc, AB near Uaupés, BRAZIL	53°10'N 113°30'W 00°50'N 67°10'W	1 yr. 9 mo. 7215 km S53°E
8	8001-83444 IPBO	L U 03 01	01/08/88 12/10/88	Innis Point, ON Corocito, HONDURAS	45°20'N 75°50'W 15°50'N 85°50'W	2 mo. 3415 km S19°W

Summary of banding statistics: Purple Martin

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			17 615
No. encountered per 1000 banded (1955–1995)			4
Total no. encountered (1921–1995)	70	27	100
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	84	60	84
No. of Canadian-banded birds moving > 0 km	44	9	54
Mean movement > 0 km of Canadian-banded birds	510	37	426
Maximum movement from all encounters (km)	7 215	1 026	7 215
% recovered (encountered dead)	97	70	89
% direct recoveries	21	14	20
% encountered during banding operations	0	29	9

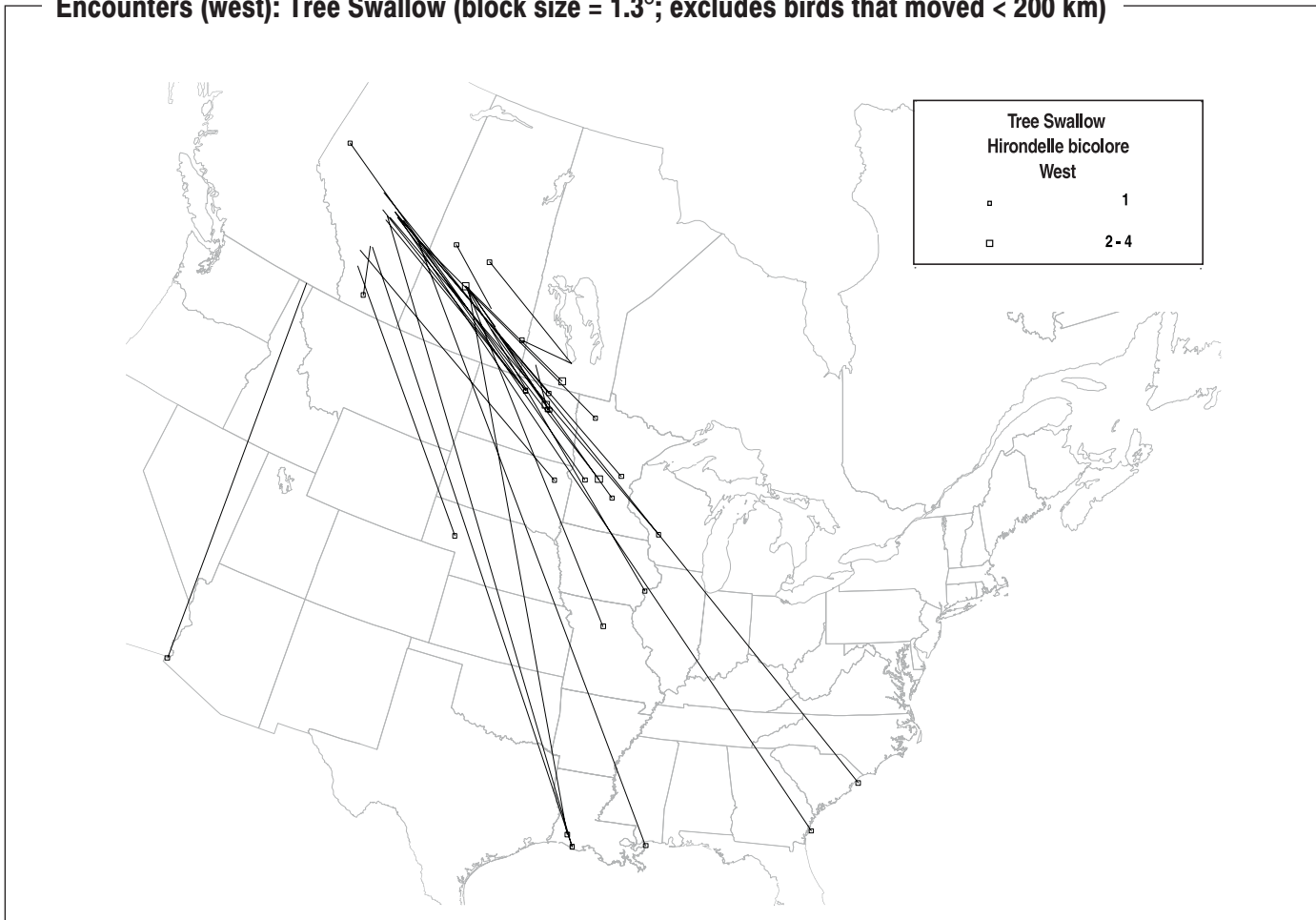
Banding effort: Purple Martin



Top banders: EP, JCF, JSK, IPBO, JRWH

Tree Swallow (*Tachycineta bicolor*) 614.0

Encounters (west): Tree Swallow (block size = 1.3°; excludes birds that moved < 200 km)



The Tree Swallow breeds virtually throughout Canada south of the treeline and in the northern two-thirds of the U.S.; it winters from the southern U.S. (north to southern California in the west, New York in the east) south to Costa Rica and the Greater Antilles.

Large numbers have been banded in Canada, particularly in nest-box studies. The encounter maps exclude birds that moved less than 200 km (compared with the usual cut-off of 100 km).

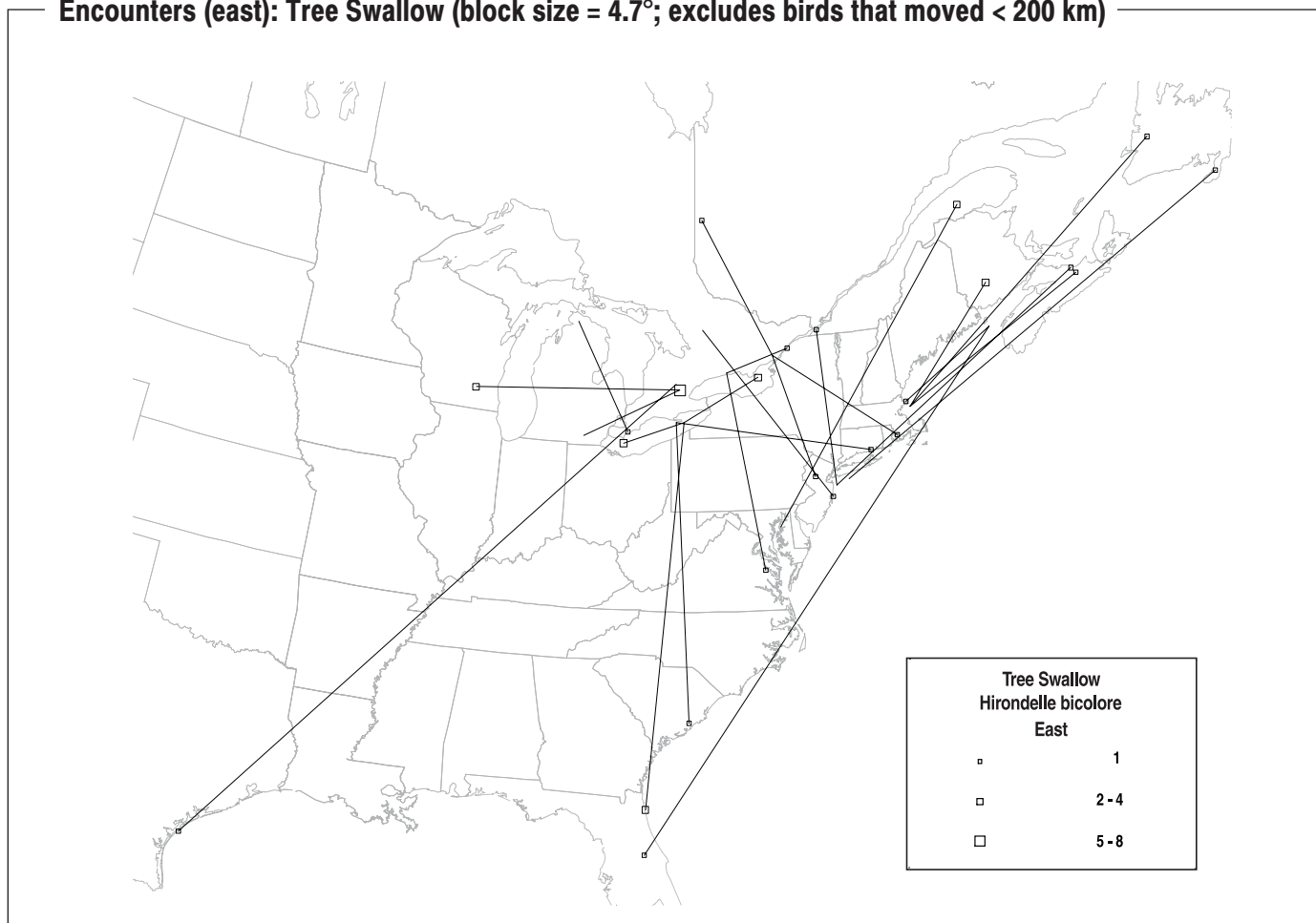
Populations along the east side of the Rocky Mountains migrate due south into Mexico (Butler 1988); a single long-distance encounter from British Columbia to Arizona (record 1) indicates that birds breeding west of the Rockies do the same. The strong southeast–northwest component in the movements of birds between the Prairie Provinces and the head of the Mississippi drainage is very consistent (see records 2 and 3). Prairie birds have been encountered on

migration along the Gulf Coast (three in Louisiana, e.g., record 4, and one in Mississippi) and also on the Atlantic coast (one in Georgia and one in South Carolina, record 5).

By contrast, birds from Quebec eastward migrate southwest–northeast along the Atlantic coast (records 6–9). Ontario appears to be a transition zone for direction of movement, with many birds banded there as breeders moving southwest–northeast like eastern Canadian swallows (e.g., record 10), and others heading southeast–northwest (like western birds, e.g., records 11–13).

Butler (1988) analyzed all North American band encounter records for this species collected between 1929 and 1984, finding patterns similar to those described above for Canadian encounters alone. He noted that most Tree Swallows from the Canadian Prairie Provinces and U.S. states near the Great Lakes appear to migrate along the Mississippi River Valley.

Encounters (east): Tree Swallow (block size = 4.7°; excludes birds that moved < 200 km)



Although several U.S.-banded swallows have been found in Central America and the Antilles, only three Canadian birds have been encountered in December–March: two in Canada and one in Louisiana (record 4). All the others encountered in the southernmost U.S. could have been migrating, such as the birds in records 7 (which lacks exact date of encounter), 10, and 11. At the time of encounter, the

bird in record 14 held the longevity record for this species at 11 years (Hussell 1992, Clapp et al. 1983). However, the current record is held by a bird banded as a nestling and recaptured 12 years later (Hussell and Anderson 1999).

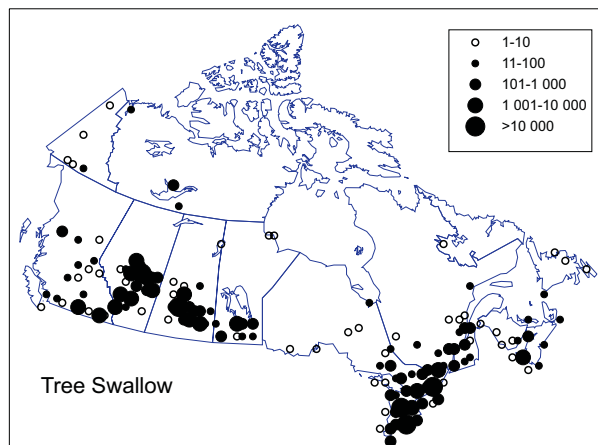
Encounter records: Tree Swallow

1	2051-76792 SFU	AHY M 05 00	23/06/87 FT/09/87	Creston, BC 14 km west of Yuma, AZ	49°00'N 116°30'W 32°40'N 114°40'W	3 mo. 1824 km S5°E
2	0720-15845 RTG	HY U 05 13	09/08/68 15/05/70	Clark Slayer National Wildlife Area, ND Clairmont, AB	48°30'N 100°40'W 55°10'N 118°40'W	1 yr. 9 mo. 1437 km N52°W
3	0800-15555 ETJ	AHY F 00 03	31/05/72 04/08/72	west of Cooking Lake, AB Fairy Lake, MN	53°20'N 113°00'W 45°40'N 94°50'W	3 mo. 1559 km S64°E
4	2021-67115 CSH	L U 05 39	03/07/89 18/12/89	11 km east of Dundurn, SK Iowa, LA	51°40'N 106°20'W 30°10'N 93°00'W	5 mo. 2634 km S30°E
5	1041-85067 JCF	L U 06 57	01/07/73 31/10/73	west of Barrhead, AB east of Burgess, SC	54°00'N 114°40'W 33°30'N 78°50'W	3 mo. 3611 km S65°E
6	0320-65638 DAM	HY U 00 03	30/08/60 27/05/62	Carroll's Point, MD Canning, NS	39°10'N 76°10'W 45°00'N 64°20'W	1 yr. 9 mo. 1168 km N63°E
7	0540-06471 BC	L U 00 01	27/06/55 ??/12/57	Kent Island, NB Altamonte Springs, FL	44°30'N 66°40'W 28°40'N 81°20'W	2189 km S41°W
8	0560-54783 DAM	U U 07 89	12/09/65 28/06/66	Carroll's Point, MD near Wilmot, NS	39°10'N 76°10'W 45°00'N 64°20'W	9 mo. 1113 km N62°E
9	0720-90656 THD	HY U 08 28	24/09/66 14/06/68	Burns John J Park, NY Garnish, NF	40°30'N 73°20'W 47°10'N 55°20'W	1 yr. 9 mo. 1620 km N57°E
10	2111-25722 DRL	L U 05 00	21/06/93 03/05/94	Fergus, ON Aransas Pass, TX	43°40'N 80°20'W 27°50'N 97°00'W	11 mo. 2309 km S46°W
11	0220-02277 FS	HY U 00 14	30/07/53 07/03/54	Bewdley, ON Auburndale, FL	44°00'N 78°10'W 28°00'N 81°40'W	8 mo. 1808 km S11°W
12	0630-84244 RJR	AHY M 05 00	17/06/65 29/03/66	Huntsville, ON Bay Head, NJ	45°20'N 79°10'W 40°00'N 74°00'W	9 mo. 746 km S44°E
13	1410-02831 HHS	AHY U 00 00	18/06/50 ??/08/52	Bewdley, ON Howerton, VA	44°00'N 78°10'W 37°50'N 76°50'W	696 km S10°E
14	0750-48658 LPBO	SY F 07 99	17/06/70 15/06/80	Long Point, ON Long Point, ON	42°30'N 80°00'W 42°30'N 80°00'W	10 yr. 0 mo. 0 km

Summary of banding statistics: Tree Swallow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>		159 080	
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	326	335	670
No. encountered from foreign bandings	17	4	23
Maximum period from banding to encounter (mo.)	95	120	120
No. of Canadian-banded birds moving > 0 km	204	66	271
Mean movement > 0 km of Canadian-banded birds	287	167	257
Maximum movement from all encounters (km)	3 611	1 824	3 611
% recovered (encountered dead)	64	31	47
% direct recoveries	13	6	10
% encountered during banding operations	19	52	36

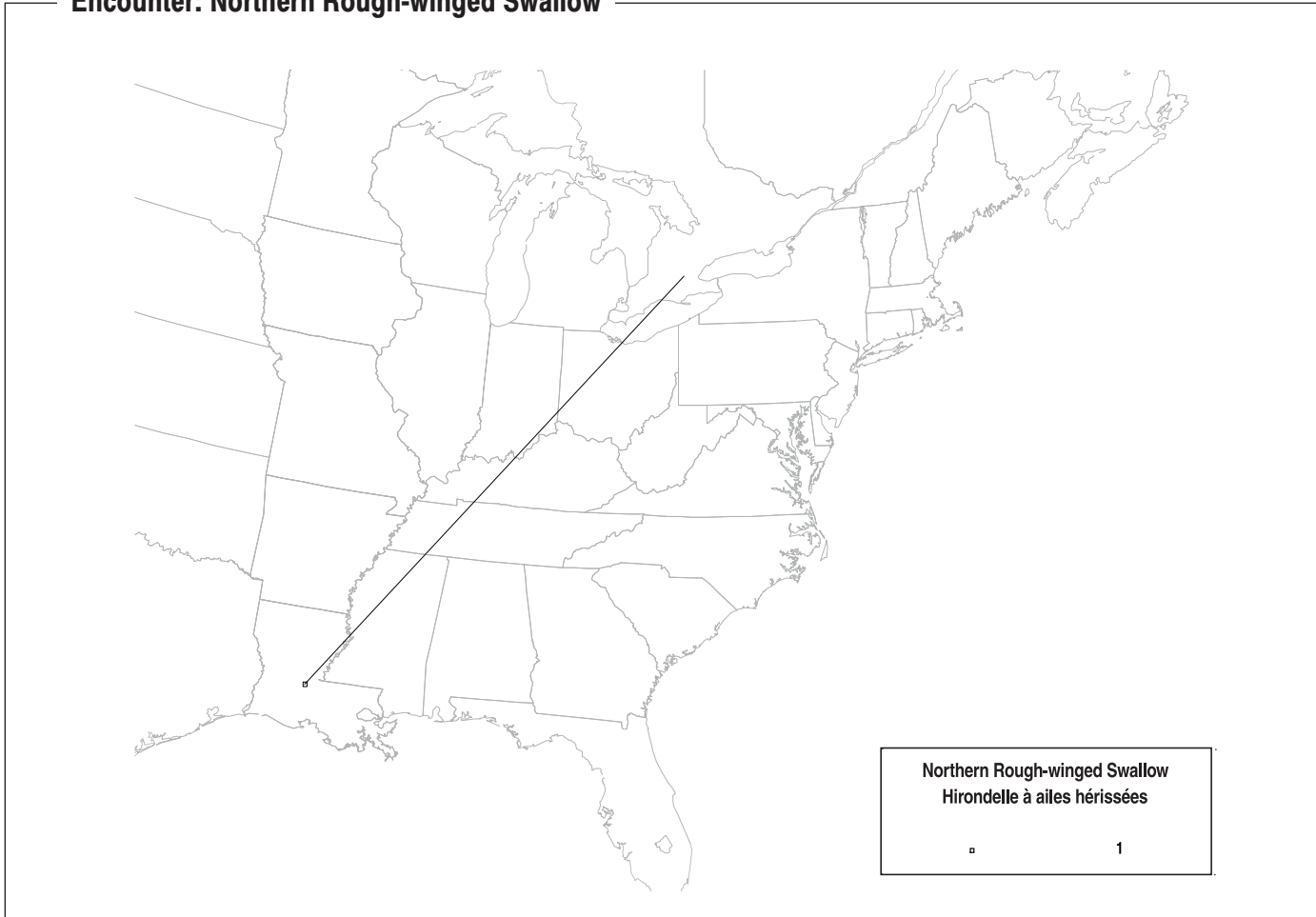
Banding effort: Tree Swallow



Top banders: LPBO, CSH, LS, JCF, RJRo

Northern Rough-winged Swallow (*Stelgidopteryx serripennis*) 617.0

Encounter: Northern Rough-winged Swallow



The Northern Rough-winged Swallow breeds throughout the U.S., as well as in southern British Columbia and extreme southern Canada (locally) from Alberta to Quebec. It winters on the Gulf Coast and from central Mexico to northern South America and the Greater Antilles.

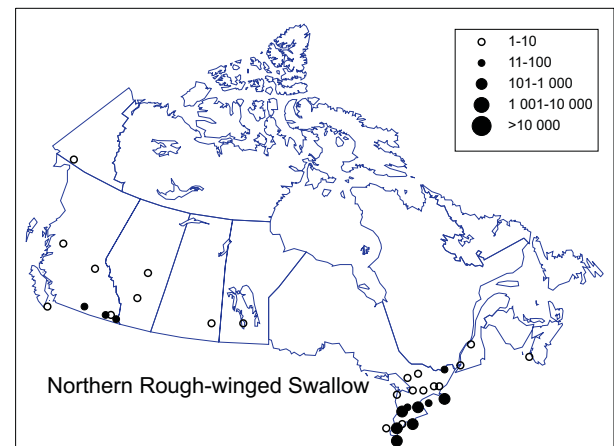
The single long-distance encounter (record 1) occurred during fall migration. The only other encounter (record 2) is of an adult retrapped at its breeding site the summer following banding.

Encounter records: Northern Rough-winged Swallow

1	0430-38518 JMoo	AHY U 00 01	24/06/45 ??/08/45	Doon, ON Augusta, LA	43°20'N 80°20'W 30°50'N 92°10'W	1740 km S41°W
2	0520-06751 LGL	AHY U 00 99	30/05/54 12/06/55	Don Mills, ON Don Mills, ON	43°40'N 79°20'W 43°40'N 79°20'W	1 yr. 1 mo. 0 km

**Summary of banding statistics:
Northern Rough-winged Swallow**

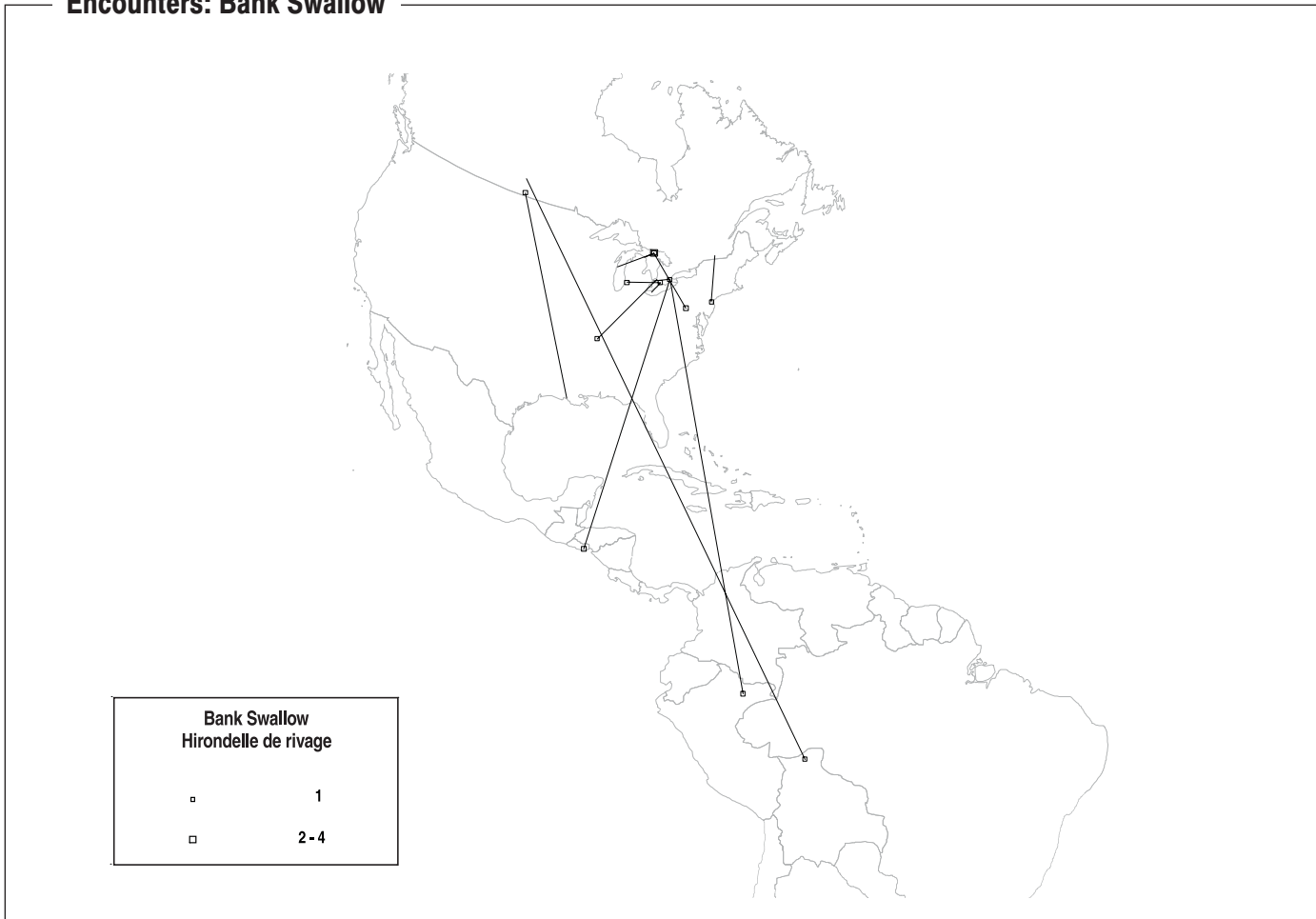
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			1086
<i>No. encountered per 1000 banded (1955–1995)</i>			0.9
Total no. encountered (1921–1995)	0	2	2
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	13	13
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	1739	1739
Maximum movement from all encounters (km)	–	1739	1739
% recovered (encountered dead)	–	50	50
% direct recoveries	–	50	50
% encountered during banding operations	–	50	50

Banding effort: Northern Rough-winged Swallow

Top banders: JBMi, PEPO, LPBO, SFU, MJW

Bank Swallow (*Riparia riparia*) 616.0

Encounters: Bank Swallow



The Bank Swallow's breeding range includes the northern two-thirds of the U.S. and most of Canada north to the treeline; it excludes coastal British Columbia and most of Newfoundland. The wintering range is mainly north and central South America east of the Andes, including western Brazil and Paraguay.

Most encounters showed zero or trivial movement, usually involving birds retrapped at or near the point of banding (the majority at breeding colonies in Ontario, e.g., record 1, the record with the longest period between banding

and encounter). In addition to the nine encounters with movement listed below (records 2–10), there were only four other examples of movement: three birds were retrapped in Ontario after being banded in Michigan, and one moved 147 km within southern Ontario. Record 6 indicates a migration speed of at least 44 km per day over 22 days.

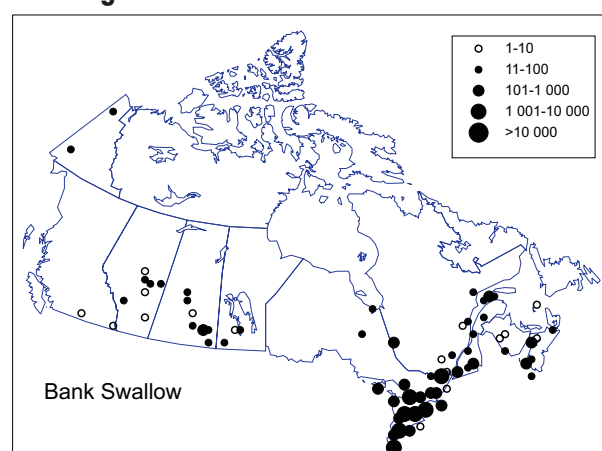
Encounter records: Bank Swallow

1	0260-75881 LAG	AHY U 00 99	31/05/59 06/07/63	Cootes Paradise Marsh, ON Cootes Paradise Marsh, ON	43°10'N 79°50'W 43°10'N 79°50'W	4 yr. 2 mo. 0 km
2	0420-63192 WAM	J U 00 00	02/07/42 03/09/46	Delaware, ON East Saugatuck, MI	42°50'N 81°20'W 42°40'N 86°00'W	4 yr. 2 mo. 382 km S89°W
3	1080-92147 BNB	U U 00 89	24/05/64 16/06/65	Manitowac, WI Gore Bay, ON	44°10'N 87°30'W 45°50'N 82°20'W	1 yr. 1 mo. 447 km N64°E
4	0520-17722 P-EM	L U 00 01	25/06/55 24/12/59	Greenfield Park, QC Berkeley Heights, NJ	45°20'N 73°20'W 40°40'N 74°20'W	4 yr. 6 mo. 526 km S9°W
5	1150-84250 FEL	AHY U 03 14	12/06/67 18/08/69	Gore Bay, ON Orbisonia, PA	45°50'N 82°20'W 40°10'N 77°50'W	2 yr. 2 mo. 729 km S32°E
6	0590-29424 WPN	AHY U 00 00	06/07/63 28/07/63	Port Franks, ON Big Oak Tree State Park, MO	43°10'N 81°50'W 36°30'N 89°10'W	22 dy. 971 km S43°W
7	0390-27427 EAM	U U 00 88	08/04/39 16/06/41	Avery Island, LA Midale Lake, SK	29°50'N 91°50'W 49°20'N 103°20'W	2 yr. 2 mo. 2378 km N21°W
8	1560-23482 ADB	AHY M 03 56	05/07/82 03/09/84	Jordon, ON Usulután, EL SALVADOR	43°10'N 80°00'W 13°20'N 88°20'W	2 yr. 2 mo. 3416 km S16°W
9	1530-42417 ADB	HY U 05 01	07/07/80 16/11/80	Jordon, ON Francisco De Orellana, PERU	43°10'N 80°00'W 03°40'S 73°10'W	4 mo. 5259 km S9°E
10	0040-03371 RHC	HY U 00 00	07/07/29 99/06/35	south of Lipton, SK Pando, BOLIVIA	50°40'N 103°50'W 11°10'S 67°10'W	5 yr. 11 mo. 7662 km S39°E

Summary of banding statistics: Bank Swallow

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			41 116
No. encountered per 1000 banded (1955–1995)			5
Total no. encountered (1921–1995)	20	260	293
No. encountered from foreign bandings	2	1	5
Maximum period from banding to encounter (mo.)	71	50	71
No. of Canadian-banded birds moving > 0 km	8	52	65
Mean movement > 0 km of Canadian-banded birds	1 760	119	314
Maximum movement from all encounters (km)	7 764	3 415	7 764
% recovered (encountered dead)	35	3	5
% direct recoveries	20	9	9
% encountered during banding operations	55	88	86

Banding effort: Bank Swallow



Top banders: ADB, LGL, IPBO, CHG, RBG

Cliff Swallow (*Petrochelidon pyrrhonota*) 612.0

Encounter: Cliff Swallow



The Cliff Swallow nests widely in Canada, from northern Yukon to Nova Scotia and in most of the U.S. except for the southeastern states. It winters in South America from Paraguay and southern Brazil to southern Argentina.

Only one encounter (record 1) showed significant movement, evidently a case of juvenile dispersal to a breeding area far from the natal site. All but 10 of the records were for birds banded and encountered in successive years at a colony

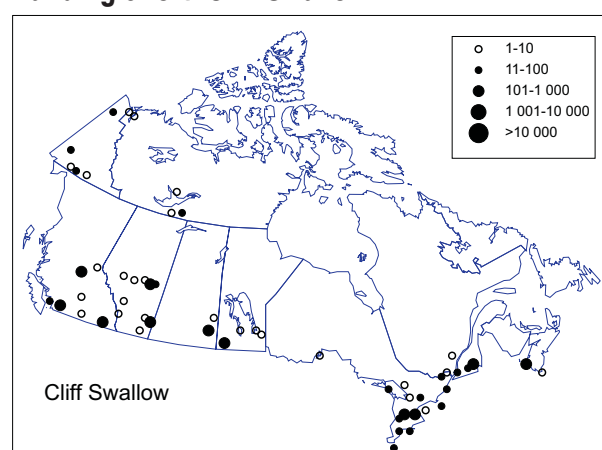
site in Fingal, Ontario (e.g., record 2). Another six bandings and same-site encounters were reported from Nova Scotia, Alberta, Yukon, Ontario (one each), and British Columbia (record 3 and one other).

Encounter records: Cliff Swallow

1	2121-69250 CRB	HY U 05 00	28/06/93 12/05/94	Keystone, NE St. Albert, AB	41°10'N 101°30'W 53°30'N 113°30'W	11 mo. 1640 km N29°W
2	0460-28116 MHF	AHY U 00 99	16/07/52 02/07/57	Fingal, ON Fingal, ON	42°40'N 81°10'W 42°40'N 81°10'W	5 yr. 0 mo. 0 km
3	2051-99504 SFU	AHY U 07 99	04/05/87 20/04/93	Creston, BC Creston, BC	49°00'N 116°30'W 49°00'N 116°30'W	5 yr.11 mo. 0 km

Summary of banding statistics: Cliff Swallow

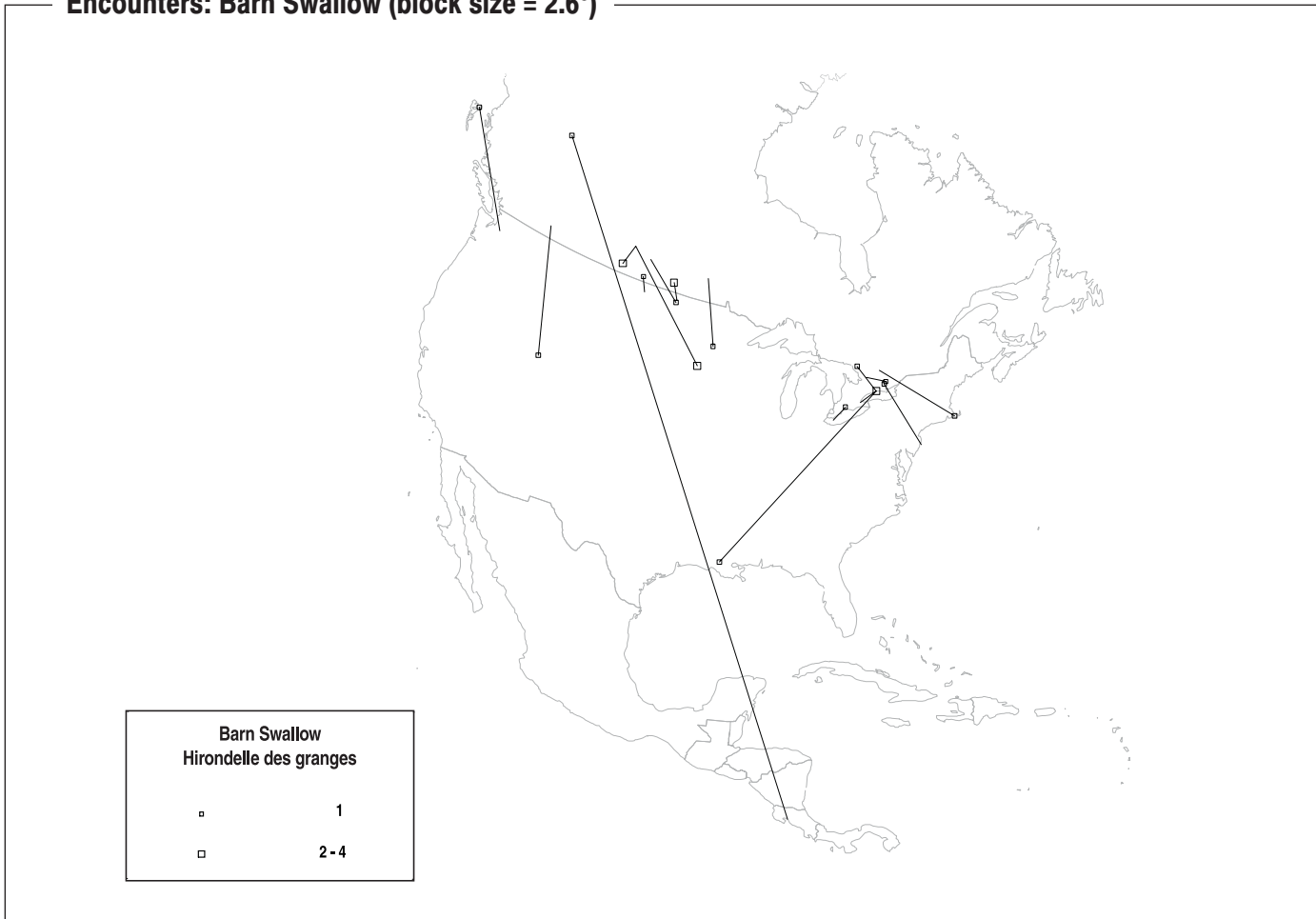
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3415
<i>No. encountered per 1000 banded (1955–1995)</i>			6
Total no. encountered (1921–1995)	1	103	104
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	11	71	71
No. of Canadian-banded birds moving > 0 km	0	3	3
Mean movement > 0 km of Canadian-banded birds	–	30	30
Maximum movement from all encounters (km)	1639	54	1639
% recovered (encountered dead)	100	2	3
% direct recoveries	0	2	2
% encountered during banding operations	0	97	96

Banding effort: Cliff Swallow

Top banders: US, BBO, MTM, DRH, BC

Barn Swallow (*Hirundo rustica*) 613.0

Encounters: Barn Swallow (block size = 2.6°)



The Barn Swallow is holarctic; it breeds across most of the U.S. and Canada north to the treeline. New World populations winter from Panama and the West Indies south through South America to Tierra del Fuego.

As with the other swallows, most encounters were at or near banding sites (e.g., record 1, the bird with the longest time between banding and encounter). The 22 exceptions with movement over 100 km are shown on the map; 10 of these are listed below (records 2–11). The bird encountered in Utah (record 2) did not have to cross the entire Rocky Mountain chain — its banding site is in the southeast corner

of British Columbia. The bird in record 3 below was possibly still migrating when banded in Washington; it was found dead in the Queen Charlotte Islands a month later.

No Canadian Barn Swallows have been encountered on the wintering grounds. The most distant encounter (record 4) was of a bird banded in Costa Rica, probably early in migration. It was found at an unknown date sheltering from a storm in a porch in British Columbia and released unharmed; however, the encounter was not reported until much later.

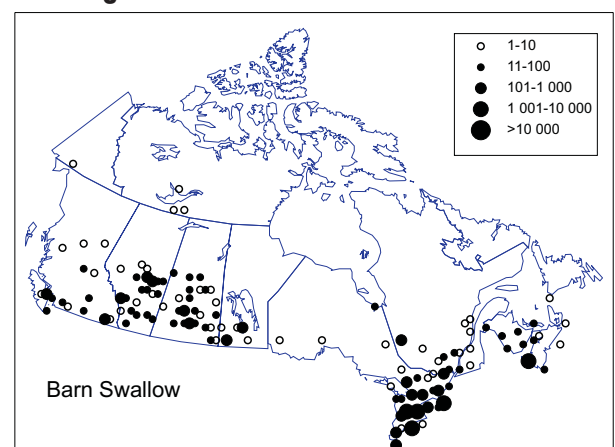
Encounter records: Barn Swallow

1	0470-27890 JMo	AHY U 06 00	21/06/52 04/06/58	Whitefish Lake, ON Algonquin Park, ON	45°30'N 78°20'W 45°30'N 78°30'W	6 yr. 13 km N90°W
2	0620-70878 RFH	L U 00 03	06/07/63 ??/05/64	Kaslo, BC Little Mountain, UT	49°50'N 116°50'W 41°10'N 112°10'W	1031 km S22°E
3	1690-16361 JDA	AHY M 03 00	20/05/85 28/06/85	18 km southeast of Startup, WA Massett, BC	47°40'N 121°30'W 54°00'N 132°00'W	1 mo. 1019 km N42°W
4	1550-80162 FGS	SY U 07 21	11/04/80 ??/12/81	Puntarenas, COSTA RICA Goodlow, BC	10°00'N 84°50'W 56°20'N 120°10'W	5995 km N23°W
5	0060-85254 FGB	J U 00 00	06/07/36 LT/10/37	Davidson, SK Luverne, MN	51°10'N 105°50'W 43°30'N 96°10'W	1 yr. 3 mo. 1120 km S44°E
6	0760-29771 WP	AHY F 05 13	21/05/70 ??/05/71	Island Beach, NJ near Queensboro, ON	39°50'N 74°00'W 44°30'N 77°20'W	588 km N27°W
7	1020-06305 FS	AHY U 00 01	23/05/63 03/09/63	Bewdley, ON 10 km west of Grosse Tete, LA	44°00'N 78°10'W 30°20'N 91°30'W	4 mo. 1922 km S42°W
8	1390-86631 FGB	U U 00 98	01/07/39 ??/05/43	Regina Beach, SK 11 km south of Upham, ND	50°40'N 104°50'W 48°20'N 100°40'W	396 km S60°E
9	0000-36588 ALH	AHY U 00 00	02/07/23 25/05/24	Stone Lake, MB Anderson Game Management Area, MN	50°40'N 97°50'W 46°00'N 95°40'W	10 mo. 544 km S18°E
10	0410-59557 FJHF	HY U 00 00	16/08/42 27/09/42	Macrorie, SK Bruce, SD	51°10'N 107°00'W 44°20'N 96°50'W	1 mo. 1074 km S49°E
11	0470-10099 RFJ	L U 00 00	30/07/52 99/09/52	Madawaska, ON Lassetts Island, MA	45°30'N 77°50'W 41°40'N 70°30'W	2 mo. 729 km S57°E

Summary of banding statistics: Barn Swallow

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			18 562
No. encountered per 1000 banded (1955–1995)			1
Total no. encountered (1921–1995)	35	79	126
No. encountered from foreign bandings	3	3	7
Maximum period from banding to encounter (mo.)	37	72	72
No. of Canadian-banded birds moving > 0 km	18	10	31
Mean movement > 0 km of Canadian-banded birds	329	302	292
Maximum movement from all encounters (km)	1 120	5 994	5 994
% recovered (encountered dead)	74	27	42
% direct recoveries	40	8	19
% encountered during banding operations	11	64	49

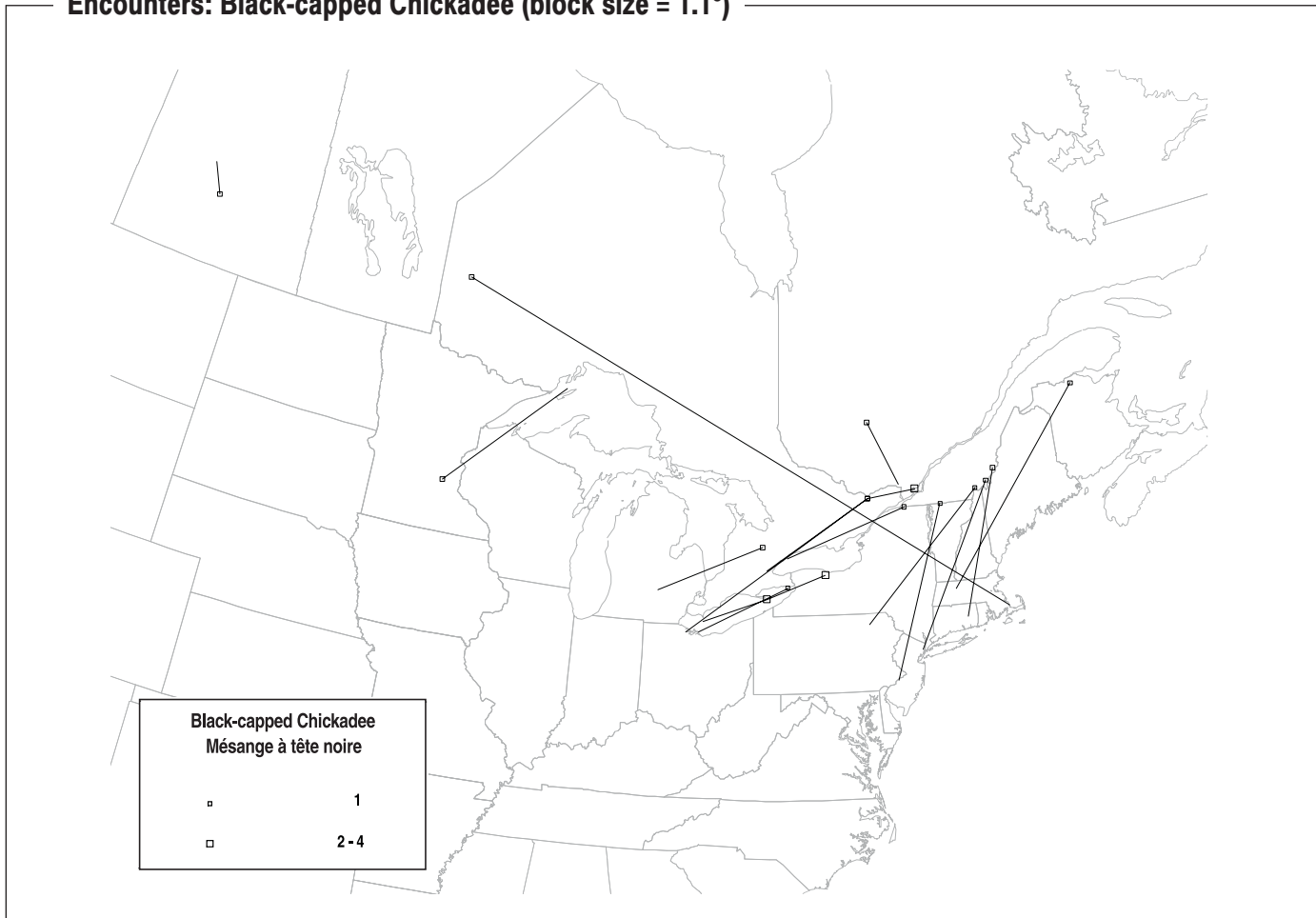
Banding effort: Barn Swallow



Top banders: LPBO, BC, JBMi, BKW, PEPO

Black-capped Chickadee (*Poecile atricapillus*) 735.0

Encounters: Black-capped Chickadee (block size = 1.1°)



The Black-capped Chickadee breeds in southern Yukon, British Columbia (excluding coastal islands), Alberta, Saskatchewan, and in the southern half of Manitoba from The Pas south and east to Newfoundland; it also breeds in the northern half of the U.S. It winters over most of its breeding range but may withdraw from the northernmost localities and from high altitudes in mountains.

The Black-capped Chickadee is highly sedentary in most of its range: over 90% of the encounters showed zero movement. Most encounters (78%) were of birds retrapped at the original banding site. However, at irregular intervals, massive movements of Black-capped Chickadees occur, sometimes in company with Boreal Chickadees. Most of the long-distance encounters occurred in such irruptions. Eighteen birds moved distances of 50–500 km, and eight moved over 500 km (records 1–7), including one (record 7) that moved over 2000 km. The latter was one of 476 birds banded in September 1976 at a coastal Massachusetts site;

such high numbers provide certain evidence of a large movement that year (M. Gustafson, pers. comm.).

Of particular interest are clusters of distant encounters in certain years. Three encounters involved birds banded at Point Pelee, Ontario, in the spring of 1962 and retrapped at Long Point; two of these occurred within a month of banding (e.g., record 8). During the same spring, there were several retraps of birds showing movement between the different banding areas of Long Point (Hussell and Stamp 1965), in what proved to be an exceptional spring influx of chickadees (Hussell 1996). Two additional clusters of encounters involved birds banded at Innis Point, Ontario, in October 1988 and 1990. In each year, two to three chickadees were encountered a short distance east of Innis Point within 20 days of banding, and one or two birds were encountered 157–183 km east 17–25 days after banding. In the spring of 1991, two birds banded at Long Point, Ontario, (one that spring and one the previous fall) were recaptured on the

same day at Braddock Bay, New York (not shown on map, because the distance travelled was less than 100 km).

Analysis of all North American encounters shows that longer-distance encounters are more directional (northeast in

spring, southwest in fall) than shorter-distance movements, which in non-irruption years may represent dispersal (Brooks 1987, 1989, 1991; Stewart 1988; Hussell 1991).

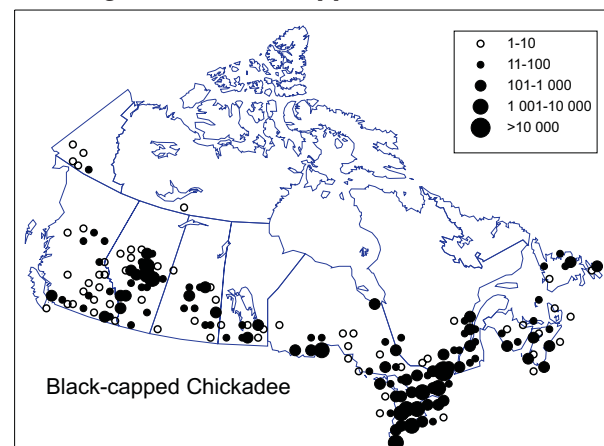
Encounter records: Black-capped Chickadee

1	0250-56327 HGMcE	U U 00 00	07/04/60 FT/10/64	Bogota, NJ Marsboro, QC	40°50'N 74°00'W 45°30'N 70°50'W	4 yr. 6 mo. 580 km N25°W
2	1980-97089 TCBO	HY U 03 00	07/10/95 ??/12/95	Thunder Cape, ON Corcoran, MN	48°10'N 88°50'W 45°00'N 93°30'W	502 km S47°W
3	0270-62171 LHR	U U 00 14	09/12/63 ??/02/65	Abington, PA Bedford, QC	40°00'N 75°00'W 45°00'N 72°50'W	584 km N17°E
4	0480-94120 EN	U U 00 01	15/11/49 08/02/56	Deerfield, MA Campbellton, NB	42°30'N 72°30'W 47°50'N 66°40'W	6 yr. 3 mo. 749 km N36°E
5	1050-05917 HLC	AHY M 00 01	15/03/64 21/10/64	Rush, PA Island Brook, QC	41°40'N 76°00'W 45°20'N 71°20'W	7 mo. 555 km N41°E
6	1600-68367 JAR	AHY U 07 89	15/02/82 04/05/82	Rocky Ridge, OH Innis Point, ON	41°30'N 83°10'W 45°20'N 75°50'W	3 mo. 730 km N52°E
7	1350-85311 MBO	U U 00 56	16/09/76 ??/05/78	Manomet, MA Madsen, ON	41°50'N 70°30'W 50°50'N 93°50'W	2042 km N53°W

Summary of banding statistics: Black-capped Chickadee

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			61 193
<i>No. encountered per 1000 banded (1955–1995)</i>			6
Total no. encountered (1921–1995)	60	794	1 054
No. encountered from foreign bandings	0	4	9
Maximum period from banding to encounter (mo.)	72	93	95
No. of Canadian-banded birds moving > 0 km	16	25	70
Mean movement > 0 km of Canadian-banded birds	94	64	64
Maximum movement from all encounters (km)	501	730	2 041
% recovered (encountered dead)	36	13	16
% direct recoveries	33	20	22
% encountered during banding operations	56	83	80

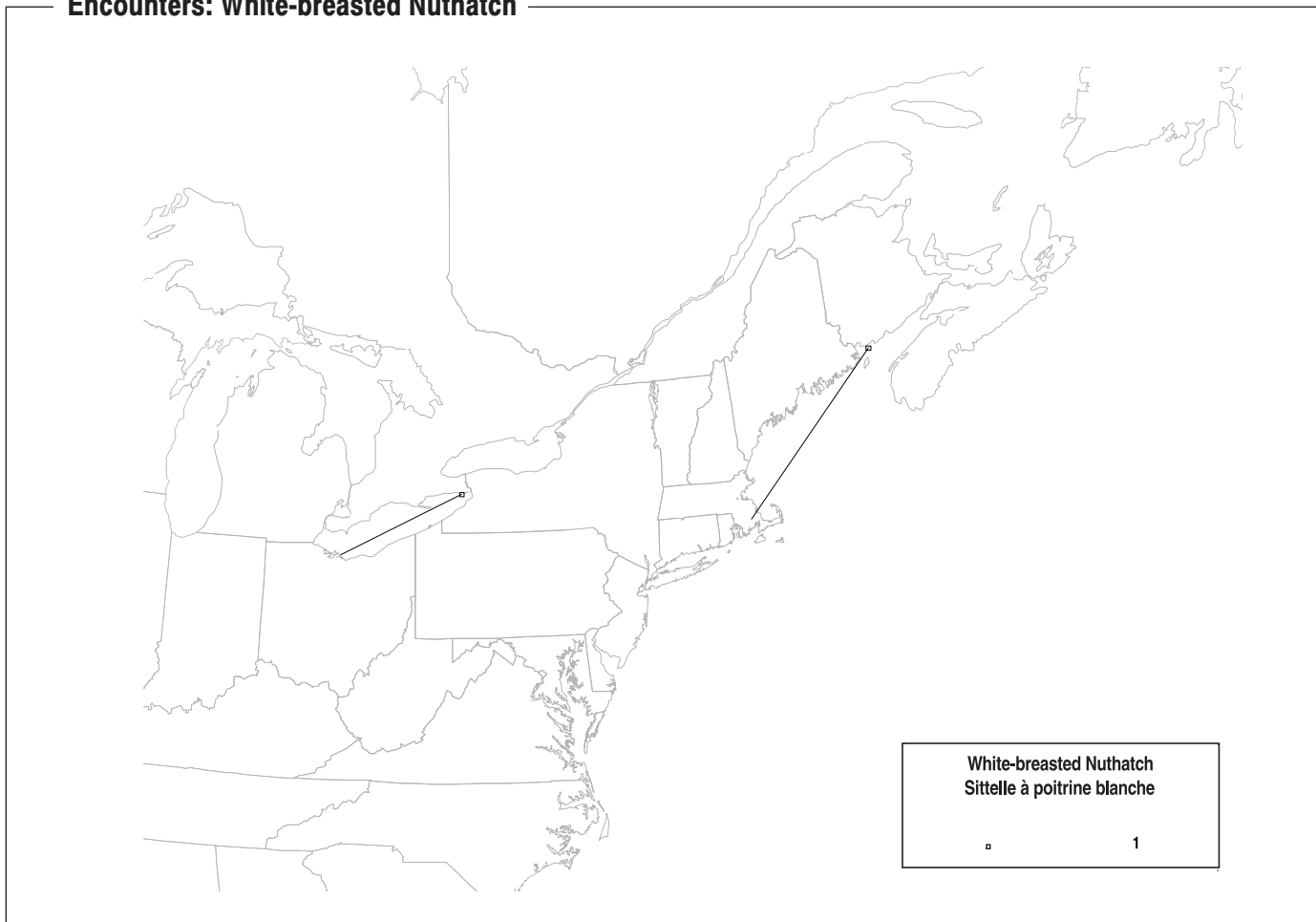
Banding effort: Black-capped Chickadee



Top banders: IPBO, LPBO, ETJ, UA, EP

White-breasted Nuthatch (*Sitta carolinensis*) 727.0

Encounters: White-breasted Nuthatch



The White-breasted Nuthatch breeds throughout much of the U.S. In Canada it breeds in southeastern British Columbia through southwestern Alberta, southeastern Saskatchewan, and southern Manitoba to northwestern Ontario; it also breeds from southern Ontario east to Cape Breton Island. In winter, it withdraws from the northern extremities of the breeding range and from higher altitudes.

Most of the encounters confirm that this species is resident through much of its Canadian range (e.g., record 1).

Data from Long Point Bird Observatory suggest occasional irruptive movements in fall (far less frequent than in Red-breasted Nuthatches) and return movements in the following spring (Miller and Dunn 1977; see also Pradosudov and Grubb 1993). The only two encounters showing any significant movement are listed below (records 2 and 3).

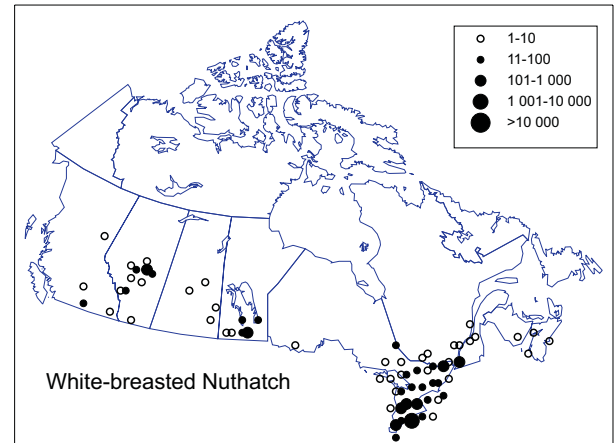
Encounter records: White-breasted Nuthatch

1	0281-70428 BBW	U M 05 00	29/03/64 28/05/68	Bracebridge, ON Falkenburg, ON	45°00'N 79°10'W 45°00'N 79°20'W	4 yr. 2 mo. 13 km N90°W
2	0020-23071 AGM	U U 00 12	22/02/26 23/04/26	Bridgewater, MA Blacks Harbour, NB	41°50'N 70°50'W 45°00'N 66°40'W	2 mo. 487 km N42°E
3	1400-31005 AS	AHY U 00 00	26/01/55 27/03/55	East Harbor State Park, OH near Port Colborne, ON	41°30'N 82°40'W 42°50'N 79°10'W	2 mo. 325 km N62°E

**Summary of banding statistics:
White-breasted Nuthatch**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3627
<i>No. encountered per 1000 banded (1955–1995)</i>			5
Total no. encountered (1921–1995)	1	43	57
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	2	43	50
No. of Canadian-banded birds moving > 0 km	1	1	3
Mean movement > 0 km of Canadian-banded birds	18	18	16
Maximum movement from all encounters (km)	18	324	487
% recovered (encountered dead)	0	18	21
% direct recoveries	100	41	49
% encountered during banding operations	100	74	71

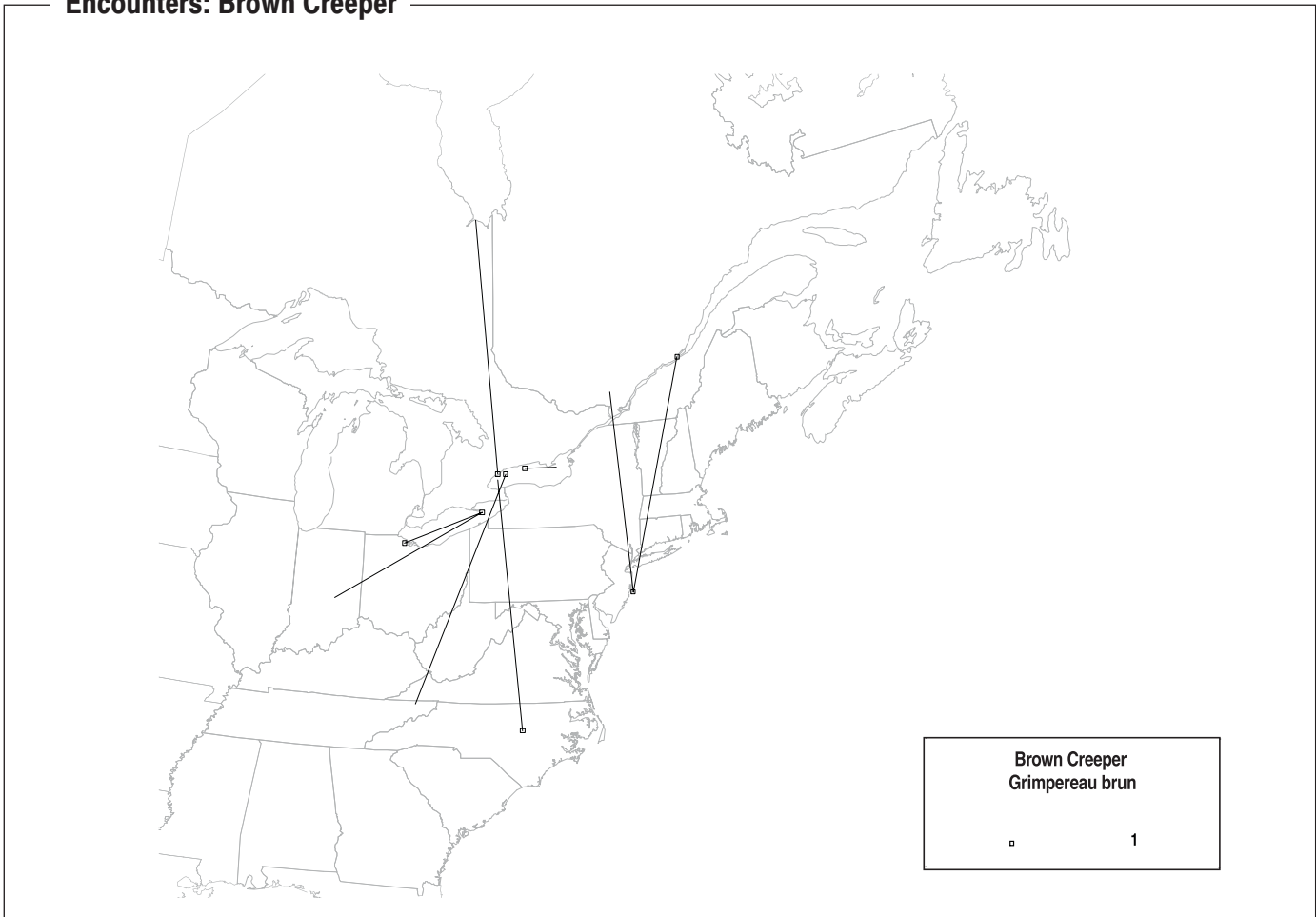
Banding effort: White-breasted Nuthatch



Top banders: LPBO, IPBO, JBMi, LTS, MJW

Brown Creeper (*Certhia americana*) 726.0

Encounters: Brown Creeper



The Brown Creeper breeds in the western U.S. and Appalachian Mountains; in Canada it breeds from coastal and southern British Columbia through the southern and central provinces to Newfoundland (except for the Prairie grasslands). It winters mainly within its breeding range in western British Columbia and the U.S. Southwest, probably withdrawing somewhat from higher latitudes; more eastern Canadian breeders migrate to winter throughout the U.S.

Record 1 is of a bird shot on the wintering ground. Almost all other birds were banded or encountered during migration, but the bird in record 2 was banded as a young

bird in the breeding range. Records 1 and 2 together neatly connect the breeding and wintering areas via migration through southern Ontario. Record 3 (not shown on map) is of a bird banded in fall at Long Point, Ontario, and encountered 12 days later and 57 km south at Erie, Pennsylvania. This suggests a direct crossing of Lake Erie. It is less clear whether a second Long Point bird (record 4) might also have made a lake crossing (as opposed to following coastlines). It was a spring migrant that should have been heading north, but it was found two days after banding near the southeastern corner of Lake Erie.

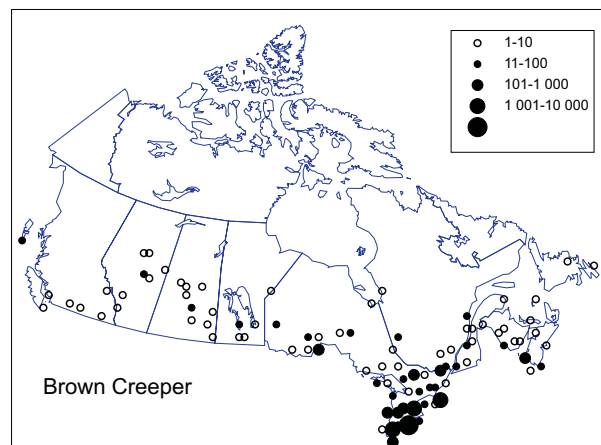
Encounter records: Brown Creeper

1	1080-73636 RED	AHY U 05 01	31/10/67 23/02/68	near Thorold, ON Auburn, NC	43°30'N 79°20'W 35°40'N 78°30'W	4 mo. 875 km S5°E
2	1700-07761 CCR	HY U 05 00	01/08/84 17/10/85	27 km northeast of Moosonee, ON Toronto, ON	51°20'N 80°20'W 43°40'N 79°20'W	1 yr. 2 mo. 857 km S5°E
3	1080-65009 LPBO	HY U 05 12	07/10/67 19/10/67	Long Point, ON Erie, PA	42°30'N 80°10'W 42°00'N 80°00'W	12 dy. 57 km S14°E
4	1910-70278 LPBO	AHY U 05 00	17/04/93 19/04/93	Long Point, ON Irving, NY	42°30'N 80°00'W 42°30'N 79°00'W	2 dy. 82 km N90°E
5	1310-81227 TJB	AHY U 05 09	27/03/73 12/04/74	near Gray, TN Bay Ridges, ON	36°30'N 82°30'W 43°40'N 79°00'W	1 yr. 1 mo. 851 km N19°E
6	1560-07938 TBO	HY F 07 89	17/10/81 04/07/83	Toronto, ON Stoney Creek, ON	43°30'N 79°20'W 43°10'N 79°40'W	1 yr. 9 mo. 46 km S36°W
7	1530-48899 DBi	U U 07 89	02/09/87 07/10/87	Saint-Faustin, QC Island Beach, NJ	46°00'N 74°20'W 39°50'N 74°00'W	1 mo. 687 km S2°E
8	1480-54776 HBS	HY U 05 13	15/10/78 06/10/79	Island Beach, NJ Charlesbourg, QC	39°50'N 74°00'W 46°50'N 71°10'W	1 yr. 812 km N15°E

Summary of banding statistics: Brown Creeper

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			25 632
<i>No. encountered per 1000 banded (1955–1995)</i>			0.4
Total no. encountered (1921–1995)	6	5	13
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	21	13	21
No. of Canadian-banded birds moving > 0 km	5	3	10
Mean movement > 0 km of Canadian-banded birds	270	328	306
Maximum movement from all encounters (km)	856	874	874
% recovered (encountered dead)	66	80	61
% direct recoveries	16	60	38
% encountered during banding operations	33	20	38

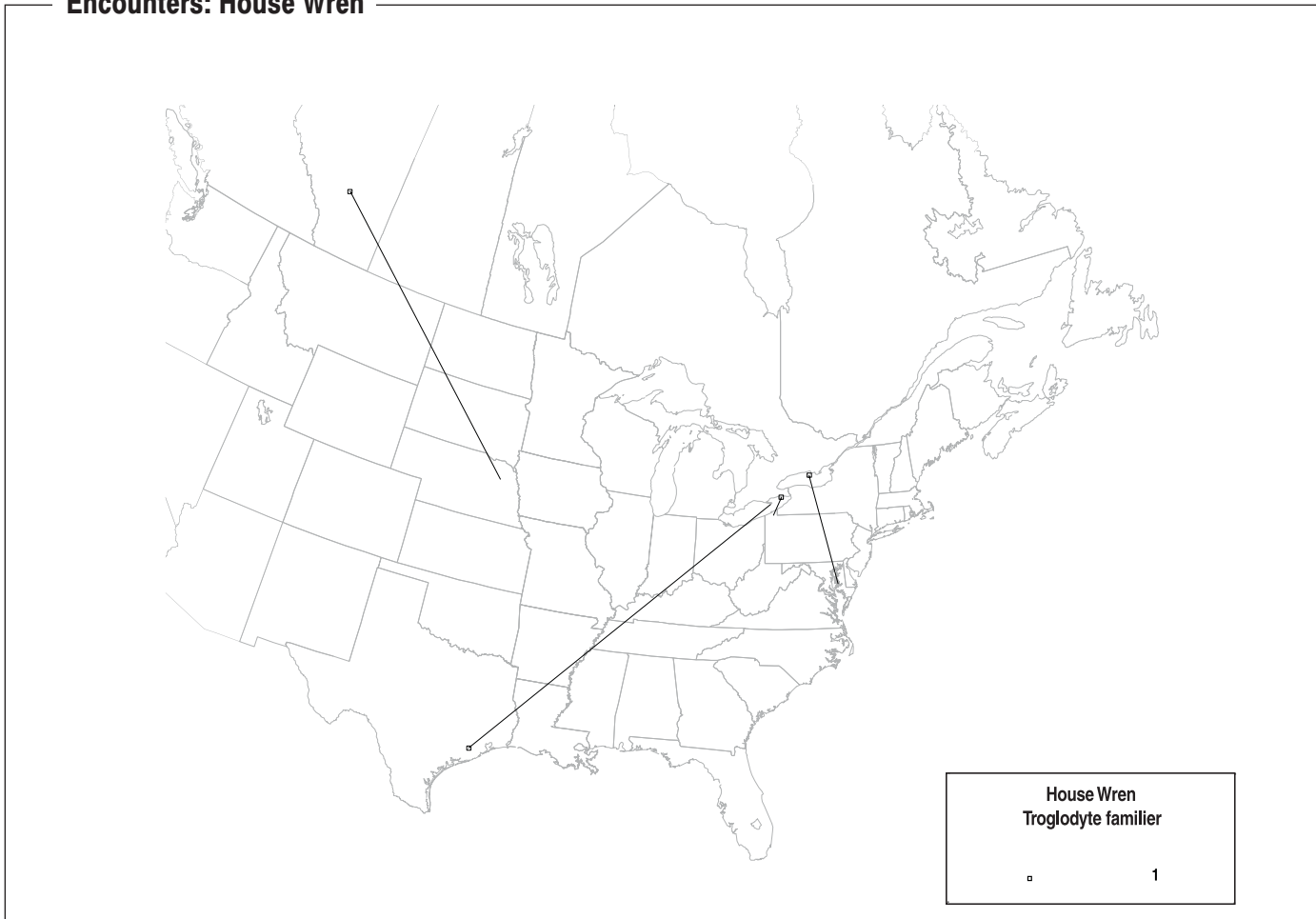
Banding effort: Brown Creeper



Top banders: LPBO, PEPO, MJW, TBO, RLW

House Wren (*Troglodytes aedon*) 721.0

Encounters: House Wren



The House Wren breeds across southern Canada from British Columbia to New Brunswick, mainly south of the boreal forest zone but also deep into northern Alberta; it also breeds in the northern two-thirds of the U.S. House Wrens winter from the southern U.S. north to Maryland in the east and south to central Mexico.

The vast majority of encountered birds were recaptured at or near the site of banding (e.g., records 1 and 2), probably during nest-box studies. Four encounters were of birds that had moved over 100 km (records 3–6).

An analysis of all banding records to 1978 (Taylor et al. 1983) indicated a fairly broad front, north–south migration in this species, although individuals from one northern state may winter in widely separated southern states. Males may winter farther north than females. Eastern seaboard wrens apparently stay east of the Appalachian Mountains. There were also a few east–west encounters, however, which cut across the general north–south pattern (also see records 3 and 5).

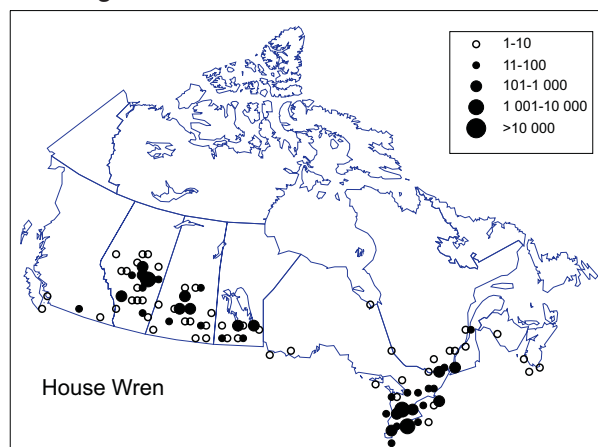
Encounter records: House Wren

1	0220-08906 LLS	AHY M 00 99	30/07/54 25/07/59	King City, ON King City, ON	43°50'N 79°30'W 43°50'N 79°30'W	5 yr. 0 mo. 0 km
2	0500-19786 MB	L M 00 87	24/06/51 09/05/53	Hampstead, QC Hudson Heights, QC	45°30'N 73°30'W 45°20'N 74°10'W	1 yr. 11 mo. 55 km S71°W
3	1020-00642 LPBO	U U 00 00	12/05/62 ??/02/63	Long Point, ON Needville, TX	42°30'N 80°00'W 29°20'N 95°50'W	2029 km S49°E
4	1370-56385 RCL	AHY U 05 12	24/05/75 18/06/75	Erie, PA Dunnville Marsh, ON	42°00'N 80°00'W 42°50'N 79°30'W	1 mo. 101 km N24°E
5	1720-61138 AJD	AHY U 04 00	08/05/85 23/07/85	Hadar, NE Pine Lake, AB	42°00'N 97°20'W 52°00'N 113°30'W	2 mo. 1650 km N42°W
6	1590-93408 HTA	HY U 07 89	22/09/84 15/05/85	St. Michaels, MD 18 km south of Hilton, ON	38°40'N 76°10'W 43°50'N 77°40'W	8 mo. 589 km N12°W

Summary of banding statistics: House Wren

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			13 365
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	36	106	158
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	35	60	60
No. of Canadian-banded birds moving > 0 km	3	1	5
Mean movement > 0 km of Canadian-banded birds	32	18	428
Maximum movement from all encounters (km)	588	1 650	2 028
% recovered (encountered dead)	55	11	22
% direct recoveries	50	9	19
% encountered during banding operations	36	85	73

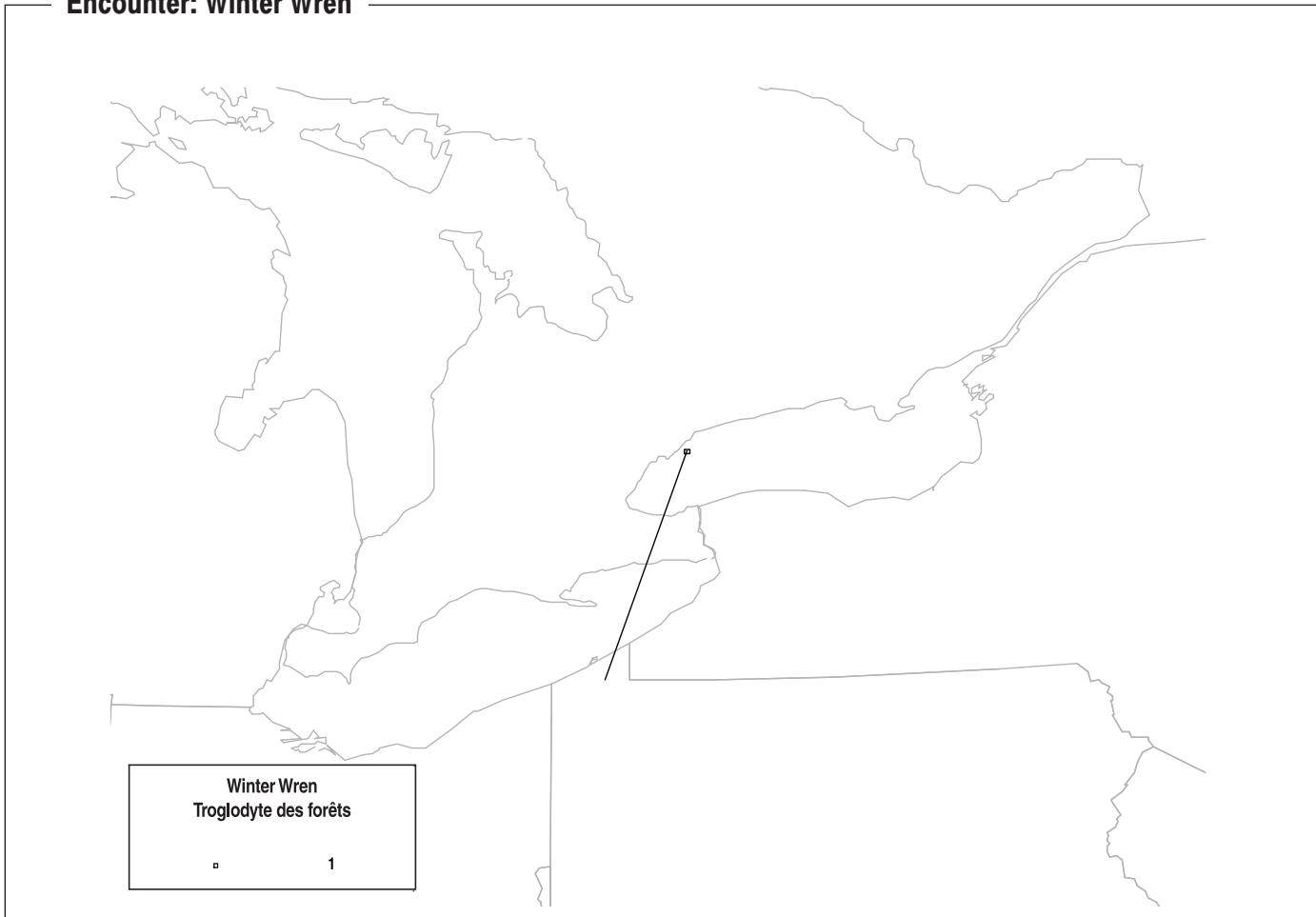
Banding effort: House Wren



Top banders: LPBO, BBO, DRL, ETJ, AWD

Winter Wren (*Troglodytes troglodytes*) 722.0

Encounter: Winter Wren



The Winter Wren breeds from coastal British Columbia east to southern Labrador and Newfoundland, south to Wisconsin and New England, and farther south in mountains; it also breeds in the U.S. Pacific states. Pacific coast birds are resident in winter, but other populations retreat to the eastern U.S. and, in the west, to a narrow area along the U.S.–Mexican border.

The only distant encounter (record 1) was of a bird encountered in successive fall migrations. Neither encounter is close to the North American longevity record of just over four years (Klimkiewicz et al. 1983).

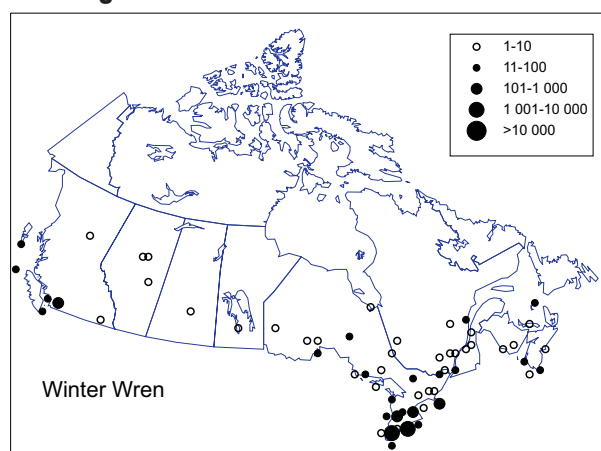
Encounter records: Winter Wren

1	1280-54692	AHY U	28/09/72	Erie, PA	42°00'N 80°00'W	1 yr. 1 mo.
	RCL	05 12	12/10/73	Agincourt, ON	43°40'N 79°10'W	198 km N20°E
2	0040-56437	AHY U	10/01/33	Duncan, BC	48°40'N 123°40'W	1 yr. 1 mo.
	GH	00 21	26/02/34	Duncan, BC	48°40'N 123°40'W	0 km

Summary of banding statistics: Winter Wren

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			5787
No. encountered per 1000 banded (1955–1995)			0
Total no. encountered (1921–1995)	0	2	2
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	–	13	13
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	–	197	197
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

Banding effort: Winter Wren



Top banders: LPBO, MJW, TBO, PEPO, JBMi

Marsh Wren (*Cistothorus palustris*) 725.0

Encounter: Marsh Wren



The Marsh Wren breeds all across the continent, from southern Canada south to the mid-U.S., with more southerly outposts. The wintering range includes the southern U.S. and northern Mexico.

The sole Canadian encounter record is an interesting one, involving a male banded in the breeding season in Saskatchewan. It was probably on its wintering area when

it died, although the encounter date is in July. The code for “how obtained” indicates the bird was “caught by or due to hawks, owls or other raptors (including found in pellets),” so perhaps the remains were found well after the actual death.

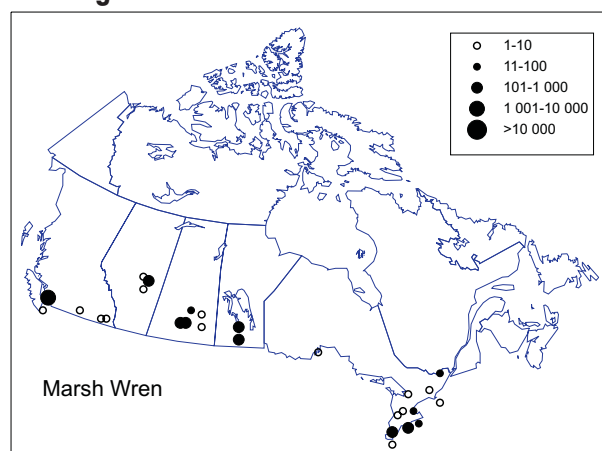
Encounter record: Marsh Wren

1	1580-63266	AHY M	22/05/91	Tugaske, SK	50°50'N 106°10'W	1 yr. 2 mo.
	DEK	05 09	10/07/92	New Orleans, LA	29°50'N 90°00'W	2697 km S36°E

Summary of banding statistics: Marsh Wren

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			4415
<i>No. encountered per 1000 banded (1955–1995)</i>			0.2
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	14	14
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	2697	2697
Maximum movement from all encounters (km)	–	2697	2697
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

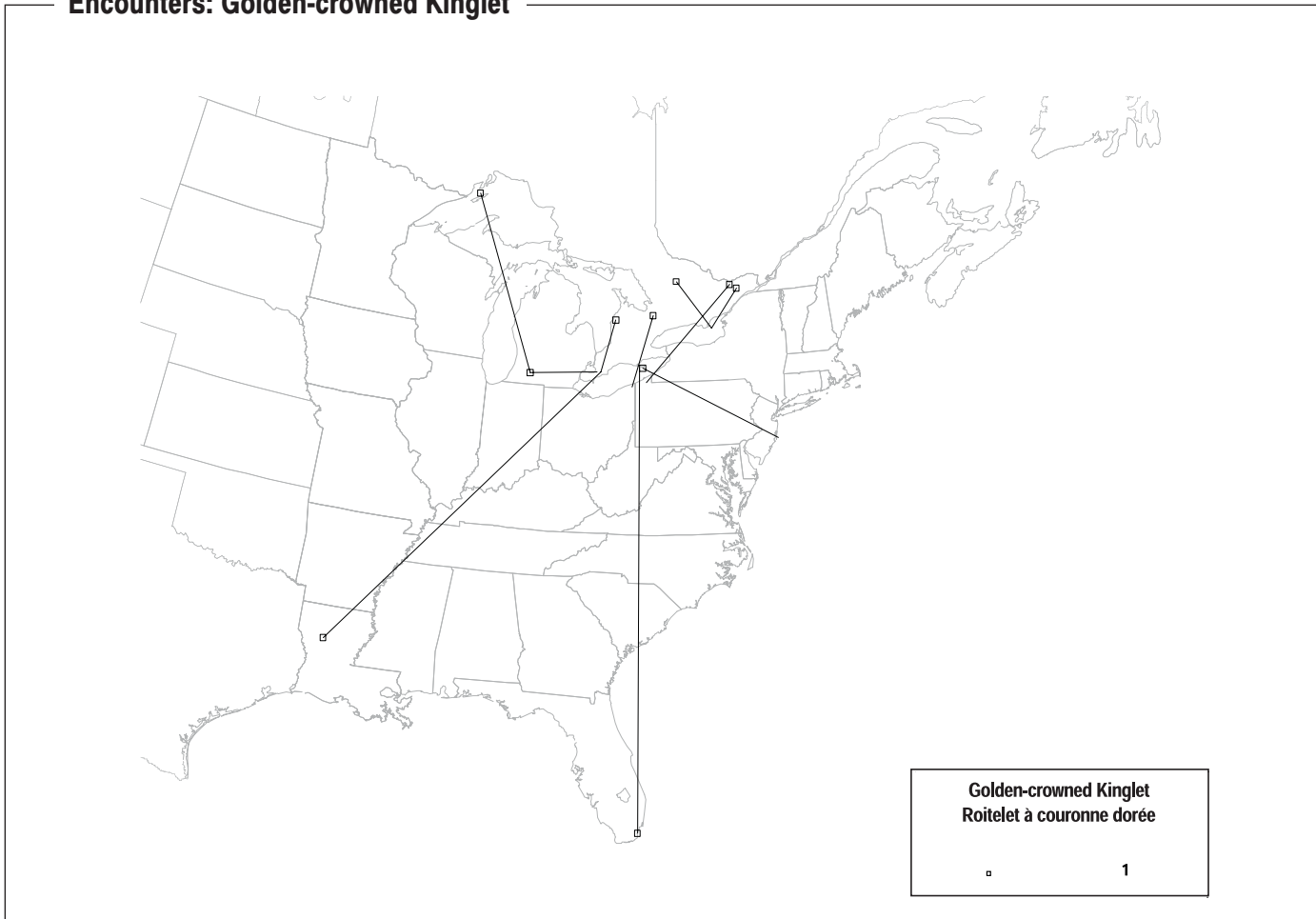
Banding effort: Marsh Wren



Top banders: RBCM, UO, MJW, ETJ, DEK

Golden-crowned Kinglet (*Regulus satrapa*) 748.0

Encounters: Golden-crowned Kinglet



The Golden-crowned Kinglet breeds in forested zones throughout British Columbia, in southern Yukon, western and northern Alberta, and northern Saskatchewan, and from central and eastern Manitoba east to Newfoundland; it also breeds in the western U.S. It winters from southern Canada throughout the U.S., as well as in southern Mexico and Guatemala.

All 10 birds that moved were banded or encountered on migration in Ontario (e.g., records 1–6). Two were encountered in winter in the southeastern U.S. (records 1 and 2), but it is unclear how far north their breeding areas might have been.

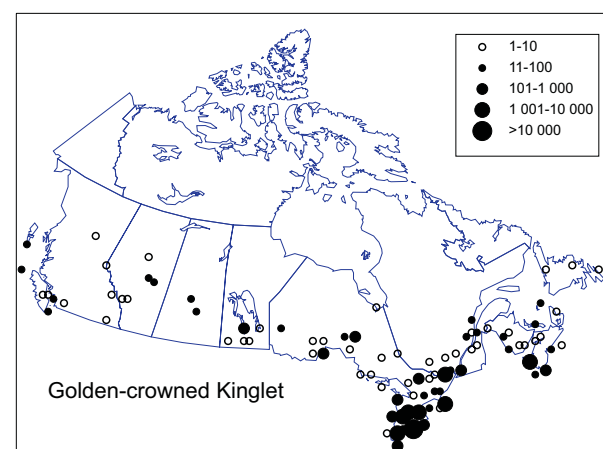
Encounter records: Golden-crowned Kinglet

1	0320-64195 TF	U M 00 01	20/10/62 22/12/62	Tilbury, ON Campti, LA	42°20'N 82°10'W 31°50'N 93°00'W	2 mo. 1511 km S43°W
2	1100-77448 LPBO	HY F 07 89	12/10/65 11/01/66	Long Point, ON Perrine, FL	42°30'N 80°20'W 25°30'N 80°20'W	3 mo. 1892 km S0°W
3	0107-32112 DLB	U U 07 89	13/10/63 23/04/65	Island Beach, NJ Long Point, ON	39°50'N 74°00'W 42°30'N 80°10'W	1 yr. 6 mo. 596 km N58°W
4	1260-38563 FLY	U M 05 13	11/10/71 99/04/74	Ashtabula Harbor, OH Barrie, ON	41°50'N 80°40'W 44°20'N 79°40'W	2 yr. 6 mo. 290 km N16°E
5	1770-25597 RCL	AHY M 07 89	08/10/88 30/09/89	Erie, PA Innis Point, ON	42°00'N 80°00'W 45°20'N 75°50'W	11 mo. 500 km N41°E
6	1900-51836 RJA	HY M 07 89	02/10/91 23/10/92	Kalamazoo, MI Thunder Cape, ON	42°10'N 85°30'W 48°10'N 88°50'W	1 yr. 0 mo. 717 km N20°W

Summary of banding statistics:
Golden-crowned Kinglet

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			28 801
<i>No. encountered per 1000 banded (1955–1995)</i>			0.3
Total no. encountered (1921–1995)	3	3	12
No. encountered from foreign bandings	1	1	4
Maximum period from banding to encounter (mo.)	12	13	30
No. of Canadian-banded birds moving > 0 km	1	1	6
Mean movement > 0 km of Canadian-banded birds	1 892	227	714
Maximum movement from all encounters (km)	1 892	500	1 892
% recovered (encountered dead)	0	66	41
% direct recoveries	66	33	33
% encountered during banding operations	100	33	50

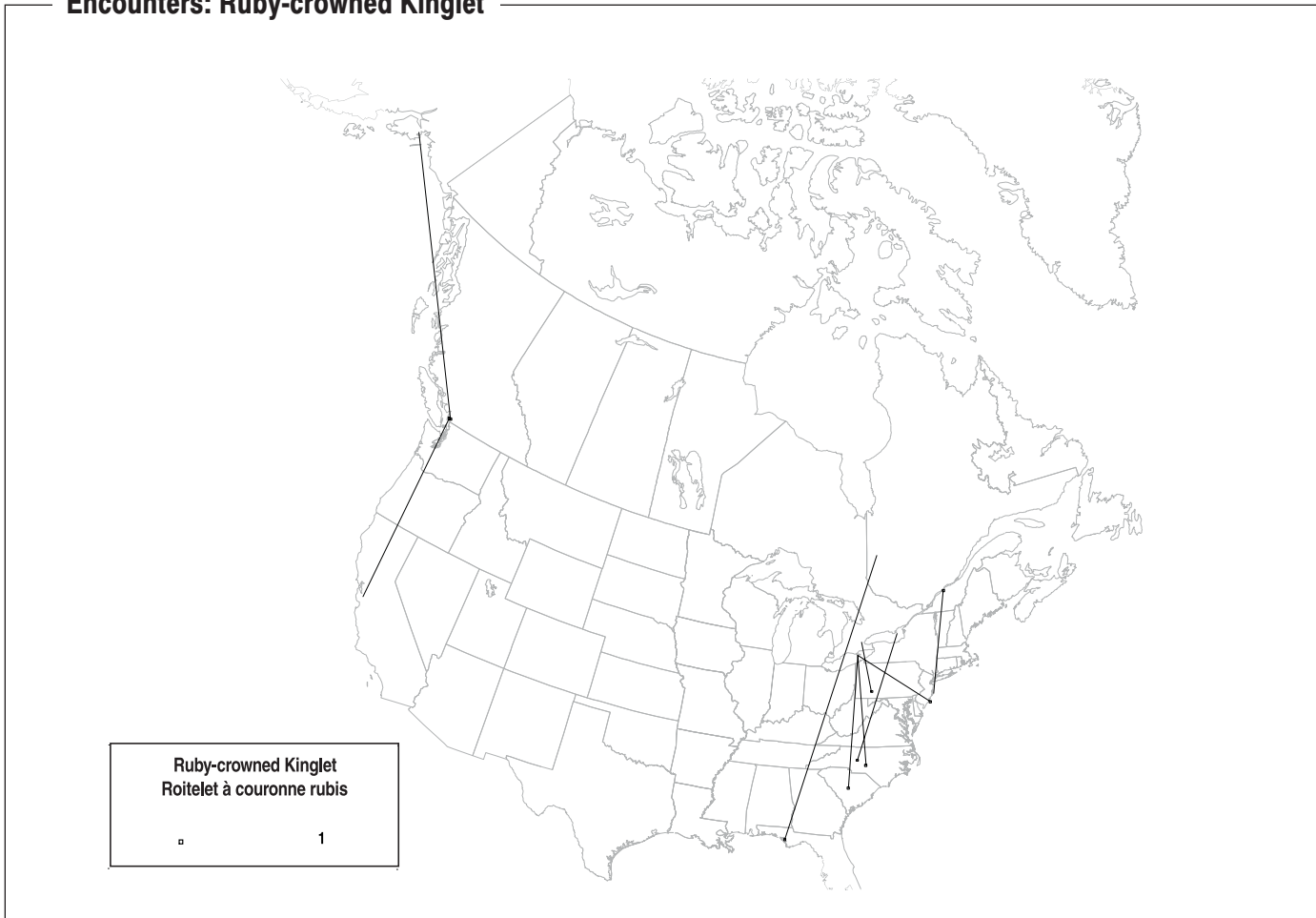
Banding effort: Golden-crowned Kinglet



Top banders: LPBO, MJW, RLW, PEPO, JBMi

Ruby-crowned Kinglet (*Regulus calendula*) 749.0

Encounters: Ruby-crowned Kinglet



The Ruby-crowned Kinglet breeds virtually throughout Canada south of the treeline, except for the Prairie Provinces; it also breeds in the northeastern and western U.S. It winters mainly in the southern third of the U.S. and through Mexico to western Guatemala.

This species has one of the lowest encounter rates of any bird. This may be partly due to its extremely thin legs, which may allow even the smallest size of band to slip off. (The smallest band size was made even smaller in 1993, in part to address this problem in banding kinglets and gnatcatchers). Of the 10 records (all listed below), 9 involved significant movements. Winter encounters, including both sexes, occurred in North Carolina (records 1 and 2), South Carolina (record 3), Florida (record 4), and California (record 5).

This pattern suggests that Canadian birds may not go as far south as Central America, although even lower encounter rates there might obscure such movements. A few long-distance encounters involved birds that were probably on their breeding grounds (record 6 in Alaska and record 7 in Quebec), while two others were both banded and encountered on migration (records 8 and 9). One of these birds moved an average of 60 km per day over six days (record 9).

Record 10 shows an unusual case of a bird retrapped on spring migration at the site where it was banded two autumns earlier.

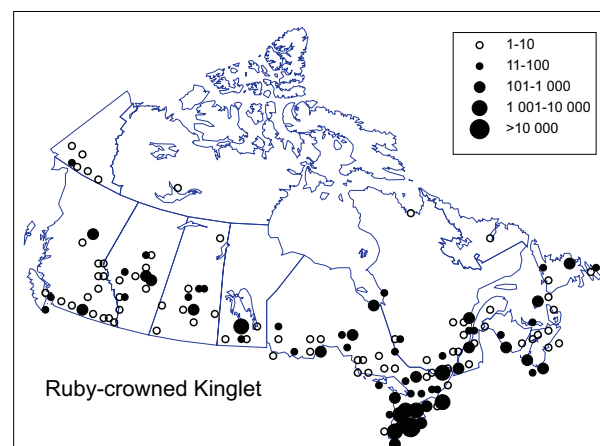
Encounter records: Ruby-crowned Kinglet

1	1720-45262 LPBO	AHY F 05 14	06/05/85 04/01/86	Long Point, ON Ether, NC	42°30'N 80°20'W 35°20'N 79°40'W	8 mo. 800 km S4°E
2	1510-12270 PEPO	U F 05 00	20/10/78 26/02/79	Prince Edward Point, ON Yadkin, NC	43°50'N 76°50'W 35°40'N 80°20'W	4 mo. 957 km S19°W
3	1100-77733 LPBO	AHY M 05 00	23/10/65 03/02/66	Long Point, ON Cayce, SC	42°30'N 80°20'W 33°50'N 81°00'W	4 mo. 967 km S4°W
4	1350-27286 MJT.	AHY M 05 13	16/07/76 22/01/77	northwest of Guyenne, QC Bayou George, FL	48°50'N 78°30'W 30°10'N 85°30'W	6 mo. 2161 km S18°W
5	1560-89936 LRM	U M 05 12	05/12/83 24/04/85	San José, CA Vancouver, BC	37°20'N 121°50'W 49°10'N 123°00'W	1 yr. 4 mo. 1321 km N4°W
6	1960-12668 JCD	HY F 03 13	12/08/93 24/09/93	18 km south of Portage, AK Port Moody, BC	60°40'N 148°50'W 49°10'N 122°50'W	1 mo. 2076 km S64°E
7	1110-41224 TS	HY M 05 00	21/10/68 FT/08/70	Island Beach, NJ Cap-de-la-Madeleine, QC	39°50'N 74°00'W 46°20'N 72°20'W	1 yr. 10 mo. 736 km N10°E
8	1840-65402 LPBO	HY U 05 13	09/10/89 99/FA/89	Long Point, ON Atlantic City, NJ	42°30'N 80°20'W 39°20'N 74°20'W	615 km S57°E
9	1890-86004 ADB	HY M 07 89	02/10/93 08/10/93	Mountsberg, ON Ligoner, PA	43°20'N 80°00'W 40°10'N 79°10'W	6 dy. 359 km S11°E
10	0390-01041 ErR	AHY U 00 99	10/10/38 09/05/40	Windsor, ON Windsor, ON	42°10'N 83°00'W 42°10'N 83°00'W	1 yr. 7 mo. 0 km

Summary of banding statistics: Ruby-crowned Kinglet

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			48 276
No. encountered per 1000 banded (1955–1995)			0.1
Total no. encountered (1921–1995)	4	4	10
No. encountered from foreign bandings	2	0	3
Maximum period from banding to encounter (mo.)	22	19	22
No. of Canadian-banded birds moving > 0 km	2	3	6
Mean movement > 0 km of Canadian-banded birds	487	1 309	976
Maximum movement from all encounters (km)	2 075	2 160	2 160
% recovered (encountered dead)	75	75	80
% direct recoveries	75	75	70
% encountered during banding operations	25	25	20

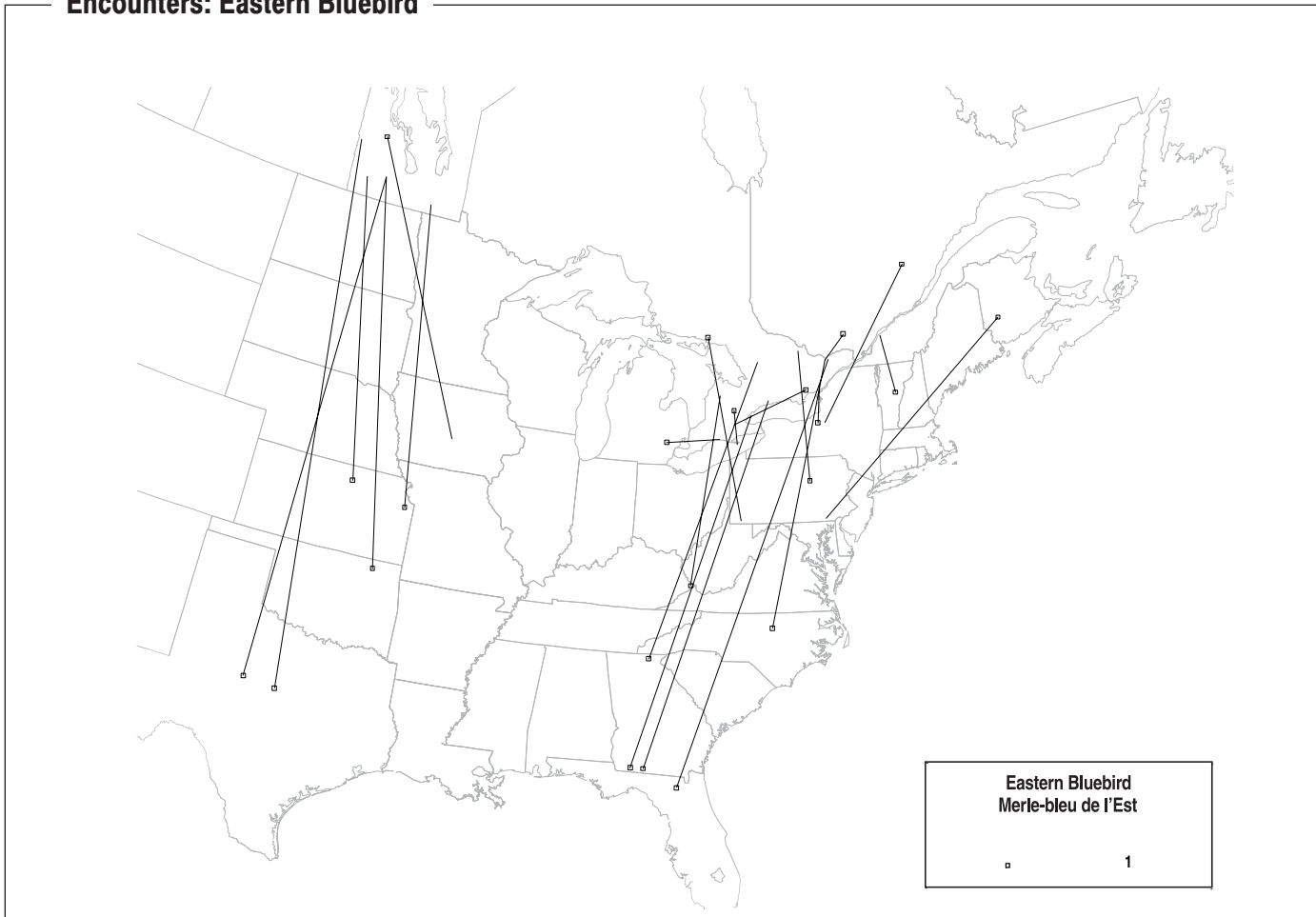
Banding effort: Ruby-crowned Kinglet



Top banders: LPBO, PEPO, MJW, TBO, IPBO

Eastern Bluebird (*Sialia sialis*) 766.0

Encounters: Eastern Bluebird



The Eastern Bluebird breeds in southern Canada from Saskatchewan to Nova Scotia, as well as in the eastern U.S. It winters from the central regions of the eastern U.S. (occasionally north to Ontario and Quebec) south to the Gulf Coast.

Twenty-one (32%) of the encounters occurred during the same summer that banding took place. Only 7 of these showed any movement, which was very slight, and 11 more were returns to the original nest site.

There were only eight encounters in mid-winter (December–February); other birds encountered in the U.S. might have been on migration. Four birds banded as nestlings in Manitoba wintered in Texas (records 1 and 2) and Kansas (record 3 and one other not listed). Four winter encounters of Ontario birds occurred in Kentucky, North Carolina, and Georgia (e.g., record 4 and presumably record 5, for which the encounter date was missing).

Encounters of Ontario birds in Georgia and Florida in March also indicate a southern U.S. wintering distribution for these birds (records 6 and 7). The encounters lend some support to Pinkowski's (1971) suggestion that northern breeding populations have a leapfrog migration, wintering to the south of the more southerly breeding populations.

The map shows the very consistent bearings of the long-distance winter encounters. Some of the shorter, more east–west movements in the Great Lakes area may result from birds taking different routes around the Great Lakes in different years.

Several birds have been encountered in the breeding season at a considerable distance north of their birthplace (records 8–11), including the sole encounter from the Maritimes (record 8).

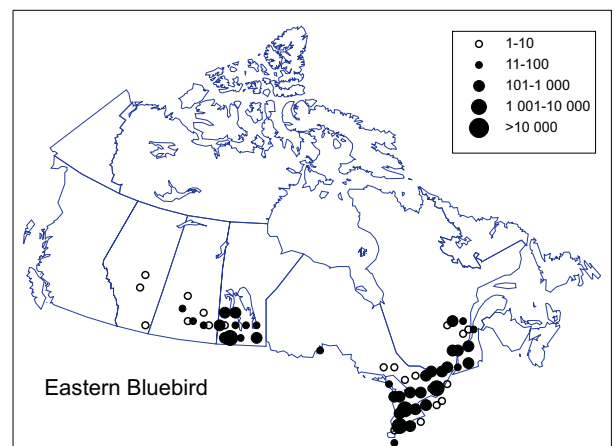
Encounter records: Eastern Bluebird

1	0780-57264 NHMBU	L U 05 00	25/06/70 23/01/71	Ingelow, MB near Wingate, TX	49°50'N 99°30'W 32°00'N 100°00'W	7 mo. 1986 km S1°W
2	8011-26321 JCF	L U 05 00	15/07/90 27/12/90	Shellmouth, MB Sidney, TX	50°50'N 101°20'W 31°50'N 98°40'W	5 mo. 2126 km S7°E
3	0820-13392 NHMBU	L U 05 00	22/07/72 14/01/74	near Souris, MB Concordia, KS	49°40'N 100°30'W 39°30'N 97°30'W	1 yr. 6 mo. 1156 km S13°E
4	1041-84423 DB	L U 05 00	11/06/69 99/01/70	Caesaria, ON near Thomasville, GA	44°00'N 78°40'W 30°50'N 83°50'W	7 mo. 1534 km S19°W
5	0491-58418 HMCD	J U 00 98	26/05/50 ??/12/51	Port Credit, ON near Whigham, GA	43°30'N 79°30'W 30°50'N 84°20'W	1473 km S18°W
6	0381-09256 WVC	AHY F 00 00	24/05/38 99/03/39	Novar, ON Blairsville, GA	45°20'N 79°10'W 34°50'N 83°50'W	10 mo. 1234 km S20°W
7	0031-12462 TSH	J U 00 01	24/06/36 03/03/37	Ottawa, ON Lake City, FL	45°20'N 75°40'W 30°10'N 82°30'W	9 mo. 1791 km S22°W
8	1411-29758 JG	L M 07 33	12/06/89 22/07/90	Buck, PA 11 km east of Millville, NB	39°50'N 76°10'W 46°00'N 67°00'W	1 yr. 1 mo. 1014 km N44°E
9	1221-48553 DDM	L U 07 04	21/05/79 18/08/82	Alleman, IA Valley River, MB	41°40'N 93°30'W 51°10'N 100°00'W	3 yr. 3 mo. 1168 km N23°W
10	1441-55486 DEE	L U 07 89	23/07/91 29/06/92	Constantia, NY Lac-Kénogami, QC	43°10'N 76°00'W 48°20'N 71°30'W	11 mo. 673 km N30°E
11	1411-61759 RKB	L U 04 00	14/05/90 30/06/91	Jefferson, PA McKerrow, ON	39°50'N 80°00'W 46°10'N 81°40'W	1 yr. 1 mo. 718 km N10°W

Summary of banding statistics: Eastern Bluebird

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			15 638
No. encountered per 1000 banded (1955–1995)			2
Total no. encountered (1921–1995)	45	19	66
No. encountered from foreign bandings	4	0	4
Maximum period from banding to encounter (mo.)	39	26	39
No. of Canadian-banded birds moving > 0 km	28	6	34
Mean movement > 0 km of Canadian-banded birds	582	263	525
Maximum movement from all encounters (km)	2 126	1 234	2 126
% recovered (encountered dead)	82	36	69
% direct recoveries	57	36	53
% encountered during banding operations	11	42	19

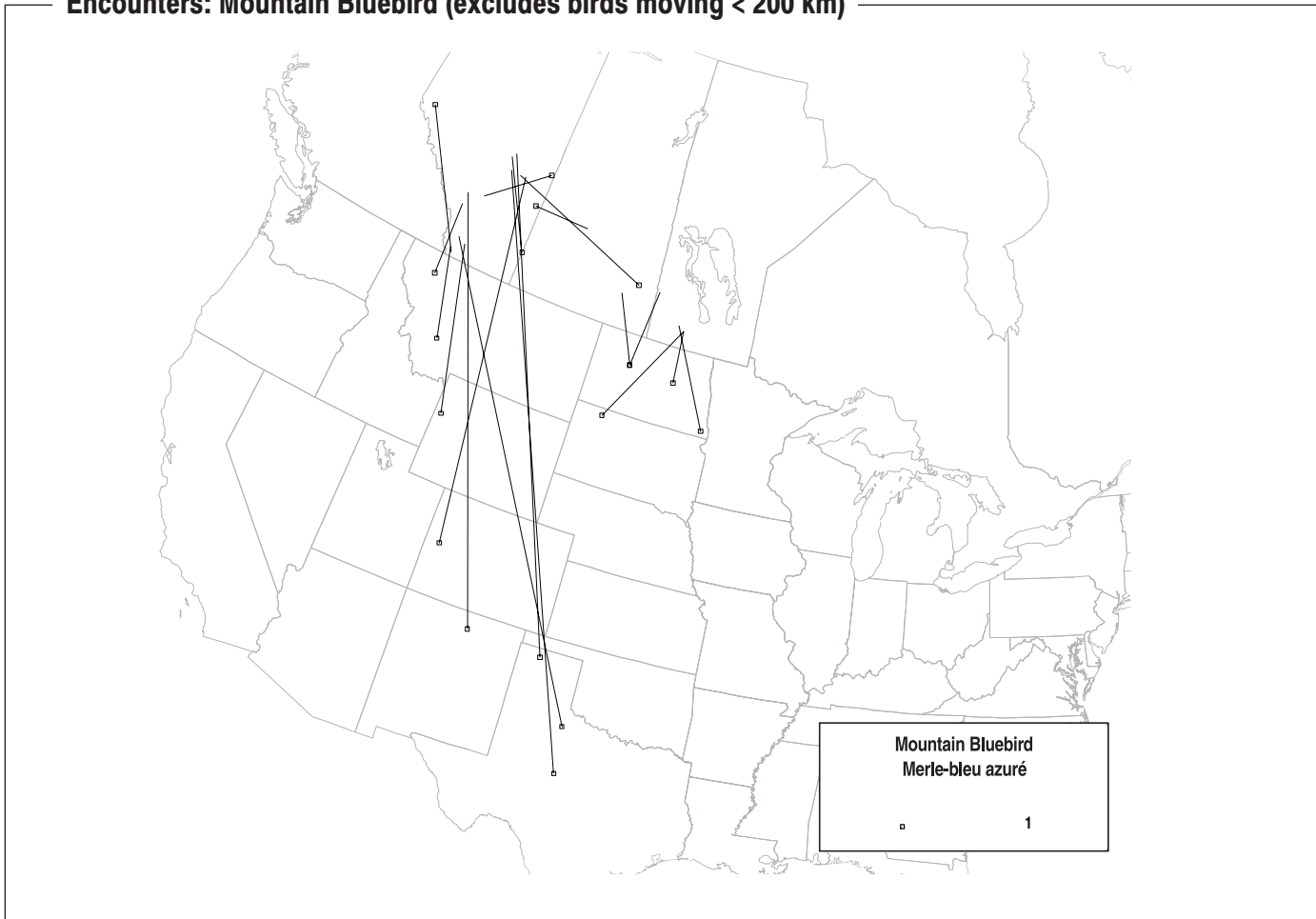
Banding effort: Eastern Bluebird



Top banders: WFR, NHMBU, RJRo, RAH, ICC

Mountain Bluebird (*Sialia currucoides*) 768.0

Encounters: Mountain Bluebird (excludes birds moving < 200 km)



The Mountain Bluebird breeds from southern Yukon, south and east to southwestern Manitoba and through the northwestern U.S. It winters from southern British Columbia (rarely) and the western U.S. to central Mexico and southern Texas.

Most banding has been done at nest boxes, and most encounters are of birds banded as nestlings. Most records show little or no movement. Thirty-eight (22%) of the encounters were of birds returning to their breeding sites in later years (e.g., records 1 and 2). Young dispersing from natal to breeding areas moved both east (e.g., record 3) and north (record 4).

Birds banded in Alberta were encountered on migration in Montana, Colorado, and Wyoming, as well as in the

wintering range in New Mexico (record 5) and Texas (records 6–8). Birds banded in Manitoba and Saskatchewan were encountered in North or South Dakota both in early spring (five records) and in winter (record 9).

Fourteen (8%) of the encounters were due to cats (e.g., record 4). Although record 2 shows the longest period between banding and encounter, the after-hatch-year female caught at her nest in Alberta (record 1) was older. She was at least five years and one month old, close to the longevity record for North America of five years and 11 months (Klimkiewicz 1997).

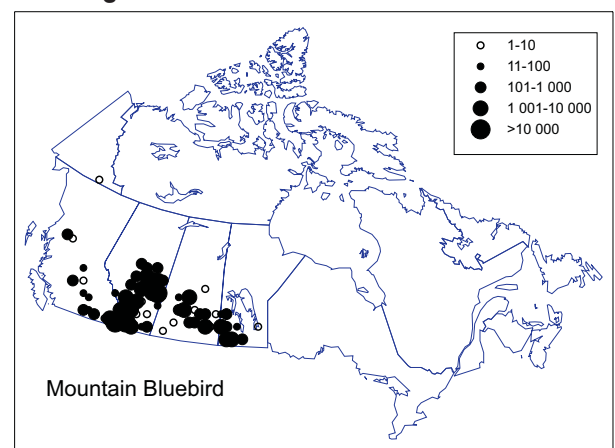
Encounter records: Mountain Bluebird

1	1271-86763	AHY F	27/05/83	11 km east of Lacombe, AB	52°20'N 113°30'W	4 yr. 1 mo.
	JCF	01 33	08/06/87	11 km east of Lacombe, AB	52°20'N 113°30'W	0 km
2	0921-12553	L U	14/06/83	11 km east of Lacombe, AB	52°20'N 113°30'W	4 yr. 11 mo.
	JCF	03 31	18/05/88	11 km east of Lacombe, AB	52°20'N 113°30'W	0 km
3	0891-17637	L U	15/06/82	18 km south of Bruce, AB	53°00'N 112°00'W	11 mo.
	JCF	05 00	18/05/83	Melville, SK	50°50'N 102°40'W	684 km S73°E
4	8011-41610	L U	03/06/90	Twin Butte, AB	49°10'N 113°50'W	1 yr. 0 mo.
	AK	03 12	03/06/91	Grand Cache, AB	53°50'N 119°00'W	631 km N33°W
5	0961-61248	L U	22/06/86	11 km west of Cremona, AB	51°30'N 114°30'W	
	DJS	05 21	??/01/87	Carson, NM	36°20'N 105°40'W	1828 km S26°E
6	0381-08471	J U	09/06/39	Camrose, AB	53°00'N 112°40'W	
	ALW	00 98	??/11/39	Wingate, TX	32°00'N 100°00'W	2550 km S29°E
7	0741-83507	L U	26/06/71	Bruderheim, AB	53°40'N 112°50'W	
	JCF	05 14	99/FA/72	near Stratford, TX	36°10'N 102°00'W	2121 km S28°E
8	0971-59130	L U	20/06/86	26 km west of Woodhouse, AB	49°50'N 113°50'W	7 mo.
	AK	05 00	18/01/87	Sneedville, TX	33°50'N 100°10'W	2104 km S37°E
9	0800-19382	L U	01/07/72	18 km south of Carberry, MB	49°40'N 99°20'W	2 yr. 6 mo.
	NHMBU	07 21	01/01/75	11 km east of Bremen, ND	47°40'N 99°10'W	223 km S3°E

Summary of banding statistics: Mountain Bluebird

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			111 142
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	157	23	180
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	59	49	59
No. of Canadian-banded birds moving > 0 km	95	10	105
Mean movement > 0 km of Canadian-banded birds	201	84	190
Maximum movement from all encounters (km)	2 549	408	2 549
% recovered (encountered dead)	84	69	82
% direct recoveries	34	30	34
% encountered during banding operations	3	13	4

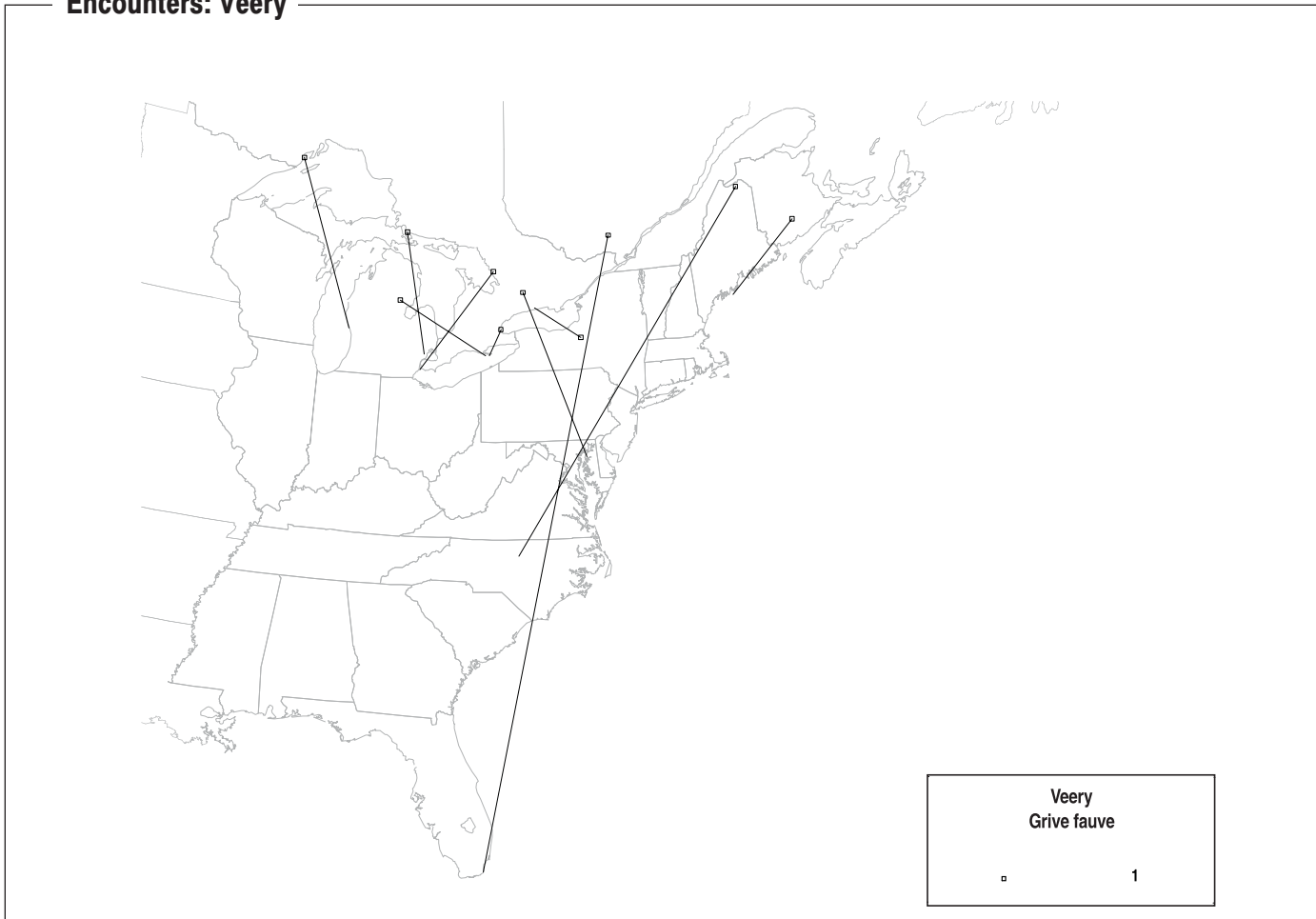
Banding effort: Mountain Bluebird



Top banders: MBT, JCF, DJS, NHMBU, LS

Veery (*Catharus fuscescens*) 756.0

Encounters: Veery



The Veery breeds throughout southern Canada south of the boreal forest zone from interior British Columbia east to Newfoundland; it also breeds in the northern U.S. (farther south in mountains). It winters in north-central South America from northern Colombia east across Venezuela to Guyana, south to Amazonian and central Brazil, and especially in northern Bolivia and southwestern Brazil (Moskoff 1995).

Four of the long-distance encounters are of birds banded on migration in the eastern U.S. and encountered on or near their breeding grounds in eastern Canada (e.g., records 1–3).

There are no records showing significant movement for western Canada (see record 4) and no winter encounters of Canadian birds.

Males appear to migrate earlier in spring than females, and adults and juveniles have a similar timing for the fall migration (Moskoff 1995).

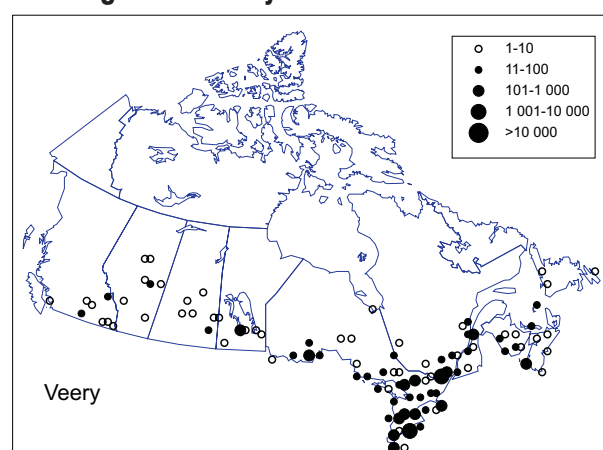
Encounter records: Veery

1	0261-07190 LHW	AHY U 03 13	16/05/70 29/06/70	Muskegon State Park, MI Thunder Bay, ON	43°10'N 86°20'W 48°20'N 89°10'W	1 mo. 616 km N20°W
2	1091-41833 EJF	HY U 05 13	04/10/70 13/06/71	Homestead Air Force Base, FL Labelle, QC	25°20'N 80°20'W 46°10'N 74°40'W	8 mo. 2373 km N11°E
3	1231-55647 CHB	U U 02 98	09/09/79 28/05/85	Hillsboro, NC Clair, NB	36°00'N 79°00'W 47°10'N 68°30'W	5 yr. 8 mo. 1517 km N32°E
4	1091-33372 PW	AHY U 07 89	21/05/72 14/07/75	east of Delta, MB Delta Beach, MB	50°10'N 98°20'W 50°10'N 98°10'W	3 yr. 2 mo. 12 km N90°E

Summary of banding statistics: Veery

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			9996
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	4	29	36
No. encountered from foreign bandings	3	3	7
Maximum period from banding to encounter (mo.)	36	38	38
No. of Canadian-banded birds moving > 0 km	0	8	9
Mean movement > 0 km of Canadian-banded birds	–	85	87
Maximum movement from all encounters (km)	2373	628	2373
% recovered (encountered dead)	75	24	33
% direct recoveries	0	17	13
% encountered during banding operations	25	75	66

Banding effort: Veery



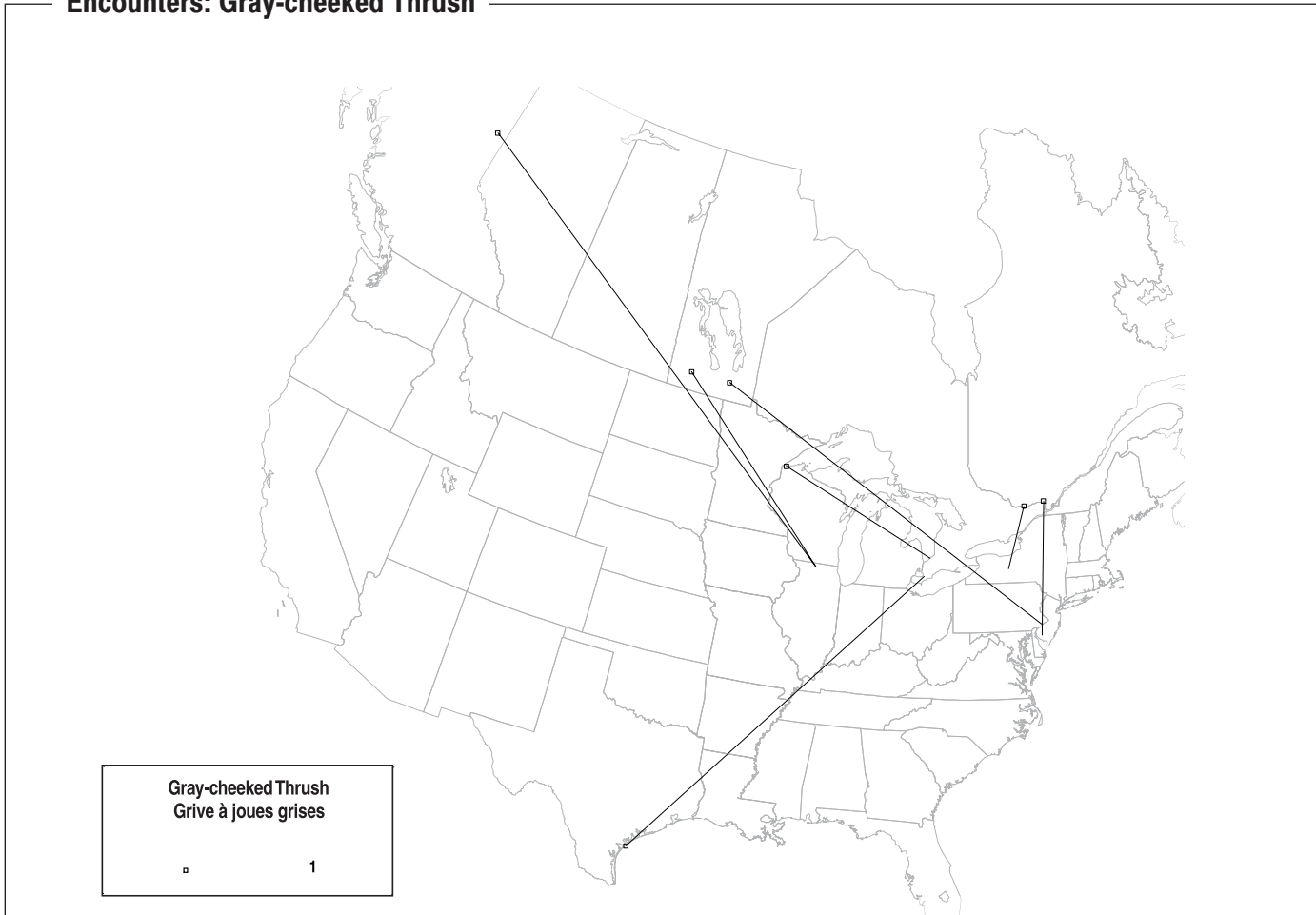
Top banders: LPBO, PEPO, TBO, IPBO, NMC

Gray-cheeked Thrush (*Catharus minimus*) 757.0

includes:

Bicknell's Thrush (*Catharus bicknelli*) 757.1

Encounters: Gray-cheeked Thrush



The Gray-cheeked Thrush breeds mainly in the taiga zone, north to the treeline and across Canada from Yukon and northwestern British Columbia east to Newfoundland; it also breeds in Alaska and Siberia. Bicknell's Thrush, only recently recognized as a distinct species (Ouellet 1993), breeds in southeastern Canada and the northeastern U.S. Both thrushes winter mainly in northern South America from Colombia, Venezuela, and Guyana south to eastern Peru and northwestern Brazil.

Seven of the eight encounters are of birds banded in fall, including five birds banded in the U.S. The birds in records 1 and 2, banded at the same location in Illinois,

were encountered in May in British Columbia and Manitoba, respectively, and a Manitoba bird was banded in Pennsylvania in fall (record 3). This suggests that western breeders head east in fall before turning south toward the wintering grounds. Eastern breeders appear to have a more north-east-southwest axis of migration (records 4 and 5). The encounter date of record 6 suggests the bird could not have been migrating, indicating that it was nesting in the range of Bicknell's Thrush.

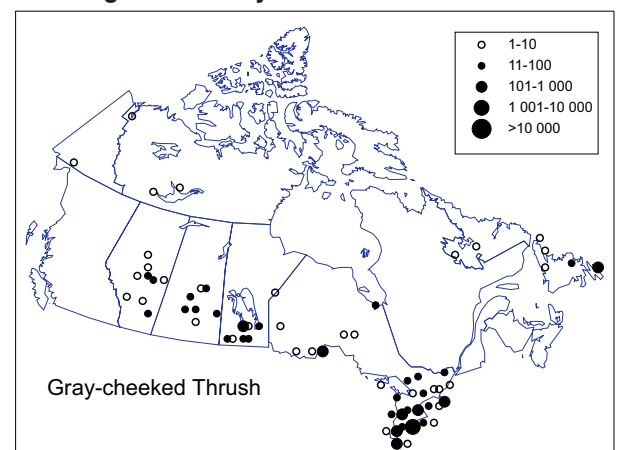
Encounter records: Gray-cheeked Thrush

1	0840-01578 CAE	AHY U 05 12	29/09/73 ??/05/78	Harrison, IL Fort St. John, BC	42°20'N 89°10'W 56°10'N 120°50'W	2731 km N45°W
2	1221-35588 LGJ	AHY U 05 00	18/09/82 15/05/83	Harrison, IL Brandon, MB	42°20'N 89°10'W 49°50'N 99°50'W	8 mo. 1171 km N41°W
3	1070-35357 JMC	HY U 03 12	03/10/68 24/05/70	Ambler, PA near St. Vital, MB	40°00'N 75°10'W 49°50'N 97°00'W	1 yr. 7 mo. 2028 km N50°W
4	1091-54155 MJL	HY U 05 13	24/09/70 22/05/74	Bellona, NY Gauvreau Lake, QC	42°40'N 77°00'W 45°30'N 75°50'W	3 yr. 8 mo. 329 km N16°E
5	1231-00160 MJW	U U 05 00	26/09/78 27/04/82	Mitchell Bay, ON Aransas Pass, TX	42°20'N 82°20'W 27°50'N 97°00'W	3 yr. 7 mo. 2089 km S44°W
6	0271-77177 ROB	HY U 00 13	02/09/63 25/06/64	Cohansey, NJ Harrington, QC	39°30'N 75°10'W 45°40'N 74°30'W	9 mo. 689 km N4°E

Summary of banding statistics: Gray-cheeked Thrush

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			8090
<i>No. encountered per 1000 banded (1955–1995)</i>			0.4
Total no. encountered (1921–1995)	3	3	8
No. encountered from foreign bandings	3	2	5
Maximum period from banding to encounter (mo.)	44	13	44
No. of Canadian-banded birds moving > 0 km	0	1	3
Mean movement > 0 km of Canadian-banded birds	–	12	993
Maximum movement from all encounters (km)	2028	2731	2731
% recovered (encountered dead)	100	66	87
% direct recoveries	0	0	0
% encountered during banding operations	0	33	12

Banding effort: Gray-cheeked Thrush



Top banders: LPBO, PEPO, MJW, DDD, JOLR

Swainson's Thrush (*Catharus ustulatus*) 758.0

Encounters: Swainson's Thrush (block size = 4.1°)



Swainson's Thrush breeds from Alaska east across forested Canada to Newfoundland, as well as in the eastern U.S. and much of the western U.S. It winters from northern Mexico south through Central America and north-central South America (east to Guyana and western Brazil, and south to Peru, Bolivia, northwestern Argentina, and Paraguay).

Of the 21 birds with significant movement, two (records 1 and 2) were encountered in interior British Columbia shortly after the breeding season. The banding locations were in Wisconsin and Kansas. These birds presumably belonged to the race *C. u. almae*, which nests in the area of encounter, or possibly *C. u. incanus*, which occupies an area farther north. By comparison, the bird in record 3, banded at the same location in Wisconsin as the bird in record 1 and also on fall migration, was encountered during the breeding season in Manitoba in the breeding range of *C. u. swainsoni*.

Similar migration directions are shown in records 4 and 5. By contrast, the bird in record 6 was banded on fall migration in Pennsylvania (like that in record 4) but was encountered in Nova Scotia. The birds in records 7 and 8 were banded in fall in Ontario but encountered later in other years in Nebraska and Alaska, respectively, considerably west of the banding locations of the two birds encountered in British Columbia (records 1 and 2). These encounters suggest that all northern-breeding populations move toward the eastern portion of the continent before heading south toward Central America.

The adult in record 9, which was banded and encountered on spring migration, moved at least 81 km per day over 12 days. The bird captured by a cat in Alaska in late September (record 8) was surprisingly late in starting migration.

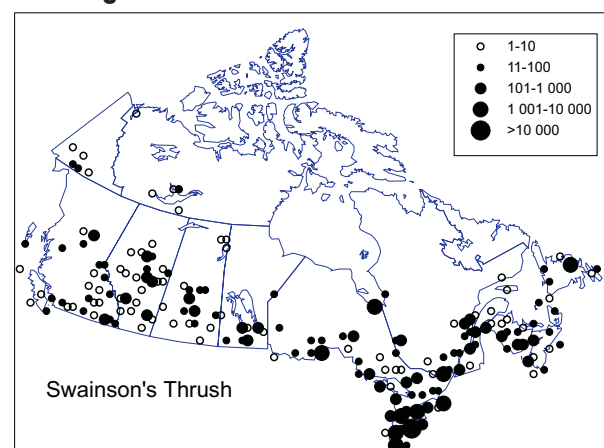
Encounter records: Swainson's Thrush

1	0311-17693 JTE	U U 00 12	11/09/61 04/08/63	Adell, WI near Vernon, BC	43°30'N 87°50'W 50°10'N 119°10'W	1 yr. 11 mo. 2478 km N62°W
2	1141-44095 RJW	AHY U 05 12	24/05/73 21/08/73	Ellis, KS near Red Mountain, BC	38°50'N 99°30'W 49°00'N 118°20'W	3 mo. 1879 km N47°W
3	0251-67197 HCM	U U 00 00	14/09/57 21/05/59	Adell, WI near St. Vital, MB	43°30'N 87°50'W 49°50'N 97°00'W	1 yr. 8 mo. 992 km N42°W
4	0331-16503 JHS	U U 00 01	21/09/63 99/SP/65	Arbuckle, PA Carman, MB	41°50'N 79°50'W 49°30'N 98°00'W	1645 km N53°W
5	0371-17339 CEP	U U 00 00	25/05/37 ST/06/37	Bellingham, MN near Vulcan, AB	45°00'N 96°10'W 50°20'N 113°10'W	1 mo. 1402 km N59°W
6	1071-92747 JMC	AHY U 05 03	23/09/69 99/06/72	Chalfont, PA Bayhead, NS	40°00'N 75°10'W 45°40'N 63°20'W	2 yr. 9 mo. 1152 km N53°E
7	0321-22755 MJW	AHY U 05 00	10/09/67 99/10/69	Balmoral Marsh, ON Gering, NE	42°20'N 82°20'W 41°40'N 103°30'W	2 yr. 1 mo. 1748 km N85°W
8	1201-27574 PEPO	U U 04 12	10/09/77 20/09/78	Prince Edward Point, ON College, AK	43°50'N 76°50'W 64°50'N 147°40'W	1 yr. 0 mo. 4822 km N36°W
9	1191-72902 RCL	AHY U 05 03	17/05/79 29/05/79	Erie, PA Saint-Henri-de-Taillon, QC	42°00'N 80°00'W 48°40'N 71°50'W	12 dy. 978 km N38°E
10	1171-68321 RPLG	AHY F 07 99	26/06/86 03/02/92	Port-au-Persil, QC Port-au-Persil, QC	47°40'N 69°50'W 47°40'N 69°50'W	5 yr. 8 mo. 0 km

Summary of banding statistics: Swainson's Thrush

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			39 044
No. encountered per 1000 banded (1955–1995)			0.6
Total no. encountered (1921–1995)	6	24	37
No. encountered from foreign bandings	0	7	12
Maximum period from banding to encounter (mo.)	25	68	68
No. of Canadian-banded birds moving > 0 km	4	4	10
Mean movement > 0 km of Canadian-banded birds	617	520	942
Maximum movement from all encounters (km)	1 546	1 878	4 822
% recovered (encountered dead)	83	45	62
% direct recoveries	83	20	29
% encountered during banding operations	16	54	37

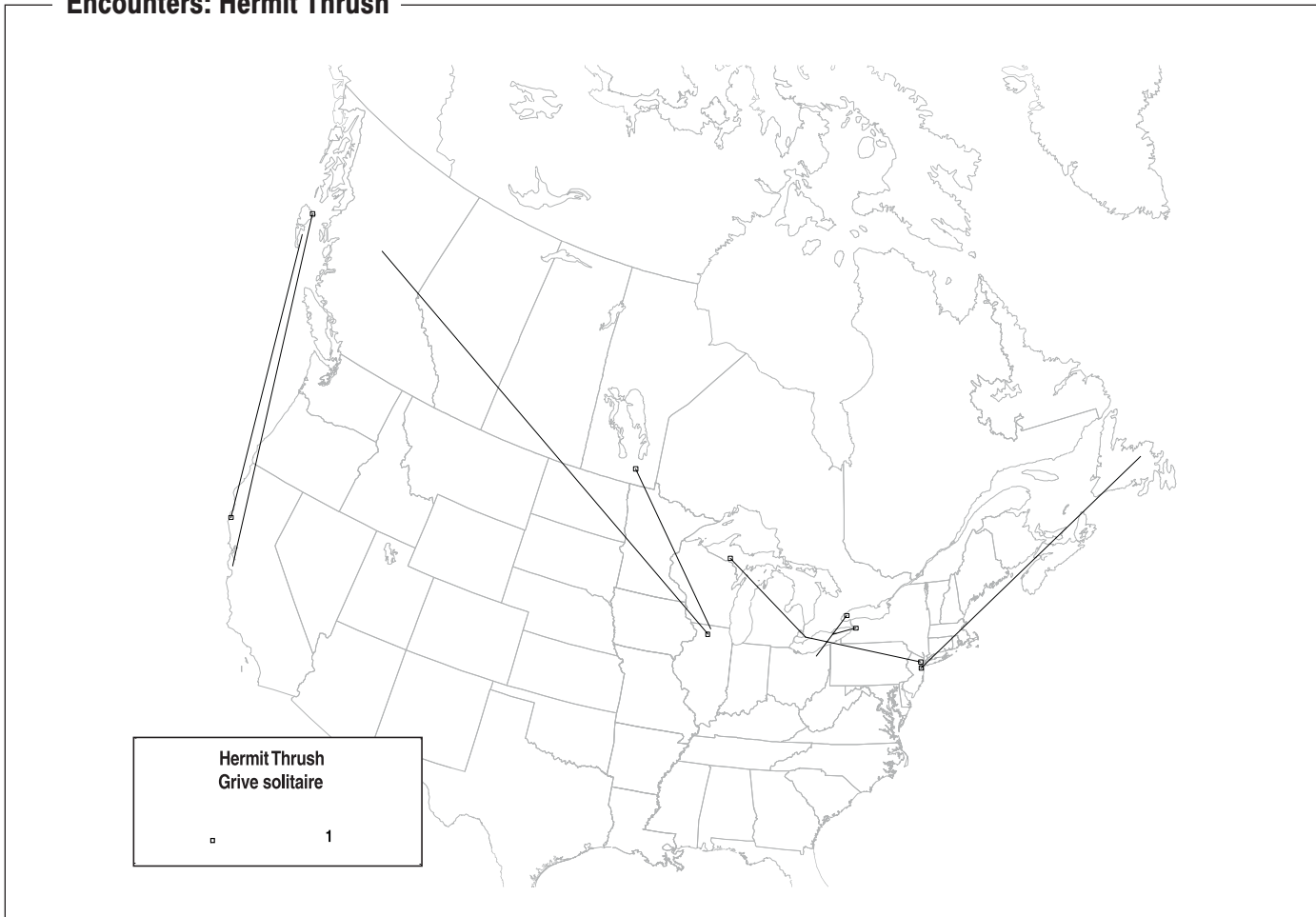
Banding effort: Swainson's Thrush



Top banders: LPBO, PEPO, JBMi, TBO, GFB

Hermit Thrush (*Catharus guttatus*) 759.0

Encounters: Hermit Thrush



The Hermit Thrush breeds from central Alaska east across much of forested Canada to Newfoundland (it is absent only from the Prairie Provinces); it also breeds in the western and northeastern U.S. It winters in southern parts of British Columbia and along the U.S. Pacific coast, as well as in the southern U.S. and Mexico as far south as Guatemala.

This temperate-wintering species is considered a short-distance migrant because a large portion of the population winters in the U.S. Two encounters (e.g., record 1) are of birds, presumably the *nanus* subspecies, moving between their breeding grounds in coastal British Columbia and wintering areas in California. In contrast, a bird banded in north-central British Columbia following the

breeding season was encountered in Illinois in late spring (record 2). A bird banded nearby in Illinois in October (record 3) was encountered in Manitoba in the spring. Encounters involving Ontario and Quebec showed relatively short movements (records 4–7), although dates of banding or encounter in the U.S. suggest the birds might not have been on their wintering areas. No Canadian birds have yet been found in the portion of the wintering range south of the U.S. The only encounter from Atlantic Canada (record 8) suggests that the *crymophilus* subspecies found in Newfoundland also moves considerable distances, although the extent of its wintering range is poorly known (Jones and Donovan 1996).

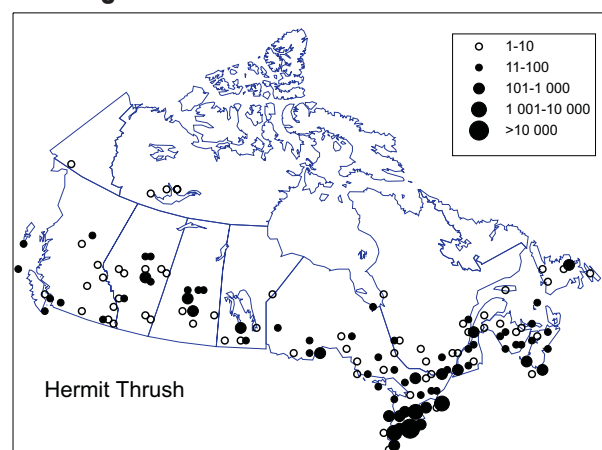
Encounter records: Hermit Thrush

1	1461-63426 AJG	HY U 05 00	24/06/93 01/11/93	Reef Island, BC Mendocino, CA	52°50'N 131°30'W 39°10'N 123°40'W	5 mo. 1635 km S25°E
2	1251-70181 JCF	HY U 05 00	02/08/81 18/05/84	48 km northwest of Fort St. James, BC Mount Morris, IL	54°40'N 124°50'W 42°00'N 89°20'W	2 yr. 9 mo. 2938 km S76°E
3	1361-77745 LGJ	HY U 05 13	02/10/88 04/05/90	Harrison, IL Winnipeg, MB	42°20'N 89°10'W 49°50'N 97°00'W	1 yr. 7 mo. 1030 km N33°W
4	1231-88038 JGE	U U 07 89	17/10/78 03/05/80	Maple Heights, OH Toronto, ON	41°20'N 81°30'W 43°30'N 79°20'W	1 yr. 7 mo. 300 km N36°E
5	1451-17958 LPBO	HY U 05 00	30/10/90 25/11/90	Long Point, ON Williamsville, NY	42°30'N 80°20'W 42°50'N 78°40'W	1 mo. 141 km N74°E
6	1070-19940 MJW	AHY U 05 13	21/04/73 01/11/73	Balmoral Marsh, ON Bloomington, NJ	42°20'N 82°20'W 40°50'N 74°10'W	7 mo. 700 km S79°E
7	1070-19484 MJW	U U 05 13	09/10/71 20/06/72	Balmoral Marsh, ON Amash, MI	42°20'N 82°20'W 46°10'N 88°20'W	8 mo. 641 km N46°W
8	1271-91648 GFB	HY U 05 00	03/08/82 23/10/82	Glenwood, NF Rahway, NJ	48°50'N 54°50'W 40°30'N 74°10'W	2 mo. 1782 km S66°W

Summary of banding statistics: Hermit Thrush

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			22 367
No. encountered per 1000 banded (1955–1995)			0.7
Total no. encountered (1921–1995)	8	12	22
No. encountered from foreign bandings	2	0	3
Maximum period from banding to encounter (mo.)	33	24	33
No. of Canadian-banded birds moving > 0 km	5	1	7
Mean movement > 0 km of Canadian-banded birds	1 304	699	1 123
Maximum movement from all encounters (km)	2 937	699	2 937
% recovered (encountered dead)	100	25	54
% direct recoveries	62	25	36
% encountered during banding operations	0	75	45

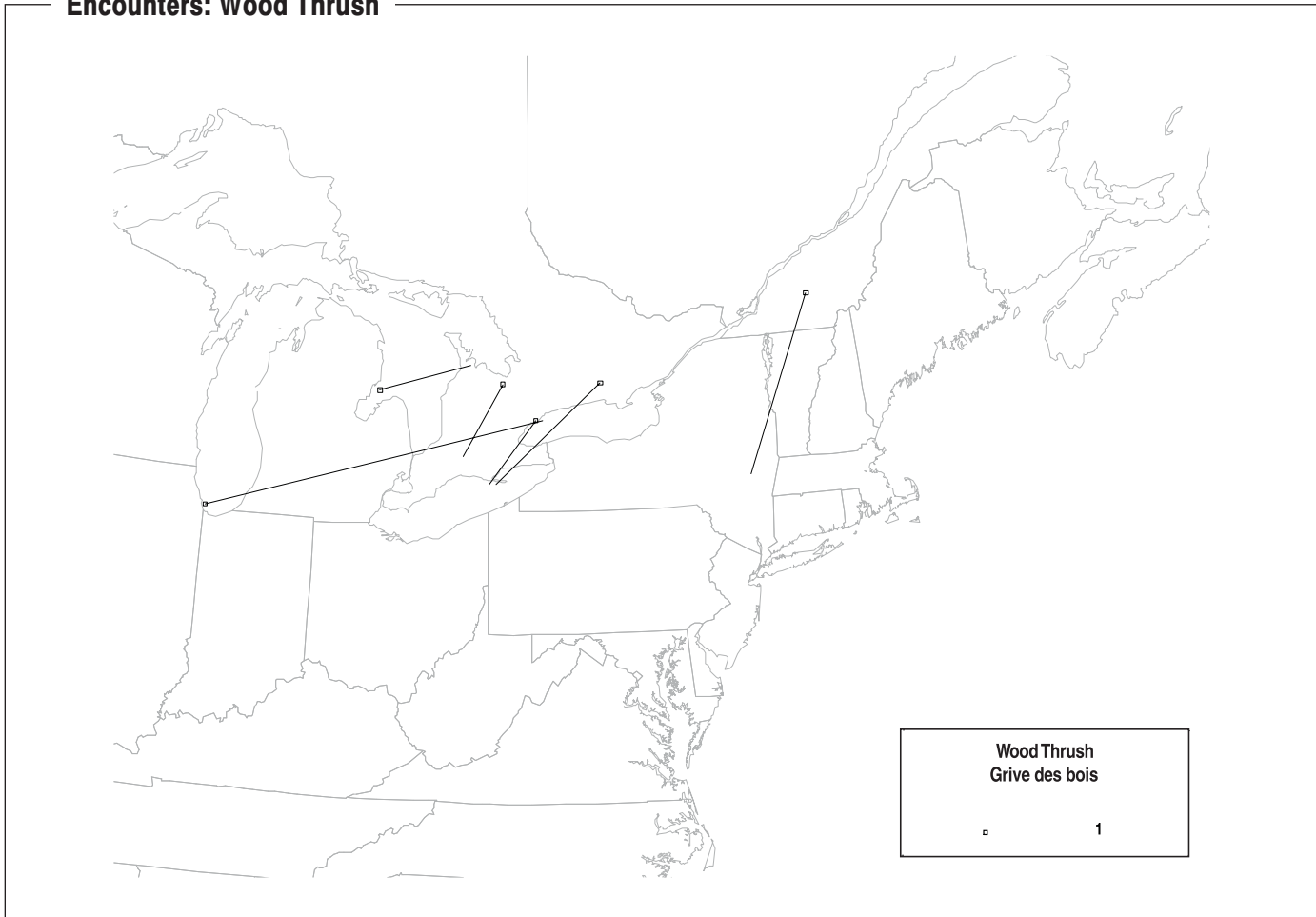
Banding effort: Hermit Thrush



Top banders: LPBO, TBO, PEPO, MJW, JBMi

Wood Thrush (*Hylocichla mustelina*) 755.0

Encounters: Wood Thrush



The Wood Thrush breeds in the eastern U.S. and in Canada in southern Ontario, southwestern Quebec, and the Maritimes. It winters mainly from southern Texas south through Central America to Panama.

All six movements of over 100 km are mapped (including records 1–4). Roth et al. (1996) considered the westerly movement shown in record 1 to be an exception to typical migration patterns through the eastern U.S., which

are north–south or parallel to the Atlantic coast. However, this bird was banded in its hatch year, and an element of juvenile dispersal may have been involved. There are no encounters of Canadian birds from the winter quarters.

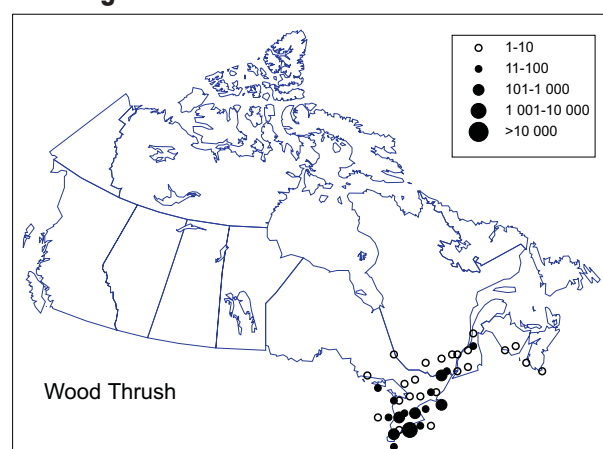
Encounter records: Wood Thrush

1	0502-85480 LGL	HY U 07 13	10/08/65 29/09/65	Agincourt, ON Chicago, IL	43°40'N 79°10'W 41°50'N 87°30'W	1 mo. 711 km S76°W
2	0521-96879 LPBO	AHY U 04 00	12/05/66 16/05/69	Long Point, ON northeast of Campbellford, ON	42°30'N 80°20'W 44°20'N 77°40'W	3 yr. 297 km N46°E
3	0701-34251 JBMi	HY U 07 89	23/09/71 15/05/72	Bruce Peninsula, ON East Tawas, MI	44°40'N 81°00'W 44°10'N 83°20'W	8 mo. 194 km S74°W
4	0961-11818 JSC	AHY U 05 00	02/09/83 17/06/85	South Berne, NY Lake Aylmer, QC	42°30'N 74°00'W 45°40'N 72°10'W	1 yr. 9 mo. 382 km N22°E

Summary of banding statistics: Wood Thrush

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3010
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	4	5	15
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	12	36	36
No. of Canadian-banded birds moving > 0 km	3	4	8
Mean movement > 0 km of Canadian-banded birds	314	160	204
Maximum movement from all encounters (km)	710	381	710
% recovered (encountered dead)	25	80	40
% direct recoveries	50	0	20
% encountered during banding operations	50	0	46

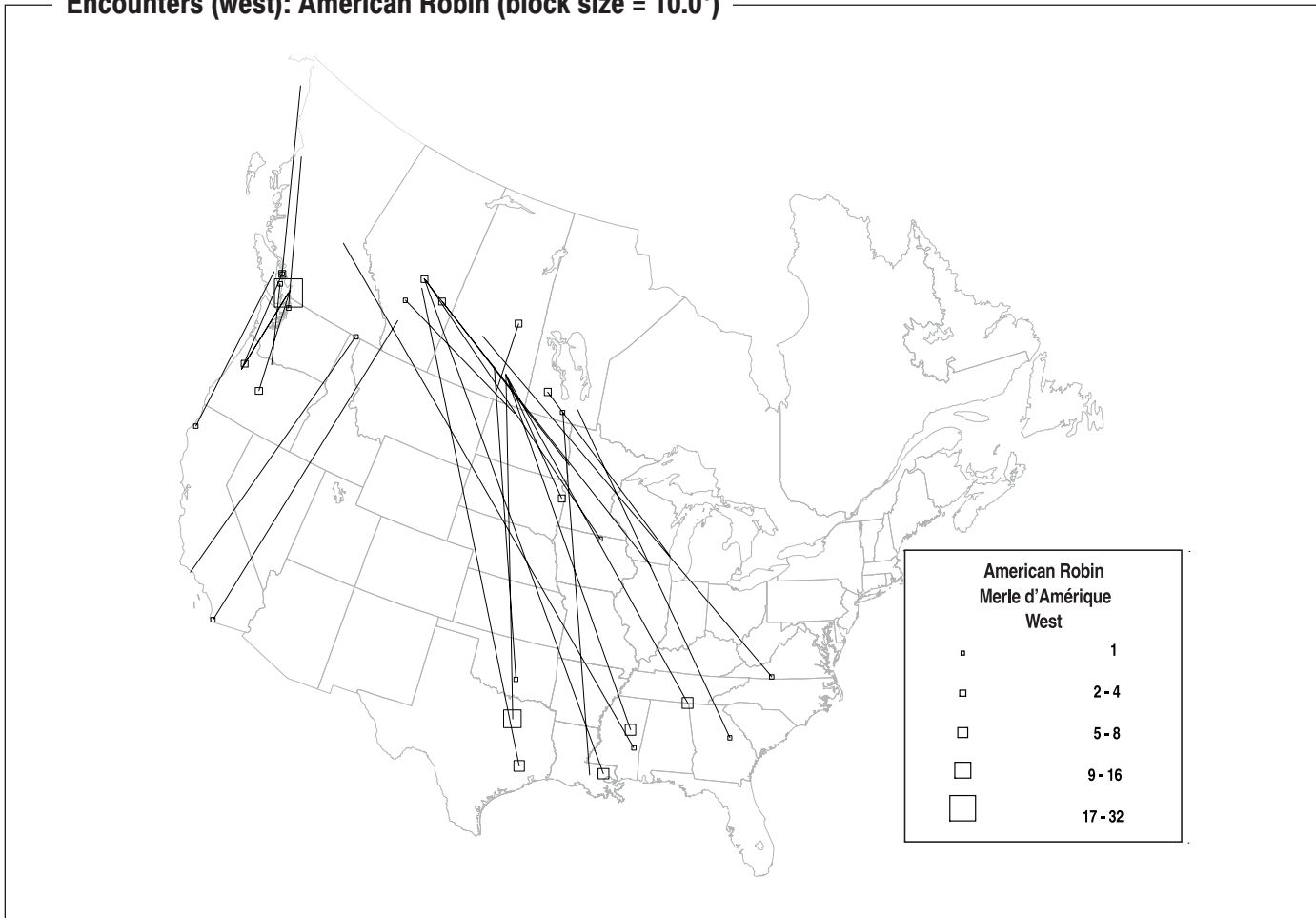
Banding effort: Wood Thrush



Top banders: LPBO, PEPO, JBMi, MJW, CMF

American Robin (*Turdus migratorius*) 761.0

Encounters (west): American Robin (block size = 10.0°)



The American Robin breeds from the treeline in Alaska and northern Yukon across Canada and through the U.S. to southern Mexico. It winters in British Columbia, southern Ontario, Newfoundland, and the northern U.S., but its main wintering range is in the southern two-thirds of the U.S. south to Guatemala and the Bahamas.

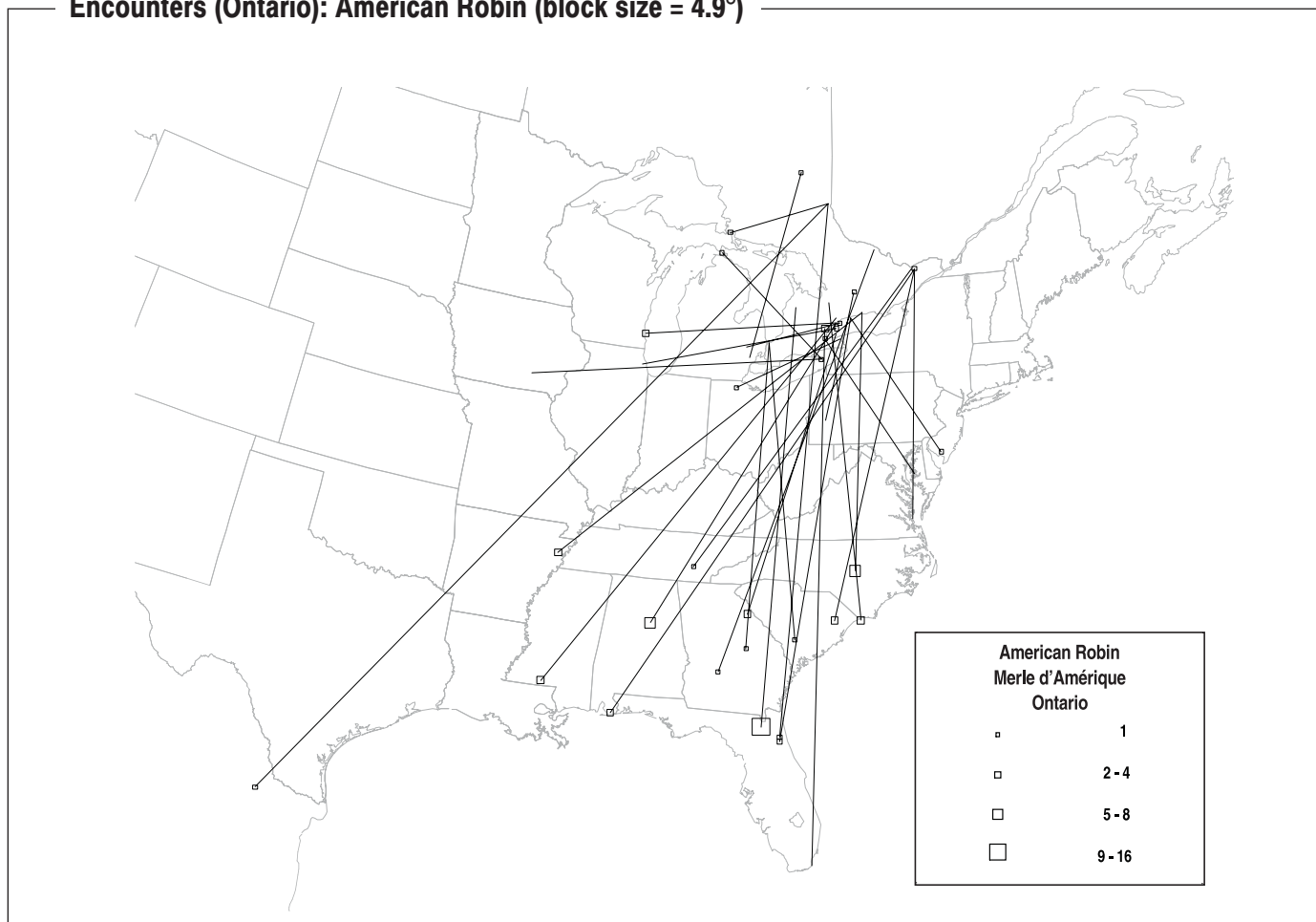
The high number of encounters makes it necessary to summarize many records with a single line on the map, so many state–province connections are not depicted (see block sizes with encounter maps and section 4.2 for explanation). Nonetheless, the maps clearly show the general direction of movements from different parts of Canada.

Of the 62 birds encountered in British Columbia, most were found from March to August, with three found in winter (December–February). Eleven encounters outside the province between October and March reflected movement down the Pacific coast to winter quarters in Washington,

Oregon, and (especially) California (e.g., record 1), a route that also appears to be used by some Alaskan birds (record 2). Encounter patterns were clearly influenced by the density of human population in the Vancouver–Victoria and San Francisco areas (although the thinning process used for mapping obscures this fact); however, it seems clear that birds from coastal British Columbia do not winter much farther south than San Francisco, and that they largely confine themselves to coastal areas. A bird from central British Columbia encountered in Mississippi (record 3) and one connecting California to Alberta (record 4) appear to represent exceptional movements across the Rocky Mountains.

Of the 261 encounters of birds banded in the Prairie Provinces, 84% were within the Prairie Provinces between April and September. Winter (December–February) encounters were concentrated in Texas and Louisiana

Encounters (Ontario): American Robin (block size = 4.9°)



(including record 5). Smaller numbers wintered farther east, overlapping to some extent with robins originating from Ontario and western Quebec. There was one winter encounter from Georgia (record 6) and one of uncertain date from Virginia (record 7).

Although the American Robin is a common wintering bird in suitable habitat in Arizona, New Mexico, and western Texas, there is a striking lack of Canadian encounters from these areas. This observation suggests that populations wintering there are derived from shorter or altitudinal migrations from the breeding range within the Rocky Mountain states.

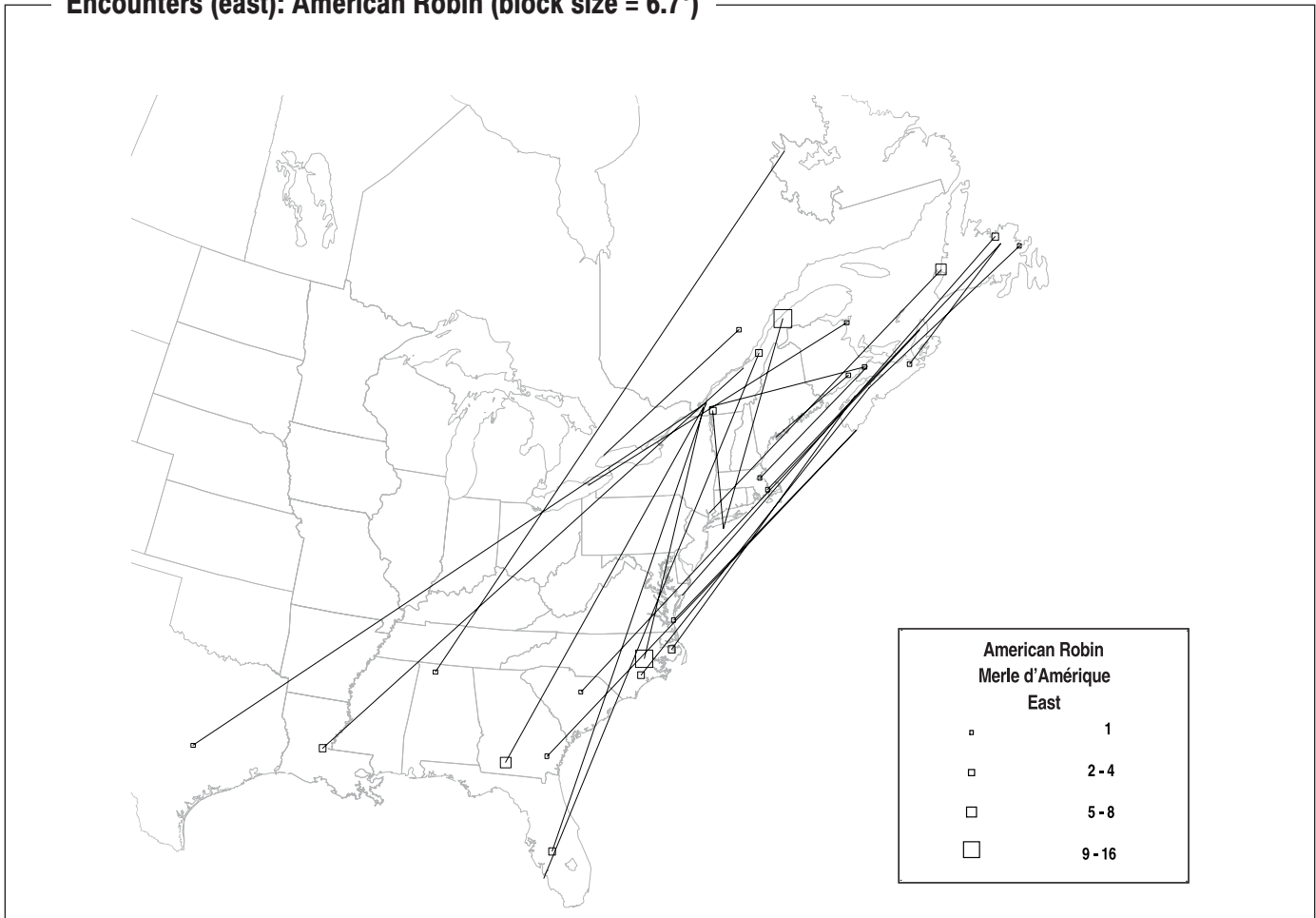
Of the 533 records involving Ontario and Quebec, nearly 85% are for birds banded or encountered within those provinces between March and October (76% between April and July). Birds banded or encountered in December–

February were nearly all found in the Carolinas and Gulf Coast states east of Texas (e.g., records 8–10), but two wintered in Canada. Records involving Mexico (record 11) and Texas (record 12 and one other) indicate that a few Ontario and Quebec birds go farther west for the winter.

Seventy percent of the 47 Maritimes birds were also banded or encountered mainly between April and October. Encounters in December–February were spread along the eastern seaboard from Maine to Florida (including record 13). Overall there is a fair degree of separation in winter of breeding populations from different parts of Canada.

Five percent of the encountered birds were shot, although none have been obtained this way since 1972. The oldest Canadian robin (record 14) is about a year shy of the longevity record for this species (Klimkiewicz et al. 1983).

Encounters (east): American Robin (block size = 6.7°)



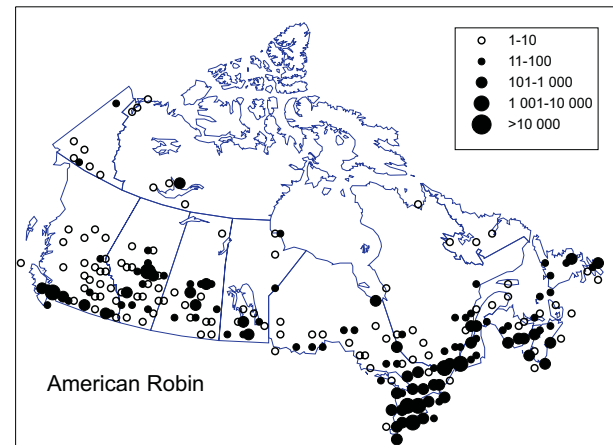
Encounter records: American Robin

1	0552-41562 LLSt	AHY U 00 12	05/01/58 30/05/58	Oakland, CA Paradise Point, BC	37°40'N 122°10'W 50°50'N 119°10'W	4 mo. 1485 km N8°E
2	0522-99155 RBW	HY U 05 13	26/06/73 13/10/73	Juneau, AK near Courtenay, BC	58°20'N 134°30'W 49°50'N 124°30'W	4 mo. 1147 km S39°E
3	0005-06942 TTMcC	AHY M 00 00	27/05/29 01/02/30	Barkerville, BC Chunky, MS	53°00'N 121°30'W 32°10'N 88°50'W	9 mo. 3489 km S61°E
4	0023-64355 DP	J U 00 00	18/06/33 08/03/34	Midnapore, AB La Mesa, CA	50°50'N 114°00'W 32°40'N 117°00'W	9 mo. 2037 km S8°W
5	0372-43716 JEH	HY U 01 07	14/06/38 24/01/40	St. Albert, AB Independence, LA	53°30'N 113°30'W 30°30'N 90°30'W	1 yr. 7 mo. 3160 km S45°E
6	0033-23138 VWJ	HY U 00 00	07/06/32 ST/02/33	Winnipeg, MB southwest of Gibson, GA	49°50'N 97°00'W 33°10'N 82°50'W	8 mo. 2191 km S37°E
7	0482-42690 AMcP	U U 00 00	27/08/51 ??/01/53	near Clavet, SK near Stuart, VA	52°00'N 106°40'W 36°40'N 80°10'W	2688 km S61°E
8	0782-62139 DAM	AHY U 04 00	06/01/75 07/09/75	Naples, FL near Saint-Aubert, QC	26°20'N 82°00'W 47°10'N 70°10'W	8 mo. 2541 km N21°E
9	0552-20603 JBa	AHY M 00 01	21/06/58 11/02/60	east of Schefferville, QC near Leighton, AL	54°40'N 66°40'W 34°40'N 87°20'W	1 yr. 8 mo. 2741 km S44°W
10	0722-96312 EJF	AHY U 05 45	30/01/69 18/06/69	near Royal Palm, FL Omemece, ON	25°20'N 80°20'W 44°20'N 78°30'W	5 mo. 2122 km N4°E
11	0502-85176 TJA	HY U 00 01	27/07/55 06/12/55	Uno Park, ON Nuevo Leon State, MEXICO	47°30'N 79°40'W 26°00'N 99°40'W	5 mo. c. 2966 km S43°W
12	0542-21657 RCM	HY U 03 00	03/09/65 ??/03/66	near Pointe-Claire, QC near Tyler, TX	45°20'N 73°40'W 32°30'N 95°20'W	2346 km S60°W
13	0343-34806 IJP	J U 00 98	16/05/35 09/02/39	Wedgeport, NS near Statesboro, GA	43°40'N 65°50'W 32°20'N 81°40'W	3 yr. 9 mo. 1870 km S53°W
14	0502-93839 AD	HY U 07 89	19/07/56 24/05/69	north of Thorold, ON Don Mills, ON	43°10'N 79°10'W 43°40'N 79°20'W	12 yr. 10 mo. 57 km N14°W

Summary of banding statistics: American Robin

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			30 829
<i>No. encountered per 1000 banded (1955–1995)</i>			10
Total no. encountered (1921–1995)	403	507	1 024
No. encountered from foreign bandings	15	44	85
Maximum period from banding to encounter (mo.)	154	98	154
No. of Canadian-banded birds moving > 0 km	158	93	280
Mean movement > 0 km of Canadian-banded birds	886	831	867
Maximum movement from all encounters (km)	3 159	3 489	3 489
% recovered (encountered dead)	88	49	67
% direct recoveries	47	19	31
% encountered during banding operations	9	48	30

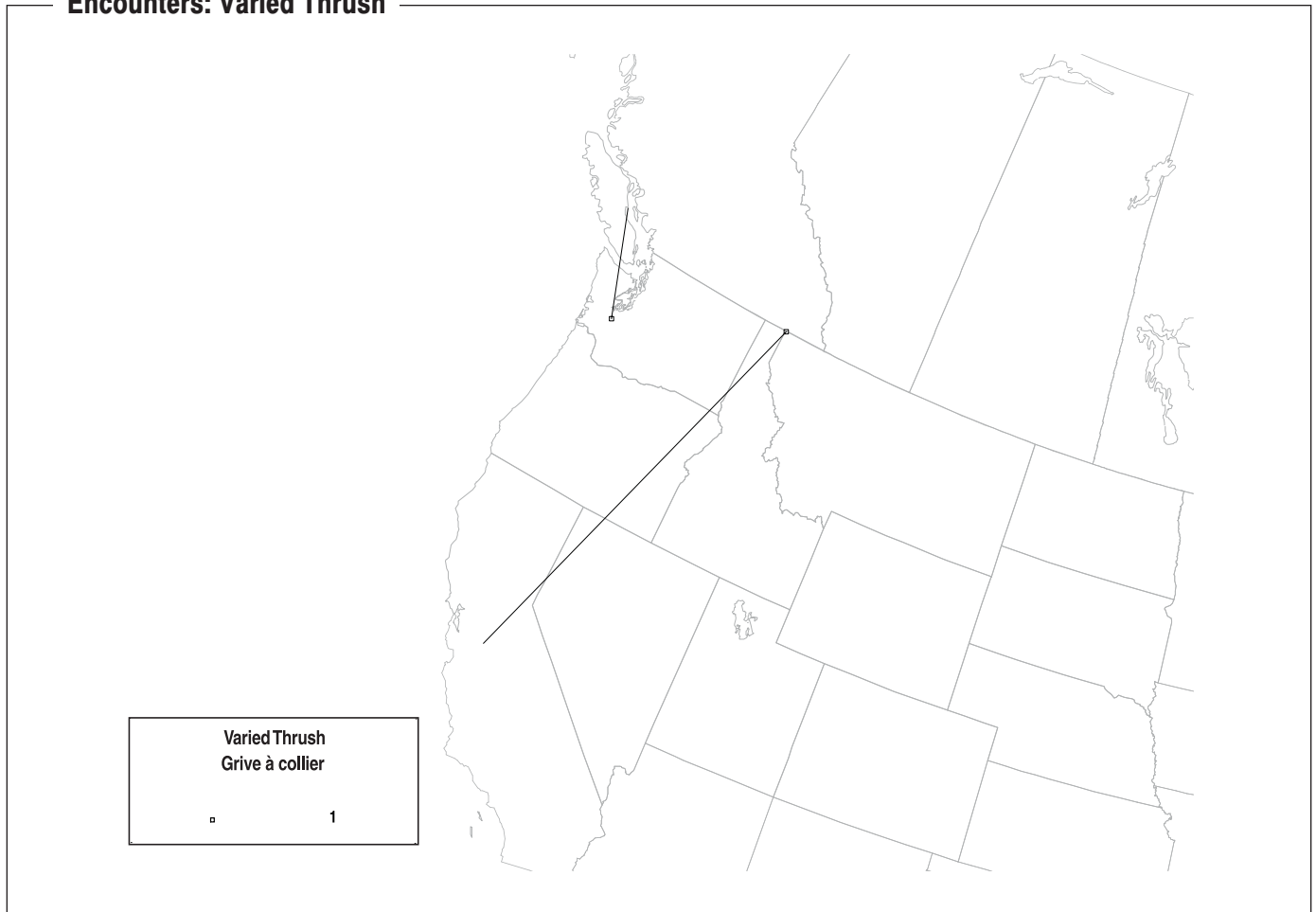
Banding effort: American Robin



Top banders: LPBO, UBC, IPBO, ETJ, MB

Varied Thrush (*Ixoreus naevius*) 763.0

Encounters: Varied Thrush



The Varied Thrush is a western species, nesting from Alaska, through Yukon, the western Northwest Territories, British Columbia, and southwestern Alberta, south down the Pacific coast to northern California. It winters from southern parts of Alaska and British Columbia, south to northern Baja California.

Most encounters were of birds banded in winter and encountered shortly after at the same site, all in southern British Columbia. Two birds moved over 50 km (records 1 and 2). Varied Thrushes are known to irrupt southward every three to five years (Wells et al. 1996), probably in response

to changes in acorn abundance, and the long-distance encounters probably resulted from such irregular movements.

The bird in record 3 would hold the longevity record for the species if the encounter date were known, but the only information available was the date of the letter reporting the encounter (seven years and four months after banding). The accepted longevity record is four years and nine months (Klimkiewicz and Futcher 1989).

Varied Thrush

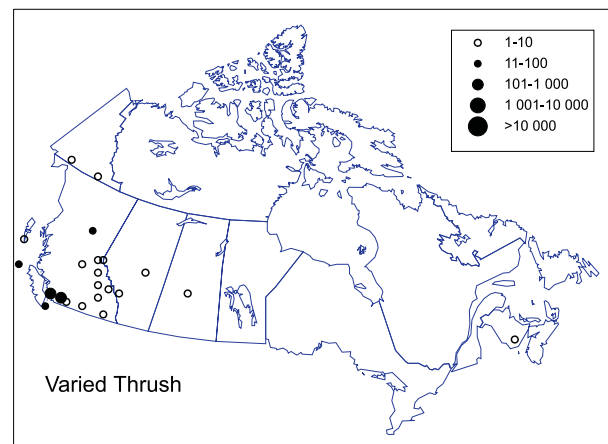
Encounter records: Varied Thrush

1	0682-40593 CHF	AHY M 05 00	04/01/78 99/03/78	Modesto, CA near Yahk, BC	37°30'N 121°00'W 49°00'N 116°00'W	2 mo. 1342 km N16°E
2	0002-65760 TP	AHY U 00 89	12/02/32 20/01/35	Courtenay, BC near Tenino, WA	49°40'N 124°50'W 46°50'N 122°50'W	2 yr. 11 mo. 348 km S26°E
3	0542-03882 DNR	U U 05 21	15/02/59 ??/06/66	Port Moody, BC Ambleside Beach, BC	49°10'N 122°50'W 49°10'N 123°00'W	12 km N90°W

Summary of banding statistics: Varied Thrush

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			469
<i>No. encountered per 1000 banded (1955–1995)</i>			19
Total no. encountered (1921–1995)	1	11	15
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	–	35	35
No. of Canadian-banded birds moving > 0 km	0	1	2
Mean movement > 0 km of Canadian-banded birds	–	348	180
Maximum movement from all encounters (km)	–	1342	1342
% recovered (encountered dead)	100	81	73
% direct recoveries	100	63	53
% encountered during banding operations	0	9	20

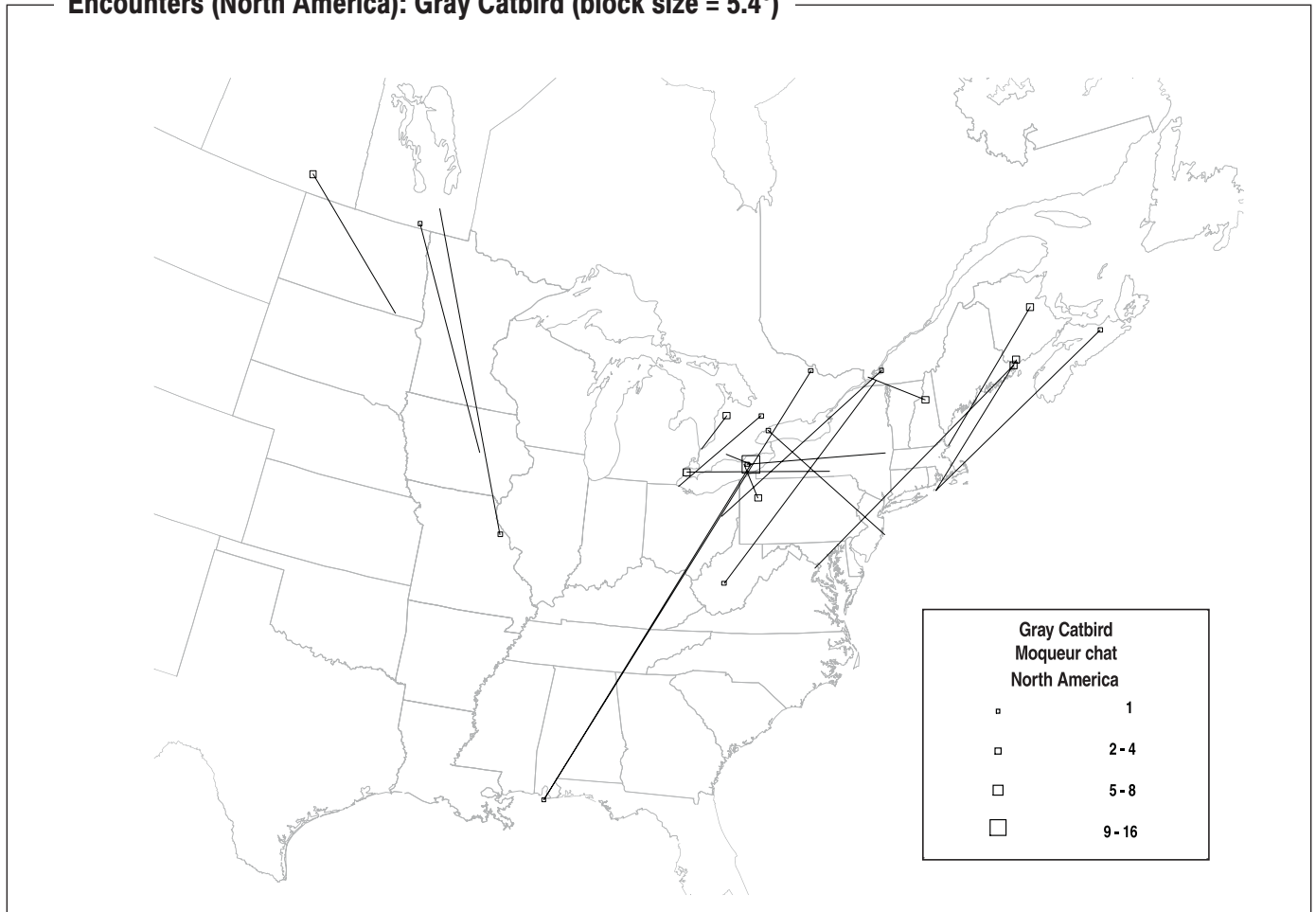
Banding effort: Varied Thrush



Top banders: CWS-BC, DBr, WMH, AM, DNR

Gray Catbird (*Dumetella carolinensis*) 704.0

Encounters (North America): Gray Catbird (block size = 5.4°)



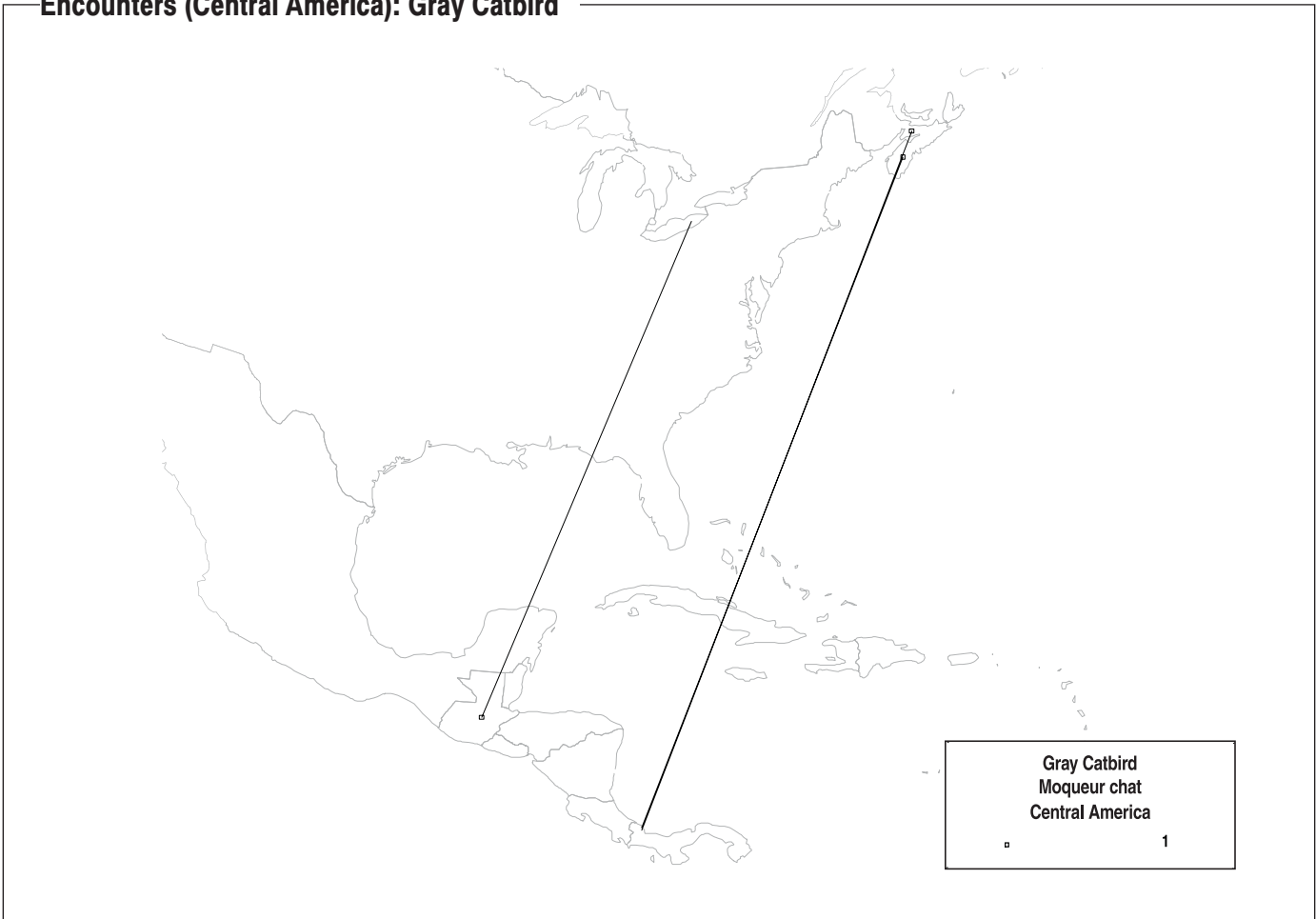
The Gray Catbird breeds in southern Canada from mainland British Columbia to Nova Scotia, chiefly south of the boreal forest zone; it also breeds in most of the U.S. except for the west coast and Southwest. It winters mainly from the southeastern U.S. and eastern Mexico through Central America to Panama, the Greater Antilles, Bermuda, and islands in the Caribbean Sea.

According to Cimprich and Moore (1995), many eastern catbirds migrate toward Florida and island-hop to Central and South America via Cuba, while others cross the Gulf directly, as illustrated by the two encounters involving coastal Alabama (see North American map). Records supporting this northeast–southwest migratory axis include 1 to 4, below. Two birds that were banded on their wintering ground in western Panama were encountered in Nova Scotia

in July of the same year (records 5 and 6), and several encounters were of birds banded in the New England states in the last two weeks of May and subsequently encountered in their breeding areas in Nova Scotia and New Brunswick (see North American map). An Ontario-banded migrant wintered in Guatemala (record 7). Western populations migrate on a south-southeast–north-northwest axis and presumably mingle with eastern birds in the southeastern U.S. (e.g., records 8 and 9).

The large symbol in Lake Erie on the North American map indicates that there are many short-distance encounters within southern Ontario, not necessarily all showing movement in exactly the same direction (see block size with encounter map and explanation in section 4.2).

Encounters (Central America): Gray Catbird



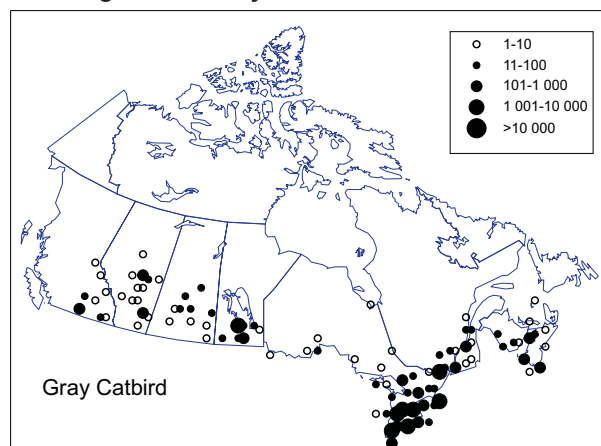
Encounter records: Gray Catbird

1	0281-04486 PHF	HY U 00 00	18/08/62 ??/10/62	Newton, PA Clark's Harbour, NS	40°10'N 74°50'W 43°20'N 65°30'W	851 km N62°E
2	0791-58118 MTD	HY U 05 14	27/09/73 17/07/75	Darnestown, MD near Springfield, NS	39°00'N 77°10'W 44°30'N 64°50'W	1 yr. 10 mo. 1191 km N55°E
3	0351-14476 HB	AHY U 00 00	07/05/36 LT/07/37	Canton, OH Hampstead, QC	40°40'N 81°20'W 45°30'N 73°30'W	1 yr. 2 mo. 833 km N47°E
4	0781-35976 TAI	AHY U 03 13	21/10/72 15/09/73	Dauphin Island, AL near Pembroke, ON	30°10'N 88°00'W 45°40'N 77°00'W	11 mo. 1973 km N26°E
5	0631-72845 PG	U U 00 14	18/10/63 99/07/64	Bocas del Toro Province, PANAMA near Oxford, NS	09°10'N 82°20'W 45°40'N 63°50'W	9 mo. 4431 km N20°E
6	0651-39092 PG	U U 00 00	19/12/63 04/07/64	Bocas del Toro Province, PANAMA near Springfield, NS	09°20'N 82°20'W 44°30'N 64°50'W	7 mo. 4262 km N20°E
7	0921-32965 LPBO	U U 08 04	08/09/85 12/01/86	Long Point, ON Coban, GUATEMALA	42°30'N 80°00'W 15°20'N 90°10'W	4 mo. 3177 km S21°W
8	0051-34848 JFB	U U 00 98	20/05/34 ST/07/36	Athol, SD Jumping Lake, SK	45°00'N 98°30'W 52°50'N 105°20'W	2 yr. 2 mo. 1004 km N27°W
9	0372-25642 CTR	HY U 00 98	29/08/37 01/10/40	near St. Vital, MB Bowling Green, MO	49°50'N 97°00'W 39°20'N 91°10'W	3 yr. 2 mo. 1256 km S24°E
10	0591-58073 JBM	AHY U 08 99	16/07/66 03/06/72	Cootes Paradise Marsh, ON Cootes Paradise Marsh, ON	43°10'N 79°50'W 43°10'N 79°50'W	5 yr. 11 mo. 0 km

Summary of banding statistics: Gray Catbird

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			20 700
No. encountered per 1000 banded (1955–1995)			3
Total no. encountered (1921–1995)	42	133	200
No. encountered from foreign bandings	10	10	24
Maximum period from banding to encounter (mo.)	44	71	71
No. of Canadian-banded birds moving > 0 km	12	19	36
Mean movement > 0 km of Canadian-banded birds	314	205	305
Maximum movement from all encounters (km)	1 547	1 973	4 431
% recovered (encountered dead)	69	35	44
% direct recoveries	42	15	22
% encountered during banding operations	26	64	54

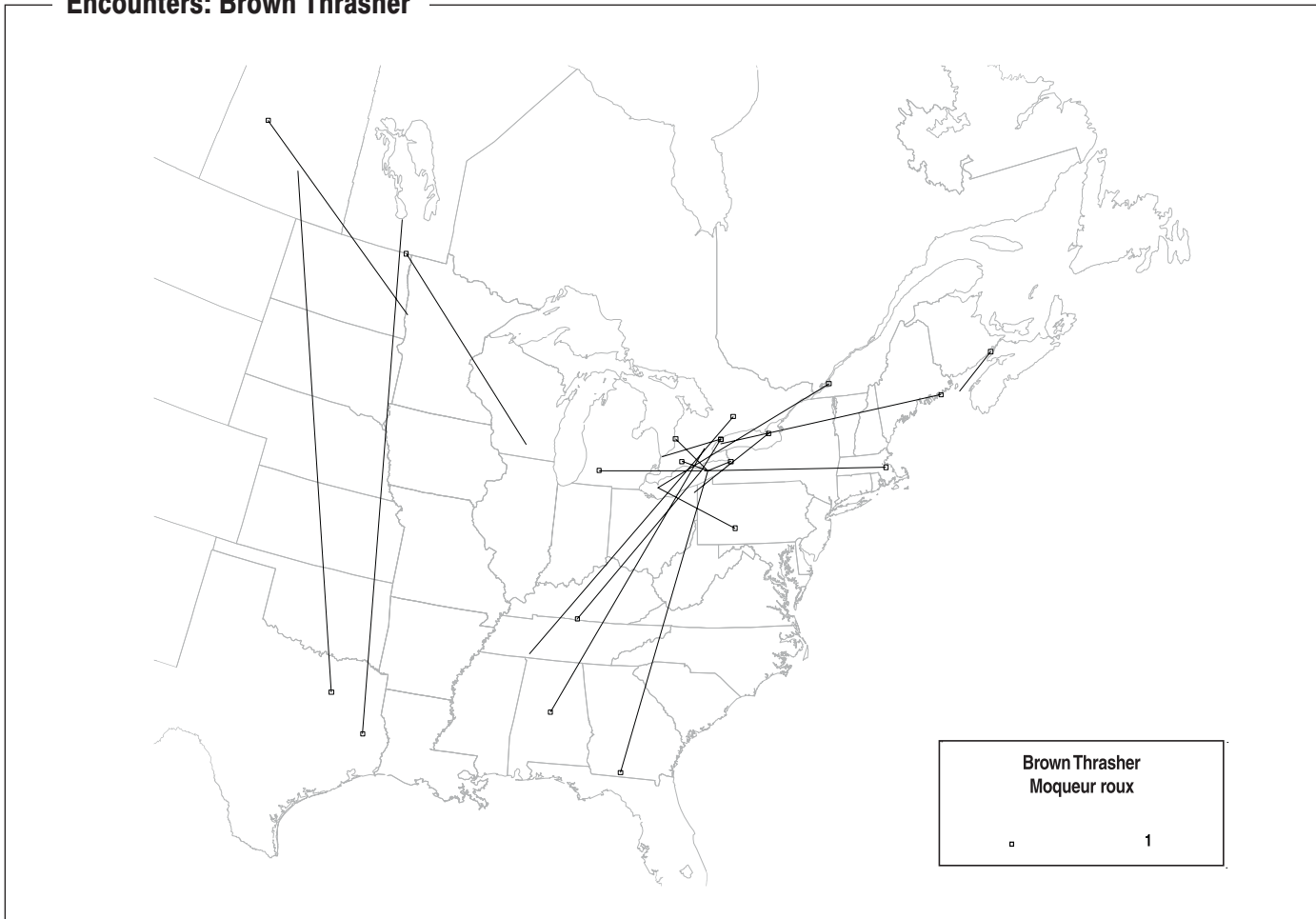
Banding effort: Gray Catbird



Top banders: LPBO, IPBO, UM, JBMi, PEPO

Brown Thrasher (*Toxostoma rufum*) 705.0

Encounters: Brown Thrasher



The Brown Thrasher breeds in the eastern U.S. and in southern Canada from the east coast to the Prairie Provinces. It winters in the southern portion of its breeding range, in the southeastern U.S.

Birds from the Prairie Provinces showed the largest displacements, with a general heading of north–south to northwest–southeast (records 1–3). Ontario birds moved broadly on a northeast–southwest axis (records 4–6),

although there were several east–west movements. One such bird was banded in Ontario in late April and encountered the next winter in Maine (record 7), and a second Ontario bird was encountered in New England four years after banding (record 8).

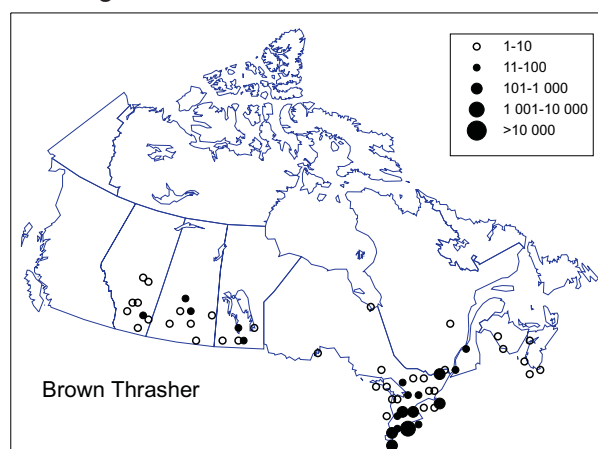
Encounter records: Brown Thrasher

1	0373-13031 FGB	HY U 00 01	26/06/38 27/11/38	Regina Beach, SK Crandall, TX	50°40'N 104°50'W 32°30'N 96°20'W	5 mo. 2139 km S22°E
2	0552-95901 LWO	HY U 05 01	06/08/64 26/12/65	Delta, MB Lufkin, TX	50°10'N 98°10'W 31°10'N 94°40'W	1 yr. 4 mo. 2135 km S9°E
3	0373-12117 JTE	U U 00 01	19/09/39 99/07/43	near Fargo, ND near Perdue, SK	46°50'N 96°40'W 52°00'N 107°30'W	3 yr. 10 mo. 971 km N50°W
4	0372-12117 WB	J U 00 01	17/06/38 99/10/39	Hespeler, ON Wilton, AL	43°20'N 80°10'W 33°00'N 86°50'W	1 yr. 4 mo. 1289 km S29°W
5	0552-90642 LPBO	HY U 06 56	01/10/62 FT/03/66	Long Point, ON Barwick, GA	42°30'N 80°00'W 30°50'N 83°40'W	3 yr. 5 mo. 1339 km S15°W
6	0722-55434 DEP	U U 05 14	11/10/68 24/05/69	near Olivehill, TN Coboconk, ON	35°10'N 88°00'W 44°30'N 78°40'W	7 mo. 1308 km N35°E
7	0502-99201 RED	AHY U 00 13	22/04/64 06/12/64	Toronto, ON Addison, ME	43°30'N 79°20'W 44°30'N 67°40'W	8 mo. 940 km N79°E
8	0542-07544 LPBO	U U 05 14	18/05/64 15/11/68	Long Point, ON Braintree, MA	42°30'N 80°10'W 42°10'N 71°00'W	4 yr. 6 mo. 755 km S90°E
9	0832-48277 PEPO	HY U 08 99	14/08/80 03/05/88	Prince Edward Point, ON Prince Edward Point, ON	43°50'N 76°50'W 43°50'N 76°50'W	7 yr. 9 mo. 0 km

Summary of banding statistics: Brown Thrasher

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			5125
<i>No. encountered per 1000 banded (1955–1995)</i>			5
Total no. encountered (1921–1995)	12	31	54
No. encountered from foreign bandings	1	1	5
Maximum period from banding to encounter (mo.)	93	76	95
No. of Canadian-banded birds moving > 0 km	7	11	25
Mean movement > 0 km of Canadian-banded birds	1002	250	486
Maximum movement from all encounters (km)	2139	940	2139
% recovered (encountered dead)	58	51	61
% direct recoveries	33	35	31
% encountered during banding operations	16	48	33

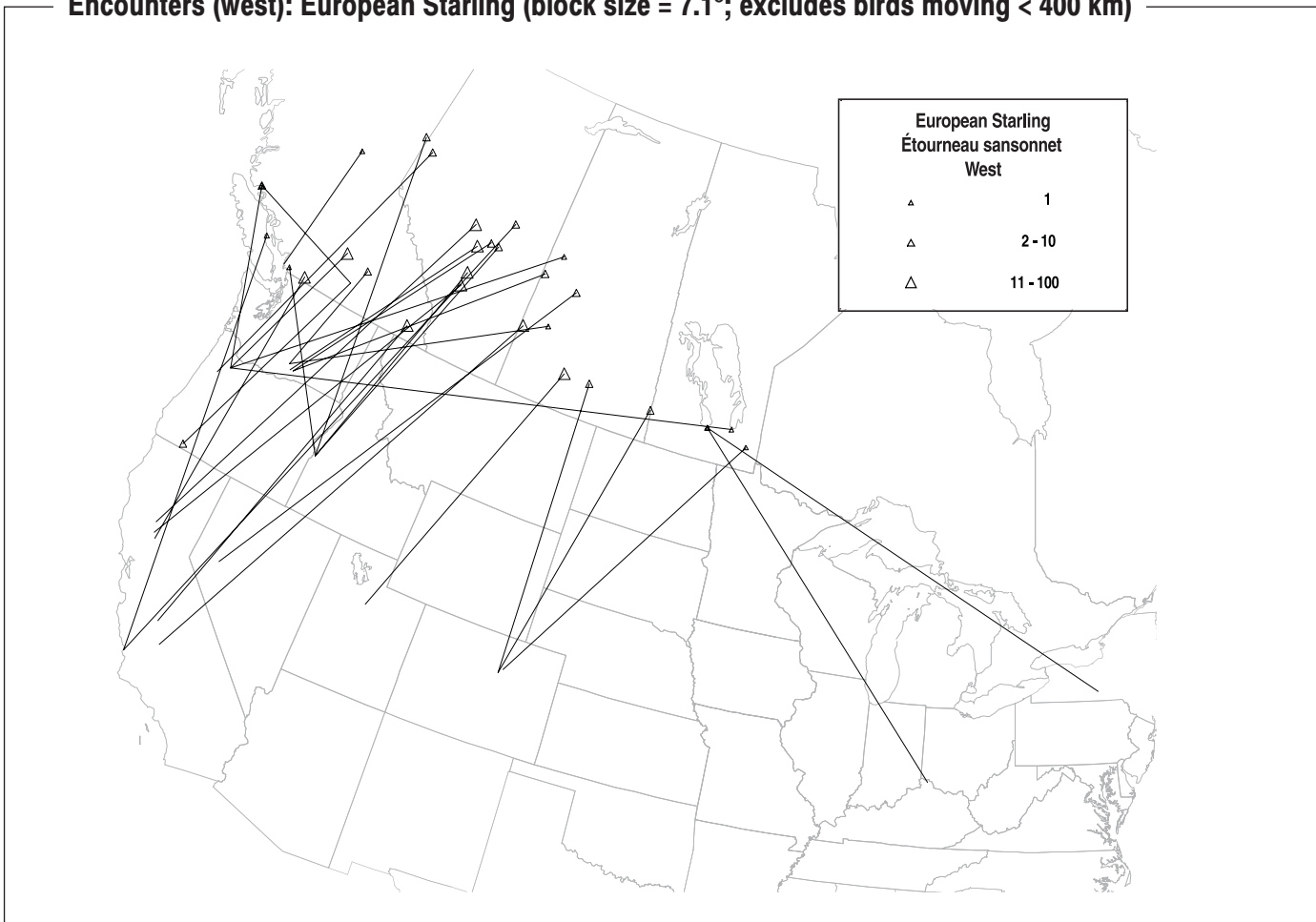
Banding effort: Brown Thrasher



Top banders: LPBO, IPBO, PEPO, TBO, NMC

European Starling (*Sturnus vulgaris*) 493.0

Encounters (west): European Starling (block size = 7.1°; excludes birds moving < 400 km)



Following its introduction to New York from the Old World in 1890, the European Starling spread through much of Canada and is still expanding in range. Currently it breeds across the U.S. and southern Canada, as well as in southern Yukon and the Northwest Territories and in northern British Columbia and Alberta. There are isolated breeding pockets in the eastern parts of the country well north of the main limit of distribution. The species winters within much of the breeding range, south to central Mexico, the Bahamas, and Cuba. It frequently winters farther north than the various species of icterid with which it commonly associates in communal roosts (Dolbeer 1982).

The species is of considerable economic importance because of the agricultural and urban impact of its enormous winter roosts, which often include Brown-headed Cowbirds, Red-winged Blackbirds, and Common Grackles. Banding data have considerable potential for population management,

so there have been several analyses — for the whole of North America (Dolbeer 1982, Burt and Giltz 1977) and for small areas (Johnson 1974, Weatherhead et al. 1980); see also earlier analyses by Kessel (1953), Bordner et al. (1968), and Richardson and Haight (1970). Results indicate that southern populations are mainly resident, whereas northern birds are partly migratory, that is, some birds migrate while others do not (which sometimes separates nest mates) and some individuals may move in some years but not others. First-year European Starlings move farther south than older birds, but there are no differences between the sexes (Cabe 1993). Our results confirm these findings on partial migration — 101 starlings were encountered in Canada in one winter (December–February) and found in a U.S. state in a different winter. Approximately half the winter encounters of Canadian birds involved individuals that did not migrate south of the border.

Encounters (Ontario): European Starling (block size = 6.1°; excludes birds moving < 400 km)



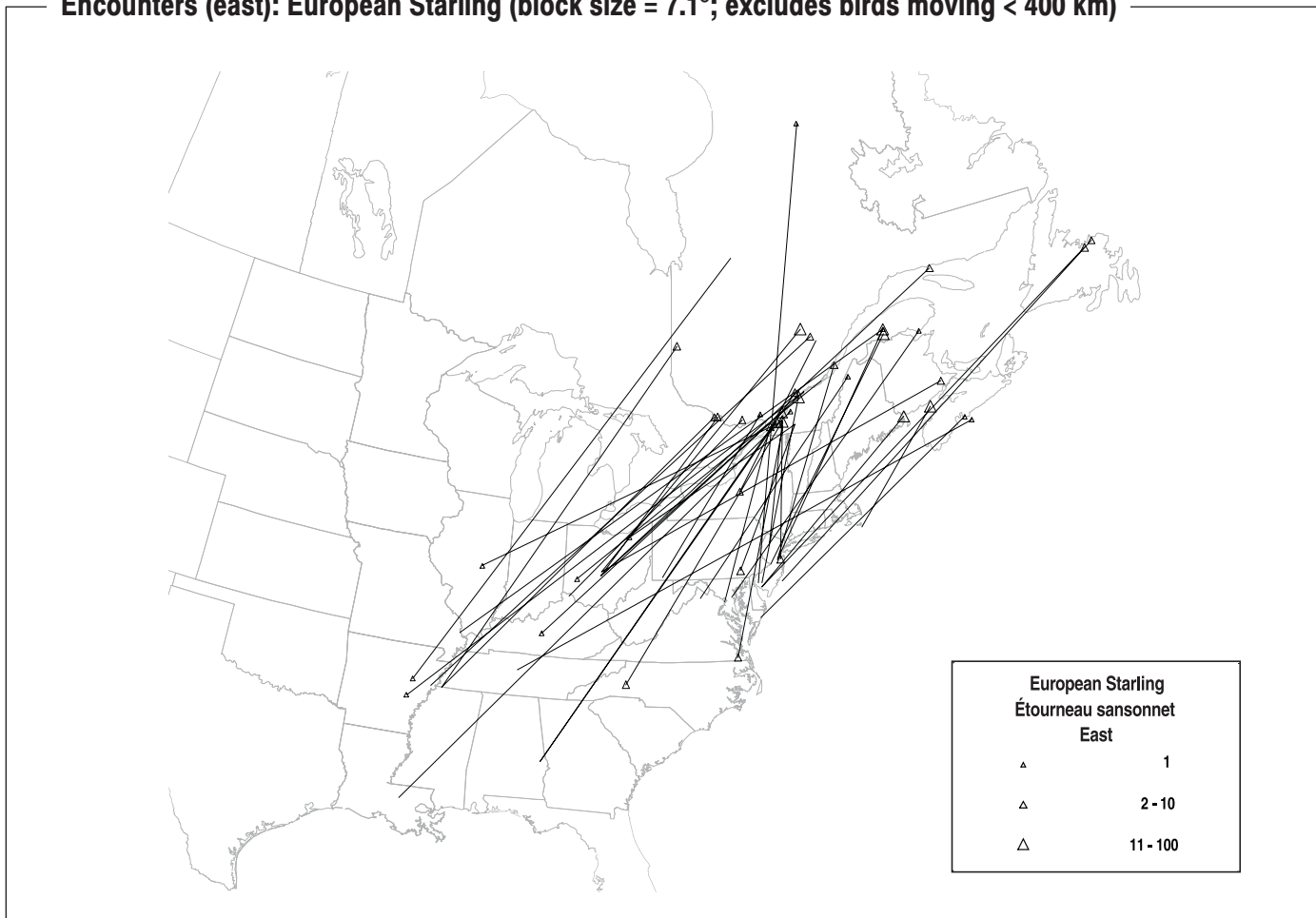
Because there are so many encounters for this species, the maps have to summarize the data to a large degree, and many individual records are not shown (see block size with encounter maps and explanation in section 4.2). No records are mapped that show movement of less than 400 km (the normal cut-off is 100 km). Nonetheless, the maps accurately depict the directionality of starling migration from Canada.

A striking feature of the encounter pattern is the southwest–northeast axis of movement shown by Prairie Province populations (such as records 1–5); this is unlike the southeast direction that most native species take from the Prairie Provinces (but see record 6). The southwest–northeast direction mimics that of starlings in Europe and eastern North America and is perhaps explained by the recent colonization of western North America by starlings (mainly since 1950; Cabe 1993, Kessell 1953). In December–February, starlings from British Columbia

and the Prairie Provinces are concentrated in the Pacific coast states, except that birds from the eastern Prairie Provinces head to more inland states such as Colorado. Ontario birds winter mainly in that province and the Great Lakes states, but others move to the mid-Atlantic states and as far south as the Gulf Coast (e.g., records 7–9). Starlings from Quebec also go as far as the Gulf Coast in winter (e.g., record 10), but many go a shorter distance to winter in northeastern states (e.g., record 11), where they overlap with birds from the Maritimes (records 12 and 13; but see record 14).

Because starlings nest readily in boxes, there are many records of old birds. The oldest Canadian bird (record 15) was much younger than the 21-year-old bird recorded in Germany (Cabe 1993), though not far off the North American record of 15 years and three months (Klimkiewicz 1997).

Encounters (east): European Starling (block size = 7.1°; excludes birds moving < 400 km)



Encounter records: European Starling

1	0662-10905 CFT	AHY U 05 00	27/01/64 99/SU/65	Cayucos, CA Beatty, SK	35°20'N 120°50'W 52°50'N 104°40'W	2326 km N28°E
2	0652-89039 JAN	AHY M 05 01	10/02/65 15/04/66	near Molalla, OR near Spruce Point, AB	45°10'N 122°40'W 58°40'N 112°10'W	1 yr. 2 mo. 1662 km N22°E
3	0652-89714 JAN	AHY F 00 00	08/02/65 12/05/65	near Molalla, OR near Matlock, MB	45°10'N 122°40'W 50°20'N 96°50'W	3 mo. 2006 km N64°E
4	0702-50357 ABi	AHY M 03 00	13/02/68 LT/10/69	near Strawberry, NV near Humboldt, SK	39°30'N 115°50'W 52°20'N 105°10'W	1 yr. 8 mo. 1646 km N26°E
5	0542-23266 AM	U U 00 21	27/01/63 15/04/63	Annacis, BC near Rosemary, AB	49°10'N 122°50'W 50°40'N 112°00'W	3 mo. 793 km N74°E
6	0472-15027 AAA	AHY M 00 01	13/01/50 13/06/50	Newfield, NY Delta, MB	42°20'N 76°30'W 50°10'N 98°10'W	5 mo. 1873 km N55°W
7	0412-00663 TSH	J U 00 98	03/06/42 11/01/43	south of Ottawa, ON Jacksonville, TX	45°20'N 75°40'W 31°50'N 95°10'W	7 mo. 2255 km S55°W

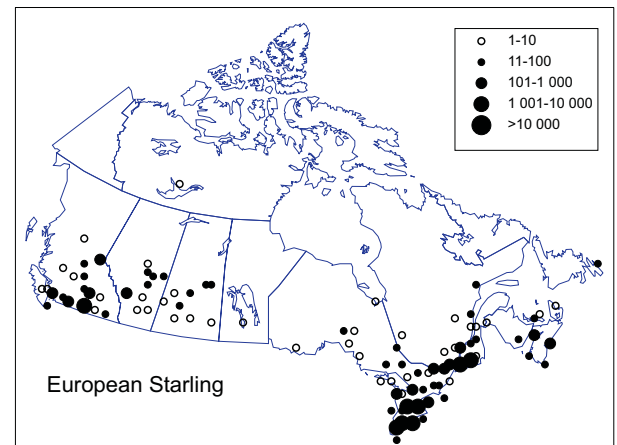
Encounter records: European Starling (continued)

8	0502-96861 AD	L U 00 53	07/06/57 10/01/59	Guelph, ON Lake Somerville, TX	43°30'N 80°10'W 30°20'N 96°30'W	1 yr. 7 mo. 2057 km S50°W
9	0382-23900 TNJ	AHY U 00 01	17/03/39 04/02/40	St. Thomas, ON Fort Meade, FL	42°40'N 81°10'W 27°40'N 81°40'W	11 mo. 1670 km S2°W
10	0582-11051 GFS	U U 00 00	04/01/62 ??/04/62	Baker, LA near Saint-Ours, QC	30°30'N 91°10'W 45°50'N 73°00'W	2322 km N38°E
11	0522-72736 RGD	AHY U 00 13	02/01/55 26/03/55	Quinton, NJ Lake Doran, QC	39°30'N 75°20'W 56°20'N 70°50'W	2 mo. 1903 km N9°E
12	0562-74659 WCR	AHY U 05 12	17/01/60 04/07/68	Brighams Cove, ME north of River Bridge, NS	43°50'N 69°50'W 46°10'N 60°30'W	8 yr. 6 mo. 779 km N67°E
13	0812-28796 RWF	SY F 05 12	23/03/75 12/06/75	Beach Haven, NJ Gander Bay, Labrador, NF	39°30'N 74°10'W 49°20'N 54°30'W	3 mo. 1900 km N48°E
14	0652-57852 MLG	U U 05 03	26/12/63 08/03/68	Columbus, OH Dover, NB	40°00'N 83°00'W 46°00'N 64°40'W	4 yr. 3 mo. 1630 km N60°E
15	0503-56514 MB	AHY U 05 00	11/03/51 99/02/65	Baie-d'Urfé, QC Baie-d'Urfé, QC	45°20'N 73°50'W 45°20'N 73°50'W	13 yr. 11 mo. 0 km

Summary of banding statistics: European Starling

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			29 860
<i>No. encountered per 1000 banded (1955–1995)</i>			21
Total no. encountered (1921–1995)	399	1 565	2 595
No. encountered from foreign bandings	58	671	1 200
Maximum period from banding to encounter (mo.)	96	167	167
No. of Canadian-banded birds moving > 0 km	220	276	576
Mean movement > 0 km of Canadian-banded birds	310	245	288
Maximum movement from all encounters (km)	2 255	2 326	2 326
% recovered (encountered dead)	84	76	81
% direct recoveries	29	29	29
% encountered during banding operations	12	19	14

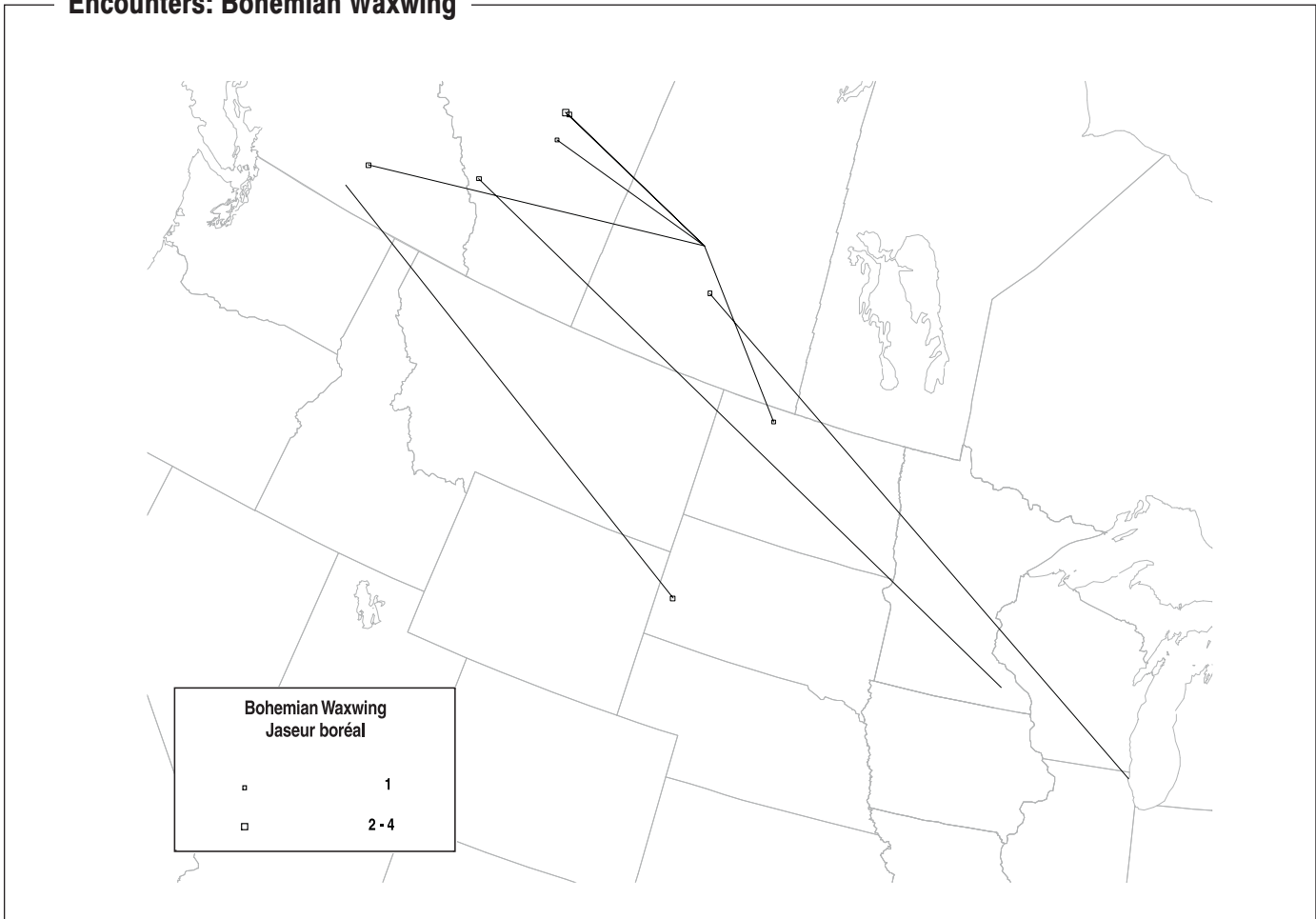
Banding effort: European Starling



Top banders: AD, MCo., REWa., ADB, MID

Bohemian Waxwing (*Bombycilla garrulus*) 618.0

Encounters: Bohemian Waxwing



The Bohemian Waxwing breeds from central Alaska and northern Yukon east to northern Manitoba and extreme northwestern Ontario, and south to the national border except in the Prairie Provinces. It winters in southern Canada north to the Northwest Territories and northern British Columbia in the west, east (rarely) to the Maritimes, south through the west-central U.S. to Arizona and New Mexico, and east to New Jersey. The Bohemian Waxwing is legendary for the irregularity of its movements, and its appearance in eastern North America varies dramatically from year to year.

All but three of the encountered birds were banded in Saskatchewan, and almost two-thirds of these were encountered in the same area within three months. The most obvious feature of the small number of encounters showing movement is the strong east–west component in direction. None of the four birds banded at Saskatoon and encountered in central Alberta was banded or encountered in the same years as the others (see records 1 and 2).

The bird in record 3 holds the North American longevity record for this species (Klimkiewicz et al. 1983).

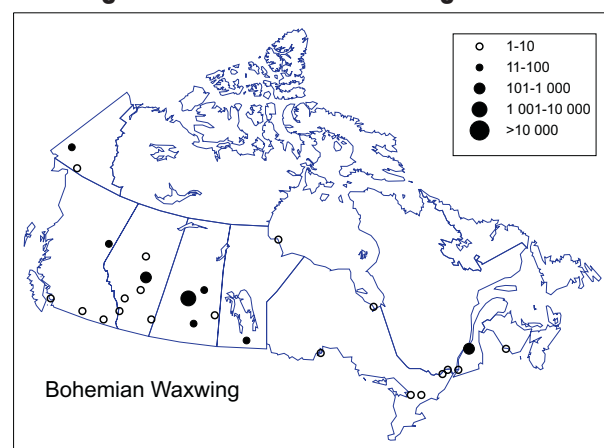
Encounter records: Bohemian Waxwing

1	0591-35113 CSH	AHY U 05 00	02/03/65 99/SP/66	Saskatoon, SK St. Albert, AB	52°00'N 106°30'W 53°30'N 113°30'W	1 yr. 500 km N68°W
2	0861-21432 CSH	AHY U 03 00	03/04/78 ST/03/79	Saskatoon, SK St. Albert, AB	52°00'N 106°30'W 53°30'N 113°30'W	11 mo. 500 km N68°W
3	0521-83313 CSH	AHY U 05 13	19/02/68 99/04/73	Saskatoon, SK near Vernon, BC	52°00'N 106°30'W 50°10'N 119°10'W	5 yr. 2 mo. 908 km S82°W
4	0571-21291 CMJ	AHY U 00 00	15/02/58 LT/05/59	near Rochester, MN 7 km east of Banff, AB	44°00'N 92°20'W 51°10'N 115°20'W	1 yr. 3 mo. 1892 km N57°W
5	0031-53871 WIL	U U 00 28	25/03/32 FT/04/32	Gurnee, IL Craik, SK	42°20'N 87°50'W 51°00'N 105°40'W	1 mo. 1662 km N48°W
6	0041-19645 EMT	U U 00 01	15/02/33 20/03/34	near Penticton, BC Mystic, SD	49°30'N 119°30'W 44°00'N 103°30'W	1 yr. 1 mo. 1362 km S69°E
7	0521-91526 CSH	U U 00 04	09/04/62 22/03/63	Saskatoon, SK Kenmare, ND	52°00'N 106°30'W 48°40'N 102°00'W	11 mo. 490 km S43°E

Summary of banding statistics: Bohemian Waxwing

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			5364
No. encountered per 1000 banded (1955–1995)			6
Total no. encountered (1921–1995)	0	29	41
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	–	62	62
No. of Canadian-banded birds moving > 0 km	0	5	8
Mean movement > 0 km of Canadian-banded birds	–	489	598
Maximum movement from all encounters (km)	–	1891	1891
% recovered (encountered dead)	–	89	90
% direct recoveries	–	75	80
% encountered during banding operations	–	0	0

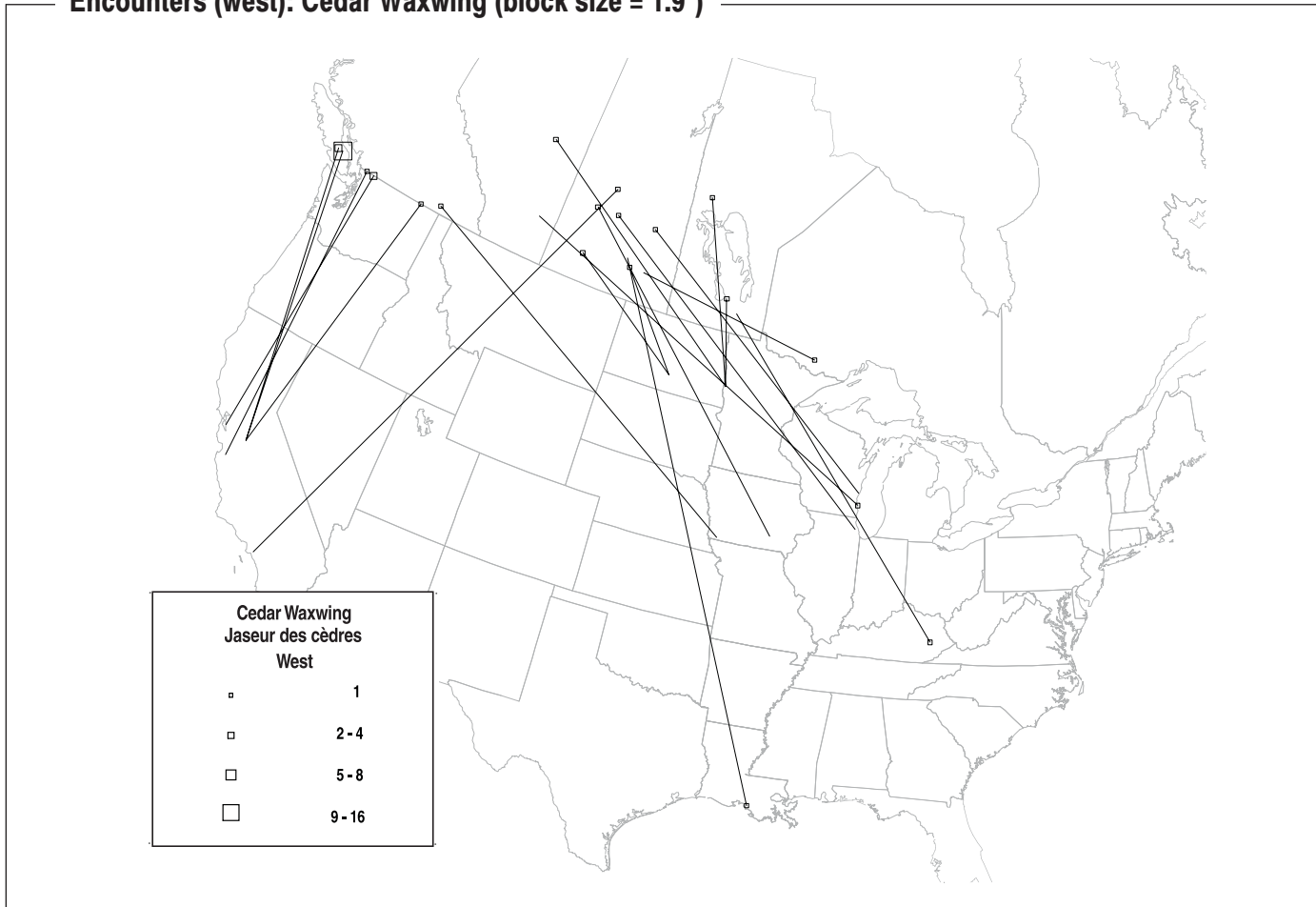
Banding effort: Bohemian Waxwing



Top banders: CSH, JGi, LTS, JCF, EP

Cedar Waxwing (*Bombycilla cedrorum*) 619.0

Encounters (west): Cedar Waxwing (block size = 1.9°)



The Cedar Waxwing breeds across the northern U.S. and southern Canada but is absent from northern British Columbia, the Territories, and Labrador. It winters locally and irregularly in southern Canada (British Columbia, Ontario, Quebec, New Brunswick, and Nova Scotia), south through the U.S. to Panama and the Antilles.

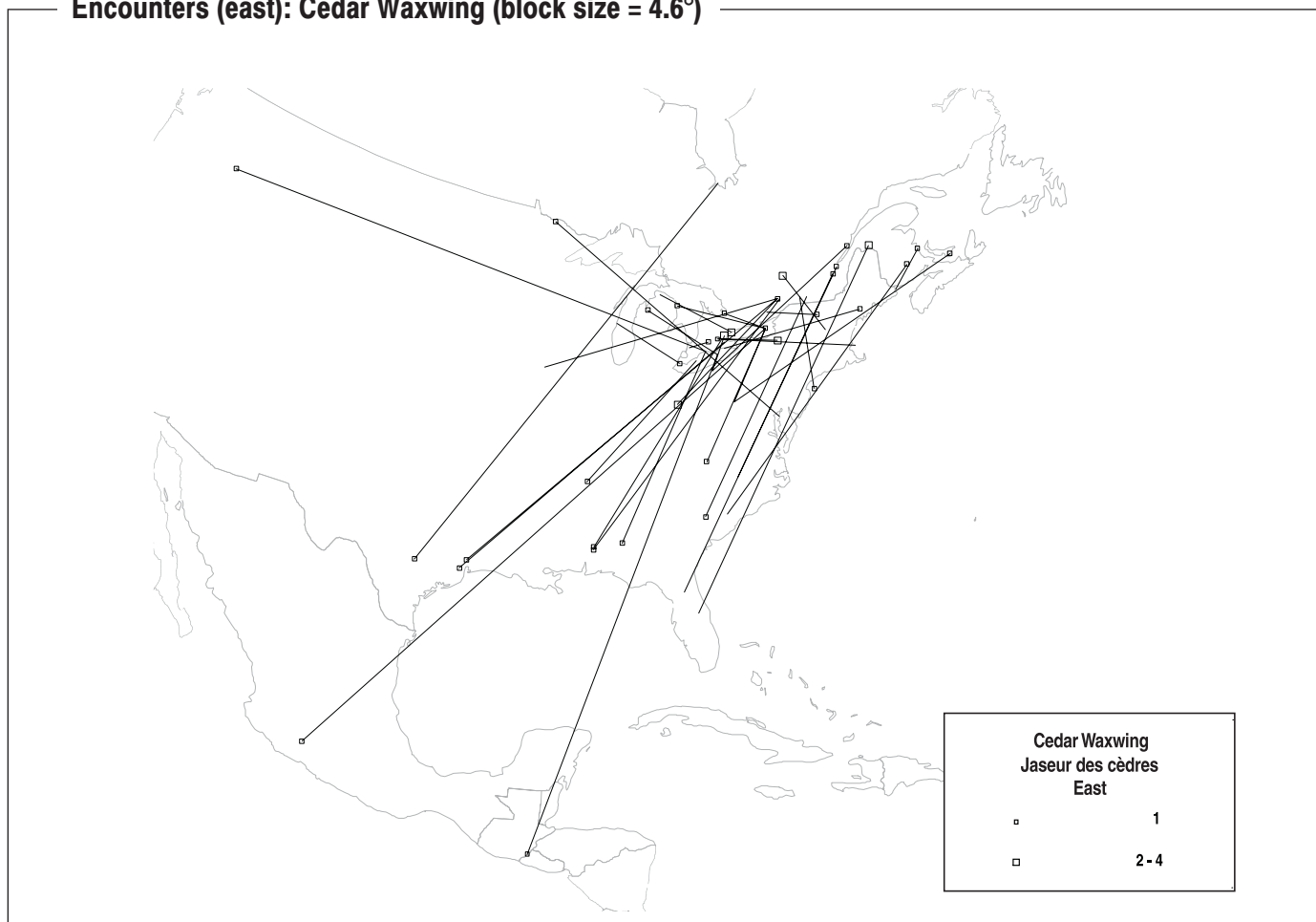
The maps show fairly consistent directionality in the movements of birds encountered in different parts of Canada; however, there is low fidelity to wintering sites, and waxwings may move continuously throughout the winter season (Brugger et al. 1994, Witmer et al. 1997).

All 21 of the waxwings encountered during the breeding season in British Columbia were banded in spring in California (e.g., record 1); another banded in southern California in spring was encountered in the same September in Saskatchewan (record 2). Encounters in British Columbia were

concentrated in the Vancouver–Victoria area (represented on the map by a single line), probably reflecting the distribution of the human population. Although most British Columbia birds appear to remain in the west, one waxwing encountered there had travelled from Iowa (record 3).

Most waxwings encountered on the Prairie Provinces moved on a northwest–southeast axis, passing through the Dakotas (e.g., records 4 and 5) and states on the south side of the Great Lakes (record 6), and wintering as far east as Kentucky (record 7) and south to Louisiana (record 8). By contrast, birds encountered in Quebec and the Maritimes travelled on a northeast–southwest axis. Birds that presumably breed in Quebec have been encountered in seven states, as far south as Texas and Florida (two records, including record 9). Ontario encounters include birds moving along both of these major axes (northwest–southeast and north-

Encounters (east): Cedar Waxwing (block size = 4.6°)



east-southwest), connecting the province to 15 states, mostly east of Texas (but see records 10 and 11), as well as Mexico (record 12) and Guatemala (record 13). A good example of this apparent mixing of populations is supplied by two birds banded in October at St. Thomas, Ontario, within five days of each other; one was encountered four years later in Alabama (record 14), and the second one nine months later

in Oregon (record 15, assuming the encounter record is an accurate one).

Cedar Waxwings are found farthest away from breeding areas in February, with no apparent difference in the distance travelled by first-year and older birds (Brugger et al. 1994).

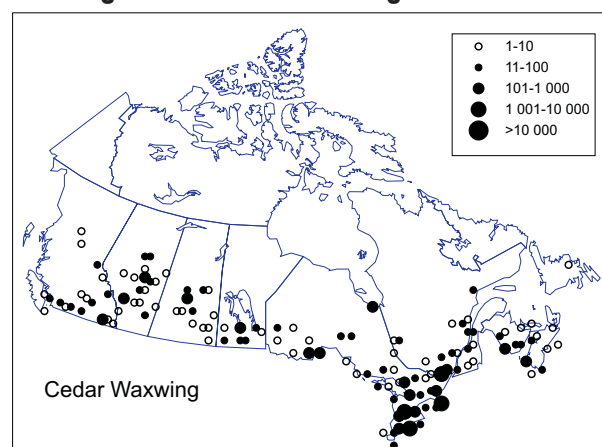
Encounter records: Cedar Waxwing

1	0281-82050 CHF	U U 00 12	01/04/60 09/06/60	southeast of Modesto, CA near Cascade, BC	37°30'N 120°50'W 49°00'N 118°20'W	2 mo. 1296 km N8°E
2	0261-90018 ACF	AHY U 00 14	18/04/60 10/09/60	east of Long Beach, CA west of Kilwinning, SK	33°50'N 118°00'W 53°10'N 107°00'W	5 mo. 2322 km N19°E
3	1041-28426 WCD	AHY U 05 12	01/11/69 ??/06/70	northeast of Auburn, IA Nelson, BC	40°40'N 95°20'W 49°20'N 117°10'W	1961 km N53°W
4	0760-54020 GMJ	HY U 02 98	08/06/68 18/06/68	near Bismarck, ND near Regina, SK	46°40'N 100°10'W 50°20'N 104°30'W	10 dy. 518 km N36°W
5	0351-10483 OAS	HY U 00 00	17/09/35 17/08/38	Fargo, ND near Smokey Lake, AB	46°50'N 96°40'W 54°00'N 112°20'W	2 yr. 11 mo. 1363 km N48°W
6	0291-49874 LGF	AHY M 00 56	03/11/64 FT/09/65	Arlington Heights, IL near Cheviot, SK	42°00'N 87°50'W 52°10'N 106°20'W	10 mo. 1793 km N45°W
7	0041-40722 VWJ	J U 00 00	12/08/32 09/02/37	Winnipeg, MB Jacksons, KY	49°50'N 97°00'W 37°30'N 83°20'W	4 yr. 6 mo. 1754 km S44°E
8	0361-26666 FGB	HY U 00 01	09/08/38 12/01/39	near Lumsden, SK Franklin, LA	50°40'N 104°50'W 29°40'N 91°30'W	5 mo. 2589 km S30°E
9	1071-37361 AMK	AHY U 05 00	19/03/68 ??/06/68	near Orlando, FL near Dégeli, QC	28°30'N 81°20'W 47°30'N 68°30'W	2389 km N24°E
10	0221-46507 JBMi	AHY U 05 00	29/08/65 12/03/66	Dundas Marsh, ON Bellaire, TX	43°10'N 79°50'W 29°40'N 95°20'W	7 mo. 2039 km S48°W
11	1271-95296 RIGM	AHY U 03 00	22/07/83 16/03/87	27 km northeast of Moosonee, ON New Braunfels, TX	51°20'N 80°20'W 29°40'N 98°00'W	3 yr. 8 mo. 2821 km S38°W
12	1231-15010 PEPO	L U 05 01	03/08/80 13/02/81	Prince Edward Point, ON Michoacán State, MEXICO	43°50'N 76°50'W 19°00'N 102°00'W	6 mo. c. 3625 km S48°W
13	1141-14941 LPBO	AHY U 05 01	22/05/76 ??/02/77	Long Point, ON Mita, GUATEMALA	42°30'N 80°20'W 14°10'N 89°40'W	3279 km S19°W
14	0221-12729 MHF	AHY U 00 01	10/10/56 01/10/60	St. Thomas, ON Montgomery County, AL	42°40'N 81°10'W 32°10'N 86°??'W	4 yr. 0 mo.
15	0221-03194 MHF	HY U 00 00	05/10/56 26/07/57	near St. Thomas, ON Cove, OR	42°40'N 81°10'W 45°10'N 117°40'W	9 mo. 2915 km N72°W

Summary of banding statistics: Cedar Waxwing

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			14 924
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	35	45	98
No. encountered from foreign bandings	10	25	53
Maximum period from banding to encounter (mo.)	54	48	54
No. of Canadian-banded birds moving > 0 km	14	20	34
Mean movement > 0 km of Canadian-banded birds	1 200	1 039	1 105
Maximum movement from all encounters (km)	3 625	3 278	3 625
% recovered (encountered dead)	91	88	91
% direct recoveries	57	28	40
% encountered during banding operations	5	6	5

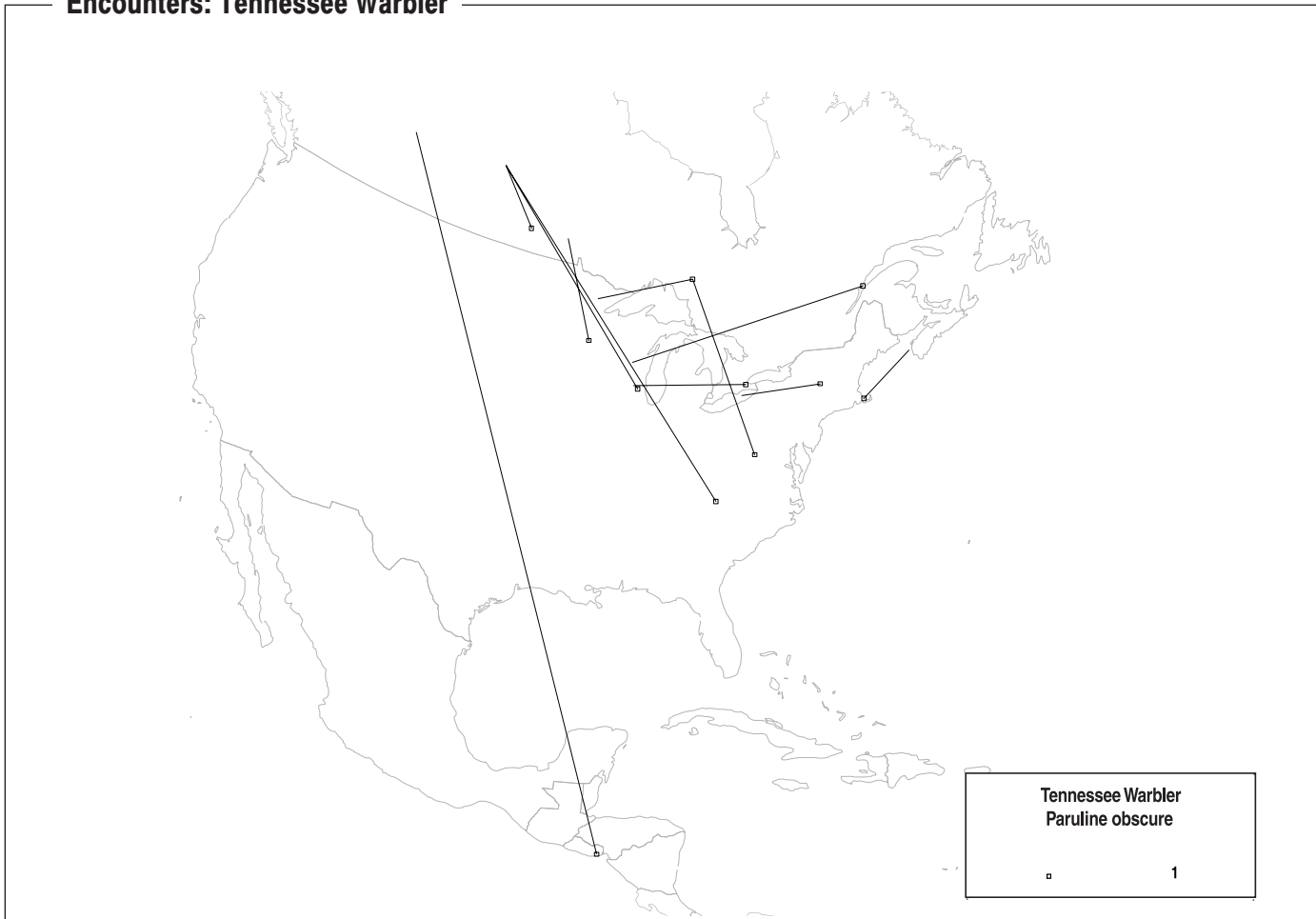
Banding effort: Cedar Waxwing



Top banders: LPBO, ADB, IPBO, PEPO, JBMi

Tennessee Warbler (*Vermivora peregrina*) 647.0

Encounters: Tennessee Warbler



One of the most boreal of warblers, the Tennessee Warbler breeds in forest zones from Newfoundland and Maine across the northern Prairie Provinces to Alberta. It winters from southern Mexico to northern South America (western Venezuela and western Colombia).

The 11 encounters with non-trivial movements are mapped. All but one bird, by virtue of dates and locations, were both banded and encountered on migration rather than on breeding or wintering grounds. The exception (record 1) was banded on migration in Alberta and encountered on its wintering grounds in El Salvador. The other four birds banded in the Prairie Provinces (records 2–5) were all encountered in the U.S. and show a consistent north–west–southeast migration direction. In contrast, birds en-

countered or banded in Ontario or Quebec (e.g., records 6 and 7) show a strong (and unusual) east–west component in their movements. Both these records involve birds encountered in 1973, close to the peak of a huge spruce budworm outbreak in Eastern Canada. Tennessee Warblers are budworm specialists (Rimmer and McFarland 1998) and possibly shift breeding distribution in response to insect outbreaks. More records are needed to clarify the true migratory direction of birds from Ontario and Quebec. The single encounter from the Maritimes (record 8) was banded in Nova Scotia and recaptured in Massachusetts eight days later, having travelled at least 53 km per day.

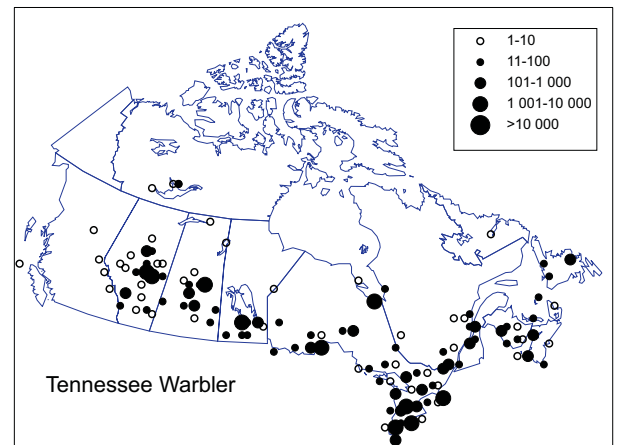
Encounter records: Tennessee Warbler

1	1540-09657 JCF	HY U 00 01	26/08/82 22/01/83	Millet, AB Usulután, EL SALVADOR	53°00'N 113°20'W 13°20'N 88°10'W	5 mo. 4945 km S36°E
2	0210-24204 MGS	U U 00 12	23/08/52 04/10/52	White Fox, SK Roan Mountain, TN	53°20'N 104°00'W 36°10'N 82°00'W	2 mo. 2562 S51°E
3	0220-01698 MGS	U U 00 12	19/09/52 ??/11/52	White Fox, SK East Newdale, MB	53°20'N 104°00'W 50°20'N 100°00'W	431 km S53°E
4	0220-15905 MGS	U U 00 13	12/08/55 04/05/56	White Fox, SK Delavan, WI	53°20'N 104°00'W 42°30'N 88°30'W	9 mo. 1659 km S54°E
5	1860-99797 DC	HY U 04 00	02/09/93 15/09/93	Greenwald, MB St. Paul, MN	50°20'N 96°30'W 44°50'N 93°00'W	13 dy. 666 km S25°E
6	1150-36492 JM	U U 07 12	27/08/69 06/08/73	Chisholm, MN Hornepayne, ON	47°20'N 92°50'W 49°10'N 84°40'W	4 yr. 636 km N77°E
7	1290-33229 MC	AHY U 05 03	14/05/72 99/08/73	Wautoma, WI Escoumins, QC	44°00'N 89°10'W 48°20'N 69°20'W	1 yr. 3 mo. 1598 km N66°E
8	1450-24480 RRA	AHY U 07 89	20/09/77 28/09/77	Westport, NS Manomet, MN	44°10'N 66°20'W 41°50'N 70°30'W	8 dy. 427 km S54°W

Summary of banding statistics: Tennessee Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			36 971
<i>No. encountered per 1000 banded (1955–1995)</i>			0.3
Total no. encountered (1921–1995)	7	4	17
No. encountered from foreign bandings	0	1	3
Maximum period from banding to encounter (mo.)	25	15	48
No. of Canadian-banded birds moving > 0 km	5	1	9
Mean movement > 0 km of Canadian-banded birds	1 471	427	1 382
Maximum movement from all encounters (km)	4 945	1 598	4 945
% recovered (encountered dead)	71	50	70
% direct recoveries	71	75	64
% encountered during banding operations	28	50	23

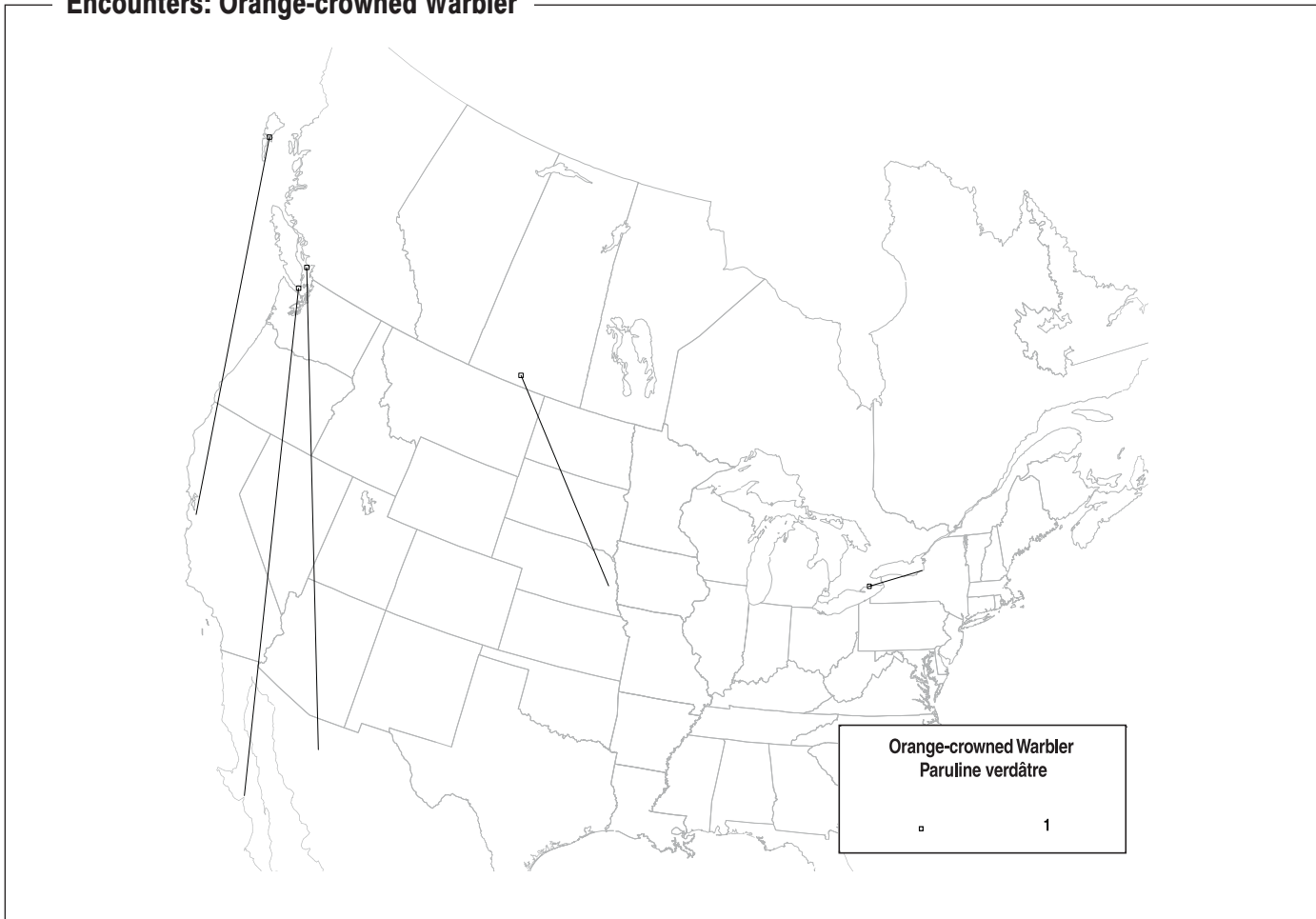
Banding effort: Tennessee Warbler



Top banders: ETJ, LPBO, MGS, BBO, KAH

Orange-crowned Warbler (*Vermivora celata*) 646.0

Encounters: Orange-crowned Warbler



The Orange-crowned Warbler breeds through most of forested Canada except for the Prairie Provinces, southern Ontario and Quebec, and the Maritimes; it also breeds in the western U.S. It winters from the southern U.S. south to Guatemala.

Three birds encountered in British Columbia on or near their breeding grounds were banded during fall, one in California (record 1) and two in Mexico (records 2 and 3). The exact coordinates for records 2 and 3 are not available, so the distance travelled is approximate. The other three

records for this species are for birds both banded and reencountered during migration. One was found dead in a building or enclosure (record 4), and the others were recaptured and released by other banders (records 5 and 6). The bird in record 4 is not far short of the record age for the species of six years and nine months (Klimkiewicz et al. 1983).

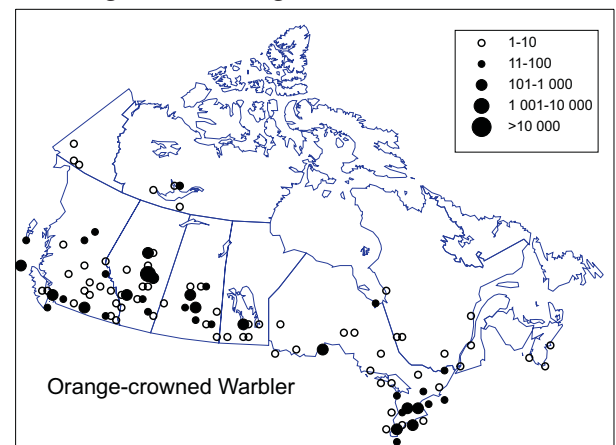
Encounter records: Orange-crowned Warbler

1	1870-73194 CCRS	HY U 03 00	28/09/91 13/06/92	San José, CA Queen Charlotte, BC	37°20'N 121°50'W 53°10'N 132°00'W	9 mo. 1930 km N21°W
2	1180-73334 DFD	HY U 05 00	03/10/68 02/05/69	Baja California State, MEXICO Beacon Hill, BC	27°00'N 113°00'W 48°20'N 123°20'W	7 mo. c. 2538 km N18°W
3	1480-43137 SMR	U U 05 00	27/11/77 ??/06/80	Sonora State, MEXICO Sechelt, BC	30°00'N 110°00'W 49°20'N 123°40'W	c. 2441 km N24°W
4	1010-09807 GLN	HY U 03 21	23/09/61 30/04/67	Ames, NE Lankenheath, SK	41°20'N 96°30'W 49°30'N 106°10'W	5 yr. 7 mo. 1176 km N49°W
5	1690-18044 RNR	HY U 07 89	29/09/85 17/05/89	18 km north of Minetto, NY Nelles Corners, ON	43°30'N 76°20'W 42°50'N 79°50'W	3 yr. 8 mo. 294 km S77°W
6	1560-07857 TBO	HY U 07 89	08/10/81 05/07/83	Toronto, ON Stoney Creek, ON	43°30'N 79°20'W 43°10'N 79°40'W	1 yr. 9 mo. 46 km S36°W

**Summary of banding statistics:
Orange-crowned Warbler**

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			5688
No. encountered per 1000 banded (1955–1995)			0.2
Total no. encountered (1921–1995)	5	0	6
No. encountered from foreign bandings	4	0	5
Maximum period from banding to encounter (mo.)	67	–	67
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds	45	–	45
Maximum movement from all encounters (km)	2537	–	2537
% recovered (encountered dead)	60	–	66
% direct recoveries	0	–	0
% encountered during banding operations	40	–	33

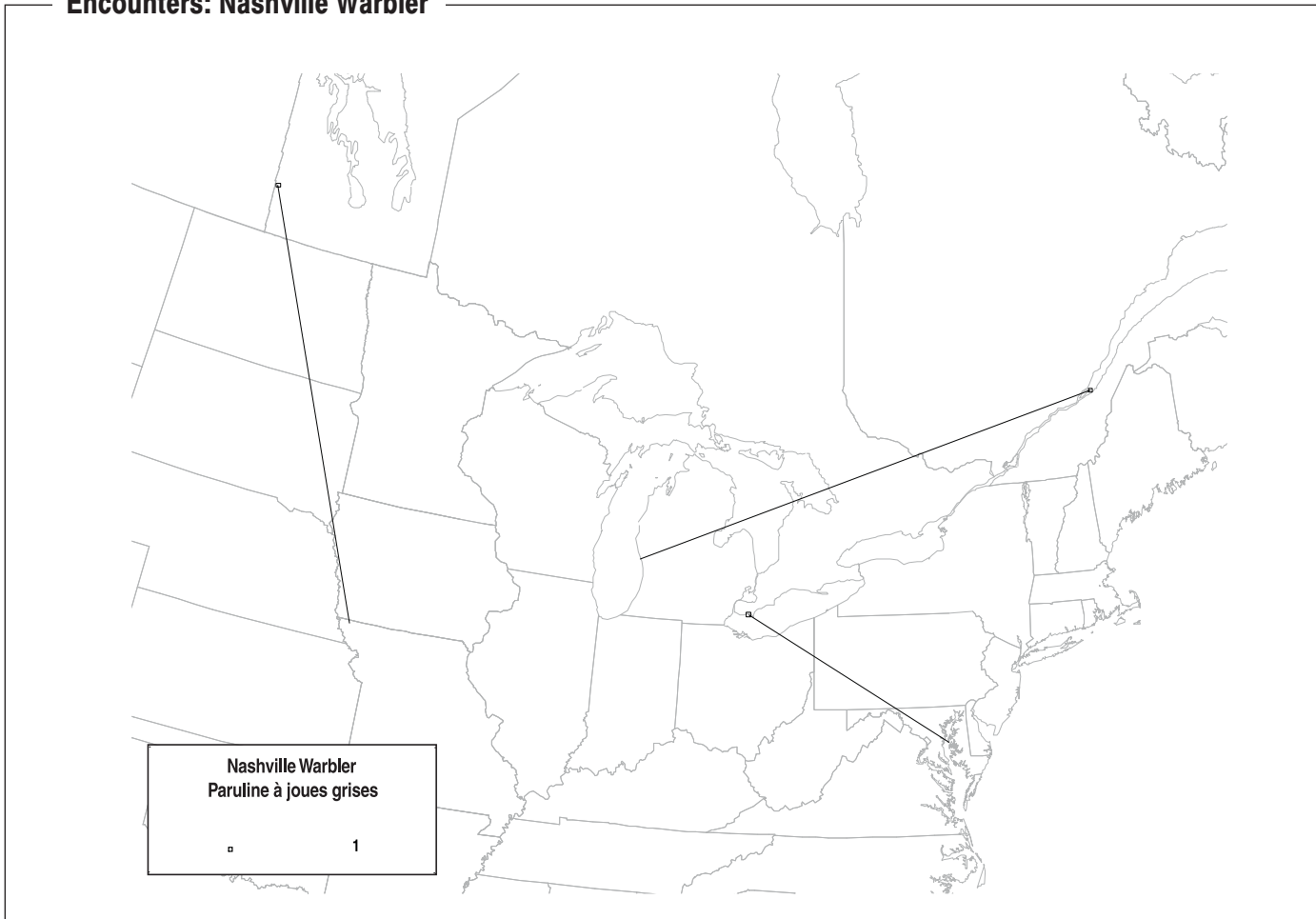
Banding effort: Orange-crowned Warbler



Top banders: ETJ, ARS, LPBO, UBC, CWS-BC

Nashville Warbler (*Vermivora ruficapilla*) 645.0

Encounters: Nashville Warbler



The Nashville Warbler is a disjunct breeder, breeding in the northwestern U.S. and southern British Columbia, and from central Manitoba across southern Canada and the northeastern U.S. to Nova Scotia. It winters from southern Texas and central Mexico to Guatemala.

The only encounters (all listed) are of birds banded on migration in the U.S. and encountered in Canada. Two were evidently encountered on migration as well (records 1 and 2;

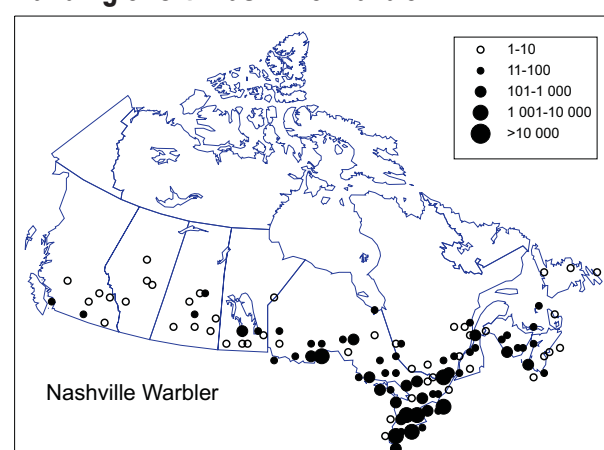
although the dates are inexact), but one (record 3) may have been on its breeding grounds when encountered. If the bird in record 1 was encountered on the date it was reported (the latter being the only information available), the bird would be only one month shy of the longevity record for the species (Klimkiewicz 1997).

Encounter records: Nashville Warbler

1	1180-75260 DB	HY F 05 12	08/09/68 99/09/75	Carr Creek, MD Cottam, ON	38°50'N 76°20'W 42°00'N 82°40'W	7 yr. 0 mo. 642 km N55°W
2	1300-33396 FLD	AHY U 05 00	06/05/73 99/SP/74	southeast of Hamburg, MO McAuley, MB	40°30'N 95°20'W 50°10'N 101°20'W	1173 km N21°W
3	1300-47113 LHW	U U 05 00	29/08/72 04/06/74	west of Muskegon, MI Cap-Tourmente, QC	43°10'N 86°20'W 47°00'N 70°40'W	1 yr. 10 mo. 1301 km N65°E

Summary of banding statistics: Nashville Warbler

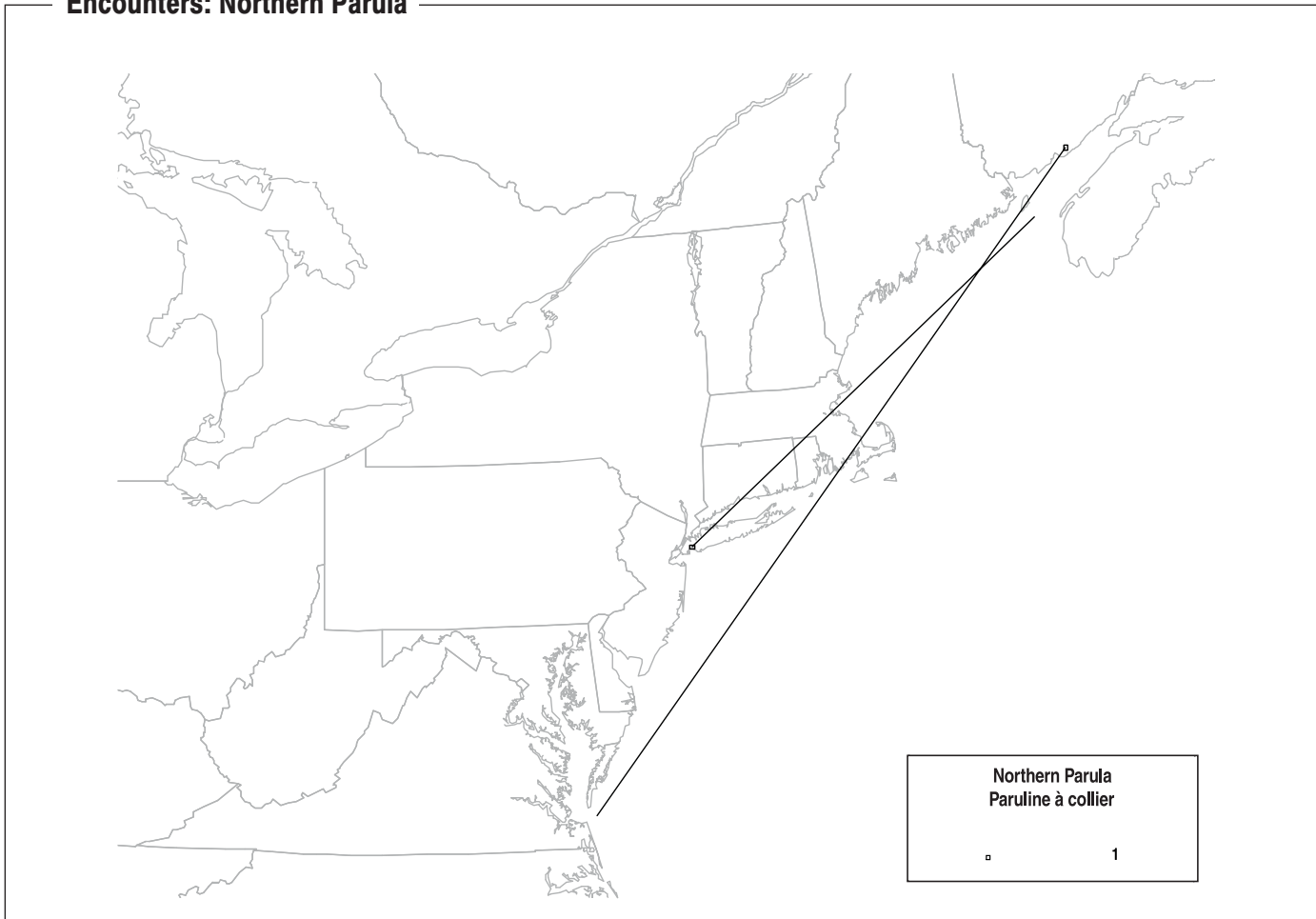
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			18 222
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	1	1	3
No. encountered from foreign bandings	1	1	3
Maximum period from banding to encounter (mo.)	84	–	84
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	641	1 173	1 300
% recovered (encountered dead)	100	100	100
% direct recoveries	0	0	0
% encountered during banding operations	0	0	0

Banding effort: Nashville Warbler

Top banders: LPBO, PEPO, MJW, IPBO, TBO

Northern Parula (*Parula americana*) 648.0

Encounters: Northern Parula



The Northern Parula breeds locally in the eastern U.S. and southern Canada from southeastern Manitoba east to Nova Scotia. It winters from central Mexico south through Central America to Guatemala, and from Florida and the Bahamas south through the West Indies to Guadeloupe.

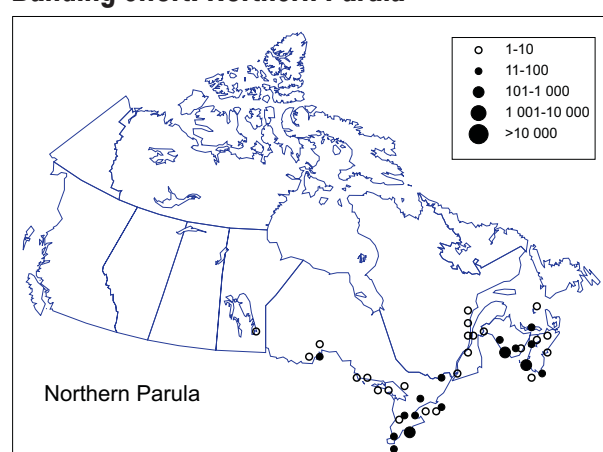
The two records showing some movement are of birds banded on fall migration. One (record 1) was encountered late the following spring, possibly on its breeding grounds but perhaps still on northward migration. The other (record 2) was encountered the following fall, again on migration.

Encounter records: Northern Parula

1	1170-58390	HY M	03/10/73	near Norfolk, VA	37°00'N 75°50'W	7 mo.
	CWH	03 00	22/05/74	French Village, NB	45°20'N 65°50'W	1248 km N39°E
2	1540-06653	HY U	20/08/80	Kent Island, NB	44°30'N 66°40'W	1 yr. 2 mo.
	BC	05 28	10/10/81	New York, NY	40°40'N 73°50'W	726 km S56°W

Summary of banding statistics: Northern Parula

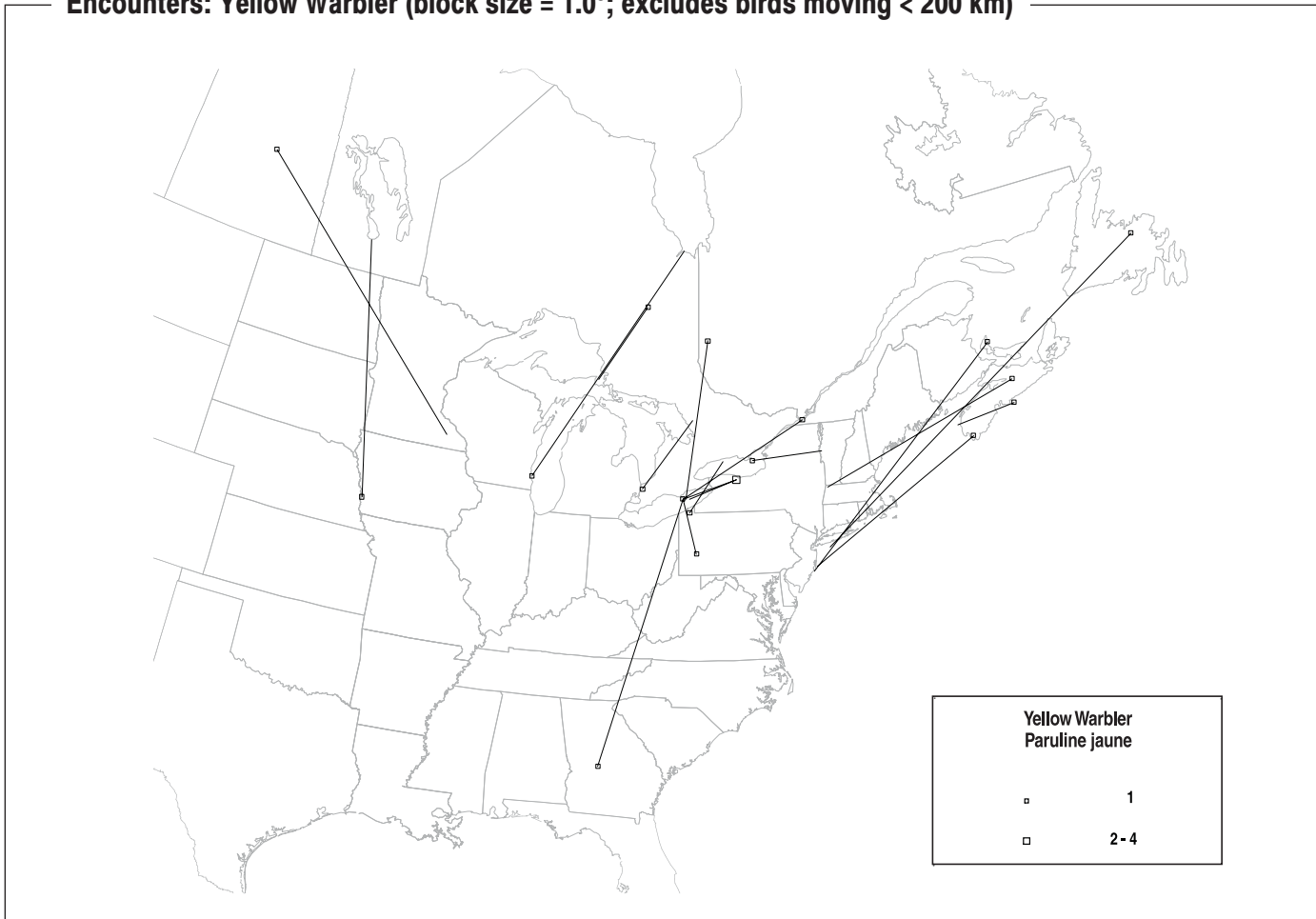
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			1115
<i>No. encountered per 1000 banded (1955–1995)</i>			0.2
Total no. encountered (1921–1995)	2	1	3
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	14	1	14
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds	726	–	726
Maximum movement from all encounters (km)	1248	0	1248
% recovered (encountered dead)	100	100	100
% direct recoveries	0	100	33
% encountered during banding operations	0	0	0

Banding effort: Northern Parula

Top banders: RRA, LPBO, BC, TD, GMBO

Yellow Warbler (*Dendroica petechia*) 652.0

Encounters: Yellow Warbler (block size = 1.0°; excludes birds moving < 200 km)



The Yellow Warbler breeds across most of the U.S. and Canada, north almost to the treeline. It winters from the southwestern U.S., through Florida and the Bahamas, south through Central America and the West Indies to South America (mainly east of the Andes) as far as Peru, Bolivia, and Amazonian Brazil.

Most encounters were of birds retrapped at the site of banding, and most were adults returning to the same nesting sites; only 26 encounters showed movements greater than 50 km. The map shows only the 19 encounters with movements greater than 200 km.

Eastern birds tend to migrate toward the southwest in fall (e.g., records 1–6 below), particularly those breeding in the Maritimes. Record 7 is noteworthy because this hatch-year bird travelled 1155 km from Long Point, Ontario, to Georgia in just 16 days, averaging 72 km per day. Yellow Warblers from the Prairie Provinces travel on a northwest–southeast axis (records 8 and 9).

The bird in record 10 once held the North American longevity record; it has since been superseded by a bird nearly 10 years old (Klimkiewicz 1997).

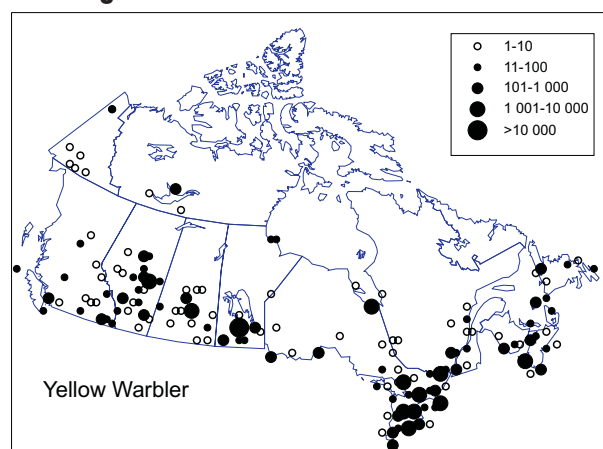
Encounter records: Yellow Warbler

1	0320-05344	HY U	26/08/62	South Stream Wildlife Management Area, VT	42°40'N 73°10'W	11 mo.
	BJB	00 00	08/07/63	near Truro, NS	45°20'N 63°10'W	853 km N66°E
2	1200-04304	AHY M	08/05/70	Island Beach, NJ	39°50'N 74°00'W	1 mo.
	KWP	02 98	30/06/70	near West Pubnico, NS	43°40'N 65°40'W	812 km N56°E
3	1320-64838	AHY F	24/05/73	Barnegat, NJ	39°40'N 74°10'W	1 yr. 3 mo.
	FHL	05 00	18/08/74	near Skinner's Pond, PE	46°50'N 64°00'W	1145 km N43°E
4	1280-41687	HY U	15/09/75	6 km south of Massapequa Park, NY	40°30'N 73°20'W	10 mo.
	ROP	05 14	03/07/76	Glenwood, Labrador, NF	49°00'N 55°00'W	1724 km N51°E
5	1540-85770	SY U	06/06/82	27 km northeast of Moosonee, ON	51°20'N 80°20'W	3 mo.
	RIGM	05 28	14/09/82	Milwaukee, WI	43°00'N 87°50'W	1086 km S34°W
6	1480-72820	HY U	26/08/78	Long Point, ON	42°30'N 80°10'W	1 yr. 10 mo.
	LPBO	05 00	FT/06/80	Lake Pelletier, QC	48°10'N 79°00'W	637 km N8°E
7	1710-05160	HY U	04/08/85	Long Point, ON	42°30'N 80°20'W	16 dy.
	LPBO	05 12	20/08/85	Fort Valley, GA	32°30'N 83°50'W	1155 km S17°W
8	1300-92740	AHY M	19/05/79	Rochester, MN	44°00'N 92°20'W	2 yr. 3 mo.
	HLB	03 12	31/08/81	Humbolt, SK	52°10'N 105°00'W	1306 km N41°W
9	1450-24882	HY U	24/07/78	Delta Marsh, MB	50°10'N 98°20'W	10 mo.
	UM	05 13	28/05/79	Omaha, NE	41°10'N 95°50'W	1020 km S12°E
10	1080-63662	AHY M	14/05/66	Balmoral Marsh, ON	42°20'N 82°20'W	8 yr. 0 mo.
	GG	07 99	04/05/74	Balmoral Marsh, ON	42°20'N 82°20'W	0 km

Summary of banding statistics: Yellow Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			63 619
No. encountered per 1000 banded (1955–1995)			1
Total no. encountered (1921–1995)	33	70	115
No. encountered from foreign bandings	2	7	9
Maximum period from banding to encounter (mo.)	96	96	96
No. of Canadian-banded birds moving > 0 km	14	18	42
Mean movement > 0 km of Canadian-banded birds	291	148	163
Maximum movement from all encounters (km)	1 723	1 305	1 723
% recovered (encountered dead)	51	25	33
% direct recoveries	9	5	8
% encountered during banding operations	48	72	66

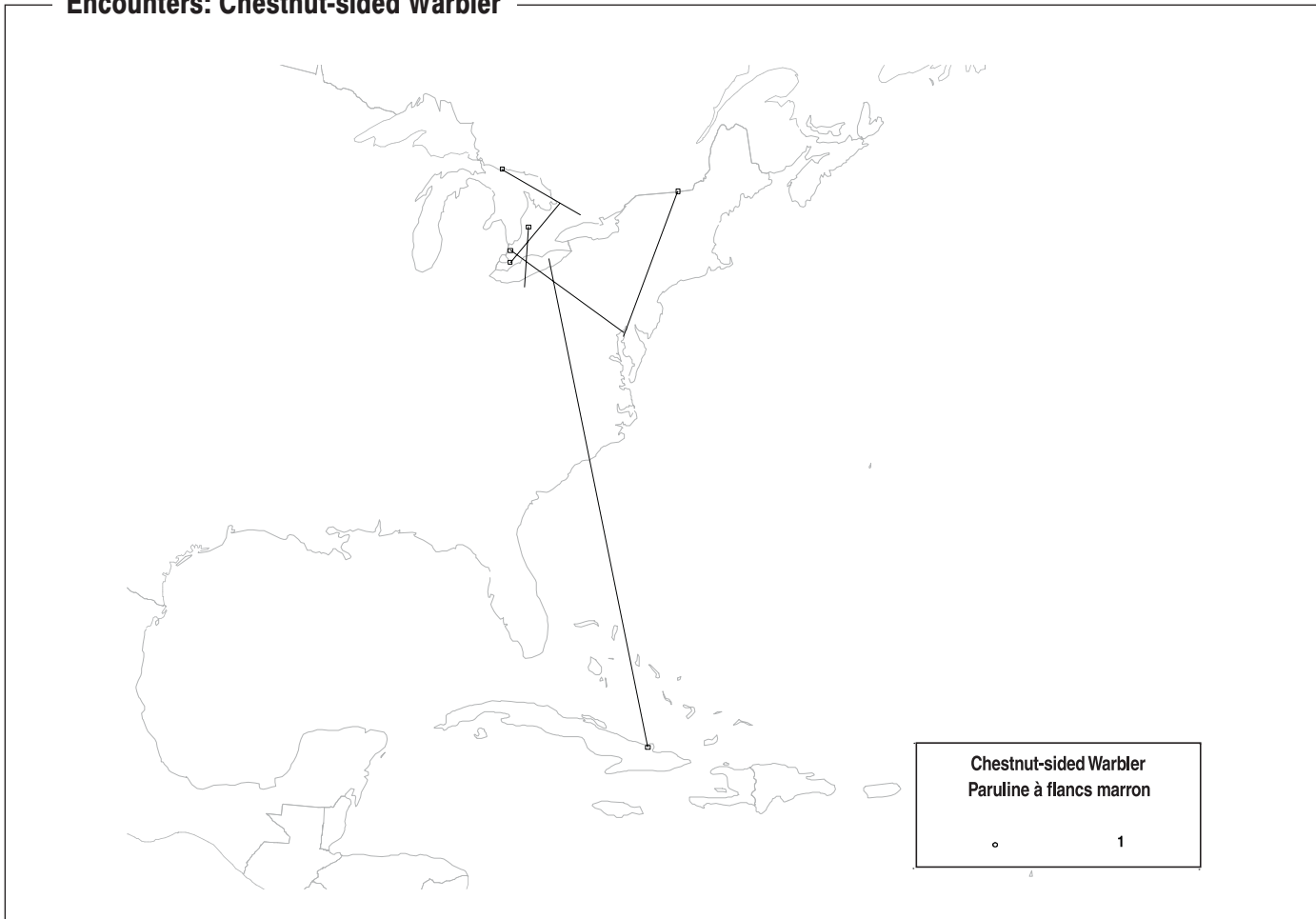
Banding effort: Yellow Warbler



Top banders: UM, LPBO, ETJ, IPBO, BBO

Chestnut-sided Warbler (*Dendroica pensylvanica*) 659.0

Encounters: Chestnut-sided Warbler



The Chestnut-sided Warbler breeds from eastern Alberta east across southern Canada to Nova Scotia, as well as south to Wisconsin, Pennsylvania, and (in mountains) northern Georgia. It winters from southern Mexico to northwestern South America.

The six encounters showing significant movement are listed below, including one bird encountered in Cuba (record 1). Except for the bird in record 2, which may have been encountered on its breeding grounds, the other distant

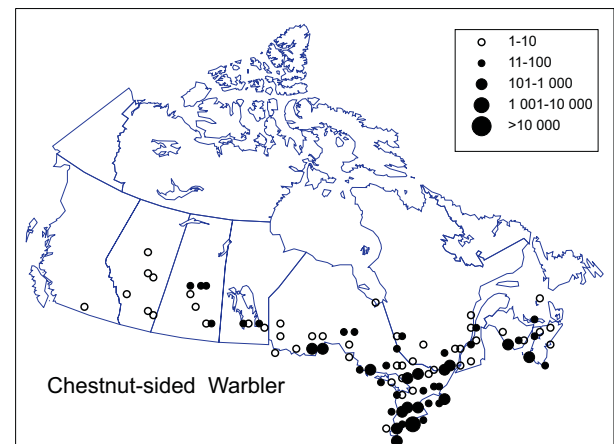
encounters were of birds both banded and encountered in migration seasons (records 1–6). Two were short-term encounters (records 3 and 4) of birds that had moved a minimum of 60 km and 30 km per day, respectively. The latter bird (record 4) had a surprising northwestern trajectory.

Encounter records: Chestnut-sided Warbler

1	1840-59267 LPBO	HY M 00 98	27/08/89 10/09/90	Long Point, ON Gibara, CUBA	42°30'N 80°10'W 21°00'N 76°00'W	1 yr. 1 mo. 2425 km S11°E
2	1740-31050 JGG	HY U 05 00	07/09/86 24/06/87	Fairlee, MD East of Abercorn, QC	39°10'N 76°10'W 45°00'N 72°30'W	9 mo. 716 km N24°E
3	0280-28237 RB	HY M 00 00	12/09/64 18/09/64	near Gravenhurst, ON Balmoral Marsh, ON	44°50'N 79°30'W 42°20'N 82°20'W	6 dy. 360 km S40°W
4	1540-06174 BKW	HY U 03 00	01/09/84 15/09/84	Bridgenorth, ON Dean Lake, ON	44°20'N 78°20'W 46°10'N 83°00'W	14 dy. 419 km N59°W
5	1150-69572 RLR	AHY M 05 12	17/05/67 15/05/68	Abingdon, MD Corunna, ON	39°20'N 76°10'W 42°50'N 82°20'W	1 yr. 0 mo. 647 km N51°W
6	1320-02679 JTS	AHY U 07 89	18/05/73 17/05/74	Maple Heights, OH near London, ON	41°20'N 81°30'W 43°50'N 81°20'W	1 yr. 0 mo. 279 km N3°E
7	0260-86955 RJR	AHY M 00 00	28/08/58 05/09/62	Port Sydney, ON Port Sydney, ON	45°10'N 79°10'W 45°10'N 79°10'W	4 yr. 1 mo. 0 km

**Summary of banding statistics:
Chestnut-sided Warbler**

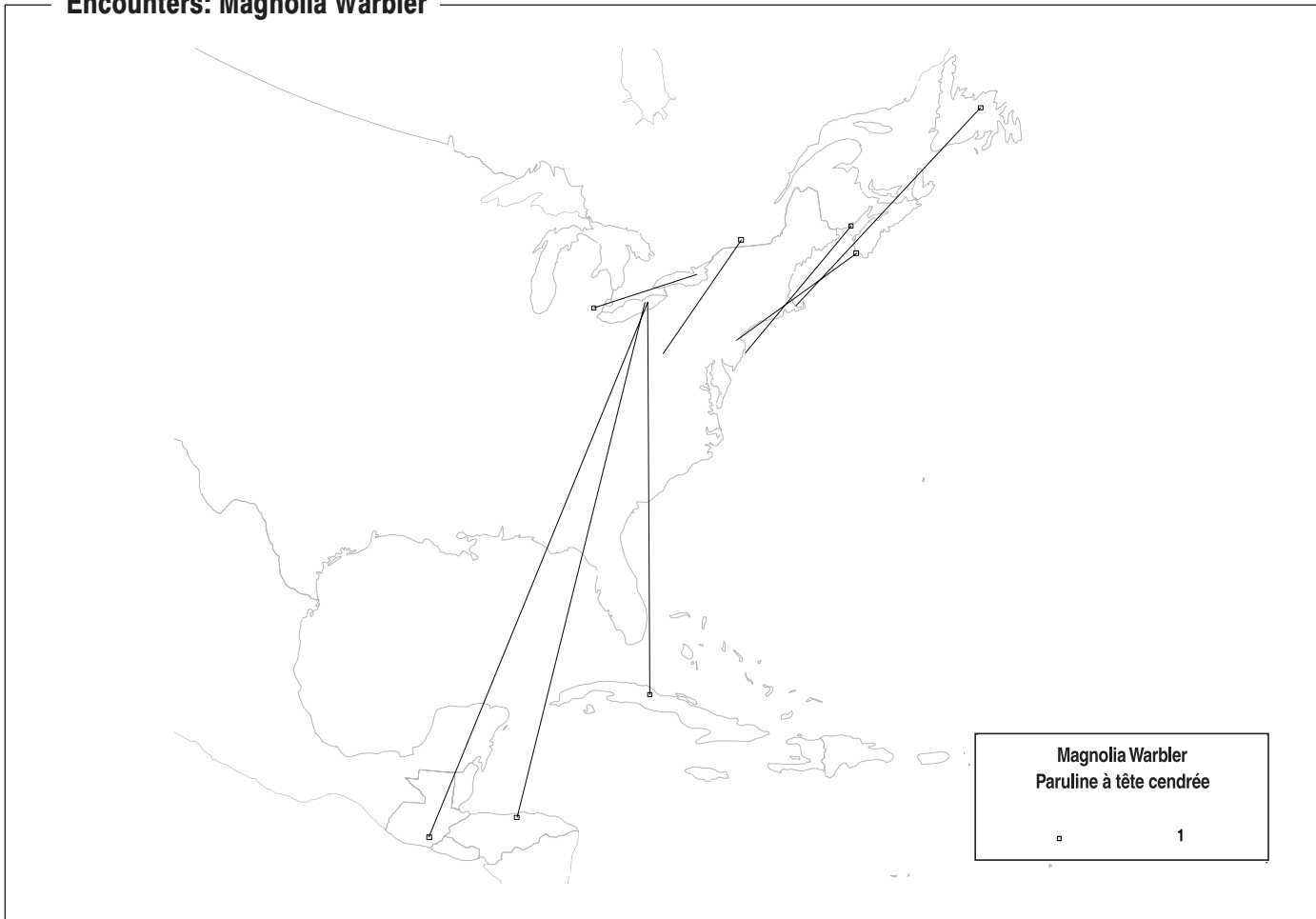
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			9460
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	4	7	11
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	9	49	49
No. of Canadian-banded birds moving > 0 km	3	2	5
Mean movement > 0 km of Canadian-banded birds	1067	27	651
Maximum movement from all encounters (km)	2424	647	2424
% recovered (encountered dead)	100	42	63
% direct recoveries	50	0	18
% encountered during banding operations	0	57	36

Banding effort: Chestnut-sided Warbler

Top banders: LPBO, PEPO, MJW, IPBO, TBO

Magnolia Warbler (*Dendroica magnolia*) 657.0

Encounters: Magnolia Warbler



The Magnolia Warbler breeds across the forested zones of Canada from the southern Northwest Territories and northeastern British Columbia to Newfoundland and the northeastern U.S. It winters from central Mexico south through Central America to Panama, and east through the West Indies to the Virgin Islands.

Of the 13 encounters, 8 showed some movement (all listed below). The birds in records 1 and 2 may have been wintering in Central America or may have been encountered

while moving from farther south. These and the bird in record 3 (all the longest-distance encounters) were banded on migration at Long Point, Ontario. The birds in records 4 and 5 were probably in their breeding areas when encountered. Banding results for this species are consistent with the trans-Gulf migration route described by Hall (1994).

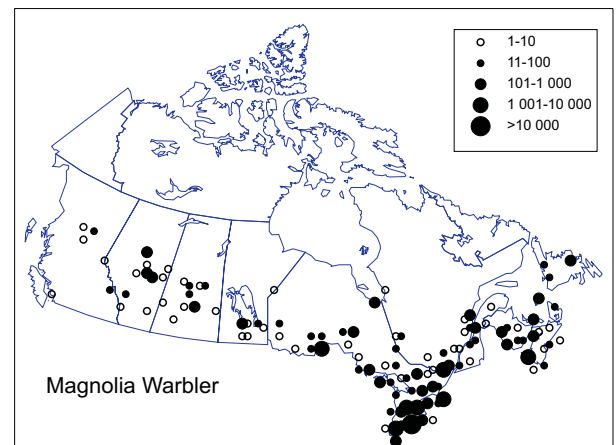
Encounter records: Magnolia Warbler

1	1200-51222 LPBO	AHY U 00 01	16/05/70 10/04/72	Long Point, ON near Cuilapa, GUATEMALA	42°30'N 80°10'W 14°20'N 90°10'W	1 yr. 11 mo. 3279 km S20°W
2	1700-41261 LPBO	ASY M 03 01	25/05/84 19/04/86	Long Point, ON Japon, HONDURAS	42°30'N 80°20'W 15°40'N 86°10'W	1 yr. 11 mo. 3039 km S12°W
3	1840-59261 LPBO	HY U 09 28	27/08/89 09/09/90	Long Point, ON inexact location, CUBA	42°30'N 80°10'W 22°??'N 80°??'W	1 yr. 1 mo. c. 2226 km S0°E
4	1060-63145 MW	U U 00 12	19/09/63 11/06/64	near Barnegat Bay, NJ Lancaster, NB	39°50'N 74°00'W 45°10'N 66°00'W	9 mo. 884 km N45°E
5	1350-83654 MBO	SY M 05 00	01/06/76 19/06/80	Manomet, MA Glenwood, Labrador, NF	41°50'N 70°30'W 48°50'N 55°00'W	4 yr. 0 mo. 1438 km N52°E
6	1510-23965 PEPO	HY U 05 00	21/08/79 25/05/82	Prince Edward Point, ON Ann Arbor, MI	43°50'N 76°50'W 42°10'N 83°40'W	2 yr. 9 mo. 586 km S74°W
7	1220-42479 CMNH	HY U 03 13	13/09/70 23/05/71	Powdermill Nature Reserve, PA Kahnawake, QC	40°00'N 79°10'W 45°20'N 73°40'W	8 mo. 745 km N35°E
8	1050-92039 NJ	AHY F 05 00	21/05/65 21/09/70	near New Brunswick, NJ near Overton, NS	40°30'N 74°30'W 43°50'N 66°00'W	5 yr. 4 mo. 793 km N59°E

Summary of banding statistics: Magnolia Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			37 885
No. encountered per 1000 banded (1955–1995)			0.2
Total no. encountered (1921–1995)	3	8	13
No. encountered from foreign bandings	1	2	4
Maximum period from banding to encounter (mo.)	33	64	64
No. of Canadian-banded birds moving > 0 km	2	2	4
Mean movement > 0 km of Canadian-banded birds	1 406	3 158	2 282
Maximum movement from all encounters (km)	2 226	3 279	3 279
% recovered (encountered dead)	66	75	69
% direct recoveries	0	12	7
% encountered during banding operations	0	25	23

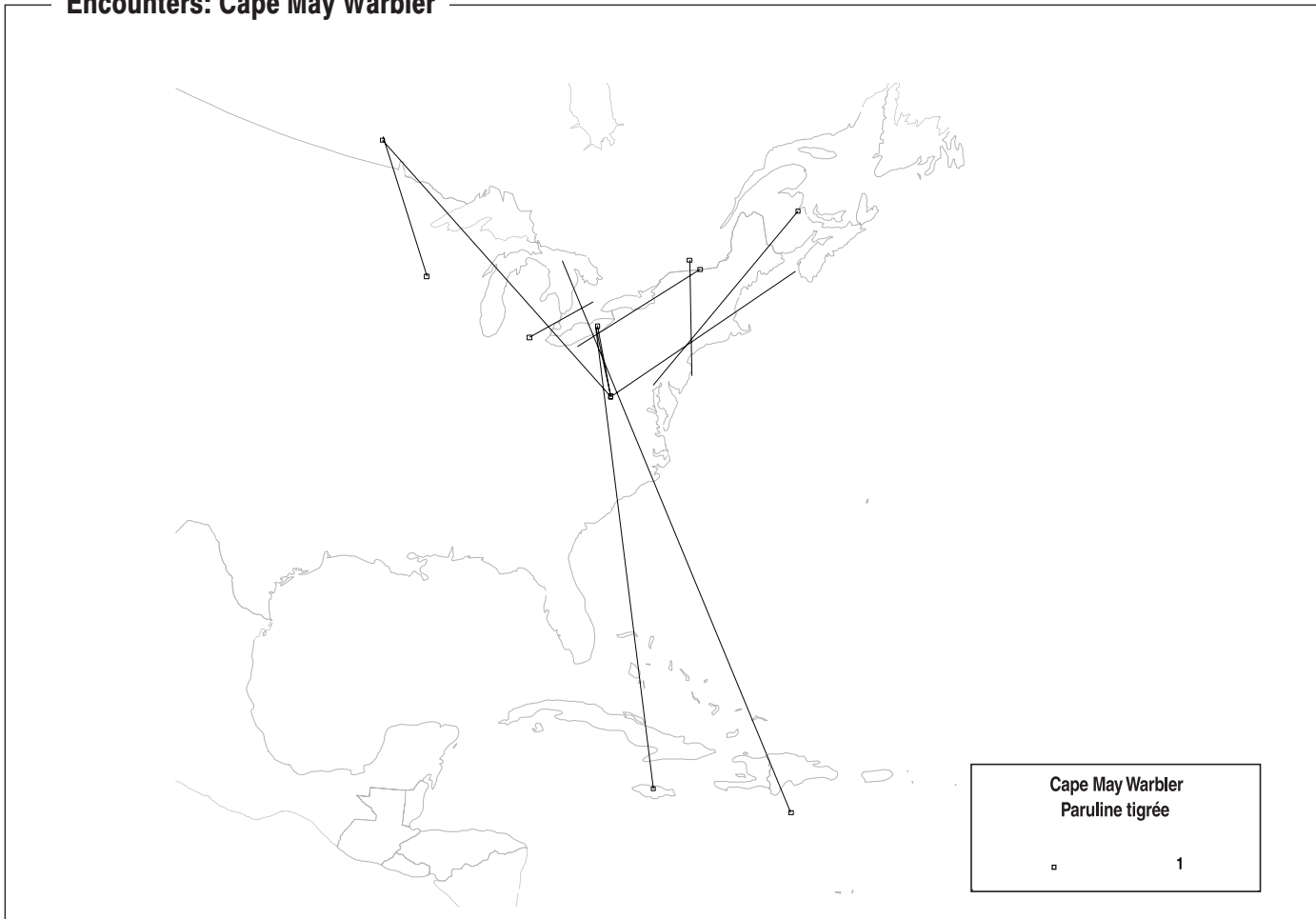
Banding effort: Magnolia Warbler



Top banders: LPBO, PEPO, MJW, TBO, RRA

Cape May Warbler (*Dendroica tigrina*) 650.0

Encounters: Cape May Warbler



The Cape May Warbler breeds in forested regions of Canada from the southwestern Northwest Territories and east-central British Columbia east to Nova Scotia and Maine. It winters in Florida and the West Indies, mainly in the Greater Antilles and the Bahamas.

Eleven of the 12 birds encountered showed significant movement (all listed below). The encounter date in record 1 suggests this adult could have been on its breeding ground. Two late fall encounters in the same year as banding

(records 2 and 3) were at locations falling within the known wintering range. All other birds (records 4–11) were both banded and encountered during migration. The Manitoba bird found dead in Wisconsin six days later (record 4) had travelled at least 131 km per day. Other short-term fall encounters linked Ontario with Michigan (record 5) and West Virginia (record 6).

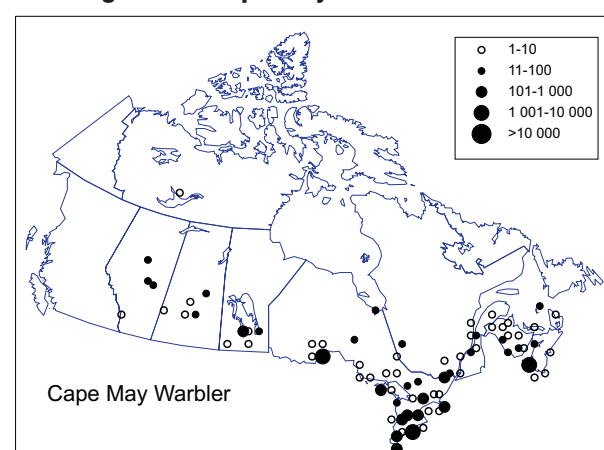
Encounter records: Cape May Warbler

1	0240-24267 SWS	AHY M 00 14	05/05/55 01/06/55	Glencoe, MD Chatham, NB	39°30'N 76°30'W 47°00'N 65°20'W	1 mo. 1229 km N44°E
2	1440-22501 LPBO	HY M 05 01	26/08/76 23/11/76	Long Point, ON Brown's Town, JAMAICA	42°30'N 80°10'W 18°20'N 77°20'W	3 mo. 2704 km S7°E
3	1540-05307 RRT	AHY M 05 00	30/08/83 18/10/83	Evansville, ON AT SEA, south of HAITI	45°40'N 82°30'W 16°40'N 70°50'W	2 mo. 3406 km S22°E
4	1780-40572 DC	HY F 05 00	23/08/88 29/08/88	Matlock, MB Alma, WI	50°20'N 96°50'W 44°10'N 91°50'W	6 dy. 783 km S31°E
5	1750-51790 DRL	HY M 05 12	26/08/86 18/09/86	Fergus, ON Osseo, MI	43°40'N 80°20'W 41°50'N 84°30'W	23 dy. 397 km S60°W
6	1470-09984 LPBO	HY M 07 89	24/08/77 04/09/77	Long Point, ON Jordon Run, WV	42°30'N 80°10'W 39°00'N 79°10'W	11 dy. 399 km S13°E
7	1540-93801 RRA	AHY M 07 89	04/08/81 30/08/82	Westport, NS Jordon Run, WV	44°10'N 66°20'W 39°00'N 79°10'W	1 yr. 0 mo. 1212 km S66°W
8	1710-79313 EMO	HY M 05 12	09/09/85 99/08/87	Jordon Run, WV Clandeboye, MB	39°00'N 79°10'W 50°10'N 96°50'W	1 yr. 11 mo. 1864 km N42°E
9	1560-41823 TS	HY M 07 89	10/09/81 14/05/82	Jordon Run, WV Long Point, ON	39°00'N 79°10'W 42°30'N 80°00'W	8 mo. 396 km N10°W
10	1420-51287 MED	HY F 05 00	20/09/75 20/05/76	Island Beach, NJ Montréal, QC	39°50'N 74°00'W 45°30'N 73°30'W	8 mo. 632 km N4°E
11	0860-15611 ABF	AHY F 05 12	15/05/75 27/09/78	Willoughby, OH 18 km north of Franklin, QC	41°30'N 81°20'W 45°00'N 72°50'W	3 yr. 4 mo. 791 km N58°E

Summary of banding statistics: Cape May Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			12 554
No. encountered per 1000 banded (1955–1995)			1
Total no. encountered (1921–1995)	7	5	12
No. encountered from foreign bandings	3	2	5
Maximum period from banding to encounter (mo.)	23	40	40
No. of Canadian-banded birds moving > 0 km	4	2	6
Mean movement > 0 km of Canadian-banded birds	1 070	2 308	1 483
Maximum movement from all encounters (km)	2 703	3 405	3 405
% recovered (encountered dead)	71	80	75
% direct recoveries	57	60	58
% encountered during banding operations	28	20	25

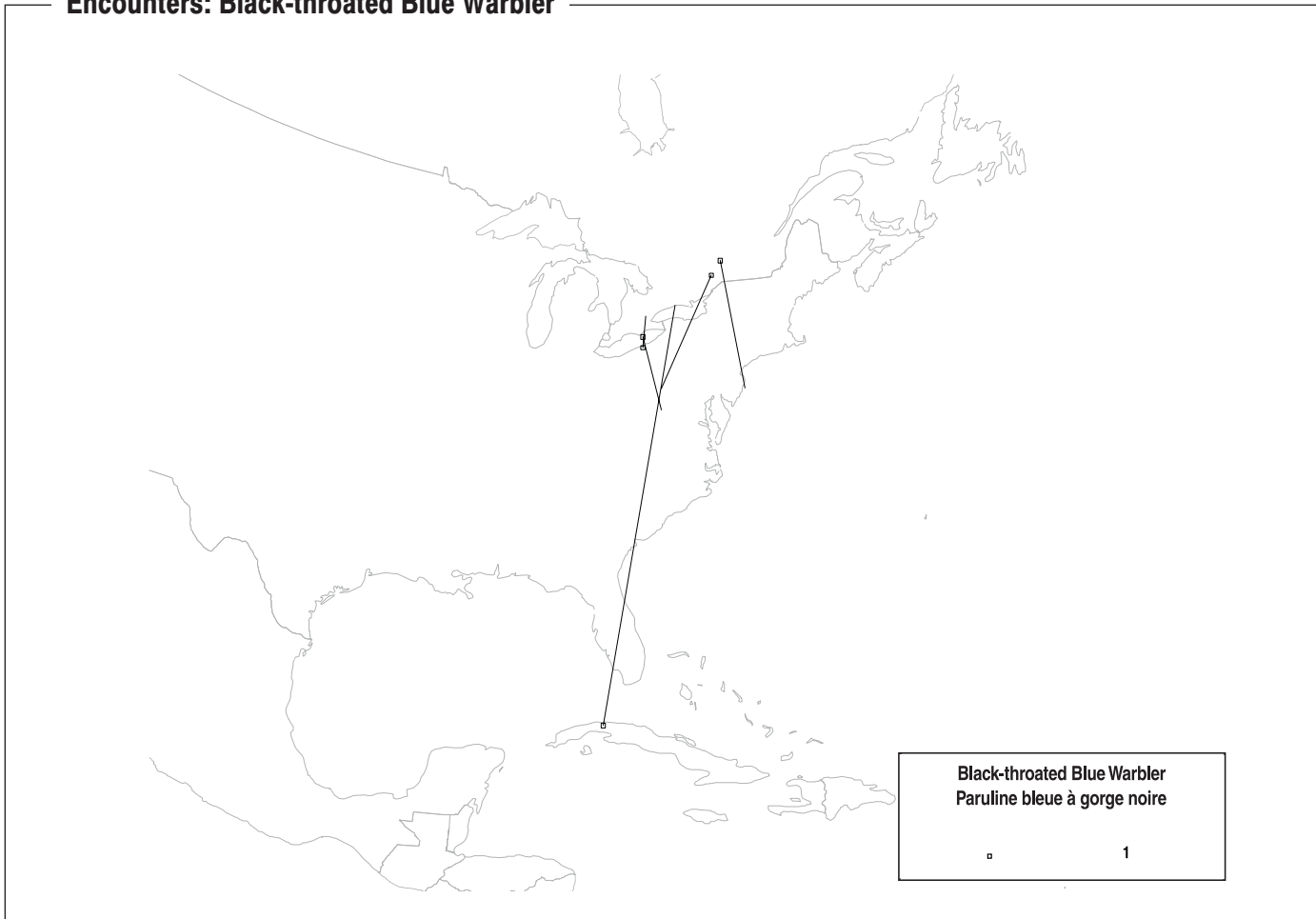
Banding effort: Cape May Warbler



Top banders: LPBO, BC, RRA, PEPO, JBMi

Black-throated Blue Warbler (*Dendroica caerulescens*) 654.0

Encounters: Black-throated Blue Warbler



The Black-throated Blue Warbler breeds in southeastern Canada from western Ontario to Nova Scotia, through the northeastern U.S. and farther south in the Appalachian Mountains. It winters from Florida and the Bahamas through the Greater Antilles and Cayman Islands.

All five encounters are listed below. The first bird was perhaps on its wintering grounds when shot, despite the relatively early encounter date. This bird had travelled at

least 44 km per day. The encounter date of record 2 (in Quebec) suggests this warbler was on its breeding grounds. All other encounters were of birds presumed to be on migration. Three of the five encountered warblers (records 2, 4, and 5) were killed by “striking stationary objects other than wires or towers” — most likely windows.

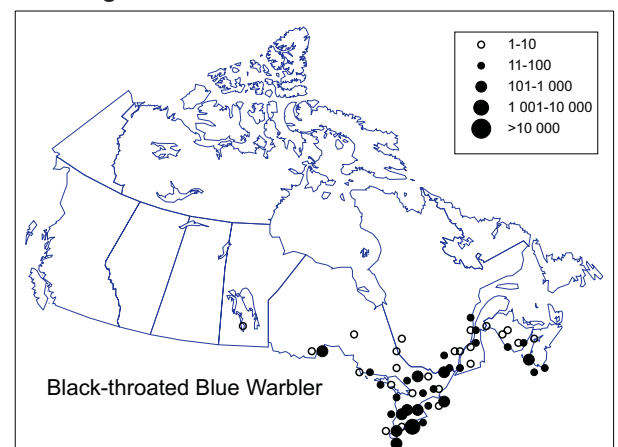
Encounter records: Black-throated Blue Warbler

1	0220-97230 FS	HY U 00 01	03/09/54 26/10/54	Bewdley, ON Guanabaco, CUBA	44°00'N 78°10'W 23°00'N 82°10'W	1 mo. 2366 km S10°W
2	1670-55573 EAMa	HY M 05 13	14/09/85 05/07/86	Island Beach, NJ Lac-Gagnon, QC	39°50'N 74°00'W 46°00'N 75°00'W	10 mo. 691 km N6°W
3	1820-77749 JAW	AHY M 07 89	27/09/89 09/05/93	Jordon Run, WV Long Point, ON	39°00'N 79°10'W 42°30'N 80°20'W	3 yr. 8 mo. 402 km N14°W
4	1540-80136 BKW	HY M 05 13	20/09/80 05/05/81	Guelph, ON 13 km west of Shawville, PA	43°30'N 80°10'W 42°00'N 80°20'W	8 mo. 168 km S5°W
5	1310-38406 CMNH	AHY F 04 13	18/05/74 18/05/77	Stahlstown, PA Ottawa, ON	40°00'N 79°10'W 45°20'N 75°40'W	3 yr. 0 mo. 659 km N25°E

**Summary of banding statistics:
Black-throated Blue Warbler**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			6176
<i>No. encountered per 1000 banded (1955–1995)</i>			0.2
Total no. encountered (1921–1995)	3	2	5
No. encountered from foreign bandings	3	2	3
Maximum period from banding to encounter (mo.)	10	44	44
No. of Canadian-banded birds moving > 0 km	2	0	2
Mean movement > 0 km of Canadian-banded birds	1266	–	1266
Maximum movement from all encounters (km)	2366	659	2366
% recovered (encountered dead)	100	50	80
% direct recoveries	33	0	20
% encountered during banding operations	0	50	20

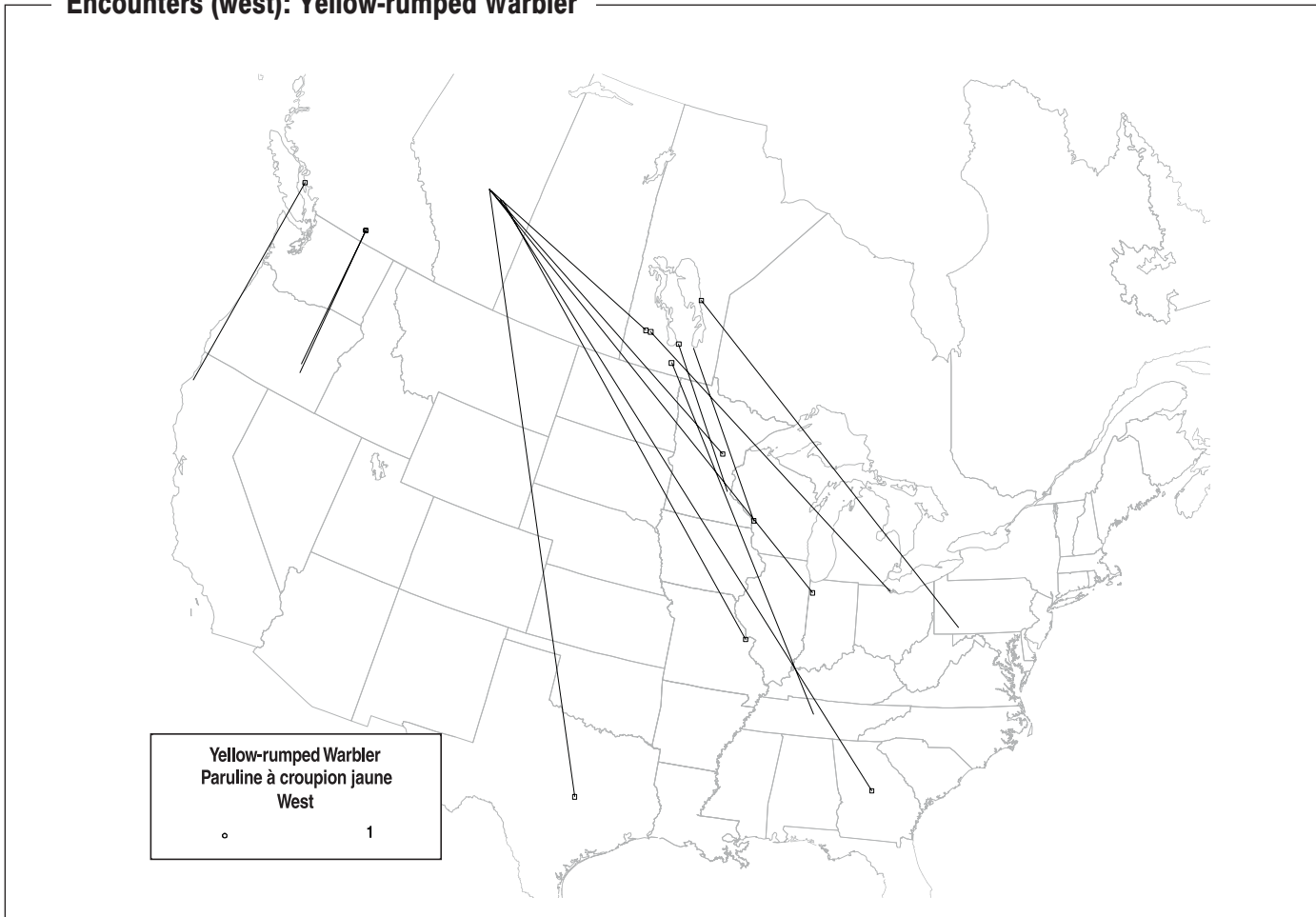
Banding effort: Black-throated Blue Warbler



Top banders: LPBO, PEPO, MJW, TBO, RRA

Yellow-rumped Warbler (*Dendroica coronata*) 655.0 and 656.0

Encounters (west): Yellow-rumped Warbler



The two subspecies groups of the Yellow-rumped Warbler, the Myrtle (*D. c. coronata*, AOU 655.0) and Audubon's Warblers (*D. c. auduboni*, AOU 656.0), were recognized as separate species prior to 1973, and banders have continued to record the forms separately. This account covers the two together.

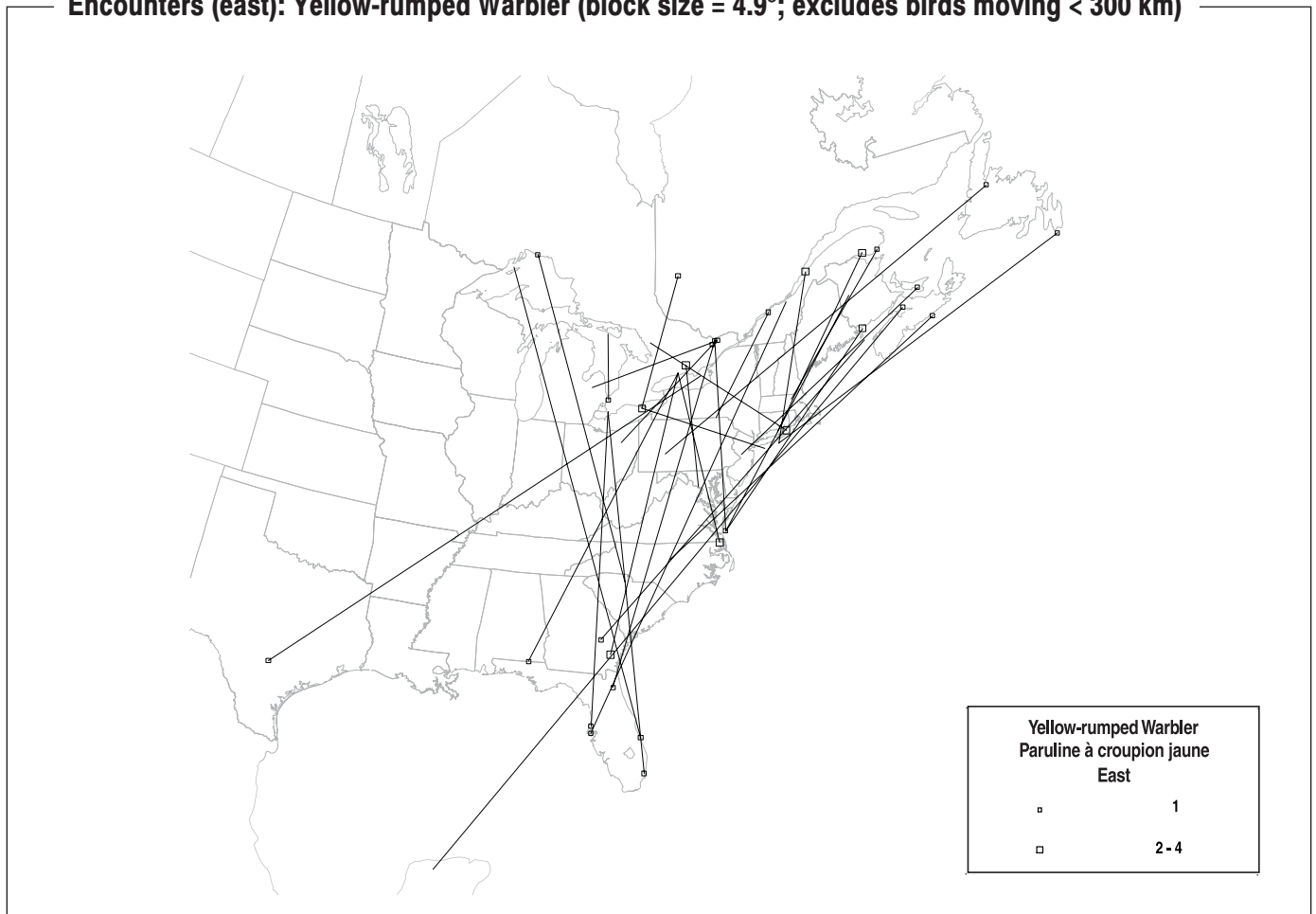
The Yellow-rumped Warbler breeds from Alaska and the western U.S. to Mexico; in Canada it breeds from the Yukon across the forested regions of all the provinces to Newfoundland. Audubon's Warbler occupies central and southern British Columbia and southwestern Alberta, where it overlaps and hybridizes with the Myrtle Warbler (Hunt and Flaspohler 1998). It winters from southwestern British Columbia (Audubon's) through the southern half of the U.S.

to Panama and throughout the West Indies and other Caribbean Islands (Myrtle).

Only a few of the birds encountered, including the one in record 1, are of the western Audubon's subspecies.

Most records involving the Maritimes were of birds banded in the U.S. Both Maritimes and Quebec birds tend to move on a northeast-southwest axis (e.g., records 2–5). Birds that presumably bred in the Maritimes were encountered in December–February in Nova Scotia (1 bird), Georgia (record 3), and Mexico (record 4). The warbler found dead in Newfoundland nine days after banding in Pennsylvania (record 5) had travelled a remarkable 222 km per day on average.

Encounters (east): Yellow-rumped Warbler (block size = 4.9°; excludes birds moving < 300 km)



Ontario accounted for most of the encounters. A few warblers from eastern Ontario moved northeast–southwest, like Maritimes birds (e.g., record 6). These may have been birds that bred in more eastern provinces, whereas birds that presumably bred in Ontario headed more north–south (e.g., record 7) or northwest–southeast toward the mid-Atlantic states (see eastern map and note that many individual records

are not shown due to the large block size, as explained in section 4.2). Warblers encountered in northwestern Ontario moved southeast in fall (e.g., record 8), as did birds from the Prairie Provinces, which wintered in Tennessee (record 9), Georgia (record 10), and Texas (record 11).

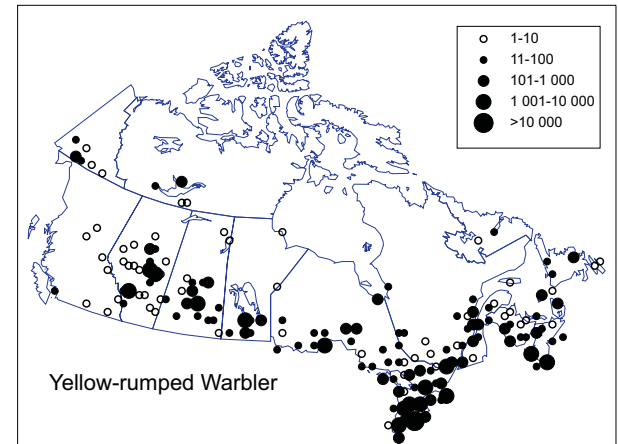
*Yellow-rumped Warbler***Encounter records: Yellow-rumped Warbler**

1	1750-95039 CR	HY M 05 14	25/10/86 17/04/87	Arcata, CA Cranberry Lake, BC	40°50'N 124°00'W 49°50'N 124°30'W	6 mo. 1003 km N2°W
2	0420-98882 DF	AHY F 00 00	26/05/53 ??/10/54	near Québec, QC Belleair Bluffs, FL	46°40'N 71°10'W 27°50'N 82°40'W	2325 km S30°W
3	0320-19400 BC	U U 00 01	29/08/61 09/02/62	Kent Island, NB Lyons, GA	44°30'N 66°40'W 32°10'N 82°20'W	6 mo. 1932 km S50°W
4	1530-61053 DTR	AHY U 03 13	25/01/83 99/SP/83	Mérida, Yucatán, MEXICO Springhill, NS	20°50'N 89°30'W 45°30'N 64°00'W	3600 km N34°E
5	1290-79225 REM	AHY F 05 00	06/05/74 15/05/74	east of Homer City, PA Hampden, NF	40°30'N 79°00'W 49°30'N 56°50'W	9 dy. 2001 km N53°E
6	1540-79683 PEPO	U U 05 00	10/10/81 FT/02/85	Prince Edward Point, ON San Antonio, TX	43°50'N 76°50'W 29°20'N 98°20'W	2496 km S57°W
7	1240-36948 MJW	AHY F 05 00	19/05/73 99/03/75	near Paincourt, ON Davie, FL	42°20'N 82°20'W 26°00'N 80°10'W	1 yr. 10 mo. 1829 km S7°E
8	1910-73964 TCBO	HY M 05 00	15/09/92 31/03/94	Thunder Cape, ON Wabasso, FL	48°10'N 88°50'W 27°40'N 80°20'W	1 yr. 6 mo. 2397 km S21°E
9	0470-63307 FCL	U U 00 00	09/01/50 04/05/50	Antioch, TN Carman, MB	36°00'N 86°40'W 49°30'N 98°00'W	4 mo. 1761 km N28°W
10	1860-67285 BBO	HY U 03 12	08/09/90 19/01/91	Beaverhill Lake, AB Macon, GA	53°20'N 112°30'W 32°50'N 83°30'W	4 mo. 3240 km S57°E
11	1640-36897 ETJ	HY U 05 00	01/10/84 05/12/86	St. Albert, AB Florence, TX	53°30'N 113°30'W 30°50'N 97°40'W	2 yr. 2 mo. 2827 km S33°E
12	0260-93051 DSC	AHY M 07 89	07/06/64 18/06/68	Summit Depot, NB Sherman, NB	47°40'N 68°10'W 47°50'N 68°20'W	4 yr. 0 mo. 22 km N45°W

**Summary of banding statistics:
Yellow-rumped Warbler**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			76 198
<i>No. encountered per 1000 banded (1955–1995)</i>			0.6
Total no. encountered (1921–1995)	39	27	80
No. encountered from foreign bandings	17	8	29
Maximum period from banding to encounter (mo.)	44	48	48
No. of Canadian-banded birds moving > 0 km	18	14	41
Mean movement > 0 km of Canadian-banded birds	920	1 177	1 125
Maximum movement from all encounters (km)	3 239	3 599	3 599
% recovered (encountered dead)	61	66	66
% direct recoveries	35	29	37
% encountered during banding operations	35	33	31

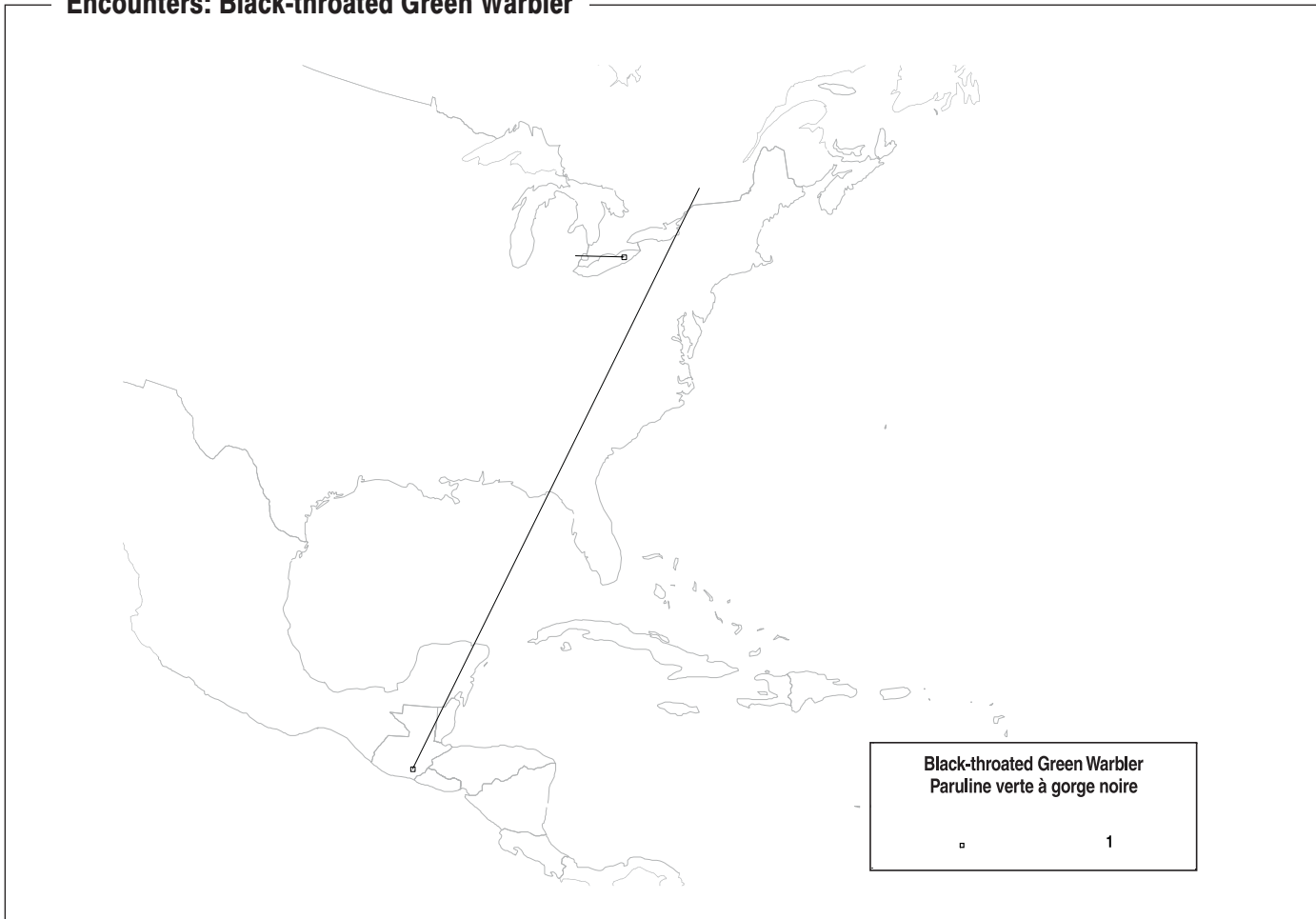
Banding effort: Yellow-rumped Warbler



Top banders: LPBO, ETJ, MJW, ARS, FS

Black-throated Green Warbler (*Dendroica virens*) 667.0

Encounters: Black-throated Green Warbler



The Black-throated Green Warbler breeds from north-central Alberta east within the forest zone to Newfoundland and south through the Appalachians; it is absent from southern parts of Alberta, Saskatchewan, and Manitoba. It winters in southern Texas, eastern Mexico, and Central America to northern Venezuela, and from southern Florida south to the Greater Antilles.

Both records are of long-distance encounters. One bird (record 1) was encountered on its presumed wintering grounds. The other (record 2) was captured on fall migration at a site not far from its fall migration stopover of almost exactly two years earlier.

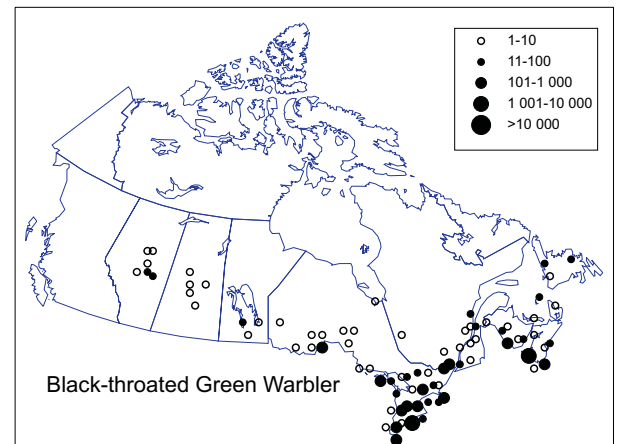
Encounter records: Black-throated Green Warbler

1	1240-42215 PHH	HY U 03 00	01/09/72 08/01/73	Lost River, Fraser Lake, QC near Cuilapa, GUATEMALA	45°50'N 74°30'W 14°20'N 90°10'W	4 mo. 3802 km S28°W
2	1030-68875 KHS	HY M 07 89	21/09/63 26/09/65	Pontiac, MI Long Point, ON	42°30'N 83°20'W 42°30'N 80°00'W	2 yr. 0 mo. 273 km N89°E

**Summary of banding statistics:
Black-throated Green Warbler**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			7914
<i>No. encountered per 1000 banded (1955–1995)</i>			0.1
Total no. encountered (1921–1995)	2	0	2
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	24	–	24
No. of Canadian-banded birds moving > 0 km	1	0	1
Mean movement > 0 km of Canadian-banded birds	3801	–	3801
Maximum movement from all encounters (km)	3801	–	3801
% recovered (encountered dead)	50	–	50
% direct recoveries	50	–	50
% encountered during banding operations	50	–	50

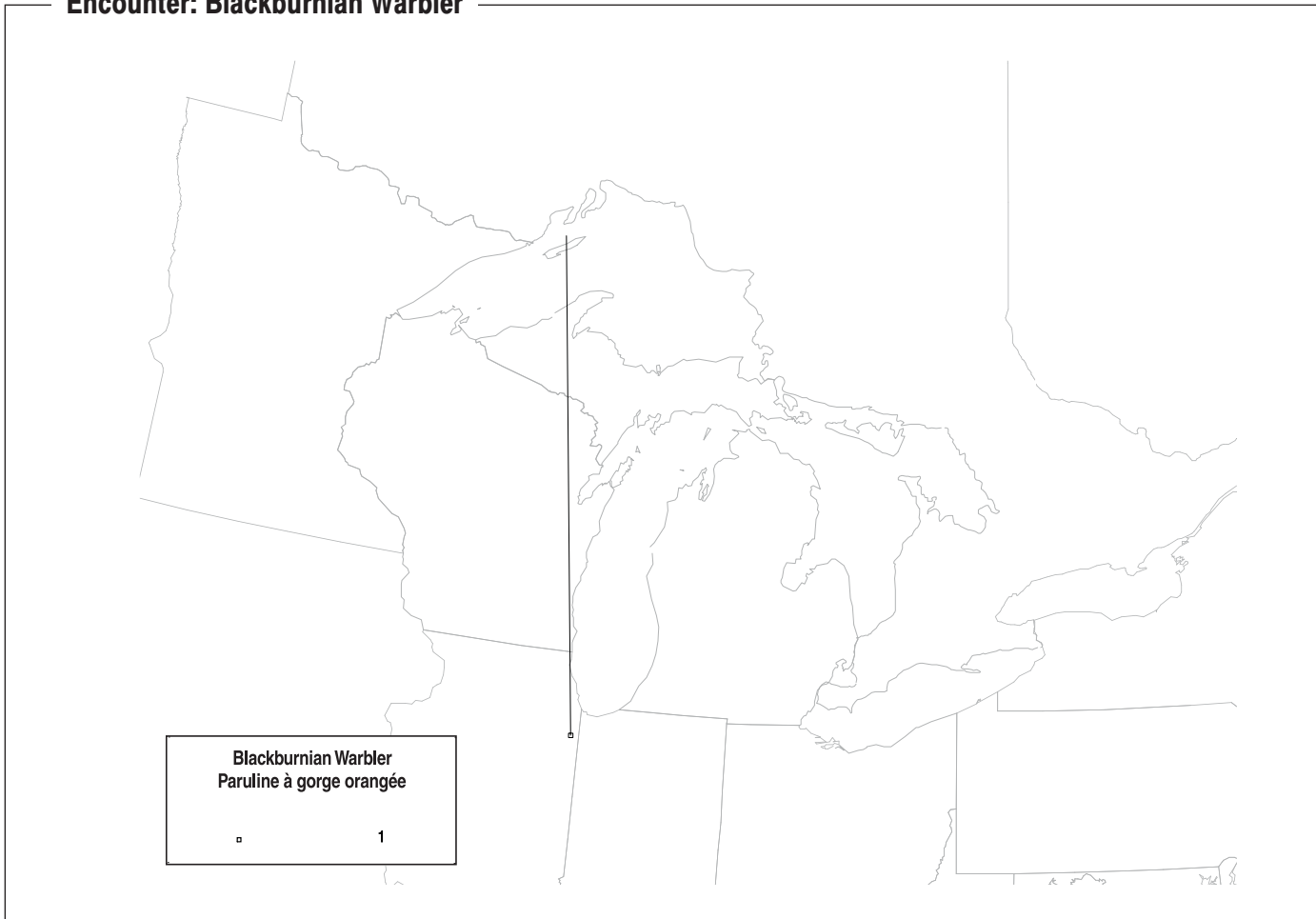
Banding effort: Black-throated Green Warbler



Top banders: LPBO, RRA, PEPO, FS, MJW

Blackburnian Warbler (*Dendroica fusca*) 662.0

Encounter: Blackburnian Warbler



The Blackburnian Warbler breeds from central Saskatchewan east within the boreal forests to Nova Scotia and south in the Appalachian Mountains. It winters in Venezuela and northwestern Colombia and on the east flank of the Andes through Peru to Bolivia.

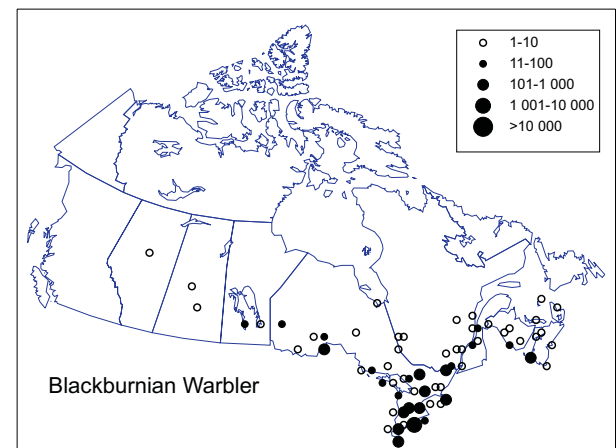
There is only one Canadian encounter, both banded and encountered on spring migration.

Encounter record: Blackburnian Warbler

1	1890-65306	ASY M	20/05/92	Thunder Cape, ON	48°10'N 88°50'W	2 yr. 0 mo.
	TCBO	05 28	ST/05/94	Monee, IL	41°20'N 87°40'W	766 km S7°E

Summary of banding statistics: Blackburnian Warbler

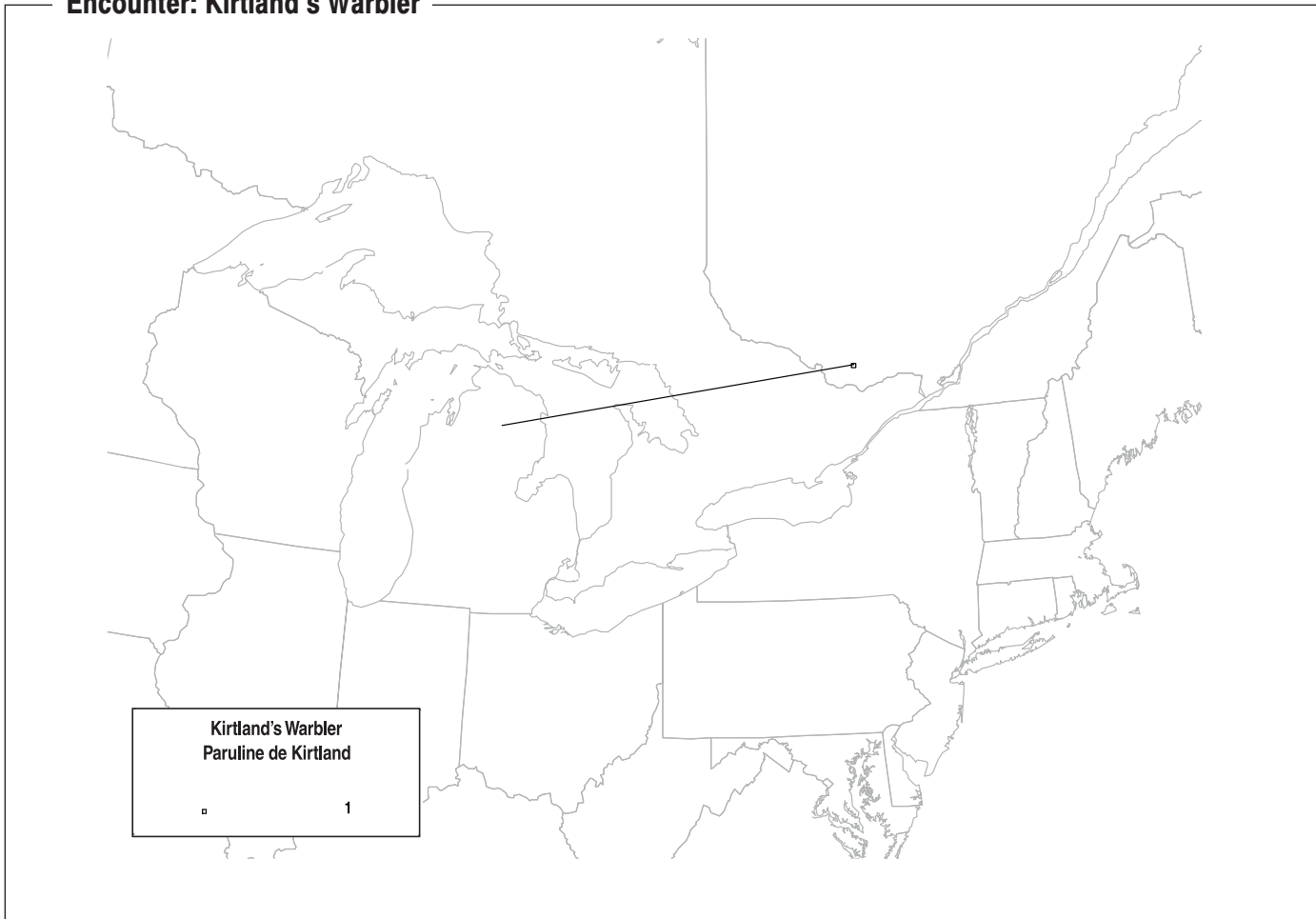
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			5257
<i>No. encountered per 1000 banded (1955–1995)</i>			0.2
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	24	24
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	766	766
Maximum movement from all encounters (km)	–	766	766
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

Banding effort: Blackburnian Warbler

Top banders: LPBO, PEPO, FS, RRA, JBMi

Kirtland's Warbler (*Dendroica kirtlandii*) 670.0

Encounter: Kirtland's Warbler



Kirtland's Warbler breeds mainly in a restricted area of central Michigan, but there have been scattered migration and breeding season records from southern Ontario, Quebec, and Wisconsin. It winters in the Bahamas.

The only encounter was of a bird banded as a nestling in Michigan and captured four years later in Quebec (record 1). This bird was banded by Lawrence Walkinshaw, a long-

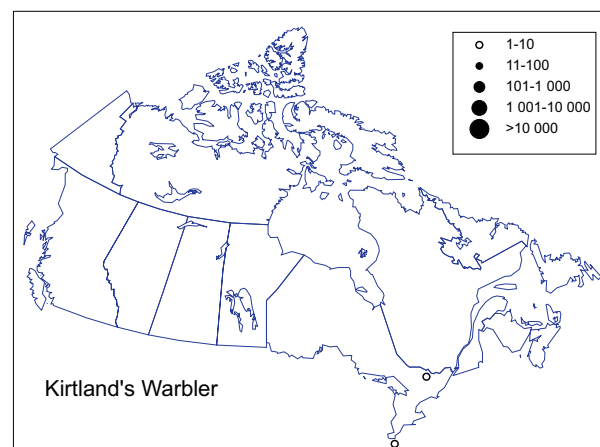
time student of the species on its nesting grounds, who also banded one of the two Kirtland's Warblers banded in Canada (near Pembroke, Ontario, in 1977). The other Canadian-banded bird was banded at Point Pelee, Ontario, in 1959.

Encounter record: Kirtland's Warbler

1	0830-20521	L U	22/06/74	Johannesburg, MI	44°50'N 84°20'W	3 yr. 11 mo.
	LHW	07 89	29/05/78	Kazabazua, QC	45°50'N 76°00'W	661 km N77°E

Summary of banding statistics: Kirtland's Warbler

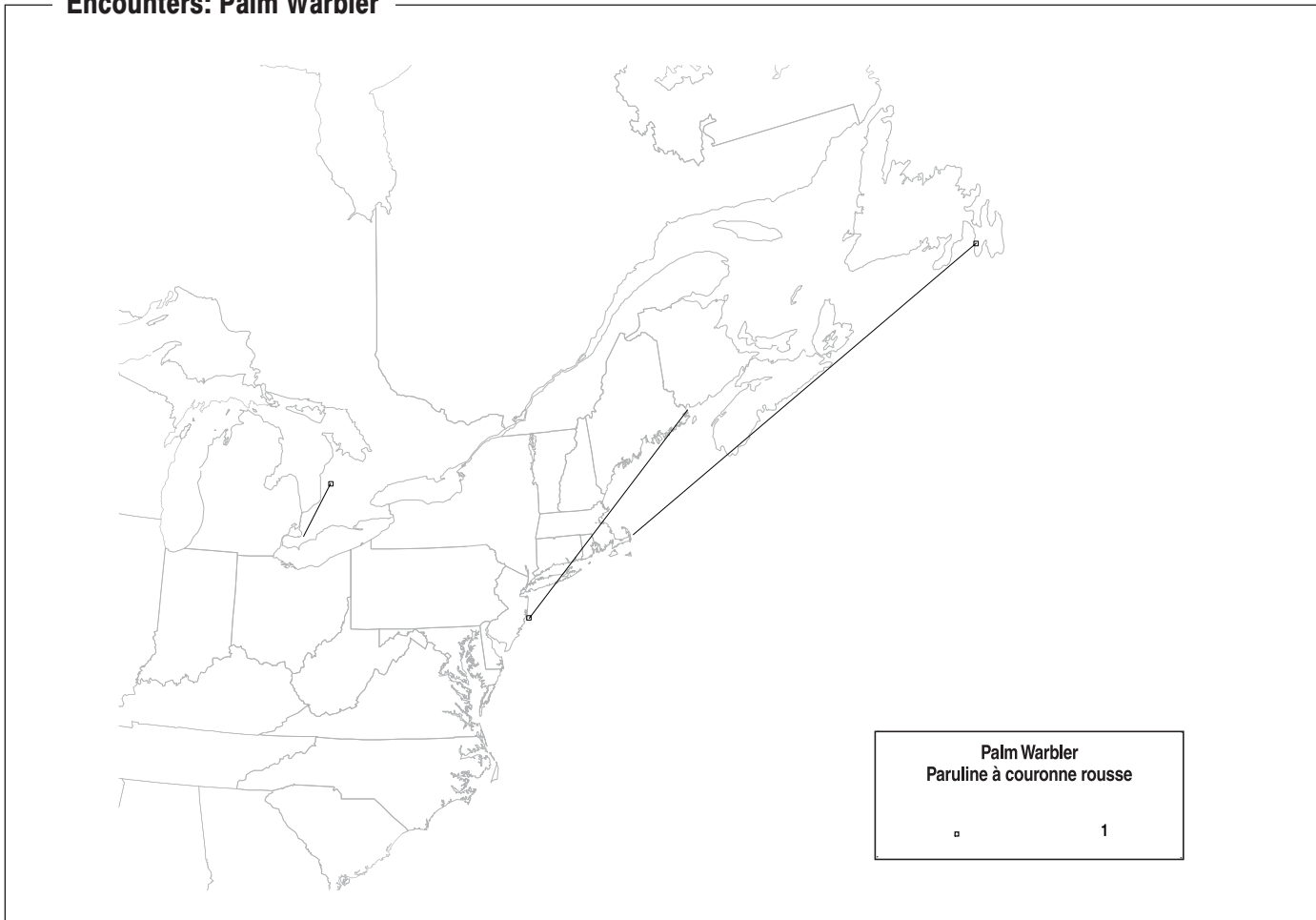
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			2
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	1	0	1
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	47	–	47
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	661	–	661
% recovered (encountered dead)	0	–	0
% direct recoveries	0	–	0
% encountered during banding operations	100	–	100

Banding effort: Kirtland's Warbler

Top banders: LHW, PPBO

Palm Warbler (*Dendroica palmarum*) 672.0 and 672.9

Encounters: Palm Warbler



The nominate *palmarum* form and the distinctive yellow *hypochrysea* form of the Palm Warbler are recorded separately by banders as the Western Palm Warbler (AOU 672.0) and the Yellow Palm Warbler (AOU 672.9). Palm Warblers breed almost entirely within Canada, from the western Northwest Territories south to central Alberta and Saskatchewan, and east through southern Canada (north to Cape Tatnam) to Newfoundland and southwestern Labrador. They winter from the southeastern coastal U.S., through the Greater Antilles and western

Caribbean Islands, across to eastern Central America. The Yellow Palm Warbler inhabits the eastern part of the breeding range including southeastern Ontario, central Quebec, Labrador, and the Maritime provinces; it winters in the southeastern U.S., where it overlaps with the Western Palm Warbler (Wilson 1996).

All three long-distance encounters are listed below; all were for birds both banded and encountered on migration. Record 1 is an apparent case of reverse migration.

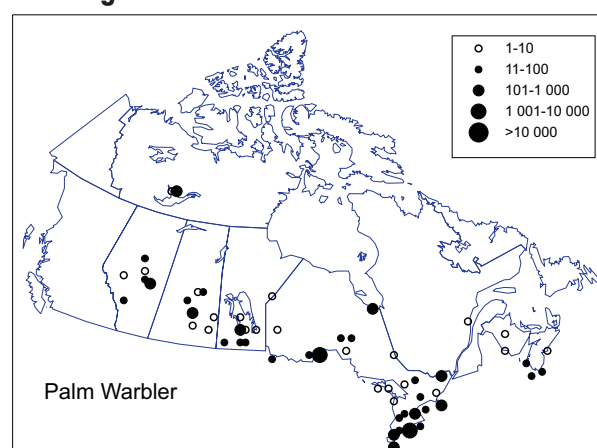
Encounter records: Palm Warbler

1	0060-44302 OLA	AHY U 00 21	09/10/32 28/11/32	Great Pond, MA near Placentia, NF	41°50'N 69°50'W 47°10'N 54°00'W	1 mo. 1387 km N59°E
2	1990-54729 TD	HY U 07 89	30/09/94 30/04/95	South Robbinston, NB Island Beach, NJ	45°00'N 67°00'W 39°50'N 74°00'W	7 mo. 813 km S47°W
3	1240-36818 MJW	AHY U 07 89	05/05/73 06/05/74	Mitchell Bay, ON Whitechurch, ON	42°20'N 82°20'W 43°50'N 81°20'W	1 yr. 0 mo. 186 km N26°E

Summary of banding statistics: Palm Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			7972
<i>No. encountered per 1000 banded (1955–1995)</i>			0.4
Total no. encountered (1921–1995)	1	3	4
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	7	12	12
No. of Canadian-banded birds moving > 0 km	1	1	2
Mean movement > 0 km of Canadian-banded birds	812	185	499
Maximum movement from all encounters (km)	812	1386	1386
% recovered (encountered dead)	0	33	25
% direct recoveries	0	66	50
% encountered during banding operations	100	66	75

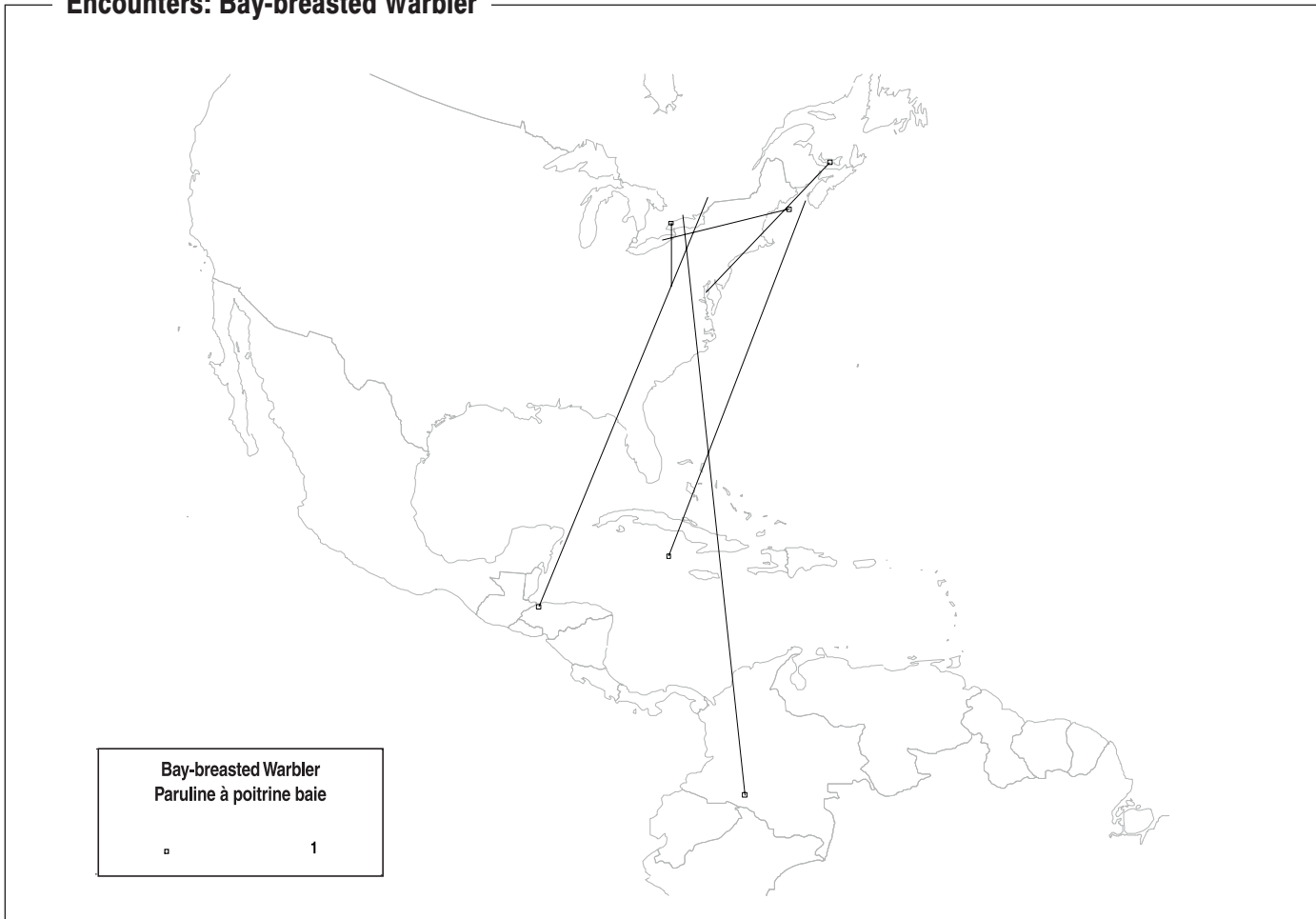
Banding effort: Palm Warbler



Top banders: LPBO, ARS, MJW, ETJ, TBO

Bay-breasted Warbler (*Dendroica castanea*) 660.0

Encounters: Bay-breasted Warbler



The Bay-breasted Warbler breeds from the southwestern Northwest Territories and northeastern British Columbia east to Nova Scotia, north to the limits of boreal forest, and south to Minnesota and Maine; it is absent from the southern parts of British Columbia, Alberta, and Saskatchewan. It winters from Panama east through Colombia to northwestern Venezuela and Trinidad.

The encounter location of record 1, near the border of Peru, Ecuador, and Colombia, is somewhat to the south and the east of the usually accepted wintering range of the species (Meyer de Schauensee 1964, 1970). It is, however, in an area where Blackpoll Warblers commonly winter. The

two species are similar in fall plumage, and the possibility of an identification error cannot be ruled out. The bird encountered in the Maritimes (record 2) was probably on its nesting grounds, but the other four (records 3–6) appear to have been both banded and encountered during migration, including those encountered in the Lesser Antilles (record 3) and Honduras (record 4).

The bird in record 5 is the oldest Bay-breasted Warbler on record (K. Klimkiewicz, pers. comm.).

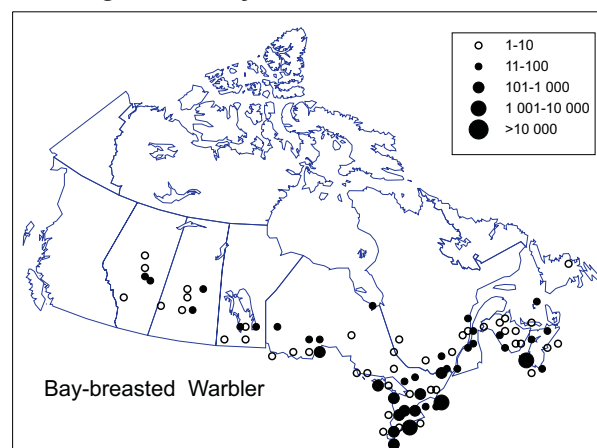
Encounter records: Bay-breasted Warbler

1	0220-09639 FS	AHY U 00 01	30/08/54 ??/02/55	Peterborough, ON near Potosi, COLOMBIA	44°10'N 78°10'W 00°50'N 75°00'W	4834 km S5°E
2	1090-03399 WTvV	U U 00 00	01/10/64 06/06/65	Carr Creek, MD New Glasgow, PE	38°50'N 76°20'W 46°20'N 63°20'W	8 mo. 1351 km N48°E
3	1470-07943 RRA	U U 00 21	08/09/78 29/04/79	Westport, NS CAYMAN BRAC, south of CUBA	44°10'N 66°20'W 19°40'N 79°40'W	7 mo. 2995 km S29°W
4	1470-08411 CHG	HY F 05 01	24/08/77 15/10/77	Ottawa, ON San Pedro Sula, HONDURAS	45°20'N 75°40'W 15°30'N 88°10'W	2 mo. 3521 km S23°W
5	1680-13081 FBP	HY U 03 00	18/09/87 14/05/92	Hutton, MD Toronto, ON	39°20'N 79°20'W 43°40'N 79°20'W	4 yr. 8 mo. 482 km N0°W
6	1480-74005 LPBO	HY U 07 13	07/09/78 16/09/79	Long Point, ON Mount Desert Rock, ME	42°30'N 80°10'W 43°50'N 68°00'W	1 yr. 0 mo. 998 km N77°E

Summary of banding statistics: Bay-breasted Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			14 880
<i>No. encountered per 1000 banded (1955–1995)</i>			0.3
Total no. encountered (1921–1995)	3	1	6
No. encountered from foreign bandings	1	0	2
Maximum period from banding to encounter (mo.)	56	–	56
No. of Canadian-banded birds moving > 0 km	2	1	4
Mean movement > 0 km of Canadian-banded birds	2 259	4 834	3 087
Maximum movement from all encounters (km)	3 521	4 834	4 834
% recovered (encountered dead)	66	100	83
% direct recoveries	33	100	33
% encountered during banding operations	0	0	0

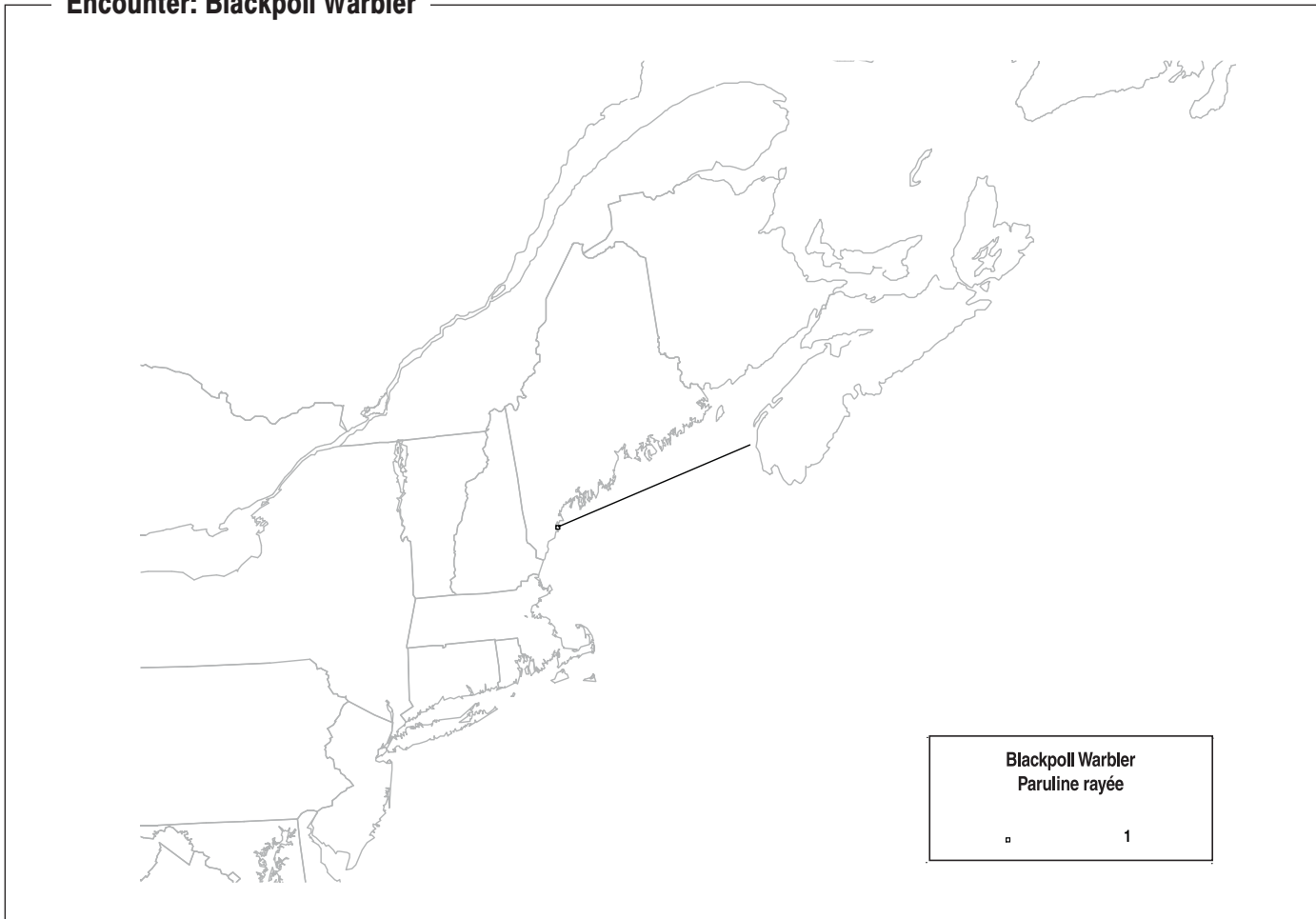
Banding effort: Bay-breasted Warbler



Top banders: LPBO, PEPO, JBMi, BC, RRA

Blackpoll Warbler (*Dendroica striata*) 661.0

Encounter: Blackpoll Warbler



The Blackpoll Warbler breeds across Alaska and Canada in the northern coniferous forests from near the treeline in northern Yukon east across the northern portions of the provinces to Newfoundland; it also breeds in the northern Appalachians. It winters in northern South America from Colombia and eastern Peru to northwestern Brazil and Suriname.

The Blackpoll Warbler is unusual among warblers in that a significant amount of its migration takes place over the ocean, although there is debate about the main departure

point along the Atlantic coast (Murray 1989, McNair and Post 1993). Only one encounter (record 1) showed significant movement, providing no insight to this debate. This bird moved 330 km southwest along the coast over an 11-day period in fall. Six other birds were both banded and encountered in the breeding season at or near the same site at least a year apart, suggesting fidelity to the breeding area.

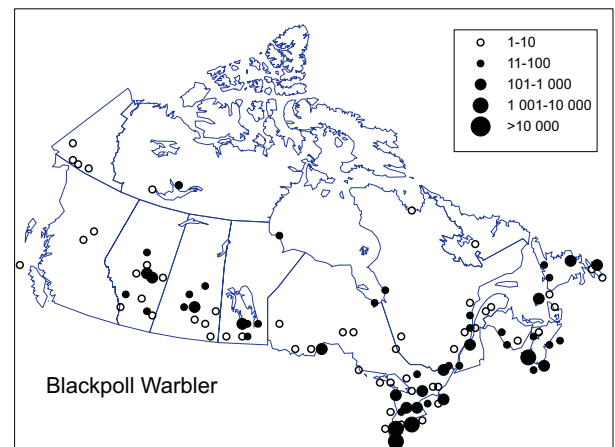
Encounter record: Blackpoll Warbler

1	1730-66154	HY M	31/08/91	Westport, NS	44°10'N 66°20'W	11 dy.
	LAL	05 00	11/09/91	North Scarboro, ME	43°30'N 70°20'W	330 km S78°W

Summary of banding statistics: Blackpoll Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			19 541
<i>No. encountered per 1000 banded (1955–1995)</i>			0.4
Total no. encountered (1921–1995)	4	5	10
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	11	12	12
No. of Canadian-banded birds moving > 0 km	3	1	4
Mean movement > 0 km of Canadian-banded birds	120	13	93
Maximum movement from all encounters (km)	329	13	329
% recovered (encountered dead)	75	40	50
% direct recoveries	50	20	40
% encountered during banding operations	25	60	40

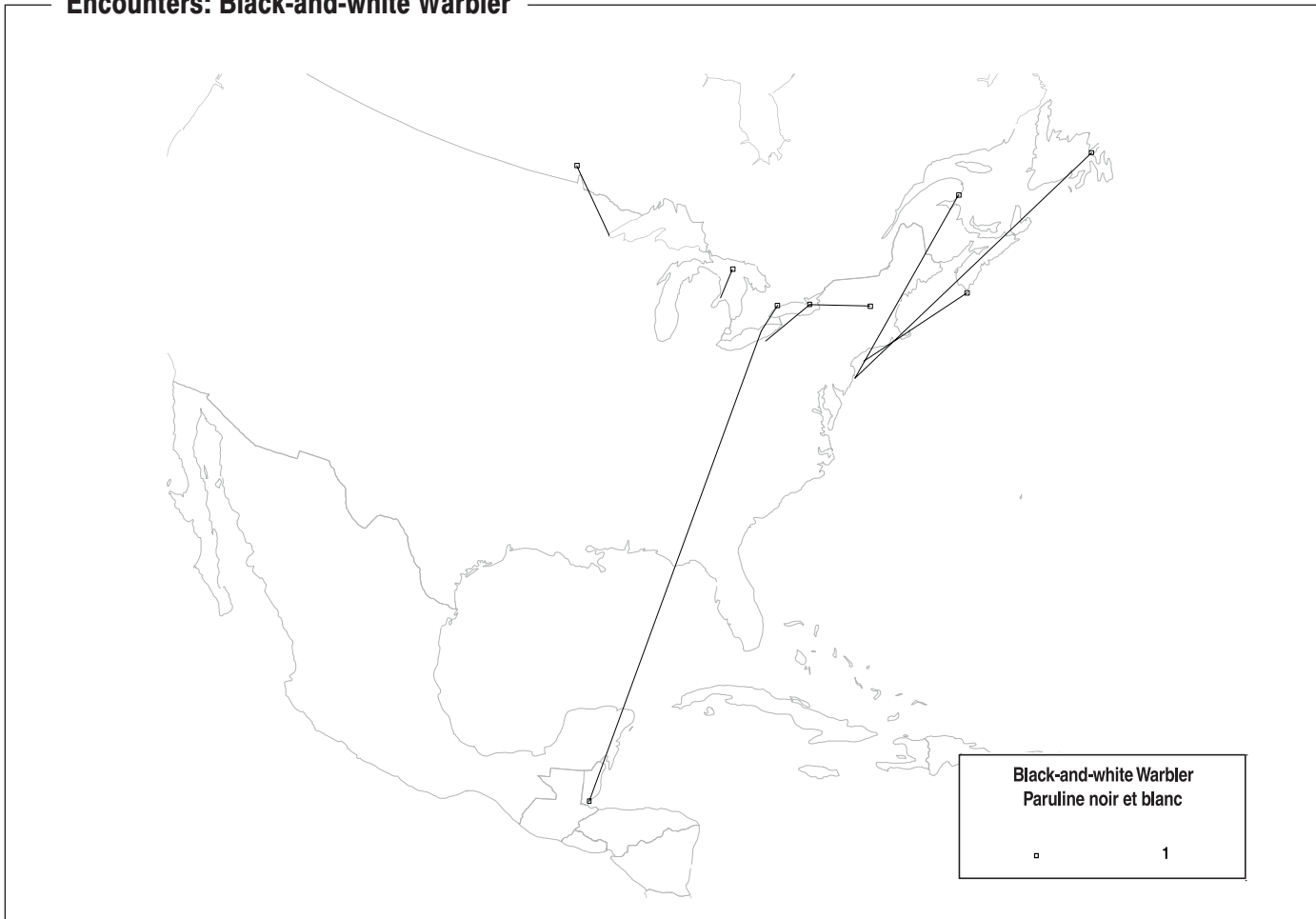
Banding effort: Blackpoll Warbler



Top banders: LPBO, ETJ, MJW, ARS, DBM

Black-and-white Warbler (*Mniotilta varia*) 636.0

Encounters: Black-and-white Warbler



The Black-and-white Warbler breeds in the forested zones of the eastern U.S. and Canada, south from the southwestern Northwest Territories, and east from east-central British Columbia to Newfoundland; it is absent from the southern Prairie Provinces. The species winters from the southern Atlantic and Gulf Coast states through Central America and the West Indies to northern Venezuela, Colombia, and Ecuador.

Of the nine encounters mapped, six birds were banded in the U.S., presumably on migration, and encountered in Canada (e.g., records 1–4). The other three birds were

banded in Ontario and encountered in Ontario, Vermont (record 5), and Belize (record 6). The latter two encounters were widely separated in distance, though both birds were found in late October; the bird found in Belize could still have been on migration to a wintering area farther south. There were no encounters from November through April.

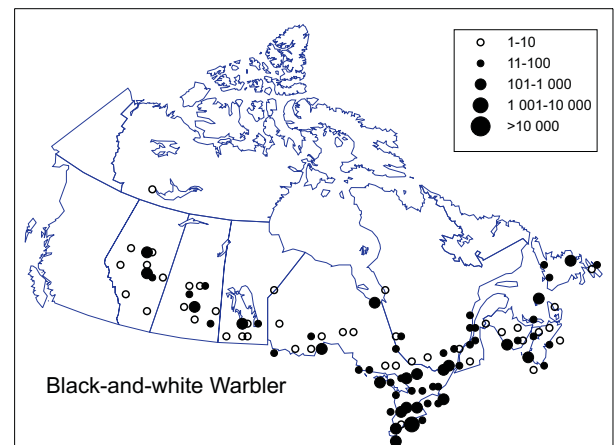
Encounter records: Black-and-white Warbler

1	1060-80273 DLB	HY M 00 00	10/09/64 99/HS/64	Island Beach, NJ near Newport, QC	39°50'N 74°00'W 48°20'N 64°40'W	1203 km N35°E
2	1120-21595 BB	AHY M 05 00	21/05/67 FT/07/69	Duluth, MN Alf A Hole Refuge, MB	46°40'N 92°00'W 49°50'N 95°30'W	2 yr. 2 mo. 438 km N35°W
3	1130-21825 WEL	AHY F 05 14	17/05/67 05/07/71	Amityville, NY Clarks Harbour, NS	40°40'N 73°20'W 43°20'N 65°30'W	4 yr. 2 mo. 712 km N63°E
4	1190-14479 DHC	AHY M 05 12	25/05/69 ??/08/71	Island Beach, NJ Musgrave Harbour, NF	39°50'N 74°00'W 48°20'N 53°50'W	1861 km N53°E
5	1440-17394 PEPO	AHY F 05 00	17/05/77 26/10/82	Prince Edward Point, ON Woodstock, VT	43°50'N 76°50'W 43°30'N 72°30'W	5 yr. 5 mo. 351 km S85°E
6	1750-15203 LPBO	SY M 05 01	05/05/86 24/10/89	Long Point, ON Punta Gorda, BELIZE	42°30'N 80°20'W 16°10'N 88°50'W	3 yr. 5 mo. 3041 km S18°W

**Summary of banding statistics:
Black-and-white Warbler**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			11 220
<i>No. encountered per 1000 banded (1955–1995)</i>			0.6
Total no. encountered (1921–1995)	2	13	15
No. encountered from foreign bandings	1	5	6
Maximum period from banding to encounter (mo.)	21	65	65
No. of Canadian-banded birds moving > 0 km	1	3	4
Mean movement > 0 km of Canadian-banded birds	176	1 138	897
Maximum movement from all encounters (km)	1 203	3 041	3 041
% recovered (encountered dead)	100	46	53
% direct recoveries	0	7	6
% encountered during banding operations	0	53	46

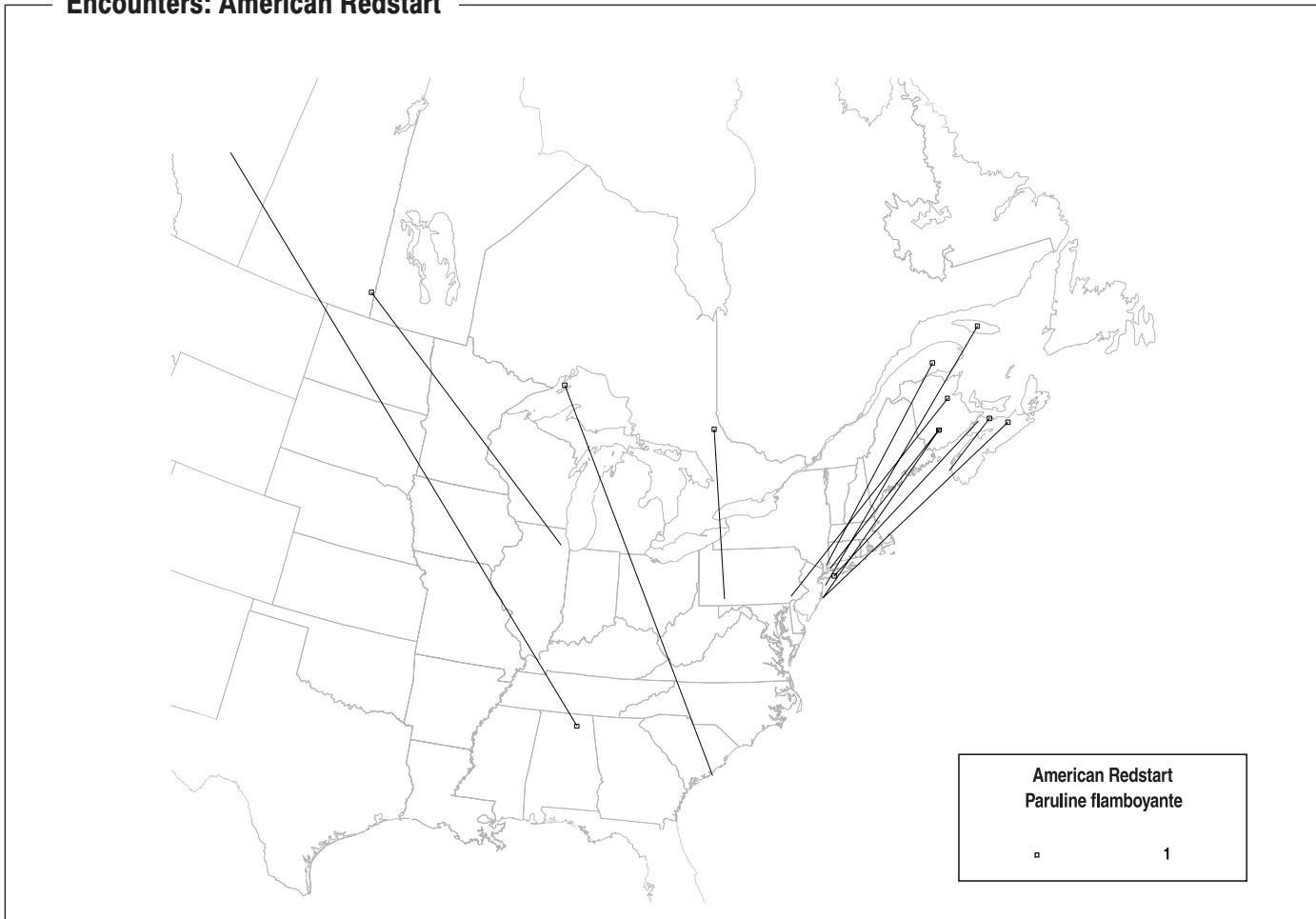
Banding effort: Black-and-white Warbler



Top banders: LPBO, IPBO, PEPO, RRA, GFB

American Redstart (*Setophaga ruticilla*) 687.0

Encounters: American Redstart



The American Redstart breeds in the eastern and northern U.S. and throughout most of forested Canada, except in western British Columbia; it winters from central Mexico and Florida, south through Central America and the West Indies, to northern South America from northwestern Peru to Suriname.

Twenty of the records were of birds banded and encountered during the breeding season at study sites in New Brunswick.

None of the encounters to date is of a bird in the wintering range, where redstarts return to specific sites year after year (McNeil 1982). The encounter map clearly shows the change in the direction of migratory movement across the

country: the axis of migration is northwest–southeast for birds from the Prairie Provinces (e.g., records 1 and 2), changing gradually to northeast–southwest for Maritimes birds. The bird encountered in eastern Ontario (record 3) was almost due north of its banding location in Pennsylvania. Most Maritimes and Quebec records (e.g., records 4–9) were of birds banded on the Atlantic coastal plain, which is hypothesized to be an important migration corridor for this species (Robbins et al. 1959, Ralph 1981). The bird in record 9, if encountered on 20 May (the latest possible date in the second third of the month), had travelled a minimum of 373 km per day over three days.

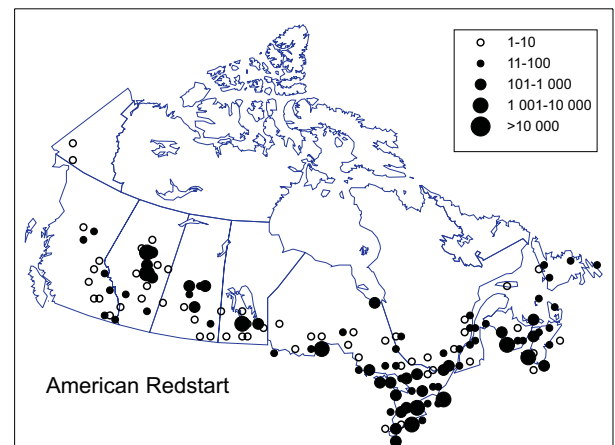
Encounter records: American Redstart

1	1110-96306 RBH	AHY M 07 21	17/05/70 23/05/75	Carol Stream, IL West Moosomin, SK	41°50'N 88°00'W 50°00'N 101°40'W	4 yr. 0 mo. 1391 km N45°W
2	1660-92473 EP	HY U 07 89	18/08/85 05/10/86	Millet, AB New Hope, AL	53°00'N 113°20'W 34°30'N 86°20'W	1 yr. 2 mo. 2960 km S57°E
3	1690-22849 CMNH	AHY M 03 14	14/09/84 14/06/90	Stahlstown, PA Jumping Caribou Lake, ON	40°00'N 79°10'W 46°50'N 79°40'W	5 yr. 9 mo. 762 km N3°W
4	0310-33767 WG	AHY M 00 14	31/08/61 02/07/63	Byram, CT Fredericton, NB	41°00'N 73°30'W 45°50'N 66°30'W	1 yr. 11 mo. 780 km N44°E
5	1520-26594 KWC	ASY M 05 00	11/05/84 13/06/86	Island Beach, NJ Fredericton, NB	39°50'N 74°00'W 45°50'N 66°30'W	2 yr. 1 mo. 905 km N40°E
6	1490-40434 GWS	ASY M 05 00	12/05/85 31/07/85	Island Beach, NJ New Glasgow, NS	39°50'N 74°00'W 45°30'N 62°30'W	2 mo. 1131 km N52°E
7	1020-59927 RCF	HY M 00 53	06/10/62 17/06/64	Highlands, NJ Anticosti Island, QC	40°20'N 73°50'W 49°30'N 63°00'W	1 yr. 8 mo. 1328 km N36°E
8	1200-63647 JAS	AHY M 05 00	14/05/69 99/05/72	Amawalk, NY near Carleton, QC	41°10'N 73°40'W 48°30'N 66°10'W	3 yr. 0 mo. 1007 km N33°E
9	1670-38941 CDG	ASY M 05 12	17/05/84 ST/05/84	Stahlstown, PA 11 km west of Beaver Brook, NB	40°00'N 75°40'W 47°00'N 65°40'W	max. 3 dy. 1120 km N43°E

Summary of banding statistics: American Redstart

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			26 349
No. encountered per 1000 banded (1955–1995)			1
Total no. encountered (1921–1995)	8	34	43
No. encountered from foreign bandings	2	7	9
Maximum period from banding to encounter (mo.)	48	69	69
No. of Canadian-banded birds moving > 0 km	3	2	6
Mean movement > 0 km of Canadian-banded birds	1 396	17	715
Maximum movement from all encounters (km)	2 959	1 391	2 959
% recovered (encountered dead)	37	61	58
% direct recoveries	12	23	23
% encountered during banding operations	50	35	37

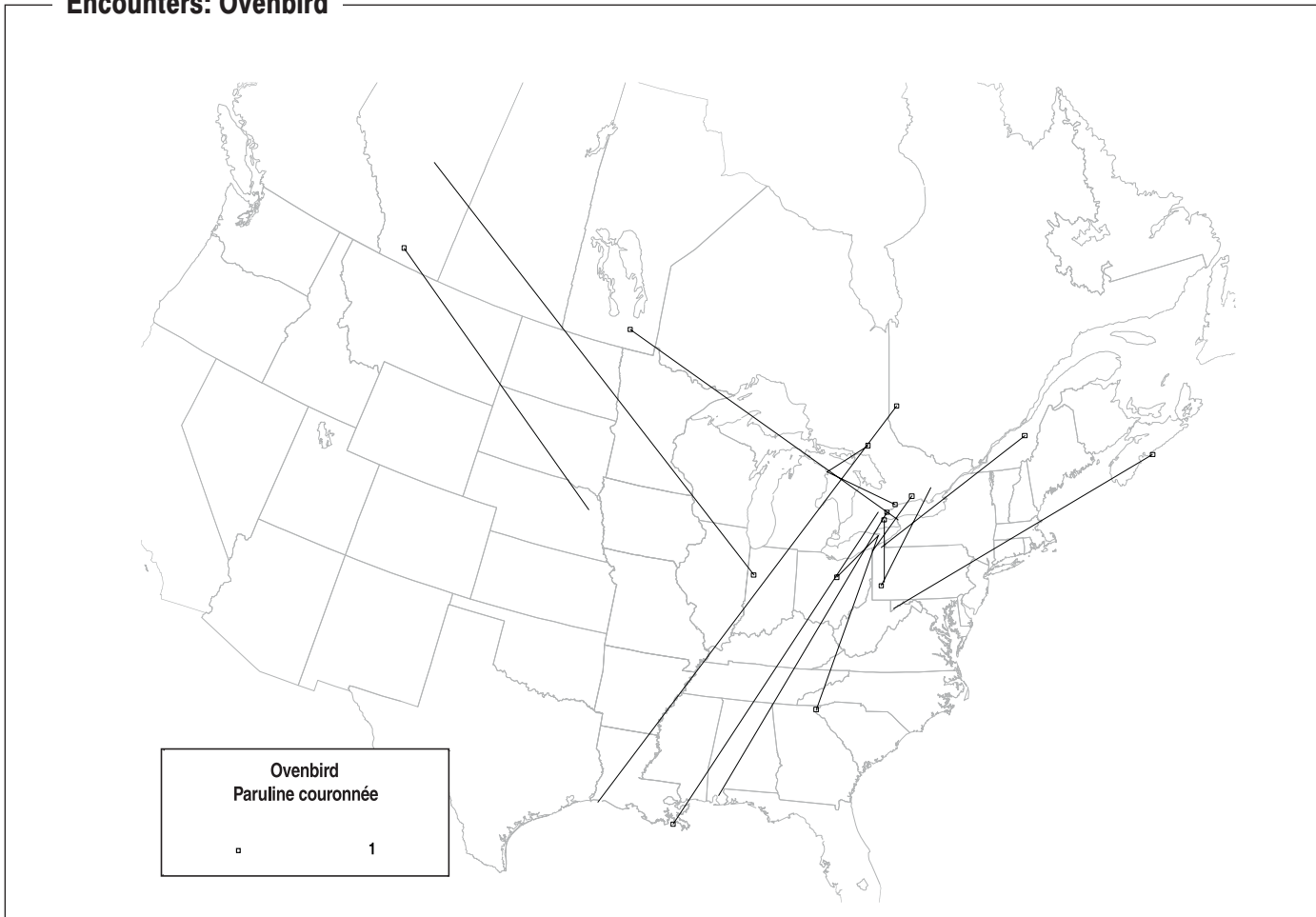
Banding effort: American Redstart



Top banders: LPBO, ETJ, PEPO, BBO, RL

Ovenbird (*Seiurus aurocapillus*) 674.0

Encounters: Ovenbird



The Ovenbird breeds in the northeastern U.S.; it also breeds from northeastern British Columbia and the southwestern Northwest Territories southeast to southern Manitoba and east through southern Canada to Newfoundland, as well as in small areas of southeastern Alberta and southwestern Saskatchewan. It winters from southern South Carolina and the Gulf Coast, through southern Mexico, Central America, and the West Indies, to Panama, northern Colombia, and northern Venezuela.

No encounter involved a bird on the wintering grounds, and the bird reported from Ontario in late November (record 1) may have been long dead when it was found (the finder provided no details). Several short-term encounters demonstrate rapid migration, with individual migrants averaging at least

79 km per day (record 2), 87 km per day (record 3), and 115 km per day (record 4).

Van Horn and Donovan (1994) describe two discrete migration paths for this species: birds west of the Appalachians follow the Mississippi flyway to Central America, while eastern Ovenbirds follow the Atlantic flyway to the Caribbean. Encounters from the Prairie Provinces, Ontario, and Quebec are consistent with the Mississippi flyway route (e.g., records 1–7). The only Ovenbird encountered in the Maritimes (record 8) may have been slightly off-course, however, because it was banded on the western edge of the Appalachians.

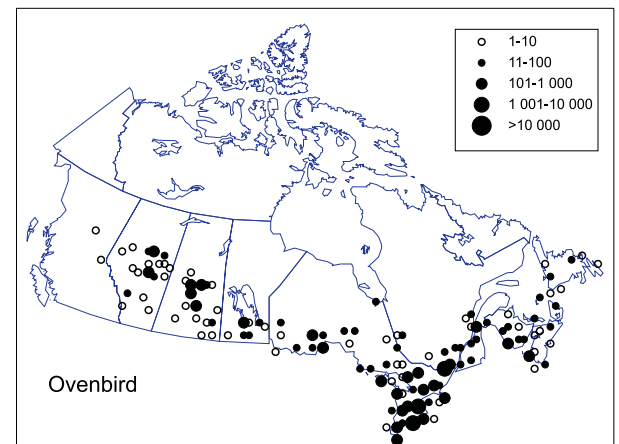
Encounter records: Ovenbird

1	0650-28457 DDS	HY U 03 00	11/10/62 20/11/65	Bromley, AL near Georgetown, ON	30°40'N 87°50'W 43°30'N 79°40'W	3 yr. 1 mo. 1600 km N25°E
2	2021-46891 FRM	AHY U 05 00	01/05/88 31/05/88	near Cameron, LA Sagard, QC	29°40'N 93°30'W 48°00'N 79°00'W	30 dy. 2388 km N27°E
3	0940-26247 ETJ	U M 05 00	31/08/82 28/09/82	St. Albert, AB Swanington, IN	53°30'N 113°30'W 40°30'N 87°10'W	28 dy. 2445 km S64°E
4	0750-22536 JL	AHY U 05 14	20/05/71 02/06/71	Pilger, NE Coalhurst, AB	42°00'N 97°00'W 49°40'N 112°50'W	13 dy. 1491 km N50°E
5	0880-38974 LPBO	HY U 03 00	30/08/78 26/09/84	Long Point, ON Clayton, GA	42°30'N 80°10'W 34°50'N 83°20'W	6 yr. 1 mo. 897 km S19°W
6	0880-56495 JJF	HY U 05 00	07/09/91 15/05/92	Youngstown, NY Winnipeg, MB	43°10'N 79°00'W 49°50'N 97°00'W	8 mo. 1561 km N55°W
7	2001-13072 RCL	AHY U 05 13	14/05/87 99/05/90	Erie, PA Saint-Elzéar, QC	42°00'N 80°00'W 46°20'N 71°00'W	3 yr. 0 mo. 865 km N53°E
8	0890-20371 SAT	HY U 07 89	05/10/86 14/06/88	Hutton, MD Halifax, NS	39°20'N 79°20'W 44°30'N 63°30'W	1 yr. 8 mo. 1429 km N61°E

Summary of banding statistics: Ovenbird

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			15 942
<i>No. encountered per 1000 banded (1955–1995)</i>			0.9
Total no. encountered (1921–1995)	11	13	25
No. encountered from foreign bandings	4	6	10
Maximum period from banding to encounter (mo.)	73	72	73
No. of Canadian-banded birds moving > 0 km	6	2	9
Mean movement > 0 km of Canadian-banded birds	466	403	672
Maximum movement from all encounters (km)	1 812	2 388	2 444
% recovered (encountered dead)	81	76	80
% direct recoveries	18	23	24
% encountered during banding operations	18	23	20

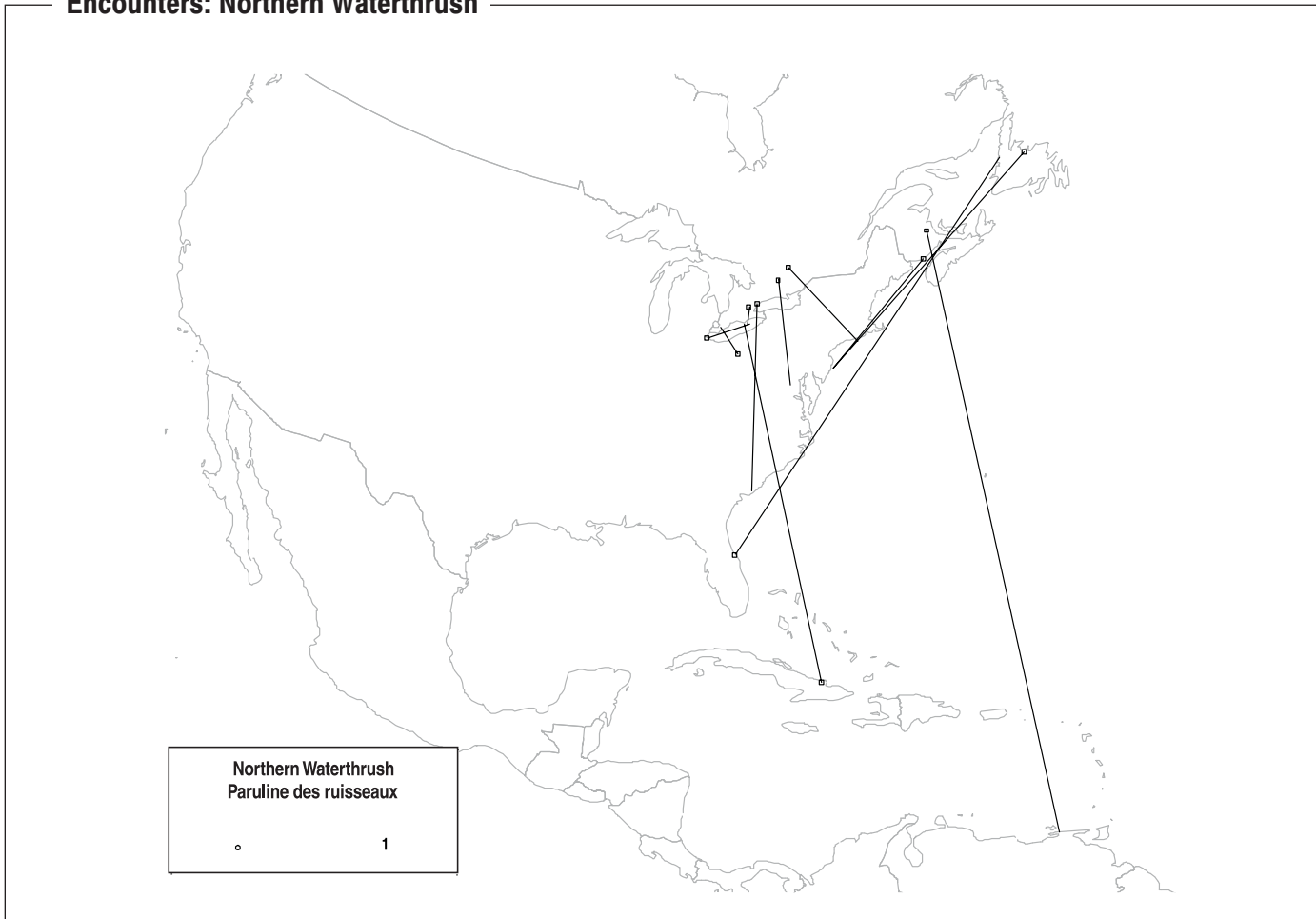
Banding effort: Ovenbird



Top banders: LPBO, ETJ, IPBO, PEPO, TBO

Northern Waterthrush (*Seiurus noveboracensis*) 675.0

Encounters: Northern Waterthrush



The Northern Waterthrush breeds throughout most of Alaska and Canada south of the treeline; it is absent only from southern Nunavut and most of the Prairie Provinces; it also breeds in the northeastern U.S. It winters from northern Mexico, southern Florida, and the Bahamas, south through Central America and the West Indies to Ecuador and northeastern Peru, and east to Suriname.

Waterthrushes from Ontario and Quebec show a more north-northwest–south-southeast component in their migration than most other warblers (e.g., records 1–3), lending support to Ralph’s (1981) suggestion that the main migration corridor (at least for eastern populations) is along the Atlantic coastal plain. There are no encounters of birds west of the Great Lakes. The southernmost records

(records 4 and 5) are in known wintering areas, but dates of encounter indicate that these birds may still have been migrating (see also record 6). A previously published long-distance encounter for this species (Belize to Ontario, Brewer and Salvadori 1978) was later shown to be erroneous, due to a mis-typed band number.

The bird in record 6 travelled at least 88 km per day in a month of fall migration, while the bird in record 7 travelled just under 200 km per day over a nine-day period in spring. The bird in record 8 holds the longevity record for this species (Klimkiewicz and Futcher 1989).

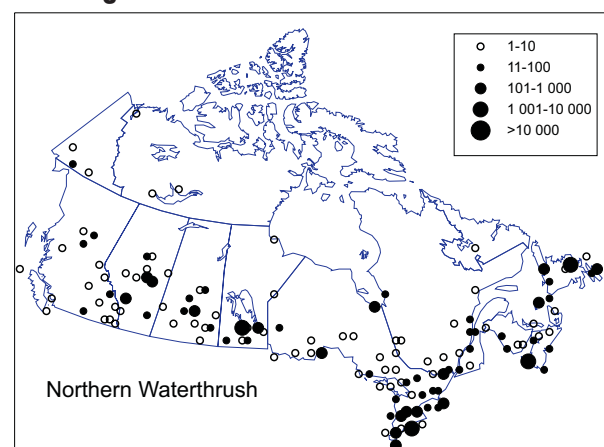
Encounter records: Northern Waterthrush

1	0560-56455 TAB	AHY U 03 00	23/04/67 04/05/68	near Charleston, SC Etobicoke, ON	32°50'N 80°00'W 43°40'N 79°30'W	1 yr. 1 mo. 1207 km N2°E
2	0860-34753 MTD	AHY U 05 13	06/05/75 TT/10/75	Darnestown, MD Bancroft, ON	39°00'N 77°10'W 45°00'N 77°50'W	5 mo. 670 km N4°W
3	1450-53267 AMNH	HY U 05 13	14/08/81 11/05/84	Great Gull Island, NY Pembroke, ON	41°10'N 72°00'W 45°40'N 77°00'W	2 yr. 9 mo. 643 km N37°W
4	2021-66906 LPBO	HY F 00 98	12/08/90 21/10/90	13 km west of Port Rowan, ON Gibara, CUBA	42°30'N 80°30'W 21°00'N 76°00'W	2 mo. 2430 km S11°E
5	2000-12273 RMcN	U U 05 12	07/10/85 99/08/86	Cariaco, VENEZUELA Rogersville, NB	10°40'N 63°40'W 46°40'N 65°20'W	10 mo. 4011 km N2°W
6	2000-02051 BMa	HY U 05 13	20/08/84 23/09/84	Rocky Harbour, NF 16 km west of Ponce Park, FL	49°30'N 57°50'W 29°00'N 81°00'W	1 mo. 3008 km S49°W
7	0760-29813 WP	AHY U 03 13	28/05/70 06/06/70	Island Beach, NJ near Roberts Arm, NF	39°50'N 74°00'W 49°20'N 55°40'W	9 dy. 1790 km N48°E
8	0880-38926 LPBO	HY U 07 89	21/08/78 11/05/87	Long Point, ON Luna Pier, MI	42°30'N 80°10'W 41°40'N 83°20'W	8 yr. 9 mo. 278 km S72°W

Summary of banding statistics: Northern Waterthrush

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			13 287
<i>No. encountered per 1000 banded (1955–1995)</i>			0.8
Total no. encountered (1921–1995)	7	9	17
No. encountered from foreign bandings	1	4	6
Maximum period from banding to encounter (mo.)	105	59	105
No. of Canadian-banded birds moving > 0 km	4	3	7
Mean movement > 0 km of Canadian-banded birds	1 456	77	865
Maximum movement from all encounters (km)	3 007	1 789	4 010
% recovered (encountered dead)	85	77	82
% direct recoveries	28	44	35
% encountered during banding operations	14	22	17

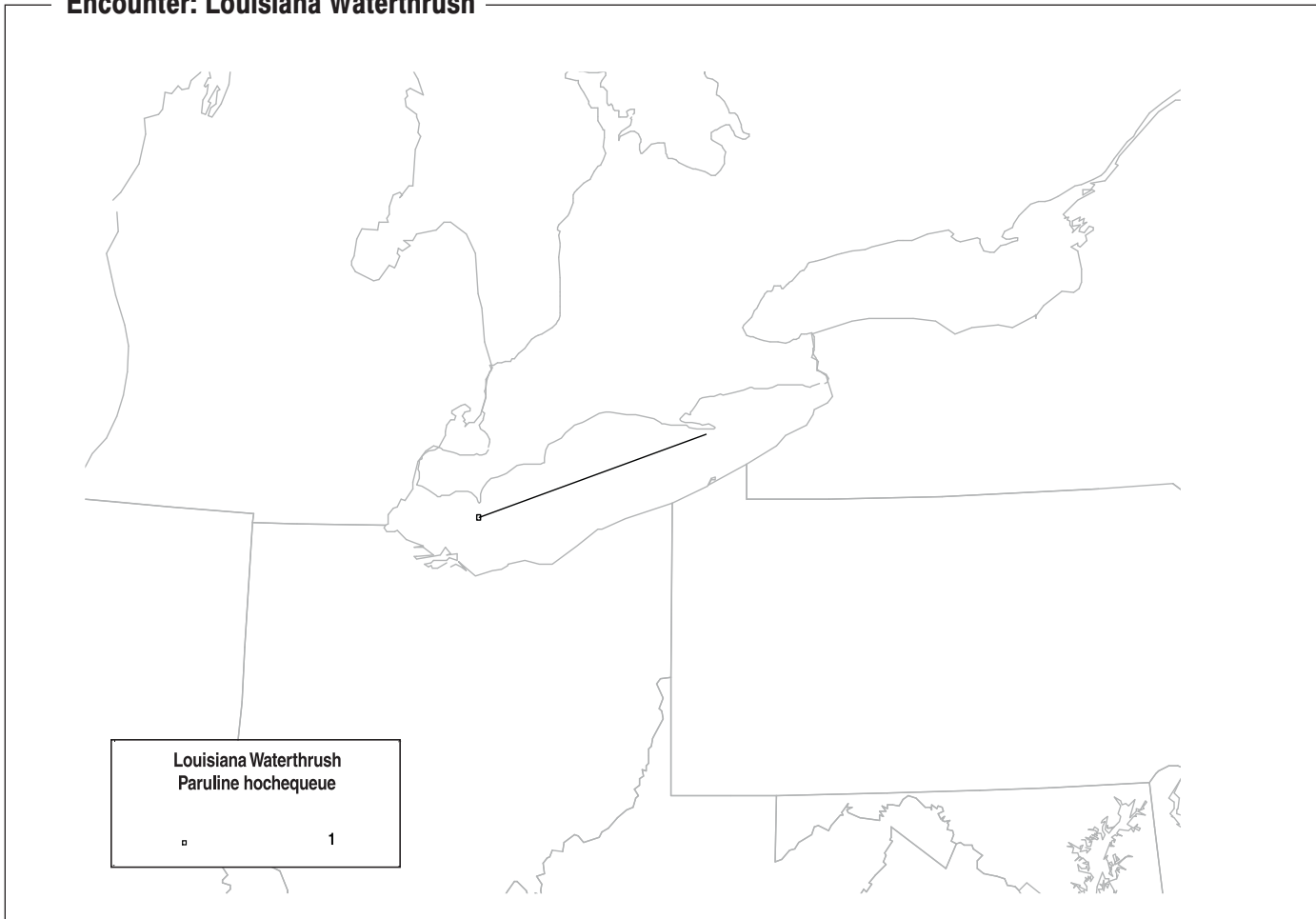
Banding effort: Northern Waterthrush



Top banders: LPBO, GFB, RRA, UM, KAH

Louisiana Waterthrush (*Seiurus motacilla*) 676.0

Encounter: Louisiana Waterthrush



The Louisiana Waterthrush breeds in southernmost Ontario and locally throughout the eastern U.S. except for the Gulf and Atlantic coasts. It winters from northern Mexico, the Bahamas, and Greater Antilles south to northern Colombia and northwestern Venezuela.

The only record is of a bird that was banded and encountered the same spring in southern Ontario. Possibly the bird had overshot its preferred breeding range and was trying to

return farther south. As shown in the summary table, few Louisiana Waterthrushes have been banded in Canada, and the fact that one has been encountered gives an unrealistically high encounter rate per 1000 banded.

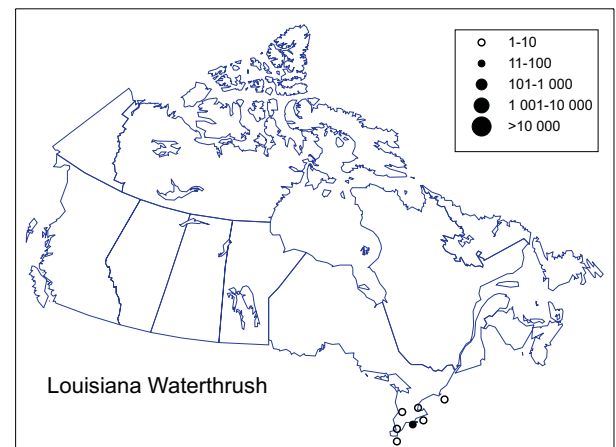
Encounter record: Louisiana Waterthrush

1	0910-17308	AHY U	27/04/82	Long Point, ON	42°30'N 80°10'W	11 dy.
	LPBO	05 00	08/05/82	Point Pelee, ON	41°50'N 82°30'W	206 km S70°W

Summary of banding statistics: Louisiana Waterthrush

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			70
<i>No. encountered per 1000 banded (1955–1995)</i>			14
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	1	1
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	206	206
Maximum movement from all encounters (km)	–	206	206
% recovered (encountered dead)	–	100	100
% direct recoveries	–	100	100
% encountered during banding operations	–	0	0

Banding effort: Louisiana Waterthrush



Top banders: LPBO, JBMi, RBG, PEPO, GGa, FTL

Mourning Warbler (*Oporornis philadelphia*) 679.0

Encounters: Mourning Warbler



The Mourning Warbler breeds from central parts of Alberta and Saskatchewan east through southern Canada to Newfoundland and the northern states of the eastern U.S. It winters from southern Nicaragua and Costa Rica south to western Ecuador and western Venezuela.

Five encounters showed significant movement, all of which are listed below (records 1–5). The birds in record 1 may have reached its wintering area or still have been

migrating when encountered in Costa Rica in early October. The bird in record 2 travelled an average of 88 km per day over an 11-day period.

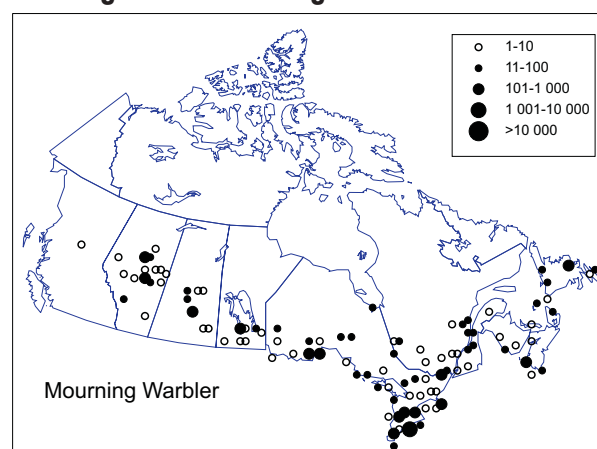
Encounter records: Mourning Warbler

1	1730-46913 IPBO	HY U 05 50	02/08/85 04/10/85	Innis Point, ON Puntarenas, COSTA RICA	45°20'N 75°50'W 09°50'N 84°40'W	2 mo. 4041 km S15°W
2	1970-09156 BBO	HY U 05 00	18/08/94 29/08/94	Beaverhill Lake, AB Whitewater, MB	53°20'N 112°20'W 49°10'N 100°10'W	11 dy. 965 km S66°E
3	0280-28777 FS	HY U 00 00	13/09/60 02/05/61	Bewdley, ON Daytona Beach, FL	44°00'N 78°10'W 29°10'N 81°00'W	8 mo. 1670 km S10°W
4	0620-62887 RLW	AHY M 00 00	26/05/62 25/05/63	Tilbury, ON Dayton, OH	42°20'N 82°10'W 39°40'N 84°10'W	1 yr. 0 mo. 341 km S30°W
5	1290-07543 KCP	AHY M 05 12	26/05/73 99/05/74	Powdermill Nature Reserve, PA Beaconsfield, QC	40°00'N 79°10'W 45°20'N 73°50'W	1 yr. 0 mo. 737 km N35°E
6	0830-01938 RIGM	AHY M 07 89	20/08/80 07/06/83	11 km east of Manotick, ON Manotick, ON	45°10'N 75°30'W 45°10'N 75°40'W	2 yr. 10 mo. 13 km N90°W

Summary of banding statistics: Mourning Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			4918
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	3	4	8
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	8	34	34
No. of Canadian-banded birds moving > 0 km	3	3	7
Mean movement > 0 km of Canadian-banded birds	2225	19	1010
Maximum movement from all encounters (km)	4041	736	4041
% recovered (encountered dead)	100	25	62
% direct recoveries	66	0	25
% encountered during banding operations	0	75	37

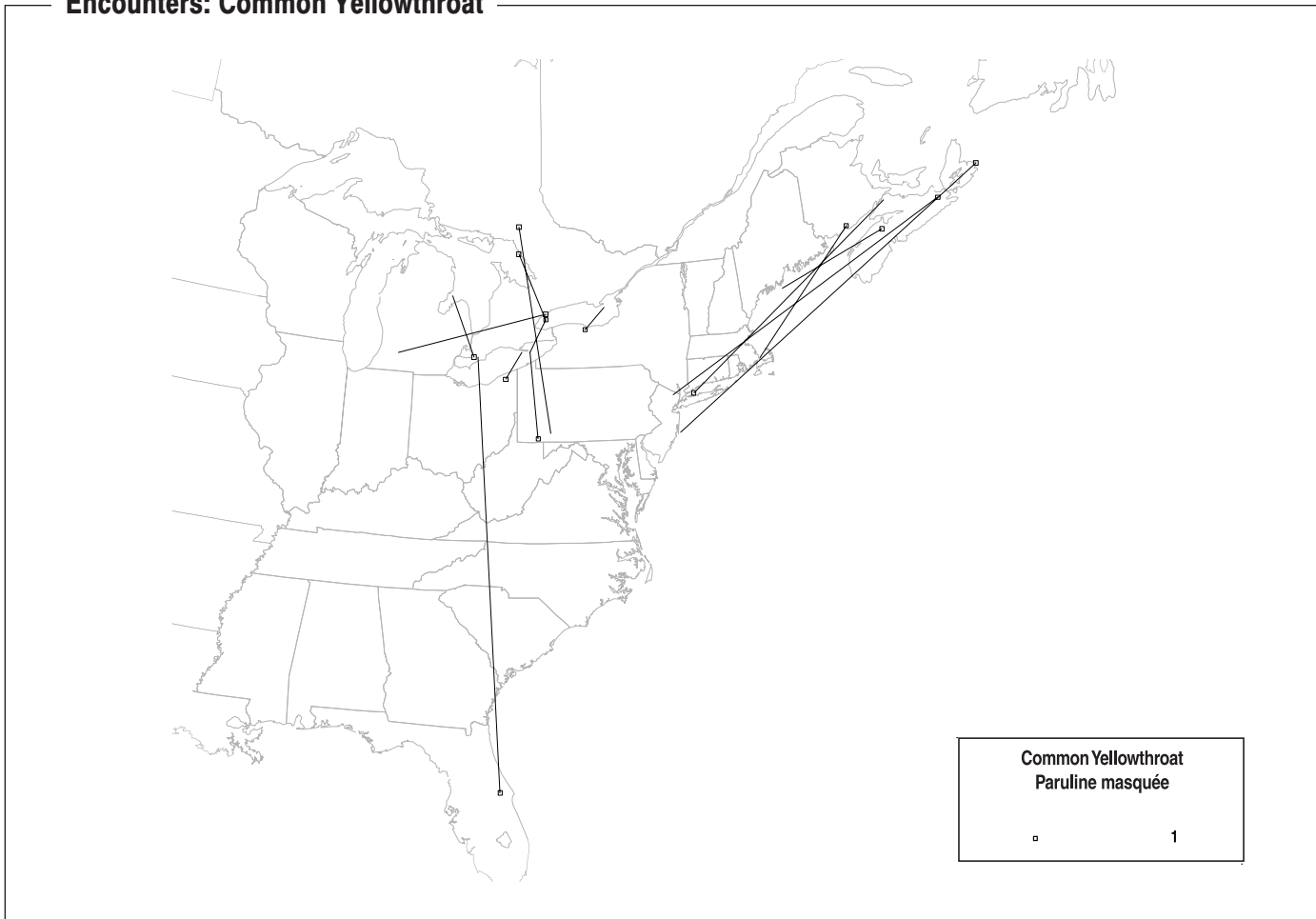
Banding effort: Mourning Warbler



Top banders: LPBO, JBMi, ETJ, PEPO, BBO

Common Yellowthroat (*Geothlypis trichas*) 681.0

Encounters: Common Yellowthroat



The Common Yellowthroat breeds throughout the U.S. and forested parts of Canada. It winters from the southern U.S. south through Central America, the Greater Antilles, and the Bahamas to Panama.

All 17 encounters showing movements greater than 50 km involved the Maritimes (5 records, including 1–3) or southern Ontario (records 4–9). No birds were encountered in winter months, but two birds from Ontario were encountered on fall migration in Florida (record 6 and a

second record omitted from the map because it lacked precise location). Other Ontario encounters also indicate a predominantly north-northwest–south-southeast orientation. The bird banded in Michigan in spring and encountered the next fall well to the east (record 7) was perhaps taking a different route through the Great Lakes in the two seasons. Two encounters (records 8 and 9) suggest direct crossings of large lakes.

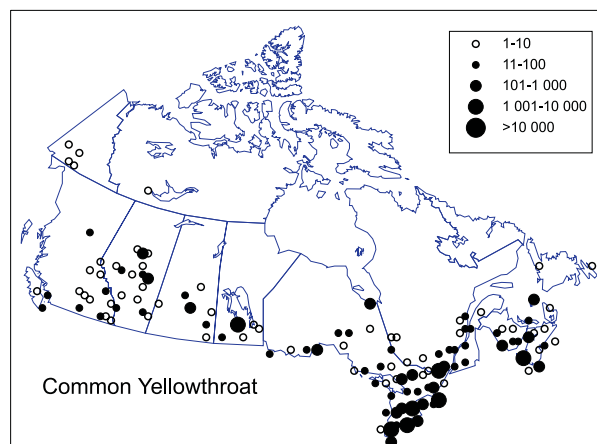
Encounter records: Common Yellowthroat

1	1230-35806 ADS	HY U 03 00	07/08/73 01/10/73	Front Lake, NB Chimon Island, CT	45°50'N 64°10'W 41°00'N 73°20'W	2 mo. 915 km S57°W
2	1330-27160 TLE	AHY M 05 12	22/05/74 99/05/74	Cape Cod Bay, MA Bayswater, NB	41°50'N 70°30'W 45°20'N 66°00'W	max. 10 dy. 532 km N41°E
3	1690-78825 DPS	AHY M 03 00	15/05/88 03/06/92	Oakland, NJ Antigonish, NS	41°00'N 74°10'W 45°30'N 61°50'W	4 yr. 1 mo. 1117 km N59°E
4	1010-82050 RDB	AHY M 07 89	16/09/61 16/05/66	Saginaw Bay, Lake Huron, MI Balmoral Marsh, ON	44°10'N 83°20'W 42°20'N 82°20'W	4 yr. 8 mo. 220 km S22°E
5	1220-42217 KCP	HY F 05 00	06/09/70 01/08/72	Powdermill Nature Reserve, PA Markstay, ON	40°00'N 79°10'W 46°20'N 80°30'W	1 yr. 11 mo. 713 km N8°W
6	0280-27791 MJW	AHY F 05 00	26/05/68 08/10/71	near Chatham, ON Christmas, FL	42°20'N 82°10'W 28°30'N 81°00'W	3 yr. 5 mo. 1544 km S4°E
7	1510-33603 RJA	HY M 03 00	20/09/81 15/05/82	Plainwell, MI Toronto, ON	42°20'N 85°30'W 43°40'N 79°20'W	8 mo. 523 km N71°E
8	1120-40480 LPBO	HY F 05 00	23/09/68 01/10/68	Long Point, ON Cool Springs Reservation, PA	42°30'N 80°00'W 39°50'N 79°40'W	8 dy. 298 km S5°E
9	1840-73542 CMF	AHY M 05 13	15/05/89 27/05/89	Prince Edward Point, ON Rochester, NY	43°50'N 76°50'W 43°10'N 77°40'W	13 dy. 100 km S42°W
10	0290-65833 RLW	AHY F 07 89	14/05/61 20/05/67	Tilbury, ON Mitchell Bay, ON	42°10'N 82°20'W 42°20'N 82°20'W	6 yr. 19 km N0°W

Summary of banding statistics: Common Yellowthroat

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			21 418
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	7	35	44
No. encountered from foreign bandings	2	9	11
Maximum period from banding to encounter (mo.)	23	72	72
No. of Canadian-banded birds moving > 0 km	4	9	15
Mean movement > 0 km of Canadian-banded birds	310	241	229
Maximum movement from all encounters (km)	914	1 543	1 543
% recovered (encountered dead)	85	25	34
% direct recoveries	57	17	22
% encountered during banding operations	14	74	65

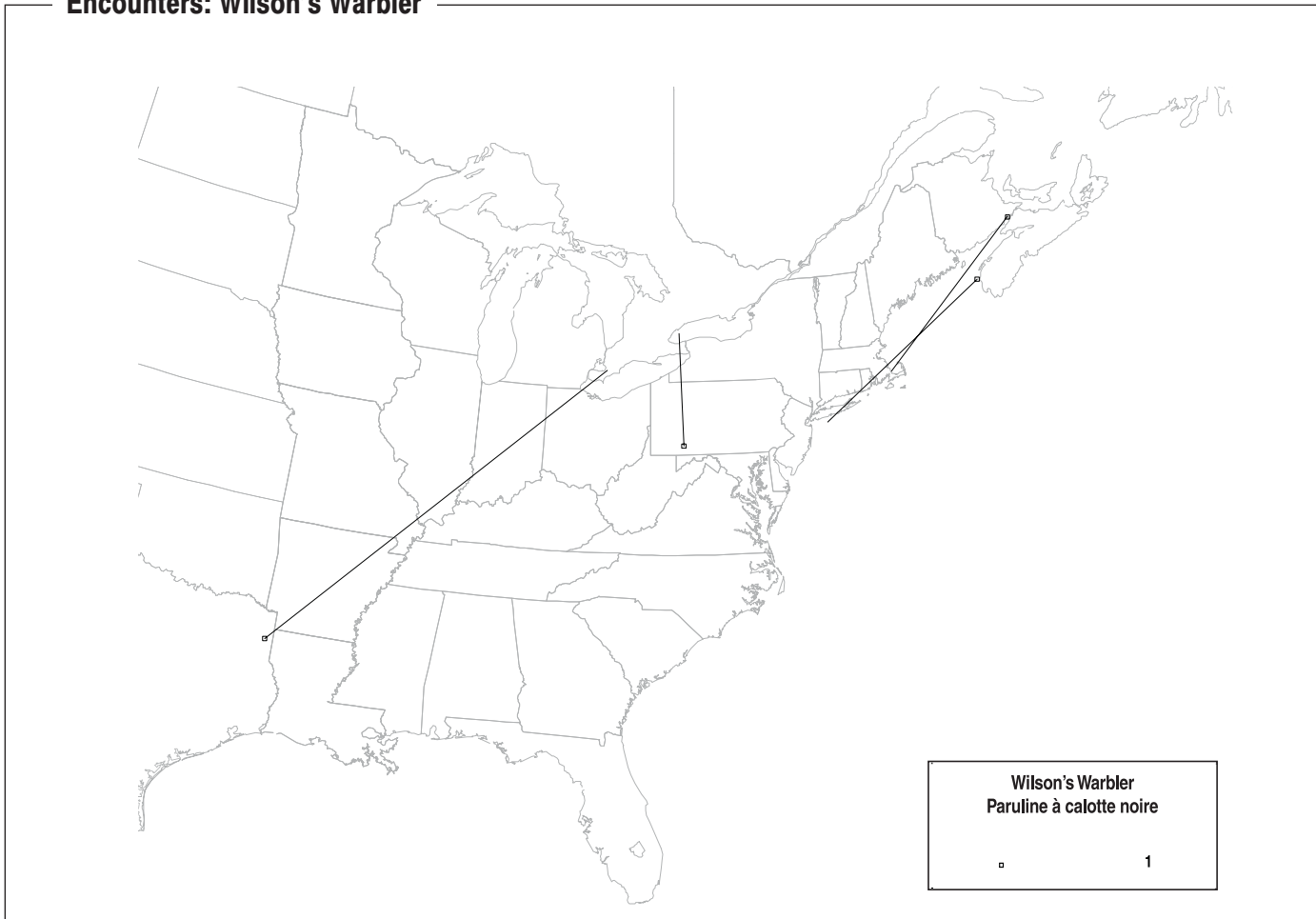
Banding effort: Common Yellowthroat



Top banders: LPBO, MJW, RRA, TBO, PEPO

Wilson's Warbler (*Wilsonia pusilla*) 685.0

Encounters: Wilson's Warbler



Wilson's Warbler breeds in Alaska and throughout most of Canada south of the treeline, except for the southern Prairie Provinces, southern Ontario and Quebec, and parts of Nova Scotia; it also breeds in Maine and parts of the northwestern U.S. It winters from northern Mexico south through Central America to western Panama.

All four encounters are listed below; all the birds were both banded and encountered during migration.

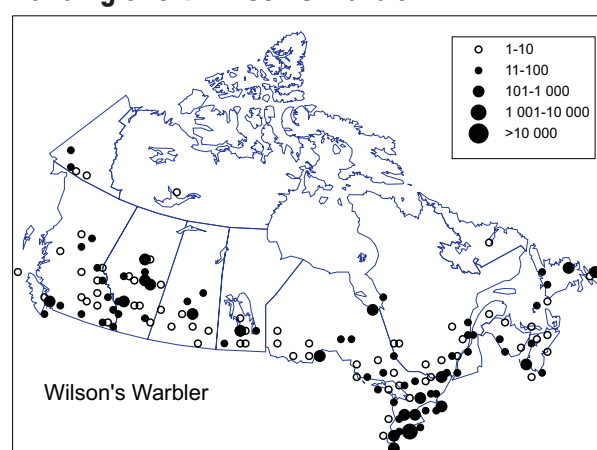
Encounter records: Wilson's Warbler

1	1080-74621 RED	AHY M 07 89	03/06/68 23/05/69	mouth of Humber River, ON Powdermill Nature Reserve, PA	43°30'N 79°20'W 40°00'N 79°10'W	11 mo. 390 km S2°E
2	1240-43275 MJW	AHY M 03 03	26/05/73 01/10/73	Mitchell Bay, ON Jefferson, TX	42°20'N 82°20'W 32°40'N 94°20'W	5 mo. 1507 km S48°W
3	1280-42370 ROP	AHY M 07 89	24/05/79 05/09/79	6 km south of Massapequa Park, NY Westport, NS	40°30'N 73°20'W 44°10'N 66°20'W	4 mo. 706 km N52°E
4	1350-83518 MBO	AHY F 05 12	28/05/76 99/08/77	Manomet, MA 18 km northeast of Amherst, NB	41°50'N 70°30'W 45°50'N 64°30'W	1 yr. 3 mo. 656 km N45°E

Summary of banding statistics: Wilson's Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			12 162
<i>No. encountered per 1000 banded (1955–1995)</i>			0.2
Total no. encountered (1921–1995)	0	4	4
No. encountered from foreign bandings	0	2	2
Maximum period from banding to encounter (mo.)	–	15	15
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds	–	948	948
Maximum movement from all encounters (km)	–	1 507	1 507
% recovered (encountered dead)	–	50	50
% direct recoveries	–	50	50
% encountered during banding operations	–	50	50

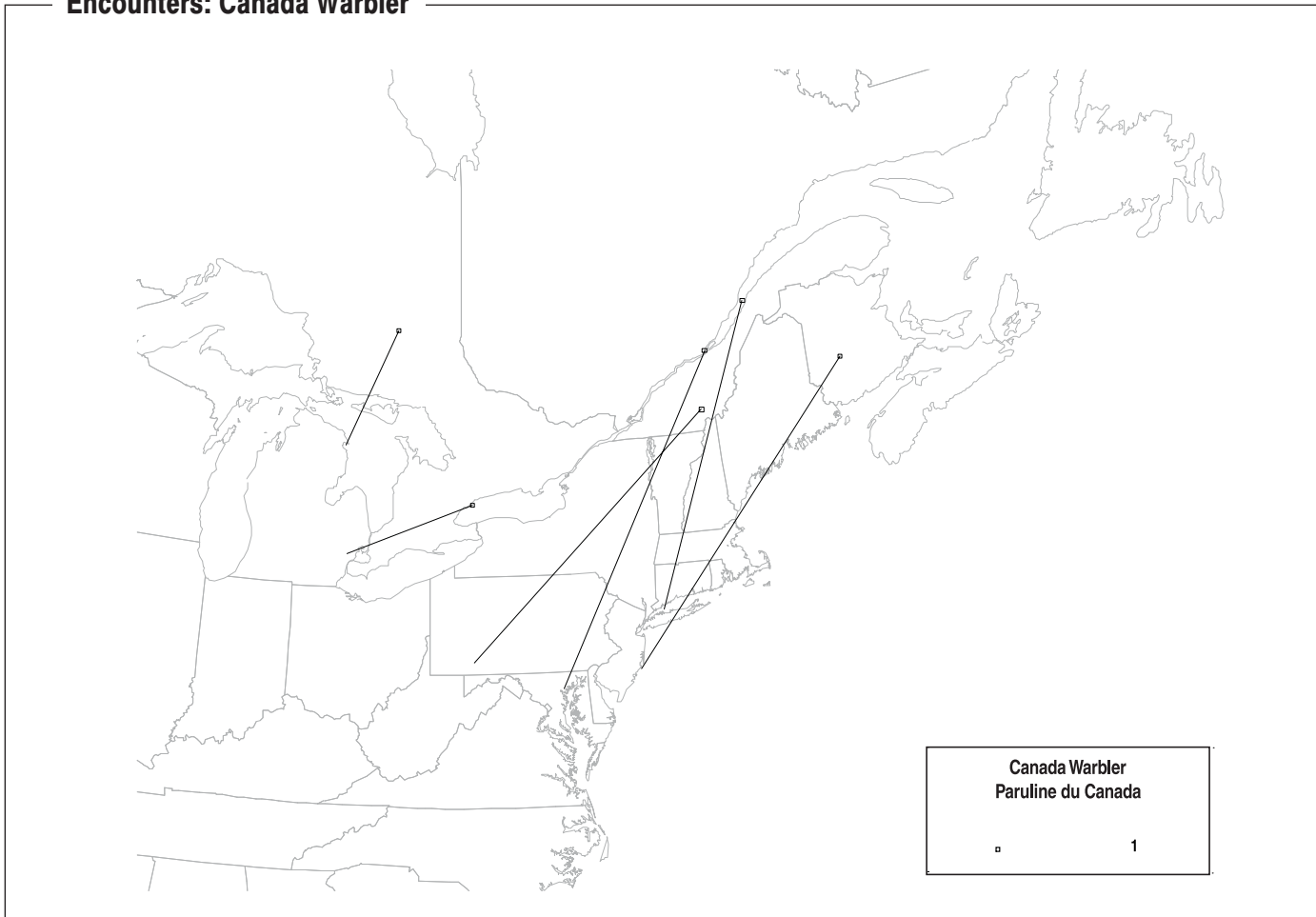
Banding effort: Wilson's Warbler



Top banders: LPBO, ETJ, PEPO, MJW, TBO

Canada Warbler (*Wilsonia canadensis*) 686.0

Encounters: Canada Warbler



The Canada Warbler breeds within the forest zones of Canada from north-central Alberta to Nova Scotia, as well as farther south in the Appalachian Mountains. It winters from Venezuela and northern Colombia south through Ecuador and central Peru.

The birds in all six distant encounters were banded in the U.S. (records 1–6), the first five of these during spring migration. Several were encountered during spring migration

as well, but three may have been in their breeding areas (records 1–3). The bird in record 7 holds the longevity record for this species (Klimkiewicz and Futcher 1989).

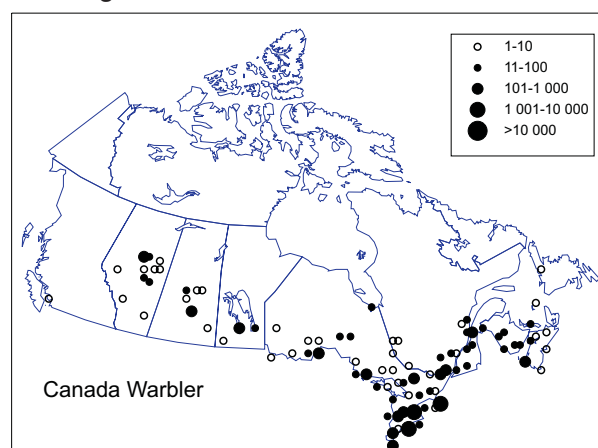
Encounter records: Canada Warbler

1	1050-66437 KCP	AHY M 00 00	18/05/63 99/SU/63	Laughlinton, PA Bishopton, QC	40°00'N 79°10'W 45°30'N 71°30'W	875 km N43°E
2	1340-62506 FHL	AHY M 05 00	18/05/74 03/06/76	Barnegat, NJ Stanley, NB	39°40'N 74°10'W 46°10'N 66°40'W	2 yr. 1 mo. 946 km N38°E
3	1500-62236 AEV	AHY M 02 13	23/05/78 06/06/78	Alpena, MI Gogama, ON	45°00'N 83°20'W 47°40'N 81°40'W	15 dy. 323 km N23°E
4	1140-16254 WPN	AHY M 05 00	31/05/68 29/05/69	Berkley, MI Agincourt, ON	42°30'N 83°10'W 43°40'N 79°10'W	1 yr. 0 mo. 350 km N67°E
5	1580-42528 CAS	AHY M 05 00	26/05/82 99/08/84	Norwalk, CT Île aux Lièvres, QC	41°00'N 73°20'W 47°50'N 69°40'W	2 yr. 3 mo. 814 km N20°E
6	1540-45601 JJS	HY F 05 00	05/09/82 28/05/84	Towson, MD Charlesbourg, QC	39°20'N 76°30'W 46°50'N 71°10'W	1 yr. 8 mo. 940 km N26°E
7	1300-28152 RPLG	AHY M 05 13	29/06/75 14/06/82	Port-au-Persil, QC Port-au-Persil, QC	47°40'N 69°50'W 47°40'N 69°50'W	7 yr. 0 mo. 0 km

Summary of banding statistics: Canada Warbler

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			10 767
<i>No. encountered per 1000 banded (1955–1995)</i>			0.3
Total no. encountered (1921–1995)	1	8	9
No. encountered from foreign bandings	1	5	6
Maximum period from banding to encounter (mo.)	20	84	84
No. of Canadian-banded birds moving > 0 km	0	2	2
Mean movement > 0 km of Canadian-banded birds	—	18	18
Maximum movement from all encounters (km)	940	946	946
% recovered (encountered dead)	100	87	88
% direct recoveries	0	37	33
% encountered during banding operations	0	12	11

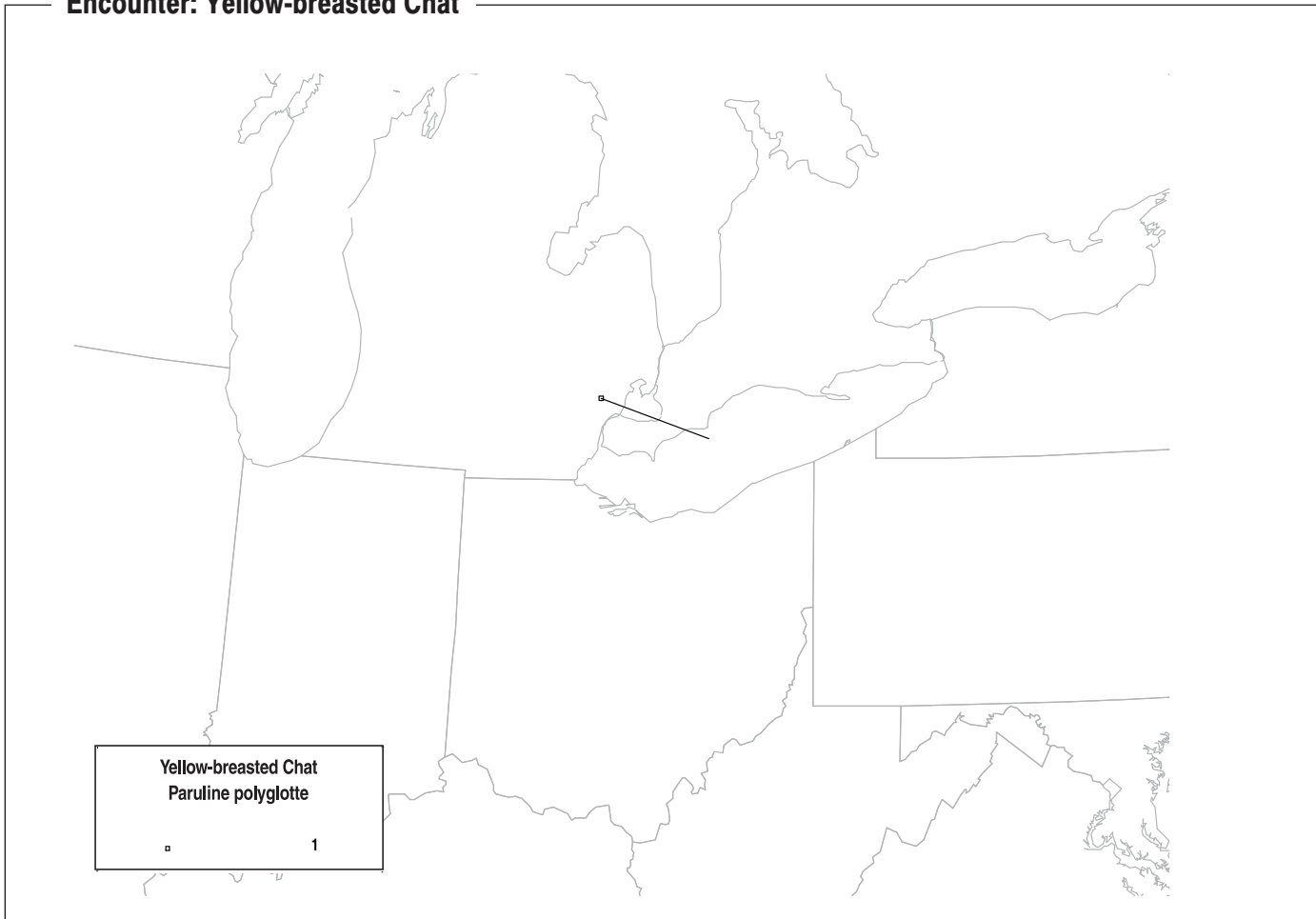
Banding effort: Canada Warbler



Top banders: LPBO, PEPO, TBO, MJW, RRA

Yellow-breasted Chat (*Icteria virens*) 683.0

Encounter: Yellow-breasted Chat



The Yellow-breasted Chat breeds through most of the U.S. but only locally in southern Canada, in southern British Columbia, Alberta, Saskatchewan, and Ontario. It winters from central Mexico south to western Panama.

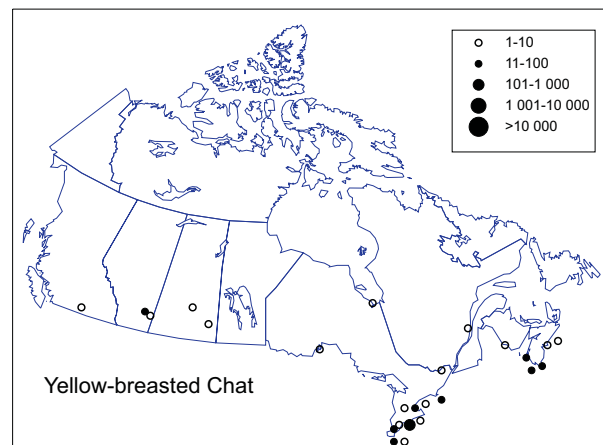
The only Canadian encounter is listed below.

Encounter record: Yellow-breasted Chat

1	0521-72610	AHY M	03/06/56	Rondeau Wildlife Management Area, ON	42°10'N 81°50'W	3 yr. 1 mo.
	FTL	07 89	10/07/59	Berkley, MI	42°30'N 83°10'W	116 km N71°W

Summary of banding statistics: Yellow-breasted Chat

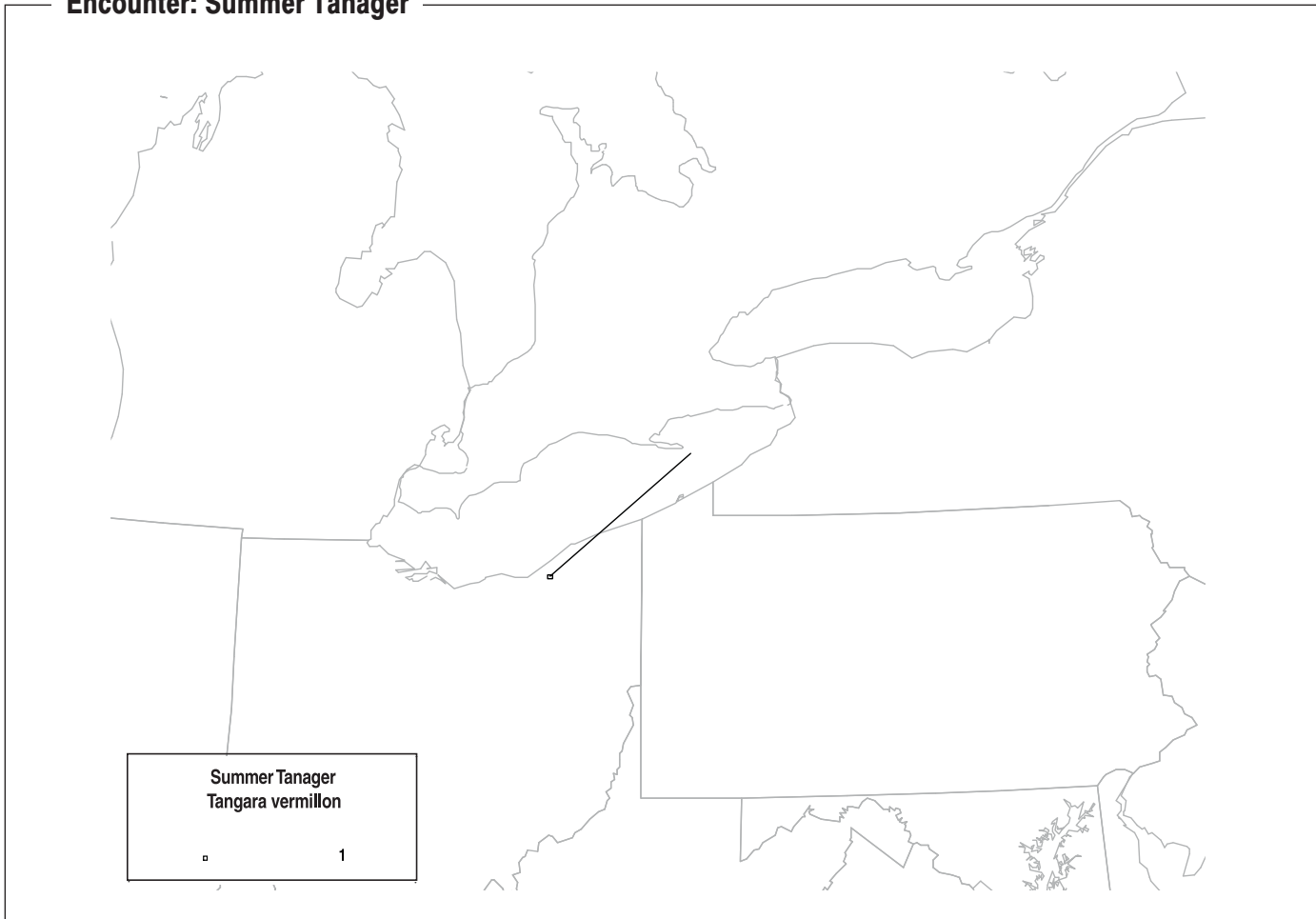
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			558
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	37	37
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	115	115
Maximum movement from all encounters (km)	–	115	115
% recovered (encountered dead)	–	0	0
% direct recoveries	–	0	0
% encountered during banding operations	–	100	100

Banding effort: Yellow-breasted Chat

Top banders: LPBO, DDD, ETJ, CKC, MJW, BC

Summer Tanager (*Piranga rubra*) 610.0

Encounter: Summer Tanager



The Summer Tanager breeds across the southern U.S. but occurs as a regular visitor in southern Ontario, New Brunswick, and Nova Scotia. It winters from central Mexico to Bolivia and western Brazil, as well as in southern California and casually elsewhere in the U.S.

The only Canadian record was of a bird that had apparently overshot the breeding range on spring migration. It was banded at Long Point, Ontario, and encountered nine

days later on the south side of Lake Erie. The encounter rate per 1000 banded is unrealistically high (see summary table) — there are no encounters at all from the more numerous Canadian bandings of Scarlet and Western Tanagers, as noted in the next two accounts.

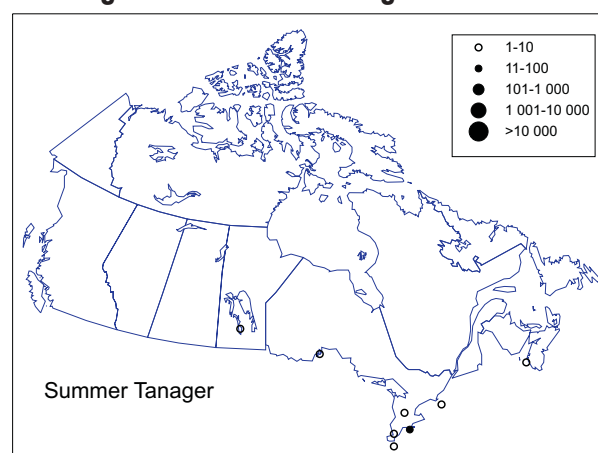
Encounter record: Summer Tanager

1	0921-32328	SY M	21/05/84	Long Point, ON	42°30'N 80°00'W	9 dy.
	LPBO	05 00	30/05/84	13 km west of Waite Hill, OH	41°30'N 81°30'W	167 km S49°W

Summary of banding statistics: Summer Tanager

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			27
<i>No. encountered per 1000 banded (1955–1995)</i>			37
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	0	0
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	166	166
Maximum movement from all encounters (km)	–	166	166
% recovered (encountered dead)	–	100	100
% direct recoveries	–	100	100
% encountered during banding operations	–	0	0

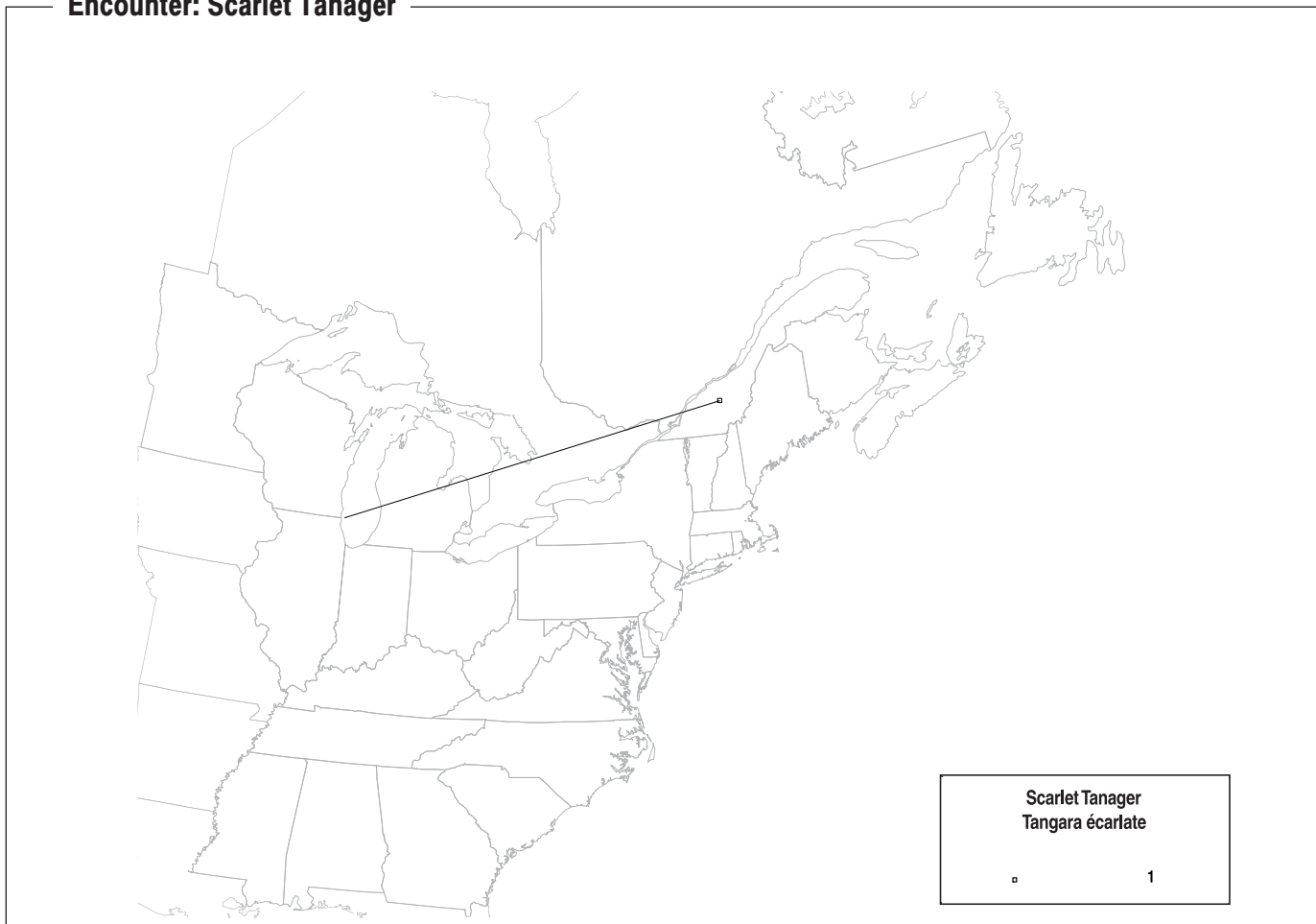
Banding effort: Summer Tanager



Top banders: LPBO, WCa

Scarlet Tanager (*Piranga olivacea*) 608.0

Encounter: Scarlet Tanager



The Scarlet Tanager breeds in the eastern U.S. except for the far south; it also breeds across southeastern Canada from southwestern Manitoba to New Brunswick. It winters in South America from Colombia to Bolivia.

Although many have been banded in Canada, the only Canadian encounter is of a bird banded in Wisconsin and

encountered in Quebec in a subsequent spring. While not the oldest tanager known, this bird comes within about a year of the longevity record (Klimkiewicz 1997).

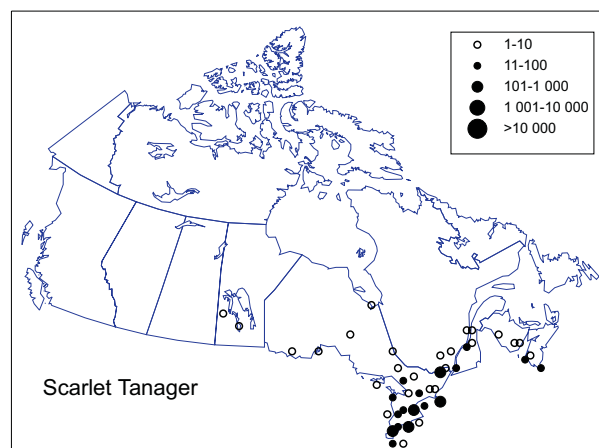
Encounter record: Scarlet Tanager

1	1241-78824	AHY M	18/05/86	Kenosha, WI	42°30'N 87°40'W	8 yr. 0 mo.
	JFS	03 00	29/05/94	Norbertville, QC	46°00'N 71°40'W	1331 km N68°E

Summary of banding statistics: Scarlet Tanager

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			2259
No. encountered per 1000 banded (1955–1995)			0
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	–	96	96
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	–	1331	1331
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

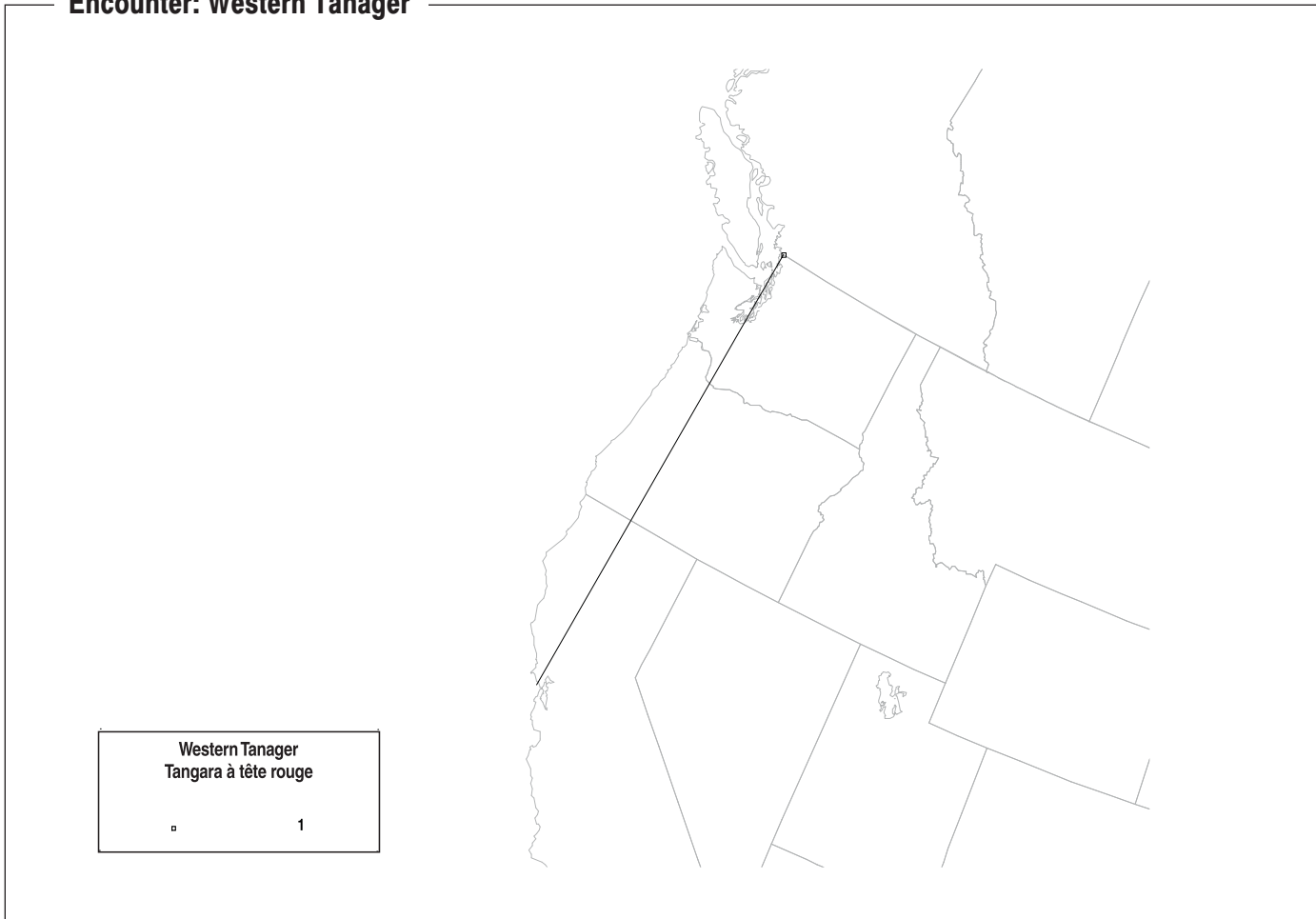
Banding effort: Scarlet Tanager



Top banders: LPBO, PEPO, JBMi, IPBO, MJW

Western Tanager (*Piranga ludoviciana*) 607.0

Encounter: Western Tanager



The Western Tanager breeds in the western U.S.; in Canada it breeds throughout British Columbia north to the southern Northwest Territories, in northern and central Alberta, and in central Saskatchewan. It winters from Baja California and central Mexico south to Costa Rica.

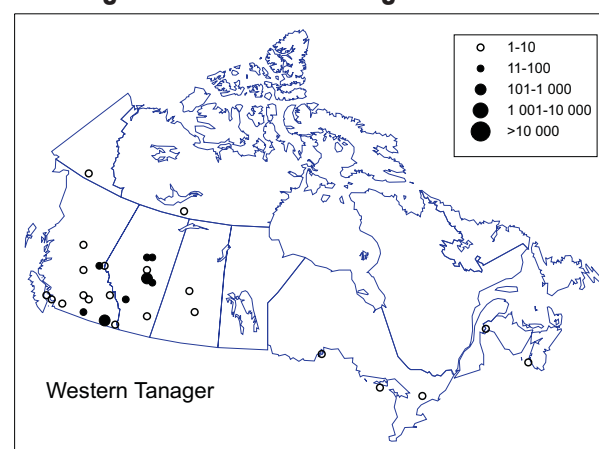
The sole encounter was banded in fall migration in California and encountered the next spring on its return journey to Canada.

Encounter record: Western Tanager

1	1411-50303	HY F	11/10/91	13 km west of San Anselmo, CA	37°50'N 122°40'W	7 mo.
	PRBO	05 13	06/05/92	Cloverdale, BC	49°00'N 122°40'W	1243 km N0°W

Summary of banding statistics: Western Tanager

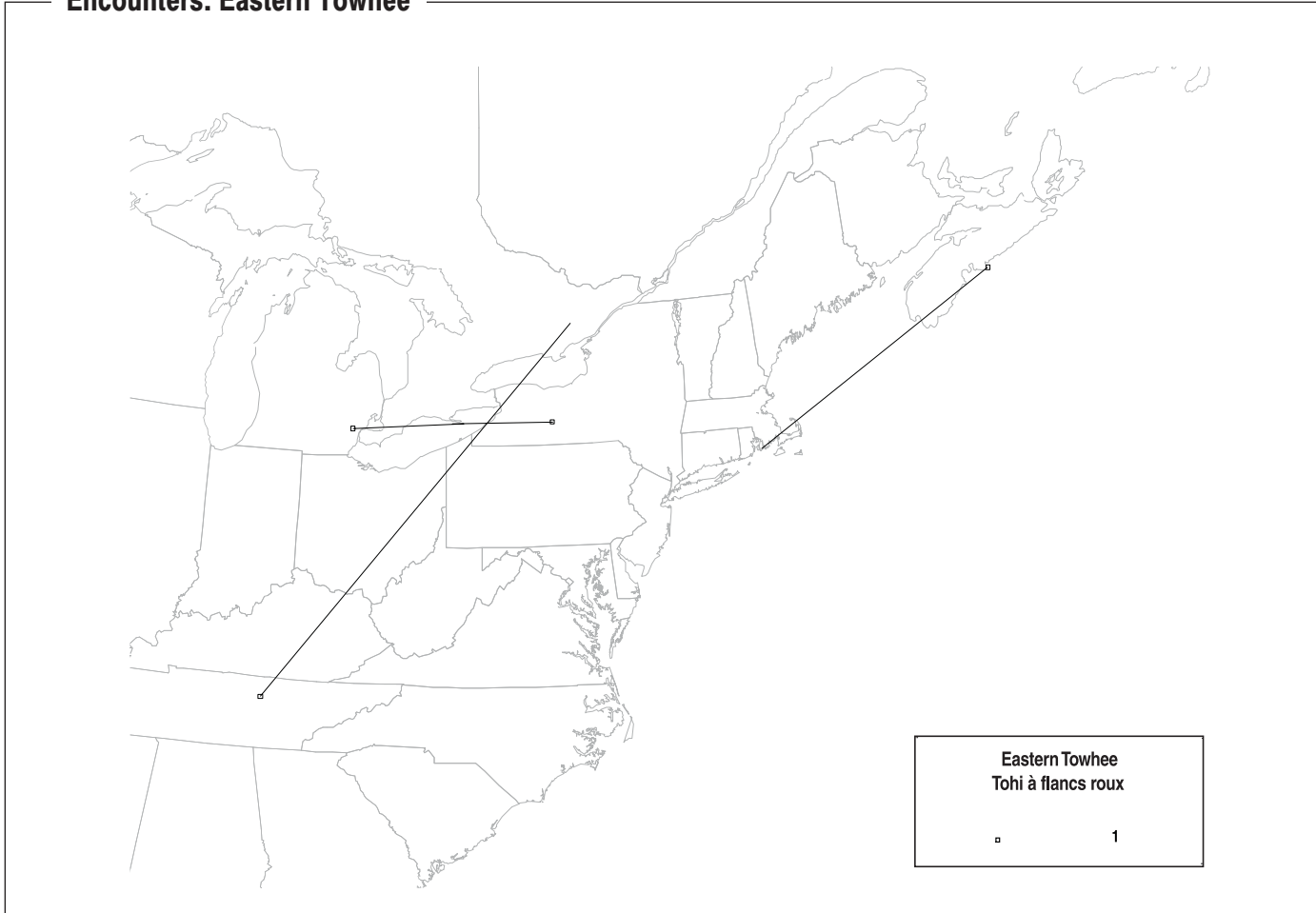
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			423
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	1	0	1
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	7	–	7
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	1243	–	1243
% recovered (encountered dead)	100	–	100
% direct recoveries	0	–	0
% encountered during banding operations	0	–	0

Banding effort: Western Tanager

Top banders: ETJ, RFH, DC, BBO, UA

Eastern Towhee (*Pipilo erythrophthalmus*) 587.0
and
Spotted Towhee (*P. maculatus*) 588.0

Encounters: Eastern Towhee



The Eastern and Spotted Towhees were formerly considered a single species, the Rufous-sided Towhee, and the two are treated together in this account.

The Eastern Towhee breeds in the eastern U.S., southeastern Manitoba, southern Ontario, and extreme southern Quebec. It winters regularly but locally as far north as extreme southern Ontario but mainly from the mid-Atlantic states south to Florida and the Gulf Coast. Spotted Towhees breed in southern British Columbia, southern Alberta, southern Saskatchewan, and the western U.S. British Columbia birds are resident; Prairie Province birds move to the U.S. Southwest for the winter.

The summary table contains 85 records for birds that are assumed to be resident Spotted Towhees (based on location; e.g., record 1, which also showed the longest period between banding and encounter). All encounters showing substantial movement refer to the migratory Eastern Towhee and are listed below (records 2–5). The bird in record 2, which was reported by the finder as being “diseased,” travelled north-east in the fall.

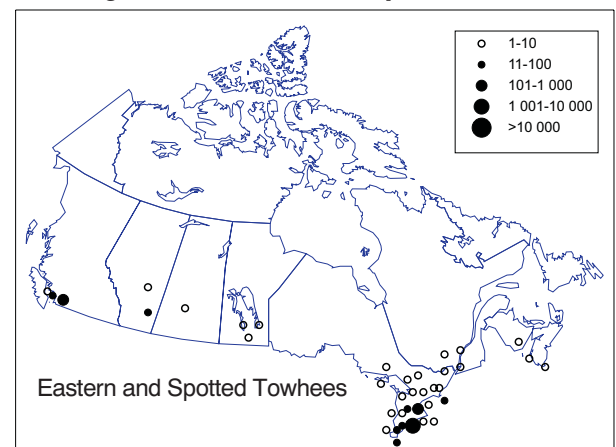
Encounter records: Eastern and Spotted Towhees

1	0002-65721 TP	AHY M 00 99	12/11/51 22/01/57	Comox, BC Comox, BC	49°40'N 124°50'W 49°40'N 124°50'W	5 yr. 2 mo. 0 km
2	0561-20104 JBa	HY M 00 20	17/08/57 17/10/57	Common Fence Point, RI Halifax, NS	41°30'N 71°10'W 44°30'N 63°30'W	2 mo. 707 km N59°E
3	0782-32114 CMF	AHY M 04 00	02/05/90 14/04/91	Sharbot Lake, ON Cookeville, TN	44°40'N 76°40'W 36°10'N 85°30'W	11 mo. 1205 km S41°W
4	0552-90148 LPBO	AHY M 00 00	21/04/62 21/04/63	Long Point, ON Farmington Hills, MI	42°30'N 80°00'W 42°20'N 83°20'W	1 yr. 275 km S87°W
5	0542-06752 LPBO	U F 00 00	11/05/60 28/04/62	Long Point, ON Jamestown, NY	42°30'N 80°00'W 42°00'N 79°10'W	1 yr. 11 mo. 88 km S51°E
6	0921-33332 LPBO	AHY F 07 89	25/04/85 02/05/88	Long Point, ON Ingleside, NY	42°30'N 80°20'W 42°30'N 77°20'W	3 yr. 1 mo. 246 km N89°E

**Summary of banding statistics:
Eastern and Spotted Towhees**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3430
<i>No. encountered per 1000 banded (1955–1995)</i>			6
Total no. encountered (1921–1995)	3	76	94
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	11	62	62
No. of Canadian-banded birds moving > 0 km	0	3	4
Mean movement > 0 km of Canadian-banded birds	–	575	453
Maximum movement from all encounters (km)	707	1205	1205
% recovered (encountered dead)	33	26	26
% direct recoveries	66	27	29
% encountered during banding operations	66	72	72

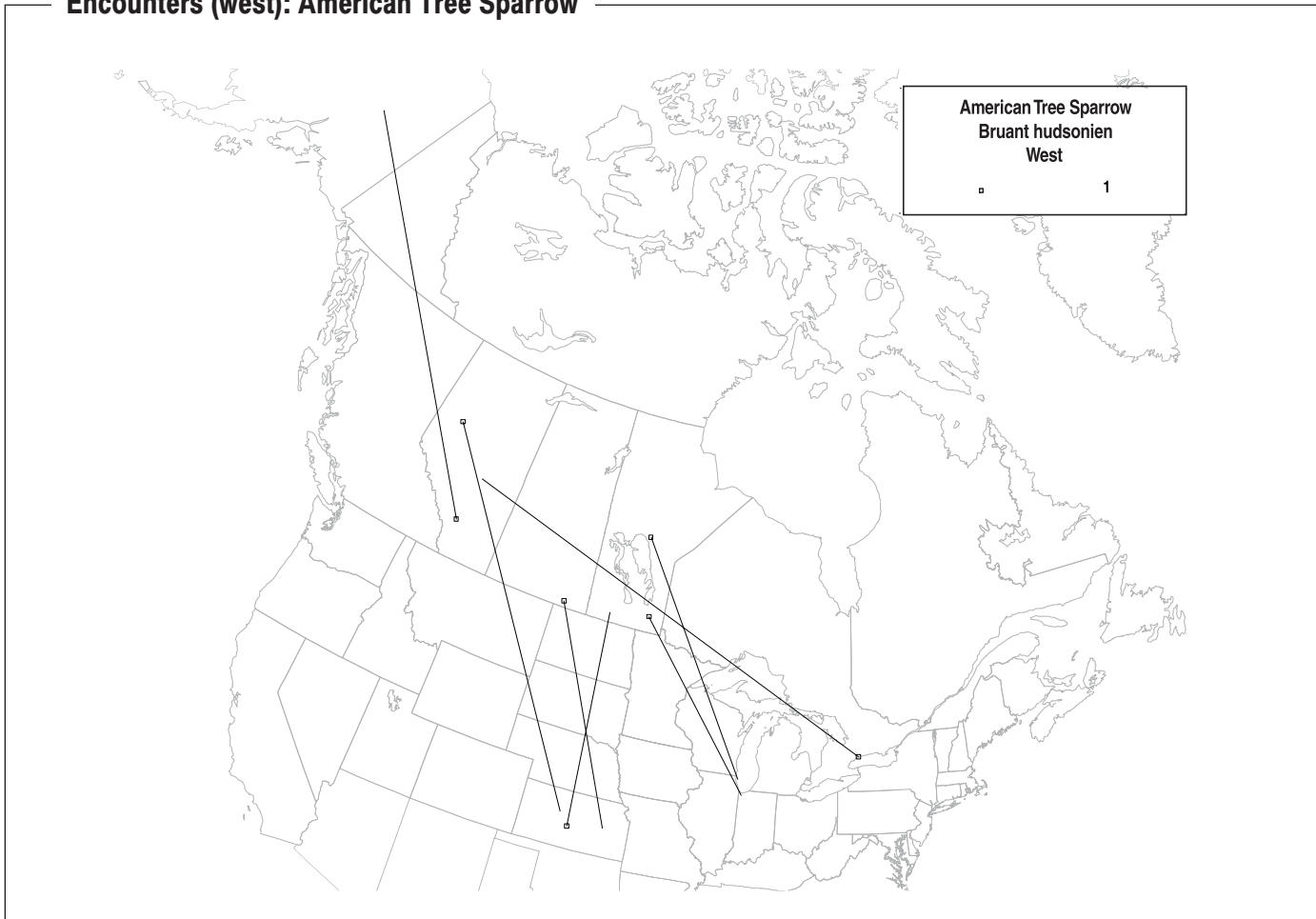
Banding effort: Eastern and Spotted Towhees



Top banders: LPBO, RBCM, DBr., UBC, CWS-BC

American Tree Sparrow (*Spizella arborea*) 559.0

Encounters (west): American Tree Sparrow

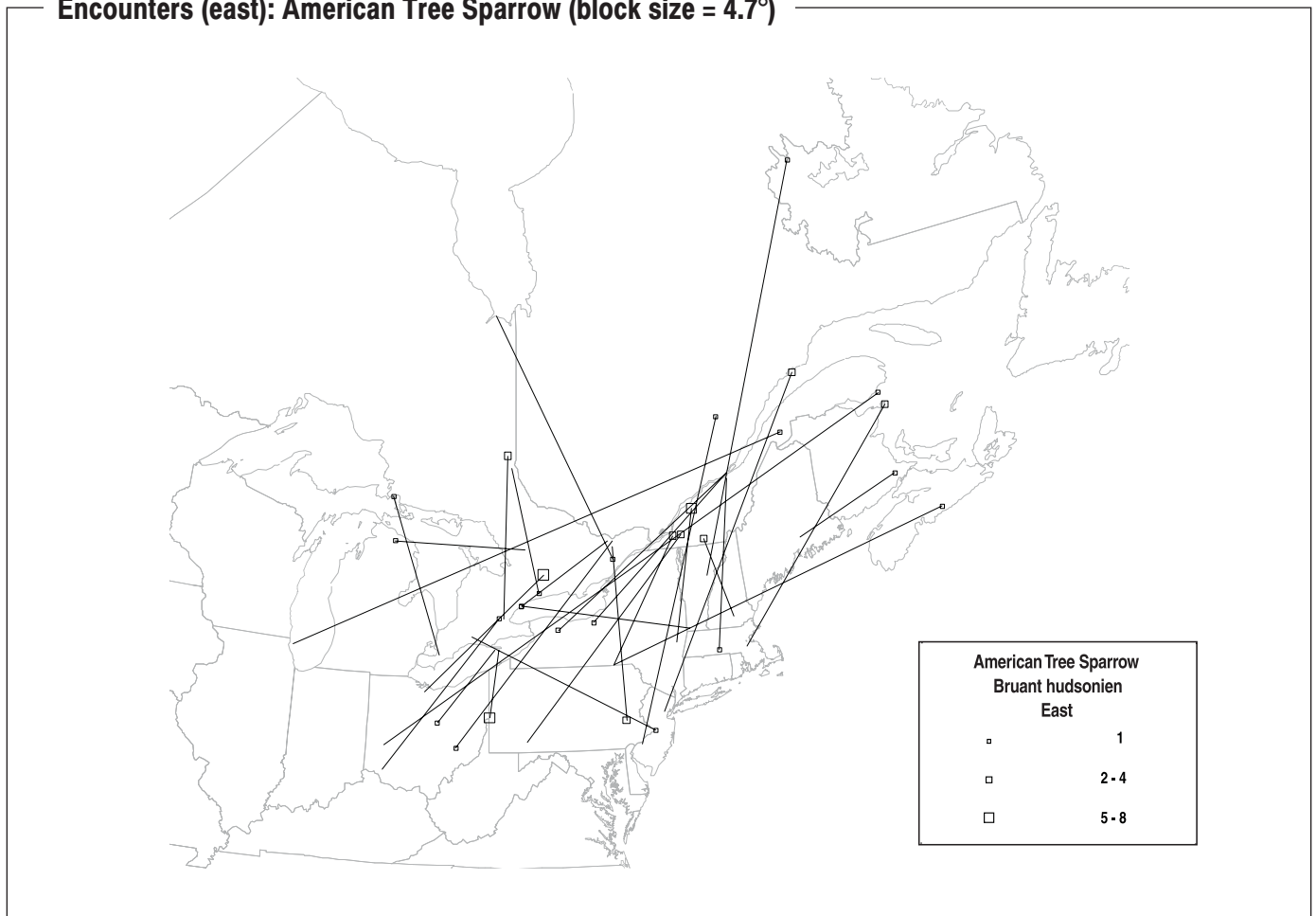


The American Tree Sparrow breeds across Alaska and Canada from Yukon to Labrador, mainly in scrubby habitats near the treeline as far north as central Nunavut and north-central Quebec. It winters from southern Canada south to northern Arizona, northern Texas, Arkansas, Tennessee, and North Carolina.

The American Tree Sparrow is the most northern-nesting of all the North American sparrows, and very little banding has been done on the breeding grounds. However, two long-

distance encounters (record 1 and a bird banded on James Bay) were of birds banded within the nesting range, and there is one encounter from the nesting range of a bird banded farther south (record 2). The encounter pattern of American Tree Sparrows is, even more than for most passerines, heavily biased by the density of human population. Most encounters were of birds banded on migration, and almost three-quarters of all records involved Ontario and Quebec.

Encounters (east): American Tree Sparrow (block size = 4.7°)



Of the 210 mid-winter encounters (December–February), 78% were in Canada (e.g., record 3); the rest were scattered across the northern U.S., with the most southerly records in New Jersey, Pennsylvania, Ohio, Illinois (record 4), and Kansas (record 5). Tree Sparrows show great fidelity to wintering areas (e.g., record 3); at one Ontario site, one-third of the birds banded in winter were retrapped in subsequent winters (A.D. Brewer, pers. obs.). Males tend to winter farther north than females (Baumgartner 1942).

Western birds move on a northwest–southeast axis, some of them evidently passing through the Great Lakes area (records 6–10). Maritimes birds move instead on a northeast–southwest axis (record 11). Ontario and Quebec seem to form a transition zone (see map).

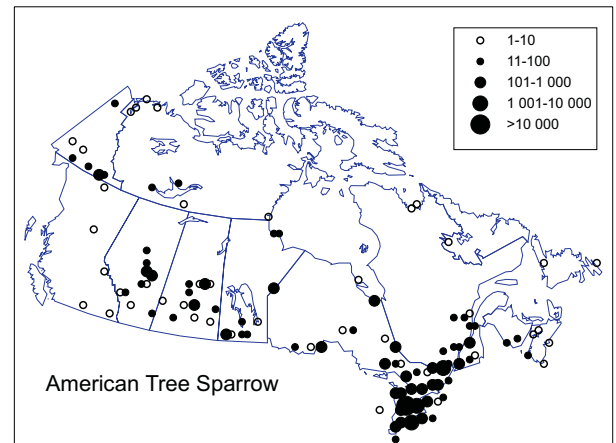
Encounter records: American Tree Sparrow

1	2131-96129 THP	HY U 05 12	18/09/93 17/10/93	College, AK Calgary, AB	64°50'N 147°40'W 51°00'N 114°00'W	1 mo. 2467 km S68°E
2	0580-77710 GCM	U U 00 01	23/02/58 01/10/60	near Plainfield, VT near Schefferville, QC	44°10'N 72°20'W 54°40'N 66°40'W	2 yr. 8 mo. 1238 km N17°E
3	0450-58012 GGO	HY M 00 29	26/12/45 07/01/49	Hudson Heights, QC Hudson Heights, QC	45°20'N 74°10'W 45°20'N 74°10'W	3 yr. 1 mo. 0 km
4	0590-65667 LJC	U U 00 01	14/01/58 04/06/65	Island Beach State Park, IL near Cabano, QC	42°20'N 87°40'W 47°40'N 68°50'W	7 yr. 5 mo. 1592 km N62°E
5	0050-33574 NC	U U 00 00	13/10/31 22/12/33	near Stockton, MB Seward, KS	49°30'N 99°30'W 38°10'N 98°40'W	2 yr. 2 mo. 1263 km S3°E
6	0070-54118 GEH	U U 00 00	03/04/34 20/10/41	Zion, IL south of Norway House, MB	42°20'N 87°40'W 53°50'N 97°40'W	7 yr. 6 mo. 1477 km N27°W
7	0520-18558 ETJ	U U 00 89	14/09/57 09/05/58	near Edmonton, AB Ajax, ON	53°30'N 113°30'W 43°50'N 79°00'W	8 mo. 2722 km S81°E
8	0510-43352 FGM	U U 00 47	20/03/54 ??/04/55	East Chicago, IN near Vivian, MB	41°30'N 87°20'W 49°50'N 96°20'W	1160 km N34°W
9	0750-17631 CAE	U U 05 00	18/11/67 11/05/68	Hays, KS near Watino, AB	38°50'N 99°20'W 55°40'N 117°30'W	6 mo. 2308 km N30°W
10	0750-75221 CWC	U U 05 00	23/11/67 ??/04/71	near Emporia, KS Midale Lake, SK	38°30'N 96°20'W 49°20'N 103°20'W	1329 km N23°W
11	0630-49065 FVM	U U 00 01	26/11/61 ??/01/64	Apalachin, NY Meaghers Grant, NS	42°00'N 76°00'W 44°50'N 63°10'W	1083 km N69°E
12	0910-19533 MB	AHY U 07 99	10/03/85 30/11/93	Île Perrot, QC Île Perrot, QC	45°20'N 73°50'W 45°20'N 73°50'W	8 yr. 8 mo. 0 km

Summary of banding statistics: American Tree Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			35 719
<i>No. encountered per 1000 banded (1955–1995)</i>			3
Total no. encountered (1921–1995)	10	209	288
No. encountered from foreign bandings	1	29	50
Maximum period from banding to encounter (mo.)	38	104	115
No. of Canadian-banded birds moving > 0 km	5	29	44
Mean movement > 0 km of Canadian-banded birds	278	243	309
Maximum movement from all encounters (km)	2 467	1 808	2 721
% recovered (encountered dead)	40	26	31
% direct recoveries	40	23	24
% encountered during banding operations	50	69	62

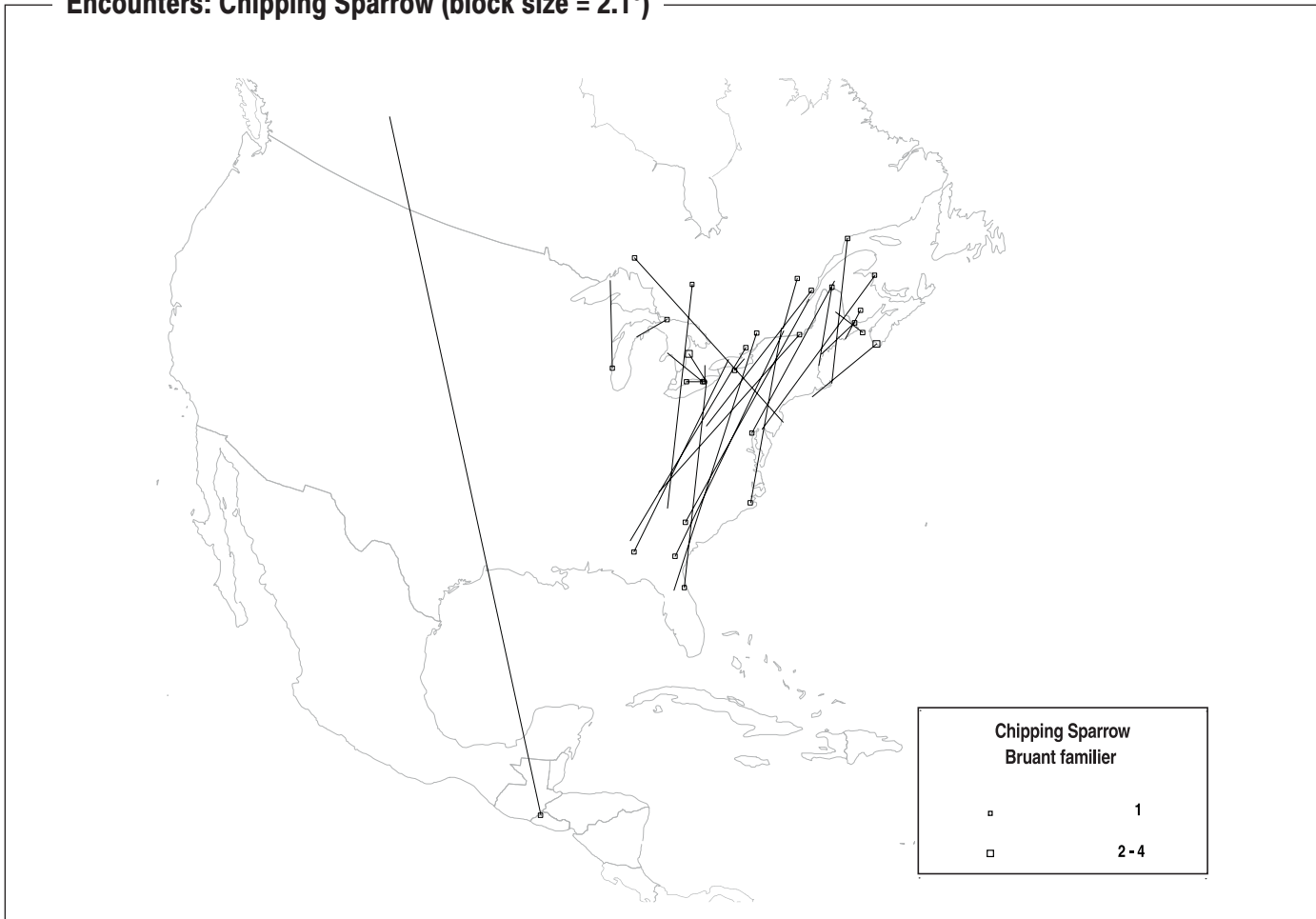
Banding effort: American Tree Sparrow



Top banders: ADB, LPBO, AS, DRL, JBMi

Chipping Sparrow (*Spizella passerina*) 560.0

Encounters: Chipping Sparrow (block size = 2.1°)



The Chipping Sparrow breeds across most of the U.S. (except Alaska), as well as in Canada to the northern limit of dense boreal forest. It winters in the southern tier of U.S. states to Central America.

Most birds (88%) showed no movement or were encountered within 50 km of the banding site. Fourteen moved more than 1000 km (10 of these are listed below), an additional 4 moved 500–1000 km, and 11 moved 100–500 km.

Maritimes and Quebec birds moved southwest for the winter (e.g., records 1–4); Ontario birds evidently move more south or southeast (see map; e.g., records 5–9). These patterns are supported by encounters of banded birds moving

between Florida and several eastern states (Middleton 1998). Although Chipping Sparrows nest as far west as coastal British Columbia and are highly migratory in most of the western part of their range, there is only one long-distance encounter from western Canada (record 10). Encountered in El Salvador at a relatively early fall date, the bird was near the southern limit of the species' winter range.

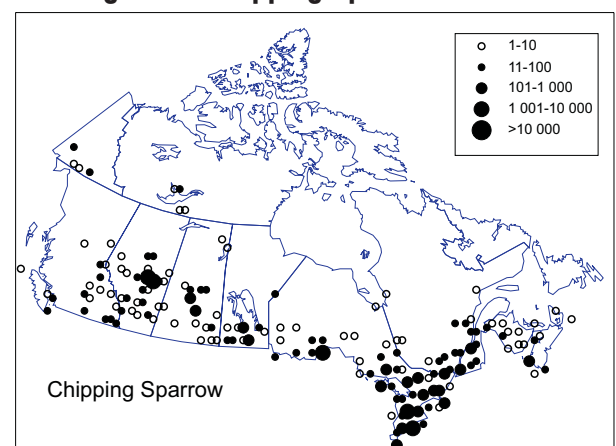
Encounter records: Chipping Sparrow

1	0280-22727 SHG	AHY U 05 13	26/05/69 03/12/71	north of Edmunston, NB Cockeysville, MD	47°50'N 68°20'W 39°20'N 76°30'W	2 yr. 7 mo. 1151 km S38°W
2	0250-96857 JHP	U U 00 21	01/05/58 23/05/58	Glasgow, DE near Shippegan, NB	39°30'N 75°40'W 47°40'N 64°40'W	22 dy. 1268 km N41°E
3	0440-50924 RBL	U U 00 01	27/09/45 ??/01/47	Beaupré, QC Batesburg, SC	47°00'N 70°50'W 33°50'N 81°30'W	1718 km S35°W
4	0520-04410 MB	HY U 00 98	18/08/54 16/03/55	Greenfield Park, QC Baxley, GA	45°20'N 73°20'W 31°40'N 82°10'W	7 mo. 1702 km S30°W
5	0310-59757 JLD	AHY F 00 89	24/02/63 10/06/63	near Hurtsboro, AL Godfrey, ON	32°30'N 85°20'W 44°30'N 76°40'W	4 mo. 1532 km N27°E
6	0390-30525 EBT	U F 00 01	22/08/39 25/01/40	Port Hope, ON Eufala, AL	43°50'N 78°10'W 31°50'N 85°00'W	5 mo. 1463 km S26°W
7	1080-45356 OLA	AHY U 03 00	20/03/66 99/FA/68	southeast of Gainesville, FL Ottawa, ON	29°30'N 82°10'W 45°20'N 75°40'W	1852 km N16°E
8	1080-67985 LPBO	AHY U 04 00	02/06/67 03/01/69	Long Point, ON Hastings, FL	42°30'N 80°00'W 29°40'N 81°30'W	1 yr. 7 mo. 1435 km S6°W
9	0280-68103 FT	U U 00 00	10/09/58 26/05/59	Island Beach, NJ Geraldton, ON	39°50'N 74°00'W 49°40'N 86°50'W	8 mo. 1488 km N38°W
10	1350-21290 ETJ	HY U 05 01	06/08/76 10/10/76	St. Albert, AB Metapán, EL SALVADOR	53°30'N 113°30'W 14°10'N 89°30'W	2 mo. 4859 km S35°E
11	0480-88721 MGS	AHY F 00 99	22/05/50 25/05/55	near White Fox, SK near White Fox, SK	53°20'N 104°00'W 53°20'N 104°00'W	5 yr. 0 km

Summary of banding statistics: Chipping Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			19 953
<i>No. encountered per 1000 banded (1955–1995)</i>			3
Total no. encountered (1921–1995)	81	156	266
No. encountered from foreign bandings	0	9	16
Maximum period from banding to encounter (mo.)	47	60	60
No. of Canadian-banded birds moving > 0 km	9	14	25
Mean movement > 0 km of Canadian-banded birds	910	290	617
Maximum movement from all encounters (km)	4 858	1 852	4 858
% recovered (encountered dead)	38	25	30
% direct recoveries	17	16	16
% encountered during banding operations	61	74	69

Banding effort: Chipping Sparrow



Top banders: LPBO, ETJ, ARS, MB, IPBO

Clay-colored Sparrow (*Spizella pallida*) 561.0

Encounter: Clay-colored Sparrow



The Clay-colored Sparrow breeds from central British Columbia north to the southern Northwest Territories and east to southern Ontario; it also breeds in the northeastern U.S. It winters in southern Texas and Mexico.

Except for the long-distance encounter listed below (record 1), all records were of birds returning to banding sites in the Prairie Provinces (e.g., records 2 and 3). The

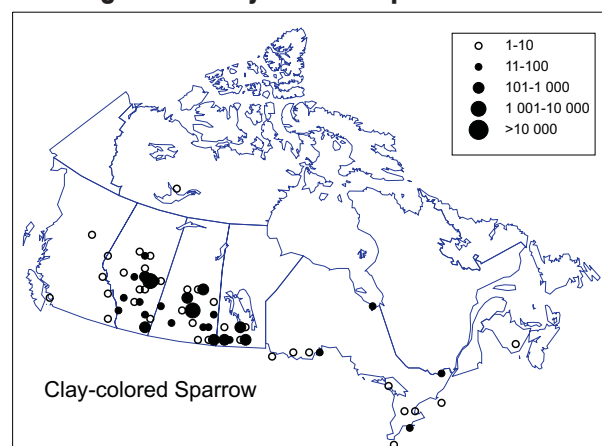
bird in record 3 was at least six years and 11 months old when recaptured, representing the current longevity record for the species (Klimkiewicz 1997).

Encounter records: Clay-colored Sparrow

1	1560-15797 ETJ	U U 05 01	08/09/81 FT/03/83	11 km north of Ryley, AB Dolores Hidalgo, Guanajuato, MEXICO	53°20'N 112°30'W 21°00'N 101°00'W	1 yr. 6 mo. 3731 km S20°E
2	0001-29846 RHC	U U 00 99	31/05/24 25/05/27	11 km south of Lipton, SK 11 km south of Lipton, SK	50°40'N 103°50'W 50°40'N 103°50'W	3 yr. 0 mo. 0 km
3	1780-31341 ETJ	AHY U 07 89	23/05/89 17/05/95	7 km west of Inland, AB 11 km north of Ryley, AB	53°20'N 112°20'W 53°20'N 112°30'W	6 yr. 0 mo. 11 km N90°W

Summary of banding statistics: Clay-colored Sparrow

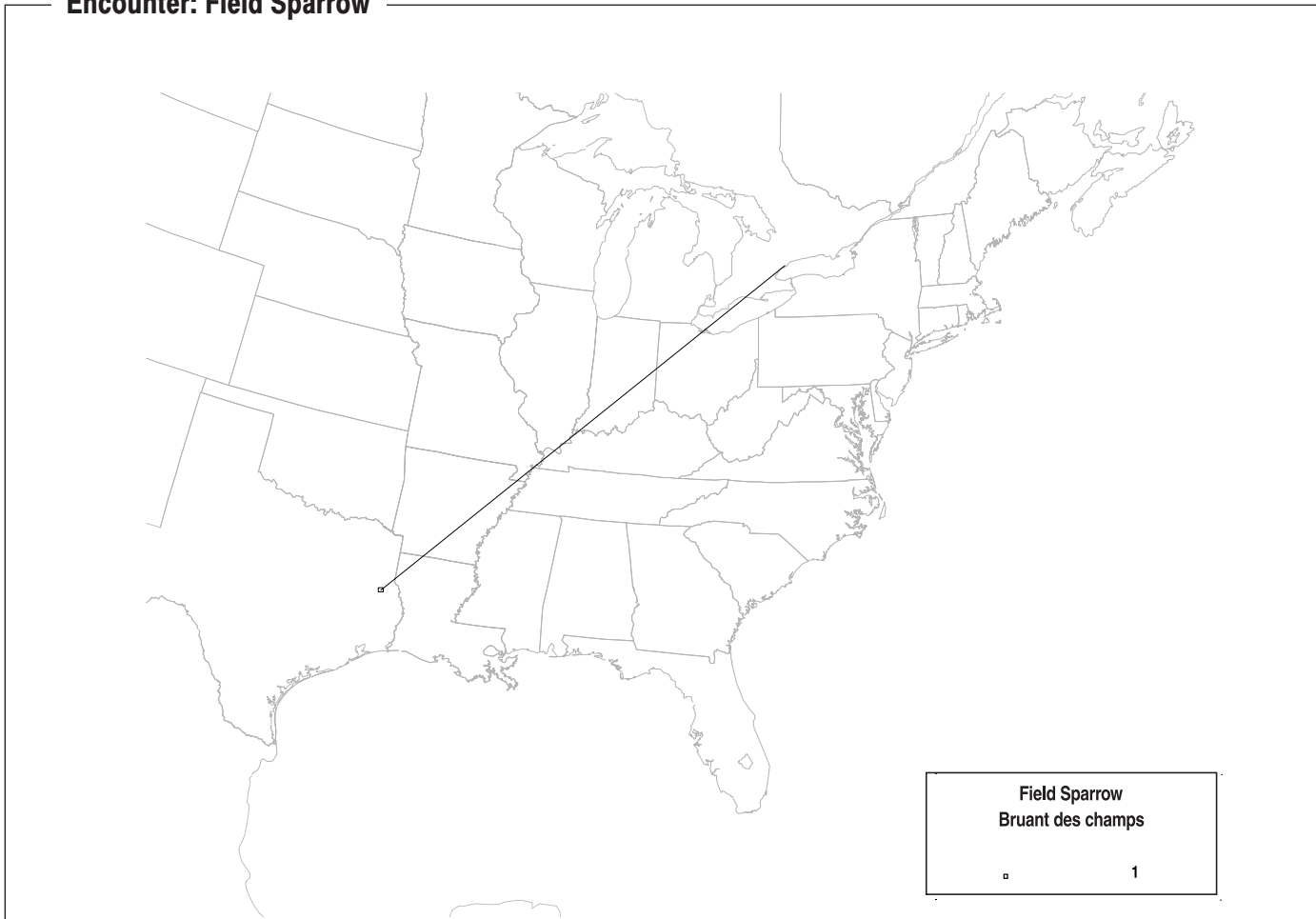
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			8387
<i>No. encountered per 1000 banded (1955–1995)</i>			0.7
Total no. encountered (1921–1995)	0	15	24
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	72	72
No. of Canadian-banded birds moving > 0 km	0	1	2
Mean movement > 0 km of Canadian-banded birds	–	11	1870
Maximum movement from all encounters (km)	–	11	3730
% recovered (encountered dead)	–	6	8
% direct recoveries	–	6	4
% encountered during banding operations	–	93	91

Banding effort: Clay-colored Sparrow

Top banders: ETJ, BBO, ARS, UM, CSH

Field Sparrow (*Spizella pusilla*) 563.0

Encounter: Field Sparrow



The Field Sparrow breeds in the eastern U.S., southern Manitoba (rarely), southern Ontario, and southwestern Quebec. It winters from Kansas east to Massachusetts, and south to northeastern Mexico and Florida, as well as casually in southern Ontario.

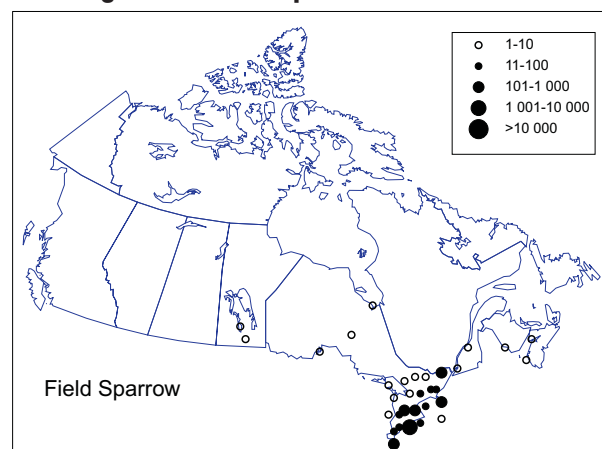
Only one of the four encounters showed movement (see below); the other three encounters took place at the banding locations in southern Ontario.

Encounter record: Field Sparrow

1	1080-71717	AHY U	02/05/67	Don Mills, ON	43°40'N 79°20'W	1 yr. 10 mo.
	FTL	05 01	22/03/69	near Martinsville, TX	31°40'N 94°30'W	1884 km S48°W

Summary of banding statistics: Field Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			4922
<i>No. encountered per 1000 banded (1955–1995)</i>			0.6
Total no. encountered (1921–1995)	0	1	4
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	22	22
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	1883	1883
Maximum movement from all encounters (km)	–	1883	1883
% recovered (encountered dead)	–	100	25
% direct recoveries	–	0	75
% encountered during banding operations	–	0	0

Banding effort: Field Sparrow

Top banders: LPBO, ADB, IPBO, TBO, DDD

Vesper Sparrow (*Poocetes gramineus*) 540.0

Encounters: Vesper Sparrow



The Vesper Sparrow breeds in the northern two-thirds of the U.S., as well as from interior British Columbia east across southern Canada to Nova Scotia. It winters in the southern third of the U.S. and in Mexico.

All the encounters showing significant movement are listed below (records 1–4). None occurred in the winter

months (December–February), but the bird in record 1 (encountered in Mexico) must have been at or near its final wintering destination.

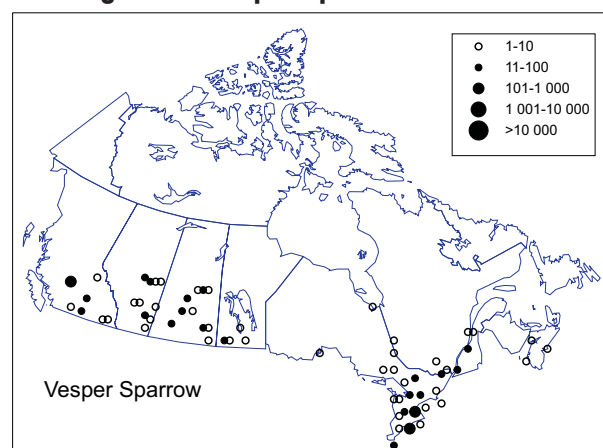
Encounter records: Vesper Sparrow

1	0370-20452 HWB	J U 00 00	20/06/38 12/11/38	near Hughenden Lake, AB Guanajuato State, MEXICO	52°30'N 111°10'W 21°00'N 101°00'W	5 mo. c. 3614 km S18°E
2	0291-48935 CAE	U U 05 01	03/10/66 10/06/67	near Munjor, KS near Steinbach, MB	38°50'N 99°20'W 49°30'N 96°40'W	8 mo. 1206 km N9°E
3	0650-98848 VMK	AHY U 00 96	30/03/63 ??/08/64	Bowie, MD Bluewater Beach, ON	39°00'N 76°50'W 44°30'N 80°00'W	666 km N22°W
4	1021-07412 FWT	AHY U 05 00	12/10/67 99/SP/71	south of Millerton, NY near Woodstock, NB	41°50'N 73°30'W 46°00'N 67°30'W	668 km N44°E
5	0021-43029 RHC	AHY U 00 99	14/06/29 17/05/31	11 km south of Lipton, SK 11 km south of Lipton, SK	50°40'N 103°50'W 50°40'N 103°50'W	1 yr. 11 mo. 0 km

Summary of banding statistics: Vesper Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			1289
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	2	11	18
No. encountered from foreign bandings	0	2	3
Maximum period from banding to encounter (mo.)	12	23	23
No. of Canadian-banded birds moving > 0 km	1	0	2
Mean movement > 0 km of Canadian-banded birds	3614	–	1813
Maximum movement from all encounters (km)	3614	667	3614
% recovered (encountered dead)	100	27	44
% direct recoveries	50	9	22
% encountered during banding operations	0	72	55

Banding effort: Vesper Sparrow



Top banders: LPBO, JLu, CWS-BC, BMat, ETJ

Savannah Sparrow (*Passerculus sandwichensis*) 541.0 and 542.0

Encounters: Savannah Sparrow



The Savannah Sparrow breeds throughout Canada and the northern half of the U.S., except for the Arctic islands and northern Nunavut. It winters along all of the western coast of North America from southwestern British Columbia south, as well as in the southern half of the U.S. south to Honduras; it also winters in the Bahamas, Cuba, and Grand Cayman and Swan islands (Wheelwright and Rising 1993).

Five of the 17 subspecies of Savannah Sparrow occur in Canada, including the Ipswich Sparrow (formerly considered a separate species), which breeds exclusively on Sable Island, off Nova Scotia. All the Canadian subspecies are migratory. Although only two banded Ipswich Sparrows have been encountered elsewhere (including record 1), this readily recognized subspecies is known to winter on the Atlantic coast between Nova Scotia and Georgia. There these birds mix with other Savannah Sparrows from the Maritimes

(e.g., records 2–5). The only encounter indicating the wintering (December–February) range of a probable Canadian breeder was of a bird banded in Florida and found later in New Brunswick (record 2). Quebec birds may winter in the same coastal areas as Maritimes birds (record 6, see map).

It is striking that there are essentially no encounters involving Ontario, given the numbers banded there (see effort map). The only Ontario encounter (record 7) is doubtless of a Quebec breeder (see encounter map) and gives no clue as to where Ontario breeders may spend the winter. The two encounters of western birds (record 8 and one banded on the west coast of Hudson Bay) also give no clue as to wintering area, but suggest a more north–south movement than is typical of western populations of forest-dwelling species such as warblers.

Long-term studies of Savannah Sparrows show fidelity to breeding sites (Wheelwright and Mauck 1998). Birds banded as nestlings did not return to their natal area to breed in Quebec (Bedard and LaPointe 1984); however, on islands in New Brunswick, 11% of nestlings returned as yearlings to nest (Wheelwright and Mauck 1998; see also record 9).

The annual survival of adults is 35–45% in both sexes (Wheelwright et al. 1994). The higher proportion of young versus adult birds encountered dead (see summary table) is consistent with demographic studies, which show high juvenile mortality and lower return rates for one-year-olds compared with older birds.

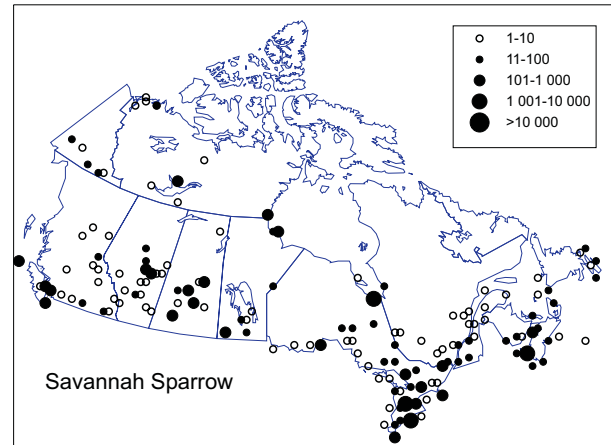
Encounter records: Savannah Sparrow

1	0321-19703	AHY F	25/06/70	Sable Island, NS	43°50'N 60°00'W	10 mo.
	IAMcL	05 45	12/04/71	Beesley's Point, NJ	39°10'N 74°30'W	1313 km S72°W
2	0720-04068	AHY U	10/02/70	near Porpoise Point, FL	27°30'N 80°20'W	
	HCW	02 56	??/07/70	inexact location, NB	46°??'N 66°??'W	c. 2460 km N27°E
3	0040-02306	U U	10/07/35	Kent Island, NB	44°30'N 66°40'W	8 mo.
	BC	00 00	14/03/36	Johns Island, SC	32°40'N 80°00'W	1751 km S46°W
4	0050-59044	U U	03/10/31	Ayer, MA	42°30'N 71°30'W	9 mo.
	WPW	00 98	05/07/32	Bateston, Cape Breton, NS	46°00'N 59°50'W	1007 km N63°E
5	0720-60482	U U	29/10/65	Bellport Bay, NY	40°40'N 72°50'W	8 mo.
	WST	05 12	07/06/66	near Burin, NF	46°50'N 55°10'W	1573 km N58°E
6	0790-56619	AHY U	10/03/71	west of Rockville, MD	39°00'N 77°20'W	4 mo.
	PWW	05 00	06/07/71	Saint-Coeur-de-Marie, QC	48°30'N 71°40'W	1151 km N21°E
7	0460-32085	AHY U	30/09/49	near Crimora, VA	38°20'N 78°50'W	
	MMC	00 14	??/06/53	Avonmore, ON	45°10'N 74°50'W	830 km N22°E
8	0620-54574	U U	20/09/59	Coulee, ND	48°30'N 102°00'W	
	RTG	05 21	??/05/60	Chelan, SK	52°30'N 103°20'W	455 km N11°W
9	0500-15253	HY U	30/06/51	Bewdley, ON	44°00'N 78°10'W	5 yr. 0 mo.
	FS	00 99	01/06/56	Bewdley, ON	44°00'N 78°10'W	0 km

Summary of banding statistics: Savannah Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			26 623
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	21	40	71
No. encountered from foreign bandings	0	5	9
Maximum period from banding to encounter (mo.)	60	38	60
No. of Canadian-banded birds moving > 0 km	9	7	18
Mean movement > 0 km of Canadian-banded birds	346	288	383
Maximum movement from all encounters (km)	1 284	2 460	2 460
% recovered (encountered dead)	71	40	52
% direct recoveries	61	20	32
% encountered during banding operations	28	60	47

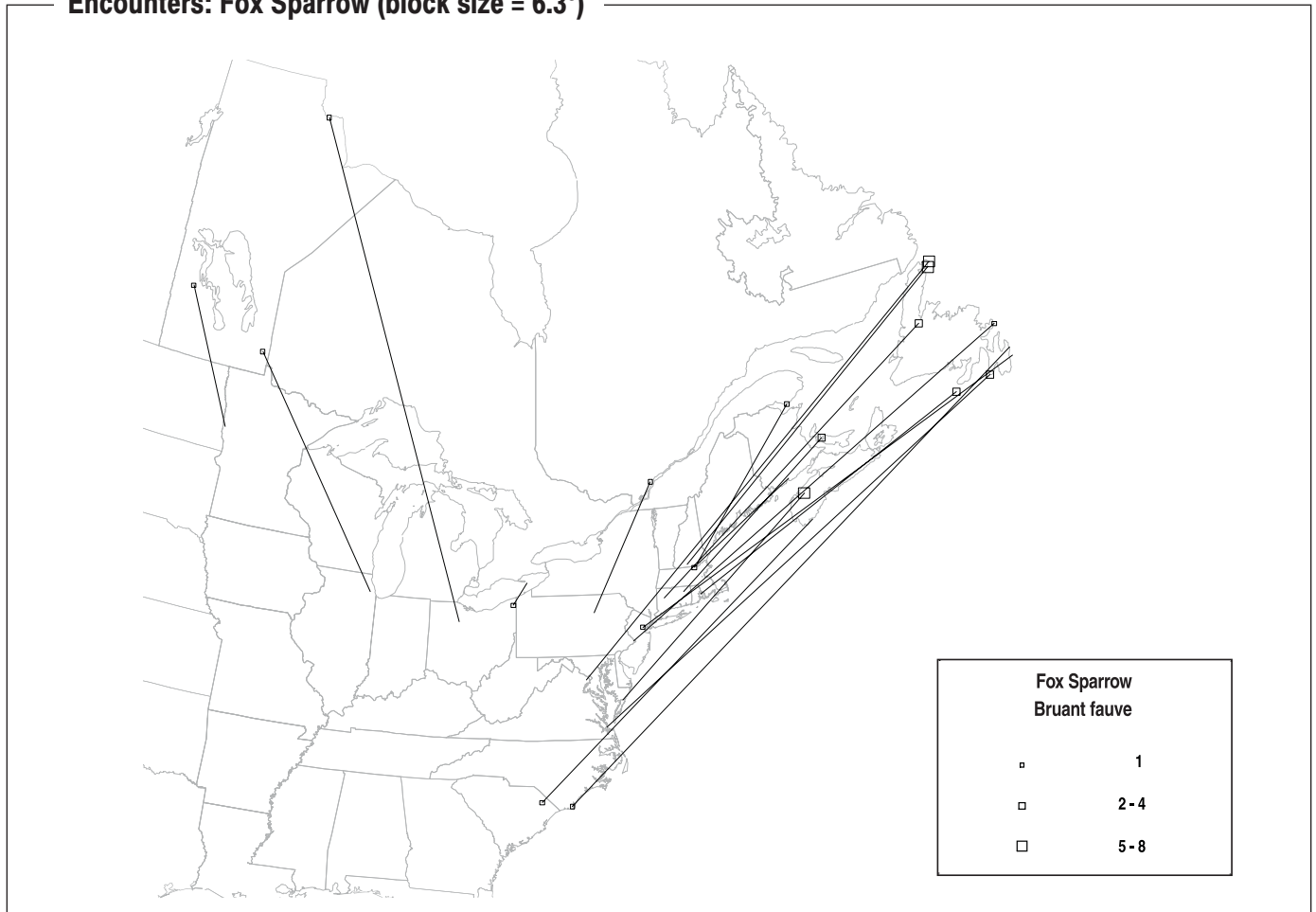
Banding effort: Savannah Sparrow



Top banders: BC, RIGM, LPBO, CF-G, CWS-BC

Fox Sparrow (*Passerella iliaca*) 585.0

Encounters: Fox Sparrow (block size = 6.3°)



The Fox Sparrow breeds chiefly between the northern limit of dense forest and the treeline of Alaska and Canada; it also breeds south through British Columbia, western Alberta, and much of the western U.S. It winters in southern parts of eastern Canada and the Maritimes (rarely), south to Georgia and Texas, and from southern Alaska and southern British Columbia south to northern Baja California.

None of the 30 birds encountered in British Columbia moved; most were recaptured at banding sites where they were overwintering. Encounters of Prairie Province birds occurred during migration (records 1 and 2), except that the bird in record 3 was encountered on the breeding grounds. Although few, these encounters suggest that Fox Sparrows breeding west of Hudson Bay spend the winter in the southeastern U.S.

The only encounter from Ontario (record 4) was of a bird banded at Long Point that was recaptured three days later, directly across Lake Erie in Ohio. The two encounters in southern Quebec were banded and encountered on migration (e.g., record 5).

The preponderance of records for Maritimes birds reflects the presence of human population in both the breeding and wintering areas. Most birds were banded in the U.S. on migration along the east coast (e.g., records 6–10). There were a few winter encounters (December–February): one each in Maryland, New Jersey, Pennsylvania, and South Carolina (record 11), and two in North Carolina (records 12 and 13; the latter is not shown on the map because of thinning — see section 4.2). These and other mapped records indicate that Maritimes breeders move southwest to winter in the middle portion of the U.S. Atlantic coast.

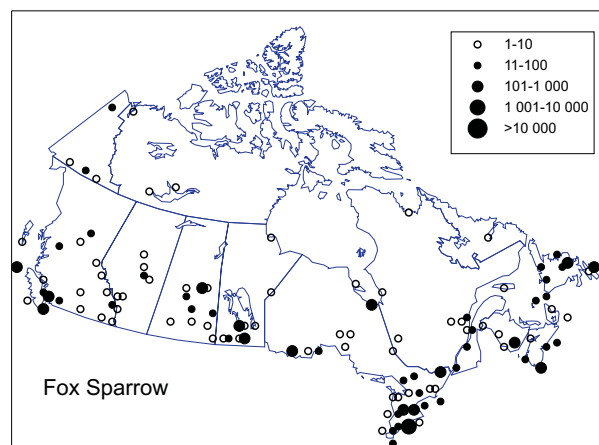
Encounter records: Fox Sparrow

1	0021-71006 OAS	U U 00 01	02/10/29 11/04/30	Fargo, ND near Ethelbert, MB	46°50'N 96°40'W 51°30'N 100°20'W	6 mo. 584 km N26°W
2	8061-33521 CBO	HY U 03 13	24/10/92 02/10/95	Elmhurst, IL Rennie, MB	41°50'N 87°50'W 49°50'N 95°30'W	3 yr. 0 mo. 1070 km N31°W
3	0991-74935 HTB	HY U 04 16	16/10/88 20/06/91	Alvada, OH Churchill, MB	41°00'N 83°20'W 58°40'N 94°10'W	2 yr. 8 mo. 2109 km N18°W
4	0741-82484 LPBO	HY U 07 89	29/10/72 01/11/72	Long Point, ON Jefferson, OH	42°30'N 80°00'W 41°40'N 80°40'W	3 dy. 108 km S11°W
5	0581-91116 WKB	AHY U 00 00	05/04/60 30/10/60	Hillsgrove, PA Joliette, QC	41°20'N 76°40'W 46°00'N 73°20'W	6 mo. 585 km N26°E
6	0281-21355 MBP	AHY U 02 98	13/03/61 04/09/67	Oakton, DC near Quirpon, NF	38°50'N 77°10'W 51°30'N 55°20'W	6 yr. 6 mo. 2204 km N43°E
7	0291-82998 MBP	AHY U 00 98	08/03/64 19/04/64	Oakton, DC near Pushtrough, NF	38°50'N 77°10'W 46°40'N 56°10'W	1 mo. 1917 km N56°E
8	0391-90383 PFJ	AHY U 00 98	28/03/40 ??/04/40	Philadelphia, PA Lardoise, NS	39°50'N 75°00'W 45°30'N 60°40'W	1329 km N57°E
9	0291-82005 MBP	AHY U 08 13	08/03/61 02/04/62	Oakton, VA Brule, NS	38°50'N 77°10'W 45°40'N 63°10'W	1 yr. 1 mo. 1379 km N52°E
10	0581-31845 WJP	U U 00 89	22/11/63 15/04/64	Willington, CT Ellerslie, PE	41°50'N 72°10'W 46°30'N 63°50'W	5 mo. 843 km N49°E
11	0362-32844 MH	AHY U 00 98	29/03/38 31/12/38	Shelburne, NS Marion, SC	43°40'N 65°10'W 34°10'N 79°20'W	9 mo. 1616 km S54°W
12	0591-58957 WT	U U 05 14	17/09/67 14/01/68	St. John's, NF Bolivia, NC	47°30'N 52°40'W 34°00'N 78°00'W	4 mo. 2592 km S64°W
13	0531-51094 HTD	AHY U 00 12	14/02/60 17/04/60	Raleigh, NC Canso, NS	34°40'N 78°30'W 45°10'N 61°00'W	2 mo. 1815 km N49°E

Summary of banding statistics: Fox Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			6499
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	4	58	80
No. encountered from foreign bandings	3	22	41
Maximum period from banding to encounter (mo.)	36	50	50
No. of Canadian-banded birds moving > 0 km	1	4	6
Mean movement > 0 km of Canadian-banded birds	107	1009	1123
Maximum movement from all encounters (km)	2126	2204	2592
% recovered (encountered dead)	75	51	61
% direct recoveries	25	32	33
% encountered during banding operations	25	48	38

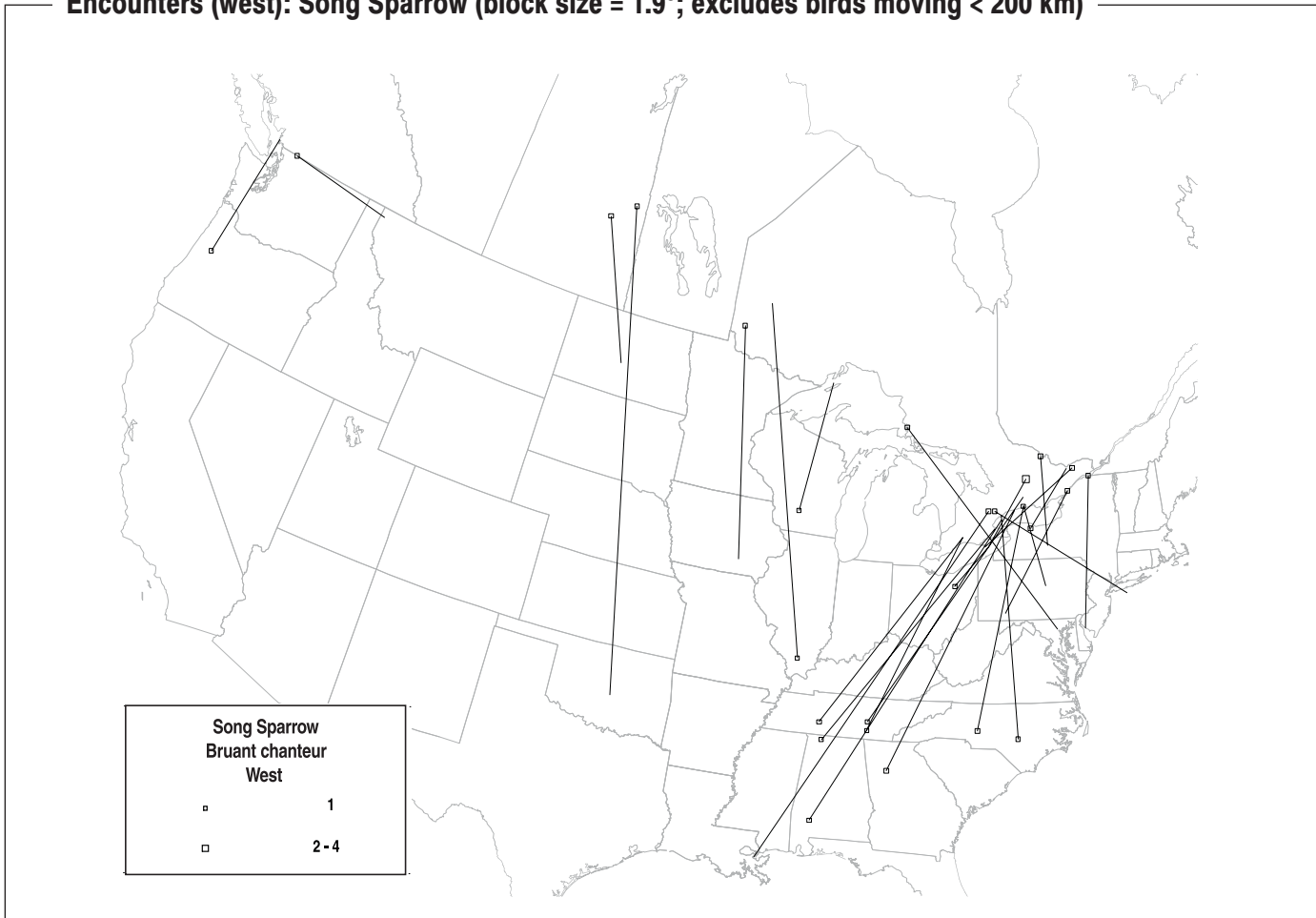
Banding effort: Fox Sparrow



Top banders: LPBO, FC, GFB, LTS, WT

Song Sparrow (*Melospiza melodia*) 581.0

Encounters (west): Song Sparrow (block size = 1.9°; excludes birds moving < 200 km)



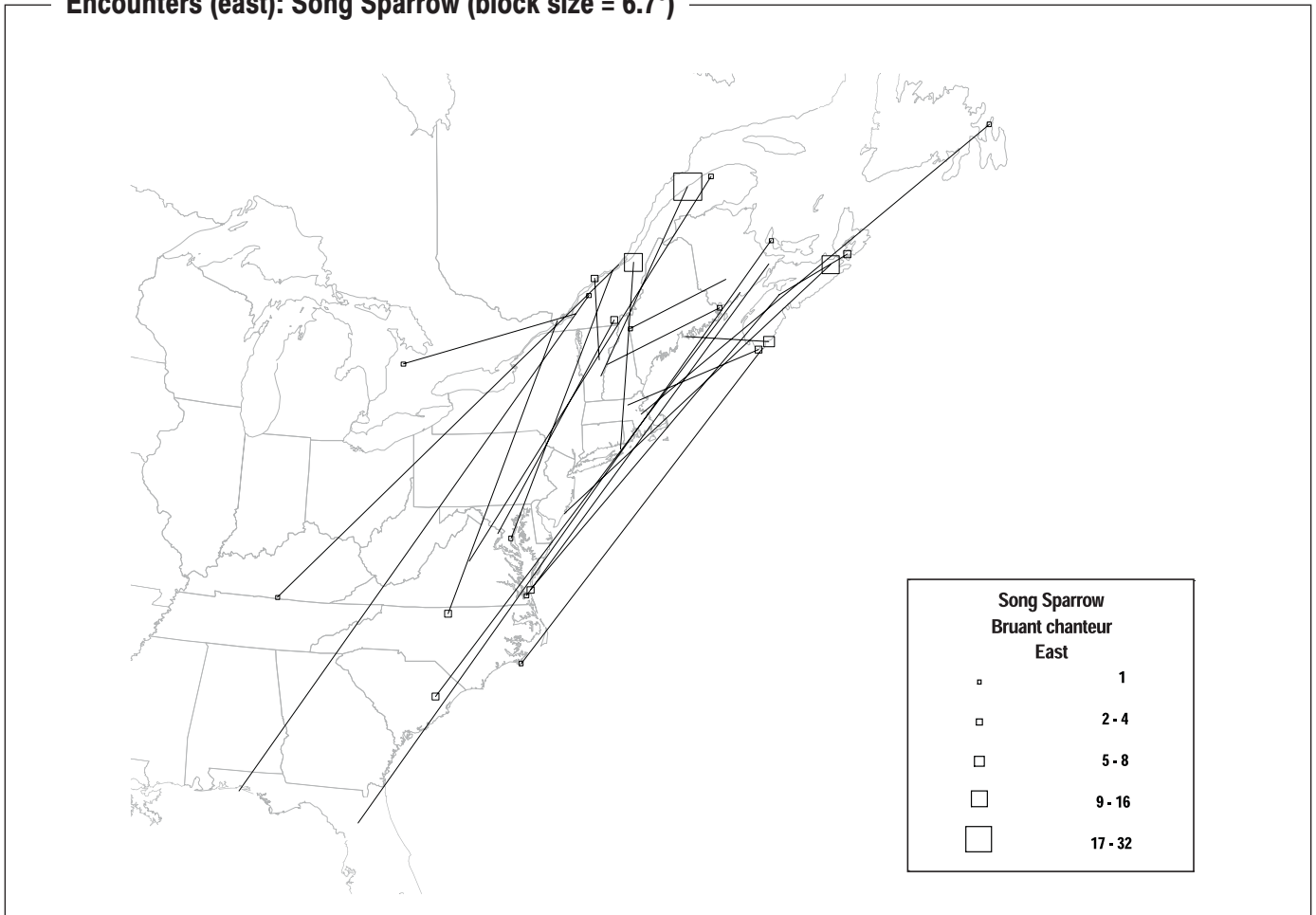
The Song Sparrow breeds across the forest zones of Canada, including the Prairie Provinces, but is absent from eastern Newfoundland and most of Yukon and the Northwest Territories; it also breeds through most of the U.S. except in south-central and southeastern states. It winters on the Pacific coast from southern Alaska south, in southern Ontario and Quebec, in the Maritimes, and south through most of the U.S. to central Mexico.

Over 60% of the encounters were of birds banded in Ontario or Quebec, and 19% were banded in British Columbia. Overall, 70% of reported encounters were returns to the banding site. The high proportion of encounters that show no movement (87%) reflects the species' fidelity to the breeding site (e.g., record 1, which also shows the longest period between banding and encounter).

Only 4 of 181 encounters involving British Columbia showed movement over 100 km, including one linking the province with Washington, one with Oregon (record 2), and one with Montana (probably a case of juvenile dispersal). Of the winter encounters (December–February), 97% were in British Columbia. There were only two distant encounters of Prairie Province birds, one banded in Oklahoma (record 3) and one in North Dakota (neither one in mid-winter). However, there are several encounters of western Ontario birds (see western map) that also show relatively north–south movement.

Of the 70 birds from Ontario and Quebec that were encountered in December–February, 48% were encountered in Canada, 11% in the northern U.S., and 11% in the southern U.S. (e.g., records 4 and 5; see also records 6 and 7, which

Encounters (east): Song Sparrow (block size = 6.7°)



were also in southern states but in the migration season). About 40% of the Maritimes sparrows encountered in mid-winter were encountered in Nova Scotia, with the rest encountered in the northeastern U.S. However, encounters farther south in late fall and early spring (e.g., records 8–10) show that some proportion of Maritimes birds must also winter in the southern U.S.

The encounter location of record 11 is notable for being outside the normal breeding range (Godfrey 1986). Several of the encounters demonstrated significant movement over short periods (records 12 and 13, plus another that showed movement of 124 km over 11 days).

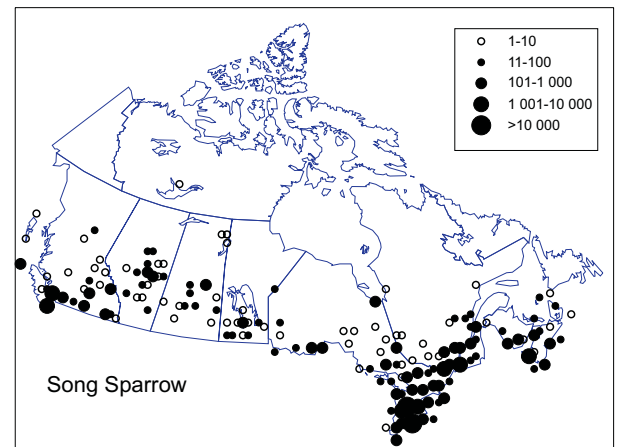
*Song Sparrow***Encounter records: Song Sparrow**

1	0341-22852	U U	20/07/32	Komoka, ON	42°50'N 81°20'W	7 yr. 10 mo.
	JH.	00 99	10/05/40	Komoka, ON	42°50'N 81°20'W	0 km
2	0321-20072	U U	30/09/67	11 km north of Stevenson, BC	49°10'N 123°10'W	3 mo.
	BBW	05 00	ST/12/67	Corvallis, OR	44°30'N 123°10'W	519 km S0°W
3	1041-99709	HY U	13/11/66	Stella, OK	35°10'N 97°10'W	8 mo.
	JSW	05 12	20/07/67	Hudson Bay, SK	52°50'N 102°20'W	2008 km N10°W
4	0221-43327	U U	13/09/59	near Peterborough, ON	44°20'N 78°10'W	
	DCL	05 15	??/02/66	near Walling, TN	35°40'N 85°30'W	1149 km S35°W
5	1161-47580	HY U	23/12/77	Shalimar, FL	30°20'N 86°30'W	6 mo.
	SJS	05 01	24/06/78	Pierreville, QC	46°00'N 72°40'W	2116 km N31°E
6	0051-10490	U U	23/09/34	Komoka, ON	42°50'N 81°20'W	1 mo.
	JHi	00 03	26/10/34	Chattanooga, TN	35°20'N 85°30'W	906 km S25°W
7	0221-19444	AHY U	23/04/60	near Pointe Lévis, QC	46°50'N 71°10'W	3 yr. 7 mo.
	AG	00 01	24/11/63	Mount Hermon, KY	36°40'N 85°40'W	1648 km S52°W
8	0670-33112	U U	25/11/68	southwest of Gainesville, FL	29°30'N 82°20'W	4 yr. 1 mo.
	CGY	05 21	23/12/72	Bloomfield, PE	46°40'N 64°10'W	2475 km N34°E
9	0050-61321	U U	03/10/38	East Memramcook, NB	46°00'N 64°30'W	2 mo.
	RMcM	00 00	29/12/38	East Ocean View, VA	36°50'N 76°10'W	1408 km S48°W
10	0760-09450	U U	16/11/68	18 km north of Chalmette, LA	30°00'N 89°50'W	3 yr. 5 mo.
	JCK	05 00	14/04/72	Orangeville, ON	43°50'N 80°00'W	1768 km N27°E
11	0360-64900	U U	23/07/37	Ponkapog, MA	42°10'N 71°00'W	4 yr. 1 mo.
	RW	00 00	18/08/41	Hants Harbour, NF	48°00'N 53°10'W	1540 km N59°E
12	0231-93801	AHY U	29/03/60	Port Clyde, ME	43°50'N 69°10'W	10 dy.
	JET	00 89	08/04/60	Lower Ohio, NS	43°50'N 65°20'W	308 km N89°E
13	0261-43661	U U	08/04/58	Charlottesville, VA	38°00'N 78°20'W	max. 21 dy.
	ABD	00 47	??/04/58	near Sainte-Anne-des-Monts, QC	49°00'N 66°20'W	1558 km N34°E

Summary of banding statistics: Song Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			62 349
<i>No. encountered per 1000 banded (1955–1995)</i>			3
Total no. encountered (1921–1995)	175	639	1 039
No. encountered from foreign bandings	10	33	79
Maximum period from banding to encounter (mo.)	74	66	94
No. of Canadian-banded birds moving > 0 km	19	26	69
Mean movement > 0 km of Canadian-banded birds	423	465	489
Maximum movement from all encounters (km)	2 116	1 647	2 474
% recovered (encountered dead)	32	18	25
% direct recoveries	23	27	26
% encountered during banding operations	66	80	73

Banding effort: Song Sparrow



Top banders: LPBO, ADB, UBC, IPBO, DRL

Lincoln's Sparrow (*Melospiza lincolni*) 583.0

Encounters: Lincoln's Sparrow



Lincoln's Sparrow breeds across most of Canada south of the treeline, except in the southern Prairie Provinces and in the western U.S. It winters in coastal areas south from southwestern British Columbia and in the southern tier of U.S. states south to Costa Rica.

Most encounter records involving British Columbia showed no movement, but one bird was encountered in Alaska (record 1). Prairie Province encounters were of birds banded on spring migration in Missouri, South Dakota, and North Dakota, including three short-term encounters (see records 2 and 3, the latter moving an average of 102 km

per day over two weeks). A bird banded in Manitoba in late autumn and encountered in Iowa that winter (record 4) does not appear on the map because the exact location was not reported.

A young bird banded on the James Bay coast in Ontario in August was encountered in Michigan the following spring (record 5), almost directly south of the banding site. Quebec and Maritimes birds travel on a slightly more northeast-southwest route (records 6–9).

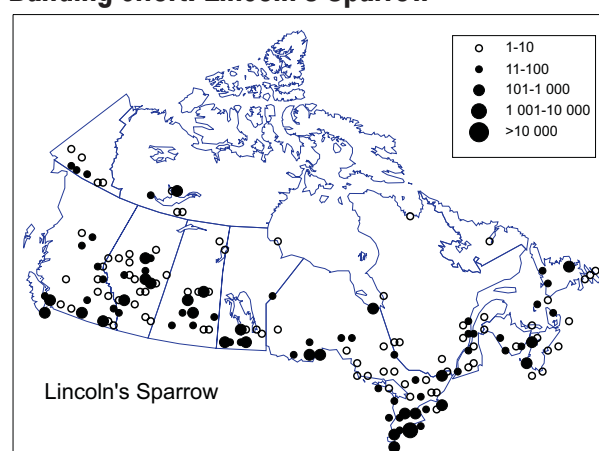
Encounter records: Lincoln's Sparrow

1	0880-75814 RBCM	AHY U 07 89	05/09/78 06/06/79	Haney, BC 18 km north of Wrangell, AK	49°10'N 122°30'W 56°30'N 132°20'W	9 mo. 1049 km N35°W
2	0020-95144 MG	AHY U 00 00	12/05/29 24/05/29	Jamestown, ND north of Foam Lake, SK	46°50'N 98°40'W 51°40'N 103°30'W	12 dy. 643 km N31°W
3	0960-27202 MLM	AHY U 03 00	28/04/83 12/05/83	Independence, MO Langenburg, SK	39°00'N 94°20'W 50°50'N 101°40'W	14 dy. 1437 km N21°W
4	0370-59177 NC	AHY U 00 12	29/08/37 ST/12/37	near Belmont, MB unknown location, IA	49°30'N 99°30'W ?? °??'N ??? °??'W	4 mo.
5	0830-13954 RIGM	HY U 05 01	21/08/79 11/05/80	27 km northeast of Moosonee, ON Clemens, MI	51°20'N 80°20'W 42°30'N 82°50'W	9 mo. 1001 km S12°W
6	0880-80901 GFB	HY U 03 00	04/08/79 18/10/79	Glenwood, Labrador, NF Sherborn, MA	48°50'N 54°50'W 42°10'N 71°20'W	2 mo. 1481 km S66°W
7	0341-47728 BV	U U 00 12	08/05/35 FT/10/35	west of Amityville, NY Bridgeville, QC	40°40'N 73°30'W 48°30'N 64°10'W	5 mo. 1142 km N37°E
8	0730-05076 LPBO	AHY U 05 00	24/05/69 ??/10/69	Long Point, ON Lachenaie, QC	42°30'N 80°10'W 45°40'N 73°30'W	639 km N54°E
9	0780-07189 JRC	HY U 05 14	02/10/69 99/07/71	near Far Rockaway, NY near Port-Cartier, QC	40°30'N 73°40'W 50°00'N 66°50'W	1 yr. 9 mo. 1184 km N24°E
10	2010-97074 LPBO	U U 07 89	15/10/85 28/12/88	Long Point, ON St. Thomas, ON	42°30'N 80°00'W 42°40'N 81°10'W	3 yr. 2 mo. 97 km N79°W

Summary of banding statistics: Lincoln's Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			13 658
No. encountered per 1000 banded (1955–1995)			0.4
Total no. encountered (1921–1995)	6	14	27
No. encountered from foreign bandings	1	4	7
Maximum period from banding to encounter (mo.)	21	34	38
No. of Canadian-banded birds moving > 0 km	2	3	6
Mean movement > 0 km of Canadian-banded birds	1 241	566	713
Maximum movement from all encounters (km)	1 481	1 436	1 481
% recovered (encountered dead)	100	71	77
% direct recoveries	66	57	62
% encountered during banding operations	0	21	18

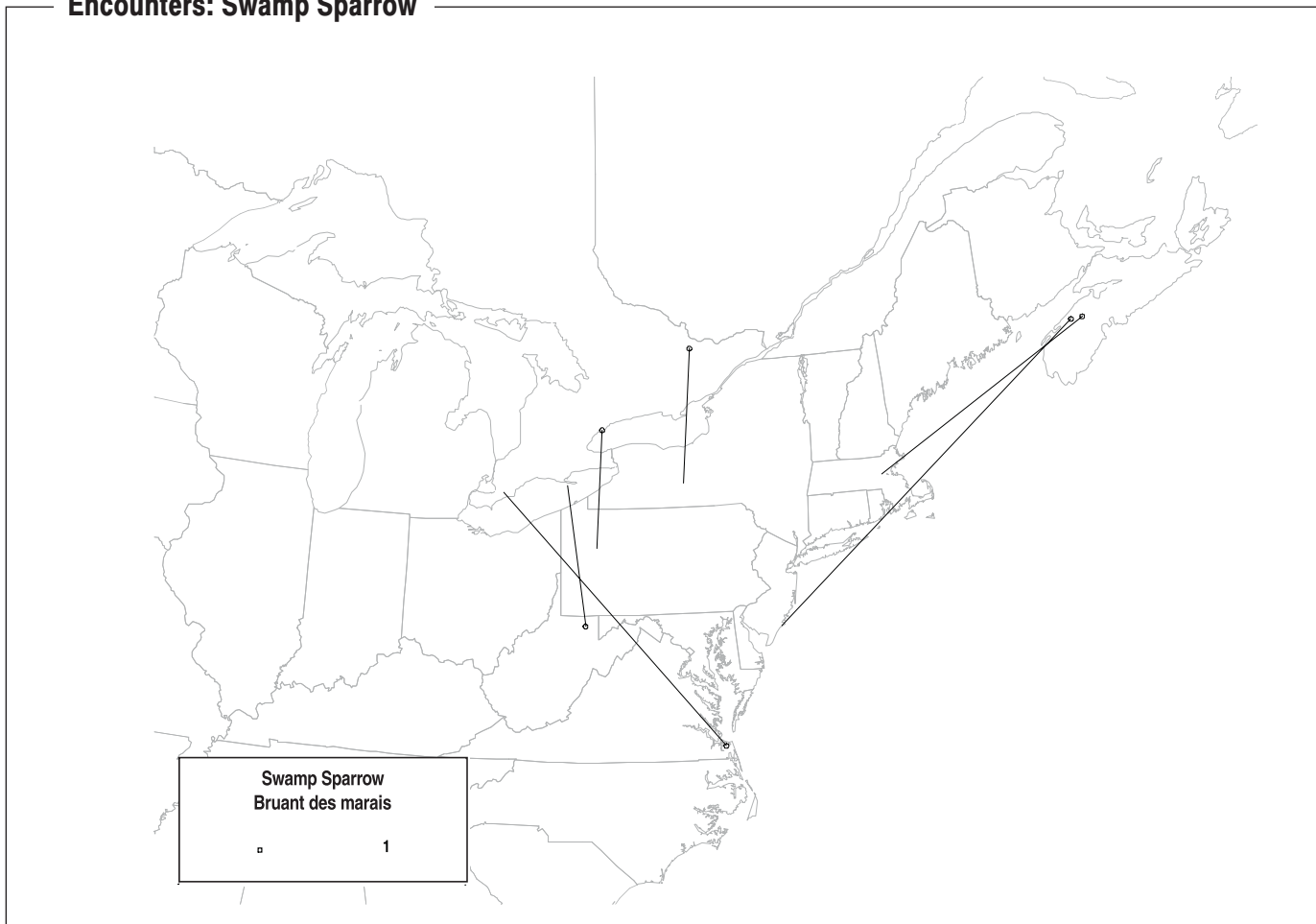
Banding effort: Lincoln's Sparrow



Top banders: LPBO, GFB, RIGM, ETJ, UBC

Swamp Sparrow (*Melospiza georgiana*) 584.0

Encounters: Swamp Sparrow



The Swamp Sparrow breeds in the southern Northwest Territories and across most provinces, but it is absent from most of British Columbia, southern Alberta, southern Saskatchewan, and northern Quebec. It also breeds in the northeastern U.S. It winters from the extreme southern parts of eastern Canada south to the Gulf Coast, as well as in Texas, Arizona, and northeastern Mexico.

All six encounters showing movement are listed below, including the one with longest period between banding and encounter (record 1). One bird (record 2) was encountered

two days after banding, having travelled an average of 140 km per day. Ontario birds tend to move directly north-south (records 1–3; record 4 could possibly have been a western breeder that travelled southeast to winter in Virginia). Maritimes birds followed the Atlantic coastline (records 5 and 6).

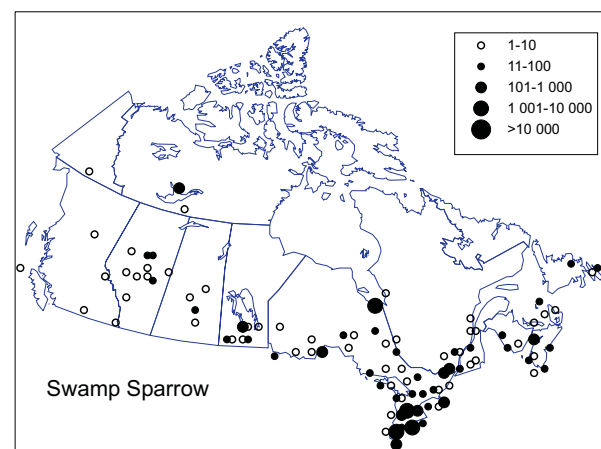
Encounter records: Swamp Sparrow

1	2011-94832 LPBO	HY U 03 00	09/10/89 20/10/91	Long Point, ON Morgantown, WV	42°30'N 80°20'W 39°30'N 79°50'W	2 yr. 0 mo. 337 km S7°E
2	0920-36149 WLF	AHY U 05 00	02/05/81 04/05/81	Knox, PA Toronto, ON	41°10'N 79°30'W 43°40'N 79°20'W	2 dy. 279 km N3°E
3	0020-54831 VB	AHY U 00 00	07/10/26 02/05/28	Bluff Point, NY near Renfrew, ON	42°00'N 77°00'W 45°20'N 76°40'W	1 yr. 7 mo. 317 km N5°E
4	0630-88112 MJW	AHY U 05 00	25/05/65 02/02/66	Balmoral Marsh, ON East Ocean View, VA	42°20'N 82°10'W 36°50'N 76°10'W	10 mo. 799 km S42°E
5	0580-03754 JBa	HY U 00 14	13/10/61 01/10/62	Acton, MA near Bridgewater, NS	42°20'N 71°20'W 44°50'N 64°50'W	1 yr. 0 mo. 593 km N60°E
6	0580-47533 WES	U U 00 12	14/11/61 99/FA/63	Absecon, NJ Bridgetown, NS	39°20'N 74°30'W 44°50'N 65°10'W	984 km N48°E

Summary of banding statistics: Swamp Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			13 250
<i>No. encountered per 1000 banded (1955–1995)</i>			0.3
Total no. encountered (1921–1995)	4	6	12
No. encountered from foreign bandings	1	2	4
Maximum period from banding to encounter (mo.)	24	19	24
No. of Canadian-banded birds moving > 0 km	2	1	3
Mean movement > 0 km of Canadian-banded birds	179	799	386
Maximum movement from all encounters (km)	593	799	983
% recovered (encountered dead)	75	66	75
% direct recoveries	25	50	41
% encountered during banding operations	25	33	25

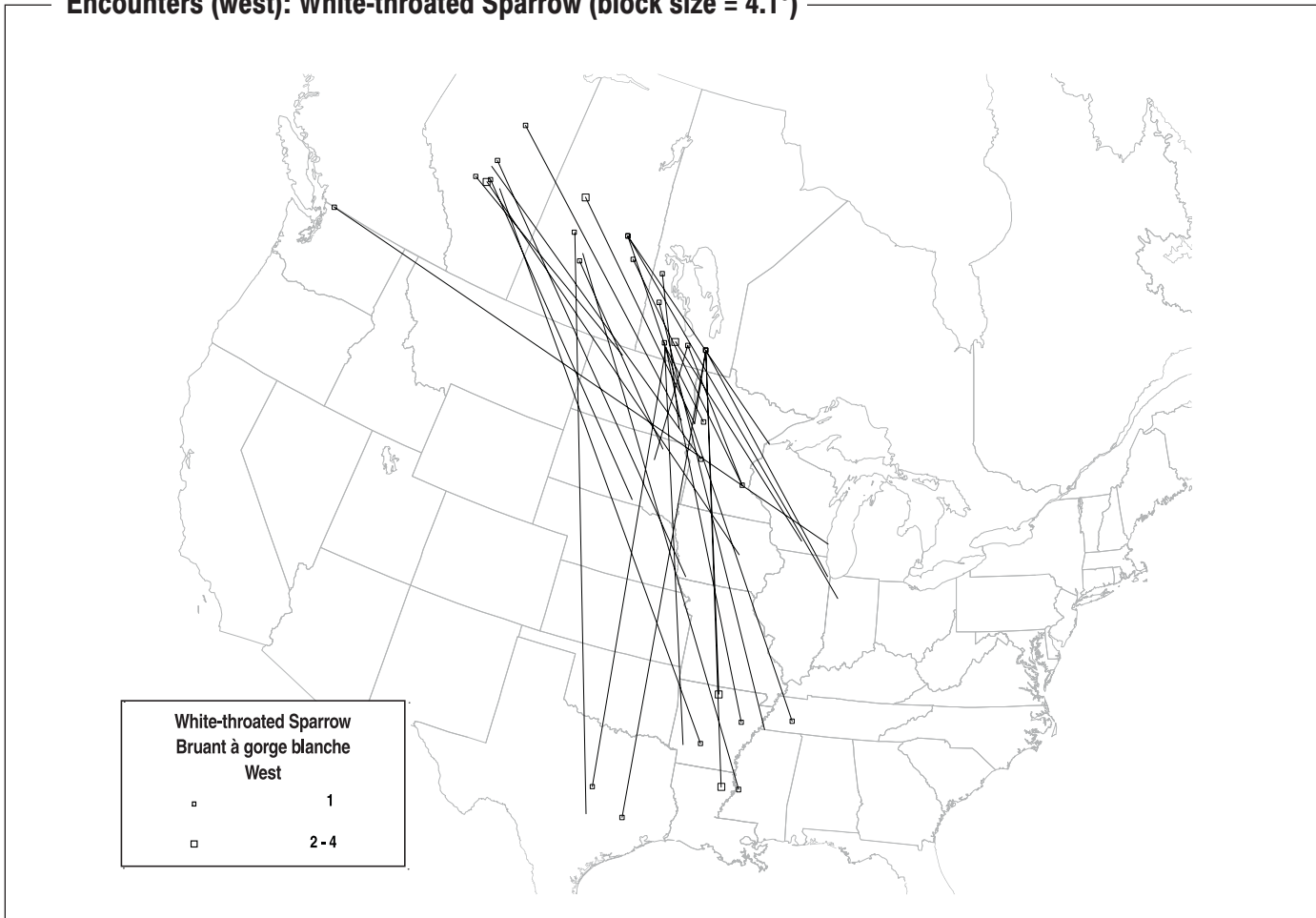
Banding effort: Swamp Sparrow



Top banders: LPBO, MJW, ADB, RIGM, CCR

White-throated Sparrow (*Zonotrichia albicollis*) 558.0

Encounters (west): White-throated Sparrow (block size = 4.1°)



The White-throated Sparrow breeds in Canadian forest, north almost to the treeline and west to southeastern Yukon and northeastern British Columbia; it also breeds in the northeastern U.S. It winters mainly in the eastern U.S., its range extending from southern Ontario to Nova Scotia and south to Florida. It also winters in the southwestern U.S. from New Mexico to Texas and very sparsely from coastal California to Oregon.

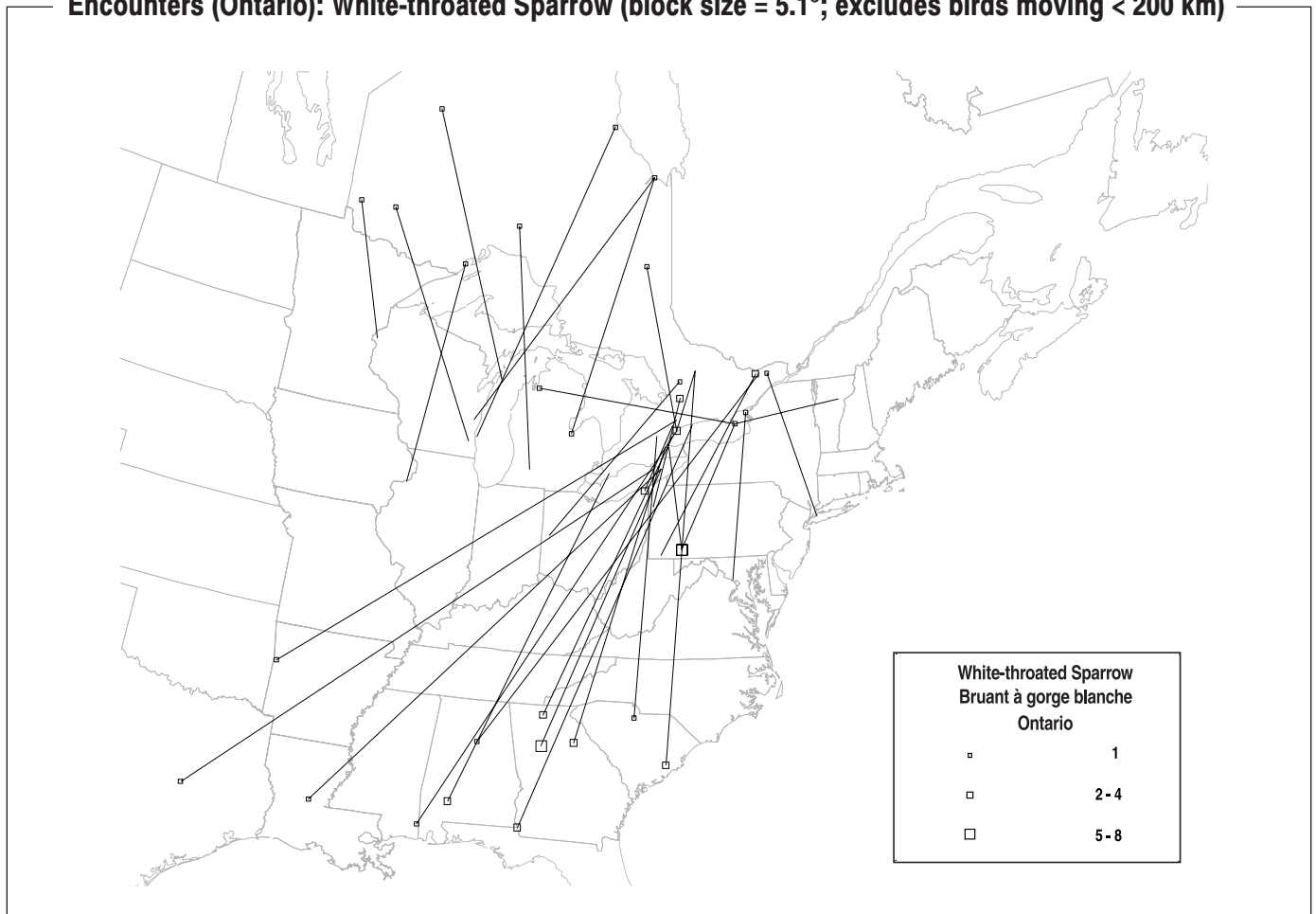
The maps exclude many individual records, due to the record-thinning process (see block size with encounter maps and explanation in section 4.2), but they do depict normal patterns of movement.

Although most birds that moved were encountered during migration, 45 were encountered in winter (December–February). These encounters show Prairie

Province birds moving on a northwest–southeast axis and overwintering primarily in Arkansas and nearby states (e.g., records 1 and 2; see also 3 and 4 for examples of birds moving in the same direction).

Eight birds were encountered in northern Ontario (north of 48°), all of which appeared to move almost directly north–south (see map). These were likely Ontario breeders, whereas birds banded in southern Ontario that moved strongly northeast–southwest were probably Quebec breeders. The latter tended to concentrate in winter in the vicinity of Alabama (see record 5 in Texas), but some stayed in Ontario and in states in between. Quebec birds migrate through a band of northern states parallel to the states traversed by Ontario birds (e.g., record 6), wintering as far south as Georgia but with a preponderance in the Carolinas.

Encounters (Ontario): White-throated Sparrow (block size = 5.1°; excludes birds moving < 200 km)

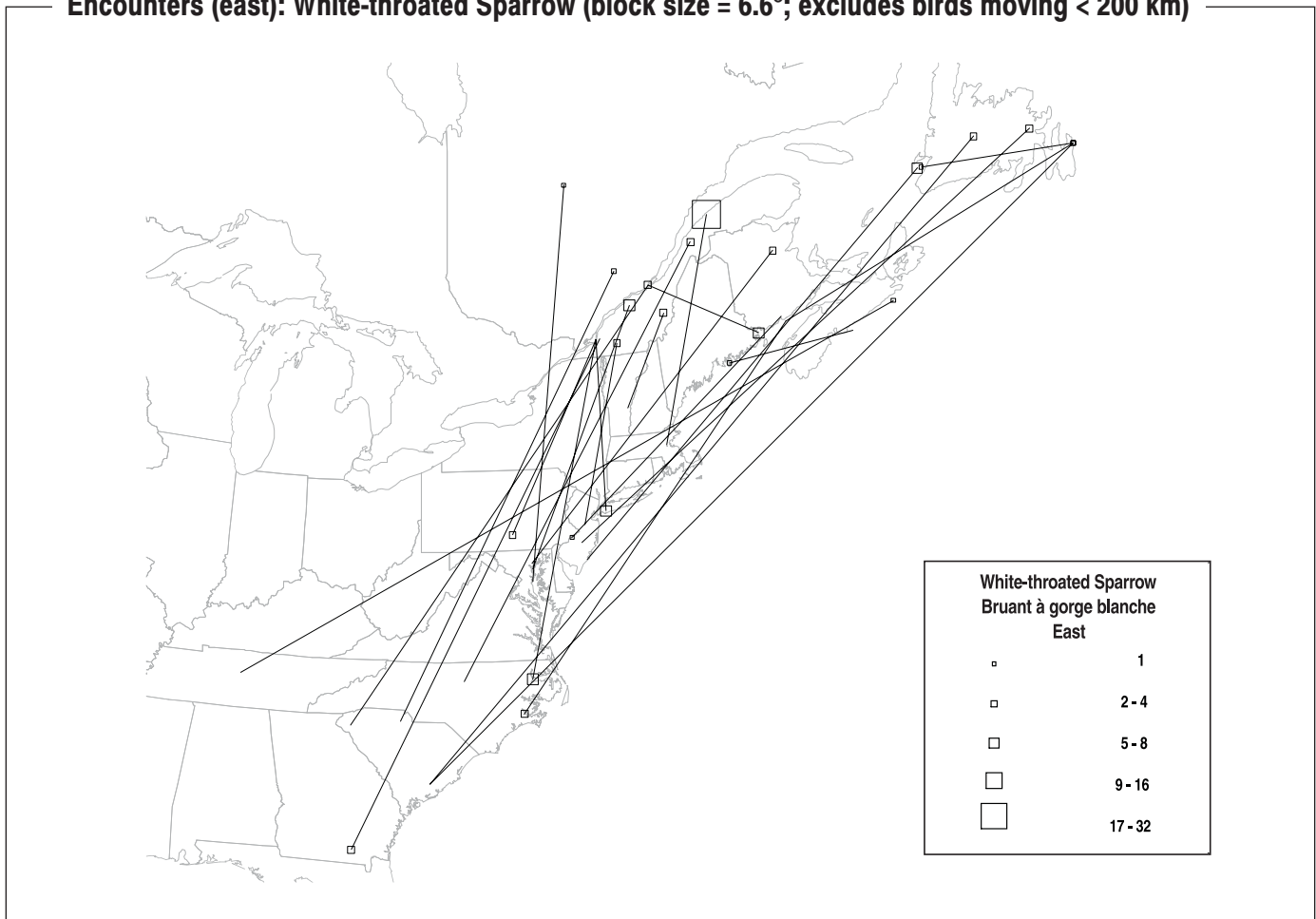


White-throated Sparrows from the Maritimes also reach the Carolinas (records 7 and 8) and Tennessee (record 9), but more commonly they winter in the northeastern states and occasionally in the Maritimes.

Fourteen sparrows were encountered within 30 days of banding that had moved more than 100 km; the bird in record 10 travelled a remarkable 673 km in one day, and

another moved an average of 153 km per day over six days. Record 11 is an atypical record (assuming the details are correct). The bird was well south of the breeding range in British Columbia when encountered in June.

Encounters (east): White-throated Sparrow (block size = 6.6°; excludes birds moving < 200 km)



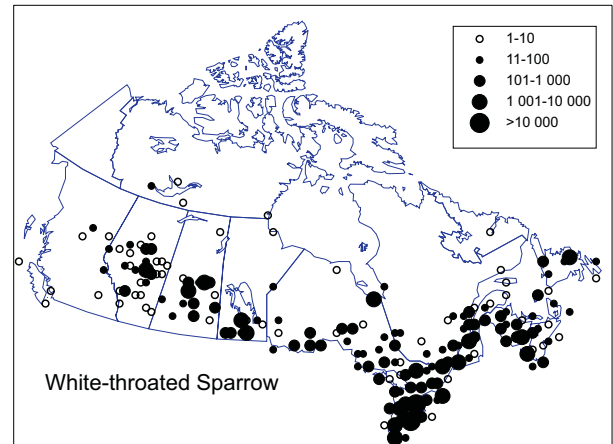
Encounter records: White-throated Sparrow

1	1041-78031 CSH	HY U 05 01	09/09/68 ??/12/69	Saskatoon, SK Chotard Lake, MS	52°00'N 106°30'W 32°20'N 90°50'W	2530 km S36°E
2	0391-06651 ABG	AHY U 00 00	16/09/38 LT/01/40	Winnipeg, MB Lindsay, LA	49°50'N 97°00'W 30°40'N 91°10'W	1 yr. 4 mo. 2189 km S15°E
3	1291-89055 GWL	AHY M 05 12	01/04/81 13/05/81	Austin, TX Speers, SK	30°10'N 97°40'W 52°40'N 107°30'W	1 mo. 2630 km N15°W
4	1021-50143 GHR	HY U 03 13	08/10/64 16/05/66	Garwin, IA Breton, AB	42°00'N 92°40'W 53°00'N 114°20'W	1 yr. 7 mo. 2025 km N45°W
5	1451-17576 LPBO	AHY M 05 00	13/10/90 21/04/91	Long Point, ON Rosebud, TX	42°30'N 80°20'W 31°00'N 96°50'W	6 mo. 1944 km S54°W
6	0201-81356 ES	AHY U 00 56	21/01/56 99/HS/60	Birdsville, MD near Chibougamau Provincial Park, QC	38°50'N 76°30'W 49°50'N 74°20'W	1236 km N7°E
7	0051-07151 WPW	U U 00 04	19/01/34 FT/08/34	Summerville, SC near Quidi Vidi Lake, NF	33°00'N 80°10'W 47°30'N 52°40'W	7 mo. 2816 km N47°E
8	0411-33434 WOA	HY U 00 00	02/08/43 15/12/43	Saint John, NB Beulaville, NC	45°10'N 65°50'W 34°50'N 77°40'W	4 mo. 1527 km S45°W
9	1041-06076 KAG	AHY U 05 00	19/04/65 58/07/65	Nashville, TN Coddles Island, NS	36°00'N 86°40'W 45°00'N 61°30'W	3 mo. 2341 km N57°E
10	1101-58291 MJW	AHY U 05 00	01/05/77 02/05/77	Mitchell Bay, ON 18 km north of Massena, NY	42°20'N 82°20'W 45°00'N 74°50'W	1 dy. 673 km N61°E
11	0390-50742 ECB	AHY U 00 01	07/10/39 08/06/41	Milwaukee, WI Abbotsford, BC	43°00'N 87°50'W 49°00'N 122°10'W	1 yr. 8 mo. 2712 km N64°W
12	0581-24025 WOA	HY U 05 01	02/08/61 29/11/69	east of Saint John, NB near Quidi Vidi Lake, NF	45°10'N 65°50'W 47°30'N 52°40'W	8 yr. 3 mo. 1043 km N71°E

**Summary of banding statistics:
White-throated Sparrow**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			112 552
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	110	228	451
No. encountered from foreign bandings	18	46	103
Maximum period from banding to encounter (mo.)	99	86	99
No. of Canadian-banded birds moving > 0 km	33	71	126
Mean movement > 0 km of Canadian-banded birds	797	809	794
Maximum movement from all encounters (km)	3 553	2 712	2 815
% recovered (encountered dead)	55	46	53
% direct recoveries	34	30	33
% encountered during banding operations	43	50	44

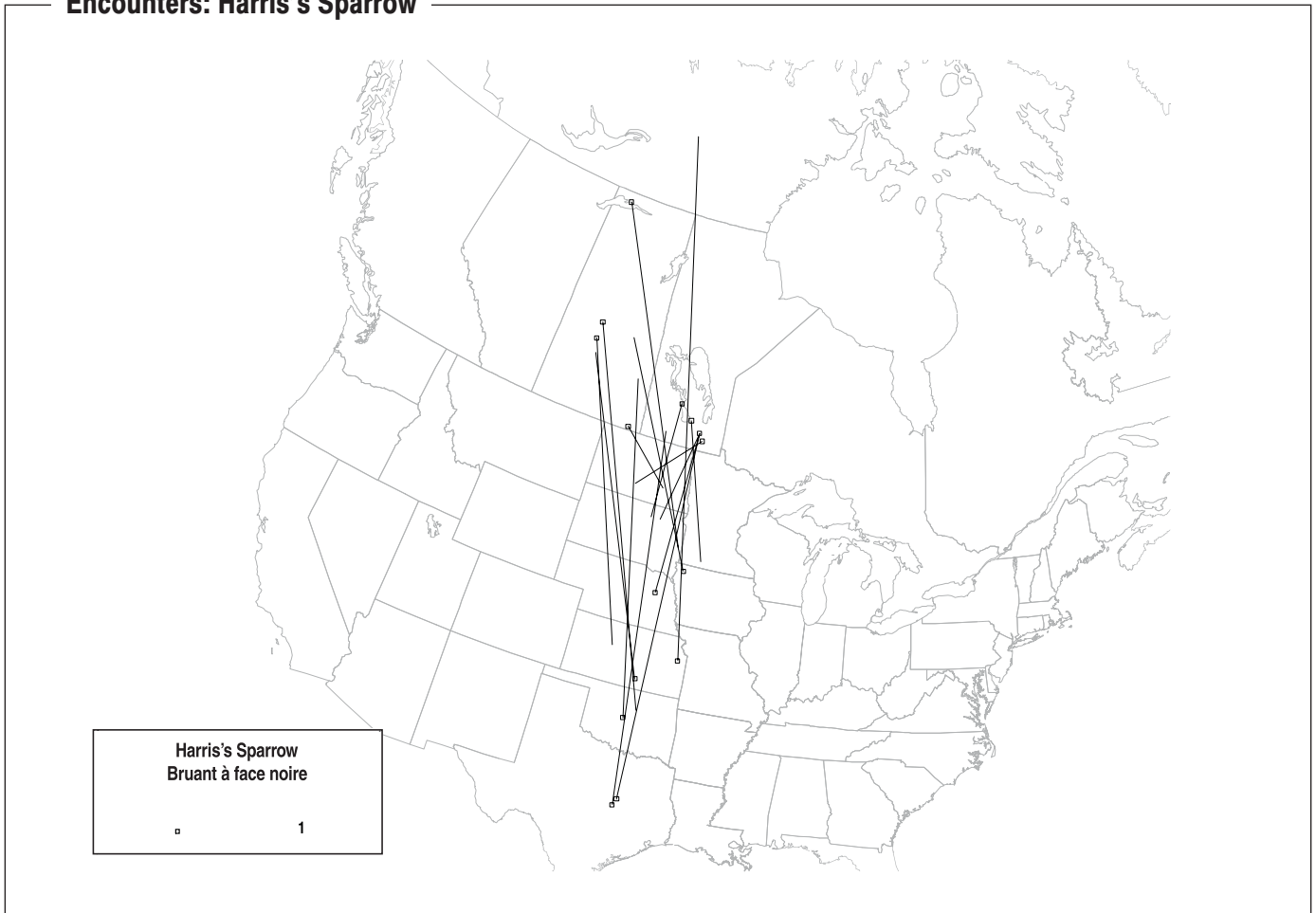
Banding effort: White-throated Sparrow



Top banders: LPBO, TBO, PEPO, MB, MJW

Harris's Sparrow (*Zonotrichia querula*) 553.0

Encounters: Harris's Sparrow



Harris's Sparrow is Canada's only endemic songbird. It breeds in the Northwest Territories, western Nunavut, northeastern Saskatchewan, and northern Manitoba. The species winters mainly in a narrow band of the midwestern U.S. from South Dakota to Texas, with smaller numbers scattered from southern British Columbia through the western U.S.

The nine encounters showing movement over 1000 km are listed below; six others moved between 100 km and 1000 km (see map). All encounters were in the migration or

wintering seasons except for record 1 (banded as a local). Record 2 (in northern Saskatchewan in late May) shows an encounter just short of the documented breeding range (Norment and Shackleton 1993). The encounter map shows that most birds move in a narrow north-south corridor between breeding and wintering areas.

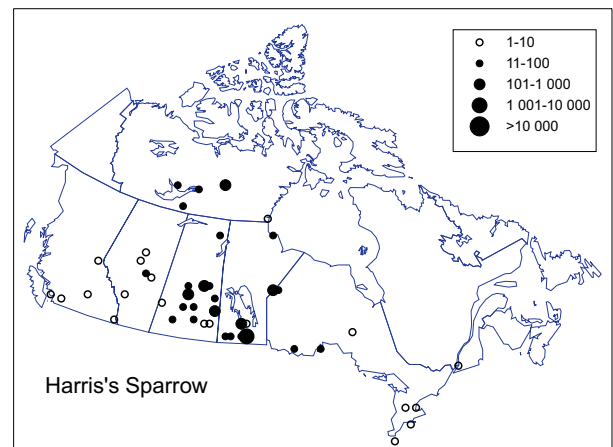
Encounter records: Harris's Sparrow

1	8011-36684 CJN	L U 05 56	07/07/91 ??/12/93	Thelon Game Sanctuary, NT Lawrence, KS	63°40'N 104°20'W 38°50'N 95°10'W	2831 km S17°E
2	0691-39262 NJH	ASY U 05 00	12/05/73 20/05/74	Brookings, SD near Fond-du-Lac, SK	40°10'N 96°40'W 59°30'N 108°20'W	1 yr. 0 mo. 1880 km N21°W
3	0341-00665 PK	U U 00 00	15/05/34 99/12/34	near St. Vital, MB Bellmead, TX	49°50'N 97°00'W 31°30'N 97°00'W	7 mo. 2041 km S0°W
4	0431-43474 NC	AHY U 00 98	01/10/47 02/02/48	Treesbank, MB Eddy, TX	49°30'N 99°30'W 31°10'N 97°10'W	4 mo. 2050 km S6°E
5	0501-32143 AMB	HY U 00 21	21/11/52 ??/05/54	Stillwater, OK Debden, SK	36°00'N 97°00'W 53°30'N 106°50'W	2093 km N18°W
6	0521-61992 MGS	HY U 00 00	19/09/56 05/10/56	White Fox, SK Hull, IA	53°20'N 104°00'W 43°10'N 96°00'W	21 dy. 1276 km S31°E
7	0521-68035 WA	HY U 00 47	30/09/55 01/03/57	near Good Spirit Lake, SK Lake Overholser, OK	51°30'N 102°40'W 35°30'N 97°40'W	1 yr. 6 mo. 1825 km S15°E
8	0841-33401 CAE	AHY U 05 00	27/04/85 06/05/86	Yocemento, KS 18 km south of Blaine Lake, SK	38°50'N 99°20'W 52°40'N 106°50'W	1 yr. 1 mo. 1644 km N18°W
9	0521-83420 CSH	HY U 05 45	26/09/68 99/12/72	near Saskatoon, SK Clearwater, KS	52°00'N 106°30'W 37°30'N 97°30'W	4 yr. 3 mo. 1761 km S27°E

Summary of banding statistics: Harris's Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			3057
No. encountered per 1000 banded (1955–1995)			2
Total no. encountered (1921–1995)	9	5	19
No. encountered from foreign bandings	2	4	8
Maximum period from banding to encounter (mo.)	51	13	51
No. of Canadian-banded birds moving > 0 km	5	1	8
Mean movement > 0 km of Canadian-banded birds	1716	2050	1596
Maximum movement from all encounters (km)	2830	2050	2830
% recovered (encountered dead)	88	80	89
% direct recoveries	44	60	57
% encountered during banding operations	11	20	10

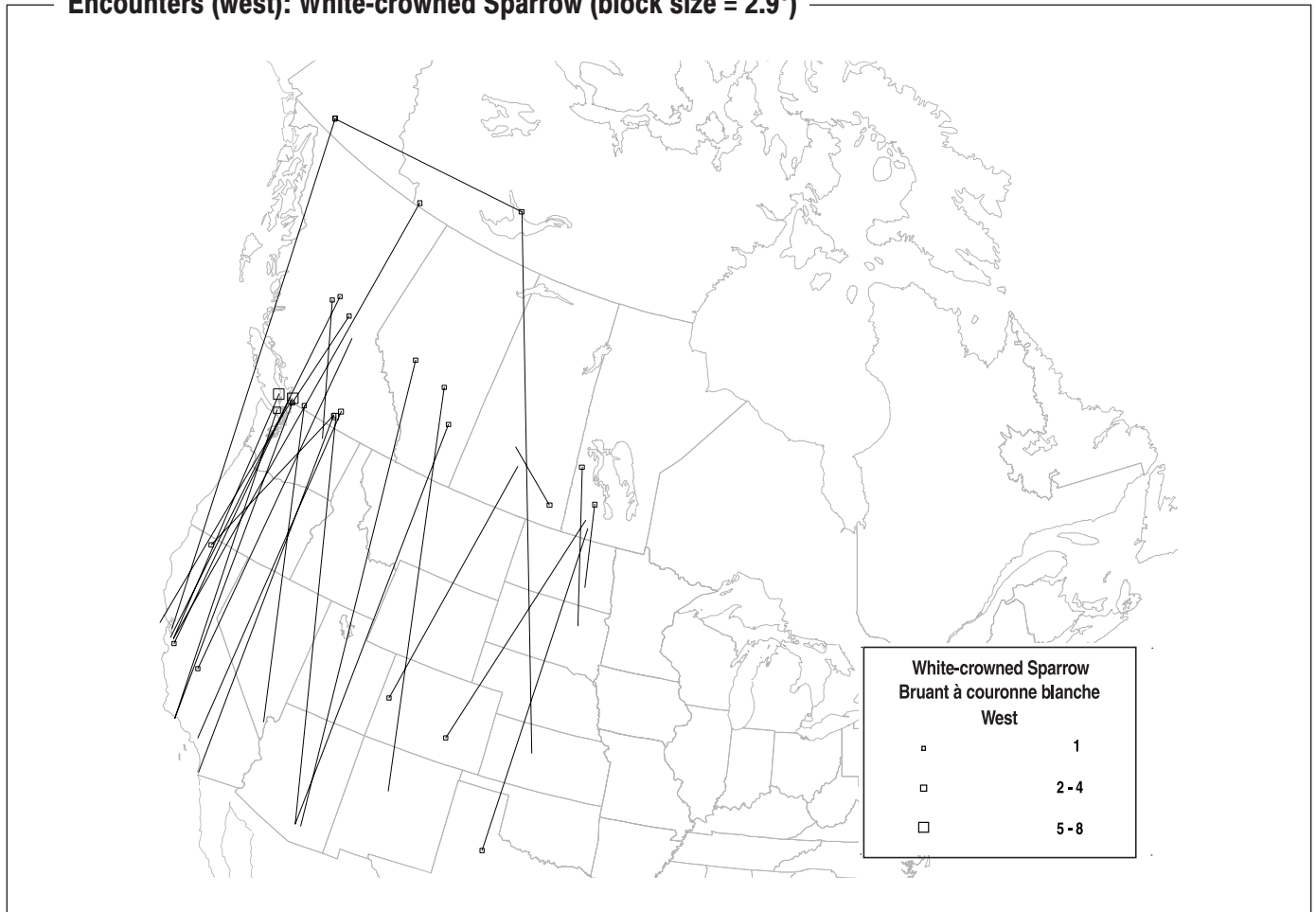
Banding effort: Harris's Sparrow



Top banders: LTS, HVH, CSH, AEW, CJN

White-crowned Sparrow (*Zonotrichia leucophrys*) 554.0

Encounters (west): White-crowned Sparrow (block size = 2.9°)



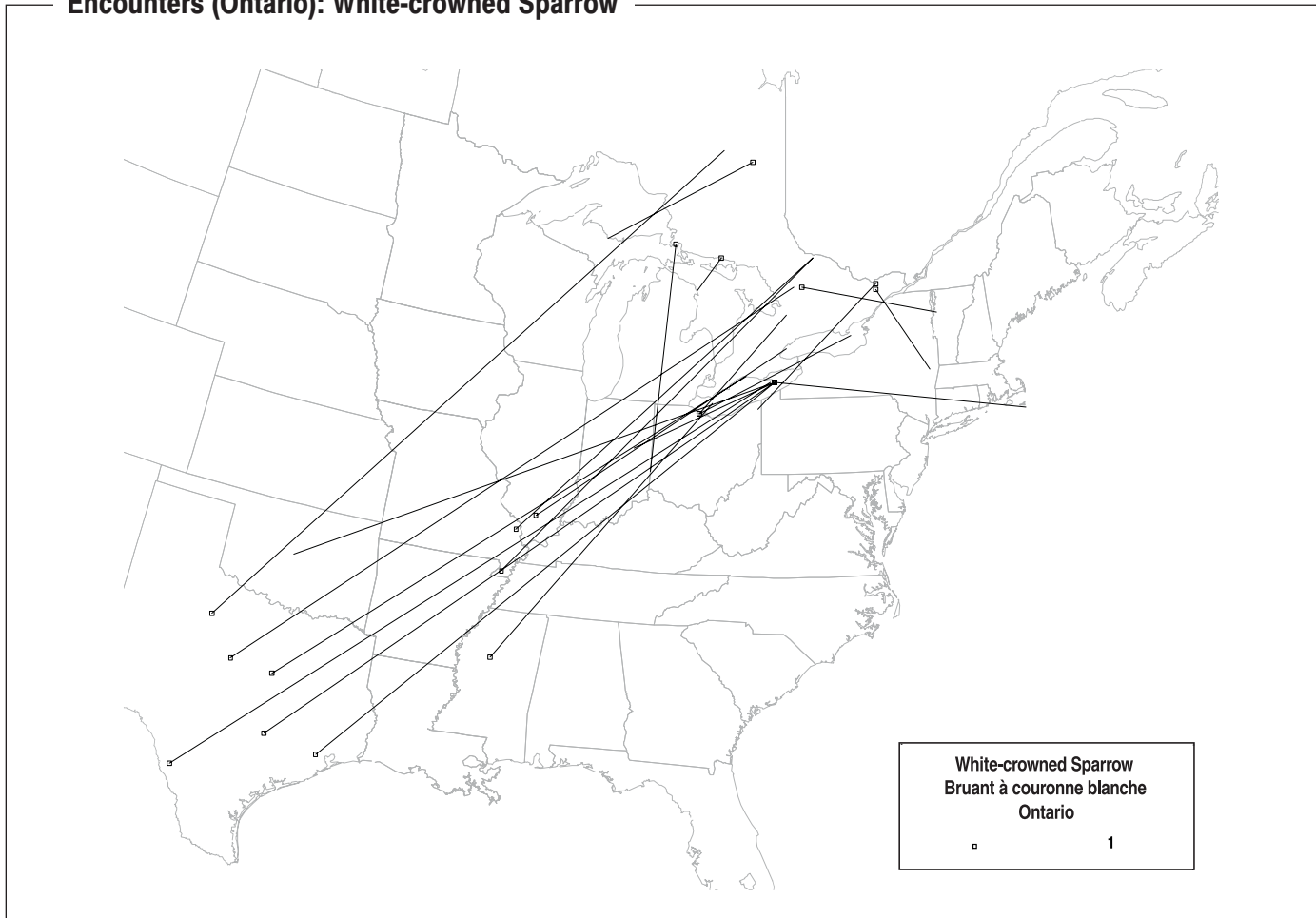
The White-crowned Sparrow breeds in northern Canada and Alaska, as well as through British Columbia and the western U.S. Five subspecies have been described, four of them migratory (Chilton et al. 1995). Although often recorded separately by banders, several subspecies are hard to distinguish and some encounters suggest errors. The subspecies are treated together in this account.

Two subspecies breed only in small parts of Canada. The Puget Sound Sparrow (*Z. l. pugetensis*), which breeds on southern Vancouver Island and the adjacent mainland, is partly migratory, with migrants heading due south to coastal California. The Mountain White-crowned Sparrow (*Z. l. oriantha*), which breeds in Canada only in southwestern Alberta, winters in the southwestern U.S. and northern Mexico (Chilton et al. 1995). The much more widespread Gambel's Sparrow (*Z. l. gambelii*) breeds in eastern British Columbia, Alaska, Yukon, and from the Northwest Territories to northern Ontario (Fort Severn). This subspecies

also migrates due south, passing through British Columbia and the Prairie Provinces to winter in the southwestern U.S. from California to western Texas, and producing the longest-distance western encounters (records 1–7, with record 1 showing the longest period between banding and encounter).

The nominate race (*Z. l. leucophrys*) breeds in the subarctic from northern Ontario to northern Newfoundland, so it has been banded primarily during migration or in winter (see banding effort map), but see record 8. Birds banded or encountered in Ontario and Quebec overlap broadly in winter (December–February) in an area extending from Missouri east to Kentucky (e.g., record 8) and south to the Gulf Coast from Texas (records 9 and 10) to Mississippi. Ontario birds are shifted slightly west of Quebec birds, and if encounters in both provinces were not so concentrated along the St. Lawrence–lower Great Lakes corridor, separation of wintering areas might be more obvious.

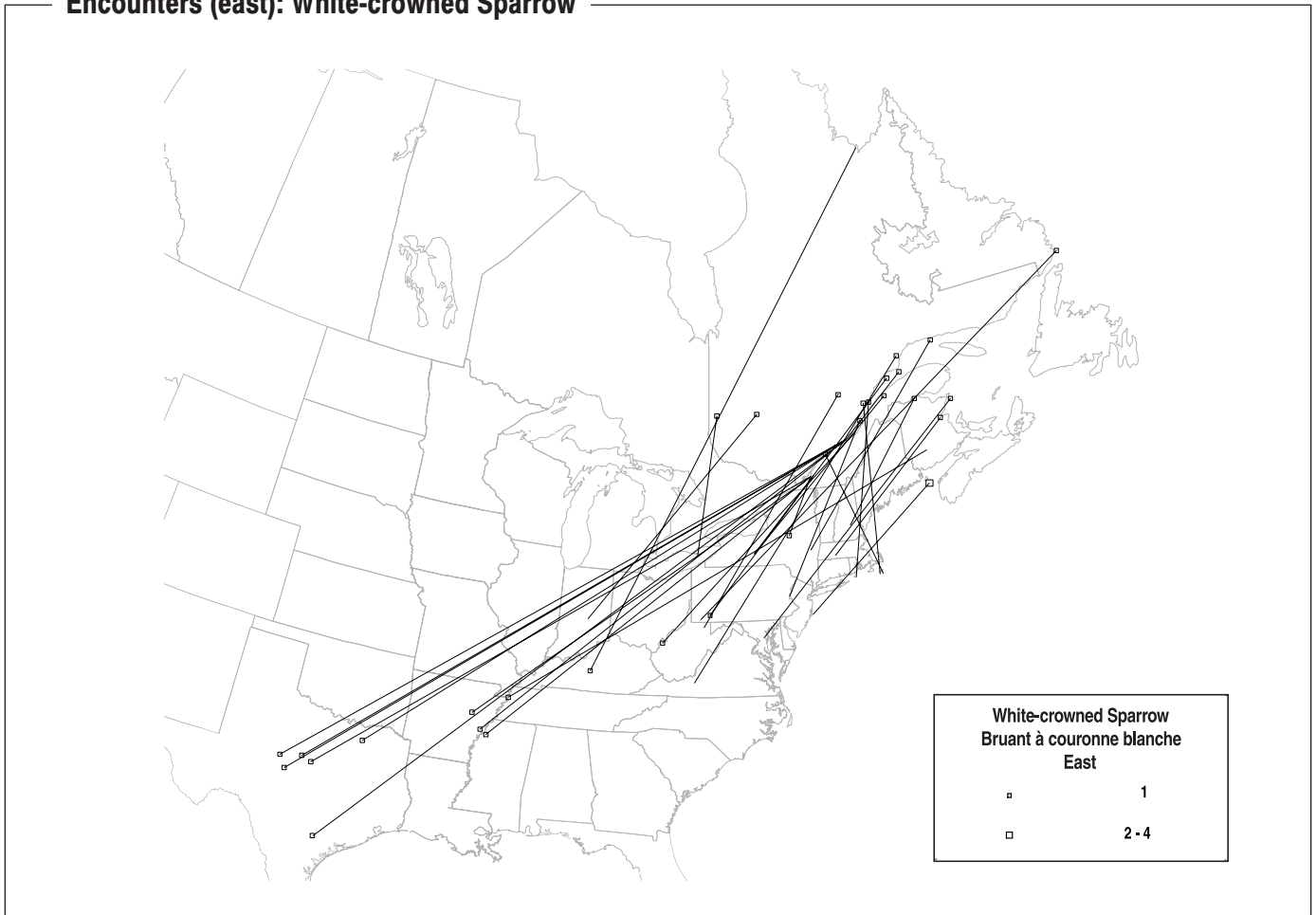
Encounters (Ontario): White-crowned Sparrow



White-crowned Sparrows are conspicuously rare in the southeastern U.S. in winter. Most birds encountered on the Atlantic coast in fall are probably off-course, because they often reorient in subsequent years (e.g., records 11 and 12). The bird in record 12 was one of two banded on Nantucket Island within a day of each other; the second was also encountered the next spring, in Quebec.

One bird (record 13) moved an average of 175 km per day over seven days — close to the average of 108–118 km per day suggested for White-crowns migrating to Alaska (DeWolfe et al. 1973), but far short of the record 500 km recorded for one night’s journey (Cortopassi and Mewaldt 1965).

Encounters (east): White-crowned Sparrow



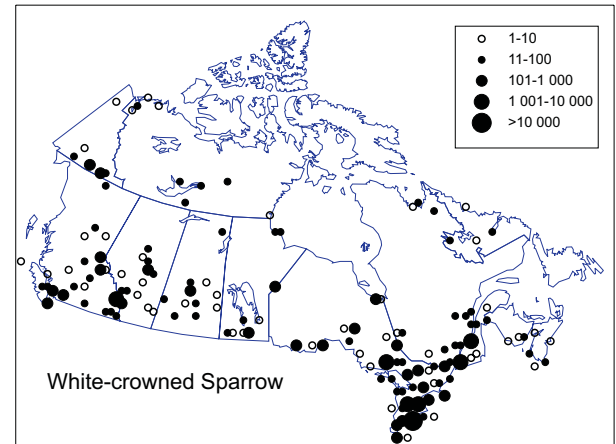
*White-crowned Sparrow***Encounter records: White-crowned Sparrow**

1	0001-35125 B&RL	U U 08 04	16/09/24 30/01/33	Davidson, SK Grand Junction, CO	51°10'N 105°50'W 39°00'N 108°30'W	8 yr. 4 mo. 1370 km S10°W
2	1071-94212 LRM	HY U 08 28	26/10/71 29/04/72	near San José, CA Fort Liard, NT	37°20'N 121°50'W 60°10'N 123°20'W	6 mo. 2544 km N2°W
3	0281-36199 FON	AHY U 00 45	19/02/61 01/05/61	Cortade, AZ near Penticton, BC	32°10'N 111°00'W 49°30'N 119°30'W	3 mo. 2055 km N18°W
4	0391-41015 NC	U U 00 01	21/09/39 19/04/42	Stockton, MB Dickens, TX	49°30'N 99°30'W 33°40'N 100°40'W	2 yr. 7 mo. 1765 km S4°W
5	0301-96580 HLC	AHY U 00 14	26/01/63 ??/05/64	near San Leandro, CA near Whitehorse, YT	37°40'N 122°10'W 60°40'N 135°00'W	2714 km N15°W
6	1131-31392 CAE	SY U 02 03	16/03/73 25/06/75	south of Hags, KS Yellowknife, NT	38°40'N 99°20'W 62°20'N 114°20'W	2 yr. 3 mo. 2816 km N32°W
7	1351-11597 CWS-YT	AHY U 05 00	05/06/89 ??/04/91	Yellowknife, NT Whitehorse, YT	62°20'N 114°20'W 60°40'N 135°00'W	1108 km S90°W
8	0221-14706 LL	U U 00 00	29/08/56 04/01/58	near Kuujuaq, QC Hodgenville, KY	58°20'N 67°50'W 37°30'N 85°40'W	1 yr. 5 mo. 2655 km S37°W
9	1381-01858 RVW	AHY U 00 01	17/05/39 ??/12/39	Kapuskasing, ON Judd, TX	49°20'N 82°20'W 33°10'N 99°50'W	2309 km S45°W
10	0431-44104 MB	HY U 00 00	04/10/47 13/03/48	Charlesbourg, QC near Runge, TX	46°50'N 71°10'W 28°50'N 97°40'W	5 mo. 3046 km S58°W
11	1061-26277 SSD	HY U 05 00	28/10/67 99/05/75	Block Island, RI near La Richardière, QC	41°10'N 71°30'W 48°10'N 69°30'W	7 yr. 7 mo. 795 km N11°E
12	0251-78960 JVD	U U 00 89	13/10/58 17/05/59	Nantucket Island, MA Long Point, ON	41°10'N 70°00'W 42°30'N 80°00'W	7 mo. 842 km N77°W
13	1131-82992 GAH	AHY U 03 00	06/05/75 13/05/75	Morgantown, WV Bégin, QC	39°30'N 79°50'W 48°40'N 71°20'W	7 dy. 1224 km N31°E

**Summary of banding statistics:
White-crowned Sparrow**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			34 505
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	53	102	175
No. encountered from foreign bandings	22	25	55
Maximum period from banding to encounter (mo.)	91	79	100
No. of Canadian-banded birds moving > 0 km	5	30	40
Mean movement > 0 km of Canadian-banded birds	1 486	1 453	1 505
Maximum movement from all encounters (km)	3 046	2 980	3 046
% recovered (encountered dead)	69	56	62
% direct recoveries	49	34	39
% encountered during banding operations	24	41	34

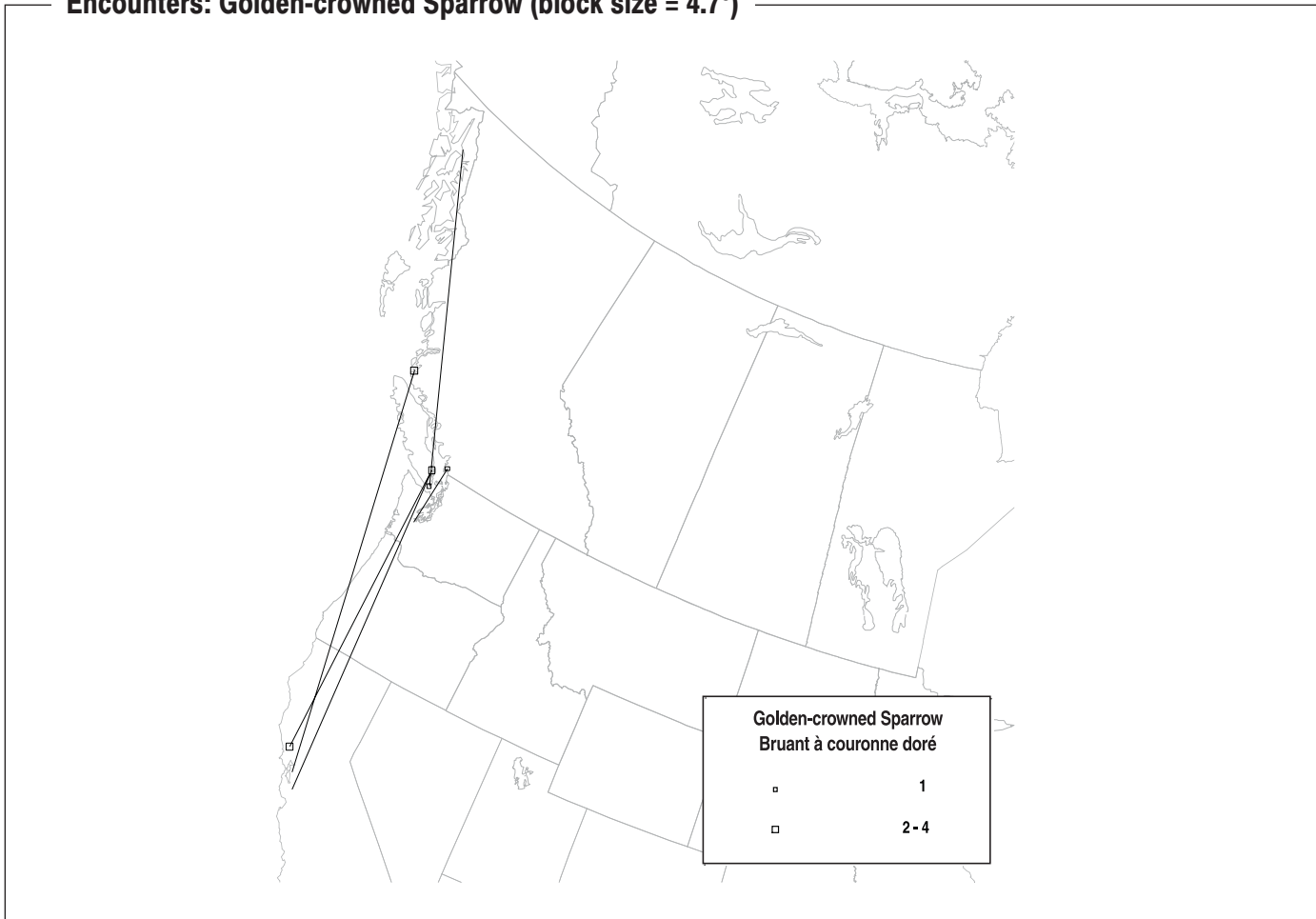
Banding effort: White-crowned Sparrow



Top banders: LPBO, MRL, MB, RJR, JGL

Golden-crowned Sparrow (*Zonotrichia atricapilla*) 557.0

Encounters: Golden-crowned Sparrow (block size = 4.7°)



The Golden-crowned Sparrow is a west coast species breeding from western Alaska and south-central Yukon to southern British Columbia and southwestern Alberta. It winters from southern British Columbia south to northern Mexico along the Pacific coast.

All encounters showing movement of 1000 km or more are listed (records 1–7). Only two others showed movement over 100 km. Most of the 38 encounters were of birds

recaptured at the site of banding in the portion of British Columbia where Golden-crowns overwinter (e.g., record 8, the bird with longest period between banding and encounter).

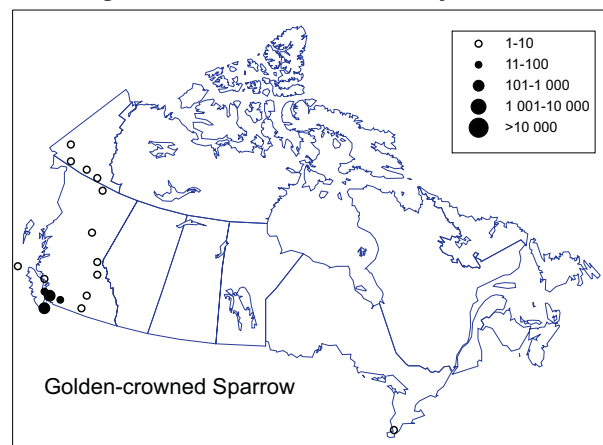
Encounter records: Golden-crowned Sparrow

1	0031-90710 JAF	AHY U 00 00	13/10/32 17/02/34	Cowichan Station, BC Guerneville, CA	48°40'N 123°40'W 38°30'N 122°50'W	1 yr. 4 mo. 1134 km S4°E
2	1361-93869 RBW	AHY M 05 12	18/04/90 11/02/92	Auke Bay, AK Victoria, BC	58°20'N 134°30'W 48°20'N 123°20'W	1 yr.10 mo. 1334 km S38°E
3	0221-12112 JGS	AHY U 00 13	01/10/56 04/11/56	Ambleside Beach, BC Albany, CA	49°10'N 123°00'W 37°50'N 122°10'W	1 mo. 1263 km S3°E
4	0301-37212 CGT	HY U 00 01	05/01/62 04/05/62	Albany, CA Goose Bay, BC	37°50'N 122°10'W 51°20'N 127°40'W	4 mo. 1564 km N14°W
5	0311-72823 HRS	AHY U 00 01	24/11/62 99/04/64	Santa Cruz, CA Cassidy, BC	36°50'N 122°00'W 49°00'N 123°50'W	1 yr. 5 mo. 1363 km N6°W
6	0381-38558 JML	U U 00 98	06/02/39 10/05/39	south of Monterey, CA Namu, BC	36°30'N 121°50'W 52°00'N 128°00'W	3 mo. 1793 km N14°W
7	0631-34017 LRM	AHY U 08 21	10/11/63 29/04/66	San José, CA Chemainus, BC	37°20'N 121°50'W 48°50'N 123°40'W	2 yr. 5 mo. 1289 km N6°W
8	0221-01852 MLB	AHY M 00 00	28/11/54 01/03/59	Albert Head, BC Albert Head, BC	48°20'N 123°20'W 48°20'N 123°20'W	4 yr. 4 mo. 0 km

Summary of banding statistics:
Golden-crowned Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			1068
<i>No. encountered per 1000 banded (1955–1995)</i>			7
Total no. encountered (1921–1995)	13	19	38
No. encountered from foreign bandings	1	4	6
Maximum period from banding to encounter (mo.)	10	52	52
No. of Canadian-banded birds moving > 0 km	1	3	5
Mean movement > 0 km of Canadian-banded birds	12	812	686
Maximum movement from all encounters (km)	1563	1362	1792
% recovered (encountered dead)	15	42	34
% direct recoveries	53	21	42
% encountered during banding operations	84	55	64

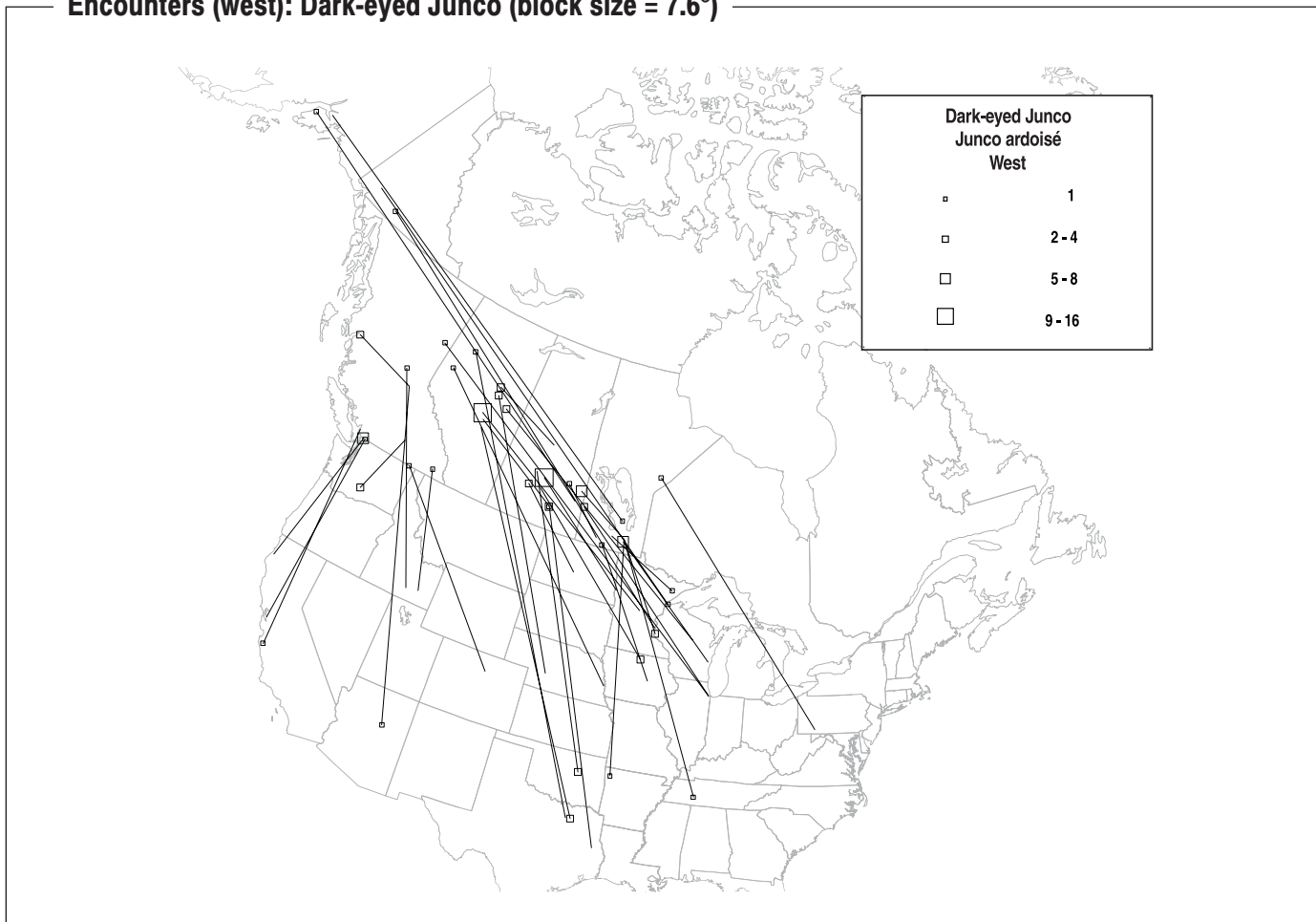
Banding effort: Golden-crowned Sparrow



Top banders: DBr, CWS-BC, UBC, BBW, WMH

Dark-eyed Junco (*Junco hyemalis*) 567.0 and 567.1

Encounters (west): Dark-eyed Junco (block size = 7.6°)



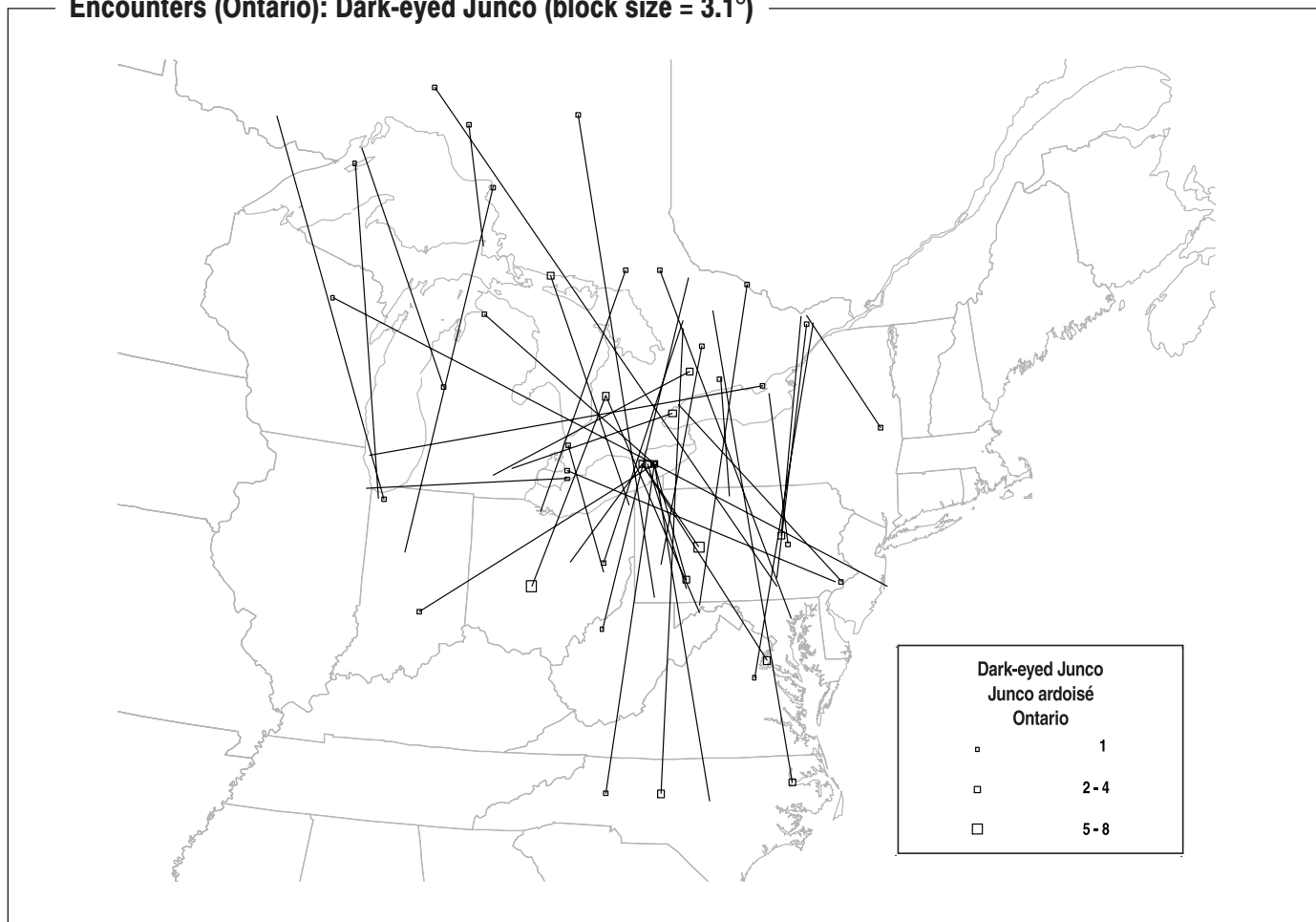
Banders recognize four forms of the Dark-eyed Junco, two of which, the Slate-colored Junco (*J. h. hyemalis*) and Oregon Junco (*J. h. oregonus*), regularly occur in Canada. These two are treated together here.

The Slate-colored Junco breeds across the northeastern U.S. and Canada north to the treeline, except for southern British Columbia and the southern Prairie Provinces. It winters in considerable numbers across southern Canada, from British Columbia to Newfoundland, and south to northern Mexico, the Gulf Coast, and Florida. The Oregon form replaces the Slate-colored in much of the western U.S., as well as from coastal and central British Columbia to central and southern Alberta and in southwestern Saskatchewan. It winters in British Columbia and the northwestern U.S. south to northern Mexico and east to Minnesota, Kansas, and Oklahoma, as well as in small numbers east to southern Ontario and southwestern Quebec. The two forms interbreed where their ranges overlap.

More than half of all birds recorded were banded and encountered in British Columbia, at all times of year, and 95% of these showed no movement. All the British Columbia birds encountered in the U.S. from Idaho west (see map) were banded as Oregon Juncos (e.g., records 1–3). Although the encounters from this province in Colorado and Arizona (record 4) may also have involved Oregon Juncos, they were not reported as such. (Note that the odd, branched pattern of certain British Columbia encounters on the map is a chance configuration of individual records.)

Slate-colored Juncos encountered in the Prairie Provinces and Alaska were concentrated during December through February in the central regions of the continent, from Manitoba and Illinois south to Texas, with 60% south of Nebraska–Iowa (records 5 and 6; see also records 7–9 for examples of birds moving in the same northwest–southeast direction). However, the bird in record 10 wintered much farther east.

Encounters (Ontario): Dark-eyed Junco (block size = 3.1°)



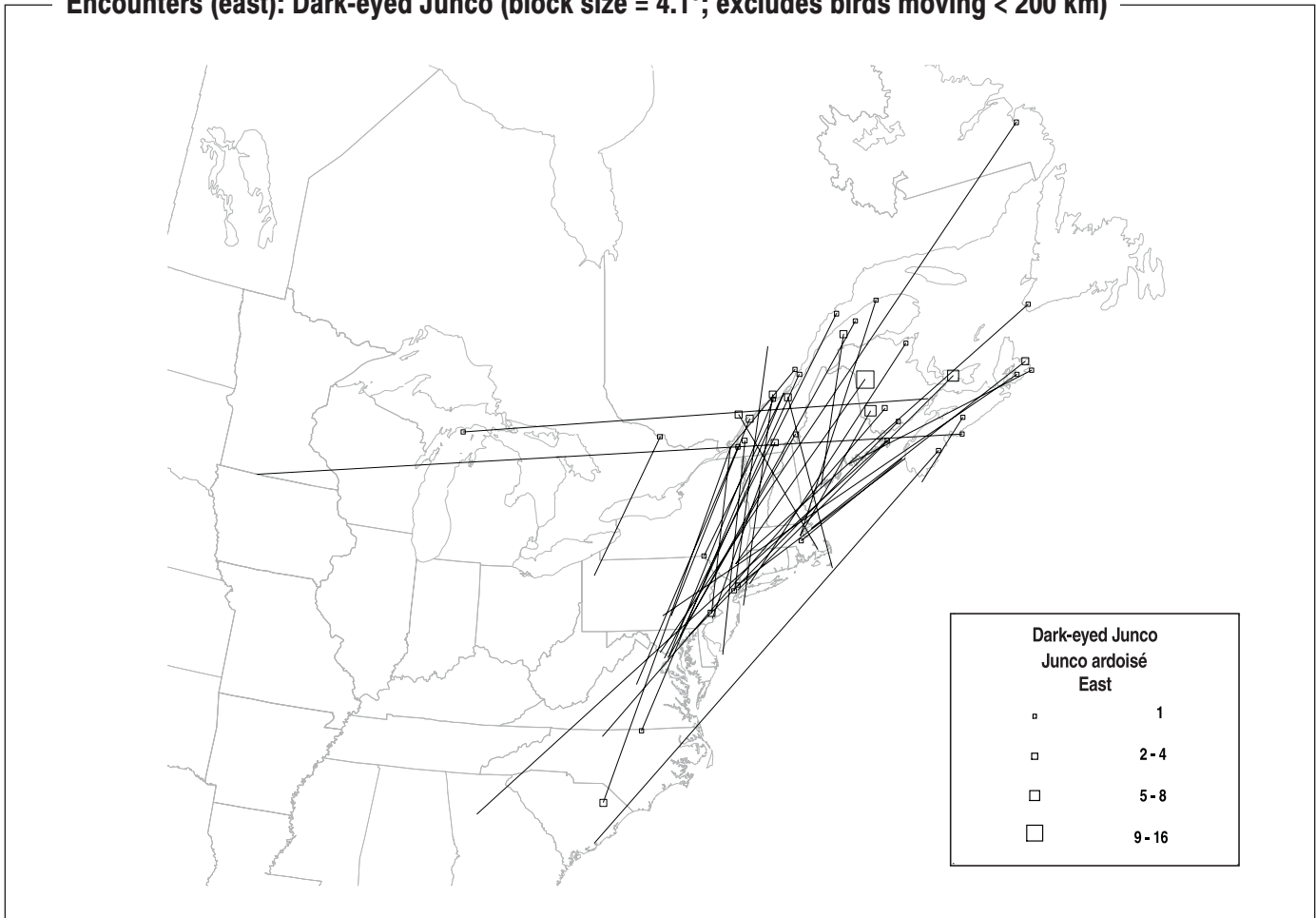
Of the Ontario birds banded or encountered in winter (December–February), nearly two-thirds wintered in the province, while the remainder were spread across the Great Lakes states eastward to the coastal states from Pennsylvania to North Carolina. In contrast to the eastern and western maps, the Ontario map shows a wide range of directions of movement, suggesting that Ontario migrants may summer both to the east and west of the province; however, there are as yet no summer encounters that confirm this hypothesis.

Maritimes Juncos either wintered in the Maritimes (35%) or were found in December–February in coastal states from Massachusetts to Georgia (records 11 and 12), but see record 13, which shows a bird that appears to have strayed far to the west (assuming the encounter details are correct). There were

only eight mid-winter encounters involving Quebec, all in coastal states where juncos from the Maritimes also winter.

Juncos show strong wintering site fidelity: two-thirds of the birds encountered in southern Ontario in winter were banded at the same site in previous winters. The predominant age and sex group shifts with the latitude of the wintering site: young males predominate in northern wintering areas, adult males farther south, young females farther south still, and adult females farthest south (Nolan and Ketterson 1990). Birds that winter in different places in different winters tend to move farther south in subsequent years (Ketterson and Nolan 1982).

Encounters (east): Dark-eyed Junco (block size = 4.1°; excludes birds moving < 200 km)



Encounter records: Dark-eyed Junco

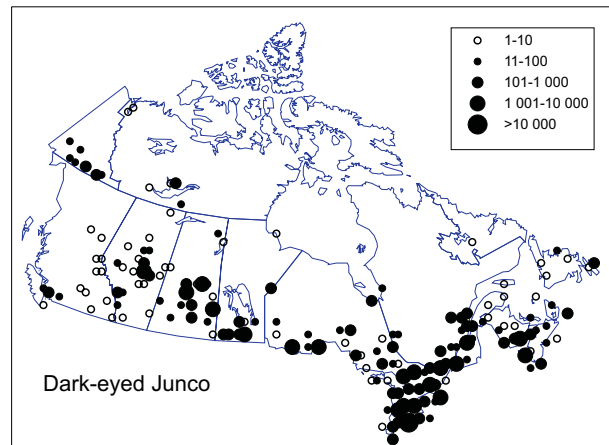
1	0210-16833 JH	AHY M 00 03	29/03/65 ??/04/65	18 km north of Malta, ID near Prince George, BC	42°40'N 113°20'W 53°50'N 122°40'W	1420 km N26°W
2	0220-56344 HKT	AHY U 00 00	23/01/54 15/01/55	Oakland, CA Aldergrove, BC	37°40'N 122°10'W 49°00'N 122°20'W	1 yr. 0 mo. 1262 km N1°W
3	0260-83910 DMB	AHY F 00 89	26/04/59 02/11/59	Horseshoe Bay, BC Jamesburg, CA	49°20'N 123°10'W 36°20'N 121°30'W	7 mo. 1453 km S6°E
4	0040-88327 TTMcC	J U 00 89	02/08/34 04/02/35	Barkerville, BC inexact location, AZ	53°00'N 121°30'W 35°??'N 111°??'W	6 mo.
5	0460-27011 TCL	AHY U 00 00	27/02/53 18/04/54	Nacogdoches, TX near Regina, SK	31°30'N 94°30'W 50°20'N 104°30'W	1 yr. 2 mo. 2254 km N18°W
6	0460-68941 HHe	AHY U 00 00	13/01/49 99/FA/52	Kansas City, MO Cucumber Lake, AB	39°00'N 94°30'W 53°50'N 112°00'W	2116 km N33°W
7	0720-49203 CC	L U 03 13	08/07/66 99/FA/66	Silver Creek, YT Duluth, MN	61°00'N 138°20'W 46°40'N 92°00'W	3341 km S83°E
8	1120-87341 CHS	AHY U 03 12	28/03/68 30/04/68	Sedalia, CO near Rosthern, SK	39°20'N 104°50'W 52°40'N 106°10'W	1 mo. 1448 km N4°W
9	0260-02797 CSH	AHY U 00 98	03/10/59 10/07/59	Yorkton, SK north of Soldotna, AK	51°10'N 102°20'W 60°30'N 151°00'W	1 yr. 9 mo. 3131 km N52°W
10	1130-88925 CMNH	HY U 07 89	12/11/66 26/09/67	near Somerset, PA Island Lake, MB	40°00'N 79°10'W 53°50'N 94°40'W	10 mo. 1930 km N32°W
11	1080-15865 DAC	AHY F 05 00	14/01/78 26/04/78	Atlanta, GA Grand Menan, NB	33°40'N 84°20'W 44°50'N 66°50'W	3 mo. 1947 km N45°E
12	0230-51776 JVD	AHY U 00 00	07/02/61 99/06/64	near Hendon, VA west of Port Hope Simpson, Labrador, NF	39°00'N 77°20'W 53°20'N 57°10'W	3 yr. 4 mo. 2213 km N37°E
13	0200-44537 GHC	AHY M 00 00	04/04/53 13/07/62	Jackson, MN Armdale, NS	43°30'N 94°50'W 44°30'N 63°30'W	9 yr. 3 mo. 2496 km N76°E

Dark-eyed Junco

Summary of banding statistics: Dark-eyed Junco

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			107 623
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	73	710	941
No. encountered from foreign bandings	17	98	162
Maximum period from banding to encounter (mo.)	113	111	113
No. of Canadian-banded birds moving > 0 km	23	70	186
Mean movement > 0 km of Canadian-banded birds	629	699	647
Maximum movement from all encounters (km)	3 341	3 330	3 341
% recovered (encountered dead)	58	31	37
% direct recoveries	38	32	33
% encountered during banding operations	41	67	61

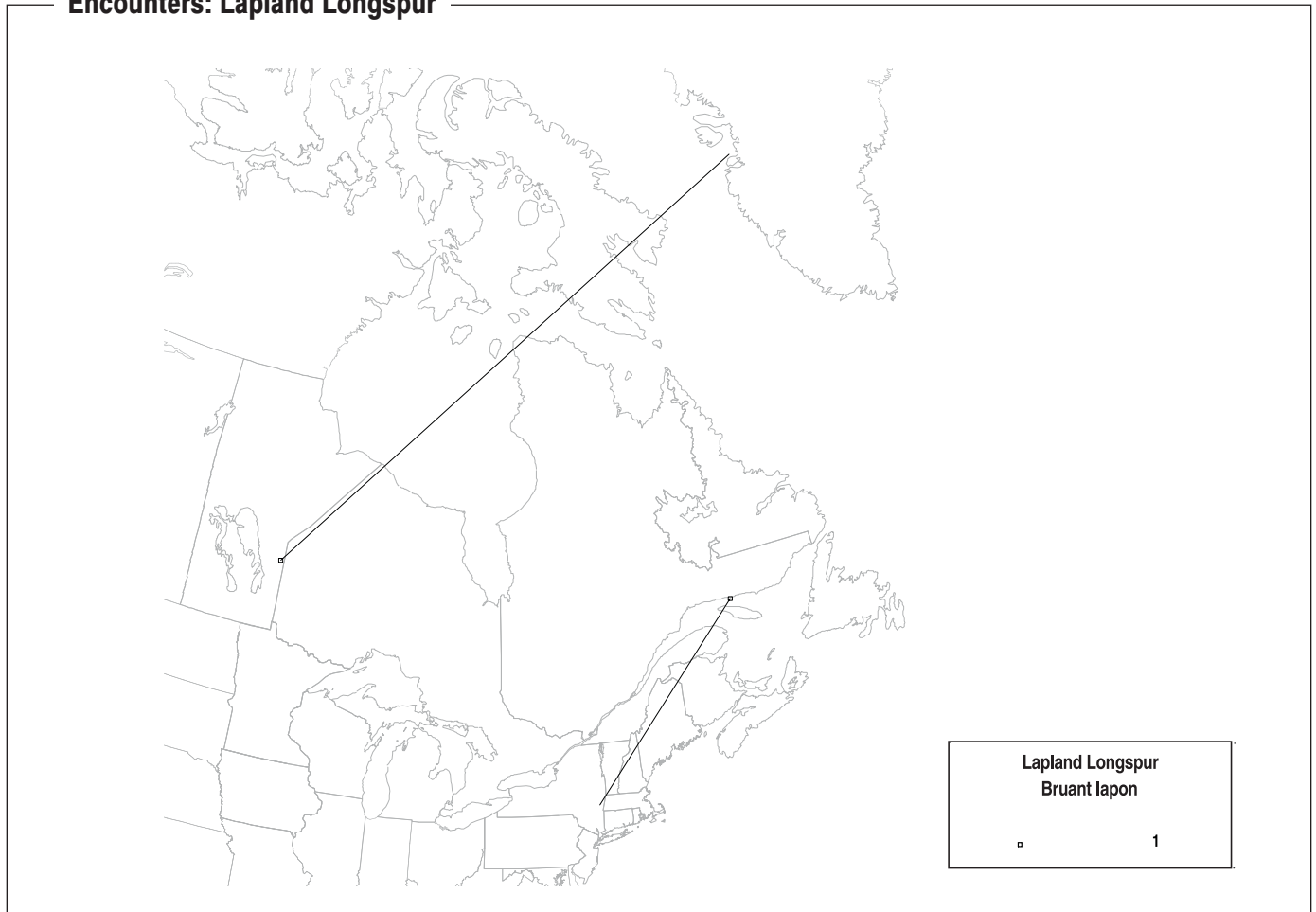
Banding effort: Dark-eyed Junco



Top banders: LPBO, NMC, MB, JBMi, ETJ

Lapland Longspur (*Calcarius lapponicus*) 536.0

Encounters: Lapland Longspur



The Lapland Longspur has a holarctic breeding distribution. In Canada it breeds north of the treeline from northern Yukon through most of the Northwest Territories and Nunavut to northern Labrador, including most of the Arctic islands; it also breeds along Hudson Bay coasts. It winters from southern Canada to southeastern California, Arkansas, and Maryland.

West et al. (1968) defined three general spring migration routes for longspurs breeding in western North America: a coastal route along the Pacific shore of British Columbia and Alaska, an intermountain route in the mountain trenches of British Columbia and southern Yukon and Alaska, and, finally, a Prairie route through the Prairie Provinces of Alberta and eastern British Columbia going west and north to the Yukon drainage.

The only two distant encounters for this species (records 1 and 2) are for eastern birds. These could both involve longspurs breeding in Greenland and wintering in North America. In addition to the Danish-banded bird from western Greenland that was encountered in Manitoba (record 1), two birds from southeast Greenland were encountered in North America, one in Quebec and one in Minnesota (Cramp and Perrins 1994; no details available). The bird in record 2 could also have been headed to Greenland (although perhaps going to Labrador), thus the band encounters yield no information about the migration routes of longspurs known to breed in the eastern Canadian Arctic.

Nearly all the remaining encounters involved recapture of birds banded in previous years at a study site on the McConnell River, Northwest Territories (e.g., record 3).

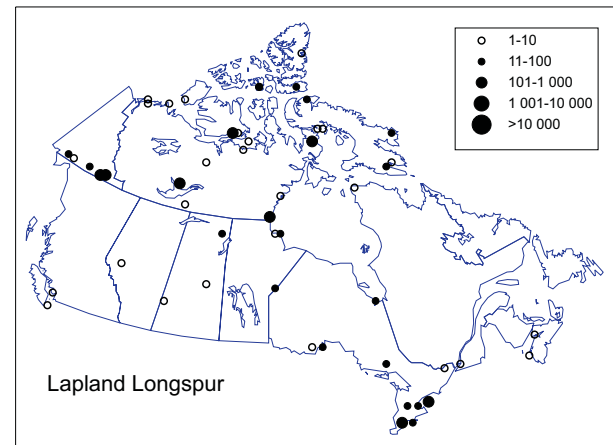
Encounter records: Lapland Longspur

1	COPENHAGEN 772906	U U	01/07/55	Egedesminde district, GREENLAND	68°40'N 52°10'W	3 mo.
		00 97	01/10/55	Little Grand Rapids, MB	52°00'N 95°20'W	2915 km S72°W
2	1341-27814 RPG	AHY U 05 00	13/02/88 99/04/89	Kinderhook, NY Havre Saint-Pierre, QC	42°20'N 73°40'W 50°10'N 63°30'W	1 yr. 2 mo. 1170 km N38°E
3	0321-16282 CDM	AHY F 03 10	27/07/71 09/06/73	30 km southwest of Eskimo Point, NT 30 km southwest of Eskimo Point, NT	60°50'N 94°20'W 60°50'N 94°20'W	1 yr. 11 mo. 0 km

Summary of banding statistics: Lapland Longspur

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3123
<i>No. encountered per 1000 banded (1955–1995)</i>			13
Total no. encountered (1921–1995)	7	34	43
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	13	23	23
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	0	1169	2914
% recovered (encountered dead)	14	20	23
% direct recoveries	0	0	2
% encountered during banding operations	85	79	76

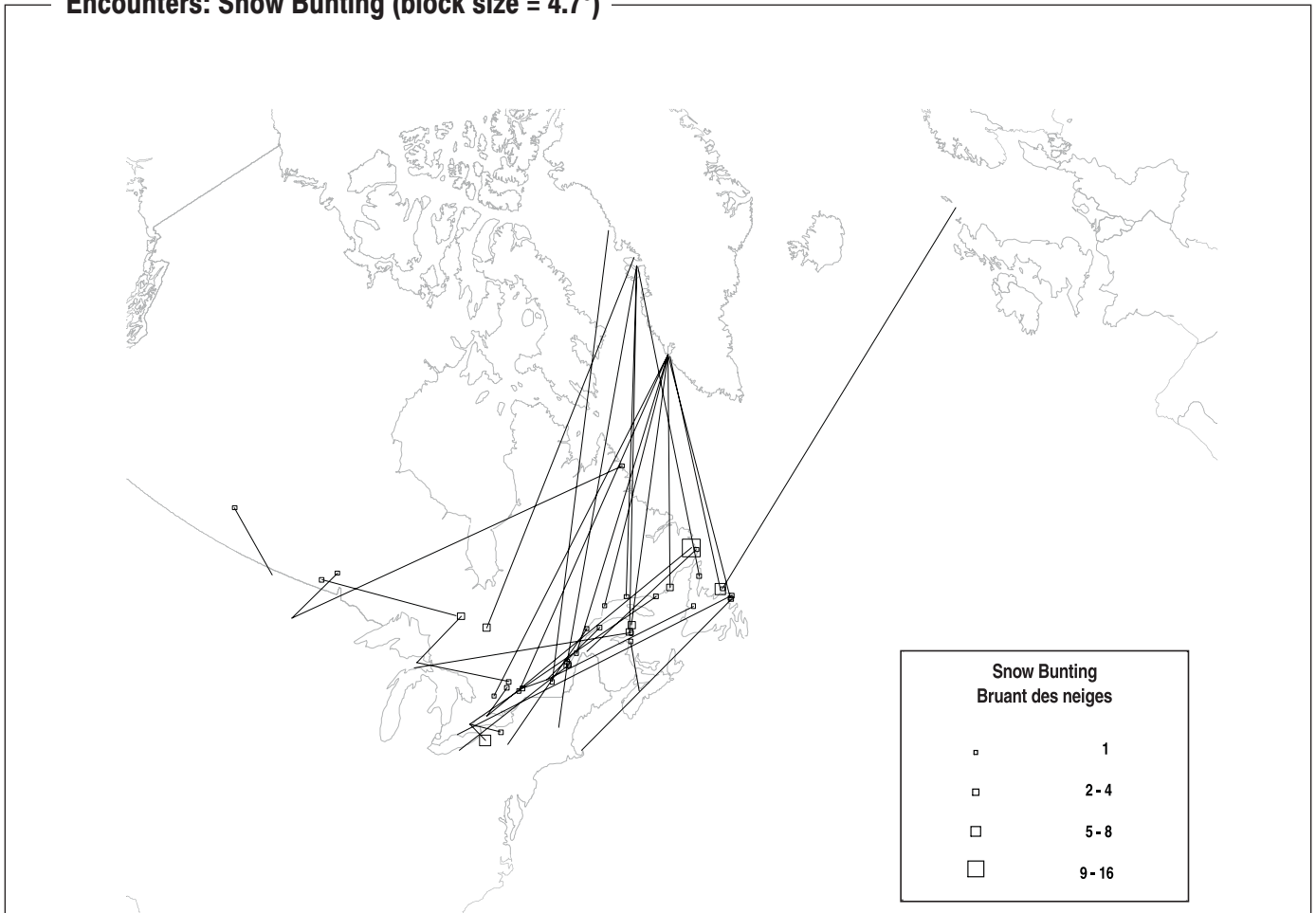
Banding effort: Lapland Longspur



Top banders: LJP, CDM, DJTH, RDM, MHF

Snow Bunting (*Plectrophenax nivalis*) 534.0

Encounters: Snow Bunting (block size = 4.7°)



The Snow Bunting is a circumpolar species, breeding north of the treeline in Europe, Asia, and North America. In Canada the breeding range extends from Hudson Bay north through the Arctic archipelago to the northern tip of Ellesmere Island. It winters in southern Canada from the St. Lawrence Valley to coastal British Columbia, and in northern states from Washington through Kansas to North Carolina; it rarely winters farther south.

As a result of extensive banding in Greenland, there have been 27 encounters of birds with Danish bands in Canada (12 in Quebec, 6 in Newfoundland, 5 in Labrador, 3 in Ontario, and 1 in New Brunswick; see records 1–3 below). Most U.S. encounters of Greenland birds are also east of the Great Lakes, but there is one record in Minnesota and several in Michigan (Cramp and Perrins 1994). All Greenland birds encountered in North America are from the west coast of that island, the principle banding locations being north of Disko Island (about 70°N) and around Godthåb (about 64°N).

Eastern Greenland birds apparently winter in central Russia in the vicinity of the Urals (Cramp and Perrins 1994), so encounter record 4 is particularly interesting. It was described by Spencer (1961) as “the first British-ringed Passerine to be encountered in the New World. It seems probable that the bird originated in Greenland and wintered on different sides of the Atlantic in successive winters.”

Encounters of Snow Buntings from North American bandings were nearly all of birds both banded and encountered in winter or on migration, with the exception of record 5 (encountered in the breeding range) and four birds banded and encountered in summer at study sites in the Arctic. Three birds banded in December or January were encountered the same winter 133–241 km farther south, suggesting movement within winters; however, there are also several examples of buntings retrapped at the same wintering sites between one and three years later. Bryens (1944) reported 51 of 596 Snow Buntings returning to his Michigan banding site

Snow Bunting

in a later winter; one bird was retrapped in nine different winters. Encounter records 6 to 8 below indicate that spring migration is well underway by April. However, the bird in record 10 (evidently a breeder from western Canada) was killed well south of the breeding range in mid-May.

The obvious heavy bias toward encounters from both the Danish and North American banding schemes along the north shore of the St. Lawrence (e.g., record 9) may be partly attributable to traditional trapping of Snow Buntings in that area for food.

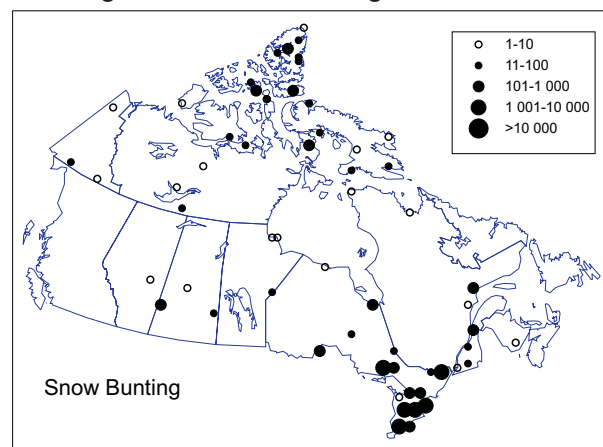
Encounter records: Snow Bunting

1	COPENHAGEN						
	871889	AHY U	27/04/51	Sarqaq-Dalen, GREENLAND	70°00'N	52°00'W	3 yr. 9 mo.
	PJ	05 14	15/02/55	Bear Valley, ON	46°50'N	79°40'W	2983 km S65°W
2	COPENHAGEN						
	852087	HY U	18/07/58	Narssak, GREENLAND	64°00'N	51°30'W	1 yr. 9 mo.
	JD	05 01	25/04/60	Fogo Island, NF	49°40'N	54°10'W	1603 km S7°W
3	COPENHAGEN						
	8100551	U U	13/08/69	Godthåb, GREENLAND	64°10'N	51°10'W	8 mo.
	E&OH	00 01	16/04/70	Port-Cartier, QC	50°00'N	66°40'W	1824 km S38°W
4	BTO						
	K81654	AHY M	07/04/59	Fair Isle, UNITED KINGDOM	59°30'N	01°40'W	11 mo.
			01/05/60	Fogo Island, NF	49°40'N	54°10'W	3455 km N85°W
5	0051-32806	U U	29/12/33	Jamestown, ND	46°50'N	98°40'W	1 yr. 6 mo.
	CEB	00 00	99/06/35	Saglek Bay, Labrador, NF	58°10'N	62°30'W	2712 km N49°E
6	1400-61701	AHY M	13/02/42	Blaney Park, MI	46°00'N	85°50'W	2 mo.
	KC	00 00	06/04/42	Sainte-Thérèse-de-Gaspé, QC	48°20'N	64°20'W	1642 km N73°E
7	0520-31779	AHY U	04/02/61	near Toronto, ON	43°50'N	79°10'W	
	LGL	00 47	??/04/61	near St. Anthony, NF	51°20'N	55°30'W	1952 km N56°E
8	0821-03823	AHY U	12/01/74	Cornhill Beach, MA	42°00'N	70°00'W	3 mo.
	CRS	08 56	27/04/74	Badgers Quay, NF	49°00'N	53°30'W	1500 km N53°E
9	0530-97379	U U	04/02/54	Canaan, NH	43°30'N	72°00'W	2 yr. 2 mo.
	AMcA	00 03	09/04/56	near Pointe-au-Pic, QC	47°30'N	70°00'W	472 km N19°E
10	0321-51863	U U	18/10/65	west of Kenmare, ND	48°40'N	102°10'W	2 yr. 7 mo.
	RTG	05 12	04/05/68	Near Madison, SK	51°10'N	109°00'W	563 km N58°W
11	0381-95998	AHY U	22/03/40	Toronto, ON	43°40'N	79°20'W	2 yr. 1 mo.
	HHS	00 26	04/04/42	near Flower's Cove, NF	51°20'N	57°00'W	1874 km N55°E
12	0891-29308	AHY M	11/02/88	Sparta, ON	42°40'N	81°00'W	9 mo.
	RAH	05 00	05/11/88	Pichards Island, Labrador, NF	49°10'N	53°20'W	2247 km N62°E

Summary of banding statistics: Snow Bunting

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			19 026
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	5	42	72
No. encountered from foreign bandings	1	7	39
Maximum period from banding to encounter (mo.)	26	43	46
No. of Canadian-banded birds moving > 0 km	4	26	31
Mean movement > 0 km of Canadian-banded birds	69	1 003	867
Maximum movement from all encounters (km)	471	2 246	3 455
% recovered (encountered dead)	100	57	75
% direct recoveries	60	42	36
% encountered during banding operations	0	30	16

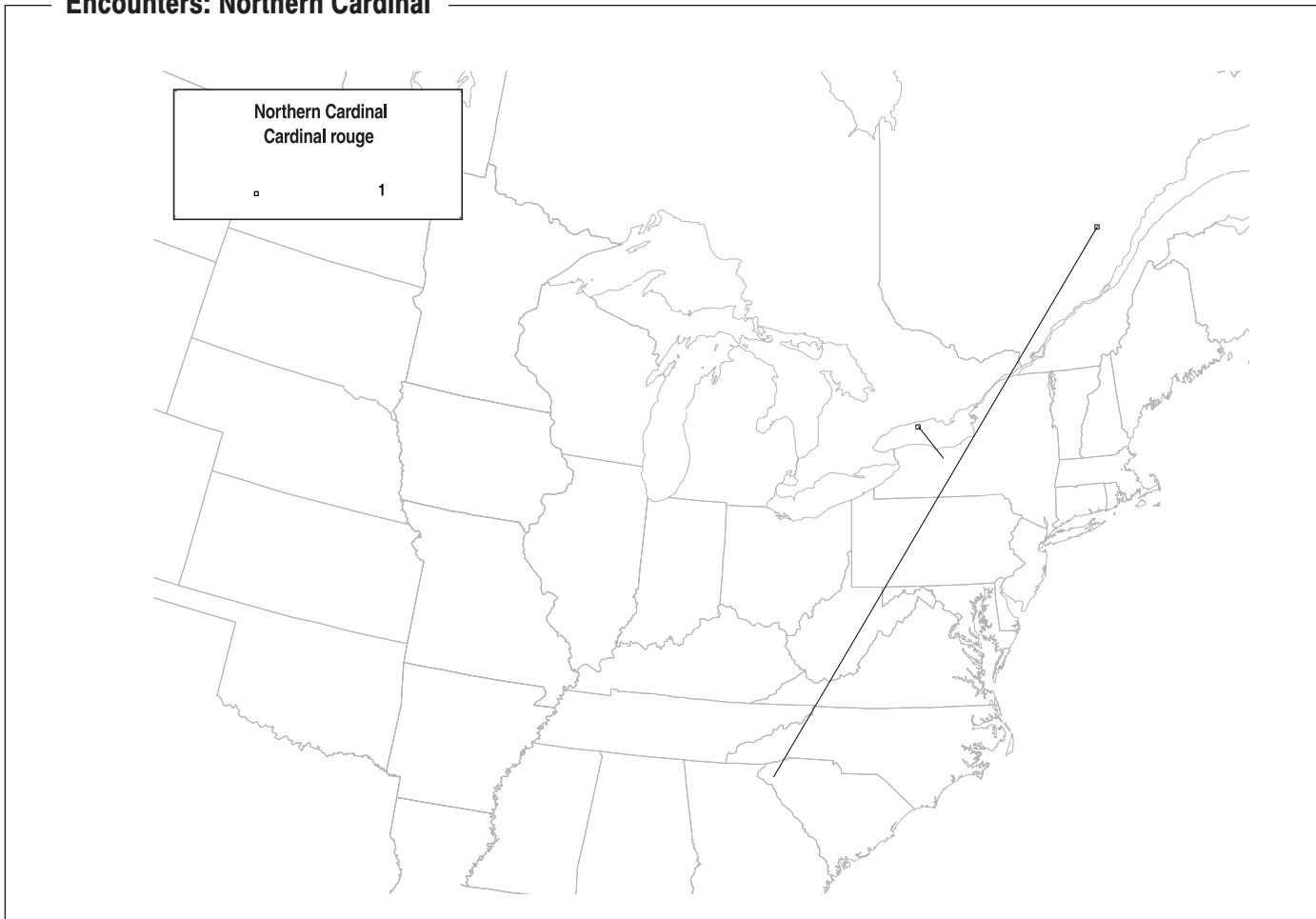
Banding effort: Snow Bunting



Top banders: ADB, PL, JGL, IPBO, DRL

Northern Cardinal (*Cardinalis cardinalis*) 593.0

Encounters: Northern Cardinal



The Northern Cardinal breeds in the eastern U.S., southern Ontario (north to Ottawa), and extreme southern Quebec. It is an occasional breeder in southern Manitoba (Winnipeg) and appears casually in southern Saskatchewan, southwestern Quebec, and Nova Scotia; since its first recorded nesting in Canada, at Point Pelee in 1901 (Godfrey 1986), it has expanded its range substantially northward and continues to do so. It is a permanent resident in most of its range, but northern populations are partly migratory.

Over half the records involved birds banded and encountered at three study sites in Ontario, including the bird with the longest period between banding and encounter

(record 1). The three cross-border encounters are listed below (records 2–4; the last bird is not on the map because it moved less than 100 km). Although many cardinals overwinter in the Canadian breeding range, it is possible that some migrate long distances (record 2); however, the encounter location of record 2 is at the very northern edge of the current breeding range in Quebec, and some of the original banding data are missing. Thus it is possible that the species designation is incorrect.

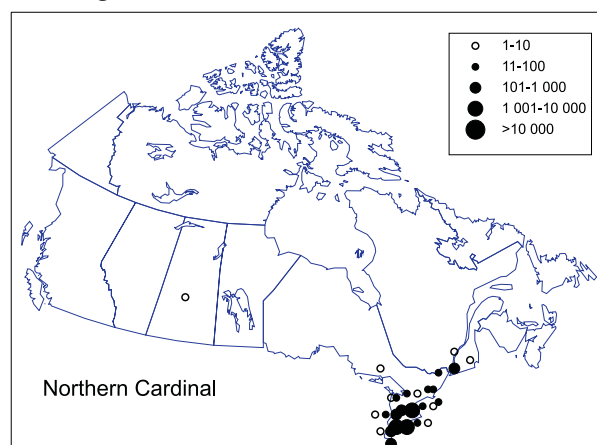
Encounter records: Northern Cardinal

1	0571-00095 CHR	AHY F 05 00	06/06/70 01/08/78	Toronto, ON Toronto, ON	43°40'N 79°20'W 43°40'N 79°20'W	8 yr. 2 mo. 0 km
2	0741-45448 REW	U U 05 04	08/03/70 FT/08/71	Clemson, SC near Chicoutimi, QC	34°40'N 82°50'W 48°30'N 71°00'W	1 yr. 5 mo. 1823 km N29°E
3	0671-97146 FTM	HY F 05 13	30/08/72 28/12/72	Egypt, NY Cobourg, ON	43°00'N 77°20'W 43°50'N 78°10'W	4 mo. 115 km N36°W
4	0261-05617 WPN	U F 07 89	16/08/58 06/05/59	Berkley, MI near Point Pelee Marsh, ON	42°30'N 83°10'W 41°50'N 82°30'W	9 mo. 92 km S37°E

Summary of banding statistics: Northern Cardinal

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			5000
<i>No. encountered per 1000 banded (1955–1995)</i>			38
Total no. encountered (1921–1995)	50	96	222
No. encountered from foreign bandings	1	0	3
Maximum period from banding to encounter (mo.)	45	98	98
No. of Canadian-banded birds moving > 0 km	7	10	25
Mean movement > 0 km of Canadian-banded birds	19	25	21
Maximum movement from all encounters (km)	114	1532	1823
% recovered (encountered dead)	42	28	30
% direct recoveries	56	20	27
% encountered during banding operations	57	68	68

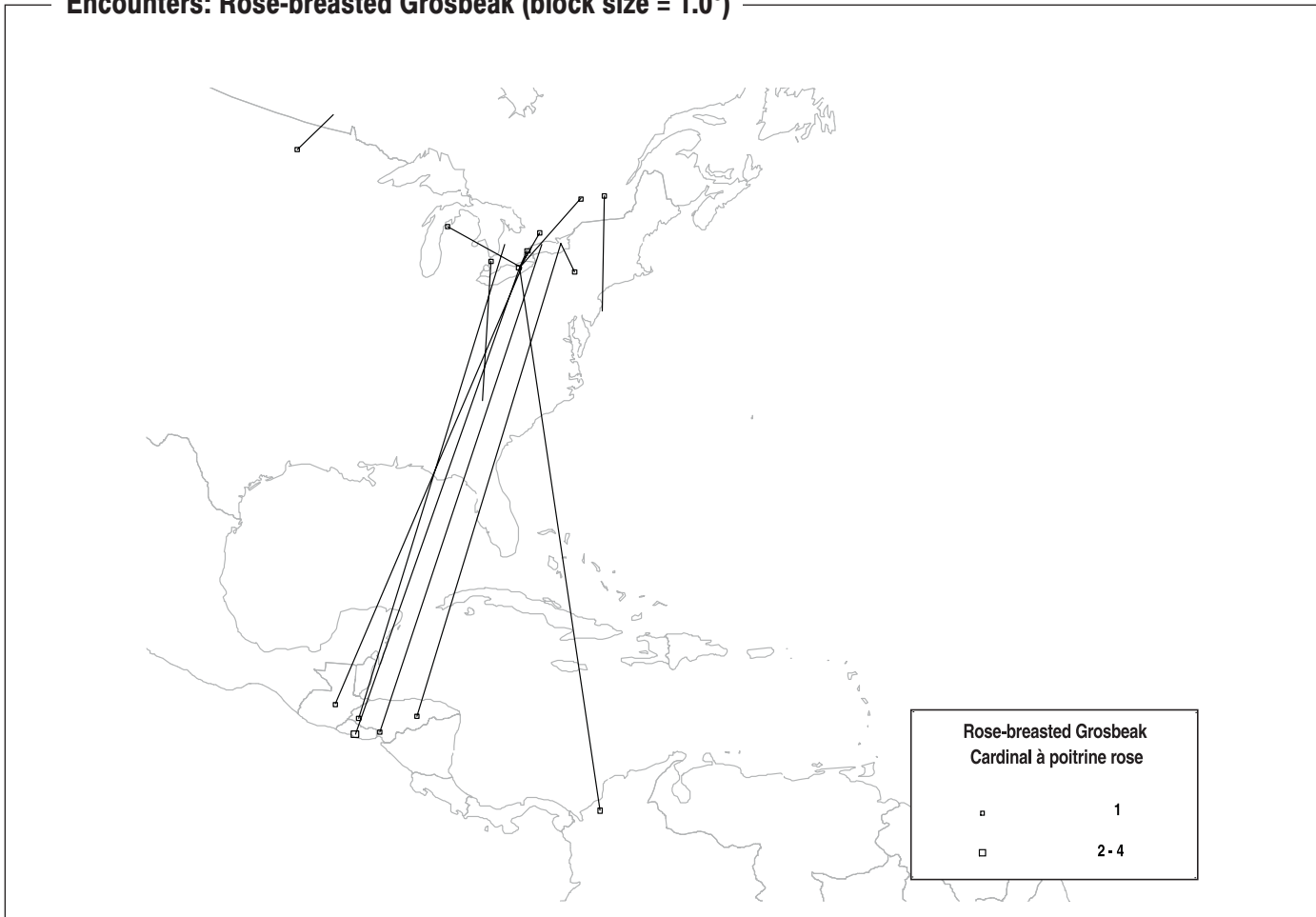
Banding effort: Northern Cardinal



Top banders: DMS, LPBO, CHR, ADB, TBO

Rose-breasted Grosbeak (*Pheucticus ludovicianus*) 595.0

Encounters: Rose-breasted Grosbeak (block size = 1.0°)



The Rose-breasted Grosbeak breeds in the north-central and northeastern U.S.; in Canada it breeds from the southwestern Northwest Territories, northwestern British Columbia, and the northern half of Alberta, through central Saskatchewan and southern Manitoba, across the southern parts of Ontario and Quebec to the Maritimes (Cape Breton). It winters mainly from central Mexico south to Ecuador, Colombia, and Venezuela.

All three encounters in winter (December–February) are of female birds banded in southern Ontario and encountered in Honduras (e.g., record 1). Two other encounters of females in the wintering range, one from El Salvador (record 2) and one from Guatemala (record 3), did not have exact encounter dates. The male encountered in November in

Colombia (record 4) could still have been in transit to a point farther south, because Rose-breasted Grosbeaks in northern Colombia are present mainly in passage, during early November and from mid-February to mid-March (Johnson 1980).

Two grosbeaks encountered during the breeding season in the same area of Quebec had been banded in widely different parts of the migration route on spring migration (Ontario and New Jersey; see map). There were two very short-term encounters of migrating birds (records 5 and 6) indicating migration speeds of 37 km and 56 km per day, respectively.

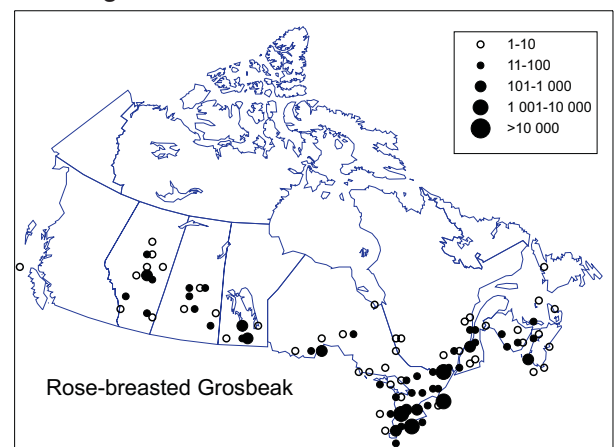
Encounter records: Rose-breasted Grosbeak

1	0891-14680 PL	U F 05 01	05/09/81 17/01/86	13 km west of Port Hope, ON Aramecina, HONDURAS	43°50'N 78°20'W 13°40'N 87°40'W	4 yr. 4 mo. 3474 km S18°W
2	0861-09233 LPBO	U F 00 56	07/09/78 ??/01/80	Long Point, ON inexact location, EL SALVADOR	42°30'N 80°10'W 13°??'N 89°??'W	c. 3338 km S17°W
3	0701-37948 LPBO	HY F 00 56	26/09/70 ??/04/76	Long Point, ON Cobán, GUATEMALA	42°30'N 80°00'W 15°20'N 90°10'W	3177 km S21°W
4	0621-08578 LPBO	AHY M 09 04	18/05/66 11/11/70	Long Point, ON near Monteria, COLOMBIA	42°30'N 80°10'W 08°40'N 75°50'W	4 yr. 6 mo. 3790 km S8°E
5	0691-40033 WAL	AHY F 07 89	18/05/67 20/05/67	Sarnia, ON Mitchell Bay, ON	43°00'N 82°20'W 42°20'N 82°20'W	2 dy. 74 km S0°W
6	0521-96015 LPBO	U F 00 89	10/05/63 11/05/63	Long Point, ON Erie, PA	42°30'N 80°00'W 42°00'N 80°00'W	1 dy. 56 km S0°W
7	0701-31921 KTS	AHY F 05 00	22/05/87 19/05/71	Winnipeg, MB near Sykeston, ND	49°50'N 97°00'W 47°20'N 99°20'W	4 yr. 327 km S33°W
8	0501-43354 LGL	AHY F 07 89	09/05/65 09/05/71	near Toronto, ON Long Point, ON	43°40'N 79°10'W 42°30'N 80°10'W	6 yr. 153 km S32°W

Summary of banding statistics:
Rose-breasted Grosbeak

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			11 390
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	6	28	40
No. encountered from foreign bandings	1	2	3
Maximum period from banding to encounter (mo.)	43	72	72
No. of Canadian-banded birds moving > 0 km	4	16	24
Mean movement > 0 km of Canadian-banded birds	1 781	565	1 098
Maximum movement from all encounters (km)	3 342	3 790	3 790
% recovered (encountered dead)	100	57	65
% direct recoveries	33	39	37
% encountered during banding operations	0	35	30

Banding effort: Rose-breasted Grosbeak



Top banders: LPBO, JBMi, PEPO, IPBO, NMC

Indigo Bunting (*Passerina cyanea*) 598.0

Encounters: Indigo Bunting



The Indigo Bunting breeds in the eastern and southwestern U.S.; in Canada it breeds in southern Manitoba, central and southern Ontario, and into southwestern Quebec. It winters mainly from central Mexico south through Central America and the Greater Antilles to Panama and northwestern Colombia.

All encounters with significant movement are listed below, including the one showing the greatest period between banding and encounter (record 1). The bird banded in Florida in January and subsequently encountered in Nova Scotia (record 2) was clearly part of the small population that

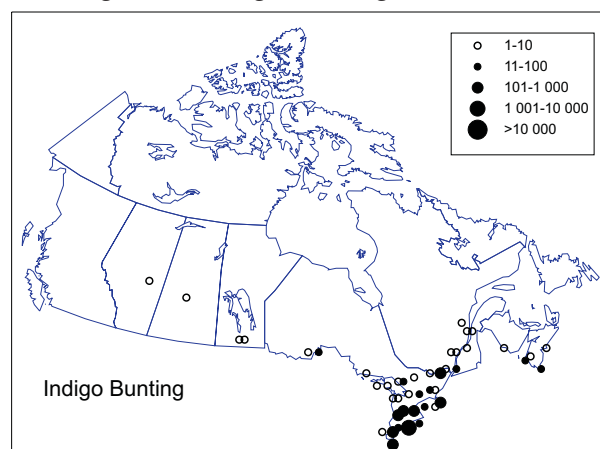
winters in Florida and Texas. However, most buntings winter south of the U.S., and the other southern U.S. encounters (records 1 and 3) were probably of birds migrating from farther south. Encounters of presumed breeders from Ontario and Quebec show a strong southwest–northeast axis of movement (records 1, 3, and 4), similar to the direction of Maritimes birds (records 2 and 5). The bird in record 6 may possibly have migrated on different sides of Lake Huron in different years.

Encounter records: Indigo Bunting

1	0610-12717 LAG	AHY M 05 00	28/05/61 LT/04/66	Kahnawake, QC Marsh Island, LA	45°20'N 73°40'W 29°10'N 91°50'W	4 yr. 11 mo. 2396 km S48°W
2	0990-18706 ABF	ASY M 05 00	09/01/84 26/05/86	Nokomis, FL 18 km south of Freeport, NS	27°00'N 82°20'W 44°00'N 66°10'W	2 yr. 4 mo. 2384 km N33°E
3	0840-42607 JHR	AHY F 05 00	29/04/74 18/06/74	north of Taft, TX Battersea, ON	28°00'N 97°20'W 44°20'N 76°20'W	2 mo. 2606 km N40°E
4	0940-76203 MCS	AHY F 05 00	23/05/81 06/07/83	Lacarne, OH Hamilton, ON	41°30'N 83°00'W 43°10'N 79°50'W	2 yr. 2 mo. 320 km N53°E
5	2101-51553 DWH	U U 03 00	14/09/92 28/04/93	Coneville, PA Larrys River, NS	41°50'N 78°00'W 45°10'N 61°20'W	7 mo. 1393 km N69°E
6	0910-17392 LPBO	SY M 05 45	13/05/82 12/07/83	Long Point, ON 13 km west of Rose City, MI	42°30'N 80°10'W 44°20'N 84°10'W	1 yr. 2 mo. 382 km N56°W

Summary of banding statistics: Indigo Bunting

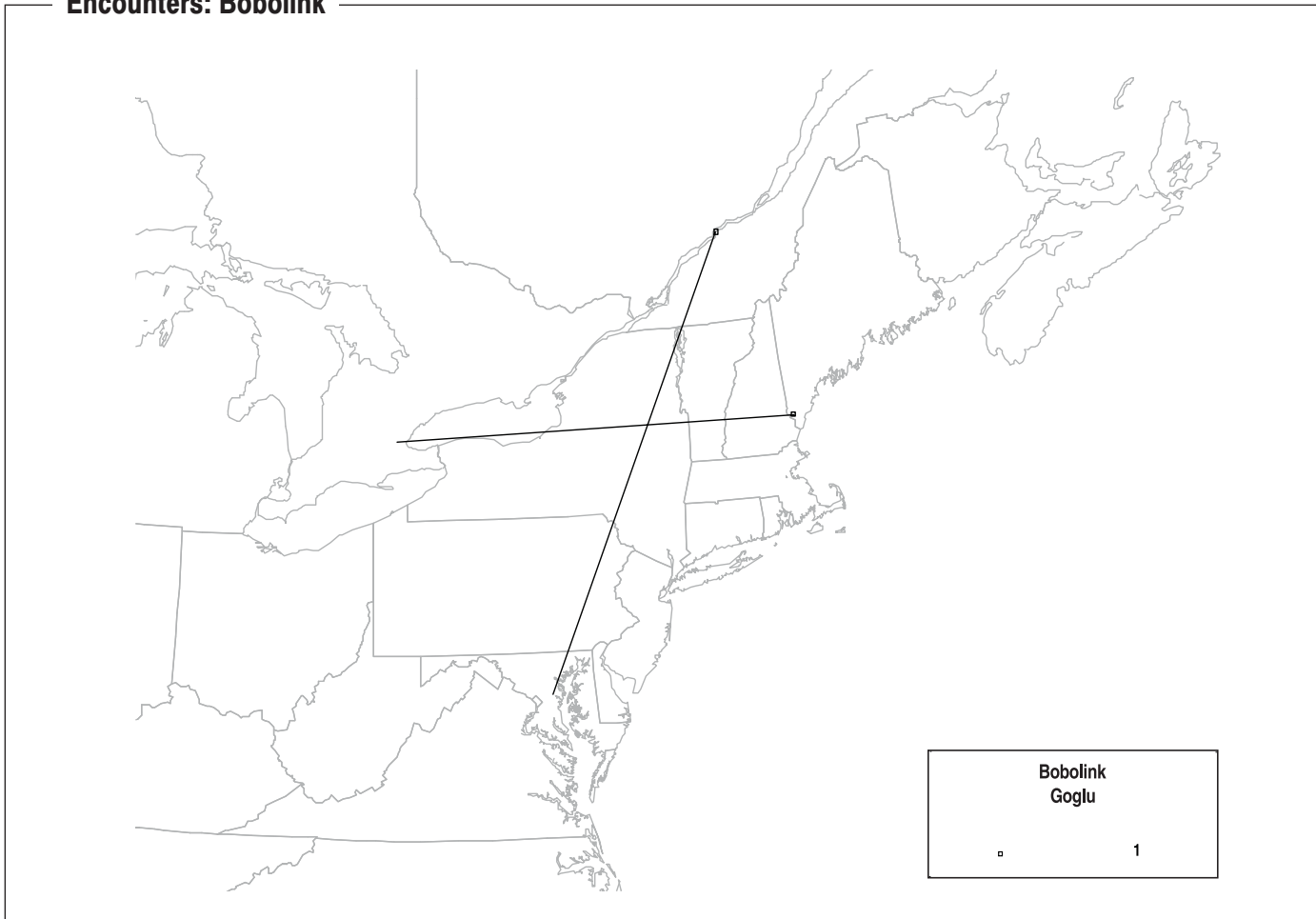
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			3244
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	0	8	9
No. encountered from foreign bandings	0	3	4
Maximum period from banding to encounter (mo.)	–	59	59
No. of Canadian-banded birds moving > 0 km	0	3	3
Mean movement > 0 km of Canadian-banded birds	–	936	936
Maximum movement from all encounters (km)	–	2605	2605
% recovered (encountered dead)	–	75	77
% direct recoveries	–	12	11
% encountered during banding operations	–	25	22

Banding effort: Indigo Bunting

Top banders: LPBO, ADB, JBMi, FTL, MJW

Bobolink (*Dolichonyx oryzivorus*) 494.0

Encounters: Bobolink



The Bobolink breeds in the northern half of the U.S.; in Canada it breeds across southern interior British Columbia, the southern Prairie Provinces, southwestern Ontario, southern Quebec, and the Maritimes. It winters in southern South America (mostly east of the Andes) from Peru, through eastern Bolivia and western Brazil, south through northern Argentina.

Four of the six encounters (e.g., records 1 and 2) were banded as hatch-year birds in August and encountered in or close to the breeding season in later years. These birds had moved 19 km, 92 km, 92 km, and 742 km, suggesting a broad range of juvenile dispersal distances. Record 3

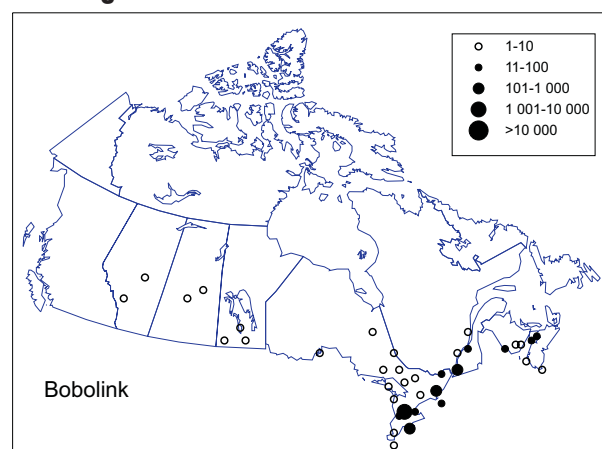
presumably involves a bird banded on its first southward migration and encountered the following breeding season; it was the only Bobolink encountered that was not banded at Mountsberg, Ontario. Four of the six birds were caught by cats (e.g., records 1–3). The bird in record 4 was banded as an adult, so was about a year older when it died than the bird in record 2, the bird with the longest period between banding and encounter.

Encounter records: Bobolink

1	0961-58772 ADB	HY F 07 12	08/08/87 01/06/88	Mountsberg, ON West Lebanon, ME	43°20'N 80°00'W 43°20'N 70°50'W	10 mo. 742 km N87°E
2	0961-57747 ADB	HY M 03 12	18/08/86 29/07/90	Mountsberg, ON Newmarket, ON	43°20'N 80°00'W 44°00'N 79°20'W	3 yr. 11 mo. 92 km N36°E
3	0731-17205 BM	HY M 05 12	14/09/67 29/07/70	Fort Meade, MD Les Becquets, QC	39°00'N 76°40'W 46°30'N 72°10'W	2 yr. 10 mo. 912 km N22°E
4	0891-88226 ADB	AHY F 05 14	18/08/84 02/06/88	Mountsberg, ON Carlisle, ON	43°20'N 80°00'W 43°20'N 79°50'W	3 yr. 10 mo. 13 km N90°E

Summary of banding statistics: Bobolink

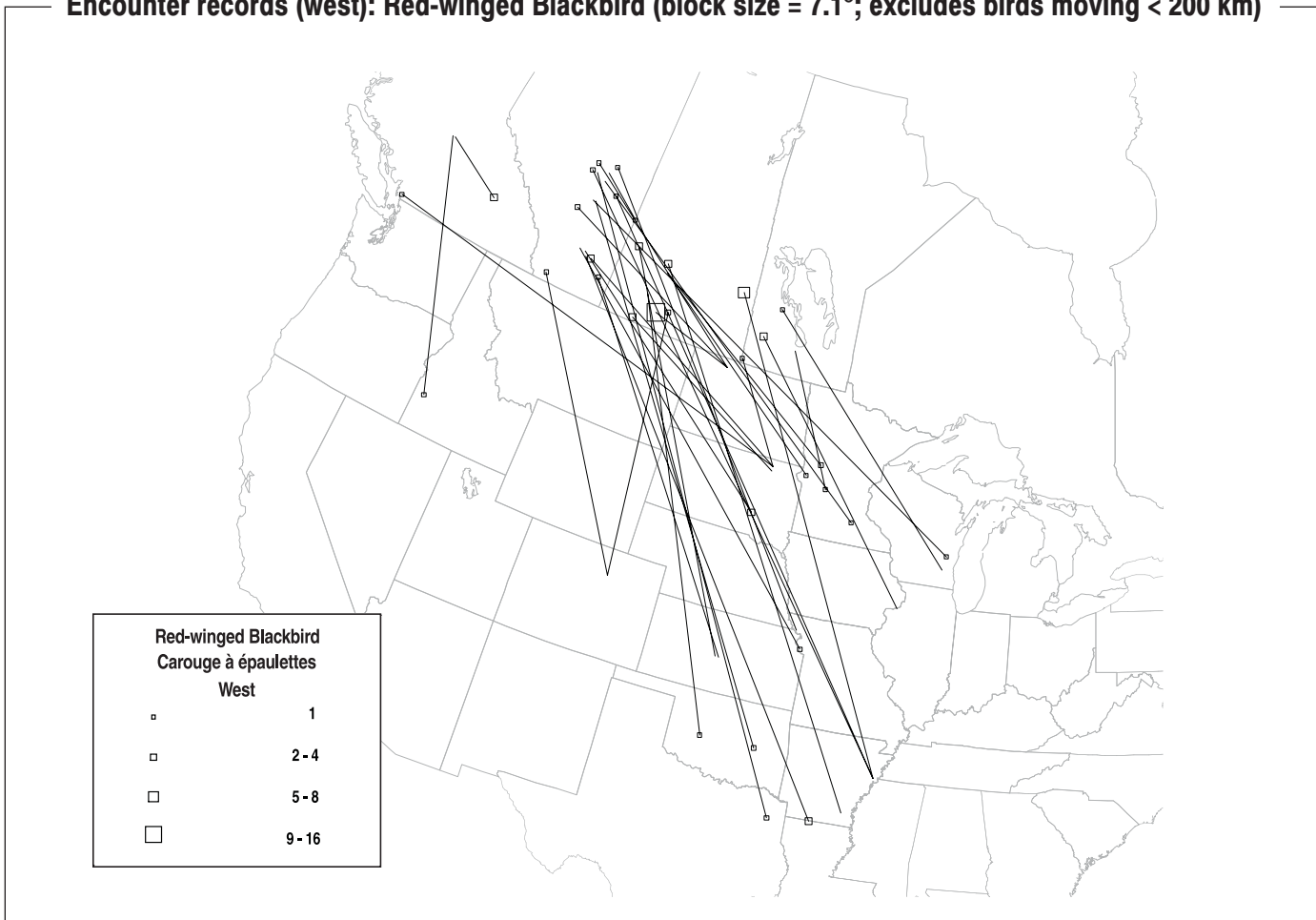
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			4907
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	5	1	6
No. encountered from foreign bandings	1	0	1
Maximum period from banding to encounter (mo.)	47	46	47
No. of Canadian-banded birds moving > 0 km	4	1	5
Mean movement > 0 km of Canadian-banded birds	235	13	191
Maximum movement from all encounters (km)	911	13	911
% recovered (encountered dead)	80	100	83
% direct recoveries	0	0	0
% encountered during banding operations	0	0	40

Banding effort: Bobolink

Top banders: ADB, PM, FTL, LPBO, DRL

Red-winged Blackbird (*Agelaius phoeniceus*) 498.0

Encounter records (west): Red-winged Blackbird (block size = 7.1°; excludes birds moving < 200 km)



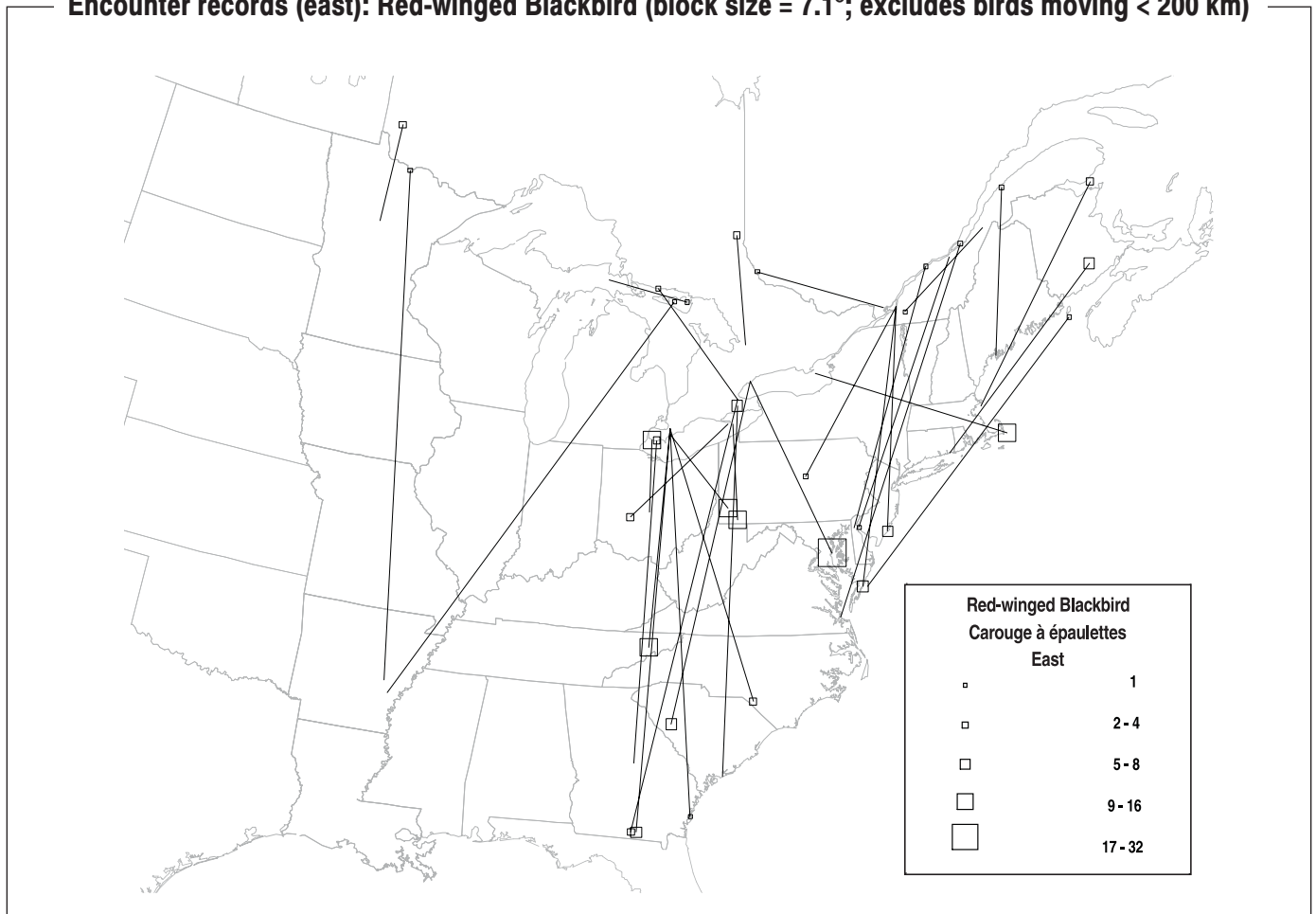
The Red-winged Blackbird breeds virtually throughout the U.S. and forested regions of Canada, as well as in the Prairie Provinces. Northern populations winter in southern Ontario, through most of the U.S., and as far south as Mexico.

Dolbeer (1978, 1982) thoroughly analyzed encounters from throughout North America. He showed that Red-winged Blackbirds migrate farther in their first year than later, and that although birds from widely different breeding areas mingle in winter roosts, they return to the same breeding areas each summer. Most birds do not begin their fall migration until October or November, after completing their postnuptial moult. Most damage to crops (occurring in late summer) can therefore be attributed to birds breeding locally. This is not necessarily the case in the Prairies,

though; Dolbeer showed that Prairie birds begin to move south in August and September, before the moult is complete. Nonetheless, banding results have shown that control measures taken at winter roosts will have little effect on reducing crop damage in any particular farming region.

Banding effort in Canada has been low relative to both the population density of the species in this country and the banding effort in the U.S. (Dolbeer 1978). Most bandings and encounters (80%) were about evenly divided between spring and summer (March–July). One-third of the encounters were of birds returning to the banding site, and 23% were of shot birds (e.g., records 1–7). Unlike raptors, for which shooting has declined since the 1960s as a source of band encounter, blackbirds continue to be shot, presumably for pest control.

Encounter records (east): Red-winged Blackbird (block size = 7.1°; excludes birds moving < 200 km)



The maps for this species summarize data by eliminating many individual records (see block size with encounter maps and section 4.2 for explanation). No movements under 200 km are shown on the map (the normal cut-off is 100 km).

Mid-winter (December–February) encounters in southwestern British Columbia document a resident population there, while other areas of that province clearly have migratory populations (see western encounter map). Birds from the Prairie Provinces have been found wintering from Colorado and Kansas to Texas and Arkansas (records

2–5); but mapped encounters from migration seasons suggest that many of these birds may also winter farther east (e.g., record 6). Sixty-four percent of the birds encountered had been banded in Ontario; these birds wintered primarily in coastal and adjacent states from Maryland to Florida and Alabama (records 7–9). However, Quebec birds concentrated in winter in coastal states in the northern half of the U.S. Atlantic coast (e.g., record 10), where they overlapped with red-wings from the Maritimes.

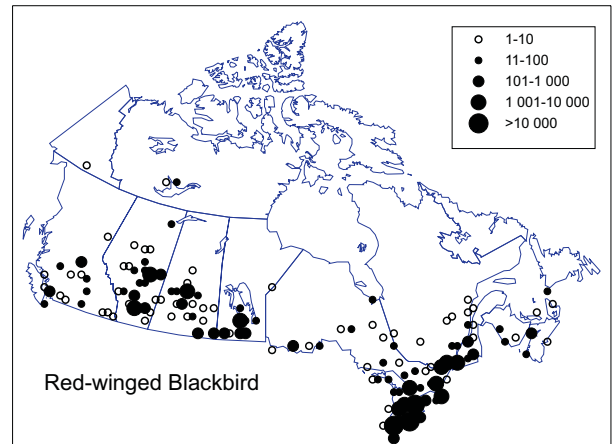
*Red-winged Blackbird***Encounter records: Red-winged Blackbird**

1	0852-64408 JHB	AHY M 05 01	09/02/87 04/05/87	Chincoteague, VA Seal Cove, NS	37°50'N 75°20'W 44°30'N 66°50'W	3 mo. 1028 km N41°E
2	0022-72887 JEH	U U 00 01	17/06/31 03/01/32	near Brooks, AB Union County, AR	50°30'N 111°50'W 33°??'N 93°??'W	7 mo. c. 2285 km S47°E
3	0032-52553 JEH	J U 00 01	09/07/33 01/01/35	near Buffalo Lake, AB Pharoah, OK	52°30'N 112°50'W 35°20'N 96°00'W	1 yr. 6 mo. 2320 km S41°E
4	0372-25313 FHP	HY U 00 01	29/06/37 20/12/38	near Edmonton, AB near Pittsburg, TX	53°30'N 113°20'W 32°50'N 94°50'N	1 yr. 6 mo. 2729 km S40°E
5	0392-40471 CMO	AHY U 00 01	07/02/40 27/04/41	near Ladelle, AR Ardath, SK	33°30'N 91°40'W 51°30'N 107°10'W	1 yr. 2 mo. 2363 km N27°W
6	0024-66914 GP	J U 00 01	04/07/34 04/09/36	near Buffalo Lake, AB Eden, WI	52°30'N 112°50'W 43°40'N 88°20'W	2 yr. 2 mo. 2056 km S71°E
7	0861-99750 EJW	AHY F 05 13	13/02/79 31/05/85	Hermanville, MD Lansdowne, ON	38°10'N 76°20'W 44°20'N 76°00'W	6 yr. 3 mo. 687 km N2°E
8	0571-00002 CHR	AHY F 05 01	04/05/69 02/01/72	Toronto, ON O'Brien, FL	43°40'N 79°20'W 30°00'N 82°50'W	2 yr. 8 mo. 1553 km S13°W
9	0621-05973 LPBO	AHY F 05 03	08/07/66 22/01/67	Mitchell Bay, ON Slocomb, AL	42°20'N 82°20'W 31°00'N 85°30'W	6 mo. 1293 km S14°W
10	0812-92965 RWF	SY M 05 00	05/02/81 99/09/85	Beach Haven, NJ Greenfield Park, QC	39°30'N 74°10'W 45°20'N 73°20'W	4 yr. 7 mo. 653 km N6°E
11	0832-42713 AS	ASY M 05 00	07/05/79 04/04/91	Mountsberg, ON Mountsberg, ON	43°20'N 80°00'W 43°20'N 80°00'W	11 yr. 11 mo. 0 km

**Summary of banding statistics:
Red-winged Blackbird**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			78 481
<i>No. encountered per 1000 banded (1955–1995)</i>			9
Total no. encountered (1921–1995)	351	678	1 092
No. encountered from foreign bandings	61	70	151
Maximum period from banding to encounter (mo.)	110	143	143
No. of Canadian-banded birds moving > 0 km	156	205	379
Mean movement > 0 km of Canadian-banded birds	342	270	307
Maximum movement from all encounters (km)	2 729	2 511	2 741
% recovered (encountered dead)	63	52	57
% direct recoveries	22	19	20
% encountered during banding operations	34	44	40

Banding effort: Red-winged Blackbird



Top banders: LPBO, MID, REWa, JBMi, PJW

Eastern Meadowlark (*Sturnella magna*) 501.0

Encounter: Eastern Meadowlark



The Eastern Meadowlark breeds in the eastern and southwestern U.S., as well as in Canada from southern Ontario east to New Brunswick. It winters from extreme southern Ontario south to Mexico.

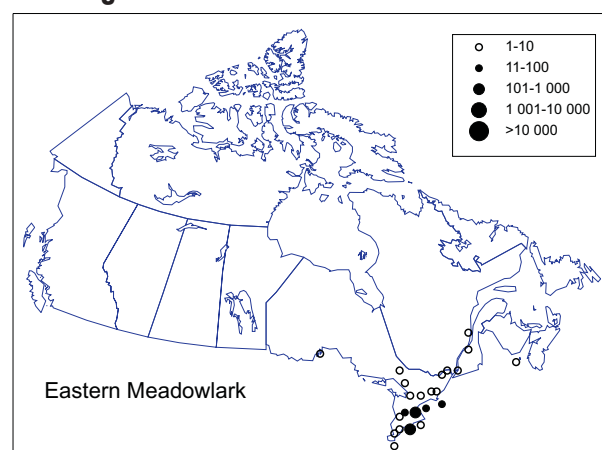
The only encounter of a bird that moved is shown on the map (record 1); it was wintering in South Carolina. The other seven birds were encountered at the site of banding (e.g., record 2).

Encounter records: Eastern Meadowlark

1	0523-67504	AHY M	27/04/58	Agincourt, ON	43°40'N 79°10'W	8 mo.
	RBr	00 01	12/12/58	Clio, SC	34°30'N 79°30'W	1021 km S2°W
2	0523-67503	AHY M	27/04/58	Agincourt, ON	43°40'N 79°10'W	1 yr. 3 mo.
	RBr	00 00	22/07/59	Agincourt, ON	43°40'N 79°10'W	0 km

Summary of banding statistics: Eastern Meadowlark

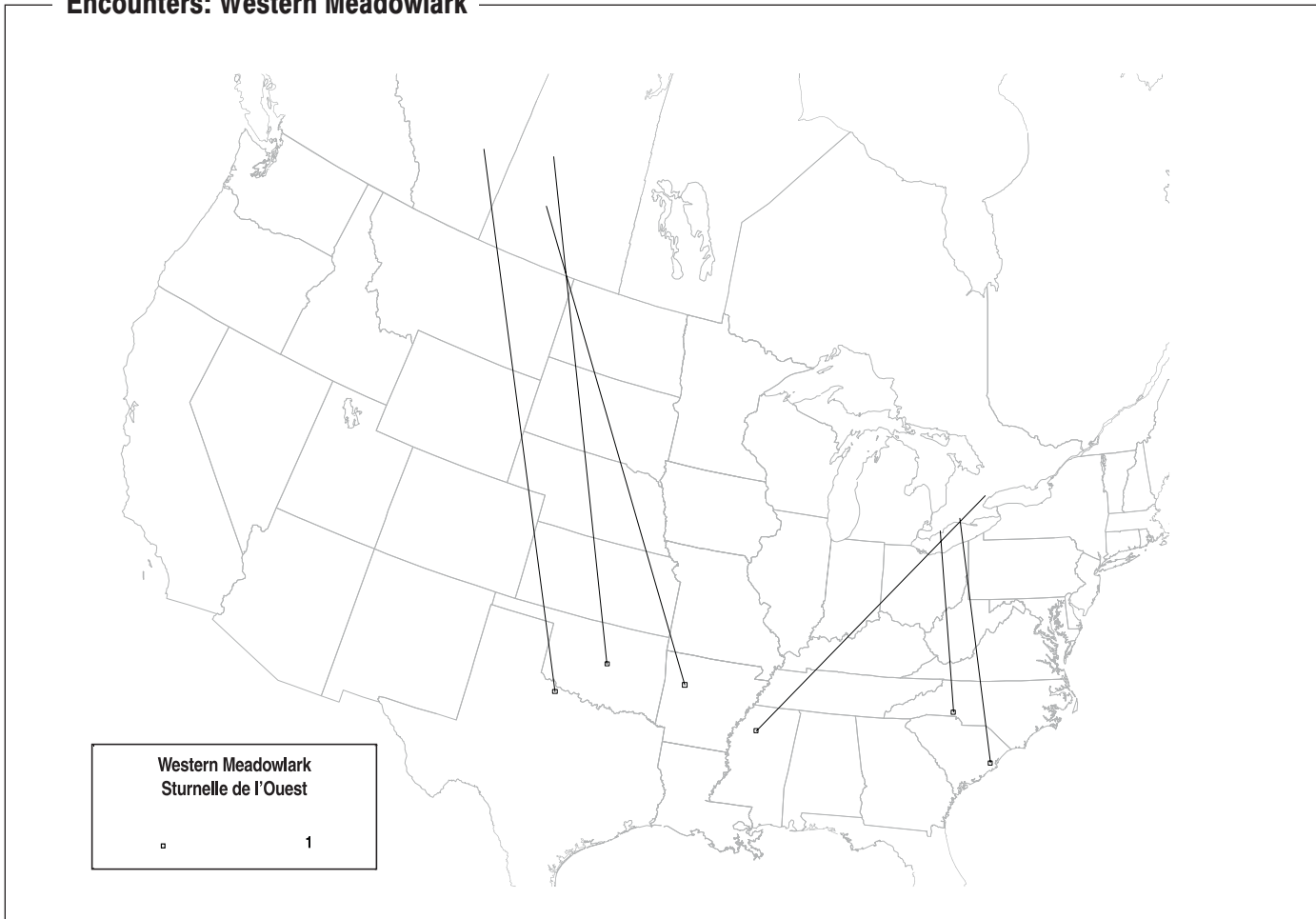
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			608
<i>No. encountered per 1000 banded (1955–1995)</i>			6
Total no. encountered (1921–1995)	4	3	8
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	–	15	15
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	1020	1020
Maximum movement from all encounters (km)	0	1020	1020
% recovered (encountered dead)	75	100	87
% direct recoveries	100	33	62
% encountered during banding operations	0	0	0

Banding effort: Eastern Meadowlark

Top banders: RWK, LPBO, JBF, PEPO, ADB, UT

Western Meadowlark (*Sturnella neglecta*) 501.1

Encounters: Western Meadowlark



The Western Meadowlark breeds in western and central states of the U.S., as well as from central and southern British Columbia to southern Manitoba, with a disjunct population in western Ontario; it also breeds rarely in local areas of southern Ontario and southwestern Quebec. It winters from southern British Columbia and the central U.S. states south to central Mexico and the Gulf Coast, as far east as Tennessee and possibly farther (Lanyon 1994).

Birds from the Prairie Provinces move southeast in fall (records 1–3), with at least some of them wintering in the U.S. rather than Mexico (e.g., record 1).

The encountered birds from Ontario (records 4–6) were all banded as part of a special study of breeding Western

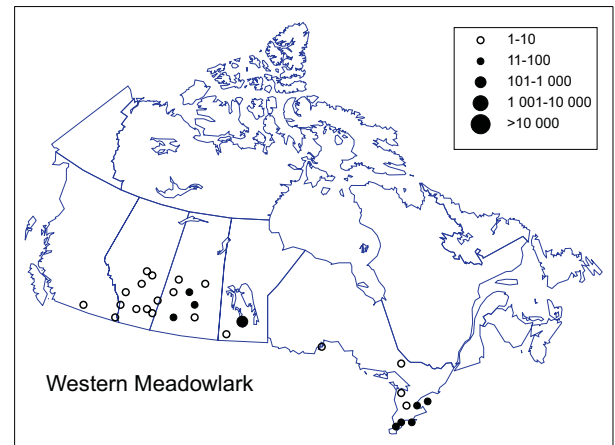
Meadowlarks, at a season when this species is easily separated from Eastern Meadowlarks by song. Two of them (records 4 and 5) are especially notable because they did not go to the usual wintering range (as did the bird in record 3), but rather to an area used by Eastern Meadowlarks. Lanyon (1994) noted that the eastern extent of the wintering area for Western Meadowlarks was difficult to determine, because the two species are very hard to tell apart in winter. These band encounters indicate that there may be a small and hitherto unsuspected wintering population on the southern Atlantic seaboard.

Encounter records: Western Meadowlark

1	0363-19833 HM	J U 00 01	08/06/38 21/02/39	Rabbit Lake, SK Arcadia, OK	53°00'N 107°40'W 35°30'N 97°10'W	8 mo. 2115 km S27°E
2	0383-60759 FJHF	J U 00 01	13/07/39 23/10/39	Macrorie, SK Coal Hill, AR	51°10'N 107°00'W 35°20'N 93°30'W	3 mo. 2067 km S37°E
3	0393-02446 MM	J U 00 00	16/07/40 19/08/47	Castor, AB near Vernon, TX	52°10'N 111°50'W 34°00'N 99°10'W	2 yr. 1 mo. 2261 km S32°E
4	0603-35319 JBF	AHY F 00 00	29/06/59 16/03/60	Blenheim, ON Lincolnton, NC	42°20'N 82°00'W 35°20'N 81°10'W	9 mo. 783 km S6°E
5	0603-35383 JBF	AHY M 00 01	29/06/60 11/01/63	Nilestown, ON Andrews, SC	42°50'N 81°00'W 33°20'N 79°30'W	2 yr. 7 mo. 1066 km S8°E
6	0543-05755 JBF	HY U 00 00	09/06/59 ??/12/61	Sandhill, ON Charleston, MS	43°40'N 79°40'W 34°00'N 90°00'W	1398 km S43°W

Summary of banding statistics: Western Meadowlark

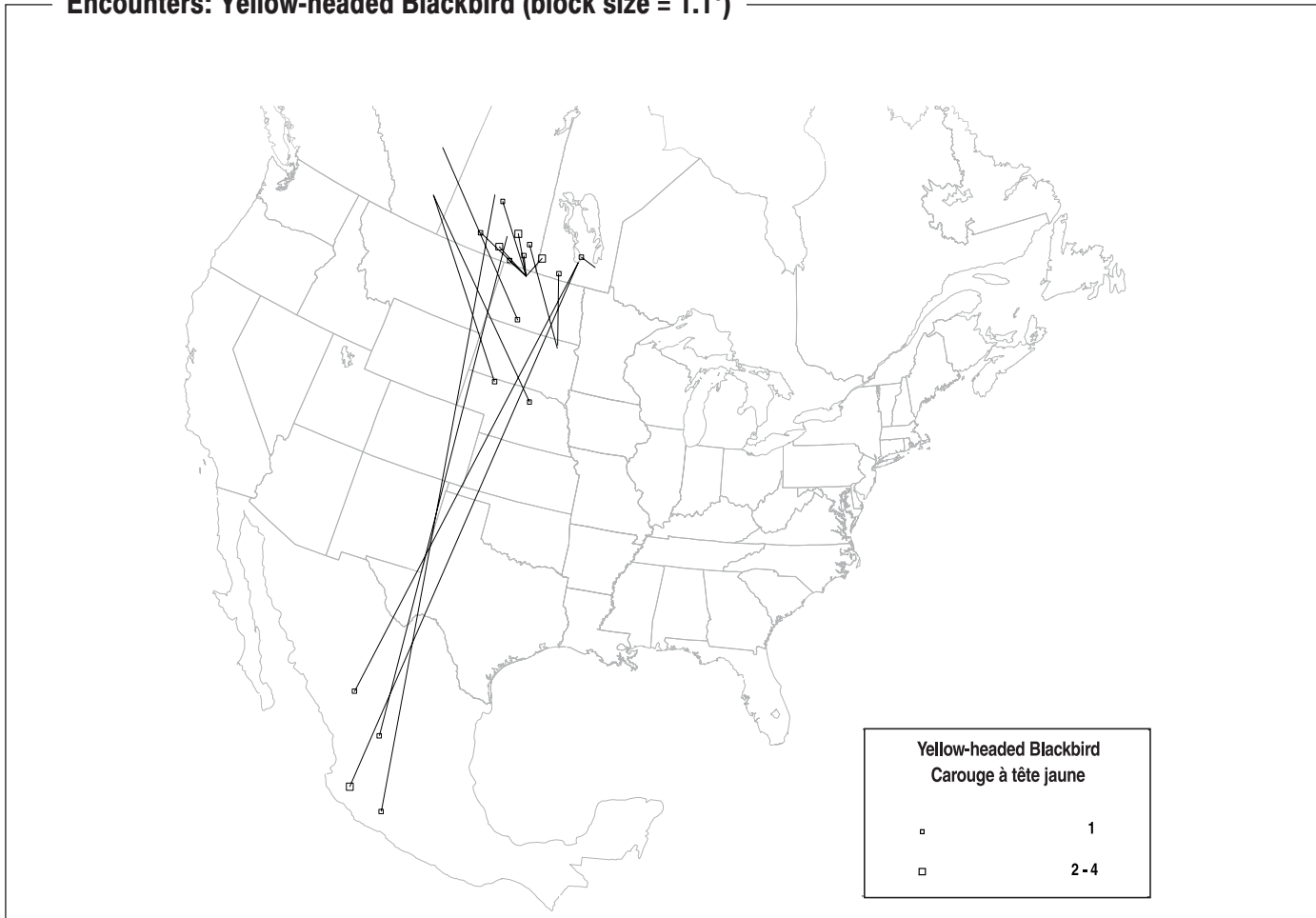
	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			443
<i>No. encountered per 1000 banded (1955–1995)</i>			13
Total no. encountered (1921–1995)	9	4	13
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	31	31	31
No. of Canadian-banded birds moving > 0 km	5	2	7
Mean movement > 0 km of Canadian-banded birds	1570	924	1385
Maximum movement from all encounters (km)	2261	1065	2261
% recovered (encountered dead)	77	75	76
% direct recoveries	44	50	46
% encountered during banding operations	11	25	15

Banding effort: Western Meadowlark

Top banders: UT, JBF, WM, ETJ, ARS, MRL

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) 497.0

Encounters: Yellow-headed Blackbird (block size = 1.1°)



The Yellow-headed Blackbird breeds from central-interior British Columbia east to the extreme western and southern parts of Ontario, as well as in the western and north-central U.S. It winters from the southwestern U.S. east to southern Texas and south to south-central Mexico.

Ten encounters involved birds banded in an intensive study in North Dakota (e.g., record 1). This work documented the timing of migration and showed that blackbirds from the northern prairies winter in Mexico (Royall et al. 1971). The annual survival for adult males was estimated at just over 50% (Bray et al. 1979).

Three adult birds banded in Alberta were among the encounters. One (record 2) was found in Nebraska in January, far north of the normal wintering range, but

possibly it had been dead for some time. The Alberta birds moved on the same northwest-southeast axis as the majority of birds that were encountered within the northern prairies (e.g., records 3 and 4). However, long-distance movements were more north-south, as shown by the five Canadian-banded birds encountered in Mexico (records 5-9; none of them with exact encounter coordinates). Three of these birds were shot (records 5-7), and one was snared (record 8). Another 11 Canadian-banded birds were encountered within about 100 km of their banding sites.

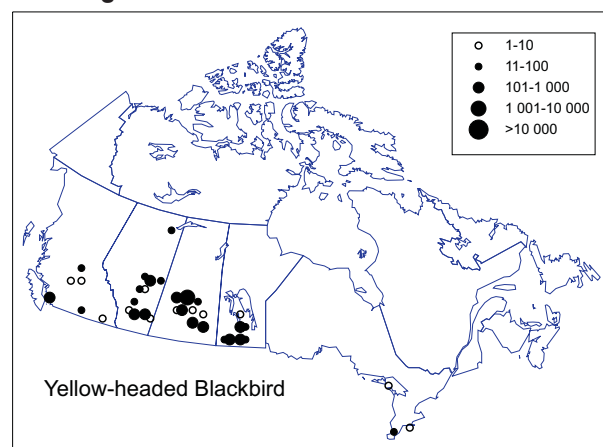
Encounter records: Yellow-headed Blackbird

1	0682-10255 RTG	HY F 06 00	14/08/64 FT/08/70	Kenmare, ND Bromhead, SK	48°40'N 102°00'W 49°10'N 103°40'W	6 yr. 133 km N73°W
2	1013-61171 CBSC	AHY M 05 00	02/09/76 20/01/77	Wardlow, AB 18 km south of Newport, NE	50°50'N 111°30'W 42°20'N 99°10'W	4 mo. 1333 km S50°E
3	0382-05071 SW	AHY M 00 00	11/05/38 99/06/40	Columbia, SD Broadview, SK	43°30'N 98°10'W 50°20'N 102°30'W	2 yr. 1 mo. 625 km N41°W
4	0652-88552 DWRC	SY M 03 12	18/05/64 01/07/67	Hecla Management Area, SD Ninette, MB	45°40'N 98°10'W 49°20'N 99°30'W	3 yr. 2 mo. 419 km N19°W
5	0523-66143 DWRS	AHY U 05 01	06/05/62 21/06/71	Delta, MB Jalisco State, MEXICO	50°10'N 98°10'W 20°00'N 104°00'W	9 yr. 1 mo. c. 3398 km S11°W
6	0692-15409 JBG	L U 03 01	30/06/69 ??/04/74	near Saskatoon, SK Michoacán State, MEXICO	52°10'N 106°40'W 19°00'N 102°00'W	c. 3714 km S8°E
7	0762-29501 LS	L U 05 01	19/06/73 99/08/73	near Regina, SK Zacatecas State, MEXICO	50°20'N 104°30'W 23°00'N 103°00'W	2 mo. c. 3045 km S3°E
8	0542-09235 JKL	HY M 06 04	21/08/64 ??/05/65	Delta, MB Durango State, MEXICO	50°10'N 98°10'W 25°00'N 105°00'W	c. 2863 km S14°W
9	0522-52029 SHL	AHY M 00 98	15/08/54 01/03/55	Delta, MB Jalisco State, MEXICO	50°10'N 98°10'W 20°00'N 104°00'W	7 mo. c. 3398 km S11°W

**Summary of banding statistics:
Yellow-headed Blackbird**

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			7956
No. encountered per 1000 banded (1955–1995)			2
Total no. encountered (1921–1995)	16	14	31
No. encountered from foreign bandings	6	6	12
Maximum period from banding to encounter (mo.)	98	109	109
No. of Canadian-banded birds moving > 0 km	8	8	17
Mean movement > 0 km of Canadian-banded birds	856	1326	1195
Maximum movement from all encounters (km)	3714	3397	3714
% recovered (encountered dead)	93	100	96
% direct recoveries	25	28	25
% encountered during banding operations	6	0	3

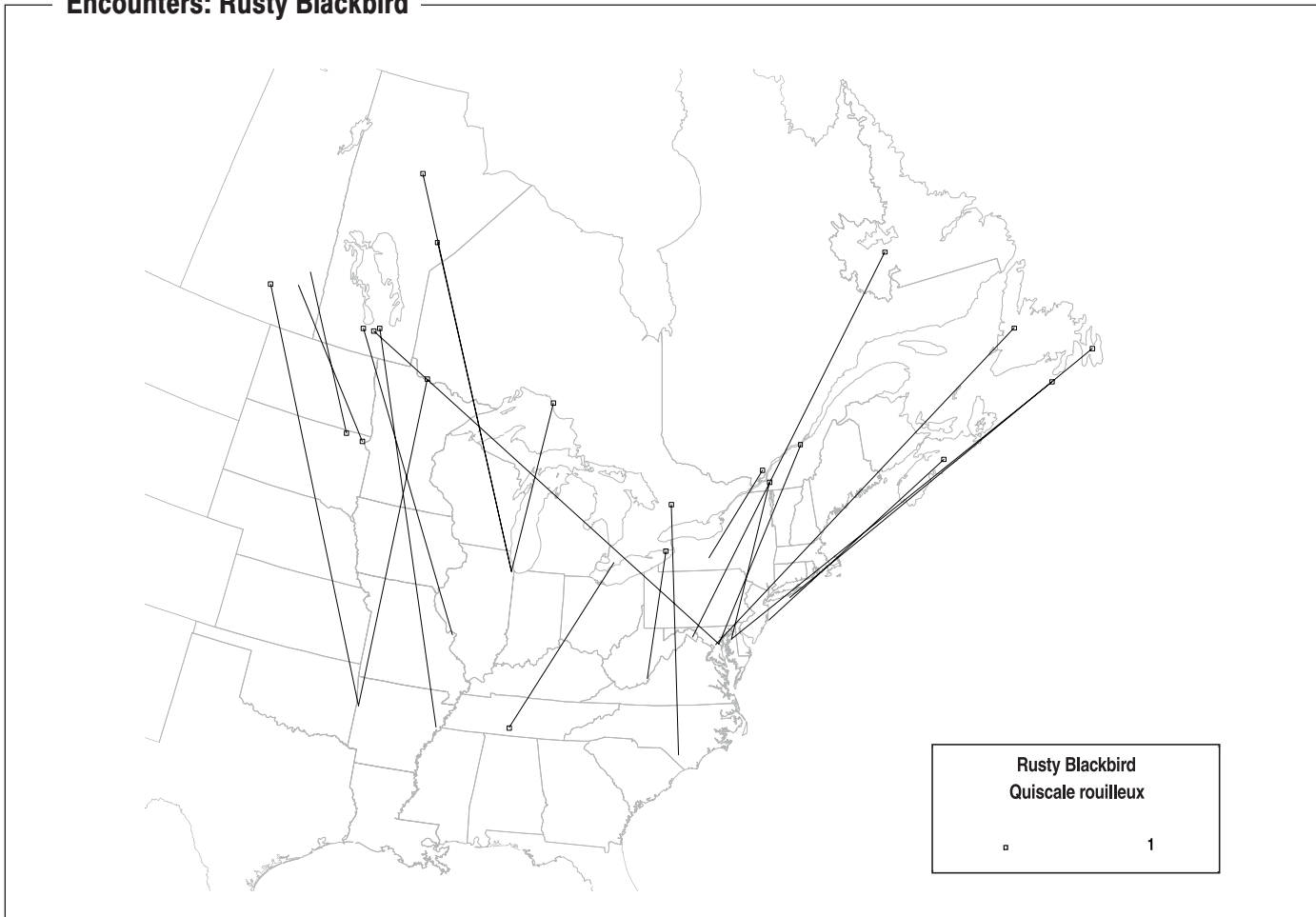
Banding effort: Yellow-headed Blackbird



Top banders: JSl, JBG, LS, PJW, UO

Rusty Blackbird (*Euphagus carolinus*) 509.0

Encounters: Rusty Blackbird



The Rusty Blackbird breeds across Alaska and Canada south of the treeline, except in the extreme south. It winters mainly in the eastern U.S., south of New England and the northern tier of midwestern states, and as far west as eastern Nebraska and eastern Texas; it also breeds locally in southern Canada (Avery 1995).

Western breeders tend to move toward the western half of the wintering range on a southeast–northwest axis (e.g., record 1), although some birds go farther east (records 2 and 3) and probably mingle in winter with more eastern breeders.

The latter move on a southwest–northeast axis (e.g., records 4–9). Most encounters were of birds banded in the U.S. in winter or on migration. There have been no encounters since 1975, perhaps reflecting a drop in banding parallel to a marked population decline.

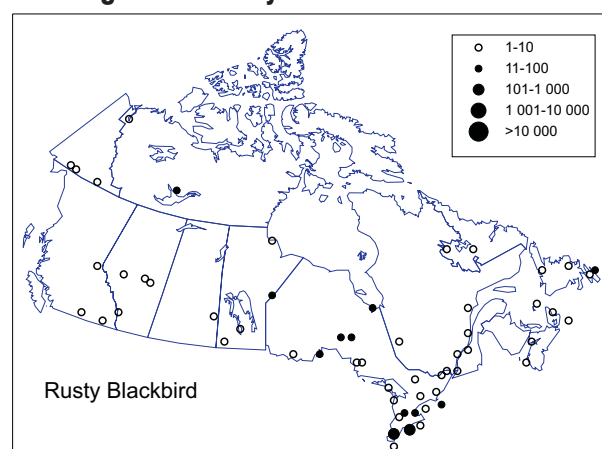
Encounter records: Rusty Blackbird

1	0023-96132 SHW	AHY U 00 01	26/04/31 17/08/33	Fort Smith, AR Lumsden, SK	35°20'N 94°20'W 50°30'N 104°50'W	2 yr. 4 mo. 1889 km N23°W
2	0352-17154 FL	AHY M 00 04	07/04/36 18/07/39	Blue Island, IL near Pelletier Lake, MB	41°40'N 87°40'W 56°30'N 97°00'W	3 yr. 3 mo. 1782 km N19°W
3	0542-53639 FCS	U M 00 01	15/01/57 ??/05/58	Bowie, MD near Reaburn, MB	39°00'N 76°40'W 50°00'N 97°50'W	2067 km N47°W
4	0562-22128 RLW	AHY M 00 03	01/11/59 07/02/60	Chatham, ON Lynnville, TN	42°20'N 82°10'W 35°20'N 87°00'W	3 mo. 884 km S30°W
5	0022-33838 VB	HY M 00 01	14/10/29 12/05/31	Bluff Point, NY Sainte-Julienne, QC	42°30'N 77°00'W 45°50'N 73°40'W	1 yr. 7 mo. 457 km N35°E
6	0562-14149 GLG	U U 06 03	13/10/63 01/10/69	Chestertown, MD Greenfield Park, QC	39°10'N 76°00'W 45°20'N 73°20'W	6 yr. 0 mo. 721 km N17°E
7	0562-14154 GLG	U F 05 00	15/10/63 06/05/67	Chestertown, MD SAINT-PIERRE & MIQUELON	39°10'N 76°00'W 46°40'N 56°10'W	3 yr. 7 mo. 1813 km N56°E
8	0712-93768 CM	U U 05 13	19/10/69 LT/07/70	Bunker Hill, WV Churchill Falls, Labrador, NF	39°20'N 78°00'W 53°30'N 64°10'W	9 mo. 1894 km N29°E
9	0572-24062 DB	HY M 00 12	31/10/59 ??/07/60	Laurel, MD near Grand Lake, NF	39°00'N 76°50'W 49°10'N 57°20'W	1917 km N47°E

Summary of banding statistics: Rusty Blackbird

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			938
No. encountered per 1000 banded (1955–1995)			3
Total no. encountered (1921–1995)	6	11	26
No. encountered from foreign bandings	4	7	18
Maximum period from banding to encounter (mo.)	19	39	72
No. of Canadian-banded birds moving > 0 km	2	3	5
Mean movement > 0 km of Canadian-banded birds	372	538	472
Maximum movement from all encounters (km)	1917	1888	2067
% recovered (encountered dead)	100	100	88
% direct recoveries	16	45	34
% encountered during banding operations	0	0	7

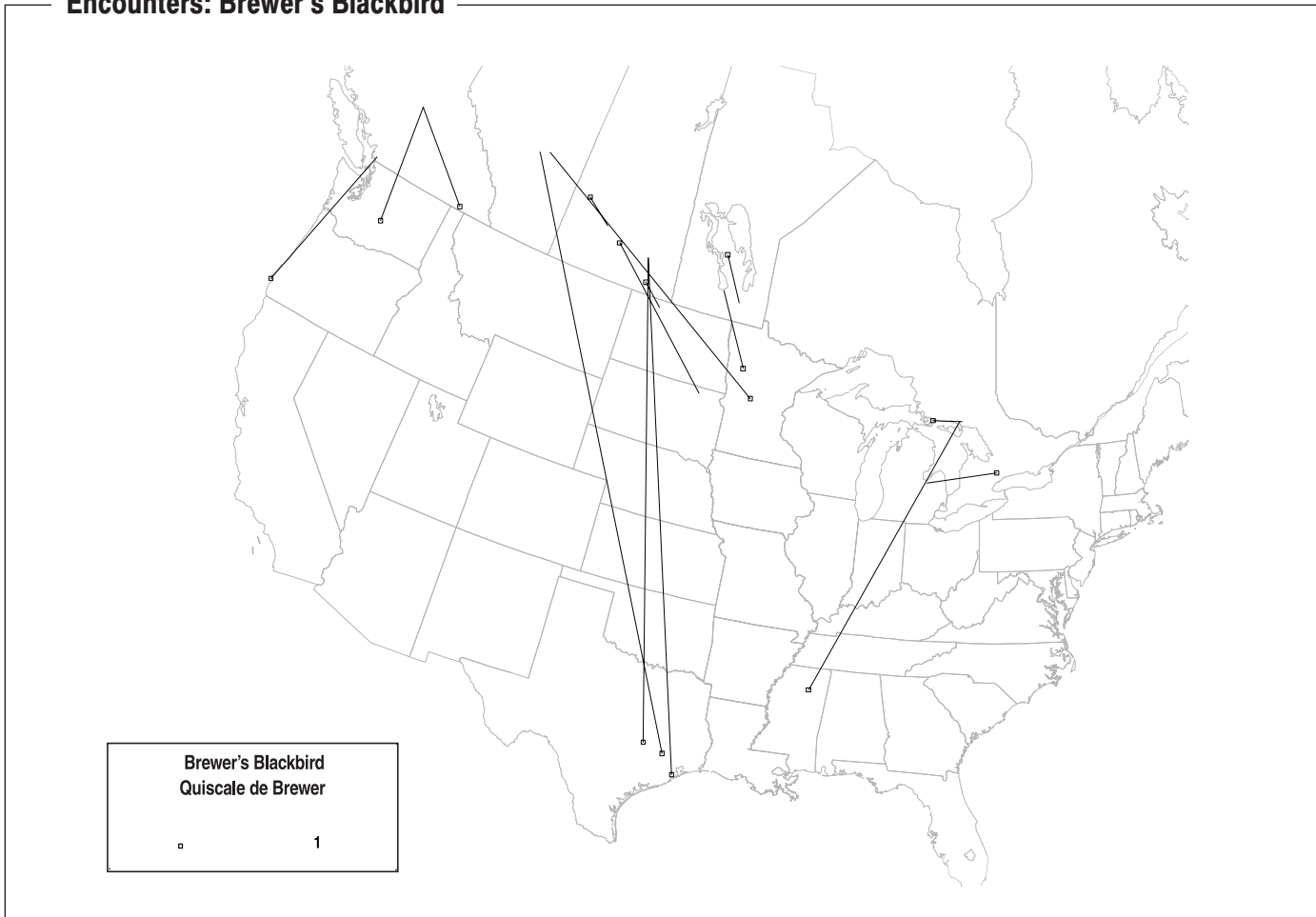
Banding effort: Rusty Blackbird



Top banders: LPBO, JBMi, MJW, RIGM, RLW

Brewer's Blackbird (*Euphagus cyanocephalus*) 510.0

Encounters: Brewer's Blackbird



Brewer's Blackbird breeds from southern and central British Columbia east to southwestern Ontario; it also breeds in the western U.S. It winters from southwestern British Columbia south to southern Mexico, as well as in the southern half of the eastern U.S.

There were three encounters of birds banded in British Columbia that showed significant movement. One bird was encountered in the same province during July, 500 km southeast of the banding site; the other two were encountered in December and January, in Washington (record 1) and Oregon, respectively. The longest-distance encounter

involving British Columbia was 735 km. This contrasts with the much greater distances covered by Prairie Province birds migrating to their winter quarters (e.g., records 2–4).

Brewer's Blackbirds expanded their range eastward in the late 1940s, reaching into northern and central Ontario during the middle and late 1960s (Gordon 1987). Records 5 to 7 and possibly record 8 illustrate this expansion.

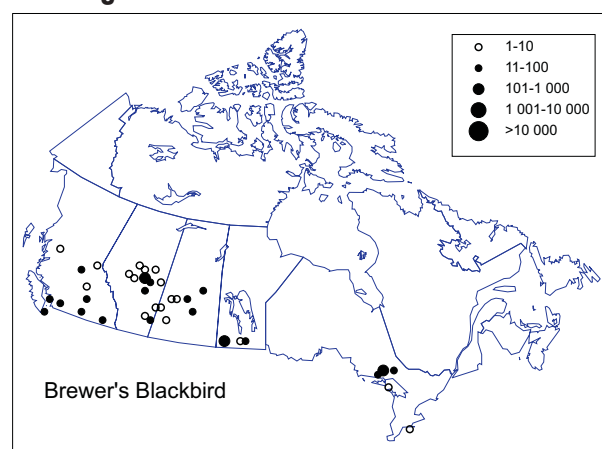
Encounter records: Brewer's Blackbird

1	0542-02769 JARo	L U 05 01	04/06/66 99/12/70	Onward, BC Ellensburg, WA	52°00'N 122°00'W 47°00'N 120°30'W	4 yr. 6 mo. 567 km S12°E
2	0004-25039 GLa	HY U 00 00	13/06/29 30/11/32	Indian Head, SK Rockdale, TX	50°30'N 103°40'W 30°30'N 96°50'W	3 yr. 5 mo. 2298 km S17°E
3	0373-08024 GLa	HY U 00 01	14/06/37 01/01/38	Indian Head, SK Algoa, TX	50°30'N 103°40'W 29°20'N 95°10'W	7 mo. 2462 km S20°E
4	0482-02107 FHP	J U 00 00	05/07/48 12/01/49	Wetaskiwin, AB south of Magnolia, TX	52°50'N 113°20'W 30°10'N 95°50'W	6 mo. 2897 km S36°E
5	0562-88544 ROMo	L U 05 12	13/06/71 04/01/75	Gough Lake, ON Robbs, MS	46°10'N 81°50'W 34°00'N 89°10'W	3 yr. 7 mo. 1490 km S27°E
6	0582-87223 WAL	L U 00 00	10/06/61 ??/06/62	near Quanicassee, MI Glenville, ON	43°30'N 83°40'W 44°00'N 79°30'W	340 km N79°E
7	0562-81442 JR	L U 04 45	13/06/70 99/SU/71	McKerrow, ON Nesterville, ON	46°10'N 81°40'W 46°10'N 83°30'W	141 km 0°W
8	0382-29815 ALW	J U 00 01	26/06/38 06/10/40	Camrose, AB inexact location, MN	53°00'N 112°40'W 46°??'N 95°??'W	2 yr. 4 mo. c.1316 km S70°E

Summary of banding statistics: Brewer's Blackbird

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			1182
<i>No. encountered per 1000 banded (1955–1995)</i>			14
Total no. encountered (1921–1995)	17	22	44
No. encountered from foreign bandings	1	3	6
Maximum period from banding to encounter (mo.)	54	36	54
No. of Canadian-banded birds moving > 0 km	11	10	23
Mean movement > 0 km of Canadian-banded birds	1079	77	588
Maximum movement from all encounters (km)	2897	375	2897
% recovered (encountered dead)	100	86	93
% direct recoveries	58	18	36
% encountered during banding operations	0	13	6

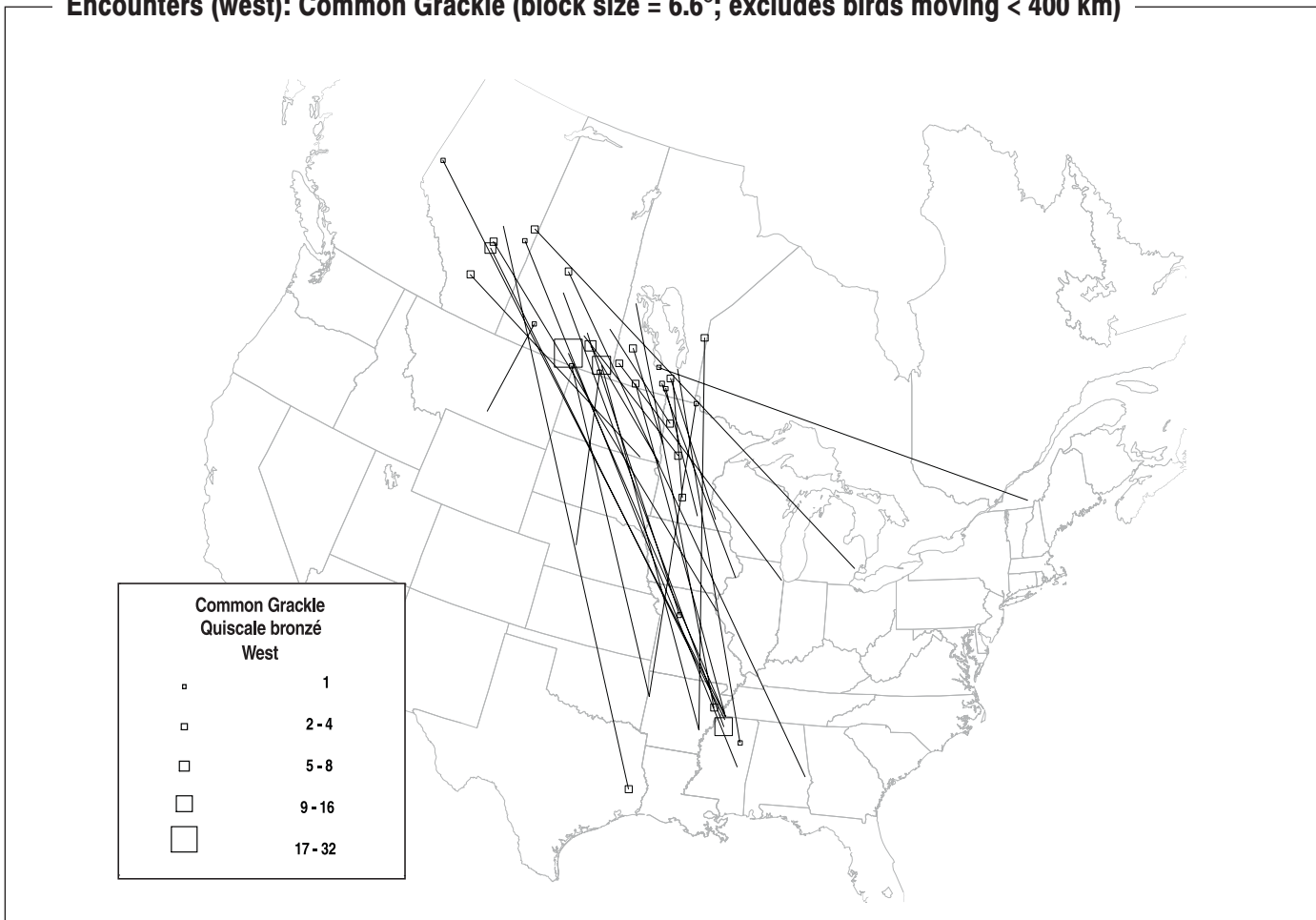
Banding effort: Brewer's Blackbird



Top banders: ROM, ETJ, DRH, RWC, JCF

Common Grackle (*Quiscalus quiscula*) 511.0

Encounters (west): Common Grackle (block size = 6.6°; excludes birds moving < 400 km)



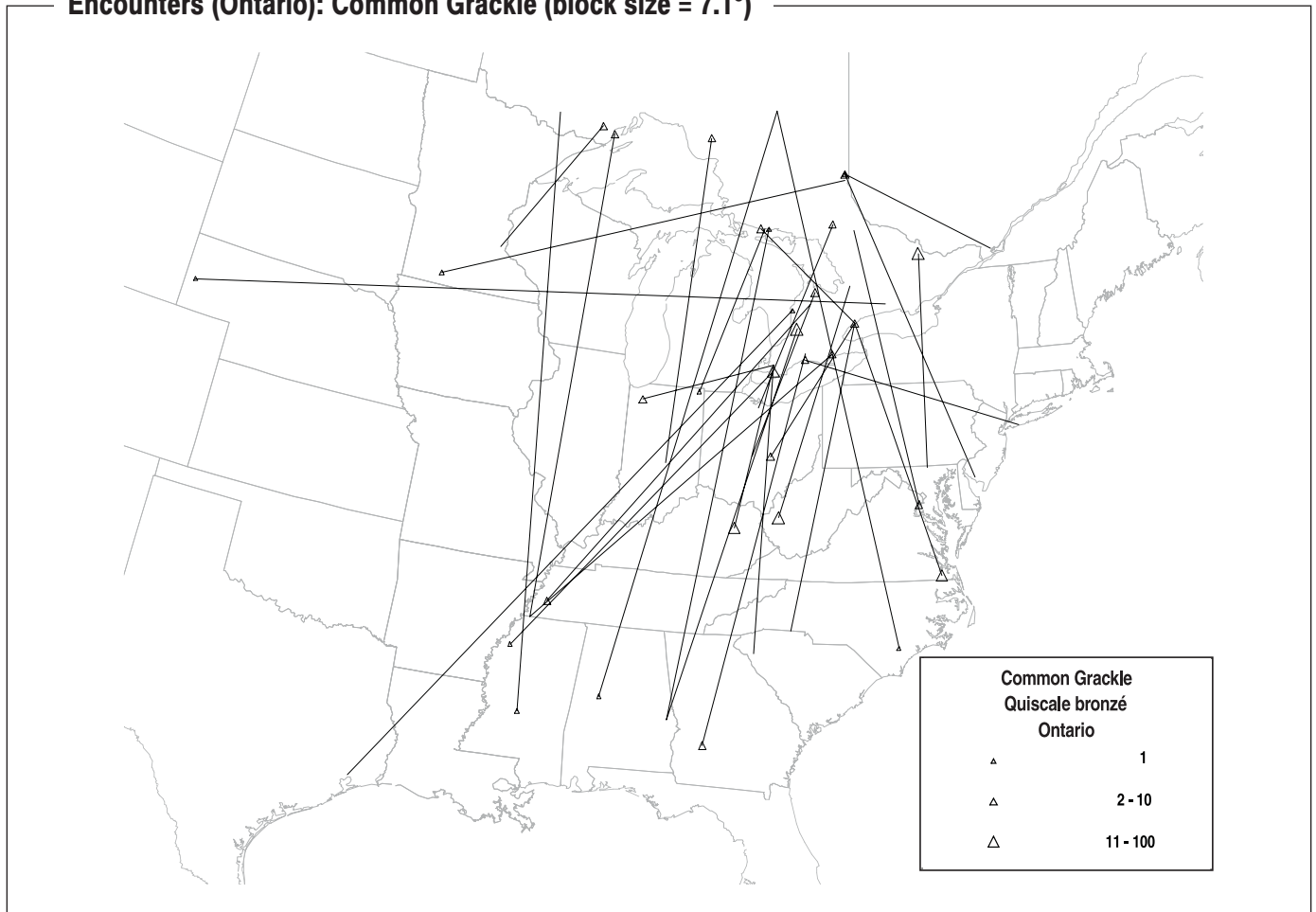
The Common Grackle breeds through most of the eastern and central U.S., as well as in forested regions of Canada, except for British Columbia. It winters in the eastern and central U.S., north to southern Ontario and New England, and south to the Gulf Coast and southern Florida.

The western map shows a northwest–southeast axis of movement for migrants from the Prairie Provinces. About 40% of winter encounters (December–February) were in Gulf Coast states from Texas to Alabama (records 1–4), another 45% were in Arkansas and Tennessee (record 5), and a few were in Canada and Minnesota. The winter range of Prairie Province birds overlaps with a portion of the winter range of Ontario birds, which occupies a broad area from southern Ontario and the Great Lakes states, south to

the Gulf Coast states (e.g., record 6, with only one encounter each in Texas and Florida, record 7), and east to the Atlantic coast south to Georgia. Over half the winter encounters of Ontario birds occurred in Gulf Coast states, but this figure is biased due to the heavy banding effort in Alabama in the mid-1960s. Quebec and Maritimes breeders migrate on a southwest–northeast axis, wintering mainly in coastal states from Maine to Virginia (records 8 and 9).

The pattern of Canadian encounters fits well with the analysis conducted by Dolbeer (1982), who also showed that more southerly nesting grackles have shorter migration distances than Canadian breeders. Females migrate an average of 100 km farther south than males, and hatch-year males migrate 100–300 km farther than adult males.

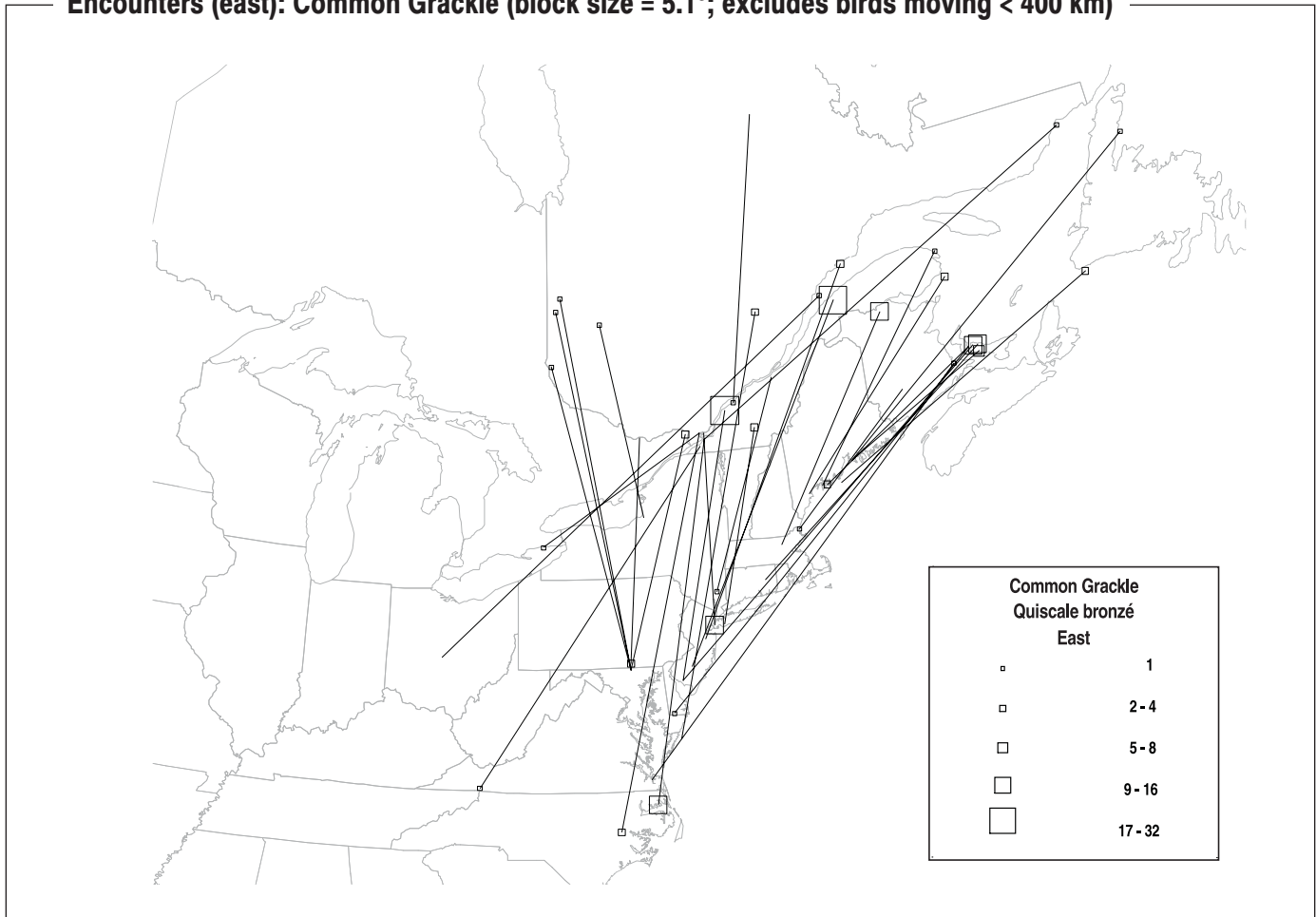
Encounters (Ontario): Common Grackle (block size = 7.1°)



The record in north-central Quebec (see eastern map) shows a bird banded as a juvenile in May 1937 at a site well north of the acknowledged breeding range (see Peer and Bollinger 1997), so possibly represents an error. However, the bird encountered in northeastern Quebec (record 10) is within the known range. Record 11 shows another

anomalous encounter; this bird was banded in August of its first year in Ontario and was recaptured in the breeding season six years later in Nebraska; it possibly represents a case of unusually distant juvenile dispersal.

Encounters (east): Common Grackle (block size = 5.1°; excludes birds moving < 400 km)



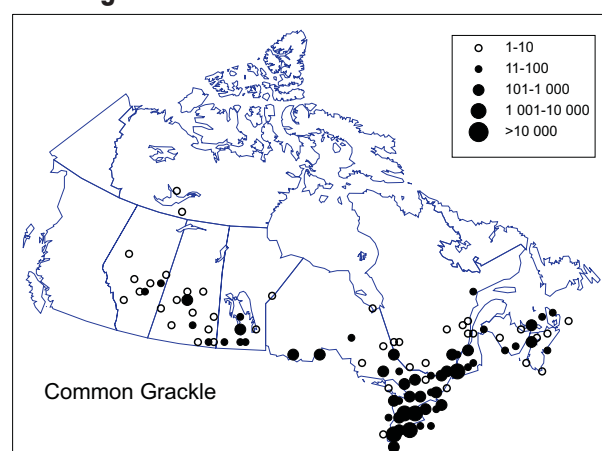
Encounter records: Common Grackle

1	0763-12742 ACWRU	U U 00 98	01/02/64 ??/09/64	near Hatchechabee, AL near Leask, SK	32°30'N 85°20'W 53°00'N 106°40'W	2848 km N30°W
2	0623-02861 CPP	HY U 00 00	21/02/58 ??/06/58	Philadelphia, MS Melfort, SK	32°40'N 89°00'W 52°50'N 104°30'W	2565 km N24°W
3	0382-08382 TER	J U 00 01	24/06/38 24/01/39	Lamont, AB Chester, TX	53°40'N 112°40'W 30°50'N 94°30'W	7 mo. 2931 km S37°E
4	0024-04610 JC	AHY F 00 01	27/04/30 01/12/32	11 km south of Lipton, SK Lost Prairie Lake, TX	50°40'N 103°50'W 31°40'N 95°30'W	2 yr. 8 mo. 2224 km S21°E
5	1163-72254 BBC	AHY F 05 00	21/01/75 03/05/76	Memphis, TN 18 km south of Beaverlodge, AB	35°00'N 90°00'W 55°00'N 119°20'W	1 yr. 4 mo. 3164 km N36°W
6	1173-77636 BBC	AHY M 07 89	01/05/76 22/04/92	Memphis, TN Long Point, ON	35°00'N 90°00'W 42°30'N 80°20'W	15 yr. 11 mo. 1182 km N42°E
7	0623-22073 LPBO	U M 05 01	01/07/65 07/12/69	Long Point, ON 16 km east of Darlington, FL	42°30'N 80°20'W 30°50'N 85°50'W	4 yr. 5 mo. 1388 km S22°W
8	0852-64275 JHB	AHY F 05 00	26/01/85 05/05/89	Chincoteague, VA Lac-Kénogami, QC	37°50'N 75°20'W 48°20'N 71°30'W	4 yr. 4 mo. 1209 km N14°E
9	0033-83876 UPRR	AHY M 00 01	22/12/44 05/05/45	Fort Meade, MD Shemogue, NB	39°00'N 76°40'W 46°00'N 65°10'W	5 mo. 1222 km N47°E
10	0484-32893 MB	HY U 00 98	17/09/50 ST/04/52	Île-Perrot, QC Saint-Augustin, QC	45°20'N 73°50'W 51°10'N 58°30'W	1 yr. 7 mo. 1305 km N55°E
11	0503-50612 FS	HY U 00 89	05/08/50 21/05/56	Peterborough, ON Mitchell, NE	44°10'N 78°10'W 41°50'N 103°40'W	5 yr. 9 mo. 2084 km N88°W

Summary of banding statistics: Common Grackle

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			36 589
No. encountered per 1000 banded (1955–1995)			35
Total no. encountered (1921–1995)	494	1 631	2 472
No. encountered from foreign bandings	48	220	422
Maximum period from banding to encounter (mo.)	123	191	191
No. of Canadian-banded birds moving > 0 km	237	565	893
Mean movement > 0 km of Canadian-banded birds	247	270	275
Maximum movement from all encounters (km)	2 930	3 164	3 164
% recovered (encountered dead)	82	76	79
% direct recoveries	27	23	25
% encountered during banding operations	15	21	18

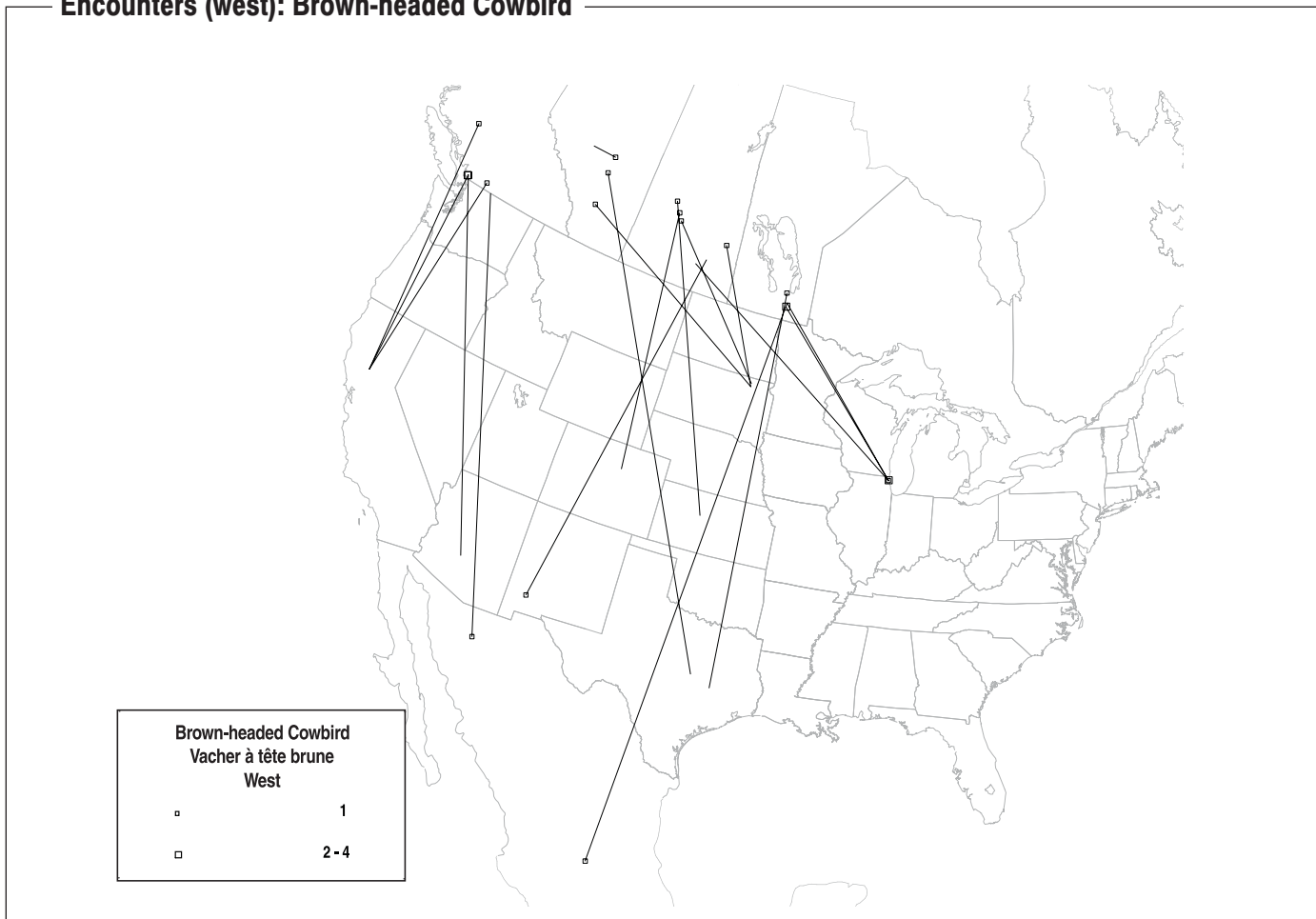
Banding effort: Common Grackle



Top banders: LPBO, CHR, REWa, MID, MB

Brown-headed Cowbird (*Molothrus ater*) 495.0

Encounters (west): Brown-headed Cowbird



The Brown-headed Cowbird breeds throughout the U.S., except for Alaska; in Canada, it breeds southward from the southwestern portion of the Northwest Territories, northern British Columbia, and northern Alberta, through central Saskatchewan, and east to southern Newfoundland. It winters in the southwestern U.S. and most of the east, as far north as southern Ontario, New Brunswick, and Nova Scotia.

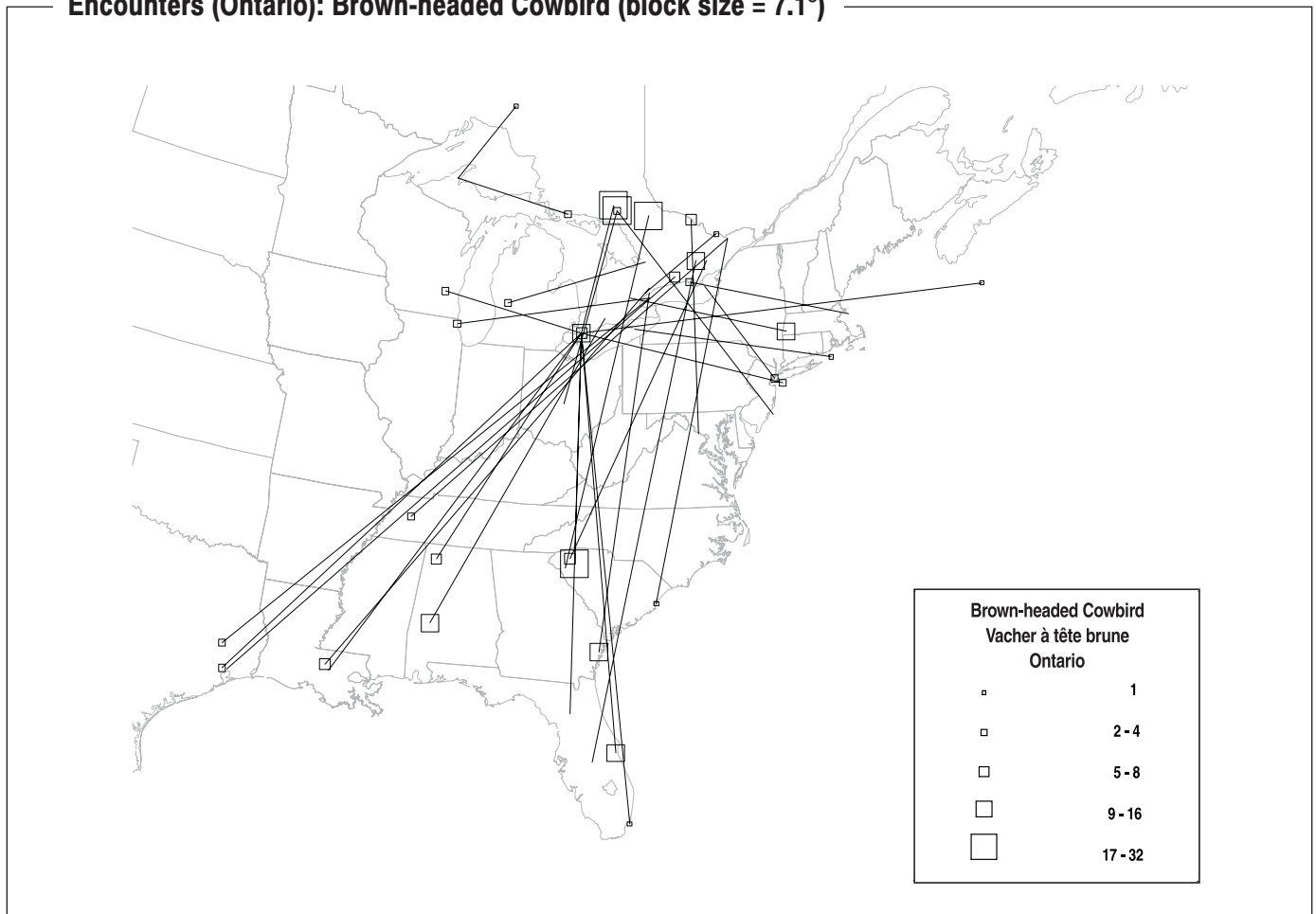
Note that the maps omit many individual encounters (see block size with encounter maps and section 4.2 for explanation). The maps nonetheless illustrate typical movement patterns.

Over half the encounters occurred in April or May, although banding was distributed fairly evenly through the year. Of the 1187 birds encountered, about 28% were returns to the banding site, 24% were found dead, and 20% had been shot. Record 1 below shows a case of reverse migration, and

record 2 shows a bird that moved unusually far east. This bird was captured by hand at sea, presumably on a boat, approximately due south of Halifax, Nova Scotia, and due east of Boston, Massachusetts. Details sent by the finder support the validity of this record (M. Gustafson, pers. comm.).

The very few data from British Columbia show movement to and from wintering (December–February) areas in California, Arizona (record 3), and Mexico (record 4). There has been relatively little banding effort in the Prairie Provinces; what has taken place has yielded mainly local encounters and no mid-winter records. However, several long-distance encounters link this region with New Mexico (record 5; this bird was found in July but possibly had long been dead), Texas (record 6), and Mexico (record 7). The northwest–southeast axis of movement in other encounters (see western map) suggest that cowbirds from the Prairie Provinces may also winter in the southeastern U.S.

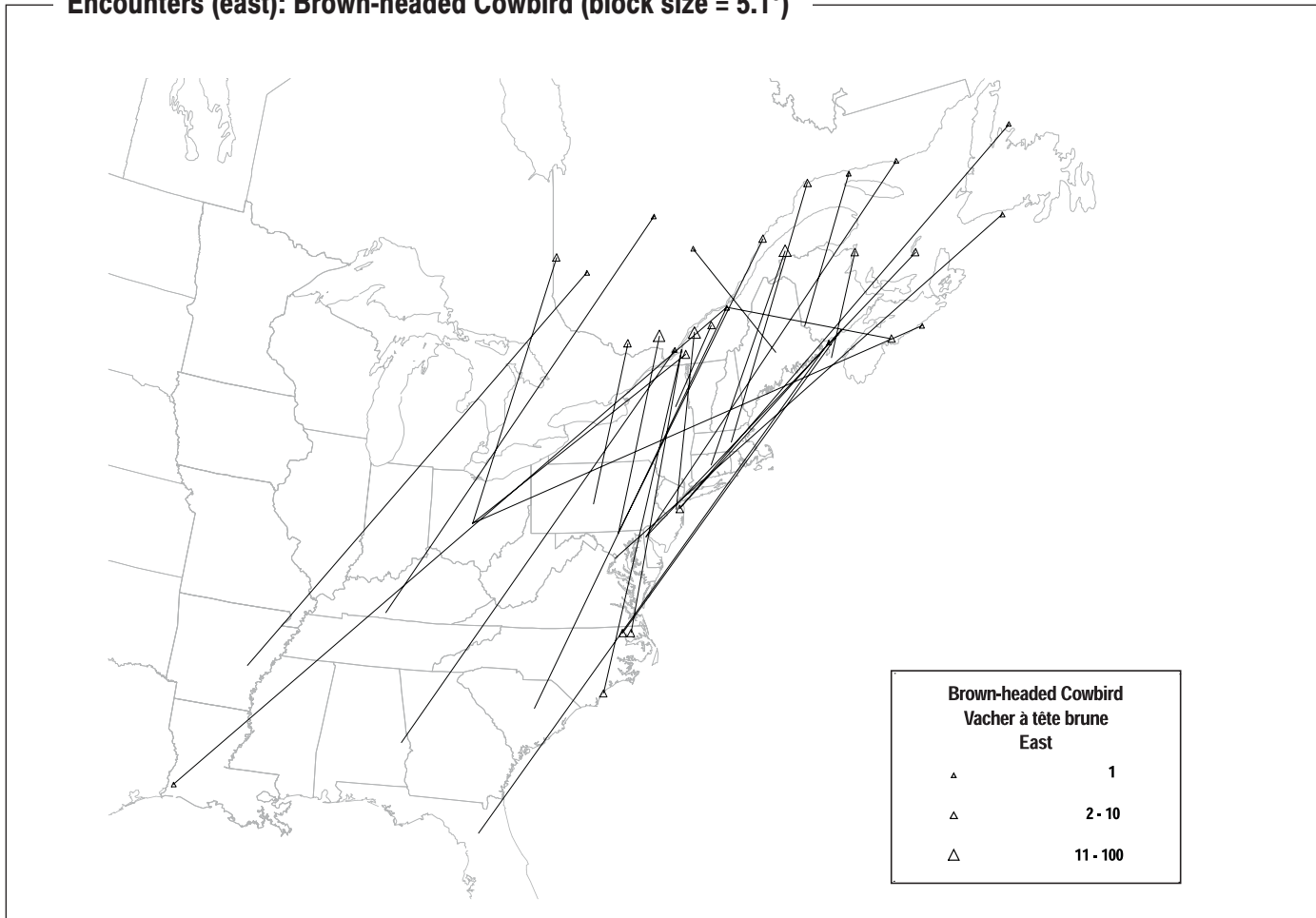
Encounters (Ontario): Brown-headed Cowbird (block size = 7.1°)



More than half the Canadian encounters were banded or encountered in Ontario. Cowbirds from that province were found in December through February in Ontario (17%), states just south of the Great Lakes (31%), the Gulf Coast states (32%; e.g., records 8 and 9), and states in between (record 10). Only a small number were found in New England coastal states. Although these proportions are biased by a concentration of band encounters in Ohio, resulting from intensive banding activity there (Burt and Giltz 1977), the delineation of wintering range is clear. By contrast, few Quebec cowbirds winter in the Gulf states (but see records 11 and 12), and nearly 70% of those encountered in December–February were in east coast states from New Jersey north. There, they overlapped with Maritimes birds, which were found mainly in the same area or in Nova Scotia (although they sometimes move farther, e.g., record 13).

The encounter patterns described above agree well with detailed analyses (Burt and Giltz 1977, Dolbeer 1982); however, the results from Burt and Giltz (1977) showed that birds banded in the Great Plains headed primarily north-northeast in spring (like the birds in records 5 and 6, but unlike those in record 7 and others shown on the western map). There is no differential migration between the sexes or age groups, and no fidelity to a particular wintering site between years (Dolbeer 1982).

Encounters (east): Brown-headed Cowbird (block size = 5.1°)



Encounter records: Brown-headed Cowbird

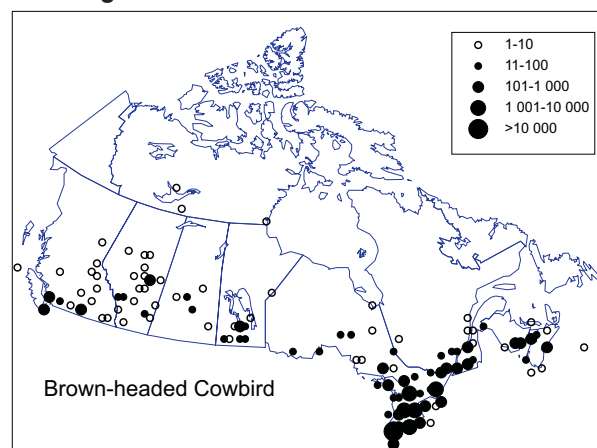
1	0372-29717 WIL	U M 00 89	23/05/38 18/06/38	near St. Vital, MB Gurnee, IL	49°50'N 97°00'W 42°20'N 87°50'W	1 mo. 1093 km S44°E
2	0691-77820 MID	AHY M 07 28	24/07/66 02/05/67	Balmoral Marsh, ON AT SEA, south of NS	42°20'N 82°20'W 42°40'N 64°30'W	10 mo. 1461 km N83°E
3	0662-58422 DWRC	AHY M 07 03	25/02/66 03/06/69	Laveen, AZ Annacis, BC	33°20'N 112°10'W 49°10'N 122°50'W	3 yr. 4 mo. 1971 km N23°W
4	0521-81886 DDD	AHY F 00 00	10/07/62 26/01/63	Chawanten Mountain, BC Sonora State, MEXICO	49°00'N 120°40'W 30°00'N 110°00'W	6 mo. c. 2300 km S27°E
5	0004-77642 RHC	AHY M 00 00	13/06/29 02/07/29	Muscow, SK near San Lorenzo, NM	50°40'N 103°50'W 32°40'N 107°50'W	1 mo. 2030 km S11°W
6	8071-27349 DMH	ASY M 05 00	23/04/93 21/05/93	18 km north of Killeen, TX Ponoka, AB	31°10'N 97°40'W 52°40'N 113°30'W	1 mo. 2715 km N24°W
7	0032-53310 JPK	AHY M 00 01	22/05/33 ST/11/33	St. Vital, MB Guanajuato State, MEXICO	49°50'N 97°00'W 21°00'N 101°00'W	6 mo. c. 3229 km S8°W

Encounter records: Brown-headed Cowbird (continued)

8	0031-98851	AHY M	29/02/32	Barbers Hill, TX	29°50'N 94°50'W	1 yr. 4 mo.
	ARSh	00 00	18/06/33	Keene, ON	44°10'N 78°10'W	2169 km N38°E
9	0022-18453	U M	09/02/30	Lake Wales, FL	27°50'N 81°30'W	2 mo.
	HH	00 04	13/04/30	Cloyne, ON	44°40'N 77°10'W	1913 km N10°E
10	0392-32002	U U	17/02/39	DeWitt, AR	34°10'N 91°20'W	
	CMO	00 98	??/10/54	Fighting Island, ON	42°10'N 83°00'W	1150 km N37°E
11	0342-48864	U M	24/05/37	Lévis, QC	46°40'N 71°10'W	1 yr. 7 mo.
	WIL	00 01	26/12/38	Edgerly, LA	30°10'N 93°30'W	2660 km S54°W
12	0521-73891	AHY F	02/05/67	Charlesbourg, QC	46°50'N 71°10'W	2 yr. 9 mo.
	AG	05 01	99/02/70	Ellerbee, FL	30°10'N 82°10'W	2083 km S31°W
13	0701-63597	HY F	15/11/67	northwest of Gainesville, FL	29°30'N 82°20'W	
	GFS	05 01	??/06/68	Blacks Harbour, NB	45°00'N 66°40'W	2206 km N34°E
14	0701-68269	AHY M	20/07/67	Mitchell Bay, ON	42°20'N 82°20'W	10 yr. 8 mo.
	MID	07 89	23/03/78	Scottsville, KY	36°50'N 86°20'W	702 km S31°W

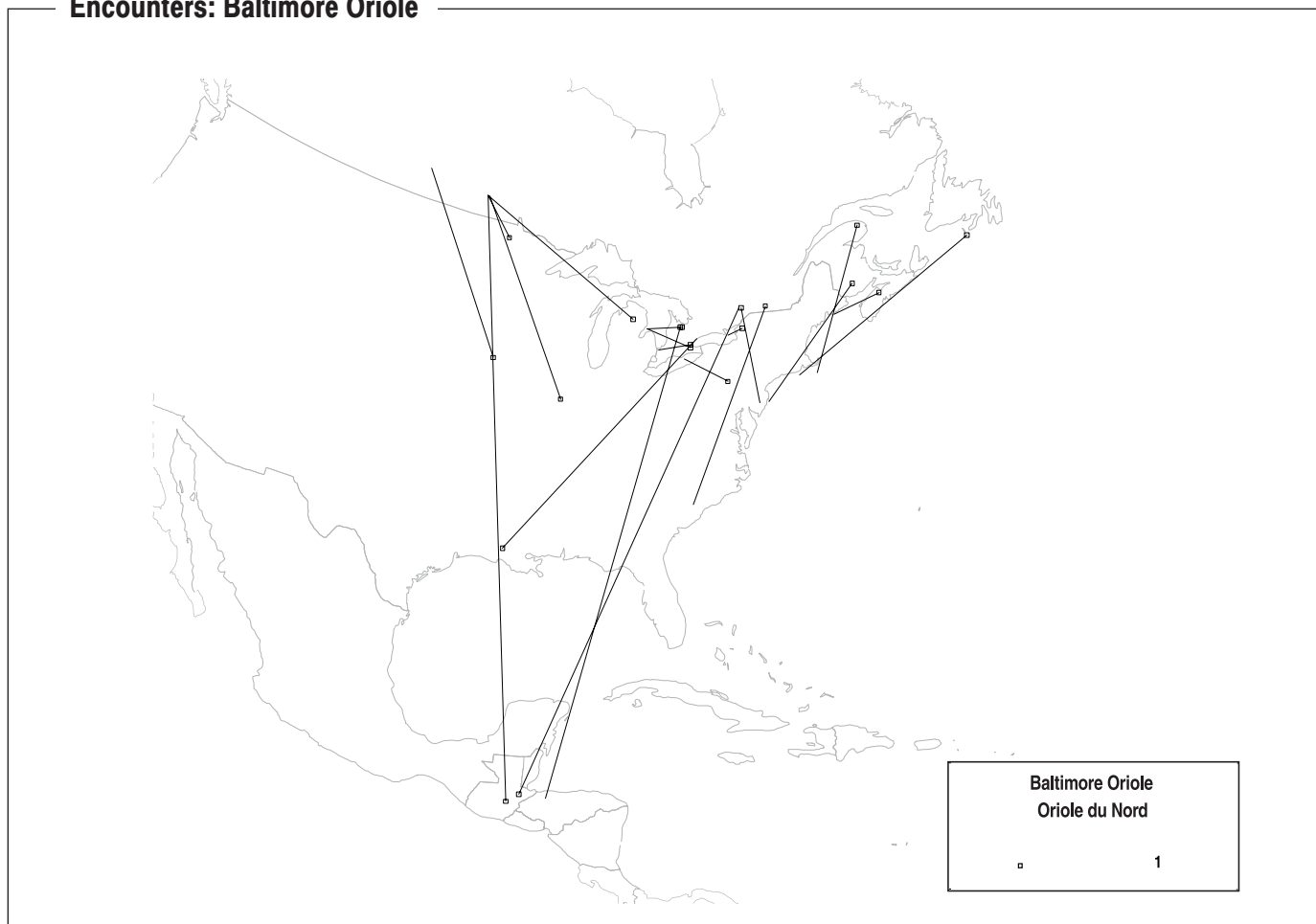
Summary of banding statistics: Brown-headed Cowbird

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			61 609
<i>No. encountered per 1000 banded (1955–1995)</i>			9
Total no. encountered (1921–1995)	98	896	1 187
No. encountered from foreign bandings	18	242	394
Maximum period from banding to encounter (mo.)	69	128	128
No. of Canadian-banded birds moving > 0 km	49	309	382
Mean movement > 0 km of Canadian-banded birds	461	492	504
Maximum movement from all encounters (km)	2 206	3 229	3 229
% recovered (encountered dead)	58	55	58
% direct recoveries	21	32	30
% encountered during banding operations	35	42	39

Banding effort: Brown-headed CowbirdTop banders: MID, REW_a, LPBO, PJW, AS

Baltimore Oriole (*Icterus galbula*) 507.0

Encounters: Baltimore Oriole



The Baltimore Oriole breeds in the eastern U.S. and from central Alberta and Saskatchewan east through southern Canada to central Nova Scotia. It winters mainly from central Mexico south to Colombia and Venezuela, in the West Indies from Cuba east to the Virgin Islands, and uncommonly in Florida and on the Atlantic coast north to Virginia.

Sealy (1985) analyzed encounters of this species on its wintering grounds in Central America, which included orioles from the Prairie Provinces (e.g., record 1) and Ontario (record 2; see also record 3, although the latter has no exact dates of encounter). However, some Canadian orioles evidently winter closer to home: one Ontario bird was banded in New Jersey in winter (record 4), and one from Quebec was banded in South Carolina (record 5). The bird in record 6, encountered in Louisiana in May, could well have

wintered farther south. Many others were both banded and encountered on migration, providing no clues as to wintering area (e.g., records 7 and 8).

Record 9 is especially interesting. The Baltimore Oriole is only a vagrant in Newfoundland (Godfrey 1986), and this bird seems to have been disoriented, because it was travelling north in fall. The reverse fall movement of the bird in record 10, from Nantucket to the Gaspé, is also remarkable. Baltimore Orioles have been recorded in Europe fairly frequently in recent years; the encounters in records 9 and 10, both of birds banded on offshore islands on the Atlantic coast, perhaps illustrate how these journeys get started.

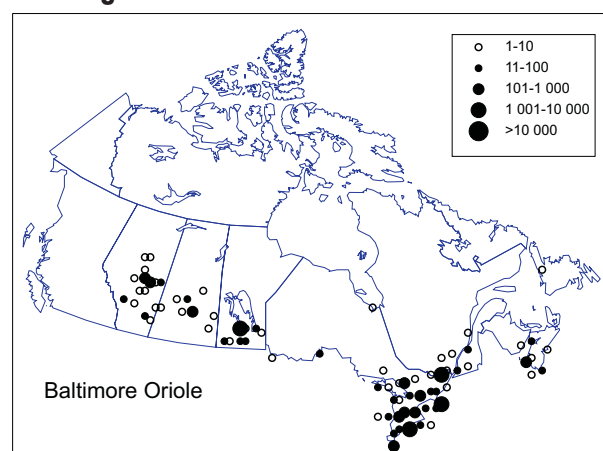
Encounter records: Baltimore Oriole

1	0861-03511 UM	SY M 02 56	18/06/77 ??/01/81	Delta Marsh, MB unknown site, GUATEMALA	50°10'N 98°20'W 16°??'N 90°??'W	c. 3877 km S14°E
2	0641-26200 KSH	AHY M 00 00	08/12/63 25/06/64	El Progreso, HONDURAS near Wodehouse, ON	15°20'N 87°50'W 44°20'N 80°40'W	6 mo. 3298 km N10°E
3	0921-29427 IPBO	AHY M 02 98	13/06/83 ??/06/86	Innis Point, ON El Estor, GUATEMALA	45°20'N 75°50'W 15°30'N 89°20'W	3554 km S25°W
4	0761-69675 CGV	AHY F 03 00	08/01/72 30/05/73	Vincentown, NJ Ottawa, ON	39°50'N 74°40'W 45°20'N 75°40'W	1 yr. 4 mo. 618 km N7°W
5	0871-12064 ECC	AHY M 05 03	28/02/78 24/05/78	Effingham, SC Châteauguay, QC	34°00'N 79°40'W 45°20'N 73°40'W	3 mo. 1361 km N20°E
6	0351-26062 HHS	U U 00 00	04/09/36 FT/05/37	Toronto, ON Bayou Waukasha, LA	43°40'N 79°20'W 30°30'N 92°00'W	8 mo. 1843 km S42°W
7	0021-50685 JC	J U 00 12	01/07/38 03/09/38	Muscow, SK Atlantic, IA	50°40'N 103°50'W 41°20'N 95°00'W	2 mo. 1241 km S37°E
8	0521-86911 JBF	AHY M 04 54	26/05/69 02/09/72	Delta, MB Springfield, IL	50°10'N 98°10'W 39°40'N 89°30'W	3 yr. 4 mo. 1352 km S33°E
9	0641-67010 MES	HY F 00 00	13/10/63 11/11/63	Block Island, RI AT SEA, off NF	41°10'N 71°30'W 46°40'N 56°10'W	1 mo. 1370 km N58°E
10	0751-47117 EFA	HY M 06 20	25/09/71 28/10/71	Esther Island, MA inexact location, Gaspé, QC	41°10'N 70°10'W 49°??'N 65°??'W	1 mo. c.1059 km N22°E

Summary of banding statistics: Baltimore Oriole

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			13 019
No. encountered per 1000 banded (1955–1995)			2
Total no. encountered (1921–1995)	13	56	78
No. encountered from foreign bandings	3	8	11
Maximum period from banding to encounter (mo.)	81	73	81
No. of Canadian-banded birds moving > 0 km	4	9	18
Mean movement > 0 km of Canadian-banded birds	617	1 030	775
Maximum movement from all encounters (km)	1 905	3 876	3 876
% recovered (encountered dead)	38	42	44
% direct recoveries	46	17	21
% encountered during banding operations	53	57	53

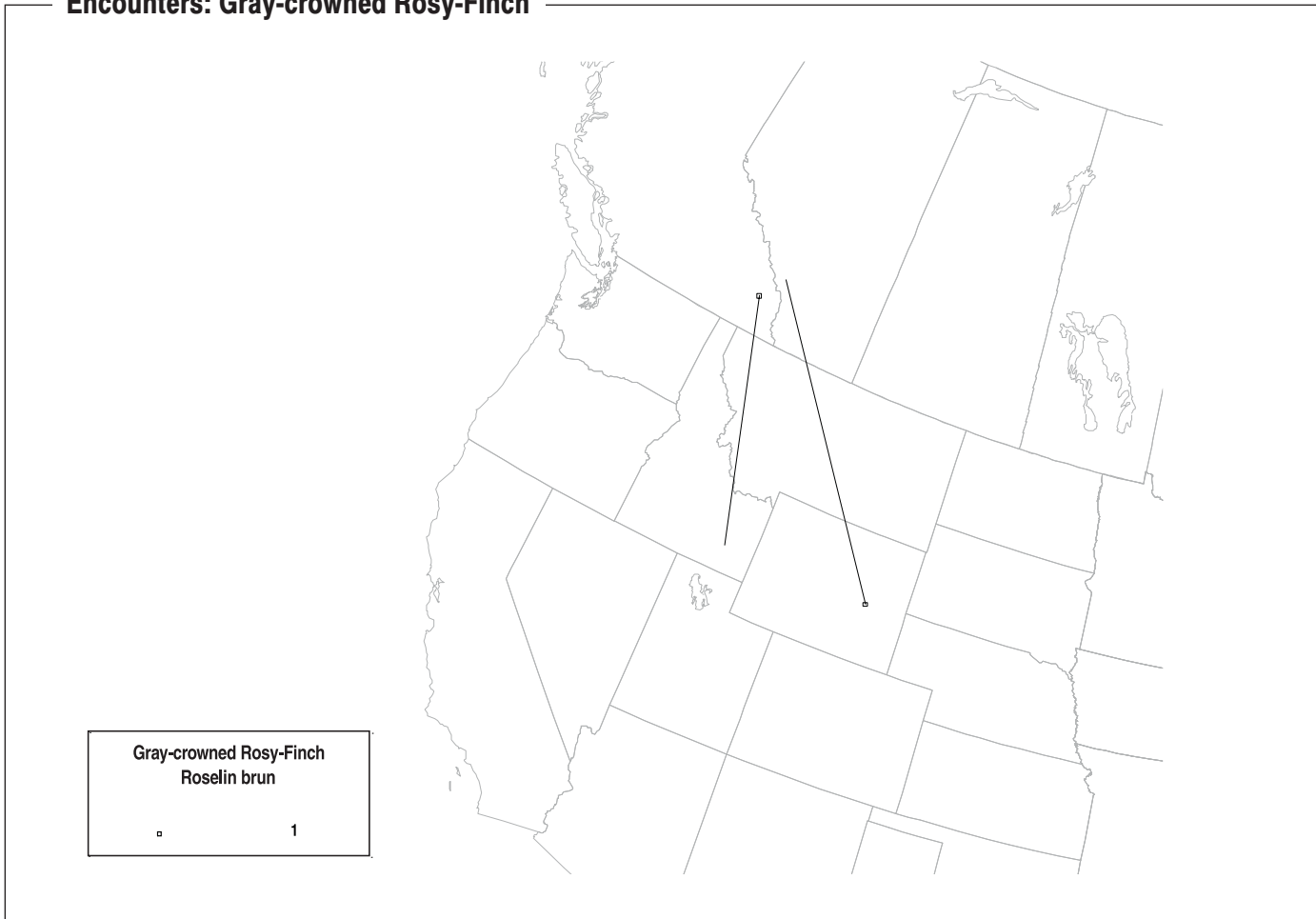
Banding effort: Baltimore Oriole



Top banders: LPBO, UM, IPBO, JBMi, ETJ

Gray-crowned Rosy-Finch (*Leucosticte tephrocotis*) 524.0

Encounters: Gray-crowned Rosy-Finch



The Rosy-Finch complex is currently split into three species. The Gray-crowned Rosy-Finch is the most northerly form, breeding from Alaska to mountains in Idaho and Wyoming. Some populations are resident or altitudinal migrants; others are latitudinal migrants (King and Wales 1964). Gray-crowns winter within the breeding range and into Alberta and southern Saskatchewan, south to the Rocky Mountain states; occasionally they stray east to the Mississippi.

Both encounters are listed, and both showed substantial movement. The bird in record 1 apparently overwintered in widely separated locations in successive years.

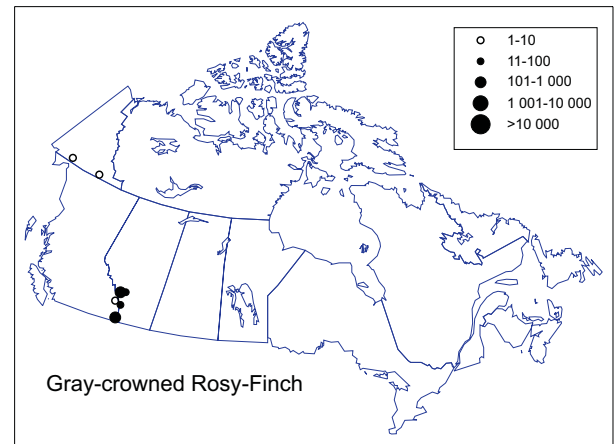
Encounter records: Gray-crowned Rosy-Finch

1	1061-92646	AHY U	04/02/73	near Inkom, ID	42°50'N 112°20'W	1 yr.
	LRP	05 45	01/02/74	near Canal Flats, BC	50°10'N 115°50'W	859 km N17°W
2	1501-41375	AHY U	10/04/92	Kananaskis, AB	51°00'N 115°00'W	11 mo.
	DRP	05 13	13/03/93	Glenrock, WY	42°50'N 105°50'W	1144 km S41°E

**Summary of banding statistics:
Gray-crowned Rosy-Finch**

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			788
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	0	2	2
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	–	12	12
No. of Canadian-banded birds moving > 0 km	0	1	1
Mean movement > 0 km of Canadian-banded birds	–	1143	1143
Maximum movement from all encounters (km)	–	1143	1143
% recovered (encountered dead)	–	100	100
% direct recoveries	–	50	50
% encountered during banding operations	–	0	0

Banding effort: Gray-crowned Rosy-Finch



Top banders: DRP, MRL, DC, LJP, AMP

Pine Grosbeak (*Pinicola enucleator*) 515.0

Encounters: Pine Grosbeak



The Pine Grosbeak is holarctic in distribution, breeding in the boreal forests of Alaska and Canada, from northern Yukon east to Newfoundland; it also breeds through much of British Columbia and the Rocky Mountains. Populations in the Territories withdraw southward in winter; others are resident except for occasional invasions as far as the mid-latitudes of the U.S.

Most encounters indicate year-round residency, although one bird moved 22 km between winters and another moved the same distance between breeding seasons. The encounters

listed below are the only ones that showed significant movement. The bird in record 1 is notable not only for having moved the longest distance, but also for being the oldest North American-banded Pine Grosbeak on record (Klimkiewicz and Futcher 1989), with a minimum age of nine years and nine months.

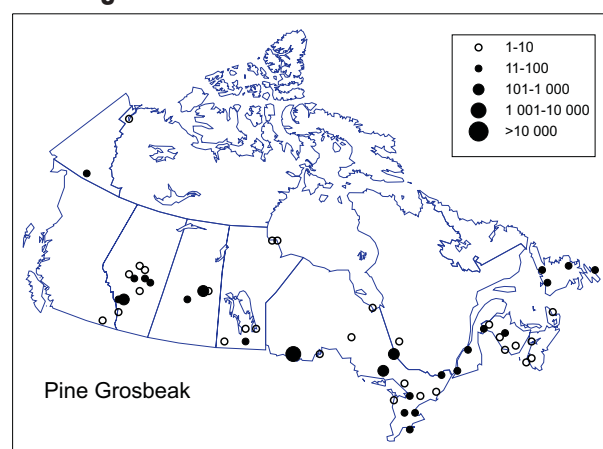
Encounter records: Pine Grosbeak

1	0562-28345 GL	AHY M 05 45	14/12/61 15/03/70	Gosheen, CT Témiscaming, QC	41°40'N 73°10'W 46°40'N 79°00'W	8 yr. 3 mo. 725 km N38°W
2	0881-29555 DHE	AHY F 07 89	03/02/79 14/02/81	Atikokan, ON Irving, WI	48°40'N 91°30'W 44°10'N 90°50'W	2 yr. 0 mo. 504 km S6°E

Summary of banding statistics: Pine Grosbeak

	Age at banding		
	Hatch year	After hatch year	Any age
No. of Canadian bandings (1955–1995)			2044
No. encountered per 1000 banded (1955–1995)			2
Total no. encountered (1921–1995)	0	10	12
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	–	99	99
No. of Canadian-banded birds moving > 0 km	0	2	3
Mean movement > 0 km of Canadian-banded birds	–	262	182
Maximum movement from all encounters (km)	–	725	725
% recovered (encountered dead)	–	40	41
% direct recoveries	–	30	25
% encountered during banding operations	–	60	58

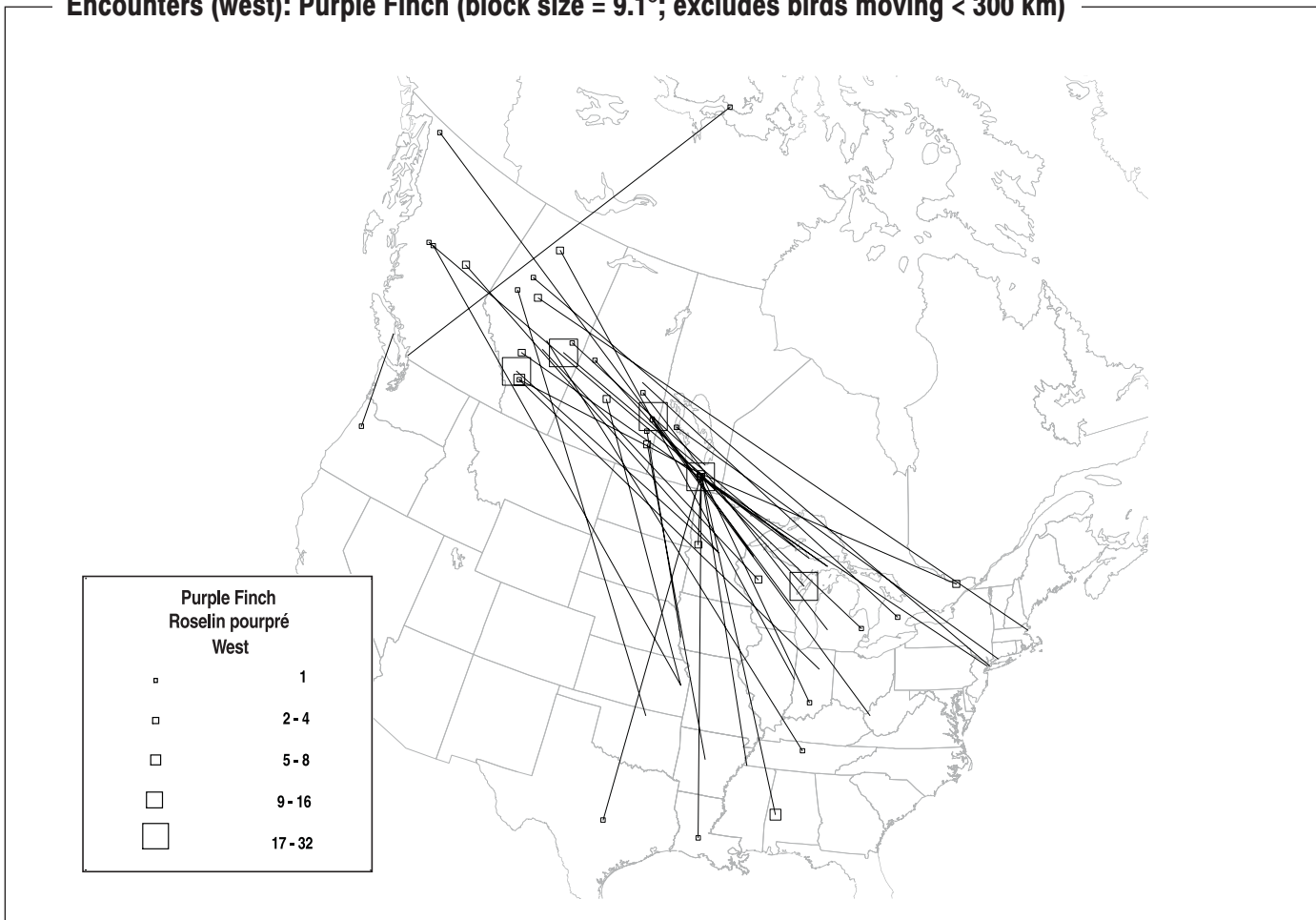
Banding effort: Pine Grosbeak



Top banders: DHE, ADa, JGL, DC, BMu

Purple Finch (*Carpodacus purpureus*) 517.0

Encounters (west): Purple Finch (block size = 9.1°; excludes birds moving < 300 km)



The Purple Finch breeds across most of the forested zones of Canada from British Columbia (except the southern interior) and southern Yukon to Newfoundland; it also breeds on the U.S. Pacific coast and in the northeastern states. It winters from southern Canada (locally) south on the west coast to northern Mexico, as well as in the eastern U.S. except for most of Florida.

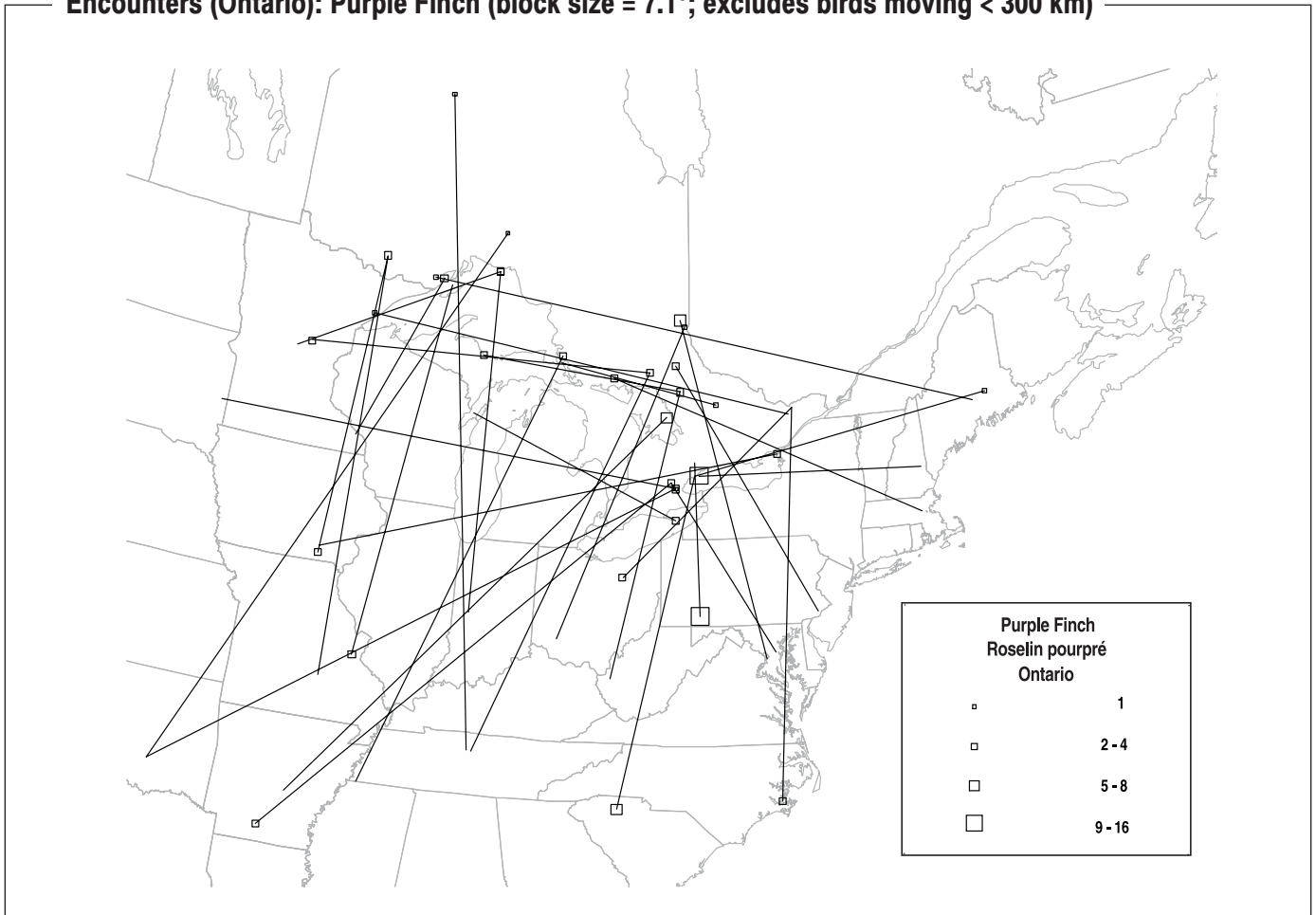
Because of the large number of encounters, the maps omit records for birds that moved less than 300 km (instead of the usual 100 km cut-off). Even so, block size remains large, and all maps are heavily thinned (see section 4.2 for explanation).

Wootton (1996) summarized some of the many analyses of band encounters, which support the patterns of encounter described below. Western Purple Finches have a stable wintering range. However, eastern birds show approximately biennial irruptions in which birds move to a variable extent

(Wootton 1996), showing little tendency to return to the same site the next winter (Yunick 1983).

Most (92%) of the finches banded in southern British Columbia remained there for the winter (December–February); but record 1 shows that birds may winter in different areas in different years. Finches from central British Columbia and the Prairie Provinces were found in winter mainly in states along the Mississippi River, from the Great Lakes to the Gulf Coast (record 2), but some went as far as the northeastern U.S. (record 3). Other encounters indicate similar destinations, although they did not take place in mid-winter (records 4–9). Assuming the encounter details are correct, record 10 is surprising. The bird was evidently a northwestern bird that wintered on the Pacific coast. This is unusual in itself, but the bird was also encountered far north of the breeding range, in the Arctic. (An Inuit hunter shot the bird and gave the band to the biologist who reported it.)

Encounters (Ontario): Purple Finch (block size = 7.1°; excludes birds moving < 300 km)



Over half the Ontario birds stayed there for the winter, but some also moved to the lower Mississippi area, and others overlapped in northeastern states with finches from the Prairie Provinces. Although some of the Ontario birds wintering in the northeastern states may originally have come from the Prairie Provinces (being encountered in Ontario as transients), there are records of birds encountered in Ontario in June or July (i.e., local breeders) that were found in winter in Vermont and North Carolina. Quebec and Maritimes birds wintered largely on the Atlantic coast from Nova Scotia to Georgia, mostly in mid-coastal states

(records 11–13), but some of these eastern Canadian birds wintered farther west, from Arkansas and Tennessee south to the Gulf Coast (records 14 and 15).

All 38 Purple Finches that were banded as adults in June–July and encountered in the same period of another year were at the same location or very nearby, suggesting fidelity to the breeding site. The records for these birds involve three provinces.

Encounters (east): Purple Finch (block size = 8.1°; excludes birds moving < 300 km)



Encounter records: Purple Finch

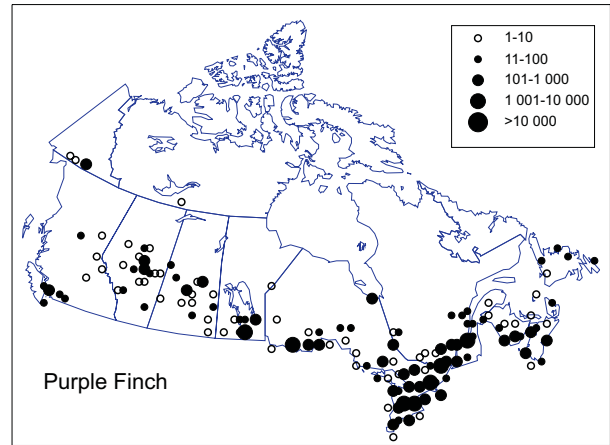
1	0360-44551 TP	U U 00 00	31/01/37 15/03/40	Courtenay, BC Dallas, OR	49°40'N 125°00'W 44°50'N 123°10'W	3 yr. 2 mo. 556 km S15°E
2	0331-82891 JKS	AHY M 03 01	11/01/64 20/05/66	near Ponca City, OK near Sturgeon Lake, AB	36°40'N 97°00'W 55°10'N 117°40'W	2 yr. 4 mo. 2595 km N31°W
3	0500-56098 BSB	U U 00 00	15/01/51 06/05/52	Demarest, NJ near Peace River, AB	40°50'N 73°50'W 56°10'N 117°10'W	1 yr. 4 mo. 3544 km N46°W
4	0200-21377 TC	AHY M 00 01	27/03/59 ??/07/62	Danvers, MA Lesser Slave Lake, AB	42°30'N 70°50'W 55°20'N 115°50'W	3512 km N50°W
5	0550-80330 EAB	U M 00 50	23/03/63 18/04/64	Hartford, CT near Peace River, AB	41°40'N 72°40'W 56°10'N 117°10'W	1 yr. 1 mo. 3552 km N48°W
6	0590-27211 ETJ	HY U 00 89	19/08/58 19/03/61	near Edmonton, AB Dalton, WI	53°30'N 113°30'W 43°30'N 89°10'W	2 yr. 7 mo. 2096 km S68°E
7	0660-13443 HRP	AHY U 00 00	08/04/63 21/05/64	Germfask, MI near Hotchkiss, AB	46°10'N 85°50'W 57°20'N 117°10'W	1 yr. 1 mo. 2460 km N48°W
8	0690-37023 RJL	AHY M 00 00	24/03/63 31/05/63	Anston, WI near Prince George, BC	44°30'N 88°00'W 53°50'N 122°40'W	2 mo. 2695 km N55°W
9	0880-36436 LTS	AHY U 05 00	15/05/78 05/03/81	Winnipeg, MB Burnet, TX	49°50'N 97°00'W 30°40'N 98°10'W	2 yr. 10 mo. 2136 km S3°W
10	0520-11511 WMH	AHY F 05 01	12/04/54 ??/09/67	Vancouver, BC Cambridge Bay, NT	49°10'N 123°00'W 69°00'N 105°00'W	2414 km N17°E
11	0510-21958 TB	AHY F 00 98	28/02/53 19/05/55	near Pennypack Park, PA near Port Au Choix, NF	39°50'N 75°00'W 50°40'N 57°20'W	2 yr. 3 mo. 1828 km N43°E
12	0830-89233 CHB	AHY U 07 89	21/01/78 10/08/86	Hillsboro, NC Charlesbourg, QC	36°00'N 79°00'W 46°50'N 71°10'W	8 yr. 7 mo. 1370 km N26°E
13	0750-30904 PGM	AHY U 05 12	22/01/69 99/10/69	near Warner Robins, GA near Riverport, NS	32°30'N 83°30'W 44°20'N 64°20'W	9 mo. 2119 km N46°E
14	2010-20368 BBC	AHY U 07 28	23/12/85 11/08/93	Memphis, TN Glovertown, Labrador, NF	35°00'N 90°00'W 48°40'N 54°00'W	7 yr. 8 mo. 3310 km N52°E
15	0560-13661 MLL	AHY F 05 14	04/12/65 99/06/68	Huntsville, AL near Port Milford, NS	34°40'N 86°30'W 45°00'N 61°50'W	2 yr. 6 mo. 2388 km N54°E

Purple Finch

Summary of banding statistics: Purple Finch

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			34 773
<i>No. encountered per 1000 banded (1955–1995)</i>			5
Total no. encountered (1921–1995)	43	609	776
No. encountered from foreign bandings	21	319	422
Maximum period from banding to encounter (mo.)	56	103	103
No. of Canadian-banded birds moving > 0 km	12	91	127
Mean movement > 0 km of Canadian-banded birds	1 381	808	883
Maximum movement from all encounters (km)	2 096	3 520	3 552
% recovered (encountered dead)	53	54	56
% direct recoveries	23	24	25
% encountered during banding operations	39	42	40

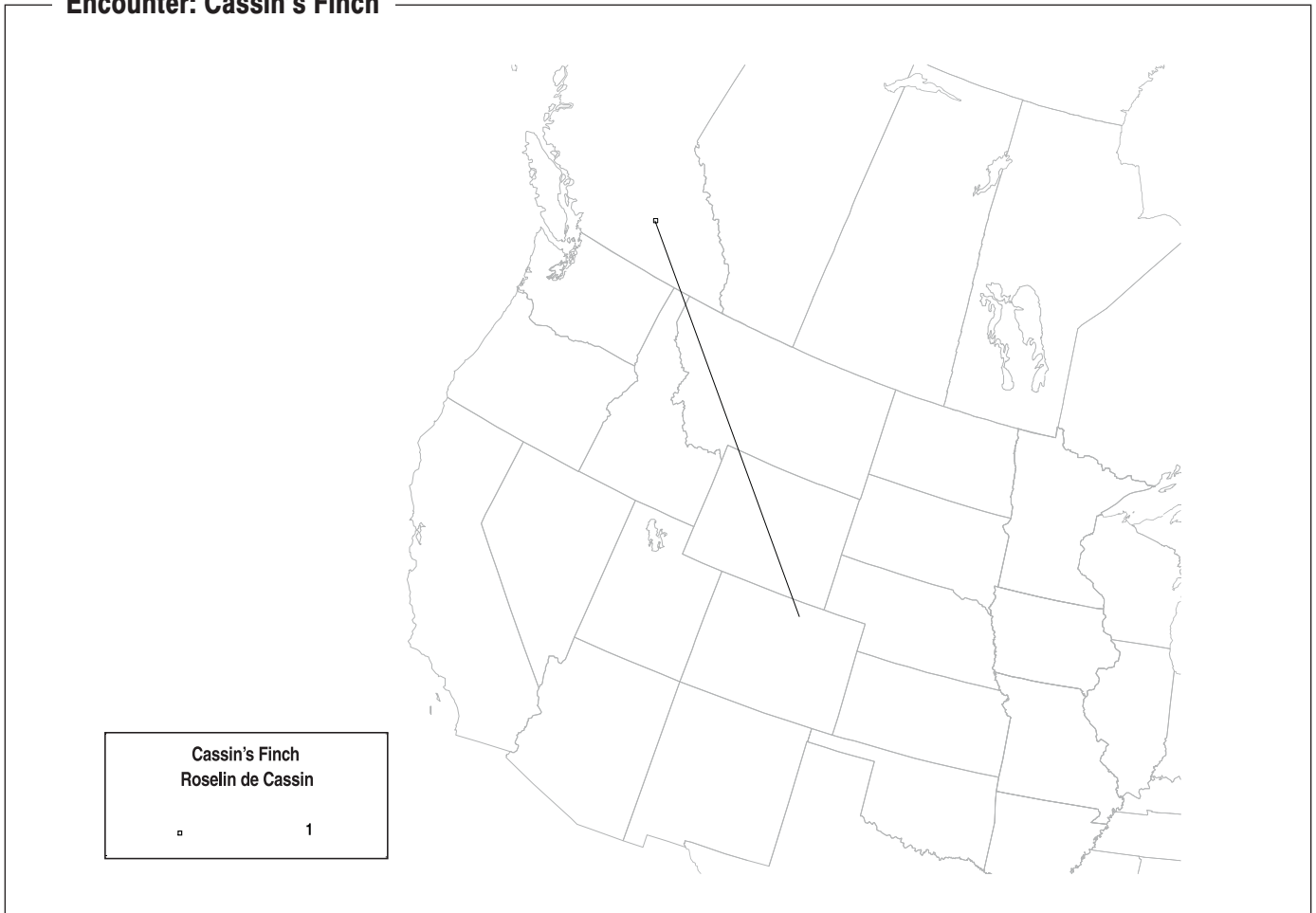
Banding effort: Purple Finch



Top banders: LTS, DHE, NMC, JGi, IPBO

Cassin's Finch (*Carpocacus cassinii*) 518.0

Encounter: Cassin's Finch



Cassin's Finch breeds from south-central British Columbia and southwestern Alberta, south to northwestern California and the Great Basin, and to northern New Mexico. It winters within the breeding range and south to central Mexico.

The only Canadian record, listed below, was of a bird banded in the U.S. and encountered at an unknown date in British Columbia.

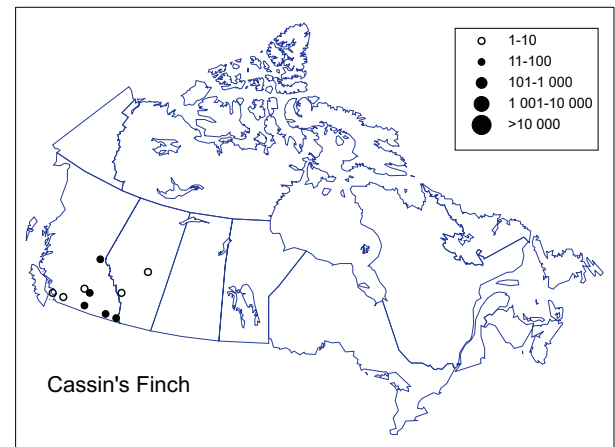
Encounter record: Cassin's Finch

1	1231-67193	ASY M	18/03/87	Fort Collins, CO	40°30'N 105°00'W	1 yr.
	RR	04 13	99/03/88	Pritchard, BC	50°40'N 119°40'W	1603 km N40°W

Summary of banding statistics: Cassin's Finch

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			182
<i>No. encountered per 1000 banded (1955–1995)</i>			0
Total no. encountered (1921–1995)	0	1	1
No. encountered from foreign bandings	0	1	1
Maximum period from banding to encounter (mo.)	–	12	12
No. of Canadian-banded birds moving > 0 km	0	0	0
Mean movement > 0 km of Canadian-banded birds	–	–	–
Maximum movement from all encounters (km)	–	1602	1602
% recovered (encountered dead)	–	100	100
% direct recoveries	–	0	0
% encountered during banding operations	–	0	0

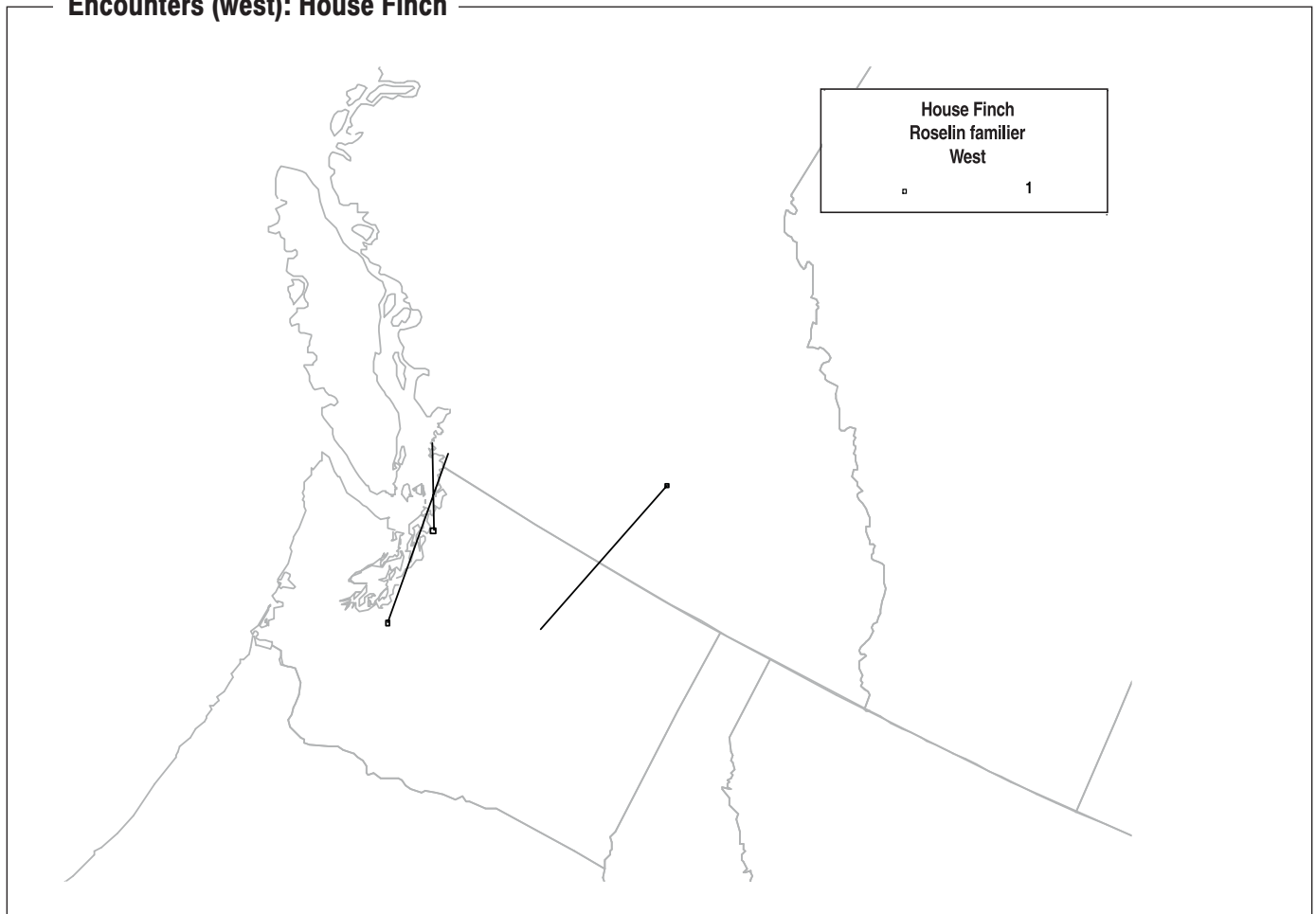
Banding effort: Cassin's Finch



Top banders: RFH, ETJ, UBC, JTF, CCo

House Finch (*Carpodacus mexicanus*) 519.0

Encounters (west): House Finch



Until the mid-1970s, the House Finch was a western U.S. bird, confined in Canada to southwestern British Columbia. After its introduction into New York in the 1940s, the species expanded spectacularly through the eastern U.S., reaching southern parts of Ontario, Quebec, and New Brunswick during the late 1970s and 1980s. It is resident in the west and partly migratory in the east, wintering within the breeding range.

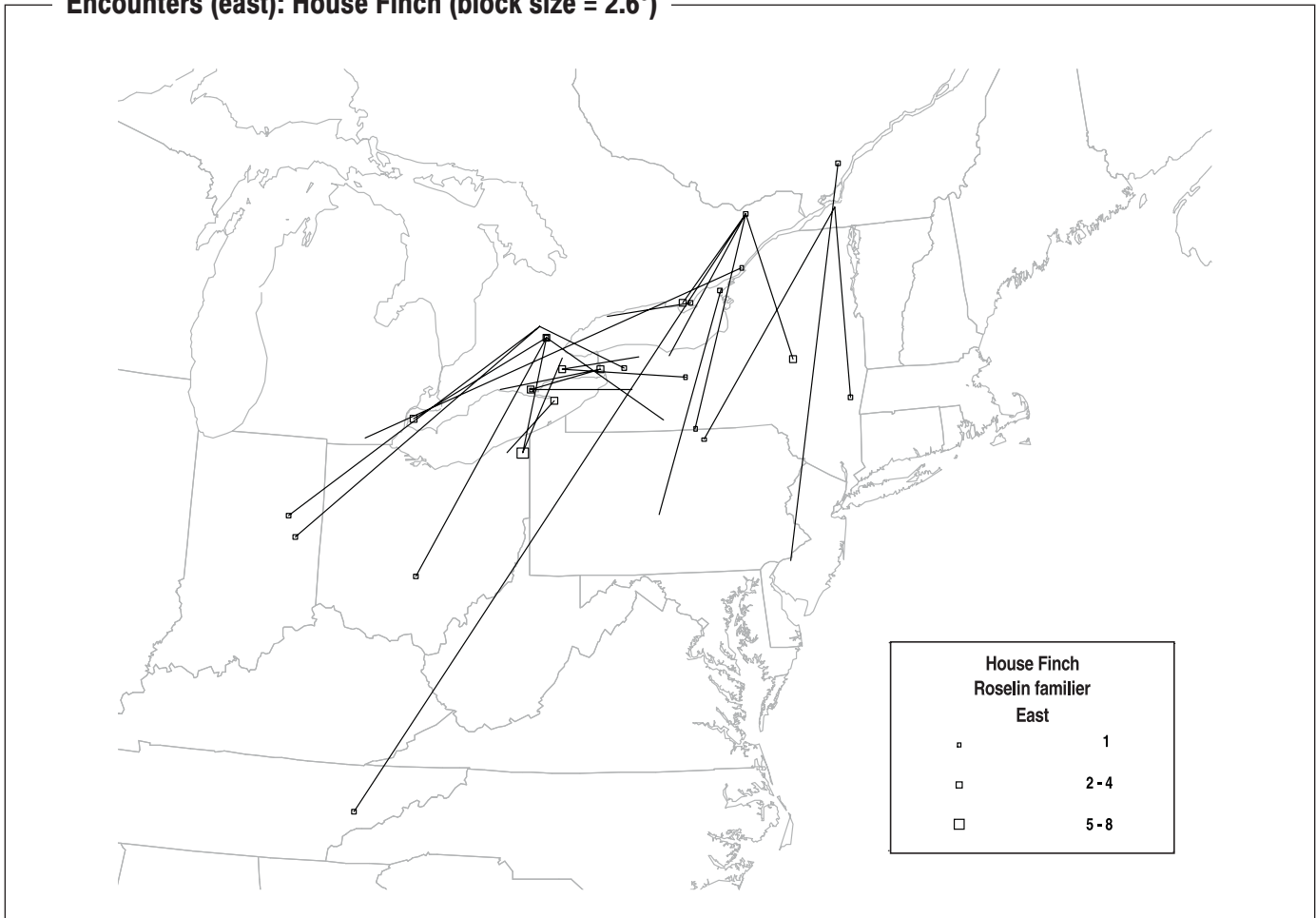
Until 1975, the Canadian population seemed to be relatively sedentary: over 99% of the records are for birds banded and also encountered in British Columbia near Vancouver. Ninety percent of these showed no movement (records 1 and 2), and only two moved over 100 km (records 3 and 4).

After 1975, this situation changed dramatically — every encounter but one since then has involved birds banded or encountered in central Canada. The species is more mobile

in its eastern range where it is a partial migrant, with males wintering farther north than females (Belthoff and Gauthreaux 1991). This mobility and migratory behaviour is illustrated by a considerable number of encounters of over 100 km that involve Ontario (more than 40) and Quebec (3 encounters including record 5) since the early 1980s. Nonetheless, of 35 Ontario birds encountered in winter (December–February), 31 were in Ontario and only 4 were farther south (2 in New York, 1 in Ohio, and 1, record 6, in Tennessee). Other examples, encountered in the U.S. in fall, presumably wintered south of Ontario as well (e.g., records 7–9).

Analyses that included U.S. encounters suggest a north-northeast–south-southwest axis of movement for birds from about Ohio eastward (as shown on eastern map), and a more directly north–south axis for birds from the western Great Lakes (Stewart 1989, Hamilton 1991).

Encounters (east): House Finch (block size = 2.6°)



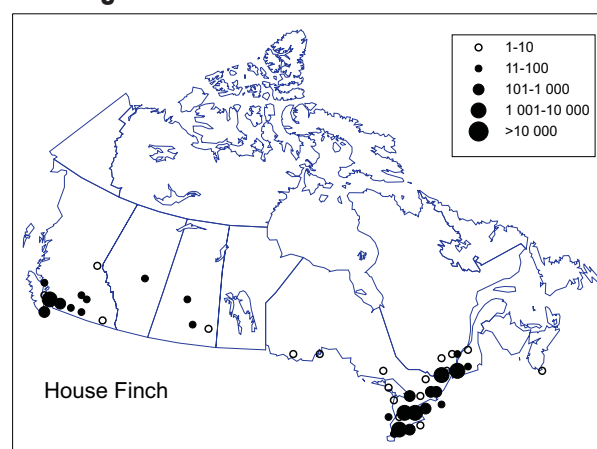
Encounter records: House Finch

1	0610-13205 WJM	AHY F 05 12	08/04/59 30/07/67	Ambleside Beach, BC Ambleside Beach, BC	49°10'N 123°00'W 49°10'N 123°00'W	8 yr. 3 mo. 0 km
2	0620-74628 BBW	HY U 05 13	05/06/66 14/05/69	Caulfield Cove, BC Caulfield Cove, BC	49°10'N 123°10'W 49°10'N 123°10'W	2 yr. 11 mo. 0 km
3	0620-74618 BBW	U U 05 14	05/06/66 03/03/67	Caulfield Cove, BC Avon, WA	49°10'N 123°10'W 48°20'N 122°20'W	9 mo. 111 km S34°E
4	0630-87896 RWC	AHY F 05 00	20/06/65 ??/12/65	Annacis, BC Auburn, WA	49°10'N 122°50'W 47°10'N 122°10'W	228 km S13°E
5	0920-41829 EWM	HY U 05 13	14/07/84 26/04/86	Darby, PA Kildare, QC	39°50'N 75°10'W 46°00'N 73°30'W	1 yr. 9 mo. 700 km N11°E
6	2021-85132 PJN	U U 05 00	30/09/89 06/01/90	Ottawa, ON Knoxville, TN	45°20'N 75°40'W 35°50'N 83°50'W	4 mo. 1261 km S36°W
7	0920-31682 ALC	HY U 05 00	04/07/86 99/05/87	Adrian, MI Athens, ON	41°50'N 84°00'W 44°30'N 75°50'W	10 mo. 726 km N63°E
8	2010-96988 BKW	HY U 05 13	16/08/88 24/11/91	Guelph, ON Ashville, OH	43°30'N 80°10'W 39°40'N 82°50'W	3 yr. 3 mo. 481 km S28°W
9	2031-53535 DRL	HY U 07 89	15/07/90 18/11/90	Fergus, ON Muncie, IN	43°40'N 80°20'W 40°10'N 85°20'W	4 mo. 568 km S48°W

Summary of banding statistics: House Finch

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			26 582
<i>No. encountered per 1000 banded (1955–1995)</i>			8
Total no. encountered (1921–1995)	99	102	422
No. encountered from foreign bandings	6	9	17
Maximum period from banding to encounter (mo.)	62	99	99
No. of Canadian-banded birds moving > 0 km	42	19	76
Mean movement > 0 km of Canadian-banded birds	147	89	135
Maximum movement from all encounters (km)	726	282	1 261
% recovered (encountered dead)	46	34	25
% direct recoveries	56	27	39
% encountered during banding operations	51	64	73

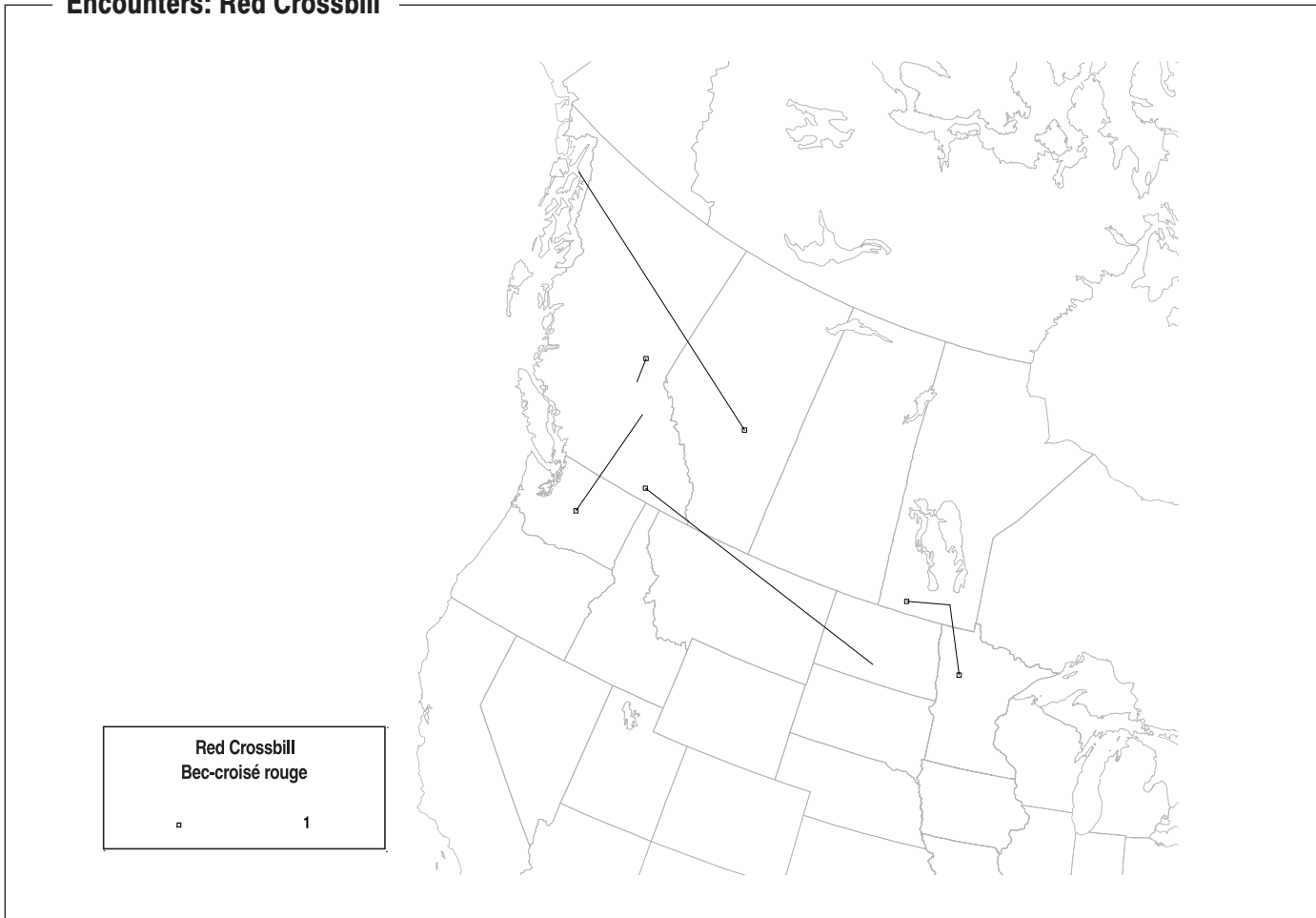
Banding effort: House Finch



Top banders: PJN, MHF, BKW, RM, DRL

Red Crossbill (*Loxia curvirostra*) 521.0

Encounters: Red Crossbill



The Red Crossbill has been known to breed throughout the western U.S. and in boreal coniferous forests from Yukon and British Columbia east to Newfoundland; however, the breeding range can be highly erratic from season to season. This species winters within the breeding range and irregularly (in irruption years) in the northern U.S., occasionally as far south as Texas and Florida (Adkisson 1996).

Although classified as resident in Canada, this species is highly nomadic in all seasons, apparently influenced by the availability of its staple food, conifer seeds. Individuals have been recaptured at the same site up to two years later (Adkisson 1996), but crossbills are known to change

breeding sites according to the location of heavy cone crops in a given year. Irruptions into the eastern U.S. are less common than in siskins and redpolls (about once every 10 years in some areas, Adkisson 1996) and involve far fewer individuals.

The list below includes all encounters of birds that moved over 100 km; it also includes all records of birds encountered a year or more after banding. The bird in record 1 holds the longevity record for North America (Klimkiewicz and Futcher 1989), with an estimated minimum age of four years and two months (the same estimated age as for the bird in record 2).

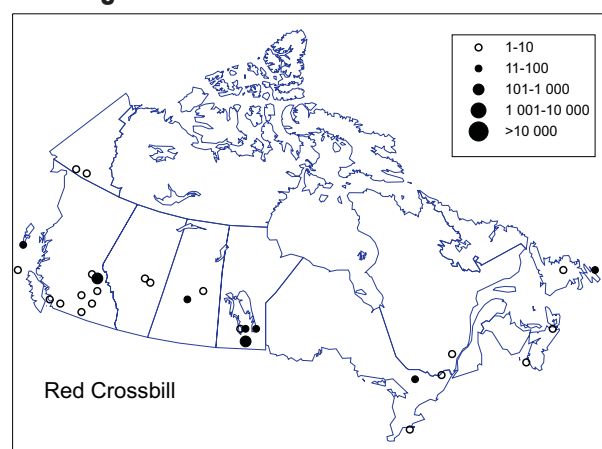
Encounter records: Red Crossbill

1	0005-76253 TTMcC	AHY M 00 12	15/05/28 11/08/31	Barkerville, BC near Dewey, BC	53°00'N 121°30'W 54°00'N 121°50'W	3 yr. 3 mo. 113 km N11°W
2	1251-53031 CWS-BC	AHY F 07 89	20/08/90 21/08/93	Wells Gray Provincial Park, BC Blewett, WA	52°00'N 120°00'W 47°20'N 120°30'W	3 yr. 0 mo. 521 km S4°W
3	1101-44323 LTS	U M 07 04	31/12/72 20/04/73	near St. Vital, MB near Wawanesa, MB	49°50'N 97°00'W 49°30'N 99°40'W	4 mo. 196 km S80°W
4	1110-44479 LTS	AHY M 03 13	16/01/73 26/02/73	near St. Vital, MB Naytahwaush, MN	49°50'N 97°00'W 47°10'N 95°30'W	1 mo. 317 km S21°E
5	1011-88857 GMJ	U U 05 12	09/11/69 99/10/71	southeast of Bismarck, ND Taghum, BC	46°40'N 100°40'W 49°30'N 117°30'W	1 yr. 11 mo. 1288 km N70°W
6	1241-80277 RBW	AHY U 05 12	13/05/91 08/05/92	Auke Bay, AK St. Albert, AB	58°20'N 134°30'W 53°30'N 113°30'W	1 yr. 0 mo. 1409 km S77°E

Summary of banding statistics: Red Crossbill

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			1103
<i>No. encountered per 1000 banded (1955–1995)</i>			16
Total no. encountered (1921–1995)	0	15	32
No. encountered from foreign bandings	0	1	2
Maximum period from banding to encounter (mo.)	–	39	39
No. of Canadian-banded birds moving > 0 km	0	8	22
Mean movement > 0 km of Canadian-banded birds	–	139	74
Maximum movement from all encounters (km)	–	1408	1408
% recovered (encountered dead)	–	73	71
% direct recoveries	–	80	81
% encountered during banding operations	–	26	15

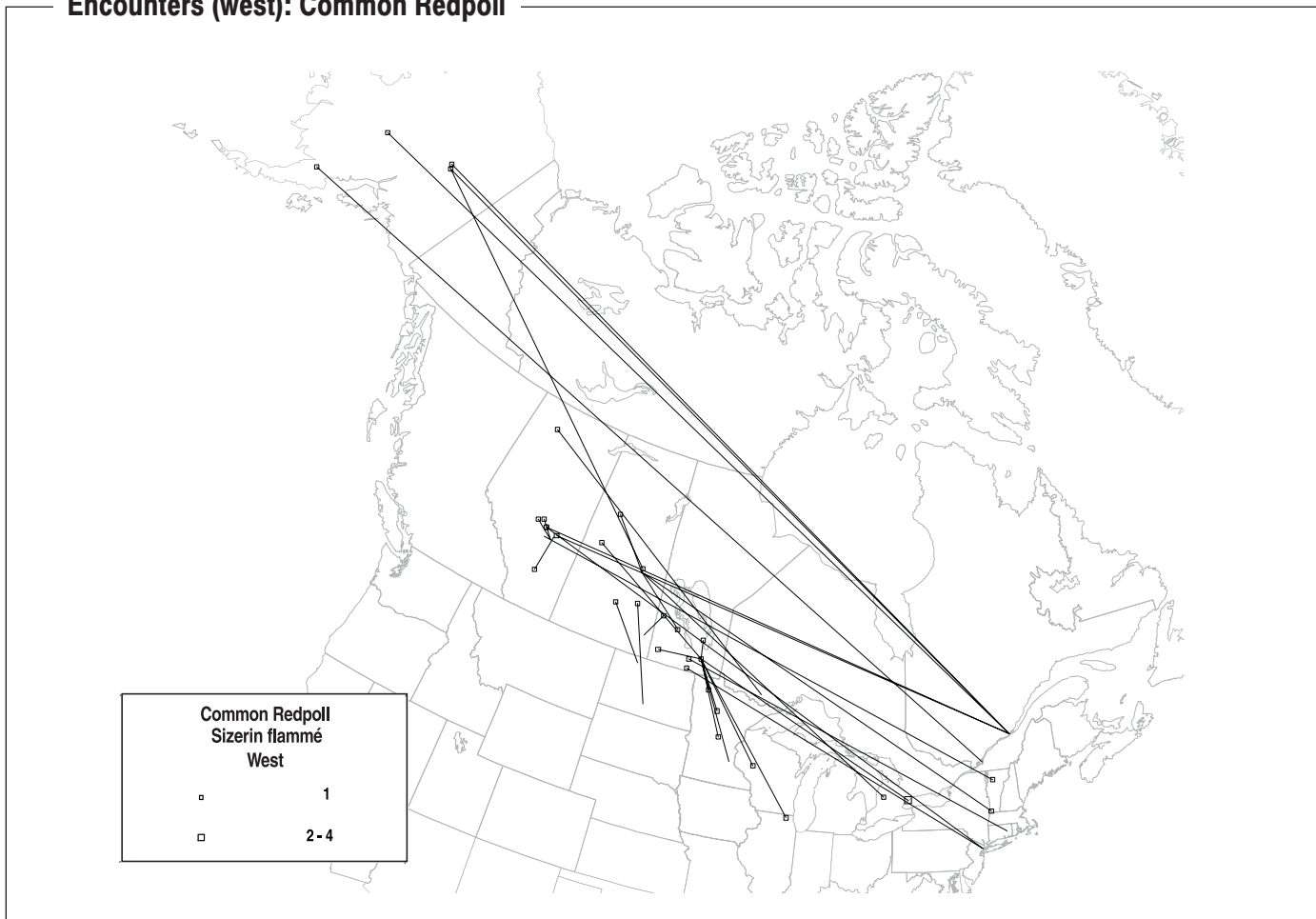
Banding effort: Red Crossbill



Top banders: LTS, HMi, RJR, MMMN, JLa

Common Redpoll (*Carduelis flammea*) 528.0

Encounters (west): Common Redpoll



The Common Redpoll is a circumpolar species that breeds across Alaska and northern Canada from Yukon to Newfoundland, north to northeastern Baffin Island. It winters from the southern breeding range south, irregularly to the northern and central U.S., and occasionally to southern states.

Approximately biennial increases in numbers banded and encountered, and in numbers observed in the U.S., were attributed by Kennard (1976), Bock and Lepthien (1976), and Troy (1983) to bumper crops of birch seeds (*Betula* spp.), which tend to occur in alternate years. Most redpolls are banded in late winter and early spring, often at bird feeders, and about half the birds were encountered during banding operations.

Of 41 birds both banded and encountered in December–February, 13 were encountered within the same winter, all in the same province where banded. The other 28 were encountered in a later year, only 2 of which were in different jurisdictions: 1 moving from Minnesota to Quebec, and 1 from Quebec to Pennsylvania. Although there are obvious differences in wintering areas between irruption and non-irruption years, there may be less nomadism among redpolls than among Pine Siskins.

The pattern of western encounters shows a west-northwest–east-southeast axis of movement (e.g., records 1–12), suggesting that redpolls from the western Arctic winter in eastern Canada and the northeastern U.S., at least during irruption years. However, some northwest–

Encounters (east): Common Redpoll (block size = 3.1°)



southeast directionality can be seen in the Prairie Provinces. The east–west component could be partly an artefact of the human population distribution, because there is almost no chance of encountering birds after they have moved north to breeding areas, except in Alaska. Moreover, the strongly east–west displacement might only occur in years of maximum irruption. A high proportion of both bandings and encounters occur in such years; for example, the birds in records 1 to 3 were all found in eastern North America in 1956, and those in records 9 and 10 were western birds banded at the same Quebec site in 1992.

The eastern map depicts additional cases of east–west movement (e.g., record 13). These cases suggest that western birds might winter on different sides of the Great Lakes in different years (e.g., a bird banded in Minnesota in February was encountered in eastern Quebec in January three winters later). This map also shows north–south movement, presumably of redpolls breeding east of Hudson Bay. These birds may winter mainly east of the Great Lakes, mingling in irruption years with birds from the western Arctic.

Common Redpoll

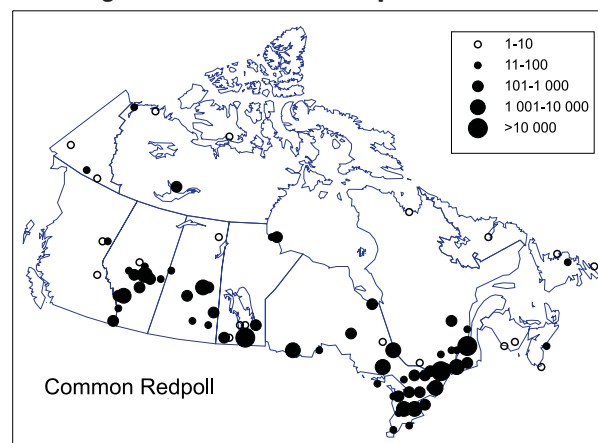
Encounter records: Common Redpoll

1	0220-05991 BMat	U U 00 00	05/03/54 18/03/56	near White Fox, SK Bennington, VT	53°20'N 104°00'W 42°50'N 73°10'W	2 yr. 0 mo. 2546 km S75°E
2	0230-84322 EGM	U U 00 00	23/03/56 10/04/58	Ridgewood, NJ Edmonton, AB	40°50'N 74°00'W 53°30'N 113°30'W	2 yr. 1 mo. 3251 km N51°W
3	0520-18656 JGu	AHY M 00 00	01/03/56 10/06/57	near Montréal, QC Levelock, AK	45°30'N 73°30'W 59°00'N 156°00'W	1 yr. 3 mo. 5434 km N43°W
4	1200-50345 LTS	AHY M 07 89	15/03/70 14/04/72	near St. Vital, MB Toronto, ON	49°50'N 97°00'W 43°40'N 79°20'W	2 yr. 1 mo. 1507 km S70°E
5	1200-55665 LTS	AHY U 04 13	01/05/70 99/01/72	near St. Vital, MB Hebron, IL	49°50'N 97°00'W 42°20'N 88°20'W	1 yr. 8 mo. 1069 km S42°E
6	0310-65245 HGMcE	U U 00 00	09/03/60 16/03/62	Ridgewood, NJ Morden, MB	40°50'N 74°00'W 49°10'N 98°00'W	2 yr. 0 mo. 2092 km N56°W
7	0320-36096 NOS	U F 00 03	01/04/60 ??/04/62	Coventry, CT near Carman, MB	41°40'N 72°10'W 49°40'N 98°00'W	2184 km N57°W
8	0440-18916 MGS	AHY U 00 01	08/03/46 14/02/47	near White Fox, SK Wingham, ON	53°20'N 104°00'W 43°50'N 81°10'W	11 mo. 1973 km S67°E
9	1860-55947 JGi	AHY U 04 13	26/04/92 25/04/94	Charlesbourg, QC Fairbanks, AK	46°50'N 71°10'W 65°00'N 148°10'W	2 yr. 0 mo. 4836 km N37°W
10	1860-53821 JGi	AHY U 07 89	25/02/92 13/03/94	Charlesbourg, QC Pyas Lake, SD	46°50'N 71°10'W 45°30'N 97°10'W	2 yr. 1 mo. 2001 km N85°W
11	1620-00320 DHE	AHY U 05 28	07/03/82 21/03/86	Atikokan, ON High Level, AB	48°40'N 91°30'W 58°30'N 117°00'W	4 yr. 0 mo. 1991 km N47°W
12	1540-26310 UAM	AHY M 07 89	30/11/85 22/02/87	College, AK 18 km north of White Fox, SK	64°50'N 147°50'W 53°30'N 104°00'W	1 yr. 3 mo. 2726 km S84°E
13	1750-38041 JGi	AHY U 05 00	10/04/86 29/03/92	Charlesbourg, QC Rose Lawn, WI	46°50'N 71°10'W 44°30'N 88°10'W	5 yr. 11 mo. 1345 km S85°W

Summary of banding statistics: Common Redpoll

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			98 123
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	1	202	261
No. encountered from foreign bandings	0	35	42
Maximum period from banding to encounter (mo.)	–	71	71
No. of Canadian-banded birds moving > 0 km	0	97	103
Mean movement > 0 km of Canadian-banded birds	–	598	599
Maximum movement from all encounters (km)	–	5 434	5 434
% recovered (encountered dead)	100	44	42
% direct recoveries	100	65	56
% encountered during banding operations	0	51	54

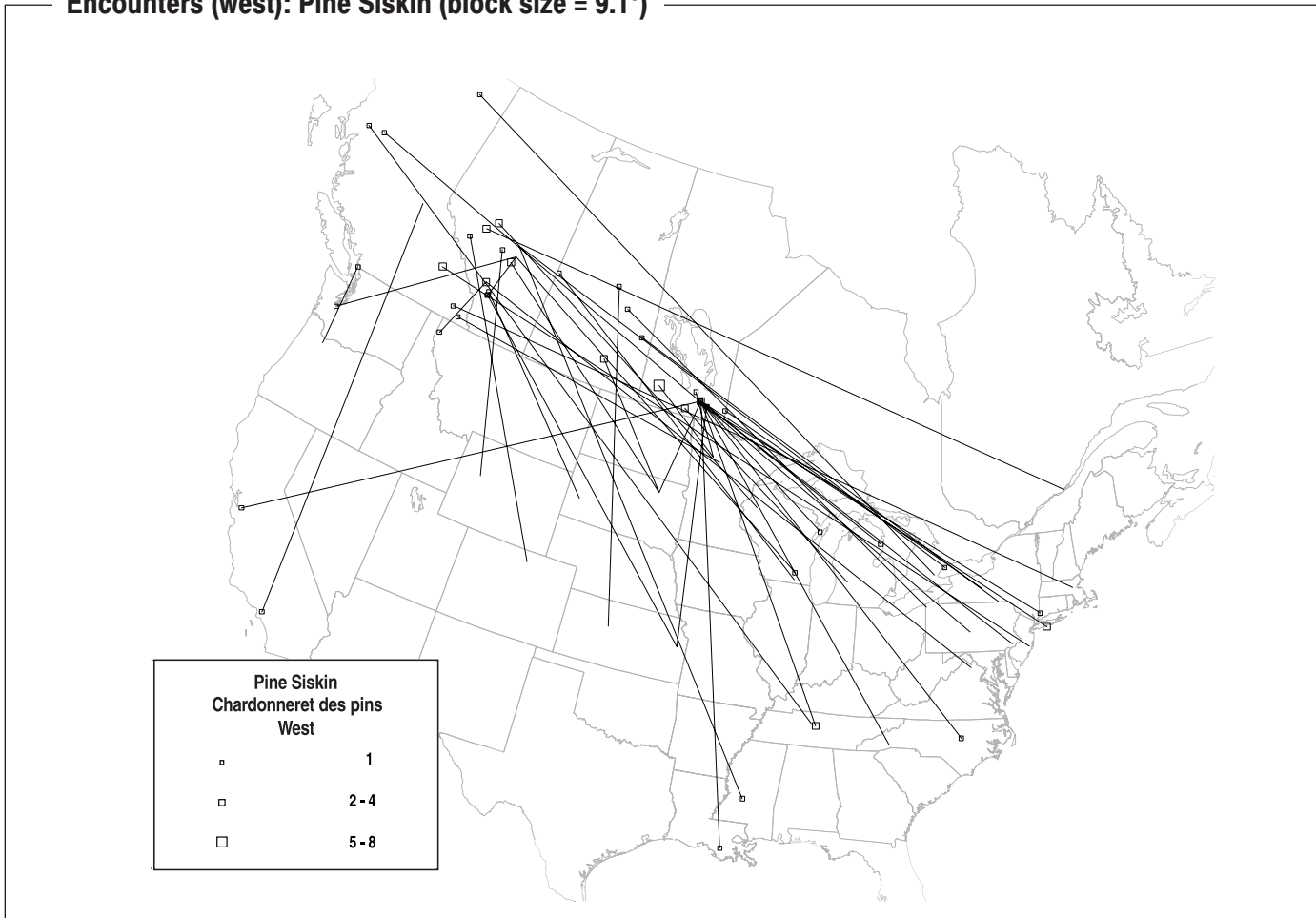
Banding effort: Common Redpoll



Top banders: JGi, LTS, NMC, IPBO, EP

Pine Siskin (*Carduelis pinus*) 533.0

Encounters (west): Pine Siskin (block size = 9.1°)



The Pine Siskin breeds across southeastern Alaska and Canada as far north as the limit of dense boreal forest, but not in the southern Prairie Provinces. It also breeds in the western and northeastern U.S. It winters in the breeding range and irregularly throughout the U.S.

The maps (the western map, in particular) exclude many individual encounters (see block size with encounter maps and explanation in section 4.2).

Siskins are highly irruptive, invading the more southern portions of the wintering range in approximately alternate years, but to a varying extent each time (Dawson 1997). A high proportion of Canadian siskin encounters involve years of maximum invasion, and about half represent recaptures

during banding operations. Most birds are banded in late winter or early spring, often at bird feeders.

Yunick (1997) reported on 13 encounters from the banding of over 4000 siskins at a site in New York during the 1989–1990 irruption. Ten birds moved on a north–south or northeast–southwest axis within the eastern U.S. and Canada, and three moved east–southeast–west–northwest (covering distances of 1356–3470 km). All other encounters and retraps at that station involving non-irruption years showed movement restricted to eastern North America. Yunick’s analysis suggests typical migratory directions (east–southeast–west–northwest for western Canadian breeders and southwest–northeast for eastern breeders),

Encounters (Ontario): Pine Siskin (block size = 6.1°)



which in irruption years bring birds to overlapping wintering sites in the eastern U.S.

This conclusion is supported by the nine Canadian records of siskins banded in winter (December–February) and encountered in a different winter. One from British Columbia spent a different winter in Tennessee (record 1); three that were in Quebec during one winter spent different winters in Maine, Virginia, and Pennsylvania; and five wintering in Ontario were encountered in different winters in Wisconsin, Kansas, South Carolina, and Missouri.

Of the British Columbia birds with winter encounters (December–February), three wintered in the province, one in Oregon, and three in Atlantic coastal states (e.g., record 2). The birds in records 3–5, though not encountered in winter, illustrate similar orientations (north–south or east–southeast–

west–northwest), with the bird in record 4 moving an average of 89 km per day over 17 days. Prairie Province birds also wintered primarily to the east–southeast, from the Dakotas, Kansas, and Tennessee to Alabama and Louisiana (record 6), as well as farther east to Virginia and North Carolina (see also records 7–9 for similar orientations). However, one bird from Manitoba evidently wintered in California (record 10).

Ontario birds wintered more directly south and southeast, mainly in Great Lakes states as far south as Texas (record 11) and Louisiana, as well as in the northeastern U.S. Several cases involving Ontario showed strong east–west movement (e.g., record 12; see also record 10), giving no clue as to whether these birds might be western or eastern breeders. Possibly this and similar California encounters (see map) result from western Canadian birds heading south in some

Encounters (east): Pine Siskin (block size = 4.1°)



winters and east-southeast in others. Quebec siskins had a winter distribution similar to that of Ontario birds but shifted slightly eastward (see record 13 for an example of similar orientation), and Maritimes birds wintered primarily in the northeastern U.S. (see records 14 and 15 for birds with similar orientation; the bird in record 15 must have wintered unusually far south).

Breeding season distribution has also been described as erratic (Dawson 1997), in part because some siskins have been banded as adults in May–July and encountered in the

same months of another year in a different state or province. There are seven such encounters involving Canadian birds, showing an average movement of 1375 km. However, the timing of the return to breeding areas and the timing of breeding itself are also variable (Dawson 1997), so even May records may sometimes represent migration localities rather than breeding sites. The strongest suggestion of shifts between breeding areas comes from records 16 and 17.

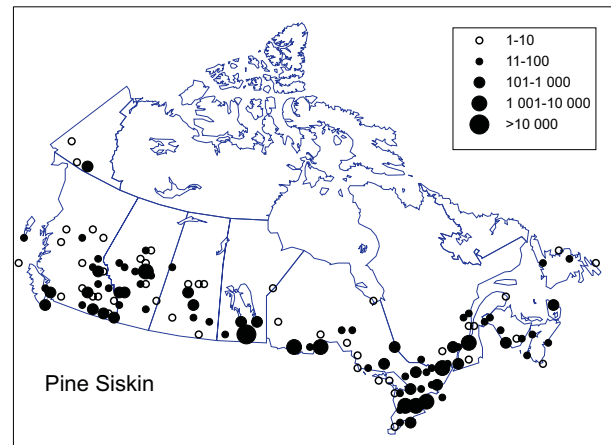
Encounter records: Pine Siskin

1	1850-00351 DFV	U U 05 14	28/12/89 16/12/90	Nashville, TN Terrace, BC	36°00'N 86°50'W 54°30'N 128°30'W	1 yr. 0 mo. 3780 km N44°W
2	1460-43096 SM	AHY U 05 13	20/01/78 25/08/79	Poquoson, VA Prince George, BC	37°00'N 76°20'W 53°50'N 122°40'W	1 yr. 7 mo. 3983 km N47°W
3	1330-25611 MBO	SY U 05 00	16/03/74 25/04/75	North Sudbury, MA Kimberley, BC	42°20'N 71°20'W 49°40'N 115°50'W	1 yr. 1 mo. 3482 km N61°W
4	1230-83376 JPL	AHY U 05 13	25/05/70 11/06/70	Bemidji, MN near Elko, BC	47°20'N 94°50'W 49°20'N 115°10'W	17 dy. 1516 km N74°W
5	0030-54805 JW	U U 00 00	15/07/28 01/04/32	Barkerville, BC Eagle Rock, CA	53°00'N 121°30'W 34°00'N 118°10'W	3 yr. 9 mo. 2132 km S8°E
6	1200-43148 LTS	U U 05 00	16/08/69 22/01/70	St. Vital, MB Amelia, LA	49°50'N 97°00'W 29°40'N 91°00'W	5 mo. 2301 km S15°E
7	1030-41475 ETJ	U U 07 89	22/08/71 25/03/72	near Edmonton, AB Don Mills, ON	53°30'N 113°20'W 43°40'N 79°20'W	7 mo. 2700 km S80°E
8	0280-16262 DRH	AHY U 00 13	02/06/63 22/04/64	St. Adolphe, MB Brewster, NY	49°40'N 97°00'W 41°20'N 73°30'W	10 mo. 2043 km S72°E
9	1160-47385 LTS	U U 07 89	29/07/69 01/03/70	St. Vital, MB Garner, NC	49°50'N 97°00'W 35°40'N 78°30'W	8 mo. 2173 km S50°E
10	1240-31766 LTS	AHY U 05 00	11/05/72 06/03/74	St. Vital, MB Irvington, CA	49°50'N 97°00'W 37°30'N 121°50'W	1 yr. 7 mo. 2407 km S65°W
11	1540-60743 BH	AHY U 07 89	01/02/81 17/03/85	Alief, TX Guelph, ON	29°40'N 95°30'W 43°30'N 80°10'W	4 yr. 1 mo. 2055 km N37°E
12	0290-69092 CHR	AHY U 00 89	24/03/63 14/02/64	Toronto, ON Ceres, CA	43°40'N 79°20'W 37°30'N 120°50'W	11 mo. 3537 km S87°W
13	1200-86330 FSH	AHY U 05 14	07/04/70 18/07/71	near Winston Salem, NC south of L'Anse-Saint-Jean, QC	36°00'N 80°10'W 48°20'N 70°30'W	1 yr. 3 mo. 1585 km N27°E
14	0200-28754 CJP	AHY U 00 12	08/04/50 26/07/51	Auburndale, MA near Placentia, NF	42°20'N 71°10'W 47°10'N 53°50'W	1 yr. 3 mo. 1468 km N63°E
15	0250-54478 JMC	AHY M 05 14	05/03/66 17/07/66	Garner, NC Fredericton, NB	35°40'N 78°30'W 45°50'N 66°30'W	4 mo. 1515 km N38°E
16	1740-00376 MLA	AHY M 05 13	09/07/90 04/06/92	18 km south of Dubois, WY 11 km west of Breton, AB	43°20'N 109°30'W 53°00'N 114°30'W	1 yr. 11 mo. 1138 km N17°W
17	1830-38795 DC	AHY U 04 12	28/07/91 22/07/93	11 km west of Dogpound, AB Troy, MT	51°20'N 114°30'W 48°20'N 115°50'W	2 yr. 0 mo. 347 km S17°W
18	0005-76403 TTMcC	AHY U 00 99	16/07/28 01/06/34	Barkerville, BC Barkerville, BC	53°00'N 121°30'W 53°00'N 121°30'W	5 yr. 11 mo. 0 km

Summary of banding statistics: Pine Siskin

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			54 925
<i>No. encountered per 1000 banded (1955–1995)</i>			1
Total no. encountered (1921–1995)	6	214	270
No. encountered from foreign bandings	3	125	135
Maximum period from banding to encounter (mo.)	29	71	71
No. of Canadian-banded birds moving > 0 km	3	66	93
Mean movement > 0 km of Canadian-banded birds	1 428	777	910
Maximum movement from all encounters (km)	2 121	3 983	3 983
% recovered (encountered dead)	66	48	45
% direct recoveries	16	48	47
% encountered during banding operations	33	44	47

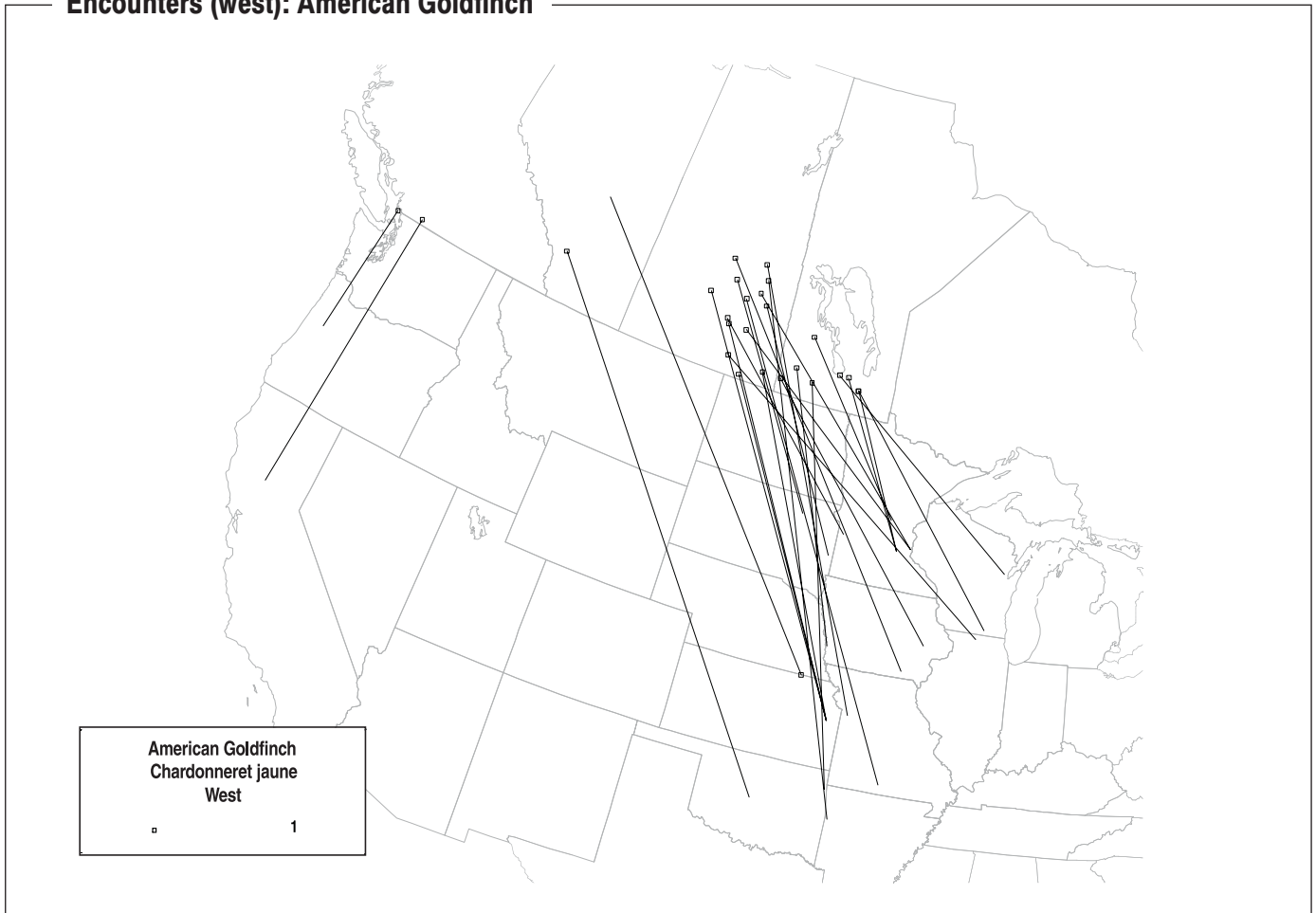
Banding effort: Pine Siskin



Top banders: LTS, JGi, IPBO, EP, CHR

American Goldfinch (*Carduelis tristis*) 529.0

Encounters (west): American Goldfinch

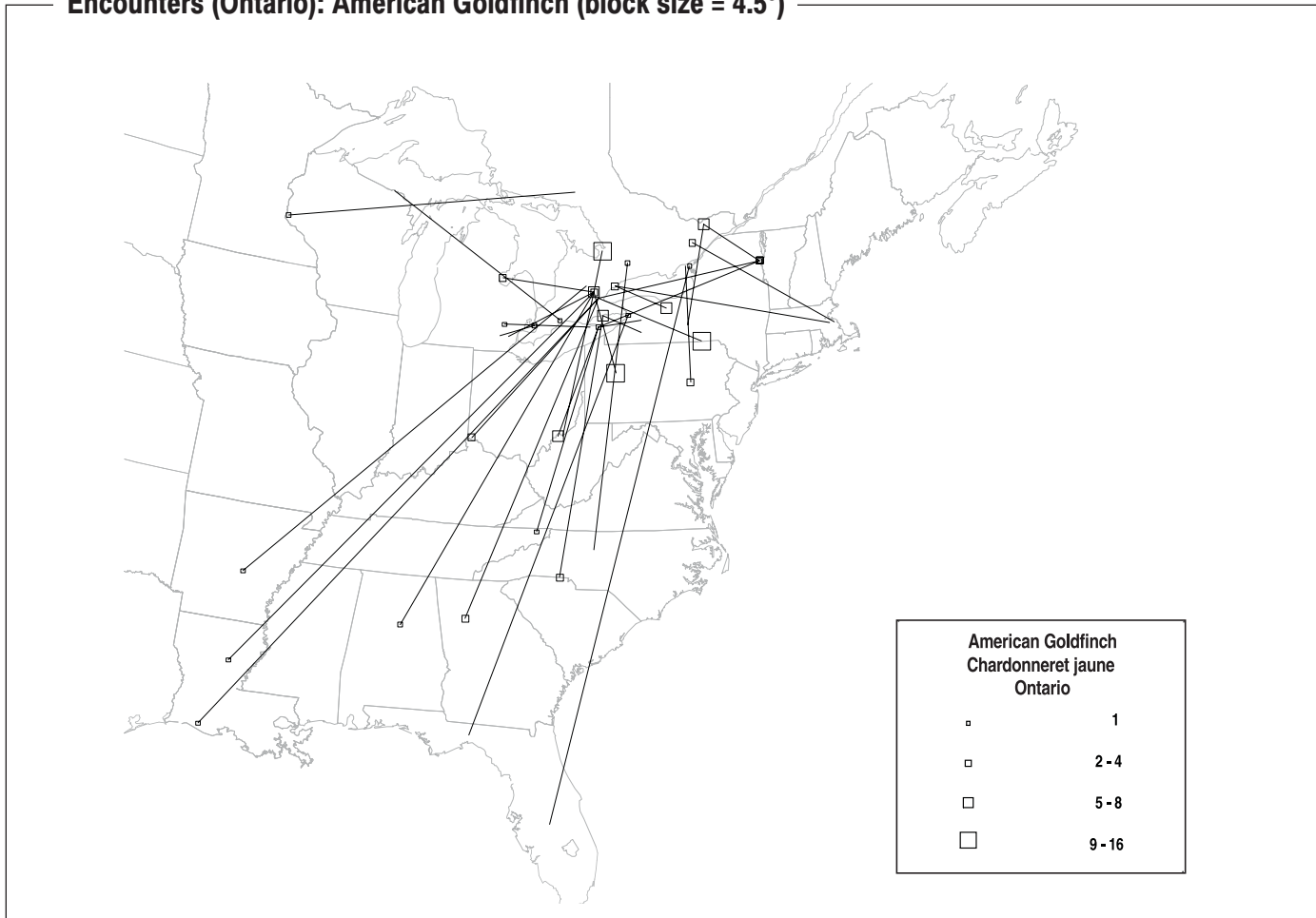


The American Goldfinch breeds in the northern half of the U.S., as well as across southern Canada, from southern British Columbia, north-central Alberta, and central Saskatchewan east to Newfoundland. It winters from extreme southern Canada throughout the U.S. to northern Mexico.

Most Canadian goldfinches migrate, although southern populations are largely resident (Middleton 1993). Many of the Canadian encounters arose from an intensive banding study in Guelph, Ontario (Middleton and Webb 1984), and over a third of all encounters are recaptures by banders. Females have been shown to migrate farther south than males, and adult males move farther than young males (Prescott and Middleton 1990).

Encounters show that British Columbia birds move to California for the winter (December–January; records 1 and 2). Those from the Prairie Provinces move southeast to winter in central U.S. states (e.g., Nebraska and Arkansas; see examples of birds encountered in migration that moved in similar directions, records 3–6). A high proportion of goldfinches banded in southern Ontario also overwinter in that province, but others move to states just south of the Great Lakes and east to the Atlantic. A few go as far as the Gulf Coast (record 7; see also record 8). Quebec and Maritimes birds winter primarily in Atlantic coastal states, from Massachusetts to Virginia (record 9), with a few heading farther south (record 10). Many other Maritimes

Encounters (Ontario): American Goldfinch (block size = 4.5°)



and Quebec birds on the east coast were encountered there during migration (records 11–14).

A sample of 14 goldfinches banded in one winter (December–February) and encountered in a different winter (all involving Ontario) showed that 9 finches spent both winters in Ontario, but the other 5 spent one of the two seasons in, respectively, Maryland, New York, Pennsylvania, Kentucky, and Alabama. This species does show fidelity to

the breeding area, however (as evidenced by six birds encountered in June–July at the same place where they were banded as adults in June–July of an earlier year).

Encounters (east): American Goldfinch (block size = 3.9°)



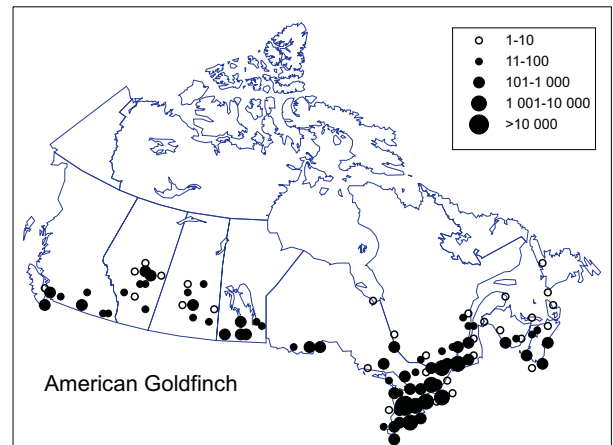
Encounter records: American Goldfinch

1	1030-13466 TEB	U U 05 14	06/02/63 ??/08/65	Big Lake Farms, CA Agassiz, BC	39°20'N 122°00'W 49°10'N 121°40'W	1095 km N1°E
2	1030-13963 TEB	U U 00 14	19/02/65 04/05/65	Big Lake Farms, CA Fort Langley, BC	39°20'N 122°00'W 49°00'N 122°30'W	3 mo. 1077 km N2°W
3	0380-36723 SHW	AHY F 00 98	06/03/38 10/06/41	Fort Smith, AR Chelan, SK	35°20'N 94°20'W 52°30'N 103°20'W	3 yr. 3 mo. 2039 km N18°W
4	1180-14043 MOR	AHY U 05 14	02/03/69 08/07/70	Lake De Montreville, MN Kelvington, SK	45°00'N 92°50'W 52°00'N 103°50'W	1 yr. 4 mo. 1105 km N41°W
5	0430-37708 CEP	U M 00 00	22/05/45 18/06/45	Bellingham, MN Bulyea, SK	45°00'N 96°10'W 50°50'N 104°50'W	1 mo. 915 km N42°W
6	1730-09289 DRG	AHY M 05 00	03/03/94 04/06/94	Yukon, OK Black Diamond, AB	35°30'N 97°40'W 50°40'N 114°10'W	3 mo. 2146 km N33°W
7	1890-84462 ADB	SY M 05 00	25/08/93 10/02/94	Mountsberg, ON Lake Misere, LA	43°20'N 80°00'W 29°50'N 92°50'W	6 mo. 1886 km S41°W
8	0750-92697 PHH	HY F 03 45	10/11/68 06/07/69	Tallahassee, FL Fort Erie, ON	30°20'N 84°10'W 42°50'N 78°50'W	8 mo. 1470 km N17°E
9	0270-69038 FVC	AHY M 00 00	15/12/57 14/08/63	South Lincoln, MA Eel Brook, NS	42°20'N 71°10'W 43°50'N 65°50'W	5 yr. 8 mo. 465 km N67°E
10	1650-45533 RFN	AHY F 05 01	04/02/84 08/07/85	Chaires, FL 11 km west of Saint-Côme, QC	30°20'N 84°00'W 46°10'N 73°50'W	1 yr. 5 mo. 1970 km N24°E
11	1030-07307 GC	AHY M 00 14	08/04/63 24/06/63	Dover, NJ near Matane, QC	40°50'N 74°30'W 48°50'N 67°30'W	2 mo. 1047 km N29°E
12	1090-17870 MO	AHY M 05 03	16/04/66 ST/08/66	Allen's Pond, MA near Seacowpond, PE	41°30'N 71°00'W 47°00'N 63°50'W	4 mo. 837 km N41°E
13	1170-22258 CMNH	AHY M 05 00	12/10/68 25/07/69	Powdermill Nature Reserve, PA near Petit Rocher, NB	40°00'N 79°10'W 47°40'N 65°40'W	9 mo. 1376 km N47°E
14	1180-92182 MAB	AHY U 05 14	17/03/69 24/08/72	Fort Eustis, VA Caribou, NS	37°10'N 76°30'W 45°40'N 62°40'W	3 yr. 5 mo. 1489 km N46°E
15	1750-28081 BKW	HY M 07 04	23/11/85 11/11/93	Guelph, ON inexact location, PA	43°30'N 80°10'W 40°10'N 79°??'W	8 yr.

Summary of banding statistics: American Goldfinch

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			84 841
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	67	281	392
No. encountered from foreign bandings	16	110	148
Maximum period from banding to encounter (mo.)	96	77	96
No. of Canadian-banded birds moving > 0 km	38	102	150
Mean movement > 0 km of Canadian-banded birds	212	278	268
Maximum movement from all encounters (km)	1 470	2 146	2 146
% recovered (encountered dead)	53	58	58
% direct recoveries	41	40	40
% encountered during banding operations	44	36	37

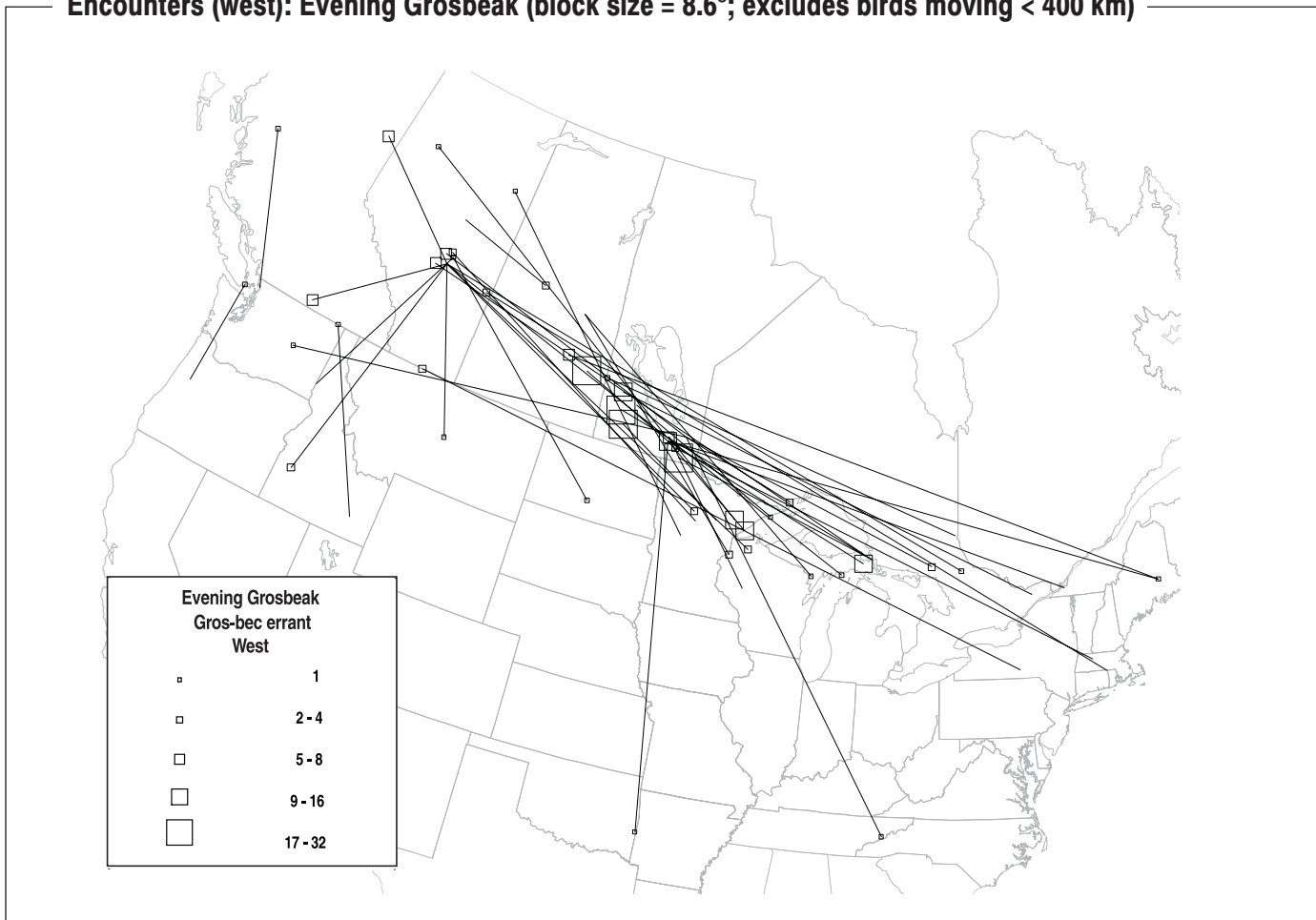
Banding effort: American Goldfinch



Top banders: ADB, BKW, ALAM, AS, LPBO

Evening Grosbeak (*Coccothraustes vespertinus*) 514.0

Encounters (west): Evening Grosbeak (block size = 8.6°; excludes birds moving < 400 km)



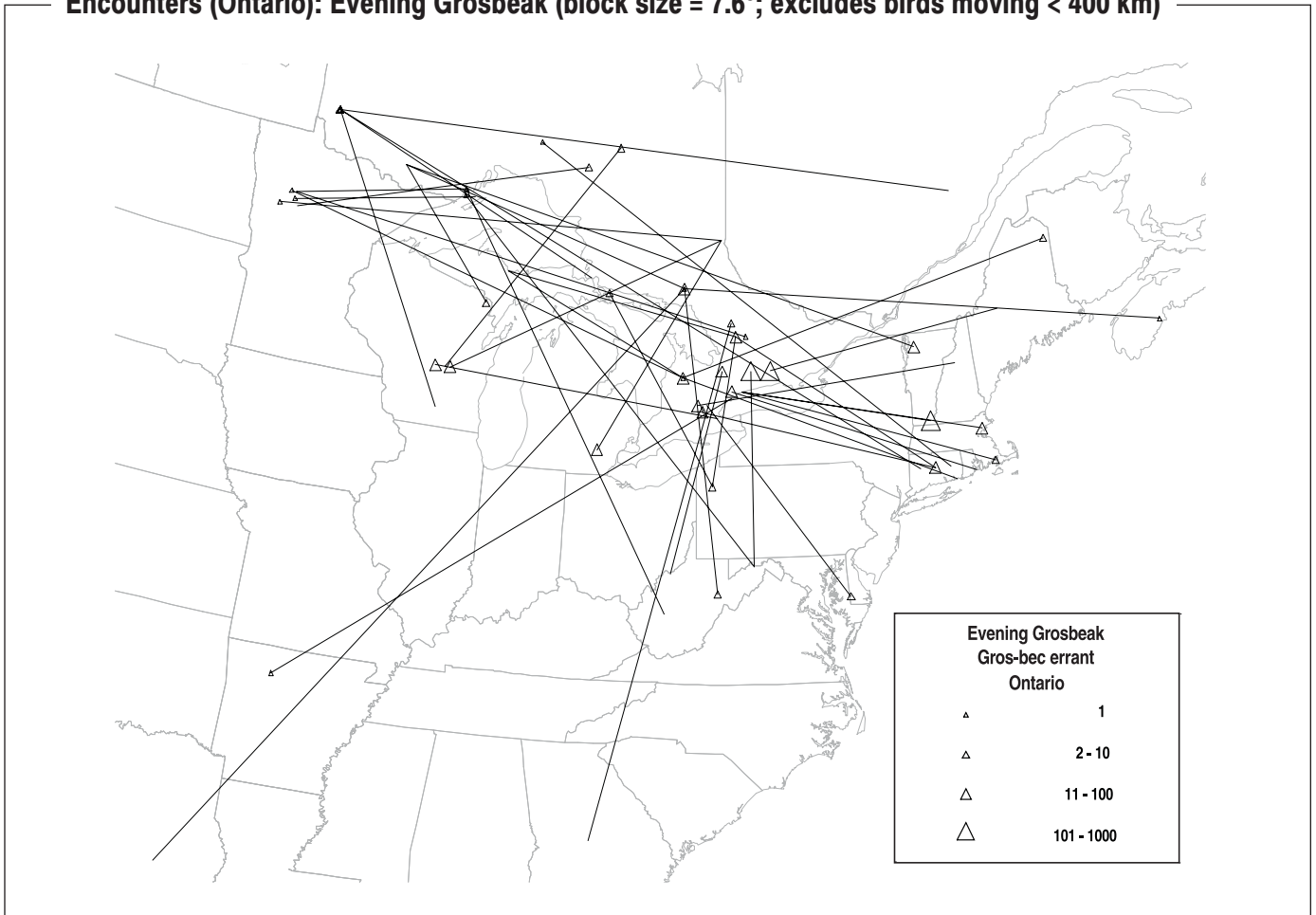
The Evening Grosbeak breeds in the western U.S., as well as across southern Canada (except for the Prairie Provinces), north to central British Columbia and northern Alberta in the west, and to Anticosti Island in the east. It winters throughout the breeding range and irregularly throughout the U.S. except in the extreme south. This species, formerly primarily western, has expanded its breeding range eastward in this century.

The large number of encounters for this species requires a great deal of selection for mapping, so many hundreds of individual records are not shown (see block size and other details with encounter maps, as well as section 4.2 for explanation. Note that nine degrees is as wide as the southern border of Saskatchewan).

Grosbeaks are irruptive migrants, at least east of the Rocky Mountains (Bock and Lephien 1976), with eastern birds showing little fidelity to wintering sites (Balph and Lindahl 1978, Yunick 1983). Males winter farther north than females, to varying extents from year to year; but there is no apparent geographic separation by age (Prescott 1991).

Probably because much banding takes place at bird feeders, there are over 2000 records of birds either banded or encountered in mid-winter (December–February). In each region of Canada except for Ontario, about 20–30% of these birds were found wintering in Canada, while the remainder wintered in the U.S. Of records involving Ontario, about 60% were of birds wintering there.

Encounters (Ontario): Evening Grosbeak (block size = 7.6°; excludes birds moving < 400 km)

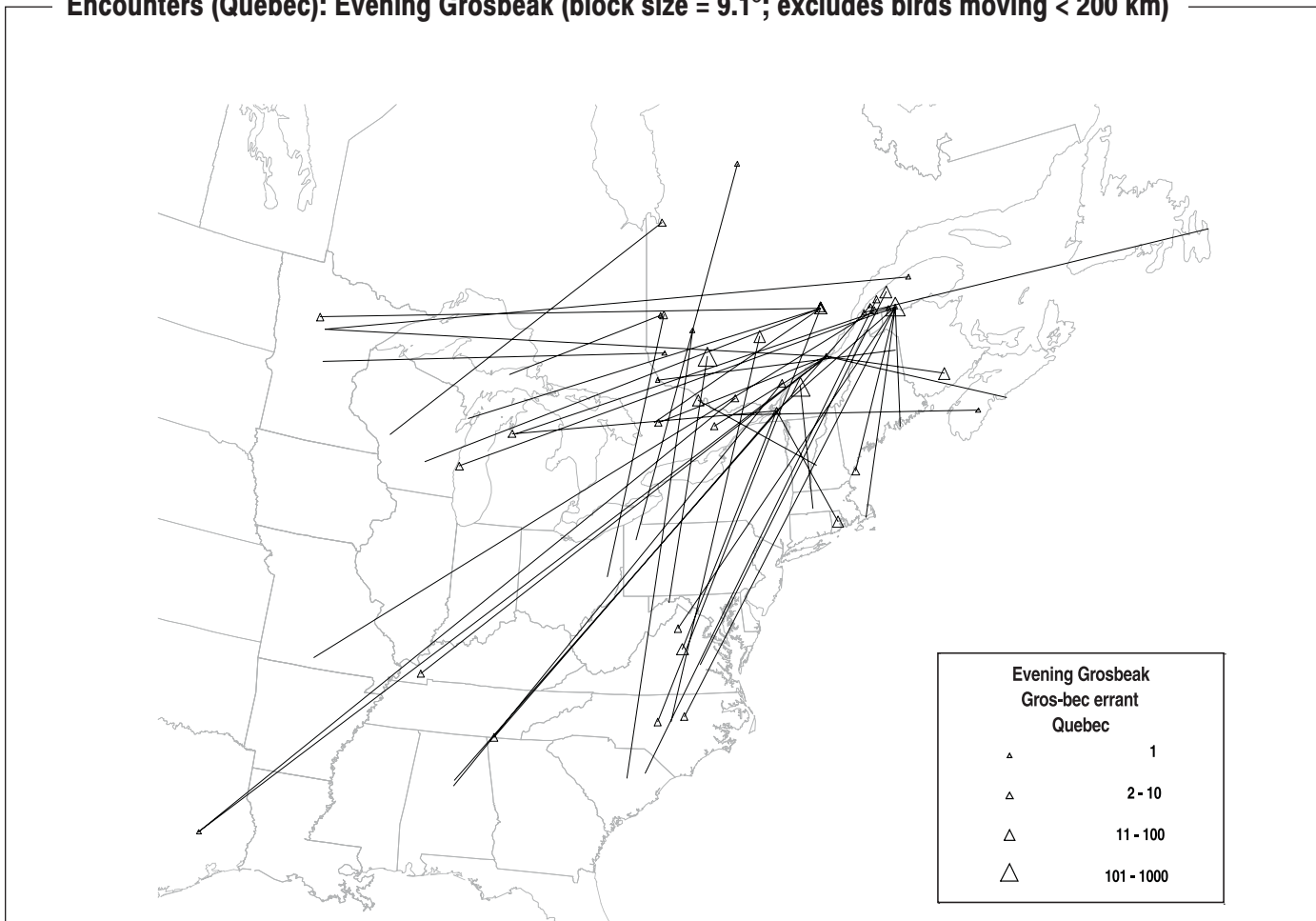


Fully 310 encounters involved grosbeaks banded in one winter and encountered in another jurisdiction in a different winter (indicating the different distances travelled from year to year and illustrating general patterns of movement). Only two birds wintering in British Columbia in one year spent different winters elsewhere (both in Alberta). (Records involving British Columbia in other seasons also show limited movement, with the birds travelling only as far as Alberta, Idaho, and Oregon). Birds that wintered in the Prairie Provinces in one year spent other winters primarily in Minnesota, Wisconsin, and Michigan, although a few wintered in the Pacific Northwest (including the two in British Columbia just mentioned). Some Prairie Province birds also

moved farther east, to New York (record 1) and the New England states (record 2), although occasionally they went more directly south (record 3).

Birds wintering in Ontario spent other winters in states from Michigan east to the coast (overlapping broadly with birds from the Prairie Provinces), and one got as far as North Carolina (record 4, not shown on the map due to extensive thinning). Records 5 and 6 show additional examples of birds that must have wintered in the southern U.S. in at least one year. Grosbeaks encountered in winter in Quebec and the Maritimes spent other winters mainly in Appalachian Mountain states, especially southern New England to

Encounters (Quebec): Evening Grosbeak (block size = 9.1°; excludes birds moving < 200 km)



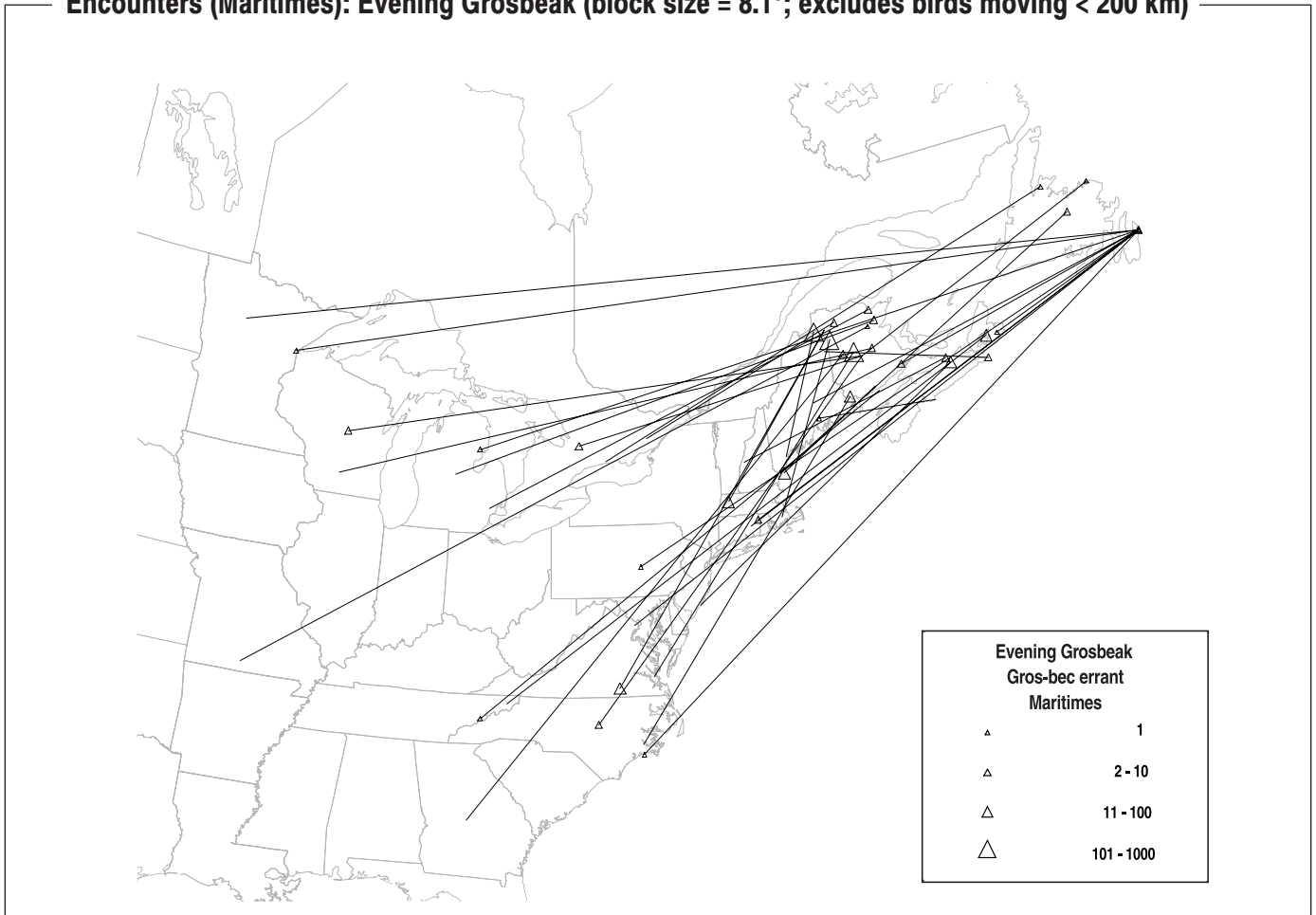
Virginia. However, one was encountered in Georgia (record 7), while others were encountered in Wisconsin and Michigan. (Possibly the latter two were breeders from the Prairie Provinces.) Other Quebec and Maritimes records are for birds that appear to have wintered in regions extending from quite far west (records 8–10) to the Atlantic coast (records 11 and 12).

Some encounters suggest low fidelity to the breeding site. There were 10 encounters in June–July of grosbeaks banded as adults in June–July of an earlier year. One of these

was in Virginia, still south of the breeding range, and may simply have been slow in migrating that year. Of the other nine, two were at the same breeding site, three were within 100 km, and four had moved 322–946 km (from Minnesota to Manitoba, Michigan to Quebec, Ontario to Quebec, and New Brunswick to Ontario; see record 13).

The bird in record 11 holds the longevity record for this species (Klimkiewicz and Futcher 1989).

Encounters (Maritimes): Evening Grosbeak (block size = 8.1°; excludes birds moving < 200 km)



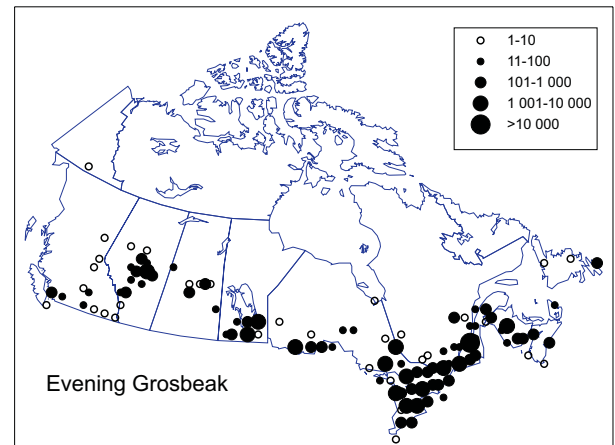
Encounter records: Evening Grosbeak

1	0601-77138 OWD	AHY M 00 00	14/04/61 ??/01/62	Ithaca, NY Milk River, AB	42°20'N 76°20'W 49°00'N 112°00'W	2843 km N63°W
2	0741-17642 PLR	AHY F 07 89	25/02/72 03/03/76	Central Village, MA St. Albert, AB	41°30'N 71°00'W 53°30'N 113°30'W	4 yr. 1 mo. 3402 km N52°W
3	0591-33401 LTS	AHY F 03 20	23/03/66 99/WI/68	St. Norbert, MB Heavener, OK	49°40'N 97°00'W 34°50'N 94°30'W	1664 km S8°E
4	0591-59356 HHK	U M 07 89	25/12/68 08/01/72	Elmwood, ON Hillsboro, NC	44°10'N 81°00'W 36°00'N 79°00'W	3 yr. 1 mo. 925 km S11°E
5	0621-69125 AJM	AHY F 07 04	28/04/62 16/03/71	near Atlanta, GA near Pembroke, ON	33°40'N 84°20'W 45°40'N 77°00'W	8 yr. 11 mo. 1475 km N23°E
6	0521-88173 PEM	AHY F 00 00	05/03/59 10/01/62	Toronto, ON near Lurton, AR	43°40'N 79°20'W 35°50'N 93°10'W	2 yr. 10 mo. 1467 km S58°W
7	0961-42460 JGi	AHY F 07 03	01/02/85 99/01/87	Charlesbourg, QC Evans, GA	46°50'N 71°10'W 33°30'N 82°00'W	1 yr. 11 mo. 1743 km S35°W
8	0921-15197 CWS-QC	AHY M 07 89	29/01/83 16/04/84	Norbertville, QC Huntsville, TX	46°50'N 71°10'W 30°40'N 95°30'W	1 yr. 3 mo. 2755 km S58°W
9	0701-47626 JEM	AHY F 07 89	09/04/67 18/03/69	Bemidji, MN near Quidi Vidi Lake, NF	47°20'N 94°50'W 47°30'N 52°40'W	1 yr. 11 mo. 3137 km N74°E
10	0521-54389 WOA	HY U 07 89	12/08/69 21/01/70	East of Saint John, NB Chestnut Hill, TN	45°10'N 65°50'W 35°50'N 83°10'W	5 mo. 1792 km S61°W
11	0581-31643 WJP	AHY M 05 14	25/12/59 15/09/74	Coventry, CT Nictau, NB	41°40'N 72°10'W 47°10'N 67°00'W	14 yr. 9 mo. 737 km N32°E
12	0621-49427 MBP	AHY M 05 45	02/03/64 ??/03/69	Dun Loring, VA near Quidi Vidi Lake, NF	38°50'N 77°10'W 47°30'N 52°40'W	2198 km N56°E
13	0731-06942 GHP	AHY M 05 45	20/06/70 25/06/71	Boiestown, NB Algonquin Park, ON	46°20'N 66°20'W 45°30'N 78°30'W	1 yr. 0 mo. 946 km S89°W

Summary of banding statistics: Evening Grosbeak

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			69 079
<i>No. encountered per 1000 banded (1955–1995)</i>			16
Total no. encountered (1921–1995)	94	3 044	3 909
No. encountered from foreign bandings	52	1 936	2 618
Maximum period from banding to encounter (mo.)	127	177	177
No. of Canadian-banded birds moving > 0 km	36	939	1 097
Mean movement > 0 km of Canadian-banded birds	404	551	542
Maximum movement from all encounters (km)	2 254	3 401	3 401
% recovered (encountered dead)	64	61	62
% direct recoveries	25	27	26
% encountered during banding operations	24	34	33

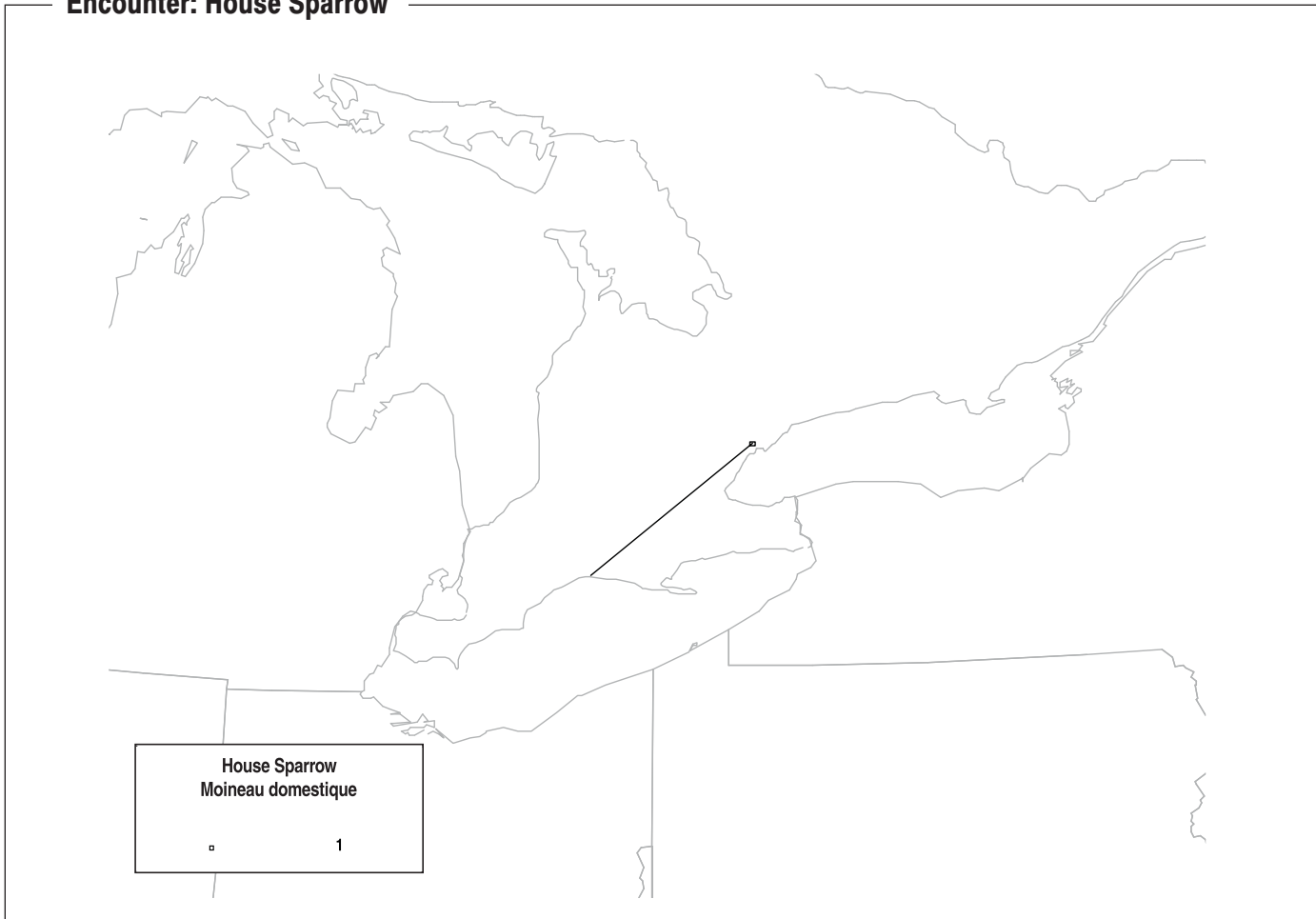
Banding effort: Evening Grosbeak



Top banders: JGi, JGL, DHE, CWS-QC, NMC

House Sparrow (*Passer domesticus*) 688.2

Encounter: House Sparrow



The House Sparrow was introduced to North America in about 1850, and it is now a permanent resident throughout most settled parts of Canada and the U.S.

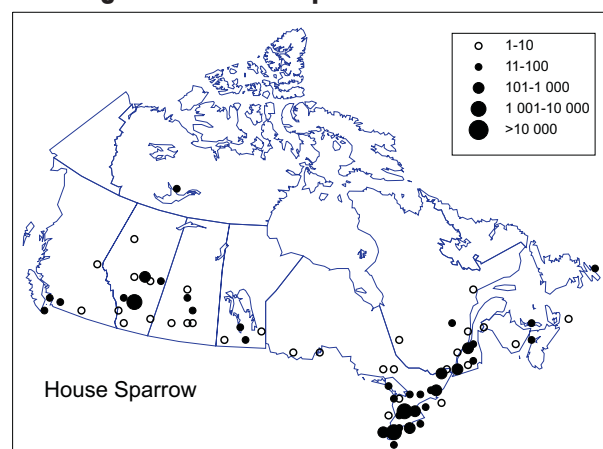
Only three birds moved over 25 km, going 33 km, 43 km, and 175 km (record 1).

Encounter record: House Sparrow

1	0402-28002	U U	30/04/42	St. Thomas, ON	42°40'N 81°10'W	
	TNJ	00 00	??/03/47	Etobicoke, ON	43°40'N 79°30'W	175 km N50°E
2	1351-08248	AHY M	12/10/85	Kingston, ON	44°10'N 76°30'W	4 yr. 3 mo.
	CMF	05 00	03/01/90	Wolfe Island, ON	44°10'N 76°20'W	13 km N90°E

Summary of banding statistics: House Sparrow

	Age at banding		
	Hatch year	After hatch year	Any age
<i>No. of Canadian bandings (1955–1995)</i>			14 802
<i>No. encountered per 1000 banded (1955–1995)</i>			2
Total no. encountered (1921–1995)	17	21	47
No. encountered from foreign bandings	0	0	0
Maximum period from banding to encounter (mo.)	24	51	51
No. of Canadian-banded birds moving > 0 km	4	11	21
Mean movement > 0 km of Canadian-banded birds	15	18	27
Maximum movement from all encounters (km)	18	27	175
% recovered (encountered dead)	100	90	93
% direct recoveries	58	38	44
% encountered during banding operations	0	4	4

Banding effort: House Sparrow

Top banders: ECM, WBM, OMH, ALAM, LPBO

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Appendix 1

Chronological summary of Canadian banding statistics

Legend A: Number of birds banded in Canada
 B: Banded in Canada, encountered anywhere
 C: Encountered in Canada, banded elsewhere

AOU no.	Species name		Numbers banded and encountered						
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1955– 1995 total	1921– 1995 total
312	Band-tailed pigeon	A:	–	30	135	0	34	199	–
		B:	0	1	5	0	0	6	6
		C:	1	22	31	3	0	56	57
316	White-winged Dove	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
319	Mourning Dove	A:	–	409	572	1 879	3 668	6 528	–
		B:	7	9	7	31	33	80	87
		C:	3	14	17	4	2	37	40
388	Black-billed Cuckoo	A:	–	252	185	441	237	1 115	–
		B:	0	1	2	4	1	8	8
		C:	0	0	1	2	0	3	3
387	Yellow-billed Cuckoo	A:	–	116	54	103	50	323	–
		B:	1	0	0	1	0	1	2
		C:	0	0	0	0	0	0	0
420	Common Nighthawk	A:	–	74	152	53	232	511	–
		B:	1	0	0	1	3	4	5
		C:	0	0	0	0	0	0	0
418	Common Poorwill	A:	–	0	0	4	68	72	–
		B:	0	0	0	0	3	3	3
		C:	0	0	0	0	0	0	0
416	Chuck-will's-widow	A:	–	0	0	2	0	2	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
417	Whip-poor-will	A:	–	67	87	68	60	282	–
		B:	0	0	0	0	3	3	3
		C:	0	0	0	0	1	1	1

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
423	Chimney Swift	A:	–	24	104	12	13	153	–
		B:	1 720	5	0	0	0	5	1 725
		C:	279	32	1	0	0	33	312
424	Vaux’s Swift	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
428	Ruby-throated Hummingbird	A:	–	25	2	316	332	675	–
		B:	2	0	0	0	0	0	2
		C:	0	0	0	1	0	1	1
436	Calliope Hummingbird	A:	–	0	0	4	0	4	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
433	Rufous Hummingbird	A:	–	1	0	5	905	911	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	1	1	1
390	Belted Kingfisher	A:	–	123	111	403	176	813	–
		B:	21	2	2	2	1	7	28
		C:	0	1	1	2	0	4	4
408	Lewis’ Woodpecker	A:	–	0	0	0	0	0	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0
406	Red-headed Woodpecker	A:	–	155	349	244	154	902	–
		B:	1	3	2	0	0	5	6
		C:	0	1	1	0	0	2	2
409	Red-bellied Woodpecker	A:	–	1	6	14	22	43	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
404	Williamson’s Sapsucker	A:	–	0	0	0	2	2	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
402	Yellow-bellied Sapsucker	A:	–	961	864	1 092	798	3 715	–
		B:	9	7	1	1	0	9	18
		C:	0	0	0	0	0	0	0

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
402.1	Red-naped Sapsucker	A:	–	5	1	0	285	291	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
403	Red-breasted Sapsucker	A:	–	9	0	0	51	60	–
		B:	1	2	0	0	0	2	3
		C:	0	0	0	0	0	0	0
394	Downy Woodpecker	A:	–	1 411	702	1 660	2 832	6 605	–
		B:	87	79	10	4	4	97	184
		C:	0	1	1	0	1	3	3
393	Hairy Woodpecker	A:	–	488	209	581	721	1 999	–
		B:	80	74	2	5	1	82	162
		C:	0	0	2	0	0	2	2
401	Three-toed Woodpecker	A:	–	5	5	1	11	22	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
400	Black-backed Woodpecker	A:	–	13	3	7	7	30	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
412	Northern (Yellow-shafted) Flicker	A:	–	2 001	1 321	2 843	1 818	7 983	–
		B:	72	21	8	5	5	39	111
		C:	0	4	3	1	1	9	9
413	Northern (Red-shafted) Flicker	A:	–	181	4	8	44	237	–
		B:	0	8	0	0	3	11	20
		C:	0	0	0	0	0	0	0
405	Pileated Woodpecker	A:	–	5	10	14	119	148	–
		B:	3	0	0	0	0	0	3
		C:	0	0	0	0	0	0	0
459	Olive-sided Flycatcher	A:	–	24	25	110	78	237	–
		B:	0	0	0	0	1	1	1
		C:	0	0	0	0	0	0	0
462	Western Wood-Pewee	A:	–	51	36	86	130	303	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
461	Eastern Wood-Pewee	A:	–	732	608	2163	1 532	5 035	–
		B:	0	1	0	1	0	2	2
		C:	0	0	1	1	0	2	2
463	Yellow-bellied Flycatcher	A:	–	1 019	852	4 056	2 180	8 107	–
		B:	1	1	0	0	0	1	2
		C:	0	0	0	0	0	0	0
465	Acadian Flycatcher	A:	–	54	12	47	43	156	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
466.1	Alder Flycatcher	A:	–	0	70	318	1 344	1 732	–
		B:	0	0	0	2	0	2	2
		C:	0	0	0	0	0	0	0
466.0	Willow Flycatcher	A:	–	0	4	49	48	101	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
466.9	Willow and Alder Flycatcher	A:	–	667	1 033	4 145	5 292	11 137	–
		B:	0	4	0	1	1	6	6
		C:	0	0	1	2	0	3	3
467	Least Flycatcher	A:	–	2 599	4 544	14 621	16 150	37 914	–
		B:	1	2	1	4	6	13	14
		C:	0	0	1	0	2	3	3
468	Hammond's Flycatcher	A:	–	4	7	22	67	100	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
469.1	Gray Flycatcher	A:	–	0	0	1	0	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
469	Dusky Flycatcher	A:	–	7	20	54	65	146	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
464.0 + 464.9	Western (Cordilleran) Flycatcher	A:	–	45	26	6	80	157	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

AOU no.	Species name		Numbers banded and encountered					1955– 1995 total	1921– 1995 total
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995		
456	Eastern Phoebe	A:	–	824	1 770	1 232	2 492	6 318	–
		B:	14	1	0	4	4	9	23
		C:	0	1	0	1	2	4	4
457	Say's Phoebe	A:	–	8	8	3	14	33	–
		B:	3	0	0	0	0	0	3
		C:	0	0	0	0	0	0	0
452	Great Crested Flycatcher	A:	–	201	209	973	629	2 012	–
		B:	0	1	0	1	1	3	3
		C:	0	0	0	0	0	0	0
447	Western Kingbird	A:	–	58	28	60	81	227	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0
444	Eastern Kingbird	A:	–	432	488	2 121	1 172	4 213	–
		B:	6	2	3	1	1	7	13
		C:	0	0	2	0	0	2	2
443	Scissor-tailed Flycatcher	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
622	Loggerhead Shrike	A:	–	74	317	82	6 863	7 336	–
		B:	8	1	3	0	15	19	27
		C:	0	0	0	0	0	0	0
621	Northern Shrike	A:	–	70	66	97	138	371	–
		B:	3	5	1	2	0	8	11
		C:	1	0	0	0	0	0	1
631	White-eyed Vireo	A:	–	12	9	62	62	145	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
633	Bell's Vireo	A:	–	1	0	0	0	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
630	Black-capped Vireo	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
628	Yellow-throated Vireo	A:	–	19	30	60	34	143	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
629	Blue-headed Vireo	A:	–	366	369	1 290	1 073	3 098	–
		B:	0	0	1	1	0	2	2
		C:	0	0	0	0	0	0	0
632	Hutton’s Vireo	A:	–	0	1	0	7	8	–
		B:	0	1	0	0	0	1	1
		C:	0	0	0	0	0	0	0
627	Warbling Vireo	A:	–	309	252	1 939	2 678	5 178	–
		B:	0	3	0	2	4	9	9
		C:	0	0	0	0	0	0	0
626	Philadelphia Vireo	A:	–	336	382	1 552	1 096	3 366	–
		B:	0	0	1	0	1	2	2
		C:	0	0	0	0	0	0	0
624	Red-eyed Vireo	A:	–	2 351	2 335	8 827	5 812	19 325	–
		B:	2	7	1	8	3	19	21
		C:	0	0	1	0	0	1	1
484	Gray Jay	A:	–	317	235	794	851	2 197	–
		B:	32	25	8	12	2	47	79
		C:	0	1	0	0	0	1	1
478	Steller’s Jay	A:	–	193	16	87	339	635	–
		B:	55	4	0	0	15	19	74
		C:	0	0	0	0	0	0	0
477	Blue Jay	A:	–	3 461	7 166	6 883	9 497	27 007	–
		B:	161	141	94	84	55	374	535
		C:	13	29	49	50	19	147	160
491	Clark’s Nutcracker	A:	–	11	0	0	2	13	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0
475	Black-billed Magpie	A:	–	978	909	459	674	3 020	–
		B:	70	36	35	6	8	85	155
		C:	0	1	0	0	0	1	1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
488	American Crow	A:	–	1 062	1 067	1 874	864	4 867	–
		B:	535	47	48	81	16	192	727
		C:	68	12	1	5	0	18	86
489	Northwestern Crow	A:	–	85	57	538	154	834	–
		B:	6	10	3	31	6	50	56
		C:	1	0	0	0	0	0	1
487	Chihuahuan Raven	A:	–	0	0	1	0	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
486	Common Raven	A:	–	163	2 100	2 945	472	5 680	–
		B:	6	6	266	176	30	478	484
		C:	0	0	0	0	1	1	1
474	Horned Lark	A:	–	169	742	1 212	421	2 544	–
		B:	16	1	2	0	0	3	19
		C:	2	0	0	0	0	0	2
611	Purple Martin	A:	–	2 053	1 646	7 319	6 597	17 615	–
		B:	17	14	22	22	23	81	98
		C:	0	1	0	1	0	2	2
614	Tree Swallow	A:	–	6 081	24 736	46 595	81 668	159 080	–
		B:	207	85	83	88	184	440	647
		C:	1	5	5	10	2	22	23
615	Violet-green Swallow	A:	–	80	6	60	783	929	–
		B:	4	0	0	0	0	0	4
		C:	0	1	0	0	0	1	1
617	Northern Rough-winged Swallow	A:	–	401	100	362	223	1 086	–
		B:	1	1	0	0	0	1	2
		C:	0	0	0	0	0	0	0
616	Bank Swallow	A:	–	17 081	6 052	14 260	3 723	41 116	–
		B:	51	225	5	6	1	237	288
		C:	1	3	0	1	0	4	5
612	Cliff Swallow	A:	–	954	273	435	1 753	3 415	–
		B:	65	32	0	0	6	38	103
		C:	0	0	0	0	1	1	1

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
613	Barn Swallow	A:	–	5 192	4 101	6 252	3 017	18 562	–
		B:	90	15	8	6	0	29	119
		C:	1	1	2	3	0	6	7
735	Black-capped Chickadee	A:	–	7 103	5 413	16 550	32 127	61 193	–
		B:	631	293	12	55	54	414	1 045
		C:	1	5	0	2	1	8	9
738	Mountain Chickadee	A:	–	4	0	127	156	287	–
		B:	18	1	0	0	0	1	19
		C:	0	0	0	0	1	1	1
741	Chestnut-backed Chickadee	A:	–	44	6	4	146	200	–
		B:	3	2	0	0	0	2	5
		C:	0	0	0	0	0	0	0
740	Boreal Chickadee	A:	–	127	378	729	470	1 704	–
		B:	5	1	0	0	0	1	6
		C:	0	0	0	0	0	0	0
731	Tufted Titmouse	A:	–	4	6	1	7	18	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
743	Bushtit	A:	–	7	0	5	169	181	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
728	Red-breasted Nuthatch	A:	–	811	1 101	3 303	2 909	8 124	–
		B:	6	1	1	0	1	3	9
		C:	0	0	0	0	0	0	0
727	White-breasted Nuthatch	A:	–	812	567	1 036	1 212	3 627	–
		B:	35	14	2	3	1	20	55
		C:	1	1	0	0	0	1	2
730	Pygmy Nuthatch	A:	–	18	0	0	0	18	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
726	Brown Creeper	A:	–	4 214	3 634	8 636	9 148	25 632	–
		B:	0	1	2	3	4	10	10
		C:	0	0	1	2	0	3	3

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
715	Rock Wren	A:	–	0	1	0	8	9	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
718	Carolina Wren	A:	–	23	10	25	150	208	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0
719	Bewick's Wren	A:	–	42	13	16	41	112	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0
721	House Wren	A:	–	901	885	3 413	8 166	13 365	–
		B:	138	12	1	2	2	17	155
		C:	0	0	1	2	0	3	3
722	Winter Wren	A:	–	588	1 069	1 748	2 382	5 787	–
		B:	1	0	0	0	0	0	1
		C:	0	0	1	0	0	1	1
724	Sedge Wren	A:	–	4	1	6	9	20	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
725	Marsh Wren	A:	–	232	462	2 834	887	4 415	–
		B:	0	0	0	0	1	1	1
		C:	0	0	0	0	0	0	0
701	American Dipper	A:	–	2	96	94	6	198	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
748	Golden-crowned Kinglet	A:	–	5 046	5 312	9 575	8 868	28 801	–
		B:	0	2	2	2	2	8	8
		C:	0	1	1	0	2	4	4
749	Ruby-crowned Kinglet	A:	–	5 278	5 777	15 746	21 475	48 276	–
		B:	1	0	1	2	3	6	7
		C:	0	0	1	1	1	3	3
751	Blue-gray Gnatcatcher	A:	–	96	46	185	127	454	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
765	Northern Wheatear	A:	–	26	0	1	0	27	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
766	Eastern Bluebird	A:	–	331	3 505	1 981	9 821	15 638	–
		B:	24	4	8	3	23	38	62
		C:	0	0	0	1	3	4	4
767	Western Bluebird	A:	–	4	0	1	1 966	1 971	–
		B:	0	0	0	0	3	3	3
		C:	0	0	0	0	0	0	0
768	Mountain Bluebird	A:	–	67	17 361	17 885	75 829	11 1142	–
		B:	11	0	51	26	92	169	180
		C:	0	0	0	0	0	0	0
754	Townsend’s Solitaire	A:	–	30	13	31	22	96	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
756	Veery	A:	–	1 195	1 470	4 010	3 321	9 996	–
		B:	3	6	2	4	14	26	29
		C:	0	1	2	3	1	7	7
757	Gray-cheeked Thrush	A:	–	2 420	1 411	1 923	2 336	8 090	–
		B:	0	0	0	1	2	3	3
		C:	0	1	2	2	0	5	5
758	Swainson’s Thrush	A:	–	6 900	5 842	15 132	11 170	39 044	–
		B:	0	8	4	10	3	25	25
		C:	1	4	3	3	1	11	12
759	Hermit Thrush	A:	–	3 141	2 904	7 197	9 125	22 367	–
		B:	4	0	2	10	3	15	19
		C:	0	0	0	2	1	3	3
755	Wood Thrush	A:	–	357	437	1 218	998	3 010	–
		B:	3	4	4	1	2	11	14
		C:	0	0	0	1	0	1	1
761.2	Fieldfare	A:	–	0	1	0	0	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
761	American Robin	A:	–	7 397	5 187	8 835	9 410	30 829	–
		B:	565	217	77	41	39	374	939
		C:	14	28	29	8	6	71	85
763	Varied Thrush	A:	–	272	43	3	151	469	–
		B:	4	4	1	0	4	9	13
		C:	0	1	0	1	0	2	2
704	Gray Catbird	A:	–	4 019	2 254	6 930	7 497	20 700	–
		B:	87	56	8	14	10	88	175
		C:	3	7	9	4	2	22	25
703	Northern Mockingbird	A:	–	41	29	44	66	180	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
705	Brown Thrasher	A:	–	1 343	1 166	1 458	1 158	5 125	–
		B:	16	13	11	7	2	33	49
		C:	1	1	2	1	0	4	5
493	European Starling	A:	–	8 227	8 904	8 934	3 795	29 860	–
		B:	688	394	192	97	24	707	1 395
		C:	301	568	274	46	11	899	1 200
493.1	Crested Myna	A:	–	50	87	0	2	139	–
		B:	0	3	3	0	0	6	6
		C:	0	0	0	0	0	0	0
697	Water Pipit	A:	–	85	55	81	48	269	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0
700	Sprague's Pipit	A:	–	5	232	0	48	285	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
618	Bohemian Waxwing	A:	–	991	2 699	1 069	605	5 364	–
		B:	3	13	19	3	1	36	39
		C:	1	1	0	0	0	1	2
619	Cedar Waxwing	A:	–	1 499	913	6 197	6 315	14 924	–
		B:	12	5	4	13	11	33	45
		C:	17	13	11	5	7	36	53

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955– 1995 total	1921– 1995 total
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995		
641	Blue-winged Warbler	A:	–	10	19	92	235	356	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
641.2	Brewster's Warbler	A:	–	3	1	6	19	29	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
641.3	Lawrence's Warbler	A:	–	0	0	3	4	7	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
642	Golden-winged Warbler	A:	–	24	37	134	155	350	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
647	Tennessee Warbler	A:	–	4 596	4 202	17 751	10 422	36 971	–
		B:	3	2	1	6	2	11	14
		C:	0	0	2	1	0	3	3
646	Orange-crowned Warbler	A:	–	447	746	1 204	3 291	5 688	–
		B:	0	0	0	1	0	1	1
		C:	0	0	2	1	2	5	5
645	Nashville Warbler	A:	–	2 423	2 671	6 984	6 144	18 222	–
		B:	0	0	0	0	0	0	0
		C:	0	0	3	0	0	3	3
648	Northern Parula	A:	–	90	75	568	382	1 115	–
		B:	0	0	0	1	1	2	2
		C:	0	0	1	0	0	1	1
652	Yellow Warbler	A:	–	3 610	4 294	23 131	32 584	63 619	–
		B:	20	28	7	17	34	86	106
		C:	0	1	2	4	2	9	9
659	Chestnut-sided Warbler	A:	–	1 280	1 116	3 329	3 735	9 460	–
		B:	0	2	0	2	4	8	8
		C:	0	0	2	0	1	3	3
657	Magnolia Warbler	A:	–	4 043	3 508	16 738	13 596	37 885	–
		B:	0	1	2	2	4	9	9
		C:	0	1	2	1	0	4	4

AOU no.	Species name		Numbers banded and encountered					1955– 1995 total	1921– 1995 total
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995		
650	Cape May Warbler	A:	–	1 130	980	6 871	3 573	12 554	–
		B:	0	0	0	5	2	7	7
		C:	0	1	0	3	1	5	5
654	Black-throated Blue Warbler	A:	–	712	758	2 187	2 519	6 176	–
		B:	1	0	0	1	0	1	2
		C:	0	0	0	1	2	3	3
655	Yellow-rumped (Myrtle) Warbler	A:	–	9 983	10 496	23 635	31 392	75 506	–
		B:	3	12	10	9	16	47	50
		C:	1	4	6	7	9	26	27
656	Yellow-rumped (Audubon's) Warbler	A:	–	186	48	122	336	692	–
		B:	0	1	0	0	0	1	1
		C:	0	1	0	0	1	2	2
665	Black-throated Gray Warbler	A:	–	37	0	1	4	42	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
667	Black-throated Green Warbler	A:	–	1 287	910	3 256	2 461	7 914	–
		B:	0	0	1	0	0	1	1
		C:	0	1	0	0	0	1	1
668	Townsend's Warbler	A:	–	2	1	7	100	110	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
662	Blackburnian Warbler	A:	–	695	500	2 777	1 285	5 257	–
		B:	0	0	0	0	1	1	1
		C:	0	0	0	0	0	0	0
663	Yellow-throated Warbler	A:	–	14	18	19	6	57	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
671	Pine Warbler	A:	–	44	51	98	99	292	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
670	Kirtland's Warbler	A:	–	1	0	1	0	2	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	1	0	1	1

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
673	Prairie Warbler	A:	–	7	5	21	33	66	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
672	(Western) Palm Warbler	A:	–	1 377	816	1 364	3 407	6 964	–
		B:	0	1	1	0	0	2	2
		C:	1	0	0	0	0	0	1
672.9	(Yellow) Palm Warbler	A:	–	79	369	377	183	1 008	–
		B:	0	0	0	0	1	1	1
		C:	0	0	0	0	0	0	0
660	Bay-breasted Warbler	A:	–	1 490	1 355	10 060	1 975	14 880	–
		B:	0	1	0	3	0	4	4
		C:	0	1	0	0	1	2	2
661	Blackpoll Warbler	A:	–	3 606	3 033	6 771	6 131	19 541	–
		B:	2	0	2	2	4	8	10
		C:	0	0	0	0	0	0	0
658	Cerulean Warbler	A:	–	25	8	22	21	76	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
636	Black-and-white Warbler	A:	–	1 134	1 110	4 641	4 335	11 220	–
		B:	2	0	1	1	5	7	9
		C:	0	1	4	1	0	6	6
687	American Redstart	A:	–	2 245	2 264	9 809	12 031	26 349	–
		B:	3	4	1	10	16	31	34
		C:	0	2	2	2	3	9	9
637	Prothonotary Warbler	A:	–	8	4	45	23	80	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
639	Worm-eating Warbler	A:	–	8	4	14	15	41	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
638	Swainson's Warbler	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

AOU no.	Species name		Numbers banded and encountered					1955– 1995 total	1921– 1995 total
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995		
674	Ovenbird	A:	–	2 256	2 069	5 852	5 765	15 942	–
		B:	1	1	1	6	6	14	15
		C:	0	2	2	2	4	10	10
675	Northern Waterthrush	A:	–	1 062	1 250	6 426	4 549	13 287	–
		B:	0	1	1	3	6	11	11
		C:	0	0	3	1	2	6	6
676	Louisiana Waterthrush	A:	–	8	4	32	26	70	–
		B:	0	0	0	1	0	1	1
		C:	0	0	0	0	0	0	0
677	Kentucky Warbler	A:	–	6	4	19	16	45	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
678	Connecticut Warbler	A:	–	162	131	191	147	631	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
679	Mourning Warbler	A:	–	493	416	1 871	2 138	4 918	–
		B:	0	2	0	3	2	7	7
		C:	0	0	1	0	0	1	1
680	MacGillivray's Warbler	A:	–	81	43	107	254	485	–
		B:	1	0	0	0	0	0	1
		C:	0	0	0	0	0	0	0
681	Common Yellowthroat	A:	–	2 642	2 475	7 844	8 457	21 418	–
		B:	1	8	11	0	13	32	33
		C:	0	0	7	2	2	11	11
684	Hooded Warbler	A:	–	16	7	41	452	516	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
685	Wilson's Warbler	A:	–	1 330	1 358	4 843	4 631	12 162	–
		B:	0	0	2	0	0	2	2
		C:	0	0	0	2	0	2	2
686	Canada Warbler	A:	–	1 224	1 102	5 065	3 376	10 767	–
		B:	0	1	0	1	1	3	3
		C:	0	1	1	4	0	6	6

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
683	Yellow-breasted Chat	A:	–	174	99	152	133	558	–
		B:	0	1	0	0	0	1	1
		C:	0	0	0	0	0	0	0
610	Summer Tanager	A:	–	8	2	10	7	27	–
		B:	0	0	0	1	0	1	1
		C:	0	0	0	0	0	0	0
608	Scarlet Tanager	A:	–	341	545	971	402	2 259	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	1	1	1
607	Western Tanager	A:	–	119	35	182	87	423	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	1	1	1
588	Spotted Towhee	A:	–	398	80	15	236	729	–
		B:	60	10	2	0	1	13	73
		C:	0	0	0	0	0	0	0
587	Eastern Towhee	A:	–	687	561	847	606	2 701	–
		B:	10	8	0	1	2	11	21
		C:	0	1	0	0	0	1	1
578	Cassin's Sparrow	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
559	American Tree Sparrow	A:	–	5 785	3 817	11 978	14 139	35 719	–
		B:	95	101	7	16	19	143	238
		C:	12	13	14	4	7	38	50
560	Chipping Sparrow	A:	–	3 525	1 484	5 255	9 689	19 953	–
		B:	165	65	4	6	10	85	250
		C:	3	9	3	0	1	13	16
561	Clay-colored Sparrow	A:	–	1 172	881	919	5 415	8 387	–
		B:	18	4	0	1	1	6	24
		C:	0	0	0	0	0	0	0
562	Brewer's Sparrow	A:	–	4	6	6	265	281	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

AOU no.	Species name		Numbers banded and encountered					1955– 1995 total	1921– 1995 total
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995		
563	Field Sparrow	A:	–	1 004	705	1 646	1 567	4 922	–
		B:	1	2	1	0	0	3	4
		C:	0	0	0	0	0	0	0
540	Vesper Sparrow	A:	–	566	199	211	313	1 289	–
		B:	11	4	0	0	0	4	15
		C:	0	1	2	0	0	3	3
552	Lark Sparrow	A:	–	3	25	40	9	77	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
605	Lark Bunting	A:	–	2	9	2	4	17	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
541	Savannah (Ipswich) Sparrow	A:	–	0	867	1 517	359	2 743	–
		B:	0	0	5	2	0	7	7
		C:	0	0	0	0	0	0	0
542	Savannah Sparrow	A:	–	4 668	3 375	7 132	8 705	23 880	–
		B:	16	18	4	8	9	39	55
		C:	2	3	3	1	0	7	9
546	Grasshopper Sparrow	A:	–	36	44	86	59	225	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
545	Baird's Sparrow	A:	–	1	63	5	149	218	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
547	Henslow's Sparrow	A:	–	8	3	11	3	25	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
548	Le Conte's Sparrow	A:	–	6	11	55	78	150	–
		B:	0	0	0	1	0	1	1
		C:	0	0	0	0	0	0	0
549	Sharp-tailed Sparrow	A:	–	34	2	52	34	122	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
550	Seaside Sparrow	A:	–	0	0	2	0	2	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
585	Fox Sparrow	A:	–	1 673	1 377	1 288	2 161	6 499	–
		B:	27	6	5	0	1	12	39
		C:	15	15	6	3	2	26	41
581	Song Sparrow	A:	–	13 365	6 837	16 649	25 498	62 349	–
		B:	691	211	18	16	24	269	960
		C:	27	20	18	8	6	52	79
583	Lincoln's Sparrow	A:	–	2 530	1 714	4 832	4 582	13 658	–
		B:	14	0	1	4	1	6	20
		C:	4	0	1	1	1	3	7
584	Swamp Sparrow	A:	–	2 182	2 590	3 913	4 565	13 250	–
		B:	4	1	1	0	2	4	8
		C:	1	2	0	1	0	3	4
558	White-throated Sparrow	A:	–	29 303	17 328	36 307	29 614	112 552	–
		B:	159	104	37	22	27	190	349
		C:	24	29	22	18	10	79	103
553	Harris's Sparrow	A:	–	1 662	801	112	482	3 057	–
		B:	3	2	3	0	3	8	11
		C:	5	1	1	0	1	3	8
554	White-crowned Sparrow	A:	–	10 111	4 459	7 558	9 843	31 971	–
		B:	40	27	2	5	3	37	77
		C:	10	11	11	2	0	24	34
554.7	Puget Sound White-crowned Sparrow	A:	–	0	0	0	37	37	–
		B:	0	0	0	0	0	0	0
		C:	0	0	2	0	1	3	3
555	Gambel's White-crowned Sparrow	A:	–	843	436	122	1 096	2 497	–
		B:	16	23	0	2	0	25	41
		C:	4	2	1	7	0	10	14
556	Nuttall's White-crowned Sparrow	A:	–	0	0	0	0	0	–
		B:	2	0	0	0	0	0	2
		C:	4	0	0	0	0	0	4

AOU no.	Species name		Numbers banded and encountered					1955– 1995 total	1921– 1995 total
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995		
557	Golden-crowned Sparrow	A:	–	503	174	96	295	1 068	–
		B:	21	12	0	0	0	12	33
		C:	1	3	1	0	1	5	6
567	Slate-colored Junco	A:	–	27 337	12 266	27 036	32 710	99 349	–
		B:	409	76	10	15	30	131	540
		C:	42	33	33	23	19	108	150
567.1	Oregon Junco	A:	–	4 817	781	557	1 715	7 870	–
		B:	165	69	3	2	0	74	239
		C:	0	7	4	0	1	12	12
539	McCown's Longspur	A:	–	0	69	0	31	100	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
536	Lapland Longspur	A:	–	307	1 766	687	363	3 123	–
		B:	0	0	41	0	0	41	41
		C:	0	1	0	0	1	2	2
537	Smith's Longspur	A:	–	2	14	0	216	232	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
538	Chestnut-collared Longspur	A:	–	2	350	4	690	1 046	–
		B:	0	0	1	0	0	1	1
		C:	0	0	0	0	0	0	0
534	Snow Bunting	A:	–	1 008	833	11 415	5 770	19 026	–
		B:	6	1	4	25	4	34	40
		C:	13	7	19	0	0	26	39
593	Northern Cardinal	A:	–	1 625	998	876	1 501	5 000	–
		B:	24	159	21	9	6	195	219
		C:	1	1	2	0	0	3	4
595	Rose-breasted Grosbeak	A:	–	977	2 028	5 264	3 121	11 390	–
		B:	7	3	11	9	7	30	37
		C:	0	0	1	2	0	3	3
596	Black-headed Grosbeak	A:	–	11	0	11	42	64	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

Appendix 1

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
597	Blue Grosbeak	A:	–	0	1	3	1	5	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
599	Lazuli Bunting	A:	–	51	4	0	112	167	–
		B:	0	0	1	0	0	1	1
		C:	0	0	0	0	0	0	0
598	Indigo Bunting	A:	–	862	365	929	1 088	3 244	–
		B:	0	3	1	1	0	5	5
		C:	0	0	1	1	2	4	4
600	Varied Bunting	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
601	Painted Bunting	A:	–	0	0	1	1	2	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
604	Dickcissel	A:	–	16	9	3	5	33	–
		B:	0	1	0	0	0	1	1
		C:	0	0	0	0	0	0	0
494	Bobolink	A:	–	736	98	1 019	3 054	4 907	–
		B:	0	0	0	0	5	5	5
		C:	0	0	1	0	0	1	1
498	Red-winged Blackbird	A:	–	11 683	28 961	22 562	15 275	78 481	–
		B:	181	165	451	109	35	760	941
		C:	15	33	81	19	3	136	151
501	Eastern Meadowlark	A:	–	156	112	296	44	608	–
		B:	4	4	0	0	0	4	8
		C:	0	0	0	0	0	0	0
501.1	Western Meadowlark	A:	–	153	81	172	37	443	–
		B:	7	6	0	0	0	6	13
		C:	0	0	0	0	0	0	0
497	Yellow-headed Blackbird	A:	–	681	1 648	3 661	1 966	7 956	–
		B:	2	2	5	5	5	17	19
		C:	1	2	8	1	0	11	12

AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
509	Rusty Blackbird	A:	–	224	314	244	156	938	–
		B:	5	2	1	0	0	3	8
		C:	7	5	6	0	0	11	18
510	Brewer's Blackbird	A:	–	335	594	116	137	1 182	–
		B:	21	5	12	0	0	17	38
		C:	1	4	1	0	0	5	6
511	Common Grackle	A:	–	10 175	11 256	6 323	8 835	36 589	–
		B:	645	641	517	157	90	1 405	2 050
		C:	106	171	107	28	10	316	422
496	Bronzed Cowbird	A:	–	58	3	0	0	61	–
		B:	0	0	1	0	0	1	1
		C:	0	0	0	0	0	0	0
495	Brown-headed Cowbird	A:	–	9 627	34 246	7 064	10 672	61 609	–
		B:	175	130	405	42	41	618	793
		C:	23	206	144	17	4	371	394
506	Orchard Oriole	A:	–	65	8	109	98	280	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
505	Hooded Oriole	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
507	Baltimore Oriole	A:	–	1 309	1 340	6 425	3 908	12 982	–
		B:	35	11	6	10	5	32	67
		C:	0	3	3	4	1	11	11
508	Bullock's Oriole	A:	–	2	1	18	16	37	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0
524	Rosy Finch	A:	–	1	1	52	734	788	–
		B:	0	0	0	0	1	1	1
		C:	0	0	1	0	0	1	1
515	Pine Grosbeak	A:	–	86	161	896	901	2 044	–
		B:	5	1	2	1	2	6	11
		C:	0	0	1	0	0	1	1

Appendix 1

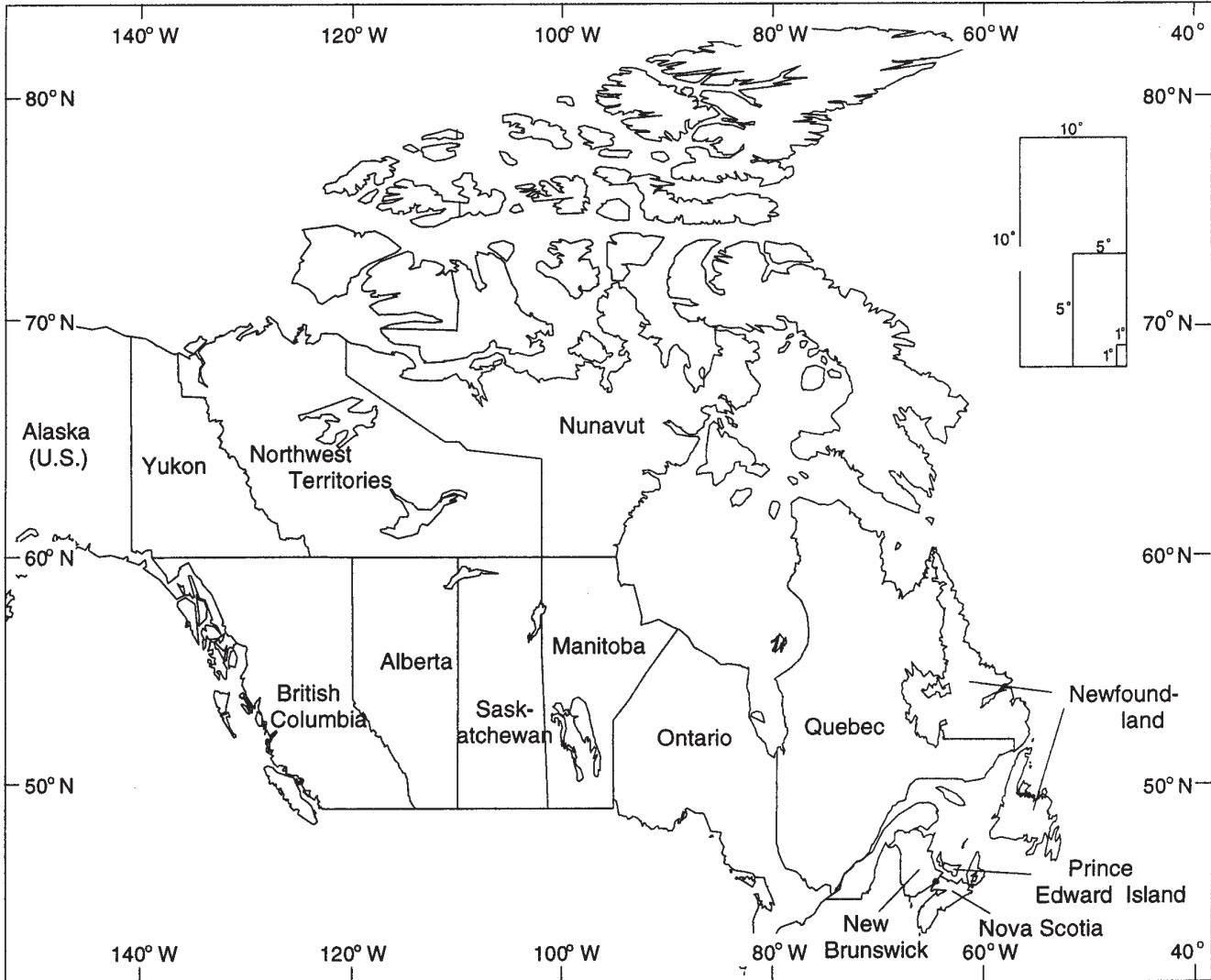
AOU no.	Species name		Numbers banded and encountered					1955–	1921–
			1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995	1995 total	1995 total
517	Purple Finch	A:	–	4 745	7 921	13 169	8 938	34 773	–
		B:	163	68	46	41	36	191	354
		C:	76	89	113	90	54	346	422
518	Cassin's Finch	A:	–	33	69	19	61	182	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	1	1	1
519	House Finch	A:	–	2 465	308	1 011	22 798	26 582	–
		B:	124	174	6	3	98	281	405
		C:	0	1	1	3	12	17	17
521	Red Crossbill	A:	–	340	712	8	43	1 103	–
		B:	12	2	15	0	1	18	30
		C:	0	0	1	0	1	2	2
522	White-winged Crossbill	A:	–	212	31	207	368	818	–
		B:	3	0	0	0	0	0	3
		C:	0	0	0	0	0	0	0
528	Common Redpoll	A:	–	4 695	19 531	28 442	45 455	98 123	–
		B:	75	29	21	44	50	144	219
		C:	2	10	2	15	13	40	42
527	Hoary Redpoll	A:	–	44	451	680	310	1 485	–
		B:	1	0	1	0	0	1	2
		C:	0	0	0	0	0	0	0
533	Pine Siskin	A:	–	4 820	10 910	9 042	30 153	54 925	–
		B:	38	3	16	21	57	97	135
		C:	1	3	29	37	65	134	135
529	American Goldfinch	A:	–	5 232	11 096	33 045	35 468	84 841	–
		B:	11	30	35	96	72	233	244
		C:	15	37	30	51	15	133	148
526.1	European Goldfinch	A:	–	0	0	0	1	1	–
		B:	0	0	0	0	0	0	0
		C:	0	0	0	0	0	0	0

AOU no.	Species name	Numbers banded and encountered						1955– 1995 total	1921– 1995 total
		1921– 1954	1955– 1965	1966– 1975	1976– 1985	1986– 1995			
514	Evening Grosbeak	A:	–	17 655	10 209	32 904	8 311	69 079	–
		B:	73	644	229	250	95	1 218	1 291
		C:	236	1 504	535	282	61	2 382	2 618
688.2	House Sparrow	A:	–	837	2 656	10 070	1 239	14 802	–
		B:	3	7	7	26	4	44	47
		C:	0	0	0	0	1	1	1

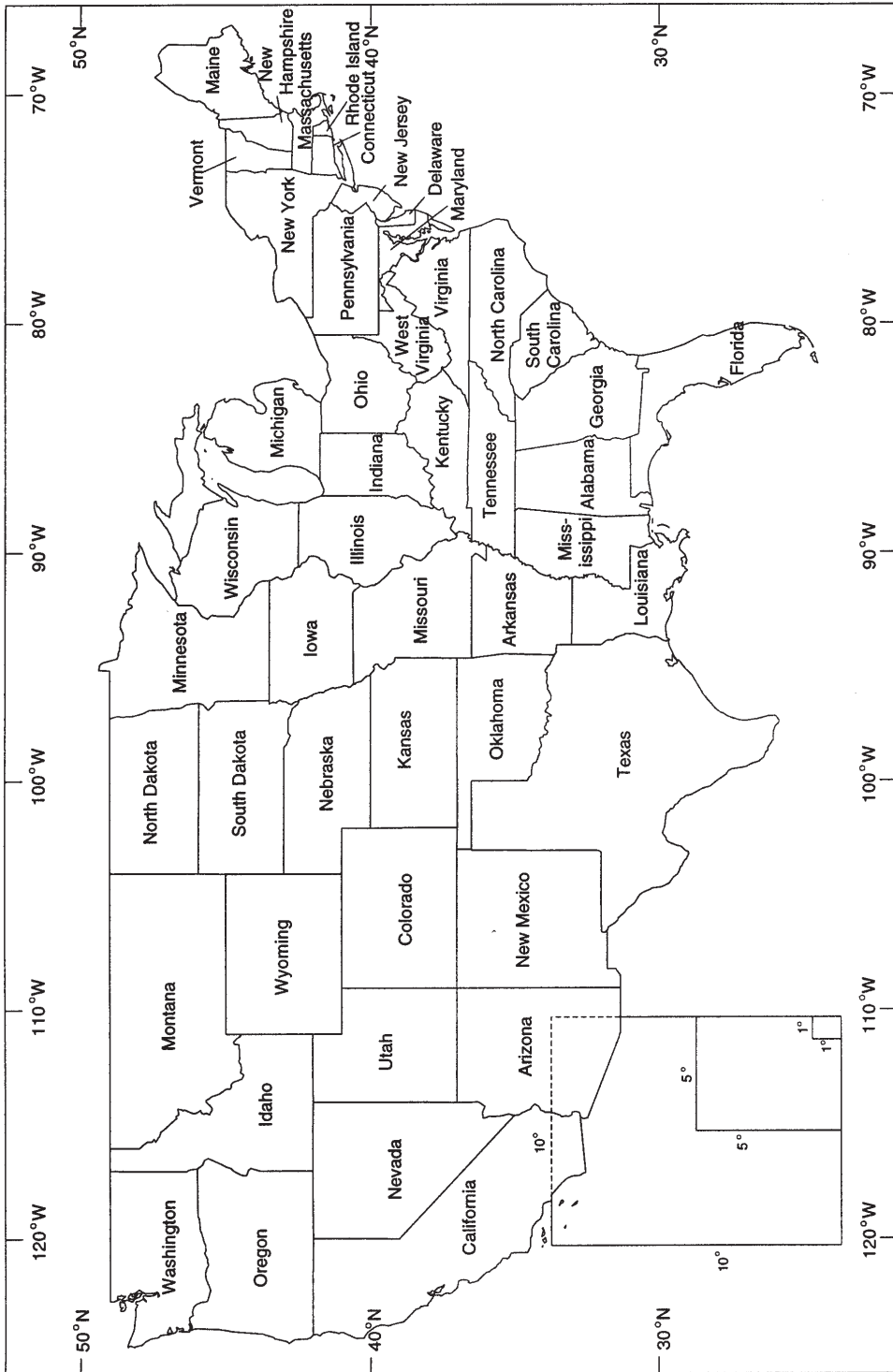
Appendix 2

Maps of Western Hemisphere political boundaries

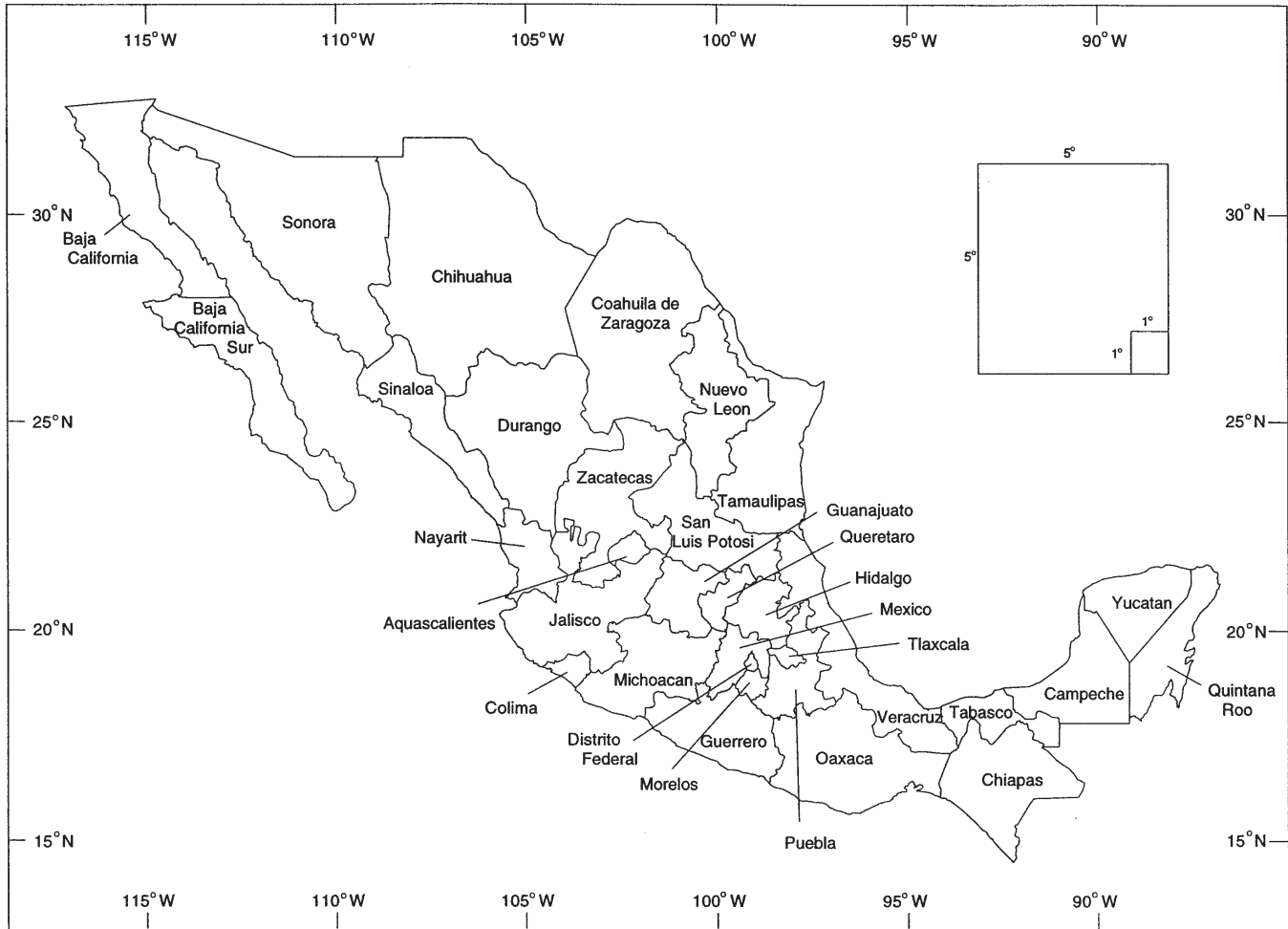
Canadian provinces and territories (latitude-longitude blocks of various sizes are shown for reference)



Continental U.S. states (latitude-longitude blocks of various sizes are shown for reference)



Mexican states (latitude-longitude blocks of various sizes are shown for reference)



Countries of Central and South America (latitude-longitude blocks of various sizes are shown for reference)



Appendix 3

Key to codes used in listings of individual encounters

Note: Unless labelled as nonstandard, codes are those used in The North American bird banding manual (Gustafson et al. 1997).

Age

U	Unknown (see note below)
L	Local (young prior to age of sustained flight)
J	Juvenile (obsolete code discontinued in 1962; bird could be either L or HY)
HY	Hatch year (capable of sustained flight and banded in calendar year of birth)
AHY	After hatch year (known to have hatched in an unknown calendar year prior to that of banding)
SY	Second year (known to have hatched in calendar year previous to banding year)
ASY	After second year (at least ASY, but true age unknown)
TY	Third year (known to have hatched two calendar years prior to that of banding)
ATY	After third year (at least ATY, but true age unknown)

Note: The system of aging birds by calendar year (HY, AHY, etc.) came into effect in 1967. For records prior to that date, the definitions of “subadult” and “adult” did not correspond exactly to SY and AHY, because the time at which birds changed from one category to the other was not clearly defined. Using current codes, a bird can only be given the U code for age in the fall, when HY and AHY birds of some species are indistinguishable. Prior to 1967, however, it was possible to use the U code for birds banded in the first five to six months of the year (when “subadults” and “adults” may be indistinguishable).

Sex

M	Male
F	Female
U	Unknown

Inexact coordinates (nonstandard codes)

??	If shown both for degrees and minutes, no coordinates were reported. If shown only for minutes, location was inexact.
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Present condition

00	Unknown, status of band unknown
01	Unknown, band left on bird
02	Unknown, band removed
03	Dead, status of band unknown
04	Dead, band left on bird
05	Dead, band removed
06	Alive-released, status of band unknown
07	Alive-released, band left on bird
08	Alive-released, band removed
09	Alive-in captivity, status of band unknown
10	Alive-in captivity, band left on bird
11	Alive-in captivity, band removed
12	Alive-captivity/release status unknown, status of band unknown
13	Alive-captivity/release status unknown, band left on bird
14	Alive-captivity/release status unknown, band removed

Data summaries in this atlas series treated birds with “unknown” present condition as “dead.” Present condition codes were not in use prior to 1965, so birds encountered earlier than that were considered “dead” unless the “how obtained” code (see below) was 28, 29, 33, 36, 41, 46, 48, 52, 53, 87–89, or 99.

How obtained (* indicates discontinued code)

00	Found dead
01	Shot
02	Caught or found dead due to starvation
03	Caught due to injury
04	Caught by or due to traps not meant to catch birds for banding
05*	Killed by carnivore not cat
06	Caught by or due to rodent
07	Caught by or due to miscellaneous birds
08	Caught by or due to shrike
09	Caught by or due to hawks, owls or other raptors (including found in pellets)
10	Banding mortality (due to traps, handling, etc.)
11	Caught by or due to dog
12	Caught by or due to cat

Bander's initials

(sorted by last capital initial, then first)

AAA	A.A. Allen	GFB	G.F. Bennett
AMcA	A. McAlister	HB	H.W. Braun
BDA	B.D. Arner	HLB	H.L. Buck
EFA	E.F. Andrews	HTB	H.T. Bartlett
HTA	H.T. Armistead	HWB	H.W. Burpee
JA	J.D. Abell	JBa	J. Baird
JDA	J.D. Anderson	JBe	J. Bedard
MLA	M.L. Abbott	JFB	J.F. Brenckle
OLA	O.L. Austin, Jr.	JHB	J.H. Buckalew
RJA	R.J. Adams Jr.	LHB	L.H. Blankenship
RRA	R.R. Anderson	MB	M. Bergeron
SEA	S.E. Aldous	MBi	M. Biro
TJA	T.J. Anderson	MAB	M.A. Byrd
UA	University of Alberta	MLB	M.L. Ball
WA	W. Anaka	NB	N. Bourne
WOA	W.O. Astle	PMB	P.M. Boocock
ABi	A. Biala	RB	R. Baxter, Jr.
ABo	A. Bourget	RBr	R. Brown
ADB	A.D. Brewer	RDB	R.D. Benedict
AMB	A.M. Baumgartner	RKB	R.K. Bell
BB	B. Basham	RMB	R.M. Brigham
BBu	B. Buckingham	ROB	R.O. Bender
BCWB	British Columbia Wildlife Branch	TB	T. Bryan
BJB	B.J. Beecher	TAB	T.A. Beckett III
BNB	B.N. Brouchoud	TEB	T.E. Balch
BSB	B.S. Bowdish	TJB	T.J. Bowman
CEB	C.E. Boardman	VB	V. Burtch
CHB	C.H. Blake	WB	W. Bewsher
CRB	C.R. Brown	WKB	W.K. Bigger
DB	D. Bridge	WSB	W.S. Brooks
DBi	D. Bird	ADC	Alabama Department of Conservation
DBr	D. Bradley	ALC	A.L. Carpenter
DLB	D.L. Bordner	BC	Bowdoin College
DMB	D.M. Bradley	BBC	B.B. Coffey, Jr.
EAB	E.A. Bergstrom	CC	C. Crook
ECB	E.C. Bosl	CCo	Cariboo College
FGB	F.G. Bard	CBSC	Canadian Bio-Sci Consultants Ltd.
GB	G. Brown	CKC	C.K. Coldwell
		CWC	C.W. Comer
		CWS-BC	Canadian Wildlife Service-BC

CWS-QC	Canadian Wildlife Service-Quebec	WC	W.A. Calder
DC	D. Collister	WCa	W. Campbell
DAC	D.A. Cohrs	WAC	W.A. Cummings
DFC	D.F. Clark	WVC	W.V. Crich
DHC	D.H. Corkran	AD	A. De Vos
DSC	D.S. Christie	ADa	A. Dalziel
DWRC	Denver Wildlife Research Center	ABD	A.B. Davenport
ECC	E.C. Clyde	AJD	A.J. Dunlap
ERC	E.R. Chubb	AFWD	Alberta Fish & Wildlife Division
FC	F. Cooke	AWD	A.W. Diamond
FVC	F.V. Cutler	DDD	D.D. Dow
GC	G. Cannon	DFD	D.F. Desante
GHC	G.H. Culbertson	DGD	D.G. Dennis
GWC	G.W. Collins	FAD	F.A. Dilling
HLC	H.L. Cogswell	FLD	F.L. Diggs
ICC	Interprovincial Conservation Club	HMcD	Mrs. H. McDongame
IMC	I.M. Cowan	HTD	H.T. Davis
JC	J.R. Carter	JD	J. Dych
JDC	J.D. Copeland	JCD	J.C. Dorio
JMC	J.M. Cadbury	JLD	J.L. Darling
JRC	J.R. Cohen	JVD	J.V. Dennis
JSC	J.S. Cherry	LRD	L.R. Duncan
KC	K. Christofferson	MED	M.E. Doscher
KWC	K.W. Clark	MID	M.I. Dyer
LJC	L.J. Carsley	MTD	M.T. Donald
MC	M. Chipman	OWD	O.W. Dillon, Jr.
MCo	McDonald College	RED	R.E. Dennis
MMC	M.M. Carpenter	RGD	Rev. G. Detwiler
MRC	M.R. Cayouette	SSD	S.S. Dickerson
NC	N. Criddle	TD	T. Dean
NMC	National Museums of Canada	THD	T.H. Davis, Jr.
RC	R.H. Carder	TPWD	Texas Parks & Wildlife Department
RCo	R. Couture	WCD	W.C. Delong
RHC	R.H. Carter	CAE	C.A. Ely
RWC	R.W. Campbell	DEE	D.E. Emord
SC	Suzanne Carriere	DHE	D.H. Elder
TC	T. Carrow	JGE	J.G. Eakin
TTMcC	T.T. McCabe	JTE	J.T. Emlen
TWC	T.W. Carpenter	HGMcE	H.G. McEntee
UBC	University of British Columbia	TLE	T.L. Eubanks, Jr.

Appendix 3

ABF	A.B. Flanigan	LAG	L.A. Gray
ACF	A.C. Felt	MG	M. Guest
CHF	C.H. Feltes	MLG	M.L. Giltz
CMF	C.M. Francis	NG	N. Garber
DF	D. Fleury	NTG	Northwest Territorial Government
EJF	E.J. Fisk	PG	P. Galindo
FJHF	F.J.H. Fredeen	RBG	Royal Botanical Garden
JAF	J.A. Flett	RPG	R.P. Guthrie
JBF	J.B. Falls	RPLG	Rev. Père L. Genest
JCF	J.C. Finlay	RTG	R.T. Gammell
JJF	J.J. Farrell	SHG	S.H. Gage
JTF	J.T. Fowle	WG	W. Geis
LDWF	Louisiana Department of Wildlife & Fisheries	WRG	W.R. Green
LGF	L.G. Flentge	ALH	A.L. Holm
MHF	M.H. Field	AMNH	American Museum of Natural History
PF	P. Foran	BH	B. Hinderstein
PHF	P.H. Fluck	CMNH	Carnegie Museum of Natural History
RCF	R.C. Frohling	CSH	C.S. Houston
RWF	R.W. Fox	CWH	C.W. Hacker
TF	T. Frith	DAH	D.A. Hancock
WLF	W.L. Fye	DJTH	D.J.T. Hussell
AG	A. Grenier	DMH	D.M. Herbert
ABG	A.B. Gresham	DRH	D.R. Hatch
AJG	A.J. Gaston	DWH	D.W. Hauber
CDG	C.D. Gerow	E&OH	E. & O.B. Hansen
CDFG	California Department of Fish & Game	FH	F. Hamel
CF-G	C. Freeman-Gallant	FSH	F.S. Hill, Jr.
CHG	C.H. Griffiths	GH	G. Hamersley
DRG	D.R. Goulden	GAH	G.A. Hall
GG	G. Galicz	GEH	G.E. Holcombe
GGa	G. Garbutt	HH	H. Havemeyer
GLG	G.L. Gardner	HHe	H. Hedges
IRG	I.R. Gardiner	HVH	H.V. Hosford
JG	J. Grantham III	JH	J. Hill
JGi	J. Giroux	JHi	J. Higgins
JGu	J. Guimond	JEH	J.E. Horning
JBG	J.B. Gollop	JRWH	J.R.W. Hider
JGG	J.G. Gruber	KAH	K.A. Hobson
KAG	Mrs. K.A. Goodpasture	KSH	K.S. Hamilton
		LLH	L. L. Howe

MH	M. Hopkins	ASL	A.S. Loewen
MCH	M.C. Hunter	B&RL	B. & R. Lloyd
NJH	Mrs. N.J. Holden	CAL	C.A. Leichhardt
OMH	Ontario Ministry of Health	DCL	D.C. Lowery
PHH	P.H. Homann	DRL	D.R. Lamble
RAH	R.A. Hubert	FL	F. Labahn, Jr.
RBH	R.B. Hoger	FCL	F.C. Laskey
RDH	R.D. Harris	FEL	F.E. Ludwig
RFH	R.F. Harrington	FHL	F.H. Lesser
TAH	T.A. Harper	FTL	F.T. Lovesy
TSH	T.S. Hennessy	GL	G. Leppart
WCH	W.C. Harris	GLa	G. Lang
WMH	W.M. Hughes	GWL	G.W. Lasley
TAI	T.A. Imhof	IAMcL	I.A. McLaren
CMJ	C.M. Johnson	JL	J. Lynge
ETJ	E.T. Jones	JLa	J.G. Landry
GMJ	G.M. Johnson	JLu	J. Lunn
LGJ	L.G. Johnson	JGL	J.G. Lemon
MLJ	M.L. Jones	JKL	J.K. Lowther
NJ	N. Jenks-Jay	JML	J.M. Linsdale
PJ	P. Jensen	JPL	J.P. Ludwig
PFJ	P.F. James	LL	L. Lemieux
RFJ	R.F. James	LAL	L.A. Laviolette
TNJ	T.N. Jones	LGL	L.G. Lambert
VWJ	V.W. Jackson	MJL	M.J. Lerch
AK	Alan Kuzyk	MLL	M.L. Levings
AKe	A. Keniston	MRL	M.R. Lein
AMK	A.M. King	PL	P. Lockhart
DEK	D.E. Kroodsmas	RL	R.E. Lemon
DLK	D.L. Kraus	RBL	Rev. Brother Laurent
GPK	G.P. Kaye	RCL	R.C. Leberman
HHK	H.H. Krug	REL	R.E. Lynn
JCK	J.C. Kennedy	RJL	R.J. Lukes
JPK	J.P. Kennedy	SAL	S.A. Liddell
JSK	J.S. Kinnaird	SHL	S.H. Low
LdeK	L. de Kiriline-Lawrence	TCL	Mrs. T. C. Lacey
PK	P. Kuntz	WL	W.L. Lott
RGMcK	R.G. McKinney	WAL	W.A. Lamb
RWK	R.W. Knapton	WDMcL	W.D. McLaren
VMK	V.M. Kleen	WEL	W.E. Lanyon

Appendix 3

WIL	W.I. Lyon	MKM	M.K. McNicholl
WNL	W.N. Lennie	MLM	M.L. Myers
AM	A. Muir	MTM	M.T. Myers
AGM	A.G. Mathers	PM	Mrs. P. MacKay
AJM	A.J. Murray	PEM	P.E. Mackay
ALAM	A.L.A. Middleton	P-EM	P.-E. Morin
BM	B. Meanley	PGM	P.G. Murton
BMa	B. Maybank	RM	R. McNeil
BMat	B. Matthews	RBCM	Royal British Columbia Museum
BMu	B. Murphy	RCM	R.C. Mellish
CM	C. Miller	RDM	R.D. Montgomerie
CDM	C.D. MacInnes	REM	R.E. Merritt
DM	David Martin	RIGM	R.I.G. Morrison
DAM	Mrs. D.A. Mendinhal	RMcM	R. McManus, Jr.
DBM	D.B. McNair	ROM	Royal Ontario Museum
DDM	D.D. Mosman	ROMo	R.O. Morgenweck
EAM	E.A. McIlhenney	SM	S. Mitchell
EAMa	E.A. Mahler	UM	University of Manitoba
ECM	E.C. Murphy	UAM	University of Alaska Museum
EFM	E.F. Martinez	WM	W.J. Maher
EGM	E.G. McEntee	WAM	W.A. Morris
EWM	E.W. Marshall	WBM	W.B. McGillivray
FGM	F.G. Maffitt	WJM	W.J. Mills
FRM	F.R. Moore	CJN	C.J. Norment
FTM	F.T. Munson	EN	E. Norman
FVM	F.V. Marsi	FON	F.O. Novy
GCM	G.C. Metcalf	GLN	G.L. Nelson
HM	H. Myers	JAN	J.A. Neff
HMi	Mrs. H. Miller	MMMN	Manitoba Museum of Man & Nature
HCM	H.C. Mueller	PJN	P.J. Narraway
JM	J. Micensky	RFN	Dr. R.F. Noss
JMo	J. Moffitt	RMcN	R. McNeil
JMoo	J. Moore	WPN	W.P. Nickell
JBM	J.B. Millar	BBO	Beaverhill Bird Observatory
JBMi	J.B. Miles	BTO	British Trust for Ornithology
JCM	J.C. Miller	CBO	Chicagoland Bird Observatory
JEM	J.E. Mason	CMO	C.M. Owens
LRM	L.R. Mewaldt	EMO	E.M. Oliver
MM	M. Murray	GGO	G.G. Ommanney
MCM	M.C. Morse, Jr.	GMBO	Grand Manan Bird Observatory



IPBO	Innis Point Bird Observatory	WJP	W.J. Padelkiewicz
LPBO	Long Point Bird Observatory	AHR	A.H. Ruess Jr.
LWO	L.W. Oring	CR	C.J. Ralph
MO	M. Oakes	CCR	C.C. Rimmer
MBO	Manomet Bird Observatory	CHR	C.H. Richards
PEPO	Prince Edward Point Observatory	CJR	C.J. Robertson, Jr.
PPBO	Point Pelee Bird Observatory	CTR	C.T. Ridley
PRBO	Point Reyes Bird Observatory	DNR	D.N. Roblin
TBO	Toronto Bird Observatory	DTR	D.T. Rogers
TCBO	Thunder Cape Bird Observatory	EdR	Edward Robinson
UO	University of Ottawa	ErR	Ernest Robinson
AMP	A.M. Pearson	GHR	G.H. Rinehart
AMcP	A. McPherson	JR	J. Randall
CEP	C.E. Peterson	JAR	J.A. Redman
CJP	C.J. Paine	JARo	J.A. Roberts
CPP	C.P. Puckette	JHR	J.H. Rappole
DP	D. Patton	JOLR	J.O.L. Roberts
DEP	D.E. Payne	LHR	L.H. Reichel
DFP	D.F. Parmelee	MDNR	Michigan Department of Natural Resources
DRP	D.R. Prescott	MNR	Manitoba Natural Resources
EP	E. Pletz	MOR	M. Olyphant, Jr.
FBP	F.B. Pope	PLR	P.L. Regan
FHP	F.H. Pegg	RR	Dr. R. Ryder
GP	G. Pickering	RAOR	R.A. O'Reilly, Jr.
GHP	G.H. Parks	RCR	R.C. Raible
HRP	H.R. Peters	RJR	R. J. Rutter
IJP	I.J. Pothier	RJRo	R.J. Robertson
JHP	Mr. & Mrs. J.H. Prest	RLR	R.L. Rytter
KCP	K.C. Parkes	RMR	R.M. Russell
KWP	K.W. Prescott	RNR	R.N. Roberts
LJP	L.J. Peyton	SMR	S.M. Russell
LRP	L.R. Powers	TER	T.E. Randall
MBP	M.B. Peacock	UPRR	U.S. Fish & Wildlife Service-Patuxent Research Refuge
MDWFP	Mississippi Department of Wildlife, Fisheries & Parks	WR	Wm. Rowan
PCP	P.C. Peterson	WCR	W.C. Ryder, Jr.
ROP	R.O. Paxton	WFR	W.F. Reid
TP	T. Pearse	AS	A. Salvadori
THP	T.H. Pogson	ADS	A.D. Smith
WP	W. Pepper	ARS	A.R. Smith

Appendix 3

ARSh	A.R. Shearer	LTS	L.T. Simmons
CAS	Connecticut Audubon Society	MCS	M.C. Sheildcastle
CCRS	Coyote Creek Riparian Station	MES	M.E. Slate
CHS	Mrs. C.H. Snyder	MGS	M.G. Street
CRS	C.R. Sindelar	NOS	N.O. Sibley
DS	D. Shepherd	OAS	O.A. Stevens
DDS	D.D. Stamm	PS	P. Siemens
DJS	D.J. Stiles	RDS	R.D. Strickland
DMS	D.M. Scott	RWS	R.W. Smith
DPS	D.P. Schwenker	SJS	S.J. Stedman
DWRS	Delta Waterfowl Research Station	SWS	S.W. Simon
ES	E. Stoehr	TS	T. Smith
EHS	E.H. Smith	TMS	T.M. Sperry
FS	F. Smith	US	University of Sherbrooke
FCS	F.C. Schmid	WES	W.E. Savell
FGS	F.G. Stiles	WRS	W.R. Salt
FRS	F.R. Scott	CFT	C.F. Tolman
FVS	F.V. Strand	CGT	C.G. Thompson
GFS	Gainsville Field Station	CWS-YT	Canadian Wildlife Service-Yukon Territory
GWS	G.W. Smith	EBT	E.B. Tracy
HBS	H.B. Suthers	EMT	E.M. Tait
HHS	H.H. Southam	FT	F. Townsend
HLS	H.L. Stoddard	FWT	F.W. Turner
HRS	H.R. Smith	GFVT	G.F. Van Tets
ISS	I.S. Sturgis	HKT	H.K. Trousdale
JS	J. Selby	JET	J.E. Towsend
JSI	J.A. Slimmon	MBT	Mountain Bluebird Trail
JAS	J.A. Spendelow	MJT	M.J. Trepanier
JFS	J.F. Steffen	RRT	R.R. Tasker
JGS	J.G. Sibley	SAT	S.A. Thayer
JHS	J.H. Stull	SCT	Mrs. S.C. Thomson
JJS	J.J. Schreiber	UT	University of Toronto
JKS	J.K. Silvey	WT	W. Threlfall
JKSc	J.K. Schmutz	WST	W.S. Terry
JTS	J.T. Shiflett	AU	Acadia University
KHS	K.H. Sanderson	ACWRU	Alabama Cooperative Wildlife Research Unit
KTS	K.T. Settlemeyer	DU	Ducks Unlimited
LS	L. Scott	MCWRU	Montana Cooperative Wildlife Research Unit
LLS	L.L. Snyder	NHMBU	Natural History Museum, Brandon University
LLSt	L.L. Stallcup	SFU	Simon Fraser University

AEV	A.E. Valentine	LHW	L.H. Walkinshaw
BV	W. Vogt	MW	M. Warburton
CGV	C.G. Vendal	MCW	M.C. Wilson
DFV	D.F. Vogt	MJW	M.J. Wolcott
SEV	S.E. Vass	MrsFW	Mrs. F. Wickenkamp
UV	University of Vermont	PW	P. White
WTvV	W.T. vanVelzen	PJW	P.J. Weatherhead
AEW	A.E. Wilson	PWW	P.W. Woodward
ALW	A.L. Wilk	RW	R.J. Wright
BBW	B.B. Westcott	RBW	R.B. Williams
BKW	B.K. Wyatt	REW	R.E. Ware
DW	D. Wheeler	REWa	R.E. Walker
DWW	D.W. Whitfield	RJW	R.J. Weber
EDW	E.D. Wood	RLW	R.L. Wright
EJW	E.J. Willoughby	RVW	R.V. Whelan
FW	F.J. Ward	SW	S. Waldstein
FSW	F.S. Whiteside	SHW	S.H. Weakley
FJW	F.J. Williams	WDW	Washington Department of Wildlife
HCW	H.C. Wilson	WMLW	W.M.L. Wotherspoon
JW	J. Wendle	WPW	W.P. Wharton
JWo	J. Woodcock	CFY	C.F. Yocum
JAW	J.A. Ward	CGY	C.G. Yarbrough
JBW	J.B. Willetts	FLY	F.L. Yocom
JGW	J.G. Woods	RPY	R.P. Yunick
JSW	J.S. Weske		

Appendix 4

Additional details on data coding and analyses

1. Distance and bearing

Distance and bearing were calculated using equations in Cowardin (1977), where:

$BLAT$ = banding latitude

$BLON$ = banding longitude

$RLAT$ = encounter latitude

$RLON$ = encounter longitude

$P = BLON - RLON$

Note: if southern hemisphere set latitude to negative
if eastern hemisphere set longitude to negative
if $P > 180$ then set $P = P - 180$

Distance (D) between banding and encounter in degrees was calculated as:

$$D = \text{acos}\{\sin(BLAT)\sin(RLAT)\} + \{\cos(BLAT)\cos(RLAT)\cos(P)\}$$

where acos denotes the inverse cosine function. The distance is then converted to kilometres by multiplying by 111.3.

The bearing (C) was calculated as:

$$C = \text{ahav}\{\sec(BLAT)\csc(D)[\text{hav}(\pi/2 - RLAT) - \text{hav}|D - \pi/2 + BLAT|\}\}$$

where hav and ahav denote the haversine and inverse haversine functions:

$$\text{hav}(A) = 0.5(1 - \cos(A))$$

$$\text{ahav}(A) = \text{acos}(1 - 2A)$$

2. Direct recoveries

Encounters fitting into the categories marked with a D below were considered “direct” recoveries, while all others were considered “indirect.” Note that direct recoveries include birds assumed to be dead (see note under “present condition” in Appendix 3) plus all birds encountered at the site of banding within 90 days.

Year	Recovery month	Banding month											
		J	F	M	A	M	J	J	A	S	O	N	D
Banding yr.	J	D	-	-	-	-	-	-	-	-	-	-	-
	F	D	D	-	-	-	-	-	-	-	-	-	-
	M	D	D	D	-	-	-	-	-	-	-	-	-
	A	D	D	D	D	-	-	-	-	-	-	-	-
	M	D	D	D	D	D	-	-	-	-	-	-	-
	J	D	D	D	D	D	D	-	-	-	-	-	-
	J	D	D	D	D	D	D	D	-	-	-	-	-
	A	D	D	D	D	D	D	D	D	-	-	-	-
	S	-	-	-	D	D	D	D	D	D	-	-	-
	O	-	-	-	D	D	D	D	D	D	D	-	-
	N	-	-	-	D	D	D	D	D	D	D	D	-
	D	-	-	-	D	D	D	D	D	D	D	D	D
Banding yr. + 1	J	-	-	-	D	D	D	D	D	D	D	D	D
	F	-	-	-	D	D	D	D	D	D	D	D	D
	M	-	-	-	D	D	D	D	D	D	D	D	D
	A	-	-	-	-	-	-	-	-	-	-	-	D
	M	-	-	-	-	-	-	-	-	-	-	-	D
	J	-	-	-	-	-	-	-	-	-	-	-	D
	J	-	-	-	-	-	-	-	-	-	-	-	D
	A	-	-	-	-	-	-	-	-	-	-	-	D