



## Lake Erie Watersnake



Photo: © Gary Allen

### Scientific name

*Nerodia sipedon insularum*

### Taxon

Reptiles

### COSEWIC Status

Special Concern

### Canadian range

Ontario

### Reason for Designation

The Canadian distribution of this unique population of watersnakes is confined to four small islands in Lake Erie. In the United States, subpopulations have recovered because of an increased fish prey base, provided by introduced Round Goby. It is uncertain whether a similar recovery has occurred in Canadian subpopulations. There is concern that the largest subpopulation on Pelee Island continues to be threatened by road mortality, shoreline development, and persecution by humans.

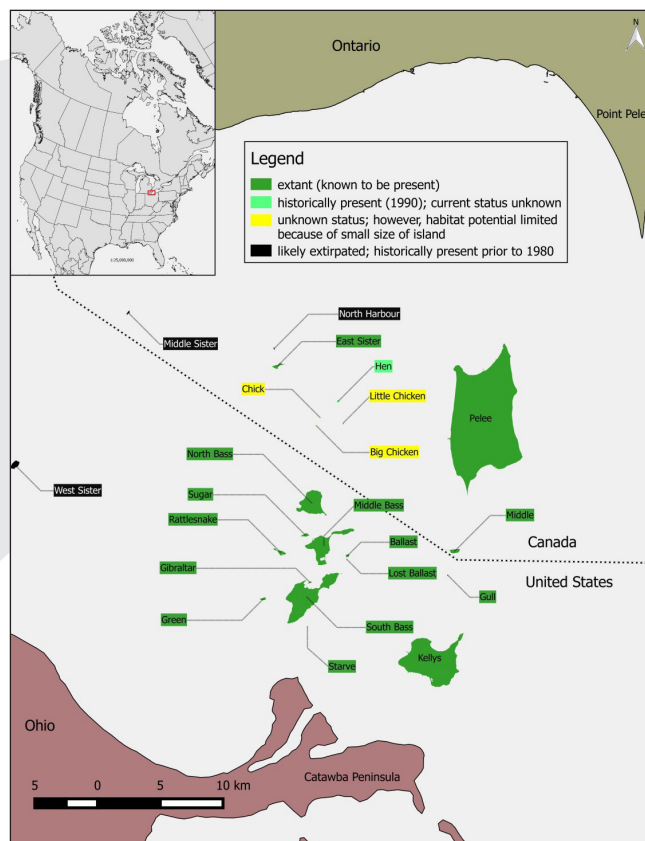
### Wildlife Species Description and Significance

Lake Erie Watersnake, *Nerodia sipedon insularum*, is one of two subspecies of the Common Watersnake, *Nerodia sipedon* (family Colubridae), found in Canada. Lake Erie Watersnakes range in appearance from being regularly patterned with dark dorsal and lateral blotches to a uniform grey (often a drab greenish or brownish) without pattern. The colour of the ventral scales is generally white

or yellowish white, often with dark speckling. Lake Erie Watersnakes are heavy-bodied. The head is large and covered with broad, smooth scales and the body scales are “keeled”. Long-term studies on Lake Erie Watersnakes have served as models for understanding evolutionary processes such as gene flow and selection, as well as provided researchers with an example of a rare species benefiting from the introduction of an invasive species.

### Distribution

Lake Erie Watersnake has one of the smallest distributions of any snake in North America. In its Canadian range, Lake Erie Watersnake is known to occur only on four small islands in the western basin of Lake Erie (Pelee, Middle, East Sister, and Hen Islands). In the United States, Lake Erie Watersnake occurs in a small shoreline area of the Ohio mainland and on 11 Ohio islands in the western end of Lake Erie.



Distribution of Lake Erie Watersnake (*Nerodia sipedon insularum*) in the western Lake Erie island region (Canada and USA), and the global range (inset).

## Habitat

During the active season, Lake Erie Watersnake occupies rocky or sandy shorelines, and limestone or dolomite shelves and ledges with cracks and varying levels of vegetation. Natural and human-made rock berms are also used. The snakes feed in the water but rarely go more than 200 m from shore while foraging. Watersnakes are rarely found more than 100 m inland during the active season, instead most of the time they are within 13 m of the water's edge. Distance travelled inland during the active season is dependent on the availability of shelter habitat and possibly conspecifics during the mating season. Hibernation habitat is farther inland and the sites used are usually cavities and crevices, and are typically composed of soil and rock substrates.

## Biology

Lake Erie Watersnake can live up to 12 years in the wild. This species reaches sexual maturity at 3–4 years of age. Courtship involves scramble competition in which several males court one female simultaneously. Annual reproduction by females is common. Females give birth to live young and litter size averages 23 and is positively related to the female's size. Lake Erie Watersnake's historical diet has been largely replaced with Round Goby (*Apollonia melanostomus*), an invasive species that arrived in Lake Erie in the early 1990s.

## Population Sizes and Trends

Lake Erie Watersnakes were reported in great numbers on several islands of western Lake Erie from the early 1800s and up to the early 1960s. Populations decreased in the latter half of the 20th century but are now increasing on U.S. islands, apparently associated with increased prey base from the introduction of Round Goby, which is an invasive fish. There is no information on trends on the Canadian islands, but the persistence of several threats suggests that populations may still be in decline.

## Threats and Limiting Factors

Intentional and accidental human-induced mortality, particularly mortality on roads is likely the most significant threat to the species. Another important threat is the reduction of habitat quantity and quality. Additional threats include environmental contamination and elevated levels of predation. The small geographic range and small population size of Lake Erie Watersnake are limiting factors and increase the vulnerability of the snakes to perturbations.

## Protection, Status and Ranks

Globally, NatureServe lists the Lake Erie Watersnake taxon as imperilled (global rank is G5T2). NatureServe lists Lake Erie Watersnake as imperilled (S2) in Ontario. In Canada, Lake Erie Watersnake was assessed as Endangered by COSEWIC in 1991 and 2006 and was added to Schedule 1 of the federal *Species at Risk Act* as Endangered in 2009. Ontario's *Endangered Species Act, 2007* (ESA; Government of Ontario 2007) came into force in 2008 and protection is provided for Lake Erie Watersnake (designated Endangered on the Species at Risk in Ontario List). Under Ontario's *Fish and Wildlife Conservation Act*, the taxon is considered a specially protected reptile. On Middle Island, the species is protected under the *Canada National Parks Act*. Lake Erie Watersnake was removed from the U.S. list of federally endangered and threatened species on August 16, 2011. Lake Erie Watersnake has a status of Endangered assigned by the state of Ohio.

Source: COSEWIC. 2015. COSEWIC assessment and status report on the Lake Erie Watersnake *Nerodia sipedon insularum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 37 pp.

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