

*Working to Conserve
Birds of Prey in Nature*

Majesty on the Wing - Bald Eagle ©1978, Robert Baleman. Courtesy of the artist and Mill Pond Press, Inc. Venice, FL 34292

1999 ANNUAL REPORT

THE PEREGRINE FUND
WORLD CENTER FOR BIRDS OF PREY

LETTER FROM THE PRESIDENT

The Peregrine Falcon was legally removed from the list of threatened and endangered species within the Endangered Species Act (ESA) on 25 August 1999 (see page 2 for details). Although the Peregrine was out of jeopardy for some years, the restoration effort could never be considered complete until this legal action was taken. Based on geographic area and results, the restoration of the Peregrine Falcon must be considered the most significant species recovery program in the 20th Century in North America. The proposed de-listing of the Bald Eagle will be a good beginning for this new century!

The Peregrine Fund was involved in the early days of Bald Eagle restoration. In 1976 we pioneered the method for release of eagles to the wild, helping New York State launch its endangered species program. The two eaglets we released by "hacking" were removed, one each, from nests with three young in Wisconsin where the Bald Eagle population was healthy. Some people criticized the release as just a publicity stunt for the Nation's Bicentennial Year. Incredibly, these first two released eagles bred in 1979, just 80 miles away from the release location, raising two young of their own and continuing to nest there for many years. The success demonstrated the methods we developed for the Peregrines had broad application for other species and, more importantly, that species restoration was possible. The reintroduction of Bald Eagles in New York was expanded and continued as it was in many other states and internationally with other eagle species by other private and government organizations. We look forward to the de-listing and have placed the Bald Eagle on the cover in recognition of that important outcome. Our congratulations to all involved!

Although restoration of the Peregrine Falcon and Bald Eagle in North America are magnificent accomplishments, never was either species in jeopardy of extinction throughout its entire range as was the case for the Mauritius Kestrel. The Mauritius Kestrel exists on a single island, Mauritius, in the Indian Ocean. In the mid 1970s when The Peregrine Fund became involved, working with the Mauritius Wildlife Appeal Fund, Jersey Wildlife Preservation Trust, and others, most people considered the species beyond hope of recovery, as only one pair was known to remain and no more than three to five total kestrels existed. Today the Mauritius Kestrel flourishes, and there are believed to be over 700 kestrels. For raptor restoration, this accomplishment must head the list for species restoration in the 20th Century.

In 1993 we were asked by the U.S. Fish and Wildlife Service and the State of Hawai'i to assume an important role in restoration of the Hawaiian Crow and, later, all of the State's endangered birds. Only two raptor species breed in Hawai'i, the Hawaiian Owl and Hawaiian Hawk, and neither is in jeopardy, although the hawk is listed under the ESA as "endangered." Through a herculean effort by The Peregrine Fund staff and cooperators, a great deal has been accomplished in just a few years. Much of the knowledge and physical foundation needed for effective species restoration in Hawai'i now exists. We did all we could short of reshaping our organization, which was the next requirement if the program results achieved were to continue at the same pace. In 2000, our role, staff, and the program in Hawai'i are being transferred to the Zoological Society of San Diego (see pages 8 & 9). We are again re-focusing on raptors. Even working only on raptors, however, the actions needed far exceed our resources, emphasizing the importance of being realistic, effective, and collaborating with others. Our varying involvements with all of the above-mentioned species and projects have convinced us of this conclusion.

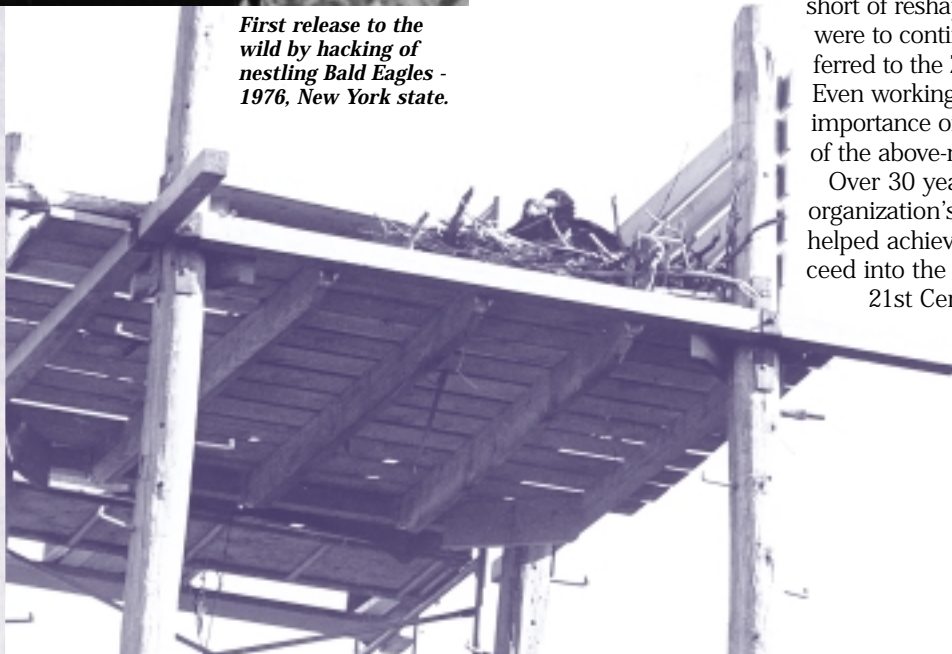
Over 30 years ago Tom Cade founded The Peregrine Fund. I have touched on only a portion of the organization's record and even so believe it to be remarkable. The qualities and traditions which have helped achieve these results in the 20th Century must be remembered and emphasized as we proceed into the future. Therefore, we present to you "Raptor 2100," The Peregrine Fund's plan for the 21st Century (page 1). With this plan comes a request for your continued partnership.

Sincerely yours,

*Bill Burnham
President*



First release to the wild by hacking of nestling Bald Eagles - 1976, New York state.



BUILDING TO LAST – RAPTOR 2100

A STRATEGIC PLAN FOR THE 21ST CENTURY: RAPTOR 2100

Early in 1998, The Peregrine Fund Board and staff began a series of retreats and meetings to review who we are, what we stand for, why we exist, and where we are going. Having an almost three-decade history of building upon successes and annually achieving meaningful results provided an excellent basis for review and discussion. The process required almost two years and resulted in “A Strategic Plan For The 21st Century: Raptor 2100.”

The successful completion of the Peregrine Falcon restoration prompted us to review and define the major objectives of The Peregrine Fund with the aim of building an organization that will continue to work through the next century to conserve birds of prey in the wild. The resulting strategic plan, Raptor 2100, describes the major objectives of the organization, provides a guideline for prioritizing projects to achieve those objectives, and outlines how we anticipate the plan will be implemented.

The Peregrine Fund's objective for Raptor 2100 is to work to conserve wild populations of birds of prey. Implicit within Raptor 2100 is the understanding that we will build on the strengths and characteristics of The Peregrine Fund that collectively make us a unique conservation organization, such as: our focus on birds of prey; hands-on, science-based projects; and our non-political, solution-oriented approach that draws people together to work on shared goals. We occupy a unique and important niche in the conservation community and by extending our global activities we expect to have a major impact on conservation of raptors and other species in their ecosystems.

Methods are divided into those that will be applied within the U.S. (Raptor 2100 National Program) and those applied throughout the rest of the world (Raptor 2100 International Program) because raptor conservation needs and opportunities differ broadly along those lines.

In general, we go to work when: (1) raptor species become threatened or endangered; or (2) limited knowledge exists on species of raptors; or (3) raptor conservation benefits environmental health and conservation of biodi-

versity; and (4) when raptors can be used for developing local capacity for conservation in the developing world; and (5) our efforts can contribute to conservation of habitat and the environment on which raptors depend.

Raptor 2100 National Program includes actions that we can apply to conserve species within the United States. These include: (1) hands-on raptor management actions (e.g., captive breeding and release); (2) providing advice and knowledge to others (e.g., federal, state, and local government); (3) public education; (4) hands-on enhancement of raptor habitats; and (5) basic research.

Raptor 2100 International Program includes all of the actions in the National Program, as needed and appropriate, plus actions that are applicable in many developing nations where a lack of knowledge, expertise, or infrastructure are often the greatest challenges to achieving conservation. These include: (1) increasing knowledge and understanding of the natural history and status of little-known raptors through field studies; (2) conserving raptors and their habitats, to include working to prevent species from becoming endangered; (3) developing local capacity to achieve conservation through training, support, and developing infrastructure; (4) providing opportunities for student training and support; (5) providing information to governments for policy decisions; (6) serving as an information warehouse on the biology and status of raptors worldwide; and (7) establishing a biogeographic small grants program to fund individuals to achieve much of the in-country work.

In assessing whether to begin a new project, we will use the following guidelines to

help us decide in what to invest our conservation resources (dollars, people, time, etc.): (1) degree of species endangerment; (2) level of knowledge about the species; (3) probability that others can and will do the work; (4) level of impact of results compared with level of investment of resources; (5) how the project fits with others underway or planned; and (6) whether we are capable of accomplishing the project successfully.

Projects will be evaluated annually using the following guidelines to help decide whether or not to continue the project: (1) adequate progress towards defined objectives; (2) prior and future organizational resource investments needed to be successful; (3) availability of financial, staff, and facility resources; (4) impact and sustainability of the results; (5) project cost and proportion of project cost provided by The Peregrine Fund.

Overall, a successful project will demonstrate one or more of the following benchmark results: (1) preventing the extinction of a species; (2) conservation of important raptor habitat; (3) an increase in knowledge of species; or (4) developing individual and organizational conservation and science capacity internationally to carry initiatives forward. Exceptional staff and Board members are both a hallmark of the past and critical for the future. Each person must contribute measurably to the organization's achievement of meaningful annual results.

Expenditures must not exceed income or the annually approved budget. Ideally, investment income (endowment) should, at a minimum, cover all administrative expense. Our goal is for 100% of donors' gifts to go to project support.

RAPTOR 2100: EXECUTIVE SUMMARY

Objective: Working to Conserve Wild Populations of Birds of Prey

Synopsis: The Peregrine Fund works worldwide to conserve wild populations of birds of prey. Conserving raptors provides an umbrella of protection for entire ecosystems and their biodiversity. We are a non-political, solution-oriented, hands-on, science-based organization. Goals are achieved by restoring and maintaining viable populations of species in jeopardy; studying little-known species; conserving habitat; educating students; developing local capacity for science and conservation in developing countries; and providing factual information to the public. Since beginning work in 1970 we have assisted raptor conservation projects in more than 40 countries on six continents.



Drawing by John Schmitt

PEREGRINE FALCON

The Peregrine Fund may be unique, but if not, surely it is one of only a few conservation organizations to achieve the goal for which it was created. Certainly we cannot take all the credit as many organizations and thousands of people played a role, but ours was certainly central and significant to the ultimate accomplishment.

At the 20 and 21 August 1999 North American Peregrine Falcon Victory Celebration, the Secretary of the Interior, the Honorable Bruce Babbitt, announced the de-listing of the Peregrine from the Endangered Species List. On 25 August 1999 the announcement was published in the Federal Register, making the action official. Over 1,000 people participated in the Boise, Idaho Celebration and we doubt any will

ever forget the experience (see *The Peregrine Fund Newsletter* No. 30, summer/fall 1999).

As U.S. Fish and Wildlife Service Director Jamie Clark, a former Peregrine release site attendant herself, said at the announcement for the proposed de-listing a year earlier on 26 August 1998, "the Peregrine Falcon is back!" She was correct, and the dramatic increase in numbers of pairs is indisputable. In some states there are now more breeding Peregrines known than ever before, and we do not know what the upper population limits and carrying capacity of the habitat may be. While a few critics of the de-listing worry that removal of the Peregrine from the protection of the Endangered Species Act could jeopardize populations, yet others are worrying the increased numbers of Peregrines could negatively affect potential prey species such as the Least Tern in California. Meanwhile, the Peregrine remains oblivious to these human concerns in its ecological role as a top predator.

There are two remaining issues to be completed in association with the de-listing: (1) development and implementation of a monitoring plan to track Peregrine populations and (2) authorizing and setting limits for harvest of nestling and immature (hatch year) Peregrines for use in falconry. Although several rather complex and expensive proposals have been made for monitoring populations, we are hopeful a more reasonable but satisfactory

method will be adopted by the U.S. Fish and Wildlife Service and the States so most of their limited funds can go toward restoration of endangered species. Monitoring no longer needs to be annual or intensive for this species. Checking small, representative portions (samples) of the Peregrine breeding sites annually or larger numbers every three to five years is sufficient. Monitoring should be to detect population trends over time, not to document annual variations in reproduction.

The final declaration of a successful recovery of the Peregrine is turning its management over to state wildlife agencies, as with other species protected under the Migratory Bird Treaty Act, and allowing for a limited harvest of hatch year Peregrines for falconry. This may seem a strange statement and unnecessary step to some readers, but we

believe it is important. The falconers offered up their Peregrines, knowledge, and even dollars to help begin the captive breeding and restoration program and contributed importantly for three decades to completion. Their trust should be recognized now that the Peregrine is back, and they should again be able to capture hatch year, wild Peregrines to use in falconry from geographic areas where Peregrines flourish. There is no biological justification not to do so. With the capture of the first Peregrine for falconry, the story of the Peregrine will have come full circle.

PROJECT GOAL

Restoration of viable wild populations of Peregrine Falcons in the United States and removal from the Endangered Species List. Achieved.



Photo by Steve Platt

Young Peregrines at Sheep Mountain release site, Rocky Mountain National Park, Colorado, 1980.

CAPTIVE BREEDING - RAPTORS

Captive breeding is a cornerstone for the Aplomado Falcon, California Condor, and Harpy Eagle restoration programs. A new crop of expertly propagated and raised young are annually required. Should this effort falter, there would be no releases, and recovery rates would slow, and even possibly fail. We therefore focus exclusively on propagation on this page.

RESULTS

Aplomado Falcon - This year, as last year and the year before, was in every sense a record breaking season for propagation of Aplomado Falcons. Of particular note is the exceptional rate for hatching of fertile eggs and survival of young hatched.

California Condor - California Condors do not reach sexual maturity until about seven or even eight years of age. Even then, production of fertile eggs may require additional years. Our captive population at the World Center is young, and many condors are just reaching maturity. We are expecting a large jump in number of young produced over the next few years. Of special note are the total number of fertile eggs laid (14) compared to the number hatched (12). Over 85% of the fertile eggs have hatched!

PROJECT GOAL

Propagate the required numbers of the best possible physically, behaviorally, and genetically constituted raptors for release to the wild.

Harpy Eagle - Ten eggs were laid by three Harpy Eagles at the World Center between 16 December 1998 and 16 April 1999. Six of the eggs were fertile, and the seventh may have been fertile but was broken by the eagles. Unfortunately, none of the eggs hatched. This failure was a great disappointment, and we reviewed all aspects of management of eagle pairs and incubation of their eggs for this season and past years. Pathology was also performed on the eggs and embryos by Bruce Rideout, Chairman of Pathology, at the San Diego Zoo. No mistakes, deficiencies, or disease were discovered. We believe, however, that housing the eagles indoors throughout the year may be resulting in vitamin deficiencies we cannot correct through diet supplements. Emphasizing this concern are the excellent results achieved by the San Diego Zoo using the same propagation parameters but with their pair held in an outside enclosure. Boise, Idaho's climate is too cold to keep tropical eagles out-of-doors. To address this issue and other difficulties we have experienced with breeding tropical raptors indoors, we plan to create a Neotropical Raptor Center in Panama in 2000 for propagation of tropical species.

Note: This report is for the year 1999. **Good news for 2000--we have hatched three Harpy Eagle chicks as of this writing!**



Photo by Bob Berry

This juvenile Ornate Hawk Eagle is not in its native Central American habitat, but is in fact at tame hawk at the residence of our Board member, Bob Berry. In 1998 he paired our handicapped hawk eagle from Guatemala with a captive-bred male, producing two beautiful progeny in 1999. This was only the second successful mating pair for this species in the U.S.

Ten Year Captive Breeding Summary for the Aplomado Falcon

Year	Total Females Laying/Laying Fertile Eggs	Total Eggs Laid	Fertile Eggs	Young Hatched	Young Survived
1990	10/4	40	6 (15%)	6 (100%)	4 (67%)
1991	8/4	43	22 (51%)	18 (82%)	12 (67%)
1992	11/6	55	35 (64%)	22 (63%)	19 (86%)
1993	13/6	69	35 (51%)	27 (77%)	26 (96%)
1994	19/12	112	53 (47%)	31 (58%)	12 (39%)
1995	24/22	115	68 (59%)	49 (72%)	49 (100%)
1996	24/21	186	130 (70%)	110 (85%)	42 (38%)
1997	23/19	180	129 (72%)	108 (84%)	105 (97%)
1998	25/19	213	136 (64%)	119 (88%)	117 (98%)
1999	27/24	222	145 (65%)	128 (88%)	126 (98%)
Total	N/A	1,235	759 (62%)	618 (82%)	512 (83%)

STAFF

Captive propagation at the World Center is accomplished by Cal Sandfort, Randy Townsend, and Randy Stevens with the assistance of Sean Cluff and Ross Dickinson. Raptor food production is managed by Amel Mustic, Roy Britton, and Nedim Omerlegovic. Facility maintenance is under the direction of Randy Stevens.

COOPERATORS

Major financial support for captive propagation is provided by the U.S. Fish and Wildlife Service, the Lee and Ramona Bass Foundation, the Idaho Bureau of Land Management, and donors listed under the project reports. Pathology and veterinarian support are provided by Meridian Veterinary Clinic, the Zoological Society of San Diego, Dubai Falcon Hospital (Dave and Cheryl Remple), Washington State University (Lindsay Oaks), the Idaho Department of Fish and Game, Wildlife Health Laboratory, Caine Veterinary Teaching Laboratory, and The Raptor Center.

CALIFORNIA CONDOR RESTORATION

In 1967 the California Condor was placed on the first federal list of endangered species with an estimated population size of less than 60 individuals. The total number of condors reached its lowest point in 1982 with just over 20 condors in existence. It has now been 12 years since the last free-flying California Condor was trapped and brought into captivity back in 1987. There were many people who believed they would never see another wild condor soaring majestically in the wild. Just one year later, in 1988, the first captive California Condor was hatched at the San Diego Wild Animal Park, and in 1992 the first experimental release took place on the Arundell Cliffs, Sespe Condor Sanctuary, in Ventura County, California. Additional condors were being raised at the Los Angeles Zoo, and the U. S. Fish and Wildlife Service (Service) requested that The Peregrine Fund be the third institution to breed condors and assume the lead for their release into the wilds of northern Arizona.

RESULTS

By September of 1993 we had completed our first 17,000 sq ft breeding and laboratory facility, the Peter and Conni Pfendler California Condor Facility, holding 10 pairs of condors at the World Center. A second 10-chamber building was constructed in 1997. We now have 21 pairs of California Condors, including the only pair on public display located in our Velma Morrison Interpretive Center.

The first release by The Peregrine Fund was on the Vermilion Cliffs, northern Arizona, in December of

1996 and releases have been occurring every year since. Releases there are being conducted under the 10(j) rule of the Endangered Species Act -- "experimental nonessential population." Outside of National Parks and Recreation Areas, the rule treats the condors as a threatened species, not as an endangered one, and no related restrictions are placed on current or future land management practices. This arrangement has worked well and we have received a tremendous level of support from the local community and everyone involved.

1999: The total population of California Condors is now at 155 individuals. Of those, 99 are in captivity with 42 at our World Center for Birds of Prey, 30 at the Los Angeles Zoo, and 27 at the San Diego Wild Animal Park. The wild population consists of 50 condors with six additional birds being held in preparation for release at a site in central California. Of the total we have 25 birds in the wild in northern Arizona at our two release sites. Five are at the Hurricane Cliffs and 20 are at the Vermilion Cliffs.

There were four condor mortalities in Arizona in 1999. A four-year-old, condor #24, was shot while perched on a rock ledge just above the Colorado river in Grand Canyon National Park. The perpetrator was subsequently fined \$3,200 dollars, placed on one year of supervised probation, and ordered to perform 200 hours of community service. The cause for the most recent death of Vermilion Cliffs condor #16 is currently being determined. The loss of these two birds was especially tragic because they were two of the oldest birds

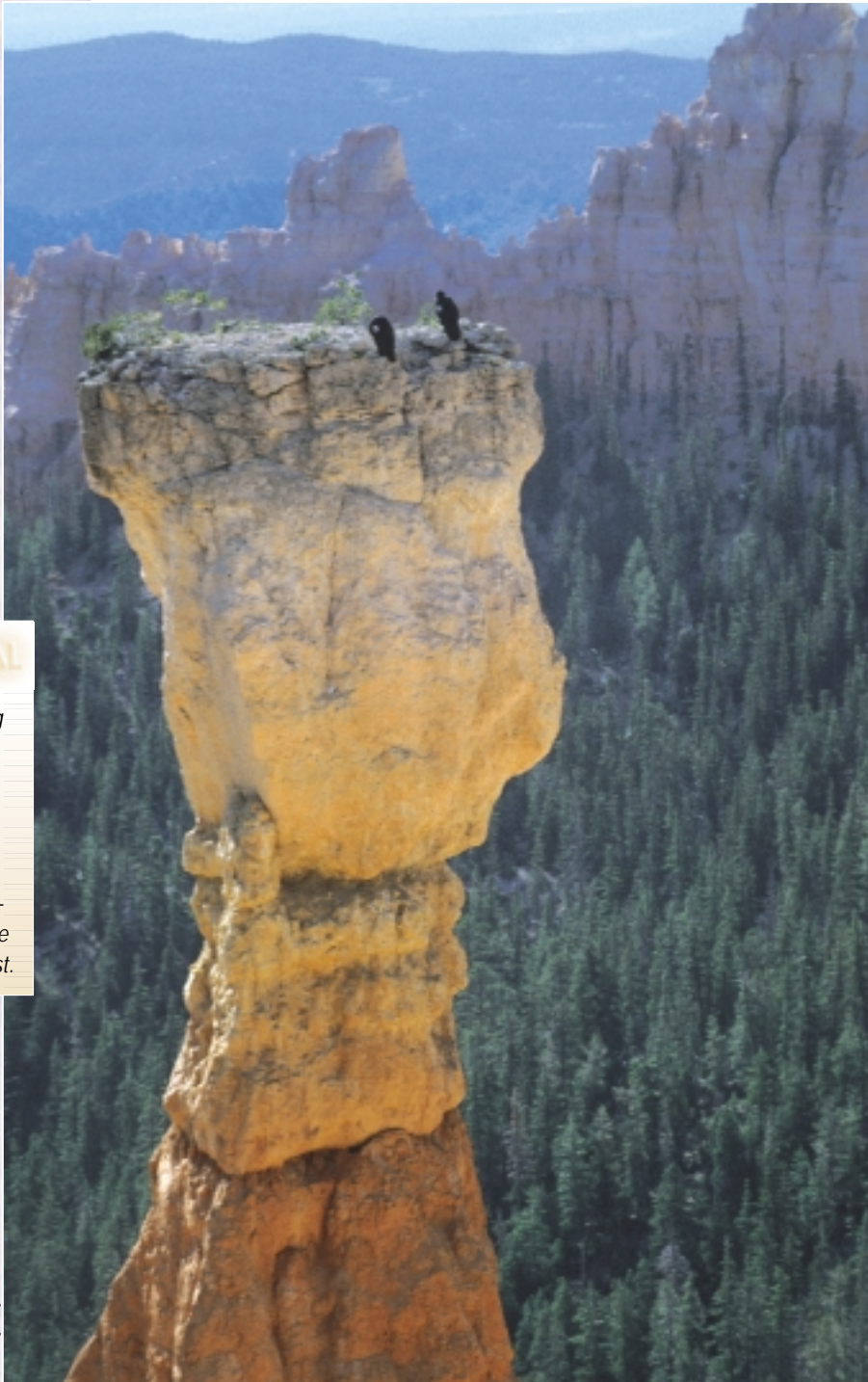


Photo by Amy Nicholas

California Condor country, Arizona!

PROJECT GOAL

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.



Ravens often harass the California Condors, as shown here. Even though ravens are large birds, they appear small compared to condors.

and would have potentially been some of the first condors to breed in the wild. Two additional young birds from the 1999 release also were lost. Condor #97 was killed by a Golden Eagle and condor #07 was found dead with food aspirated into its lungs. Of the 35 condors we have released in three years, nine have died. Considering the ages, it is clear the condors are most at risk during the first few months in the wild. Four deaths have occurred less than two months after release, and six of the nine were less than five months after release. Of 23 released birds that have survived longer than six months, 20 are still alive in the wild. If a young condor can make it through its first spring and summer, its chances for survival increase dramatically.

After extensive flights during the summer of 1998, the Vermilion Cliffs-released condors have remained relatively sedentary, while young from the first Hurricane release ventured as far north-east as Mesa Verde, Colorado before permanently joining with the Vermilion Cliffs birds. In early



Left: Project field manager Shawn Farry with young California Condor.

Below: Fitting a California Condor with a radio transmitter prior to release are, from left, Ruth Andres, Brian Mutch, Shawn Farry, Bill Heinrich, and Chad Fitzpatrick.



July both groups of condors, now numbering 20 individuals, discovered the South Rim of Grand Canyon National Park. With the Park often hosting up to 12,000 visitors per day, the condors were drawn to the activity at the many overlooks. Peregrine Fund and Park biologists joined forces to keep the condors away from potentially dangerous situations while providing tourists with valuable educational information on condor biology.

Significant progress was made this year in creating a self-sufficient wild condor population. From mid-May through the end of August no Vermilion Cliffs condors fed on carcasses we provided, preferring

to forage completely on their own. During this period condors were observed feeding on the carcasses of Mule Deer, Big Horn Sheep, Beaver, Elk, and range cows and sheep. In late August our biologists were able to trap 18 of the condors, take blood samples, and replace radio transmitters. Blood samples were evaluated for chemical and metal contamination as well as for nutritional analysis. All of the condors came up with a clean bill of health.

FUTURE PLANS

We are currently working with local communities and the U. S. Fish and Wildlife Service to expand

the area covered by the 10(j) status to include half of Nevada and all of Arizona, Utah, Colorado, and New Mexico. The expansion would help facilitate additional releases. We are gradually making progress on reaching the recovery goal of establishing a population of 150 condors and at least 15 breeding pairs outside of California. There are still no California Condors breeding in the wild although we anticipate that changing in the next few years as the population of free-flying condors becomes sexually mature.

STAFF

Coordination, Bill Heinrich with assistance from Brian Mutch; reintroduction, Shawn Farry; field assistance, Amy Nicholas, Kirk Stodola, Kristy Bly, Gantt Charping, Janelle Cuddeford, Gretchen Druliner, Melissa Gray, Jeffrey Kingscott, and Karen Leavelle; and scientific assistance, Lloyd Kiff.

COOPERATORS

Transporting California Condors takes a tremendous amount of logistical coordination. We have been fortunate to receive major support from the Bureau of Land Management's Boise Smoke Jumpers, the Idaho National Guard, the U.S. Forest Service, Norm Freeman (based out of Phoenix), and The Salt River Project with both fixed wing aircraft and helicopters.

Additional cooperators are the U. S. Fish and Wildlife Service, the Los Angeles Zoo, the Zoological Society of San Diego, the Arizona Game and Fish Department, and the Bureau of Land Management, as well as the local ranchers and lodge owners. Special thanks go 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., ARCO Foundation, William H. Gates Foundation, Wallace Research Foundation, The Kearney Foundation, Globe Foundation, Jane Smith Turner Foundation, Patagonia, Bank One, Arizona, NA, Norcross Wildlife Foundation, Inc., Ten Times Ten Foundation, Grand Canyon Association, and Tejon Ranch.

NORTHERN APLOMADO FALCON RESTORATION

Photo by Angel Montoya



Above: Aplomado Falcons do not build nests but instead use those constructed by other birds which may be weak and dangerous to eggs and young. Here Brian Mutch reinforces such a nest.

Right: Brian Mutch passes a downy Aplomado Falcon down from the nest to Angel Montoya for banding.

Photo by Bill Heinrich



Once common throughout much of the American Southwest, the Aplomado Falcon declined dramatically during the early part of this century and had disappeared as a breeding species within the United States by the 1950s. The U. S. Fish and Wildlife Service listed the Aplomado Falcon as an endangered species in 1986 and requested that The Peregrine Fund assume the leadership in its recovery. To accomplish this, a captive breeding population was developed from 25 nestlings collected over a four-year period from remaining populations in southern Mexico. From this modest investment of wild stock, an incredible 466 captive-bred Aplomado Falcons have now been released into former habitats in south Texas! Our biologists are currently observing at least 19 estab-

lished pairs of Aplomado Falcons, and this beautiful species is once again breeding within the United States.

RESULTS

Last season (1998) we celebrated our best year yet for both the number of Aplomado Falcons raised and the number of young falcons successfully released. This year was even better! We experienced phenomenal propagation success (see *Captive Breeding - Raptors*), and a record 115 captive-bred falcons were released at eight sites along the Texas Gulf Coast with a 75% success rate. Each release site is continually monitored for a minimum of six weeks. A falcon is considered to be successfully released once it has been out in the wild for three weeks, capturing prey on its own and no longer dependent on being fed by our biologists. The most important causes of death for newly released falcons are disorientation immediately following release and subsequent predation by Great-horned Owls. Over the years the success rate has averaged 70%. We have learned that the longer a release site is used within a season, the higher the mortality rate becomes. It essentially becomes a feeding station for not only the released falcons, but for other wildlife as well, particularly Turkey Vultures, Great-horned Owls, Chihuahuan Ravens, Raccoons, and Coyotes. These

species not only increase the amount of food required to support a falcon release, but also represent a direct threat to the falcon's survival. In an effort to attract fewer miscellaneous wildlife species, our biologists have successfully developed a covered feeding platform which shields the food from view of vultures and other scavengers.

There are at present two core breeding areas of released Aplomado Falcons. Five pairs have been located on Matagorda Island, and a second group of 14 pairs occurs approximately 150 miles to the south on the Laguna Atascosa National Wildlife Refuge and surrounding private properties. The mean distance between active nests in the southern group is approximately 19 km (n= 6). Many of the 19 pairs of Aplomado Falcons under observation were sub-adult, nevertheless eight (42%) attempted to breed, and four (21%) successfully fledged a total of 12 young. An average of 1.5 young were fledged from

PROJECT 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.

pairs that attempted to nest. In Mexico we continue to monitor a population of Aplomado Falcons in northern Chihuahua where 13 nests fledged a total of 17 young resulting in 1.3 fledged per nest. The fledging rate of Aplomado Falcons in this new Texas population compares favorably with the fledging rate that we are observing in Chihuahua. Nevertheless, mortality at nest sites remains higher than we would like due to predation



Two 1999 wild-produced young produced from previously released Aplomado Falcons.

Photo by Brian Mutch

from other birds, mammals, and fire ants. Aplomado Falcons do not construct their own nests, but rather utilize abandoned hawk, kite, or raven nests. We have observed nestling mortality as a result of structural failures associated with the age and disrepair of some of these secondhand nests. In an effort to reduce nestling mortality resulting from predators and from structural failure, in Texas we have erected a variety of artificial nesting structures.

The adaptability of the Aplomado Falcon and their use of novel nesting sites is fascinating to observe. Two pairs nested in artificial structures we provided, and the remainder utilized abandoned stick nests on power poles and in Macartney Rose, Texas Ebony, and Mesquite. One pair even attempted to nest directly on the ground. Of particular interest are the five pairs of falcons on Matagorda Island. These are the first pairs to be discovered on barrier islands and as far north as Matagorda. Young Aplomado Falcons are particularly vulnerable to predation by Great-horned Owls during the first two weeks after their release. Releasing Aplomado Falcons on barrier islands like Matagorda, which support fewer Great-horned Owls, may represent an important step in the recovery of this species. We had expected the falcons to disperse onto the mainland to nest and have been rather surprised that pairs are actually nesting successfully on the island on top of thickets of rose bushes.

More than 97% of suitable habitat in Texas is privately owned, requiring the essential partnership of the landowners in this endan-

gered species recovery effort. This partnership has required the development of a unique and effective Habitat Conservation Plan known as a "Safe Harbor Agreement," which has successfully enrolled more than one million acres of private habitat to date. 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. Through education at both federal and local levels, and through the development of innovative and realistic solutions to current problems associated with the Endangered Species Act, we are significantly increasing the potential for participation by the private sector in species restoration by instilling trust.

FUTURE PLANS

The success of this project requires that additional release sites be established. With so many new pairs being formed during the last year, many of the release sites that we have used in the past are now occupied by pairs of falcons. This bodes well for the success of this program but represents a continual challenge to develop new, and successful, release sites. In 2000 we are planning to use 10 sites, of which eight will be new. We are in the process of expanding the Safe Harbor permit to enable the development of release sites in west Texas. The Peregrine Fund is also working with a variety of private, state, and federal entities in New Mexico in an effort to develop a future release program in that state.

Adult female Aplomado Falcon.



Photo by Steve Bentzen

Artificial nests can be safer for breeding falcons than natural nests. Here Wade Ruddick, San Jose Island ranch manager (left), and Angel Montoya construct a nest to hopefully be used in the future by Aplomado Falcons.



Photo by Brian Mutch

STAFF

Program direction, Peter Jenny; coordination, Bill Heinrich; reintroduction, Brian Mutch; field manager, Angel Montoya; science assistance, Lloyd Kiff; and hack site attendants-Christine Appet, Alison Benedict, Thom Benedict, Kelly Bowman, Elizabeth Burgess, William Gantt Charping, Janelle Lynn Cuddeford, Dana Doherty, Jessica Eastlake, Maya Farry, Marcus Martin, Mark Menlove, David Moen, Beverly Oney, Stephanie Sims, Kristy Smith, and Ruth Van Wye.

COOPERATORS

We cooperate with the U. S. Fish and Wildlife Service, the Secretaria 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 eggs and blood of established Aplomado Falcons. In cooperation with PRONATURA VERACRUZ and FUNDACION ARA, we support a county-wide distributional survey of the Aplomado Falcon in Mexico.

Providing essential financial support were the Lee and Ramona Bass Foundation, The Brown Foundation, Inc., Houston Endowment, Inc., Ruth Andres, the Robert J. Kleberg, Jr. and Helen C. Kleberg Foundation, the National Fish and Wildlife Foundation, The Tapeats Fund, The Charles Engelhard Foundation, Exxon Corporation, Turner Foundation, Inc., Central and South

West Services, Inc., U.S. Fish and Wildlife Service, Karen and Tim Hixon, Walter Negley, Herman Stude, Jane Smith Turner Foundation, and Mike and Carolyn Maples.



Photo by Tracy Powers

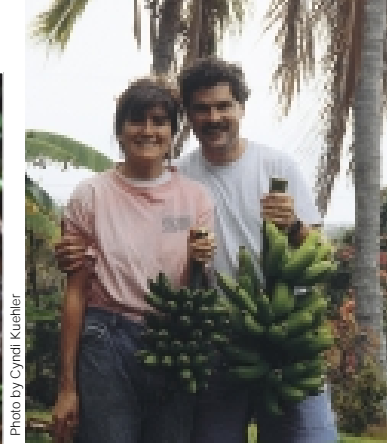


Photo by Cyndi Kuehler

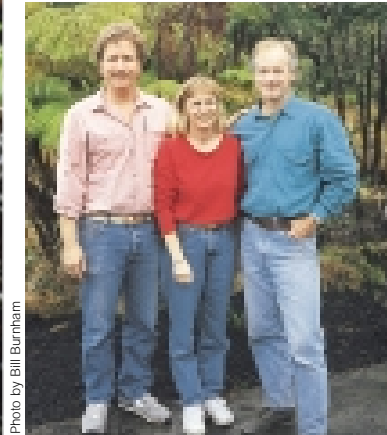


Photo by Bill Burnham

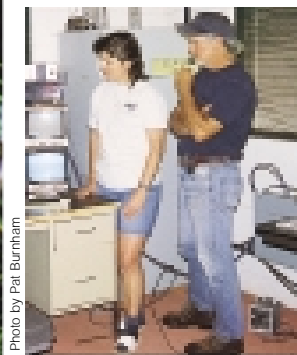


Photo by Pat Burnham

HAWAIIAN ENDANGERED BIRD CONSERVATION PROGRAM

The Hawaiian Islands are facing an extinction crisis of unprecedented proportions. The remaining species of native birds probably comprise less than 20 percent of the original bird life that evolved in these Islands. Nearly 75 percent of the recorded extinctions in the United States have been native Hawaiian species.

The Peregrine Fund's overriding goal is to enhance global environmental health and the conservation of natural resources, and particularly biological diversity. Our approach to conservation is to "make a difference and make it sustainable" by maintaining a small, simple, flexible organization that can act quickly and effectively. It is precisely this conservation philosophy that made us the organization best suited to help the U. S. Fish and Wildlife Service and the State of Hawai'i halt the imminent extinction of the Hawaiian Crow in 1993 and achieve many other results.

Even with the continued support of State and Federal agencies and our private land-owner partners, however, the natural heritage of the Hawaiian Islands cannot be saved without a major effort by government and the private sector alike addressing the continuing impact of introduced exotic species which are primarily responsible for extinctions in Hawai'i.

RESULTS

During the past seven years The Peregrine Fund's Hawaiian Endangered Bird Conservation Program has accomplished a great deal. In particular, (1) the development of an expert and highly motivated staff, (2) the design and construction of a 3.5 million dollar state-of-the-art propagation facility, the Keauhou Bird Conservation Center, (3) an improved State of Hawai'i-owned Maui Bird Conservation Center, (4) the development of the technology to hatch and hand-rear successfully 13 species of native Hawaiian birds (10 were the first ever accomplished), (5) the establishment of an associated environmental education program for Hawaiian school children, and (6) the successful reintroduction and breeding of the endangered Puaiohi in the wild.

PROJECT GOAL

To restore viable populations of endangered Hawaiian birds and remove them from the Endangered Species List.

We believe the personnel, basic knowledge, and facilities now exist to achieve hands-on recovery actions successfully for native Hawaiian birds. We have laid a good foundation.

And, in keeping with our organizational philosophy "make a difference and make it sustainable," we believe reaching the next level of achievement can best be accomplished by the transition of The Peregrine Fund's role to another organization that can offer the program different conservation resources. This is only the beginning and there is yet much to be



File Photo

Clockwise from top: Marla and Joop Kuhn, long-term staff members in Hawai'i.

Our first three staff in Hawai'i, from the left: Co-director Alan Lieberman, Co-director Cyndi Kuehler, and Hawaiian Crow Release Manager Peter Harrity.

Barbara McIlraith and John Turner expertly managed the Maui Bird Conservation Center for The Peregrine Fund.

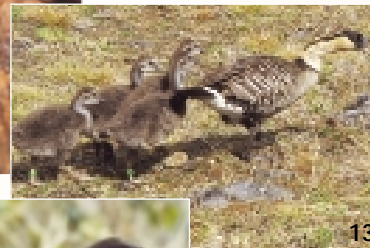
Our Keauhou Bird Conservation Center is a state-of-the-art captive propagation facility which includes areas for organized visits by students. This is a Kaumana School group.

CHICKS HATCHED BY HAWAIIAN ENDANGERED BIRD CONSERVATION PROGRAM (1993-1999)

done before the tide is turned in favor of species recovery.

After discussions with the Zoological Society of San Diego (ZSSD), the U. S. Fish and Wildlife Service, and the Hawai'i Department of Land and Natural Resources, we believe that the ZSSD is an exceptional organization with the depth of resources to elevate the program in Hawai'i to the next needed level. The ZSSD's Center for Reproduction of Endangered Species (CRES) can assist the Hawai'i program in the areas of research, veterinary medicine and pathology, and public relations. Increased public education and visibility are important to enhance conservation in Hawai'i. The ZSSD has the scope and breadth to meet these needs. We have invested a great deal in Hawai'i, and we will continue our involvement in an advisory capacity.

Part of the key to our continued success is staying true to our organization's original focus -- working on birds of prey. To our co-workers, cooperators, and friends in Hawai'i, our sincere thanks and best wishes for continued success.



1.	Common 'Amakihi	21
	<small>Photo by Alan Lieberman</small>	
2.	'I'iwi	2
	<small>Photo by Paul Banko</small>	
3.	'Oma'o (Hawai'i Thrush)	27
	<small>Photo by Joop Kuhn</small>	
4.	Hawai'i 'Elepaio	11
	<small>Photo by Jack Jeffrey</small>	
5.	Paliia	22
	<small>Photo by Jack Jeffrey</small>	
6.	Puaiohi (Small Kau'i Thrush)	46
	<small>Photo by Joop Kuhn</small>	
7.	'Akohekohe (Crested Honeycreeper)	6
	<small>Photo by Jack Jeffrey</small>	
8.	Hawai'i Creeper	9
	<small>Photo by Joop Kuhn</small>	
9.	Maui Parrotbill	3
	<small>Photo by Alan Lieberman</small>	
10.	'Apapane	2
	<small>Photo by Alan Lieberman</small>	
11.	Hawai'i 'Akepa	6
	<small>Photo by Joop Kuhn</small>	
12.	'Alala (Hawaiian Crow)	36
	<small>Photo by Paul Banko</small>	
13.	Nene (Hawaiian Goose)	52
	<small>Photo by Joop Kuhn</small>	



STAFF

Cyndi Kuehler and Alan Lieberman, Co-Directors; Peter Harrity, 'Alala release; Marla Kuhn, Joop Kuhn, Paul Oesterle, Tracey Powers, Mary Schwartz, and Lynne Neibaur, Keauhou Bird Conservation Center personnel; Barbara McIlraith, John Turner, Valerie Stein, and Stephen Bailey, Maui Bird Conservation Center personnel. Kristin Whitaker worked as seasonal help during 1999. Conservation interns included Melissa Barney, Matt Farley, Angie Felty, Keith Hackbarth, Tracy Hagen, Dianne Havens, Ju Lee, Patrick Lieske, Leayne Patch, Lisa Rathbun, Mary Schmidt, Kecia Spears, and Alison Tozier.

COOPERATORS

Working together to make this restoration program successful are the U. S. Fish and Wildlife Service, Hawai'i Division of Forestry and Wildlife, U. S. National Wildlife Refuges - Hakalau and Kai Malino, the Biological Resources Division of the U.S.G.S., the National Park Service, Kamehameha Schools/Bishop Estate, the Zoological Society of San Diego, and the biologists, administrators, landowners, and interns of the Partnerships entrusted with the recovery of the Puaiohi, 'Alala, and Maui forest birds.

Financial and in-kind support were provided by the U.S. Fish and Wildlife Service, the Hawai'i Department of Land and Natural Resources, the Zoological Society of San Diego, The Geraldine R. Dodge Foundation, the Cooke Foundation, Ltd., Wallace Research Foundation, the Atherton Family Foundation, Tesoro Hawaii Corporation, Kaytee Avian Foundation, Hawaii Community Foundation, the McInerny Foundation, G. N. Wilcox Trust, Club 300 of Sweden, the Margaret B. Shipman Foundation, the Mad River Foundation, Hawaii Electric Light Company, an important anonymous donor, and many supportive Peregrine Fund members in Hawai'i.

Joni Frey created a new flight mural for the Discovery Room.

STAFF

Program Director, Nancy Freutel; volunteers and gift shop, MaryAnn Edson; education and raptor care, Kim Middleton; and facility maintenance, Mark Armstrong and Paul Malone.

Volunteers: Donating over 100 hours of service in 1999 were: Mark Armstrong*, Pat Baumbach, Christa Braun*, Karen Brender*, Don Disotell*, June Disotell, Betsy Eldredge, Phil Eldredge, Leo Faddis*, Anne Fitzsimmons, Bob Fitzsimmons*, Don Fox*, Linda Fraser*, Joni Frey*, Dawn Gable, Marie Gummerson*, Helen Harrington, Jerry Heimbeck*, Bryan Jennings*, Lori Johnson, Jeanne Koeberlein, Bob Koeberlein*, Pat Kolb, William Kolb*, Paul Malone*, Mike McSweeney*, Milton Melzian*, Bob Murray*, Trish Nixon*, Brit Peterson*, Carole Smith*, Nikki Stilwell*, and Dick Thatcher*.

* Docents

COOPERATORS

Financial support was provided by the Laura Moore Cunningham Foundation, Inc.; Offield Family Foundation; Harry W. Morrison Foundation; U.S. Bank; Union Pacific Foundation; Jim and Karin Nelson; Tom and Diana Nicholson; J.A. & Kathryn Albertson Foundation; Bank America Foundation; Laurie Simms; Browning Ferris Industries; Key Foundation; McAlvain Construction, Inc.; Interior Systems, Inc.; Maxey Tookey Architects; Romar Electric Co., Inc.; YMC, Inc.; Kilgore Architectural Products, Inc.; The Masonry Center, Inc.; Itron Telephone Solutions; ES/Drake Communications; Steve Guinn; Boise State University Construction Management Club; and numerous individual donors.



Photos by Nancy Freutel



Photo by Russell Thorstrom

John Schmitt adds an Andean Condor he prepared for the Interpretive Center.

Inform and educate the general public and primary and secondary students on the importance of birds of prey, nature, and our organization's accomplishments. We accomplish our goals by providing factual information to the public and by providing visual and hands-on opportunities during visits to the World Center for Birds of Prey.

EDUCATION PROGRAM

RESULTS

Cumulative: Since its inception in 1984, the Education Program has continued to grow to meet demand. We liken our beginnings to that of a one-room school house, and today we are housed in the ever-expanding Velma Morrison Interpretive Center. Our first public tours were given in 1985, and since that time we have directly reached almost 500,000 people through our educational programs.

1999: During this year we recorded over 30,000 visitors to the Velma Morrison Interpretive Center. As visitors arrive, many sign the guest register, which indicates we had visitors from all 50 states and 27 foreign countries. Fifty-five percent of our visitors indicated they visited the World Center because of a referral by other family members or friends.

The number of school children visiting with their classrooms

increased by over 500 students from the prior year. Our 8,152 visiting school children, totaling 331 classrooms, represented all grade levels from kindergarten through college. Almost 80% of these students are in elementary school. Third graders again represented the largest single school grade level.

We created an entirely new entry into the Interpretive Center and moved our gift shop there. The former gift shop has become a new Discovery Room. This new room provides visitors an opportunity for a greater in-depth discovery of the biology of birds of prey and will feature numerous hands-on exhibits. We also created an indoor raptor presentation area, reformatting and updated the *Jungle Awakening* show, and enhanced three interactive displays.

The life blood of the education program continues to be the talented and dedicated volunteers



Photo by Fred Schmitz

Eagle Scout Jessie Simmons, on the right, completes his service project. He donated the completed kestral boxes for our use.



New entry and gift shop at World Center for Birds of Prey.

who contribute their time and talents to make the program successful. The team of 124 volunteers worked over 8,500 hours in capacities such as chamber cleaning, gift shop staffing, scheduling, planning, mural design and painting, construction, library work, and, of course, Docents leading tours. Volunteers contributing more than 100 hours during the year are listed in this report.

FUTURE PLANS

To make the facility more useable by a greater number of people, we are continuing to upgrade several displays. Major additions expected within this year will be completion of the new Discovery Room and the addition of touch screen monitors to illustrate the different kinds of raptors better. Space continues to be at a premium, and we are exploring all avenues to enhance visitors' experiences and create a better learning environment.

RESULTS

The popularity of The Peregrine Fund's Internet site has continued to increase over the years. The number of "hits" (number of times pages are visited) to our site has increased from 600 during our first month on line in August 1995 to more than 600,000 per month this year! The Internet is providing us a cost-effective method to present information on our projects and their results to a world-wide audience. Through our site we provide background information and results on many of our projects, press releases, job announcements, and "Notes from the Field" written by our biologists working in the field. The site is an excellent information resource for students and teachers.

Due to the overwhelming response, we recently redesigned the site to incorporate new technology and to simplify navigation. The new design has been receiving excellent comments. It was selected by Britannica.com as one of the best on the Internet when reviewed for quality, accuracy of content, presentation, and usability.

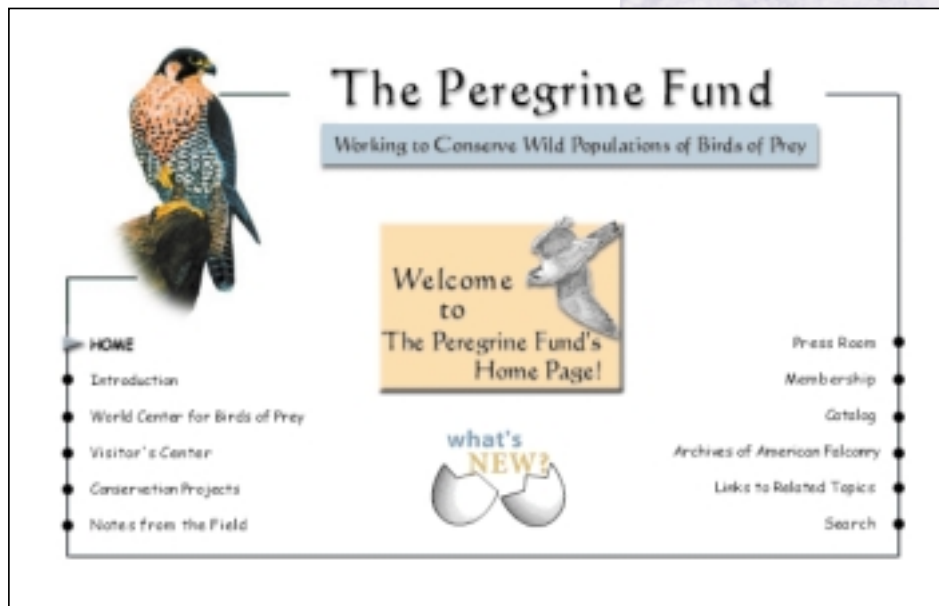
In an effort to produce more revenue for The Peregrine Fund from the Internet, we have joined as members of Shop2Give.com and GreaterGood.com. These sites have ground-breaking programs that enable you to support The Peregrine Fund while shopping on the Internet -- at no extra cost to you. Visit www.shop2give.com/peregrinefund or www.GreaterGood.com and choose The Peregrine Fund as your nonprofit organization. Then begin shopping at a variety of stores including Amazon.com, The Disney Store, 1-800-Flowers, and many more. A percentage of the purchase price (up to 15%) will be donated directly to The Peregrine Fund.

The Peregrine Fund also has an on-line catalog of items available in our gift shop at the World Center for Birds of Prey. Members of The Peregrine Fund are entitled to a 10% discount on any purchase. Our catalog is at www.peregrinefund.org/catalog.html.

FUTURE PLANS

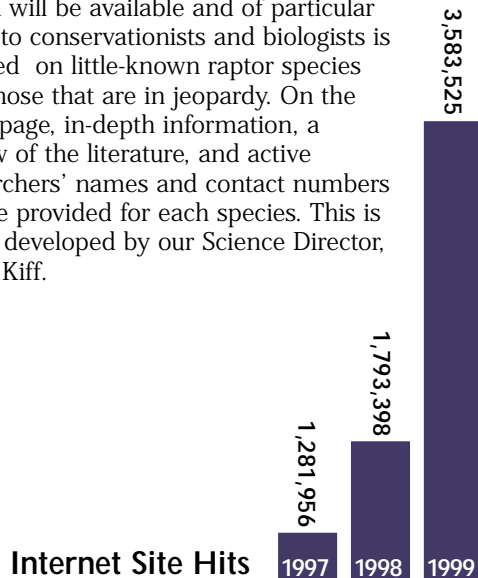
We plan to continue updating the site as new features become available. In 2000 we expect to add an interactive section on different kinds of raptors. This section will focus primarily on North American raptors and the birds of prey visitors see at our

THE PEREGRINE FUND INTERNET SITE



Interpretive Center. There will also be an interactive quiz to test your knowledge on basic facts about birds of prey and their identification. This section will be developed for use by children and adults.

A new resource we are developing which will be available and of particular value to conservationists and biologists is focused on little-known raptor species and those that are in jeopardy. On the homepage, in-depth information, a review of the literature, and active researchers' names and contact numbers will be provided for each species. This is being developed by our Science Director, Lloyd Kiff.



PROJECT GOAL

To provide well written, factual, and timely information to the general public about our organization and projects and in-depth information on raptors for conservationists and biologists via the Internet.

STAFF

The Peregrine Fund's internet site is supervised by Jeff Cilek, Vice President. Linda Behrman maintains the site with assistance from Brenda Ruckdashel.

COOPERATORS

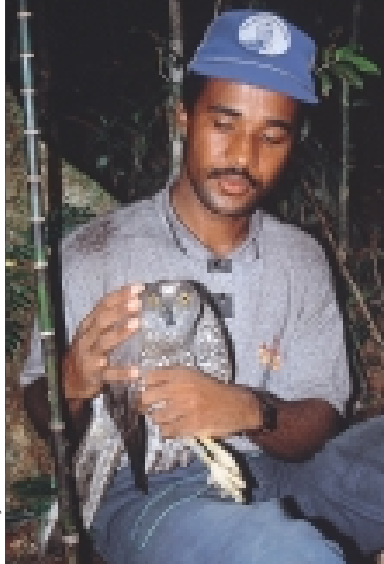
Financial support for the internet site was provided by the Ten Times Ten Foundation.

PROJECT GOAL

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

Malagasy doctoral student Lily-Arison René de Roland holding his favorite study raptor, the Henst's Goshawk.

Photo by Russell Thorstrom



Harilalaina Robenarimangason collects data for student Ignace Randriamanga who studied Madagascar Harriers for his DEA degree (Masters equivalent).



Photo by Russell Thorstrom

Masters student Ruth Tingay and Peregrine Fund technician Eloi Fanameha band and take a blood sample from a Madagascar Fish Eagle nestling before replacing it in its nest.



File Photo

STUDENT EDUCATION

RESULTS

Cumulative: Over the past 30 years, we have directly assisted students in completing 15 Ph.D. and 31 M.Sc. degrees or equivalents, and more than a dozen undergraduate degrees.

1999: We continued assisting students in three main programmatic areas, including the Maya Project, Madagascar Project, and the Pan-Africa Project. Jason Sutter completed his M.Sc. on the ecology of the Crane Hawk at Tikal National Park, Guatemala at Boise State University, marking the seventh advanced degree obtained by parti-

cipants in the Maya Project. Munir Virani, who had already earned an M.Sc. with our support, completed his Ph.D. at the University of Leicester, United Kingdom with a study on the ecology of Augur Buzzards in Kenya. By year's end, Carter Ong was near completion of her M.Sc. work on the ecology of the Martial Eagle in Kenya; her graduate studies have been at the University of Leicester, United Kingdom.

It was a banner year for graduate students associated with the Madagascar Project as six degree programs were completed. These included DEA degrees (M.Sc. equiv-

alent) earned by Erik Rakotoarisoa (ecology of ground-rollers), Ignace Randriamanga (ecology of the Madagascar Harrier), Doris Rasamoelina (modeling of fisheries in several lakes), Ursile Razanantsoa (ecology and behavior of an endangered lemur, Decken's Sifaka), and Harilalaina Robenarimangason (ecology of the Banded and Madagascar Kestrels). Lily Arison René de Roland earned his Ph.D. with his detailed studies of the biology of the Henst's Goshawk and France's Sparrowhawk. All of these degrees were earned at the University of Antananarivo. Sup-

SCIENTIFIC PUBLICATIONS AND PRESENTATIONS

RESULTS

A 275-page indexed bibliography of publications by our staff and research associates, or with our support, was updated, and it included 753 titles published between 1970-1999. At least 45 publications appeared in 1999, including two large progress reports on the Madagascar Project for the years 1997-98. These were produced entirely by our Malagasy staff. Aristide Andrianarimisa, National Director of the Madagascar Project, edited the volumes, and the various accounts were written mostly by the Malagasy students who have been involved with the project. Many of these contributions will eventually be published in technical journals.

The long years of field research on the Maya Project are paying off in the form of numerous papers and short notes published in ornithological journals. By now, 35 peer-reviewed publications, disser-

tations, and theses have resulted from the Maya Project, and the Madagascar Project field work has generated 41, with more to come from both groups. The published contributions of our talented field biologist, Russell Thorstrom, have been particularly noteworthy for both of these projects. In aggregate, the publications emanating from the Maya and Madagascar Projects will serve as a lasting contribution to the conservation and knowledge of the birds in those regions.

Our Science Director, Lloyd Kiff, gave the keynote address (on the recovery of the Peregrine in North America) at the 3rd International Conference of

the Raptor Research Foundation in Mikulov, Czech Republic in September. Rick Watson and Lloyd Kiff also participated in the World Conference of BirdLife International in Malaysia in November, and Lloyd Kiff attended the VI Neotropical Ornithological Congress in Monterrey, Mexico.

PROJECT GOAL

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

FUTURE PLANS

Because our work involves a mixture of pure research and applied conservation, we have a special obligation to report our results to our peers, wildlife managers, and the interested public.

Thus, we will continue to emphasize publications and oral presentations as highly important pay-offs of our programs.

TPF PUBLICATIONS

Technical	172
Dissertations/theses	46
Reports	508
Popular articles	27
Total:	753

SPECIMEN COLLECTION

RESULTS

Our collections now contain nearly 7,000 eggshell specimens, salvaged from our 30 years of captive breeding work, and over 200 bird skins, mostly of raptors. These specimens are maintained for research and reference purposes and are housed in 24 state-of-the-art metal cabinets

PROJECT GOAL

Develop and maintain systematic collections of eggshells and raptor study skin specimens for research and reference purposes.

in our 800 sq ft collection building.

In 1999, John Schmitt, renowned artist and taxidermist, was able to spend a week at the World Center preparing several dozen salvaged specimens that

had accumulated over the past few years from natural mortality in the captive breeding program and road-killed birds brought to us by our volunteers and associates. Most of these specimens were integrated into the main collection, and others were placed in a mini-reference collection in the Interpretive Center. Eggshell specimens salvaged from the various captive breeding programs were added, and inventories of prepared and incoming specimens were maintained.

FUTURE PLANS

A custom-made device for measuring eggshell thickness was obtained from Clark Sumida, of Camarillo, California. This sophisticated instrument will allow us to conduct detailed studies on differ-

ences in eggshell thickness between captive- and wild-laid eggs of Peregrines, Aplomado Falcons, California Condors, and other species. We also will continue to examine the role of genetics in various egg parameters, including size, color, and shape. Our collection is unique among museum egg collections since we have detailed information about each of the birds that laid the eggs and often their parents as well. We will continue to build up gradually a representative collection of study skins of birds of prey with a goal of eventually having at least one example of each sex and age class of all North American species with a spread wing for the convenience of artists and researchers.



Photo by Lloyd Kiff

Measuring the thickness of a California Condor eggshell.

STAFF

The collections are supervised by Science Director Lloyd Kiff. Christi Hall maintained the specimen catalogue and assisted with data organization. Bird specimens are prepared by John Schmitt.

port was also provided for studies by Renee Land (Tufts University) on the ecotoxicology of Madagascar Fish Eagles, Gilbert Razafimanjato (University of Antananarivo) on the endemic Peregrine subspecies in southern Madagascar, and Ruth Tingay (University of Nottingham, United Kingdom) who conducted field research on the roles and relationships of extra-pair birds at Madagascar Fish Eagle nests for her M.Sc. degree.

FUTURE PLANS

We will provide support to Travis Booms and Catherine Wightman, Boise State University Master's degree candidates who are associated with our Greenland Project under the supervision of Mark Fuller. In Madagascar, studies will continue by Gilbert Razafimanjato on Peregrines and Ruth Tingay, who is now embarking on a Ph.D. program and continuing her field research on the roles and relationships of extra-pair birds at Madagascar Fish Eagle nests. Two individuals associated with our Pan-Africa project will continue their studies with our support: Mburu Chege, who is conducting research on the ecology of the Egyptian Vulture at Hell's Gate National Park, Kenya for an M.Sc. at the University of Nairobi, and Ato Lakew Berhanu of Ethiopia who is conducting field studies on the Lammergeier for a future M.Sc. at the University of Kent, United Kingdom.

LIBRARY

Our library now contains nearly 5,000 books, as well as complete or partial runs of over 400 technical journals and conservation magazines. Our computerized reprint collection contains over 9,000 catalogued articles, and another 5,000 await processing.

PROJECT GOAL

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 Intermountain biological community.

In 1999 Mrs. Nobuko McClure, of Camarillo, California, donated a huge biological library from the estate of her late husband, Dr. H. Elliott McClure,

who conducted ornithological and medical entomological research in Southeast Asia for many years. In addition, Dr. Jared Verner donated a large portion of his conservation biology library, and smaller gifts of books and other materials were received from many other donors. A large collection of mostly technical ornithological journals was purchased from Flora and Fauna Books in Seattle.

Cataloguing of the library, using the OCLC system, was initiated in 1999, and about half of the book holdings have been formally processed. Our catalogued titles are included in the widely used OCLC database, allowing users from anywhere in North America

to see what titles we house. Additional shelving was added in both the main library and in the collections room to accommodate the many new acquisitions.

FUTURE PLANS

In coming months, we will complete cataloguing books and monograph holdings, finish binding long journal runs, and bring the reprint catalogue up to date. Shelf space is now at a premium, and a new area dedicated specifically to the library will eventually be required. Nevertheless, we continue to seek donations of libraries and individual books, all of which are tax deductible.



Photo by Brenda Ruckdashel

A plate from the two-volume set, Nicoll's Birds of Egypt, donated by Sally Spofford, one of the many rare holdings in our library.

STAFF

The library is supervised by Lloyd Kiff, Science Director. Volunteer Dawn Gable assisted with the reprint collection in 1999, and Christi Hall helped catalogue books.

NEOTROPICAL RAPTOR CONSERVATION PROGRAM

Conservation in the Neotropics (the biological region comprising most of tropical Central and South America and the West Indies) is a global priority because of the high diversity of species found in tropical habitats and the rapid rate of habitat alteration. Within the Neotropics, the islands of the West Indies are particularly important because of the number of species in jeopardy from loss of the already limited habitat and the importance of these islands as a flyway for migratory species. Central America is important because of the limited extent of remaining forest, the high proportion of taxonomic diversity within this area, and the large proportion of North American migrant species that winter there. Conservation biologists agree the best way to conserve biodiversity is to set aside large tracts of untouched land. The practical reality, however, is that most land areas set aside will likely be much smaller than necessary to conserve tropical biodiversity adequately. This is particularly true for large, widely dispersed animals such as raptors. By meeting the ecological requirements of wide-

ranging raptors, top-of-the-food-chain predators, we can reasonably expect to save most of the biodiversity in the food chain below them. In this way raptors can provide an umbrella of protection for the ecosystem in which they live.

The Peregrine Fund's time-tested, hands-on, science-based approach has both a unique and valuable role for conservation in the Neotropics. A significant investment now in the Neotropics will strongly influence conservation actions and raptor research for decades, if not longer. As forests are rapidly diminishing, the return on investment will likely never be as great in Latin America as during the next 10 years.

The Peregrine Fund's Neotropical Raptor Conservation Program builds on our many years of experience in Central and South America, especially the Maya Project in Guatemala, the Harpy Eagle project in Venezuela, and the current effort to release and study Harpy Eagles in Panama. The program is designed to produce dramatic results for conservation of rap-

tors, habitat, and biodiversity in the Neotropics. Specific elements of the program are described in the following pages, under the Neotropical Raptor Center, Honduras, and Harpy Eagle Conservation and Research.

ANTICIPATED RESULTS

The Neotropical Raptor Conservation Program has the following major goals: (1) conservation of raptors known or likely to be in jeopardy because of their small populations and/or limited or disjunct ranges; (2) improved knowledge and conservation of raptors with emphasis on those for which too little is known to determine their status; (3) answering important land management questions using the ecological needs of raptors' as a yardstick for conservation of viable populations; (4) influencing human behavior using raptors as flagships for conservation of tropical biodiversity; (5) conserving important tracts of habitat for tropical biodiversity; and (6) providing leadership and developing local capacity for raptor conservation and research in Latin America.

FUTURE PLANS

In addition to the work already in progress and described in the following pages, we are planning to expand our species-specific studies on those raptors that are little known and possibly in jeopardy. Beginning in 2000, we will study the ecological needs of the Isidor's Eagle (also called Black and Chestnut Eagle) in South America, and develop studies on the Orange-breasted Falcon in Central America and the Grenada Hook-billed Kite and Ridgway's Hawk in the West Indies. We also hope to begin studies to understand the effects of forest loss and fragmentation on raptor communities to help ensure that sufficient forest area remains in sufficiently large blocks to ensure the survival of forest-dependent species.



Photo by Craig Flatten

Adult Ornate Hawk Eagle.

STAFF

The Neotropical Raptor Conservation Program is directed by Rick Watson and Bill Burnham and advised by Peter Jenny, Lloyd Kiff, Alberto Palleroni, Russell Thorstrom, and David Whitacre.

COOPERATORS

Collaborators include the Smithsonian Tropical Research Institute, Autoridad Nacional del Ambiente, and the Fundacion de Rehabilitacion de Especies Tropicales. Funding for this program is provided by the Wolf Creek Charitable Foundation and the Henry M. and Wendy J. Paulson Foundation.

Photo by Russell Thorstrom



Incubating female Barred Forest Falcon looks up at biologist from her hidden nest within the cavity of a tree.

PROJECT GOAL

To develop a comprehensive program of conservation, research, and development of local capacity for conservation throughout the Neotropics by focusing on raptors.

NEOTROPICAL RAPTOR CENTER

Photos by Angel Muela



Administrador General Ricardo Anguizola, who is responsible for Panama's wildlife, natural areas, and environment, holds the Republic's National Bird, the Harpy Eagle. He has been integral in establishment of the new Neotropical Raptor Center.



The press conference in Panama City announcing the establishment of the Neotropical Raptor Center. From the left are the new Center's Director, Alberto Palleroni (with eagle), Lars Klassen, Director, USAID Panama, Jacobo Lacs, Peregrine Fund Board member, Ricardo Anguizola, Administrador General, Autoridad Nacional del Ambiente, and Jorge Arosemena, Executive Director of the City of Knowledge/Fundacion Ciudad Del Saber.

In early 2000 we will establish the Neotropical Raptor Center in the Republic of Panama, Central America. The new center will serve as the headquarters of our Neotropical Raptor Conservation Program (see page 14).

The Center will consist of captive breeding facilities surrounded by 40 ha of forest, offices, and housing and be located within the City of Knowledge, the former U.S. Army's Ft. Clayton. The site is being made available by agencies of the Panamanian government (see Cooperators). The location is within a 30 minute drive of Panama City and 15 minutes of the Harpy Eagle release site in the Soberania National Park. It is contiguous with the Parque Natural Metropolitano. We expect to move most of our Harpy Eagles from the World Center for Birds of Prey to this new facility in June/July 2000 when it should be operational (see Captive Breeding -- Raptors, page 3). Alberto Palleroni will be the Director of this new facility.

PROJECT GOAL

Develop and operate a facility in Panama from which our Neotropical Raptor Conservation Program will be based and captive breeding and other hands-on activities with raptors can occur.

COOPERATORS

Patronato Amigos Del Aguila Harpia, Autoridad Nacional del Ambiente, Interoceanic Region Authority (A.R.I.), City of Knowledge/Fundacion Ciudad Del Saber, USAID Panama, and Jacobo Lacs.

TAWAHKA BIOSPHERE PROJECT - HONDURAS



Photo by David Anderson

RESULTS

Cumulative: This project developed from collaboration that began in 1990 with biologists from the University in Tegucigalpa. Work in 1998 showed great potential impact for raptor conservation in Central America by helping the Tawahka Indians protect their indigenous lands.

1999: David Anderson spent five months living in the Tawahka village of Krausirpe. His surveys in the area and into the Sierras del Warrunta, a limestone mountain range in the midst of rainforest, found 21 diurnal and four nocturnal raptor species, and nests of six diurnal species. Surveys for cliff-nesting raptors found Bat Falcons but surprisingly no Orange-breasted Falcons. Helicopter surveys, conducted later by Russell Thorstrom and Rick Watson, confirmed the unexpected absence of these falcons.

David learned about Tawahkan

customs and culture and developed an understanding of what resources it would take to achieve the proposed project. The cost of working at this site, plus new information that the Biosphere Reserve may be established without our involvement, lead us to curtail our proposed project. Grants were provided to Asociacion Asang Launa to help the Tawahka community build an airstrip and to Professor Gustavo Cruz to assist with biological surveys.

FUTURE PLANS

Collaboration will continue with support of Honduran students to complete training in ecology and conservation. We will survey for Orange-breasted Falcons throughout Central America to determine whether the known population in Belize and Guatemala is isolated from the species' southern range and therefore potentially in jeopardy.

Krausirpe, a Tawahka village on the Patuca River and our base of operations in 1999.

PROJECT GOAL

To help the Tawahka Indians create a biosphere reserve to conserve 230,000 ha of rainforest in their indigenous land in southeastern Honduras.

STAFF

Rick Watson leads this project with assistance from David Anderson, Russell Thorstrom, and Bob Berry.

COOPERATORS

We work with The Tawahka Indian community, Asociacion Asang Launa, and the Department of Biology, Universidad Nacional Autónoma de Honduras. Funding was provided by the Wolf Creek Charitable Foundation.

HARPY EAGLE CONSERVATION AND RESEARCH

STAFF

Bill Heinrich coordinates the release aspect of the Harpy Eagle Program. Alberto Palleroni manages the project in Panama and directs our research activities there. Also participating are Angel Muela (general operations and field biologist), Francisco Barrios (operations and field work), Oscar Beingolea (raptor specialist-breeding and field biologist), Edwin Urriola (field biologist), Yu-Cheng Hsu and Janeene Touchton (field biologists, Barro Colorado Island), and Bernabe Fernandez and Hilario Rodriguez (Ecological Police).

COOPERATORS

The partnership of many individuals and organizations has made this project possible, including, in Panama, the Presidency of Panama, Autoridad Nacional del Ambiente, Autoridad de la Region Interoceanica, Patronato Amigos Del Aguila Harpia, Smithsonian Tropical Research Institute, City of Knowledge/Fundacion Ciudad Del Saber, Fundacion de Rehabilitacion de Especies Tropicales, USAID, Jacobo Lacs, David de Castro, Asociacion Nacional para la Conservacion de la Naturaleza, Alcaldia del Distrito de Panama/Summit Gardens, Canopy Towers, Bern Empresas, ANCON, Panama Audubon Society, the Collective Lands of the Embera and Wounaan Indians, Kuna Yala (San Blas Lands), Comarca Nogbe Bugle (Teribes, Waymies, and Bokota Indigenous Lands), and Soberania, Darien, Camino de Cruces, and Chagres National Parks. Major financial support for this project in 1999 was received from the Offield Family Foundation, Mr. and Mrs. Peter Manigault, Mr. and Mrs. Jacobo Lacs, James and Barbara Cimino Foundation, Exxon Company, USA, and Pennzoil Company.

Large tropical forest raptors like the Harpy Eagle occur at low densities and reproduce in the wild at very slow rates. As a result of human persecution and the rapid rate of tropical defor-

estation, the Harpy Eagle is threatened in Central America, and South American populations may become threatened or lost in the future if threats cannot be reduced. Although much is being done to establish tropical forest reserves,

many will be too small to support more than a handful of reproductively isolated pairs of Harpy Eagles. Captive propagation and subsequent reintroduction may be required to maintain genetic diversity and help mitigate the enhanced effects of natural loss on these small, isolated populations and restore the species to its former range.

An increase in public understanding of the need to protect Harpy Eagles and leave intact habitat around their nests is essential for

conservation of the species. By achieving this kind of protection, the efforts on behalf of the Harpy Eagle can also provide an umbrella of protection for most other species in the same habitat. The Harpy Eagle is a flagship for conservation of tropical forests and an effort to restore such a charismatic species can significantly increase local environmental concern. Restoration, coupled with a concerted effort to enhance local understanding and concern for the species, may be most successful initially in Panama where it is the national bird.

We have invested considerable resources in the scientific investigation of the Harpy Eagle in the wild, yet there remain significant gaps in our understanding of its ecology and behavior. By releasing and observing captive-raised eagles, we can achieve a degree of intimacy, not possible with entirely wild birds, that greatly increases opportunities to make observations that are normally rare, such as how eagles choose, hunt, and kill their prey. The study of released birds has become an essential part of our research program.

RESULTS

Cumulative: Since beginning captive propagation in 1988 and through 1999, at the World Center for Birds of Prey we have raised six young eagles and released five to the wild in Panama, of which three

remain alive, all independent of human care. One was shot and a second found dead. Observation of their behavior is providing new and additional information to the field studies we accomplished and/or supported on wild birds in Panama,

PROJECT GOAL

Conserving Harpy Eagle populations by preserving habitat, reducing human persecution, and by reestablishing lost eagle populations through propagation and release where habitat remains, and by expansion of knowledge of the eagle through research.

Venezuela, Colombia, and Ecuador. From these studies we have gained new information on range, behavior, diet, breeding, and nest density from 18 radio-tagged eagles (many monitored by satellite), 34 nests found in Venezuela, and 14 nests found in Panama.

1999:

Release of Captive Produced Eagles - Using modified techniques we developed

for release of Peregrine Falcons and Bald Eagles, we can now predictably and successfully release captive-produced Harpy Eagles to the wild by hacking. Of the five eagles released, one was found dead near the release site but the other four eagles all began capturing their own food and became independent of human care. One of those was later shot. Two have been independent for over one year. We have found that even after independence we can capture, relocate, and immediately re-release the young eagles in a new area where they will then remain. We re-released a male and a female Harpy Eagle on Smithsonian's Barro Colorado Island (BCI). BCI is within the Panama Canal and no eagles existed on the island. Long-term research has been underway there



Photo by Alberto Palleroni

Above: our released male Harpy Eagle, "James," with his prey, a Two-toed Sloth.

Taiwanese biologist Yu-Cheng Hsu provided crucial assistance by monitoring our released Harpy Eagle for over six months.



Photo by Alberto Palleroni

for decades on many of the Harpy Eagle's potential prey. Smithsonian researchers are excellent supportive cooperators on this project.

Prey Captured - By intensive observation of released Harpy Eagles we have documented hundreds of attempts to capture prey, of which about 140 were successful. The primary prey species captured were Two- and Three-toed Sloths, Mantled Howler Monkeys, and White-faced Capuchin Monkeys, as well as a variety of other prey such as deer, Collared Peccaries, opossums, Iguanas, Kinkajous, porcupines, Agoutis, tamarins, and coati mundis. Almost all the previous information on what Harpy Eagles feed on was from prey delivered to, and remains collected at, nests.

Hunting by Eagles - Until now, very few observations existed on hunting behavior and methods and prey captured by Harpy Eagles. For the two oldest released eagles (one male and one female), we have determined their cycles of behavior and hunting habits, documenting every prey capture over several months. We know the male captures far fewer primates than the female. The female takes about 50% primates, the bulk of the balance made up of sloths. The male captures more sloths and only about 10% of its diet are primates, with a greater variety of other prey. The male kills about every four to five days while the female kills about every six to seven days.

Wild Nests - Over 30 nest sites of Harpy Eagles have been located in Panama with the critical assistance of our cooperators. We are finding that: (1) Harpy Eagles thrive in indigenous people's lands, (2) they are common where encroach-

ment of non-native people and guns are absent, and (3) they are absolutely absent when the slightest inroads are made.

Native Peoples and Harpy Eagles We are in communication with most of the indigenous communities in Panama and were invited to make a presentation at their Congress. Based on this presentation and communications, we have been given access to many key areas and habitats for the Harpy Eagle. Further, we are being provided nest site locations by communities and are establishing formal relationships with them to help protect the Harpy Eagle and monitor nests.

Public Education - In cooperation with the Patronato Amiguo Del Aguila Harpia and under the leadership of David de Castro, we are assisting and cooperating with the development of a country-wide education program in Panama focused on the Harpy Eagle.

FUTURE PLANS

In 2000 the education program to prevent shooting of Harpy Eagles should begin in earnest in Panama. We will continue to release captive-produced Harpy Eagles to the wild and test other hands-on management actions to bolster wild populations. In collaboration with the Smithsonian Tropical Research Institute and Marc Hauser, Professor, Harvard University, and his graduate stu-

dent, Ricardo Gil Da Costa, we are looking at the dynamics of predator-prey interactions on BCI with observations and experiments of predation by Harpy Eagles on Capuchin and howler monkeys. With John Rubin, Rubin Tarrant Productions, we are developing prototypes of tiny, transmitting cameras that mount on a Harpy Eagle to film hunting from their point of view. We will continue to locate and monitor wild Harpy Eagle nests in cooperation with Panama's native peoples and the Panamanian government.



Photo by Lars Klassen



Photo courtesy of Neil Rettig Productions, Inc.

Adult female Harpy Eagle at the nest.

Left: Public and student education are important parts of conservation of the Harpy Eagle and its environment.

PAN-AFRICA CONSERVATION PROGRAM



Photo by Munir Virani

Russell Thorstrom and Kenyan assistant Chege trapping African Fish Eagles in Lake Naivasha, Kenya.

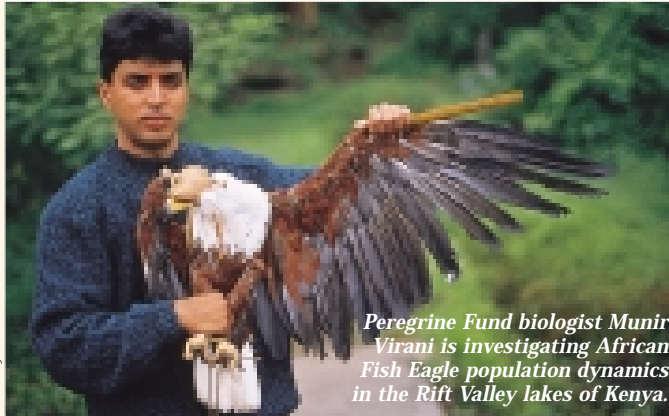
STAFF

Rick Watson directs the Pan-Africa Program with assistance from Russell Thorstrom. Project management is by Simon Thomsett and Munir Virani in Kenya, and Ron Hartley in Zimbabwe. Collaboration of Peregrine Fund grantees is by Susanne Shultz in Ivory Coast and Dr. Pat Benson in South Africa.

COOPERATORS

Zimbabwe Falconers' Club, Zimbabwe Department of National Parks and Wildlife Management, National Museums of Kenya Ornithological Department, Kenya Wildlife Service, Ethiopian Wildlife Conservation Organization, Leicester University, United Kingdom, University of Pretoria (Conservation Planning Unit) and Rob Davies, South Africa, and many others. Support for this program was provided by an important anonymous donor and many in-kind donations.

Photo by Simon Thomsett



Peregrine Fund biologist Munir Virani is investigating African Fish Eagle population dynamics in the Rift Valley lakes of Kenya.

Photo by Simon Thomsett



Project Manager Simon Thomsett checks eggs for hatching at a Bearded Vulture nest in Ethiopia.

RESULTS

Cumulative: Work in Africa has focused on Kenya, Ethiopia, Zimbabwe, and more recently on South Africa and Ivory Coast in West Africa. Numerous public education projects have been completed in Kenya. Student support and training have been successful in both Kenya and Zimbabwe, resulting in the graduation of local students at both the Master's and Ph.D. level. Studies have been completed, providing essential new information on species in jeopardy, such as the Sokoke Scops Owl, Bateleur, Crowned Eagle, Martial Eagle, Egyptian Vulture, Bearded Vulture, and Cape Vulture.

1999: In Zimbabwe, student Angus Middleton completed a study on winter breeding eagles. Monitoring of Teita, Peregrine, and Lanner Falcon breeding continued, as did studies on Black Eagles in the Matobo hills and the raptor community around Bulawayo. A new study began on the role of hyrax in the distribution of Black Eagles, Crowned Eagles, and African Hawk Eagles in the Bubiana Conservancy.

In Kenya, biologist Munir Virani graduated with his Ph.D. from the University of Leicester, United Kingdom. His study on the ecology of the Augur Buzzard in human-altered landscapes provided information on the effects of Kenya's fast growing population, industries, and agriculture on

these once common raptors. Project Manager Simon Thomsett enjoyed a breakthrough with the reintroduction of the Bearded Vulture (also called Lammergeier) to Kenya's Hell's Gate National Park, described in detail in the following pages.

FUTURE PLANS

The endangered Sokoke Scops Owl is known only from two small areas of east Africa, where its largest population is confined to a small and isolated "habitat island," a patch of forest on Kenya's coast. Studies to date have failed to locate the first nest of the owl, a key piece of knowledge needed to understand how we can prevent the species' extinction in the face of extremely limited remaining habitat. This project has one aim: to find the first-ever nests of the Sokoke Scops Owl and with this knowledge, conserve those features of the habitat essential for breeding.

African Fish Eagle studies on Lake Naivasha will be expanded to cover the eagle's distribution in the Kenyan Rift Valley and Kazinga Channel, Uganda, because of increasing concerns about the effects of pesticide, fertilizer, and other organic contamination of lakes and their effect on eagle and other wildlife populations.

Increasingly, conservation priorities must be established based on the likelihood of species extinction. An emerging tool needed to help in decision making is the use of Geographic Information Systems (GIS) that use a computer to map habitats and predict raptor distribution and abundance more accurately than ever before achieved. We are planning to develop a raptor GIS model, initially using a few species we know well in Madagascar. If the model works well, we will eventually develop a worldwide GIS covering at least the raptors in jeopardy.

PROJECT GOAL

To build local capacity for conservation of biodiversity using a focus on birds of prey and their ecological needs.

BEARDED VULTURE REINTRODUCTION TO KENYA

The Bearded Vulture is a large, colorful vulture that nests on high cliffs in rugged mountains of South Africa, Kenya, and Ethiopia on the African continent, and parts of Europe and Asia. The African population is considered separate and different from those elsewhere. They are globally endangered due to human interference at the nest, mostly from recreational climbers, and from accidental poisoning by livestock farmers trying to control predators with poison baits. Until the early 1980s breeding Bearded Vultures were an important attraction among the fauna of Hell's Gate National Park, Kenya. They were driven from their breeding area by rock climbers who used their nest sites to rest while climbing. Elsewhere in Kenya, Bearded Vultures have declined due to disturbance and poisoning, so that the species is now endangered. Since implementation of the Hell's Gate National Park's management plan in 1984, climbing has been controlled, so the probability of successful reintro-

duction of the species to this key area is high.

RESULTS

1999: Peregrine Fund Project Manager Simon Thomsett has worked since February 1998 to secure the cooperation of the Ethiopian authorities and study the Bearded Vulture's breeding biology in Ethiopia to determine the project's feasibility. In December 1999 he collected the first two nestlings, which are being raised in Kenya for release in April 2000.

FUTURE PLANS

Over the next three years, a further 16 nestling Bearded Vultures will be rescued from siblicide (death of the second-hatched chick often caused by attacks from the first-hatched chick) in their breeding sites in Ethiopia, about 1,400 km north of the Kenyan release site. They will be raised in captivity at our Athi River facility, and then released at Hell's Gate.

PROJECT GOAL

To re-establish the Bearded Vulture (Lammergeier) as a breeding species in Hell's Gate National Park, Kenya, and to begin the process of species restoration throughout Kenya; and, to help develop local capacity for conservation in Ethiopia.

After rescue from siblicide in Ethiopia, Bearded Vulture nestlings were raised in captivity in Kenya for release in Hell's Gate National Park.

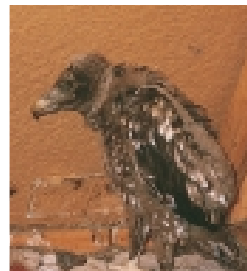


Photo by Rick Watson

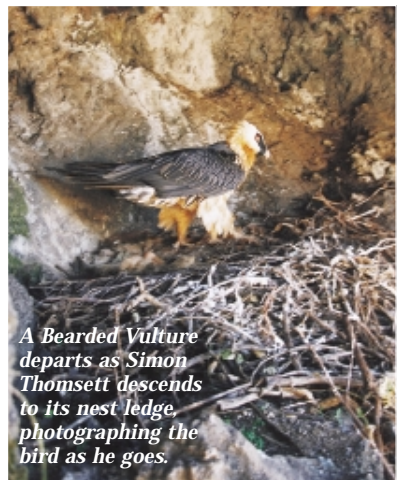
Released birds will be radio-tagged, followed, and studied to understand their behavior, movements, and survival. Surveys for Bearded Vultures in likely mountainous habitat will be completed to determine whether and where further releases could occur to bolster the Kenyan population.

STAFF

Project management in Kenya and Ethiopia is by Simon Thomsett.

COOPERATORS

We collaborate with Kenya Wildlife Services, Ethiopian Wildlife Conservation Organization, and the National Museums of Kenya.



A Bearded Vulture departs as Simon Thomsett descends to its nest ledge, photographing the bird as he goes.

Photo by Simon Thomsett



Reintroduction of Bearded Vultures to Hell's Gate National Park in Kenya is being achieved with young birds from the Bale Mountains of Ethiopia.

Photo by Simon Thomsett

CROWNED EAGLE AND CONSERVATION OF TAI NATIONAL PARK, IVORY COAST

This project is a first attempt to provide an early warning system for loss of biodiversity within a national park using the diet of an avian predator to detect change in the biological community structure. Crowned Eagles prey mainly upon primates, which are subject to poaching within the park. Following the diet of eagles over time can reveal important changes in prey composition that are not readily detected by conventional census methods.

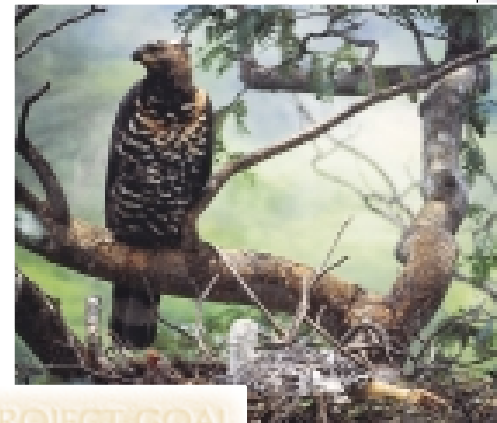


Photo by R. R. Hartley

PROJECT GOAL

To establish the use of Crowned Eagle diet in Tai National Park as a low-cost, sensitive means to measure prey populations and monitor changes due to poaching.

Seven Crowned Eagle nests were studied in Tai National Park, Ivory Coast.

estimation of relative densities of primates in six zones throughout the park with different levels of poaching, and (3) comparison of eagles' diets across the areas surveyed. Susanne Shultz is executing the first, and supervising the second and third components which will be conducted by Ivorian Ph.D. students from the National University of Abobo, Abidjan.

RESULTS

1999: U.S. student Susanne Shultz completed the first season of study on Crowned Eagles in Tai National Park. Seven nests were observed, and home range, behavior, and diet information were collected for the first time from this species in West Africa's tropical moist forests.

FUTURE PLANS

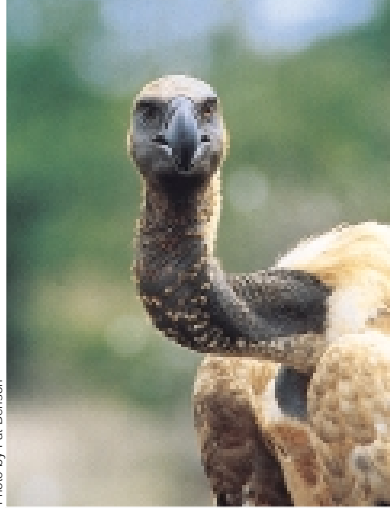
This project has three parts: (1) location and monitoring of nests and individual eagles, (2)

COOPERATORS

We provided financial support to Susanne Schultz of the State University of New York at Stony Brook, working in collaboration with the National University of Abobo, Abidjan and Tai National Park.

The endangered Cape Vulture is found only in southern Africa.

Photo by Pat Benson



CAPE VULTURE CONSERVATION IN SOUTH AFRICA

The endangered Cape Vulture is found only in southern Africa. Its decline came with the disappearance of migratory ungulate herds and widespread use of poisons for predator control. Most of the remaining individuals of this cliff-nesting, colonially breeding bird occur in South Africa's northern and northwest provinces where communal lands with high live-stock mortality provide food for foraging vultures. Commercial live-stock and game farming are the other prominent economic activities in these provinces. Almost one-quarter of the global population of Cape Vultures

nest in one colony on cliffs of the Kransberg mountain range. Monitoring of the Kransberg colony began in 1981 and continues to present. Reproduction, mortality, and the factors affecting them, as well as foraging movements of adults, vulture behavior, and nutrition have been studied, resulting in the most extensive long-term study of vultures in Africa. The knowledge gained from this study is contributing importantly to the management and conservation of the Cape Vultures and other colonial nesting vulture species.

RESULTS

Cumulative: Since 1984 Pat Benson has monitored the number of breeding pairs at Kransberg, measuring a decline from 961 active nests (in which an egg is laid) to a low of 697

in 1995. Analysis of over 600 carcasses collected during this study indicates poisoning is a major mortality factor, while disturbance at nests and collision with man-made structures are other human factors affecting these birds.

1999: Peregrine Fund support began in 1999 for monitoring that continued throughout the year with monthly visits to determine nest occupancy, laying, hatching, fledging, and failure dates for the roughly 2,700 nest sites that have been identified on the cliff and marked on photographs from aerial censuses con-

ducted at this colony since 1981. When possible, the cause of nest failure (e.g., predation, poisoning, collision) was determined from available evidence, and carcasses were collected from the base of the cliff for necropsy, and later prepared and stored at the Transvaal Museum.

FUTURE PLANS

Birds generally live longer than equivalent-sized mammals. Large

PROJECT GOAL

Complete the longest-ever continuous study on Cape Vulture population dynamics at Kransberg Colony, South Africa and use the understanding gained to mitigate human impacts on the species' survival.

species, such as the Cape Vulture, may live 40-50 years or more, and have a potentially long reproductive life. This long-term study has made it possible to determine a species' lifetime reproductive output and the relative importance of the many factors influencing population trends. Completion of this work will

allow us to distinguish the effects of the natural environment (e.g., wet and dry cycles, which occur in southern Africa on an approximately 8-10 year period) from human-induced factors (e.g., poisoning, disturbance, collision) and gauge their relative importance. This information is essential for well-informed management decisions and conservation interventions and will be made public through publication in scientific and popular journals, as well as possibly television and radio.



Photo by Pat Benson

Above: Cape and other vultures feed on an elephant carcass. Poisoning in agricultural areas has contributed significantly to the decline of Cape Vultures and other avian scavengers.

Right: for nearly two decades Pat Benson has monitored almost one-quarter of the global population of Cape Vultures nesting on the cliffs of the Kransberg mountain range.

Photo by Pat Benson



COOPERATORS

The Peregrine Fund provides financial support to Pat Benson of the University of the Witwatersrand.

MADAGASCAR PROJECT

RESULTS

The Indian Ocean island of Madagascar, like many other islands in the world, supports a diversity of life that is found nowhere else; it is unique to Madagascar. Of Madagascar's 22 raptors, three are considered critically endangered; all are in jeopardy to some degree.

Cumulative: Since beginning in 1990, we have re-discovered the Madagascar Serpent Eagle and Madagascar Red Owl, both previously unseen for decades and thought, by some, to be extinct. We have helped create Madagascar's largest national park on Masoala Peninsula, protecting about 810 square miles of rainforest habitat for the Red Owl and Serpent Eagle. We have investigated the ecology of the Madagascar Fish Eagle, measured its population size, developed low-cost methods to help increase its population size, and developed a locally sustainable community initiative to conserve its wetland habitat. Throughout our work, we have supported and trained Malagasy biologists, one at Ph.D. and 10 at Masters-degree levels, as well as over 30 field staff.

1999: Five Masters and one Ph.D. student completed their degrees this year, and one new student began a study on Madagascar's endemic subspecies of Peregrine Falcon. Our goal in western Madagascar is to cause the recovery of

the endangered Madagascar Fish Eagle. Accomplishments this year include the creation and strengthening of two community natural resource management associations (FIZAMI and FIFAMA) at three adjacent lakes that support over 10% of the fish eagle's breeding population. The associations have begun to control over-fishing and exploitation of lakeside trees, resources required by fish eagles and shared with local communities. A study to

understand paternity and dispersal of young fish eagles was completed to help understand the strange occurrence of one or two extra-pair birds at the nest.

On Madagascar's northeastern Masoala peninsula we continued to provide ecological monitoring to the national park using the avian community as indicators of

change in biodiversity. We also completed first-ever studies on the Madagascar Harrier Hawk, White-browed and Malagasy Scops Owls, and Bernier's Vanga. Madagascar Serpent Eagles have yet to be found breeding again since we discovered the first nest in late 1997.

FUTURE PLANS

The recovery of the Madagascar Fish Eagle population requires a long-term effort of probably 10 to 20 years before we reach our recovery goal of 250 breeding pairs. Successful recovery depends not only on management of the species, but also on conservation of

PROJECT GOAL

To develop local capacity for conservation of biodiversity using Madagascar's rare and unique raptors as the focus, to aid in conservation of important rainforest and wetland habitats, and to prevent the extinction of raptors in jeopardy.

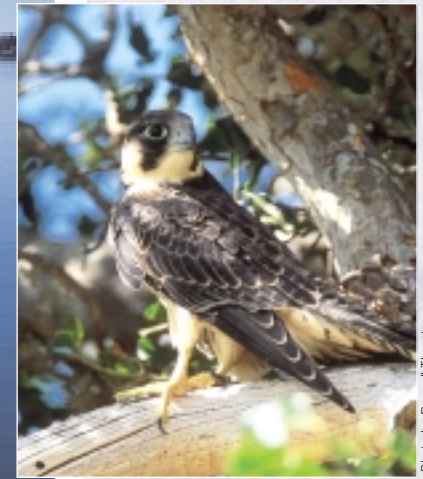


Photo by Russell Thorstrom

Madagascar's endemic subspecies of Peregrine Falcon is the study subject for our newest Malagasy student.

Left: community associations have successfully begun to control overfishing and exploitation of lakeside trees, resources required by Madagascar Fish Eagles and shared with local people.

Photo by Ruth Tingjay

STAFF

Rick Watson directs the Madagascar Project with expert help from Russell Thorstrom, Aristide Andrianarimisa, and 24 other Malagasy staff.

COOPERATORS

Our principal collaborators are the Direction des Eaux et Forêts (DEF), other members of the Tripartite Commission, and Association pour le Gestion des Aires Protégées (ANGAP). We also work with the National Office of the Environment (ONE), University of Antananarivo, Durrell Wildlife Conservation Trust, Bemaraha Project, UNESCO, ZICOMA, CARE-Madagascar, Wildlife Conservation Society, and many others. Financial support was provided by the Liz Claiborne and Art Ortenberg Foundation, The Walt Disney Company Foundation, and CARE.

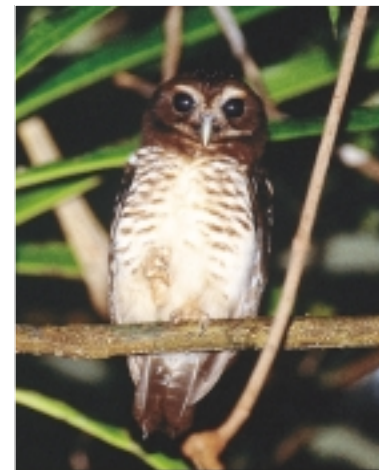


Photo by Russell Thorstrom

In 1999 we began studies on the White-browed Owl and other owls from our rainforest research base on Masoala Peninsula.

habitat and reduction of human persecution. Significant progress this year indicates the probability of success with habitat conservation by local communities is good. In coming years we will place additional emphasis on reducing human persecution, a component that was not funded in 1999.

Lastly, by developing the infrastructure to support the biologists trained by our project we hope that our work in Madagascar will be continued in perpetuity. With this aim in mind, we plan to fledge an independent Malagasy conservation organization, "Ankoay Trust for Conservation."

NEW GUINEA HARPY EAGLE CONSERVATION PROJECT



Photos by Mark Watson

PROJECT GOAL

To complete first-ever ecological studies on the New Guinea Harpy Eagle and use the knowledge gained to help conserve its rainforest habitat, employing the eagle as a flagship species for conservation.

STAFF

This project is directed by Rick Watson, conducted by Mark Watson and Russell Thorstrom, and advised by Lloyd Kiff.

COOPERATORS

We cooperate with the Research and Conservation Foundation of New Guinea (RCF), the Zoological Society of San Diego (ZSSD), and Wildlife Conservation Society. Financial support was provided by The Walt Disney Company Foundation, ZSSD, Chevron Company, and The Peregrine Fund Board.

The New Guinea Harpy Eagle is a large and powerful bird of prey, which is widespread but uncommon throughout the forests of New Guinea. It is believed to be threatened by habitat loss, habitat degradation, and direct hunting. The feathers are widely valued as ceremonial adornments, especially by some highland clans where the eagle is accorded spiritual powers. We believe that an endemic eagle with such significant cultural associations would be very suitable as an "umbrella" or "flagship" species for forest conservation

integrated with sustainable development and indigenous culture.

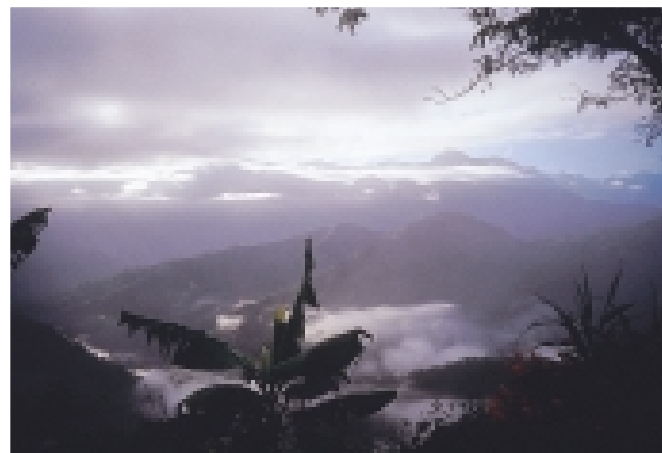
RESULTS

1999: Peregrine Fund biologist Mark Watson spent 212 days in the field searching for harpy eagles, following every report by local inhabitants. Despite extremely rugged terrain and dense rainforest, he managed to locate at least seven pairs. None, however, nested during the study period, though used nests were evidence that they had bred in previous years. He observed eight individual eagles for a total of just under 17 hours, collecting first-ever information on behavior, diet, and vocalizations. The huge effort and time involved in gaining a small amount of valuable information testifies to the tenacity needed to overcome the difficulty of studying large, secretive raptors in dense forest and rugged mountainous terrain. Two local guides were trained to continue monitoring known pairs and immediately report signs of breeding.

FUTURE PLANS

Only by continued search and study will we gain sufficient understanding of this species' nest site and foraging needs to ensure that sufficient adequate habitat remains. At least another season of study is needed to complete this project, assuming that we can find one or more actively breeding pairs.

At first evidence from our field assistants that New Guinea Harpy Eagles may be breeding, we will send our biologist, Russell Thorstrom, to New Guinea to begin intensive study of their breeding behavior and ecology.



Top: the New Guinea Harpy Eagle is a large and powerful bird of prey which is widespread but uncommon throughout the forests of New Guinea.

Magnificent landscapes hide the extremely rugged terrain and dense rainforest in which our biologists worked to find seven pairs of New Guinea Harpy Eagles.

Right: feathers from the New Guinea Harpy Eagle are valued as ceremonial adornments, especially by some highland clans where the eagle is accorded spiritual powers.



PHILIPPINE EAGLE

The Philippine Eagle is the rarest of the very large forest eagles. Probably only a few hundred pairs remain, and only on two to four of the over 7,000 islands making up the Philippines. The eagle is that country's national bird.

The Peregrine Fund's primary involvement and investment in the Philippines is in and through the Philippine Eagle Foundation (PEF), a Filipino non-profit organization. We believe this organization holds the greatest hope for preserving this endangered bird of prey. Below, and with our congratulations, we present a synopsis of results achieved by the PEF through their holistic conservation program for the eagle and its environment. The Peregrine Fund contributes to the PEF primarily by providing biological and programmatic advice and financial support.

RESULTS

Community-Based Initiatives (two of many examples): The PEF established a model and then 2.5 ha training farms and facilities for local communities they work with in the uplands where the eagle remains. These farms demonstrate sustainable agriculture techniques such as sloping agricultural land technology, crop rotation, multiple-story planting, etc. They will serve as showcases for their partner-communities to replicate.

The PEF organized a forum for local governments, tribal leaders, non-government organizations, and peoples' organizations to facilitate

natural resource management and planning in their respective areas. This initiative was an attempt to cause officials and community leaders from different areas where eagles occur to share experiences, plans, and aspirations with the hope to further understand the species and promote the development of solutions to human-caused impacts on eagles.

Field Research: Twenty years of information on wild nests and breeding success was compiled and accepted for publication in the Journal of Raptor Research in 2000. Surveys continued for nests of Philippine Eagles on the island of Mindanao. Using radio telemetry, at one site two eagles (immature and adult female) were tracked and monitored. In association with the field work three Philippine Eagles were rescued, two of which survived. Work was also begun to develop habitat restoration projects which will link two large natural areas (Mt. Apo and Mt. Kitanglad) by joining forest fragments between these areas.

Captive Breeding: The PEF successfully hatched and raised three eaglets during the 1999/2000 breeding season. One of these, "Pangarap" (meaning dream), was the first young from a natural breeding pair of captive Philippine Eagles. The eagle was named by a 13-year old Filipino, Gianne Pascual from Nueva Ecija, who won over two thousand other children in a nationwide name search contest.

Conservation Education: The PEF held a Teacher's Congress in

Captive-bred Philippine Eagle. The future of the Philippine Eagle and people are directly tied through their environment.

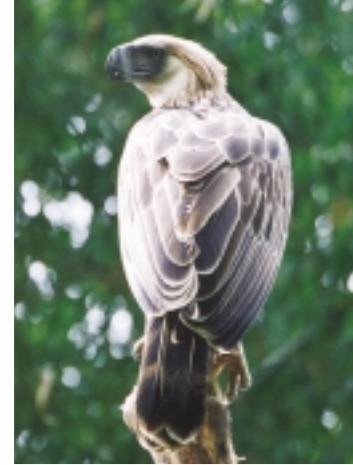


Photo by Christian Fackelmann



Photo courtesy of Philippine Eagle Foundation

which 120 teachers from a large area participated. This was followed by Echo Seminars in the provinces where teachers the PEF had developed as trainers in turn taught their colleagues. The Congress and Seminars helped swell the ranks of PEF partners among Philippine schools.

In 1998 PEF began a campaign to educate radio broadcasters about the environment and eagle. This effort was complemented in 1999 by development of short radio

broadcast spots for use by stations. The goal of the campaign is to reach audiences in the remote upland areas where eagles still remain.

With the help of over 50 college student volunteers, about 200,000 visitors toured the PEF Philippine Eagle center near Davao City on the island of Mindanao. A majority of the visitors were students.

COOPERATORS

Conservation associates Jim and Joyce Grier work closely with Bill Burnham and his co-workers on this project. Joyce has her own separate projects directed at grade school age children - Classrooms That Make A Difference; Co-global Student Partnership for Rainforest Conservation, and The Tropical Rainforest and the People. As a Professor of Biology at North Dakota State University and expert on eagles, Jim advises on science issues. Major financial support for the project was provided by The Walt Disney Company Foundation.

PROJECT GOAL

Conservation of the Javan Hawk Eagle and its habitat by improving knowledge and enhancing technical capacity in Indonesia.



The Javan Hawk Eagle lives exclusively in the forests of Java, Indonesia, where its habitat has been fragmented. Now confined to only about 10% of its former range, the species is in jeopardy.

COOPERATORS

We collaborate with the R & D Centre for Biology of the Indonesian Institute of Sciences (LIPI), Fauna-Flora International-Indonesia Programme, and provided support to Firman Hadi, Padjadjaran University and Yayat Afianto, Bogor Agricultural University. Financial support for the project was received from The Walt Disney Company Foundation.

JAVAN HAWK EAGLE

The Javan Hawk Eagle is a magnificent but little-known bird of prey which lives exclusively in the forests of Java, Indonesia. Its range has been fragmented over many years so that now it is confined to only about 10% of its former distribution, and there is increasing danger that populations in east and west Java will become isolated from each other. Trade in the species has increased in recent years and is believed to threaten the species' survival, as its population must be very small. The species recovery plan developed in 1998 by the Javan Hawk Eagle Focus Group acknowledges that much important information needed to ensure survival of the species is lacking. This project is a step in the right direction to make a difference.

RESULTS

1999: We attempted to answer two important ecological questions needed to understand the factors that limit the distribution and abundance of the Javan Hawk Eagle: (1) what is the home range of the species and how does it limit breeding density, and (2) what is the diet, and does food availability limit distribution? Work was conducted by two Indonesian students, Firman Hadi and Yayat Afianto, thereby helping to develop local capacity for conservation and research.

Their studies contributed to their graduation with degrees in conservation biology. Yayat Afianto went on to become the coordinator of the Javan Hawk Eagle Conservation Group.

FUTURE PLANS

Survival of the Javan Hawk Eagle depends on conservation of suitable forest habitat. We still need to understand the availability of suitable habitat and nesting density to estimate the island's carrying capacity for hawk eagles, their population size, and extinction probability. With this understanding we can help ensure that sufficient suitable habitat is protected to sustain the species.

LESSER FISHING EAGLE - INDIA



Lesser Fishing Eagle.

PROJECT GOAL

To determine the likely cause of reproductive failures of the Lesser Fishing Eagle in Corbett National Park and adjacent areas in India.

The Lesser Fishing Eagle once occurred throughout the lower Himalayas in India, but the population is currently reduced to a few pairs in and near Corbett National Park. There has been no reproduction in recent years. A grossly deformed eggshell was retrieved from an unproductive nest in 1991. Because there was no portion of yolk associated with the shell, it was not possible to obtain any quantitative determinations of the content of organochlorine pesticides. But the "fingerprint" of DDT compounds, which resembled the composition of fresh DDT, indicates exposure to a recent application of DDT. Other organochlorines, including dieldrin, HCHs, chlordanes, and PCBs, were also detected. At the request of Bob Risebrough, Executive Director, The Bodega Bay Institute, we assisted with this project by providing matching financial support.

RESULTS

Studies in India were carried out by Rishad Naoroji of Bombay (now called Mumbai), author of *A Handbook on the Birds of Prey of the Indian Subcontinent*, assisted by Leon Pereira, a graduate student at St. Xavier's college in Mumbai. Over the past several years an unhatched egg, egg

fragments with membranes from a hatched egg, and egg fragments with attached membranes from an unhatched egg were obtained from three nests in Corbett National Park; feathers and down were obtained from a fourth nest. In addition, samples of the fish which are their principal food, the Golden Mahaseer and the Black Mahaseer, were obtained from the river flowing through the eagle territories, but upstream, outside the Corbett Park.

Leon Pereira brought these samples to The Bodega Bay Institute laboratories, Berkeley, California, where he spent six months. The analyses were completed and final numbers of the concentrations of the contaminants will be determined shortly after a series of calibrations is carried out. Concentrations of the DDT compounds in the unhatched egg, however, were in the order of 900 ppm lipid weight, equivalent to those in the most highly contaminated eggs of Brown Pelicans in California in 1969, and about nine times higher than concentrations that would cause reproductive failures in Bald Eagles.

COOPERATORS

The Bodega Bay Institute and Mr. Rishad Naoroji, with financial support provided by The Walt Disney Company Foundation.

MONGOLIAN RAPTOR CONSERVATION PROJECT

The Golden Eagle has borne witness to the struggle of human survival on the steppes of central Asia since time immemorial. More than a thousand years before Temujin united the rival clans and was crowned Genghis Khan (Chinggis Khan—universal king), extending the Mongol empire from Beijing to the Caspian Sea, the eagle is believed to have stood upon the arm of Asiatic hunters of the steppes providing food and pelts from its prey. As with the eagle's dependence upon the seasonally changing environments of their natural world, so are the lives of the Mongol nomads to this day.

Ecologically, Mongolia is the joining place for several Central Asian environments and the last place many species still occur on the continent. Environments vary greatly from high mountains with glaciers to deserts. Much of the country's natural beauty and environments remain unchanged by human activities, but development driven by the country's needs and desires are now, more than ever, changing the cultural and natural systems. To preserve Mongolia's past traditions and nature will require a careful balance of planning and actions, particularly during the early part of the 21st century. The Peregrine Fund is now working with and supporting Mon-

golian biologists and conservationists to help achieve that balance.

RESULTS

In 1999 Bill Burnham, with Board member Robert Comstock, Sheldon Severinghaus, a University of California, Berkeley Visiting Scholar in Mongolia, and photographer Daniel O'Neil, had the opportunity to visit Mongolia and meet with conservationists and eagle falconers. The common interest in the eagle and birds of prey helped bridge cultural boundaries and establish a common bond for discussions.

Based on discussions there, Mongolian national and local conservation priorities were identified to which The Peregrine Fund might contribute. Their priorities were to (1) have a Mongolian specialist on birds of prey, (2) to have the specialist be Nyambayar Batbayar, and (3) to

have the knowledge on eagles in Mongolia expanded through scientific research. At the same time they emphasized how little was known about all raptors in Mongolia and the great need for good information.

Considering their priorities and our goal, we set several activities into motion and are considering others. We provided grants to both the Mongolian Ornithological Society and the Mongolia Birds of Prey Association. We agreed in 2000 to begin training and assist with an advance degree (M.Sc.) program for Nyambayar to help him become a

specialist on eagles in Mongolia expanded through scientific research. At the same time they emphasized how little was known about all raptors in Mongolia and the great need for good information.



A Mongolian falconer hunts with his Golden Eagle as have his predecessors for centuries before him.

PROJECT GOAL

Help conserve Mongolian raptors by enhancing in-country conservation and science capacity and cultural traditions.

specialist in raptors for Mongolia. We further agreed to assist with his research on the Golden Eagle.

In 2000 we hope to expand our work in Mongolia by sending a biologist/falconer there to live with the Kazacks who hunt with Golden Eagles. This person would document in detail the capture, training, and hunting of the eagles and their role and tradition in the culture. This cultural practice and relationship with the Golden Eagle is largely disappearing with the eldest

generation. We wish to preserve the technical knowledge and know-how, and, if possible, the tradition for future generations of Mongolians/Kazacks. The loss of this tradition not only diminishes the culture, but removes a wildlife constituency in a people who are beginning to see raptors and other wildlife as competitors with humans for resources rather than as an integral part of the natural environment.

STAFF

This project is directed by Rick Watson and conducted by Nyambayar Batbayar with advice and assistance from Bill Burnham.

COOPERATORS

We cooperate with the Mongolian Academy of Sciences, World Wildlife Fund For Nature-Mongolia, Mongolian Ornithological Society, Mongolia Birds of Prey Association, Sheldon Severinghaus, and Nomadic Expeditions Mongolia. Financial support is provided by Thinsulate™ Insulation and The Robert Comstock Company.



Photo by Jack Stephens

Above: Gyr Falcon in North Greenland from Jack Stephens' photographic web site at www.JackStephensimages.com.

Above right: Atlantic Puffin.

Right: Peregrine Fund Board member and noted British scientist Ian Newton with Dovekie.

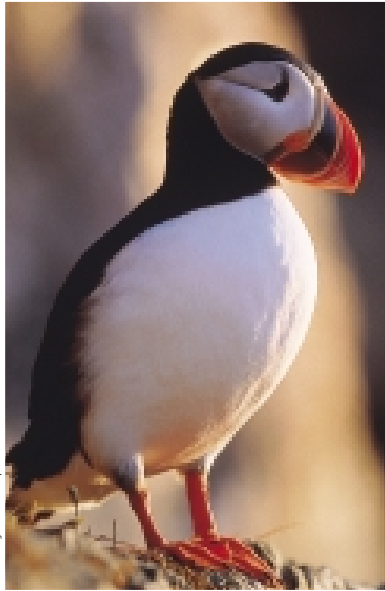


Photo by Jack Stephens



Photo by Kurt K. Burnham

HIGH ARCTIC INSTITUTE

We are building on a base of information and experiences founded in 1972 when Bill Mattox began research on falcons in Greenland. That research has continued uninterrupted since. Compared to temperate or tropical regions, or even the Alaskan and much of the Canadian arctic, Greenland has fewer species and a simpler natural biotic system. Greenland, an island 1,660 miles long and 650 miles wide, is about 85% covered by a huge central icecap extending up to 11,000 feet above sea level. The inland ice and frigid ocean currents greatly influence the marine and terrestrial environments. Fresh water from melting snow and ice mix with salty ocean water, helping create a nutrient-rich environment for fish, mammals, and birds. At the top of the food pyramid are the predators, and in particular the Peregrines and Gyrfalcons. The falcons are for the Arctic as the Arctic is for the world, an environmental barometer providing early warning of larger problems such as global climate change and pollution.

To understand the inter-relationships of the falcons and their environment and influencing factors, we are focusing geographically on four widely spaced locales in East,

West, and North Greenland. Each of these areas is similar but also distinctive for different reasons, including certain falcon prey species. Because of our previous research and records from Arctic explorers and early naturalists in Greenland, historic biological information exists for each area with some going back to the 1800s. Also, because of Greenland's small human population, severe environment, and limited development, the landscape is largely unchanged from centuries ago, if not longer. Therefore, when

PROJECT GOAL

Conservation and understanding of Gyr Falcon and Peregrine Falcon populations and their environments in Greenland.

change is detected in natural systems, the causes are usually either natural fluctuations or resulting from recent aberrations, e.g. changing climate, environmental contamination, or yet other unknown factors. These con-

siderations combined with excellent cooperators and our long-term experience, create an exceptional opportunity for investigations on falcons and their environments which should produce far greater insight and benefit.

RESULTS

North Greenland - The first falcon survey in 1999 was by dog sled (320 linear km) in May near Qaanaaq, locating 12 previously used Gyr Falcon nest sites. This was prior to egg laying. A second survey by boat (300 km) and on

foot occurred in July/August, locating only two active Gyrfalcon eyries but four pairs of Peregrine Falcons, the most northern at 77° N latitude. Research was also continued on Dovekies, the Gyrfalcon's primary prey.

West Greenland - Investigations began in the Kangerlussuaq area in March/April when 61 previously known Gyrfalcon nest sites were surveyed by helicopter and nine were found occupied. All sites were again checked in June/July by helicopter and/or on foot, along with 80 known Peregrine eyries. Only six of the nine Gyrfalcon sites located earlier were occupied, but five more nests were found when 50 additional unsurveyed cliffs were examined. Fifty sites were located with Peregrines with an average of 3.06 young per successful pair. Surveys were also conducted for Ravens, Rock Ptarmigan, and Arctic Hare. Catherine Wightman completed the research for her M.Sc. in raptor biology at Boise State University.

East Greenland - In the Scoresby Sound area we accomplished a preliminary survey for Gyrfalcons, trying to learn something of their current distribution and abundance. During June, we surveyed roughly 6,000 sq km of Jameson Land by helicopter and about 30 linear km of Liverpool Coast by skis and dog sled, locating 14 Gyrfalcon nest sites of which five were occupied.

Right: Long-time Thule, Greenland resident, naturalist, photographer, and our Thule project coordinator, Jack Stephens, in his element.

Below: May 1999 dog sled survey for Gyrfalcons in North Greenland.

Photo by Kurt K. Burnham



Photo by Kurt K. Burnham

STAFF

The project is managed by Kurt Burnham under the general direction of Bill Burnham with special assistance from Bill Mattox. Also participating in 1999 were Tom Cade, Gregg Doney, Jim Enderson, Mark Fuller, Tim Gallagher, Ian Newton, Olafur Nielsen, Jack Stephens (Thule Coordinator), and Catherine Wightman.

COOPERATORS

Authorization was provided by The Commission for Scientific Research in Greenland, Greenland Home Rule Government, and by the United States Air Force. We cooperate with Thule Air Base, the U.S. Department of the Interior/Bureau of Land Management, Conservation Research Foundation, PICO/University of Nebraska, New York Air National Guard, 109th TAF, Boise State University, Bent Brodersen/KISS Center, and Danish scientists Knud Falk and Kaj Kampp, among others. Major financial support was provided by The Charles Engelhard Foundation, Benu and the Florence Hegyi Family Trust, and The Walter C. Hill Family Foundation.



The first book published by the Archives of American Falconry.

ARCHIVES OF AMERICAN FALCONRY

A common factor among all the founders of The Peregrine Fund was a love of raptors from their association with the sport of falconry. Falconers' insights, technology, birds, and support all have been important in the successes enjoyed by our organization and benefited conservation of birds of prey in general in North America. During the early years of The Peregrine Fund's existence some of the early practitioners of American falconry passed away, and with the loss of associated memorabilia and information each had amassed, it is understandable why we sought to preserve the history of the sport in the Americas.

RESULTS

Cumulative: Founded in 1986, the Archives of American Falconry (AAF), with its unrivaled collections of historical falconry materials, is unique in the world. Its library is world class and its holdings in the English language are unsurpassed. In attaining its goals, it is assisted by an advisory board of prominent falconers. Since 1991 it has been housed in the James Nelson Rice Wing, created to provide appropriate housing for its collections and activities. Normal operational funding is provided from interest on the AAF Endowment Fund, provided almost entirely by the American falconry

community, and does not compete with funding for conservation projects.

1999: Several major events highlighted our year just ended. First, we realized our initial endowment goal of \$350,000. We emphasize "initial" for, while endowment interest is sufficient to cover current operational expenses, should we ever have to hire a professional archivist a considerably higher balance would be required. With this in mind, we continue to seek to expand our endowment.

Secondly, with the publication of Luff Meredith's *American Falconry in the Twentieth Century* (with much able assistance from Bill Mattox), we have finally launched our long-awaited Archives Heritage Publication Series. The response has been overwhelming, and we are off to a grand start in this addition to our outreach program. Thanks to the generosity and energy of John Swift, our library has significantly expanded, leaving now only a handful of major works needed for completion of our Eng-



Peregrine Fund Board member Jim Weaver in northwestern Colorado with his falcon, "Lukey."

STAFF

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

COOPERATORS

The Archives is dependent on the generous support of many friends, falconer and non-falconer alike. In 1999 particularly noteworthy assistance was received from Sterling Bunnell, the California Hawking Club, Kent Carnie, Keith Carpenter, Michaela Grandley, David Frank, Walter Hill, David Kennedy, Bill and Joan Mattox, Rob McIntyre, Carter Montgomery, North American Falconers Association, Bill and Marcie Oakes, Williston Shor, Rick Skibsted, John Swift, and Duane and Sharon Zobrist.

lish language holdings. Having achieved our initial endowment goal, we now feel comfortable in earmarking at least part of the funds received from our annual auction of deaccessioned duplicate books for the purchase of selected additions to our library--works we judge not likely available through normal donor sources. Such purchases have already added substantially to the stature of the Archives.

Upon the recommendation of the Board of the North American Falconers Association (NAFA), presentation of our joint AAF/NAFA Heritage Award was made at this year's annual NAFA meet to Peregrine Fund Founding Board Member Jim Weaver. At the same time, the Archives' curator was honored with receipt of NAFA's Freienmuth Award for long-term service to that organization.

FUTURE PLANS

The manuscript for our second Heritage Series book is complete and we await only selection of the photos to accompany it to proceed with our next publication effort. This work--the day-by-day diary of John and Frank Craighead from their historic visit to India in 1940--is anxiously awaited by the falconry community, and we anticipate a particularly rousing reception for the coming volume.

With the continuing expansion of our library and, indeed, all of our collections, we are reminded of the down side of our success: we simply have no room or additional storage cabinetry in our present room. We have had to become increasingly concerned and active in seeking funds to construct facilities to house our expanding collections.

PROJECT NEST-EGG

We are building The Peregrine Fund to last beyond our lifetimes and through the 21st century to conserve this nation's and the world's birds of prey (see *Building To Last--Raptor 2100*, page 1). The Peregrine Fund already possesses many of the demonstrated qualities of exceptional organizations. For organizations to remain exceptional in the long term they need stable financial resources.

For the past three decades we have begun each year with more programs than dollars. Planning and accomplishing projects and programs, yet not knowing the amount of money which would be annually available, has been and remains a major problem. Other than establishing upper spending limits, carefully developed budgets are meaningless without adequate financial resources. Despite these difficulties we have annually achieved meaningful and measurable results, always paid our bills on time, and almost always ended the year with a positive balance, using any "extra" dollars to build a small cash reserve to help with cash flow.

Recognizing this problem, the chairmen of our Board of Directors have worked to improve our financial situation. First, Roy Disney and Jerry Herrick strove to increase our overall income, and in 1995, with the leadership of the new Chairman, Julie Wrigley, the Board of Directors established "Project Nest-Egg," a five-year fund raising drive to establish a \$10,000,000 endowment for The Peregrine Fund. Julie made the initial gift and other Board members followed suit by adding dollars to their annual gifts. When Hank



Photo by Russell Thorstrom

For organizations to remain exceptional in the long term they need stable financial resources.

Paulson accepted the Board's chairmanship from Julie, he also accepted the lead role in Project Nest-Egg. At the time of this writing the value of the endowment is \$7,655,000. Our Board of Directors has agreed that when the goal is reached, while maintaining the value of the principal, funds can be used for operation of the organization from its appreciation and earnings. Project Nest-Egg (our endowment) will create a "guaranteed" annual source of funds which we will strive to increase each year through further contributions and appropriate growth in the investment of the endowment funds.

The Board of Directors invites and requests The Peregrine Fund's other supporters and friends to join them to help build The Peregrine Fund to last by making gifts of cash, appreciated stock, or other assets to Project Nest-Egg during their lifetime, and after death as a beneficiary in their estates.

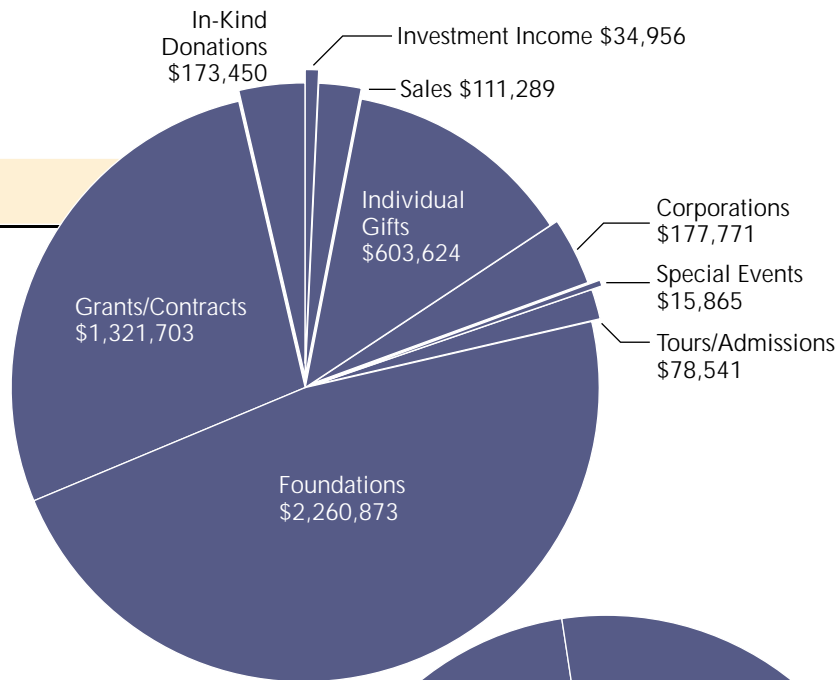
As a further source of endowment funds, and as a policy, The Peregrine Fund places all dollars from bequests and contributions made "in the memory of" the deceased (memorial gifts) into our endowment. We do this so these gifts from and for these special people provide a lasting contribution--a continuing contribution to conservation of birds of prey.

We welcome inquiries about bequests and suggest using the following general form:

"I give, devise, and bequeath to The Peregrine Fund, Inc., an Idaho not-for-profit organization, located on the date hereof at the World Center for Birds of Prey, 566 West Flying Hawk Lane, Boise, Idaho 83709, the sum of \$_____ (or specifically describe the property or asset being bequeathed)."

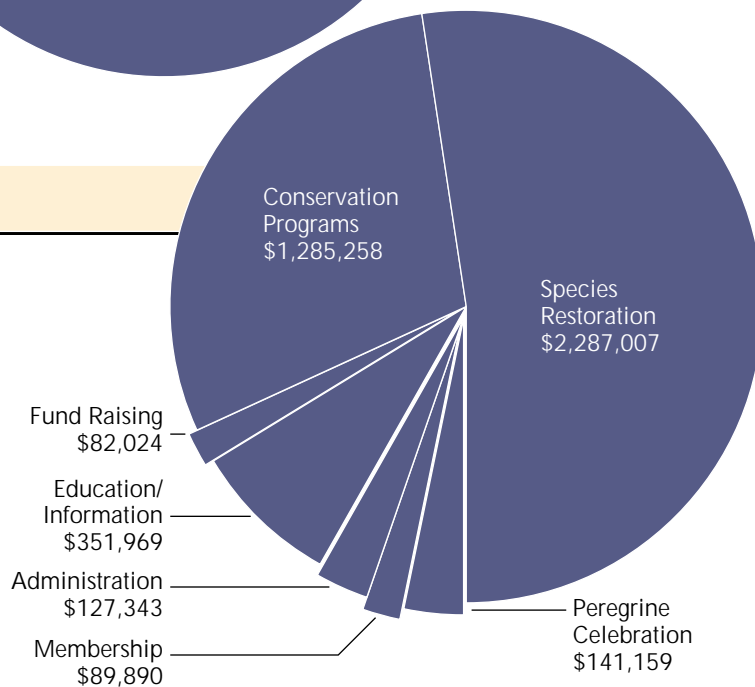
THE PEREGRINE FUND – Balance Sheets • September 30, 1999 and 1998

INCOME



EXPENSE

Excludes construction



Many organizations and individuals contribute building 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.

ASSETS	1999	1998
CURRENT ASSETS		
Cash and cash equivalents	\$ 781,036	\$ 1,114,469
Merchandise inventory	54,134	73,521
Grants receivable	229,161	25,038
Pledges and other accounts receivable	128,210	102,073
Prepays and other current assets	58,295	46,122
TOTAL CURRENT ASSETS	1,250,836	1,361,223
PROPERTY, EQUIPMENT AND ARCHIVES		
Land	1,513,000	1,513,000
Land improvements	803,404	799,700
Buildings	5,173,753	5,129,705
Trailers	150,123	150,123
Equipment and vehicles	1,488,408	1,386,690
Fixtures and displays	585,240	533,952
Construction in progress	768,321	8,481
	10,482,249	9,521,651
Accumulated depreciation	(2,854,116)	(2,500,883)
	7,628,133	7,020,768
Library	180,591	163,845
Archives	589,432	571,273
	8,398,156	7,755,886
ENDOWMENT ASSETS		
Cash	549,929	9,103
Investments	5,567,333	5,000,462
	6,117,262	5,009,565
	\$15,766,254	\$ 14,126,674

LIABILITIES AND FUND BALANCES	1999	1998
CURRENT LIABILITIES		
Accounts payable	\$ 53,255	\$ 53,169
Accrued taxes and expenses	620	4,404
Deferred restricted revenue	247,501	269,516
TOTAL CURRENT LIABILITIES	301,376	327,089
FUND BALANCES		
Unrestricted operating fund	949,460	1,034,133
Restricted endowment fund	6,117,262	5,009,566
Investment in property, equipment, and archives	8,398,156	7,755,886
TOTAL FUND BALANCES	15,766,254	13,799,585
	\$15,766,254	\$ 14,126,674

DONORS

\$20,000 or more

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