



# FlightPath

Volume 3, Issue 1

Summer 2009

## Notes from the Field

### Enjoying the Finer Things in Life: Chocolate, Coffee and Birds

Steven Latta, Ph.D.

In the Septentrional Mountains of the Dominican Republic, extended families live largely as they have for generations. From simple houses, and with hard work, they have gently transformed the land into what some have called the best place in the world for organically growing cacao – the source of chocolate. The wet valleys and unique soils produce an excellent chocolate that is in demand throughout the world, but especially by the chocolatiers of Europe and North America. The knowledge and traditions of growing and processing this fine organic chocolate is passed on through families and a cooperative network of small-scale growers.

Like the world's best coffee, cacao

is grown on trees which themselves are shaded by taller trees in the overstory. Picked by hand, transported by mules, dried in the sun, and often ground to a paste in mortars and pestles hewn from local trees, chocolate represents a labor of love. And like shade-grown coffee, these “plantations” are also part of the family “home garden,” providing many varieties of fruit and wood for cooking and construction.

Coffee as well as cacao may be shaded by tropical fruits - oranges, grapefruit, avocados, mangoes, guanabana, - or beautiful flowering trees. Not coincidentally, these mountains also are home to an impressive variety of birds. The wide

diversity of trees in the cacao plantation, as well as the pesticide-free organic nature of the farm, provides an inviting habitat for many birds that may be spending the winter or their entire lives in these plantations.

One of the migratory species that are common in the cacao plantations is the Louisiana waterthrush.

*continued on page 2*

## Human Population and Biodiversity

### The Perils of the Population Paradigm

Todd Katzner, Ph.D.

Economic slowdowns have a way of focusing our attention on problems at hand. The first real slowdown of the 21st century is no exception. Termed the “Great Recession” by some, our recent economic struggles are said to have initiated with a slide in the U.S. housing market that channeled into preexisting structural problems at national and global financial institutions. Unemployment has jumped from a millennium low of 3.8 percent in April 2000, to about nine percent as of March 2009. Every day most of us experience the pain of this global slowdown and every day we hear the pundits talk about the “when” and the “how” of recovery.

One of the encouraging story lines emerging from this recession is the focus on “green” jobs – those that link economic revitalization to industries that seek to limit growth of our carbon footprint. This emphasis is part of a national attempt to redirect our economy and way of thinking to promote both economic growth and encourage long-term viability. As we strive to recover from the recession, therefore, we are also trying to change our country and our relationship to the environment. Changes such as these are not trivial and it is critical that we think them through

*continued on page 5*



*Drying freshly harvested cacao beans.*

Photo: Steven Latta

# Letter from the Editor

## High Impact Conservation at the National Aviary

The National Aviary is unique among American zoological institutions in that it supports a larger Ph.D.-level field research staff than any similarly sized organization. In the Department of Conservation and Field Research (DCFR) our operating costs and salaries are covered by a generous endowment, so our biologists are able to focus their efforts on research and conservation rather than on raising funds for their own salary as is required of biologists at other non-academic institutions.

Our funding approach is exceptional among conservation organizations. The support it provides gives our scientists the opportunity to set and achieve highly ambitious conservation and research goals, but it also insures donors that nearly all of their funding is used directly for on-the-ground research and conservation efforts. Few other organizations can make this claim!

In the DCFR we focus on applied conservation problems linked to the impact of human population and resource consumption on birds, their habitats, and environmental sustainability. Our

“high impact conservation” approach targets research, education and capacity building at sites, on systems and with species to maximize our significance to conservation, to address neglected conservation priorities, and to ensure maximum understanding of how to build a sustainable future. Furthermore, we communicate our conservation programs to the public, leveraging outreach at the National Aviary’s public facility to reach the broadest possible audience.

In this issue of Flight Path we highlight projects that target environmental problems and species that other organizations ignore. In examples from North America we focus on ensuring environmental sustainability by using birds as indicators of human impacts on the environment. In Pittsburgh we are investigating how urban landscapes contribute to bird diversity, and elsewhere we are investigating the impacts of human-caused pollution and acidification of stream water on birds. Internationally, we are investigating how land use and agriculture affect populations of Neotropical migratory birds, and how an



anti-inflammatory drug used in treating cattle for various ailments is causing precipitous declines in vultures.

While understanding the problems faced by birds is essential to their conservation, we are also interested in solutions. In this issue we present an essay on why avian populations and biodiversity will suffer if we continue to insist that human population growth is required for economic growth, and we offer ideas on how research and collaborations can be used to help build human knowledge and capacity internationally for wildlife management and conservation. These solutions are essential if we are to ensure that future generations can live well in a healthy environment.

—Steven Latta, Ph.D. Editor

## Notes from the Field

*continued from page 1*

The waterthrush lives along the small streams that run throughout the cacao region. There they search for insects that live in the water, or they stray into the cacao where they toss aside the fallen leaves hoping to uncover terrestrial insects.

In studies designed to understand what determines the survival of this species of conservation concern, we have been capturing and color-banding waterthrush each winter. We follow individual birds to delineate their winter territories, and we identify characteristics of each territory that may be important to insure the bird’s survival.

This winter we benefited from the help of a Dominican student, Hodali Almonte,

who is studying waterthrush foraging behavior for her thesis. In addition, a recent graduate of the University of Michigan, Krista Latta, mapped habitat throughout our study site using GIS (Geographic Information Systems).

These maps will help us to better understand how stream morphology, depth, bank stability, and vegetation can buffer habitats and contribute to their quality.

Because many streams and rivers are severely impacted by sedimentation, agricultural run-off, and untreated human and animal wastes, water quality is a significant issue in the Dominican Republic. By selecting study streams in organic cacao plantations, as well

as streams primarily outside of these plantations, we expect to be able to test the importance of a range of water qualities on waterthrush survival.

In time, we expect to be able to point out the benefits of organic agriculture on stream ecosystems, and the importance of water quality and shaded cacao plantations to waterthrush populations. In a world where human influences are pervasive in nearly all corners, it is important that we also recognize how species can coexist with agriculture – especially with such vital crops as chocolate and coffee - and how we can best manage these habitats to the benefit of humans, birds, and other wildlife.

## Short Takes

### Training Bird Guides in the Dominican Republic

Steven Latta, Ph.D.

With 25,000 hotel rooms and 30 km of beaches, hundreds of thousands of tourists visit Punta Cana in the Dominican Republic every year. But few of them will learn about the rich wildlife of the region, and many will also never see the nearby community of Veron, which exists mostly due to this tourism and provides around 40% of the hotels' workers. Thirty years ago, a handful of families lived off of the land and sea here. But as development and demand for workers increased, thousands of families moved from other communities in the Dominican Republic and Haiti to Veron. Now a community of 10,000 lives virtually without public services and social and environmental problems abound.

Veron's residents live off of the tourism of Punta Cana, yet many do not have the resources to be trained

in a marketable skill. Brigada Verde is a U.S. Peace Corps program that works with youth of this community to promote conservation and environmental education. With volunteer Colleen Ratliff, the Brigada Verde has been working with youth to help the planet and serve their community.

In the past year, as the group has grown, they have been looking for training that will help them get jobs while also aiding them to continue to protect the environment. This was the origin of, the project "Brigada Verde Bird Guides". Supported by a gift of 15 copies of the Spanish edition of Steven Latta's *Birds of the Dominican Republic and Haiti*, members of the guiding association recently completed a 10-week course in skills related to bird guiding. Through

Photo: Colleen Ratliff



*Participants in the ecotourism and birding guide training held in Veron, Dominican Republic.*

hard work and fun activities, they became proficient in identifying by sight and sound the birds of the Punta Cana area, using binoculars, birding etiquette, basic English and bird physiology.

With these new skills and resources, the youth should be able to find jobs through the hotels and tour companies, while raising community environmental awareness and providing a local income source. We are monitoring the success of this program to help us create even better environmental education programs in the future.

### The Pittsburgh Parks Project and Conservation in an Urban Setting

Lukas Musher

Traditionally, the idea of applying conservation to urban or developed landscapes was a non-issue. Why would you seek to study the ecology of what appears to be a biologically non-diverse environment such as a city? It has usually been assumed that cities have nothing to offer by way of ecology. Only recently have perspectives changed. Many ecologists and conservation biologists are now looking to cities to study the effects of urbanization and development on natural systems.

Two years ago, along with several other volunteers and interns, I began counting birds for the National Aviary in parks and cemeteries throughout Pittsburgh. We ran the surveys from May through July by going to randomly located points throughout green spaces and counting all of the birds that were seen or heard.

The goal of this project was to

determine how the nature of our urban landscape, such as parks and other green areas, and commercial and residential development affects native bird communities.

To determine what drives the composition of avian communities we looked at how these variables interacted with human population density, species richness (the number of species in a given park), as well as the overall diversity of birds. Some of the questions we were trying to ask were: Are invasive species such as European Starlings or House Sparrows really a threat to native birds? Are larger parks more diverse than smaller ones? And what steps should we take to help conserve or improve our natural areas within cities?

As an avid bird watcher myself, it was a lot of fun to be able to participate in this study. Many of Pittsburgh's parks and cemeteries are beautiful and

wonderfully diverse, and produced some very interesting birds. At Highland Park I found a pair of nesting Hooded Warblers, and at St. Peter's Cemetery in Southside I found a pair of Orchard Orioles and heard a Yellow-billed Cuckoo.

From all the data we collected, many other interesting birds were sighted, and a lot of important insight into urban conservation biology is being made. Steve Latta, Todd Katzner and I are now in the process of finishing the first of two papers that will likely come out of the fieldwork we did. With a constant threat of development and habitat loss around the world, it is increasingly important to learn about and understand the ecology of developed and urbanized landscapes. It is also essential that we reduce the effects of development on natural systems. Maintaining and preserving large city parks is critical in the conservation of the world's avifauna.

# Partnering for Conservation

## Honoring Darwin at Duquesne University

Danielle Commisso

The year 2009 marks the 200th birthday of Charles Darwin, as well as the 150th year since his seminal work, *On the Origin of Species*, has been in print. To honor these two significant events, Duquesne University is collaborating with seven Pittsburgh cultural institutions, including the National Aviary, to bring a year-long celebration to the city.

Since 2003, Dave Lampe, associate professor of biological sciences, has brought Duquesne's annual "Darwin Day" lecture to the public. This year Lampe teamed up with fellow Duquesne

plain sight. Like Newton's discovery of gravity, evolution is right in front of us. But evolution is harder to see than gravity. So part of Darwin's great work rests on his acute ability to observe the world. We want to show everyone that they too, can observe the world," said Pollock.

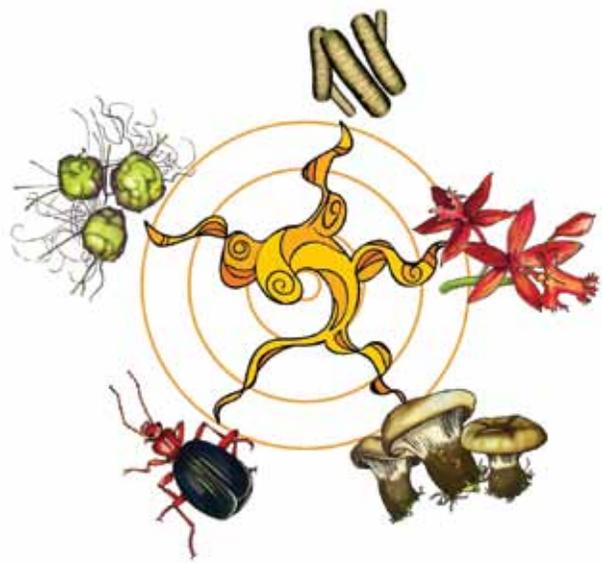
One of the most encompassing and longest running Darwin celebrations worldwide, "Darwin 2009" in Pittsburgh offers events and installations for all ages, with a significant portion dedicated to providing educational opportunities for students and home-schoolers. Teachers and parents can download free lesson

plans that explore many different concepts of evolution through interactive activities and self-guided tours through the museums' plant, animal and fossil collections.

Participating in the celebration are the National Aviary, Carnegie Museum of Natural History, Carnegie Science Center, Pittsburgh Zoo & PPG Aquariums, Carnegie Library of Pittsburgh, Phipps Conservatory and Botanical Gardens and Children's Museum of Pittsburgh. At the National Aviary, students can tour the collections with two different lesson plans that teach evolution through self-inquiry.

In "Unique Beak Physique," students explore how bird beaks are evidence that birds have adapted to their habitat and food. A large poster illustrates how certain beaks have evolved to serve specialized functions, similar in function to many human tools. With the "Feathered Families" lesson plan, students can visit five different birds of prey species to discover how morphological traits, such as talons, plumage, and beaks make each bird a member of a unique species and

*continued on page 6*



*The "Spiral of Life" is part of a mural series to be installed in each Pittsburgh-area "Darwin 2009" institution. Each mural explores a unique angle of life's evolution through a spiral shape, emphasizing the common origin and equality of all things.*

biology professor Dr. John Pollock and his SEPA science outreach project, the Regenerative Medicine Partnership in Education, to create "Darwin 2009: A Pittsburgh Partnership." Beginning in January, the celebration has offered two lecture series, public events and educational opportunities that explore the life of Charles Darwin and the principle of evolution.

"Darwin discovered something common and obvious that was hidden in



## NATIONAL AVIARY

FlightPath is published for the members and benefactors of the National Aviary.

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

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carefully.

A consistent theme in today's conventional wisdom is what I will here call the "population paradigm" – the idea that economic growth requires population growth. There is no doubt that a growing population creates more demand for goods and services, more potential employees and, therefore, more potential output. Time and time again we have seen the positive consequences of population growth in North America – economies ramp up, jobs are created, roads are expanded, etc. At the same time though, there can also be negative consequences, especially for the environment - suburban wildlands are eliminated, pollution and traffic increase, allergy and disease rates increase, the housing market can price-out median wage-earners and, for many of us, quality of life decreases.

The fact that negative consequences go hand in hand with population growth gives pause to blind acceptance of the population paradigm. In fact, there are empirical as well as qualitative reasons to doubt the population paradigm. Consider the stories of the two cities represented in last year's Super Bowl – Phoenix, Arizona, and Pittsburgh, Pennsylvania. The demographic tale of these two cities is one of similar initial trajectories, but radically different recent trends (see the attached figure for details on population trends in these cities). The story of Pittsburgh is one for the ages – fast paced exponential population growth in the early 1800s through the 1920s, then a plateau and, since about 1950, an ongoing population decline. Phoenix's story is no less interesting, with exponential population growth that began around 1900 and that continued unabated into this century.

The population paradigm predicts that economic trends would follow numerical population patterns. To some degree that has been the case. Certainly

Pittsburgh showed massive economic growth and environmental destruction in conjunction with its population growth. Furthermore, the decline of the steel industry presaged the general economic and subsequent population declines in the region, as well as the concurrent improvements in environmental quality. Likewise, Maricopa County (where Phoenix is located) has seen massive job growth and environmental degradation, and most economic indicators showed (until recently) upward trends that parallel those in population.

A simple reading of history stops at this point squarely within the framework of the population paradigm. A more detailed analysis though suggests that there is more to this story than meets the eye. Pittsburgh, especially, defies the population paradigm and points a way forward for the rest of the country in this regard. Since 1950 Pittsburgh's population has declined steadily. At first the city paid a heavy price for these population declines. Unemployment shot up, per-capita incomes declined and the riverfronts were littered with the skeletons of steel mills and their partner industries. More recently, the city has experienced a renaissance that bodes well for southwest Pennsylvania and for the nation as a whole. Refocusing on technology industries, Pittsburgh has seen economic growth and environmental revitalization in spite of, and perhaps because of, its ongoing population declines.

A population paradigm proponent would argue "if only the Steel City had not seen population declines, then imagine the growth they would have had!" It is true that continued population growth from the 1930s may have lessened the impacts of Pittsburgh economic travails. But at what cost?

One need look no further than Phoenix Arizona for one possible answer to that question. There, population growth has continued unabated, to such an extent

that it is consistently one of the fastest growing regions in the United States. The consequences of this exponential growth are appalling. Maricopa County was once pristine desert, with abundant wildlife, clean air, and a stunningly beautiful mountain backdrop. So clean was this desert that doctors used to send their sick patients to the "Valley of the Sun" to convalesce and recover.

Today, Phoenix abuts Tempe, which runs into Scottsdale and Glendale, and all of these cities and many others are losing natural landscapes to urban sprawl. Air temperatures in Maricopa County have risen as the desert is paved and water is in short supply as households and putting greens demand a grassy desert lawn. Air quality has declined and drive times increase as the number of vehicles spirals upwards, wildlife populations have declined and the desert beauty was lost to golf courses and cookie-cutter "southwest-style" developments. Today, sick patients in the "Valley" are told to leave, to find a cleaner place to live.

Bluntly put, there is a reason why Pittsburgh is now ranked as one of the most livable cities in the United States and why Phoenix is often at the bottom of those same lists. One of these cities has trashed its environment with unabated population growth. The other has largely recovered from the population and environmental excesses of the past and preserved and protected what it has, while simultaneously growing its economy. One of these cities is also being slammed by the current recession, its vulnerabilities enhanced by unsustainable growth. In contrast, the other city is relatively more stable, neither growing too slowly or too quickly, and although substantially influenced by the global slowdown, is not suffering as are faster growing urban centers.

Several weeks ago I attended a "Green Jobs" event sponsored by the Allegheny County Executive, Dan

continued on page 7

# Links Across the National Aviary

## Building Cooperative Programs with ZooDom in Santo Domingo

For several years, the Department of Conservation and Field Research has prioritized the island of Hispaniola for attention under its “high impact conservation” strategy.

In December 2008, the National Aviary reached out to develop stronger ties with partner organizations in the Dominican Republic through the invitation of the National Zoological Park of the Dominican Republic (ZooDom).

Dr. Steven Latta, assistant director of conservation and field research, together with Steven Sarro, director of animal programs, traveled to Santo Domingo to consult and advise on improving the state of the zoo, with a special emphasis on their large, outdoor walk-through aviary.

The ZooDom aviary is a huge space enclosed by draped chain-link fencing suspended from a central iron donut. Years of neglect have taken a toll and the aviary needs significant restoration work. Over several days, we toured the zoo facilities and grounds with ZooDom’s staff. We were very impressed with the layout of the zoo, the beauty of the grounds, and the palpable enthusiasm of the ZooDom team and their efforts to create an improved zoo experience for the visitors and the animals.

In the coming months ZooDom

intends to restore the Grand Aviary to its original condition, expanding the bird species in the aviary, and using feeding stations to attract wild birds into the aviary.

We also expect to see the development of breeding programs for select threatened and endangered

by authorities. As in many countries, poaching for the pet trade is a serious problem in the Dominican Republic. During our week-long December visit we participated in the release of more than two dozen endangered Hispaniolan Parakeets, four Red-tailed Hawks, and more than three dozen endangered

Hispaniolan boas! Seeing these beautiful animals return to the wild is a thrill that is hard to beat!

We are also planning mutually beneficial exchanges of staff between the Aviary and ZooDom. These visits will allow all of us to experience the challenges and rewards of managing our partner’s facilities, and to learn from one another. Our intern exchanges will begin in June 2009 when Dr. Adrell Nunez will visit the National Aviary to see first-hand our veterinary programs, animal management practices, and the summer free-

flight bird show. Because Adrell is also responsible for reptile care at ZooDom, we have also arranged a short internship for him at the Toledo Zoo as well.

We are hopeful that our suggestions help ZooDom to improve and fulfill its mission, and we look forward to a long and mutually beneficial relationship between our organizations.



Photo: Steven J. Sarro

Steven Latta and ZooDom staff returns confiscated Hispaniolan Parakeets to the wild.

species. Already the zoo is moving forward with plans to breed several endemics including the Ashy-faced Owl, White-necked Crow, and White-fronted Quail-Dove. With ZooDom expertise and recommendations from the National Aviary concerning the breeding and ecological needs of these species, we are confident that success will be seen.

Another area of collaboration is in the rehabilitation and release to the wild of birds and other animals confiscated

## Partnering for Conservation

*continued from page 4*

what they reveal about their evolutionary relationships. A wall mural opening in late-spring will showcase how birds have evolved from dinosaurs and modern bird taxonomy. Part of the “Spiral of Life” mural series, the National Aviary’s mural is one of five murals to be installed in a

“Darwin 2009” institution. Each mural explores a unique angle of life’s evolution through a spiral shape, emphasizing the common origin and equality of all things.

Visit the National Aviary’s website (link: <http://www.aviary.org/educ/darwin2009.php>) to find out more and to download

free lesson plans.

This project has been funded by Science Education Partnership Award (SEPA) from the National Center for Research Resources, a component of the National Institutes of Health.

# Meeting Reports

## Ornithologists Gather in Pittsburgh

Three years ago the National Aviary and Powdermill Nature Reserve of the Carnegie Museum of Natural History offered to host the 2009 joint meeting of the Wilson Ornithological Society and the Association of Field Ornithologists. These societies are two of the major ornithological research groups within the United States. It was our goal to use this conference to introduce the National Aviary and Powdermill to the world as ornithological and conservation science organizations.

As you may know, these meetings were held here in Pittsburgh in mid-April. Based on the feedback we've received at and after the conference, we believe that we achieved and even far exceeded our goals. Universally, our guests seemed to think that the conference was well organized, that the city was impressive, and, importantly, that our organizations were remarkable in so many ways.

From a scientific perspective this

conference was also a success. Plenary talks were provided by Dr. Sid Gauthreaux of Clemson University and by Dr. Bruce Beehler of Conservation International. Sid is one of the founders of the field of radar ornithology and Bruce is a leading ornithological conservation biologist. Another theme of the conference was the use of new and developing technologies in the study of birds. For example, Aviary and Powdermill researchers presented new techniques to track birds with sophisticated transmitters, and to monitor migration by recording flight calls at night.

The success of this conference was due, in large part, to the efforts of our staff, for creating an environment where we can succeed in these efforts, and to our board, for allowing that environment to

grow and prosper. Special thanks are also due to the local organizing committee, representing the National Aviary (Erin Estell, Todd Katzner, Steve Latta), Powdermill Nature Reserve (Andy Mack), the Pennsylvania Game Commission (Tammy Colt, Samara Trusso), the Western Pennsylvania Audubon Society (Jim Bonner, Brian Shema), the Three Rivers Bird Club (Jack Solomon, Jim Valimont), Duquesne University (Brady Porter), the University of Pittsburgh (Tony Bledsoe, Jean Deo), and the Western Pennsylvania Conservancy (Mike Kuzemchak).



## Human Population and Biodiversity

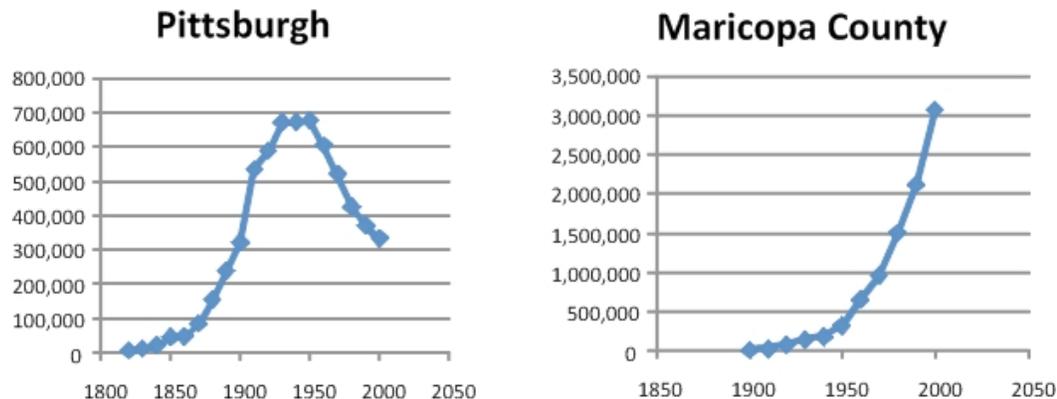
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Onorato. At the end of the event, one of the panelists closed by stating that for economic growth, the population of Allegheny County had to grow. I was left wondering what planet I was on and if the speaker was stuck in a past century. For the truth is that there are few patterns more anathema to a "green" economy than unabated population growth.

Pittsburgh has shown that economic growth and revitalization can occur even when population declines. As we move forward out of the current "Great Recession" into an unknown future, only a few things are certain. One of these is that more people, whether in Pittsburgh or Phoenix or elsewhere, has typically meant more environmental degradation

and, for most of us, a lower quality of life. Although there are many things that cause environmental degradation, a declining population provides great benefit to our environment. Moreover, our economy can grow as our

population shrinks. So let's punt the population paradigm and let's move forward into a real green economy – one where economic growth and a growing standard of living don't require population growth!



*Fig 1. Population trends in Pittsburgh PA and the greater Phoenix Metropolitan Area (roughly Maricopa County) over the past 150-200 years.*

## Recent Publications

Latta, S. C. and J. Faaborg. 2009. **Migratory Birds in the Caribbean: Benefits of studies of over-wintering birds for understanding resident bird ecology and promoting critical development of conservation capacity.** *Conservation Biology* 23:286-293.

Funding agencies want to be assured that their priorities are met through projects that they support. In the world of conservation, there is sometimes a perceived conflict between funding research on wildlife and funding education.

In a unique analysis of the results of funding for their work in the Caribbean, the National Aviary's Steven Latta, and Scientific Advisory Board member John Faaborg, use examples from Puerto Rico and Dominican Republic to demonstrate that ecological research of over-wintering migratory birds often provides information about the ecology of little-known tropical resident birds.

For example, critically important

monitoring of winter residents in Puerto Rico has provided information on the relationships between rainfall, resident bird population fluctuations, and bird survival. It also has alerted local biologists to declines in resident bird populations, including one apparently driven by the entry of a brood parasite into the study area.

But avian research has also had an under-appreciated effect on the development of conservation capacity and conservation efforts in host countries. Latta and Faaborg show that funding field studies of Neotropical migrants over-wintering on Hispaniola has resulted in a huge increase in field training of students and wildlife

professionals; promoted conservation awareness at local and national levels; played an important role in the growth and professionalization of key environmental organizations; spawned a growing ecotourism industry for birdwatching; and driven national park management planning and conservation efforts for all bird species.

Latta and Faaborg encourage funding organizations and agencies to consider the broader impacts of supporting migratory bird research and monitoring efforts. And they emphasize that research and education can go hand in hand to build an indigenous conservation movement in host countries.

## Support Our Work!

The Department of Conservation and Field Research (DCFR) of the National Aviary depends on external support to reach our conservation goals. 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](http://www.aviary.org), or by contacting our staff.

## Funding Success

### AZA Supports Vultures

Counting birds seems simple in principle but is often difficult in practice. The problem that scientists find most challenging is figuring out how many birds they don't see. This is especially relevant when populations are rare or declining, as is the case for vultures in Asia. These birds have undergone catastrophic population declines in the past 15 years.

Griffon Vultures on the Indian sub-continent are particularly impacted with population reductions of more than 95%. Three species may soon go extinct in the wild. The toxic drug diclofenac, a non-steroidal anti-inflammatory used in

treating cattle for various ailments, is causing these precipitous declines. Cows that die with diclofenac residues in their system are a deadly poison to vultures. Millions of vultures have died in the past 15 years from toxic meals such as these. The last remaining populations of these species, primarily in Southeast Asia, are now of extremely high conservation importance.

Currently, the data on their population numbers is limited, and the numbers that do exist are based on potentially unreliable methods. Last year, the Conservation Endowment Fund of the

Association of Zoos and Aquariums gave the National Aviary a grant to study this problem. The goal of this project is to assess the size of Griffon Vulture populations in Southeast Asia using genetic mark-recapture techniques through feathers collected at feeding stations. Information gathered from these studies is a key to guiding conservation decisions for these imperiled species. Dr. Todd Katzner is supervising this project. Implementation is led by Yula Kapetanakos, a graduate student at Cornell University's Lab of Ornithology.