



The INSTITUTE for BIRD POPULATIONS

Celebrating 30 Years

2019 Annual Report





The INSTITUTE for BIRD POPULATIONS

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IBP year-round staff plus several board members and associates in Marshall, California. Left to right, seated, front row: Peter Pyle, Helen Loffland, Meredith Swett Walker. Seated, 2nd row: Ron Taylor, Lynn Schofield, Mandy Holmgren, Bob Wilkerson. Standing: Jerry Cole, Ed Pandolfino, Deborah Mills, Danielle Kaschube, Rachel Blakey, Martin Bern, Steven Albert, Morgan Tingley, Rodney Siegel, Lauren Helton, David DeSante, Chris Ray. Staff not pictured: Jim Saracco.

IBP enables science-based conservation of species and habitats by studying the abundance, demography, and ecology of birds and other wildlife.

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IBP Needs Your Support!

We rely on support from people like you to continue our work. Please consider a tax-deductible contribution, and multiplying the impact by encouraging friends and family to support IBP. Use the donation envelope included in this report, donate through birdpop.org, or send a check to IBP, P.O. Box 1346, Point Reyes Station, CA 94956. Thank you!

On the cover: Golden-crowned Kinglet, one of many songbird species studied by IBP as part of our bird population monitoring programs in western national parks.

Photo: Hayley Crews

A Message from IBP's Executive Director

IBP turned 30 this fall. For people, this is often an important milestone, signifying full entry into adulthood and an amassing of experience and, hopefully, wisdom - even as the energy and ambition of youth still burn brightly. I think this is also a pretty good description of where IBP is in its development.

Dave DeSante founded IBP in 1989 to establish the Monitoring Avian Productivity and Survivorship (MAPS) program. Starting with little more than a bold vision and a rigorous work ethic, he and IBP's early staff built a collaborative network of demographic bird monitoring stations that now spans North America. With more than 1,300 stations established over 30 years, MAPS has amassed over 2 million bird capture records. IBP has analyzed those records to produce over 70 scientific papers, pushing back the frontiers of knowledge on avian demographics, population trends, and other aspects of avian ecology and conservation.

In recognition that migratory bird conservation is an international challenge, in 2002 IBP launched *Monitoreo de Sobrevivencia Invernal* (MoSI), a collaborative network of monitoring stations

throughout the Neotropics, designed to monitor migrant birds where they winter. Our many partners have established over 200 MoSI stations in 20 countries, and the data are yielding important insights into non-breeding season ecology. Later, we extended the approaches used by MAPS and MoSI to study and help conserve birds in Commonwealths and U.S. Territories in the Pacific, including Saipan and American Samoa.

Closer to home, since its founding, IBP has been studying birds in California's Sierra Nevada. Years later, we consolidated our efforts into our Sierra Nevada Bird Observatory (SNBO), to address conservation of at-risk species, habitat restoration, and the effects of climate change throughout the region. The SNBO has grown to be our largest program, and has yielded >40 scientific papers, many with important implications for land management in the Sierra Nevada.

Even as these and other programs have matured, we have kept the flame of innovation and experimentation alive by helping to pioneer the use of emerging technologies such as GPS tracking devices to quantify movements of individual birds, genetic and stable isotope analyses to assess migration connectivity of populations, and automated sound recording systems to improve occupancy studies. We are also extending our work to animals besides birds, particularly insect pollinators that play critical roles in ecosystem maintenance.

In the pages that follow, we report on some of IBP's activities and accomplishments in 2019, but also celebrate our 30-year history. We'd also like to say Happy Birthday to the thousands of staff, trainees, volunteers, colleagues, partners, supporters, and friends we have worked with through the years - this is your celebration, too.

In friendship,



Rodney Siegel, Ph.D.



Our celebration cake, made by Melissa Cameron, was every bit as delicious as it looks.

The MAPS & MoSI Programs



MAPS - Monitoring Avian Productivity and Survivorship

Now in its 30th year, the MAPS program is one of North America's premier long-term continental monitoring programs. Unlike many other programs that collect data on abundance, MAPS gathers information on the age, reproductive status and survival of individual birds – information critical for understanding how to conserve declining populations. With more than 2 million records, the MAPS database now provides an unprecedented capacity to look at long-term trends and effects of long-term ecological processes and stressors, like climate change.

MoSI - Monitoring Overwinter Survival

Because most migratory birds that breed in North America spend the majority of their lives south of the US border, demographic monitoring efforts must be coordinated with our partners in Latin America and the Caribbean. With information collected from stations in more than 20 countries, the MoSI dataset covers a timespan and geographic range that few other monitoring programs in the Neotropics can match. MoSI data provide critical insights into movement patterns and habitat use of migratory and resident tropical birds during the North American winter.

Lazuli Bunting, one of the species whose productivity has increased over the last 30 years in Yosemite as temperatures have increased and snowfall has declined (see page. 5).

Photo: Mick Thompson

MAPS: How is Climate Change Affecting the Birds of Yosemite National Park?

New IBP study examines 25 years of data from the park's MAPS stations.

A great strength of the MAPS program is its longevity; some stations have been operating for nearly three decades. Yosemite National Park is home to six of the longest-operating stations, including the very first, Hodgdon Meadow. This year, we took advantage of these stations' tenure to publish a ground-breaking study on how annual variation in climate and elevation relate to the breeding phenology and productivity of birds across Yosemite's montane zone.

MAPS data fill an important niche in understanding climate effects on birds by not just showing that climate can affect their distribution and abundance of species, but by showing how climate effects on vital rates can contribute to the population changes of Yosemite's birds.

We found that over a 25-year study period, breeding timing and productivity tracked climate variation, with a trend toward warmer springs with less snowpack and a tendency for earlier breeding and increased productivity in the montane bird community. This trend would seem

MAPS Program



Over 1,300 stations



48 states, 10 Canadian provinces, 1 Mexican state



2.5 million capture records



249 scientific papers & reports

Top  species banded

- Song Sparrow
- Gray Catbird
- Swainson's Thrush
- Yellow Warbler
- Common Yellowthroat



to be good news for Yosemite's birds. However, we note that not all species may be benefiting similarly from the trend toward milder spring conditions. For example, we found that species with highest productivity at the higher elevation stations are species whose elevation ranges have been shrinking in Yosemite over the past century. Continued warming may further diminish the amount of suitable habitat for these species and alter bird-climate relationships in the future.

Red-breasted Sapsucker, another species we studied at Yosemite, where most bird species appear to have successfully adapted to climate change by breeding earlier over the last 25 years.

Photo: Mick Thompson

MAPS: What We Need for Better Bird Monitoring in the Boreal Forest

North America's last great forest – the boreal – which extends from Newfoundland to Alaska, spanning two countries and dozens of First Nations territories and Alaska Native Corporations, is sometimes referred to as “North America's bird nursery,” as scores of species rely on the area for breeding or migration refueling. Climate change, oil and gas development, and other factors are increasingly affecting this vital habitat.

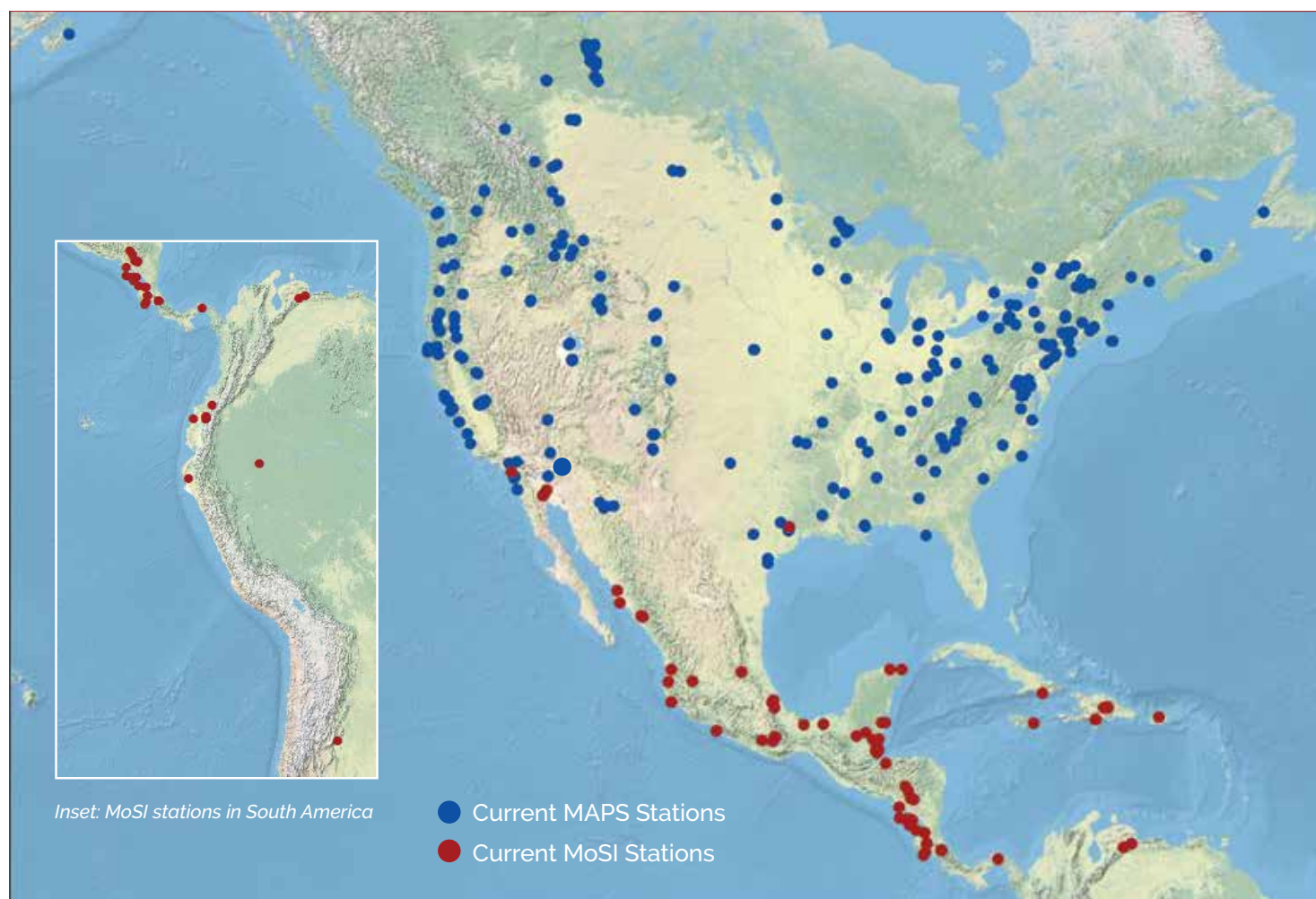
As the climate changes, the boreal forest is projected to provide crucial habitat for even more bird species. In a recent paper authored by several organizations including IBP, scientists identified the challenges facing bird monitoring efforts in the boreal forest and offered some recommendations for future monitoring.

Due to the forest's size and inaccessibility, most surveys are conducted along its southern fringe, and relatively little is known about birds that breed



in other parts. Better monitoring will likely need to include the expansion of programs like MAPS, while integrating new techniques and remote sensing that may be well suited to inaccessible areas of the boreal forest.

Through its coordination of MAPS monitoring in the boreal forest and our participation in the North American Bird Conservation Initiative, IBP will continue to be a part of the effort to monitor boreal birds.





MoSI's Early Days

The MoSI program began in 2002 with workshops, including one in Nicaragua, where this photo was taken. Pictured are, standing in back: Freddy Ramirez, David DeSante, Liliana Chavarria-Duriaux, Salvadora Morales. Seated in back: Alejandra Martínez-Salinas, Mariamar Gutiérrez, Sergio Vilchez-Mendoza, Sandra Hernández, Peter Pyle. Seated in front: Heydi Herrera Rosales, Marvin Tórrez, Edgar Castañeda, Osmar Arróliga, Georges Duriaux. All of the workshop participants pictured here continue to work in bird conservation today.

More than 200 collaborators have joined the MoSI network at some point. Of the 100 currently active stations, three have been with the program since

its inception. Liliana Chavarria Duriaux and Georges Duriaux (pictured above) continue to run two MoSI stations at their renowned El Jaguar Coffee Farm/Ecolodge. Also in Nicaragua, Jose Zolotoff, Ph.D. and Roger Mendieta still manage the MoSI station on Volcán Mombacho National Park. And in Mexico, Manuel Grosselet still operates his original MoSI station at the Oaxaca Botanical Garden. IBP is grateful to all these scientists and the many volunteers and staff that have assisted the program through the years.

The MoSI Family Continues to Grow

In 2019, new cooperators joined the program in Mexico, El Salvador, Nicaragua, Costa Rica, Honduras, The Dominican Republic, Peru, Ecuador, and the U.S. Virgin Islands.



We also continued providing stations with micro-grants of banding supplies such as nets, pliers, scales, and gauges. In 2019, we sent supplies to 15 stations. And, for the third year in a row, IBP and the Southern Sierra Research Station (SSRS) offered

a fellowship opportunity for an early career biologist affiliated with the MoSI program to come to the U.S. and work with our crews in southern California and at Yosemite National Park. This year's recipient was Jelicsa Peña from Peru, pictured above. In addition to assisting with field surveys for Willow Flycatcher and other species with SSRS, Jelicsa improved her bird banding skills with IBP's MAPS crew in the Park.

MoSI Program



259 stations



20 countries



100,000+ captures



15 scientific papers

Top  species banded:

- Orange-crowned Warbler
- Northern Waterthrush
- Prothonotary Warbler
- Wilson's Warbler
- Wood Thrush

IBP's Sierra Nevada Bird Observatory

Since its beginning, IBP has been studying birds in the Sierra Nevada. For 30 years we have partnered with federal, state and private land managers to conduct research that both elucidates the ecology of Sierra birds, and directly informs their conservation. From habitat restoration to forest management, from tiny hummingbirds to North America's largest owls, from the foothills to the alpine, we work with our many partners to help ensure that the region's diverse and abundant birdlife has what it needs to persist and thrive, even in a time of rapid change.

Photo: Jeremy Bishop

Black-backed Woodpeckers and Post-Fire Forest Management

The changing nature of fire in many parts of North America may pose challenges even for birds, like the Black-backed Woodpecker, that prefer recently burned habitats. New IBP science conducted with partners from the University of Connecticut and the US Forest Service finds that these woodpeckers actually prefer to nest near the edges of burned patches, where fledglings can easily find cover in nearby unburned trees after they leave the nest.

These edges may be getting harder to find as wildfires become larger and more homogeneously severe – some recent very large fires in the Sierra were poorly colonized by the birds. US Forest Service land managers are using our findings to identify the most important patches of fire-killed trees to protect from salvage logging. This research proved newsworthy as well and received coverage in *Newsweek*, *National Geographic* and other national news outlets.



Beetles, Woodpeckers, and Changing Fire Patterns

Fire-loving woodboring beetles are important prey for Black-backed Woodpeckers. But how will a changing fire regime affect this critical food resource? The forecast for forests in the western US calls for more burned trees due to increased fire activity and a longer fire season. This might seem an obvious boon to woodboring beetles, but research by scientists from IBP and the US Forest Service suggests the effects on the beetles may be more complicated. When fires ignite outside the historical fire season – which is happening with increasing frequency – large numbers of beetles may be less likely to find and make use of the newly burned trees, yielding habitat that may be much less suitable for Black-backed Woodpeckers than it appears.

Center: Black-backed Woodpecker
Photo: US Fish and Wildlife Service

Studying and Protecting Forest Owls and Raptors

Throughout 2019, IBP continued its robust program of research and monitoring to support conservation of forest owls and raptors in the Sierra Nevada. A collaboration with the US Forest Service, the National Park Service, and other partners yielded a published paper on the apparent resilience of Great Gray Owls to a recent megafire; the information will help guide habitat management priorities for this California endangered species.

Elsewhere in the Sierra, we completed (and published) a study of space use and habitat selection by California Spotted Owls. Cutting-edge satellite-tracking technology revealed that some individual owls forayed surprisingly long distances from their usual home ranges, and suggested that current guidelines for creating habitat reserves around nesting areas may not protect sufficient roosting and foraging habitat for this wide-ranging species. Related work on Northern Goshawks is in progress, as are multi-year surveys to determine nesting locations of owls and raptors across two National Forests. Results will protect nesting habitat from potentially disruptive forest thinning activities.

“If you build it, they will come” – meadow restoration and meadow-loving birds

Studying the habitat needs of meadow birds and using the results to help inform meadow restoration efforts has long been a focus of IBP's work in the Sierra Nevada. Those efforts continued in 2019, with a particular focus on assessing how a variety of approaches to hydrologic restoration are affecting birds. One particularly promising approach we and our partners are investigating is the use of “beaver dam analogs” – man-made structures designed to mimic the form and function of a natural beaver dam.



Photo: Ken Lund



Great Gray Owl
Photo: Tony Varela

Sierra Nevada Bird Observatory



300+ trainees



20,000+ point counts



128 scientific papers
& reports



Advised dozens of habitat
restoration projects



3 state conservation
strategies:

- Great Gray Owl
- Black-backed Woodpecker
- Willow Flycatcher

Bird Monitoring in Pacific Northwest National Parks

IBP has been monitoring birds in five national parks of the Pacific Northwest for 13 years. We've trained more than 90 young scientists who have hiked over 22,000 miles to conduct 12,000 point counts. This work has produced more than 35 scientific papers and reports that help land managers throughout the region understand changing bird populations and make appropriate management decisions to conserve them.



Image: Mandy Holmgren

Science for Parks

IBP works with park managers in areas ranging from remote wilderness to heavily used recreation areas to provide the science they need for protecting bird populations.

For many years we have been using point counts to monitor bird populations in western national parks. Our partnership with the national parks began in Yosemite, but has since expanded to other Sierra Nevada parks and to the Pacific Northwest, and now includes nine parks. In several of the parks (Mount Rainier, North Cascades, and Olympic National Parks in the Pacific Northwest; Sequoia, Kings Canyon, and Yosemite National Parks in the Sierra Nevada) we monitor bird populations across large, wilderness areas – habitat that other large bird survey programs don't reach.

Working in these remote areas helps us to disentangle effects of stressors like changes in climate and wildfire patterns from development and other land use changes that are more directly altered by humans.

This year, we focused our efforts on two of the smaller parks, San Juan Island National Historical Park and Lewis and Clark National Historical Park, which occupy mixed-use landscapes in western Washington and Oregon. Our recently published work revealed that, within the two parks, bird populations are largely stable or increasing, even among species that do not appear to be faring as well across the region or the continent.

With our partners at the National Audubon Society, we also assessed the effect of off-highway vehicle (OHV) use and OHV trail density on the abundance and diversity of bird species at Hollister Hills State Vehicle Recreation Area in California. (see image below). Our study was published earlier this year. Overall, we found bird populations to be largely thriving, even within the context of (well-regulated) OHV recreation.

The overarching message of these two studies? Parks and protected areas, even when heavily used by people, can serve as critical lifeboats for birds, buffering them from many stressors in a rapidly changing world.



Wrentit, one of many bird species that appear to be thriving in Hollister Hills State Vehicle Recreation Area, even in the context of (well-regulated) off-highway vehicle (OHV) use. IBP is studying the responses of bird populations to OHV recreation in OHV parks across California, in partnership with the National Audubon Society.

Photo : Becky Matsubara



IBP's Science Isn't Just "For The Birds"

In recent years IBP scientists have been applying their skills to identifying conservation needs of bumble bees and other insect pollinators in the Sierra Nevada. In 2019 we partnered with the US Forest Service to publish a study on the overlapping but distinct habitat preferences of bumble bees and riparian birds in streamside corridors, and provided specific vegetation restoration targets for maximizing diversity of both groups.

We are now working in a variety of meadow and riparian habitats across the Sierra to assess which specific flowering plants are preferred by different bumble bee species, and provide more detailed planting and seeding recommendations for land managers engaged in habitat restoration.

Bombus insularis

Image: BumbleBCons

A View from the Field

My dissertation work at the University of Wyoming had trapped me at my computer, and it was during a procrastination session that I saw the ad for a bird banding biologist in Virginia, working for IBP. I hesitated for a while and then dared to apply, fearing my advisor's disapproval, but longing to work with live birds—lusting, even, to escape the interminable shell of my current work.

It turned out to be a great decision. I drove east from Wyoming, speeding forward in phenological time. I passed through the wave of migrating spring warblers somewhere between Michigan and Ohio; early-breeding cardinals and grackles already had fledglings by the time I reached our field site at Fort AP Hill, Virginia.

I learned a lot about both birds and IBP from working on this project. IBP biologist Ron Taylor patiently answered my unending data questions while we set up four new MAPS stations. I was fortunate to band with Blaine Carnes, a Texan who loves birds, baseball, and bacon (possibly in that order), and who has banded bajillions of the first. I had banded only occasionally over the previous several years, so Blaine let me process



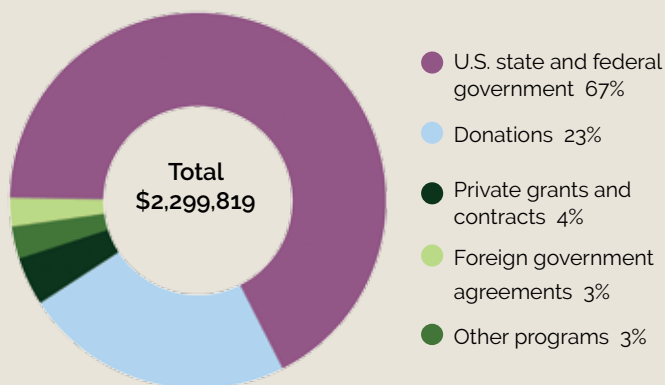
nearly every bird we mist-netted, and then double-checked my age and molt codes. Eventually I became more proficient and consistent in aging birds by molt.

There's something about getting an up-close look at birds in the field that synergizes with the duller work of data management, coding, and writing. Even though my dissertation doesn't involve bird banding, this experience has re-energized my work. My research excites me again because I can now probe ideas that came to me in the field. Ideas that, much like the birds I banded, take flight.

Libby Megna
IBP Seasonal MAPS Biologist
Fort AP Hill, Virginia

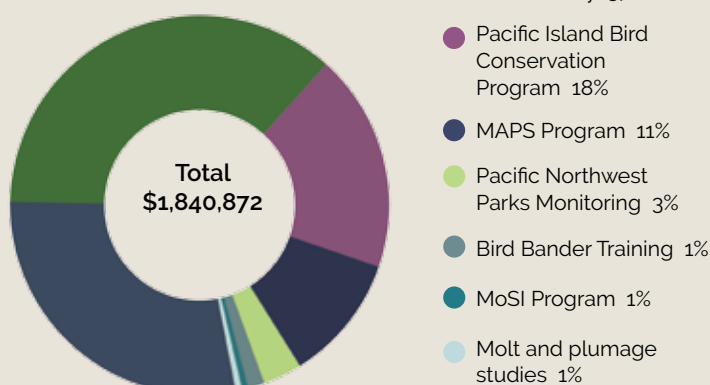
Fiscal Year 2018 Revenue & Expenditures

Revenue and expenditures for 2018 are shown below. IBP's fiscal year runs from January 1 to December 31. Final figures for 2019 were not available at the time this report went to press.



2018 Revenue

Net Assets: \$613,181



2018 Expenditures

Peer-reviewed Publications

As part of our effort to disseminate our scientific findings widely, IBP scientists frequently publish results in peer-reviewed scientific journals. In 2018-19, IBP staff published more than 40 peer-reviewed articles, most of which are available in our searchable database of more than 650 publications at birdpop.org.

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Yellow Warbler

Photo: Ray Hennessey



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Partner Perspective



Nicole Michel, Ph.D.
Senior Quantitative Ecologist, National Audubon Society

"I am thrilled to have the opportunity to continue to partner with The Institute for Bird Populations! I first heard about IBP in 1996 and was excited to land an internship in 1997, running the MAPS stations at Yosemite National Park. It's no exaggeration to say that summer spent banding birds in montane meadows and living in the park changed my life. I returned the next three summers as a field biologist, and became part of the full-time staff from 1999-2005. Fourteen years later, with a PhD under my belt and a new role of Senior Quantitative Ecologist at National Audubon Society, I'm happy to be collaborating with IBP once again. Several years ago, I was invited to write a paper on boreal bird monitoring, and invited IBP biologist Jim Saracco to contribute [see page 6 of this annual report for a summary of the paper].

A few years later, Audubon obtained a grant from the California Off-Highway Motor Vehicle (OHV) Parks and needed a subcontractor to conduct part of the work, I jumped at the chance to work with IBP again. I knew that they were a reliable partner who would go above and beyond in completing the work, and would be a joy to work with along the way. We've already published our first paper [see page 11] on OHV effects on birds at Hollister Hills State Vehicular Recreation Area. I hope to continue to have opportunities to partner with IBP well into the future."

IBP is grateful to our many partners for helping to make our work possible.

Alberta Biodiversity Monitoring Institute, Canada
Amador Calaveras Consensus Group, CA
American Birding Association
American Rivers
The Association for Fish and Wildlife Agencies
Audubon California Starr Ranch Sanctuary, CA
Audubon Canyon Ranch, CA
Association of Fish and Wildlife Agencies
Avinet, Inc.
Avocet Research Associates, CA
Bandelier National Monument, NM
Bernice P. Bishop Museum, HI
Birds Caribbean
Blackrock Nature Lodge, Belize
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Eco Kaban, Mexico
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Inland Bird Banding Association

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Stanford University, CA
Kalamazoo Nature Center, MI
Klamath Bird Observatory, OR
The Lawrence Foundation, CA
Lewis and Clark National Historical Park, OR
and WA
March Conservation Fund, CA
Mount Rainier National Park, WA
Muséum National d'Histoire Naturelle, CESCO,
Paris, France
Museum of Vertebrate Zoology at Berkeley, CA
Museum of Wildlife and Fisheries Biology,
UC Davis, CA
National Audubon Society
National Autonomous University of Mexico
National Ecological Observatory Network
(NEON) Program
National Geographic Society
National Park Service – National Inventory
and Monitoring Program
National Park Service – North Coast and Cascades
Network, WA and OR
National Park Service – Sierra Nevada Network, CA
North American Bird Conservation Initiative
North Cascades National Park, WA
Occidental Arts and Ecology Center, CA
Olympic National Park, WA
Owl Moon Environmental, Inc., Canada
Partners in Flight
Paso Pacifico, Nicaragua
Plumas National Forest, CA
Point Blue Conservation Science, CA
Reserva El Jaguar, Nicaragua
San Francisco State University, CA
San Juan Island National Historical Park, WA
Sequoia and Kings Canyon National Parks, CA
Science and Technology Branch, Environment and
Climate Change Canada
Shearwater Analytics, FL
Sierra Foothills Conservancy, CA
Slate Creek Press, CA
Smithsonian Migratory Bird Center, Washington DC
Sonoma State University, CA

Southern Sierra Research Station, CA
The Nature Conservancy
The Pollinator Partnership, CA
The Sierra Meadows Partnership, CA
Third Millennium Alliance, Ecuador
Tierra de Aves, Mexico
Truckee Donner Land Trust, CA
Truckee River Watershed Council, CA
Tulane University, AL
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University of Alberta, Canada
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US Fish and Wildlife Service, Div. of Migratory Birds
USDA Forest Service Region 4
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USDA Forest Service, Pacific Southwest
Research Station
USDA Forest Service, Northern Research Station
USDI Bureau of Land Management, California Office
USGS Alaska Science Center
USGS Bird Banding Laboratory
USGS-FRESC, Olympic Field Station, WA
USGS Patuxent Wildlife Research Center, MD
USGS National Climate Change & Wildlife
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