Flight Path

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NOTES FROM THE FIELD

Cambodian Vulture Conservation

Todd Katzner, Ph.D.

Cambodia's northern dry deciduous dipterocarp forest is unlike any other place I've experienced. A forested savannah, the tall, straight dipterocarp trees are well spaced, separated by low bamboo and grasses. This is a place that spawned some of the world's great bovids (cow-like animals) – wild water buffalo, the rare bantang and guar, and the now-extinct koupray. Today, domesticated cattle and buffalo have largely replaced these native ungulates. Still, the habitat remains relatively intact and remarkably diverse biologically in spite of civil wars, Khmer Rouge atrocities and land mines.

These historic and modern bovid populations also support two of the world's most endangered bird species, the Indian White-backed Vulture (*Gyps bengalensis*) and the Slender-billed Vulture (*Gyps tenuirostris*). Elsewhere in the range of these vultures their populations have declined almost to extirpation. The tale of these masters of the air is a sad one — one of unintended consequences, and a demonstrable case of how the actions of increasing numbers of humans can destroy wildlife populations.

Twenty-five years ago there were ~30-40 million Indian White-backed Vultures. They were almost certainly the world's most numerous raptor.

continued on page 3

Photo: Todd Katzner

Critically endangered Indian White-backed, Red-headed and Slender-billed vultures feed in Cambodia's northern plains.

HUMAN POPULATION AND BIODIVERSITY

Bringing Quality of Life Issues to Conservation

Steven Latta, Ph.D.

Researchers come to the field of avian conservation biology for many reasons. Some are motivated by the sheer beauty and diversity of the world's birds. Others are challenged by fundamental questions of ecology and evolution, such as how so many species came to exist, why a species may have elaborate plumage, or how a migratory bird locates breeding and wintering grounds each year. Still others are concerned with the sustainability of populations of game species and are asking what can be done to maintain or expand bird populations for recreational users.

But the one thing that nearly all researchers have in common, and that they share with birdwatchers and nature-lovers around the world, is an innate understanding that birds add to our own quality of life. Whether they live in rural areas, suburbs or cities, most people encounter birds every day. Birds are an important and highly visible part of ecosystems, and are integral to the natural environment that everyone shares. Birds provide recreational opportunities and generate economic benefits by supporting nature watching, photography, tourism, hunting and other outdoor activities. In fact, according to the U.S. Fish and Wildlife Service,

continued on page 4

LETTER FROM THE EDITOR

Looking Back, Moving Forward

2007 has been a year of growth and entrenchment for the Department of Conservation and Field Research. Buoyed in late 2006 with the arrival of our second senior-level avian ecologist, in 2007 we saw our research programs spread throughout the United States, from Pittsburgh park-lands to the Allegheny and Appalachian highlands, to the boreal forests of northern Minnesota, and to the threatened river systems of California. As regular readers of *Flight Path* will know, our biologists address highly charged conservation issues such as the impacts on wildlife of the development of wind power, and the effects of acid rain and coal mine seepage on birds, and use research to identify constructive solutions to conservation problems. Looking abroad, we continue to study the decline of vulture populations in Asia and have developed new ways to use DNA from naturally shed feathers to estimate the size and the rate of births and deaths within a wildlife population. In the Americas, we are assessing the factors that influence the size of migratory bird populations by studying these species on both the wintering and breeding grounds. We also have focused research in Ecuador to identify conservation and management strategies in the face of growing human population pressures in threatened habitats of the high Andes and coastal dry forests.

In 2008 we will grow the Department further. As the National Aviary moves forward with our fundraising efforts, we anticipate expanding the conservation and research program, working with local partners to better target neglected conservation priorities, and continuing research to understand how human populations and resource consumption impact bird populations. As this issue of *Flight Path* suggests, we will be increasingly addressing how to advance bird conservation and biodiversity protection so as to foster a sustainable environment and help insure quality of life for ourselves and for generations to follow.

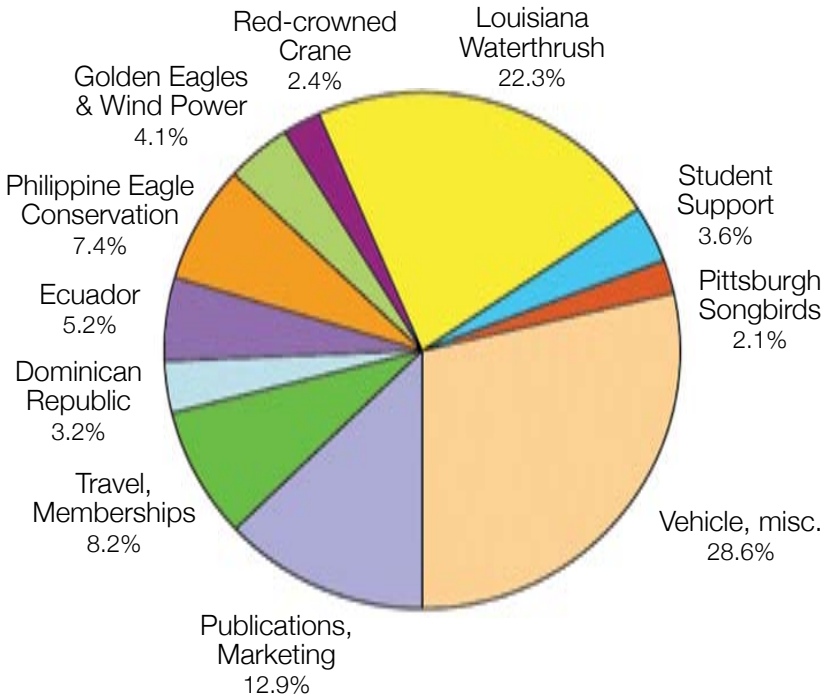
—Steven Latta, Ph.D. Editor

FUNDING AND EXPENDITURES

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 2007, $83,694 of endowment funds was allocated toward operating expenses and conservation projects. A breakdown of the way those funds were spent is highlighted here. (For project descriptions, see our web page: www.aviary.org/dcfr.php). In addition to these funds, the department attracted in a total of $147,224 in external funding for these and other projects, and garnered another $204,154 in collaborative grants that passed through other institutions.

A significant portion of this external funding was provided through the generosity of private donors, whose support is crucial to the department's continued success. Donations to DCFR or to specific projects can be made on-line or by contacting our staff.

National Aviary endowment funds used for conservation programs, 2007



RECENT PUBLICATIONS

A major measuring stick of the DCFR's success is publishing our research in peer-reviewed scientific journals. Each issue of Flight Path *features a recent publication by one of our staff ornithologists.*

Rudnick, J. A., T. E. Katzner, E. A. Bragin, and J. A. DeWoody. 2007. **A non-invasive genetic evaluation of population size, natal philopatry, and roosting behavior of non-breeding Eastern Imperial Eagles (*Aquila heliaca*) in central Asia.** Conservation Genetics, published online.

Nothing is more central to species conservation than estimating population size, for if we do not know how many individuals exist, how can we define conservation strategies for those individuals? In the case of birds of prey, breeding populations are often well defined, but individuals who do not hold nesting territories are extremely difficult to count. At the Naurzum Nature Reserve in northern Kazakhstan, researchers regularly observed aggregations of non-breeding Imperial Eagles, sometimes as many as 40 birds at once, but we never really knew how many birds were actually present.

Because traditional trapping and marking of so many eagles would have been impossible, in 2004 Todd Katzner and colleagues used novel non-invasive approaches to solve this problem. By regularly visiting communal roost sites, they were able to collect large numbers of eagle feathers. From these feathers, researchers extracted genetic material (DNA) to identify individual birds. From the number of birds identified, we generated a population estimate.

All told, we observed a maximum of 21 eagles at any one time in summer 2004. That same summer over a 20 day period about 1,800 feathers were collected and DNA successfully extracted from 1,200 of them. From these feathers we identified 287 individual Imperial Eagles — more than 10 times greater than that observed.

This research suggests that there is more to counting "cryptic" components of populations than meets the eye. Birds are, for humans, indicators of our impact on the environment. Identifying ways to count them is therefore critical to understanding how expanding human populations and resource consumption impact the environment. Innovative approaches to conservation science such as these are and will continue to be a keystone of the National Aviary's conservation and field research programs.

Notes from the Field

continued from page 1

Twenty years ago, their numbers began to decline dramatically and today only a few thousand are left. The culprit implicated in this ecological catastrophe is a drug called Diclofenac, used heavily in veterinary medicine on the Indian subcontinent. A non-steroidal anti-inflammatory medicine, residues of the drug remaining in the body of a dead animal will, within days, kill a vulture that feeds on the carcass.

Diclofenac has never been heavily used in Cambodia. As a consequence, vulture populations there have not suffered the severe declines that they have in other regions. Nevertheless, Cambodia's vulture population decreased slowly over the past hundred or so years, as increasing numbers of people have destroyed available habitat and forage resources.

I am in Cambodia with Yula Kapetanakos, a graduate student I co-supervise at Cornell University's Lab of Ornithology. Our mission is simple in concept but complicated to achieve. At its most fundamental level conservation is difficult to implement if you don't know how many individuals of a threatened species there are to conserve. Nobody knows how many vultures exist in Cambodia. For her doctoral dissertation, Yula will attempt to address this most basic question. However, because vultures are nearly impossible to count accurately with traditional techniques, Yula will apply the non-invasive genetic monitoring protocols that I developed for eagles. She will pick up naturally-shed feathers at roosts or feeding sites and extract DNA from those feathers to identify birds. We then use a technique called "mark-recapture modeling" that counts the number of individuals observed in repeated feather collection events to estimate the size of the vulture population.

In the United States and across the world, the Department of Conservation and Field Research addresses pressing ornithological conservation concerns. Of all the research projects that we conduct, this one, conducted in collaboration with the Wildlife Conservation Society, probably has the most pressing importance to conservation. Few ornithological issues are as urgent as that of vulture declines, and there are no populations as poorly studied as those in Cambodia. In an upcoming issue of *Flight Path*, Yula will write of her progress in her study, and we will provide regular updates on our role in this crucial conservation problem.

This project is supported by an Association of Zoos and Aquariums conservation endowment fund grant.

Human Population and Biodiversity

continued from page 1

the estimated 46 million American birdwatchers generated sizable economic benefits for the nation in 2001. This group spent more than $32 billion in retail purchases, generating $85 billion in related economic activity, and creating more than 860,000 jobs.

Birds also enhance the human condition in more subtle ways. Like availability of jobs with dignity, affordable housing options, quality health care opportunities, and cultural assets, birds, natural resources, and wildlife habitat impact our own quality of life. One need not be a birdwatcher to appreciate the first spring song of the returning robin, to feel a charge when a bright bluebird flashes across the meadow, or be uplifted in mid-winter by the crimson red cardinal in a snow-covered dogwood tree. And even when unseen, who is not thrilled just to know that the world's rainforests still contain Chestnut-mandibled Toucans, that Emperor Penguins still wander the ice, that Ruffed Grouse still drum on hollow logs, and that the boreal forest still hosts millions of nesting warblers? These are intangible gems of awareness that can not be priced, and these gems add to the quality of life for all people.

As researchers and conservationists, as birdwatchers and naturalists, as citizens—as humans—we share a common responsibility to help foster a sustainable environment for future generations. At the National Aviary, we strive daily to share our fascination and excitement for birds with children and adults alike. As our motto states, "We inspire respect for nature through an appreciation of birds." Our Department of Conservation and Field Research is founded on the knowledge that human populations and our patterns of consumption of natural resources are dramatically impacting birds and their habitats. Our research and education efforts specifically target neglected conservation priorities to understand how human populations impact bird populations. The goal in this approach is to promote bird conservation and biodiversity protection to foster a sustainable environment and to help insure quality of life. At the National Aviary, we take steps to conserve birds and their habitat and to make our communities better places to live.

MEETING REPORTS

Kettling on the Kittatiny

Mid-September found us at another conference, this time the Raptor Research Foundation conference, held in Allentown, Pennsylvania. The National Aviary's Todd Katzner presented a talk on his non-invasive genetic monitoring work and also was asked to moderate a scientific session on demographics. A highlight of the meeting was the three papers, co-authored by Katzner, presented on the National Aviary's work with Golden Eagles in eastern North America. These papers, presented by Trish Miller and Mike Lanzone of the Carnegie Museum of Natural History and Dave Brandes of Lafayette College, were the first formal presentations stemming from our collaborative project. The talks were well received and our research group has now established itself as an emerging player in eastern raptor studies and research on the interaction between Pennsylvania's birds and human-caused environmental threats.

Eagle Conservation Alliance

In September 2007, the 2nd annual meeting of the Eagle Conservation Alliance was held in Puebla, Mexico. The conference was hosted by Mexico's first AZA-accredited facility, Africam Safari. The National Aviary's Todd Katzner was invited to speak at this conference about his work with eagles. His talk, entitled "New approaches to monitoring eagles: collecting the most appropriate data and doing it without disturbing the birds," addressed one of the biggest problems in conservation — accurately counting numbers of individual animals. He focused on the non-invasive genetic monitoring techniques he developed to track changes in population size. These techniques (also described in "Recent Publications," page 3) are part of a cutting edge approach to monitoring that has the potential to change our perspective on the conservation status of many species of birds.

NATIONAL AVIARY

Flight Path 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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MEETING REPORTS

Flamingo Conclave Supported

In November 2007, the Wildlife Conservation Society and the American Museum of Natural History, with support from the National Aviary and a diverse array of other institutions, sponsored a meeting of the Caribbean Flamingo Conservation Group in Yucatán, Mexico. The Caribbean Flamingo (*Phoenicopterus ruber*) breeds along the coasts of Columbia, Venezuela, and the Yucatán Peninsula of Mexico, as well as on the Bahama Islands, Hispaniola, Cuba, and the Turks and Caicos Islands. With the goal of setting regional priorities for field research, nearly 30 participants from Bahamas, Bonaire, Columbia, Cuba, Mexico, Spain, United Kingdom, and United States presented reports on the status of the species, including historic changes in population size and distribution. This sharing of information and experience resulted in additional work to coordinate research and conservation activities across borders. The size of Caribbean Flamingo populations and the location of their breeding and feeding sites were seen as the most fundamental pieces of information needed to improve management and conservation of the species. The participants therefore agreed to conduct a simultaneous census and a coordinated banding program. The National Aviary will continue to support their conservation and participate in these important activities.

PARTNERING FOR CONSERVATION

Ministère des Ressources Naturelles et de la Faune, Québec, Canada

Todd Katzner, Ph.D.

In the Department of Conservation and Field Research, we are well aware of the role that our national and international partners play in helping us to achieve our organizational goals and to complete projects. In this regular column, we feature one of the many key partners with whom we collaborate.

As we so regularly point out, partners are essential for conservation efforts. At our small organization, most often we seek out those partners. As the significance of our work has grown, though, sometimes those partners find us. Last spring, I received an e-mail from Charles Maisonneuve of the Ministère des Ressources Naturelles et de la Faune (Ministry of Natural Resources and Wildlife; MRNF) of the government of the Canadian province of Québec. Charles was asking about our Golden Eagle research, both specific technical questions and broader research goals.

What began as simple questions from a colleague has sprung into one of our most relevant North American collaborations. As it turned out, Charles had approached several other eagle biologists in the United States but none had taken the time to answer his questions. Charles and I talked extensively and, when he was passing through Pittsburgh, we met for dinner to discuss collaboration. Later last summer, Trish Miller and Mike Lanzone, partners in our Golden Eagle research from Powdermill Nature Reserve, visited Charles in Québec and saw several eagles and eagle nest sites.

Photo: Charles Maisonneuve

Raymond McNicoll of the MRNF with an Eastern Golden Eagle.

As a result of all this contact, a remarkable partnership for conservation has emerged. Charles' organization is facing many of the same wind power-related questions in Québec as we are in Pennsylvania. Like us, Charles had started a project to study the impacts of wind energy development on eagles. By a happy coincidence, our strengths and weaknesses were exceedingly well matched. Charles had satellite tracking devices for many birds, but few people to do in-depth analysis with the data he collected. Our team has excellent analysis capacity but only a few tracking devices. We are now sharing data — Charles is providing us with data from his birds, and in return, we are analyzing the movements of all birds in both Pennsylvania and in Québec.

Both teams benefit from this collaboration and we aim to expand it even further. This summer, we are planning a trip to Québec to participate in Charles' summer bird trapping and to further identify ways to work together. This is a massive research project, and alone neither team has the capacity to address the questions it raises. Together we will make a contribution to science and management that protects eagles and allows for expanding human resource consumption in a bird-friendly way.

SHORT TAKES

Hispaniolan Biodiversity Book Publication

Harvard University Press has recently published a gorgeous book of photographs by the past-president of the Hispaniolan Ornithological Society and National Aviary collaborator, Eladio Fernandez. The book, *Hispaniola: A photographic journey through island biodiversity*, which includes an essay on bird biodiversity and conservation by the National Aviary's Steven Latta, is a celebration of the unique splendor of Hispaniolan fauna and flora. It is also a call to action for the world to save this often-ignored cradle of diversity. This theme is echoed by the "grandfather" of conservation of biodiversity, E. O. Wilson, who honors Hispaniolan biodiversity in his foreword to the book. With his photographs, Fernandez takes readers on a vicarious journey through some of the best of the remaining wild and protected areas of the Dominican Republic and Haiti. Fernandez has an eye for the beauty found in all parts of the natural world, and his images range from macroscopic views of butterflies to aerial views of landscapes. Birds are a specialty throughout, with many excellent shots of birds capturing prey, feeding young, preening, and displaying. Translated simultaneously into English and Spanish, the coffee table sized book is sure to fire up the reader's imagination and, we hope, generate interest in protecting these critically threatened habitats and rare endemic species. As Wilson says in his foreword, "The beauty and novelty of Hispaniola's living environment are assets to be treasured by the whole world. Many of its ecosystems and species, so well displayed in Eladio Fernandez's collection, are sadly also at risk... I hope that more action will be taken to save as much as possible of it for future generations."

Photo © Eladio Fernandez

L'Estere, Haiti

New Brochure Promotes Dominican Conservation

The National Aviary has teamed up with a California-based artist and the Hispaniolan Ornithological Society to produce a stunning new laminated guide to more than 65 common birds of the Sierra de Bahoruco National Park. The park, on the border between the Dominican Republic and Haiti, is one of the most important areas for biodiversity conservation on the island. Included in the brochure are 28 endemic birds — birds that can not be found anywhere else in the world. With exquisite paintings by noted artist Dana Gardner, the guide is intended to raise awareness in communities surrounding the National Park of the importance of protecting this rich natural heritage. Short paragraphs by National Aviary interns Danilo Mejía and Marisabel Paulino remind readers that the National Parks are refuges for wildlife. They stress the importance of parks as habitat for animals, the common ownership and responsibility for these lands, and the role of park management and citizens in their protection. As the brochure states, "Birds are a marvel that nature has granted us; we should take care of them, as they are part of nature just as are we."

Endemic Caprimulgids

MEETING REPORTS

The Wildlife Society

One of the largest and most important professional organizations for wildlife managers, The Wildlife Society, held a special symposium on the "Conservation of Biodiversity through Actions Benefiting High Priority Landbirds" at its annual meeting in Tucson, Arizona in September. As an invited speaker, the National Aviary's Steven Latta spoke on his experience in the Caribbean where studies of wintering migratory birds are often used to generate research dollars. Latta used his presentation to show that dollars for migrant-focused research have also had a critically important and under-appreciated effect in a number of different ways. Specifically, efforts have also resulted in a huge increase in field training of students, wildlife professionals and naturalists; promoted conservation awareness at local and national levels; played an important role in the growth and professionalization of key environmental organizations; and helped to spawn a growing ecotourism industry for birdwatching. Research has also driven national park management planning and conservation. Latta concluded that support for research is one of the best ways to forward a broad conservation agenda.

LINKS ACROSS THE NATIONAL AVIARY

Executive Directions

Todd Katzner, Ph.D.

Change in institutional leadership presents challenges and opportunities, never more so than at a small institution where policy and procedures are determined as much by personality as by established protocols. In the last few months, the National Aviary has been through significant administrative change. At the Department of Conservation and Field Research, we view these changes as positives. In the short time since our new leadership has emerged, we've seen significant improvement in many regards, and we can see extensive opportunity for future growth and new links across the National Aviary.

The most consequential change we've seen is in the hiring of the institution's new chief executive officer, Linda Dickerson. A brief scan of Linda's résumé speaks to her remarkable professional accomplishments and preparedness for this position. From the perspective of our department, Linda's presence has already improved our capacity to successfully address our mission.

Dayton Baker took over the struggling Pittsburgh Aviary in 1991. Through force of willpower and the combination of his personality and drive to succeed, along with a dedicated staff and board of directors, Dayton was able to right that sinking ship and grow it into the National Aviary we know today. Who we are today is largely due to Dayton's contribution to the institution and his vision. When Dayton stepped down, many of us wondered what would come next and if the new CEO would respect the course he had plotted. In Linda, we have an extraordinary person who leads by example and who sees the value of Dayton's vision. Although the overall course has changed little, personality matters at a small institution, and we have seen dramatic changes in links across the National Aviary. Linda is a physical presence at the institution in a way we have not seen before. Always available, she works so hard and accomplishes so much, we often wonder if her day lasts 36 hours instead of the 24 the rest of us experience.

Photo: Nuelsi Palés, National Aviary

CEO Linda Dickerson with Todd Katzner and the female Peregrine Falcon from Pittsburgh's Gulf Tower.

The role of the CEO at a non-profit is driven by administration and by fund-raising. The managerial staff at the National Aviary needs little in the way of administration, but we need a great deal of support raising funds for our programming. It is here that we have already seen the most dramatic changes at the National Aviary. Although small details previously were well attended to, in many regards our major fundraising efforts were treading water, neither sinking nor moving forward. Linda has single-handedly changed all that. She is extraordinarily well connected in Pittsburgh and nationally, and she uses those connections to benefit the National Aviary and individuals at the institution. In our department, these links have played out as a massive growth in fundraising networking, without undermining the critical importance of other ongoing fundraising activities underway at the institution. Already, because of Linda's remarkable influence, DCFR staff have developed extensive professional relationships within the local donor community. These relationships are the key to establishing credibility and building a base for future fundraising activities.

Change can bring insecurity and fear about the future. This has not happened for the Department of Conservation and Field Research. Instead, Linda Dickerson's presence as CEO has strengthened the links we have across the National Aviary. These expanded links make us a better organization than we were. They also move us closer toward achieving the vision that Dayton Baker laid out as he built this institution from a local bird-house into an emerging national organization. In the next few years, you will see us grow still more, into an acclaimed player on the national scene. Stable links across the National Aviary, such as those between our department and our remarkable leadership, are a critical component of ensuring that growth.

You can support the goals and projects of the Department of Conservation and Field Research at the National Aviary.

Secure online donations at www.aviary.org.

NATIONAL AVIARY

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SHORT TAKES

Blakiston's Fish-Owl Conservation

The river valleys of Northeast Asia, still dominated by old-growth forests, are home to an elusive giant, the Blakiston's Fish-owl (*Ketupa blakistoni*). Possibly the largest owl in the world, this aquatic prey specialist manages to persist year-round in a climate largely frozen for months on end. Although remnant populations persist in Japan, and possibly China and North Korea, most of the global population of approximately 1,000 pairs lives in Russia. Despite increased logging pressure in the river valleys where the owls are found, no specific conservation plans for this owl exist in Russia. The Blakiston's Fish-owl Project (BFOP) is an international initiative formed in 2005 by Russian fish-owl biologist Sergei Surmach and American conservationist Jonathan Slaght, currently a Ph.D. student at the University of Minnesota. This collaboration will address the conservation challenges of this enigmatic species. The project approaches fish-owl conservation by focusing on three critical areas: innovative research, scientific capacity-building, and conservation awareness. At present, the central research component of BFOP is a habitat-use study upon which conservation recommendations can be formed. In winter 2007, BFOP scientists became the first in the world to attach long-lasting VHF transmitters to the species by capturing four adult fish-owls. The National Aviary is helping the BFOP by providing scientific guidance and much-needed funding for GPS transmitters which will be attached during winter 2008. For more information about fish-owls and this important project, please visit the BFOP website (www.fishowls.com).

Photo: Jonathan Slaght

Blakiston's Fish-owl — perhaps the world's largest owl.