



News Release

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Satellites Help Scientists Track Migratory Birds: GPS the Latest Tool in Fight Against Avian Influenza

Editors: Please see end of news release for info on downloadable photos.

Wearing light solar-powered GPS satellite transmitters, wild swans from Mongolia are winging their way across Eurasia, while land-bound scientists tracking the birds' journeys on computers say that these unique studies will shed light on how wild birds may be involved in the spread of avian influenza.

In August, a team of international scientists from the United Nations Food and Agriculture Organization (FAO) and the U. S. Geological Survey (USGS) joined the Wildlife Conservation Society (WCS) and Mongolian Academy of Sciences (MAS) in the surveillance project, which is part of the Wild Bird Global Avian Influenza Network for Surveillance (GAINS) program funded by USAID. The team attached the GPS transmitters to wild whooper swans in an effort to track the birds to their wintering grounds.

Such research is providing information on migration routes and informs governments about potential threats from diseases such as highly pathogenic avian influenza (HPAI). The HPAI strain known as H5N1 is highly lethal for a variety of species, especially poultry and some waterfowl species. When transmitted to people through close contact with infected birds, the virus can be deadly. Leaders across the world are concerned about a potential pandemic threat should the virus become transmissible among humans.

“We are working to understand the role wild birds may play in the spread of H5N1,” said Dr. Scott Newman, International Wildlife Coordinator for Avian Influenza for FAO, seconded from Wildlife Conservation Society, and based in Rome, Italy. “Although poultry and bird trade are probably the primary routes of movement, migratory birds are likely involved in some areas.”

The whooper swans drew increased attention after large numbers perished in Mongolia in 2005 and in western China in 2005 and 2006 in areas where few poultry are present. Subsequent sampling of the dead swans by WCS scientists Drs. Martin Gilbert and William Karesh, verified that some of the swans were infected with HPAI. This discovery suggested that HPAI may be moving through the region and

potentially spreads from it, prompting the study to identify where these migratory bird populations fly in the winter.

“Although we are sampling wild birds for avian influenza in the field, we will not be able to fully understand their role in this disease unless we better understand their movements,” said Dr. Karesh, who is WCS’s director of the Field Veterinary Program in New York and coordinator of the GAINS system. “WCS samples birds in East Asia under the GAINS program, but when we find infected birds, we need to know where they are going.”

Many migratory species nest thousands of miles from where they spend the winter, and it is difficult to determine which groups come from which areas, said Dr. John Takekawa, one of the wild swan study scientists, who is with the USGS Western Ecological Research Center in California. “We are marking swans with very small GPS transmitters that are similar to navigation systems on cars, but that also transmit the data through weather satellites so we can track their movements.”

The whooper swan locations are being updated twice weekly on a project webpage (www.werc.usgs.gov/sattrack/) that also includes access to the data in Google Earth format. A comprehensive database of information on international wild bird avian influenza surveillance and migratory bird activity is available on the WCS website at www.gains.org. Biologists at the USGS Alaska Science Center (alaska.usgs.gov/science/biology/) and USGS Patuxent Wildlife Research Center (www.pwrc.usgs.gov) are providing assistance with analyses and fieldwork.

Whooper swans were captured by the international team in early August on the grassland steppe of far eastern Mongolia, near the borders of Russian and China. Each year, swans molt their feathers after the breeding season, and during that flightless period, the birds were captured by biologists in boats and on-foot. Small, 70-gram (2.3 ounces or the weight of a dozen quarters) solar-powered transmitters were affixed on 10 of the 8-kilogram (18-pound) large swans with backpack harnesses. The harnesses are made of Teflon ribbon that deteriorates and falls off of the birds within a few years.

Takekawa noted that satellite tracking data will provide information that will not only help scientists better understand and document links between wild birds and the spread of avian influenza, but that will also help enhance conservation efforts through determining the non-breeding ranges of birds and the mechanisms involved in long-distance migration.

The GPS transmitters are made by a wildlife specialty company; it is only in the last 5 years that they were reduced to a size suitable for migratory birds. Their accurate locations, often better than 30 feet, provide a wealth of information on migrating birds and use of their habitats that was not available before. The locations are recorded every 2 hours and stored in the transmitter memory before being sent to the research team by email through weather satellites every 2 days.

Recommendations from the FAO-OIE International Scientific Conference on Avian Influenza and Wild Birds in Rome (www.fao.org/ag/againfo/subjects/en/health/diseases-cards/conference/index_en.html) include improving our understanding of wild bird behavior, precise migratory strategies, locations of aggregation and convergence, and interactions between wildlife and domestic species. “The whooper swan project in Mongolia demonstrates the importance that FAO places on understanding the relationship between agricultural, wildlife, and human health,” Newman said.

News Editors: Downloadable images are available at www.werc.usgs.gov/sattrack/whooperswan/pressrelease.html. Photographs were taken by onsite scientists collaborating in the whooper swan project.

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The Wildlife Conservation Society (WCS) saves wildlife and wild lands. WCS does so through careful science, international conservation, education, and the management of the world's largest system of urban wildlife parks, led by the flagship Bronx Zoo. Together, these activities change individual attitudes toward nature and help people imagine wildlife and humans living in sustainable interaction on both a local and a global scale.

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