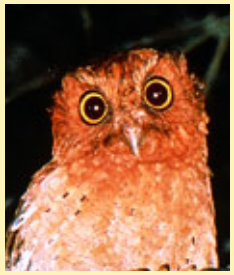
THE PEREGRINE FUND

WORLD CENTER FOR BIRDS OF PREY

• 2001 ANNUAL REPORT •

Working to Conserve Birds of Prey in Nature



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The Peregrine Fund Staff

The organization's business-related activities are supported by Pat Burnham (Administrator), Carol Pettersen (Bookkeeper), and Shaun Olmstead (Secretary/Receptionist). Linda Behrman is our Membership Director and Jack Cafferty is our Program Executive.

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Letter from the President

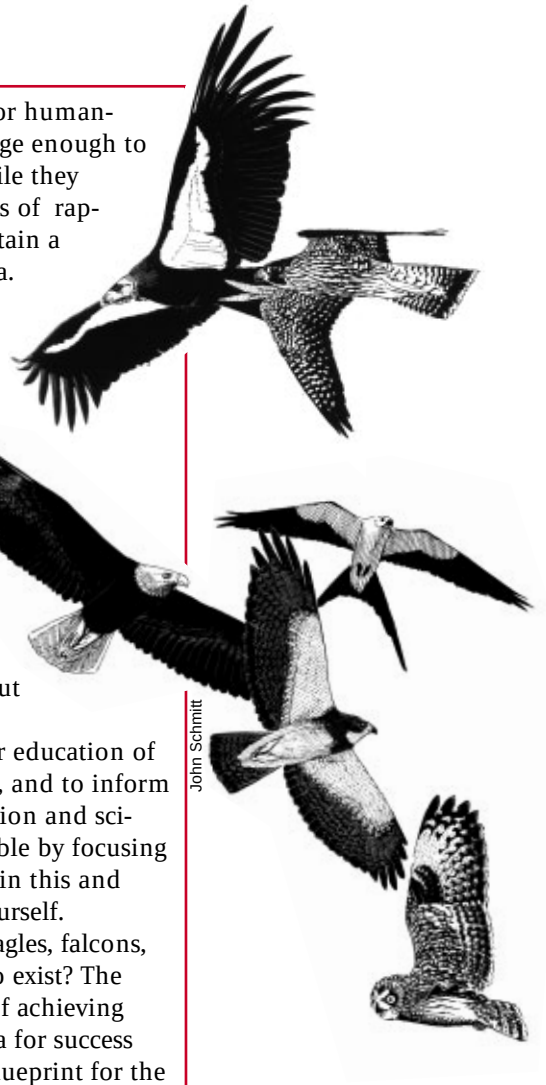
Particularly since September 11, the image of the Bald Eagle has regularly appeared as a symbol of freedom in the media and wherever Americans have gathered. The Bald Eagle and other birds of prey the world over are visible, charismatic life-forms that represent many values important to mankind. We humans want the continued existence of the eagle and other raptors for our inspiration and enjoyment and for that of our children, grandchildren, and future generations. Even if we do not regularly see birds of prey, we want to know they are still there. Although each species of raptor is important in its own right and should be preserved, all have value for other reasons, including their position and function within the web-of-life. They are also a good focus for conservation actions.

Why? As raptors are at the top of the food chain, their conservation can provide an umbrella of protection for an entire environment or habitat. The Harpy Eagle of Latin America is an excellent example. To preserve viable populations of this species we must also conserve the tropical forest in which the eagle lives and the complex diversity of life it holds and on which the eagle depends for food, nests, and survival. Particularly in Central America, the Harpy Eagle's environment is home not only to species that live there year around, but to migrant songbirds that winter there and nest in the yards, fields, and forests of the United States and Canada.

The position of raptors atop the food chain also makes them sensitive indicators of environmental health (including ecological processes), quality of habitat, and pollution. Raptors serve as the miner's canary did, where the death of a caged canary carried by miners warned them of otherwise undetectable poison gas that would also kill them. Our projects in the forests of Guatemala and Madagascar show that changes to forest habitat quality resulted in changes in nesting density, and even which species of birds of prey would be found. In poor quality habitat, populations decline and eventually species disappear. If raptor species are to be maintained, suitable habitat and the inter-related ecological processes must continue in an uncontaminated environment. An obvious example of the effects of environmental pollution on raptors is the Peregrine Falcon and DDT.

To succeed in conservation of an eagle, or any wildlife species, many breeding pairs are needed to ensure enough young annually to replace the adults which die as a result of natural or human-related causes. Therefore, the habitat area must be large enough to support sufficient breeding pairs and their young while they mature and become adults. Typically even single pairs of raptors require sizable areas in which to live, so to maintain a viable population usually requires a large habitat area.

Since raptors are not confined by political or legal boundaries their conservation cannot usually be achieved only through establishment of parks or reserves. Many species are also highly migratory. A Peregrine may breed on a remote cliff in the Rocky Mountains or a skyscraper in New York City, but it may spend its winters chasing prey in a salt marsh in Mexico or wetland in a valley of the Andes Mountains in South America. To achieve conservation of raptors we must think and act holistically. People, cultures, and nations must work together. Conflict and litigation seldom benefit birds of prey, but cooperation always does.



John Schmitt

We have found birds of prey to be a good focus for education of students, training of conservationists, study of nature, and to inform the public and even governments. Building conservation and science capacity in the developing world is also achievable by focusing on raptors. There are many examples of these points in this and past annual reports, and we invite you to look for yourself.

How can The Peregrine Fund do more to ensure eagles, falcons, hawks, owls, and their other relatives will continue to exist? The answer is illustrated by our excellent 33-year record of achieving meaningful annual results. We have a proven formula for success and a sound plan for the future—Raptor 2100, our blueprint for the 21st Century. The answer is we just need to do more and more of everything we are already doing. To achieve this objective your continued, and even expanded, partnership is needed now and in the future. Success breeds success, and its continued achievement depends on all of us.

Bill Burnham
President

Northern Aplomado Falcon

GOAL

To establish a self-sustaining wild population of Aplomado Falcons in the Southwestern United States and northern Mexico through captive propagation, release, and management with the ultimate goal of removing this species from the Endangered Species List.

The Northern Aplomado Falcon was once a conspicuous grassland resident of the American Southwest, but by the middle of the Twentieth Century this beautiful falcon was absent from much of its former range. Causes for its decline are still poorly understood but are most likely the result of several factors, including habitat change, human persecution, and ultimately, the widespread use of persistent pesticides. Although the Northern Aplomado Falcon was not listed as an Endangered Species until 1986 by the United States Fish and Wildlife Service, three private groups, the Chihuahuan Desert Research Institute, the Santa Cruz Predatory Bird Research Group, and The Peregrine Fund, had already begun to develop a captive breeding and reintroduction program for this species as early as 1978 because suitable habitat appeared still to exist and because the falcon's habitat requirements were consistent with current land use, notably cattle ranching. Between 1978 and 1988, 25 nestling Aplomado Falcons were collected from several populations in Mexico in an effort to form the foundation of a captive breeding program.

Fledgling Aplomado Falcons near release site.

Amy Nicholas

RESULTS

The Aplomado Falcon has been difficult and labor intensive to breed in captivity, and it was not until the last five years that our propagation efforts produced young falcons in numbers large enough to effect a realistic species recovery. So successful has the propagation effort become that over 700 captive-bred falcons have now been released into the wild, of which 562 have been released over the course of the last five years alone. This species restoration effort represents an incredible return on an initial investment of only 25 wild nestlings.

Aplomado Falcons have been released at more than a dozen locations along the south Texas Gulf Coast from Rockport, Texas, south to the Mexican border. Releases have occurred on Laguna Atascosa, Aransas, and Matagorda Island National Wildlife Refuges, as well as on an increasing number of private properties. Access to private property for the recovery of this Endangered Species has been greatly facilitated through the use of an innovative agreement known as a "Safe Harbor." This conservation plan provides protection for the landowner from potential restrictions imposed by the Endangered Species Act while, at the same time, providing access to essential habitat for the recovery of the Aplomado Falcon. With the protection of private property rights provided by this conservation tool, we now hope to develop Aplomado Falcon release sites in West Texas. To date, some 2,600 square miles of habitat maintained by the private sector is currently enrolled in the Aplomado Falcon Safe Harbor program.

More than 33 pairs of falcons now grace the grasslands of South Texas in habitats where the species had not been seen for more than 50 years. Moreover, these established pairs are now breeding and have successfully fledged more than 59 young. Traditionally Aplomado Falcons had been

Restoration

known to nest in the abandoned nests of other birds of prey and ravens at the tops of tree yuccas and in low-lying mesquite. Although such nest sites are still being used by the falcons, the rate of predation by raccoons is high and the most successful pairs have been those nesting higher off the ground on manmade structures, particularly power poles. So successful has the recovery effort been in South Texas that suitable habitat for the release of additional falcons is becoming difficult to find.

Although successful, the recovery of the Aplomado Falcon is not without challenges. Predation by Great-horned Owls remains a significant threat to young Aplomado Falcons during the release phase, while raccoons represent the greatest source of nest failure once pairs become established and begin to breed.

A manual describing propagation and release techniques for the Aplomado Falcon has been completed for publication.

Adult Aplomado Falcon in flight.

© W.S. Clark

FUTURE PLANS

The Peregrine Fund is now expanding this restoration program into other portions of the historical range of the Aplomado Falcon, to include West Texas, and has an interest in developing a future release program in the state of New Mexico. Southern New Mexico could represent significant habitat for the ultimate recovery of the Aplomado Falcon. We believe that the same restoration techniques proven to be successful in Texas could be used in New Mexico. The greatest challenge in New Mexico is not biological, but political. The "Safe Harbor" tool used so effectively in Texas only applies to non-federal lands, and New Mexico represents a matrix of large tracts of both federal and non-federal lands. Naturally, these political distinctions mean nothing to an Aplomado Falcon, but they do to the agencies and individuals who manage and utilize these lands. For the Aplomado Falcon to gain access to these important grasslands will require adequate assurances that their introduction will not result in unrealistic demands and restrictions on land use and management to government and non-government users of public and private lands.

We will continue to release Aplomado Falcons in South Texas and develop new release sites in West Texas under the Safe Harbor program. We will also be working to develop ways to reduce the rate of nest mortality by encouraging falcons to utilize artificial predator-proof nest structures and through experimentation with chemical repellents. As opportunities present themselves, blood samples and addled eggs will continue to be analyzed for contaminant levels.

Angel Montoya retrieves a young Aplomado Falcon from nest.

© W.S. Clark

STAFF

Program direction, Peter Jenny; coordination, Bill Heinrich; reintroduction, Brian Mutch; propagation, Cal Sandfort; research, Grainger Hunt; field manager, Angel Montoya; science assistance, Lloyd Kiff; field assistants Jessica Brown, Janelle Cuddeford, Marta Curti, Erin Gott, Amy Nicholas, and Darren Wallis; and hack site attendants Georgeanna Banks, Melissa Farinha, Kate Krulia, Rebecca Kryder, Thomas Lord, Angela Nelson, Lisa Philhower, Allison Poussard, Michael Psinakis, Robert Rogers, Molly Severson, Swathi Sridharin, Kelly Torres, Jasen Swift, Adam Weber, and Angela Yuska.

COOPERATORS

We cooperate with the U.S. Fish and Wildlife Service, the Secretaia De Medio Ambiente Recursos Naturales Y Pesca (SEMARNAP), the Texas Parks and Wildlife Department, and receive support from many partners from the private sector. Working closely with Miguel Mora of the Patuxent Wildlife Research Center, we continue to analyze levels of environmental contaminants found in the blood collected from released falcons and from their addled eggs.

Providing essential financial support were the Lee and Ramona Bass Foundation, Houston Endowment, Inc., Ruth O. Mutch, The Robert J. and Helen C. Kleberg Foundation, ExxonMobile Foundation, Edward R. Rose III Family Fund of The Dallas Foundation, The Charles Engelhard Foundation, The National Fish and Wildlife Foundation, Turner Foundation, Inc., Geo-Marine, Inc., American Electric Power, The Tapeats Fund, Earl C. Sams Foundation, U.S. Fish and Wildlife Service, The Steele-Reese Foundation, Norcross Wildlife Foundation, Inc., Jane Smith Turner Foundation, Joan and Herb Kelleher Charitable Foundation, and the State of Texas.

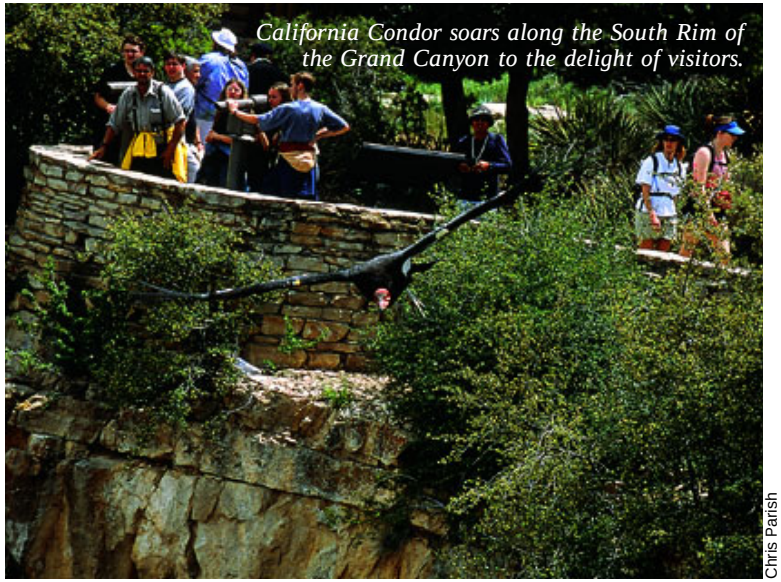
We give special thanks to Ruth Mutch and Norm Freeman for providing safe and efficient air transportation of our Aplomado Falcons from Idaho to Texas.

California Condor Restoration

GOAL

To establish self-sustaining wild populations of California Condors through captive propagation, release, and management with the ultimate goal of removing the species from the Endangered Species List.

The California Condor recovery program is on track with a total number of 183 condors in existence at the end of the calendar year. Flying free in California were 32 condors, and in Arizona 31 birds graced the sky after our most recent release. An additional five birds will be released in Arizona in early 2002. It is interesting to note that there are now more free-flying condors in Arizona than existed for the entire species in 1987 when the last wild condor in California was brought into captivity. The total population then only consisted of 27 individuals. Meeting the recovery goal objectives of two disjunct wild populations of 150 birds each, with at least 15 breeding pairs in each of the populations for downlisting to "threatened," is looking more achievable each year.



California Condor soars along the South Rim of the Grand Canyon to the delight of visitors.

Chris Parish

RESULTS

In 2001, for the first time ever there were nesting attempts in the wild from captive-produced condors. There were two nesting attempts in California and one in Arizona. Please see our web site at *www.peregrinefund.org* or The Peregrine Fund Newsletter No. 32, Summer/Fall 2001, for details. Although eggs were laid in all three attempts, each one failed. The cause was most likely inexperience, and such failure is not that different from what we see with the first nesting attempts of our captive birds. By mid-March 2002, pairs in both Arizona and California were again breeding and we have great expectations.

A five-year review of the Arizona release program by all of the cooperators was accomplished. The review is a requirement of the "nonessential experimental population" designation, which allows us to release condors in Arizona under the Endangered Species Act. The review was very positive. A result should be the expansion of the boundaries of the "nonessential experimental population" area. The current boundary is limited in size, and the condors fly beyond. We have recommended that the new area include the entire states of Arizona, Utah, New Mexico, and southwestern Colorado.

In Arizona, there was only one mortality over the entire year when a released hatch-year condor died of malnutrition for unknown reasons. After the deaths of condors from ingestion of lead in 2000, we are continuing to test all of the released condors for lead every six months. Since that incident, all condors have shown only trace lead levels in their blood.

We continue to monitor movements of each condor with the conventional transmitters as we have for the past five years. In August 2001 we equipped our most elusive condor with a solar powered satellite monitored transmitter (PTT). This condor had completely disappeared for over five months during winter 2000. The PTT has enabled us to keep track of all of her movements, with one of the longest flights covering 106 miles.

On 27 November 2001, with the help of the US Forest Service and the Bureau of Land Management, 11 condors were flown from the World Center to the Vermilion Cliffs, Arizona. On 12 February 2002, with over 150 of our friends and cooperators in attendance, we celebrated our fifth year of releases by releasing seven of the eleven condors into the existing population. The remaining birds will be released in the next few months.

Over the past year we have been encouraged by the overall improved behavior of the flock as a whole. The group of young released in early 2001 has exhibited the most desirable behavior we have seen in

Winter in Condor country.

Chris Parish

Jeff Cilek

Chris Parish presents a heartfelt gift to Maggie Sacher as a token of appreciation for her critical support and partnership in restoration of the California Condor.

juveniles over the last three years. They have shown less interest in humans and have ranged less widely than young birds in previous years. They continued to return to the release site every two to four days where we place food out for them and other condors throughout the year.

FUTURE PLANS

The success of the satellite transmitters has given us the confidence to begin experimenting with PTT units that incorporate global positioning systems, GPS. This will provide precise locations of where a condor is, or was. We hope to have the first 10 operational GPS/PTT units on condors within the coming year. By using this state of the art technology we will have the ability to record the condors' movements, reducing logistical difficulties and improving monitoring and management of the population. They will enable us to find locations and determine the types of food condors are utilizing, so that we can better monitor for potential contaminates. The movements as related to the age of the birds, as well as seasonal and weather related influences, will be studied. They also should help in locating nesting sites and defining home range requirements for the founding population.

We are continuing to work closely with our associate, Norm Freeman, and his company, Elemental Data Control Systems, in developing personal data assistants, or PDA units, for biologists. All field biologists will have their own PDAs and be able to record information, then download into a central computer at the end of the day, enhancing results, saving time, and improving coordination. Each unit will have individual data on each condor programmed into it, including transmitter frequencies.

Along with expansion of condor facilities at the World Center, we will build a quarantine and treatment facility behind our offices at the Vermilion Cliffs. We then will be able to hold sick or injured birds in this facility for limited periods of time while they are being treated.

We will continue to release as many young condors as possible in northern Arizona with the help of all of our cooperators and, where possible, help to ensure that the current "nonessential experimental population" area is expanded.

STAFF

Coordination, Bill Heinrich; reintroduction Chris Parish and Sophie Osborn; research Grainger Hunt and Chris Woods; field assistance Chris Crowe, Marta Curti, Kevin Fairhurst, Paul Flournoy, Courtney Harris, Kristine Lightner, Thomas Lord, Blake Massey, David McGraw, and Molly Severson.

COOPERATORS

Cooperators are the U. S. Fish and Wildlife Service, the Arizona Game and Fish Department, the Bureau of Land Management, the National Park Service, the Los Angeles Zoo, and the Zoological Society of San Diego, as well as the local ranchers and lodge owners. The U. S. Forest Service, Norm Freeman, and the Bureau of Land Management assisted with transportation of the condors. Our special thanks to Maggie Sacher.

Financial assistance this year was provided by the U. S. Fish and Wildlife Service, The Geraldine R. Dodge Foundation, Idaho Bureau of Land Management, Turner Foundation, Inc., The Walt Disney Company Foundation, Globe Foundation, The Kearney Foundation, Phelps Dodge Corporation, Patagonia, The Evan Frankel Foundation, The Charles Schwab Corporate Foundation, Norcross Wildlife Foundation Inc., The Steele-Reese Foundation, Ten Times Ten Foundation, Sidney S. Byers Charitable Trust, Jane Smith Turner Foundation, Ms. Conni Pfendler, Norm Freeman, and The Salt River Project.

GOAL

To propagate the required number of the best possible physically, behaviorally, and genetically constituted raptors for release to the wild.

STAFF

Captive propagation at the World Center is accomplished by Cal Sandfort and Randy Townsend with assistance from Nedim Omerbegovic, Randy Stevens, Russ Jones, and Craig Carpenter. Food production is managed by Amel Mustic with assistance from Roy Britton and Dalibor Pongs. Facility maintenance is under the direction of Randy Stevens.

COOPERATORS

Major financial assistance is provided by the U.S. Fish and Wildlife Service, the Idaho Bureau of Land Management, and donors listed under species project reports. Pathology and veterinarian support are provided by Meridian Veterinary Clinic (Scott Higer and Brooke Cummings), the Zoological Society of San Diego (Bruce Rideout), Washington State University (Lindsay Oaks), the Idaho Department of Fish and Game, Wildlife Health Laboratory, Caine Veterinary Teaching Laboratory, and The Raptor Center (Pat Redig).

Captive Breeding

at the World Center for Birds of Prey

Each year we are totally dependent on the skill of our staff and our captive populations to produce the young required to advance recovery programs. Captive breeding is the cornerstone for the Aplomado Falcon and California Condor restoration programs, as it was for the Peregrine Falcon. Harpy Eagle propagation remains developmental, but great strides have been made in predictably producing consistent numbers of birds for releases.

RESULTS

Aplomado Falcon - A record for Aplomado Falcon propagation was set in 2001 with 129 young raised. These young were produced from 32 Aplomado Falcon females laying 284 eggs, of which 170 (60%) were fertile. One hundred thirty-one (77%) hatched and 129 young (98%) survived.

Five of the reproducing falcons laid eggs for the first time from which five young were produced. Four breeding age (2+ years) female Aplomado Falcons did not lay, but we expect these birds to lay in 2002. Three of the females were two years old and one was three years old.

Of the 32 pairs, 10 copulated and produced 94 eggs. Seventy-one eggs (76%) were fertile, 53 (75%) hatched, and 53 (100%) young survived. Unlike most copulating Peregrine Falcons, some copulating Aplomado Falcons will continue to lay eggs sequentially. As each egg is laid it is removed and the falcon lays another egg. This year three females laid from 14 to 19 eggs in succession, resulting in 48 eggs with 31 (76%) young produced from them.

Nineteen egg-laying females did not copulate with their mates and were artificially inseminated. Those artificially inseminated females produced 175 eggs. Ninety-nine (56%) were fertile, 78 (79%) hatched, and 76 young (97%) survived.

We removed eggs as they were laid from 19 of the 32 egg-laying falcons. This increased egg production from a normal three-egg clutch to eight or more eggs from each of these females. Natural incubation doubles the chance of eggs hatching. When removing eggs as they are laid, eggs receive no natural incubation. Surrogate incubation is provided for the extra eggs by non-copulating pairs of Peregrine Falcons retained after the successful recovery of this species. In 2001 this technique increased the number of Aplomado Falcon chicks which might otherwise have been expected by over 73%.

California Condor - Currently 40 California Condors reside at our World Center for Birds of Prey facility. Two of these birds are being temporarily housed and are slated for release in northern Arizona some time in the near future. The remaining 38 birds (19 pairs) make up our captive breeding population.

In an effort to improve condor breeding we exchanged mates of four condors at the end of the 2000 breeding season. One of these females, which had not laid a fertile egg in four seasons, produced a fertile egg in 2001. We are hopeful the other re-paired condors will also produce fertile eggs in the future.

The good news does not end here. Five other females also produced their first fertile eggs in 2001. This gave us a total of 15 fertile eggs out of 21 laid, and 13 chicks for the 2001 breeding season. The total fertility was 71%, hatchability was 87%, and our chick survival rate was 100%.

Kurt K. Burnham

Recently-hatched Aplomado Falcons huddle near the heat source while begging for food. Color markings are placed on heads to help identify young until they are old enough to be fitted with leg bands.

In an effort to increase our productivity further we re-paired three more females at the end of the 2001 breeding season. We plan to continue re-pairing as appropriate until pairs are producing fertile eggs. We have found this technique to work with other species. Through careful management and insight we hope eventually to obtain optimal pairings to accelerate productivity to the maximum possible.

Harpy Eagle - Two females laid seven eggs, of which six (86%) were fertile. Three eggs (50%) hatched and two young (66%) survived. All breeding age female Harpy Eagles laid.

Shortly after the breeding season all the young and breeding adults were relocated to our new Neotropical Raptor Center in Panama. Breeding resumed normally after the move, and as of mid-April 2002 four healthy young have been produced (see Harpy Eagle section of this report).

Archives of American Falconry

The Peregrine Fund has long enjoyed a close bond with falconers and falconry. Falconers' techniques, birds, money, and, indeed, individual falconers themselves have all played significant roles in the successes enjoyed by our organization and in raptor conservation and research. Dissipation of invaluable collections of historical falconry memorabilia as pioneer American falconers began to pass away caused The Peregrine Fund to establish the Archives of American Falconry in 1986 as a financially self-supporting project. Dedicated to preserving the history of the sport, the Archives is unique in the world.

GOAL

To collect and conserve evidence of the history of falconry and to document the role of falconers in raptor conservation in the Americas.

RESULTS

Historical materials donated to the Archives during this year again have an appraised value well over our annual average. The value of our library collections has been further enhanced both by one-time purchases, from our auction-based Accessions Fund, and upgraded thanks to some serious "horse trading" of duplicates orchestrated by Associate Librarian John Swift.

Sally Spofford continues to provide material from the research of her late husband, Walter, the latest centering around some 35,000 Kodachrome slides. Coupled with his extensive field notes and maps already in the Archives collections, these slides are invaluable, exemplifying the Archives' efforts to preserve the results of falconers' scientific research.

The donation of an extensive collection of raptor hoods and patterns produced in Jim Nelson's development of a non-molded, Dutch-shaped hood represents our archival efforts—the acquisition of contemporary materials of historical potential.

At the end of the year Michael Swain generously shared with us the correspondence of his father, the late California falconer, Henry Swain. Included were many letters from British falconer Ronald Stevens. The latter, when added to copies Tony Huston has given us of his and John Morris' boyhood correspondence with Stevens, have given the Archives a wondrous reservoir of unpublished material from this highly acclaimed British falconer.

With our collections representing such a vast array of materials centered under one roof, Helen Macdonald, a Ph.D. candidate from Cambridge, elected a six-month residence in Boise to utilize our materials and those in the scientific library in preparation of her dissertation on the role of falconers in U.S. and British raptor conservation and research. Peter Kluh came from Germany and found a number of details on the life of Otto Kals, the old German falconer/hood maker, that had eluded his research in Europe. Dr. Gordon Mellor of the British Falconers Club expanded his research on early British clubs.

The Archives published Volume II in our Heritage Publication Series: John and Frank Craighead's *Life with an Indian Prince.* Praise for this work, both its content and presentation, has been unanimous. Copies are still available, with details available on our web site. Volume I in the series, Luff Meredith's *American Falconry in the Twentieth Century,* is now out of print.

We were particularly pleased this year to present our joint Archives-North American Falconers Association Falconry Heritage Award to long-time Missouri falconer Dan Cover. Dan has long set a high standard of ethics and integrity within the falconry community truly worthy of this recognition.

FUTURE PLANS

The new building to provide more adequate facilities for the Archives and The Peregrine Fund's scientific library and collections is well beyond the planning stage—construction has begun. The need for such expanded space reflects the unprecedented successes we have enjoyed. We continue efforts to secure the funding still outstanding to ensure timely completion of this expansion.

Our Archives, though primarily focused on American history, is increasingly encompassing the preservation of falconry history on a worldwide basis. As this trend continues, we look forward to working with the whole of the international falconry community.

Jack Cafferty

Associate Librarian John Swift assists Cambridge researcher Helen Macdonald in using the Archives.

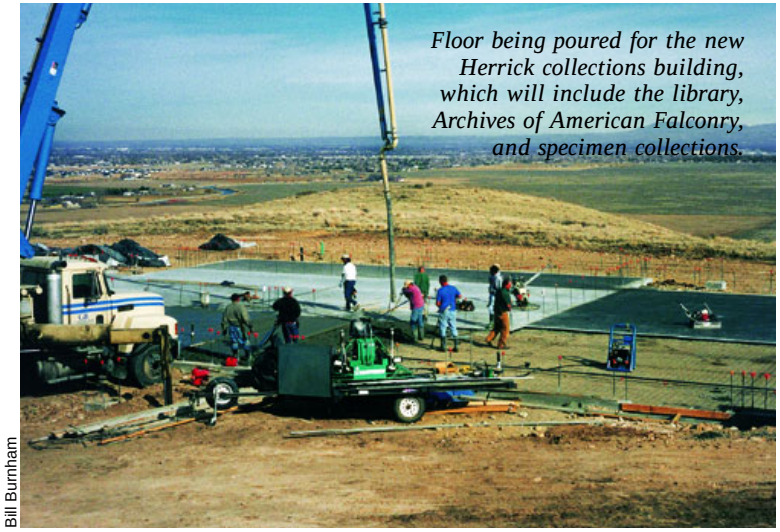
STAFF

Curator Archivist, S. Kent Carnie; Research/Editorial Associate, William G. Mattox; and Non-resident Associates: Library, John Swift; Research, Craig Culver and Peter Devers; and Graphics, Don Garlock and Jim Stabler.

COOPERATORS

The Archives is dependent on the generous support of many friends, falconers and non- falconers alike. In 2001 particularly noteworthy assistance was received from Sterling Bunnell, Tom Cantella, Kent Carnie, Bill Cornatzer, Craighead Wildlife Wildlands Institute, Salvatore Foglio, Jim Frazier, Walter Hill, North American Falconers Association, Sally Spofford, Edward Stabler, Jeraldine Struthers, Michael Swain, John Swift, and the Wolf Creek Charitable Foundation.

Research Library



Bill Burnham

Floor being poured for the new Herrick collections building, which will include the library, Archives of American Falconry, and specimen collections.

RESULTS

Cumulative: Gaining an awareness of existing knowledge is the logical starting point for any sound scholarly research, and access to good library resources is therefore essential for our researchers. The holdings in the World Center library have now grown to over 7,000 books and monographs, mostly on birds, and partial or complete runs of over 500 journal and magazine titles. The catalogued reprint collection contains over 13,000 items, and subscriptions or exchange agreements are maintained for 269 technical journals, magazines, and newsletters. In terms of sheer size, our Research Library is now probably one of the 10 largest collections on birds and related natural history topics in North America.

2001: Significant gifts of journals and books were received from many donors, including Frank Baldridge, Charles Collins, James Enderson, Walter Hughes, Maxine Kiff, J. Michael Scott, Harley Shaw, Sally Spofford, Charles Van Riper, and Kevin Winker. Arrangements were also made for the eventual deposition of the remainder of the vast Spofford library to join the large portions already donated to us over the past few years, and Sally Spofford continues to be our strongest supporter.

FUTURE PLANS

Efforts were underway at the end of 2001 to place the library and reprint catalogues on line at The Peregrine Fund web site. By utilizing internet technology, it is our hope that we can make our unique library resources available to raptor researchers throughout the world.

The long anticipated move into the new library/archives complex should occur in the summer of 2002, and it will then be possible to place all of the library holdings in order for the first time in several years. One of the most attractive features of the new building will be the inclusion of several offices reserved for visiting scholars, and we expect that they will be used regularly, especially by visiting graduate students preparing dissertations. Given the significant increase in library space that we will enjoy in 2002, we are even more eager to receive library donations of any kind, all of which are tax deductible.

GOAL

To establish and maintain a comprehensive ornithological and conservation biology research library related to the mission of the organization and of major importance to the entire biological community.

STAFF

The library is supervised by Lloyd Kiff, who was ably assisted by Lynda Leppert, Stephanie Brady, and Shaun Olmstead during 2001.

Scientific Publications and Presentations

RESULTS

Cumulative: By the end of 2001, 836 publications, including 320 technical journal articles, dissertations, and theses, had been produced by The Peregrine Fund (TPF) staff biologists and associates.

2001: Twenty publications by TPF contributors appeared in 2001, including eight from the Madagascar Project and three from the Maya Project. A particularly notable paper was contributed by Mark Watson on the New Guinea Harpy Eagle.

GOAL

To present the results of research studies to scientific forums, government agencies, and interested groups.

Numerous presentations were made at scientific meetings, symposia, and workshops. Among the latter was a workshop on the Asian vulture crisis held in Nairobi, Kenya, in May 2001 under the direction of Munir Virani and Leon Bennum, and the proceedings were published by the National Museums of Kenya.

Efforts were made by Chris Woods and Grainger Hunt to summarize the findings from the first years of the California Condor release project, and virtually all of the most important findings of the Maya and Madagascar Projects have now been reported in the primary literature.

The long-anticipated book, *Raptors of the Maya Forest*, the first book on Neotropical raptors, reporting the results of the Maya Project and being edited by Dave Whitacre was accepted for publication by Cornell University Press.

FUTURE PLANS

It is expected that the Maya Forest raptors book will be published in 2003, and similar books on other species are being considered. We will continue our attempts to close the gaps between data gathered and results published.

Also in 2003 we anticipate the publication of a book edited by Tom Cade and Bill Burnham on the Peregrine Falcon restoration program in North America, a celebration of 35 years of effort by many hundreds of Canadians and Americans who were determined to bring the Peregrine back to safe numbers.

STAFF

Project leaders and individual staff members are responsible for reporting the results of their research. Lloyd Kiff maintains the bibliography of Peregrine Fund publications.

Specimen Collection

RESULTS

Cumulative: Throughout its history, The Peregrine Fund has maintained collections of bird specimens (study skins) and eggshells salvaged from the captive breeding program and from natural casualties, e.g., birds killed from colliding with windows and along roadways. These collections are useful for basic reference purposes and for a variety of research applications.

The collections now include over 8,000 eggshell specimens and over 300 study skins of birds. Additional bird specimens mounted as they would have been in life are on display in the Velma Morrison Interpretive Center.

FUTURE PLANS

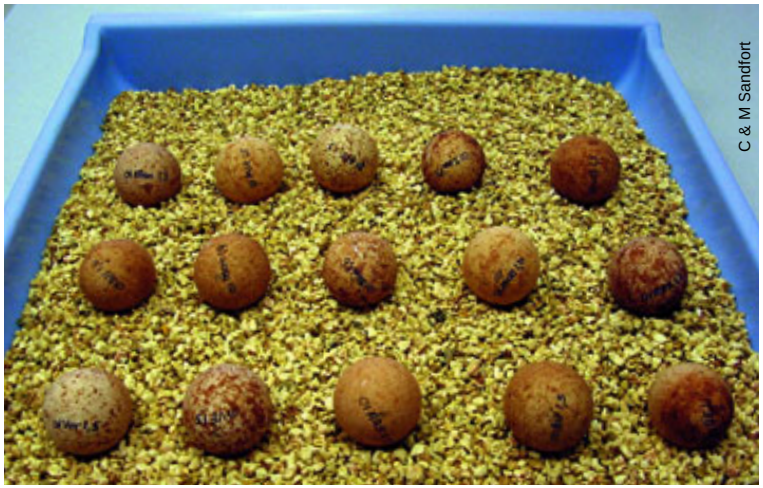
With the expected completion of the new library/archives facility in 2002, the specimen collections will be moved to new, larger quarters, and we will be in a position to add to them more aggressively, mostly through the exchange of specimens with other institutions.

GOAL

To develop and maintain systematic collections of eggshells and study skin specimens for research and reference purposes.

STAFF

The specimen collections are supervised by Lloyd Kiff, Science Director, and John Schmitt is the preparer.



C & M Sandfort

Aplomado Falcon eggs are coded to indicate year, breeding pair, clutch, and sequence in which egg was laid.

Student Education

RESULTS

Cumulative: Since our inception, training students has been a major part of the mission of The Peregrine Fund (TPF), and, in turn, the contributions of students to our field programs has been an essential ingredient in their success. Beginning in 1970 at Cornell University, we have directly assisted students in obtaining 49 advanced degrees, including 15 Ph.D.s and 34 Master's degrees or equivalents.

2001: Students were supported in connection with six different projects in 2001. They included five students in Pakistan, one in Nepal, and one in India, who are involved in different aspects of the Asian Vulture Crisis project under the supervision of TPF biologist Munir Virani. Travis Booms continued his studies on the food habits of Gyrfalcons in Greenland in connection with his Master's degree program at Boise State University and Kurt Burnham began a D. Phil. program at Oxford University with his research on Peregrines and Gyrfalcons. Nyambayar Batbayar reached the end of his residence in the Raptor Biology program at Boise State University and returned to Mongolia to conduct field studies of the Cinereous Vulture.

In the Neotropics, Ricardo Gil-da-Costa studied predator-prey behavior as a sidelight of our release of Harpy Eagles in Panama in connection with his pursuit of a Ph.D. at Harvard University, and Kathia Herrera studied the diet of the released Harpy Eagles on Barro Colorado Island in Panama for her Bachelor's degree.

In the African region, Ato Lakew Berhanu of Ethiopia completed his studies in conservation biology and was awarded a Master's degree at the University of Kent, United Kingdom. Suzanne Schultz of the State University of New York was supported in her research on the biology of the Crowned Eagle in the forest of the Ivory Coast. Four students working in Madagascar received TPF support, including Laura Estep, a Fullbright Scholar at Eckerd College, and Ruth Tingay, University of Nottingham, who conducted field studies on the Madagascar Fish Eagle. Sarah Karpanty studied raptor predation on lemurs for a Ph.D. at the State University of New York, and Gilbert Razafimanjato completed his research on the endemic Peregrine Falcon subspecies in Madagascar for a Master's degree equivalent at the Université d' Antananarivo.

GOAL

To identify and/or provide research and educational opportunities for undergraduate and graduate students, both in the United States and other countries, especially in connection with our field programs.

C & M Sandfort

Nestling Peregrine Falcon has the width of its leg measured as part of a growth study.

STAFF

Students are supervised by their respective project leaders in cooperation with their advisors at their parent institutions.

Education Program

STAFF

Education Director, Nancy Freutel; Education and Raptor Care, Kim Middleton; Volunteers and Gift Shop, MaryAnn Edson; Education Assistant, Trish Nixon; and Facility Maintenance, Howard Kinzy.

Volunteers serving over 100 hours: Mark Armstrong*, Pat Baumback, Christa Braun*, Karen Brender*, Helen Crewse*, June Disotell, Betsy Eldredge, Phil Eldredge, Leo Faddis*, Anne Fitzsimmons, Bob Fitzsimmons*, Linda Fraser*, Joni Frey*, Karen Gross, Marie Gummerson*, Kathryn Hampton*, Ted Hanford*, Jerry Heimbuch*, Bryan Jennings*, Robert Koeberlein*, Mike McSweeney*, Milton Melzian*, Bob Murray*, Trish Nixon*, Bret Noble*, Brit Peterson*, Carole Smith*, L. Chan Springer*, Diann Stone*, Henry Tamcke Jr.*, and Dick Thatcher*

*indicates docents

COOPERATORS

Our thanks to our many partners, including financial assistance from the Laura Moore Cunningham Foundation, Inc., The Ahmanson Foundation, U.S. Bancorp Foundation, Harry W. Morrison Foundation, Inc., Velma V. Morrison, Union Pacific Foundation, Boise Cascade Corporation, J.A. & Kathryn Albertson Foundation, Jim and Karin Nelson, The Sunderland Foundation, M. J. Murdock Charitable Trust, Key Foundation, Ada County Association of Realtors Foundation, Steve Guinn, and numerous other corporate and individual donors.

The Education Program began in 1985 and has since grown rapidly to its current role which is to operate the Velma Morrison Interpretive Center in Boise, Idaho. We are open to the public seven days a week, and we also give hundreds of scheduled tours, especially for school groups. More than 100 volunteers each year help staff the Center and provide educational tours and other assistance.

GOAL

To educate the general public and school students about the importance of conservation of biological diversity and about the leadership role The Peregrine Fund has occupied in achieving results toward this conservation goal.

RESULTS

This year we had over 27,000 people visit from all 50 states and 33 foreign countries. The most foreign visitors were from Canada, followed by England, Germany, Guatemala, Australia, and New Zealand. We reached another 2,700 people during off-site presentations. Included in these totals were 6,130 students who came to the Center with their classes from throughout the Northwest. However, these numbers do not accurately reflect the impact of our effort. Excerpts from a letter by Mari adds true meaning to some of these numbers:

"We recently visited your center over our spring break. We loved it! My son Josh is 10 years old; he has a passion for birds of prey and was amazed at your Center. That is all he has been talking about. He gave a speech on an autobiographical incident that has changed his life and he chose to write about your Center. I am sure your staff is overworked and underpaid, so you all need to know the hearts you touch when it happens."

Impacts and experiences such as those related by Josh's mother are the true measure of what The Peregrine Fund and the Education Program accomplish.

Introductory screen of the new "Kinds of Raptors" interactive display at the Velma Morrison Interpretive Center.

To accommodate the growing needs of our visitors we completed a much needed renovation of our landscaping. We added additional lawn space for visitors, two separate picnic areas—one with a wood lathe shade cover, additional sidewalks, and an arbor leading to a memorial area with benches where visitors can sit and reflect.

The major exhibit addition was the completion of the "Kinds of Raptors" display. This new interactive exhibit allows visitors to explore one of two touch screen kiosks featuring the different kinds of raptors.

The heart of the Education Program is our volunteers. Almost 7,500 hours were donated by 104 volunteers. Their efforts, enthusiasm, and experience allow our program and message to go out to thousands each year. Volunteers clean chambers, staff the gift shop, lead tours, work in our library or office, and do general maintenance. Without their commitments, we would not get heart warming mail such as above. We owe them our deepest gratitude for a job well done.

FUTURE PLANS

The visitors center continues to evolve to meet the needs of our visitors. The "Kinds of Raptors" display mentioned above is being converted to a format compatible with the Internet and should appear on our home page early this summer. When the Discovery Room becomes fully operational we will transfer our energies to converting more of the Gerald D. and Kathryn Swim Herrick Tropical Raptor Building into educational space.

www.peregrinefund.org

Wildlife never sits still, and neither do we! The Peregrine Fund's web site is a cost-effective way to communicate results and information from our many projects to the world.

RESULTS

Summary of Past: From modest beginnings of just a few pages of content in August 1995, our web site *(www.peregrinefund.org)* has grown to become one of the most popular conservation sites on the Internet. Now with over 370 pages, the more than 64,000 monthly visitors enjoy up-to-date field notes from several projects, images of and information on birds and wildlife from around the world, unique catalog items, press announcements, and much more.

GOAL

To present useful information about birds of prey and our organization and its activities to the public, conservationists, and biologists.

2001: The highlight of 2001 was the addition of our free E-newsletter, the online shopping cart, and expanded catalog. The E–newsletter's first year provided more than 1,800 subscribers with video of a Harpy Eagle hatching, "Notes from the Field" detailing the discovery of the first egg to be laid in the wild by a California Condor since 1986, job announcements, new catalog items, a special invitation to the release of California Condors, membership information, and much more. The E-newsletter is in addition to the popular printed versions of our newsletter and annual report received by our members and cooperators.

FUTURE PLANS

Technological advancements present program managers numerous opportunities which can be interesting to the public. We will expand the use of satellite tracking devices on Peregrine Falcons and Gyrfalcons in Greenland and on California Condors in the Grand Canyon area. After analysis, the information will be placed on our web site. Our biologists will receive the valuable information they need for the project, and the public will have the opportunity to be intimately involved in our conservation projects. Imagine tracking a California Condor from your home computer as it soars hundreds of miles!

A web camera positioned above an Aplomado Falcon nest in South Texas is also planned. This will allow web site users the opportunity to absorb the intricacies of a wild falcon nest while our biologists learn more about the prey being provided to the young falcons.

Two other features soon to be added to our web site will provide access to research resources for biologists and conservationists around the world. First, the popular "Kinds of Raptors" display from our Interpretive Center will be placed on the web site. The "Global Raptor Information Network" will, by virtue of constant updating, provide conservationists around the world with a unique source of information on the 150 species of diurnal raptors considered to be "vulnerable" or unknown.

The Peregrine Fund

Working to Conserve Birds of Prey in Nature

15 December 2001

E-Newsletter

Issue 8

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Captive Breeding
New Guinea Harpy Eagle
Tindor's Eagle
Sokoke Scops Owl

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Membership
Volunteer
Shop at our On-line Store

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tpf@peregrinefund.org

Information for members, volunteers and supporters of The Peregrine Fund. For additional information about The Peregrine Fund, visit our web site at www.peregrinefund.org

The Peregrine Fund to Host Conference on Neotropical Raptors

We are in the process of organizing an exciting opportunity for raptor enthusiasts and practitioners of research and conservation. We invite you to join us in Panama, 24-27 October 2002, for the first International Conference on Neotropical Raptors and Harpy Eagle Symposium. For details go to http://www.peregrinefund.org/nrsconference.html

Eleven More Condors Transferred to the Grand Canyon Area

Eleven more California Condors were transferred from The Peregrine Fund's breeding facility in Boise, Idaho to their release site on the Vermilion Cliffs in Arizona. The condors will be released in early 2002. To read more go to http://www.peregrinefund.org/press/condor101.html

Experience Life as an Aplomado Falcon Release Site Attendant

At around 8:00 AM the first of the Aplomado Falcons makes its way to the tower, its black and gold form outlined clearly in my scope. Beautiful in their vivid colors and playful soaring flights, these birds have the ability to look like a fat pigeon one minute and like royalty the next. For the brief time that they are present, the tower is alive. The falcons eat the quail with small, rapid bites, often ripping feathers to get to the unexposed flesh." Swathi Sridharan describes her summer as an Aplomado Falcon release site attendant. http://www.peregrinefund.org/notes_aplo.html

Do you know a Harry Potter Fan?

Still trying to decide what to get that special someone for Christmas? Well, if you know a fan of the Harry Potter stories then we have a gift for you! Check out the cute stuffed owls at our on-line store http://www.peregrinefund.org/press/catalog_potter.html

To unsubscribe, click here

STAFF

The Peregrine Fund's web site is supported and maintained by Linda Behrman, Jeff Cilek, Rob Rose, and MaryAnn Edson, with assistance from all programmatic personnel.

COOPERATORS

Partial support for the web site was provided by The Charles Engelhard Foundation, M. J. Murdock Charitable Trust, and others.

High Arctic Institute

GOAL

To conserve and understand Gyrfalcon and Peregrine Falcon populations and their environments.

Greenland is the largest island in the world and home to a rare bouquet of plants and animals that have evolved together in this remote and hostile arctic environment. Despite only 15% of the island being ice-free, Greenland is home to tens of millions of seabirds, shorebirds, songbirds, and waterfowl. This unique combination of prey, in addition to the most northern populations of Peregrine Falcons and Gyrfalcons in the world, makes Greenland unlike any other place on earth. Continued study and monitoring of local wildlife populations are essential as environmental changes take place.

Since the 1970s researchers from The Peregrine Fund have volunteered their time in Greenland, and in 1993 we officially began working in Greenland as an organization. In 1997 we founded the High Arctic Institute, a demonstration of our long-term commitment to the research and conservation of Greenland's wildlife and wild places. During the 2001 field season, from early June through mid-September, we accomplished field research in two geographic areas, Kangerlussuaq, southwest Greenland, and Thule, northwest Greenland.

RESULTS

Kangerlussuaq

In Kangerlussuaq during the 2001 field season, 64 known Peregrine Falcon and 64 known Gyrfalcon nest sites were checked for occupancy either by foot or by helicopter from June through August. For Peregrine Falcons, 33 (52%) were found to be occupied by at least one or more adults with researchers entering 11 of them, with the average number of young per successful site 3.27. Thirteen (20%) of Gyrfalcon nest sites were occupied, with the average number of young per successful site 2.9. Five satellite transmitters were placed on falcons in the Kangerlussuaq area, four on Gyrfalcons and one on a Peregrine Falcon.

Travis Booms completed his fieldwork on Gyrfalcon prey selection for his M.Sc. in raptor biology at Boise State University.

Thule

For the 2001 field season in Thule, five territorial pairs of Peregrine Falcons were found, and of those, four produced 13+ young. During each of the past two seasons new Peregrine Falcon nests have been located. Peregrines are being located much further north than either local Inuit and past High Arctic explorers ever reported them. This may be due to Peregrine immigration from more southern Greenland or an expansion of a local population due to better environmental conditions.

Two new active Gyrfalcon nest sites were located, one produced two young and the other contained three young when last observed. Gyrfalcon occupancy was down from previous years with one site inactive for the first time in nine years. Satellite transmitters were placed on three Gyrfalcons and three Peregrine Falcons. Field research in Thule was limited as boat motor problems drastically reduced the time for surveying. Most likely further nest sites were active but by the time the sites were surveyed the young had already fledged and left the area.

Summer campsite in northern Disko Bay, Greenland.

Jack Stephens, jackstephensimages.com

Kurt K. Burnham

Kurt K. Burnham

Left: Ruth and Brian Mutch with large nestling female Gyrfalcon in Greenland.

Above: Thick-billed Murres at nest on Saunders Island.

FUTURE PLANS

During the 2002 field season researchers will continue work placing satellite transmitters on Gyrfalcons and Peregrine Falcons in both Kangerlussuaq and Thule in addition to collecting information on reproduction. Blood samples will be collected from all falcons handled by researchers to look at genetic variation between and within these populations of falcons.

STAFF

Kurt K. Burnham manages this project under the general direction of Bill Burnham and with special assistance provided by Bill Mattox and Ian Newton. Jack Stephens is the Thule coordinator and lives in the High Arctic Institute facility. Also participating in 2001 were Ryan Blaedow, Travis Booms, Jamie Cafferty, Jack Cafferty, Eric Hetherington, Jim Mussell, Brian and Ruth Mutch, Alberto Palleroni, Marco Restani, and Rick Yates.

COOPERATORS

The Commission for Scientific Research in Greenland, Greenland Home Rule Government, Danish Polar Center, and the United States Air Force provided authorization. We cooperate with the U.S. Department of Interior/Bureau of Land Management, Conservation Research Foundation, Boise State University, University of Copenhagen Zoological Museum, and Danish scientists Kaj Kampp and Knud Falk.

The Charles Engelhard Foundation, Archie W. and Grace Berry Foundation, Ruth O. Mutch, Bennu, and the Eyas Foundation provided major financial support.

Special thanks to the men and women of the 109th Air National Guard and of Thule Air Base for supporting our work in Greenland. Thanks to Bent Brodersen of KISS and Tom Quinn and Robin Abbott from VECO Polar Resources. Further thanks to Kim Pelle of Greenland Contractors for his support and assistance.

We greatly appreciate John Ferguson of Citation Resources Inc. and New Millennium for allowing us to share their helicopter time in Kangerlussuaq.

NEOTROPICAL RAPTOR CONSERVATION PROGRAM

STAFF

The Neotropical Raptor Conservation Program is directed by Leo Salas under the overall guidance of Rick Watson. They are assisted by Magaly Linares, Lilia Mendoza, and project staff listed separately in the following pages. Dave Whitacre is the Senior Scientist for this program.

GOAL

To conserve Neotropical birds of prey and their habitats through research, hands-on interventions, public education, and development of local capacity.

COOPERATORS

The partnership of many organizations and individuals has made this program possible, including the Presidency of Panama, Autoridad del Canal de Panamá (Panama Canal Authority, ACP), Autoridad Nacional del Ambiente (ANAM, National Environmental Authority), Autoridad de la Región Interoceánica (ARI), and Fundación Ciudad del Saber (City of Knowledge Foundation). Jacobo Lacs, who serves on our Board of Directors, has provided invaluable support and assistance.

Important financial support in 2001 was provided by the Wolf Creek Charitable Trust, Hank and Wendy Paulson, and the U.S. Agency for International Development (USAID). The U.S. Agency for International Development has provided economic and humanitarian assistance worldwide for more than 40 years.

The Neotropical Raptor Program builds on over two decades of work in Latin America and the Caribbean that began with research on the Orange-breasted Falcon and expanded to the Maya Project in Guatemala, Harpy Eagle studies in Venezuela and Panama, and many others. The program researches and conserves biodiversity throughout the Neotropical biogeographic region, which encompasses the biologically similar area from southern Mexico and the Caribbean to the tip of South America.

Of 86 diurnal raptor species in the Neotropics, 16 are endangered or vulnerable, and 21 are too little known to guess their status. We have identified the raptors most at risk and prioritized those that need the most urgent research or conservation action. We have begun programs to conserve the Orange-breasted Falcon and the Harpy Eagle in Panama, the Grenada Hook-billed Kite, and the Ridgway's Hawk in Dominican Republic. These projects are described separately in the following pages.

Our long-term goals are ambitious. We intend to develop our programs to help protect raptors and their habitats, and by doing so, effectively help protect biodiversity in some of the biologically richest forests of the planet. Our program is unique in Latin America and the world because of its focus on raptors and international nature—birds recognize no national boundaries—and we aim to provide leadership and knowledge throughout the region.

Fondo Peregrino–Panamá (The Peregrine Fund–Panama) was created in the fall of 2000 to meet an urgent logistical need for a center of operations for the Neotropical Raptor Conservation Program in a central geographic location in the region. The government of Panama, through the National Environmental Authority and the Panama Canal Authority, encouraged our location in Panama by helping us find land on which to build our first tropical captive breeding facility, the Neotropical Raptor Center, and provide offices in the nearby City of Knowledge that serve as The Peregrine Fund's regional headquarters.

RESULTS

With the establishment of the Fondo Peregrino–Panamá we have begun building and training our local staff in raptor biology and conservation. Recent important additions to our staff include a Program Director, Administrator, Environmental Education Director, and Propagation Specialist. Our Boise-based staff are providing training in all aspects of program management, from financial administration to technical aspects of captive propagation of raptors.

By providing factual information and opportunities for legislators to meet a Harpy Eagle face-to-face, we participated in the legislative process to decree the Harpy Eagle as the official national bird of Panama on 13 March 2002. As the national bird of Panama the Harpy Eagle will gain greater protection and value as an icon for wildlife conservation.

Our biologists completed preliminary studies on the little-known Isidor's Eagle (also known as the Black-and-Chestnut Eagle) in the mon-


Angel Muela


File photo


Pat Burnham

Left: Leo Salas, Director, Neotropical Raptor Program, at Orange-breasted Falcon eyrie.

Above: Jaco Lacs, Latin American Board Member of The Peregrine Fund, addresses the press when Harpy Eagles arrive in Panama.

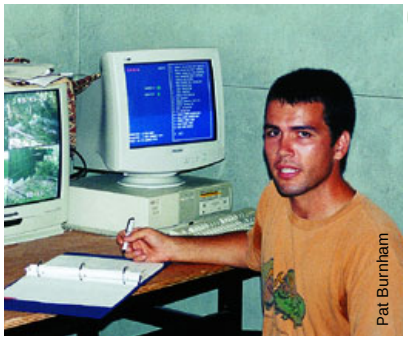
Below: Magaly Linares, Administrator and Veterinarian, Neotropical Raptor Program.

tane forest of southeastern Perú. Despite the extreme habitat (steep, rugged, high altitude mountain slopes, high rainfall, and dense forest), five individual eagles were studied in the Kosñipata Valley, providing new information on the species' behavior and ecology.

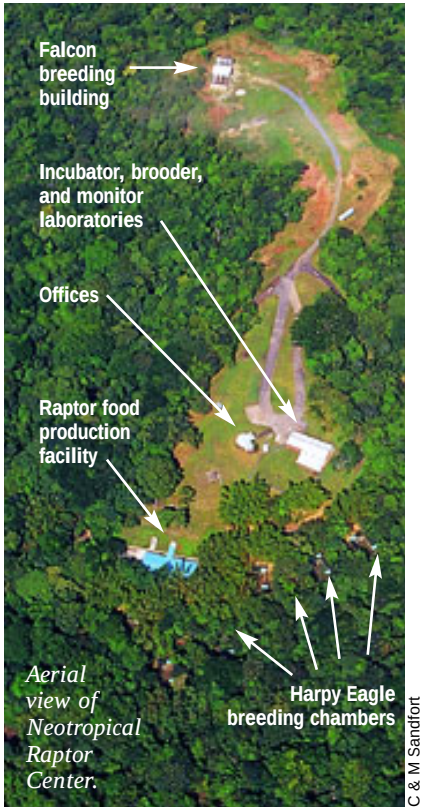
FUTURE PLANS

As part of our leadership role in Latin America and the Caribbean, we are organizing the first Neotropical Raptor Conference and Harpy Eagle Symposium, 24-27 October 2002. This meeting is designed to be an important networking event to enhance and facilitate international communication and cooperation toward raptor conservation in the Neotropics. The conference will provide new information on the status, biology, and captive breeding of the Harpy Eagle and other raptors. Abstracts of the conference will be published on our new Global Raptor Information Network (GRIN) web site as part of our efforts to provide up-to- date information for raptor research and conservation worldwide. More information on this event can be obtained from our web site, *www.peregrinefund.org/nrconference.html.* Other projects are described in detail in the following pages.

Neotropical Raptor Center



Angel Muela, Director, Neotropical Raptor Center. The screens monitor captive Harpy Eagles.



Aerial view of Neotropical Raptor Center.

Our conservation efforts in the Neotropical region include the development and use of conservation techniques such as captive propagation for species restoration and genetic management of isolated populations. Over the past two years we have completed construction of Phase I of the Neotropical Raptor Center (NRC), located within 40 hectares of lowland forest of the Camino de Cruces National Park of Panama. The Center encompasses a hill overlooking the Panama Canal on the edge of the City of Knowledge, formerly U.S. Army Fort Clayton.

It contains state-of-the-art breeding enclosures for six pairs of Harpy Eagles and six pairs of Orange-breasted Falcons. The Harpy Eagle chambers were built within the rainforest, carefully minimizing disturbance to surrounding vegetation, and have been equipped with digital video cameras for remote monitoring to ensure minimal disturbance to the eagles. The Orange-breasted Falcon chambers were constructed on the top of the hill with panoramic vistas and a climate resembling that of their typical cliffs. Other enclosures for forest-interior raptors will be added as our research and conservation efforts expand.

RESULTS

The NRC is now the home of four breeding pairs of Harpy Eagles and three non-breeding birds. Our first pair, resident in the facility since October 2000, laid two fertile eggs that hatched in January 2002—the first Harpy Eagles hatched in captivity in Central America! Two more hatched in April. The four eaglets have grown quickly, and at the time of writing are housed in newly constructed rearing chambers at the NRC. These chambers are attached to, and in full view of, an aviary containing a single adult female to help the chicks identify the adult as a parental figure.

FUTURE PLANS

Phase II construction of the incubation and brooding laboratory will complete the immediate plans for the NRC. Observation of birds in captivity can provide much important behavioral information that can greatly facilitate captive propagation in the future, as well as our understanding of the species in the wild. We will begin systematic observation of our captive birds using digital video cameras. We hope to use the same cameras to build an interactive web classroom to broadcast our efforts and conservation message on the Internet.

GOAL

To develop and operate a state-of-the-art facility for captive propagation and research on tropical raptors.

STAFF

The NRC is directed by Angel Muela, with captive propagation supervised by Cal Sandfort and conducted by Mia Jessen assisted by Francisco Barrios, José De Los Santos López, Noel Guerra, and Alberto Dìaz, with veterinary support from Magaly Linares. Alberto Palleroni made important contributions during 2001.

COOPERATORS

The establishment of the NRC was made possible with assistance from the Autoridad del Canal de Panama (ACP), Autoridad Nacional del Ambiente (ANAM, National Environmental Authority), Autoridad de la Region Interoceanica (ARI), and Fundacion Ciudad del Saber. Jacobo Lacs, who serves on our Board of Directors, has provided invaluable support and assistance.

Important financial support was provided by Wolf Creek Charitable Trust and Hank and Wendy Paulson.

Harpy Eagle Conservation and Research

GOAL

To conserve Harpy Eagle populations through habitat conservation, reduction of human persecution, restoration of lost and bolstering of depleted eagle populations through propagation and release, and expansion of knowledge of the eagle through research.

The Harpy Eagle is one of the most impressive icons for forest conservation in the Neotropics. As a large, far-ranging, top-of-the-food-chain predator, the Harpy Eagle needs large areas of intact forest in which to survive. It is a locally endangered, globally threatened species that has been depleted by human persecution and loss of forest habitat. Measures taken to conserve this magnificent raptor can effectively help conserve biodiversity in the forests it occupies. This program focuses on the Harpy Eagle to help ensure survival of the species and its habitat.

STAFF

Harpy Eagle conservation and research is directed by Leo Salas and conducted by Angel Muela, Mia Jessen, Ursula Valdez, José Vargas, Andrew Health, Francisco Barrios, José De Los Santos López, and Noel Guerra, with veterinary support from Magaly Linares. Cal Sandfort provides overall direction for management of the captive eagle population. Janeene Touchton and Alberto Palleroni made important contributions during 2001.

COOPERATORS

The Harpy Eagle project relies on the cooperation of many organizations and individuals, including the Presidency of Panama, Autoridad Nacional del Ambiente (ANAM), Alcaldìa del Distrito de Panamá/Summit Gardens, Autoridad del Canal de Panamá (ACP), Fundacion Ciudad del Saber, Patronato Amigos del Aguila Harpia, Smithsonian Tropical Research Institute, Harvard University, Fundacion de Rehabilitacion de Especies Tropicales, Asociacion Nacional para la Conservacion de la Naturaleza (ANCON), GreenCom, Panama Audubon Society, Ecological Police, people of the Collective Lands of the Embera-Wounaan and Comarca Sambú Emberá-Wounaan, Soberania, Camino de Cruces, Chagres, and Darien National Parks, and Imprenta Pacifico-Clave 2.

Major financial support for this project in 2001 was received from Wolf Creek Charitable Trust, Hank and Wendy Paulson, U.S. Agency for International Development (USAID), The Charles Engelhard Foundation, Diane A. Ledder Charitable Trust, and Jacobo Lacs.

RESULTS

Propagation: Two Harpy Eagle chicks were raised at the World Center for Birds of Prey in early 2001. In October, once the NRC facilities were completed, these young eagles and two breeding pairs were transferred to the NRC where they quickly acclimated to their new home. The NRC's Harpy Eagle chambers, embedded in the forest and designed to incorporate all aspects of the eagles' natural habitat, provide the natural light, humidity, and rain that these Neotropical raptors need. The first-ever Harpy Eagles to hatch in captivity in Panama hatched on 24 and 28 January 2002. Two others hatched in April. Special chambers have been designed for raising the eaglets, and they allow for observation of an adult female in an adjacent aviary while limiting the eaglets' direct contact with human caretakers. These chambers provide for the necessary "bonding" between the eaglets and adult Harpy Eagles. In the short time that the propagation program has been in place at the NRC, the prompt and optimistic results suggest great potential for future captive breeding efforts and validate the difficult decision to build the NRC and transfer the Harpy Eagles.

Release: Our two surviving released eagles were re-trapped after more than 18 months of independence in the wild. They both were wandering extensively into areas known to have high poaching activity, where two eagles released previously were shot. The surviving eagles will be held together at the NRC until they reach sexual maturity, when they will be experimentally released in a remote location to test the idea that a bonded pair may settle and breed without roaming into areas of potential conflict with people.

Research: Most of the field work we do with Harpy Eagles takes place in the Darien National Park, where many of Panama's wild Harpy Eagles still remain. We are partnering with the Emberá-Wounaan indigenous communities in the Darien in a study to understand the species' ecology and conservation needs. We will train local "parabiologists" to help collect data from the Harpy Eagles' nests and habitat.

Harpy Eagle nestling. Angel Muela

FUTURE PLANS

In October 2002, we will host a Harpy Eagle Symposium as part of the Neotropical Raptor Conference in Panama City. We aim to bring together the world's experts on Harpy Eagle status, distribution, behavior, ecology, and captive breeding. By collecting and sharing the knowledge of the world's experts, we expect to focus our own efforts and potentially coordinate work towards a common conservation goal.

Captive propagation of Harpy Eagles in Panama is just beginning to show important results. We have already learned much about this species from past work, and expect to learn much more. We will continue our experimental release of Harpy Eagles to determine the most effective way to reintroduce this large, forest dwelling tropical raptor into unoccupied suitable habitat. Once propagation and reintroduction methods have proven reliable, we will expand our release efforts to restore lost or bolster depleted Harpy Eagle populations. Knowledge gained about this species will be valuable for conservation of other tropical forest birds of prey, such as the Crowned Eagle of Africa and the Philippine Eagle.

Neotropical Environmental Education

Our experience in Panama has shown that the major threats to Harpy Eagles, and raptors generally, are human persecution and habitat loss. Conservation of the Harpy Eagle must include changing human behavior to prevent persecution and help protect the eagle's tropical forest habitat. The Harpy Eagle is the national bird of Panama and is an important icon for conservation in this country. An environmental education program that uses the Harpy Eagle as a flagship for conservation will not only benefit this species, but also all birds of prey and the many other species that inhabit the remaining forests of Panama.

Our goal is to develop a program based on a sound understanding of human attitudes towards raptors and people's need for forest resources to address the threats and curb negative human impact. Our immediate priority is to work with communities adjacent to potential Harpy Eagle release sites in the Panama Canal Area and around our main study sites in the Darien region of Panama. We are conducting studies in these communities to understand better the educational needs and response of communities to education, so that our efforts can be more focused and effective and evaluated in a scientifically rigorous manner.

RESULTS

Cumulative: Our efforts in recent years contributed to the education of children from rural communities through donations of school supplies. As a result of the shooting death of "James," one of our captive-bred and released Harpy Eagles, which was killed in the vicinity of a release site, our education efforts became much more focused and began addressing the issue of human persecution in areas where we were experimentally releasing Harpy Eagles. We provided people with information about the fragile natural history of the eagles and on our institutional goals and research activities. We interacted with local schools and students conducting educational activities, often using a Harpy Eagle for live demonstrations. We also conducted regular educational activities at our Neotropical Raptor Center with schools, organized groups, and the general public.

2001: During 2001 our educational activities focused on communities adjacent to Barro Colorado Island (BCI) in the Panama Canal, the location of one of our last surviving released Harpy Eagles. We gave talks to children and adults from small towns, rural schools, and national parks of the area. To help integrate the program into the community, education assistant Kathia Herrera lived in Las Pavas village for periods between February and September 2001, during which she conducted educational activities and participated in many daily life-events.

We used a young Harpy Eagle for many educational presentations to children and youth, mainly in the vicinity of Soberania National Park. The impact of a close-up and personal meeting with a live Harpy Eagle in these groups has been enormous. Using a Harpy Eagle as a flagship species for communicating the importance and value of conservation is clearly a successful educational tool.

FUTURE PLANS

A comprehensive effort to develop environmental education using the Harpy Eagle as a flagship species for conservation has been initiated. With this knowledge, we will design an environmental education program that may include using communications tools through local communities, media, and/or the national school curriculum. Once designed, the environmental education program will be tested in priority communities near Harpy Eagle release sites and in frontier communities in the Darien region. With feedback from concurrent studies, we will adapt the program to a broader audience throughout Panama. Ultimately, we hope to export this model to other countries in Latin America and in other parts of the world.

Janeene Touchton

Janeene Touchton

Above: Kathia Herrera and her student solve a Harpy Eagle puzzle.

Below: Children at Las Pavas village learn what it takes to build a Harpy Eagle nest.

GOAL

To change human attitudes towards birds of prey, especially Harpy Eagles, to reduce persecution and conserve their habitat.

STAFF

Rick Watson and Leo Salas oversee this program conducted by Ursula Valdez, Kathia Herrera, José Vargas, Andrew Heath, and Marta Curti. Lisa Jeres and Janeene Touchton made important contributions during 2001.

COOPERATORS

We collaborate with the Smithsonian Tropical Research Institution, Autoridad Nacional del Ambiente (ANAM), Soberania National Park, Chagres National Park, Ecological Police, GreenCom, and the Peace Corps.

Financial support for this program was provided by the U.S. Agency for International Development (USAID).

Orange-breasted Falcon Project

GOAL

To understand the species' status and consequences of population isolation in fragmented landscapes, and to develop captive breeding and release methods for future species restoration.

STAFF

This project is coordinated by Rick Watson and Peter Jenny, and conducted by Leo Salas, Angel Muela, Mia Jessen, Francisco Barrios, Andrew Heath, José De Los Santos López, and Noel Guerra, with veterinary support from Magaly Linares and assistance in Peru from Oscar Beingolea. Cal Sandfort provides overall direction for hands-on management of eggs and young.

COOPERATORS

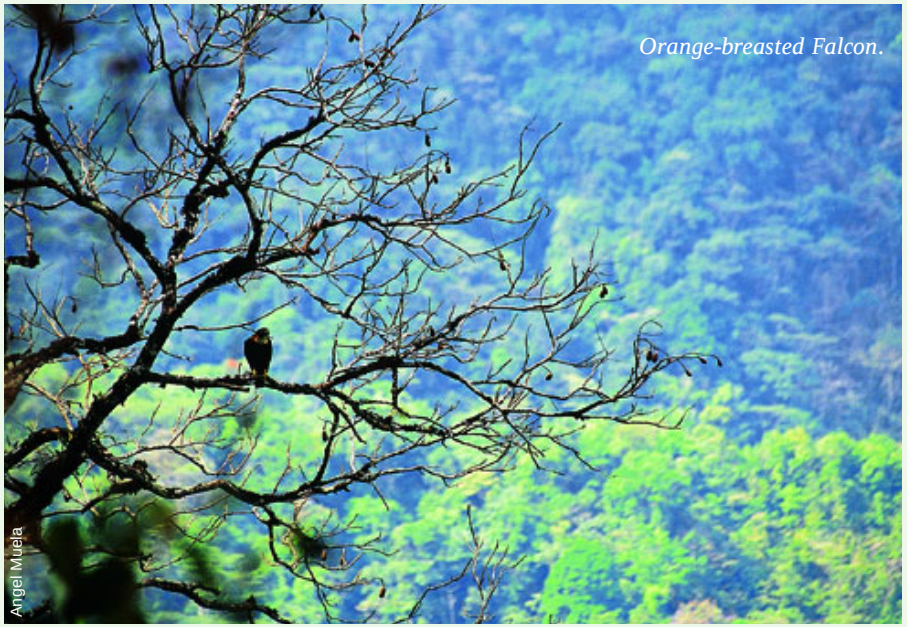
We collaborate in Panama with Autoridad Nacional del Ambiente (ANAM) and the Comarca Emberá-Wounaan Indians. Assistance was provided by Helipan Corporation. Piñas Bay Resorts, S.A., and Pantiacolla Lodge, Peru.

Financial support was provided by the Wolf Creek Charitable Trust.

The Orange-breasted Falcon is a medium-sized, highly specialized Neotropical falcon. Feeding primarily upon small bats and birds, and nesting mostly on cliffs surrounded by forest, the Orange-breasted Falcon appears to be rare despite its extensive range from southern Mexico to northern Argentina. This species does not seem to be threatened by illegal trade or human persecution, but rather by its requirement for large tracts of climax tropical forest.

Our studies on the Orange-breasted Falcon were first begun in 1978 by Peter Jenny. They included extensive surveys that located 35 birds and 16 pairs, and studies at nests in Ecuador and Guatemala. These studies were followed with research by Aaron Baker and other Peregrine Fund biologists from 1989 onwards. Our research shows that this species occurs at very low densities and is sensitive to habitat change. Our surveys through Central America in 1999 and 2000 showed the birds in Belize and Guatemala may be isolated from the species' southern range.

Although a tremendous effort is being made to establish tropical forest reserves, many will be too small to maintain more than a few reproductively isolated pairs of raptors and many other similar animals, including the Orange-breasted Falcon. These reserves will not be enough to ensure their survival. As tropical forests become more fragmented, we can expect to see the effects of isolation on these populations.


Angel Muela

Orange-breasted Falcon.

By studying the Orange-breasted Falcon in the wild, and developing methods for restoration of lost or depleted populations, we can hope to understand and then reduce the effects of habitat fragmentation through species management. Captive propagation and subsequent reintroduction may be required to maintain genetic diversity, as well as to help mitigate the increased effect of both natural attrition and random events on these small and isolated populations. Through the release of captively bred falcons it may be possible to establish a population that is less dependent on primary forest habitats, as was done for the Mauritius Kestrel.

RESULTS

A six-chamber, state-of-the-art Orange-breasted Falcon breeding facility was completed at the Neotropical Raptor Center. Extensive searches for Orange-breasted Falcons breeding in Panama located four nests in the Darien region. Because of high breeding failure among these pairs in 2001, only two nestlings were collected to become part of our captive breeding population.

FUTURE PLANS

We aim to develop methods for predictably breeding this "very different" falcon in captivity. Orange-breasted Falcon eggs or young continue to be collected to build the captive breeding program. By collecting eggs we aim to avoid their natural predation and cause wild pairs to lay a second clutch so they can still raise young this season. Eventually, offspring from this program will be reintroduced to the wild in areas of suitable habitat where they once occurred. Through this process captive propagation and release techniques will be adapted and refined to accommodate the behavioral needs of these Neotropical falcons. Field studies will be continued to determine what ecological factors limit the species' distribution and abundance throughout its range and investigate genetic variation within and between populations. Captive breeding will be carried out at the Neotropical Raptor Center, Panama, and at Robert Berry's breeding facility in Sheridan, Wyoming.

West Indies Project

Island species are more vulnerable to extinction than continental species because their habitat and range are limited by the size of their island home, and they may have evolved in the absence of terrestrial predators to which their response is naive. Immigration and growth of human populations on islands quickly diminishes the extent and quality of suitable habitat, and often introduces noxious plants and animals, resulting in major impacts on biodiversity that are often unique to the island. As a result of these processes, populations of the Ridgway's Hawk (Dominican Republic), Grenada Hook-billed Kite (Grenada), Cuban Kite (Cuba), and Gundlach's Hawk (Cuba) are low and likely declining. We are implementing a conservation program for raptors of the West Indies islands and their habitats. The project will begin with ecological research and development of local capacity for research and conservation. Later, it may include habitat protection, public education to reduce persecution, and possibly species restoration if needed.

The West Indies flyway is a critical link in the migration routes of over 100 species of shorebirds, songbirds, and raptors that breed in North America and winter in the south. This project will also help the conservation of other endemic species (found only on the islands) and migratory birds that depend on intact island habitats. By focusing on the conservation needs of endemic and endangered raptors that require large areas of intact habitat in which to survive, we can hope to provide an umbrella of protection to many other animals and plants that are unique to this island chain, and those that depend on it as their migration route. Together, these goals create the basis for a long-term commitment to conservation of island habitats in the West Indies and the endemic and migratory species they support.

Critically endangered Ridgway's Hawk.

Russell Thorstrom

RESULTS

Due to funding constraints, field work was limited to a breeding survey for Grenada Hook-billed Kites in August 2001. Several nesting pairs of kites were located in new areas and habitats, including humid forests, providing a better understanding of the species' potential range and habitat needs in Grenada. Survey results were presented to the Society of Caribbean Ornithologists' conference in Cuba, where important local contacts were made to begin efforts on the endangered raptors of Cuba.

The Ridgway's Hawk is one of three critically endangered birds in the Dominican Republic. We began field surveys in February 2002 in Los Haitises National Park, the last known stronghold for this woodland raptor in the Dominican Republic. Here we found eight pairs, including two active nests, and suspect the population within the park may be viable. However, no Ridgway's Hawks were found outside of this park, which represents only a tiny fraction of its former range.

FUTURE PLANS

Studies on the Ridgway's Hawk and Grenada Hook-billed Kite will continue until we have sufficient knowledge to determine the most effective conservation interventions for each species. In Cuba, our local partners will begin surveys for Cuban Kites and Gundlach's Hawks in March 2002. The field teams are in place and we are expecting positive results this spring. We hope to begin support and training of local partners in the Dominican Republic, Cuba, and Grenada to develop local capacity for conservation and research in each country.

Los Haitises National Park, last known refuge of the Ridgway's Hawk.

Russell Thorstrom

GOAL

To help prevent the extinction of raptors found only on the islands of the West Indies and conserve native habitats that are also important for migrating birds.

STAFF

This project is managed by Russell Thorstrom under guidance from Leonardo Salas and Rick Watson.

COLLABORATORS

We work in partnership with the Dirección Nacional de Parques Republica Dominicana (DNP), Grenada Forestry Department, U.S. Fish and Wildlife Service, Sociedad Ornitologica de la Hispaniola, and Museo Nacional de Historia Natural de Cuba.

Financial support for this program was received from The Walt Disney Company Foundation Conservation Awards and the U.S. Agency for International Development (USAID).

PAN-AFRICA RAPTOR CONSERVATION PROGRAM

GOAL

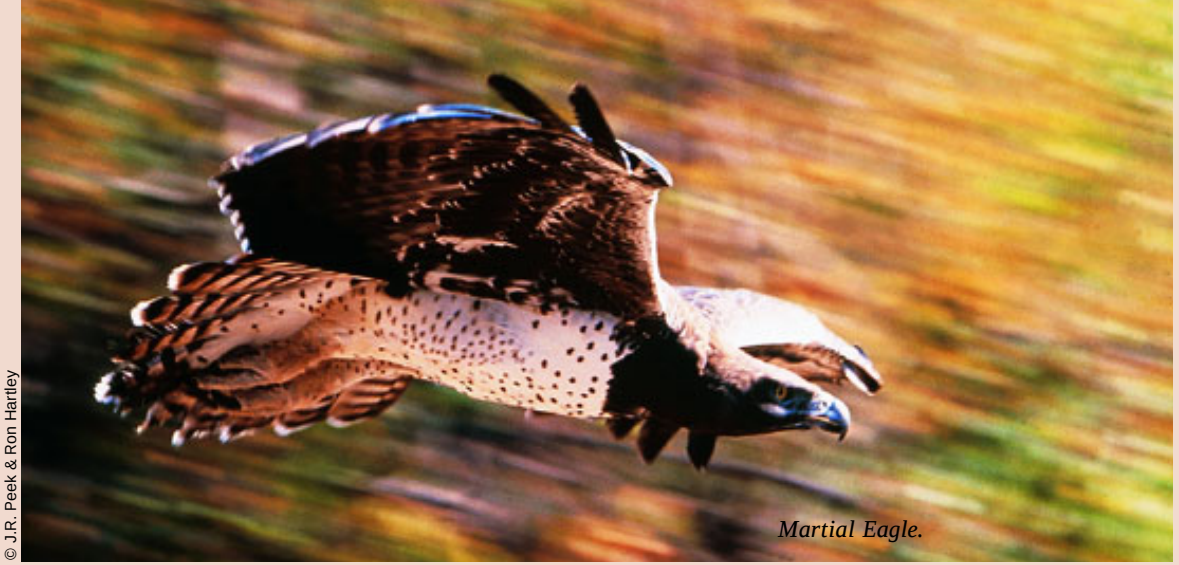
To conserve raptors and their habitats through research, education, and development of local conservation and science capacity, and hands-on intervention.

STAFF

Rick Watson directs the Pan-Africa Raptor Conservation Program with assistance from others listed separately with the following projects.

COOPERATORS

We collaborate with the Conservation Planning Unit of the University of Pretoria, South Africa, State University of New York, University of Liverpool, University of Kent, Nottingham University, United Kingdom, National University of Abobo, Abidjan, and Taï National Park, Ivory Coast.



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Martial Eagle.

Of the 89 diurnal birds of prey in the Ethiopian biogeographic region (mostly Africa and associated islands), at least 16 are listed as globally endangered, and seven are so poorly known we can not begin to assess their status.

The Pan-Africa Program provides an umbrella of organization and collaboration in Africa and its islands to build local capacity for conservation of birds of prey and their habitats through training, education, and financial and logistical support of individuals and organizations, as well as research, providing factual information to governments and the public, and hands-on conservation intervention where needed. Since beginning in 1990, this program has supported research and developed conservation capacity in Madagascar, South Africa, Zimbabwe, Kenya, Ethiopia, Ivory Coast, and Cape Verde. Over 25 students have been supported through Ph.D. and M.S. degrees, most of whom continue to work in conservation, including some for The Peregrine Fund's conservation and research projects.

RESULTS

In 1999 we began providing financial support, and later technical assistance and training, to U.S. student Susanne Shultz for research on the African Crowned Eagle in Taï National Park, Ivory Coast. Susanne completed first-ever studies on the foraging ecology, population density, and breeding of this large forest raptor in West Africa. Her work included training of Ivorian students, and we hope to continue the effort to develop local capacity for raptor conservation and research in West Africa.

In partnership with the University of Pretoria, South Africa, we concluded an experimental project to develop geographic information system models of raptor distributions in Madagascar based on habitat characteristics and recent land cover data. The aim was to use this tool to identify important areas for raptor conservation.

Other projects in South Africa, Zimbabwe, Kenya, and Madagascar are described separately below.

FUTURE PLANS

Development of local capacity in most countries of Africa is an important goal of this program. We hope to expand our research, conservation, and training opportunities beyond the current countries. We also hope to develop a small grants program that can be used to support new small projects by qualified individuals from Africa.

East Africa Project

Simon Thomsett began the East Africa project in 1992 to develop raptor research and conservation capacity in East Africa. Achievements have been many, including the support and training of Kenyan student Munir Virani at both M.S. and Ph.D. levels. Munir was subsequently hired as a Peregrine Fund biologist. In Kenya he runs field studies on the endangered Sokoke Scops Owl and African Fish Eagle population dynamics in the Rift Valley. Since 2000 Munir has also run The Peregrine Fund's Asian Vulture Crisis Project, spending part of his time working in Pakistan, Nepal, and India.

Kenya supports a rich biological diversity in its spectacular and varied habitats. An astounding 20% of the world's raptor species are found in Kenya alone. Conversely, Kenya's expanding human population has placed its biodiversity under threat from clearing and conversion of natural habitats, degradation of land, and pol-

lution of water. Populations of raptors in particular have been adversely affected. Extensive tree felling has resulted in loss of nest sites. Changes in people's traditional nomadic lifestyles towards sedentary subsistence agriculture have reduced raptor foraging areas. Large-scale carcass poisoning to kill livestock predators has killed raptors, and reduced numbers of both resident and migratory raptor populations.

Our goal is to detect decline in populations of raptors at risk, obtain a better understanding of their ecological needs, and assess the degree of human-caused damage to their habitats. Using this information, we aim to change the conservation approach in Kenya from the exclusivity of the national park system to a broad-based coexistence ethic.

GOAL

To monitor populations of raptors at risk, understand their ecological needs, and develop scientifically sound conservation plans to ensure the survival of their habitats.

RESULTS

Cumulative: Since 1993 when field research began, we have gained a better understanding of the ecological needs and population status of the endangered Sokoke Scops Owl, Augur Buzzard, African Fish Eagle, Martial Eagle, Crowned Eagle, and Bearded Vulture.

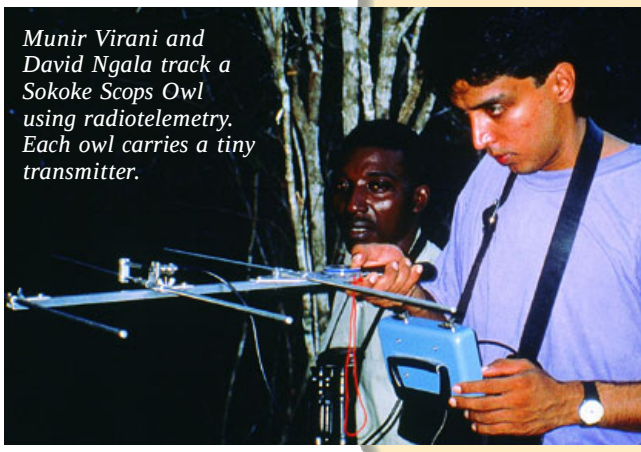
2001:

Sokoke Scops Owl: The Arabuko-Sokoke forest in coastal Kenya is the second most important forest in Africa for bird conservation. Illegal logging threatens the survival of the endangered Sokoke Scops Owl. In 2001, Alison Cameron trapped and radio-tracked seven Sokoke Scops Owls in an attempt to locate the first-ever nest of the species. No nest site was discovered since none of the radio-tracked owls was breeding at the time. However, a better understanding of breeding season and methods improves the probability of success next season. We trained more local forest guides who, on their own initiative, discovered the first disjunct population of Sokoke Scops Owls in unprotected land north of the forest at Dakatcha. We are working with local groups to encourage the Malindi District Council to declare Dakatcha as a Forest Reserve.

African Fish Eagle: The characteristic dawn cry of the African Fish Eagle is the quintessence of sunrise in Africa, or perhaps a cry for help! Since 1994, we have been monitoring the population dynamics of this magnificent bird at Lake Naivasha and have established that rapidly changing land use along the lakeshore, alien species introductions, over fishing, and fluctuating water levels have combined to reduce fish eagle populations by over 50% since the 1970s.

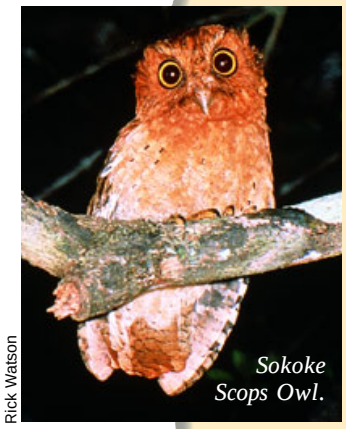
Since 2000, we have expanded our study to include other Rift Valley lakes to assess the population status of fish eagles. A high year-round ratio of immature to adult fish eagles at Lake Bogoria indicates that this habitat is an important "nursery ground" for dispersing juveniles. Nearby Lake Baringo is threatened with sedimentation from inflowing rivers as a result of erosion upstream. We are trying to understand how Lake Baringo's fish eagle population of approximately 15 pairs copes with a rapidly changing lake and how the species' ecology compares with that of Lake Naivasha eagles.

Gyps *vultures:* Vultures play an important role in ecosystems. In East Africa's savanna grasslands, for example, they consume nearly 70% of large animals that die and would otherwise become a health hazard to both wildlife and people. Responding to the Asian Vulture Crisis and the possibility of a disease specific to *Gyps* vultures spreading to vulture populations in Africa, we organized a vulture workshop in Nairobi (May 2001) to develop strategies for vulture monitoring and conservation. As a result, three Ruppell Vulture colonies were selected for aerial surveys and we have begun hematological studies to obtain baseline data on *Gyps* vulture blood chemistry and serum profiles. This will enable us to detect any unusual clinical signs, unexplained mortalities, and declines in vulture populations, should they occur.



Munir Virani and David Ngala track a Sokoke Scops Owl using radiotelemetry. Each owl carries a tiny transmitter.

Rick Watson



Sokoke Scops Owl.

Rick Watson

FUTURE PLANS

We will continue to study endangered Sokoke Scops Owl populations in primary and degraded forests. Finding and describing the first-ever nest of the species remains our highest priority, as we believe this will add considerably to both the forest's and species' conservation and management.

Studying populations of African Fish Eagles and *Gyps* vultures will continue while we build on our understanding of their ecology.

STAFF

The East Africa Project is conducted by Simon Thomsett and Munir Virani.

COOPERATORS

We collaborate with the Department of Ornithology at the National Museums of Kenya, Kenya Wildlife Service, University of Leicester, United Kingdom, A. Rocha, and Nature Kenya.

Zimbabwe

GOAL

To develop local capacity for research and conservation of birds of prey through training, support, and hands-on conservation.

STAFF

Ron Hartley manages the Zimbabwe Project.

COOPERATORS

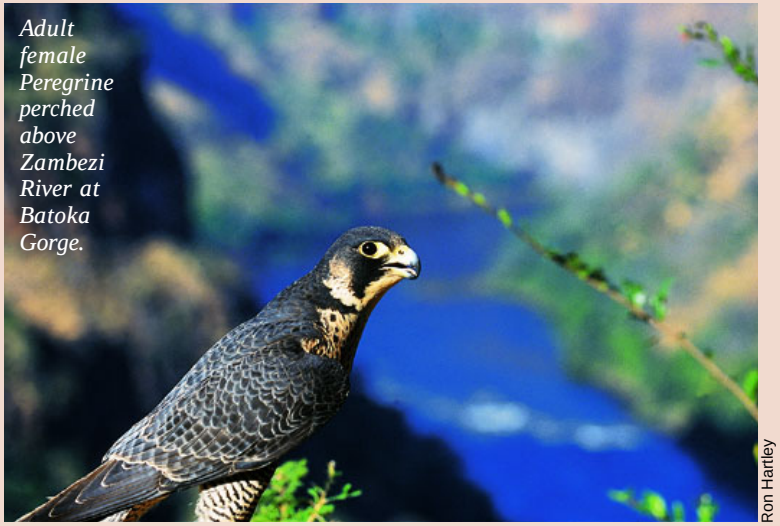
We collaborate with the Zimbabwe Falconers' Club and the Zimbabwe Department of National Parks and Wild Life Management. Financial support for this project was provided by Paul Tudor Jones, II, Malilangwe Trust, David Maritz, and other important donors. Support was received in Zimbabwe from Dunlop Company, United Spring of Zimbabwe, and Gorges Lodge.

The Zimbabwe Falconers' Club has collaborated with The Peregrine Fund since 1983 when Tom Cade and Jim Weaver first visited Ron Hartley to begin a project on the Teita Falcon, a globally vulnerable species. As a result of our collaborative field studies since then, Zimbabwe has become known as one of the Teita Falcon's largest strongholds. Our collaboration expanded in 1989 with an investigation into the impact of DDT on the Peregrine Falcon, a landmark study for the Afro-tropics. In 1991 we began a formal collaboration under the Pan-Africa Raptor Conservation Program. Since then, field studies have investigated the status and conservation of Teita, Peregrine, and Lanner Falcons in Zimbabwe, impact of DDT on selected raptors, raptor community studies in Batoka Gorge, Save and Malilangwe Conservancies, Esigodini, and Matobo Hills, and helped develop local capacity for raptor conservation and research.

Our partnership with the Zimbabwe Falconers' Club (ZFC) has been the basis of our efforts in Zimbabwe. We recognize that the enthusiasm and much of the knowledge for raptor research and conservation already existed among the ZFC members, and with a relatively small investment of financial support and technical expertise from The Peregrine Fund, together we can achieve meaningful results. We soon realized that our expectations were vastly exceeded by the capacity of the ZFC, and Ron Hartley in particular, to produce results.

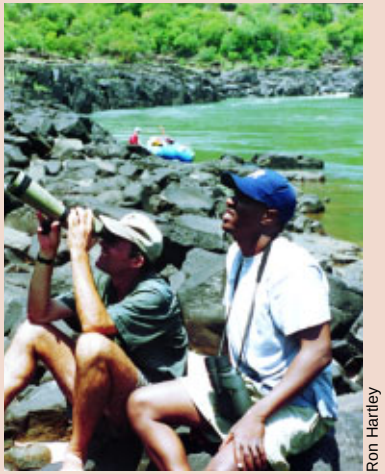
RESULTS

This past year has been typically busy. Two important projects included an intensive survey of Batoka Gorge that revealed a reduced population of breeding Teita Falcons, and the establishment of a raptor community study in Malilangwe Conservation Trust. Three new pairs of Teita Falcons were established in captivity, bringing the total held to eight pairs. As there appears to be a decline in the Teita population in Batoka Gorge, the captive breeding program may be needed in the future to restore the species. Over 30 ZFC volunteers participated in multiple field studies, including five raptor community studies in the Save, Triangle, and Bubiani Conservancies, Esigodini and Mbalabala; monitoring of Teita, Lanner, and Peregrine Falcon populations across Zimbabwe; and a new project on the breeding ecology of the Secretary Bird. Results were published in popular and scientific journals. A special edition of the journal *Honeyguide* dedicated to the ZFC's 25 years of accomplishments is in preparation, and educational talks were given to numerous school and local interest groups.



Adult female Peregrine perched above Zambezi River at Batoka Gorge.

Ron Hartley



Ron Hartley

Ron Hartley and Oscar Mitumbili scan a cliff in Batoka Gorge for falcons.

FUTURE PLANS

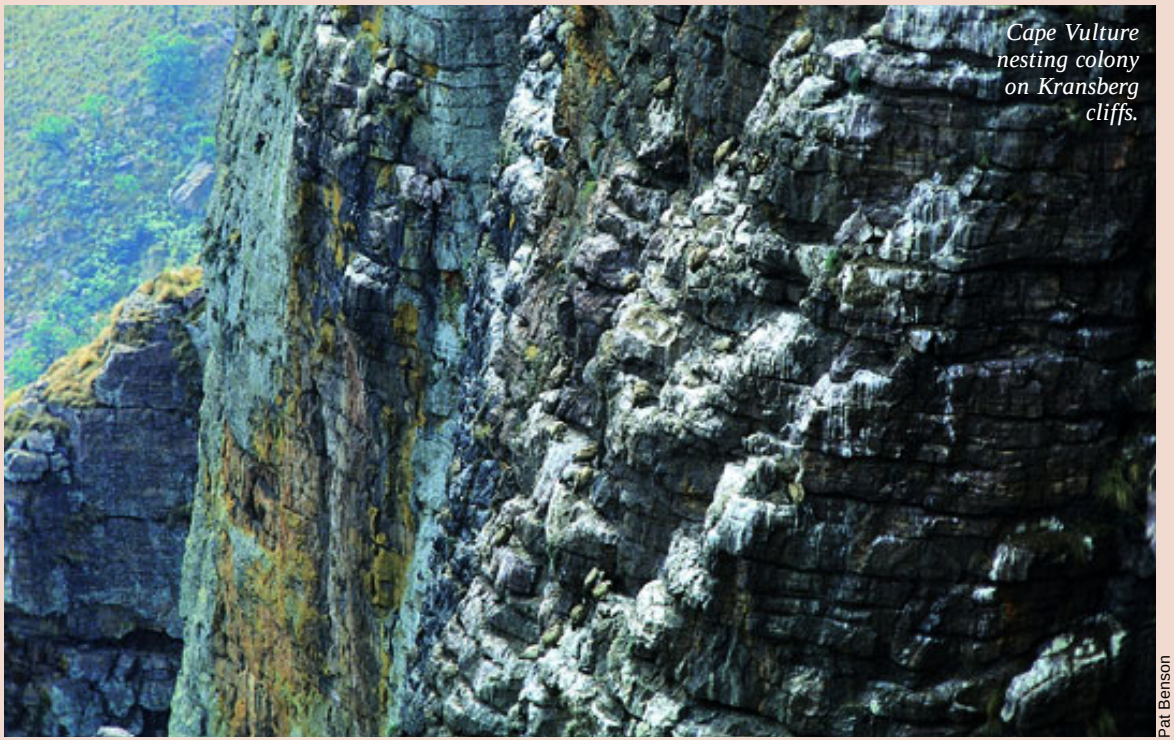
In addition to continuing long-term captive breeding programs, falcon monitoring, and raptor community studies, we aim to expand our involvement and support of raptor conservation in the Malilangwe Conservation Trust. This area has a diverse and abundant raptor community, and has been compared to internationally recognized raptor areas such as the Snake River Birds of Prey Area in Idaho and Matopos hills of Zimbabwe.

Cape Vulture


Pat Benson

Endangered Cape Vulture.

We have provided financial support to Pat Benson since 1999 to continue his unprecedented population study on Cape Vultures of the Kransberg and other mountain sites. Pat has studied the breeding, mortality, and other population parameters of the Kransberg colony since 1981 in what is probably the most extensive ongoing study of vulture biology in Africa. Long-term studies are rare and valuable because they provide an understanding of the impact of environmental cycles, such as the southern African wet-dry climate cycle that spans over a decade, compared with trends caused by human impacts and other effects. Cape Vulture populations have declined to endangered status due to poisoning during predator control by ranchers, land-use changes that depleted food supply, and other causes.


Pat Benson

Cape Vulture nesting colony on Kransberg cliffs.

RESULTS

Over 2,900 Cape Vulture nesting sites were monitored during 2001 at the Kransberg colony, one of the largest colonies known. Fewer nesting attempts were documented this year than in any other year in this study. Only 678 sites were occupied by pairs that at least built nests, a 31% decline in population size from a high in 1984 of 977 occupied sites. This year 370 nestlings fledged, about the same breeding success rate as in previous years, despite a fire that burned through the cliff area in mid-season.

Observations were also made at the Manutsa colony where at least 465 pairs built nests and fledged 273 young. This colony is much more difficult to monitor than Kransberg due to its size and inaccessibility. Behavioral observations were made at both sites to measure the occurrence of head drooping behavior and understand its relationship to ambient temperature. This study will help answer an important question in the Asian Vulture Crisis Project where head drooping has been suggested to be linked to unusual mortality of vultures.

FUTURE PLANS

Monitoring of population size and breeding success will be repeated at both the Kransberg and Manutsa colonies, and behavioral data will be analyzed for publication in scientific journals.

GOAL

To support the most extensive long-term study on Cape Vulture population dynamics and use the knowledge gained to mitigate human impacts on the species' survival.

COOPERATORS

The Peregrine Fund provides financial support to Pat Benson of the University of the Witwatersrand, South Africa, who conducts this study.

Bearded Vulture Reintroduction to Kenya

GOAL

To re-establish the Bearded Vulture (Lammergeier) as a breeding species in Hell's Gate National Park, improve public understanding of the value of wildlife in Kenya, and help develop capacity for conservation in Ethiopia.

STAFF

Simon Thomsett manages the Bearded Vulture reintroduction project.

COOPERATORS

We work in partnership with Kenya Wildlife Service, Ethiopian Wildlife Conservation Organization, National Museums of Kenya Ornithological Department, Hell's Gate Management Association, and Durrell Institute of Conservation and Ecology, United Kingdom.

The Bearded Vulture is endangered in South Africa, Kenya, and Europe and threatened globally due to disturbance at the nest from rock climbers and others, and use of poisons by farmers. It is being reintroduced to the European Alps with some success, but this project is a first-ever attempt to reintroduce the species in Africa. Bearded Vultures once nested in Hell's Gate National Park, Kenya, but were driven away by unscrupulous climbers in the early 1980s. Now that climbing is controlled in the Park, the chances are high for successful reintroduction to this important breeding area.

Simon Thomsett manages the Bearded Vulture reintroduction project which spans both Kenya and Ethiopia. The aim is to collect nestlings from Ethiopia, using "sibling rescue," and raise them in captivity for release into Hell's Gate National Park to restore the species as a breeding resident. The project also aims to use this process as an educational opportunity to improve public understanding of the value of raptors and other wildlife. This project was requested by Kenya Wildlife Services and is conducted in partnership with the Ethiopian Wildlife Conservation Organization and others.

RESULTS

Cumulative: After nearly two years of research and negotiation, in 1999 The Peregrine Fund obtained the first two Bearded Vulture nestlings, using "sibling rescue" methods, from Ethiopia where the species is present in reasonable numbers. Two nestlings obtained in December 1999 were reared in Kenya and released in Hell's Gate National Park in March 2000.

2001: Three nestlings were obtained in December 2000 and were successfully raised and released at fledgling age in April 2001. Within a few weeks, two of the three birds were deliberately killed by members of a local village in a politically motivated attack to gain notoriety in which the birds were innocent victims. The last remaining bird was recaptured and is now in captivity while we evaluate this project.

This project has provided opportunities to develop local capacity for conservation in Ethiopia and Kenya. From Ethiopia, biologist Lakew Berhanu was supported through his Masters degree in conservation biology at Durrell Institute for Conservation and Ecology in the United Kingdom. He graduated in September 2001 and returned to work as a conservation biologist in the Ethiopian Wildlife Conservation Organization.

FUTURE PLANS

Although our goal of releasing "sibling rescued" Bearded Vultures from Ethiopia into Hell's Gate National Park was achieved in this second year of what we anticipated to be at least a three- to four-year effort, the unexpected attack on released birds and the logistical difficulty of obtaining young birds from Ethiopia have caused us to re-evaluate our objectives and methods. To achieve our goals, the project must now include the option of captive breeding and sibling rescue management within Kenya. The new methods add significantly to the cost and duration of the project, and can only be justified with additional commitment from Kenya Wildlife Services and government to address the causes of the species' decline and factors preventing their successful return. This commitment is currently under discussion.

Simon Thomsett

Cape Verde Red Kite Conservation

The Cape Verde Red Kite project aims to prevent the extinction of the kite and to help ensure survival of other raptors that are found only on the Cape Verde Islands, an Atlantic archipelago about 500 km west of Senegal, Africa. The kite was widely distributed among the northwestern islands until about the 1950s, but a rapid decline began in the 1960s, and by 2000 only two individuals were reported to remain. Like the Mauritius Kestrel in the 1970s and 1980s, this species appears to be on the verge of extinction. At its lowest numbers, only four Mauritius Kestrels remained, but through captive breeding and release, and other interventions, the kestrel's population has been restored to about 800, including around 250 breeding pairs. We propose a similar project for the Cape Verde Red Kite.


Simon Thomsett

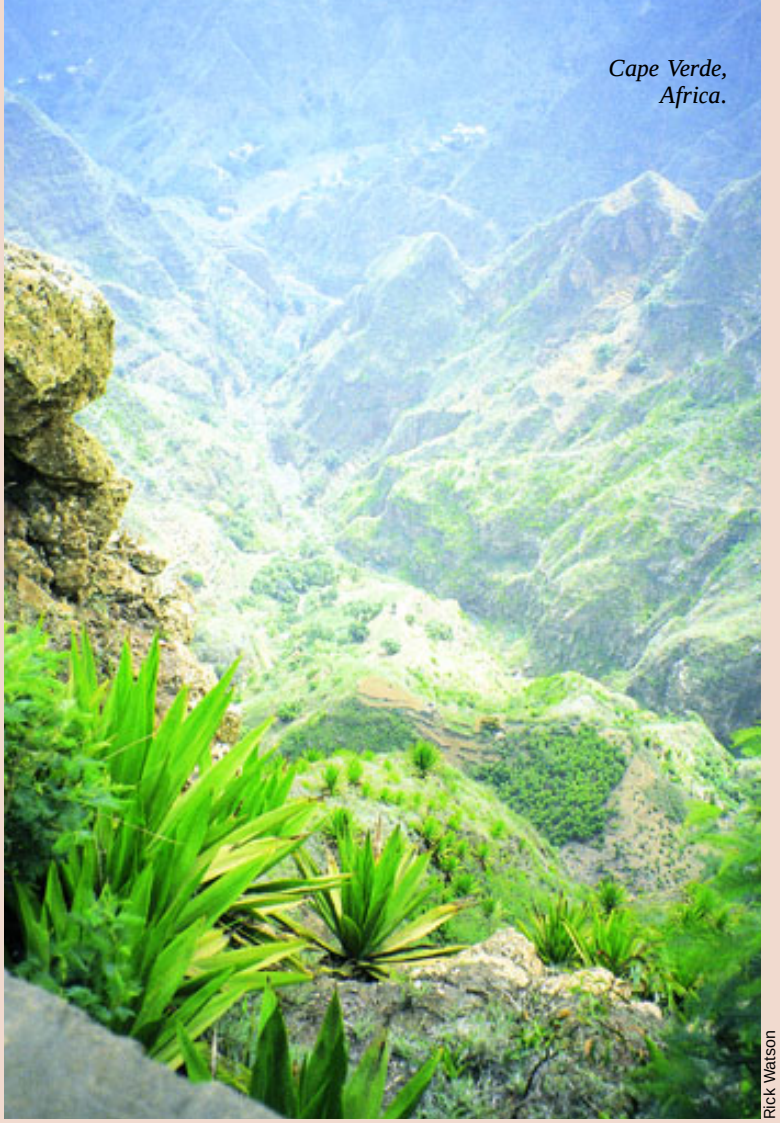
Cape Verde Kite.

RESULTS

In October 2000, Sabine Hille, who has worked on raptors in the Cape Verdes, was recruited to conduct surveys for kites on the Cape Verde islands. She brought together a team of volunteers from Portugal and Germany. In May and June 2001 the team conducted thorough surveys of those Cape Verde islands most likely to support Cape Verde Red Kites. None were found on the islands considered to be the species' last breeding stronghold, but six birds were located on the eastern islands of Boavista and Maio. Unfortunately none could be trapped because they were feeding mostly on a super-abundant supply of grasshoppers. Careful observation of their behavior through October suggested the species may move seasonally between islands, giving hope that more individuals may exist.

FUTURE PLANS

This project is probably the last chance to prevent the extinction of the Cape Verde Red Kite. We will focus initially on survival of the species through captive breeding.


Rick Watson

Cape Verde, Africa.

Later, the program will lead to reintroduction and work to mitigate the causes of the species' decline. Our field team is now planning to locate and capture all remaining Cape Verde Red Kites. They will be placed in a captive breeding facility, initially in the United Kingdom with The National Birds of Prey Centre, and possibly later in The Peregrine Fund's new Neotropical Raptor Center in Panama. Provided that breeding pairs can be established in captivity, i.e., breeding age individuals of both sexes can be captured, their progeny will be used, first, to build the captive breeding population, and, second, to release back into the wild in Cape Verde to restore the species in its natural range.

GOAL

To help prevent the extinction of the Cape Verde Red Kite and promote the conservation of other raptors on the Cape Verde Islands.

STAFF

This project is directed by Rick Watson and conducted by Sabine Hille, Simon Thomsett, Jim Willmarth, and many volunteers.

COOPERATORS

We work in partnership with The National Birds of Prey Centre, United Kingdom, Cape Verde Ministry of Agriculture and Fisheries, SEPA (Executive Secretariat for Environment), INIDA (Instituto Nacional de Investigação e Desenvolvimento Agrário), CEAI (Centro de Estudos de Avifauna Ibérica de Portugal), and Cape Verde Project Natura 2000.

Madagascar Project

GOAL

To prevent the extinction of endangered raptors, assist in the conservation of critical habitat, and develop local capacity for conservation using Madagascar's rare and endangered birds of prey as a focus.

The Peregrine Fund began work in Madagascar in 1990 to help prevent the extinction of the Madagascar Fish Eagle, and attempt to re-discover the Madagascar Serpent-Eagle and Red Owl, species not reliably seen since last collected by museums in the 1930s. We first found the Madagascar Serpent-Eagle in 1993, and, a few months later in 1994, found the first Madagascar Red Owl. At the same time, we joined with CARE and the Wildlife Conservation Society to help create Masoala National Park to protect critical rainforest habitat for these species. As a result, Masoala National Park was inaugurated in 1997 and we continue to study rainforest raptors and assist the park with management-related field studies from Andranobe Field Station, our base of operations built in 1991.

We began field studies on the Madagascar Fish Eagle in 1991 to understand what natural and human factors were limiting the species' distribution and abundance. Among our findings was an unusual breeding behavior that involves three or more adults at the nest that probably limits the species' ability to disperse and may affect reproductive output.

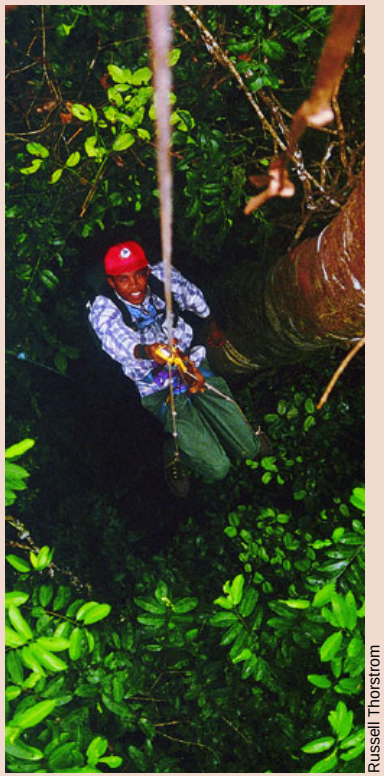
Probably the largest limiting factors were human persecution and habitat degradation. Based on this understanding, in 1993 we first proposed a community-based wetland conservation project to empower local indigenous communities to manage and conserve wetland resources that they share with the fish eagle. The project was implemented in 1996 around lakes Befotaka, Soamalipo, and Ankerika. It resulted in the formation and training of two community associations to manage wetland resources. The associations gained official government sanction in 2001 and have begun a three-year probationary period in which their ability to conserve and manage the wetland's natural resources, including fish eagles, will be judged.

Our efforts also helped bring Madagascar, in 1998, into the Ramsar Convention on Wetlands of International Importance. The three lakes, collectively known as the Manambolomaty Complex, were designated as one of the first two Ramsar Convention wetland sites in Madagascar. Madagascar wetlands contain unique biodiversity and are highly threatened. This international treaty provides conservation and wise use of wetlands and their resources.

In addition to these conservation and research achievements, we have trained and supported 12 Malagasy students at M.S. and Ph.D. levels, three other students at M.S. and Ph.D. levels, trained about 15 local individuals as field technicians, and involved many others as staff, volunteers, and visiting students. Many of these have completed and published studies on Malagasy raptors, other birds, and conservation-related issues such as vegetation regeneration, fisheries, and lemur ecology.

This nucleus of trained and educated Malagasy people enabled us to create a Malagasy organization, Ankoay Trust for Conservation, to continue in perpetuity the work we began, and we continue to support a local staff of about 20.

Russell Thorstrom



Russell Thorstrom

Above: Henst's Goshawk perched near its nest.

Right: Aristide Andrianarimisa climbs to a platform to observe Madagascar Serpent-Eagles.

RESULTS

Our work in Madagascar divides into two main areas. The Madagascar Fish Eagle and Wetlands Conservation Project is pioneering a long-term sustainable effort to empower

local communities to achieve wetland biodiversity conservation. It will help conserve the critically endangered Madagascar Fish Eagle and its wetland habitat in a key breeding stronghold for the species. The project is based on formalizing traditional community-based management of wetland resources using a 1996 law that empowers local communities to create a resource management charter (GELOSE) among users. The charter aims to conserve wetland biodiversity, including endangered Madagascar Fish Eagles, while meeting the sustenance needs of local indigenous people on a sustainable basis. In September 2001, we celebrated five years of work to help create two community management associations at the Manambolomaty lakes complex with a ceremonial transfer of authority from government to the associations.

On the Masoala peninsula, northeastern Madagascar, our goal is to achieve conservation and ecological understanding of the critically endangered endemic Madagascar Serpent-Eagle. In October 2000, we located the second-ever nesting pair of Madagascar Serpent-Eagles. The nest was in an epiphyte surrounded by vines high in the nest tree, similar to the first nest we described in 1997. The pair was incubating a single-egg clutch. On 9 November 2000 the egg hatched, and on 9 January 2001 the young fledged. At 85 days of age the fledgling was observed catching its first prey, a small chameleon.

In September 2001 we located another pair nest building near our Andranobe Field Station. This was the first time we have been able to observe nest building behavior. Both adults participated in the nest construction, but after nest completion the pair failed to lay an egg for reasons unknown to us. The pair continued to visit the nest and add branches during November and December. This pair may wait for next breeding season to continue its nesting cycle, and we will continue to look for evidence of breeding.

FUTURE PLANS

Our role in the fish eagle and wetlands conservation project over the next three years will be to help the new community associations succeed during a government-required probationary period. We will provide technical expertise and training, assistance, and support to the associations to manage critical natural resources (fish and trees) that they share with fish eagles. We will help the associations establish a low-cost resource monitoring program (fish harvest rates, tree cutting rates, fish eagle population parameters) that will allow them to measure and evaluate the success of their resource management program. If successful, this project will serve as the model and standard by which all other community-based conservation projects are judged in Madagascar.

Russell Thorstrom

Lily-Arison Rene de Roland

Above: Madagascar Fish Eagle soars over its wetland habitat.

Left: Eugéne and Velo hold a nestling Madascar Serpent-Eagle.

STAFF

Russell Thorstrom manages the Madagascar Project with Aristide Andrianarimisa and Lily-Arison René de Roland and a staff of 18 in Madagascar.

COOPERATORS

We collaborate with the Ministére des Eaux et Forêts (MEF/DEF), Ministére de l'Enseignement Supérieur (MinSup), and Ministére de la Recherche Appliquée au Développement (MRAD), Association National pour la Gestion des Aires Protégées (ANGAP), Organization National pour l'Environment (ONE), University of Antananarivo, United Nations Educational, Scientific and Cultural Organization (UNESCO), Parc Botanique et Zoologique de Tsimbazaza, World Wide Fund for Nature (WWF-Madagascar), Wildlife Conservation Society, Conservation International, Ranomafana National Park program, Madagascar Faunal Group, Durrell Wildlife Conservation Institute, and many others.

Financial support for this project was provided by the Liz Claiborne and Art Ortenberg Foundation, The John D. and Catherine T. MacArthur Foundation, The Walt Disney Company Foundation Conservation Awards, Wildlife Conservation Society, Ramsar Convention Bureau, and several important individuals.

ASIA-PACIFIC RAPTOR CONSERVATION PROGRAM

The Asia-Pacific program includes the Oriental and portions of the Australasian and Palearctic biogeographic regions. Of the 109 diurnal raptor species in the Oriental and Australasian regions combined, 25 are in jeopardy and 22 are too poorly known to estimate their conservation status. Our efforts focus mainly on the most threatened species, found mainly on the islands between the Pacific and Indian Oceans, and the catastrophic decline in vultures in south Asia on the Indian sub-continent.

First-known photograph of a fledgling New Guinea Harpy Eagle.

Martin Gilbert

New Guinea Harpy Eagle

The New Guinea Harpy Eagle is the largest non-human predator within the tropical forests of Papua New Guinea. Despite its size the species is inconspicuous and rarely seen. Very little is known of the natural history, breeding biology, and habitat requirements of this shy raptor. The species is found throughout New Guinea where its habitat is under threat from mining, logging, and other factors. In particular the New Guinea Harpy Eagle is targeted by local hunters who seek the eagle's intricately marked tail feathers for use in traditional ceremonies. The species is currently classified as being vulnerable to extinction.

The Crater Mountain Wildlife Management Area within the Eastern Highlands of Papua New Guinea was designated to protect the unique forest ecosystem from exploitation through the promotion of tourism and research. Local people benefit from the income generated by visitors and scientists working in the park and are, in this way, able to protect their environment while preserving their unique way of life. The Crater Mountain Wildlife Management Area offers the eagles a high level of protection and so provides an ideal environment in which to study this little-known species of raptor. The Peregrine Fund began work in the area in 1998 and has since supported two local technicians in the location of Harpy Eagle nest sites.

Local celebration near New Guinea Harpy Eagle's nest.

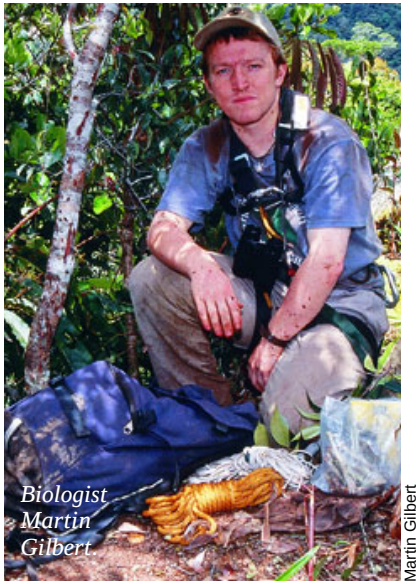
Martin Gilbert

RESULTS

Local field technicians located two active nests in the Crater Mountain Wildlife Management Area. This achievement has marked 2001 as their most successful field season to date. At the time of discovery, both nests had recently fledged offspring, with single juveniles remaining in close proximity to their nests. Valuable data was gathered, adding to our knowledge of prey selection and reproductive biology. As a direct result of fieldwork this season, a further nest containing a young nestling was located in February 2002.

FUTURE PLANS

We will continue to support local field technicians to facilitate location of nests within the Crater Mountain Wildlife Management Area and further our understanding of the species' requirements. Efforts are being made to locate a local biology student to be trained in techniques of raptor study. By supporting and training local experts we will provide a lasting impact on the conservation of raptors within Papua New Guinea.



Biologist Martin Gilbert.

Martin Gilbert

GOAL

To study the biology of the virtually unknown New Guinea Harpy Eagle, to understand its life history and ecological requirements, and to promote its conservation.

STAFF

This project is directed by Rick Watson and conducted by Martin Gilbert.

COLLABORATORS

We collaborate with the Research and Conservation Foundation of Papua New Guinea, Wildlife Conservation Society, and the people of the Crater Mountain Wildlife Management Area. Important assistance was provided by Debbie Wright, Andy Mack, and the Papua New Guinea National Museum and Art Gallery.

Asian Vulture Crisis

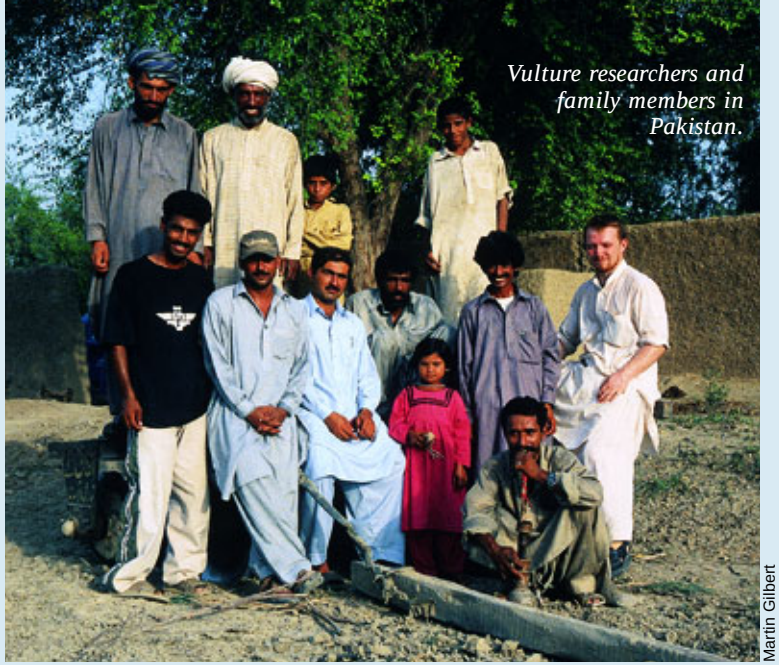
GOAL

To intervene in the threatening extinction of the Gyps vulture populations across the Indian subcontinent by determining the cause of gout-associated mortalities and developing a scientifically rigorous recovery plan.

The catastrophic collapse of populations of at least three species of *Gyps* vultures (Oriental White-backed, Cliff, and Slender-billed) on the Indian subcontinent over the past decade represents a chapter in nature that is unprecedented for any group of living birds in modern times. Populations that numbered in the tens of thousands have been depleted to none or just a few individuals. Most appear to have died of visceral gout as a result of renal failure. Evidence of visceral gout is visible in freshly dead birds as a white, paste-like deposit of uric acid on the internal organs. These deaths from renal failure are precipitated by an unknown underlying cause.

For millennia, vultures have been important in the Indian subcontinent—ecologically, traditionally, and aesthetically. Living harmoniously with man and dependent on their livestock for food, Oriental *Gyps* vultures have played a vital role as "garbage-disposers," consuming millions of livestock carcasses annually and ridding the environment of potentially harmful disease-causing organisms such as anthrax and botulism, which affect humans and livestock. An ecosystem devoid of these highly dependent primary scavengers raises concerns of ecological imbalance, spread of disease, and economic loss. Ancient cultures are also threatened. The Zoroastrian community of India has for over 2,000 years relied on vultures to dispose of their dead at the "Towers of Silence" and are now forced to reconsider their ancient tradition.

Our primary goal is to identify and understand the underlying cause of renal failure and gout-associated mortalities affecting these vultures. Only with this understanding can we know how to intervene to halt the spread of this mortality factor to other vulture species and help the recovery of vulture populations on the Indian subcontinent. In 2000/2001, in collaboration with partners in Pakistan, Nepal, and India, we launched rigorous field-based ecological and veterinary studies to (1) measure vulture mortality rates and reproductive success; (2) collect and analyze vulture tissue samples for pathogens and contaminants, and (3) develop local capacity through hands-on and academic training to ensure a pool of dedicated and motivated individuals to continue vulture research.



Vulture researchers and family members in Pakistan.

Martin Gilbert

RESULTS

Pakistan: During the 2000/2001 field season we located and monitored nests of Oriental White-backed Vultures, and measured a breeding success of 43% that is lower than estimates from previous (pre-crash) studies on the same species. Our field biologists collected and removed nearly 700 dead vultures from and underneath study nests and estimated an annual adult mortality rate of at least 16% that is indicative of a rapidly declining population. Our highest priority was to find "freshly dead" or dying vultures so that tissues could be collected and sent to our laboratories for analyses. This was a challenging task for Martin Gilbert and our team of Pakistani students (one Ph.D. and four M.Phil. students) as dead vultures putrefied quickly under an intensely hot sun. With tenacity, our biologists managed to conduct gross necropsies on 147 dead vultures of which nearly 75% died from visceral gout. Contrary to previous speculation by Indian biologists that dying vultures exhibited an unusual head-drooping syndrome, we demonstrated that head-drooping in vultures was a normal thermoregulation behavior to alleviate heat stress and not a clinical sign of dying vultures.

Preliminary results from our second field season (2001/2002) show that numbers of occupied nests at our study sites have declined substantially, and adult vultures continue to die at an alarming rate. Since October 2001, we have collected and removed nearly 250 dead vultures. Cases of visceral gout appear to be more frequent this season, responsible for 86% of vulture deaths.

Our diagnostic partners have not, so far, found consistent evidence that the gout-associated vulture mortalities are caused by an infectious agent, contaminant, or nutritional deficiency. However, we

have isolated a new Mycoplasma bacterium from vulture tissue and are evaluating the role that this agent may have in the gout-associated vulture mortalities.

Nepal: During the 2000/2001 field season, we located 67 vulture nests, estimated annual adult mortality at 17%, and recorded a low breeding success of 34% at Koshi Tappu. This season (2001/2002) we have located only 12 nests of which nine are presently active, indicating a rapid 82% decline of nesting vultures in the region. We have also expanded our focus to locate and monitor nests of the related Himalayan Vultures in the Kali Gandaki valley of the Annapurna region.

FUTURE PLANS

It is clear from our studies that the rate at which *Gyps* vultures are dying in the Indian subcontinent is unsustainable. Unless remedial action is taken, populations will quickly be reduced to inviable levels. We have refined our work plan based on the experiences of our first field season to improve our chances of finding and understanding the cause of gout-associated vulture mortalities in our second field season.

The events in the United States of September 11, and the subsequent war against terrorism in Afghanistan, mounting insecurity in Pakistan, and political tension between India and Pakistan have made our second field season difficult. Yet, with our partners in the Ornithological Society of Pakistan we continue to measure the ecological dynamics of vulture populations in Pakistan, particularly rates and causes of mortality. Our priority to collect, export, and analyze freshly dead birds for tissues remains highest.

With our partners in Bird Conservation Nepal, we are conducting the first-ever study on Himalayan Vultures to determine the causes of mortality in this *Gyps* species. We continue to monitor the fate of *Gyps* vultures in the lowlands.

We will continue to disseminate scientifically sound information and awareness of the vulture crisis through our scientific presentations, publications, popular articles, and our web site. Our research efforts have catalyzed urgent vulture conservation strategies in Europe and Africa where, with our assistance, programs are now in place to monitor vulture colonies to detect early signs of a similar catastrophe.

Gyps *vulture in flight.*

Martin Gilbert

Local transport.

Martin Gilbert

STAFF

The project is directed by Rick Watson and conducted by Munir Virani and Martin Gilbert.

COOPERATORS

We are working in partnership with J. Lindsay Oaks, Washington State University; Patrick Benson, University of the Witwatersrand; Ornithological Society of Pakistan; Bird Conservation Nepal-Himalayan Nature; and the Bombay Natural History Society. We depend on the collaboration and support of many other organizations and individuals, including the Punjab Department of Wildlife and Parks, Lahore Zoo, National Council for the Conservation of Wildlife, B.Z. Multan University, University of Agriculture at Faisalabad, Sind Wildlife Management Board, Zoological Survey Department Pakistan, World Wide Fund for Nature (WWF-Pakistan), and Pakistan Museum of Natural History. In Nepal, we collaborate with Koshi Camp and Department of National Parks and Wildlife Conservation. In the United States we collaborate with the Zoological Society of San Diego, The Raptor Center, University of Minnesota, and the Bodega Bay Institute.

Important financial support was provided by the Gordon and Betty Moore Foundation, United Nations Foundation, The Walt Disney Company Foundation Conservation Awards, the Zoological Society of San Diego, William and Noel Wade, Ten Times Ten Foundation, and the Ivorybill Foundation.

GOAL

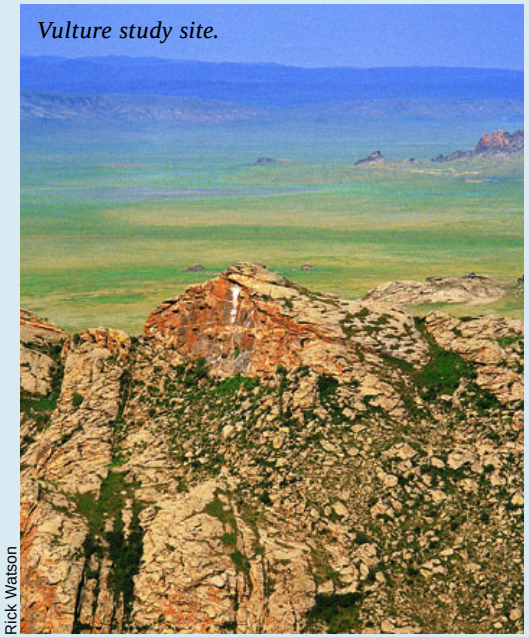
To develop local capacity for research and conservation of raptors in Mongolia.

Mongolia Project and Cinereous Vulture Research

Ecologically, Mongolia is the joining place for several central Asian environments and the last place many species still occur on the continent. Development driven by the country's financial needs and desires and demands of its expanding human population are changing the cultural and natural environmental systems. To preserve Mongolia's past traditions and nature will require a careful balance of planning and actions. To achieve that balance will require knowledgeable, highly motivated, expert Mongolian biologists. This project combines hands-on field training of a Mongolian student in both the U.S. and Mongolia, academic training in the U.S., and applied conservation research in Mongolia. The training will result in a young Mongolian leader in conservation.

Nyambayar Batbayar.

Rick Watson



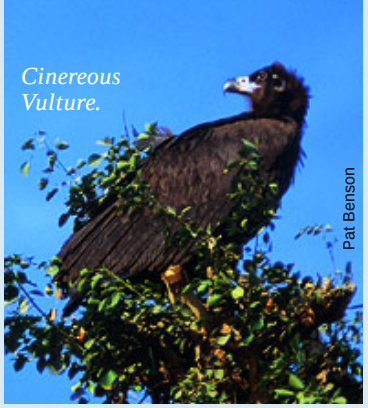
Vulture study site.

Rick Watson

The Cinereous Vulture, also known as the Eurasian Black Vulture, is the largest Old World raptor, similar in size to a California Condor. Today this species is listed regionally as either endangered or threatened, and is included in the Red Data Book for rare and endangered species. Formerly it ranged from Western Europe and North Africa through Europe, the Middle East, and Northeast China. At present in the West, remnant populations breed only in Spain, Greece, and on Mallorca Island. The rest of the birds exist from Turkey and Crimea east across Central Asia into Mongolia. Essentially nothing is known about the ecology and population dynamics of these birds in the East. This project serves two major needs: (1) to determine important baseline information about Cinereous Vulture ecology in Mongolia, its most eastern range, and (2) to provide an education and training opportunity to a Mongolian biologist to help develop local capacity for raptor conservation in Mongolia. Student Nyambayar Batbayar was identified by The Peregrine Fund in 1999 as a strong Masters-degree candidate for this training opportunity.

RESULTS

In cooperation with Boise State University's Raptor Research Center, United States Geological Survey (USGS), raptor biologists and our own biologists provided Nyambayar with over six months of intensive field training and experience. His work included handling Golden Eagles, Prairie Falcons, and American Kestrels in the Snake River Birds of Prey Area and California Condors in Arizona and Idaho. Field methods included attaching radio tags to falcons, eagles,



Cinereous Vulture.

Pat Benson

and condors, and tracking them as they moved over their home range, making scientific observations of raptor behavior, locating and climbing to nests, and observing nesting.

Nyambayar enrolled in Boise State University's Master of Science program in raptor biology in the fall semester of 2000, undertaking several graduate level courses in raptor biology, geographic information systems, statistics, and related subjects. He also developed his research plan with his major professors, Mark Fuller and Rick Watson, and took additional English language training.

FUTURE PLANS

In February 2002 Nyambayar returned to Mongolia to begin his directed research project. His research will contribute to his thesis, an essential part of his Master's degree, and contribute to a better understanding of the ecological needs of the Cinereous Vulture in Mongolia and how to ensure the species' survival in habitats it shares with Mongolia's nomadic tribes.

STAFF

Rick Watson manages the Mongolia Project.

COOPERATORS

We cooperate with the Raptor Research Center and Boise State University, World Wide Fund for Nature-Mongolia, and Mongolian Academy of Sciences. Support was provided by the Trust for Mutual Understanding and the Robert Comstock Company.

Philippine Eagle

We work to conserve the Philippine Eagle by providing support to the Philippine Eagle Foundation, a premier Philippine conservation organization and the only one focusing on the eagle. This dedicated not-for-profit organization has a long history of achieving meaningful annual results. The Philippine Eagle Foundation can be contacted in care of Dennis Salvador, Executive Director, Philippine Eagle Foundation, Inc., VAL Learning Village, Ruby St., Marfori Heights, Davao City 8000, Philippines. Their web site address is *www.philippineeagle.org*.

The Philippine Eagle is a spectacular tropical forest-dwelling eagle. It is the rarest of all large forest eagles and the potential for the survival of a viable wild population remains uncertain. Like most other large forest eagles, under the best of circumstances a breeding pair will only produce a single young every other year. Before the young can reproduce, it must survive five or more years until breeding age, then locate a mate and have sufficient habitat and food to nest and in turn reproduce itself. For an eagle population to remain stable, reproduction and survival of young must be sufficient to at least replace all breeding adults when they die. Because of persecution of the eagle and expanding human populations in the Philippines, the challenge to preserve this Philippine Eagle and its forest environment is large, but the Philippine Eagle Foundation is working hard, as is illustrated below.

RESULTS

The better the information available to guide conservation action, the more probable the success. Scientific studies are needed to help produce that information. The Peregrine Fund's support to the Philippine Eagle Foundation (PEF) is for enhancing their science capacity and for field studies. The PEF has a talented and energetic group of biologists who are taking full advantage of this support. The following are some of the highlights from their work.

Captive breeding of Philippine Eagles is becoming a predictable annual occurrence at the PEF's Davao facility. This is an excellent accomplishment that has been achieved mainly through use of eagles which were incidentally obtained and already in captivity, rather than properly taken and cared for wild nestlings for captive breeding. In preparation for the first release of a captive-raised Philippine Eagle, PEF biologists have begun investigations of potential sites in 2001.

It is hoped that long-term radio telemetry research will provide valuable information on the ecology of the Philippine Eagle. Since 1998, seven eagles, both adults and juveniles, carrying radio transmitters have been studied. As a result of improved capture techniques, four eagles were monitored in 2001. At the sites where eagles were being monitored and elsewhere, 10 nest sites were studied at three levels, (1) on the nests themselves, (2) nest site features within 0.1 ha from the nest tree, and (3) the habitat features within 1 sq km of the nest tree.

In further studies, by mapping the known nest sites of Philippine Eagles from the island of Mindanao from 1991 to 1998, they were able to estimate the density of adult breeding pairs at 127-133 sq km per pair. They will continue to attempt to refine these numbers as better information is gathered.

courtesy of F.R.E.E. Ltd.

For the first time in recent years a search for Philippine Eagles was conducted by the PEF biologists in cooperation with the government's Parks and Wildlife Bureau and DENR Regional Eagle Watch teams on the island of Samar. Eagles were sighted at two locations and one nest was found. These and other studies and investigations will continue and expand in the future.

We have chosen here to focus only on the PEF science-related results. However, their conservation approach is holistic and includes conservation education for the public, teachers, and the broadcast media; community-based initiatives to enhance sustainable agro-business and to conserve forests; and much more, all of which deserve recognition and are producing valuable results.

GOAL

Conservation of the Philippine Eagle and its habitat.

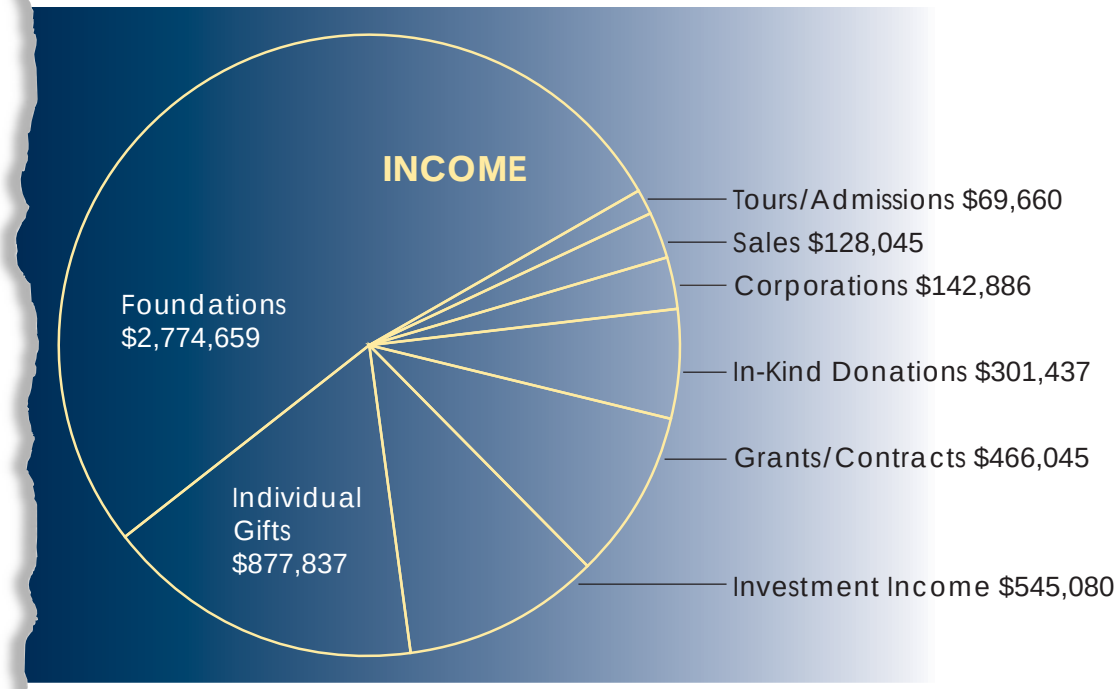
STAFF

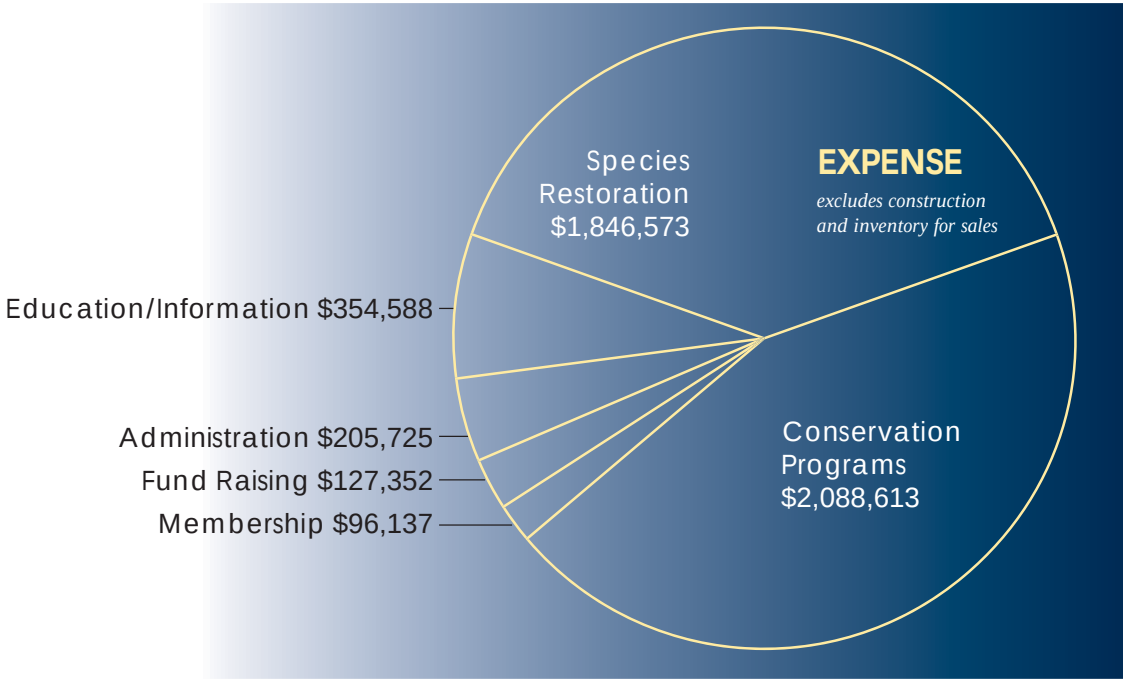
Conservation associates Jim and Joyce Grier work closely with Bill Burnham and his co-workers on this project.

Balance Sheets · September 30, 2001 and 2000

ASSETS	2001	2000
CURRENT ASSETS		
Cash and cash equivalents	$ 1,402,464	$ 807,201
Merchandise inventory	37,440	43,637
Grants receivable	50,000	478,142
Pledges and other accounts receivable	235,012	98,033
Prepaids and other current assets	37,572	81,786
TOTAL CURRENT ASSETS	1,762,488	1,508,799
PROPERTY, EQUIPMENT AND ARCHIVES		
Land	1,513,000	1,513,000
Land improvements	758,881	758,522
Buildings	6,417,766	6,160,879
Trailers	150,123	150,123
Equipment and vehicles	1,283,210	1,223,928
Fixtures and displays	618,840	594,211
Construction in progress	21,865	23,465
	10,763,685	10,424,128
Accumulated depreciation	(3,300,722)	(2,976,964)
	7,462,963	7,447,164
Library	266,229	237,822
Archives	653,140	600,536
	8,382,332	8,285,522
ENDOWMENT ASSETS		
Cash	21,893	21,710
Investments	7,514,514	8,841,295
	7,536,407	8,863,005
	$ 17,681,227	$ 18,657,326

LIABILITIES AND FUND BALANCES	2001	2000
CURRENT LIABILITIES		
Accounts Payable	$ 80,484	$ 424,812
Accrued taxes and expenses	804	716
Deferred restricted revenue	744,434	141,742
TOTAL CURRENT LIABILITIES	825,722	567,270
FUND BALANCES		
Unrestricted operating fund	936,766	941,529
Restricted endowment fund	7,536,407	8,863,005
Investment in property, equipment and archives	8,382,332	8,285,522
TOTAL FUND BALANCES	17,681,227	18,657,326
	$ 17,681,227	$ 18,657,326





Many organizations and individuals contribute materials at no cost or at cost. Services contributed have been recorded at the amount it would have cost The Peregrine Fund.

Figures for this audited statement were provided by Balukoff, Lindstrom & Co., P.A., Certified Public Accountants. Full reports are available upon request.

The Peregrine Fund is a not-for-profit organization and can only operate through the support of voluntary contributions. Because no work could have been done without this financial support, the birds truly are in your hands. We are proud to list the individuals, businesses, organizations, foundations, and agencies who have contributed $100 or more, including gifts of goods or services, during 2001. We regret that space limits us to listing only those who have contributed at that level and above. Every donor is very important to us, and your continuing participation makes the programs possible. We thank each and every one of you for your partnership.

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We welcome inquiries about bequests at (208) 362-3716.

If you wish to make a provision in your will, the following general form is suggested:

I give, devise, and bequeath to The Peregrine Fund, Inc., an Idaho not-for-profit corporation, located on the date hereof at the World Center for Birds of Prey, 5668 West Flying Hawk Lane, Boise, Idaho 83709, the sum of $_____ (or specifically described property)."

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