# MAPS Chat

**Newsletter of the MAPS Program**

Number 8 – April 2007

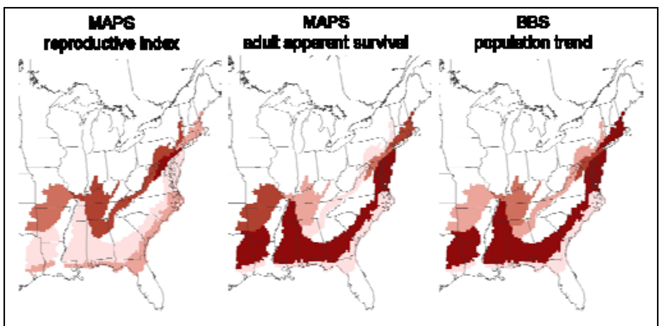
*The Institute for Bird Populations*


## Taking Stock of the MAPS Program: A Look Back and a Vision for the Future

*James Saracco and Dave DeSante*

In the last decades of the twentieth century, ornithologists and bird watchers began to document serious declines in many of our familiar migratory songbirds. In response, IBP and 15 visionary collaborators established the MAPS program in 1989. With the establishment of MAPS, the first steps were taken to gather the types of data needed to determine demographic and environmental causes of population declines. Great strides have been made since then, and MAPS has truly become a major force in North American landbird monitoring. Nevertheless, in order for MAPS to remain vital, and to best meet continental-scale bird monitoring goals, as well as research and conservation needs, it is important that we periodically take stock of the program and chart its course for the future.

Over the past several months we have begun a series of analyses aimed at evaluating and improving the current MAPS program and providing direction for its future growth. As a first step, we asked whether MAPS currently provides accurate information on continental scale bird population trends. We evaluated this question by comparing trend estimates from MAPS to those from the North American Breeding Bird Survey (BBS). We selected 37 species of wood-warblers for this comparison – essentially all of the warblers for which we could obtain trend estimates from both programs. Trend estimates from the two programs showed a strong positive correlation, suggesting that MAPS (and the BBS) does indeed accurately portray population trends.




Spatial pattern of vital rates and population trend in Worm-eating Warbler (1992-2003). Darker red colors are higher (or more positive) values. The pattern for survival matches the pattern for population trend more closely than does the pattern for productivity (reproductive index).

### *Also in This Issue....*



The correspondence between MAPS and the BBS was encouraging; yet, as all MAPS contributors are aware, the true value of MAPS comes from its ability to provide information on vital rates (i.e., reproduction and survival). One of the central goals of MAPS since its initiation has been to link data on vital rates to changes in populations – i.e., to identify the demographic causes of population changes. In our recent analyses of MAPS, we have spent a lot of time developing methods for meeting this goal. These range from simple visualizations of data to complex modeling efforts. Consider, for example, spatial patterns in productivity, survival, and population trends for Worm-eating Warbler at the scale of BBS physiographic strata. Simply "eyeballing" these patterns suggests that adult apparent survival rate is relatively important in driving population trends. This result was reinforced by a formal analysis that showed productivity to have relatively little direct effect (compared to survival) on population trend for this species. We are in the process of completing similar analyses for 38 other landbird species.

Other important goals of MAPS include the detection of differences in vital rates between populations or regions and changes (trends) in vital rates over time. We recently completed "power analyses" of MAPS data, the results of which suggest that sample sizes of the current MAPS program are adequate to detect meaningful differences or trends in survival over 20-year time horizons for 105 bird species at the continental scale, and for 19 (Alaska and Boreal Canada regions) to 47 species (Northwest region) at the MAPS-regional scale. A "cluster-scale" (e.g., six nearby stations on a particular land-management unit) analysis of MAPS stations on Pacific Northwest national forests suggested that at least 15 species could be effectively monitored at that scale.

Although these numbers are gratifying, we think that we can do much better. We estimate that by increasing the size of the MAPS program by 70% via a targeted approach – siting stations in such a way as to target under-represented habitats and species – we could double the number of landbird species that MAPS effectively monitors at the regional scale. Such expansion of MAPS would greatly enhance its utility as the principal landbird demographic monitoring component of a larger Coordinated Bird Monitoring program for North America. Achieving this goal for expansion would require little new effort in some MAPS regions. For example, in the Northwest, where the MAPS program is largest, our goal calls for just 20 new MAPS stations. A much larger expansion would be required, however, in under-represented regions – particularly in Alaska and Boreal Canada. Recent losses of MAPS stations in Alaska (including those set up to sample for avian influenza last year; see article on avian flu on next page) are discouraging in this respect – a great deal of new effort and funding will be required to re-establish MAPS on a large scale in these northern regions.

We are currently in the process of developing specific sampling strategies to help direct expansion of MAPS at the MAPS-regional level. The general idea is to provide specific advice to cooperators interested in establishing new stations as to where those stations might be sited in order to best meet regional and continental bird monitoring goals. We have completed development of such a strategy for the Northwest, and with a recently-acquired grant from the Northeast Coordinated Bird Monitoring Partnership's Survey Design and Implementation Fund, we are well on our way to having one in place for the Northeast as well. We hope to complete similar analyses for the remaining MAPS regions over the course of the next couple of years. Once completed, these sampling plans will be made available to all current and potential MAPS contributors. We hope they will serve as a guide to any plans that you might have for the initiation of new MAPS stations in the future.

It is an exciting time to be involved in the MAPS program. We are in the process of providing new direction for the program in the coming years. And the program has matured to the point where we are now able to address many important research questions with MAPS data. The answers to these questions will provide critical information for landbird conservation and management, now and in the future. The importance of your contributions to this effort cannot be overstated. Indeed, the independent MAPS station cooperator is the lifeblood of the program, operating nearly 80% of the MAPS stations that are operated each summer. The data that you are collecting are the core of what we all hope will be a long-term data set that will be drawn on by conservation biologists for decades. For this, ours and future generations can be grateful. Thank you and keep up the good work!

# Welcome new MAPS contributors

*We want to welcome the following operators who joined the MAPS flock between 2005 and the present. Some started new stations and other took over existing stations. We look forward to working with you for many seasons to come!*

**Alfonso Alguirre**, Ensenada, B.C., Mex.; **Eric Baka**, Baton Rouge LA; **Nick Bartok**, Yuma AZ; **Wanda Burdett**, Rocky Harbour NL; **Laura Burkholder**, Livermore CA; **John Carpenter**, Normal AL; **Timothy J. Caton**, Ely MN; **Jessie Coty**, Livermore CA; **Joe Cox**, Raleigh NC; **Doreen Cubie**, Awendaw SC; **Francie Cuthbert**, St. Paul MN; **Stephen Davis**, Craven SK; **Sharon Dehn**, Getzville NY; **Dan Derbyshire**, Downsview ON; **Keely Dinse**, Ann Arbor MI; **Jimmy Dodson**, Rougemont NC; **Joe Engler**, Ridgefield WA; **Jorie Favreau**, Paul Smiths NY; **Isabel Fernandes**, Oyster Bay NY; **Andrew Forbes**, Columbia MO; **Bob Frey**, Ashland OR; **Angela Gatto**, Lake Havasu City AZ; **Jim Giocomo**, Knoxville TN; **Robert Grefe**, Saginaw MI; **Thomas Greg**, Jamison PA; **Ken Griggs**, Los Banos CA; **Mike Harris**, Fouke AR; **Craig Heflebower**, Vian OK; **Donata Henry**, Abita Springs LA; **Curtis Hoagland**, Kountze TX; **Greg Hoch**, Moorhead MN; **Mary Hunnicutt**, Sasabe AZ; **Jodi Isaacs**, Morro Bay CA; **Michael Janis**, Paducah TX; **Sara Kaiser**, San Diego CA; **Brenda Kramarchuk**, Saskatoon SK; **Thomas P. LeBlanc**, Salamanca NY; **Kaycee Lichliter**, Middletown VA; **Dave Lockman**, Stevensville MT; **Luciana Luna Mendosa**, Ensenada, B.C., Mex.; **Suellen Lynn**, San Diego CA; **Jim Lytle**, Silver Springs NV; **Jeff Mackay**, Ruby Valley NV; **Melanie Madden-Smith**, San Diego CA; **Mike Magnuson**, Mineral CA; **Ron Melcer**, Davis CA; **Chase Mendenhall**, Jackson WY; **Todd Montandon**, Alpine TX; **Thomas Mowbray**, Winston-Salem NC; **Donald Norman**, Shoreline WA; **Regena Orr**, Morro Bay CA; **Victor Ortega**, Ensenada B.C., Mex.; **David Peters**, Saginaw MI; **Sandy Polcyn**, Allen TX; **Jeff Port**, St. Paul MN; **Mike Quinlan**, Bowie MD; **Kenny Ribbeck**, Baton Rouge LA; **Hernán Rodríguez**, Ensenada BB, Mex..; **Daniel C. Ryan**, Aurora MN; **Jeff Sanchez**, Vian OK; **Charles Self**, Camden AR; **Brenda Shepherd**, Jasper AB; **Anne Smedley**, Lima OH; **Roger Smith**, Jackson WY; **Kristina Smucker**, Missoula MT; **Eric Soehren**, Montgomery AL; **Andy Sprenger**, Annapolis MD; **Rita Thelen**, Lima OH; **Randy Thompson**, Rocky Harbour NL; **Melanie Truan**, Davis CA; **Yong Wang**, Normal AL; **Mike Wesbrook**, Jasper AB; **Andrew Whiting**, Saskatoon SK.

# Collection of Samples to Detect Avian Influenza at MAPS, MoSI, and MAWS Stations

*Peter Pyle, James Saracco, Phil Nott, and Dave DeSante*

Avian influenzas (AI's) are found in small proportions of wild birds, especially waterfowl and shorebirds (but also landbirds), which easily transmit viruses through fecal matter while bathing and preening communally at freshwater roosting sites. Potentially, some144 subtypes of AI are in existence, but only a few are commonly detected. Most subtypes are classified as low pathogenic avian influenzas (LPAIs) and are responsible for mild infections and seasonal influenzas. Sometime before 2003, however, a particularly virulent and highly pathogenic strain of the H5N1 subtype of AI (hereafter, "H5N1") emerged in Asia. This strain probably originated in domestic poultry, which are often housed in tight and unsanitary quarters. Highly pathogenic viruses can evolve rapidly, potentially causing influenza pandemics.

H5N1 is of particular concern because of the potential effects it has on both the poultry industry and human health. More than 160 humans in Asia have died through contracting AI, either from direct handling of poultry or, in a few cases, as transmitted from human to human. To date, highly pathogenic H5N1 has not been detected in the Western Hemisphere; however, it has both occurred, and spread via wild birds, including landbirds, in Asia. This has led to concern that it might become introduced into North America by birds migrating from Siberia to Alaska. The billion-dollar North American chicken industry is particularly concerned because, although transmission to people through direct contact with infected poultry is very unlikely, many Americans will likely stop buying and eating chicken (as occurred with beef following detection of "mad cow disease"), leading to millions of dollars in losses.

These concerns led to substantial funding aimed at quickly detecting H5N1 in North America once it reaches this continent (an inevitability according to most pathologists), and toward preventing its spread once it has been confirmed. An easy and effective way to detect AI in birds is through "cloacal swabbing", the inserting of a small swab into the cloaca of a bird in the hand. AI viruses are present in the intestinal and cloacal wall cells and are shed into the feces. Cloacal swabbing, which does not hurt the bird, is a rapid and effective viral sampling method (about one minute extra handling time per bird) because it provides for the collection of both fecal material and, more importantly, cloacal wall cells that contain high numbers of viral particles.

The Institute for Bird Populations (IBP) coordinates the largest and most comprehensive networks of bird-banding stations in North and Central America. We were thus invited to join with the Center for Tropical Research at UCLA on a project funded by the National Institutes of Allergy and Infectious Diseases to field-coordinate the collection of thousands of swab samples from birds captured at MAPS stations targeting breeding populations in North America, MoSI (Monitoreo de Sobrevivencia Invernal) stations targeting wintering populations in the Neotropics, and MAWS (Monitoring Avian Wintering Survival) stations targeting wintering populations in the southern United States, during 2006-2009. We have also partnered with the USDA Forest Service's Redwood Sciences Lab in a broader effort that includes sampling from LaMMNA (Landbird Migration Monitoring Network of the Americas) banding stations.

Obtaining a sample from a Chestnut-backed Chickadee.

**Sampling from MAPS Stations**

In February 2006, IBP sent a letter of invitation to MAPS station operators across North America to participate in a continent-wide AI sampling effort. Of the 286 operators who ran 477 MAPS stations during 2006, we received positive responses from 98 operators who ran 240 of those stations. In March and April 2006 we developed (with the assistance of UCLA) detailed written protocols for AI sampling and produced a short video illustrating the swabbing procedure. Both the protocols and video clip were linked to our website (www.birdpop.org) for downloading. We experimented with different swabs sizes and found that the smallest swabs commercially available ("2-mm swabs") were too large to sample smaller birds (those taking band sizes 0 and 1) without risking injury to the bird. Based on our recommendations, UCLA contracted with the manufacturer to develop a smaller ("1- mm") swab to sample landbirds, but was unable to obtain and distribute the 1-mm swabs until the 2006 MAPS season was nearly over. However, by sampling larger birds (taking band

*Continued on page 6*

# Beyond Monitoring: Responses to Land Management, Climate, and Weather

*Phil Nott*

As the MAPS program accumulates quality data, thanks to the diligence of its contributors, we increasingly realize the value of these data to our understanding of avian ecology and how that knowledge might be useful to avian conservation efforts. For centuries human activities have removed or altered critical habitat for many bird species, which sometimes led to total extinction: Great Auk, last known pair seen and shot in 1844; Labrador Duck, last specimen taken in 1875; Passenger Pigeon, last known individual died in 1914; Carolina Parakeet, last known individual died in 1914; Heath Hen, extinct by 1932; Ivory-billed Woodpecker, extinct by 1952 (or is it?). In the last 50 years, however, the efforts of conservationists and the forming of federal and state laws to protect rarer species have delayed extinction or, in some cases, such as the Peregrine Falcon, even reversed the declines. Sadly, other species blinked out due to human activities, despite efforts to save them: Bachman's Warbler, last seen in early 1960s, apparently extinct; Eskimo Curlew, last seen in early 1960s, probably extinct; and Dusky Seaside Sparrow, last seen in 1980; extinct.

Before joining IBP, I researched the Dusky's close cousin, the Cape Sable Seaside Sparrow of the Southern Everglades, a federally endangered sub-species clinging to the few remaining patches of short-hydroperiod prairies where they breed. At this stage of rarity and threat of extinction, such species are at our mercy and require careful management to protect remaining habitat and restore altered habitat. Despite such efforts, a category 7 hurricane could sweep in from the Gulf of Mexico and undermine our conservation efforts in a few extremely violent hours. Afterwards, familiar natural habitats might be completely unrecognizable. For instance, as such a storm makes landfall, protective mangrove swamps would be breached by the storm surge causing formerly freshwater habitats to be inundated with sea water, and requiring decades for them to recover.

Extreme stochastic events such as hurricanes are becoming globally more frequent. So, after centuries of relatively stable global climate, a new threat to bird diversity is forming, that of rapid global climate change. We cannot begin to imagine the complexity of the consequences this has for the natural world and the human race.

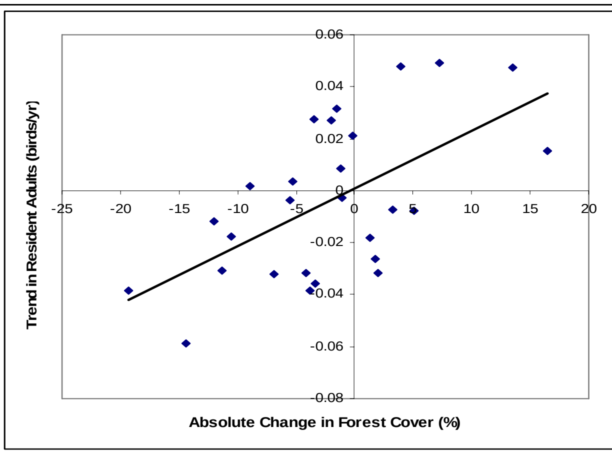
Responses of birds to changing climates will be further complicated by the fact that we have converted so many natural habitats into areas of "impervious surface," whereby cities, towns, and roads look like bare rock to many birds. Even more extensive areas have been converted to agricultural land and provide little or no breeding habitat for most bird species. Surely these will appear as deserts to species that are shifting their breeding ranges and may act as partial barriers to the range shifts of plant species. Some species will be successful in shifting their ranges in response to climate change; indeed it is clear that some species are already shifting their ranges. Other species will become extinct, however, simply because there will be no place for them to go. Still other species' ranges will become fragmented, such that, over time, distant populations might eventually become subspecies that physically and behaviorally seem very different from one another. It is, in fact, the ability of birds to adapt quickly to changing conditions that is responsible for the incredible diversity of modern avifauna. It is staggering to imagine the differences that must exist between the present avifauna, which has responded to the recent vegetation patterns across North America, and the avifauna that responded to the vegetation patterns that existed 18,000 years ago.

Present day vegetation patterns of North America

Vegetation patterns of North America 18,000 years b.p.

For the past several years, my research has focused on using MAPS data to examine the effects of changing climates and landscapes on bird populations. Most recently, I completed an analysis of MAPS data from Virginia and from stations within 150km of the Virginia border. (If your MAPS station lies within those regions, I would like to personally thank you for contributing your data to the central database.) Two major findings relating to bird responses to habitat and climate resulted from this study:

a) We found that demographic parameters of many species responded to changes in the percentage forest cover surrounding each MAPS station as measured by the difference between the pattern of forest cover detected in the 1992 and 2001 National Land Cover Datasets (NLCDs). For Wood Thrush, which is a rapidly declining species, we compared forest loss or gain within a 1-km-radius area around each MAPS station to the annual trend in numbers of resident adults captured. This revealed a highly significant relationship whereby the number of resident adults increased at stations where there was a net gain in forest cover and decreased at stations where forest cover declined.




Station-specific estimates of the trend in resident adult Wood Thrushes as a function of absolute change in forest cover.

b) We found a highly significant relationship between annual climatic conditions in the Atlantic lowlands of Mexico and northern Central America, where many Wood Thrushes overwinter, and reproductive indices. We concluded that female body condition (mass divided by wing chord length) appears to depend on pre-migration precipitation (February to April) across this region, which, in turn, depends on El Niño conditions in the equatorial Pacific. Females that experience drier conditions on their winter range prior to spring migration subsequently show relatively poor body condition on their breeding grounds. Furthermore, this effect also carries over to their young, which also show poorer body conditions following those dry winters.

Add to this the fact that Virginia winters are getting drier and warmer, due to the combined influences of El Niño effects and the persistent warming phase of the Atlantic Ocean, and you can imagine how the forest floor for foraging Wood Thrushes might become stressed during the breeding season. Studies in Europe have suggested that warmer winters/earlier springs on northerly breeding grounds can cause the invertebrate biomass to peak before some migrants have returned from Africa, thus suppressing their reproductive success. Perhaps, despite the fact that the canopy cover is closing, which should be favorable to Wood Thrushes, changing seasonal environmental conditions of the forest floor have altered the diversity, abundance, and availability of prey items.

In another analysis of MAPS data (MAPS Chat Number 6, February 2002), IBP showed an analogous pre-migration conditioning effect on Neotropical migrants that breed in Washington and Oregon and overwinter in western Mexico. We also found that the same El Niño induced patterns of winter precipitation throughout Mexico and Central America influenced Painted Bunting survival and reproduction in Texas. In particular, annual survival rates of Painted Buntings were high if July to September rainfall was high across the molt migration region of northwest Mexico the previous year, but were low following drier years.

Although in the short-term, we may not be able to easily influence climatic conditions, we can certainly manage our lands, even our backyards, to help maintain abundant and productive populations of birds and give them a better chance of surviving the effects of short-term climate change that are being predicted by climatologists.

Without your data we would not de able to make such valuable contributions to our understanding of avian ecology, the causes of population change, and methods by which land owners can maintain healthy populations of landbirds. We thank you very much for your contribution of data and ask you, please, keep contributing to MAPS.

***Want to report a foreign recovery?***

The Bird Banding Offices have introduced a new band encounter website. Check it out at:

**www.reportband.gov**

*AVIAN FLU* – *Continued from page 3*

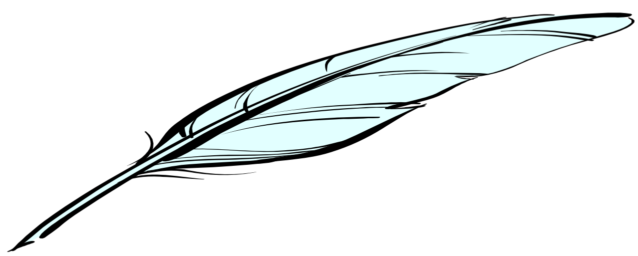
size 1B and larger) during the entire season, as well as some smaller birds near the end of the season, MAPS operators were able to successfully collect 5,925 cloacal swab samples of 218 species from 35 states during the 2006 season. We greatly appreciate the effort that MAPS operators expended in obtaining these samples.

In addition to our sampling for avian influenza at MAPS stations in the "lower 48", we also collaborated with the U.S. Fish and Wildlife Service's efforts to obtain cloacal swab samples from "high priority" migratory birds in Alaska last summer. This was a huge effort, and samples from nearly 17,000 birds were processed and tested for avian flu. Species that IBP targeted included Arctic Warblers and Eastern Yellow Wagtails, both migrants from Southeast Asia. The wagtail was of special interest since it often forages in close association with poultry, where it could contract AI. We set up MAPS stations and used song playbacks to capture birds at a variety of locations ranging from Southwest Alaska to the Seward Peninsula and the North Slope. Overall, we collected 1,024 swab samples from 28 bird species.

Only samples from our target species have so far been tested, and none of these were found to be positive for any avian influenza strain. Indeed, of all of the samples processed from Alaska last year, only 1.6% was found to be carrying LPAI viruses and none was positive for H5N1. Unfortunately, this Alaska sampling effort will not be funded again this summer. Thus, continued sampling at MAPS stations all across the United States becomes more important than ever if we are to learn anything about the occurrence, frequency, and subtypes of avian influenzas in North American landbirds.

As with any large new project, the first year was not without a learning curve. MAPS operators asked numerous questions and had various concerns for the safety of both bird and bander alike. These concerns were generally assuaged when all MAPS operators were provided with safety kits complete with masks, respirators, gloves, and protective smocks, along with an antiseptic gel to wash hands between every sampling effort. But this quickly led to additional questions. Could birds be taken out of nets while wearing gloves? How could one blow the feathers away from the cloacal region (necessary for obtaining a sample) while wearing a respirator? How could we prevent bird-to-bird transmission during banding operations? How should the samples be stored (certainly not in a refrigerator containing food for human consumption!)? We carefully fielded every query, sometimes consulting experts at UCLA, before coming to collective decisions about the best ways to proceed. In essence, therefore, the 2006 MAPS season, besides resulting in almost 6,000 samples, was a successful collaboration between IBP, UCLA, and MAPS operators to refine these important sampling protocols.

In addition to collecting the cloacal swab samples, we also asked MAPS operators to pull two tail feathers from sampled individuals. This is part of a larger effort undertaken by UCLA to determine migratory



connectivity between breeding populations in temperate North America and wintering populations in the Neotropics. Small samples of DNA can be isolated from the pulp at the bases of collected feathers, which enables identification of subpopulations within each species, at least to the level of subspecies if not lower. This information will be critical if H5N1 is detected, because it will permit potential pathways for its spread to be more easily anticipated. In addition, isotopic analysis of the feather vanes can identify the latitude at which feathers are developed. UCLA had previously been collecting two outer tail feathers, but, based on our recent molt studies, we advised MAPS banders to take one inner and one outer rectrix. Because of replacement sequences (typically from the inner to the outer rectrix) and the protracted period of molt, these feathers often are replaced during separate periods (e.g., before vs. after migration, or during a prebasic vs. a prealternate molt), leading to isotopic signals from both summer and winter grounds. Thus, in addition to learning about connectivity, we may also learn much about molt locations through analyses of feather isotopes.

**Sampling from MoSI and MAWS Stations**

The learning curve was not just restricted to sampling efforts at banding stations but also applied to the best storage medium to use and to laboratory procedures to

**Bird Banding Classes**

Have you ever wanted to delve just a little bit deeper into the theory of molt and banding techniques? Or, do you know someone new to banding or wanting to learn to band? IBP offers banding classes to fill both of these needs.

Our classes emphasize bird safety and bander ethics throughout the learning and teaching process. We encourage banders to share their ideas and techniques throughout the classes to further the learning process for everyone.

Visit the training page of our web site at http://www.birdpop.org/training2007.htm to find out what beginner and advance level classes are being offered or how to host a class of your own. Email Danielle Kaschube at dkaschube@birdpop.org if you would like further information.

detect viruses. Based in part on testing of MAPS samples (which is still ongoing), UCLA, in concert with the Los Alamos National Laboratory, have been perfecting procedures for analyzing swab samples collected by banders. Following the MAPS season and prior to the MoSI season, UCLA determined that guanidine was a better medium than ethanol for preserving and testing for AI. A widespread problem with ethanol was that it evaporated easily from the vials, unless (and even sometimes when) the lids were screwed on tightly. Guanidine is not as evaporative and should last longer in storage.

By December 2006 UCLA, had perfected its new medium and procedures and, following the same request strategy as we employed for MAPS, we enlisted the help of 17 MoSI and MAWS operators, running 50 stations, to collect samples on the Neotropical and temperate wintering grounds in seven countries, including the southern U.S. Despite some problems with Mexican and


Participants in the MoSI Workshop, held at La Mancha, Veracruz, Mexico, in October 2006, learn how to take cloacal swab samples. Irving Chavez and Christian Garcia look on as Jorge Angel Cruz obtains a sample form a Hooded Warbler and Richard Joos records data.

Central American customs and permitting procedures (which all have to be factored into a project such as this), it appears that we will have collected 1000's of additional samples during the November 2006-March 2007 MoSI and MAWS season.

A paper was published in December, 2006, in the Proceedings of the National Academy of Sciences by A.M. Kilpatrick et al. titled *Predicting the Global Spread of H5N1 Avian Influenza*. In this paper, the authors concluded "that H5N1 is more likely to reach the Western Hemisphere through infected poultry and into the mainland United States by subsequent movement of migrating birds from neighboring countries, rather than from eastern Siberia." Thus, the continued sampling for AI in Nearctic-Neotropical migratory birds on both their winter ranges (MoSI) and breeding ranges (MAPS) becomes more crucial than ever.

**Future Sampling**

It is important to remember that the primary purpose of our AI and feather sampling is to increase our understanding of the ecology of avian influenzas and migratory connectivity in landbirds, not to act as an early warning system for highly pathogenic strains. In this respect, we need to continue frequent and extensive AI and feather sampling in as many locations as possible, thereby increasing our chances of detecting a) any avian influenzas, given the low frequencies at which they appear to occur, b) species-specific strains of avian influenzas, and c) the migratory connectivities that can provide critical information on potential dispersal pathways for the virus from Mexico, Central America, or the Caribbean to North America. These monitoring efforts and subsequent sequencing of any avian influenza viruses detected will be useful in understanding how strains have evolved, and in identifying the regions to which they are endemic. Any samples collected will also help the development of more effective vaccines for poultry and humans and, thus, reduce the risk of a potential pandemic.

If you did not participate in the flu sampling last year, we urge you to participate this year – you will be providing a potentially important contribution toward enhancing avian and human health. If you did participate last year or will participate this year, please accept our deepest appreciation and gratitude. Thank you very much.

## *What are WBBA, IBBA, EBBA?*

The Western, Inland, and Eastern Bird Banding Associations, of course! The three banding associations promote the exchange of information and ideas regarding banding. They hold annual meetings at which all are welcome to attend and collaborate to produce the journal *North American Bird Bander* which provides a medium for papers on all manner of banding related research, lists of banding related publications, reviews of regional banding totals, and the list continues. We encourage you to join these organizations and become a part of your regional banding community to share your ideas and findings. Visit the website of your region's association at:

Western Bird Banding Association
http://www.westernbirdbanding.org/

Inland Bird Banding Association
http://www.aves.net/InlandBBA/

Eastern Bird Banding Association
http://www.frontiernet.net/~bpbird/index.htm

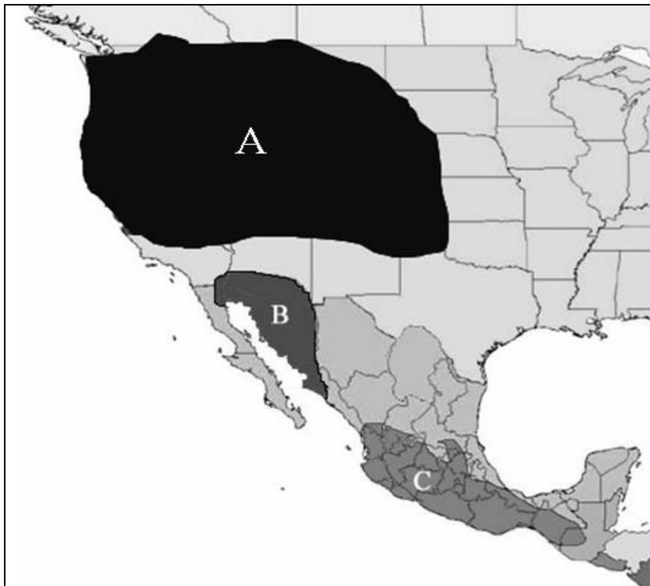
# Molt Migration Stopover Ecology Project

*Peter Pyle*

We think of migratory landbirds as moving between breeding and wintering grounds. But it turns out that many western species have "molting grounds" as well. Because it becomes so dry throughout much of western North America during July-September, many adult landbirds have developed a strategy to migrate down to the monsoon region of southeastern Arizona, western Sonora, and northern Sinaloa to molt. In this region, summer rains ("monsoons") come up from the Gulf of California during July and August, resulting in a bloom of vegetation and insect productivity, resulting in a larger quantity of resources needed for molting than is available at that time on the breeding grounds to the north. After molting, which may take a month or more, these birds continue on to wintering grounds in southern Mexico and Central America, thus having a two-part southward migration.

Remarkably little is known about molt migrants, perhaps because few persons have been out looking in the monsoon area at this time of year. We are not even sure which species are involved, but we know that Ash-throated Flycatcher, Western Kingbird, Lucy's Warbler, Western Tanager, Lark Sparrow, Lark Bunting, Lazuli and Painted buntings, and Orchard Oriole, among many other possibilities, undergo these molt migrations. More importantly, we do not know what habitats and other ecological requirements are needed by adults of these species in order to undergo an energy-consuming, complete molt. Should riparian or other areas in the desert Southwest become affected such that the critical resources needed to molt become limited, survival of these birds may become compromised. Limited resources on the molting grounds could be just as detrimental to landbird populations as problems on the breeding grounds (which we investigate through the MAPS program) and/or problems on the winter grounds (which we investigate with the MoSI and MAWS programs).

Thanks to a grant from the U.S. Fish and Wildlife Service, Region 6, we will be undertaking an exciting new pilot project in June-September this year to study molt-migrants and attempt to determine their habitat and ecological requirements. Beginning in mid-June we will conduct area searches for molting adults to determine where molt-migrants reside. We will then establish and operate three banding stations in Arizona and five or six in northwestern Mexico during mid-July through mid-September to determine timing and duration of molt, body condition, site persistence, and other factors related to the molts. Our goal is to come up with recommendations for conserving and managing critical habitats for molt migrants in the desert Southwest.




Breeding (A), molting (B), and wintering (C) grounds of the Lazuli Bunting, a "molt-migrant". IBP currently studies population dynamics on the breeding and wintering grounds (with the MAPS and MoSI programs, respectively) but practically nothing is known of the ecological requirements of molt-migrants on the molting grounds.

## MAPS Feeder

- IBP's Journal, Bird Populations, is now in electronic format. Download Volume 7 today from the IBP website at http://birdpop.net/pubs/birdpopv7.php
- IBP bids warm welcome to staff biologist, Amy Finfera, and computer guru, Teryk Morris.
- We bid fond farewell to staff biologists Kelly Gordon and Victor Sepulveda who are pursuing new directions in their careers.
- Have a wonderful 2007 MAPS season!

MAPS Chat is published by The Institute for Bird Populations for contributors to the MAPS Program.

*Editors:* Dave DeSante & Danielle Kaschube
*Office:* P.O. Box 1346
Point Reyes Station, CA 94956-1346
*Telephone:* 415-663-1436
*Fax:* 415-663-9284
*e-mail:* ibp@birdpop.org
*website:* www.birdpop.org