Northeast Loon Study Working Group (NELSWG) Meeting – January 13-14, 2000

Facilitated by the Working Group Chair: David Evers, BioDiversity Research Institute

Thursday January 13

Welcome and Introductions (List of Participants appended)

Past Efforts (1999)

Canada
Neil Burgess (Canadian Wildlife Service)
Resighting work: New Brunswick (NB) and Nova Scotia (NS). Totals: 4 weeks, 38 adults banded, 30 re-sighted, 7 loons not re-sighted and were replaced. Specific study areas: Kejimkujik (Keji) Park all 13 re-sighted, one of the banded females found dead 210 ppm kidney. Lepreau 13 of 18 re-sighted. Overall, 3 mate switching and 2 possible.

Spring Loon Surveys: Began in 1987 and continuing through 1999. 5 km x 5 km blocks. 1990-1994 is good data. NS 64 blocks NB 29 blocks. Not normally distributed so used negative binomial regression. Shows a significant declining trend in NS (driven by 1989 data). NB shows no trend, but much fewer blocks.

Other Loon work: existing data on organochlorine and mercury (Hg) in loon, bald eagle, and osprey. Combine necropsy data on body condition, disease, and parasite loads. Initial paper in J. Wildl. Diseases. Paper on stable isotopes and mercury in loons and their prey just getting underway. Collaborative study of Hg sources and dynamics in Keji. Last is Modeling of Hg dynamics and bioaccumulation (ongoing).

Louis Champoux (La Maurice, Quebec) Continue to see high levels in blood and feathers on certain lakes. Big effort to get data from CLLS and compile data for pH, fish, birds, etc.

REMAP
Neil Kammen (VT DEC) Overall goal is to get a profile of the lakes that contribute Hg to the fish that people eat and the fish that birds eat. Sampled 100 lakes so far. Sediment (deep spot) and hypo and metalimnetic Hg (water). Also paleolimnological using Pb210 cores (can tell deposition rates). Have fish from 2 sizes from 40 lakes and birds from 26 lakes so far.
Have very acid lakes and very alkaline lakes. Sediment range 26 - 624 ng MeHg, mean 4.5 ng. Total Hg (water) 0.3 - 35 ng/L, mean 5.1 ng/L. High DOC-Low pH lakes are high as well as anoxic lakes. Dave Evers, BioDiversity Research Institute (BRI). Total Cumulative Risk to loons (all lakes) NY (10%), VT (15%), NH (18%), ME (28%).

Risk Categories to Common Loons:

	Low	Mod	High	VHigh
Blood Adult	1.0	1-3	3-4	>4.0
Blood Juv	0.1	0.1-0.3	0.3-0.4	>0.4
Feather	9	9-20	20-30	>30
Egg	0.5	0.5-1.0	1-2	>2.0

Blood is just one measurement of the body burden of loons. Birds accumulate Hg over time (12% per year for adult males). Individuals need time to accumulate in order to start to see the effects.

NH

Harry Vogel, Loon Preservation Committee (LPC).

Since 1976, LPC has monitored the abundance, productivity and mortality of Common Loons in New Hampshire, managed loon populations to mitigate the effects of human activities, and educated the public about loons and their challenges. The 1999 NH loon population comprised 200 territorial pairs, 135 nesting pairs, 123 chicks hatched and 95 chicks surviving in mid August. Between 1976 and 1999, LPC monitoring revealed statistically significant increases in numbers of territorial pairs, nesting pairs, successful nests, and surviving large young. Increases in the number of territorial pairs and a steady to increasing in New Hampshire's loon population. These increases have been enough to offset decreases in the proportion of nesting pairs to territorial pairs and the proportion of large young to chicks hatched, and therefore the proportion of large young per territorial pairs. A strong negative correlation between these parameters and boat registrations, supported by other studies and mortality statistics, suggest boating has had an impact on loon populations in New Hampshire. The numbers of territorial pairs, nesting pairs, chicks hatched and surviving large young may be stabilizing over the past four years after 20 years of relatively steady growth, perhaps indicating that the carrying capacity of the state is being realized.

ME

Bill Hansen (Florida Power and Light): Hydro facilities managed for loons (9 facilities). Some work has been done for over 10 years. Try to get out every week to look at population and monitoring. Mitigating for fluctuating water levels. Do use a fair number of platforms on the large fluctuating facilities. Big changes over the 10 years. Started out trying to maximize the number of territories, now are more intelligent and careful about how deploy rafts. More demands by the public have created more problems/issues for loons. Same information that is collected by LPC is collected by FPL.

Susan Hitchcox (ME Audubon). Loon count, 500 volunteers, estimate of population count for southern Maine. Lead sinkers legislation for lead will take effect in 2002. Have an active outreach effort and funding for Pb work. Other legislative actions involve restrictions on surface water use.

VT

Eric Hansen (Vermont Institute of Natural Science - VINS): Last 5 years, nesting pairs have doubled. Chicks/pair 1.1-1.4, survivorship 80-90%. No big lake territories like Umbagog in NH. Four of six new rafts were used this past year. Intensive management via signs on some of the lakes. Use about 60 volunteers for management and 200 for loon watch one-day census. Sinker exchanges and education efforts are in place for Pb.

NY

Sixty-two loons (40 adults and 22 juveniles) and 1 merganser were sampled on 31 lakes in the Adirondack Park in NY during the summers of 1998 and 1999. Fifty-four of the loons were color-banded. Resitings of 9 of the 16 adult loons banded in 1998 were confirmed in 1999. An additional 3 probably banded birds were sited, but the band numbers were not confirmed. Yodel tagging (Cornell). Four measures of the yodel. Can separate individual male loons. If individual changes territory, yodel changes dramatically.

MA

Brad Blodgett (MA DF&W). Small program. Do not have an NGO assisiting. Looking for one to help. 1999 was a pretty good year for territorial pairs, but chicks fledged/pair have gone down (chance events). Quabbin has 10 pairs, with the others as single lake territories. There is some movement for lead sinker control. Most loon lakes are NOT residential lakes, so is different than other states. GIS effort to determine potential numbers of loon lakes in MA. Final analysis is that 60 lakes are considered potential loon lakes. 10 are already occupied. Visited 3 reservoirs. Quabbin and Fitchburg have birds banded. Wachusett doesn't allow motorboats, so capture efforts were frustrated.

Loon Health/Mortality

Lead is still the number one mortality factor. Trauma is another factor (not just boat strikes, but con-specific trauma). Hg speciation by UCONN for all tissues from 1999 on. Total number is leveling off from previous years. Wants to do fecal steroid for next year. Also want to do more vitellogenin work.

Winter Sampling

3 birds caught the last sampling period in VA (multiple reasons). 3 birds in ME. Need good weather or capture efficiency goes way down.

II. FUTURE WORK

Canada

Mercury Research Network (long shot, less than 10%)
Analyzing reproductive trends in population trends and lake pH.
Write up of existing information.

EPA

Allen VanArsdale: Air data shows that there is more than enough Hg deposited to drive the systems as we understand them now. Conceptual models predict that NE may become a net emitter in the future. Not saying that landform is saturated. There is conflict between atmospheric data and paleolimno data. Freeform discussion followed. Most of the money coming

in will come from ORD (Office of Research and Development).
Mona Hebler: Risk Assessment from multiple stressors - want to use loons and Hg as the test case. As the initial stage, map the existence of relevant loon data.

USFWS
- FERC Activities - water level fluctuations on Hg availability
- REMAP, will include mink as an indicator species for 2000
- continue NY and winter sampling
- Catostrophic events (Oil Spills)
- continue mortality studies, especially in NH
- lead sinker outreach
- more outreach in general, including publishing
- other loon issues (bycatch)

Friday January 14

State Priorities
ME - statewide census (aerial census)
NH - Outreach effort with lead
VT - water level fluctuations as it relates to background Hg levels as well as Pb issues
NY - Long term annual goals with population monitoring - need a graduate student to re-sight

NGO Priorities
BRI - REMAP with the addition of ME REMAP lakes
FPL - FERC requirements - Still have questions. Small flashy watersheds have high Hg in fish and birds.
University of Southern Maine - Genetic differences between regional populations of loons. Will give more info as techniques become available.
LPC - Continue monitoring efforts with fine tuning of data collection. Look at goals, with idea of understanding where the NH loon population is and where it "should" be. Shoreline development and watercraft activity as they relate to loon population pressure. Southeast NH is a hotspot that needs further study.
VINS - Continue with lead education and sinker exchange sites with permanent exchange sites established. Habitat loss and shoreline development are still considered to be one of the biggest problems. Tackle other than sinkers is also a problem that will be addressed.
ME Audubon - Another year of sinker outreach with a summer intern (preferrably with a ME accent). Jet Ski/boat disturbance issues are also being considered.
NY - Lead sinker legislation. New Natural History Museum in Tupper Lake with a LPC-like organization possible
TUFTS - Possible use of drugs on captured birds. Also, want to do more publishing of the data. Will continue to assist with MA sampling. Working with Lead sinker group to get slide show together.

OUTREACH

Brochure for the NELSWG
Powerpoint Presentation - Slide show
Also on CD two posters, one generic and one technical with one block left free for new information and logo.
Brochure targeted for general public when doing field work and managers.
Policy Makers - need to let policy makers know that there is data out there from NELSWG and they should put it to good use. Neil and Allen will bring up at next conference call of EGECP mercury task force.
Web site one for NELSWG (Tufts will house the lead sinker work).

III. DATABASES

A. Matrix Water Hg

Project	Dates	N Lakes	Location
REMAP	98-99	100	VT, NH
Canada	97-98	100	NB, NS, Newfoundland
SWAP	98-99	60	ME
TOTALS	**97-99**	**260**	

Water Quality Parameters Needed
pH, alkalinity, DOC, color, Ca, Al, sulfate, sulfide
NH- Bob Estabrook, VT - Neil, ME - Barry, NY - Nina

B. Matrix Sediment Hg

Project	Dates	N Lakes	Location	Notes
REMAP	98-99	100	VT, NH	50 MeHg
Canada	97	50	NB, NS	MeHg for Keji
Reservoir Study	96-97	14	NH, ME	some MeHg
TOTALS	**96-99**	**164**		

Paleo samples: REMAP, Haines, Driscoll, Keji, Allen

C. Matrix Sediment Fish Hg

Project	Dates	N Lakes	Location	Notes
REMAP	98-99	46	VT, NH	whole and fillet (YP)
Canada	96-97	24	NS	whole (YP)
Canada	97-98	18	NB	whole (YP)
Canada	97-99	15	Quebec	whole, all spp.
Reservoir Study	96-97	14	NH, ME	whole (YP)
ME REMAP	93-95	120	ME	Other species as well whole, all spp.
TOTALS	**93-99**	**237**		

D. Matrix Sediment Loon Blood/Feathers/Eggs Hg

US

Matrix	Dates	Samples	Location	Notes
Adult blood	93-99	338	Northeast US	
Adult feathers	93-99	338	Northeast US	
Juvenile blood	93-99	160	Northeast US	
Eggs	93-99	404	Northeast US	

Loon samples came from 219 different lakes in the Northeast US:
ME - 72, NH - 85, VT - 25, NY - 35, MA - 2

Canada

Matrix	Dates	Samples	Location	Notes
Adult blood	95-99	85	NS, NB, Quebec	
Adult feathers	95-99	65	NS, NB, Quebec	
Juvenile blood	95-99	51+	NS, NB, Quebec	
Eggs	88-99	22?	NS, NB, Quebec	

E. Other Piscivorous Bird Samples

- Eagles	Eggs and nestling blood	ME
- Osprey	Eggs and nestling blood	ME, NB, Quebec
- Kingfisher/merganzer	blood (n=20)	ME, NH, VT

F. Loon Health Matrix

Tufts

1) Necropsy Results (86-99)
2) Metal, OC, and PCB levels in selected tissues
3) Lead sinker results from necropsied loons
4) Blood Profile on live birds (CBC, PCM, Glucose, Total Solids) from US and Canada

Scheuhammer

1) Necropsy results (93-99) from 50+ birds from NS, NB, and Quebec
2) OC, PCB, and metals from selected tissues

G. Loon Monitoring

NY - One day census only
MA - Productivity data on 7 lakes
VT - Productivity data on loon lakes (15-30)
NH - Productivity data on loon lakes (<250)
ME - One day census plus Florida Power and Light productivity data on 100 pairs from 15 lakes
NS, NB - Productivity on 50 lakes in Keji and Lepreau, CLLS data, Aerial surveys (87-99)
Quebec - Productivity on 20 lakes, CLLS data

Note: CLLS refers to the Canadian Lakes Loon Survey.

IV. DATA GAPS

LPC - Boat intrusions. Have tried to quantify over the last couple of years, but multiple factors like time of day, weekday/weekend, nesting state, etc. confounds the analysis. ME Audubon - looked at reproductive success and boat disturbance, no one single effect found. General discussion of study design followed with no consensus reached. Discussion of the use of video as a method of influencing the public.

Shoreline development/other human disturbance (LPC). Have quantified over the last two years and are in the process of analyzing the data. General discussion followed.

Discussion lead by FWS on the need to better quantify the increase in productivity that results in outreach efforts. Results could be used during future Damage Assessments where loons are injured.

Northeast Loon Study Workgroup Members attending the meeting

BioDiversity Research Institute
David Evers, Oksana Lane, Chris DeSorbo
BioDiversity Research Institute
195 Main Street
Freeport, Maine 04032
(207) 865-3302 (voice)
(207) 865-3614 (fax)
BDLoon@aol.com

ME Audubon
Sally Stockwell, Susan Hitchcox
Maine Audubon Society
20 Gilsland Farm Road
Falmouth, ME 04105
(207) 781-2330 ext. 216 (voice)
(207) 781-0974 (fax)
sstockwell@maineaudubon.org
susan.hitchcox@maineaudubon.org

Loon Preservation Committee (part of Audubon Society of NH)
Harry Vogel, Kate Taylor
Loon Preservation Committee
P.O. Box 604, Lee's Mills Road
Moultonborough, NH 03254
(603) 476-5666 (voice)
(603) 476-5497 (fax)
h_vogal@hotmail.com
katemtaylor@hotmail.com

Vermont Institute of Natural Science (VINS)
Eric Hansen
VINS
27023 Church Hill Road
Woodstock, VT 05091
(802) 457-2779 (voice)

P.O. Box 22
Craftsbury, VT 05826
(802) 586-8064

Tufts University School of Veterinary Medicine
Rose Miconi
Tufts University School of Veterinary Medicine
200 Westboro Road
North Grafton, MA 01536
(508) 839-7918 (voice)
(508) 839-7930 (fax)

Florida Power and Light
Bill Hanson
FPL Energy Maine Hydro
150 Main Street
Lewiston, ME 04240
(207) 795-1342 x237
(207) 783-8035 (fax)
William_Hanson@fpl.com

New Hampshire Fish and Game Department
Beth Reinheart
NH Fish and Game
2 Hazen Drive
Concord, NH 03301
(603) 271-3017 (voice)
(603) 271-1438 (fax)

Maine Department of Inland Fisheries and Wildlife
Tom Hodgman
Maine Department of Inland Fisheries and Wildlife
Wildlife Division
650 State Street
Bangor, ME 04401-5654
(207) 941-4482 (voice)
(207) 941-4450 (fax)
tom.hodgman@state.me.us

ME Department of Environmental Protection
Barry Mower
Maine DEP
Ray Building, SHS 17
Augusta, Maine 04333
(207) 287-7777 (voice)
barry.f.mower@state.me.us

VT Agency of Natural Resources
Neil Kamman,
VT Dept. of Environmental Conservation
103 S. Main Bldg. 10N
Waterbury, VT 05671
(802) 241-3777 (voice)
(802) 241-3287 (fax)
neilk@dec.anr.state.vt.us

MA Division of Fish and Wildlife
Brad Blodget
State Ornithologist
Division of Fisheries and Wildlife
Field Headquarters, Rte. 135
Westboro, MA 01581
(508) 792-7270 x152 (phone)
(508) 792-7275 (fax)
brad.blodget@state.ma.us

NY Department of Environmental Conservation (NY DEC)
Nina Schoch
NYS DEC
Box 296, Route 86
Ray Brook, NY 12977
(518) 897-1289 (voice)
nschoch@gw.dec.ny.state.us
Bschochd@capital.net

Nova Scotia Department Of Natural Resources
Joe Nocera
N.S. Dept. of Natural Resources, Wildlife Division
136 Exhibition Street
Kentville, NS B4N4E5

Canadian Wildlife Service
Neil Burgess
Wildlife Toxicologist
Canadian Wildlife Service - Atlantic Region, Environment Canada
P.O. Box 6227 (17 Waterfowl Lane)
Sackville, New Brunswick E4L 1G6
(506) 364-5049 (voice)
(506) 364-5062 (fax)
neil.burgess@ec.gc.ca

Louise Champoux
Wildlife Toxicologist
Canadian Wildlife Service - Quebec Region P.O. Box 10100, 1141 route de l'Eglise
Ste.-Foy, QC G1V 4H5
(418) 648-4657 (voice)
(418) 649-6475 (fax)
Louise.Champoux@EC.GC.CA

U.S. Fish and Wildlife Service
Andrew "Drew" Major, Ken Munney, Linda Morse
USFWS, New England Field Office
22 Bridge Street, Unit #1
Concord, NH 03301
(603) 225-1411 (voice)
(603) 225-1467 (fax)
andrew_major@fws.gov // kenneth_munney@fws.gov // linda_morse@fws.gov

Environmental Protection Agency
Alan VanArsdale
USEPA
New England Regional Laboratory
60 Westview Street
Lexington, MA 02421
(781) 860-4610 (voice)
Vanarsdale.alan@epa.gov

Romona Haebler
US EPA / Atlantic Ecology Division
27 Tarzwell Drive
Narragansett, RI 02882
(401) 782-3095 (voice)
(401) 782-3030 (fax)
haebler.romona@epa.gov

Amy McMillan
US EPA / Atlantic Ecology Division
59 Shaws Mill Road
Gorham, ME 04038
(207) 839-8705
mcmillan.amy@epa.gov

Cornell University
Charles Walcott, Jay Mager
Cornell University, Department of Neurobiology and Behavior
W 255 Mudd Hall
Ithaca, NY 14853
Charles (607) 254-4382 (voice) -4308 (fax) CW38@cornell.edu
Jay (607) 266-8729 (voice) JNM22@cornell.edu