COSEWIC
Assessment and Update Status Report

on the

Spotted Gar
Lepisosteus oculatus

in Canada

THREATENED
2005

COSEWIC
COMMITTEE ON THE STATUS OF
ENDANGERED WILDLIFE
IN CANADA

COSEPAC
COMITÉ SUR LA SITUATION
DES ESPÈCES EN PÉRIL
AU CANADA

COSEWIC status reports are working documents used in assigning the status of wildlife species suspected of being at risk. This report may be cited as follows:

COSEWIC 2005. COSEWIC assessment and update status report on the spotted gar *Lepisosteus oculatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 17 pp. (www.sararegistry.gc.ca/status/status_e.cfm).

Previous report(s):

COSEWIC 2000. COSEWIC assessment and update status report on the spotted gar *Lepisosteus oculatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 13 pp.

Campbell, R.R. 1994. Update COSEWIC status report on the spotted gar *Lepisosteus occulatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-13 pp.

Parker, P. and P. McKee. 1983. COSEWIC status report on the spotted gar *Lepisosteus oculatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. 1-15 pp.

Production note:
COSEWIC would like to acknowledge Nicholas E. Mandrak and Becky Cudmore for writing the update status report on the spotted gar *Lepisosteus oculatus*. This report was prepared under contract with Environment Canada, overseen and edited by Bob Campbell, the COSEWIC Freshwater Fish Species Specialist Subcommittee Co-chair.

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Également disponible en français sous le titre Évaluation et Rapport de situation du COSEPAC sur le lépisosté tacheté (*Lepisosteus oculatus*) au Canada – Mise à jour.

Cover illustration:
Spotted gar — Illustration by Joe Tomelleri. Used with permission of Fisheries and Oceans Canada.

Catalogue No. CW69-14/67-2005E-PDF
ISBN 0-662-40620-6
HTML: CW69-14/67-2005E-HTML
0-662-40621-4


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COSEWIC
Assessment Summary

Assessment Summary – May 2005

Common name
Spotted gar

Scientific name
Lepisosteus oculatus

Status
Threatened

Reason for designation
This species has a very limited range in Canada where it is known only from three coastal wetlands in Lake Erie. Although its distribution is likely limited by temperature, some of the shallow vegetated habitats that it requires for all life stages are subject to the impacts of siltation, dredging, filling, and aquatic vegetation removal and harbour improvements.

Occurrence
Ontario

Status history
Designated Special Concern in April 1983. Status re-examined and confirmed in April 1994. Status re-examined and designated Threatened in November 2000, and in May 2005. Last assessment based on an update status report.

COSEWIC
Executive Summary

Spotted Gar
Lepisosteus oculatus

Species Information

The spotted gar is a member of the family Lepisosteidae and is one of two gar species found in Canada. In comparison to the other gar species, longnose gar, the spotted gar has a shorter, wider snout and a shorter, deeper caudal peduncle.

Distribution

It has a wide, but disjunct, distribution in the Mississippi and Great Lakes drainages of eastern North America. Its occurrence in Canada has been confirmed at five locations: Lake St. Clair, Long Point Bay (including the Big Creek wetland), Point Pelee National Park, Rondeau Bay in Lake Erie, and Bay of Quinte in Lake Ontario.

Habitat

Adult spotted gar prefer quiet, vegetated, shallow clear waters of lakes and rivers. Submerged branches, fallen trees or log complexes provide resting cover. Shallow areas of dense vegetation constitute nursery and spawning habitat.

Biology

Maximum known age of spotted gar is 18 years, and onset of maturity is 4 years. Spotted gar are spring spawners. The species is sexually dimorphic. Primarily a piscivorous ambush predator, spotted gar also consume crayfishes and aquatic insects. They are well adapted to heavily vegetated ecosystems of low dissolved oxygen concentrations as they are able to breathe air.

Population Sizes and Trends

Fewer than 55 specimens have been collected in Canada; therefore, it is not possible to identify population sizes and trends.

Limiting Factors and Threats

Loss of quiet, vegetated, shallow habitats as a result of human activities such as dredging, filling and harbour improvements threaten this species within its Canadian range.

Special Significance of the Species

Spotted gar's high relative abundance and predatory potential in quiet, shallow, vegetated habitats in the southern United States suggest it is a key component of the food web in these systems.

Existing Protection or Other Status Designations

Spotted gar populations in Rondeau Provincial Park and Point Pelee National Park are partially protected by their location in these public parks. This species is also one of eight fish species addressed under the ecosystem-based Sydenham River Recovery plan. It is currently listed as Threatened on Schedule 1 of the Canadian *Species at Risk Act*.

COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal agencies (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government members and the co-chairs of the species specialist and the Aboriginal Traditional Knowledge subcommittees. The Committee meets to consider status reports on candidate species.

DEFINITIONS (NOVEMBER 2004)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and it is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A wildlife species for which there is inadequate information to make a direct, or indirect, assessment of its risk of extinction.

* Formerly described as “Vulnerable” from 1990 to 1999, or “Rare” prior to 1990.
** Formerly described as “Not In Any Category”, or “No Designation Required.”
*** Formerly described as “Indeterminate” from 1994 to 1999 or “ISIBD” (insufficient scientific information on which to base a designation) prior to 1994.

Environment Canada | Environnement Canada
Canadian Wildlife Service | Service canadien de la faune
Canada

The Canadian Wildlife Service, Environment Canada, provides full administrative and financial support to the COSEWIC Secretariat.

Update
COSEWIC Status Report

on the

Spotted Gar
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in Canada

2005

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SPECIES INFORMATION

Name and classification

Kingdom	Animalia
Phylum	Chordata
Class	Actinopterygii
Order	Semionotiformes
Family	Lepisosteidae
Genus and species:	*Lepisosteus oculatus* Winchell, 1864
Common English name:	spotted gar (Nelson *et al.* 2004)
Common French name:	lépisosté tacheté (Coad 1995)

Description

The spotted gar (*Lepisosteus oculatus*) is a member of the family Lepisosteidae (Nelson *et al.* 2004). It is characterized by (Scott and Crossman 1998): a long, narrow body; long, relatively broad snout (length 43.6-82.8% of head length, least width 9.9-16.0% of snout length); short, deep caudal peduncle (least depth 43.4-49.4% of caudal peduncle length); and rounded, abbreviate heterocercal caudal fin (Figure 1). The body of the spotted gar is olive-green to velvety brown above the lateral line, has a lateral band with a narrow reddish stripe, and is a dull silvery colour below the lateral line. Brown spots are present on the snout, head, body and fins.

Figure 1. The spotted gar (*Lepisosteus oculatus*). Illustration by Joe Tomelleri. Used with permission of DFO.

The spotted gar is one of two native gar species found in Canada (Scott and Crossman 1998). In comparison to the longnose gar (*Lepisosteus osseus*), the spotted gar has a shorter, wider snout (Figure 2) and a shorter, deeper caudal peduncle (Scott and Crossman 1998). It should be noted that both species are spotted, and this character should not be used to distinguish between them.

Figure 2. Differences in snout length and width in similar-sized longnose gar (top) and spotted gar (bottom) collected in Rondeau Bay, 2002. Photo by Jason Barnucz, DFO.

The exotic Florida gar (*Lepisosteus platyrhinchus)* has also been collected in the Great Lakes basin, undoubtedly the result of release from aquaria (Cudmore-Vokey and Crossman 2002). The spotted gar closely resembles the Florida gar, but has bony, translucent plates on the isthmus between the gill openings, which are absent in the Florida gar (Page and Burr 1991).

Designatable units

All Canadian populations are found within the Great Lakes-Western St. Lawrence ecozone of the freshwater ecozone classification adopted by COSEWIC. The population structure within this ecozone is unknown.

DISTRIBUTION

Global range

The spotted gar has a wide, but disjunct, distribution in the Mississippi and Great Lakes drainages of eastern North America (Figure 3). In the Mississippi drainage, it is found from Alabama to Texas in the south, to Illinois in the north, and from Tennessee in the east to Oklahoma in the west. (Lee *et al.* 1980, Page and Burr 1991). The populations in the Great Lakes are widely disjunct from the Mississippi populations. In the Great Lakes basin, populations are found in Illinois, Indiana, Ohio, Ontario and Michigan (Lee *et al.* 1980; Page and Burr 1991).

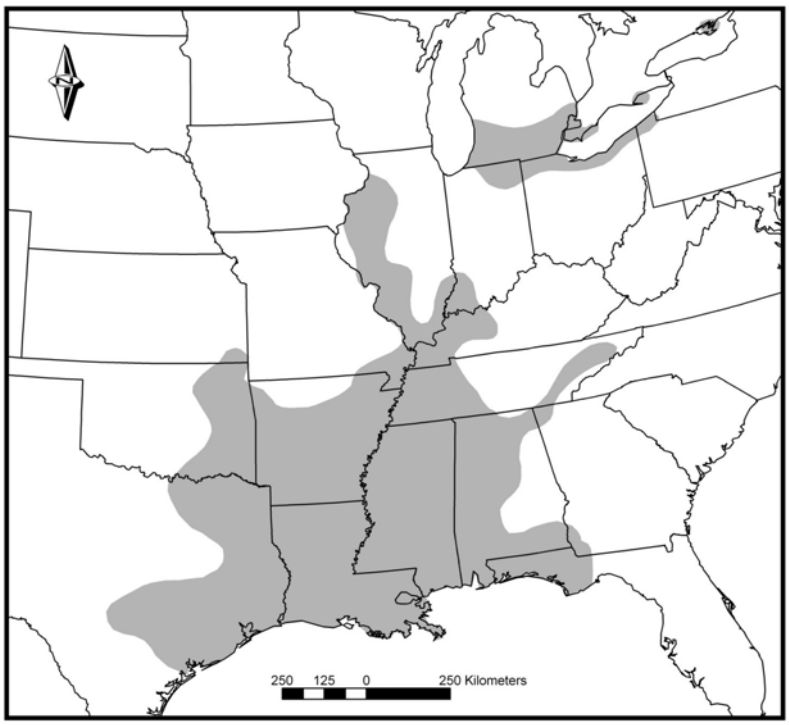

Figure 3. Global distribution of the spotted gar [modified from Page and Burr (1991)].

Canadian range

In Canada, the occurrence of spotted gar has been verified at five locations: Lake St. Clair, Long Point Bay, Point Pelee National Park, Rondeau Bay in Lake Erie, and Bay of Quinte in Lake Ontario (Figure 4). The first confirmed record of spotted gar at Point Pelee was collected in 1913, in Long Point Bay in 1947, and in Rondeau Bay in 1955 (there are records of spotted gar caught by a commercial fisherman at “Merlin” in 1925, and at “Port Crewe” in 1938 — these fishes were likely caught in Rondeau Bay). A single specimen was captured in 1962 in Lake St. Clair near the mouth of the Thames River. Based on its highly disjunct nature, the Quinte record is likely the result of an introduction. There are two records of spotted gar from the Sydenham River, both collected in 1975. One record was based on a metalarva (38 mm TL) that was subsequently determined to likely be a longnose gar by a larval fish expert (Darrel Snyder, Colorado State University Larval Fish Laboratory) (Erling Holm, Royal Ontario Museum (ROM), pers. comm.). The other record lacked a voucher specimen. Subsequent sampling (most recently, boat electrofishing, hoopnetting and seining in 2002 and 2003; N.E. Mandrak, unpubl. data) in the vicinity of the original records has failed to find any additional specimens; therefore, the original records are deemed questionable. There have been many additional reports of spotted gar elsewhere in southwestern Ontario but subsequent examinations of voucher specimens, if available,

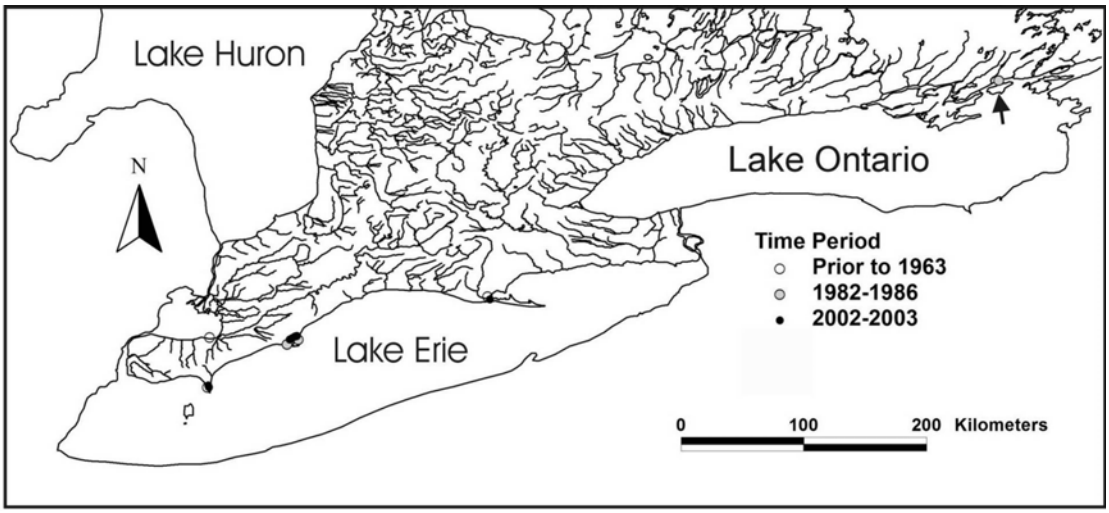

Figure 4. Canadian distribution of the spotted gar.

re-identified the specimens as longnose gar. If voucher specimens were not available for examination, the reports were regarded as suspect and excluded from this report.

First Nations communities are located within the distribution range of the spotted gar, but information from community members was not available for inclusion in the status report.

HABITAT

Habitat requirements

Adult spotted gar prefer quiet, vegetated, shallow (0-5 m) clear waters of lakes and rivers (Carlander 1969, Scott and Crossman 1998, Lee *et al.* 1980, Lane *et al.* 1996b, Page and Burr 1991, Snedden *et al.* 1999, Coker *et al.* 2001, Cudmore-Vokey and Minns 2002). The adults are generally found over silt and clay (but often sand) substrates (Lane *et al.* 1996b). Snedden *et al.* (1999) described in detail the spotted gar habitat in Louisiana, noting that submerged branches, fallen trees or log complexes provided diurnal resting cover. The structurally complex shallow water habitat preferred by the spotted gar is probably related to its foraging tactics. Vegetation around which spotted gar were found in Oklahoma included primarily *Polygonum*, *Potamogeton*, *Myriophyllum*, and *Justicia* (Tyler and Granger 1984).

Nursery habitat consists of the top meter of water in the spring (1-2 m in fall) over sand, silt, or clay substrate. Areas of dense submergent and emergent vegetation are preferred (Simon and Wallus 1989, Lane *et al.* 1996a, Cudmore-Vokey and Minns 2002).

Spawning habitat consists of shallow water (0-1 m) with aquatic vegetation, brush or debris (Scott and Crossman 1998, Lee *et al.* 1980, Lane *et al.* 1996c) in quiet areas (Simon and Wallus 1989) such as flooded riparian areas (Snedden *et al.* 1999).

Trends

As the result of the lack of historical data, there is little information on changes in habitat in areas where spotted gar have been recorded. Aquatic vegetation appears to vary with lake water levels. During the 1980s aquatic vegetation had declined significantly due to increased water levels; however, an increase in aquatic vegetation cover in Rondeau Bay has recently occurred following a decrease in water levels, and also as a result of increased water clarity due to the invasion of dreissenid mussels (S. Dobbyn, OMNR, pers. comm.). This may have resulted in an increase in the amount of habitat preferred by spotted gar. However, vegetation removal programs carried out in Rondeau Harbour may offset any positive effect in the harbour area (Dobbyn, pers. comm.). At Point Pelee, the period between breaching events (breaching of the barrier beaches) has increased as a result of declining lake water levels. As a result water quality (e.g. DO levels) has declined and turbidity increased (H. Surette, University of Guelph, pers. comm.). Increased turbidity may limit the ability of the spotted gar to sight feed.

Protection/ownership

In Canada, the spotted gar occurs in publicly owned waters, and all fish habitat within these waters is protected by the federal *Fisheries Act*. In addition, it is found in Point Pelee National Park, Rondeau Provincial Park, and Long Point Bay, which has both a provincial park and a national wildlife area. Therefore, its habitat receives additional protection afforded to national wildlife areas through the *Canada Wildlife Act*, and national and provincial parks through the *Canada National Parks Act* and Ontario *Provincial Parks Act*. As a Threatened species listed in Schedule 1 of the federal *Species at Risk Act*, the spotted gar and its residence are protected; however, its critical habitat is yet to be protected under the *Act*.

BIOLOGY

General

The known maximum age is 18 years and maximum length and weight are 1120 mm and 2700 g (Coker *et al.* 2001). Spotted gar caught in Point Pelee National Park in 2002 and 2003 (n=19) ranged in length between 133 mm and 629 mm and had a maximum weight of 1087 g. Studies on the growth rate of young spotted gar from Oklahoma suggested a growth of 1.7 mm (1 g) per day during July and August (Carlander 1969). Young spotted gars reach a length of 250 mm after the first year of life (Pflieger 1975).

An adhesive organ on their snout, oval-shaped pigmented eyes, and an ovoid and elongated yolk sac characterize recently hatched gars (Simon and Wallus 1989). Spotted gar larvae are darkly pigmented subdermally on the dorsum (Simon and Wallus 1989). Although capable of swimming, they often remain hanging vertically, relatively inactive, attached to underwater structures by their adhesive snout. The yolk sacs are absorbed at lengths greater than 17.6 mm and the spotted gars then become more dispersed and begin to feed (Simon and Wallus 1989).

Reproduction

Spotted gar are 4 years old at onset of maturity and approximately 522 mm in length (Scott and Crossman 1998, Coker *et al.* 2001). Love (2002) described sexual dimorphism in spotted gar from southern Louisiana. Females had longer bodies and long snouts. He attributed this difference in length between the sexes as likely due to reproductive investment. Females have larger gonads than males per unit of body mass as they are extremely fecund. The large snout of females may enable greater foraging success, possibly indicating that nutritional requirements are greater for females (Love 2002).

Increasing photoperiod and water temperatures at 15^{o}C initiated spring spawning in Louisiana (Snedden *et al.* 1999), with the most intense spawning occurring mid-May in Oklahoma (Tyler and Granger 1984). Cudmore-Vokey and Minns (2002) reported spawning temperature to range from 21 ^{o}C to 26 ^{o}C.

Tyler and Granger (1984) described the spawning behaviour of spotted gar in Oklahoma. One large female, closely accompanied by three to five much smaller males, swam slowly through densely vegetated areas. The female deposited her eggs as she jerked and thrashed in the shallows. The demersal, adhesive, oval (approximately 2.5 mm in diameter) eggs (Simon and Wallus 1989) are formed in masses held together by a clear gelatinous substance and are attached to aquatic vegetation (Scott and Crossman 1998, Coker *et al.* 2001). The eggs hatch within a week (Cudmore-Vokey and Minns 2002).

Survival

The known maximum age is 18 years (Coker *et al.* 2001). Survival rates are unknown.

Physiology

The preferred temperature of spotted gar has been reported as 16^{o}C (Coker *et al.* 2001). The spotted gar possesses a physostomous gas bladder and can breathe air (Scott and Crossman 1998).

Movements/dispersal

The spotted gar exhibit significantly greater movement rates in Louisiana during the spring (flood pulses) as they move to spawning areas (Snedden *et al.* 1999). This follows a consistently low activity period from December to February, and then in June and July activity declines to pre-flood levels. However, it will move large distances to regions of more suitable habitat, but has distinct home ranges during the spring (Snedden *et al.* 1999). In Louisiana, spotted gar are more active at night than during the day except during the spring (Snedden *et al*. 1999).

Nutrition and interspecific interactions

The spotted gar is primarily a piscivorous ambush predator, but does consume crayfishes and aquatic insects (Carlander 1969, Scott and Crossman 1998, Tyler and Granger 1984, Coker *et al.* 2001, Snedden *et al.* 1999). Fish species consumed vary with studies and seem to indicate that spotted gar feed on the most vulnerable or most available prey items (Dugas *et al*.1976). Dugas *et al*. (1976) indicated that spotted gar in Louisiana primarily consumed small, non-game species and did not pose as much of a threat to game fishes as previously thought. Feeding intensity varies throughout the day, with most feeding activity occurring in the early morning and, secondarily, at night (Carlander 1969, Snedden *et al.* 1999). Feeding took place around complex structures where prey items would be found. Relatively little food was consumed during the day (Snedden *et al.* 1999).

Spotted gar use asymmetrical movements of muscles on either side of the head to manipulate fish after capture so that the prey can be swallowed head first (Lauder and Norton 1980). This allows prey to be swallowed more successfully despite the relatively small opening of the buccal cavity and the direction of the scale rows on the prey.

It has been previously thought that the eggs of spotted gars were toxic to higher invertebrates and possibly vertebrates (Scott and Crossman 1998); however, Ostrand *et al*. (1996) found that green sunfish (*Lepomis cyanellus*) and channel catfish (*Ictalurus punctatus*) that fed on the eggs of spotted gar showed no evidence of ill effects. Therefore, the ichthyotoxin of gar eggs may not act as a protective mechanism from fish predators (Ostrand *et al.* 1996). However, fish fed on the eggs of spotted gar showed the least amount of weight gain compared to those fed eggs of other gar species.

The spotted gar is present in Point Pelee National Park where the longnose gar is absent. Although spotted gar are present in Long Point and Rondeau bays where longnose gar are present, they are absent from the many suitable habitats in southwestern Ontario where longnose gar are abundant (N.E. Mandrak, unpubl. data). Further study is required to determine if this observation is the result of interspecific interactions or other factors.

Behaviour/adaptability

Gars are among the most abundant piscivores in structurally complex shallow water habitats in the southern United States. This high relative abundance and predatory potential suggest that they are key components of the food web (Snedden *et al.* 1999). As a result of their ability to breathe air, spotted gar are physiologically well adapted to heavily vegetated ecosystems and can exploit seasonally hypoxic (dissolved oxygen concentrations of less than 2 mg/L) habitats that typically exclude other piscivores (Snedden *et al.* 1999).

POPULATION SIZES AND TRENDS

Fewer than 55 specimens of spotted gar have been collected in Canada (20 at Point Pelee, 27 in Rondeau Bay, two in Long Point Bay, and two in Big Creek wetland (Long Point Bay); therefore, it is not possible to identify population sizes and trends. Nineteen individuals were captured in Point Pelee National Park in 2002 and 2003, and 11 were large enough to be PIT-tagged (H. Surette, University of Guelph, pers. comm.). None of the tagged individuals were recaptured in subsequent sampling.

The fishes of Big Creek, Long Point Bay, and Rondeau Bay have been extensively sampled, primarily by seining, with few spotted gar captured. Prior to the first report in the Big Creek wetland in 2004, the wetland was sampled in four years (1979, 1983, 1984, 1985) by the Canadian Museum of Nature (CMN) and Wilfrid Laurier University (Royal Ontario Museum (ROM), unpubl. data). In 2003, it was not collected at the same Big Creek site sampled using the same effort and gear (N.E. Mandrak, unpubl. data). Long Point Bay has been sampled in 19 different years since 1928 by CMN, Ontario Ministry of Natural Resources (OMNR) and ROM (ROM, unpubl. data). In 2004, it was not collected in Long Point Bay at 30 sites intensively sampled by boat electrofishing (>1000 sec/500 m site) (N.E. Mandrak, unpubl. data). Prior to the first report in Rondeau Bay in 1955, the bay was sampled in 10 different years since 1921 by the CMN and ROM (Royal Ontario Museum, unpubl. data). In the summer of 2004, intensive boat electrofishing (>1000 sec/500 m site, i.e., more than 15 minutes surveying a 500 m stretch at each site) captured 8 spotted gar at 3 of 8 sites sampled.

The current status of populations in the Bay of Quinte and Lake St. Clair is unknown but, based on recent sampling (Bay of Quinte, 1988-2003; Lake St. Clair, 2002-2004) of suitable habitat (N.E. Mandrak, unpubl. data), they are presumed to be extirpated.

The disjunct nature of gar populations in the American portion of the lakes Erie, St. Clair and Huron (Trautman 1981, Bailey *et al.* 2004) and the large expanses of unsuitable habitat between American and Canadian populations make a rescue effect highly unlikely.

LIMITING FACTORS AND THREATS

Temperature likely limits the distribution of spotted gar in Canada; however, its Canadian distribution may expand under climate warming scenarios (Mandrak 1989). Quiet, vegetated, shallow habitats, vital to all stages of the spotted gar life history, are rapidly disappearing, or are being degraded from siltation, dredging, filling and harbour improvements in their distribution (Carman 2002, Environment Canada 2003). Historic large-scale, and recent small-scale, vegetation removals conducted in Rondeau Harbour have negatively impacted spotted gar habitat (Dobbyn, pers. comm.). Increased turbidity, as documented at Point Pelee, may limit the ability of the spotted gar to sight feed.

SPECIAL SIGNIFICANCE OF THE SPECIES

Gars are among the most abundant piscivores in structurally complex shallow water habitats in the southern United States. This high relative abundance and predatory potential suggest that they are key components of the food web (Snedden *et al.* 1999).

EXISTING PROTECTION OR OTHER STATUS DESIGNATIONS

The Global, National (US and Canada), Subnational (State and Provincial) ranks for spotted gar are given in Table 1. Spotted gar was designated as Special Concern in 1983 by COSEWIC and this status was reconfirmed in 1994. The status was re-examined and uplisted to Threatened in 2000 (COSEWIC 2003). It is currently listed as a Threatened species on Schedule 1 of the Canadian *Species at Risk Act*, which makes it an offence to kill, harm, capture, take, possess, collect, buy, sell or trade a spotted gar, as well as damage or destroy its residence.

Table 1. Global, National and Subnational (State and Provincial) ranks and status for spotted gar (*Lepisosteus oculatus*) (from CESCC 2001, NHIC 2003, NatureServe 2005).

Global	US National	Canadian National*	Subnational	
			US States	Ontario
G5*	N5*; Not found in TESS (USFWS database of Threatened and Endangered Species)	N2*; COSEWIC= Threatened	SX* = NM S1*= PA, OH, GA S1S2*= KS S2S3*= IL, MI S4* = OK, AR, IN, KY S5*= TX, LA, MS, AL, TN, MO SNR = FL	S2*; OMNR Status=Threatened; General Status=3 (Sensitive)

*G/S ranks: 1=critically imperiled; 2=imperiled; 3=vulnerable to extirpation or extinction; 4=apparently secure; 5=demonstrably widespread, abundant and secure; X = extirpated; NR = unranked, not yet assessed.

Spotted gar is considered secure (S5) or apparently secure (S4) in much of its range, particularly in the southern United States (Texas, Louisiana, Mississippi, Alabama, Tennessee, Missouri, Oklahoma, Arkansas, Indiana, and Kentucky). However, at the margins of its United States distribution, including the Great Lakes basin, it is ranked S2S3 (Michigan, Illinois), S1S2 (Kansas), and S1 (Pennsylvania, Ohio, and Georgia) (NatureServe 2005).

Populations found in Long Point Provincial Park and National Wildlife Area, Rondeau Provincial Park, and Point Pelee National Park are partially protected by their location in these public parks. The spotted gar is one of eight fish species being addressed under the ecosystem-based Sydenham River Recovery Strategy. The goals of this strategy are to maintain existing populations and restore each species to areas of the river where they formerly occurred thereby sustaining and enhancing the native aquatic community (Dextrase *et al.* 2003).

TECHNICAL SUMMARY

Lepisosteus oculatus
spotted gar lépisosté tacheté
Range of Occurrence in Canada: ON

Extent and Area information	
• *extent of occurrence (EO)(km²)* Excludes introduced Bay of Quinte records.	5,000
• specify trend	Stable?
• are there extreme fluctuations in EO (> 1 order of magnitude)?	No
• *area of occupancy (AO) (km²)* Area of ponds where captured in Point Pelee. Area of suitable habitat (vegetated, less than 5 m deep) in Long Point (including Big Creek wetland) and Rondeau bays.	Point Pelee - 2.08 Rondeau Bay - 35.49 Long Point Bay – 14 Total - 51.57 Lake St. Clair – single site of unknown area
• *specify trend (decline, stable, increasing, unknown)*	Stable?
• *are there extreme fluctuations in AO (>1 order magnitude)?*	Stable?
• *number of extant locations*	3
• *specify trend in # locations (decline, stable, increasing, unknown)*	Stable
• *are there extreme fluctuations in # locations (>1 order of magnitude)?*	no
• *habitat trend: specify declining, stable, increasing or unknown trend in area, extent or quality of habitat*	Unknown
Population information	
• *generation time (average age of parents in the population) (indicate years, months, days, etc.)*	8 years?
• *number of mature individuals (capable of reproduction) in the Canadian population (or, specify a range of plausible values)*	Unknown
• *total population trend: specify declining, stable, increasing or unknown trend in number of mature individuals*	Unknown
• *if decline, % decline over the last/next 10 years or 3 generations, whichever is greater (or specify if for shorter time period)*	
• *are there extreme fluctuations in number of mature individuals (>1 order of magnitude)?*	Unknown
• *is the total population severely fragmented (most individuals found within small and relatively isolated (geographically or otherwise) populations between which there is little exchange, i.e., <1 successful migrant / year)?*	Yes
• *list each population and the number of mature individuals in each*	Point Pelee - >11 Rondeau Bay - unknown Long Point Bay - unknown
• *specify trend in number of populations (decline, stable, increasing, unknown)*	Unknown for all populations.
• *are there extreme fluctuations in number of populations (>1 order of magnitude)?*	Unknown for all populations.
Threats	
- habitat degradation from siltation, dredging, filling, etc., related to harbour and beach improvements	

Rescue Effect (immigration from an outside source)	Low
• *does species exist elsewhere (in Canada or outside)?*	Yes
• *status of the outside population(s)? (for Lake Erie populations only)*	MI - S2S3 PA, OH - S1
• *is immigration known or possible?*	Unknown, Unlikely
• *would immigrants be adapted to survive here?*	Yes
• *is there sufficient habitat for immigrants here?*	Probably
Quantitative Analysis	

Existing Status

NatureServe Ranks

See Table 1

Wild Species 2000 (Canadian Endangered Species Council 2001)

Canada – 1

ON – 1

COSEWIC

Threatened (May 2005)

Status and Reasons for Designation

Status: Threatened	**Alpha-numeric Code**: D2

Reasons for Designation:

This species has a very limited range in Canada where it is only known from three coastal wetlands in Lake Erie. Although its distribution is likely limited by temperature, some of the shallow vegetated habitats that it requires for all life stages are subject to the impacts of siltation, dredging, filling, and aquatic vegetation removal and harbour improvements.

Applicability of Criteria

Criterion A (Declining Total Population): Not applicable — Current populations are apparently stable and the historic loss of one population (Lake St. Clair — last observed in 1962) occurred more than three generations (24 years) ago. Although the species is also apparently extirpated from the Bay of Quinte in Lake Ontario, it is thought that its presence there was the result of an introduction and there was only ever one individual found. Due to lack of recent declines, this species does not qualify under this criterion.

Criterion B (Small Distribution, and Decline or Fluctuation): Not applicable — The area of occupancy (52 km^2) is below the minimum threshold for endangered and the extent of occurrence (5000 km^2) is right at the threshold between threatened and endangered. Although there are only three extant locations, there are no continuing declines in population size, occurrences or habitat nor are there extreme fluctuations. Therefore the species does not qualify under this criterion.

Criterion C (Small Total Population Size and Decline): Not applicable — The number of mature individuals is not known, but even if numbers were small enough to meet the thresholds for threatened or endangered, required declines do not exist to apply this criterion.

Criterion D (Very Small Population or Restricted Distribution): Qualifies for Threatened, D2, based on its occurrence at three locations, and threats to habitat.

Criterion E (Quantitative Analysis): Data are not available to apply this criterion.

ACKNOWLEDGEMENTS AND AUTHORITIES CONTACTED

Acknowledgements

Jason Barnucz, Fisheries and Oceans Canada, and Heather Surette, University of Guelph, provided unpublished data. Carolyn Bakelaar provided GIS support. Dusan Markovic prepared the global range map. The OMNR COA program provided funds for sampling Rondeau Bay.

Funding for the preparation of this status report was provided by the Canadian Wildlife Service, Environment Canada.

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COLLECTIONS EXAMINED

E. Holm, ROM, verified identifications of specimens from Lake St. Clair and Bay of Quinte.