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2014 Annual Report





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Above: (front, L to R) Lauren Helton, Mandy Holmgren, Joanna Wu, Ruth Lopez; (middle, L to R) Ron Taylor, Helen Loffland, Bob Wilkerson; (back, L to R) Steve Albert, Dave DeSante, Peter Pyle, Rodney Siegel, Danielle Kaschube, Jim Saracco.

A Message from IBP's Executive Director: *Connections*

This Annual Report is one way that IBP connects with our larger community of supporters and colleagues. I hope you enjoy reading about our many successes on behalf of birds during 2014. A few highlights:

- Understanding the connections between breeding and wintering areas used by particular populations of migratory birds has great potential to aid bird conservation. On pages 4 and 5 we describe how IBP is using cutting-edge technology and the research platforms offered by the MAPS and MoSI programs to unravel the mysteries of migratory connectivity.
- A major focus of IBP's Sierra Nevada Bird Observatory is to connect our ecological research with land management. On pages 6-8 we provide several examples of how our science is directly informing land management and conservation efforts for birds throughout the Sierra Nevada.
- Connections between IBP and other organizations and agencies are critical to virtually all of our work. On page 11 we thank the many partners who have made our conservation and science efforts possible during the past year.

Wishing you happy birding in 2015,

Rodney Siegel, Ph.D.
Executive Director

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Peer-reviewed publications authored or co-authored by IBP scientists, 2013-2014

Peer-reviewed publishing is a critical component of IBP's work. It ensures that our science is rigorous and helps our findings reach a wide audience of land managers and researchers, so that our work yields as much benefit for bird conservation as possible.

Bond, M. L., D. E. Lee, R. B. Siegel, and M. W. Tingley. 2013. Diet and home range size of California Spotted Owls in a burned forest. *Western Birds* 44:114-126.

Gallar, S., A. Ruiz-Sánchez, R. Rueda-Hernández, and P. Pyle. 2014. Molt topography and its application to the study of partial wing-molt in two neotropical wrens. *Ibis* 156:311-320.

Howell, S.N.G., and P. Pyle. *In press*. Use of 'definitive' and other terms in molt nomenclature: A response to Wolfe et al. *The Auk*.

Johnson, O., P. Pyle, and J. Tietz. 2013. The subspecies of the Song Sparrow on Southeast Farallon Island and in central California. *Western Birds* 44:162-170.

Nelson, K., and P. Pyle. 2013. Distribution and movement patterns of individual Crested Caracaras in California. *Western Birds* 44:45-55.

Pyle, P. 2013. Appearance. Molts. Plumages. In S. T. Weidensaul, R. Robinson, R. R. Sargent and M. B. Sargent, Ruby-throated Hummingbird (*Archilochus colubris*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology.

Pyle, P. 2013. Dark-faced Common Murres off California in fall and winter. *Western Birds* 44:250-261.

Pyle, P. 2013. Evolutionary implications of synapomorphic wing-molt sequences among falcons (*Falconidae*) and Parrots (*Psittaciformes*). *The Condor* 115:593-602.

Pyle, P. 2013. Molt homologies in ducks and other birds: a response to Hawkins (2011) and further thoughts on molt terminology in ducks. *Waterbirds* 36:75-79.

Pyle, P. 2014. Plumages of second-basic and older Northern Harriers: A circular *Circus*? *Birding* 46:46-53.

Pyle, P., R. David, B. D. Eilerts, A. B. Amerson, A. Borker, and M. McKown. 2014. Second record of Bryan's Shearwater *Puffinus bryani* from Midway

Atoll, with notes on habitat selection, vocalizations, and at-sea distribution. *Marine Ornithology* 42:5-8.



Above: Bryan's Shearwater, one of many bird species that were subjects of IBP scientific publishing in 2014. Photo by K. Horikoshi.

Pyle, P., A. Engilis Jr., and D. A. Kelt. *In press*. Manual for ageing and sexing the landbirds of Bosque Fray Jorge National Park and north-central Chile, with notes on occurrence and breeding seasonality. Special Publications of the Louisiana State University, Baton Rouge, LA.

Rowan, E. L., R. B. Siegel, D. R. Kaschube, and S. Stock. *In review*. North American longevity records for nine landbird species monitored at Yosemite National Park's MAPS stations.

Ruegg, K., E. Anderson, K. Paxton, V. Apkenas, S. Lao, R. B. Siegel, D. F. DeSante, F. Moore, and T. Smith. *In press*. Mapping migration in a songbird using high-resolution genetic markers. *Molecular Ecology*.

Ruiz-Gutierrez, V., W. L. Kendall, G. White, and J. F. Saracco. *In review*. Modeling dynamics of resident and transient individuals: a case study using uncertain-state models for migratory birds.

Rundel, C., M. Wunder, A. Alvarado, K. Ruegg, R. Harrigan, A. Schuh, J. Kelly, R. B. Siegel, D. F. DeSante, T. Smith, and J. Novembre. 2013. Novel statistical methods for integrating genetic and stable isotopic data to infer individual-level migratory connectivity. *Molecular Ecology* 22:4163-76.

Rushing, C., T. B. Ryder, J. F. Saracco, and P. P. Marra. 2014. Assessing migratory connectivity for a long-distance migratory bird using multiple intrinsic markers. *Ecological Applications* 24:445-456.

Saracco, J. F., C. M. Gabriele, and J. Neilson. 2013. Population dynamics and demography of humpback whales in Glacier Bay and Icy Strait, Alaska. *Northwestern Naturalist* 94:187-197.

Saracco, J. F., A. L. Holmgren, R. L. Wilkerson, R. B. Siegel, R. C. Kuntz II, K. J. Jenkins, P. J. Happe, J. R. Boetsch, and M. H. Huff. 2014. Landbird trends in national parks of the North Coast and Cascades Network, 2005-12. U.S. Geological Survey Open-File Report 20141202.

Siegel, R. B., N. D. G. Hagemeyer, R. L. Wilkerson, B. C. Barr, and M. W. Tingley. *In revision*. An apparent case of lethal intraspecific conflict in the Black-backed Woodpecker.

Siegel, R. B., P. Pyle, J. H. Thorne, A. J. Holguin, C. A. Howell, S. Stock, and M. Tingley. 2014. Vulnerability of birds to climate change in California's Sierra Nevada. *Avian Conservation and Ecology* 9(1):Art7.

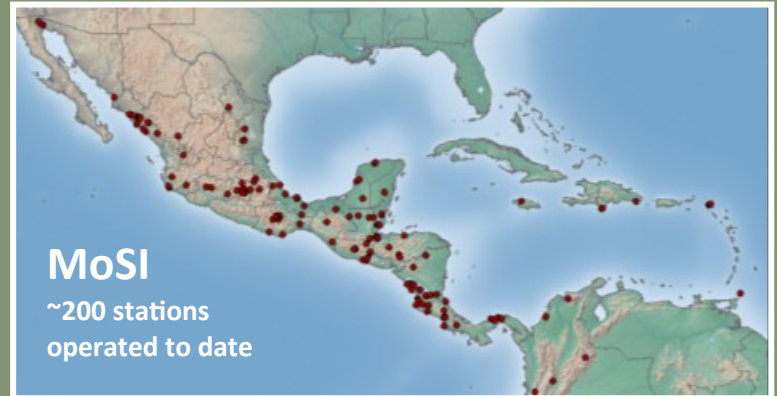
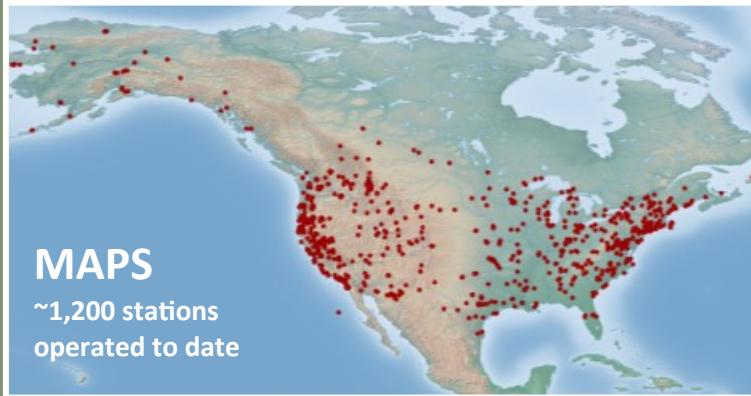
Siegel, R. B., R. L. Wilkerson, M. W. Tingley, and C. A. Howell. *In press*. Roost sites of the Black-backed Woodpecker in burned forest. *Western Birds*.

Tingley, M. W., R. L. Wilkerson, M. L. Bond, C. A. Howell, and R. B. Siegel. 2014. Variation in home range size of Black-backed Woodpeckers (*Picoides arcticus*). *The Condor: Ornithological Applications* 116:325-340.

Wu, J. X., D. M. Delparte, and P. J. Hart. 2014. Movement patterns of a native and non-native frugivore in Hawai'i and implications for seed dispersal. *Biotropica* 46:175-182.

Wu, J. X., R. B. Siegel, H. L. Loffland, M. W. Tingley, S. L. Stock, K. N. Roberts, J. J. Keane, J. R. Medley, R. Bridgman, and C. Stermer. *In review*. Diversity of nest sites and nesting habitats used by Great Gray Owls in California.

MAPS and MoSI: International collaboration to monitor annual-cycle dynamics of landbirds



Above: Red dots indicate all MAPS and MoSI stations that have operated for at least one year between 1989-2014 (MAPS) and 2002-2014 (MoSI).

What are the MAPS and MoSI Programs?

The **Monitoring Avian Productivity and Survivorship (MAPS)** program is a continent-wide collaborative effort among North American public and private agencies and individuals to assist the conservation of birds and their habitats through demographic monitoring and research.

The **Monitoreo de Sobrevivencia Invernal (MoSI; Monitoring of Winter Survival)** program complements MAPS by coordinating data collection on Neotropical migrant and resident landbirds in 15 countries in northern Latin America, where many North American breeding

species winter. Together, the MAPS and MoSI programs provide a fuller picture of the health of the hemisphere's landbird populations and their conservation needs.

MAPS and MoSI data provide insights into questions like:

- *What demographic factors drive population declines?*
- *Where are problems most acute, on the breeding or non-breeding grounds?*
- *What drives differences in population trends between particular regions or habitats?*
- *What are the relationships between population change, climate, and habitat conditions?*

Using micro-GPS units to learn where Yosemite's migratory songbirds spend the winter



The adult male Black-headed Grosbeak pictured to the left is wearing a tiny GPS unit that will record his precise location 8 times during fall, winter, and spring of 2014/15. He and 8 other grosbeaks were fitted with the units during summer 2014 at one of IBP's long-running MAPS stations in Yosemite National Park. We will collect the devices from individuals recaptured in 2015 and extract location coordinates. These data will pinpoint where in Mexico the birds spent the winter, and identify the migratory routes they followed. We will then be able to incorporate annual weather conditions on the wintering grounds and migration pathways into our already sophisticated models of how annual weather on the breeding grounds in Yosemite affects population demographics.

How Do MAPS and MoSI Work?

Both programs use standardized protocols to capture birds in fine-mesh nets during the breeding season (for MAPS) or the northern hemisphere winter (for MoSI) at stations operated by independent banders, NGOs, public agencies, or IBP staff. Researchers band the birds and collect information on their age, sex, body condition, and reproductive status. Captured birds are fitted with a lightweight, numbered leg band and released unharmed. Subsequent recapture data provide information on survival and recruitment rates, and movement patterns.

MAPS and MoSI have amassed nearly 2.5 million records from more than 1,400 stations. Analyses of MAPS and MoSI data by IBP and other researchers yield estimates and indices of **vital rates** including population growth rate, survivorship, and productivity.

Below: Yellow Warbler, one of many Neotropical migrant species monitored by MAPS and MoSI. Artwork by Lauren Helton.



Why are MAPS and MoSI Important?

Information on vital rates provides insight into the causes of population changes and the annual stages at which they are operating. MAPS and MoSI results can point conservation efforts in the right direction by revealing the **what, where, and why** of bird population declines, often in ways that other survey methods cannot.

MAPS and MoSI also provide valuable platforms for coordinated research on migratory connectivity (see inset below) and many other topics that can inform bird conservation.

Using genetics to link breeding, winter, and migratory populations of Wilson's Warblers

Recent advances in DNA sequencing have yielded great progress in linking of breeding, migration, and wintering locales. Using high resolution genetic markers from feather and blood samples collected at 68 MAPS and MoSI stations, IBP partners at UCLA and several other universities identified six subpopulations of Wilson's Warbler on the breeding grounds and linked them to specific wintering areas in Mexico and Central America (subpopulations indicated by distinct colors, right). The study also identified migratory routes and timetables of spring migration for individual subpopulations. The MAPS and MoSI programs played a critical role in this study by providing coordinated sample collection at a large set of geographically diverse sites. This promising use of new genetic techniques may revolutionize our understanding of migratory connectivity—the links between breeding and wintering areas—for populations of many landbird species.

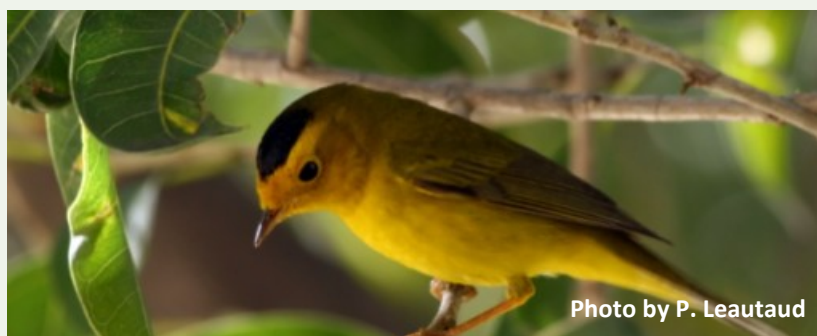


Photo by P. Leautaud





Photo by M. Frye

IBP'S Sierra Nevada Bird Observatory

Research to improve management of burned forests

IBP scientists partner with federal, state, and private land managers to conduct research on the status and needs of at-risk bird species in the Sierra Nevada, and often help develop conservation strategies to address those needs.

Recently burned forests have been a major focus of our monitoring, research, and conservation efforts during the last several years. Forest fire can threaten human safety and property, and can reduce habitat for some species of management concern, but it also creates important habitat for species that thrive in burned forests, perhaps best represented by the Black-backed Woodpecker.

In 2014 our Black-backed Woodpecker research yielded important information (published in two new papers) on the species' habitat needs, and a quantitative model for predicting the number and location of Black-backed Woodpecker territories in burned forests. The model has already been used by the Forest Service for planning post-fire forest management on the 2013 Rim fire (the largest fire on record in the Sierra Nevada) and other fires throughout the region. IBP was honored to receive the 2014 Wings Across the Americas Research Partnership Award (see page 11) from the US Forest Service for our efforts on behalf of Black-backed Woodpeckers.

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Photo by B. Wilkerson

In 2014 IBP scientists partnered with the US Forest Service and Yosemite National Park to study the effects of the 2013 Rim fire (*left*) on Black-backed Woodpeckers (*below*) and Great Gray Owls, and to make informed recommendations about post-fire forest management.



Photo by J. Leibrecht

- continued from page 6

Another at-risk species likely affected by the Rim fire, but in a very different way, is the Great Gray Owl, a California endangered species. The fire burned vast forest tracts in and near Yosemite National Park, at the center of Great Gray Owl's restricted California range. In 2014, IBP and Yosemite personnel initiated a study of how the fire affected Great Gray Owls and their nesting habitat in the Park.

Right: An IBP field crew observes birds in a burned Sierra Nevada forest. Such areas are often at the center of conflict between competing approaches to forest management; IBP's science facilitates informed decision making.



Photo by M. Witte

Predicting effects of climate change on Sierra Nevada birds

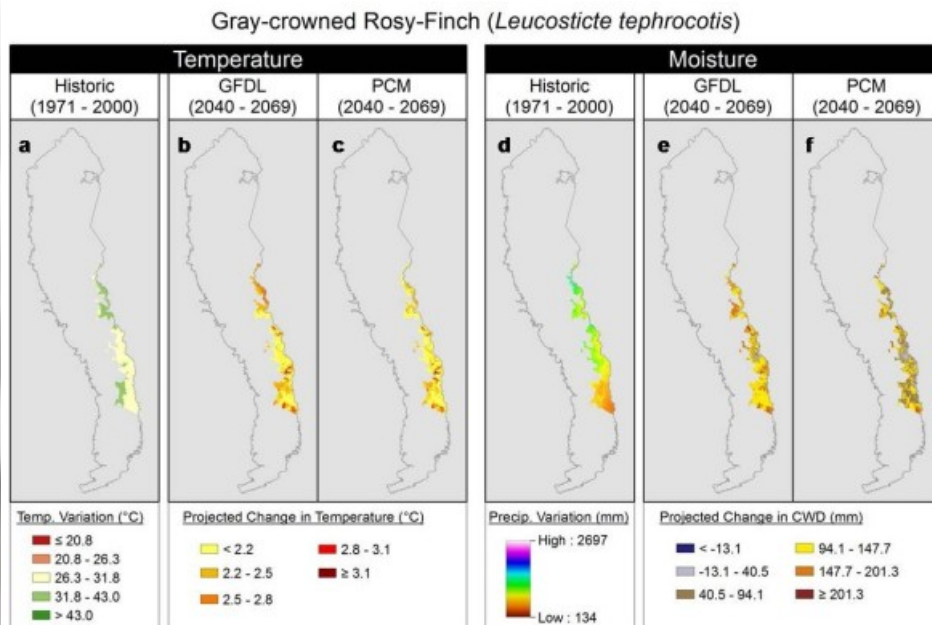
In a rapidly changing climate, effective bird conservation requires credible projections of species' vulnerability to future conditions. In a paper published in 2014, IBP scientists and colleagues predicted vulnerability to climate change of 168 bird species that breed in the Sierra Nevada. The analysis assessed species-specific exposure and sensitivity to climate change across the region, incorporating information about each species current distribution and ecological relationships with spatially explicit climate change projections under two climate change models. Only one species, White-tailed Ptarmigan, received the most vulnerable rank, Extremely Vulnerable. Sixteen species scored as Moderately Vulnerable using one or both climate models: Common Merganser, Osprey, Bald Eagle, Northern Goshawk, Peregrine Falcon, Prairie

Falcon, Spotted Sandpiper, Great Gray Owl, Black Swift, Clark's Nutcracker, American Dipper, Swainson's Thrush, American Pipit, Gray-crowned Rosy-Finch, Pine Grosbeak, and Evening Grosbeak. Species associated with alpine or subalpine habitats and aquatic ecosystems received significantly more vulnerable rankings than birds associated with other habitats. In contrast, species primarily associated with foothill, sagebrush, and chaparral habitats ranked as less vulnerable than other birds. Our results suggest that some of these species may respond to climate change in the region with population increases or range expansions. These results can help Sierra Nevada land managers to prioritize conservation and management actions that benefit the species that are most likely to need them.

Gray-crowned Rosy-Finch (*below*), one of 16 species ranked as Moderately Vulnerable to climate change in the Sierra Nevada, in an analysis that incorporated climate change projections under two different climate models (referred to here as GFDL and PCM) throughout its current Sierra range (*mapped, below right*).



Photo by D. Sherony



Research and conservation to help meadow birds

IBP leads a vigorous program of monitoring, research, and conservation on behalf of birds that inhabit montane meadows in the Sierra Nevada. Two meadow species that we focused on in 2014 were Great Gray Owl and Willow Flycatcher, both of which are California endangered species.

Great Gray Owl

It is likely that fewer than 200 pairs of Great Gray Owls live in California. IBP is partnering with the California Department of Fish and Wildlife to develop a **Conservation Strategy for Great Gray Owl** that will aid in the long-term preservation of the species in California. In a related effort, we also visited, and assessed nearly all of the known current and historical nests sites in the Sierra Nevada, and now have a manuscript in review that describes the surprising diversity of

conditions in which Great Gray Owls nest, and provides recommendations for developing and sustaining habitat conditions that are conducive to nesting.

Willow Flycatcher

More than ten years have passed since state and federal survey efforts have been collated to provide a current picture of the distribution and population size of Willow Flycatcher in the Sierra Nevada and southern Cascades of California. In 2014 IBP led a multi-agency effort to collate recent survey results from state and federal agencies and other groups, and provide an updated range map and population estimate for Willow

Flycatcher in the region. We identified 93 meadows and riparian systems that likely still support the species, but also found that many local extirpations have occurred, yielding an estimated 50% decline in occupied sites during the last 30 years. We are now using these updated distribution data to identify high-priority areas for meadow restoration and other work that may benefit the species.

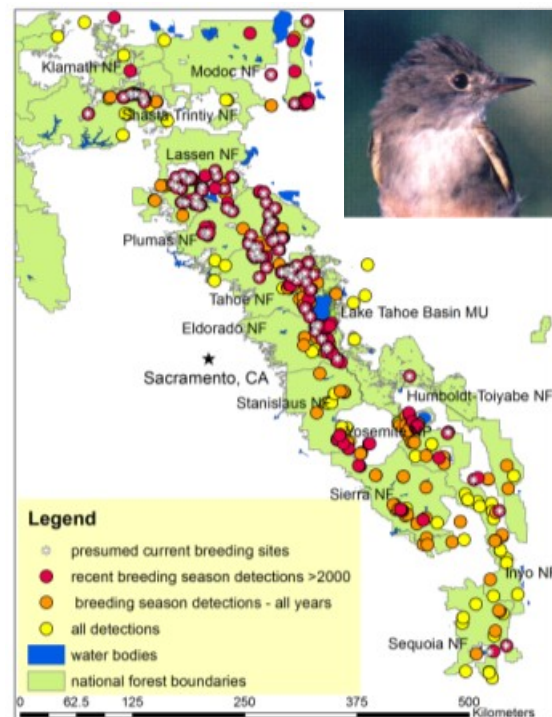


Photo by K. Strohm

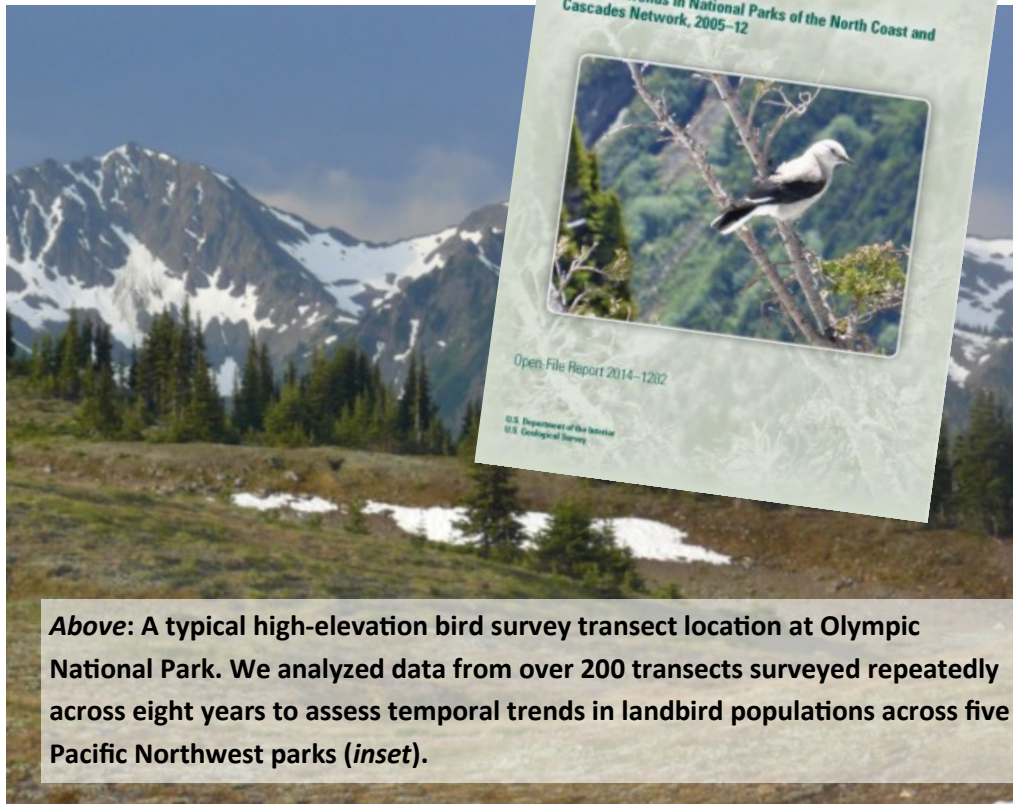
Montane meadows (*above*) support endangered Great Gray Owls (*right*) and Willow Flycatchers (*above right*) in the Sierra Nevada. IBP is partnering with numerous agencies to protect these species and restore their habitats.

Photo by S. Stock

Monitoring bird populations in national parks of the Sierra Nevada and Pacific Northwest

IBP has worked with the National Park Service (NPS) since 2005 to monitor bird populations at nine western national parks, as part of the NPS Inventory and Monitoring Program. In 2014 IBP and partners published a comprehensive analysis of the first eight years of data from five Pacific Northwest parks, including Mount Rainier, North Cascades, and Olympic National Parks. Species with declining populations in the parks included Red-breasted Nuthatch, Pacific Wren, and Golden-crowned Kinglet.

New analyses spearheaded by a post-doctoral researcher joining IBP in early 2015 will assess how habitat and annual weather conditions drive species occupancy patterns across space and time.



Above: A typical high-elevation bird survey transect location at Olympic National Park. We analyzed data from over 200 transects surveyed repeatedly across eight years to assess temporal trends in landbird populations across five Pacific Northwest parks (*inset*).

Molt and plumage studies

IBP is an international leader in research involving avian molt patterns and plumage variation with age and sex. One of the reasons for developing clear criteria for determining age and sex of birds in-the-hand is that it allows for much more sophisticated modeling of population dynamics based on mark-recapture data.

One example of such work in 2014 was IBP's partnership with colleagues at UC Davis to publish an age- and sex-determination manual for 29 landbird species found at Fray Jorge National Park, Chile. Age- and sex-determination criteria were based on examination of specimens from museums across the United States and Chile, as well as data from birds captured at six MAPS stations operated at Fray Jorge during 2008 and 2013.

Newly developed age- and sex-determination criteria for Chilean birds in an upcoming *Special Publication* of the Louisiana State University, Baton Rouge, include findings for Giant Hummingbird (*below*) and Moustached Turca (*right*).



Photo by A. Engilis, Jr



Photo by A. Engilis, Jr

Demographic landbird monitoring on tropical Pacific islands

Landbird populations on tropical Pacific islands are threatened by many factors, including habitat destruction and alteration, climate change, and invasive species such as the Brown Tree Snake, which has decimated native landbird populations on Guam.

In 2014 IBP continued partnering with local government agencies on the islands of Saipan (Commonwealth of the Northern Mariana Islands), and Tutuila and Ta'u (American Samoa) to monitor vital rates of native island landbirds.

Project goals include learning more about the basic biology (especially pertaining to molt strategies and seasonal timing of breeding and other life-cycle events) of previously under-studied species; providing annual estimates and indices of vital rates including survival and productivity; exploring how vital rates vary with habitat, weather, and other factors; and ultimately using these results to recommend management actions that will benefit the species we are studying.

Below: View across the bay to one of our landbird demographic monitoring stations on the island of Tutuilla, American Samoa.



VIEW FROM THE FIELD

Kimiko Kayano, IBP field biologist intern in American Samoa and Yosemite National Park



The day begins in darkness, the stars still cold pinpricks above. My partner and I shoulder our packs and begin the hike that will deposit us at a particular spot within the dripping jungle of a remote island in the South Pacific. We are mist-netting birds in American Samoa for IBP's Pacific Islands bird monitoring project. The air is thick with moisture and the mosquitos whine insistently while we fit birds with metal leg bands that allow us to keep track of individuals.

Four months later, I wait in a starkly different habitat, this time with the aim of capturing and banding birds in Yosemite National Park. There is frost on the ground, but still the dawn chorus echoes around us, frantic and ethereal. Suddenly, the day breaks above the pines and a shaft of sunlight slices through a meadow burnt by wildfire last year, now overflowing with purple-blue lupines. That morning we capture a living gem, infinitely more complex, more brilliant than any sparkling stone could ever be. The lightning colored Evening Grosbeak in my hand flashes fierce eyes and opens its bill threateningly. We fit the metal band around its leg and I wonder: Where did you come from and where are you going? Will you live another long year full of perils to come again next summer? The metal glinting around its leg will help to answer these questions. As I open my hand to let the grosbeak go, it flashes into the sky and I can't help sending out hope and well wishes following behind.

Today, I am repacking my bags to suit the simmering climate of the tropical jungles of American Samoa. I will be returning, this time for a two year stay, to study those enigmatic birds in a new position with the Department of Marine and Wildlife Resources. The experience gained and connections made while interning for IBP have led me across breathtakingly beautiful places in the company of fantastic people and opened a door to a profoundly fulfilling career.

Left: IBP intern Kimiko Kayano holds a Collared Kingfisher she banded on the island of Ta'u, American Samoa.

Partners (we couldn't do it without you!)

Partnerships with land managers, government agencies, foundations, and other researchers and NGOs are critical to virtually all of IBP's bird conservation work. We thank the many partners* listed below, who joined forces with us to study and conserve bird populations in 2014.

*IBP is also grateful to independent contributors of MAPS and MoSI data, who are acknowledged elsewhere.

American Bird Conservancy
American Museum of Natural History, NY
American Rivers
Avocet Research Associates, CA
Big Oaks National Wildlife Refuge, IN
Burrowing Owl Preservation Society, CA
California Academy of Sciences
California Bird Records Committee
California Cooperative Ecosystem Studies Unit
California Department of Fish and Wildlife
California Partners in Flight
Colorado State University
Cornell Lab of Ornithology, NY
Department of Marine and Wildlife Resources,
American Samoa
Devils Postpile National Monument, CA
Division of Fish and Wildlife, Commonwealth of
the Northern Mariana Islands
Eldorado National Forest, CA
Environment Now, CA
Farallon Marine Sanctuary Association, CA
Florida Fish and Wildlife
Gallery Route One, CA
Gulf of the Farallones National Marine
Sanctuary, CA
H. T. Harvey and Associates, CA
Hoosier National Forest, IN
Institute of Boninology, Japan
Jug Bay Wetlands Sanctuary, MD
Kestrel Consulting, CO
Lewis and Clark National Historical Park,
OR and WA
March Conservation Fund, CA
Mount Rainier National Park, WA
Museum of Vertebrate Zoology at Berkeley, CA
Museum of Wildlife and Fisheries Biology, UC
Davis, CA
National Fish and Wildlife Foundation
National Museum of Natural Sciences, Spain
Natural History Museum of Los Angeles
County, CA
Naval Support Activity Crane, IN
North American Bird Conservation Initiative,
Monitoring Working Group
North Cascades National Park, WA
Olympic National Park, WA
Opossum Creek Retreat, WV
Owl Moon Environmental, Inc., Canada
Partners in Flight Western Working Group
Pit Resource Conservation District, CA
Plumas National Forest, CA
Point Blue Conservation Science, CA
Point Reyes National Seashore, CA
Princeton University, Woodrow Wilson
School, NJ
Richardson Bay Audubon Center, CA
San Francisco State University, CA
San Juan Island National Historical Park, WA
Sequoia and Kings Canyon National Parks, CA
Shearwater Journeys, CA
Sierra Pacific Industries, CA
Slate Creek Press, CA
Smithsonian Migratory Bird Center,
Washington DC
Strategic Environmental Research and
Development Program of the Dept. of
Defense
Tahoe National Forest, CA
Thorne Environmental Landscape Analysis, CA
UCLA, Center for Tropical Research
UCLA, Dept. of Ecology & Evolutionary Biology
UCLA, Institute of the Environment
UC Davis, Museum of Wildlife Biology
University of Alaska, Anchorage
UCONN, Dept. of Ecology and Evolutionary
Biology
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USDA Forest Service – Pacific Southwest
Research Station
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Management
USFWS, Division of Bird Habitat Conservation
USFWS, Regions 1-6, 8
USGS-FRESC, Olympic Field Station, WA
USGS Patuxent Wildlife Research Center, MD
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Western Bird Banding Association
Western Field Ornithologists
Western Foundation of Vertebrate Zoologists
Wolf Ridge Environmental Learning Center, MN
Yosemite Conservancy, CA
Yosemite National Park, CA

PARTNER SPOTLIGHT

Chrissy Howell, Ph.D., Regional Ecologist
USDA Forest Service, Pacific Southwest Region



Above: IBP Executive Director Rodney Siegel and Forest Service Regional Ecologist Chrissy Howell receive the 2014 Wings Across the Americas Research Partnership Award – a national-level recognition from the US Forest Service.

The Pacific Southwest Region of the Forest Service has partnered with IBP for many years on a range of projects including MAPS stations and avian monitoring projects. Little was known about the basic ecology, population status, and habitat requirements of the Black-backed Woodpecker in California before a partnership was launched in 2008 between the Pacific Southwest Regional Office of the Forest Service, IBP, and the ten National Forests in the Sierra Nevada. The ultimate goal of this work is to better integrate the habitat needs of Black-backed Woodpeckers into forest management. The partnership has yielded a plethora of information and publications relevant to Forest Service planning approaches and management actions. Recent studies reveal important details about where the woodpeckers forage, when the birds raise their young, and how much burned forest the birds need – information that has proven very helpful to us in the Forest Service. In 2014 these partnership efforts were nationally recognized by a “Wings Across the Americas” Research Partnership Award. It has been a pleasure to partner with IBP on these efforts!

- Chrissy Howell

Help IBP study and conserve birds and their habitats!

Yes, I want to make a tax-deductible contribution to support bird monitoring, research, and conservation efforts at **The Institute for Bird Populations**. Enclosed is my check for:

\$30 \$50 \$100 \$500 \$1,000 Other _____

Name: _____

Email: _____

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2015 Sneak Preview

Right: Bumble bees and other pollinators provide essential ecosystem services that are critical for birds and humans alike, but populations of many pollinators, including the Western Bumble Bee, are declining. In 2015 IBP will launch a new partnership with the US Forest Service and scientists at San Francisco State University to study habitat needs of bumble bees in recent fire areas of the Sierra Nevada.



Western Bumble Bee
(*Bombus occidentalis*)
Artwork by Lauren Helton.