

MAPS Chat

An occasional newsletter of the Monitoring Avian Productivity and Survivorship (MAPS) Program

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Thank you MAPS operators!

Fifteen years of MAPS data—over one *million* records—are now verified and being analyzed to inform climate change adaptation strategies

In November 2008, IBP biologists reached a long-awaited milestone and completed vetting of all 1989-2006 MAPS data, a total of 1.5 *million* banding and recapture records. From these, we extracted about 1.2 *million* records of aged birds captured during the ten periods of the standardized MAPS program at the 975 stations across United States and Canada that were operated at least one year between 1992 and 2006. These records, along with effort and breeding status data, comprise the 15-year database that we are now analyzing to assess demographic responses of North American landbirds to climate change.

MAPS, to which so many operators across North America have contributed, provides the largest and most meticulously vetted standardized capture-mark-recapture (CMR) database on birds in existence on the planet. People sometimes ask why we go to such lengths to verify every record so thoroughly. The answer is that we are providing a unique database documenting the demographics of North American landbirds at the turn of the 21st century, and from this database we (and future researchers) will be able to answer questions regarding the dynamics of landbird populations, their vital rates, and their responses to environmental changes that we do not yet even know how to ask. As evidence for this, recall that when MAPS was created in 1989, reverse symmetry CMR models from which we now

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routinely estimate both recruitment and *lambda* (the rate of population change) had not yet been developed. Clearly, this database must be as accurate as possible.

The next major thrust of IBP's data analyses will be to use the 15-year dataset to model responses of vital rates to weather, so that we can predict consequences of climate change on bird populations, identify species that will be particularly sensitive to climate change, and help develop land management strategies to reduce the impacts of climate change on bird populations.

The continued participation of MAPS operators will be crucial for the formulation of effective climate change adaptation strategies that maintain healthy bird populations. We deeply appreciate and thank all MAPS operators for their contributions to MAPS.

MAPS data point to low first-year survival as the driver of declines in many bird species

Trend data from the North American Breeding Bird Survey (BBS), as well as from the MAPS program, suggest that many populations of migratory songbirds are declining. Yet, knowledge of declines is not enough to effectively manage populations and reverse declines. Demographic data from MAPS can help to focus conservation efforts by providing information on proximate causes of population trends.

We illustrated how demographic data from MAPS can provide unique insights into drivers of population trend in a recent analysis of 12 years (1992-2003) of MAPS data for **Yellow Warbler** published in the November 2008 issue of the *Journal of Wildlife Management* (<http://www.birdpop.org/pubs/JWM2008.htm>). This analysis suggested that survival, and probably most importantly, first-year survival, was the key driver of spatial variation in population trends in this species—indicating that reversing declines in areas where Yellow Warbler is declining will likely require management and conservation efforts applied during the non-breeding season.

Building on the *Journal of Wildlife Management* paper, we report results of similar analyses for an additional 28 species in a report that we recently submitted to the National Fish and Wildlife Foundation. For most species, results were similar to those reported for Yellow Warbler. Productivity appeared to be important for explaining spatial variation in recruitment (addition of new adults into the breeding population) and population trend for just 9 species, while recruitment appeared to be important in explaining spatial variation in population trend at the scale of Bird Conservation Regions (BCRs) for 25 species, indicating that first-year survival was the driver of trend for at least 16 species.

We found that species for which first-year survival (i.e., recruitment, but not productivity) was important in driving spatial variation in trends tended to have the strongest negative overall trends, species for which adult survival was important tended to have weaker negative trends, and species for which productivity was important tended to have stable or positive trends.

These results indicate that (1) enhancing survival, especially of first-year birds, may be the most important conservation strategy for slowing declines and achieving stable populations of many migratory songbird species, (2) enhancing productivity may be necessary to recover populations whose declines have been arrested, and (3) relationships between landbird vital rates and winter weather and habitat characteristics must be identified and described. We encourage you to read more about these important results in the full report, which you can download at: (http://www.birdpop.org/DownloadDocuments/MNF_FinalReport.pdf).

IBP offers beginner and advanced bird banding classes

Are the art of skulling or the subtleties of molt limits making you frustrated? Do you know someone that would like an intensive introduction to bird banding? IBP has instructors that can guide both beginner and advanced banders to help improve their banding skills.

Our classes emphasize bird safety and bander ethics at every juncture in the learning and teaching process. We encourage banders to share their ideas and techniques throughout the classes to enhance the learning process for all participants.

Visit the training page of our website at <http://www.birdpop.org/training2009.htm> to find out what classes are being offered or how to host a class of your own, or email Danielle Kaschube at dkaschube@birdpop.org for further information.



Students learn bird banding techniques and data collection procedures during an IBP bander training course.

MAPS meets the tropical Pacific!

In collaboration with the Division of Fish and Wildlife of the **Northern Marianas Islands**, an IBP field crew established six TMAPS (Tropical MAPS) stations on the island of Saipan in 2008. This effort is IBP's first foray into implementing MAPS in the tropics, and will provide critical data on the status, demographics, and conservation needs of endemic landbirds of Saipan such as **Rufous Fantail**, **Golden** and **Bridled White-eye**, **Micronesian Honeyeater**, and **Collared Kingfisher**.



Mariana Fruit-Dove captured at a TMAPS station on the island of Saipan.

One important goal of the initial 3-month field season was to gather data that would enable accurate age and sex determination of Saipan birds. These data, in combination with examination of more than 300 museum skins, has allowed us to



View from near one of the TMAPS stations on Mount Tapochau, Saipan.

produce a draft "Pyle Guide" for Saipan birds. As we enter our second field season in April, we aim to fill remaining gaps in this work and hope to expand the project to a year-round monitoring effort to better understand the timing and variability of breeding seasons in these birds. View the Saipan age-sex manual and a report on initial field season results by following the links at: <http://birdpop.org/pubtmaps.htm>.

Needed to help with MAPS-UCLA flu sampling in 2009: YOU!

Whether you've conducted flu sampling at your MAPS station in the past or not, 2009 is IBP's last season coordinating these efforts for UCLA, and we need your help for this important research into emerging infectious diseases to succeed. Invitations to participate in 2009 will be emailed out soon; information is also available at <http://www.birdpop.org/aimaps.htm>. Early results from samples already collected are expected from UCLA soon. Questions? Contact Peter Pyle at ppyle@birdpop.org.

Comings and goings...

New MAPS operators—welcome to the MAPS community!

We welcome the following operators who joined the MAPS flock between 2007 and the present. Some started new stations and others took over existing stations. We look forward to working with you for many seasons to come!

Mark Armstrong, Knoxville TN; **Lorraine Bondi-Goldsmith**, Old Westbury NY; **Tom Brown**, Staten Island NY; **Patti Campsall**, Slave Lake AB; **Elizabeth Ciuzio**, Cape May Court House NJ; **Scott & Lizette Crosby**, Sacramento CA; **Dusty Downey**, Moorcroft WY; **Jodie Falcone**, San Diego CA; **Scott Gibson**, Trabuco Canyon CA; **Embere Hall**, Jackson WY; **Christine Hass**, Elgin AZ; **Carlene Henneman**, Weldon CA; **Kate Heyden**, Frankfort KY; **Wayne Higginbotham**, Baton Rouge LA; **Dr. Barbara Hillery**, Old Westbury NY; **Scarlet Howell**, San Diego CA; **Jeff Howland**, Roswell NM; **Bill Hulslander**, Hopkins SC; **Greg Kaltenecker**, Boise ID; **Shannon Kearney-McGee**, Burlington CT; **Richard Krikun**, Slave Lake AB; **Jeremy Leifert**, Burlington CT; **Tina Leonard**, Rocky Harbour NL; **Doug Leslie**, Sacramento CA; **Jennifer McCabe**, Jackson WY; **Karen McDonald**, Downsview ON; **Scott Meister**, Wheaton IL; **Blair Ogburn**, Sylva NC; **Rodney Olsen**, Vergennes VT; **Dusty Pate**, TX; **Sharon Petzinger**, Clinton NJ; **Susan Pulsipher**, Linden NC; **Dr. Robert J. Reilly**, Powhatan VA; **Dave Roemer**, Kountze TX; **Pete Schmidt**, Sherwood OR; **Michael Seymour**, Baton Rouge LA; **Justin Shew**, Trabuco Canyon CA; **Adam Smith**, Frankfort KY; **Roberta Swift**, Junction City OR; **Rita Thelen**, Lima OH; **Suzanne Tomassi**, WA; **Flor Torres**, Ensenada, B.C., Mex.; **Aaron Virgin**, Oyster Bay NY; **Mike Welik**, San Diego CA; **Maria Whitehead**, Charleston SC; **Kerry Wilcox**, Tiburon CA; **J. David Williams**, Ipswich SD; **Andrea Wuenschel**, Seattle WA; **Michele Zwartjes**, Portland OR.

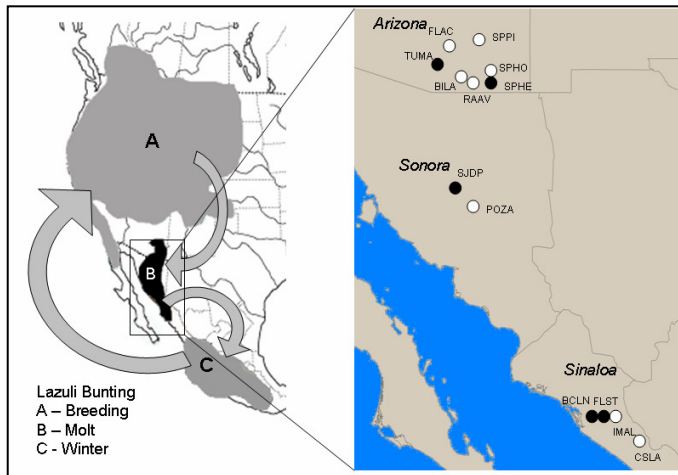
Goodbye to a valued staff member and friend



In February Staff Biologist **Amy Finfera** left IBP after two years working in our Point Reyes Station, CA, office, and many field seasons with our MAPS, MAWS, and Cuba programs. We wish Amy the best of luck in her future pursuits!

“MoMS” project reveals habitat needs of “molt-migrants” in Arizona and Mexico

Birds that migrate to the Mexican monsoon region to undergo their prebasic molt—after breeding but before moving on to the wintering grounds—are called molt-migrants. These species are attracted to the flush of productivity during late summer in the monsoon region while the breeding grounds are drying up. IBP has just completed a two-year study to identify molt-migrant species and determine their



Molt-migration strategy of Lazuli Bunting (left) and locations of MoMS capture stations (right) with closed symbols representing “wet” stations and open circles representing “dry” stations.

molting habitat requirements, by establishing 13 Molt-Migration-Stopover (“MoMS”) mist-netting stations and conducting extensive area searches in southeastern Arizona and northwestern Mexico.

Results confirm molt-migration in species in which the phenomenon has been previously documented, including **Ash-throated Flycatcher, Western Kingbird, Warbling Vireo, Western Tanager, Black-headed Grosbeak, Lazuli Bunting, Painted Bunting, Bullock’s Oriole, and Lesser Goldfinch.** We also found nine additional species of molt-migrants including **Yellow-green Vireo, Phainopepla, Nashville Warbler, Green-tailed Towhee, Chipping Sparrow, Lark Sparrow, Indigo Bunting, Orchard Oriole, and Streak-backed Oriole.** For some of these species only a small proportion of adults captured were molt-migrants, indicating that the phenomenon may be an individual-level response to breeding season dynamics or weather conditions. Only one Lazuli Bunting was recaptured between the two years, suggesting extremely low between-year site fidelity for molt-migration stopover.

We classified our capture stations as being predominantly “wet” or “dry”; molt-migrants in active



Male Lazuli Bunting, captured on its Arizona molting grounds.

molt preferred “wet” stations in riparian habitats, especially during the drier monsoon year of 2007, but also chose native grasslands to undergo their molt. In 2008, which was much wetter than 2007, molt-migrants chose a broader array of habitats for molting, including mesquite and desert scrub. The differences between seasons and the broad range of habitats selected by molt-migrants in Arizona emphasize the need to protect a mosaic of native habitat diversity in order to provide adequate habitat for this

suite of molt-migrant species. We are now preparing our results from the MoMS project for presentation at scientific meetings and publication in scientific journals.

New results: latest MAPS report highlights worrisome declines

We recently completed the “**Monitoring Avian Productivity and Survivorship (MAPS) Program 2004, 2005, and 2006 Report**” that will be published in Volume 9 of [Bird Populations](#) this summer. Based on the 15-year (1992-2006) MAPS database, the report provides program-wide and regional adult survival rates for up to 192 species and 2003-2004, 2004-2005, and 2005-2006 constant-effort changes in adult population size and productivity for 140 species.

In the report we also pool data from all species and stations and document:

- a highly significant 15-year decline in adult population size of -1.77% per year
- a widely fluctuating temporal pattern in productivity with a decreasing tendency of -0.25% per year
- a nearly significant 13-year decline in adult apparent survival of -0.46% per year.

These disturbing long-term declines underscore the critical need for continued MAPS monitoring, and for using MAPS results to develop effective conservation strategies.