

Parc national d'Aiguebelle

Northern saw-whet owl and boreal owl: two new nesting species for Parc national d'Aiguebelle

By Suzanne Trudel, Head of the Conservation and Education Department, Parc national d'Aiguebelle, in collaboration with Louis Imbeau, Professor-Researcher, NSERC-UQAT-UQAM Industrial Chair in Sustainable Forest Management, Université du Québec en Abitibi-Témiscamingue

The northern saw-whet owl is the smallest owl in eastern North America. It measures between 18 cm and 21.5 cm in length, and its weight varies between 54 g and 124 g, with the female being bigger and heavier than the male. Its cousin, the boreal owl, is slightly more robust. Mainly active at night, these two species are not well known and are hard to spot. In Québec, the Abitibi region and Parc national d'Aiguebelle are located roughly at the northern limit of the range of the northern saw-whet owl and at the southern limit of the range of the boreal owl.

To nest, both species use natural cavities in dead trees or take advantage of former cavities used by woodpeckers, mainly those of the pileated woodpecker and northern flicker. In the boreal forest, cavities big enough to accommodate a family of small owls are rare. This situation likely limits the size of the populations of these two owl species.

In order to learn more about these two species, studies were recently carried out at Université du Québec en Abitibi-Témiscamingue to specify, on the one hand, what their favourite habitats are and to evaluate, on the other hand, their susceptibility to the loss and fragmentation of mature forests.

Night-time surveys along roads revealed that the northern whet-owl is well established in the Abitibi region, and in particular in Parc national d'Aiguebelle where no fewer than eight different specimens were counted in 2005 at ten survey stations. A network of 300 artificial nesting-boxes was set up in the region in order to monitor small owl populations over the long term. This network should make it possible to determine the extent to which local habitat conditions influence the selection of nesting-boxes and the productivity of the pairs that use them. In the fall of 2005, 20 nesting-boxes were laid out in Parc national d'Aiguebelle. Not having undergone extensive alteration associated with human activities (logging or agriculture), these sites are important and represent good "benchmark sites" within the context of the study.

The first year of monitoring of the nesting-boxes, in 2006, was very profitable for the Aiguebelle sites: the two species were added to the list of the park's nesting species! A pair of northern whet-owls gave birth to four young; a pair of boreal owls were the proud parents of three fledglings. All of these specimens, including the adults, were banded, which will allow researchers to determine if these same individuals use the park's nesting-boxes again in the future.

Parc national d'Anticosti

Aerial survey of the white-tailed deer on the territory of Parc national d'Anticosti

By Éric Savard, Head of the Conservation and Education Service, Parc national d'Anticosti,
and Bruno Rochette, Wildlife Technician, Direction de l'aménagement de la faune de la Côte-Nord,
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In the late 19th century, Henri Menier introduced 220 white-tailed deer (*Odocoileus virginianus*) on île d'Anticosti. Over the last century, the white-tailed deer has progressively adapted to this initially hostile habitat, so much so that today the population is evaluated at 166,000 head. The impact that this cervid can have on its habitat is major. For example, the intensive browsing of certain plant species makes their regeneration very difficult. It is therefore essential that we have an estimate of the white-tailed deer population in order to be able to monitor its evolution in relation to its habitat.

In 2001, the year in which Parc national d'Anticosti was created, an aerial survey was carried out on the island. In the summer of 2006, the Ministère des Ressources naturelles et de la Faune (MRNF) conducted a new aerial survey of the white-tailed deer on the territory of île d'Anticosti, including that of Parc national d'Anticosti. When this survey was planned, André Gingras, a biologist with the MRNF, proposed to park management the addition of survey plots within the park's boundaries in order to be able to better evaluate the deer density inside the park.

On île d'Anticosti, deer population surveys are generally carried out in August, the period when the colour of deer coats facilitates the detection of these animals from the air through the forest cover. The operation consists of using a helicopter to fly over, at low altitude (60 m) and at low speed (75 km/h), sample plots spread out over the entire surface being surveyed. All deer groups are counted in these plots measuring 3.5 km in length and 60 m in width.

The technique employed is known as the "double aerial survey" and requires a Bell 206 type helicopter. Two persons report their observations to the navigator who directs the pilot along the flight lines previously drawn on a map. At this stage, GPS is an invaluable tool. The information transmitted by the observers is noted on the flight maps; the number of deer observed by flight day can be impressive. The raw data of each flight day are processed using a computer program making it possible to estimate the number of deer present and to determine the level of statistical accuracy.

In 2006, a total of 76 plots were flown over within the park's boundaries. A density of 22.4 deer/km² ± 14% was evaluated there, making it possible to estimate that in the summer of 2006 there were between 11,000 and 14,600 deer in Parc national d'Anticosti. In 2001, a density of 17.5 deer/km² ± 13% had been noted for this same territory. We thus find a 28% increase between the two fly-overs. This increase is on the same order of magnitude as that calculated for the entire island (32%).

The deer density index, which we obtained during this survey, has proven to be very important. Indeed, it may be a decisive factor within the context of the annual follow-ups on wildlife and plants inside the park's boundaries. The considerable increase in the number of white-tailed deer could have a direct impact on the presence of certain species, which we will attempt to evaluate during our future research. However, such an index is not necessarily valid over the long term. Other surveys will be necessary to better document and evaluate changes in the deer population as well as their repercussions on the various ecosystems in which this population is evolving.

Other achievements:

Monitoring of a Balsam Fir – White Spruce – Eastern White Pine forest (exceptional forest ecosystem);

Survey of amphibians;

Monitoring of a special status plant (Longleaf arnica).

Photo

Bruno Rochette, MRNF

Parc national du Bic

Estuary harbour seal... less common than one would think

By Marlène Dionne, Head of the Conservation and Education Service, Parc national du Bic, and Esther Blier, Director, Réseau d'observation de mammifères marins

Parc national du Bic is an ideal place to observe seals. This may be explained, in part, by the presence of huge boulders exposed during high tide and found in the many coves and bays. These boulders are used by seals as haulout sites and are essential for the species' survival. Seals come to rest here, to give birth (from late May to early July) and to moult (until mid-September). On the periphery and inside the park's boundaries, the grey seal and the harbour seal are the main seal species observed. Indeed, the harbour seal is the park's emblematic species. With a harbour seal population evaluated at some 150 specimens, the park sector is home to one of the largest concentrations of this species in the St. Lawrence Estuary.

Since 1999, the park has been teamed up with the Réseau d'observation de mammifères marins (ROMM) to collect observation data on the presence and behaviours of seals. Carried out systematically by park wardens-naturalists, this collection of data takes place during observation periods within the context of the discovery activities program. For several years now, this meticulous work has allowed the park's Conservation and Education Service and researchers to obtain invaluable information on seals. Moreover, this work has helped make up for certain shortcomings in our knowledge. In fact, this new scientific contribution could allow the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) to reassess the protection status attributed to the Estuary harbour seal.

Facing the same threats as the beluga whale, the Estuary harbour seal is a source of concern. Several stakeholders, including the park, mobilized to create a St. Lawrence Estuary Harbour Seal Concertation Committee. The aim of this concertation committee, overseen by the ROMM, is to ensure this species' protection and development. The drafting, in March 2004, of the St. Lawrence Estuary harbour seal action plan was the first achievement of the ROMM. This plan highlights the main concerns regarding the harbour seal's survival: poor knowledge of the specific situation of the harbour seal in relation to that of other seal species, lack of knowledge in general, pathogens and diseases, accidental and intentional harvests, disturbances at sea and at haulout sites, and deterioration of the habitat.

The coastal habits of the harbour seal as well as its distribution around the globe suggest that this species is common everywhere. In fact, based on the recent surveys carried out by Fisheries and Oceans Canada (Robillard et al., 2005), the harbour seal population could number between 4,000 and 5,000 in the Estuary and Gulf of St. Lawrence. These figures are low in comparison with those of other seal species found in these same sectors. For example, there are more than 5 million harp seals in eastern Canada.

When seals are out of the water, they are particularly vulnerable to disturbances. Believing them to be in difficulty, some well-meaning individuals try to put young seals that are on the shore back into the water. This intervention can result in a serious problem. Once back in the water, the young seal, having absorbed human odours, risks being abandoned by its mother and not surviving. That is why it is best to keep one's distances from seals.

It is up to us to make known this species, its characteristics and the types of behaviour that should be adopted in its presence. With this objective in mind, the park is carrying out research activities and an awareness promotion and education program to actively protect the harbour seal.

Note: The Estuary harbour seal action plan is available on the web site of Parc national du Bic au www.parcquebec.com

Parc national de Frontenac

Flies that are indicative of the state of biodiversity of the peat bogs of Québec and Vermont

By Amy Moores, Master's level student, McGill University, and René Charest, Head of the Conservation and Education Service, Parc national de Frontenac

Peat bogs are wetlands that develop when the production of organic matter exceeds its decomposition; the result is an accumulation of peat. While peat bogs are characteristic of boreal regions, some bogs are present in more temperate areas. These bogs are relics of the last glaciation. Today, a number of these bogs are threatened by agriculture, forestry work, urban sprawl and peat harvesting. These threats are of particular concern in that peat bogs play several important ecological roles, notably by retaining water, by filtering polluted water, by acting as a carbon reservoir, and by providing habitats for a large variety of plants and animals.

The species composition of peat bogs, the vegetation structure and the properties of soils contrast with those of the other types of ecosystems. Since peat bogs are home to several animal and plant species that are typical of boreal forests, the bogs of southern Québec have often been referred to as boreal islands.

The insects living in peat bogs are highly diversified. Due to their role, insects hold an important place here. Diptera (order of flies and mosquitoes) were chosen as indicators to carry out a study on the biodiversity of peat bogs, because these insects occupy several ecological niches in the bogs; they are herbivores, predators, parasites or saprophages¹. Diptera are also choice organisms for studying certain ecological variables in that a large sampling may be made at a low cost. Indeed, diptera use a variety of habitats to feed and are sensitive to changes in the environment.

The team, made up of Amy Moores and Terry Wheeler of McGill University as well as Jade Savage of Bishop's University, surveyed six peat bogs of northern Vermont and southern Québec. Among them, the peat bog of the Saint-Daniel sector, located in Parc national de Frontenac, is in a preservation zone. The goal of the research was to determine the impact of the surface area of peat bogs, of the vegetation structure and of the use of adjacent territories on the diversity of diptera. During the summer of 2006, insects were harvested using a combination of three types of traps. In all, 7,867 insects were collected. They are currently being identified and analyzed at McGill University's Lyman Entomological Museum.

The peat bog of Parc national de Frontenac was an ideal site for the project; its surface area is large, the park is well preserved and it is surrounded by natural forests. The ecological integrity of this benchmark site makes it possible to study diptera communities in an environment free from disturbances. The preliminary results already indicate a greater abundance in comparison with the other sites under study. In all, some 1,600 insects were collected there, which represents about 20% of the harvests and which points to a high specific diversity.

The continuation of the work to identify species and the analysis of data should allow researchers to highlight the key variables for the preservation of the biodiversity of the diptera populations of peat bogs. These data will certainly allow us to better understand this unique ecosystem and to better protect the peat bog of Parc national de Frontenac as well as those which do not benefit from the same preservation status.

¹ Feeds on organic matter undergoing decomposition.

Parc national de la Gaspésie

Evolution of the permafrost at Mont Jacques-Cartier

By Claude Isabel, Head of the Conservation and Education Service, Parc national de la Gaspésie, in collaboration with Marylène Savoie and James T. Gray, Université de Montréal.

The world scientific community agrees that we are experiencing a major period of climate change. Our environment is being affected by these changes in various ways.

Parc national de la Gaspésie is home to islands of permafrost. Little is known about the behaviour of permafrost in an alpine environment in relation to temperature variations. In 2006, a team from Université de Montréal tried to answer two specific questions in this respect. First, what is the evolution of the permafrost atop Mont Jacques-Cartier and can a signal of climate change be detected? What will be the influence of climate change on this permafrost and how will it be represented in the ground? Using air and ground temperature data collected over the last several years atop Mont Jacques-Cartier along with data from the region's meteorological stations, the researchers developed a model to make various simulations over time.

The study did not reveal a clear signal regarding the influence of climate change on the past evolution of the permafrost atop Mont Jacques-Cartier. However, the simulations confirmed that in the future, an increase in the surface temperature would have an influence on the entire soil profile. For example, at a depth of 11 m, where the limit of the annual zero degree is currently situated, the variation will be from 1.6 °C to 2.2 °C over a period extending from 1961 to 2099. At the rate of climate warming anticipated by the models, the permafrost will not be maintained in the first 30 metres of the profile. If frozen patches remain deep in the ground, they are destined to disappear. The maintenance of the permafrost at the summit of Mont Jacques-Cartier is thus far from assured.

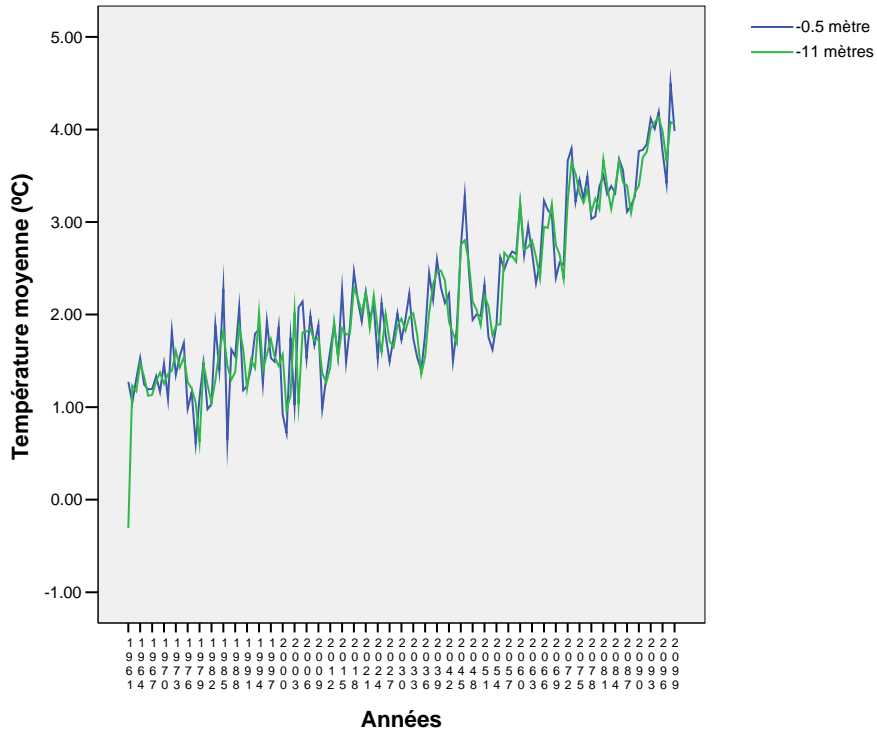
Consideration should be given to the speed at which the changes will occur in the components of this arctic-alpine environment. There is reason to believe that the geomorphological landscapes, the polygonal soils, the rocky glaciers and the other characteristic forms of the Gaspé massif could become inactive in the upcoming decades. To ensure that this evolution is monitored, the researchers planned the setting up of an automatic soil temperature recorder.

Here is another example of the impact of global warming on our environment. Little is known about all the consequences of these soil temperature variations at the summit of Mont Jacques-Cartier. However, several pessimistic scenarios have been put forward. The acquisition of knowledge concerning the evolution of the ecosystems within the current context is slow and difficult, but it is essential. Despite everything, several responsible attitudes and behaviours are known and can be adopted right away in order to reduce the scope of the impacts that already influence many aspects of our life.

Other achievements:

- Winter warming and dynamics of avalanches in the Gaspésie region (Université du Québec à Rimouski, University of Moncton);
- Sampling of diptera of the fanniidæ family (Bishop's University).

FIGURE 2 : Time series of simulated soil temperatures at depths of 0.5 m and 11 m according to the HadCM3 model and scenario a2



0.5 metres
11 metres

Mean temperature
Years

Parc national des Grands-Jardins

Impact of acid rain on aquatic wildlife and establishment of a biological monitoring operation focusing on lakes

By Valérie Simard, Park Warden – Natural Environment Technician, Parc national des Grands-Jardins, and Stéphane Légaré, Biologist, Canada Wildlife Service

Despite the fact that acid rain has lost some of its popularity, it still represents one of the greatest threats to the ecosystems of eastern Canada. Since 2001, the team of Stéphane Légaré, biologist with the Canada Wildlife Service (CWS), has been busy laying the foundations of a biological monitoring operation which seeks to determine the impacts of acid rain on aquatic wildlife.

The 33 lakes of Québec, which are the subject of the biological monitoring operation, are all located on the North Shore of the St. Lawrence River, between the Outaouais and Saguenay rivers. Lac des Enfers (788 m in altitude, pH of 6.76) of Parc national des Grands-Jardins was chosen for this study. For each lake, a complete sampling was done: benthos (organisms that live in mud), nekton (organisms that swim), zooplankton, amphibians, waterfowl and fish.

The potential effects of the acidification of aquatic environments on wildlife are numerous: increase in the availability of several contaminants, modification of the ionic balance of organisms, lower reproductive success for certain species, and decline in wildlife abundance and diversity. The data collected did not reveal a significant relationship between the pH of lakes and the abundance or diversity of zooplanktonic and nektonic invertebrates. These two groups of organisms seem instead to be affected by the presence or absence of fish. However, the analyses show that the diversity and number of invertebrates present in the benthos fall significantly when the acidity of the water increases. The benthic community thus appears to be a bio-indicator that is sensitive to the level of acidity of lakes.

In the case of vertebrates, no significant relationship was established between the diversity and abundance of amphibians and the acidity of lakes. However, the diversity of fish species turned out to be greater in lakes with a pH above 6. Although it is generally recognized that acidification affects waterfowl by modifying the abundance and the rate of contamination of their food (by mercury notably), the limited number of lakes sampled in the study did not make it possible to draw such conclusions.

The pH, when tied in with other chemical, physiological and ecological factors, is a key element for the dynamics of aquatic environments. By using larval organisms of the benthos (ephemera, dragonflies, amphipods) as potential bio-indicators of the level of acidity of the lakes of southern Québec, this monitoring operation, put in place by the Canada Wildlife Service, is an important step for measuring the long-term effects of acid rain on aquatic ecosystems as well as on their eventual recovery.

Parc national des Hautes-Gorges-de-la-Rivière-Malbaie

Prevention: the key to living with the black bear

Miriane Tremblay, Head of the Conservation and Education Service, Parc national des Hautes-Gorges-de-la-Rivière-Malbaie

With a seemingly insatiable appetite and in the habit of taking the easy way, the black bear wants nothing more than to have access to all the various forms of food which park visitors leave behind. Indeed, garbage and table scraps represent a true feast for bears. This animal shows a surprising level of ingenuity to get at this food.

If the manager of a territory located at the heart of a forest does not place sufficient importance on waste management and on the practices of his clientele, he will soon learn the hard way. Bears will also have to pay the price for human negligence. Here are the negative consequences of poor management. First, bears will be more present in sectors frequented by the clientele, garbage cans risk being knocked over, several clients could be frightened by the presence of bears, and the accidents involving bears and humans will become increasingly frequent. Moreover, bears will have to be relocated, even killed, this after all the energies of the team will have been monopolized.

After having experienced its share of problems with the black bear, the team at Parc national des Hautes-Gorges-de-la-Rivière-Malbaie took several actions seeking to make the cohabitation of its clientele with this species both possible and safe. First of all, a full review was made of waste management practices. Food storage poles were installed in the park's campground areas not accessible to cars, garbage cans were removed from certain locations, and changes were made to waste containers and recycling bins to ensure that their content is inaccessible to bears. The challenge associated with this latter operation was to find a functional and affordable system that is compatible with the equipment of garbage collection and recycling firms.

The participation of our clientele is also essential to achieve our objectives. That is why we developed several awareness promotion tools. For example, articles on the black bear were published in the park's newsletter, posters were placed in strategic locations, an informal talk on the subject of bears was added to our discovery activities program and an awareness promotion pamphlet is systematically handed out to all campers when they arrive at the park. The aim of all these tools is to have our clientele assume greater responsibility by placing emphasis on the behaviours that should be adopted to ensure that the bear retains its innate fear of humans.

Since all of these prevention means have been put in place, our clientele and bears have been living together successfully. Indeed, no incident was reported in 2006. The team is very happy that it has successfully taken up the challenge of combining, on its territory, the action, development and protection mission shared by all Québec parks. The aforementioned means of prevention will be maintained in the future. Moreover, we will continue to monitor the activities of the bear very closely to better understand its behaviour, to act promptly and appropriately, and to adapt our management methods, if necessary.

Parc national de l'Île-Bonaventure-et-du-Rocher-Percé

Monitoring the life cycle of the northern gannet during the wintering period

By Roger Saint-Arneault, Head of the Conservation and Education Service, Parc national de l'Île-Bonaventure-et-du-Rocher-Percé

Parc national de l'Île-Bonaventure-et-du-Rocher-Percé is taking part in a project, the aim of which is to study the ecology of the northern gannet during the winter season. The previous studies, which sought to increase knowledge about the distribution and winter movements of seabirds, relied on traditional techniques such as banding birds and at-sea monitoring activities. While limited by the nature of the methods employed, these studies provided important data. In some ways the current project has revolutionized the study of birds during the wintering period for it combines the use of electronic data sensors with chemical analyses.

Within the context of this project, we were, on the one hand, interested in the itinerary followed and the staging areas used by the northern gannet. In other words, we want to know where the birds go, when they go there and how long they stay there. The geographical information provided by the data sensors will help answer these questions.

On the other hand, the project is also interested in the characteristics of the habitat of the northern gannet, the types of prey this species consumes and the way in which it catches its prey. In addition to allowing us to determine the birds' position, the devices worn by the birds record the temperature. Some of these devices also measure the depth of dives. These two parameters make it possible to characterize the winter habitat of the northern gannet according to two aspects. First, we will be able to thermally describe the ecology of their winter habitat and secondly, evaluate their dietary habits. The latter will be inferred from the data pertaining to the depth of their dives. Blood and feather samples will be collected to determine the sex of specimens, but also to establish the chemical properties of their diet for the summer and winter seasons. A better knowledge of the diet should enable us to better define the position of the northern gannet in the food chain and to quantify the contribution of the various oceanic provinces (benthic and neretic zones) to this species' diet.

The data will come from several sites and data collection activities will span several years and involve the same birds. As a result, it will be possible to compare the itineraries of birds from different colonies with specimens from the same colony. Moreover, knowing the sex of specimens, we will be able to check for the existence of sexual dimorphism in behaviours during the wintering period. In addition, this experiment will allow us to compare different electronic equipment, as some birds will wear more than one piece of equipment produced by different manufacturers.

The presence of this large colony of northern gannets was behind the creation of Parc national de l'Île-Bonaventure-et-du-Rocher-Percé. Thanks to this ambitious project, the scope of our knowledge will increase significantly and will allow us to adjust our management practices to ensure the protection of the species. This project will also make it possible to enrich the content of our discovery activities for the benefit of the park's many visitors.

Parc national des Îles-de-Boucherville

Reforestation pilot experiments at Parc national des Îles-de-Boucherville: the study's conclusions

By Danielle Chatillon, Head of the Conservation and Education Service, Parc national des Îles-de-Boucherville

Since May 2004, reforestation pilot experiments have been under way at Parc national des Îles-de-Boucherville to establish the best strategies for accelerating plant succession. This natural return to the forest should take place very slowly at the park, given its rich agricultural past and the numerous constraints present: small abundance of seed-bearing trees; dense herbaceous vegetation that adversely affects the establishment of tree seedlings; major presence of rodents; large white-tailed deer population.

The study carried out by Étienne Laliberté, a Master's level student at Université de Montréal, and by Alain Cogliastro and André Bouchard, his professors at the Institut de recherche en biologie végétale, made it possible to highlight various elements. The absolute necessity of protecting plantations from the white-tailed deer was the first element to emerge. In this respect, two types of techniques were tested: exclosures (fences) and protective sleeves (cylinders made out of fabric which allow light to pass through but which protect against deer and rodents). The use of sleeves proved to be the more interesting option but the results for the two types of techniques are equivalent in terms of protecting plantations from deer. Sleeves could also have a beneficial effect on tree growth during the establishment phase. In addition, they offer several logistical advantages over exclosures; easier to install, they are also reusable.

Furthermore, the study reveals that for the silver maple, the red ash and the bur oak, the planting of rooted tree seedlings grown in a greenhouse is the option which guarantees the best survival and the best growth, in comparison with trials involving cuttings or set blocks involving certain species such as red ash and cottonwood. The microtopography is also a key factor to be taken into consideration in order to optimize the success of hardwood plantations in the park. It seems that water can accumulate in too great a quantity in ground depressions which adversely affects the optimum growth of trees, even if no surface water is visible.

In addition, the sites having low herbaceous vegetation (which block less sunlight) should be favoured as potential plantation sites, as opposed to sites having taller herbaceous vegetation. It would also be preferable to opt for denser plantations in order permit a faster closing of the tree canopy. By quickly creating a forestry environment, the establishment of seedlings of forest species will be favoured and, as a result, the succession from field to forest will take place faster.

Finally, from a purely ecological standpoint, it would be advantageous if the future plantations were as far as possible from existing wooded areas in order to maximize the future potential of the natural regeneration of trees in abandoned fields. Indeed, in a temperate environment, the succession from field to forest is greatly limited by the dispersion of seeds. By establishing patches of forest far from wooded areas, the growth of trees is favoured in places where the natural regeneration would be slower. These trees will in turn become seed-bearers once they have attained sexual maturity. Thanks to the results of this research project, park managers are better equipped to successfully carry out future actions related to the ecological restoration of forest landscapes on the territory.

Parc national de la Jacques-Cartier

Monitoring of *Carabidae* and *Curculionidae* populations at Parc national de la Jacques-Cartier

By Antoine Picard, Park Warden – Patrolman, Parc national de la Jacques-Cartier

As part of a program to monitor ecological integrity, Parc national de la Jacques-Cartier is conducting a long-term study to evaluate the impact of human activities, more specifically those of campers, on the habitat of certain insects. This project is all the more interesting in that it is the impetus behind the first survey based on the composition and the diversity of the territory's insect populations.

The two families of insects under study were chosen because they are considered good indicators of the quality of habitats. Indeed, *Carabidae* and *Curculionidae* are particularly sensitive to changes to their environment. For example, the upsetting of the herbaceous layer, caused by trampling, risks having a direct impact on the diversity and relative abundance of the species of these families. This trampling is caused by campers who occasionally use shortcuts to go to the washroom facilities, the water supply point or a neighbouring site.

Curculionidae (snout beetles) are mostly plant-eating beetles. They feed on leafage or different parts of herbaceous plants, shrubs and trees. *Carabidae*, for their part, are predator beetles that hunt and live on the soil, in bedding or under plant debris, making them very sensitive to trampling.

The sampling site was purposely set up near camping areas laid out in the form of a loop with services and having existed for three years. The transect begins not far from a campsite and extends over 50 m towards a less disturbed area. Along the transect, there are six "pit traps" (container inserted in a hole in the ground) for *Carabidae* as well as two "impact traps" (screen frame 1 m from the ground) for *Curculionidae*.

The traps were visited once a week over a three-month period and 117 specimens were harvested. With the invaluable cooperation of Agriculture and Agri-food Canada, we identified 14 different species, 13 of which belong to the *Carabidae* family. An interesting fact has already emerged: the number of specimens per species captured in the less disturbed zone is 3.33, whereas it is below 2.5 specimens per species captured in the disturbed zone near the campgrounds.

However, only a long-term monitoring operation will enable us to evaluate the impact of trampling on the populations of these two families of insects. The study will continue for several seasons, and other observations will allow us to adjust our management method based on the results obtained.

Parc national de Miguasha

The expanding Devonian paleoestuary of Miguasha

By Sylvain Desbiens, Head of the Conservation, Education and Research Service, Parc national de Miguasha, and Daniel Brisebois, Géologie Québec, Ministère des Ressources naturelles et de la Faune

The fossil-bearing cliff of Miguasha was discovered in 1842 by Abraham Gessner, then rediscovered in 1879 by R.-W. Ells, of the Canada Geological Commission. For more than a century, the geographical distribution of the famous Escuminac Formation was considered limited to the coastal areas of Miguasha Point and Escuminac Bay, with the reference section being included in Parc national de Miguasha. This park was created in 1985 to preserve, protect and develop its exceptional fossil wildlife and flora.

Discoveries made in recent years have greatly altered previous conceptions about the extent of the sedimentary basin that is home to the Miguasha Group, which also includes the Escuminac Formation and the underlying Fleurant Formation. In 2003, a major outcrop area of this geological group was identified at the eastern boundary of the municipality of Nouvelle, about 5 km northeast of the conservation park. This new fossil-bearing site, which is very promising, occupies the nose of the Ristigouche syncline. Even more surprisingly, the same two geological formations were identified in 2006 some 40 km east of Miguasha, in the Cascapédia region, near New Richmond. Clasts of the Escuminac Formation are also dispersed locally in coastal fluvio-glacial deposits of the Maria region.

The paleoenvironment associated with the Escuminac Formation is the subject of debate, with the current consensus favouring an estuarine environment. The new recently discovered outcrops modify our perceptions of this ancient estuary which dates back 378 million years. The image of a major system, which perhaps occupied a large portion of Baie-des-Chaleurs, is beginning to emerge. These discoveries also raise the question of the protection of the universal paleontological heritage of the Escuminac Formation, which should be officially recognized by Québec.

Parc national du Mont-Mégantic

Learning more about the micromammals of Parc national du Mont-Mégantic

By Patrick Graillon, Head of the Conservation Service, and Nathalie Pelletier, Park Warden – Natural Environment Technician, Parc national du Mont-Mégantic

Park visitors seldom notice micromammals, creatures that tend to be nocturnal by nature. Yet both their number and their ecological role are important. Indeed, in addition to contributing to the control of burrower insects and the dispersion of plant seeds, these small mammals also serve as prey for larger mammals and meat-eating birds. In fact, micromammals are a category of mammals that is made up of the smallest species, namely mice, shrews and moles.

Already in the 1990s, a few surveys had been carried out at Parc national du Mont-Mégantic, but all had focused on the same sector. During the summer of 2006, four sites were surveyed, this time, in different park environments.

The first site, located alongside a brook near the ASTROlab, is at the foot of the mountain and in the domain of the sugar maple – yellow birch forest. It is at this site that we observed the greatest number of different species, including the rock vole, a new species for the park and a rare species in Québec. This species is likely to be designated as threatened or vulnerable. The second site, that of De La Montagne brook, is also located in the domain of the sugar maple – yellow birch forest, but in a sector where no human activity is found nearby. Six species were surveyed here, including the meadow vole and the meadow jumping mouse, even though this is a forest environment! It should be noted that this is the first mention of these two species in the park.

The third site, situated at the col, between Mont Mégantic and Mont Saint-Joseph, is located in a mixed forest at an altitude of 900 metres. Five species were surveyed here. Among them, the American water shrew is also considered a new species in the park. Finally, at the site atop Mont Mégantic in a fir stand at more than 1 000 m in altitude, we found a smaller number of specimens. Six different species live together on this territory including a concentration of masked shrew, well adapted to these conifer forests. The big winner of this survey is the redback vole, a very abundant species at all four sites.

In all, 15 species have now been confirmed at Parc national du Mont-Mégantic. Among them, three have a legal protection status, including the Gapsé shrew which was surveyed in 1995 and then again in 2006. This rare species is currently at the centre of a controversy. Specialists cannot agree on whether it is a separate species or whether it belongs to the same species as the long-tailed shrew, present in the mountains of New England. Whatever the case may be, the park's mountain environment is perfectly suited to this rare species, which takes full advantage of this protected territory.

Parc national du Mont-Orford

Sentier des Crêtes trail revisited

By François-Xavier Regnault, Park Warden – Patrol Officer, Parc national du Mont-Orford

Sentier des Crêtes trail is a major attraction for Parc national du Mont-Orford. Created in the 1980s, this trail has taken the form of various itineraries over the years. For the Estrie region, it is a one-of-a-kind mountain hiking experience. Aside from the fact that it offers hikers spectacular viewpoints of the entire region and the north-eastern United States, Sentier des Crêtes trail (7.5 km in length, altitude difference of 530 m) also represents one of the only two segments of the Sentiers de l'Estrie trails (140 km) that are protected and enshrined in legislation.

For these reasons, Sentier des Crêtes trail has a very good reputation. It also enjoys a strong following among fall hikers. However, owing to the large number of visitors and its less than optimal location, the trail's walking surface had deteriorated to a point where it was only possible to preserve and restore the northern section. As for the southern section, it has been completely relocated. In both cases, restoration work is planned over two seasons in 2006 and 2007.

Redevelopment of the northern section (3.4 km)

In 2006, the northern section was partially restored. It was necessary to dry out the walking surface by carrying out drainage canal excavation work, by setting up water crossing points and stone stairs, and by trimming nearby vegetation. This latter intervention helps optimize the circulation of air and the passage of the sun's rays in the walking area.

Relocation and development of the southern section (4.1 km)

The southern portion, located on the ridge of the Mont Orford massif, was entirely relocated. The new route, repositioned some 600 m west of the old one, was located closer to the water divide. This has facilitated drainage management. Moreover, the search for exceptional natural elements to be incorporated in the trail, such as geological formations, changes in forest strata, observation points, etc., has made it possible to diversify the route and, in so doing, to encourage hikers to stop and take in the scenery. Wildlife and flora monitoring operations were part of the same planning process. These operations were carried out prior to the commencement of the work. However, it is the data, collected over a full year, that helped determine whether or not certain sensitive sectors should be avoided (protection of special status vegetation) or closed in winter (protection of moose yards).

Once these preliminary steps had been completed, it was possible to begin the actual development work. For the four-man team, the challenge consisted of laying out a trail with support structures made exclusively out of stone. Indeed, depending on their dimensions, the rocks make it possible to build long-lasting structures that are natural in appearance and that require very little upkeep.

We are now at the half-way mark, with still one season to go to achieve our objectives. Nevertheless, the work already carried out testifies to the importance placed on these preliminary steps for laying out a hiking trail. Indeed, they make it possible to reconcile the preservation of the territory and its accessibility.

Parc national du Mont-Saint-Bruno

An orchard having a low environmental impact at Parc national du Mont-Saint-Bruno

By Daniel Cormier and Gérald Chouinard, Researchers-Entomologists, Integrated fruit production laboratory of the Institut de recherche et de développement en agroenvironnement (IRDA)

The Société des établissements de plein air du Québec (Sépaq) entered into a partnership agreement with the Institut de recherche et de développement en agroenvironnement (IRDA) concerning the environmental management of the orchard of Parc national du Mont-Saint-Bruno. Since April 1, 2003, the agreement has authorized the IRDA to operate the orchard with a view to carrying out research and development (R&D) as well as growing and marketing apples. The park's recreational-tourism vocation has thus been complemented by an environmental and scientific vocation. Following redevelopment and rejuvenation work, the orchard was divided into three sectors, each having a distinct vocation: the R&D sector, the demonstration sector, and the conservation sector.

Having a surface area of 2.5 ha, the R&D sector is devoted to various types of research seeking to develop tools and strategies for managing pests in an environmentally friendly way. The aim of the research is notably to reduce the drift and environmental impact of pesticides, a better use of pesticides, the development of alternatives to pesticides, including biological control, the preservation of beneficial insects, and the detection of pests. All of these studies seek to reduce the environmental impacts while preserving the quality and profitability of production operations. The R&D sector also includes a plot that is not treated with pesticides (except for herbicides), where the biology and seasonal ecology of several pests and their natural enemies are studied.

As for the integrated fruit production (IFP) demonstration sector, it occupies 2 ha and aims to make known to apple-growing professionals, producers and the public new environmental methods associated with integrated fruit production, an approach where the emphasis is placed on a minimal use of pesticides and the adoption of integrated management. With this approach, it is possible to produce quality apples in a profitable and environmentally friendly manner.

The conservation sector, which spans an area of 2 ha, is dedicated to preserving the historical, varietal, cultural and scientific heritage of this orchard established in 1929 by the Frères de Saint-Gabriel. Old but ever-popular cultivars (Cortland, Lobo, Melba, McIntosh) are found next to less well-known cultivars (Bancroft, Hume, Wealthy) along with a few pear trees and plum trees. Finally, to the great pleasure of visitors, the orchard of Parc national du Mont-Saint-Bruno is open throughout the fall, allowing visitors to pick the various varieties of apples.

Parc national du Mont-Tremblant

Seeking out the wolf packs of Parc national du Mont-Tremblant

By Véronique Vermette, Biologist, in collaboration with Hugues Tennier, Head of the Conservation and Education Service, Parc national du Mont-Tremblant

The immensity of the landscapes of Parc national du Mont-Tremblant has always attracted visitors. However, a new interest emerged in 2006. The park's emblematic species, the wolf (*Canis lupus*), caught visitors' attention and gave rise to numerous discussions. In many respects, 2006 was the year of the wolf! Indeed, in addition to adorning the cover page of the *Park newsletter*, this enigmatic member of the canidae family was observed on countless occasions both by park visitors and employees. These sightings led visitors to ask numerous questions often taking the following form: *"But where do these wolves hiding in the dark or peering out of the undergrowth along roads and in other locations come from?"*

Steps were taken to intensify the program to acquire knowledge about the park's wolf packs. Having as a basic premise that five wolf packs are spread out over the entire territory (Ministère de l'Environnement et de la Faune, 1996), we decided to proceed with several studies. Each year, we make a compilation of wildlife observations. A monitoring of the movements of the Lac-des-Sables pack has been under way since 2001. On this subject, it is worth mentioning that sampling sites are regularly marked by the passage of one to four specimens. The analysis of the data indicated fewer movements during the 2003 season. However, the situation stabilized from 2004 to 2006. The frequency of tracks even increased in comparison with 2001-2002.

In 2006, the park implemented a new annual survey program. The methodology is based on the principle of "calling packs". While Parcs Québec has adopted a code of ethics which does not authorize wolf calls during discovery activities, this method, and limited and clearly defined within the context of a scientific research protocol, is authorized.

The territory was divided into several listening stations 6 to 10 km apart. Knowing that under ideal weather conditions the howl of a wolf can have a range of 2 to 5 km, researchers consider that almost the entire surface area of the park was covered. During two outings in September, out of 18 stations, six of our calls were answered, only one of which originated from a group (likely made up of three adults and three or four young wolves). Based on their origin and their approximate distance, two of the five responses (coming from lone wolves) heard at two adjacent stations may have originated from the same wolf. Consequently, four lone wolves actually answered our calls. A few minor adjustments were made to the methodology to ensure that future surveys unfold smoothly.

It is important to locate packs and learn more about the wolf at Parc national du Mont-Tremblant. This new knowledge will allow us to better protect the species as well as enrich the content of the discovery activities. Who knows? It may be one day possible to find oneself in the company of a wolf pack of Parc national du Mont-Tremblant by way of a multimedia exhibit combining sounds and images...

Parc national des Monts-Valin

First survey of nocturnal raptors at Parc national des Monts-Valin

By Marie-Hélène Hachey, Park Warden-Naturalist, Parc national des Monts-Valin

Created in September 1996, Parc national des Monts-Valin is still young. Recently, several steps were taken to better identify the park's avifauna. Among these efforts, a survey of nocturnal raptors was carried out in the summer of 2006 and made it possible to increase to 132 the number of bird species found in the park. The 132nd species, the boreal owl, was a pleasant discovery, given the northern character of Parc national des Monts-Valin.

Boreal owl

A small owl of the boreal forest, the boreal owl (*Ægolius funereus*) has a brown plumage, a yellowish beak and a pale facial disk with a black border. A little bigger than the northern saw-whet owl, this species measures 23 cm to 35 cm in size. While it is an official resident of the conifer forests of the north, the boreal owl makes irregular migrations towards the mixed forests of the south. Despite its occasional incursions and the presence of a few nesting pairs, this small owl is rare in the Saguenay-Lac-Saint-Jean region as well as throughout southern Québec.

Beginning at the end of April, the male sings a soft, mysterious song made up of the same note repeated several times; this song likely explains this species' Latin name *funereus*, or funereal in English. It is during this period that the odds of hearing the boreal owl are greatest.

Methodology and results

During two evenings, one in June, the other in July, three nocturnal raptors were heard in the park: two northern saw-whet owls in a mixed forest at the foot of the mountain, and a boreal owl in a mature spruce stand at 700 m in altitude. The survey was carried out using the following method: at each station, there was a three-minute listening period, followed by the playing of a recording, followed by another listening period. In order to avoid scaring small owls by playing the song of a bigger owl, the species were "called" by increasing order of size: northern saw-whet owl, boreal owl, barred owl and great horned owl.

As for the results obtained, two hypotheses might explain the small number of specimens surveyed. First, the surveys were carried out late in the season, after the period when birds sing the most. Secondly, it is possible that the nocturnal raptor populations were at the low point of a cycle, in response to the fluctuations in small mammal populations. Whatever the case may be, the first mention of the boreal owl on the park's territory makes up for these modest results.

Parc national d'Oka

A new method for controlling poison-ivy is being tested at Parc national d'Oka

By Alain Meilleur, Researcher specializing in plant ecology, Consultant, Primula Environnement Inc.

Poison-ivy causes its share of problems for individuals who come into contact with this plant. Indeed, poison-ivy (*Toxicodendron radicans*) produces urushiol, an oily compound that is an irritant and that can cause painful dermatitis, depending on how allergic the person is. The onset of this dermatitis occurs from 24 hours to one week after contact with the plant. However, to provoke an allergy, the plant's tissues must be broken in order for the irritant to come into contact with the person's skin.

This plant poses a particularly tricky problem in that it tends to reproduce near disturbances associated with human activities, especially alongside trails. This species reproduces by means of rhizomes extending in every direction. Capable of growing one metre per year, these rhizomes are only inhibited by physical obstacles or by the presence of an environment that is overly damp and shaded. This method of development, which takes the form of clones, allows the plant to cover large surfaces and to reduce local biodiversity.

To combat the negative effects of poison-ivy on visitors to Québec parks, Parc national d'Oka has been conducting tests to reduce the species' presence on its territory. One of the methods proposed in 2006 was to spray a salt-based herbicide known under the name of "Adios Ambros" with a view to controlling poison-ivy. We selected 30 experimental plots comprising 100 numbered stems which were treated with the product when the leaves of the clones had developed fully. The experimental sites were spread throughout the park to cover the different growth situations of poison-ivy clones. The collection of data, such as the number of leaves, the height and the number of divisions of the stems as well as the presence of flowers, was done before and after the treatment.

The results show that the treatment eliminates about 67% of the stems, regardless of their height and the location of the experimental site, while reducing the height of the remaining live stems after treatment. A second treatment, which we had planned to carry out before the end of the poison-ivy growing season, was performed in early September 2006. The salt concentrations found in the soil following treatments have only a short-term adverse effect on the environment, whereas more toxic herbicides tend to accumulate in the soils, especially when applied repeatedly. In several cases, the stems covered by the second treatment appeared to be dead, but we will have to wait until next summer to confirm this observation. The study will be completed in the summer of 2007. However, if this method proves effective and has a limited impact on the environment, park officials may begin using it already in the month of June.

Parc national de Plaisance

Monitoring of a common hackberry population

By Jean-François Houle, Head of the Conservation and Education Service, Parc national de Plaisance

Precarious status plant species are excellent indicators of the state of health of natural habitats. Human activities often have a direct impact on this state of health. Parc national de Plaisance, for its part, is not immune to the negative effects that human activities can have. In fact, two factors directly influence the park's health, namely the ever increasing number of visitors and the fact that the park's territory is bounded by highly urbanized and farming environments.

The common hackberry (*Celtis occidentalis*) is a tree species belonging to the *Ulmaceae* family which includes, among others, the scotch elm. Uncommon in Québec and not often noticed, the common hackberry is on Québec's list of species likely to be designated as threatened or vulnerable. Despite the small forested area of Parc national de Plaisance, there are a few populations of this rare species. Prior to 2006, this species had never been monitored in the park, although one study (Dignard, 1994) mentioned its presence and pinpointed the location of several specimens. In 2006, as part of the Ecological integrity monitoring program, the park's Conservation and Education Service began monitoring the species on its territory. Once each of the populations is located and characterized, the long-term objective of the monitoring operation will be to determine the state of health: good, stable, deteriorating or improving.

Our first surveys were carried out on a nice population of at least 30 specimens. We began by counting the number of adult specimens and stems (new growths). We then noted the various parameters. For specimens measuring 5 cm or more in diameter, we took the following measurements: size at breast height (SBH), plant quality and verticality data. All specimens were geo-referenced and an identification number was assigned to them. As for stems measuring less than 5 cm in diameter, they were counted and marked with tape. Data describing the type of habitat as well as the companion species were also noted. Finally, positioning data were collected to evaluate the possible expansion of the population. We intend to proceed in this same manner for each of the populations (more than five specimens) that we locate. In addition, each of the other adult hackberry trees surveyed in the park will be assigned a number and will be positioned.

This monitoring operation will enable us to not only better protect this fragile species and to guide us in our management choices, but also to learn more about this species.

Parc national de la Pointe-Taillon

Banding of migratory birds at Parc national de la Pointe-Taillon

By Dominique Crépin, Head of the Conservation and Education Service, Parc national de la Pointe-Taillon, in collaboration with Jonathan Nadeau, Wildlife Planning Technician, Association des sauvaginaires du Saguenay–Lac-Saint-Jean

Parc national de la Pointe-Taillon is a long peninsula that extends into the waters of Lac Saint-Jean. Just above the surface of the water, this sandy point is home to numerous wetlands frequented by ducks that raise their broods here or make a stopover during their migrations. The quality of the natural environment and the tranquility of the premises offer ideal conditions for the establishment of a permanent migratory bird banding station.

Set up in 2001, the Pointe-Taillon bird banding station has been operated by the Association des sauvaginaires du Saguenay–Lac-Saint-Jean from the very outset. The aim of this research station is basically to monitor and document the migratory movements of waterfowl in the Saguenay–Lac-Saint-Jean region and to estimate their annual productivity.

Each summer, capture cages are installed in marshes and ponds located at the western tip of Pointe-Taillon. Corn grains are placed on the floor of the cages to attract ducks. During the three weeks when banding takes place, the cages are visited on a daily basis to release the birds once an identification band has been attached to their leg.

Since the start of the project, 3,634 birds have been captured at the park's banding station. Of that number, 173 ducks having been banded at Pointe-Taillon were recaptured at the same location in the following years. The banded birds can be broken down into 16 species: American black duck, mallard, green-winged teal, blue-winged teal duck, wood duck, northern pintail, gadwall, American wigeon, lesser scaup, ring-necked duck, redhead, common goldeneye, spirit duck, goosander, hooded merganser, Canada goose. Hybrid American black ducks-mallards have also been banded. The American black duck is the most represented species. Indeed, it accounted for close to 64% of the banded birds during the summer of 2006.

A collection of biological data, like that being carried out at the Pointe-Taillon migratory bird banding station, requires long-term monitoring. The results of this work will undoubtedly become an invaluable reference for monitoring waterfowl populations of the Saguenay–Lac-Saint-Jean region and for acquiring knowledge on aquatic bird groups that seek refuge at Parc national de la Pointe-Taillon.

Parc national du Saguenay – Saint-Laurent

Eighth five-year survey of the peregrine falcon (*Falco peregrinus*) in Québec, in 2005

By Mireille Poulin, Sylvie Beaudet, Lise Deschênes, Pierre Fradette, Benoît Gagnon, Isabelle Gauthier, Alain Lachapelle, Jean Lapointe and François Shaffer, members of the l'Équipe de rétablissement des oiseaux de proie (ÉROP) du Québec, in collaboration with François Tremblay, Parc national du Saguenay

There are two subspecies of the peregrine falcon in Québec. The *tundrius* subspecies nests in the north, mainly in the Ungava Bay region, whereas the *anatum* subspecies frequents the southern part, i.e. the part located south of the tree line (Bird, 1997).

From the end of the 1940s to the 1960s, there was an alarming decline in the peregrine falcon population in North America. The main cause was the use of organochloride pesticides, which led to the contamination of several raptors and consequently, resulted in lower reproductive success (Peakall et coll., 1990). The ban, in 1972, on the use of DDT together with repopulation programs have helped improve the status of this species.

It was in 1969, during a conference focusing on raptor research planning held at Cornell University, that the decision was made to monitor the peregrine falcon throughout North America (Cade and Fyfe, 1970). The objective of the eighth survey, carried out in 2005, was to survey all the known and potential nesting sites of the peregrine falcon in southern Québec with a view to confirming the presence of pairs. This survey also sought to accurately pinpoint the location of nests and to determine the number of young falcons. For financial reasons, it was impossible to survey the nesting sites for the subspecies north of the 49th parallel.

The results obtained confirm the attainment, even the exceedence, of the first objective of the peregrine falcon recovery plan, namely the obtaining, in September 2005, of a population that remains above 25 pairs and that is capable of producing, on its own, at least 37 young per year. The falcon population is steadily increasing and its productivity has been stable since the last survey was carried out. Officials must still determine the hazards that threaten each nesting site and identify the appropriate protection measures to achieve the second objective of the recovery plan.

The carrying out of the eighth five-year survey of the peregrine falcon by observers from several organizations, including Parc national du Saguenay, has made it possible to achieve the anticipated objectives. Fifty-three territorial pairs, having produced a minimum of 83 fledglings, were observed during the survey. According to the team of researchers, a survey of the nesting sites north of the 49th parallel should be made in order to determine the state of the population of the subspecies identified in the introduction.

This summary report presents encouraging results leading us to believe that at this rate, the peregrine falcon could be the first species to be removed from the list of precarious status species.

Parc national de la Yamaska

Important scientific progress for arachnology at Parc national de la Yamaska

By Alain Mochon, Head of the Conservation and Education Service, Parc national de la Yamaska, in collaboration with Pierre Paquin² and Nadine Dupérré³, leading arachnologists

Spiders have not been studied extensively in most regions of the world. Yet they play a major ecological role, given their incredible number, the diversity of their behaviour and their ability to live in almost every environment. In Québec, the known araneofauna comprises 654 species, broken down into 27 families. To this list must be added some fifty probable species, which have yet to be surveyed in the province. A major survey was carried out at Parc national de la Yamaska in 2006 in order to draw up an exhaustive wildlife register of this group.

Indeed, 2,200 samples from pitfall traps, beating, screening and bedding extraction operations were collected in four typical habitats of the park's natural landscape. This harvest yielded more than 8,000 adult specimens. The park's southern location and its plant mosaic held the promise of surprising finds. The scope of the discoveries exceeded all expectations...

The diversity of the park's araneofauna is reflected in 200 species. Several of these species represent invaluable distribution sightings for the arachnologic knowledge of North America. For example, *Clubiona quebecana* (*Clubionidæ*), *Elaver excepta* (*Clubionidæ*), *Habrocestrum parvulum* (*Salticidæ*) as well as a few other species had only been surveyed once or twice across Québec. Even more noteworthy, five species within this group were surveyed for the first time in the province. They are *Araneus guttulatus* (*Araneidæ*), *Theridion alabamense* (*Theridiidæ*), *Dipæna appalachia* (*Theridiidæ*), *Admestina wheeleri* (*Salticidæ*) and *Calodipæna incredula* (*Mysmenidæ*). The discovery of this latter species reveals a remarkable extension of its range; it had only been surveyed in Florida and Texas. What is more, it constitutes the first mention of the *Mysmenidæ* family for Québec, and the first mention of the *Calodipæna* genus for Canada.

The *Linyphiidæ* family is the park's most diversified family, with 62 species surveyed. It is in this group that the discoveries are the most interesting. Most spiders of this family only measure a few millimeters in size at the adult stage. Two species are entirely new for the science and consequently have no name. One of them belongs to the *Agyneta* genus, whereas the other belongs to an unknown genus, which is probably new. A formal recognition process has been undertaken in the scientific field of systematics. One of these two species of *Linyphiidæ* will be described shortly and will bear the name of *Yamaskensis*, in honour of Parc national de la Yamaska, type locality associated with this new spider. It is time to update the official registers! Québec's araneofauna now comprises 661 species, making up 28 families.

Paquin, P. et Dupérré, N. (2003). *Guide d'identification des Araignées (Aranæ) du Québec*. Fabriques, Supplément 11, 251 pages.

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