FlightPath

Volume 2, Issue 2 Fall 2008

Notes from the Field

"Bridging" the Bird Gap

Todd Katzner, Ph.D.

With my head held back as far as it would go, I stared directly up and wondered how in the heck we were going to get to that Peregrine Falcon nest. Together with officers of the Pennsylvania Game Commission and several members of PennDOT's bridge team, we were underneath one of Pittsburgh's biggest bridges, tracking down a report of breeding Peregrine Falcons. I'm not normally afraid of heights, but this structure was a bit intimidating, even for me.

As most residents of our city know, Peregrine Falcon populations have been growing recently. These incredible birds are now breeding regularly in the area. Every year, active and usually successful breeding occurs on the Cathedral of Learning in Oakland and on the Gulf Tower in downtown Pittsburgh. Likewise, in recent years, breeding pairs of Peregrine Falcons have occupied a number of our local bridges.

Pittsburgh's peregrines breeding on buildings use small, graveled nest boxes placed on high ledges. Charles Bier of the Western Pennsylvania Conservancy originally established our local nest boxes. Now, the National Aviary, the Pennsylvania Game Commission and building owners collectively manage the boxes.

Photo: Todd Katzner

Female peregrine defending her nest on a Pittsburgh bridge.

Bridge-breeding birds are another story. In each case, the birds nesting on bridges chose those sites by themselves, with no additional help from people. Furthermore, in recent years, the number of bridge nests has been increasing. At least three pairs of peregrines are breeding on bridges in the area, and possibly a few more that we don't know about exist!

The recent rise in the numbers of these birds and the implications about human interactions with wildlife

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Human Population and Biodiversity

Birds as Indicators of Human Impacts on the Environment

Steven Latta, Ph.D.

The transformation of natural habitats represents one of the great forces in global environmental change and one of the great drivers of biodiversity loss. From coastal wetlands to montane forests, habitats and entire ecosystems are eliminated, degraded and fragmented in myriad ways. Human attempts to use and subdue natural habitats have been a constant theme in the earth's transformation in many societies and many lands.

Human activities and population growth impact birds at their breeding sites, during migration, and in the winter on their non-breeding grounds. Just as birds respond to habitat degradation, they will also respond to conservation efforts and management programs designed to improve wildlife habitat. In fact, birds are often viewed as excellent indicators of habitat change.

Using birds as indicators of ecosystem health has been growing. Birds are particularly good for this monitoring because they are relatively easy to study and they occupy many different ecological niches. Also, scientists can measure bird reproduction and survival, both of which respond quickly to habitat change. However, to use birds as indicators requires that their ecology be well known and easily observed.

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Letter from the Editor

Attracted by Birds

People are drawn to birds because of their natural beauty, lively song, miraculous flight and because birds are symbols of diverse ecosystems. Because of their attractiveness to human observers, birds became important indicators of ecosystems' health. As a "bioindicator," the abundance or diversity of birds is an accurate gauge to quickly measure the impact of habitat changes. These changes may be negative, such as pollution or habitat destruction, or they may be positive, such as habitat improvement or restoration activities.

Birds are particularly good taxa for this monitoring because they are relatively simple to study, are easy to see, and announce their presence with songs and calls. In addition, because of their popularity, birdwatchers and other non-professionals can often participate in activities monitoring numbers of birds and habitat change.

This issue of FlightPath focuses on using birds as indicators of human impacts on the environment. The National Aviary is developing new techniques to monitor bird populations and is designing local, regional and national plans to help locally-based collaborators to monitor birds. As the struggles to conserve biodiversity and critical ecosystems around the world continue, researchers will increasingly view birds as key bioindicators of habitat conditions. And, avian monitoring will be an important component of any management response for conservation. The National Aviary will be at the forefront of developing new techniques for using birds as bioindicators for conservation. Hopefully, using birds in this way will involve more people in the successful conservation of biodiversity.

—Steven Latta, Ph.D. Editor

Recent Publications

Latta, S. C., C. J. Ralph, and G. Geupel. 2005. **Strategies for the conservation monitoring of permanent resident landbirds and wintering Neotropical migrants in the Americas.** *Ornitología Neotropical* 16:163-174.

Bird conservation and management requires collection of habitat-specific data on populations because most conservation and management activities depend on knowing the population size of a species, as well as numbers of males, females and offspring. For example, scientists must understand the population dynamics of game species well enough to allow continued harvest activities without generating negative impacts on future reproduction and population levels.

Likewise, scientists must know the distribution, population size and population trends of threatened and endangered species in order to develop effective conservation plans. For other species, monitoring activities must be adequate to detect population trends so that significant declines are apparent while the birds representing these species are still relatively abundant.

Most conservation organizations have agreed to the need to establish long-term bird monitoring and research programs. However, developing national or international monitoring programs is difficult because indigenous organizations that could lead monitoring programs often have their own goals and locally-defined monitoring objectives. These objectives may vary among regions and countries and must be integrated into international monitoring schemes.

This article presents a new monitoring strategy based on a hierarchical approach that allows locally-based organizations to generate results relevant to their local management efforts, while enabling them to simultaneously participate in wider, regional and international monitoring efforts. By participating in broad-based monitoring programs, local groups help to determine population trends of migratory and permanent resident birds at a scale far greater than any local monitoring effort can achieve.

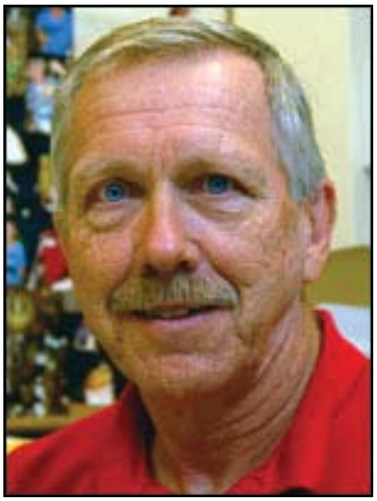
This strategy also allows researchers to address basic research questions concerning the ecology and natural history of migratory and resident bird species. Through cooperative efforts and standardized monitoring, the National Aviary can evaluate the efficacy of conservation and management actions throughout the Americas, while also fulfilling locally-defined conservation and monitoring objectives.

Introducing Our Scientific Advisory Committee

Behind every great organization is a great team of advisors. Proudly, some of the world's foremost conservationists and academics advise the Department of Conservation and Field Research. The Scientific Advisory Committee is comprised of four senior biologists – Nigel Collar, John Faaborg, Joshua Ginsberg and Susan Kalisz.

Dr. Nigel Collar is the Leventis Fellow in Conservation Biology at BirdLife International and Cambridge University in England. Dr. Collar co-founded BirdLife International, one of world's largest NGOs dedicated exclusively to conservation of bird populations worldwide. Dr. Collar's knowledge of bird conservation issues is encyclopedic. He is a first-rate guide for the National Aviary as it chooses new directions and expands programs.

Nigel Collar, Ph.D.



John Faaborg, Ph.D.

Joshua Ginsberg, Ph.D.

Susan Kalisz, Ph.D.

Dr. John Faaborg is a Professor of Biology at the University of Missouri. He is one of the world's leading avian ecologists and demographers. His studies focus primarily on how bird populations respond to variations in habitats that occur over time and space. Dr. Faaborg's study sites span the Americas, from North America through the Caribbean and Latin America. He has maintained the longest avian monitoring program in the hemisphere at Guánica Forest in Puerto Rico. Dr. Faaborg's credentials as a scientist are impeccable. He is an elected Fellow of the American Association for Advancement of Science and is the President-Elect of the American Ornithologists' Union. He has received numerous awards for his work on Neotropical migratory birds. On the Scientific Advisory Committee, Dr. Faaborg is most closely connected to conservation issues of North American bird populations.

Dr. Joshua Ginsberg is Vice President for Conservation Operations at the Wildlife Conservation Society (WCS) in New York. His organization, also known as the Bronx Zoo, is the leading institution world-wide for wildlife field research and conservation. WCS serves as a model for the Conservation and Field Research Department. Dr. Ginsberg is a formidable conservationist, having conducted years of extensive field work in Africa and led WCS's Asia and Africa divisions for several years before assuming his current position.

Dr. Susan Kalisz is a Professor of Biology at the University of Pittsburgh and a long-serving National Aviary board member. Dr. Kalisz is an internationally renowned specialist in the evolution, ecology and conservation of flowering plants and their communities. A variety of sources, including the US National Science Foundation, fund her research. As a board member, Dr. Kalisz was instrumental in creating the Conservation and Field Research Department. As the scientist in Pittsburgh most closely associated with the department, Dr. Kalisz plays a personal role as mentor, advisor and friend to the staff.

All of these remarkable conservationist scientists help the National Aviary's Conservation and Field Research program in their own way, advising and giving direction related to their particular strengths and expertise. Their sage advice and dedicated service enable the National Aviary to be on the forefront of bird conservation worldwide. Thank you, Susan, Joshua, John and Nigel for your vision and inspiration!

Partnering for Conservation

Creating a Broad Collaboration for Conservation in Ecuador

Steven Latta, Ph.D.

South America has more bird species than any other continent in the world. The center of this biodiversity is the Andes Mountains, which harbor South America's greatest concentration of species not found anywhere else in the world. Significant numbers of threatened bird species call this area home, making it one of the world's "hotspots of biodiversity." Like other major biodiversity hotspots found near densely populated areas, the tropical Andes region has already suffered extensive habitat loss.

The National Aviary's Dr. Steven Latta is working with diverse partners in Cajas National Park to provide some of the scientific background necessary to manage birds in this vitally important area. Cajas National Park covers more than 25,000 hectares in the high Andes of southern Ecuador. The Park is the first Ecuadorian natural reserve administrated by a local government institution through an innovative decentralization agreement signed with the Ecuadorian federal government. This decentralized approach opened the door for broad collaborations among experts interested in helping to conserve and manage Andean biodiversity.

Photo: C. Graham

Cajas National Park, Ecuador

After extensive talks, such an innovative collaboration was arranged among Latta, the Ministry of the Environment, ETAPA (the city of Cuenca's municipal company for water supply), Dr. Gustavo Chacón and Boris Tinoco of the University of Azuay in Cuenca, and Dr. Catherine Graham of Stony Brook University in New York. This collaboration calls on all parties to promote bird research, education, and capacity building for the conservation of Cajas National Park and surrounding ecosystems.

The Park's most prominent ecosystem is the alpine grass vegetation, which is intermixed with scattered patches of stunted trees. At lower elevations, a mosaic of regenerating pasture, introduced tree plantations (pine and eucalyptus), secondary forest fragments (bosque altoandino secundario), and primary forest (bosque altoandino primario and bosque de quinua) are found. With 300 lakes, the Park was named an internationally important RAMSAR wetland site and an Important Bird Area.

Beginning in 2005, the diverse partnership began studies of bird community composition and bird survival at four sites in representative habitats across Cajas National Park. We are studying how birds respond to habitat disturbance, checking the health of individual birds captured in mist nets and monitoring individual birds to determine how they survive in similar habitats suffering from more or less disturbance by humans.

The partners plan to observe birds to learn how useful human-disturbed habitats are for birds and other wildlife. They will also examine how ecosystems change under scenarios of continued deforestation and reforestation. In the forest fragments, the researchers are

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NATIONAL AVIARY

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The National Aviary inspires respect for nature through an appreciation of birds.

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Human Population and Biodiversity

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Under these conditions, birds can serve effectively as an early warning signal for changes in habitat conditions.

Evaluating the magnitude of habitat change and its impact on birds is essentially a project to monitor bird numbers. While bird populations may change in response to local, regional and global pressures, monitoring most often occurs on a local scale. Still, locally-based monitoring presents its own challenges. Each project may have different goals based on different local needs. Variation in resources and skills needed for monitoring also presents challenges. For this reason, a variety of monitoring programs exists, allowing locally-based partner organizations to generate results based on their abilities.

The National Aviary uses birds as indicators of ecosystem health in many ways. In western Pennsylvania, National Aviary researchers use the Louisiana Waterthrush (*Seiurus motacilla*) to indicate the condition of its stream habitat. Knowing how stream pollution and changes in aquatic insect communities affects stream birds is critical for their conservation and management. In order to be a useful bioindicator of stream quality, differences in water quality must have observable and predictable effects on the waterthrush. Furthermore, if waterthrush are effective as an indicator, they should be easier and more economical to measure than stream insects or other measures of the ecosystem.

The Aviary's Dr. Todd Katzner has contributed to the use of birds as indicators of habitat change by developing a novel method of monitoring bird populations. Fundamentally, conservation requires knowing how many individuals of a threatened species exist. Because many species are difficult to capture and count, Katzner has pioneered non-invasive genetic monitoring protocols for eagles and vultures. Katzner and his students collect feathers that are naturally-shed at roosts or feeding sites. They extract DNA from these feathers to identify individual birds. Using these techniques, Katzner and colleagues monitor eagles in Kazakhstan and vultures in Cambodia as indicators of human influences on their environment.

Finally, on the island of Hispaniola, where humans have impacted nearly all natural habitats, the Aviary's Dr. Steven Latta uses birds as indicators of how useful early-successional scrub and young forests may be as habitat for a variety of songbirds. As agricultural lands are abandoned or protected, most expect restoration of the former forests to increase the land's value for wildlife. A recently completed five-year study demonstrated how the community of birds using re-growing fields and young forests changes over time and how the survival of birds in the older habitats improves. By comparing results in the restored sites to results from forests not greatly impacted by humans, the National Aviary's project will predict how birds will respond to further gains or losses of these forests. These results will guide the restoration of forests in national parks and other protected areas.

Photo: K. Eisermann

Monitoring Birds in Guatemala.

As increasing human populations impact habitats and ecosystems, and as mankind struggles to conserve biodiversity, birds will be increasingly valuable as bioindicators of habitat conditions. Developing new monitoring techniques, applying these protocols in diverse lands, and designing management responses for conservation will continue to be a National Aviary priority.

Funding Success

Pittsburgh Zoo and PPG Aquarium Supports Telemetry Studies

The Pittsburgh Zoo Conservation Fund recently made a generous award to Dr. Steven Latta to support radiotelemetry studies of the Louisiana Waterthrush. These birds breed in Pennsylvania and other Eastern states, but their restricted and often threatened habitat has focused attention on them as a species of conservation concern. Contamination and development often threaten the Central American and Caribbean winter habitats of these birds.

The Zoo granted funding to purchase radiotelemetry equipment to track individual waterthrush during both the breeding and over-wintering periods.

National Aviary researchers will follow individual birds to identify which habitats they use and what parts of their home ranges are most important. Information from these studies will identify threats to this species and other Neotropical migrant and indigenous birds sharing the riparian habitats. The data generated will provide the scientific foundation for specific conservation actions and will supply local residents and land managers with critical information needed to conserve these highly threatened habitats.

Links Across the National Aviary

Penguin Conservation Efforts at the National Aviary

Steven Sarro

At the National Aviary, the Animal Programs Department generates conservation initiatives to supplement the Department of Conservation and Field Research's work. The National Aviary supports Aquarium and Zoo Association (AZA) programs called Species Survival Plans (SSP). SSPs identify animal species of conservation concern and manage the North American captive population.

Management plans under an SSP include genetic and demographic considerations necessary to preserve the species' genetic diversity over time. The SSP also addresses concerns about the conservation of wild populations as well as captive management and sustainability issues. The National Aviary supports SSPs for the Andean Condor, Bali Mynah, Guam Rail, Palm Cockatoo, Red-crowned Crane and African Penguin.

The African Penguin is of particular interest to the National Aviary and to Steven J. Sarro, the Aviary's Director of Animal Programs. Sarro has been the SSP Coordinator for the African Penguin since 1995. African Penguins inhabit the coastal waters of southern Africa, nesting on islands and hunting in the fish-rich cold waters. Experts estimated the penguin population at over 2 million birds in the last century. Due to human activities including over-fishing, guano harvesting, egg collecting and oil spills, the population now hovers around only 150,000 birds.

To address this alarming situation, the African Penguin SSP is partnering with the Southern African Foundation for the Conservation of Coastal Birds (SANCCOB), headquartered in Cape Town, South Africa. SANCCOB is a wildlife rehabilitation facility dedicated to preserving the African Penguin and other coastal species through research, education and rehabilitation.

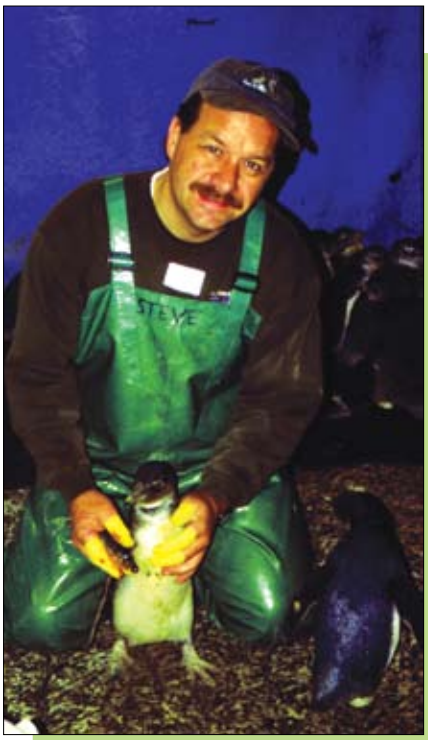

Photo: Steven J. Sarro

Steven Sarro cleaning oiled penguins.

The African Penguin SSP provided advice and expertise during the 2000 *Treasure* oil spill, and SSP penguin experts were sent to Cape Town to help in the penguin recovery efforts. During this single oil spill, approximately 44,000 African Penguins were either oiled or had to be relocated. The off-shore break-up of an iron ore freighter that dumped crude oil into the ocean near the penguin nesting islands caused this disaster. Birds affected by this one spill represent almost one-third of the known population. Fortunately, SANCCOB and volunteers from around the world were able to relocate or rehabilitate approximately 90% of the affected birds.

The National Aviary has exhibited the African Penguin for the past five years, and has included these birds in education programs and as part of its staged avian presentations. The Aviary also raises money to aid penguins as part of its daily avian presentations. While one of the African Penguins is on-stage, a trained American Crow accepts paper money donated by visitors and stuffs the bills into a donation box.

Proudly, the National Aviary has raised over $11,000 this year and expects the total to surpass $15,000 by year's end. All of these funds go directly to SANCCOB to support African Penguin conservation. The National Aviary is proud to collaborate with SANCCOB and to advance these conservation efforts in the wild, as well as contributing to the preservation of this amazing species of bird in captive programs.

Partnering for Conservation

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evaluating how the size of forest patches and their position relative to each other influences the abundance and movement patterns of specific species.

Training new biologists is also an important part of this project. We began this "capacity building" by training several field assistants in bird monitoring protocols and by intensively training Boris Tinoco, the Ecuadorian field supervisor, at Point Reyes Bird Observatory (PRBO) in California. When Boris began his doctoral studies at Stony Brook University, his successor also completed training at PRBO with National Aviary support.

Building on this solid foundation, the Aviary's current conservation goals focus on generating the scientific tools needed to manage birds in significantly disturbed habitats. National Aviary experts are also training students, community members and park personnel to monitor and manage birds and their habitats. This broad collaboration will translate into improved management and conservation of Ecuador's high Andean birds.

Meeting Reports

Wildlife Conservation Society of the Philippines

Attendance at conferences is one of the key ways that today's scientists disseminate information. Whether these conferences are national or international, the National Aviary's credibility and stature depends in part on its attendance at such conferences.

This spring, the Aviary staff traveled to the Philippines for the annual meeting of the Wildlife Conservation Society of the Philippines (WCSP) and for a workshop to establish best practices for conservation of Philippine Eagles. The National Aviary was a primary sponsor for the WCSP meeting, and it helped to select this year's theme – "Human population density: Impacts on biodiversity."

Dr. Todd Katzner, representing the Aviary, gave the plenary talk at the conference on this topic. His seminar compared the human population impacts on biodiversity by focusing on examples from three countries. These countries included a gradient of population densities, ranging from Kazakhstan with a low population density, to the USA with a moderate (and growing) human population density, to the Philippines with an extremely high human population density. Each country faces unique environmental problems. In each country, different forces drive conservation problems and biodiversity loss.

Although a potentially thorny topic for an American to address overseas, the talk was well received, generating many questions and a good discussion among participants. On the same trip, Katzner spoke at a smaller meeting hosted by one of the world's largest conservation organizations, Conservation International. His talk focused on the Philippine Eagle's importance as a species in need of landscape-scale conservation actions.

Support Our Work!

The Department of Conservation and Field Research (DCFR) of the National Aviary depends on external support to reach our conservation goals. Current funding comes from a variety of sources, with our most significant support provided by the Avian Conservation Endowment.

In addition to these endowment funds, the department attracts external funds for its projects. A significant portion of this external funding is provided through the generosity of private donors, whose support is crucial to the department's continued success. Because of our endowment, donors can be assured that 100% of their funds will be used for conservation and no monies will be spent on salaries or overhead costs.

Donations to DCFR or to specific projects can be made online at www.aviary.org, or by contacting our staff. Please also remember the National Aviary in your year-end giving.

Notes from the Field

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and natural systems are particularly interesting. As human populations and the impact of our consumption grow, we must find ways to minimize our impacts on wildlife. Birds, especially birds of prey, are excellent indicators of how humans impact the world.

Declines in bird populations probably mean that we are harming our environment, and if we don't change our actions humans also will suffer the consequences. The decline of Peregrine Falcon populations occurring midway through the last century resulted from man's overuse of the pesticide DDT. The pesticide and its residues caused dramatic declines in populations of many birds of prey. Now that DDT is no longer overused, populations of Peregrine Falcons, Bald Eagles, osprey and other birds are rising dramatically.

The National Aviary, together with the Pennsylvania Game Commission, is working to manage our local falcons to ensure that their populations continue to grow. Every year, we assist in the banding of the birds nesting on Pittsburgh's buildings. Now, with the addition of birds nesting on bridges, we are climbing under these bridges trying to band every chick that we find. Bands become critically important for tracking populations and understanding the demography of this recovering population. For example, because of her bands, we know that the female peregrine that bred this year at the Cathedral of Learning hatched in 1999 from the nest at the Firstar Center in Milwaukee, Wisconsin!

So, that is why I was wondering how we would climb up to that super-high peregrine nest. I'm happy to say that eventually we did make it to the birds. In the course of the last few years, I've become something of a bridge-climbing addict. Whenever we climb, a PennDOT crew always accompanies us. Still, bridge peregrines are not for the faint of heart or for the acrophobic.

Our bridge hikes are high above the water, usually on a narrow catwalk, and we often meet defensive adult peregrines. Nevertheless, these climbs offer the unique opportunity to see these amazing birds up close in the wilds of the urban jungle and contribute significantly to their management and conservation.

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IN THIS ISSUE

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Secure online donations at www.aviary.org.

Short Takes

Designing the Dominican Birding Trail

Hispaniola supports more than 300 bird species, including 31 unique endemics (birds found nowhere else in the world) and 35 over-wintering Neotropical migratory bird species. Some of the birds are found in few other places in the world during winter. Considering the rapid habitat destruction in the Dominican Republic and Haiti, it is important to increase local appreciation for birds and other wildlife in order to sustain a healthy ecosystem.

With Steven Latta's recent publication of the first complete field guide to the birds of the Dominican Republic and Haiti, an increased interest in birdwatching on the island emerged. To act on this immediate opportunity, the US Fish and Wildlife Service awarded Latta and collaborators from the Hispaniolan Ornithological Society funding to develop and publicize the Dominican Birding Trail.

This project will promote birdwatching, locally-based economic development and conservation by identifying 60-80 sites across the Dominican Republic, including Watchable Wildlife Sites, Important Bird Areas, Alliance for Zero Extinction sites, nature trails and other prime birding locations. Project organizers will produce a book describing the birding trail, including site descriptions, maps, driving and walking directions, expected bird species and recommendations for food and accommodations. A laminated fold-out map will serve as an introduction to the sites and their indigenous birds. All of these materials will also be placed on the internet for global promotion.

Original art by B.K. Mackay

Golden Swallows

This project seeks to increase birdwatching opportunities and bolster the economic impact from birdwatching and ecotourism. With public outreach promoting birdwatching and conservation, the National Aviary hopes to stimulate local economic development. This will increase support for site-protection and engender a conservation ethic in the Dominican Republic.