

# **Long-billed Curlew Satellite Telemetry Project Meg and Bert Raynes Wildlife Fund Interim Report**

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## **Brief Summary**

In May and June of 2013, Intermountain Bird Observatory (IBO) outfitted 5 adult curlews breeding in Idaho with satellite transmitters. In 2014 and 2015 we expanded and deployed an additional 26 transmitters on curlews from 7 distinct breeding sites across 3 states: Idaho, western Montana, and Wyoming. The effort in Wyoming began with a grant from the Meg and Bert Raynes Wildlife Fund in 2014 that allowed us to track a female curlew, “AJ” from the National Elk Refuge (NER) to western Mexico. This interim report focuses on capture and movement details for a new female, “HY”, captured in 2015 in the Kelly Hayfields area of Grand Teton National Park (GTNP) supported by the Meg and Bert Raynes Wildlife Fund in addition to an update on AJ, and a brief summary of results from the region.

## **Introduction**

Long-billed Curlews are declining in many parts of their range and factors include habitat loss and degradation, environmental toxins, and human disturbance (Dugger and Dugger 2002). Boise State University’s Intermountain Bird Observatory (IBO) has studied a population of curlews in southwestern Idaho (Long-billed Curlew Habitat Area of Critical Environmental Concern; ACEC) since 2009 - a population that was first studied intensively in the late 1970s (Jenni et al. 1981) and for which subsequent monitoring has documented a population decline of at least 90% in just over 35 years. In addition to the much reduced population size, we’ve also observed very low reproductive success at this site. In recent years, we’ve also expanded our curlew research to other breeding populations in the Intermountain West, including other parts of Idaho, Montana, and Wyoming. We have directly observed some threats on the breeding grounds but others may be happening during migration and/or in wintering areas. Our knowledge about what curlews do once they leave Intermountain West breeding areas is limited (but see Page et al. 2014), hampering our ability to explain population declines. Some basic questions that we still lack information about include:

- What migratory routes do they take to reach their wintering grounds?
- When do Intermountain West breeding curlews arrive on their wintering grounds and where do they go?
- What specific habitats do they require during migration and winter?

Satellite transmitters on Long-billed Curlews can provide valuable insights into the species’ migratory routes, migratory timing, and habitat requirements - information critical to conservation planning. In recent years, researchers have attached satellite transmitters to curlews

in other western states with great success, especially in terms of learning about migration routes and wintering destinations. Curlews from Montana, Oregon, Nebraska, and Nevada have each been tracked to different wintering grounds (Page et al. 2014). Two curlews banded in the ACEC in the 1970s were later recovered/re-sighted in California and Haiti (R. Redmond, pers. comm.) but we still don't know enough about where curlews that breed in Idaho, western Montana, or Wyoming migrate to and spend the winter.

## **Methods:**

Capture, Banding, and Attachment of Satellite Transmitters: We searched for nests by observing behavior of adult curlews. Most often we found nests by watching key activity areas during the early morning and early evening. During these time periods adults switch incubation duties, and we were able to observe the nest switch and then set up an observation/approach point for a given nest. Once nests were found and birds selected for transmitters, we captured incubating adults on nests by carrying an 18-m mist-net between two biologists and dropping it over the incubating adult. The ideal method is to keep each biologist equally spaced on either side of the nest as adults will generally remain on the nest until approached very closely. Once a successful capture is made, we transported the curlew to a location with a mild temperature (vehicle with A/C if a warm day) in order to keep the curlew from getting too hot or cold and begin the banding/measuring process. In order, we:

- Placed a USGS aluminum band
- Placed an alpha flag (green with two white letters) on the upper leg – opposite leg as USGS band
- Measured wing and culmen (bill length) and weighed the bird
- Used the leg-loop harness technique to safely attach the satellite transmitter to the lower back (synsacrum)

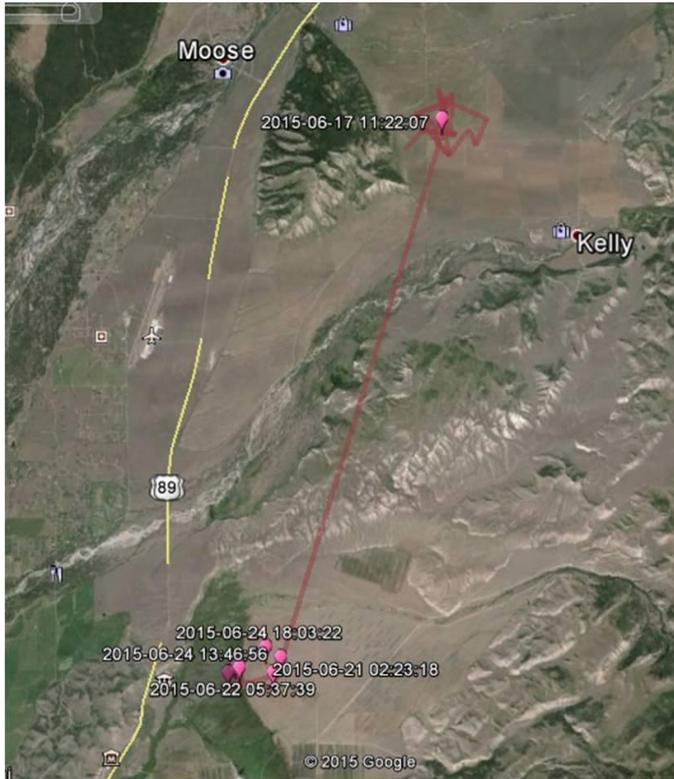
Jay Carlisle was trained in this technique during May 2013 by Fletcher Smith of the Center for Conservation Biology (Virginia) and has since deployed 28 transmitters from 2013-15.

## **Results:**

From May 29-31, we had a lot of help in searching for curlew nests on both the NER and GTNP. GTNP staff had already located one nest in the Kelly hayfields area prior to our arrival and we located three additional nests there plus another nearby pair engaged in courtship behavior. At the NER, we focused our efforts in the area where AJ was spending the most time and found a single nest – fortunately it was AJ's nest! Though we struggled with weather and unsuccessful trapping attempts during this time window, on May 31 we were able to deploy two new transmitters: one on a female ("HY") at GTNP and the other on a male ("CL"), AJ's mate, on the NER. We focus here on details for HY while also reporting on continued data from AJ as well as regional data. Current locations at this link: <http://ibo.boisestate.edu/curlewtracking/locations/>

Details of HY's capture and marking include: PTT (satellite transmitter) # 148830, USGS Band # 676-51108, alpha flag (color leg band) "HY", coordinates 12T 527705 4832474. HY weighed 770 grams, the heaviest of all curlews we captured in 2015. Here we detail both local and large-

scale movement data from HY (Figures 1, 2, and 3). HY remained very near her nest through June 17 and then spent 8 days staging on the NER before embarking on her autumn migration (Figure 1). Her migration took her S/SW over Utah and Arizona and she ultimately arrived at her wintering area at the mouth of the Colorado River in northwestern Mexico on June 29, 2015 (Figure 2). Her breeding season movement behavior and departure timing was similar to that documented for curlews tracked in Wyoming and other breeding areas.



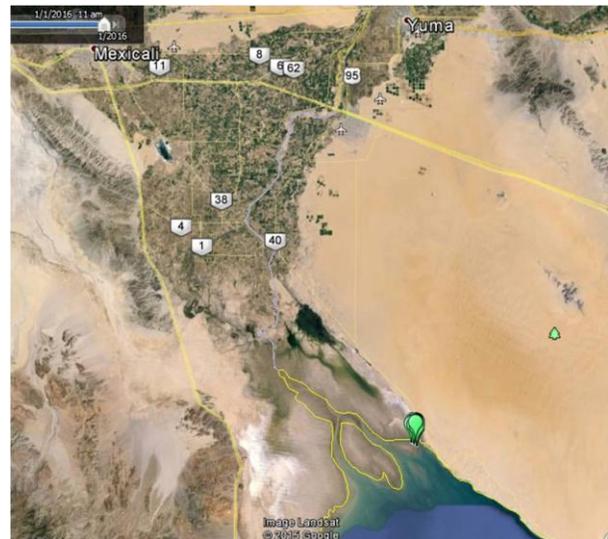
**Figure 1.** Map of HY's movements on the breeding grounds from May 31 through June 25, 2015. Locations through June 17 were very close to her nest site (Grand Teton National Park NW of Kelly) then she moved to the National Elk Refuge for about a week prior to migration. Only high-quality locations shown.

We also deployed a transmitter on AJ's mate on the NER, funded by the Wyoming Governor's Association Big Game License Coalition. Details of CL's capture and marking include: PTT (satellite transmitter) # 148831, USGS Band # 655-67030, alpha flag (color leg band) "CL", coordinates 12T 523861 4820059. CL remained on the NER until July 2, 2015 and, like HY, he then migrated to the mouth of the Colorado River where he stayed until early December before moving to agricultural habitats in the Imperial Valley of southeastern California (Figure 3).

Figure 3 shows a summary of migration routes and post-breeding destinations of all the curlews IBO tracked from Idaho, Montana, and Wyoming in 2015. 2015 data are similar to 2013-14 data and it appears that the more western breeders within the Intermountain West are more likely to migrate to California's Central Valley whereas more eastern breeders are more likely to migrate to northwestern Mexico or the Imperial Valley of southeastern California (Figure 3). AJ has wintered near the border of the Mexican states of Sinaloa and Nayarit for both winters we've been able to track her and she is the outlier relative to the eastern Idaho/western Wyoming populations in that she has traveled much further south.



**Figure 2.** Map of HY's autumn migration route during late June, 2015. We detected a single in-flight location from just south of the Great Salt Lake, Utah and her ultimate destination was the mouth of the Colorado River in northwestern Mexico.



### Outreach & Dissemination of Results:

On numerous occasions since beginning to collect data on AJ and HY, we have given public presentations and fielded questions on our Long-billed Curlew research at several venues, including:

- La Paz, Baja California, Mexico; Nov 5, 2014: joint meeting of The Waterbirds Society and CIPAMEX (the Society for the Study and Conversation of Birds in Mexico)
- Jackson, Wyoming; Nov 14, 2014: Jackson Bird and Nature Club
- Salt Lake City, Utah; Nov 18, 2014: Tracy Aviary
- Cody, Wyoming; June 7, 2015, Meadowlark Audubon Society
- Island Park, Idaho; June 27, 2015, The Nature Conservancy's Flat Ranch
- Boise, Idaho; Nov 3, 2015: Boise State University, S. Coates thesis proposal
- Jackson, Wyoming; Nov 5, 2015: curlew project featured in "Far Afield" documentary about Bert and Meg Raynes
- Jackson, Wyoming; Nov 6, 2015: Jackson Bird and Nature Club

Each of these opportunities has allowed for information exchange and partner development.

**Figure 3.** Summary map of migration routes and post-breeding destinations of Long-billed Curlews tracked from Idaho, Montana, and Wyoming in the 2015 fall migration; curlews tracked from the Jackson area in contrasting colors: “AJ”, the curlew tracked from the National Elk Refuge in Jackson, Wyoming, originally captured in May 2014 and still transmitting, is shown in **blue**; “HY” from Grand Teton National Park, captured in 2015, is shown in **green**; and “CL” from the National Elk Refuge (2015) is shown in **red**.



## **Future Work:**

How long these transmitters will last is difficult to predict given the many factors involved but with transmitters of this size (9.5g), it is possible to obtain two or more years of data. Also, although the data provided by the three breeding curlews in the Jackson area is fascinating and has already given us new insights into the wintering distribution for curlews that breed in Wyoming, more data are needed to determine how much variation there might be within specific breeding populations (i.e., is AJ really the outlier or are there others in Jackson with a similar pattern?). Our goal will be to reach a total of at least five breeding curlews from the Jackson area (NER and/or GTNP) with transmitters over the next few years to understand their migration patterns and document wintering grounds. This information will then be used to develop regional conservation strategies that include both summer and winter habitat areas.

## **Literature Cited:**

- Dugger, B. D., and K. M. Dugger. 2002. Long-billed curlew (*Numenius americanus*). In *The Birds of North America*, No. 628 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA. 28 pp.
- Jenni, D. A., R. L. Redmond and T. K. Bickel. 1982. Behavioral ecology and habitat relationships of long-billed curlew in western Idaho. Research Report. U.S. Bur. Land Manage. 234 pp.
- Page, G. W., N. Warnock, T. L. Tibbitts, D. Jorgensen, C. A. Hartman, and L. E. Stenzel. 2014. Annual migratory patterns of Long-billed Curlews in the American West. *The Condor: Ornithological Applications* 116:50-61.

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