COMMITTEE ON THE
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WILDLIFE IN CANADA

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COMITÉ SUR LE STATUT
DES ESPÈCES MENACÉES
DE DISPARITION AU
CANADA

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STATUS REPORT ON THE LAKE CHUBSUCKER *ERIMYZON SUCETTA* IN CANADA

BY

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AND

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STATUS ASSIGNED IN 1994
VULNERABLE

REASON: THE LAKE CHUBSUCKER IS A RARE SPECIES IN DECLINE RESULTING FROM HABITAT LOSS AND DETERIORATION.

OCCURRENCE: ONTARIO

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Committee on the Status of Endangered Wildlife in Canada

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STATUS ASSIGNED IN 1994
VULNERABLE

Status Of The Lake Chubsucker, *Erimyzon sucetta*, In Canada

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Mandrak, N.E., and E.J. Crossman. 1993. Status of the Lake Chubsucker, *Erimyzon sucetta*, in Canada. Report to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). Canadian Wildlife Service, Ottawa, Ontario K1A 0H3.

The Lake Chubsucker, *Erimyzon sucetta*, is a robust, moderately deep-bodied member of the sucker family with a wide head, blunt snout and small, slightly inferior, protrusible mouth. It has a disjunct North American distribution, and in Canada, is found only in southwestern Ontario. This species is declining in many parts of its range. The most significant threats to the Lake Chubsucker in Canada is the drainage or siltation of its critical habitat. In Canada, it prefers a habitat susceptible to human perturbation, has only been collected in low numbers at few localities, and is at its northeastern range limit. Therefore, until adequate sampling is undertaken to assess the stability of the Canadian populations, it is recommended that the Lake Chubsucker be classified as Vulnerable in Canada.

Le sucet de lac, *Erimyzon sucetta*, est un membre de la famille des meuniers, robuste et relativement trapu, avec une tête large, un nez émoussé et une petite bouche protractile, légèrement sous la tête (inférieure). Sa distribution est éparse en Amérique du Nord et, au Canada, on ne le retrouve que dans le sud-ouest de l'Ontario. L'espèce est en déclin dans la majeure partie de son aire de répartition. Au Canada, les pires menaces pour le sucet de lac sont le drainage et la sédimentation dans son habitat principal. Au Canada, il préfère les habitats vulnérables où il y a risque de perturbations humaines; on n'en a récolté que de petits nombres dans quelques localités et il se trouve à la limite nord-est de son aire de répartition. Par conséquent, jusqu'à ce qu'un échantillonnage adéquat soit entrepris pour evaluer la situation des populations canadiennes, on recommande que le sucet de lac ait le statut de "menacé" au Canada.

Key Words: Lake Chubsucker, *sucet de lac*, *Erimyzon sucetta*, Catostomidae, threatened, Ontario

Erimyzon sucetta (Lacepède, 1803), the Lake Chubsucker, belongs to a genus of suckers (family Catostomidae) which includes only three species. It is the only representative of this genus to occur in Canada, and is found only in southwestern Ontario. This report summarizes our current knowledge of the distribution and status of the species in Canada.

The Lake Chubsucker is a robust, slightly compressed fish with a moderately deep-arched back, thick caudal peduncle and wide head with a blunt snout (Figure 1). It has a small, slightly inferior, suctorial, protrusible mouth (Scott and Crossman 1973). The dorsal surface of its body is deep olive to greenish-bronze, the ventral surface is green-yellow to yellow-white. Scales above lateral line are dark-edged giving a cross-hatched appearance. A lateral band, if present, has been documented as continuous in adults (Pflieger 1975, Trautman 1981, Rutherford *et al.* 1985, Robison and Buchanan 1988), or broken into blotches or transerve bands (Anonymous 1962, Scott and Crossman 1973, Douglas 1974, Page and Burr 1991). Preserved adult specimens from Ontario exhibit both continuous and blotched lateral bands when present. Adult size may reach a maximum size of 410 mm total length (TL; Page and Burr 1991), although Ontario specimens seldom exceed 254 mm TL (Scott and Crossman 1973).

A dorsal fin with a short base, fewer than 20 rays and without a rounded or pointed anterior lobe differentiates the genus *Erimyzon* from the genera *Carpiodes*, *Cycleptus* and *Ictiobus*. *Erimyzon* differs from other genera of Catostomidae by the presence of an oblique mouth and absence of a lateral line.

In Canada, the creek chubsucker, *Erimyzon oblongus*, has been reported only in New Brunswick, but not since 1873 (Cox 1896). Cox (1896) erroneously listed this record as *E. sucetta* based on Adams (1873) who listed it as *Moxostomus oblongus* (=*Erimyzon oblongus*). Scott and Crossman (1959) concluded that "it seems highly unlikely that it [*Erimyzon oblongus*] ever occurred in New Brunswick". It is present in the American drainage of the Great Lakes in the tributaries of southwestern Lake Erie and southeastern Lake Ontario; therefore, all *Erimyzon* specimens collected in Ontario should be examined closely for *Erimyzon oblongus*. There are differences in the literature in the description of the distinguishing characteristics between the largely sympatric *Erimyzon sucetta* and *Erimyzon oblongus* (Cook 1959, Scott and Crossman 1973, Douglas 1974, Smith 1979, Trautman 1981, Rutherford *et al.* 1985, Robison and Buchanan 1988, Page and Burr 1991), probably as the result of the natural variation of these characters over the geographic ranges of these species. The eye is generally larger in *Erimyzon sucetta* (eye diameter ranges from 3.4 to 6.0 times into head length (HL); 3.2–5.2 with 3.0 and 7.2 extremes in the 55 preserved Ontario specimens examined) than in *Erimyzon oblongus* (5.5–6.2 times into HL). *Erimyzon sucetta* generally has a lower lateral line scale count (32–40; 32–40 in Ontario specimens examined) and higher dorsal ray count (10–13; 10–13 in Ontario specimens examined) than *Erimyzon oblongus* (37–47; 8–11). *Erimyzon oblongus* is more slender (body depth 3.2–4.2 times into standard length (SL)) than *Erimyzon sucetta* (2.4–3.2 into SL; 3.0–4.0 in Ontario specimens examined). Prior to spawning, male Lake Chubsuckers develop a falcate anal fin and 3 tubercules (a reduced fourth tubercule is occassionally present; Douglas 1974) on each side of the snout (Robison and Buchanan 1988).

Distribution

Erimyzon sucetta exhibits a disjunct North American distribution (see inset map, Figure 2). A southern element is centred around the Gulf States and extends northward from the Arkansas River through the Mississippi Valley to southern Illinois; east of the Mississippi River to the Atlantic Seaboard and northward to southern Virginia; and, west of the Mississippi River to eastern Texas. A northern element encompasses a southern Great Lakes drainage. Distribution is fragmented between the two main areas of distribution. Trautman (1981) hypothesized that this fragmentation was the result of northeastern range expansion during the warm Hypsithermal Period (ca. 7,000–5,000 years before present), and subsequent range contraction and fragmentation during the wane of this Period. In recent times, the distribution of *Erimyzon sucetta* appears to be decreasing in many states, and it is now considered extirpated in Iowa and New York (Becker 1983, Smith 1985). However, it was first recorded in Oklahoma in 1982 (Rutherford *et al.* 1985).

In Canada, *Erimyzon sucetta* has been collected only in the drainages of the Niagara River, and lakes Erie, St. Clair and Huron in southwestern Ontario (Figure 2,Mandrak and Crossman 1993). Records by Small (1883) for "Hartwell's locks", Ottawa, and by Halkett (1913) for the St. Lawrence River and tributaries are probably erroneous. Hubbs and Brown (1929) felt that the Lake Chubsucker was probably present in Ontario, although none had been collected. Scott (1952) reported that this species was first captured in 1949, and suggested that its presence was the result of recent natural migration northward. Mandrak (1990) stated that *Erimyzon sucetta* dispersed through glacial waterbodies into the Lower Peninsula of Michigan and along the south shore of Lake Ontario during the late Pleistocene. Through these, and adjacent glacial waterbodies, the Lake

Chubsucker would have had the opportunity to disperse into the lower Great Lakes and subsequently into Ontario. Mandrak (1990) suggested that it was not collected prior to 1949 due to low population numbers and the difficulty of sampling its preferred habitat: therefore, he concluded that the species should be considered native to Ontario. Despite more recent sampling (*see* Appendix), the Lake Chubsucker was collected only prior to 1970 in Tee Creek, a Niagara River tributary, in Jeanettes Creek, a Thames River tributary, and at the mouth of Big Creek. Despite previous sampling (*see* Appendix), it has been collected only since 1970 in three tributaries of Big Creek, and the Old Ausable Channel, a Lake Huron tributary. The species has been collected before and after 1970 in Lake Erie at Long Point, Rondeau Harbour, Point Pelee and in Lake St. Clair. No specimens have been collected since 1983.

Protection

Erimyzon sucetta receives no special protection in Canada (but see "**Habitat**" section). It is legally protected in New York and Ohio, and is of "Special Concern" in Indiana, Kentucky, Missouri and Wisconsin (Johnson 1987).

Population Size and Trend

No attempt has been made to determine the population size of *Erimyzon sucetta* in Ontario. Only 30 collections of the Lake Chubsucker have been made in Ontario, and most of these collections yielded less than five specimens. Therefore, it is difficult to assess population sizes and trends. The sampling data suggest that populations are stable at Point Pelee where the Lake Chubsucker had been collected in 1949, 1968, 1972 and 1983, and in Rondeau Bay where it had been collected in 1953, 1954, 1955, 1963, 1975 and 1983. Trends in

the remaining populations in Ontario are not known.

Habitat

The preferred habitat of *Erimyzon sucetta* is clear, still, well-vegetated waters, such as those provided by backwaters, bayous, drainage ditches, floodplain lakes, marshes, oxbows, sloughs and wetlands, with substrates of gravel, sand and silt mixed with organic debris (Douglas 1974, Pflieger 1975, Smith 1979, Trautman 1981, Burr and Warren 1986, Robison and Buchanan 1988). In Ontario, the Lake Chubsucker has been captured primarily in heavily vegetated, stagnant bays, channels, ponds and swamps with low turbidity and substrates of clay, silt, sand and organic debris. In 1974, a single specimen was collected in Lyndecock Creek, a Big Creek tributary, in a habitat described as being moderately flowing with abundant floating vegetation over a clay and silt substrate. It is likely that the number and quality of areas containing the critical habitat of the Lake Chubsucker are decreasing, as the result of the draining of wetlands and increases in siltation associated with agricultural practises in southwestern Ontario.

Federal and provincial legislation exists that protects the habitat of *Erimyzon sucetta*. The Federal Fisheries Act prohibits the destruction of (commercial) fish habitat by any means. The National Parks Act protects habitat in Point Pelee National Park, and the Ontario Provincal Parks Act protects habitat in Long Point, Pinery and Rondeau provincial parks. The flora, fauna and its habitat in the latter two parks are protected by the Ontario Wilderness Areas Act. The Ontario Lakes and Streams Improvement Act prohibits the impoundment or diversion of watercourses which leads to siltation. The voluntary Land Stewardship II program of the Ontario Ministry of Agriculture and Food is

designed to reduce the erosion of agricultural lands. This program has the potential to slow the degradation of critical habitat by reducing siltation.

General Biology

In North America, the annual spawning season of *Erimyzon sucetta* varies between March and July (Cooper 1983). Examination of the gonads of several preserved specimens from Ontario indicated that *Erimyzon sucetta* likely spawns between late April and June in Ontario. At spawning time, the Lake Chubsucker moves to marshes to spawn (Loftus and Kushlan 1987). Depending on the size of the female, between 3,000 and 20,000 eggs (Bennett and Childers 1966) are broadcast over submerged vegetation and hatch at water temperatures between 22°C and 29°C (Cooper 1983).

The Lake Chubsucker is omnivorous and its diet consists of plankton, small crustaceans and molluscs, aquatic insects, and filamentous algae and other plant matter which sometimes comprise over 70% of its diet (Cooper 1983, Robison and Buchanan 1988).

Erimyzon sucetta is tolerant of low O_2 levels (Odum and Coldwell 1955, Cooper 1983) and intolerant of siltation, turbidity and high stream gradients (Trautman 1981).

Limiting Factors

Siltation, increased turbidity and loss of critical habitat are factors attributed to the decline of the Lake Chubsucker throughout its distribution (Lee *et. al* 1980, Trautman 1981, Burr and Warren 1986). Draining of wetlands and siltation appear to be the leading causes of significant loss of critical habitat in Canada.

Special Significance of the Species

Erimyzon sucetta is declining throughout most of its North American range and is the only representative of its genus presently known in Canada. It can be concluded that the behavioural, ecological and genetic diversity represented by the genus *Erimyzon* is in jeopardy in Canada.

In Canada, the drainage or siltation of critical habitat appear to be the most significant threats to *Erimyzon sucetta*. Population declines will occur in areas where the Lake Chubsucker is still present unless further drainage or siltation of critical habitat is prevented. If further degradation of critical habitat is prevented, extant populations should become stable.

Evaluation

Populations of *Erimyzon sucetta* at Point Pelee and Rondeau Harbour on Lake Erie appear to be stable. Trends in the remaining populations cannot be assessed due to lack of adequate resampling. In Ontario, it has only been collected in low numbers at few locations, it prefers a habitat highly susceptible to human perturbation, and the populations represent the northeastern range limit of the species. Therefore, until adequate sampling of these populations is undertaken to determine their stability, it is recommended that the Lake Chubsucker be classified as **Vulnerable** in Canada.

The choice of status is effected by differences in population trends in protected habitats (e.g. Point Pelee and Rondeau parks) and unprotected habitats (e.g. riverine habitats). It is obvious that the populations in the protected habitats are, by definition, Vulnerable. The unprotected habitats, for which there is poor information, account for a significant portion of the Canadian range of the Lake Chubsucker. As the result of human actions, populations in unprotected

habitats may be threatened with imminent extirpation which suggests a status of Endangered. Additional information may lead to a reevaluation of the status assigned.

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Figure Captions

Figure 1. The Lake Chubsucker, *Erimyzon sucetta*. Reprinted with permission from Scott and Crossman 1973.

Figure 2. Canadian distribution of *Erimyzon sucetta*. Inset map: North American distribution of the Lake Chubsucker (modified from Lee *et al.* 1980). Note: this species has not been recorded in Canada since 1983.

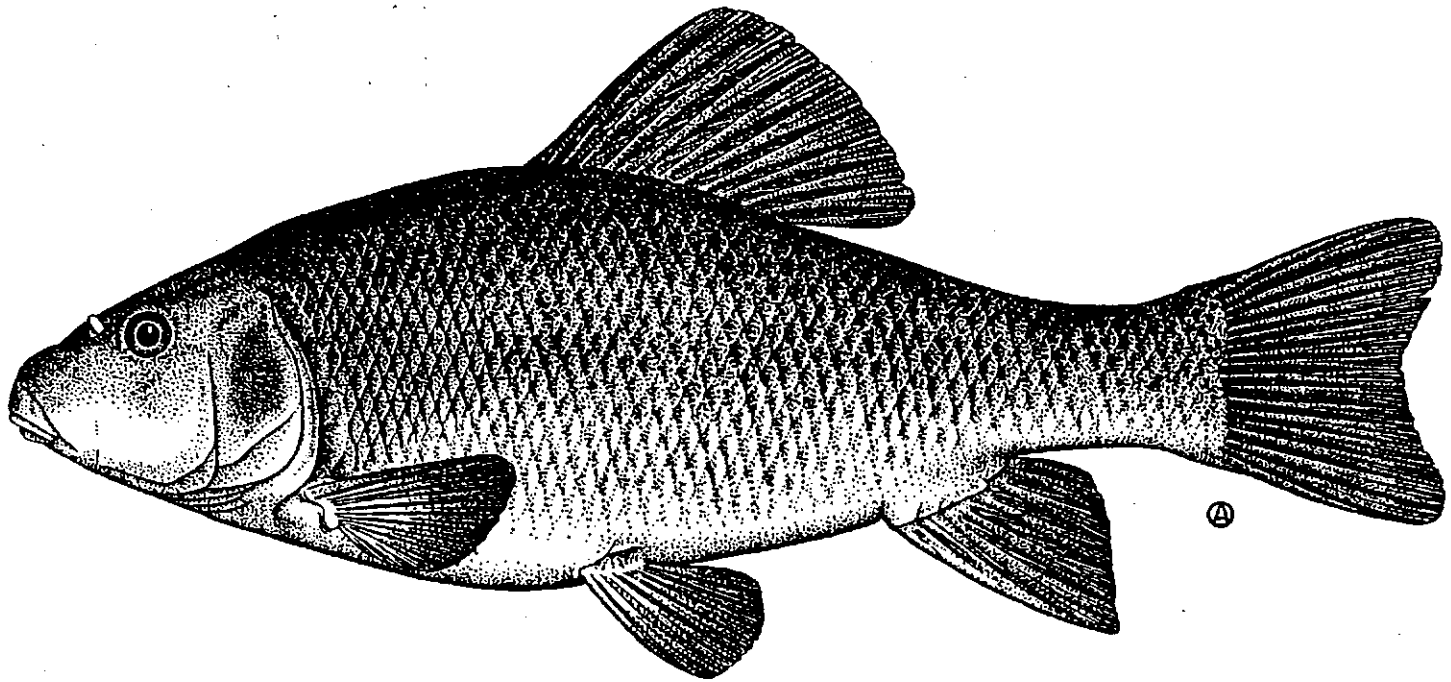

Fig. 1

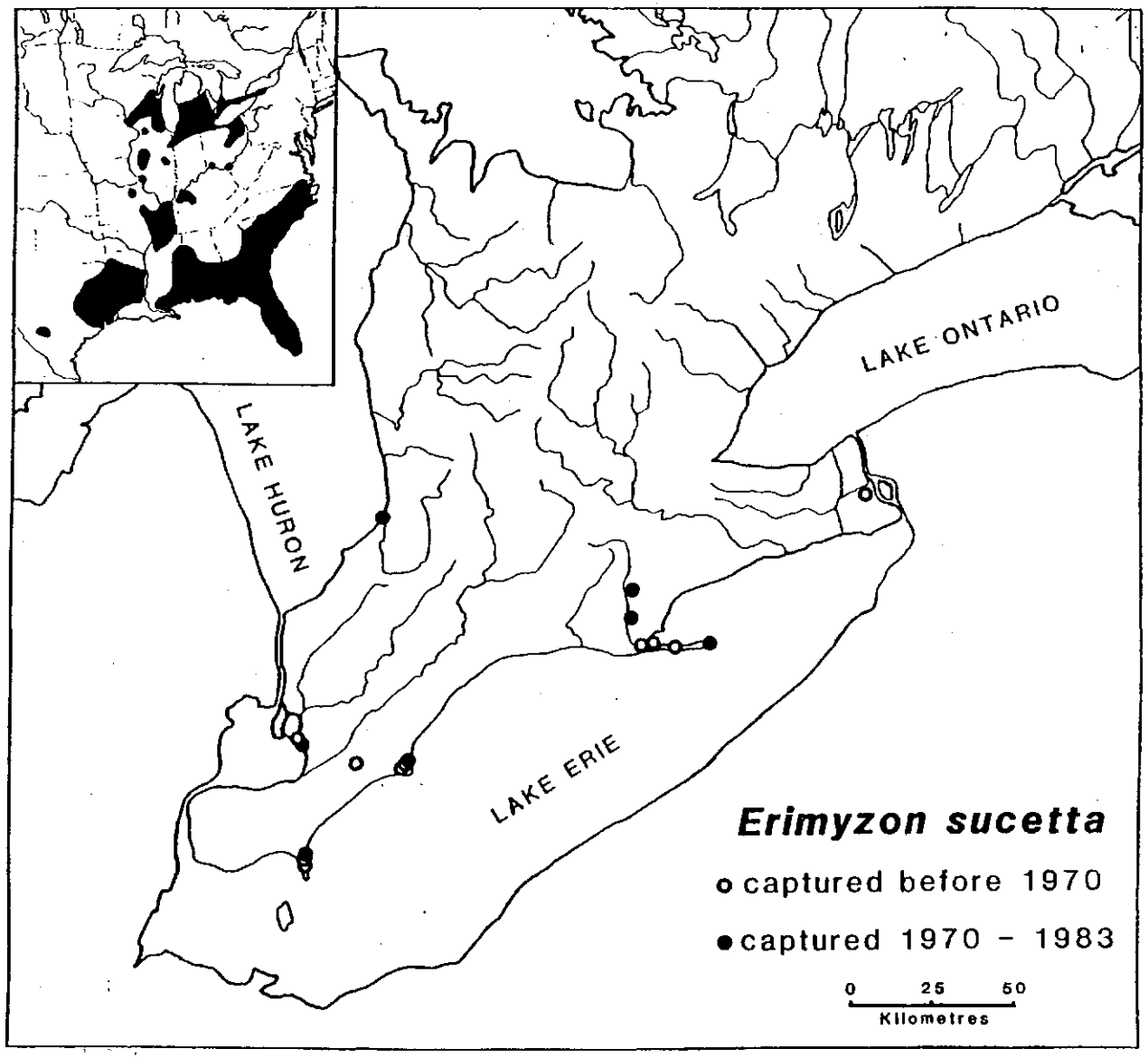
LAKE ONTARIO
LAKE HURON
LAKE ERIE
Erimyzon sucetta
o captured before 1970
● captured 1970 - 1983
0 25 50
Kilometres

Fig. 2