

RESEARCH HIGHLIGHTS

May 2003

NESTING BEHAVIOR OF GRAY JAYS DURING MILITARY AIRCRAFT NOISE EVENTS

Karen Gosse (Minasquat)

In April 2003, Minasquat (formerly Innu Environmental and Jacques Whitford) began a study for the IEMR on the effects of noise disturbance associated with military aircraft on the behavior of nesting Gray Jays (*Perisoreus canadensis*). As this was the first formal study on Gray Jays in Labrador, this research also provided an opportunity to collect general biological information on Gray Jays in the area.

The study area comprised suitable habitat within 2 km of the end of the two runways at 5-Wing Goose Bay and a control area in the vicinity of the Happy Valley-Goose Bay municipal landfill. Black spruce forests, the preferred Gray Jay habitat, were surveyed for the presence of nesting pairs and Potter traps used to capture adults. To aid researchers in locating nests, a radio transmitter was attached at the base of the tail retrices of 12 captured birds that were subsequently relocated by telemetry. After 6 days of searching, one nest was located on 6 May at the north end of runway 34. Nestlings were estimated at five days old when discovered. Nestling and adult behavior were monitored for 11 days during 104 disturbance events. The primary stimulus in these experiments was noise and levels were quantified using a Larson-Davis DSP80 sound meter. Maximum sound levels (L1) varied greatly (67.3 – 110.4 dB). Leq, the overall noise index which represents an average sound level required to produce the same acoustic energy as the total actual noise, also varied (59.4 – 92.0 dB) according to whether aircraft were taking off or landing, from which runway, and other conditions such as wind speed and direction. Researchers were monitoring for any overt reactions to military aircraft noise events,

such as the flushing of adults from the nest, premature fledging of young, or other startle responses. No such reaction was documented in association with this single nest. One other brood of Gray Jays was located by telemetry on 17 May, but the young had already fledged.

Status: Due to the late arrival of transmitters and lateness of the military training season, incubation duration and overall number of nests to be monitored was less than planned. Nevertheless, the study has provided a wealth of information on the biology and behavior of Gray Jays in the Happy Valley-Goose Bay region, including information on nesting habitat, hatch dates, nestling period, parental nest attendance, and on feeding behavior with insight regarding reactions to jet events at the airport.



Shirley Hill and Karen Gosse attaching transmitter to Gray Jay (Minasquat)

Inside this issue:

Gray Jays	1
Contaminants Database	2
Contaminants Database (cont'd)	3
Weather Stations	3
Model Forest	4
IEMR Staff	4
Contact Information	4

DEVELOPMENT OF A COMPREHENSIVE AND CONSOLIDATED CONTAMINANTS DATABASE FOR LABRADOR (LCWG)

In review of its research agenda for 2003 and as part of its commitment to the Labrador Contaminants Working Group, the IEMR Board recently approved \$20,000 of funding to be used towards the development of a comprehensive and consolidated contaminants database for Labrador.

Background and Project Description

The Labrador Contaminants Working Group (LCWG) was formed in April 2000 as a multidisciplinary partnership between Aboriginal groups, government agencies, university researchers, non-governmental organizations and industrial interests. The primary goal of the LCWG is to develop a research agenda to understand the scope, nature and implications of contaminants in the Labrador environment.

Compared to the rest of Canada's North, relatively little information has been published regarding contaminant levels in the soils and biota of northern Labrador. Studies that have been undertaken are scattered in databases belonging to government departments, university researchers and independent organizations. The valuable information obtained is hence difficult to access and/or retrieve. Over the past two years, the LCWG has met six times either in St. John's or Goose Bay. We have sought to bring together information on contaminant studies in Labrador and organize it into an online database accessible to all Labradorians, researchers, regulators, and others interested in contaminant research in the region.

The original research proposal sought to:

1. identify and retrieve information on existing studies of contaminant concentrations in Labrador air, water, sediment, soil, flora, and fauna from all of the various government departments and independent organizations,
2. complete a metadata (project) inventory from this information
3. develop a prototype database of the contaminants data that is both accessible and retrievable,
4. provide a framework for inputting new data as it is obtained, and ultimately,
5. develop a context within which a communications strategy and future research needs can be identified.

To date, all objectives except number 3 have been addressed. Key organizations, agencies, and researchers were contacted in 2000, and a method was set in place to retrieve the required project information. In 2001 the metadata inventory was developed and tested. A software interface was then written to allow for data entry and to ensure that data quality assurance and quality control standards were met. Upon completion, the metadata database was distributed via the web to members of the LCWG in late 2001. During the next several months, members tested and provided feedback on the web interface in order to better meet the needs of the target audience. In February 2002 the Labrador Contaminants Working Group web site was released and 'show-cased' to the general Labradorian public in two open meetings (February 25 –

Goose Bay & February 26 – St. John's). Members of the Working Group decided in February 2002 not to pursue objective number 3, since several organizations had reservations about providing raw data for public distribution.

The web-based mapping system used to display the data spatially was developed in the next stage of the project. This interface allows the online user to submit queries to the metadata database and have the results of those inquiries displayed on a map of Labrador or as a downloadable report. Following several more revisions, the metadata database and the online mapping can now be accessed by anyone on the web at www.lcwg.ca. In its current form, it includes 36 projects which are the efforts of 22 different organizations including government departments, educational and non-governmental organizations, and environmental consulting companies. Almost 20,000 individual records of contaminant information are included in the database which is now 10.9 Mb in size. The web site also provides many links to information sources on environmental contaminants in the North. These range from plain-language web sites for school children to international assessment reports on scientific research and monitoring of Arctic



Photo credit
Environmental Science Group, Royal Military College

contaminants. One of the objectives of the LCWG has been to provide easy access to understandable and reliable background information on environmental contaminants for Labradorians.

The database includes all of the information provided on contaminant levels within the Low-Level Training Area. As a user and significant stakeholder, IEMR can now begin to use the database to help make decisions about the current state of knowledge and understanding of contaminant related issues within the Low-Level Training Area compared to the rest of Labrador, and determine the most appropriate research questions to ask.

Plans for 2003-2004

Two objectives of the initial project (providing a framework for input of new data and developing a communications strategy

CONTAMINANTS DATABASE (CONT'D)

and list of future research needs) remain to be completed. These objectives will be addressed simultaneously.

A review of the metadata currently in the inventory will be undertaken in order to better understand the data capture process, the completeness of those sets, and how well the quality assurance and quality control measures have been adhered to. Once the database review has been completed, a system will be put in place to streamline new data entry into the Labrador Contaminants Metadata Inventory, and a data entry manual will be written. The LCWG will also canvass the broader environmental research, management and consulting sectors to identify projects and datasets that are still missing from



Photo credit
Department of Environment, Govt of Newfoundland and Labrador

the metadata inventory.

Having gathered and consolidated all of the contaminants metadata into a single user-friendly database, this information can now be used to begin to ask (and indeed answer) some of the specific questions posed at the genesis of this project. These questions included:

1. What is the nature and extent of contamination in Labrador soil, water, sediment, flora, and fauna?
2. How do levels of contamination in the Labrador environment compare to other areas in Canada?
3. Are there areas of overlap in the research endeavours of different organizations?
4. Is the research currently being undertaken in Labrador relevant to the information needs of Labrador residents?
5. Are there data gaps in contaminants research in Labrador? If so, what are they?
6. What research endeavours should be supported in the future to fill in these data gaps?

Thus in this final stage of the project, the LCWG will review the inventory of research projects in Labrador, and from there, identify gaps and develop a consensus on priorities for future work. This process will also actively foster greater collaboration between organizations. Throughout this process, the LCWG will continue to turn towards Labradorians and all of our partners in order to better understand the needs of the region and its people with respect to contaminants research.

Weather and Osprey in the Low-level Training Area of Labrador

Corey Cooney, Minaskuat

On behalf of the Department of National Defence, Minaskuat (formerly Jacques Whitford) has been extensively involved with monitoring the effects of low-level jet aircraft noise on the behavior and reproductive success of nesting osprey. Results of these investigations and the findings of others have indicated that nesting success of this species may be more closely tied to weather than low-level jet aircraft training. To look at this suggestion in greater detail the IEMR has engaged Minaskuat to continue monitoring osprey inside and outside the low-level training area but also collect 'local' weather information. Following suggestions from a recent Scientific Review Committee meeting on osprey, weather conditions during the 2003 season will be monitored at two sites (Parke Lake and Minipi Lake) located south of Happy Valley-Goose Bay. Each location will be equipped with Weather Wizard III wireless weather stations from Davis Instruments capable of recording temperature, wind direction, wind speed and rainfall. Software will record these data every 30 minutes allowing for 30 days of observations before the stations must be revisited to download the information. Two local outfitters Mr. Dave Hollett and Mr. Jack Cooper, are cooperating with this program. Ultimately, the researchers hope to determine whether a relationship exists between osprey reproductive success and the surrounding weather conditions.



Corey Cooney installing weather wizard at the Parke Lake Lodge (Minaskuat)

INSTITUTE FOR ENVIRONMENTAL MONITORING AND RESEARCH

P.O. Box 1859, Stn. B
Happy Valley - Goose Bay, Labrador
AOP 1E0

Phone: 709-896-3266
Fax: 709-896-3076
Email: iemr@iemr.org

Western Newfoundland Model Forest Board Presentation April 2003

Sean Dolter, WNMF

An information session was held during the April 29-30, 2003, meeting of the Board. Mr. Sean Dolter, Project Manager with the Western Newfoundland Model Forest, reviewed for the members the innovative techniques used by them for strategic forest management. In his presentation, Mr. Dolter outlined the objectives of their program and the partnership activities for 2003-2004 which include capacity building and developing processes for managing our forests, applied science for forecasting management options, decision support, and communication and public participation.

His presentation outlined four case studies - the first being an outline of the techniques used to geo-reference non-timber values through surveying methods, recording, digitizing, preparing GIS software layers, making queries, and public delivery. Non-timber values mapping was explored by the WNMF as a means of assisting local communities and organizations with sharing their forest values with district planning teams. These non-timber values can be added to GIS layers and overlaid with potential harvesting blocks. Possible conflicts that may arise from the co-existence of harvesting with a non-timber oriented value become evident when spatially arranged. The planning committee may then concentrate on geo-referenced spatial conflicts versus vague recollections of where conflicts may exist. This methodology also engages the opinions of residents that may not want to commit to the format of publicly oriented participation process.

The second case study involved the Biodiversity Assessment Modeling strategy and the components and challenges of the Natural Disturbance Regime (NDR) project in place in the boreal forest of Western Newfoundland. This project works directly with the province's wood supply model and will enable industry and provincial departments to forecast the impact of various harvesting scenarios into the future. Once these scenarios are forecasted, a series of secondary models will analyze the impact of harvesting on a variety of biodiversity parameters and indicator species. These parameters will be compared with the output of LANDIS, a natural disturbance simulator model. LANDIS will forecast the same forest without human impact and give each parameter's natural range of variability. The final analysis will indicate to forest managers if their harvesting strategy will potentially cause detrimental effects on this suite of biodiversity indicators.

The third case study he presented included the details of the stream crossing and characterization which mapped all stream crossings surveyed from 1998 onward in Western/Central Newfoundland. He added that this program was expanded to include Labrador in 2001. According to research conducted by the WNMF partnership in Copper Lakes, stream crossings were the number one contributor to stream siltation. Eric Young, with the Engineering Division of the Department of Forest Resources and Agri-foods was presented with the stream crossing prototype and will be continuing the process for the WNMF partners.

In concluding, Mr. Dolter reviewed the background of the work that they have conducted in Labrador including the role they will play with the implementation of the forest management district 19 plan and the establishment of a forest management committee.

IEMR STAFF

Moncton, New Brunswick

Louis LaPierre, Ph.D.
Institute Chair

Gloria Belliveau
Executive Assistant

Happy Valley- Goose Bay,
Labrador

Maureen Baker
Administrative Manager

Natasha Canning
Secretary

Colin Jones (on leave)
Wildlife Biologist

Tony Parr
GIS Specialist

Annette Greenslade
Post Doctoral Fellowship



Research Highlights

Information for this issue of Research Highlights was provided and compiled by Institute staff. If you have any comments or if you have information you would like to see included, please contact the Institute's office.