

American white pelican habitat use and movements: an assessment of breeding ecology, migration, and wintering areas of the Medicine Lake National Wildlife Refuge nesting colony.

Purpose

The purpose of this project is to document and assess habitat use, home range, and foraging activities of American white pelicans (*Pelecanus erythrorhynchos*) nesting on Medicine Lake National Wildlife Refuge (NWR), in one of the largest breeding colony of pelicans in North America. Satellite telemetry is being used to track pelicans for a one and a half-year period: through the breeding season, fall migration, on wintering grounds, and back to the colony for another breeding season and fall migration. Refuge managers require information on the foraging activities and habitat use of pelicans to effectively manage this migratory bird resource, assure protection of important habitat, and to identify and address management concerns. In addition to contributing to local efforts to target wetland and migratory bird conservation, this project will add information to national efforts to address depredation conflicts with white pelicans at fish farms in the Gulf Coast.



Background and Description

Medicine Lake NWR is home to the fifth largest colony of American white pelicans in North America. White pelicans are considered a species of local management concern in Montana (Montana Partners in Flight Conservation Plan 2000). This colony has been in existence since 1938, and numbers have grown steadily with increased protection for the species (current 10-yr average = 4000 nests). The colony is located on two islands and a nearby peninsula on 8200-acre Medicine Lake. White pelicans are known to forage in shallow marshes, rivers, and lake edges, where mainly small fish and amphibians are taken, but relatively few studies have been completed, and none in Montana. Although the pelicans nest on the refuge, most foraging takes place off the refuge, as birds travel into surrounding private lands in the Northeast Montana Wetland Management District. Nothing is known about the pelicans daily activities away from the breeding colony, i.e., what wetlands or streams are important foraging areas, what prey is taken, and what the extent of the pelicans use area is. Pelicans in some areas are known to commute more than 50 miles to forage during the breeding season (Evans and Knopf 1993). Food is then brought back to young and regurgitated. The Medicine Lake colony is home to a large portion of the entire pelican breeding population in North America, yet with no information on ecology and activities of these birds, refuge managers are unable to identify and address management or conservation concerns.

Because of the distances traveled by pelicans during the breeding season, satellite telemetry is the most cost-effective way to monitor these wide-ranging birds. Another advantage to satellite telemetry is that the birds can also be tracked regularly during their migration and in wintering areas for an entire year, so a complete picture of movements and use areas is gained. This is especially important for white pelicans because of management problems developing in some wintering areas. The aqua-culture industry in the Gulf Coast states is being impacted by wintering

white pelicans foraging on fish farms in Louisiana and Mississippi, and annually uses a variety of non-lethal and lethal techniques to control numbers of offending pelicans (Werner et al 2000). Information on these pelicans breeding ground origins, as well as their use areas in the Gulf Coast area is critical to managing this emerging conflict.

This project is being conducted cooperatively by researchers from: Medicine Lake NWR, St. Cloud State University, and *Earthspan*, the non-profit branch of the Center for Conservation Research and Technology.

Project objectives are to:

- 1) document home ranges and foraging areas, as well as general habitat use of breeding pelicans of the Medicine Lake nesting colony
- 2) document migration routes and wintering areas for locally-breeding pelicans through satellite telemetry and analysis of historic band returns
- 3) describe food habits of locally-breeding pelicans
- 4) identify management and conservation issues, and assess need and possibilities for initiating long-term demographic work on nesting colony population dynamics
- 5) through refuge outreach, use satellite tracking of pelicans to educate the public on migratory bird issues

Methods

Five adult pelicans were trapped and tagged in July 2002 at the breeding colony on Medicine Lake. The 95-gram satellite transmitters were affixed to the pelican using a backpack style harness. They have a multi-season timer, allowing intensive collection of location data during the breeding season (approximately 8 hours/day providing about 6 locations), with less frequent locations collected during migration and the wintering season. Locations are e-mailed to the researchers from the satellite service every four days. Using the location data together with Geographic Information Systems (GIS), the scientists will be able to determine what type of habitat the pelicans use during the breeding season and how large an area they use. Migration and wintering areas will be mapped at a coarser scale.



95-gram satellite transmitter with harness



Affixing the harness and transmitter.



Pelicans also receive a numbered leg band.



Pelican #36753, ready to go!

In addition, 1200 young pelicans in the colony were fitted with numbered, aluminum leg bands on their breeding grounds to allow identification of individual pelicans. When and where any of these banded birds are found will help scientists determine what proportion of the young pelicans return to the colony, how long they live, and what migration routes and wintering areas they use. Diet samples will also be collected from chick regurgitate in the colony during early, mid, and late breeding season to describe food habits through the summer.



Young pelicans gather in creches once they are old enough to leave their nests.



Applying a numbered leg band to a young pelican.