



LEWS NEWS



Photo: Greg Brenner, MI Sea Grant

Volume XI

May 2005

Protecting Lake Erie's Natural Heritage

Recovery of the Lake Erie Watersnake (LEWS) population and removal of the snake from the Federal list of threatened and endangered wildlife are the ultimate goals of researchers, state and federal wildlife agencies, and conservation groups working to protect the snake. This issue, which kicks off the 6th year of LEWS News, provides an update on recovery progress. The Lake Erie Watersnake Recovery Plan, approved in 2003, identifies the goals that must be achieved before the snake can be removed from the list. One of the three criteria includes population goals for each of the 4 large islands, as well as for the snake population overall. Dr. Rich King's article demonstrates that LEWS populations are achieving the desired population goals and are well on their way towards recovery. Continued LEWS population censuses (playfully called "Nerodio" after the snake's scientific name *Nerodia sipedon insularum*) will gather the information necessary to estimate annual population sizes and demonstrate recovery progress. Another of the criteria establishes goals for protected habitat, or land on and near the shoreline that will be available for the snakes to inhabit in perpetuity. The Lake Erie Islands Chapter of the Black Swamp Conservancy (LEIC-BSC) provides an update on their first voluntary LEWS Conservation Easement, and the benefits to the landowners as well as the snakes. LEWS aren't the only interesting snake on the islands... Eastern fox snakes also thrive here, and researchers want to understand more about them. Kristin Stanford, AKA the island snake lady, and

researchers Kent Bekker and Dr. Tim Reichard will be tracking the movements of fox snakes on the islands and mainland. If your children are interested in learning more about snakes, fish, butterflies, and other island life, they may want to check out the Environmental Adventure Camp or Nature Camp at the Bay this summer. Programs such as this, sponsored by LEIC-BSC, help kids to appreciate the values and beauty of nature, so that they can continue the tradition of stewardship on these beautiful islands that we all love and cherish.



CURRENT POPULATION ESTIMATES FOR THE LAKE ERIE WATERSNAKE

The Lake Erie Watersnake Recovery Plan identifies three criteria for removing the snake from the Federal list of Endangered and Threatened Wildlife. The first, *Population Persistence*, sets overall and island-specific population size requirements for the U.S. islands. The second, *Habitat Protection and Management*, sets overall and island-specific habitat protection requirements. The third, *Reduction of Human-induced Mortality*, seeks to reduce intentional and accidental human-induced mortality to the point where such mortality no longer represents a significant threat. (cont. on page 2)

This article focuses on the first of these criteria by summarizing current U.S. Lake Erie watersnake population estimates. This criterion specifies that “*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, Green, Ballast, and Gibraltar) for a period of six or more years*” (Lake Erie Watersnake Recovery Plan, Criterion 1a, p. 28). The rationale for this criterion comes from the International Union for Conservation of Nature and Natural Resources (IUCN) which provides population size guidelines for threatened and endangered species. This criterion further specifies that “*Subpopulations on each of the 5 small islands capable of supporting Lake Erie Watersnakes year-round (Rattlesnake, Sugar, Green, Ballast, and Gibraltar) persist during the same six or more year period as Criterion 1a, and the estimated population size reaches or exceeds the population size stated below for the four largest islands simultaneously during the same six or more year period as Criterion 1a*” (Lake Erie Watersnake Recovery Plan, Criterion 1b, p. 29). Island-specific population sizes are: 1. Kelleys Island – 900 adults, 2. South Bass Island – 850 adults, 3. Middle Bass Island – 620 adults, and 4. North Bass Island – 410 adults. These island-specific population criteria are intended to ensure that multiple Lake Erie Watersnake subpopulations persist as a hedge against population decline or extinction due to catastrophic or stochastic events (such as severe weather). The requirement that total and island-specific population criteria are met for six or more years is intended to ensure that there is sufficient time for recruitment of new adults within the recovery period. Lake Erie Watersnakes can reach sexual maturity in 2-3 years and thus, six years provides enough time for at least two generations of snakes to mature.

Estimates of animal populations frequently rely on “mark-recapture” techniques. These techniques involve capturing and marking a sample of animals during an initial census. At a later date, a second census is conducted and the number of animals bearing marks from the first census is recorded. This number together with the number of animals captured on each date is then used to compute an estimate of

population size. Additional censuses provide more data, refining population estimates. Based on such work, population estimates were generated for 11 study sites on five of the Lake Erie Islands, encompassing about 15.8 km (nearly 10 miles) of shoreline. Together, these estimates total about 4,100 adult watersnakes (Table 1).

Table 1. – Island-by-island summary of current (2000-2004) adult Lake Erie watersnake population size. Extrapolated population sizes for uncensused sites and totals that include those extrapolations are shown in parentheses.

Island	Method	Length (km)	Population
Kelleys	mark-recapture	7.3	1875
	capture rate	3.8	290
	uncensused	7.2	(269)
	total	18.3	2165 (2434)
South Bass	mark-recapture	2.2	906
	capture rate	0.5	125
	uncensused	13.8	(538)
	total	16.5	1031 (1569)
Middle Bass	mark-recapture	3.2	1045
	capture rate	6.1	866
	uncensused	4.3	(179)
	total	13.6	1911 (2090)
North Bass	mark-recapture	2.2	189
	capture rate	4.3	196
	uncensused	1.9	(58)
	total	8.4	385 (443)
Rattlesnake	capture rate	1.5	304
	uncensused	1.0	(48)
	total	2.5	304 (352)
Sugar	capture rate	0.9	322
	uncensused	0.6	(30)
	total	1.5	322 (352)
Green	capture rate	1.2	55
	total	1.2	55
Ballast	capture rate	0.7	266
	uncensused	0.3	(12)
	total	0.9	266 (278)
Gibraltar	mark-recapture	0.9	123
	total	0.9	123
9 U.S. Islands	mark-recapture	15.8	4107
	capture rate	19.0	2304
	uncensused	28.9	(1122)
	total	63.7	6562 (7697)

Information on watersnake capture rate at these 11 sites indicated that capture rate and population density were strongly correlated. This made it possible to estimate watersnake population size at 19 additional study sites encompassing 19 km (nearly 12 miles) of shoreline where only capture rate data were available (where only one census event had

occurred). An additional 2,300 adult watersnakes were estimated to be present at these sites (Table 1).

Finally, interpolations (estimates) of watersnake population size were made at 30 more sites. These interpolations were based on the assumption that at least low densities of watersnakes (48 adults/km) occurred at uncensused sites, provided that habitat and land-use practices were suitable and watersnakes were present nearby. These 30 sites encompassed 28.9 km (18 miles) of shoreline. About 1,100 adult watersnakes are likely present at these sites (Table 1).

Together, these three methods of population estimation encompass the entire shoreline of the U.S. islands where Lake Erie Watersnakes are present and protected. Mark-recapture and capture rate estimates totaled more than 6,500 adult watersnakes (including interpolated numbers at 28.9 km of uncensused shoreline brought this total to nearly 7,700 adults), exceeding 5,555 adults, the number specified in the *Population Persistence* criterion of the Lake Erie Watersnake Recovery Plan. Estimates also exceeded island-specific criteria for Kelleys, South Bass, and Middle Bass Island. On North Bass Island, estimated population size (385 adults) fell short of the island-specific recovery criterion (410 adults) unless interpolated numbers at uncensused sites were included (total = 443 adults) (Table 1).

Lake Erie Watersnakes seem tolerant of many human activities. Medium to high density populations occur in close proximity to summer homes and high traffic areas. In addition, Lake Erie Watersnakes appear capable of rapid population growth. Many females produce large numbers of offspring annually and sexual maturity is attained in 2-3 years. These characteristics, combined with management activities outlined in the Lake Erie Watersnake Recovery Plan (U.S. Fish and Wildlife Service 2003), make recovery and eventual delisting of the Lake Erie Watersnake a real possibility.

Richard B. King
Department of Biological Sciences,
Northern Illinois University, DeKalb, IL 60115



ATTENTION KIDS! Nature Camp at the Bay and Environmental Adventure Camp

Have you ever held a garter snake, caught a dragonfly, reeled in a yellow perch or taken a ride on board the BioLab? These are all experiences children enjoyed during the Lake Erie Islands Chapter of the Black Swamp Conservancy's (LEIC-BSC) nature camp programs in 2003 and 2004. The LEIC along with the Lake Erie Islands Historical Society will again be sponsoring Nature Camp at the Bay this summer. This year we are excited to announce that we have received a grant from the Ohio Environmental Education Fund to help offset some of the expenses and to expand our program. The Ohio State University Stone Laboratory and the Lake Erie Islands State Parks will also be collaborators this year. Special thanks to Dr. Carmen Trisler, Valerie Mettler, Carol Ferguson, and Lisa Brohl for their help in writing the grant. We will have two different day camps held on South Bass Island, divided by age. Because of the popularity of the camp for the younger children, we are offering a morning and afternoon session of the same camp to provide enough space for everyone. We are limiting participation to 20 children in each of these sessions. The dates and times are as follows:

Environmental Adventure Camp Ages 9+
July 25-28, 2005 10:00AM-3:00PM
Nature Camp at the Bay Ages 6 to 8
July 18-21, 2005 10:00AM-12:00PM
July 18-21, 2005 1:00PM-3:00PM

Highlights of this year's Nature Camp will include a visit to the Butterfly House, fishing, water festival, and nature crafts. For the Environmental Adventure Camp, there will be a trip on the BioLab, fossil hunting on Kelley's Island, and kayaking. To register, pick up forms from the Lake Erie Islands Historical Society or call Lisa Brohl at 419-285-5811. The cost for the Nature Camp program is \$20.00/child/week. Family rates are available. Final camp schedules will be sent with registration confirmation letters.

The LEIC-BSC will also be providing the instructors for a Middle Bass Nature Camp sponsored by the Middle Bass Local Board of Education for residents of Middle Bass Island to be held June 27-30, 2005.

Lake Erie Islands Chapter of the Black Swamp Conservancy Announces its First Conservation Agreement !!!!

The Lake Erie Islands Chapter of the Black Swamp Conservancy (LEIC-BSC) secured their first conservation agreement to protect habitat for the federally threatened and state endangered Lake Erie Watersnake just before the end of 2004. The agreement is on private shoreline property on Kelley's Island. The property owner has realized a significant income tax deduction as a result of the donation of the agreement on less than an acre of shoreline. This deduction can be spread out over a number of years if desired. They will be managing the property the same as they have been and there will be no public access. The LEIC-BSC reserves the right to monitor the agreement property annually. Grant funds from the Wildlife Diversity Fund managed by the ODNR Division of Wildlife paid for the survey, appraisal, and legal fees associated with setting up the agreement. The property owners said that setting up the agreement was easy and that they learned a lot about their land in the process.

We have additional funds available in 2005 to pay for expenses associated with donating a voluntary conservation agreement to protect

habitat for the snake on a portion of your property within 69 meters of the shore. There can be significant income tax deductions generated from the donation of a conservation agreement and there is no public access—just the contentment of knowing that you have protected valuable habitat for the Lake Erie Watersnake as well as the other plants and animals that need shoreline habitat. Property protected through conservation agreements will help reach the goals of protected acreage for each island as set by the U. S. Fish and Wildlife Service's Recovery Plan for the Lake Erie Watersnake, and will help to achieve recovery and delisting of this unique island species. Please contact us if you need more information on this program.

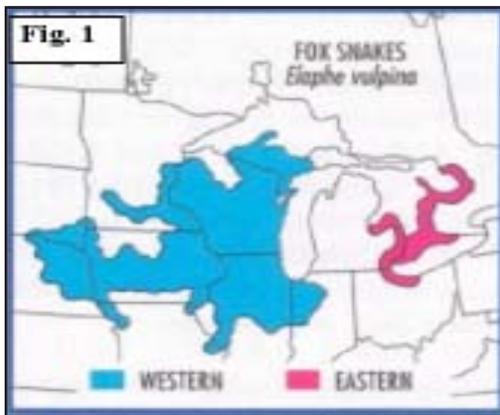
Lisa Brohl, Chair
 Lake Erie Islands Chapter of the Black
 Swamp Conservancy
 P. O. Box 155
 Put-in-Bay, Ohio 43456
 419-285-5811 leic_bsc@cros.net
 www.lakeerieislandsbsc.org



Shorelines and nearshore areas that provide habitat for the LEWS can be put into a conservation easement through LEIC-BSC, resulting in protection for the snake and significant tax deductions for the landowner.

HAVE YOU SEEN THIS SNAKE??

The Eastern Fox Snake (*Elaphe gloydi*) has historically been a dominant member in the community of reptiles residing within the marshes surrounding Lake Erie. It is a relatively large (> 5") constrictor that feeds on small mammals, birds and bird eggs. Presently, it is listed as a 'Species of Special Concern' within Ohio. Throughout the rest of its limited range (Fig. 1), which includes parts of Michigan and Ontario, the Fox Snake has been listed as 'Threatened' due to habitat destruction and exploitation from the pet trade.



In fall of 2004 researchers, Kent Bekker and Kristin Stanford received funds to begin a study for the next two years on the status and population distribution of the Eastern Fox Snake throughout its range in Ohio. They plan to use a combination of survey techniques and radio telemetry at several different locations within the state to understand how the snakes are responding to different levels of habitat fragmentation. This year, with the help of Dr. Tim Reichard, they will implant transmitters into 4 snakes at two locations: Maumee Bay State Park and the new Middle Bass Island State Park. They hope to gather enough information on the current populations of Fox Snakes within Ohio to help determine its current status.

In order to get the most information available, researchers are also asking local residents living or working near the historic range of the Eastern Fox Snake to report their sightings to a special e-mail address (ohio_fox_snake@hotmail.com). Ideally, the report should include a photo and a detailed description of the location. To help get the word out, they plan on hanging posters describing the snake and what to do if you see one at all of the local state parks and nature centers. If you live or work within the snakes historic range (Lucas, Wood, Ottawa, Sandusky or Erie Counties) and would like to request a poster to hang at a Park District or Nature Center in your area, please send an e-mail to the above address.



Researchers tag an Eastern Fox Snake

GOT SNAKES????~ Announcing Nerodio 2005

Yes, folks. Once again, the time for the annual Lake Erie Watersnake census, A.K.A. ~ Nerodio is rapidly approaching. Myself as well as many other equally insane people will be spending two weeks scouring the islands for Lake Erie Watersnakes. As in the past, we will begin our census at the Bass islands (May 31 – June 4) and then move over to Kelleys Island (June 5-10). Following Kelleys Island, we will return to the Bass island area to census the smaller islands like Rattlesnake, Sugar and Ballast. We will be visiting our traditional sites that we go to every year, however, we are always open to suggestions for new areas to get the best population estimate that we can! As part of the recovery criterion outlined in the recovery plan, one of our objectives is to continue to monitor the snake population size. Additionally, we hope that we can show that the population size is currently at the recovery size criterion (a total of more than 5500 adult snakes for all 9 US islands combined). I will also be visiting select sites throughout the summer. If you would like us to come and catch snakes on your property, please contact me at 419-285-2341 or e-mail theislandsnakelady@yahoo.com. We thank those residents who have been supportive of our work and encourage others to do so as well!

On another note, I will also be conducting an Eastern Fox snake survey this year. We plan on doing both population surveys and some radio-telemetry on Middle Bass Island. If you know of Fox snakes on your property and wouldn't mind me coming by to look for them, please send me an e-mail to ohio_fox_snake@hotmail.com or call the Stone Lab office. Thanks again!

Kristin Stanford ~ The Island Snakelady



U.S. FISH AND WILDLIFE SERVICE
6950 AMERICANA PKWY.
SUITE H
REYNOLDSBURG, OH 43068-4127

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Have questions, comments, or ideas for LEWS News? Contact us!
Megan_Seymour@fws.gov