

Sea Duck Joint Venture Annual Project Summary for Endorsed Projects FY 2012 – (October 1, 2011 to Sept 30, 2012)

Project Title: SDJV Project #131: Compilation and archival of sea duck satellite telemetry data

Principal Investigator(s): Alicia Wells-Berlin, USGS Patuxent Wildlife Research Center

Partners: Many (see attached table listing contacts and contributors)

Project Description: Satellite telemetry has been the primary tool used to track migration of sea ducks. Many researchers with various affiliations have used this technique, representing a considerable investment due to high cost of transmitters, data acquisition, and capture and veterinary costs. In an effort to secure these valuable data sets in perpetuity, the SDJV contracted with USGS Patuxent to contact researchers with responsibility for satellite telemetry data sets, acquire the Argos and other metadata for deployments, and securely archive these data sets.

Objectives:

- 1) Contact all principal investigators for any completed or ongoing satellite telemetry study of sea ducks in North America to request raw (Argos) data sets.
- 2) Obtain and secure as many satellite telemetry data sets as possible, on a voluntary basis. Upload Argos data for all available historical satellite telemetry data sets on sea ducks to a publically accessible web-based central repository and mapping and analysis tool, such as *MoveBank*, *STAT*, and *Seaturtle.org*.

Project Status (as of October 2012)

A letter (see below) was sent from the SDJV Management Board to 38 researchers (Table 1).

Of the 38 researchers who received the letter from the SDJV management board only 7 were completely unresponsive. Of those that responded, 8 were individuals who were collaborators on a project and did not manage the datasets. We have 8 datasets that are on hold at present that we will still continue to remind the researchers to upload and assist them if needed. In the attached spreadsheet the comment section explains the last communication we had with the researcher. We have archived 13 different datasets representing 9 different species. All but two of these have provided the deployment information needed to define the datasets. We will continue to correspond with these researchers in hopes of obtaining these necessary files.

Once we have received all the outstanding datasets then we will complete a batch upload into Movebank as requested by SDJV. The Movebank folks have requested that we upload all at once so we can work through any errors that may occur all at once. However, there are 12 datasets that are already uploaded into either seaturtle or Movebank. These were completed by the researchers themselves before we obtained the data. We have found out that if we attempt to download the data from Movebank that they do not store the sensor data associated with the transmitter. Therefore, we have strongly suggested sending us raw ds and diag data directly.

This project required numerous emails and phone calls to receive the datasets, but I think the initiative was fruitful. It would be beneficial to determine what the ultimate outcome for this data is, but in the meantime we will maintain within our database and on Movebank. Feel free to contact me if you have any questions or concerns.



Sea Duck Joint Venture Coordination Office
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503
907-786-3569
August 30, 2011

Dear **Principal Investigator of a project that has used satellite telemetry for sea ducks,**

Satellite telemetry is one of the most important tools used for investigations of sea ducks. Birds are difficult to capture, and the costs of transmitters (PTTs) and data acquisition are high, thus the resulting data sets are extremely valuable. The Sea Duck Joint Venture is seeking satellite telemetry data for North American sea ducks from all researchers who have previously marked sea ducks, or are involved in ongoing satellite telemetry programs to help ensure that these data sets are safely preserved and to facilitate viewing of tracking maps and summary results (at discretion of PI) from those studies. The purpose of this letter is to invite you to be a part of this effort.

A similar letter was sent to many of you last year, but response was light and we wanted to better clarify what the effort was about, and address some questions that came up, and hope for higher participation this time around.

How do you and the sea duck research and management community benefit from this effort?

Our intent is to facilitate information exchange and ensure permanent archival of these important and expensive data sets. The sea duck data model and database is being developed to archive both the detailed raw Argos data and filtered data points and geometry. The filtered output includes good quality PTT data points and summarized data points (i.e., the single best point per cycle). These data can be exported for additional analysis using external tools like Matlab, Google Earth, ArcView, Excel and others. The export can include detailed PTT data or summarized geometry files (e.g., polygons of key areas used by species for display in a mapping program). Security features allow a program manager or owner to control the levels of access to a program or grouping of PTTs. For example, access could be granted to detailed PTT performance data, detailed PTT location information or summarized geometry/polygon data. Access could be limited to a specific period of time as well. There has been a significant time and money invested in collecting this valuable data on sea duck movement patterns from satellite transmitters. However, without the proper tools to manage, analyze, and disseminate the data, all potential benefits to sea duck management will not be realized.

- Your valuable data will be safely and securely archived in a permanent database at USGS. We are also involved in discussions with the Bird Banding offices in both the U.S. and Canada to see if they will consider serving as a permanent repository for satellite telemetry data.

- Your data will be automatically uploaded to Movebank (see Movebank description, below)
- Your data will be automatically uploaded to WildlifeTracking.org. (see Wildlifetracking description, below) For an example of mapping products, go to <http://www.wildlifetracking.org/feature.shtml> .

What level of security would be afforded to these data?

You will have total control of your data – you set the level of access that you are comfortable with. It is not our intent to restrict your ability to publish data on your own. The Movebank and WildlifeTracking programs have variable levels of data sharing that are set by the principal investigator. Levels include 1) no sharing at all (these data would only be visible to the principal investigators and the data manager), 2) data can be visible by others, but no manipulations can be made except by the principal investigators or the data manager, and 3) data are fully shared and can be viewed as well as downloaded by anyone who has that access level.

What does it cost you?

There is no cost to you, other than the time it takes you to organize your files for transfer.

What would we need from you?

We would need the raw unfiltered Argos data files in DIAG format as well as the DS files. Also needed would be the metadata associated with the PTT's like species, sex, age, weight, deployment date and time, band number, and the duty cycle(s) of the PTT. These data could be emailed, dropped in a designated drop folder on the my.usgs.gov site (detail instructions located in Appendix) or mailed on a DVD or flash drive, which will be returned to you. (We would prefer the my.usgs method) In addition to the old raw data, we would need you to add Argos user "perry" as being "on copy" for any of your ongoing programs. This can easily be completed using the Argos website.

The SDJV has contracted with USGS Patuxent Wildlife Research Center to help acquire, on a voluntary basis, as many data sets as possible and to manage and upload these data sets as described above. **In the near future, you will be contacted directly by Ron Therrien who can provide additional details about the proposed archival project and answer your questions.**

We greatly appreciate your consideration for participation in this project. For further details or if you have any questions please feel free to contact Ron Therrien at 301-497-5640; rtherrien@usgs.gov.

Sincerely,

Mr. Keith McAloney, Sea Duck Joint Venture Management Board Co-chair, Canada

Mr. Brad Bortner, Sea Duck Joint Venture Management Board Co-chair, U.S.

Movebank

<http://beta.movebank.org>

1. Movebank acquires new data in real-time by linking data streams coming from satellites, cellphone networks, or other local area networks.
2. Existing (legacy) animal data are uploaded to the centralized Movebank database.
3. Users who prefer to host their own data can link to Movebank resources through a distributed system.
4. Users interact with data through a customizable 'cyberdashboard' with online calculators for spatial analyses, animal density estimation and other statistical tools.

Who can use it:

- All potential users are invited to share experiences, questions, suggestions at www.movebank.org/community.
- Animal-trackers and camera-trappers have exclusive access to their data and the option to make them "open access" to share with professionals and students, with appropriate credit. Scientists will be able to interact with their data in realtime, and make instant comparisons with legacy data from other studies.
- Theoreticians can mine animal movement and distribution data to test ideas related to ecological patterns, evolutionary processes, and disease spread.
- Conservation managers can use Movebank to show population changes over time and space.
- Educators will find a wealth of examples to illustrate biological principals and let students ask and answer their own questions about wild animals.

Pros:

- Can standardize various formats of tracking data, such as Argos, GPS, and banding.
- Provides various levels of sharing the data:
 - Completely private – only the designated PIs can view and access data
 - Collaborator – data can be seen by designated parties other than PI but not accessed
 - Public – full release of data
- Can use Dave Douglas filter on data.

Cons:

- Still new and so the program is a work in progress at this point.

Wildlife Tracking

<http://www.seaturtle.org> OR <http://www.wildlifetracking.org>

(these are sister sites that are replicas of each other - just two different domains for non-seaturtle users)

The "Satellite Tracking and Analysis Tool" (STAT) is the engine that works behind the scenes to make everything go. Each night STAT logs in to the ARGOS computers and retrieves any new or updated data and inserts them into the database. It then sends a summary of the update to e-mail addresses designated by each program manager and regenerates all of the maps to reflect the new or updated data.

STAT is also where you set up projects to be shared on the satellite tracking web site, wildlifetracking.org. Simply create a new project, give it a name and description, select each of the tags that should be included in that project, and even upload sponsor and partner logos to be displayed on the project page. You can set up as many projects as you like. You can then configure each of your tags by entering an animal's name and background information and choose from a number of options that control the appearance of your maps. You can preview all of your pages before making them public, and simply check a box to make a project public when you are ready. You are not required to share your tracks to take advantage of STAT, but it is preferred that at least some of your tracks are made public.

Also under development are a suite of data management and analysis tools. Currently, you are able to review and export your data, including bathymetry data extracted from the GEBCO 1-minute global bathymetry dataset. Additional tools include data filters, summary reports and maps, additional export functions and a direct link to SEATURTLE.ORG's Maptool for on-the-fly mapping of your data.

Once you are sharing tracks on SEATURTLE.ORG those animals become eligible for the "Adopt a Tracked Animal Program". You may designate which animals to make available for adoption. Visitors to the web site are invited to adopt tracked animals. Proceeds from each adoption go to support both your tracking program and SEATURTLE.ORG's tracking program. Contact tracking@seaturtle.org for more details and terms of agreement.

Pros:

- Elaborate mapping capabilities, such as sea surface temperature, chlorophyll a, currents, NDVI,
- Automatically uploads data from Argos every day.
- Emails any partners automatically so interested parties are kept up to date on progress of animals.
- Adoption program which could potentially provide money for future sea duck research.

Cons:

- Can only use Argos tracking data - no other format.
- Does not employ Dave Douglas' filter, but has other filtering capabilities that are similar.

Data Archival at USGS

Data to be archived will be supplied via the Seabird Tracking area on the my.usgs.gov web site at https://my.usgs.gov/home/portal/community/Seabird_Tracking.

Access to the site can be requested from rtherrien@usgs.gov. Your email address will be your logon id and a password will be assign to you by the site administrator. Once you have access complete the following:

- 1) Create a folder containing the raw unfiltered Argos data in DIAG and DS formats
- 2) Download and completed deployment spreadsheet from [Transmitter Deployment Information.xlt](#) saving the results in the same folder.
(https://my.usgs.gov/alfresco/webdav/Communities/Seabird_Tracking/Templates/Transmitter%20Deployment%20Information.xlt)
- 3) Upload this folder into the drop folder on my.usgs.gov.
(https://my.usgs.gov/alfresco/webdav/Communities/Seabird_Tracking/PIs/Drop%20Folder)

Your data will now be safely archived.

For those with ongoing projects that are interested in having their data filtered by the Douglas filter and returned for their use, the my.usgs.gov site also provides this capability. Once we have the archived data, if transmitters are still active Argos user “perry” needs to be added as on-copy for the data. That way all your future Argos data is automatically downloaded into the archives and run through the filter. The output from the filter process is then available online using a network drive interface. Via security permissions, the principle investigator controls who has access to the data.

Table 1. Researchers contacted about archival of satellite telemetry data sets.

SDJVdataarchivalfinalsummary.xlsx

| A | B | C | D | E | F | G | I | K | L | M |
|---------------|--------------|--|-----------------------------------|---|---------------------------------|---------------------|---------------------|--------------------------|---------------|--|
| First Name | Last Name | Email | Affiliation | Species | Marking Location | Obtained & Archived | No response from PI | On Movebank or Seaturtle | Activity Log | Comments |
| Tony | Chubbs | techubbs@cabelab.net | | | | | X | | | no reply |
| Grant | Gilchrist | grant.gilchrist@ec.gc.ca | Environment Canada | | | | X | | | no reply |
| Mark | Mallory | mark.mallory@ec.gc.ca | Environment Canada | | | | X | | | no reply |
| Joshua | Stiller | jostille@syrr.edu | University of New York Syracuse | | | | X | | | no reply |
| Mike | Petrula | mike.petrula@alaska.gov | Alaska Dept Fish and Game | | | | X | | | out of office until Aug 12, no reply since then, requested nudge by John Pearce |
| Jonathan | Thompson | j.thompson@ducks.ca | Ducks Unlimited | | | | X | | | received an automatic reply from Pamela Corbett, must not work with DU anymore |
| David | Ward | dward@usgs.gov | USGS Alaska Science Center | surf scoter | Baja, California, Alaska | | X | | | no reply, requested Sean and John to nudge him for us, out in the field until Sept 10 worked with Jerry |
| Blake | Bartzen | blake.bartzen@ec.gc.ca | Environment Canada CWS | long-tailed ducks | Northwest Territories | | | | in process | emailed through Tim Bowman, willing to participate, no communication since then |
| Margaret | Petersen | mpetersen@usgs.gov | USGS Alaska Science Center | | | | | Y | in process | told John Pearce that she is uploading all into Movebank...working on getting access to these to upload into our database |
| John | Pearce | jpearce@usgs.gov | USGS Alaska Science Center | | | | | | in process | |
| Joseph | Evenson | joseph.evenson@dfw.wa.gov | Washington Dept Fish and Wildlife | surf scoter, white-winged scoter | Puget Sound, Washington | | | | in process | have not heard from since initial communication stating interested but very busy, will keep following up |
| Dan | Rosenberg | dan.rosenberg@alaska.gov | Alaska Dept Fish and Game | black scoter, harlequin duck, steller's eider, surf scoter, white-winged scoter | Alaska | | | | in process | have not heard from since seaduck conference, John will nudge (told John he would be in touch with us...still no correspondence) |
| Matt | Seixon | mseixon@usgs.gov | USGS Alaska Science Center | spectacled eiders | Alaska | | | | in process | last transmitter just finished will upload soon |
| Susan | De La Cruz | delacruz@usgs.gov | USGS San Francisco Bay | surf scooters | San Francisco Bay | | | Y | in process | in field, will upload upon return |
| John | Takekawa | jtakekawa@usgs.gov | USGS San Francisco Bay | surf scooters | San Francisco Bay | | | Y | in process | Susan is taking care of his data upload |
| Jason | Schamber | jason.schamber@alaska.gov | Alaska Dept Fish and Game | black scoter | Alaska | | | | on hold | waiting for publication to be accepted then will upload |
| Sean | Boyd | sean.boyd@ec.gc.ca | Environment Canada | barrow's goldeneye, black scoter, surf scoter, white-winged scoter | British Columbia, Alberta | | | Y | in process | could not get scoter data or complete deployment files uploaded before Oct. 1st. will continue to follow up with him. |
| Abby | Powell | franp@uaf.edu | University of Alaska Fairbanks | king eider | Alaska | X | | | Received data | working with student, Rebecca Bentzen, USB in the mail |
| Lynne | Dickson | lynne.dickson@ec.gc.ca | Environment Canada CWS | Common eider, King eider, long-tailed | Western Canadian Arctic, Alaska | X | | | Received data | Myra Robertson has data with Lynne's retirement |
| Scott | Gilliland | scott.gilliland@ec.gc.ca | Environment Canada CWS | surf & black scooters | Labrador, Restigouche River, NB | X | | Y | Received data | |
| Christine | Lepage | christine.lepage@ec.gc.ca | Environment Canada CWS | white-winged scoter, surf scoter | St. Lawrence Estuary | X | | Y | Received data | |
| Pam | Loring | ploring@my.uri.edu | University of Rhode Island | black scoter | Jamestown, Rhode Island | X | | Y | Received data | |
| Philip | Martin | philip_martin@iws.gov | USFWS Alaska | steller's eider | Alaska | X | | | Received data | |
| Jay | Osenkowski | jay.osenkowski@dem.ri.gov | Rhode Island Dept Env Mgt | surf scoter, common eider | Jamestown, Rhode Island | X | | Y | Received data | |
| Matt | Perry | mperry@usgs.gov | USGS FwRC | black and surf scoter, long-tailed duck | Chesapeake Bay, MD, Nantucket, | X | | Y | Received data | |
| Scott | Petrie | spetrie@hsc-ec.gc.ca | Long Point Waterfowl | Lesser Scaup | Lake Ontario | X | | | Received data | non-seaduck and need more complete deployment files |
| Michel | Robert | michel.robert@ec.gc.ca | Environment Canada CWS | harlequin | St. Lawrence Estuary | X | | | Received data | |
| JP | Savard | jean_pierre.savard@ec.gc.ca | Environment Canada | common eider, barrow's goldeneye | St. Lawrence Estuary | X | | Y | Received data | have data, requested deployment files, received no reply |
| Lucas | Savoy | lucas.savoy@briloon.org | BioDiversity Research Institute | white-winged scoter | Massachusetts, Maine | X | | Y | Received data | |
| Philip | Wilson | philipwilson@gmail.com | Long Point Waterfowl | Long-tailed Ducks | Lake Ontario | X | | Y | Received data | |
| Jerry | Hupp | jhupp@usgs.gov | USGS Alaska Science Center | | | | | | | Has no seaduck data and only VHF data |
| Paul | Flint | pflint@usgs.gov | USGS Alaska Science Center | | | | | | | Jason Chamber will handle his BLSC data |
| Dan | Esler | desler@sfu.edu | Simon Fraser University | | | | | | | responded that data was controlled by other PIs on list |
| Jean-Francois | Giroux | giroux.jean-francois@uqam.ca | University of Quebec at Montreal | | | | | | | JP has common eider data |
| Glen | Mittlehauser | purple.sandpiper@gmail.com | Maine Natural History Observatory | | | | | | | Michel Robert's dataset |
| Heather | Wilson | heather_wilson@iws.gov | USFWS Alaska | | | | | | | no data, just assisted with Margaret's projects |
| Ramunas | Zydalis | zydelis@gmail.com | | | | | | | | not NA data, removed |
| Leif | Nilsson | leif.nilsson@zooekol.lu.se | | | | | | | | not NA data, removed |