Dated: July 19, 2011.

J.R. Castillo,

Rear Admiral, U.S. Coast Guard, Commander, Eleventh Coast Guard District.

[FR Doc. 2011–20761 Filed 8–15–11; 8:45 am]

BILLING CODE 9110–04–P

DEPARTMENT OF HOMELAND SECURITY

Coast Guard

33 CFR Part 165

[USCG–2011–0264]

RIN 1625–AA00

Safety Zone; Annual Events Requiring Safety Zones in Milwaukee Harbor, Milwaukee, WI

AGENCY: Coast Guard, DHS.

ACTION: Notice of enforcement of regulation.

SUMMARY: The Coast Guard will enforce this safety zone for annual fireworks events in the Captain of the Port, Sector Lake Michigan zone at various times from 9:15 p.m. on September 9, 2011 through 10:30 p.m. on September 10, 2011. This action is necessary and intended to ensure safety of life on the navigable waters immediately prior to, during, and immediately after fireworks events. This rule will establish restrictions upon, and control movement of, vessels in a specified area immediately prior to, during, and immediately after fireworks events. During the enforcement period, no person or vessel may enter the safety zones without permission of the Captain of the Port, Sector Lake Michigan.

DATES: The regulations in 33 CFR 165.935 will be enforceable at various times between 9:15 p.m. on September 9, 2011 and 10:30 p.m. on September 10, 2011.

FOR FURTHER INFORMATION CONTACT: If you have questions on this notice, call or email BM1 Adam Kraft, Prevention Department, Coast Guard Sector Lake Michigan, Milwaukee, WI at 414–747–7154, e-mail *Adam.D.Kraft@uscg.mil.*

SUPPLEMENTARY INFORMATION: The Coast Guard will enforce the safety zone listed in 33 CFR 165.935, Safety Zones, Milwaukee Harbor, Milwaukee, WI, for the following events:

(1) *Indian Summer fireworks display* on September 9, 2011 from 9:15 p.m. through 10 p.m.; on September 10, 2011 from 9:45 p.m. through 10:30 p.m.

All vessels must obtain permission from the Captain of the Port, Sector Lake Michigan, or his or her on-scene representative to enter, move within or exit the safety zone. Vessels and persons granted permission to enter the safety zone shall obey all lawful orders or directions of the Captain of the Port, Sector Lake Michigan, or a designated representative. While within a safety zone, all vessels shall operate at the minimum speed necessary to maintain a safe course.

This notice is issued under authority of 33 CFR 165.935 Safety Zone, Milwaukee Harbor, Milwaukee, WI and 5 U.S.C. 552(a). In addition to this notice in the **Federal Register**, the Coast Guard will provide the maritime community with advance notification of these enforcement periods via broadcast Notice to Mariners or Local Notice to Mariners. The Captain of the Port, Sector Lake Michigan, will issue a Broadcast Notice to Mariners notifying the public when enforcement of the safety zone established by this section is suspended. If the Captain of the Port, Sector Lake Michigan, determines that the safety zone need not be enforced for the full duration stated in this notice, he or she may use a Broadcast Notice to Mariners to grant general permission to enter the safety zone. The Captain of the Port, Sector Lake Michigan, or his or her on-scene representative may be contacted via VHF–FM Channel 16.

Dated: July 29, 2011.

M.W. Sibley,

Captain, U.S. Coast Guard, Captain of the Port, Sector Lake Michigan.

[FR Doc. 2011–20768 Filed 8–15–11; 8:45 am]

BILLING CODE 9110–04–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R3–ES–2010–0039; 92220–1113–000; ABC Code: C6]

RIN 1018–AW62

Endangered and Threatened Wildlife and Plants; Removal of the Lake Erie Watersnake (Nerodia sipedon insularum) From the Federal List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule; notice of availability of final post-delisting monitoring plan.

SUMMARY: Under the authority of the Endangered Species Act of 1973, as amended (Act), we, the U.S. Fish and Wildlife Service (Service), are removing the Lake Erie watersnake (*Nerodia sipedon insularum*) from the Federal List of Endangered and Threatened Wildlife due to recovery. This action is based on a review of the best available scientific and commercial data, which indicate that the subspecies is no longer endangered or threatened with extinction, or likely to become so within the foreseeable future.

DATES: This rule becomes effective September 15, 2011.

ADDRESSES: This final rule is available on the Internet at: *http://www.regulations.gov* and *http://www.fws.gov/endangered.* Supporting documentation used in preparing this final rule will be available for public inspection, by appointment, during normal business hours, at the U.S. Fish and Wildlife Service, Ohio Ecological Services Field Office, 4625 Morse Road, Suite 104, Columbus, Ohio 43230.

FOR FURTHER INFORMATION CONTACT: Mary Knapp, Field Office Supervisor, or Megan Seymour, Wildlife Biologist, U.S. Fish and Wildlife Service, Ohio Ecological Services Field Office, 4625 Morse Road, Suite 104, Columbus, Ohio 43230 (telephone 614–416–8993). Individuals who are hearing-impaired or speech-impaired may call the Federal Relay Service at (800) 877–8337 for TTY assistance.

SUPPLEMENTARY INFORMATION:

Background

The Lake Erie watersnake is a subspecies of the Northern watersnake (*N. sipedon sipedon*) that occurs primarily on the offshore islands of western Lake Erie in Ohio and Ontario, Canada, but also on a small portion of the United States (U.S.) mainland on the Catawba and Marblehead peninsulas of Ottawa County, Ohio (Conant and Clay 1937, p. 2; King 1986, p. 760). Lake Erie watersnakes are uniformly gray or brown, and have either no banding pattern, or have blotches or banding that are either faded or reduced (Conant and Clay 1937, pp. 2–5; Camin and Ehrlich 1958, p. 504; King 1987, pp. 243–244). Female Lake Erie watersnakes grow up to 1.1 meters (m) (3.5 feet (ft)), long, and are larger than males (King 1986, p. 762). Newborn Lake Erie watersnakes are the size of a pencil, and are born during late summer or early fall (King 1986, p. 764).

Lake Erie watersnakes are distinct from Northern watersnakes in their reduced or absent banding patterns (Conant and Clay 1937, pp. 2–5; Camin and Ehrlich 1958, p. 504; King 1987, pp. 243–244), use of substrates dominated by limestone or dolomite (Conant and Clay 1937, p. 6; King 1986, p.760), diet composition (Hamilton 1951, pp. 64–65), larger body size (King 1989, pp. 85–86), lower growth rates (King 1986,

p. 770), and shorter tails (King 1986, p. 768).

Lake Erie watersnake summer habitat is composed of rocky shorelines with limestone or dolomite shelves, ledges, or boulders for sunning and shelter. Shelter occurs in the form of loose rocks, piled rocks, or shelves and ledges with cracks, crevices, and nearby vegetation. Rip-rap erosion control, armor stone, and docks incorporating a stone crib structure often serve as summer habitat for the snake. Lake Erie watersnakes typically forage for fish and amphibians in Lake Erie, and research indicates that more than 90 percent of their current diet is composed of the nonnative, invasive fish round goby (*Neogobius melanostomus*) (King *et al.* 2006b, p. 110). Jones *et al.* (2009, p. 441) report that the mean foraging distance from shore is 85 m (279 ft) and the average water depth of the foraging locations is 3.32 m (10.9 ft). Data from 56 radio-tracked adult Lake Erie watersnakes indicate that during the summer, 75 percent of this population ranged within 13 m (42.7 ft) of the water's edge (King 2003, p.4). King (2003, p. 4) identified that 75 percent of the 56 radio-tracked Lake Erie watersnakes used 437 m (1433 ft) of shoreline or less as a home range. In the winter, Lake Erie watersnakes hibernate below the frost level, in cracks or crevices in the bedrock, interstitial spaces of rocky substrates, tree roots, building foundations, and other similar natural and human-made structures. Seventy-five percent of 49 radio-tracked Lake Erie watersnakes hibernated within 69 m (226 ft) of the water's edge (King 2003, p. 4). Individual snakes often demonstrated site fidelity, returning to the same shoreline area and the same or nearby hibernacula in successive years (King 2003, pp. 4, 11–17).

Additional information on the Lake Erie watersnake's life history and biology can be found in the final listing rule (64 FR 47126; August 30, 1999) and the Lake Erie Watersnake (*Nerodia sipedon insularum*) Recovery Plan (Service 2003a, pp. 6–11).

Previous Federal Actions

On June 1, 2010, we published a proposed rule to remove the Lake Erie watersnake from the Federal List of Endangered and Threatened Wildlife (75 FR 30319). We solicited data and comments from the public on the proposed rule. The comment period opened on June 1, 2010 and closed on August 2, 2010. We discuss the comments received later in this document. For more information on previous Federal actions concerning the Lake Erie watersnake, please refer to the proposed rule published in the **Federal Register** on June 1, 2010 (75 FR 30319).

Recovery

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. The Act directs that, to the maximum extent practicable, we incorporate into each plan:

(1) Site-specific management actions that may be necessary to achieve the plan's goals for conservation and survival of the species;

(2) Objective, measurable criteria, which when met would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the list; and

(3) Estimates of the time required and cost to carry out the plan.

However, revisions to the list (adding, removing, or reclassifying a species) must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is endangered or threatened (or not) because of one or more of five threat factors. Therefore, recovery criteria must indicate when a species is no longer endangered or threatened by any of the five factors. In other words, objective, measurable criteria, or recovery criteria contained in recovery plans, must indicate when we would anticipate an analysis of the five threat factors under section 4(a)(1) would result in a determination that a species is no longer endangered or threatened. Section 4(b) of the Act requires that the determination be made ''solely on the basis of the best scientific and commercial data available.''

Thus, while recovery plans are intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved, they are not regulatory documents and cannot substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. Determinations to remove a species from the list made under section 4(a)(1) of the Act must be based on the best scientific and commercial data available at the time of the determination, regardless of whether that information differs from the recovery plan.

In the course of implementing conservation actions for a species, new information is often gained that requires recovery efforts to be modified accordingly. There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more recovery criteria may have been exceeded while other criteria may not have been accomplished, yet the Service may judge that, overall, the threats have been minimized sufficiently, and the species is robust enough, that the Service may reclassify the species from endangered to threatened or perhaps delist the species. In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan.

Likewise, information on the species may be learned that was not known at the time the recovery plan was finalized. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Overall, recovery of species is a dynamic process requiring adaptive management, planning, implementing, and evaluating the degree of recovery of a species that may, or may not, fully follow the guidance provided in a recovery plan.

Thus, while the recovery plan provides important guidance on the direction and strategy for recovery, and indicates when a rulemaking process may be initiated, the determination to remove a species from the Federal List of Endangered and Threatened Wildlife is ultimately based on an analysis of whether a species is no longer endangered or threatened. The following discussion provides a brief review of recovery planning for the Lake Erie watersnake as well as an analysis of the recovery criteria and goals as they relate to evaluating the status of the species.

The Service completed the final Lake Erie Watersnake Recovery Plan in 2003 (Service 2003a). We used the Recovery Plan to provide guidance to the Service, the State of Ohio, and other partners on methods to minimize and reduce the threats to the Lake Erie watersnake, to guide and prioritize research on the watersnake, and to provide measurable criteria that would help determine when the threats to the snake had been reduced so that it was no longer endangered or threatened and could be removed from the Federal List of Endangered and Threatened Wildlife (List). The Lake Erie Watersnake Recovery Plan (Service 2003a, pp. 28–30) outlines three recovery criteria, each with two parts, to assist in determining when the snake has recovered to the

point that the protections afforded by the Act are no longer needed. All three of the criteria in the Lake Erie Watersnake Recovery Plan have been fully met and, in most cases, substantially exceeded. Each criterion and its attainment are described fully below.

Criterion 1: Population Persistence

The first criterion is intended to indicate when threats related to small population size and limited distribution of the species have been ameliorated, and the species is no longer ''vulnerable to extinction or extirpation from catastrophic events, demographic variation, negative genetic effects, and environmental stresses such as habitat destruction and extermination'' (64 FR 47126; August 30, 1999). Attainment of the criterion would indicate when the population size constitutes a viable, persistent population and threats have been ameliorated sufficiently. The criterion also includes a distribution component that would indicate the presence of multiple subpopulations distributed throughout the range of the subspecies to provide assurance that genetic diversity is being maintained, and provide multiple source populations should one subpopulation be eliminated due to a catastrophic event. The rationale for the targets set in this criterion is further explained in the Lake Erie Watersnake Recovery Plan (Service 2003a, pp. 27–29, 31–33).

Criterion 1(a): Estimated population size reaches or exceeds 5,555 adult Lake Erie watersnakes on the U.S. islands combined (Kelleys, South Bass, Middle Bass, North Bass, Rattlesnake, West Sister, Sugar, Green, Ballast, and Gibraltar) for a period of 6 or more consecutive years.

Researchers at Northern Illinois University (NIU) have led intensive annual Lake Erie watersnake censuses since 2001 and have collected data to generate annual adult population estimates as recommended in the Lake Erie Watersnake Recovery Plan (Service 2003a, pp. 39–40). The methodology for conducting censuses and calculating the adult population estimates based on the census data is detailed in King *et al.* (2006a, pp. 88–92). Generally, population estimates are generated using multiple years of mark-recapture data, and applying closed- and open-population methods to analyze the data (King *et al.* 2006a, pp. 88–92). The preferred and most accurate method for calculating population size, the Jolly-Seber method (Jolly 1965, Seber 1965), requires at least three census periods and does not provide an estimate for the first or last period. Thus, the most recent year for which Jolly-Seber population estimates were generated is 2009. To provide population estimates for 2010, the Lincoln-Petersen method (as modified by Bailey in Caughley 1977, p. 142) or Schumacher's method (Caughley 1977, p. 145) or a relationship between population density and capture rate was used, depending on the number of within-year census events and captures at a given sampling location (King and Stanford 2011, p. 3). As data are collected each year, previous years' estimates are refined and current year estimates are generated using the above methods.

King and Stanford (2011, p. 17) report the results of these annual adult Lake Erie watersnake population estimates from the time period encompassing 2001 through 2010. These population estimates indicate that Criterion 1(a) has been fully achieved, and in recent years substantially exceeded, during the period 2002–2010 (see table 1 below). Based on the most recent population estimates in King and Stanford (2011, p. 17), this criterion's population goal of at least 5,555 adults was first achieved in 2002 when there were an estimated 6,180 adult watersnakes on the U.S. islands combined, and has remained well above that level for the last 9 years. While the adult population estimate for 2010 seems low compared to other recent years, this is simply a factor associated with the method used to calculate the adult population size for the most recent year's data. As noted above, the Jolly-Seber method cannot be used to generate current-year population estimates, so a different though less exact method is used, depending on the number of within-year census events and capture numbers. It is expected that with another year of census data, the refined population estimates for each island and for the total population for 2010 will be considerably larger and more accurate.

Even more enlightening than the adult population estimates is the calculation of realized population growth of adult Lake Erie watersnakes since intensive monitoring began in 2001. King and Stanford (2009, p. 6) used the program MARK (White 2004, Cooch and White 2008) to model realized population growth using annual census data from 2001 through 2008 at eight intensive study sites with the most complete capture histories. This model documented realized population growth of approximately 6 percent per year for the years 2001–2008, with 95 percent confidence limits of 2–10 percent, providing strong evidence of a minimum of 2 percent population growth per year across multiple sites (King and Stanford 2009, pp. 6–7). This indeed demonstrates that the adult Lake Erie watersnake population has grown measurably since the time of listing, and validates the population estimates that also show increasing trends. As discussed below under Factor E, new analyses incorporating improved sex ratio and adult survival data indicate that a recovery population goal should be 6,100 snakes (King and Stanford 2009, p. 8). However, such estimates are best viewed as approximations given the available information at the time (King and Stanford 2009, p.8). Irrespective of which population goal is used, 5,555 adult snakes or 6,100 adult snakes, both population goals have been met and exceeded for nine consecutive years (2002–2010) (King and Stanford 2011, p. 17). We conclude that Criterion 1a has been fully achieved and indicates that threats related to small population size have been ameliorated.

TABLE 1—TOTAL ESTIMATED U.S. ADULT LAKE ERIE WATERSNAKE POPULATION SIZE, 2001–2010 (KING AND STANFORD 2011, P. 17). ESTIMATES THAT EXCEED ISLAND-SPECIFIC AND OVERALL POPULATION SIZE GOALS SPECIFIED IN THE LAKE ERIE WATERSNAKE RECOVERY PLAN (SERVICE 2003a) ARE SHOWN IN **Bold**

Year	Four largest U.S. Islands with Lake Erie Watersnake populations				Small islands with Lake Erie Watersnake populations *	Combined U.S. islands
	Kelleys	South bass	Middle bass	North bass		
Recovery Goal	900	850	620	410	Not applicable	5555
2001	**1860**	**1560**	**770**	160	780	5130
2002	**2150**	**1400**	**1300**	**550**	780	**6180**
2003	**2190**	**1490**	**1920**	270	780	**6650**
2004	**2750**	**1590**	**1460**	**460**	1270	**7530**

TABLE 1—TOTAL ESTIMATED U.S. ADULT LAKE ERIE WATERSNAKE POPULATION SIZE, 2001–2010 (KING AND STANFORD 2011, P. 17). ESTIMATES THAT EXCEED ISLAND-SPECIFIC AND OVERALL POPULATION SIZE GOALS SPECIFIED IN THE LAKE ERIE WATERSNAKE RECOVERY PLAN (SERVICE 2003a) ARE SHOWN IN **Bold**—Continued

Year	Four largest U.S. Islands with Lake Erie Watersnake populations				Small islands with Lake Erie Watersnake populations *	Combined U.S. islands
	Kelleys	South bass	Middle bass	North bass		
2005	**2450**	**1590**	**1920**	**790**	920	**7670**
2006	**2800**	**2670**	**3710**	**1380**	1430	**11990**
2007	**3930**	**2110**	**2480**	**970**	890	**10380**
2008	**3430**	**2540**	**3090**	**760**	2060	**11880**
2009	**2850**	**2630**	**4370**	**1170**	960	**11980**
2010	**3700**	**2070**	**2030**	**730**	1270	**9800**

* See Criterion 1(b).

Criterion 1(b): Subpopulations on each of the five small U.S. islands capable of supporting Lake Erie watersnakes year-round (Rattlesnake, Sugar, Green, Ballast, and Gibraltar) persist during the same 6-or-more-year-period as Criterion 1a, and estimated population size reaches or exceeds the population size stated below for each of the four largest islands simultaneously during the same 6-or-more-year-period as Criterion 1(a): Kelleys Island—minimum of 900 adults; South Bass Island—minimum of 850 adults; Middle Bass Island—minimum of 620 adults; and North Bass Island—minimum of 410 adults.

Populations of Lake Erie watersnakes have been confirmed on the following small U.S. islands throughout the period 2002–2010: Rattlesnake, Sugar, Green, Ballast, and Gibraltar (King and Stanford 2010b, pp. 6–7). Populations of Lake Erie watersnakes have persisted on the small islands during the same 9-year period as Criterion 1(a), exceeding the minimum 6 years specified in the recovery plan.

As identified in table 1 above, estimated population sizes for each of the four largest U.S. islands have exceeded their population size criteria for the 9 consecutive years between 2002 and 2010. This is the same consecutive 9-year period as Criterion 1(a), with only one exception—North Bass Island in 2003 (King 2008, pp. 5, 16). King (2008, p. 5) describes the circumstances of the sampling on North Bass Island that year: ''North Bass Island was surveyed just once in 2003 and weather conditions were poor (partly cloudy and cool) during this survey. As a result, capture rates, especially at the NE,E,SE Shore site, were low.'' King (2008, p. 5) states that the Lake Erie watersnake adult population estimate for North Bass Island in 2003 is likely inaccurate because the population estimates for the years prior to and after the 2003 census substantially exceeded the population estimate for 2003, and because watersnakes require 3 to 4 years to reach adulthood. King (2008, p. 5) concludes that, ''It is unlikely that these year-to-year differences in estimated population size (from 610 to 270 to 440) reflect true variation in population numbers. Instead, the low estimate for 2003 appears to reflect inadequate sampling in that year.''

Based on the information above, it is reasonable to assume that North Bass Island has met the population size criterion for 9 consecutive years, as have the other three largest U.S. islands. Even if we exclude the North Bass Island population estimate for 2003, all four islands have met population size goals for 6 or more consecutive years. We, therefore, conclude that Criterion 1(b) has been fully achieved.

Criterion 2: Habitat Protection and Management

Criterion 2 is intended to ensure that sufficient habitat exists to protect approximately one-fifth of the Lake Erie watersnake delisting population goal of 5,555 adult snakes. The goal for protecting a total of 7.4 km (4.6 mi) of shoreline habitat and 0.51 km² (126 ac) of inland habitat within 69 m (226 ft) of shore accounts for approximately 10 percent of the total shoreline of the four largest islands and 13 percent of the total inland habitat within 69 m (226 ft) of shore of the four largest U.S. islands. As described in Factor A, *The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range* below and the recovery plan (Service 2003a, pp. 9, 15), Lake Erie watersnakes are fairly resilient to habitat modifications and can persist along and within developed areas. However, it is important to also have habitat areas that are permanently protected and managed for the snake to provide a series of permanent refugia distributed across the islands that can support a substantial portion of the Lake Erie watersnake population. These protected and managed areas provide habitat for snakes that are temporarily displaced from other areas as well as provide core areas of habitat with reduced sources of mortality to support core populations necessary to maintain a viable population. We estimated in our recovery plan (Service 2003a, p. 34) that the protection of enough habitat to permanently support one-fifth (20 percent) of the recovery population goal is sufficient to maintain a viable population on the U.S. islands. The criterion also includes a distribution component that stratifies a portion of protected habitat across the four largest islands to ensure protected habitat is available for multiple subpopulations distributed throughout the range of the subspecies. As described in Criterion 1(a) above, multiple populations provide assurance that genetic diversity is being maintained, and provide multiple source populations should one subpopulation be eliminated due to a catastrophic event. The rationale for the targets set in this criterion is further explained in the Lake Erie Watersnake Recovery Plan (Service 2003a, pp. 29–30, 34–35).

Criterion 2(a): Sufficient summer and hibernation habitat protected in perpetuity and sustained in a manner suitable for the continued persistence of the Lake Erie watersnake. Individual parcels will collectively encompass a total of 7.4 kilometers (km) (4.6 miles (mi)) of shoreline, and 0.51 km² (126 acres (ac)) of inland habitat lying within 69 m (226 ft) of the shoreline on U.S. islands in Lake Erie. To be included under this criterion, each parcel will have a written agreement, which may be represented by a conservation easement (such as is currently offered by the Ohio Department of Natural Resources (ODNR) and Lake Erie Islands Chapter of the Black Swamp Conservancy (LEIC–BSC)) or other habitat management plan that has been

approved by the Service (such as the ''Lake Erie Watersnake Habitat Management Planning'' document for Middle Bass Island State Park). Individual parcels may be publicly or privately owned.

Criterion 2(b): Protected shoreline habitat and inland habitat within 69 m (226 ft) of the shoreline, as described in Criterion 2a, will be distributed among the four major islands as follows, with the remaining protected habitat occurring on any of the U.S. islands:

(i) Kelleys Island—minimum 1.2 km (0.75 mi) shoreline, 0.083 km² (20.5 ac) inland;

(ii) South Bass Island—minimum 1.1 km (0.70 mi) shoreline, 0.078 km² (19.3 ac) inland;

(iii) Middle Bass Island—minimum 0.82 km (0.51 mi) shoreline, 0.057 km² (14.1 ac) inland; and

(iv) North Bass Island—minimum 0.54 km (0.34 mi) shoreline, 0.037 km² (9.1 ac) inland.

By working collaboratively with partners, primarily ODNR, LEIC–BSC, Western Reserve Land Conservancy (WRLC), Put-in-Bay Township Park District (PIBTPD), and Cleveland Museum of Natural History (CMNH), we have ensured the permanent protection of 18.25 km (11.41 mi) of shoreline habitat and 1.287 km² (318.18 ac) of inland habitat within 69 m (226 ft) of shore (table 2). The total protected habitat indicated in table 2 is more than double the goal established in Criterion 2 of the Recovery Plan, and is sufficient to support approximately half (50 percent) of the recovery population goal. Further, as evidenced in table 2, the goals for each of the four major islands have either been met or exceeded.

TABLE 2—LAKE ERIE WATERSNAKE PROTECTED HABITAT BY ISLAND-SPECIFIC AND OVERALL HABITAT PROTECTION AND MANAGEMENT GOALS SPECIFIED IN THE LAKE ERIE WATERSNAKE RECOVERY PLAN

[Service 2003a, pp. 29–30]

Island	Property	Length of shoreline		Land within 69 m of shore		Partner
		(km)	(mi)	(km²)	(ac)	
Kelleys	Kelleys Island State Park; North Pond State Nature Preserve; Kelleys Island Alvar.	1.74	1.09	0.149	36.9	ODNR.
	Long Point Preserve	0.57	0.36	0.087	21.4	CMNH
	Schollenberger Easement	0.03	0.02	0.001	0.14	LEIC–BSC.
Subtotal		2.34	1.47	0.237	58.44	
Kelleys Goal		1.2	0.75	0.083	20.5	
South Bass	South Bass Island State Park; Oak Point State Park.	0.8	0.5	0.052	12.9	ODNR.
	Scheef East Point Nature Preserve	0.52	0.32	0.026	6.4	PIBTPD, LEIC–BSC.
Subtotal		1.32	0.82	0.078	19.3	
South Bass Goal		1.1	0.7	0.078	19.3	
Middle Bass	Middle Bass Island State Park; Kuehnle Wildlife Area.	2.74	1.71	0.197	48.7	ODNR.
	Petersen Woods	0.03	0.02	0.006	1.55	LEIC–BSC.
	Lawrence Evans	0	0	0.003	0.75	LEIC–BSC.
	Middle Bass East Point Preserve	0.22	0.14	0.017	4.3	PIBTPD, LEIC–BSC.
Subtotal		2.99	1.87	0.223	55.3	
Middle Bass Goal		0.82	0.51	0.057	14.1	
North Bass	North Bass Island State Park; Fox's Marsh Wildlife Area.	9.9	6.19	0.683	168.8	ODNR.
Subtotal		9.9	6.19	0.683	168.8	
North Bass Goal		0.54	0.34	0.037	9.1	
Green	Green Island Wildlife Area	1.7	1.06	0.066	16.34	ODNR.
Total All Islands		18.25	11.41	1.287	318.18	
Total Goal		7.4	4.6	0.51	126	

The Service's partners in establishing Lake Erie watersnake protected habitat are generally conservation organizations and we expect our partners to manage and protect Lake Erie watersnake habitat consistent with their conservation missions. However, the Service has additionally ensured that some form of permanent protection is in place for each protected habitat. Each property that counts towards Criterion 2 is protected by one of the following methods, all of which have been reviewed and endorsed by the Service: A permanent conservation easement which specifically incorporates Lake Erie watersnake habitat management and preservation; a Letter of Agreement between the landowner and the Service indicating that the habitat will be maintained in a natural habitat suitable for the Lake Erie watersnake in perpetuity; a perpetual management plan to protect Lake Erie watersnake habitat; or an environmental covenant and permanent deed restriction that supports conservation of the Lake Erie

watersnake and its habitat in perpetuity. For example, ODNR's properties compose 90 percent of the total protected inland habitat. In 2005, ODNR submitted to the Service the ''Lake Erie Water Snake Habitat Management Planning; Lake Erie Island Properties Owned or Managed by the Ohio Department of Natural Resources'' (ODNR 2005, p. 1) document to qualify these properties as recovery habitat for the snake.

This document identified specific management actions that will be undertaken on each island property to avoid injury and harm to the Lake Erie watersnake during typical land management activities such as mowing, tree removal, maintenance and repair of structures, and vegetation control (ODNR 2005, pp. 3–6). Some of these management actions include: Avoiding excavation during the Lake Erie watersnake hibernation season; removing only the above-ground portion of a tree while maintaining the root mass for hibernation habitat; and establishing ''no mow buffer zones'' within 21 m (70 ft) of the water's edge between the shoreline and more manicured lawn areas to provide summer habitat for the Lake Erie watersnake (ODNR 2005, pp. 3–5). Further, the document specifies proactive measures ODNR will implement to enhance watersnake habitat, conduct outreach activities regarding the watersnake, and promote research on the watersnake (ONDR 2005, p. 6). Finally, the document specifies that ODNR will initiate early consultation with the Service to determine how to avoid and minimize impacts to the Lake Erie watersnake prior to submitting an application to a Federal agency for conducting activities in snake habitat (ODNR 2005, p. 2). Once a species is delisted, Federal agencies would not be required to consult with the Service on their action of issuing permits, but the ODNR plans to continue this early consultation, as well as implementing all portions of the Lake Erie watersnake habitat management plan, after delisting (ODNR 2010, pers. comm.).

Another example of protected habitat is property protected by a conservation easement held by the Lake Erie Islands Chapter of the Black Swamp Conservancy. These easements include as their purpose statement, ''The purpose of this Conservation Easement is to permanently maintain the Protected Property as Lake Erie Water Snake habitat as a scenic area of the Lake Erie Island Region and to prevent or remedy any subsequent activity or use that significantly impairs or interferes with this purpose'' (Black Swamp Conservancy 2003, p. 2). The easement includes a number of prohibited uses designed to maintain the natural habitat of the property for the Lake Erie watersnake (Black Swamp Conservancy 2003, pp. 2–3). Finally, the easement includes management guidelines for allowable activities that avoid disturbance of Lake Erie watersnakes and their habitat (Black Swamp Conservancy 2003, pp. 13–14).

Both ODNR's Habitat Management Plan and Black Swamp Conservancy's Conservation Easement program provide examples of mechanisms for protecting Lake Erie watersnake habitat, while allowing for reasonable actions such as vegetation maintenance. All areas that qualify as protected habitat for the Lake Erie watersnake have similar management plans or similar documents, and all of these properties are overseen in some way by ODNR or another conservation-based organization. Based on this information, Criteria 2(a) and 2(b) have been fully achieved.

Criterion 3: Reduction of Human-Induced Mortality

Criterion 3(a) is intended to ensure that the Lake Erie watersnake will no longer be threatened by intentional human persecution, the main factor that led to the listing of the snake. This criterion will measure whether outreach efforts have been successful in reducing human persecution. Criterion 3(b) is intended to ensure that accidental human-induced mortality, such as occurs from roadkill, has been reduced to the maximum extent practicable, and no longer represents a significant threat to the population.

Criterion 3(a): Objective analysis of public attitude on the islands indicates that intentional human persecution is no longer a significant threat to the continued existence of the snake.

As indicated in the final listing rule for the Lake Erie watersnake (64 FR 47131; August 30, 1999), ''persecution by humans is the most significant and well documented factor in the decline of Lake Erie water snakes.'' Lake Erie watersnake adults are large, readily encountered along the shoreline and in nearshore waters, and cluster in groups during portions of the year. Though not venomous, Lake Erie watersnakes will bite and secrete musk if handled, and sometimes will not flee when approached by humans. These Lake Erie watersnake characteristics, coupled with a general fear of snakes among a broad sector of the human population, may have contributed to an increased desire to eliminate them within the island environment, compared to other areas and other species of snake. Therefore the recovery strategy for the watersnake focused heavily on public outreach and education, in an attempt to change the negative perception and behavior of some island residents and visitors towards the watersnake. Public outreach focused on several basic messages: Lake Erie watersnakes are not venomous; Lake Erie watersnakes are a natural part of the island environment; and Lake Erie watersnakes should not be harmed or killed. Several public opinion surveys were recently conducted to gauge island landowner perception of the Lake Erie watersnake, and past, current, and future behavior towards the snake. Information on public opinion was derived primarily from formal surveys conducted by Wilkinson, Northern Illinois University (NIU) (Wilkinson 2008) and Olive (2008).

The Lake Erie Watersnakes Public Opinion Survey (Wilkinson 2008) of 754 randomly selected island residents within the range of the Lake Erie watersnake resulted in 348 responses from residents of 5 U.S. islands, 1 response from 1 Canadian island resident, and 1 response from 1 non-island resident (Wilkinson 2008, p. 7). Nineteen questions were asked to gauge the general knowledge, perceptions, and threat of human persecution among island residents. Respondents were also given the opportunity to provide written comments. Several of the survey questions were identical to survey questions asked of island residents in a 1999 public opinion survey (Service 1999), and answers were compared to determine changes over time.

Responses from the 2008 survey indicate that 99 percent of respondents are aware that the Lake Erie watersnake occurs on the island, and that 94 percent of respondents are aware that it is a protected animal (Wilkinson 2008, pp. 1, 5). Eighty-three percent of respondents indicate that their knowledge of the Lake Erie watersnake has increased since the species was listed in 1999 (Wilkinson 2008, p. 5). Respondents cite a large variety of methods by which they have become more familiar with the snake, including: The Service and ODNR's biannual newsletter ''LEWS News,'' the ''Island Snake Lady'' (an NIU researcher funded by ODNR and the Service), and various media sources (Wilkinson 2008, pp. 2–4). Generally, these data indicate that Federal, State, and nongovernmental organizations' outreach and education campaigns are reaching the vast majority of island residents, and are

helping to increase their access to information about the watersnake.

Additionally, Wilkinson (2008, p. 1) reports that 66 percent of respondents indicated that their attitude toward the watersnake is generally positive or neutral, while 34 percent indicate that their attitude is generally negative. While it is apparent that not all residents feel positively toward the snake, it is very notable that, despite human persecution being the most significant factor in the decline of the Lake Erie watersnake, only about 4 percent of respondents indicated they had knowingly killed a watersnake since the time of listing, and only about 14 percent of respondents said they would knowingly kill a watersnake if it was no longer protected by State or Federal laws (Wilkinson 2008, p. 6). We interpret these responses to indicate that, while the watersnake will still face some human persecution, the vast majority of islanders would not resort to lethal means if they encountered watersnakes on their property.

Similarly, in 2007, Olive (2008, p. 83) randomly selected and interviewed 44 individual property owners from Middle Bass Island regarding the Endangered Species Act and the Lake Erie watersnake. Of those interviewed, 7 percent admitted to killing a snake and 18 percent admitted they might kill a snake while it is listed (Olive 2008, pp. 112–113, 153).

Despite the admitted intentional human persecution documented by both Wilkinson (2008, p. 6) and Olive (2008, pp. 112–113, 153), adult Lake Erie watersnake populations have increased substantially since the time of listing, both across the U.S. range and on each large island (King and Stanford 2010a, p. 11; King and Stanford 2009, pp. 6–7). This positive population growth indicates that the adult Lake Erie watersnake population can tolerate some loss of individuals due to intentional mortality and still persist at a recovery level.

Wilkinson's 2008 public opinion survey found that 31 percent of respondents' attitudes toward Lake Erie watersnakes have become more negative since listing, 30 percent have become more positive, and 39 percent have not changed (Wilkinson 2008, p. 1). While this survey did not attribute reasons to the change in attitude, 69 out of 168 (41 percent) of the optional comments on Wilkinson's (2008, pp. 8–13) survey response form indicated the belief that there are now too many snakes, that the snakes are becoming nuisances due to their numbers and their habits of clustering along the shoreline, or that the snakes should no longer be protected.

Public opinion of the Lake Erie watersnake varies widely among those who support it, those who have no opinion, and those who dislike or fear the snake. Outreach efforts have reached nearly all island residents, increasing access to information about the Lake Erie watersnake, including nonlethal ways to address nuisance snakes. Opinion surveys indicate that most people do not now and will not in the future kill Lake Erie watersnakes; however, many people indicate that the sheer number of snakes along the shoreline has become a nuisance, and this may contribute to negative feelings towards the snake. As Lake Erie watersnake numbers have rebounded, and a significant amount of habitat has now been permanently protected to support Lake Erie watersnakes, the Lake Erie watersnake population can withstand a limited amount of intentional mortality. While the threat of intentional mortality likely can never be completely eliminated, results of public opinion surveys along with population estimates indicate that the number of mortalities anticipated from intentional human persecution on its own and with other residual threats are not limiting population persistence or growth.

Continued outreach regarding the Lake Erie watersnake's role in the island ecosystem is important, and this effort will continue through various partners post-delisting. Planned ongoing outreach activities are addressed in the Summary of Factors Affecting the Species—Factor E, *Other Natural or Manmade Factors Affecting Its Continued Existence*, below. Public opinion will be monitored post-delisting to ensure this remnant threat is not affecting the Lake Erie watersnake population as a whole. Therefore, we conclude Criterion 3(a) has been fully achieved.

Criterion 3(b): Accidental human-induced mortality, such as occurs from roadkill and fishing, has been reduced to the maximum extent practicable, and no longer represents a significant threat to the population.

Several sources of accidental human-induced mortality have been examined to determine to what degree they may be contributing to overall mortality of Lake Erie watersnakes, and if they are a significant threat to the population.

A survey of registered boaters in the Lake Erie island region was conducted to determine how many members of the Lake Erie Island boating and fishing community had direct encounters with snakes, and to characterize the responses from these encounters (Stanford 2004). Of 1,437 surveys mailed out, 468 were completed and returned (Stanford 2004, p. 1). An additional 21 surveys were completed voluntarily by individuals who picked them up at various outreach events that occurred in the vicinity of the islands, for a total of 489 survey responses (Stanford 2004, p. 1). Of the respondents, 118 reported having encountered a watersnake on their boat, and not a single encounter resulted in a boater or angler killing a snake (Stanford 2004, p. 2). These data suggest that encounters between boaters and watersnakes typically do not result in mortality. Only 13 of the 489 respondents (less than 3 percent) indicated that they have ever caught a snake by hook and line while fishing with both live and artificial baits, and from both boat and shore, though no information was provided regarding snake mortality during these incidents (Stanford 2004, p. 2). It is clear that bycatch of Lake Erie watersnakes due to hook and line fishing incidents is very rare, and does not pose a significant threat to the population.

Despite the rarity of mortality during fishing and boating, approximately 25 percent of boaters and anglers near the Lake Erie islands may encounter a Lake Erie watersnake (Stanford 2004, p. 2). ODNR Division of Wildlife developed pamphlets entitled, ''Lake Erie Watersnake—Make your Boating Experience More Pleasant'' to aid anglers and boaters in deterring Lake Erie watersnakes from entering their boats, and to recommend nonlethal methods to remove snakes from boats (ODNR 2003). These pamphlets are available online (*http://respectthesnake.com*) and at a number of State parks, boat launches, and marinas in the island region.

To address the effect roadkill mortality may have on the Lake Erie watersnake population, King (2007, pp. 5–6) conducted a survey of roadkill mortality on the four large U.S. islands between June 26 and July 15, 2005. This survey found a total of 71 roadkill snakes, including 45 roadkill Lake Erie watersnakes (King 2007, p. 5). King (2007, p. 6) states, ''Among watersnakes, 38 were neonates, 5 were juveniles, and 2 were adults. These results suggest that adult Lake Erie watersnake roadkill mortality is relatively low (Brown and Weatherhead 1999). Available data on watersnake mortality suggest that survivorship of neonates is low. Thus, roadkill mortality of this age-class likely has little impact on watersnake population trends.'' Therefore, we conclude that the number of mortalities

anticipated from accidental human-induced mortality due to roadkill events alone or coupled with other residual threats is not likely to limit population growth or persistence.

As described further under Summary of Factors Affecting the Species—Factor A and Factor E below, intensive public outreach has occurred to increase awareness of island residents and visitors of the presence of the Lake Erie watersnake on the Lake Erie islands and in nearby waters, and to reduce both accidental and intentional mortality of Lake Erie watersnakes. To reduce accidental mortality from typical land management activities such as lawn mowing and tree clearing, and to guide residents in an appropriate way to address Lake Erie watersnakes that are found in garages, pools, lawns, patios, basements, and other similar areas, various outreach documents have been developed by both the Service and ODNR. The Service's ''Lake Erie Watersnake Management Guidelines for Construction, Development, and Land Management Activities'' (Service 2009, Service 2003b) provide guidance on how to avoid take during typical land-management activities, and ODNR's ''A Lakeshore Property Owner's Guide to Living with Lake Erie Watersnakes'' (ODNR 2006) provides guidance on dealing with nuisance snakes in human living areas in a non-lethal manner. These documents are available on the Internet (*http://respectthesnake.com*) and at various locations on the islands.

In summary, we have assessed the impact of accidental human-induced mortality on the adult Lake Erie watersnake population. We have used an intensive public outreach campaign to increase awareness of residents and visitors to the presence and protected status of the Lake Erie watersnake, and have provided guidance and tools for minimizing human–snake encounters and addressing snakes encountered in boats, homes, yards, and other human-inhabited areas in a nonlethal manner. We have determined that accidental human-induced mortality, such as that which occurs from boating, fishing, and roadkill events, does not pose a substantial threat to the adult Lake Erie watersnake population, and, therefore, does not warrant further action. We assert that Criterion 3(b) has been achieved.

Identification of Additional Threats

The Lake Erie Watersnake Recovery Plan also identified potential additional threats that should be investigated. The plan did not recommend any specific criteria in regard to these potential threats, but instead recommended research to determine the degree of threat, if any, posed by invasive species and contaminants.

The Lake Erie Watersnake Recovery Plan (Service 2003a, pp. 18, 38, 49, 57) recommended that additional studies be conducted to document the impact invasive species, including the round goby, may have on the watersnake. King *et al.* (2006b, p. 110) found that, since the appearance of round goby in the Great Lakes in the early 1990's, Lake Erie watersnake diets have shifted from a diet of native fishes and amphibians to a diet composed of more than 90 percent round goby. This dietary shift corresponds to increased watersnake growth rates, increased body size, and increase in fecundity, with female watersnakes producing on average 25 percent more offspring post-invasion (King *et al.* 2008, pp. 155, 158; King *et al.* 2006b, pp. 111–113). King *et al.* (2008, p. 159) suggest that, ''resource availability may have contributed to population declines in Lake Erie watersnakes during the mid- to late-1900s. * * * While habitat loss and human-caused mortality are likely contributors to past watersnake population declines, the possibility exists that a reduction in benthic [lake bottom] fish biomass, resulting in reduced watersnake fecundity, was also a factor. Unfortunately, quantitative data on long-term temporal trends in benthic fish biomass are lacking.''

Since the establishment of round goby in Lake Erie in the mid 1990s they have become ubiquitous and plentiful throughout the Lake. Johnson *et al.* (2005, p. 83) estimated that the western basin alone supported 9.9 billion round goby, and found that population assessments using nonvisual techniques (such as trawl surveys) tend to be conservative. ODNR annually samples for selected fish species within the western basin of Lake Erie using trawl surveys, and has included round goby in the sampling since 1995. Since 1998, mean catch-per-hectare of all age classes of round goby from trawl surveys in August and September range from 38.6 to 226.9 (ODNR 2010a, pp. 84–85), with sometimes substantial differences in catch-per-hectare rates between months in the same year. This sampling indicates an oscillating trend in goby abundance since their establishment in the western basin, and should be considered a conservative detection method based on Johnson *et al.*'s findings (2005, p. 83). ODNR Fisheries Researcher Carey Knight (2010, pers. comm.) indicates that round goby are likely to remain established and plentiful within the Lake Erie basin over time, but that localized botulism or hypoxia/anoxia events could result in localized, temporary depletions of goby, including within the range of the Lake Erie watersnake. Regardless of these localized events, it is likely that the round goby will persist within the western Lake Erie basin for the foreseeable future.

If it is correct that limited foraging opportunities were a cause of the watersnake's population declines, the abundance of the round goby within the island region of western Lake Erie will likely provide a significant prey source into the foreseeable future, negating any threats from limited prey availability.

The Lake Erie Watersnake Recovery Plan (Service 2003a, pp. 18–19, 38, 49, 57) also recommended that additional studies be conducted to document the impact contaminants may have on the watersnake. In particular, this research became a high priority when it became apparent that the watersnake's diet switched from native fish and amphibians to almost exclusively round goby (King *et al.* 2006b, p. 110). Round goby is a nonnative, invasive species that arrived from the Black and Caspian Seas in ballast water and became established within the Great Lakes in the early 1990's (Jude *et al.* 1992, pp. 418–419). Round goby is abundant in the western basin of Lake Erie, with an estimate of 9.9 billion round gobies in 2002 (Johnson *et al.* 2005, p. 83). Round goby prey extensively on zebra mussels (*Dreissena polymorpha*) and quagga mussels (*Dreissena bugensis*) (Ray and Corkum 1997, p. 270). Zebra and quagga mussels are nonnative, invasive species from the Black and Caspian Seas that have become established within the Great Lakes and are abundant in and around the western Lake Erie islands reaching densities up to 3.4×10^5 mussels per m^2 in the western basin of Lake Erie (Leach 1993, p. 381).

Zebra and quagga mussels are filter feeders and are known to bioaccumulate contaminants including PCBs (Kwon *et al.* 2006, pp. 1072, 1075). Biomagnification of PCBs has been documented in the zebra mussel—round goby—smallmouth bass food chain in Lake Erie (Kwon *et al.* 2006, p. 1075), so biomagnification of contaminants through the consumption of round goby by Lake Erie watersnakes was thought to be a possible threat to the watersnake. Polychlorinated biphenyls (PCBs) have been documented in Lake Erie watersnakes in fairly high levels (113 micrograms per gram (μg/g) (Bishop and Rouse 2006, pp. 454, 456) and 167 μg/g (Bishop and Rouse 2000, pp. 500–501)).

Recent research compared the levels of contaminants in Lake Erie

watersnakes pre- and post-goby invasion and found ''a marginal increase in hexachlorobenzene levels, and a significant decline in dieldrin, oxychlordane, and heptachlor epoxide,'' and found that, ''sum PCBs and p,p′-Dichlorodiphenyldichloroethylene (DDE) remained stable in the watersnakes after the invasion of round goby * * * suggesting that although the dietary switch to round gobies meant consumption of a more contaminated diet, their diet remained at the same trophic position [place in the food chain]'' (Fernie *et al.* 2008 p. 344). Fernie *et al.* (2008, pp. 344, 349–350) did recommend additional studies to determine if these contaminants affect reproductive and physiological parameters in Lake Erie watersnakes; however, because Bishop and Rouse (2006, pp. 452, 454, 456) tested for and did not find a correlation between high levels of PCBs and embryonic mortality or number of embryos produced by female watersnakes, no additional research on contaminants is deemed necessary at this time.

Research confirms that the dietary switch from native fish and amphibians to round goby has not resulted in significant increases in contaminant loads in Lake Erie watersnakes. Additionally, while relatively high levels of PCBs were detected in watersnakes, these levels did not correspond with reduced embryonic survivorship. Lake Erie watersnake population numbers continue to increase despite relatively stable exposure to contaminants over the past 18 years of study, and, therefore, we conclude that contaminants do not pose a significant threat to the Lake Erie watersnake at this time or in the foreseeable future.

Results of Recovery Plan Review

Available data indicate that all recovery criteria have been fully met. In addition, we investigated other potential threats and concluded they do not pose significant threats, and, therefore, no further action with respect to these potential threats is necessary. Based on our review of the Lake Erie Watersnake Recovery Plan, we conclude that review of the status of the Lake Erie watersnake under section 4(a)(1) would result in a determination that the species be removed from the List of Endangered and Threatened Wildlife. That analysis is presented below.

Summary of Public and Peer Review Comments and Recommendations

In our June 1, 2010, proposed rule, we requested that all interested parties submit information, data, and comments concerning multiple aspects of the status of the Lake Erie watersnake. The comment period was open from June 1, 2010, through August 2, 2010.

In accordance with our policy on peer review, published on July 1, 1994 (59 FR 34270), we solicited review from five expert scientists who are familiar with this species regarding pertinent scientific data and assumptions relating to supportive biological and ecological information for the proposed rule. Reviewers were asked to review the proposed rule, the supporting data, and the post-delisting monitoring plan, to point out any mistakes in our data or analysis, and to identify any relevant data that we might have overlooked. Three of the five peer reviewers submitted comments. All three were supportive of the proposal to remove the Lake Erie watersnake from the Federal List of Endangered and Threatened Wildlife. All peer reviewer comments are incorporated directly into this final rule or the final post-delisting monitoring plan.

During the 60-day comment period, we received comments from five individuals, organizations, and government agencies. We have read and considered all comments received. We updated the rule where it was appropriate. The only substantive issue raised was by ODNR Office of Coastal Management. ODNR Office of Coastal Management commented that Federal agency activities having reasonably foreseeable effects on any land or water use or natural resource of Ohio's designated coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the federally approved Ohio Coastal Management Program. If coastal effects are reasonably foreseeable, the Service should submit a Consistency Determination to the ODNR Office of Coastal Management; however, if there are no coastal effects, a Negative Determination can be submitted to ODNR. Removing the Lake Erie watersnake from the List of Endangered and Threatened Wildlife will not result in any foreseeable effects on land or water use or natural resources of Ohio's designated coastal zone. The Service submitted a Negative Determination to ODNR Office of Coastal Management on September 28, 2010. On November 12, 2010, ODNR Office of Coastal Management provided a concurrence letter indicating no further coordination on this issue is necessary (ODNR 2010b).

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from listed status. ''Species'' is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). Once the ''species'' is identified, we then evaluate whether that species may be endangered or threatened because of one or more of the five factors described in section 4(a)(1) of the Act. We must consider these same five factors in delisting a species. We may delist a species according to 50 CFR 424.11(d) if the best available scientific and commercial data indicate that the species is neither endangered nor threatened because (1) The species is extinct, (2) the species has recovered and is no longer endangered or threatened, or (3) the original scientific data used at the time the species was classified were in error.

A recovered species is one that no longer meets the Act's definition of threatened or endangered. The analysis for a delisting due to recovery must be based on the five factors outlined in section 4(a)(1) of the Act. This analysis must include an evaluation of threats that existed at the time of listing, those that currently exist, and those that could potentially affect the species once the protections of the Act are removed.

In the context of the Act, the term ''threatened species'' means any species or subspecies or, for vertebrates, Distinct Population Segment (DPS) that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The term ''endangered species'' means any species that is in danger of extinction throughout all or a significant portion of its range. The Act does not define the term ''foreseeable future.'' For the purpose of this rule, we define the ''foreseeable future'' to be the extent to which, given the amount and substance of available data, we can anticipate events or effects, or reliably extrapolate threat trends, such that we reasonably believe that reliable predictions can be made concerning the future as it relates to the status of the Lake Erie watersnake.

The following analysis examines all five factors currently affecting, or that are likely to affect, the Lake Erie watersnake within the foreseeable future.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The islands on which the Lake Erie watersnake occurs provide seasonal residences and vacation areas to a large number of people during the summer months. Further, the western Lake Erie basin is widely known for recreational and fishing opportunities, and is a regional destination area, particularly during the summer months. It is therefore not surprising that most of the islands have faced and continue to face development pressure (Seymour 2009, pers. comm.).

Prior to listing, three of the large islands (Kelleys, Middle Bass, and South Bass) were fairly well developed with residences and small-scale commercial businesses, with scattered natural areas throughout. North Bass Island supported a few residences, but was primarily agricultural, and dedicated to viticulture (vineyards). The small islands are mostly privately owned, and typically support a few residences interspersed with natural areas. Development activities on the islands since the Lake Erie watersnake was listed in 1999 include the following types of projects: Residential construction on three of the four large islands, hotel and motel structures on two of the large islands, dock construction and rehabilitation on most of the islands, shoreline stabilization on most of the islands, small and large marina construction and rehabilitation on several of the islands, utility line installation on three of the large islands, road rehabilitation projects on two of the large islands, wastewater treatment facilities on several of the islands, beach nourishment projects on several of the islands, small-scale commercial development on several of the large islands, and airport upgrades on several of the islands (Seymour 2009, pers. comm.).

Many of these activities occur on or near the shoreline, where Lake Erie watersnakes spend much of their time. In some cases, development activities can result in habitat loss or degradation, for example, when a building is constructed along a segment of shoreline that previously supported natural vegetation, or when a vertical wall is constructed along the shoreline to protect against erosion. However, some types of development actually provide suitable Lake Erie watersnake habitat. For example, Lake Erie watersnakes will readily use rip-rap or armor stone erosion control structures and crib docks that incorporate stone fill for summer habitat.

Destruction or Modification of Summer Habitat

As described in the *Background* section, Lake Erie watersnake summer habitat consists of the rocky and vegetated island shorelines and the adjacent nearshore waters of Lake Erie. Seventy-five percent of adult Lake Erie watersnakes are found within 13 m (42.7 ft) of the water's edge during the summer (King 2003, p. 4). Destruction or modification of summer habitat typically occurs due to residential or, less often, commercial development, installation or modification of roadways and associated utilities, shoreline erosion control projects, dock construction or modification, and dredging activities. These activities may result in loss or degradation of rocky shorelines, vegetation, and nearshore aquatic habitats, which the snakes use for basking, resting, cover, mating, and foraging.

Lake Erie watersnakes are affected by summer habitat destruction and modification in a variety of ways, depending on the method, design, and timing of the specific project. Lake Erie watersnakes are resilient to many modifications to summer habitat, such as installation of rip-rap erosion control structures and crib docks. Repeated observations over multiple years document that individual Lake Erie watersnakes displaced during construction activities will return to the same area once construction is complete, as long as rocky or vegetated shoreline habitat is present (Stanford 2009, pers. comm.). Further, artificial habitat such as crib docks and rip-rap erosion control are known to support a large number of Lake Erie watersnakes during the summer season on all of the large islands, and may actually provide habitat where natural rocky shoreline habitat was previously limited. Projects that impact summer habitat, but occur during the winter season, may have no observable impacts on the Lake Erie watersnake, while projects that impact summer habitat during the summer may cause temporary displacement of Lake Erie watersnakes from all or a portion of their shoreline home range.

The vast majority of the islands' shorelines are typically composed of either larger parcels (typically ODNR properties) that are protected Lake Erie watersnake habitat or smaller private lots. Larger parcels comprise approximately one-quarter (25 percent) of the islands' shoreline, and these areas are designated as protected habitat for Lake Erie watersnakes. In most cases, projects that impact Lake Erie watersnake summer habitat occur on small private parcels. Because of the limited size of these parcels and the types of shoreline projects that would occur there, impacts will be limited to only a small portion of an individual snake's home range. While individual snakes may be displaced from portions of their home ranges, displacement would likely be temporary, as Lake Erie watersnakes are known to return to former home ranges once construction actions are complete, and adjacent portions of an individual watersnake's habitat would likely remain undisturbed and available to support the snake's breeding, feeding, and sheltering needs.

There are only a few activities that may permanently displace Lake Erie watersnakes from their summer habitat, including installation of vertical steel or concrete walls along the shoreline or over the sides of existing rock-filled crib docks. In instances where homes, businesses, roads, or other similar structures are built close to the shoreline, the presence of manicured lawns and shorelines may degrade summer habitat through loss of cover, though Lake Erie watersnakes are often encountered basking in grassy areas near the shoreline despite the presence of homes or roads. While Lake Erie watersnakes may use grassy areas near shorelines and roads for basking, this habitat is not ideal because snakes are highly visible and may be more susceptible to predation or human persecution, and less cover is generally available in these areas. Further, maintenance activities such as mowing may kill or injure snakes that use maintained grassy areas. Finally, snakes basking along road edges may be more susceptible to road kill than snakes basking near natural shorelines. Threats such as roadkill and human persecution are addressed under Factor E below.

Impacts to foraging habitat (Lake Erie) are typically limited to fill placement for erosion control, docks, or navigation structures, or dredging to facilitate navigation. All impacts to foraging habitat are regulated by the U.S. Army Corps of Engineers (Corps) through section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act (see Factor D, *The Inadequacy of Existing Regulatory Mechanisms*). Projects such as these typically cover only a small geographic area, and are of limited duration. Impacts to the Lake Erie watersnake from these activities may include a limited amount of foraging habitat loss due to placement of fill within Lake Erie, degradation of foraging habitat due to short-term turbidity, and temporary displacement from foraging areas where construction activities are occurring. While

watersnakes may be temporarily displaced from foraging habitat during construction, on repeated occasions over multiple years, individual Lake Erie watersnakes have been documented recolonizing disturbed foraging areas shortly after construction activities are complete (Stanford 2009, pers. comm.). As noted above, the primary prey of Lake Erie watersnakes is round goby, and these fish are superabundant in the island region (King *et al.* 2006b, p. 110). Foraging habitat and prey do not appear to be a limiting factor for Lake Erie watersnakes, and therefore limited construction activities within foraging habitat are not anticipated to have significant impacts on Lake Erie watersnakes.

Prior to listing, summer habitat modification included the activities described above, but of particular concern was the proliferation of sheet steel docks and vertical concrete and steel shoreline walls. Development of homes, businesses, and roads along the island shorelines may have degraded natural watersnake habitat to some degree, but as described above, Lake Erie watersnakes appear to be fairly resilient to the presence of these types of structures, as long as rocky or vegetated shorelines persist once construction is complete.

Since the time of listing, most destruction and modification of Lake Erie watersnake summer habitat has been subject to consultation under section 7 of the Act through the issuance of Corps permits under section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act (see Factor D, *The Inadequacy of Existing Regulatory Mechanisms*). These laws provide the Service the opportunity to review and comment on all projects affecting Lake Erie watersnake foraging habitat and many projects affecting shoreline habitat. Under these authorities, the Service has consistently recommended installation of rip-rap erosion control structures and crib docks in lieu of vertical concrete or sheet steel structures, seasonal timeframes for construction activities if appropriate, educational signage, and other appropriate avoidance and minimization measures. This consultation has reduced shoreline habitat degradation substantially, and has resulted in the creation of artificial shoreline habitat for Lake Erie watersnakes on many islands.

We anticipate that similar projects impacting the islands' shorelines and the Lake Erie watersnake's summer habitat will continue into the foreseeable future. As noted above, the vast majority of these projects are regulated by section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act, and as such, the Service will have the opportunity to review and comment on these Corps projects via the public notice process following delisting. The Service will continue recommending rock structures as opposed to vertical structures on these types of projects, under the authority of the Fish and Wildlife Coordination Act, as rock structures are beneficial not only to snakes, but to fish and other aquatic species as well. We anticipate that construction of shoreline structures beneficial to Lake Erie watersnakes will continue into the foreseeable future.

The destruction or modification of summer habitat may temporarily displace individual watersnakes. However, these impacts do not affect the population as a whole because individuals are generally not lost from the population and displacement does not appear to significantly affect survival and reproduction to the point that it would affect population growth or viability. Shoreline habitat loss has been minimized while the species has been listed and is expected to remain minimal within the foreseeable future due to coordination and consultation with the Corps under section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act, and the use of snake-friendly designs such as rip-rap and crib docks. Lake Erie watersnakes have been documented to readily use these structures for summer habitat.

Further, while shoreline construction activities may temporarily displace Lake Erie watersnakes from portions of summer habitat, they will readily recolonize these areas shortly after construction activities are complete, as long as rocky or vegetated shorelines still exist (Stanford 2009, pers. comm.). Destruction and modification of foraging habitat is typically limited in scope and duration, and does not appear to be a limiting factor for the watersnake. The presence of permanently protected habitat for the Lake Erie watersnake will reduce the potential for impacts to summer habitat, as will the use of voluntary guidelines to minimize impacts of habitat modification and promote the use of compatible structures and materials beneficial to the snake. Both are described further below.

Destruction or Modification of Hibernation Habitat

As described in the *Background* section, during winter (generally mid-September through mid-April), Lake Erie watersnakes hibernate below the frost level, in cracks or crevices in the bedrock, interstitial spaces of rocky substrates, tree roots, building foundations, and other similar natural and human-made structures (King 2003, pp. 5, 11–18). Seventy-five percent of Lake Erie watersnakes hibernate within 69 m (226 ft) of the water's edge (King 2003, p. 4). Individual snakes often demonstrate site fidelity, returning to the same shoreline area and the same or nearby hibernacula in successive years (King 2003, pp. 4, 11–17).

Destruction or modification of hibernation habitat typically occurs due to residential development, or less often, commercial development, installation or modification of roadways or utilities, removal of tree roots, agriculture, and other excavation activities in areas within approximately 69 m (226 ft) of the shoreline. These activities may result in excavation, filling, or general disturbance of the rock, soil, root, or other substrates within which Lake Erie watersnakes hibernate.

Lake Erie watersnakes are affected by hibernation habitat destruction and modification in a variety of ways, depending on the extent and timing of the specific project. Destruction or modification of hibernation habitat during the winter when Lake Erie watersnakes are hibernating will likely result in death of hibernating snakes due to exposure, as well as the loss of the hibernacula for future generations of snakes. If snakes are excavated during the hibernation season it is unlikely that they would be able to search for and find alternate hibernacula due to cold temperatures and frozen or snow-covered ground, and would not survive exposure to winter weather. Destruction or modification of hibernation habitat during the summer when Lake Erie watersnakes are not hibernating may result in temporary or permanent displacement from the hibernation area, and may force the snakes to find alternate hibernation sites.

Though Lake Erie watersnakes often demonstrate hibernacula fidelity, individual snakes have survived the winter when accidentally relocated during the summer to areas outside of their home range (King and Stanford 2009, p. 8), and when documented moving between islands (King 2002, p. 4), indicating that they are capable of finding new hibernation sites when previous sites are inaccessible. While this indicates that some Lake Erie watersnakes are able to locate suitable alternate hibernacula, it is also likely that some Lake Erie watersnakes are unable to locate suitable alternate hibernacula and die from exposure or

predation. Because Lake Erie watersnakes appear to use a variety of substrates and materials as hibernation habitat, and hibernation habitat sufficient to support approximately half (50 percent) of the adult Lake Erie watersnake recovery population is now protected, it is unlikely that the presence of suitable hibernation habitat is a limiting factor for the snake. It is more likely that loss of hibernation habitat during the winter is problematic due to the accompanying mortality.

Prior to the watersnake's 1999 listing, three of the four large islands were subject to substantial residential and commercial development, and North Bass Island, while not subject to substantial development, was intensively farmed for grapes. Destruction and modification of hibernation habitat for development and agricultural activities likely occurred on a regular basis throughout the year. It is likely that Lake Erie Watersnakes were displaced from their hibernation habitat when excavation or filling of hibernacula associated with the above activities occurred during the summer months. During portions of the watersnake's hibernation season, the lake and ground are frozen and snow-covered, limiting access to construction vehicles and likely precluding some, but not all, ground-disturbing activities during this most sensitive time period. Therefore, it is likely that some Lake Erie watersnakes were injured or killed during excavation or filling activities within hibernation habitat that occurred during the hibernation season.

Since listing, many excavation or filling activities within proximity to the shoreline have been coordinated with the Service to determine if the activity would result in take of Lake Erie watersnakes or to determine if avoidance or minimization measures were warranted. Projects involving small areas of excavation, excavation of topsoil only, or excavation far inland from the shoreline, and that were completed during the summer months, were not anticipated to cause direct mortality or substantial displacement of Lake Erie watersnakes. Other projects that resulted in substantial excavation or fill within proximity to the shoreline were anticipated to destroy or modify hibernacula and cause take of Lake Erie watersnakes. For these projects, formal consultation under section 7 of the Act or the issuance of a section 10(a)(1)(B) permit under the Act occurred. During the 12-year period during which Lake Erie watersnakes have been listed, only six projects were anticipated to cause loss of hibernation habitat and take of Lake Erie watersnakes. While development is fairly evenly spread across three of the large islands, most projects reviewed since the watersnake's listing did not cause loss of hibernation habitat.

We anticipate that, within the foreseeable future, loss of Lake Erie watersnake hibernation habitat will likely proceed at approximately the same rate as within the past 12 years. We anticipate that approximately one large-scale development every 2 years will cause loss of Lake Erie watersnake hibernation habitat (Seymour 2009, pers. comm.). The presence of hibernation habitat is not likely a limiting factor for the subspecies; however, to limit mortality of watersnakes, it is important that large-scale excavation or filling activities within approximately 69 m (226 ft) of the shoreline do not occur during the winter hibernation season. Once the species is delisted, there will be no requirement to consult with the Service on activities that may affect hibernation habitat, nor is there a separate Federal nexus that would trigger Service review of the project as is the case with projects that may affect summer habitat. The Service has addressed this gap in hibernation habitat protection and management by the presence of permanently protected habitat for the Lake Erie watersnake, and by use of voluntary guidelines, both described further below.

The destruction or modification of hibernation habitat may displace individual watersnakes and result in minimal mortality, but these impacts do not affect the population as a whole. Hibernation habitat loss during listing was minimal, and within the foreseeable future is likely to continue to be minimal, based on recent trends (Seymour 2009, pers. comm.). Lake Erie watersnakes have recently been documented to survive winters despite their former hibernacula being inaccessible, indicating they are capable of finding alternate hibernacula if historical hibernacula are lost. The potential loss of some hibernation habitat due to development post-delisting will be mitigated by the presence of permanently protected habitat on each of the large islands, described further below.

Protected Habitat

While it is true that Lake Erie watersnakes are fairly resilient to some habitat modifications and persist along and within developed areas, the Service recognizes that it is important to also have portions of habitat that are permanently protected and managed to benefit the Lake Erie watersnake, and which will provide a substantial amount of suitable summer and hibernation habitat for the snake in the foreseeable future. The Lake Erie Watersnake Recovery Plan calls for the permanent protection and management of summer and hibernation habitat sufficient to support one-fifth (20 percent) of the recovery population goal of 5,555 adult Lake Erie watersnakes (Service 2003a, p. 34). This habitat must encompass a total of 7.4 km (4.6 mi) of shoreline, and 0.51 km^2 (126 ac) of inland habitat lying within 69 m (226 ft) of the shoreline on U.S. islands in Lake Erie (Service 2003a, p. 29).

Additionally, this habitat must be distributed among the large U.S. islands as described below to support multiple subpopulations throughout the range of the subspecies: Kelleys Island—1.2 km (0.75 mi) shoreline, 0.083 km^2 (20.5 ac) inland; South Bass Island—1.1 km (0.70 mi) shoreline, 0.078 km^2 (19.3 ac) inland; Middle Bass Island—0.82 km (0.51 mi) shoreline, 0.057 km^2 (14.1 ac) inland; and North Bass Island—0.54 km (0.34 mi) shoreline, 0.037 km^2 (9.1 ac) inland (Service 2003a, p. 29). The remaining protected habitat may occur on any of the U.S. islands. To be included as protected habitat, each parcel will have a written agreement, which may be represented by a conservation easement or other habitat management plan that has been approved by the Service (Service 2003a, p. 29) and protects Lake Erie watersnake habitat in perpetuity.

As discussed in *Recovery,* by working collaboratively with partners, primarily ODNR, LEIC–BSC, Western Reserve Land Conservancy, Put-in-Bay Township Park District, and Cleveland Museum of Natural History, we have ensured the permanent protection and management of 18.25 km (11.41 mi) of shoreline habitat and 1.287 km^2 (318.18 ac) of inland habitat within 69 m (226 ft) of shore (see table 2) in perpetuity. The total protected habitat indicated in table 2 above is more than double the goal established in Criterion 2 of the Recovery Plan, and is sufficient to support approximately half (50 percent) of the recovery population goal of 5,555 adult Lake Erie watersnakes. Further, as evidenced in table 2, the recovery goals for protected habitat on each of the four major islands have either been met or exceeded. This protected habitat will provide a series of permanent refugia distributed across the islands and across the U.S. range of the subspecies that can support a substantial portion of the Lake Erie watersnake population.

The recovery plan (Service 2003a, p. 34) describes why this quantity of protected habitat is sufficient to

maintain a viable population of Lake Erie watersnakes: Lake Erie watersnakes are fairly resilient to habitat modifications and can persist along and within developed areas (Service 2003a, pp. 9, 15); adult population estimates at the time the recovery plan was drafted were nearing the recovery goals even though only 0.046 km^2 (11.4 ac) of inland habitat and 0.89 km (0.55 mi) of shoreline habitat met the definition of protected habitat; and hibernation sites can support more than one snake, therefore, protection of the specified habitat amounts could support more than the estimated half (50 percent) of the recovery population. Based on the above information, the Service assumes that the remaining half (50 percent) of the recovery population will persist on the other 75 percent of island shoreline and 67 percent of inland areas within 69 m (226 ft) of shoreline that is not protected habitat.

While not considered in the Recovery Criterion, it is important to note that several of the islands in Canada also support Lake Erie watersnake habitat that is permanently protected: Middle Island (18.5 ha (48 ac)) is owned by Parks Canada and is part of Point Pelee National Park (Dobbie 2008, p. 8); East Sister Island (15 ha (37 ac)) is protected as a Provincial Nature Reserve by Ontario Parks (Ontario Parks 2009, p. 1); Pelee Island, the largest Canadian island within the range of the Lake Erie watersnake, contains three nature reserves: Fish Point and Lighthouse Point (combined 114 ha (282 ac)), established and managed by the Ontario Ministry of Natural Resources; Stone Road Alvar (approximately 178 ha (439 ac)), portions of which are owned by the Nature Conservancy of Canada, Ontario Nature, and Essex Region Conservation Authority (Municipality of Pelee Island 2007, p. 1); and Mill Point (1.5–2 km (0.9–1.2 mi) of shoreline habitat) under the protection of the Essex Region Conservation Authority and Ontario Nature (COSEWIC 2006, p. 8). Habitat management to maintain native plant communities and benefit species at risk (including the Lake Erie watersnake) and their habitat is ongoing on protected habitat in Canada (for examples see Dobbie 2008, Ontario Parks 2009).

Voluntary Guidelines

Destruction or modification of hibernation habitat during the winter months when Lake Erie watersnakes are using such habitat may result in mortality of individual snakes, but will not threaten the population as a whole once the protections of the Act are removed. If snakes are excavated during the hibernation season, it is unlikely that they would be able to search for and find alternate hibernacula due to cold temperatures and frozen or snow-covered ground, and would not survive exposure to winter weather. Once the species is delisted, no regulatory options will exist to address timing of impacts to hibernation habitat. To minimize impact to individual watersnakes from this threat, the Service will continue to widely distribute ''Lake Erie Watersnake Management Guidelines for Construction, Development, and Land Management Activities'' (Service 2009). Further, we will continue to recommend to local governments that they adopt and broadly distribute these voluntary guidelines, and we will monitor compliance with these voluntary guidelines when the watersnake is delisted.

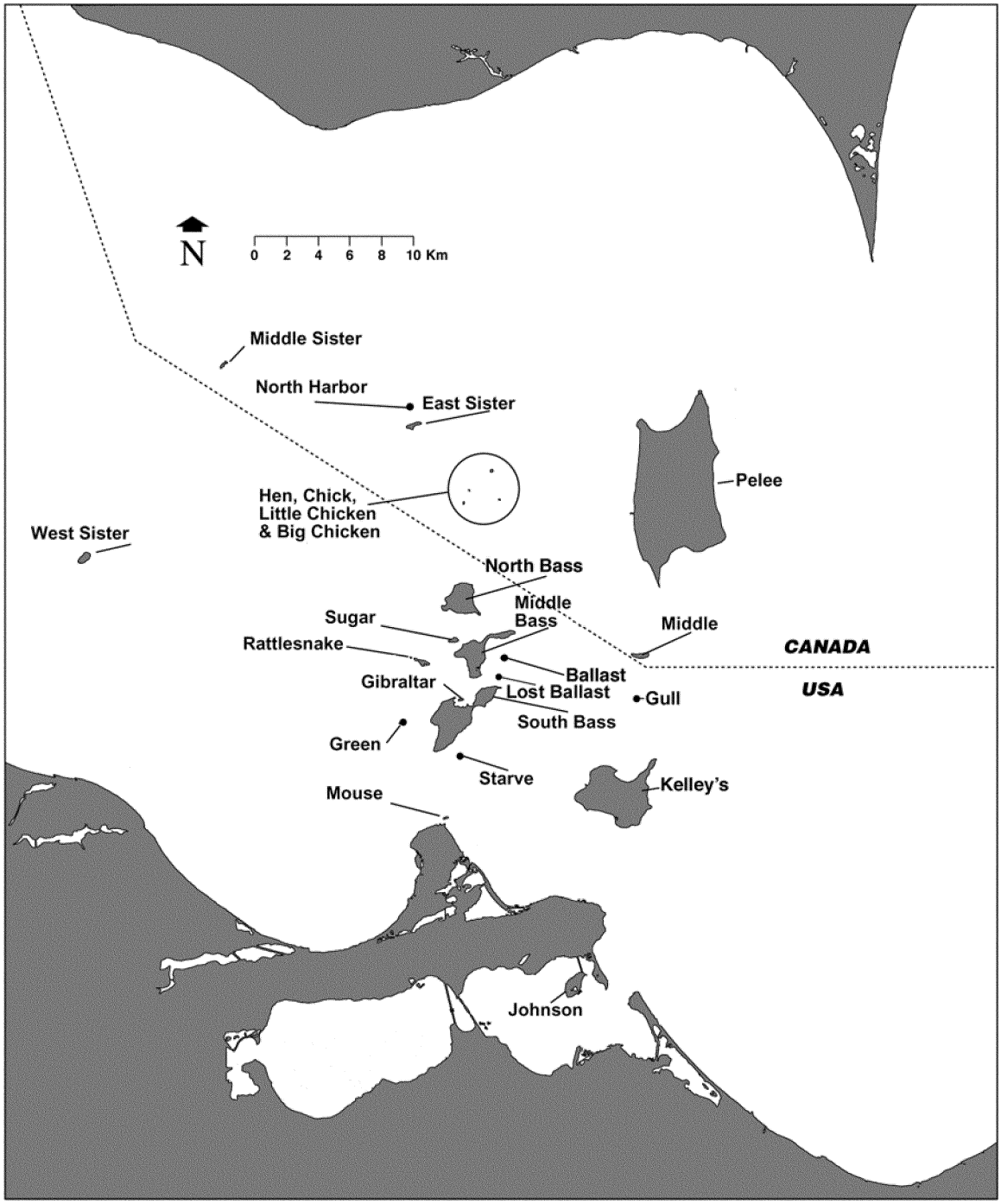
The Service initially developed Lake Erie Watersnake Management Guidelines for Construction, Development, and Land Management Activities (Service 2009, Service 2003b) when the subspecies was listed. These voluntary guidelines were intended to substantially reduce the potential for take to occur during typical private and public land management activities such as lawn mowing, tree cutting, and excavation activities. The guidelines recommend seasonal restriction on activities such as excavation and mowing, design recommendations for shoreline structures that will enhance Lake Erie watersnake summer habitat, and suggestions for monitoring snakes during construction activities (Service 2009, p. 1–2; Service 2003b, pp. 2–4). These actions aid in avoiding and minimizing habitat loss to individual watersnakes due to typical land management actions on private property.

Though the guidelines are voluntary, they have been added as mandatory conditions on Federal permits and as reasonable and prudent measures in biological opinions and incidental take statements to avoid and minimize take during the completion of projects that required section 7 consultation or section 10 permits under the Act (for example, see Service 2008, p. 5). When the subspecies is delisted, these guidelines will still be recommended under the auspices of the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661–667e) when reviewing Federal activities that are planned within Lake Erie watersnake habitat areas.

Range Curtailment

The historical range of the Lake Erie watersnake includes the offshore islands of the western Lake Erie basin in the United States and Canada as well as portions of the Catawba-Marblehead peninsula on the mainland of Ohio, though the threatened subspecies included only those Lake Erie watersnakes occurring on U.S. and Canadian islands greater than 1.6 km (1 mi) from the Ohio mainland (64 FR 47126). The U.S. islands and rock outcrops within the historical range include, but are not limited to, the islands called Kelleys, South Bass, Middle Bass, North Bass, Sugar, Rattlesnake, Green, Gibraltar, Starve, Gull, Ballast, Lost Ballast, West Sister, Mouse, and Johnson. The Canadian islands and rock outcrops within the historical range include, but are not limited to, the islands called Pelee, Middle, East Sister, Middle Sister, North Harbour, Hen, Chick, Big Chicken, and Little Chicken (figure 1).

Figure 1. Historical range of Lake Erie watersnake within the western Lake Erie basin of Ohio and Canada. Map courtesy of Barbara Ball and Department of Biological Sciences, Northern Illinois University.



At the time of listing, Lake Erie watersnakes had been extirpated from two U.S. islands within the range, Green and West Sister, and two Canadian islands, Middle Sister and North Harbour. Further, population declines documented over several decades, along with the limited geographic range and insular nature of the Lake Erie watersnake population, indicated that, without the Act's protection, further range contraction was likely.

Since the time of listing, Lake Erie watersnakes have naturally recolonized Green Island, a small island close to South Bass Island, and a viable population of adult watersnakes has persisted there for 8 years after an absence of 10 or more years (King and Stanford 2011, p. 18; King and Stanford 2009, p. 7; King 2002, p. 4). This natural recolonization demonstrates the importance of maintaining multiple subpopulations of the Lake Erie watersnake on as many islands as possible, to provide source populations for recolonization should a stochastic event occur that eliminates all or a part of the population on another island.

Lake Erie watersnakes were known to occur on West Sister Island based on specimens collected there in 1938 and 1939, but were not collected during repeated searches in the 1980s and 1990s (King *et al.* 2006a, p. 86). While it is not known why Lake Erie watersnakes disappeared from West Sister Island, it is the most isolated of the U.S. islands, located approximately 13.7 km (8.5 mi) from the mainland and approximately 20.9 km (13.0 mi) from

the nearest island. Three intensive snake surveys since the time of listing have documented two adult female watersnakes on West Sister Island, one in 2002 and one in 2008, though it is unclear if these individuals were members of a permanent resident population, or transient individuals that swam or drifted to the island (King and Stanford 2009, p. 9). King and Stanford (2009, p. 9) conclude that ''Lake Erie Watersnakes remain exceedingly rare or absent from West Sister Island.''

Lake Erie watersnakes also occur on islands in Canada. The most recent Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Assessment and Update Status Report on the Lake Erie Watersnake in Canada (COSEWIC 2006, pp. 5–6, 12–13) concludes that within Canada the subspecies is likely restricted to four Canadian islands: East Sister, Hen, Middle, and Pelee. Population estimates have not been calculated systematically for Lake Erie watersnakes on Canadian islands as they have in the United States. As of the 2006 status assessment, population estimates for all Canadian islands combined were ''likely less than 1,000 adults'' (COSEWIC 2006, p. 19).

A main portion of the 2003 Recovery Plan's strategy was to ensure the persistence of multiple subpopulations of the Lake Erie watersnake on each of the large islands, as well as the small islands on which the watersnake was already present in the United States. The presence of multiple population centers helps to protect against stochastic events, such as storms, severe winters, or fire. If entire subpopulations are lost from a catastrophic event, the presence of other subpopulations provides the opportunity for individuals to recolonize the disturbed area. The chance that the species will persist over time increases with the presence of additional subpopulations. Further, the maintenance of multiple subpopulations increases the likelihood that genetic diversity that may exist across the range is maintained.

The Service and our partners have demonstrated over the past 9 years that Lake Erie watersnakes have met the population persistence criterion in the Recovery Plan (Service 2003a, pp. 28–29), including the portion of the criterion requiring a specific adult Lake Erie watersnake population estimate on each of the four large islands, and persistence of Lake Erie watersnakes on the small islands (Rattlesnake, Sugar, Gibraltar, Ballast, and Green) throughout this same period. Further, annual surveys have documented range expansion of the Lake Erie watersnake within its historical range since the time of listing, including the recolonization of Green Island. Lake Erie watersnakes also persist on four Canadian islands. Coupled, these data indicate that the population of Lake Erie watersnakes is secure across its range and is likely to persist into the foreseeable future, even if the protections of the Act are removed (see Factor D, *The Inadequacy of Existing Regulatory Mechanisms*).

Summary of Factor A: Individuals of the Lake Erie watersnake face a low amount of residual threat from habitat destruction or modification due to development within the Lake Erie islands within the foreseeable future, though the watersnake population has proven resilient to much of the development that has occurred since listing. Summer and hibernation habitat sufficient to support approximately 50 percent of the adult Lake Erie watersnake recovery population has been protected in perpetuity. Impacts to summer shoreline and foraging habitat will still be regulated by the Corps, and the Service will provide comments to avoid and minimize impacts to the Lake Erie watersnake under the authority of the Fish and Wildlife Coordination Act. Impacts to hibernation habitat will directly affect individual watersnakes if the impacts occur during the hibernation season, however, existing standardized voluntary guidelines to limit winter excavation have been and will continue to be widely distributed to address those impacts. The Lake Erie watersnake has recolonized a portion of its historical range; its adult populations have shown conclusive growth; and the recovery criteria for island-specific and overall adult population size have been substantially exceeded for the past eight years. Therefore, we determine that the present or threatened destruction, modification, or curtailment of its habitat or range, is not currently causing, or likely to cause in the foreseeable future, the subspecies to be threatened or endangered.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

We know of no recreational, commercial, or educational overutilization of the Lake Erie watersnake. Lake Erie watersnakes are not currently a collected or sought-after species, and no recreational or commercial collection of this subspecies has been documented to date. The historical collection of Lake Erie watersnakes for scientific purposes is well-documented in the final listing rule (64 FR 47126; August 30, 1999). Institutions conducting research using live vertebrate animals and receiving funding from the Public Health Service require approval of research proposals by the Institutional Animal Care and Use Committee. This oversight will help to ensure that any scientific collection will not result in overutilization of the species, to the point that population-level effects are likely to occur. Therefore, we do not believe overutilization to be a current threat to the species, nor is it likely to become a threat in the foreseeable future.

C. Disease or Predation

At the time of listing, neither disease nor predation was implicated in the decline of Lake Erie watersnakes. We currently have no data indicating that disease is a threat to the Lake Erie watersnake. Predators of the Lake Erie watersnake include a number of species native to the islands, specifically herring gull (*Larus argentatus*), great blue heron (*Ardea herodias*), robin (*Turdus migratorius*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), blue racer (*Coluber constrictor*), and mink (*Mustela vison*) (Camin and Ehrlich 1958, p. 510; Goldman 1971, p. 197; King 1986, p 769; King 1987, p. 242, 250; King 1989. p. 87; Stanford 2009, pers. comm.). We anticipate that other birds, predatory fish, and mammals likely prey on Lake Erie watersnakes, particularly neonate and immature snakes. Predation of individual Lake Erie watersnakes clearly is occurring; however, all of these predators are native to the islands, and the snake's population has persisted in the face of such predation both historically and currently. We have no data to indicate that there has been a change in predation pressure. As the Lake Erie watersnake population has shown steady increases despite ongoing predation pressure since the time of listing, we determine that mortality due to predation is not a substantial threat to the subspecies now, nor will it be within the foreseeable future.

D. The Inadequacy of Existing Regulatory Mechanisms

The 1999 final listing rule (64 FR 47126) describes various status designations of the Lake Erie watersnake at State, Provincial, and Federal Canadian levels, but concluded that ''regulatory mechanisms are inadequate because of the small number of water snakes in preserves and the vulnerability from lack of regulatory protection outside of preserves.'' As described above in Factor A, *The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range,* a substantial amount of Lake Erie watersnake habitat has been

protected since 1999 by management agreements, conservation easements, or deed restrictions. Protected habitat includes 18.25 km (11.41 mi) of summer habitat and 1.287 km² (318.18 ac) of hibernation habitat within 69 m (226 ft) of shore (Table 2). This amount of habitat is sufficient to support approximately 50 percent of the recovered population goal of 5,555 adult Lake Erie watersnakes, and is distributed throughout the U.S. range of the subspecies.

In addition to the protected habitat, since the time of listing a substantial portion of additional island habitat has been acquired by the Ohio Department of Natural Resources. These lands include 0.5 km² (123 ac) of Middle Bass Island and 2.4 km² (593 ac) of North Bass Island. The portions of these islands within 69 m (226 ft) of shore are included as protected habitat, but the remainder of these properties may also provide habitat for the 25 percent of Lake Erie watersnakes that hibernate greater than 69 m (226 ft) inland. Middle Bass Island State Park is dedicated to boating, camping, and recreation, while ODNR's portion of North Bass Island will remain primarily natural (ODNR 2004, p. 1).

Further, since the time of listing, the Lake Erie Islands Chapter of the Black Swamp Conservancy, a nonprofit land conservancy, was established and is acquiring conservation easements on island properties. All of their properties within 69 m (226 ft) of shore are included as protected habitat; however, an additional 0.04 km² (9.6 acres) of land may also provide habitat for the 25 percent of Lake Erie watersnakes that hibernate greater than 69 m (226 ft) inland. This habitat will remain in a natural state for the foreseeable future.

The Cleveland Museum of Natural History maintains multiple preserve properties on Kelleys Island. All of their properties within 69 m (226 ft) of shore are included as protected habitat; however, an additional 0.4 km² (99 acres) of land may also provide habitat for the 25 percent of Lake Erie watersnakes that hibernate greater than 69 m (226 ft) inland. This habitat will remain in a natural state for the foreseeable future.

As described under Factor A, *The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range,* several of the islands in Canada also support Lake Erie watersnake habitat that is permanently protected: Middle Island (18.5 ha (48 ac)) is owned by Parks Canada and is part of Point Pelee National Park (Dobbie 2008, p. 8); East Sister Island (15 ha (37 ac)) is protected as a Provincial Nature Reserve by Ontario Parks (Ontario Parks 2009, p.1); Pelee Island, the largest Canadian island within the range of the Lake Erie watersnake, contains three nature reserves: Fish Point and Lighthouse Point (combined 114 ha (282 ac)), established and managed by the Ontario Ministry of Natural Resources; Stone Road Alvar (approximately 178 ha (439 ac)), portions of which are owned by the Nature Conservancy of Canada, Ontario Nature, and Essex Region Conservation Authority (Municipality of Pelee Island 2007, p. 1); and Mill Point (1.5–2 km of shoreline habitat) under the protection of the Essex Region Conservation Authority and Ontario Nature (COSEWIC 2006, p. 8). Habitat management to maintain native vegetation communities and to benefit species at risk (including Lake Erie watersnakes) and their habitat is ongoing on protected habitat in Canada (for examples, see Dobbie 2008, Ontario Parks 2009).

As discussed under Factor A, *The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range,* since the Lake Erie watersnake was listed in 1999, destruction and modification of watersnake summer habitat has been addressed under section 7 of the Act through the Corps section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act authority. These laws provide the Service the opportunity to review and comment on all projects affecting Lake Erie watersnake foraging habitat, and many projects affecting shoreline habitat. Under these authorities, the Service has consistently recommended installation of rip-rap erosion control structures and crib docks in lieu of vertical concrete or sheet steel. This substantially reduced shoreline habitat degradation and resulted in the creation of artificial shoreline habitat for Lake Erie watersnakes on many islands.

We anticipate that similar projects impacting the islands' shorelines and the Lake Erie watersnake's summer habitat will continue into the foreseeable future. As noted above, the vast majority of these projects are regulated by section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act, and as such, the Service will still have the opportunity to review and comment on these projects via the Corps' Public Notice process, even when the watersnake is delisted. The Service plans to continue recommending rock structures as opposed to vertical structures on these types of projects, under the authority of the Fish and Wildlife Coordination Act. This regulatory mechanism will remain in place into the foreseeable future, allowing the Service to maintain some oversight and input relative to the condition of island shorelines for the Lake Erie watersnake.

Currently, the Lake Erie watersnake is listed as a State endangered species under the Ohio Revised Code 1531.25. State endangered status is defined as: ''A native species or subspecies threatened with extirpation from the state. The danger may result from one or more causes, such as habitat loss, pollution, predation, interspecific competition, or disease'' (ODNR 2008, p. 1). Coordination with ODNR Division of Wildlife indicates that the State supports delisting the Lake Erie watersnake as they believe that ''the snake population appears secure and growing throughout its range,'' and, ''[t]he snake warrants removal from Federal protection'' (ODNR 2009, p. 1). ODNR Division of Wildlife has proposed that, upon Federal delisting, the Lake Erie watersnake would be reclassified to State threatened status, and is likely to remain as such for the foreseeable future (ODNR 2009, p. 1). State threatened status ''affords a heightened perception of importance and conservation need by the public,'' and ''provides a mechanism for filing criminal charges against people who are responsible for direct mortality'' (ODNR 2009, p. 1). Therefore, State take prohibitions reducing the threat from intentional human persecution will still exist when the Lake Erie watersnake is federally delisted.

The province of Ontario, Canada, designated the Lake Erie watersnake an endangered species under their Endangered Species Act in 1977, while COSEWIC listed the Lake Erie watersnake as endangered in April 1991 (COSEWIC 2006, pp. 16, 19). Upon the passage of Canada's Species At Risk Act (SARA) in 2003, the Lake Erie watersnake continued to be listed under Schedule 1 as an endangered species (Canada Gazette Part II 2009, p. 404). Once delisted in the United States, the Lake Erie watersnake will continue to be protected under these Federal and Provincial laws. The SARA (2002) makes it an offense to ''kill, harm, harass, capture or take an individual of a listed species that is extirpated, endangered or threatened; possess, collect, buy, sell or trade an individual of a listed species that is extirpated, endangered or threatened, or its part or derivative; or, damage or destroy the residence of one or more individuals of a listed endangered or threatened species or of a listed extirpated species

if a recovery strategy has recommended its reintroduction.''

Further, a recovery team for the Lake Erie watersnake has been established in Canada, and a preliminary draft Recovery Strategy has been developed (Government of Canada 2010, p. 4) to guide recovery efforts. These mechanisms and approaches to guide recovery of the Lake Erie watersnake in Canada are similar to those implemented in the United States. We have no reason to believe that these actions will be any less effective in Canada than they have been in the United States. Further, because Lake Erie watersnakes typically show site fidelity (King 2003, pp. 4, 11–17) and have only rarely been documented to move between islands (King 2002, p. 4), the status of the watersnake population on the Canadian islands is not likely to influence the status of the watersnake populations on U.S. islands.

In summary, substantial protected habitat and permanently conserved natural habitat on the U.S. western Lake Erie islands have been established since the time of listing. These areas are sufficient to support approximately 50 percent of the recovery population goal of 5,555 adult Lake Erie watersnakes. Additional protected habitat exists in Canada. Some jurisdiction over impacts to Lake Erie watersnake summer habitat will be maintained post-delisting via the Corps section 404 and section 10 authorities. Further, the proposed State reclassification of the Lake Erie watersnake to a threatened designation will maintain the existing prohibition on intentional mortality of watersnakes and will provide a mechanism for filing criminal charges should intentional direct mortality occur. Lake Erie watersnakes maintain endangered status in Canada and Ontario, and recovery actions in Canada are ongoing. We have determined that these regulatory mechanisms and cooperative agreements are sufficient to ensure the persistence of Lake Erie watersnakes in the foreseeable future, and, therefore, Lake Erie watersnakes will not be threatened by the inadequacy of existing regulatory mechanisms post-delisting.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Human Persecution and Other Human-Induced Mortality

As indicated in the final listing rule for the Lake Erie watersnake (64 FR 47131; August 30, 1999), ''persecution by humans is the most significant and well documented factor in the decline of Lake Erie water snakes.'' Therefore, the recovery strategy for the watersnake focused heavily on public outreach and education in an attempt to change the negative perception and behavior of some island residents and visitors toward the watersnake. As described in detail in *Recovery* above, public opinion surveys were conducted to gauge island landowner perception of the Lake Erie watersnake, and past, current, and likely future behavior toward the snake (Olive 2008, Wilkinson 2008).

Generally, the survey results indicate that Federal, State, and nongovernmental organizations' outreach and education campaigns are reaching the vast majority of island residents, and are helping to increase their access to information about the watersnake (Wilkinson 2008, p. 5). While it is apparent that not all residents feel positively toward the snake, it is very notable that, despite human persecution being the most significant factor in the historical decline of the Lake Erie watersnake, only about 4 percent of respondents indicated they had knowingly killed a watersnake since the time of listing, and only about 14 percent of respondents said they would knowingly kill a watersnake if it was no longer protected by State or Federal laws (Wilkinson 2008, p. 6). Of those Middle Bass Island residents interviewed by Olive (2008, pp. 112–113, 153), 7 percent admitted to killing a snake and 18 percent admitted they might kill a snake while it is listed. We interpret these responses to indicate that, while individual watersnakes still face some human persecution, the vast majority of islanders would not resort to lethal means if they encountered watersnakes on their property.

Despite the admitted intentional mortality documented by both Wilkinson (2008, p. 6) and Olive (2008, pp. 112–113, 153), adult Lake Erie watersnake populations have increased substantially since the time of listing, both across the U.S. range and on each large island (King and Stanford 2010a, p. 11; King and Stanford 2009, pp. 6–7). This indicates that the adult Lake Erie watersnake population can tolerate some degree of intentional mortality of individual snakes and still persist at a recovery level.

Public opinion of the Lake Erie watersnake varies widely among those who support it, those who have no opinion, and those who dislike or fear the watersnake specifically, or snakes in general. Outreach efforts have reached nearly all island residents, increasing access to information about the Lake Erie watersnake, including nonlethal ways to address nuisance snakes. Opinion surveys indicate that most people do not now, and will not in the future, kill Lake Erie watersnakes; however, many people indicate that the sheer number of snakes along the shoreline has become a nuisance, and this may contribute to negative feelings toward the snake. As Lake Erie watersnake numbers have rebounded, and a significant amount of habitat has now been permanently protected to support its populations, the Lake Erie watersnake population can withstand a limited amount of intentional mortality. While the threat of intentional mortality likely can never be completely eliminated, results of public opinion surveys indicate that the amount of mortality anticipated from intentional human persecution on its own and with other residual threats is not likely to cause the subspecies to become threatened or endangered again within the foreseeable future.

Continued outreach regarding the Lake Erie watersnake after delisting will be important in ensuring that island landowners and visitors maintain access to information about the biology of the snake, its conservation status, and its role in the ecosystem. Following delisting, outreach will continue to focus on changing the negative perceptions and behavior of some island residents and visitors toward the watersnake. Outreach activities will continue through various partners, focusing on establishing permanent informational displays at specific island locations. For example, an Ohio Environmental Education Grant was recently awarded to the Lake Erie Islands Nature and Wildlife Center and Lake Erie Islands Historical Society to design interpretive posters and a permanent display that specifically address the Lake Erie watersnake, its current status, and conservation needs (Stanford 2009, pers. comm.).

The display will be housed at the Lake Erie Islands Nature and Wildlife Center on South Bass Island while the posters will be made available to local organizations and school teachers and will promote consistent education among a variety of audiences and locations (Stanford 2009, pers. comm.). The permanent display at the Lake Erie Islands Nature and Wildlife Center will provide education for the entire island community, as well as the estimated 5,000–10,000 visitors anticipated per year (Stanford 2009, pers. comm.). This display will explain the current Lake Erie watersnake legal status and the protective guidelines, which will be updated when the snake is delisted (Stanford 2009, pers. comm.). Similarly, a permanent display on the Lake Erie watersnake is currently being developed at ODNR's Aquatic Visitor's Center on

South Bass Island. Additional signage or displays about the Lake Erie watersnake are planned for ODNR's Middle Bass Island State Park (Service 2008, p. 5) and the Scheef East Point Nature Preserve on South Bass Island (ODNR 2007, pp. 6, 9).

In addition to intentional human persecution, several sources of accidental human-induced mortality were examined to determine to what degree they contribute to overall mortality of Lake Erie watersnakes, and if they are a threat to the population. These include mortality from hook and line fishing, roadkill mortality, contaminants, and the interaction between Lake Erie watersnakes and invasive species. These potential threats are discussed in detail under *Recovery,* above. Based on recent research, accidental human-induced mortality occurring from boating, fishing, and roadkill events does not pose a threat to the adult Lake Erie watersnake population (King 2007, pp. 5–6; Stanford 2004, p. 4). Further, invasive species and contaminants do not threaten the adult Lake Erie watersnake population (Fernie *et al.* 2008, p. 334; Bishop and Rouse 2006, pp. 452, 454, 456; King *et al.* 2006b, pp. 111–113) now or in the foreseeable future.

One new source of potential injury and mortality to Lake Erie watersnakes has recently been identified. In May 2008, erosion control blankets were placed over an excavated area on Gibraltar Island, a small Lake Erie island. Within three days, 25 adult Lake Erie watersnakes became entangled in the erosion control blankets that were placed over approximately 1347 m^2 (0.33 ac) (Stanford 2008, pers. comm.). The erosion control blankets were single net, filled with straw, and photodegradable within 45 days (Stanford 2008, pers. comm.). Entanglement occurred on the first warm days of the summer, and we assume that many snakes were emerging to bask, forage, and mate. When the entangled snakes were discovered, they were cut from the blankets; however, 14 adult male Lake Erie watersnakes died (Stanford 2008, pers. comm.). Mortality was thought to be due to suffocation or sun exposure, though necropsies were not conducted. Upon discovery of the snakes, all of the erosion mesh was immediately removed (Stanford 2008, pers. comm.).

Since this event, when consulting on projects on the islands, the Service has requested that erosion control blankets not be used (for example, see Service 2008, p. 2). When the species is delisted, we will continue to include this recommendation under the authority of the Fish and Wildlife Coordination Act when reviewing Federal activities on the islands. Additionally, we have incorporated this recommendation into the revised Lake Erie Watersnake Management Guidelines for Construction, Development, and Land Management Activities (Service 2009, p. 2), which will be widely distributed, as described under Factor A above. We believe that, through these mechanisms, entanglement in erosion control blankets or similar materials will not pose a substantial threat to the Lake Erie watersnake population now or in the foreseeable future.

Small Population Size

As noted in the listing document (64 FR 47126; August 30, 1999), all of the known threats were exacerbated by the small population size and the insular distribution of Lake Erie watersnakes. According to the listing document, ''the current low population densities and insular distribution of Lake Erie watersnake make them vulnerable to extinction or extirpation from catastrophic events, demographic variation, negative genetic effects, and environmental stresses such as habitat destruction and extermination'' (64 FR 47126; August 30, 1999). Since the time of listing, the adult Lake Erie watersnake population has increased substantially. Annual adult Lake Erie watersnake population censuses and estimates indicate that the population is growing by approximately 6 percent per year, and that the current snake population far outnumbers the goal of 5,555 adult Lake Erie watersnakes required for the population to be recovered (King and Stanford 2011, p. 17; King and Stanford 2009, pp. 6–7; Service 2003a, pp. 28–29, 33).

King and Stanford (2009, pp. 5–8) recently analyzed Lake Erie watersnake survey data from the period 1996–2008, and used Program MARK to model adult survival, and used Jolly-Seber population estimates to estimate sex ratios in adult Lake Erie watersnakes. The generated estimates for adult sex ratio (1.6 male: 1 female) and adult survival (0.70) proved to be different than the sex ratio and adult survival rates used in setting the overall Population Persistence criterion of the 2003 Lake Erie watersnake Recovery Plan at 5,555 adult Lake Erie watersnakes. Incorporating the new adult sex ratio and adult survival estimates into the formula used in the Recovery Plan to generate the adult Lake Erie watersnake population goal (Service 2003a, p. 31) yielded a revised population goal of 6,100 adult Lake Erie watersnakes (King and Stanford 2009, p. 8).

King and Stanford (2009, p. 8) note that, ''the estimated adult Lake Erie watersnake population size exceeds this value [6,100] for all years from 2002–2008.'' Further, King and Stanford (2009, p.8) caution that the adult population goals ''are based on a series of approximations. * * * As a consequence, such estimates are best viewed as ''educated guesses'' that may change as more information is obtained.'' Irrespective of which adult population goal is used, 5,555 as outlined in the Recovery Plan (Service 2003a, p. 28) or 6,100 as recently recalculated using more current information (King and Stanford 2009, p. 8), the adult Lake Erie watersnake population has met and exceeded both of these goals for nine consecutive years (2002–2010) (King and Stanford 2011, p. 17). Therefore, we no longer find that low population numbers increase the severity of any potential threats.

The most recent COSEWIC Assessment and Update Status Report on the Lake Erie Watersnake in Canada (COSEWIC 2006, pp. 5–6, 12–13) concludes that in Canada the subspecies is likely restricted to four Canadian islands: East Sister, Hen, Middle, and Pelee. Further, it indicates that the population trajectory is declining from historic population sizes, but may have stabilized (COSEWIC 2006, p. 18). Population estimates have not been calculated systematically for Lake Erie watersnakes on Canadian islands as they have in the United States. As of the 2006 status assessment, population estimates for all Canadian islands combined were ''likely less than 1,000 adults'' (COSEWIC 2006, p. 19). Because Lake Erie watersnakes typically show site fidelity (King 2003, pp. 4, 11–17) and have only rarely been documented to move between islands (King 2002, p. 4), the status of the watersnake population on the Canadian islands is not likely to greatly influence the status of the watersnake populations on U.S. islands or as a whole.

Further, the presence of multiple subpopulations distributed throughout the range of the subspecies provides assurance that genetic diversity is being maintained, and provides multiple source populations should one subpopulation be eliminated due to a catastrophic event. Because Lake Erie watersnakes are an island-dwelling subspecies, and their range is naturally restricted to a series of relatively small islands in western Lake Erie, it is likely that they will always have a population size that may be considered small relative to species with a much larger

range. However, analysis of Lake Erie watersnake population size, as described in the Recovery Plan (Service 2003a) indicates that a census population size of 5,555 adult watersnakes constitutes a viable, persistent population. Therefore, we no longer find that the insular distribution of the Lake Erie watersnake increases the severity of any potential threats.

Climate Change

Global climate change due to trapping of greenhouse gases, particularly carbon dioxide, within the atmosphere is widely predicted by scientists all over the world (IPCC 2007, p. 9). Within the Great Lakes region and Ohio specifically, climate change is expected to bring increased temperatures, increased but altered distribution patterns of precipitation, and greater intensity of extreme weather events including drought, storms, floods, and heat waves (Karl *et al.* 2009, p. 117; Kling *et al.* 2003, pp. 17–18). Winters will be of shorter duration and warmer temperatures and snow melt will occur earlier (Kling *et al.* 2003, pp. 17–18). These projected changes in seasonal temperature patterns may cause Lake Erie watersnakes to hibernate for shorter periods of time, to seek cover more frequently during the active season to escape extreme weather events, and to forage more frequently than they do now to compensate for an extended active season. It is unlikely that these potential behavioral changes brought on by warmer temperatures would constitute a threat to the species.

Warmer temperatures and decreased ice cover across the Great Lakes region predicted by multiple models could result in warmer water temperatures and water levels between 0.3–0.6 m (1–2 ft) below current levels in Lake Erie (Karl *et al.* 2009, pp. 119, 122; Kling *et al.* 2003, pp. 23–24). Decreases in Lake Erie water levels, which define the boundaries of the western Lake Erie islands, can lead to increases in the area of the island exposed, expansion or loss of coastal wetland habitat (depending on elevation and topography), changes in extent or composition of island shoreline habitat, and changes in erosion and accretion patterns. Over all, lower water levels will likely create additional linear footage of island shorelines within the western Lake Erie basin, potentially expanding Lake Erie watersnake summer terrestrial habitat areas. Portions of former foraging habitat may dry, requiring watersnakes to seek out additional foraging territories. Water depth decreases of 0.3 to 0.6 m (1 to 2 ft) are unlikely to disturb large portions of Lake Erie watersnake foraging habitat. As noted previously, Lake Erie watersnakes' diets are composed primarily of round goby, which are plentiful in the warm waters of the western Lake Erie island region, and would likely remain plentiful despite potential effects from climate change. It is unlikely that lower water levels would significantly change Lake Erie watersnake behavior, or represent a threat to the population.

Climate change projections for Lake Erie indicate that increases in water temperature during the summer may result in lower dissolved oxygen (hypoxia), and prolonged stratification of lake water, resulting in an increase in the potential for dead-zones to occur or expand across time and space (Karl *et al.* 2009, p. 122; Kling *et al.* 2003, p. 22). Further, goby are susceptible to hypoxic and anoxic events and may die when dead-zones form. However, the western Lake Erie basin is generally shallow, with an average depth of 7.4 m (24 ft), and stratification is rare here, and brief when it does occur (USEPA and Environment Canada 2008, p. 18), and therefore we do not anticipate a threat to the population from this projected change. However, low dissolved oxygen could also result in more easily mobilized mercury and other contaminants that exist in Lake Erie sediments, and introduction of increased contaminant loads into the food chain (Karl *et al.* 2009, p. 122). It is possible that additional contaminant loads could result in physiological or reproductive impacts to Lake Erie watersnakes, but what the effective concentrations of these contaminants are is unknown. As discussed above, contaminants have been detected in Lake Erie watersnakes in relatively high levels, but have not been documented to cause adverse effects; therefore, we do not anticipate that a potential increase in contaminant mobilization within the waters of Lake Erie due to warming water temperatures poses a threat to Lake Erie watersnakes.

Warmer lake waters are anticipated to result in coldwater habitat being eliminated or shifting north in some areas, potentially changing the fish communities in these areas (Karl *et al.* 2009, p. 122; Kling *et al.* 2003, pp. 53–54). However, the western basin of Lake Erie is composed of warm water habitat already (USEPA and Environment Canada 2008, p. 18) and is too shallow to support coldwater habitat. Therefore, we do not anticipate shifts in fish species composition within the western Lake Erie basin due to climate change, and subsequently no threat to the Lake Erie watersnake is anticipated.

At this time, we do not have sufficient information to document that climate change poses a significant threat to the continued existence of the Lake Erie watersnake.

Summary of Factor E: Intentional human-induced mortality is a residual threat to the Lake Erie watersnake. However, Lake Erie watersnake numbers have rebounded, and a significant amount of habitat has now been protected to support Lake Erie watersnake populations. The Service believes that the Lake Erie watersnake population can withstand a limited amount of intentional mortality and still maintain recovery-level population size. While the threat of intentional mortality likely can never be completely eliminated, results of public opinion surveys indicate that the amount of mortality anticipated from intentional human persecution on its own and with other residual threats is not likely to cause the subspecies to become threatened or endangered again within the foreseeable future.

Unintentional human-induced mortality, such as occurs from road-kill, hook and line fishing, contaminants, and impacts of invasive species, has been researched throughout the recovery period and has not been documented to cause take at levels sufficient to impact the adult Lake Erie watersnake population. Unintentional mortality through entanglement in erosion control fabrics, though rare, will be addressed through continued outreach and through coordination with the Corps on projects that impact Lake Erie watersnake summer habitat. Lake Erie watersnake persistence is no longer threatened by small population size or limited distribution, as they have substantially increased in number and expanded in range since the time of listing, and protected habitat sufficient to support 50 percent of the recovery population is distributed across all of the large islands. Finally, we have assessed the potential for climate change to impact the Lake Erie watersnake based on projected habitat changes in Great Lakes-regional and Ohio models, and have determined that we do not have sufficient information to document that climate change poses a significant threat to the continued existence of the Lake Erie watersnake. Therefore, we find that other natural or man-made factors, coupled with any other residual threats are not likely to cause the subspecies to become threatened or endangered again within the foreseeable future.

Summary of Threats

As demonstrated in our *Summary of Factors Affecting the Species,* threats to the Lake Erie watersnake have been abated or sufficiently minimized over the U.S. range of the subspecies. Recovery actions and a reduction or abatement of threats have lead to demonstrated population growth at multiple sites, increasing population estimates, range expansion within the historical range, proof of resiliency of the Lake Erie watersnake to some habitat modification, and protection of a significant amount of summer and hibernation habitat throughout the range.

The biological principles under which we evaluate the rangewide population status of the Lake Erie watersnake relative to its long-term conservation are representation, redundancy, and resiliency (Groves, *et al.* 2003, pp. 30–32). At the time of listing, the Lake Erie watersnake population had declined substantially from historical numbers, and its range had contracted due to extirpation from several U.S. and Canadian islands. Since listing, population numbers have rebounded, real population growth at multiple sites has been documented, and the range has expanded to include multiple stable or increasing subpopulations across most of its historical range (West Sister Island is the only U.S. exception, as discussed in Factor A above) (King and Stanford 2009, pp. 6–9). Thus, there is adequate representation (occupancy of representative habitats formerly occupied by the Lake Erie watersnake across its range) and redundancy (distribution of populations in a pattern that offsets unforeseen losses across a portion of the range) to support the long-term persistence of the Lake Erie watersnake.

The Lake Erie watersnake has demonstrated resilience and behavioral plasticity to both ecological and human-induced changes in its environment in the recent past. As described above, the Lake Erie watersnake has made a nearly complete dietary shift since the invasion of the round goby in the early 2000s, indicating flexibility in prey selection (King *et al.* 2006b, p. 110). We now know that crib docks and armored shorelines provide valuable Lake Erie watersnake summer habitat and that the Lake Erie watersnake can persist in stable numbers in human-dominated island landscapes, as long as rocky or vegetated shorelines are present. Further, we have documented multiple situations where Lake Erie watersnakes have been able to identify and successfully use new hibernation sites when historical hibernation sites are destroyed or unavailable, indicating that the Lake Erie watersnake is more resilient to certain types of habitat modification than was previously known. The Lake Erie watersnake has also demonstrated its ability to naturally recolonize historical habitat after an absence of many years. Thus, despite any residual threats to individual watersnakes, we find that the Lake Erie watersnake has sufficient resiliency to persist within the foreseeable future.

Intensive adult Lake Erie watersnake censuses and subsequent analysis of the census data over the past 10 years have demonstrated a growing population, range expansion, and successful reproduction over multiple generations (King and Stanford 2009, pp. 6–7, 9). There is no evidence of recent extirpations of subpopulations, nor of a population sink. As previously described, habitat destruction and modification are not thought to be significant threats to the population now or within the foreseeable future (see Factor A above).

Recovery efforts have provided increased attention and focus on the Lake Erie watersnake and the habitat upon which it depends. Numerous conservation actions have been implemented by government agencies, universities, and conservation groups. Most notably, these include intensive research and population monitoring of Lake Erie watersnakes by NIU and other partners, and land purchase and conservation on many islands within the range of the subspecies by ODNR, LEIC–BSC, Western Reserve Land Conservancy, and Put-in-Bay Township Park District.

Lake Erie watersnakes persist in Canada on 4 islands, though population estimates have not been calculated systematically for Lake Erie watersnakes on Canadian islands as they have in the United States. Protected habitat on Canadian islands totals 325.5 ha (806 ac), and a Recovery Team and Draft Recovery Strategy have been established to guide recovery in Canada. Once delisted under the ESA, Lake Erie watersnakes occurring in Canada will remain protected by SARA and the Ontario Endangered Species Act. We have no reason to believe that the recovery actions implemented in Canada will be any less effective than they have been in the U.S. Further, because Lake Erie watersnakes typically show site fidelity (King 2003, pp. 4, 11–17) and have only rarely been documented to move between islands (King 2002, p. 4), the status of the watersnake population on the Canadian islands is not likely to influence the status of the watersnake populations on U.S. islands.

In summary, all of the past, existing, or potential future threats to the Lake Erie watersnake, either alone or in combination, have either been eliminated or largely abated throughout all of its range. The major factors in listing the Lake Erie watersnake were human persecution and habitat destruction and modification. These threats have been abated as evidenced by the substantial recovery of the snake. Therefore, we have determined that the Lake Erie watersnake is no longer in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range.

Significant Portion of the Range Analysis

Having determined that the Lake Erie watersnake is not in danger of extinction or likely to become so in the foreseeable future throughout all of its range, we must next consider whether the subspecies is in danger of extinction or is likely to become so in any significant portion of its range.

A portion of a species' range is significant if it is part of the current range of the species (species used here is as defined in the Act, to include species, subspecies, or DPS) and if it is important to the conservation of the species because it contributes meaningfully to the representation, resiliency, or redundancy of the species. The contribution must be at a level such that its loss would result in a decrease in the ability to conserve the species.

Applying the definition described above for determining whether a species is endangered or threatened in a significant portion of its range, we first addressed whether any portions of the range of the Lake Erie watersnake warranted further consideration. We examine whether any available information indicates a portion of the species' range may be both significant and threatened or endangered. As described in Factor A and Factor E above, some threats to the species will remain post-delisting, primarily loss of hibernation habitat during the winter hibernation season and intentional human persecution. These threats exist across the range of the species, and are not concentrated in any one area. We concluded, however, that these threats were not substantial enough to pose a threat to the viability of the subspecies or pose a threat of extirpation to the species in any portion of its range. In addition, we have concluded that while movement between islands is rare, it occurs frequently enough that the species has demonstrated an ability to

recolonize historical habitat and its distribution across multiple islands provides multiple source populations should one subpopulation be eliminated due to a catastrophic event.

We conclude that the available information does not indicate that any portion of the species range is likely to be threatened or endangered. If no portion is likely to be threatened or endangered, there is no purpose to examining what portions may be significant. Therefore, based on the discussion of the threats above, we do not foresee the loss or destruction of any portions of the subspecies' range such that our ability to conserve the subspecies would be decreased. Therefore, we find that the Lake Erie watersnake is not in danger of extinction and is not likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

Effects of the Rule

This rule revises 50 CFR 17.11(h) to remove the Lake Erie watersnake from the List of Endangered and Threatened Wildlife. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, no longer apply to this species. Federal agencies are no longer required to consult with us if any action they authorize, fund, or carry out may affect the Lake Erie watersnake.

Post-Delisting Monitoring Plan

Section 4(g)(1) of the Act requires us, in cooperation with the States, to implement a monitoring program for not less than 5 years for all species that have been recovered and delisted. The purpose of this requirement is to develop a program that detects the failure of any delisted species to sustain itself without the protective measures provided by the Act. If, at any time during the monitoring period, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing.

A post-delisting monitoring (PDM) plan has been developed for the Lake Erie watersnake, building upon and continuing the research that was conducted during the listing period. Public and peer review comments submitted in response to the draft post-delisting monitoring plan have been addressed within the body of the plan and summarized in an Appendix to the plan. In summary, the plan proposes to: (1) Conduct annual adult Lake Erie watersnake population censuses; (2) conduct diet composition studies and round goby abundance surveys; (3) monitor all areas included as protected habitat; (4) conduct public opinion surveys; and (5) monitor implementation of voluntary guidelines.

The plan proposes to conduct annual adult Lake Erie watersnake population censuses, as have occurred throughout the listing period, for a period of 5 years post-delisting. The data collected will be used to generate annual adult Lake Erie watersnake population estimates for the population as a whole, and for each of the four large islands, using the same methods as used previously (King *et al.* 2006a, pp. 88–91). During years one, three, and five, the collective data will be used to calculate lambda (λ), the population growth parameter, as described in King and Stanford (2009, pp. 5–7). Annual reports detailing the population estimates and population growth (if applicable) will be submitted to the Service and ODNR upon completion of data analysis by the individuals or groups conducting the census.

The diet of the Lake Erie watersnake underwent a dramatic change following the invasion of the North American Great Lakes by the round goby with round gobies now constituting more than 90 percent of prey consumed, and possibly fueling Lake Erie watersnake population recovery (King *et al.* 2006b, King *et al.* 2008, Jones *et al.* 2009). Lake Erie watersnake diet composition studies will be conducted during years three and four, as will round goby local abundance surveys. The data gathered from these studies will be used to evaluate round goby availability as a prey item for the snake. Researchers conducting these studies will actively look for indications of changing predator-prey interactions including potential loss of prey base that may lead to watersnake population declines. Results of the diet composition studies will be summarized in the annual reports during years 3 and 4. Results of the round goby local abundance surveys will be submitted in a final report to the Service after the surveys are completed in year 4.

Additionally, all areas included as protected habitat will be monitored once per year, in collaboration with partners that manage the protected habitat (for example, ODNR, LEIC–BSC). The monitoring will ensure that the management plans, conservation easements, or other documents are being implemented as agreed, and that Lake Erie watersnakes or suitable habitat persists on the site. Written documentation of the protected habitat monitoring will be filed in the Service's Ohio Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Public opinion surveys will be conducted during year four of the post-delisting monitoring. These surveys will follow the same protocol and ask similar questions as the survey conducted in 2008, and responses will be compared to determine if and how public opinion of Lake Erie watersnakes may be changing, and if and to what extent human persecution may be impacting the Lake Erie watersnake population post-delisting.

During each year of the post-delisting monitoring period, the Service will coordinate with local government agencies on Kelleys, Middle Bass, and South Bass Islands, to monitor compliance with the ''Lake Erie Watersnake Management Guidelines for Construction, Development, and Land Management Activities'' (Service 2009). Documentation of local government responses will be filed in the Service's Ohio Field Office (see **FOR FURTHER INFORMATION CONTACT**). Compliance with the voluntary guidelines will be used to assess the extent to which mortality of Lake Erie watersnakes due to excavation activities during the hibernation period may be affecting the adult watersnake population.

The post-delisting monitoring plan identifies measurable management thresholds and responses for detecting and reacting to significant changes in Lake Erie watersnake protected habitat, distribution, and persistence. If declines are detected equaling or exceeding these thresholds, described below, the Service in combination with other post-delisting monitoring participants will investigate causes of these declines, including considerations of habitat changes, substantial human persecution, stochastic events, or any other significant evidence. The result of the investigation will be to determine if the Lake Erie watersnake warrants expanded monitoring, additional research, additional habitat protection, or resumption of Federal protection under the Act.

The management thresholds for determining how the Service will respond to various monitoring outcomes are as follows:

(1) Post-delisting monitoring indicates that the species remains secure without the Act's protections if all the following are met: (a) Realized population growth parameter, lambda (λ), is greater than or equal to 1.0 for two out of three periods for which it is calculated, including the last period, (b) the adult population estimates are greater than or equal to 5,555 overall, and (c) each of the four large islands' subpopulation estimates are greater than or equal to the goals defined in the recovery plan (Service

2003a, pp. 28–29): Kelleys Island, 900; South Bass Island, 850; Middle Bass, 620; and North Bass, 410 (Service 2003a, pp. 28–29). Under these circumstances there would be no reason to relist the species, or continue PDM.

(2) Post-delisting monitoring indicates that the species may be less secure than anticipated at the time of delisting, but information does not indicate that the species meets the definition of threatened or endangered if the realized population growth parameter, lambda (λ), is less than 1.0 for two consecutive periods for which it is calculated. Should this situation occur, the Service would look closely at the results of the dietary study, round goby local abundance, public opinion survey, status of protected habitat, and implementation of voluntary guidelines to determine if any residual threats or concerns may be contributing to population declines. Further we will consider if other emerging threats, for example new invasive species or communicable diseases, may be impacting the Lake Erie watersnake population. Variable courses of action may be considered to address any residual or emerging threats.

The Service will also consider whether the population may be reaching carrying capacity and these population declines are a result of normalization around carrying capacity. If the population growth parameter was less than 1 for the first two consecutive periods (Years 1 and 3, 2011 and 2013), PDM would continue as planned, but population growth would be calculated in Year 4 as well. If the population growth parameter was less than 1 for the last two consecutive periods (Years 3 and 5, 2013 and 2015) the Service would extend the PDM period for the Lake Erie watersnake for 2 additional years. All relevant data would be examined to ensure that the population does not meet the definition of threatened or endangered.

(3) Post-delisting monitoring yields substantial information indicating threats are causing a decline in the species' status since delisting, such that listing the species as threatened or endangered may be warranted if realized population growth parameter, λ, is less than 1.0 for three consecutive periods for which it is calculated. Should this situation occur, the Service would look closely at the results of the dietary study, round goby local abundance, public opinion survey, status of protected habitat, and implementation of voluntary guidelines to determine if any residual threats or concerns may be contributing to population declines. Further we will consider if other emerging threats, for example new invasive species or communicable diseases, may be impacting the Lake Erie watersnake population. Variable courses of action may be considered to address any residual or emerging threats. The Service will also consider whether the population may be reaching carrying capacity and these population declines are a result of normalization around carrying capacity. Further, the Service would consider whether listing the Lake Erie watersnake as threatened or endangered is warranted. If listing is not warranted, PDM would be extended for 2 additional years to continue to monitor Lake Erie watersnake population trends.

(4) Post-delisting monitoring documents a decline in the species' probability of persistence, such that the species once again meets the definition of a threatened or endangered species under the Act if realized population growth parameter, λ, is less than 1.0 for two consecutive periods for which it is calculated, and one of the two following situations occurs: Range-wide adult Lake Erie watersnake population estimate is less than the recovery goal of 5,555 during the most recent census, or one or more of the large island subpopulation estimates is less than the population recovery goal specified in the recovery plan (Service 2003a pp. 28–29), when using the Jolly-Seber method of population estimation (Jolly 1965, Seber 1965).

The Service will complete a final report at the end of the 5-year post-delisting monitoring period, assessing the current status of the Lake Erie watersnake population. It is the intent of the Service to work with all of our partners toward maintaining the recovered status of the Lake Erie watersnake.

The final post-delisting monitoring plan is available on the Service's Midwest region Web site: *http://www.fws.gov/midwest/endangered*.

Required Determinations

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

Office of Management and Budget (OMB) regulations at 5 CFR 1320 implement provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*). The OMB regulations at 5 CFR 1320.3(c) define a collection of information as the obtaining of information by or for an agency by means of identical questions posed to, or identical reporting, recordkeeping, or disclosure requirements imposed on, 10 or more persons. Furthermore, 5 CFR 1320.3(c)(4) specifies that ''ten or more persons'' refers to the persons to whom a collection of information is addressed by the agency within any 12-month period. For purposes of this definition, employees of the Federal Government are not included.

An agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. This rule does not include any new collections of information that require approval by OMB under the Paperwork Reduction Act. We do not anticipate a need to request data or other information from 10 or more persons during any 12-month period to satisfy monitoring information needs. If it becomes necessary to collect standardized information from 10 or more non-Federal individuals, groups, or organizations per year, we will first obtain information collection approval from OMB. We anticipate requesting data or other information from 10 or more persons during public opinion surveys planned in 2014. Prior to conducting collection of standardized information from 10 or more non-Federal individuals, groups, or organizations per year, we will first obtain information collection approval from OMB.

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), need not be prepared in connection with regulations adopted under section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951), Executive Order 13175, and the Department of Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. We have determined that there are no tribal lands affected by this rule.

References Cited

A complete list of all references cited in this rule is available on the Internet

at *http://www.regulations.gov,* or upon request from the Field Supervisor, Columbus, Ohio Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Author(s)

The primary authors of this document are the staff members of the Columbus, Ohio Field Office, U.S. Fish and Wildlife Service (see **FOR FURTHER INFORMATION CONTACT**).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Public Law 99–625, 100 Stat. 3500; unless otherwise noted.

§ 17.11 [Amended]

■ 2. Amend § 17.11(h) by removing the entry ''Snake, Lake Erie water'' under ''Reptiles'' from the List of Endangered and Threatened Wildlife.

Dated: July 27, 2011.

James J. Slack,

Acting Director, U.S. Fish and Wildlife Service.

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