Personal Presence

- **Kristin Stanford**, Ph.D. student, Northern Illinois Univ.
- Part-time island resident
- Research and Outreach
- “The Island Snake Lady”
Nature Camps
Contests and Presentations
Protecting Lake Erie's Natural Heritage

Telemetry Study Update

This summer, researchers from Northern Illinois University returned to the islands for the third year of the Lake Erie water snake (LEWS) telemetry study. The LEWS is a Federal and State endangered species, found only in the western basin of Lake Erie. Fieldwork from March through mid-May focused primarily on locating telemetered Lake Erie water snakes as they emerged from hibernation. In addition, radio transmitters were surgically implanted into 5 additional Lake Erie water snakes on 2 June 2002. This was possible because transmitters with at least a year of remaining battery life had been recovered from dead water snakes during the previous year.

Fieldwork conducted in late-May and early-June 2002 focused primarily on censusing adult Lake Erie water snake population size. The U.S. Fish and Wildlife Service is in the process of writing a recovery plan for the snake. This plan will identify the requirements for removing the snake from the threatened species list. One of the requirements will be a specific population size, and the information needed to calculate this population size will be obtained from the censuses completed over the past few years. Census efforts were quite successful during spring 2002; a total of 925 adult water snakes were captured and released at 15 study sites on Kelleys and the Bass Islands. New estimates of adult population size are generally consistent with other recent estimates.

Fieldwork since early June 2002 focused primarily on monitoring movement patterns of telemetered snakes. By keeping track of where and how often individual snakes are moving, researchers can further understand snake behavior, leading to a better grasp of how human activities might impact the snake. Assessment of this information will also aid in completing the Recovery Plan.

A surprising observation was made this summer related to movement patterns of snakes. A female Lake Erie water snake that was marked with a PIT tag (see page 4) on the south shore of Kelleys Island on 18 May 2001 was recaptured on Middle Island (a small Canadian island north of Kelleys Island) on 23 May 2002 by officials of the Ontario Ministry of Natural Resources. Two snakes were previously documented to have moved between Sugar and Middle Bass Islands. This new observation further documents occasional inter-island movements by Lake Erie water snakes. Researchers are not sure how the snake got from Kelleys to Middle Island; it may have swum or hitched a ride with an unsuspecting boater.

Also related to movement patterns is the news that Lake Erie water snakes have returned to Green Island. Lake Erie water snakes are known from
Dirty Jobs
Land Management

**Public land**
- 16% of total U.S. islands area*
- 10% of total island shoreline*
- Includes Parks, Wildlife Areas, Nature Preserves

**Private land**
- 84% U.S. island area*
- 90% of total island shoreline*

*Prior to listing
Public Land- ODNR

- North Bass Island purchase
  - 602 acres
  - Most of island shoreline
  - High quality LEWS habitat
Public Land - ODNR

- Purchase and rehab of Middle Bass Island State Park and Marina
  - ~100 acres
  - Large shoreline expanses
  - Huge construction project
  - Minimized take, though some take was permitted
  - LEWS rapidly recolonized after construction
LEWS Management Plan for all ODNR properties

Shoreline BMPs

Inland BMPs

Ensure suitable habitat in perpetuity
Public Land - ODNR

- South Bass Island State Park
- Green Island State Wildlife Area
- Kelleys Island State Park
- North Pond State Nature Preserve
- Kelleys Island Alvar
- Kuehnle Wildlife Area
- Fox’s Marsh Wildlife Area
- Oak Point State Park
- North Bass Island State Park
Local Champions

- BSC, WRLC, PIBTPD
- Many successful grants
- Acquisition of property with ESA Sect. 6 & Clean Ohio Grants (OEPA)
Private Land Management

- Perpetual Conservation Easements through Black Swamp Conservancy
  - Voluntary
  - Aid in achieving recovery goals
  - Tax incentives
  - Held by land conservancy, funded by Ohio DNR
Private Land Management

LEWS Guidelines
- Voluntary
- Timeframes for construction
- Mowing recommendations
- Shoreline mgmt.
- Contact info for regulatory agencies
SECT. 7—COOPERATION WITH OTHER FEDERAL AGENCIES
Federal actions—funded, authorized, or carried out by any Federal govt. entity

Must consult with USFWS if action “may affect” ESA listed species

Army Corps of Engineers is Federal agency that regulates “Waters of the U.S.”=Lake Erie, among others.
All docks, shoreline stabilization projects, dredging, etc. requires permit from Corps
LEWS occurs in these areas on islands
Must consult with USFWS before issuing permits
Required minimization measures in design, timing of these projects to protect LEWS
Snake-friendly design
Timing of Activities
Mitigation
SECT. 10—PERMITS
Sect. 10 Permits

- **Research and recovery permits**
  - NIU for all research activities; authorizes limited unintentional take during research

- **Habitat Conservation Plan and Incidental Take Permits**
  - 2 issued to private landowners; authorizes limited take due to construction of homes, requires minimization/mitigation measures.
Permits
LEWS have recolonized Green Island after an absence of more than 20 years.

Small island populations have persisted.
# Population Persistence

<table>
<thead>
<tr>
<th>Year</th>
<th>Four Largest U.S. Islands LEWS Populations</th>
<th>Small Island Populations</th>
<th>Combined U.S. Islands</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kelleys</td>
<td>South Bass</td>
<td>Middle Bass</td>
</tr>
<tr>
<td>Recovery Goal</td>
<td>900</td>
<td>850</td>
<td>620</td>
</tr>
<tr>
<td>2001</td>
<td>1860</td>
<td>1560</td>
<td>770</td>
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<tr>
<td>2002</td>
<td>2150</td>
<td>1400</td>
<td>1300</td>
</tr>
<tr>
<td>2003</td>
<td>2190</td>
<td>1490</td>
<td>1920</td>
</tr>
<tr>
<td>2004</td>
<td>2750</td>
<td>1590</td>
<td>1460</td>
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<tr>
<td>2005</td>
<td>2450</td>
<td>1590</td>
<td>1920</td>
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<tr>
<td>2006</td>
<td>2800</td>
<td>2670</td>
<td>3710</td>
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<tr>
<td>2007</td>
<td>3930</td>
<td>2110</td>
<td>2480</td>
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<tr>
<td>2008</td>
<td>3430</td>
<td>2540</td>
<td>3090</td>
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<tr>
<td>2009</td>
<td>2850</td>
<td>2630</td>
<td>4370</td>
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<tr>
<td>2010</td>
<td>3700</td>
<td>2070</td>
<td>2030</td>
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</tbody>
</table>

King and Stanford 2011
## Habitat Management

<table>
<thead>
<tr>
<th>Island</th>
<th>Property</th>
<th>Length of Shoreline (mi)</th>
<th>Land within 69 m of Shore (ac)</th>
<th>Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kelleys</td>
<td>Kelleys Island State Park; North Pond State Nature Preserve; Kelleys Island Alvar; Long Point Preserve; Schollenberger easement</td>
<td>1.47</td>
<td>58.44</td>
<td>ODNR, CMNH, LEIC-BSC</td>
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<tr>
<td><strong>Kelleys Goal</strong></td>
<td></td>
<td>0.75</td>
<td>20.5</td>
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<td>South Bass</td>
<td>South Bass Island State Park; Oak Point State Park; Scheef East Point Preserve</td>
<td>0.82</td>
<td>19.3</td>
<td>ODNR; PIBTPD, LEIC-BSC</td>
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<tr>
<td><strong>South Bass Goal</strong></td>
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<td>0.7</td>
<td>19.3</td>
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<td>Middle Bass</td>
<td>Middle Bass Island State Park; Kuehnle Wildlife Area; Petersen Woods; Lawrence Evans; Middle Bass East Point Preserve</td>
<td>1.87</td>
<td>55.3</td>
<td>ODNR; LEIC-BSC; PIBTPD</td>
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<td><strong>Middle Bass Goal</strong></td>
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<td>0.51</td>
<td>14.1</td>
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<td>North Bass</td>
<td>North Bass Island State Park; Fox’s Marsh Wildlife Area</td>
<td>6.19</td>
<td>168.8</td>
<td>ODNR</td>
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<tr>
<td><strong>North Bass Goal</strong></td>
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<td>0.34</td>
<td>9.1</td>
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<tr>
<td>Green</td>
<td>Green Island Wildlife Area</td>
<td>1.06</td>
<td>16.34</td>
<td>ODNR</td>
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<tr>
<td><strong>Total All Islands</strong></td>
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<td>11.41</td>
<td>318.18</td>
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<td><strong>TOTAL GOAL</strong></td>
<td></td>
<td>4.6</td>
<td>126</td>
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</tbody>
</table>
Intentional Mortality

Public Opinion Surveys

- Outreach campaign has reached nearly all residents, understanding of the snake has increased
- 66% positive or neutral toward snakes
- 14% would kill a LEWS if not listed
- Remains a concern, but not a significant impact on rapidly growing population.
Delisting!

- August 2011
- 23rd species delisted due to recovery
- Possible through successful partnerships, dedicated people, available funds
Post-Delisting Monitoring

- Continue monitoring population parameters and threats for 5 years post-delisting
  - Population size, realized population growth—remaining stable (King et al 2014)
  - Round goby=88% of prey (King et al 2014)
  - Managed habitat remains suitable
  - Public opinion fairly constant
Thoughts...

- ESA can and does prevent extinction and allow recovery—LEWS as a case study
- Without partnerships at State, Local, and Federal levels, recovery would not have happened
- LEWS listing generated money for conservation that otherwise would not have been available
- Brought focus to islands as places with significant natural resources
- Short time frame from listing-delisting is unusual; small range, many partners, high fecundity
THANK YOU!

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