

# HISTORIC AND CURRENT DISTRIBUTION AND STATUS OF THE EASTERN MASSASAUGA (*Sistrurus catenatus catenatus*) IN ONTARIO, CANADA

Wayne F. Weller and Michael J. Oldham

## ABSTRACT

The range of the eastern massasauga (*Sistrurus catenatus catenatus*) extends into Canada only in Ontario. In Ontario, its range has been defined as "around the Great Lakes" from the north shore of Georgian Bay southward through central and southwestern Ontario to the eastern end of Lake Erie. Based on information from 1134 records dating from pre-1900, the historic range has been significantly reduced over the last few decades. Currently, massasaugas occur in four separate areas in Ontario: northeastern and eastern Georgian Bay, the Bruce Peninsula, the Windsor area in the extreme southwestern part of the province, and the Wainfleet Marsh area in the Niagara Peninsula. Habitat loss, specifically the alteration or elimination of wetlands is probably the major reason for range reduction. As of May 1990, the eastern massasauga is protected under the Ontario Ministry of Natural Resources' Game and Fish Act, which prohibits hunting, harassment and killing. It was declared a THREATENED species in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in April 1991. Sites within a small portion of the four areas are protected by federal legislation (within Canada's National Parks) and provincial legislation (within Ontario's Provincial Parks).

## INTRODUCTION

In Canada the eastern massasauga, *Sistrurus c. catenatus*, occurs only in Ontario. Early distribution maps showed that the massasauga ranged in Ontario from northern Georgian Bay southward around the shoreline of the Great Lakes in the western end of Lake Ontario (Conant, 1958; Logier, 1958). Subsequent maps have shown much the same range (Conant, 1975; Minton, 1983; Cook, 1984; Conant and Collins, 1991); however, two changes suggest that the range in Ontario is decreasing. One change is the absence from the east central part of southwestern Ontario subsequent to Conant (1958), the other is the absence from Manitoulin Island subsequent to Conant (1975). Indeed, to the general public who may only have reference to the three editions of the Peterson Field Guide series on reptiles and amphibians, the range of the massasauga in Ontario appears to have been reduced.

## EVALUATION OF THE HISTORIC AND CURRENT DISTRIBUTION IN ONTARIO

Based on early accounts of massasaugas in Ontario, the decrease in range may not be a recent event. Garnier (1881) stated that the massasauga was previously not rare along Lake Erie, but that they were exceedingly rare by the 1880's. Nash (1905) commented that massasaugas once occurred in the meadows of western Lake Erie, but as of the early 1900's were almost extinct. Logier (1939) wrote that massasaugas were not plentiful in Ontario even then.

In an attempt to better define the historic and current distribution of the eastern massasaugas in Ontario, 1134 records were assembled from a variety of sources. These sources included museum specimens (116 records), published papers, unpublished reports, field journals of several naturalists, interviews with outdoor enthusiasts in 1985 and 1986, newspaper accounts of snake bites, Ontario Ministry of Health snakebite records, field research studies and records from the Ontario Herpetofaunal Summary (Weller and Oldham, 1988), a province-wide amphibian and reptile atlas project initiated in 1984 and coordinated by the Ontario Field Herpetologists. The 1134 records were divided into three time periods, pre-1958, 1958 to 1983, and 1984 to present. Most of the massasauga records obtained are sight and literature records, with no verifying specimen or photograph. However, before being mapped and considered for this paper, all records were scrutinized, and the authors feel that the vast majority of records used are accurate. Records prior to 1958 are those that would have been available for preparation of the early maps (Conant, 1958; Logier, 1958). Those of the 1958 to 1983 period are more recent, but precede the province-wide atlas project. Records made since 1983 take into account the period of the herpetological atlas survey.

An evaluation of the records indicates that the early maps were somewhat misleading in suggesting that the massasauga was continuously and widely distributed in the interior part of southwestern Ontario. Records prior to 1958 (Figure 1) show that massasaugas were never known as far inland as Lake Erie and east of Lake Huron as shown in Logier (1958) and particularly Conant (1958). Based on records made over the next 25 years (Figure 2), massasaugas appeared to be widely distributed throughout eastern Georgian Bay and Bruce Peninsula, and spottily distributed around coastal areas of Manitoulin Island, inland areas south of Georgian Bay, and along the north shore of Lake Erie. Since 1983, massasaugas have been reported largely from four major areas: northeastern and eastern Georgian Bay, the Bruce Peninsula, extreme southwestern Ontario around the City of Windsor and the eastern Niagara Peninsula in the Wainfleet Marsh (Figure 3). Convincing, but as yet unconfirmed reports, have, however been reported from a few sites outside these areas. It appears that as of the 1990's, the massasauga's range in Ontario has been fragmented into four widely separated geographical areas.

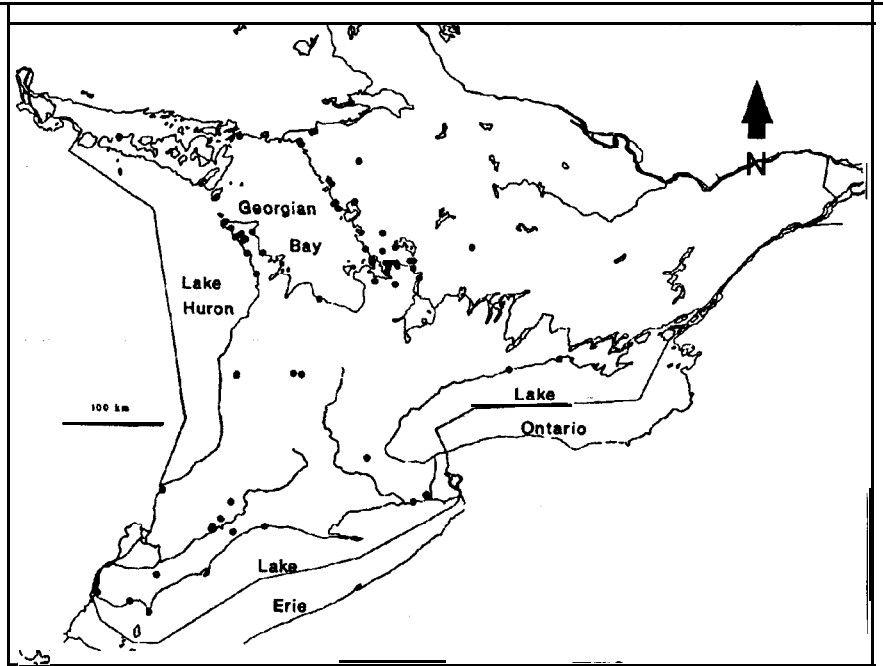


Figure 1. Eastern massasauga-pre-1958 records.

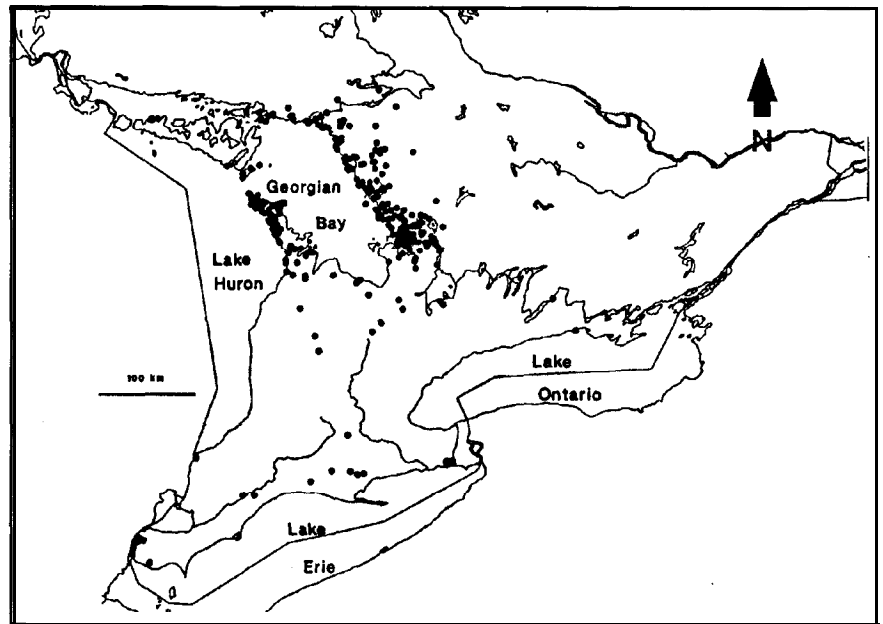


Figure 2. Eastern massasauga -1958-1983 records.

The loss of wetlands in southwestern Ontario may be responsible for the historic and current distribution pattern of the massasaugas in Ontario. Around 1800, 20 to 30 percent of southwestern Ontario was wetland (Snell, 1987; see this paper Figure 4). The highest concentration of wetlands occurred mostly in the counties bordering the Great Lakes where up to 60 percent of the areas were wetlands. In 200 years, wetlands in southwestern Ontario have been greatly reduced. Few records of massasaugas occur in areas which, as of 1982, contained less than five percent wetlands (Figure 5).

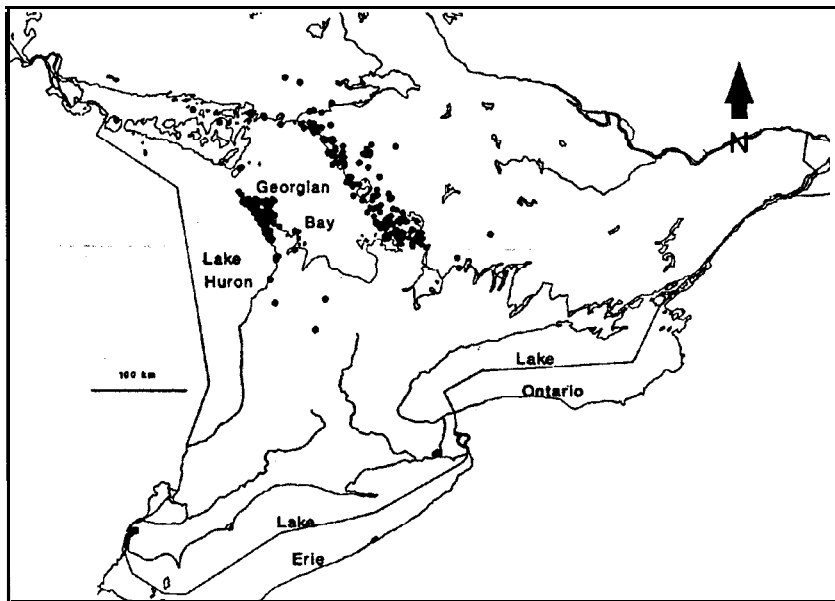


Figure 3. *Eastern massasauga*—1984-present records.

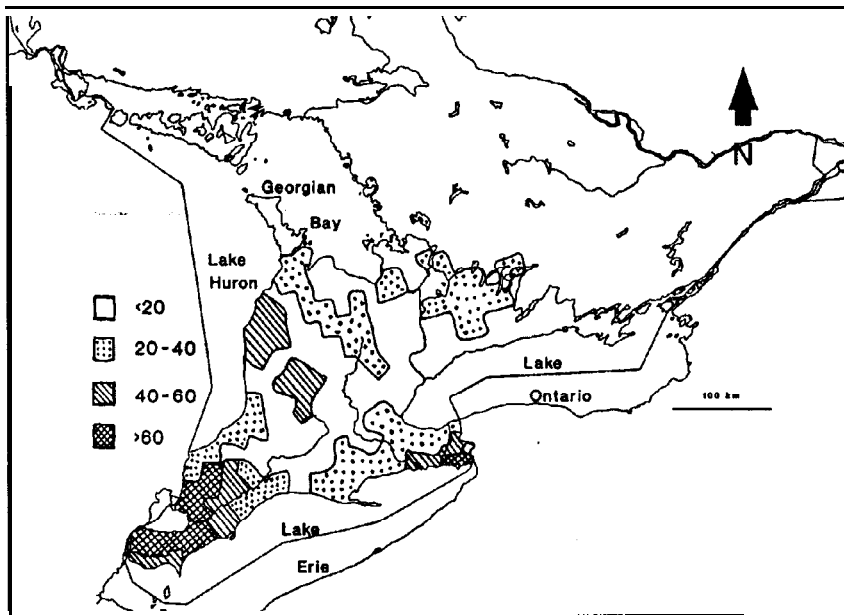


Figure 4. Percent wetland ca. 1800.

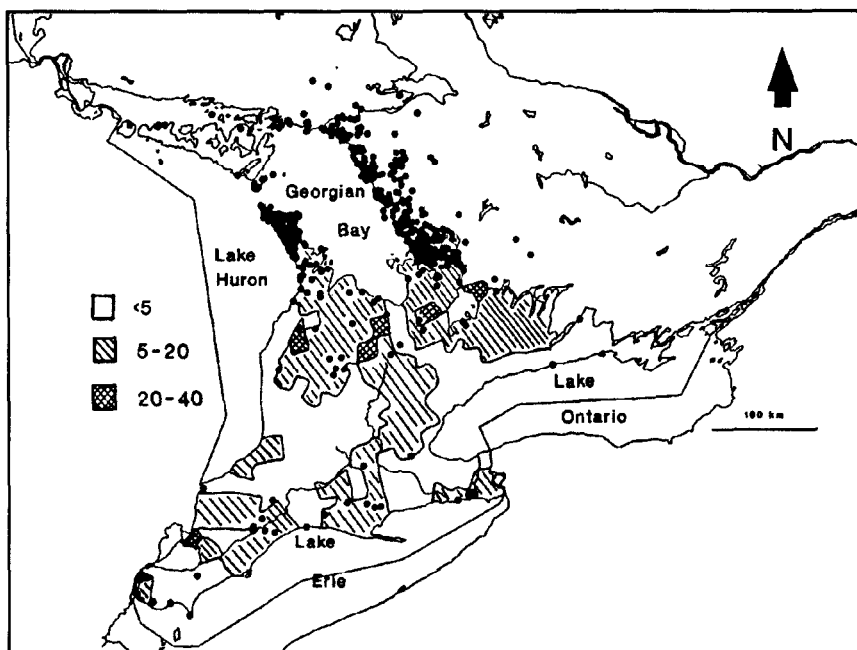


Figure 5. Eastern massasauga—all records. Percent wetland by 1982.

#### STATUS AND PROTECTION IN ONTARIO

In May 1990, the eastern massasauga was added to the list of species protected in Ontario under Ontario's Game and Fish Act (Ontario Regulation 263/90). This Act, administered by the provincial government through the Ministry of Natural Resources, offers protection from hunting, harassment or killing. However, massasauga habitats are not protected under this Act. The eastern massasauga was declared a THREATENED species in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in April 1991 based on the status report by Weller and Parsons (1991).

Some areas of massasauga habitat are protected through programmes and policies administered by the federal, provincial and city governments, and private organizations. Habitats protected in the northeastern and eastern Georgian Bay area are within provincial parks such as Killarney, Grundy Lake, Killbear and Six Mile Lake, within provincial nature preserves such as Blackstone Harbour and Gibson River, and on several islands comprising Georgian Bay Islands National Park. A large section of the northeastern part of the Bruce Peninsula offers protection for massasauga habitats through the Bruce Peninsula National Park and the Federation of Ontario Naturalists' Dorcas Bay Nature Reserve. In extreme southwestern Ontario, the City of Windsor protects habitat through its park system, specifically the Ojibway Prairie complex, and the provincial government through the Ojibway Prairie Provincial Nature Reserve. In the Wainfleet Marsh area in the Niagara Peninsula, the provincial government protects massasauga habitat as a result of land acquisition along the northern border of a now defunct peat harvesting operation.

In February 1992, an Eastern Massasauga Recovery Team was assembled and given the task of preparing a recovery plan. The recovery plan will include a summary of the massasauga's distribution and general biology in Ontario, and an outline of recommendations designed to ensure the continued existence of massasauga populations in Ontario.

#### MASSASAUGA RECORDS NOW COMPILED

The Ontario Field Herpetologists is in the process of compiling a computer data base of all Ontario records of amphibians and reptiles. A separate program has been established to compile records of massasauga for monitoring purposes. Access to this information for scientific or educational purposes can be arranged through the authors.

Basic collecting/observation information and often habitat characteristics are recorded in an IBM-compatible data base software format, designed for use with geographic information system (GIS) software.

Persons observing massasaugas in Ontario are encouraged to submit information to Ontario Field Herpetologists through either WFW or MJO.

#### LITERATURE CITED

- Conant, R. 1958. A Field Guide to Reptiles and Amphibians of the United States and Canada east of the 100th Meridian. Houghton Mifflin Co., Boston. 366pp.
- Conant, R. 1975. A Field Guide to Reptiles and Amphibians of eastern and central North America. Second Edition. Houghton Mifflin Co., Boston. 429pp.
- Conant, R. and J. T. Collins. 1991. A Field Guide to Reptiles and Amphibians of eastern and central North America. Third Edition. Houghton Mifflin Co., Boston. 450pp.
- Cook, F. R. 1984. Introduction to Canadian Amphibians and Reptiles. National Museum of Natural Sciences, National Museums of Canada, Ottawa, Ontario. 200pp.
- Garnier, J. H. 1881. List of Reptiles of Ontario. Canadian Sportsman and Naturalist (Montreal) 1(5):37-39.
- Logier, E. B. S. 1939. The Reptiles of Ontario. Royal Ontario Museum of Zoology, Handbook No. 4. University of Toronto Press, Toronto, Ontario. 63pp.
- Logier, E. B. S. 1958. The Snakes of Ontario. University of Toronto Press, Toronto, Ontario. 94pp.
- Minton, S. A. 1983. *Sistrurus catenatus*. In: Catalogue of American Amphibians and Reptiles. pp. 332.1-332.2.
- Nash, C. W. 1905. Batrachians and Reptiles of Ontario. In: Check List of the vertebrates and catalogue of specimens in the biological section of the Provincial Museum, Department of Education, Toronto. 32pp.
- Snell, E. A. 1987. Wetland distribution and conversion in southern Ontario. Working paper No. 48. Inland Waters and Lands Directorate, Environment Canada. Canada Land Use Monitoring Program. 53pp.
- Weller, W. F. and M. J. Oldham, eds. 1988. Ontario Herpetofaunal Summary 1986. Ontario Field Herpetologists, Cambridge, Ontario. 221 pp.
- Weller, W. F. and H. J. Parsons. 1991. Status of the eastern massasauga, *Sistrurus c. catenatus* in Canada. Unpubl. manuscript. Submitted to Subcommittee on Amphibians and Reptiles, Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Ottawa, Ontario. 50pp.