Aleutian Terns: Migration Mystery

By Biologists Susan Oehlers, Nate Catterson, Mike Goldstein, and Sanjay Pyare

Susan Oehlers releases a banded Aleutian Tern. Photo by William Richards.

This summer, Forest Service biologists, in collaboration with the University of Alaska Southeast (UAS), the University of Hawaii, and the Alaska Department of Fish and Game (ADF&G), continued research on Aleutian terns on the Yakutat Ranger District. Besides limited colony counts, very little is known about the breeding ecology of this species, and essentially nothing is known about their winter distribution, except anecdotal observations of the species in Southeast Asia during the non-breeding season. The prevalence of the Avian Influenza (H5N1) in Southeast Asia, coupled with potential impacts of human disturbance, are potential threats to Aleutian Terns. This species is designated as a species of concern by several agencies and NGOs, including ADF&G, Audubon Alaska, U.S. Fish and Wildlife Service (USFWS), and The North American Waterbird Conservation Plan, as well as a Forest Service Sensitive Species, primarily due to suspected population declines throughout their range.

The Aleutian tern colony on Black Sand Spit on the Yakutat Forelands is one of the largest in the world, supporting up to 3,000 Aleutian Terns, or one third of Alaska's population and a significant proportion of the global population. Aleutian terns were documented on the Spit as far back as 1923, and the colony appears to be stable despite apparent declining populations elsewhere within Alaska. In part because of the large population of Aleutian Terns found there, Black Sand Spit was recently named as an Audubon Important Bird Area (see article in SourDough Notes Winter 2008 Issue).

In 2007, Forest Service biologists worked collaboratively with ADF&G, USFWS, City and Borough of Yakutat, Audubon Alaska, Yakutat Tlingit Tribe, and UAS to identify specific conservation concerns and develop a management priority list. This interagency "Aleutian Tern Working Group" identified the need to develop an accurate population estimation method as the highest priority for managing the species. Yakutat Ranger District Fisheries Biologist Nate Catterson, has been tackling this priority in his master's work through UAS (see SourDough Notes Winter 2009 Issue).

The second highest priority determined by the working group was to identify the tern's migration pathway and timing. Consequently, the focus of the 2010 season was to deploy tracking devices called archival light loggers, or "geolocators," on the terns, with continued financial support provided by USFS, UAS, and the ADF&G non-game grant program. Weighing as little as one gram, geolocators work by archiving data about day length that can be used to interpolate a physical location on the earth's surface.

A bird in hand: an Aleutian tern fitted with a unique identification band, a color band, and a geolocator. Photo by Susan Oehlers.

A tiny sensor records light levels every couple of minutes. As every Alaskan knows, day length varies with latitude. Length of day can also be used to calculate solar noon. An internal clock records the time of solar noon, which, when compared with Greenwich Mean Time, can be used to estimate longitude; a calculation first employed by British mariners over a hundred years ago. Using mesh wire boxes with trap doors placed over nests, and the trapping expertise of Dr. David Duffy from the University of Hawaii, we captured 47 terns on Black Sand Spit.

We also investigated smaller colonies in the Yakutat area, and were successful at capturing 66 terns from the colony located near the Italio River. Although geolocators have been used on other tern species, this was the first deployment of geolocators on Aleutian terns. There are many challenges associated with geolocators; primarily that the individual bird has to be re-captured to obtain the data. By recovering even a few birds, however, we will obtain a much greater understanding of this species, and bring us one step closer to identifying the reasons for their decline. We will attempt to retrieve the data during the next two seasons; stay tuned.

Dave Duffy and Susan Oehlers band an Aleutian tern. Photo by William Richards.