



THE INSTITUTE FOR BIRD POPULATIONS

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FEATHER SAMPLING TO DETECT WEST NILE VIRUS

Greetings MAPS operators,

IBP and UCLA thank those of you who have collected feather samples during the last 14 years, encourage you to continue collecting, and invite those of you who have not collected feather samples in the past to please participate. Feather samples contribute to important research into resolving migration routes and tracking avian diseases.

http://www.ioe.ucla.edu/ctr/research/AvPath/bander_corner.html

We are particularly interested in MAPS operators who previously participated in avian influenza sampling. Although widespread AI sampling is not being conducted this year WE STILL NEED YOUR FEATHERS!

This year requests for feather envelopes should be directed by email to Dani Kaschube (dkaschube@birdpop.org) providing a shipping address and the station identifier. If you have questions about the sampling efforts please feel free to phone Dani at 609-625-0767.

Feathers collected during the next two years will be used to investigate the spread of West Nile virus (WNV) in birds, the response of WNV to climate change, and the effect of the disease on bird fitness and survival. The complete feather-pulling protocol for WNV-sensitive species can be found at www.birdpop.org/WNVmaps.htm.

The feathers that MAPS operators have collected during past years represent extremely valuable contributions to UCLA's Center for Tropical Research feather collection, which is being used by numerous researchers to increase our understanding of many aspects of bird ecology and the transmission of avian-borne pathogens. You can find out more about these aspects at http://www.ioe.ucla.edu/ctr/research/neotropical_migrants.html. These feathers and the new feathers that will be collected during this project hold great potential to help us understand pathogen transmission pathways in birds and their consequences for both human health and the health of the bird populations that are our passion. In most cases, the extra processing time required to sample feathers is minimal, yet a single feather can hold much important information, not only about avian infections, but also about overwintering locations, migratory routes, and speciation.

If you are willing to collect feathers during the 2010 MAPS season, please send your name, address, and MAPS location to Dani Kaschube (dkaschube@birdpop.org) so we can register you for the project and have feather sample envelopes sent to you. Also, please indicate your preference for shipping the feathers to UCLA at the end of the season: either UPS or FedEx. UCLA will provide you with a UPS or FedEx shipping number when they send your feather envelopes so you can ship the samples free of charge.

West Nile Virus Infection in North American Migratory Birds:

UCLA, IBP, and other collaborators are involved in an EPA research grant to study “The Role of Avian Host Dynamics and Anthropogenic Stressors on the Transmission of West Nile Virus and the Implications for Human Health and Biodiversity”. The project uses the feather collection to examine the ecological correlates of West Nile Virus (WNV) infection in migratory birds. This research is aimed at determining: 1) how disease hotspots vary with climate and ecological change, and 2) whether WNV can be detected in birds that were previously infected but have since recovered from the disease. WNV RNA can be extracted from a feather calamus of previously exposed individuals. WNV can then be genetically detected using a technique called real time RT-PCR (reverse transcription-polymerase chain reaction).

WNV was detected from 2005 feather collection samples of American Robins (*Turdus migratorius*) from Georgia, Texas, and New Jersey that were suspected of carrying the infection. From last years sampling efforts, additional positives were uncovered from a number of target taxa. Screening is now being performed on those species that have been reported to have high positive rates (Gray Catbird, American Robin), as well as species that have yet to be tested for the disease.

The WNV project will target the following ten species (see below) thought to be particularly sensitive to infection and/or principal vectors of the disease:

Swainson's Thrush (*Catharus ustulatus*) is one of the most common birds of the northern spruce-fir forests. It is a Nearctic-Neotropical migrant that breeds as far north as Alaska and northern Canada. It winters from Mexico through northern South America. The wide range of this species makes individuals potentially effective spreaders of WNV across large geographic areas. This species has previously tested seropositive for WNV.

Hermit Thrush (*Catharus guttatus*) is one of the most widely distributed forest-nesting migratory birds in North America. It breeds across most of Canada and the western and northeastern U.S. and overwinters throughout much of the southern U.S. and Mexico as far south as Guatemala.

American Robin (*Turdus migratorius*) is one of the most common North American passerines, and almost all are migratory. Robins are generally suited to a variety of habitats, including deep forests, woodlands, and grasslands, and are flexible in their foraging and feeding habits. They have adapted well to rapidly changing environments, and are often found in close association with all types of human-altered landscapes, from farms to suburban areas. Recent studies have suggested that because of their high population numbers and high susceptibility to flaviviruses, robins may represent a significant contributor to the spread of WNV in North America. This species has previously tested seropositive for WNV.

Gray Catbird (*Dumetella carolinensis*) is a common, native Nearctic species inhabiting woodland and occasionally suburban environments and has adapted well to clearings and human altered areas. It breeds in north, central, and eastern U.S. and southern Canada. Wintering grounds include the southeastern United States, the east coast of Mexico, and occasionally in the Caribbean. This species has previously tested seropositive for WNV.

Yellow Warbler (*Dendroica petechia*) is a common wood warbler that breeds from Alaska and Canada south to the central U.S. and west into Mexico. It also breeds in southern Florida, throughout the Caribbean and Central America coasts, and in northern South America. It winters in Mexico and Central and South America. This species has previously tested seropositive for WNV.

Common Yellowthroat (*Geothlypis trichas*) is one of the most common and widely distributed wood warblers in North America. It breeds across much of Canada and the U.S. and south

into Baja California Norte, Oaxaca and Veracruz, Mexico. Common yellowthroats winter along the Atlantic and Gulf Coasts, in southern California, and throughout Mexico and Latin America.

Wilson's Warbler (*Wilsonia pusilla*) is a common wood warbler associated with mesic habitats.

It breeds from the boreal forests of eastern Canada west to British Columbia and Alaska, and south along the Pacific coast and through western mountains southern California and central Colorado. Its wintering range extends from eastern and western Mexico and parts of southern Texas to Panama.

Yellow-breasted Chat (*Icteria virens*) is the largest wood warbler and is widely distributed across much of eastern and western North America. This species also has a breeding population in Mexico, with most of the population wintering in Middle America from Mexico to Panama. Although common, less is known about the distribution and connectivity of this species as compared to other wood warblers. This species has previously tested seropositive for WNV.

House Finch (*Carpodacus mexicanus*) is a common species found in a variety of habitats in the western U.S., yet is mostly associated with urban and suburban areas in the east. Eastern populations and some western populations migrate to wintering grounds in the southern U.S. Most western populations are sedentary. House Finches frequently form mixed species flocks, making them potential spreaders of WNV across taxa. This species has previously tested seropositive for WNV.

Brown-headed Cowbird (*Molothrus ater*) is a brood parasite that comes into close contact with hundreds of species of migratory birds, allowing for the possibility of interspecific spread of WNV, and is typically associated with agricultural areas in close proximity to humans. Formerly occurring in the central grassland of the U.S., forest clearing has allowed this species to extend its range across most of North America, and populations have increased dramatically. This species has previously tested seropositive for WNV.

Thank you very much for your participation in this critically important work.

Rodney Siegel, Executive Director, M. Philip Nott and James F. Saracco, MAPS Co-Program Directors, Danielle R. Kaschube, MAPS Coordinator.