

DATA MANAGEMENT AND SHARING

Integrating LaMNA (Landbird Monitoring Network of the Americas) and the Western Hemisphere Bird-Banding Network

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<http://www.klamathbird.org/lamna>

What is LaMNA?



- Organized in 2000 as the Migration Monitoring Working Group of Partners In Flight
 - LaMNA is a Network of banders and institutions that play many roles to bring together data, increase communication and to provide many tools to bird banders and banding organizations.
 - Major direction comes from the North American Banding Council, North American Bird Conservation Initiative, and the Canadian Migration Monitoring Network, and other organizations throughout the Americas.
 - Principal idea of LaMNA is not to lose any banding data. About half of data that people take of bird banding and bird census activities are lost every five years without some backups
- For example, we are entering data for F. G. Stiles, taken in the 1970's from Colombia. And we are working with partners on landbirds throughout Mexico and elsewhere in Latin America.
 - We are enabling NABC standards and maintain the **full diversity of data as it was taken, under the motto: "No Data Left Behind!!"**

Who are LaMNA?

- Paid personnel: from several bird observatories, NGOs, etc. (e.g., PRBO, Klamath Bird Observatory, Bird Studies Canada, Cornell Laboratory of Ornithology, USFS Redwood Sciences Laboratory)
- All together the organizations spend on this project a budget of more than \$750,000 in 2010
- Personnel: include full and part time people: a data base manager, GIS specialist, two analysts, banding data coordinator and others. Assistance from web designers, programmers
- Completed objectives in last two years): to provide tools (online or stand-alone) for
 - Entering data in the lab and the field.
 - Checking validity of species and attributes
 - Data displays and visualizations
- ...AND.... LaMNA IS ALSO MADE UP OF ALL OUR COLLABORATORS AND DATA DONORS!
- LaMNA not just a hyper-Network of collaborators, but a variety of applications and tool developments in a WIKI-style using R-program (<http://www.r-project.org/>).
 - Open-source (free)
 - Peer-to-peer
 - Collaborative

LaMNA Organization and Goals

Governance based on model of "Partners in Flight". That is..... *"If you show up, you are a part!"*

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Red de Anillamiento de Aves del Hemisferio Occidental

Goals are:

- Establish and maintain the list of Partners and Data Donors
- Maintain communication
- Provide data-handling tools
- Provide visualization tools
- Enable data storage and security

What is “Visualization?”

Simple (easy) and rapid way to “see” your data. It helps you understand what the birds are trying to say to you about their life styles and needs, providing you with information for land managers and politicians to show what the birds requirements are.

Graphs and summaries allowing for data filters (choose sub-sets of data) –

- Over time, e.g., by month or year
- By local stations, or regional compilation of several stations
- Subdivisions of any of the data by age/sex, condition, breeding status, etc.

For:

- Capture rates (abundance of residents, birds moving or staying)
- Health status (e.g. fat, wing vs. weight, etc.)
- Breeding status (e.g. brood patch, condition)
- Skull ossification rates
- Molt types and strategies

The taxonomy challenge: what is a species? Authorities for taxa?

- LaMNA adopted the eBird list (eBird.org) as the taxonomic authority for the Americas (it associates “common names” to taxa)
- Most banders record common name, thus facilitating conversion of these to the appropriate taxonomic definitions when revisions are made

There is a heiracrcy of bird names, based on eBird

group (e.g. “sparrows”)

genera

super species (e.g., “flicker”)

species

super-subspecies (e.g., red Fox Sparrows)

or subspecies

Data standardization challenges

LaMNA uses Avian Knowledge Network (Cornell University, et al.), an “exchange schema” that compiles datasets, including banding data. We have learned that there is a definite need for standards of references and definitions for each variable.

At least two ways to handle the challenge:

1. Unified Standards (essentially impossible!) vs.
2. Metadata collection

...both approaches when possible

Needed for sharing and analyses... especially of very valuable historical data

Body fat example:

- Several measurement methodologies as shown in the table below for different locations of fat
- Several scoring methods even at one location such as the furculum.
- In many cases no simple one-to-one translation to a universal methodology or scoring method

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Bander 1	Bander 2	Bander 3
Furculum	Abdominal	Total
None	None	No
<30%	Slight	Yes
30-60%	Abundant	
>60%		

Unified standards vs. flexible variables

- Unified Standards (everybody the same):
 - Little processing needed, BUT
 - Historical data makes up vast majority and we can't easily unify these!
 - People want to take special data, such as flight feather molt in more detail
 - Unified could make constraints on creativity and exploration?
- flexible variables: The solution– to this is to embrace the diversity and map the data and variable “domains” (categories) by being flexible with the data definitions.
 - Include all variables from all methods
 - Allow varying definitions for variables
 - Provide flexibility for historic and future(!) variables

Specific and standard variables

for example: A variable called “TailMeasurementLength”

Contains two fields, one for description of the method, other is the measurement's value.

Example of description of the method used and the units measured in would be:

Tail Length: “Length of outer tail feather; Method specified, but usually measured from the insertion of the central two feathers to the longest tail feather to the nearest mm.] millimeter”

Non-standard variables

For variables not common to many banding stations, special-project data, e.g., for molt, bill, and other measurements Three groups of fields can be used to describe these variables, ...

One field names the variable, another describes how it is taken, and the third measures it

How we do it? LaMNA Three Steps in Data Processing:

Step I: Cooperator sends full dataset in any format

Each “dataset” ideally should comprise 4 data files:

- Banding data
- Effort data
- Location data
- Sampling protocol

Step II -- LaMNA data “migration”

- LaMNA experts process datasets into Avian Knowledge Network (AKN) format. Ultimate output is: a single flat table holding cooperator data in AKN data exchange format (515 fields!)

Step III -- LaMNA data “federation” –

- Matching variables and fields to make it universally available to cooperators

LaMNA current status

- Data Universe: (30.000.000 banding records have been taken)
- Data files received: effort, birds, location curated “as is” (~ 1,350,000 records)
- Data reviewed by LaMNA (864,180 records)
- Data processed: all data properly linked into single table “view”(683,600 records)
- Data processed: formatted to fit AKN's data exchange format (502,621 records)

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- Dataset fully documented, curated and posted in web-based access system (484,266 Bird records)

Tools Now Available at the website

- Band Inventory Tracking Tool
- Banding Data Entry Program
- Exploration Tools
- Analysis Tools (Programming in R)

Our goal is help you properly document preserve and make available every banding dataset
Our work has just begun. We need YOUR HELP We are inviting you to join our effort!!

Discussion 8 - DATA MANAGEMENT AND SHARING

Argentina Alex Jahn – There is a plan to expand Monitoring Avian Productivity and Survivorship (MAPS) program to South America. I think that this probably will not happen soon. Aves Internacionales wants to enter data into LaMNA, because we want to compare its data with North American data of survivorship and productivity. We need a standardized way to enter data on the Network to compare data.

United States - C.J. Ralph - U.S Forest Service -All the data that collected from LaMNA are totally comparable with the MAPS data from the Institute for Bird Populations LaMNA is developing tools for survivorship programmed by "R" (www.r-project.org). It doesn't matter what the origins of the data are, you can do mark-recapture with your own data.

Chile – Ana Maria Venegas – AvesChile – In Chile, the majority of the researchers have a commitments with their projects' sponsors, and they aren't willing to give the data to the database. When they share information it is only about the migratory birds.

Costa Rica -Pablo Elizondo – INBio, Costa Rica - It is important to note that LaMNA has five security or access levels for outsiders. To learn about these levels, visit: <http://www.avianknowledge.net/content/about/data-access-levels>. Any contributor could decide which level best fits their needs, and also they can change their security level over time.

Brazil - Raquel Lacerda- CEMAVE – How could be send the data?.

United States - C.J. Ralph - U.S Forest Service -- You can send the information to LaMNA in any possible form, paper, electronic files, etc. The most important thing is that data has the fourth component files (Location, Effort, Banding data, and Protocols). Any country could be a node for funneling the data in, so far you can create your node.

Colombia - Maria Isabel Moreno - SELVA – In Colombia there is a Sistema de Información de Biodiversidad, managed by the Instituto Humboldt, which is likely to be similar to many other Latin American countries. One possibility is to send the information to the official place in Colombia and also to the LaMNA, so it is possible to have the information access and the analysis capabilities at LaMNA.

Costa Rica -Pablo Elizondo – INBio, Costa Rica – In order to avoid duplicate data being reported, LaMNA could establish contact with other nodes and Initiatives to share the information.