TO: Elk River Chain of Lakes (ERCOL) Watershed Lake Associations
FROM: Common Coast Research & Conservation
DATE: June 23, 2010
RE: ERCOL Watershed Loon Banding

Loons in the ERCOL Watershed
The Elk River Chain of Lakes Watershed is one of the strongholds for common loons breeding in Michigan's northern Lower Peninsula. The Elk River Chain of Lakes Watershed supports a population of 8-10 breeding loon pairs, which may be among the largest population in the northern Lower Peninsula of Michigan. The all-volunteer ERCOL Loon Monitoring Program has been committed to proactively managing and monitoring its population of common loons since 1980.

Results of Loon Conservation in the ERCOL Watershed
Increased Population- Because of the habitat preservation and public education efforts of this dedicated group of individuals, the number of nesting pairs in the ERCOL Watershed has actually increased over the past 20 years.

Increased Productivity Rate- Nesting success has improved on lakes where volunteers have improved nesting habitat by installing artificial nesting islands (ANIs) and loon nesting area buoys, which are approved and permitted by MDNRE.

Increased Maturation Rate- Fledgling success has improved on lakes where shoreline habitat has been protected. Long stretches of undeveloped shoreline insure adequate nursery habitat and quiet, undisturbed areas for loons to rest at night.

Protected Habitat- The ERCOL Watershed Loon Monitoring Program also has advocated for habitat presEducating property owners has resulted in the protection of extensive areas along the shores of Elk Lake, Skegemog Lake, Clam Lake, Lake Bellaire and Intermediate Lake for loon nesting and nursery sites.

Proposed Project
It is estimated that between 16-20 birds will be banded on five lakes in the ERCOL Watershed. Researchers will fit the loons with USFWS metal leg bands and a unique combination of color-bands. They will collect feathers and blood, which will be analyzed for mercury.

Objectives
1. Identify individual adult common loons breeding in the Elk River Chain of Lakes Watershed
2. Assess current levels of mercury exposure of adults and juveniles in the ERCOL Watershed
3. Reassess mercury levels of banded loons sampled 18-20 years previously in the ERCOL Watershed
4. Determine risk of adult loons to zoonotic diseases, epizootic events, and contaminants based on sampling and reporting of banded loons that are recovered.

Benefits

- Increased public awareness about the unique attributes of this popular non-game species including long life span, breeding site fidelity and dynamic social behavior.
- Increased public awareness about the threats to Michigan breeding loons, such as mercury exposure and botulism die-offs on the Great Lakes (for example see http://articles.chicagotribune.com/2008-01-15/news/0801150030_1_lake-michigan-zebra-mussels-dead-birds).
- Banding and monitoring adults (>95% annual return) will allow early evaluation of the impact of potentially catastrophic events such as the Gulf Oil Spill and, if necessary, identify the need to develop mitigative measures.
- Extensive sampling of loons across North American offers a unique perspective on results of mercury sampling in the ERCOL Watershed. Loon blood and feather mercury levels, especially in juvenile loons, reflect mercury burdens in sports fish and can be an indicator to anglers of elevated mercury.

Potential Partners:

Lake associations

- Elk-Skegemog Lakes Association (4 to 8 birds)- $1500
- Friends of Clam Lake (3 birds)- $500
- Three Lakes Association (7 birds)- $1500
- Intermediate Lake Association (8-11 birds)- $1500

Michigan Department of Natural Resources & Environment

- Keith Kintigh, wildlife ecologist
- Andrea Albert & Steve Spiegel, Antrim County Conservation Officers

Common Coast Research & Conservation (CCRC)

- A non-profit conservation and research organization committed to the study and protection of the Common Loon and its aquatic habitat.
- CCRC has been monitoring loon populations in Michigan and elsewhere in North America since 1990.

Veterinarians:

- Dr. Tom Holbel- Bellaire Animal Hospital (assisted with the previous banding)
- Dr. Adrianne Waffle- Torch Lake Animal Clinic

Newspapers:

- Linda Gallagher- Antrim Review, Bellaire
- Tom Vranich- Elk Rapids Review, Elk Rapids
- Sherri McWhirter- Record/Eagle, Traverse City
- John Flesher- Associated Press, Detroit

Participation

Because loons are a threatened species in Michigan, this activity is undertaken with the utmost care and respect for the safety and health of the birds. This banding activity is conducted late at night, with a proven safe and effective capture method that has been used for 20 years.

Roles & Responsibilities

Joe Kaplan, a biologist and co-Director of Common Coast Research & Conservation will be responsible for conducting the research and managing the research team. Joe has permits to capture and band loons from the USFWS and MDNRE and has conducted loon research across the North American breeding range of the Common Loon for 20 years.

Local Volunteers- Lake associations will provide financial support for the banding activity. Lake association members, members of the press and others are welcome to observe the banding activities.

Local Coordinator- Peg Comfort will serve as the local contact person for the project and will coordinate logistics for the research team. Peg has served as the coordinator for the ERCOL Loon Monitoring Program since 1980. She assisted with the initial banding in 1990-1992.

LOONS IN MICHIGAN

FACT SHEET

Loons in Michigan

In Michigan, the Common Loon is a state-listed threatened species with an estimated population of 500-800 breeding pairs (Kaplan et al. 2010). There are fewer than 100 pairs in the southern Lower Peninsula. Most nesting pairs are located in the Upper Peninsula. More than 1,000 loons at Seney National Wildlife Refuge, Ottawa National Forest and Isle Royale National Park have been tagged and many have been recaptured.

The Common Loon (*Gavia immer*) breeds on freshwater lakes throughout northern North America and migrates annually to oceanic wintering areas on the Atlantic, Pacific and Gulf Coasts (Evers et al. 2000). Several loons that nest on the inland lakes of Michigan have been recovered along the Gulf of Mexico; some have come from the Elk River Chain of Lakes Watershed.

Loon Recovery Efforts

1980	A group of volunteers initiated the ERCOL Watershed Loon Monitoring Program
1988	MDNR surveyed loons in Michigan
1989	MDNR classified loons as a threatened species in Michigan MDNR approved a Recovery Plan for the Common Loon
1990	Michigan Loon Preservation Association (MLPA) initiated the Michigan Loon Watch on registered lakes
1990-1992	Dr. Dave Evers banded 13 loons in ERCOL Watershed
1990-2010	Joe Kaplan and Common Coast banded loons in Seney National Wildlife Refuge, Isle Royale National Park and Ottawa National Forest
2002	Forest Home Township established the first loon nursery preserve in the State of Michigan and the first township owned loon nursery in the nation, perhaps the world.

Loon Banding

Color tagging has been used for more than 20 years to identify individual loons and monitor mercury levels in the birds. Most recently, geolocating archival tags have been placed on loons at Seney NWR to determine the migratory flyways and wintering areas for this important breeding population. Recent technological advances in the miniaturization of electronic tracking devices have made possible the monitoring of broad-scale movements of free-ranging migratory species such as seabirds (Schaeffer et al. 2006).

Banded loons have a 96% return rate. The highest productivity known for loons at Seney National Wildlife Refuge and a majority of those birds are banded. Over the 20 years that loons have been banded at Seney, productivity and the number of pairs have increased. (Kaplan, 2010)

Threats to Loons

Loons have many natural predators: in the air- eagles & ospreys, in the water- muskellunge, northern pike, snapping turtles, on the land- raccoons, fox.

Loons are also threatened by loss of habitat due to residential development along the shores of inland lakes, increased boat traffic on inland lakes, wildlife harassment from jet skies and boaters and entrapment in fishing line.

New Threats

1) Mercury poisoning from atmospheric deposition & lead sinkers used by fishermen
2) Potential risk of epizootic events on the Great Lakes (e.g., botulism die-off along the north shore of Lake Michigan during fall 2006 & 2007)
3) Mortality events on the Atlantic and Gulf Coasts (Forrester 1997)
4) Zoonotic diseases (including emerging issues such as H5N1 and West Nile Virus)
3) The recent oil spill in the Gulf of Mexico- to be determined

Other Studies in Michigan

The use of archival tags to geolocate migratory flyways and wintering areas of Seney breeding loons will satisfy a current knowledge gap using a relatively non-invasive technique. Knowledge gained from using this technology will determine if loons display a similarly high level of site fidelity for migration routes and wintering areas as for breeding territories. Answering this question will allow managers to assess the risk of migratory loons to disease and elevated contaminants exposure in non-breeding areas where Seney loons are not afforded the same level of protection.

Archival tags will record ambient light levels, pressure and temperature data that can be used to estimate geographic position and diving depth. Loons fitted with archival tags will be recaptured and data retrieved upon their return to breeding territories (>95% annual return for adults). Archival tags currently record data for one migration cycles and data can be retrieved for up to ten years.

Isle Royale National Park, which uses a similar methodology to monitor loons at Seney NWR, is supporting ($18K) an archival tag project for FY 2010. Sleeping Bear Dunes National Lakeshore (SLBE) has identified the common loon as a species of management concern in addition to one of the primary avian species implicated in the die-off of nearly 3000 birds in 2006 on Lake Michigan. SLBE has initiated a project to determine factors contributing to this recent outbreak in type E botulism and continues to monitor impacted species within its boundaries through the Lake Michigan Nearshore Health Project, and is supporting the archival tag project (10K).

References/Literature Cited:

Evers, D.C., J.D. Kaplan, P.S. Reaman and J.D. Paruk. 2000. Demographic characteristics on the Common Loon in the Upper Great Lakes. J.W. McIntyre and D.C. Evers (Eds.). Loons: Old history and new findings. Proceedings of a symposium from the 1997 meeting, Am. Ornithologists' Union. North American Loon Fund, Holderness, NH.

Evers, D.C., J.D. Kaplan, M. W. Meyer, P. S. Reaman, W. E. Braselton, A. Major, N. Burgess and A. M. Schuehammer. 1997. A Geographic Trend in Mercury Measured in Common Loon Feathers and Blood. Environmental Toxicology and Chemistry 17: 173-183.

Evers, D.C. 1993. A replicable capture method for adult and juvenile Common Loons on their nesting lakes. Pp 214-220 in L. Morse, S. Stockwell, and M. Pokras (Eds.). Proc. 1992 conference on the Loon and its ecosystem: Status, management, and environmental concerns. U.S. Fish Wildlife Service, Concord, NH. 247pp.

Forrester, D.J.,Davidson, W.R., Lange Jr., R.E.,Stroud, R.K., Alexander, L.L., Franson, J.C.,Haseltine, S.D., Littell, R.C. and S.A. Nesbitt. 1997. Winter mortality of common loons in Florida coastal waters. Journal of Wildlife Diseases 33:833-847.

Gostomski, T.J. and D.C. Evers. 1998. Time-activity budget for common loons, Gavia immer, nesting on Lake Superior. Canadian Field Naturalist 112: 191-197.

Kaplan, J.D., McCormick, D.L., and K.B. Tischler. 2010. Common Loon species account. The atlas of breeding birds of Michigan. *in press.*

Kaplan, J.D. 2003. Human recreation and loon productivity in a protected area, Isle Royale National Park. M.S. thesis, Michigan Technological University.

Shaffer, S.A., Tremblay, Y., Weimerskirch, H., Scott, D., Thompson, D.R, Sagar, P.M, Moller,H., Taylor, G.A, Foley, D.G, Block, B.A. and D.P. Costa. 2006. Migratory shearwaters integrate oceanic resources across the Pacific Ocean in an endless summer. Proceedings of the National Academy of Science. 103: 12799–12802.