



W · I · N · G · S · P · A · N

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MESSAGE FROM THE PRESIDENT

Raptor Research Foundation annual meetings historically come in two basic styles: smaller, more intimate conferences where we meet alone; and larger, expansive meetings in conjunction with other ornithological societies. Both types of conference have their advantages. Last fall's meeting in conjunction with the Third North American Ornithological Conference in New Orleans fell into the big and expansive category. Despite the memorable onslaught of Tropical Storm Isadore, the conference was a resounding success. We reaffirmed our ties to the North American ornithological community, and broadened our horizons (and the horizons of the other societies) by mixing and sharing. This fall's conference will offer the other kind of opportunity, and in a setting that will be hard to beat. The Anchorage meeting should allow us plenty of time to focus on RRF business and on raptors and raptor conservation. In addition, we will have once-in-a-lifetime opportunities to enjoy the best that autumn has to offer raptor enthusiasts in Alaska. If I had to pick between the two flavors of conference, I'd choose the smaller meeting, and our 2003 gathering is looking like a contender for the best ever. Please read and heed the announcement elsewhere in this newsletter regarding planning and procedures for attendance. Travel to Alaska can be economical if you plan ahead, and now is the time to do that.

At our Board and membership meetings in New Orleans, your elected officers and directors discussed ways of keeping the membership more informed of our activities and actions. In 2002 we began conducting business formally through e-mail agendas developed periodically throughout the year, and this format readily lends itself to member input. With the Board's concurrence, in 2003 we will begin posting these agendas and the summary follow-up reports on the RRF web site. As a guide, I intend to develop agendas and distribute them on or about 20 February, 20 May, 20 August, and 20 November. The August agenda will constitute the agenda for the Board meeting in September. If you are interested in keeping up with, and having input into what the Board is doing, I suggest you visit the web site and review these agendas, and provide input to your elected directors and officers to aid them in formulating their positions. We need your input and expertise, and I hope you'll take the time to share it with us. I look forward to hearing from you.

Best regards,

Brian



**RAPTOR RESEARCH FOUNDATION
2003 ANNUAL MEETING**

**Anchorage, Alaska
3-7 September**

Come North to Alaska as the raptors head south! The Raptor Research Foundation's 2003 annual meeting will be held from 3-7 September at the Hilton Hotel in Anchorage, Alaska. This year's conference is hosted by the Alaska Bird Observatory. Abstracts for oral and poster presentations on any aspect of raptor biology, ecology, conservation, or management are welcome. Deadline for presentation abstracts is 1 June 2003. Details and instructions will be posted at <http://www.alaskabird.org> as they become available. Three asynchronous field trips are planned around the conference: a one-day Kenai Fjords National Park wildlife tour, a day of raptor migration viewing in the Matanuska Valley, and a three-day tour of Denali National Park. Space on these trips is limited, so register early! Watch the conference website for updates. For information regarding the conference, contact Nancy DeWitt, Alaska Bird Observatory, P.O. Box 80505, Fairbanks, AK 99708 USA; phone: 1-907-451-7159; e-mail: birds@alaskabird.org.

An all-day **INTERNATIONAL SYMPOSIUM ON THE ECOLOGY AND MANAGEMENT OF NORTHERN GOSHAWKS** will be held in conjunction with the conference. The goal of the symposium is to assemble researchers and managers from around the world for an exchange of information with which to assess the current state of knowledge on Northern Goshawks. Topics of special interest are 1) population ecology and demographics, 2) linkages between habitat and demographic performance, and 3) landscape-level management, but submissions dealing with any aspect of Northern Goshawk ecology and management will be considered. For information regarding the goshawk symposium, contact Dr. Clint Boal, Texas Cooperative Fish & Wildlife Research Unit, Texas Tech University, Lubbock, TX 79409-2120 USA; e-mail: clint.boal@ttu.edu.

THE RAPTOR RESEARCH FOUNDATION, INC.

(FOUNDED 1966)

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Wingspan is distributed twice a year to all RRF members. It is also available to non-members for a subscription rate of \$10 per year. *The Journal of Raptor Research* (ISSN 0892-1016) is published quarterly and available to individuals for \$33 per year (\$18 per year for students) and to libraries and institutions for \$50 per year from: Ornithological Societies of North America, P.O. Box 1897, Lawrence, KS 66044 USA. Add \$5 for destinations outside of the continental United States. Individual and student memberships renewed before November 15 are \$30 and \$15, respectively. Persons interested in predatory birds are invited to join The Raptor Research Foundation, Inc. Send requests for information concerning membership, subscriptions, special publications, or change of address to: Ornithological Societies of North America, P.O. Box 1897, Lawrence, KS 66044 USA.

THE MALTA PROBLEM

by Robert A. G. Davies

An estimated 5,000 birds of prey are still being killed annually on Malta. Most of these birds are shot as they try and roost on the tiny, isolated island to break a long, hard journey. It is not known how many raptors are gunned down from the 600 odd powerboats which speed out to intercept them as they arrive low over the water, but this amount may even exceed those shot on land. The numbers shot represent one quarter to one third of the numbers that are thought to be still brave enough to try and migrate across the Central Med. Clearly this is a terrible weak link in our global efforts to look after these threatened birds and should not be ignored by conservation agencies in Europe and Africa.

The situation on Malta has actually deteriorated in recent years because of new guns, cell phones and boats. It is illegal to kill birds of prey in Malta, but the laws are not enforced because the government is too scared of losing the hunters' vote (they comprise a significant portion of the populace). The special unit set up to tackle illegal hunting is too small and under-equipped to be effective. To make matters worse, the European Union has just derogated its own laws (the Birds' Directive) to please Maltese hunters and facilitate accession of the island nation to the Union.

We need to engineer the political will on Malta to enforce local laws. There is a negative and a positive way of doing this: the negative route is by tourist boycott which would hit hard because 35% of Malta's GDP comes from tourism (mostly from Britain and Germany). The positive route is to convince the Maltese Government that it is already losing substantial tourist income because of the appalling situation, and to demonstrate that people from other countries can and will spend their money in Malta to come and witness the fantastic spectacle of the migration.

The Hawk and Owl Trust would like to set a positive course by commissioning a study to calculate the number of tourists who are currently staying away from Malta because of the appalling situation, and the number who might come if the migration spectacle were to be properly marketed. We have approached other conservation groups and the World Tourism Organisation in Spain to assist us with this.

We invite Raptor Research Foundation members to join us in this endeavour by accompanying us to a raptor watch camp in Malta this September. It is of vital importance that we sow the seeds to build a tourism industry around the migration. But a strong stomach is needed because birds are being shot. Your attendance would be a huge morale boost to the supporters of Migration Unlimited and Birdlife Malta.

For the long term, we have begun our quest for World Heritage Status for Buskett Gardens: an historic site on Malta where thousands of birds of prey try to roost each migration and where many fall to the guns. As a formally protected area, Buskett already fulfils most of the requirements for UNESCO but we still need to convince the people of Malta that they have a site of inestimable, universal value in their care.

You may think a tougher approach is due, but Birdlife Malta has asked us especially not to call for a tourist boycott as this would undermine their significant advances in winning over popular support on Malta (about 60% of the population resent the way that the hunters are holding their country to ransom). We would like to respect our partner's wishes in this regard and help them with their education campaigns. We have delivered a few thousand educational posters sponsored by Swarovski which depict the main species traveling the route in wonderful line drawings by Ian Willis.

Action and Contact Information: To join the annual raptor camp in Malta this autumn, send an e-mail to Justin Vassallo (lidram@yahoo.com); information about the camp is available at Birdlife Malta's website (www.birdlifemalta.org). If you would like to help us over the long haul, please join The Hawk and Owl Trust (The Hawk and Owl Trust, 11 St. Mary's Close, Abbotskerswell, Newton Abbot, Devon TQ12 5QF, England; phone: 44-1626-334864; e-mail: hawkandowl@aol.com) and follow developments on our website (www.hawkandowl.org).

6th WORLD CONFERENCE ON BIRDS OF PREY AND OWLS

Budapest, Hungary, 18-23 May 2003

Plans for the 6th World Conference on Birds of Prey and Owls are proceeding smoothly, and a substantial number of early registrations have already been received. The scientific programme will include a wide range of subjects, many of them concerning threats to raptors of human origin (pesticides, electrocutions, direct and indirect persecution, habitat destruction), but the most absorbing topic will clearly be the current 90% population crash suffered by *Gyps* vultures in India, the cause of which is still unidentified, and the threat of its spreading into Eurasia and Africa. In addition, there will be workshops on individual species such as Imperial Eagle and Montagu's Harrier. Film shows in the evenings will include several of the notable films made by Michael Terrasse and two made in Argentina and Spain by Claus and Ingrid Koenig. Following the conference, participants are offered a choice among six, 3-5 day excursions to view the outstandingly varied bird life of Hungary, which includes 24 diurnal and 8 nocturnal species of raptors. For full details, see the WWGBP website: <http://www.raptors-international.de>.

2002 RECIPIENT OF THE MORLEY NELSON FELLOWSHIP

"Nest Site Selection by Northern Pygmy Owls (*Glaucidium gnoma*) in Montana"
Graham G. Frye, Choteau, Montana

The Morley Nelson Fellowship is awarded by the Conservation Research Foundation. For information about the fellowship, please see *Wingspan* 11(2):16.

EIGHT CALIFORNIA CONDORS GO TO GRAND CANYON AREA

Arizona's population of California Condors will increase to 41 with the arrival of eight young condors on January 18. All eight condors hatched last year at The Peregrine Fund's World Center for Birds of Prey. On January 1, there were 198 California Condors in the world, 80 of those are in the wild in Arizona, California, and Mexico. The young condors will be released in small groups after an acclimation period of at least six to eight weeks. The public will be invited to view those releases. As information becomes available about the release, it will be placed on The Peregrine Fund's web site (www.peregrinefund.org/whats.html). "We are expecting a very good year," stated Dr. William A. Burnham, President of The Peregrine Fund, "In addition to these eight young condors, there are three pairs from previous releases that are investigating caves in preparation for probable breeding."

On January 18, 2003, a plane funded by the Bureau of Land Management will pick up eight condors from the World Center for Birds of Prey in Boise, Idaho and transport them to Page, Arizona. Biologists will then transport them to the release aviary on the Vermilion Cliffs. "The continued success of the California Condor program reflects the hard work and cooperation among a number of private and governmental partners," said Roger Taylor, BLM Arizona Strip Field Manager, "We're glad we can help by transporting the condors by airplane to Page and by truck to the aviary at the Vermilion Cliffs National Monument."

Arizona Game and Fish Department Director Duane Shroufe says that the addition of eight more condors in the state is terrific: "This is another piece of good news, along with the fact that we have various condors in the wild showing mating behavior." "Visitors to Grand Canyon National Park continue to be delighted by the sight of condors soaring near the rim," stated Joseph Alston, Superintendent of Grand Canyon National Park, "Condors from previous releases have nested three times in northern Arizona at the Grand Canyon, which has provided an exceptional opportunity for expanding public awareness regarding conservation of rare species, while adding to the overall experience for visitors. Although the condors have not yet fledged any young, we hope that as the adults become more experienced they will become more successful at raising young and establishing a self-sustaining population."

"Working with a broad group of professionals dedicated to sound science to reestablish condors in this portion of their historic range continues to be a career highlight," said U.S. Fish and Wildlife Service Southwest Regional Director Dale Hall, "Local enthusiasm for the program's continued success is an affirmation of our efforts and the acceptance of the condors back to this remote landscape."

The Arizona reintroduction is a joint project among The Peregrine Fund, Arizona Game and Fish Department, U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, Southern Utah's Coalition of Resources and Economics, and numerous other partners. The Peregrine Fund, a non-profit conservation organization, is conducting the release; National Park Service and Bureau of Land Management are managing the habitat; U.S. Fish and Wildlife Service is responsible for the overall recovery of the species; and Arizona Game and Fish Department is responsible for management of wildlife in the state.

The California Condors are being released as a "non-essential/experimental population" under section 10(j) of the Endangered Species Act. Section 10(j) provides that the species can be released in an area without impacting current or future land use planning. This authority has been spelled out further in an innovative agreement between the U.S. Fish and Wildlife Service and local governments. This "implementation agreement" spells out a positive working relationship between the Federal government and the various local governments.

**IN MEMORY OF A TRUE GENTLEMAN AND FALCONER,
DONALD V. HUNTER, JR.**

by Vic Hardaswick, Kent Christopher, and Tom Cade

It is with regret and deep personal sorrow that we report the passing on June 14, 2002 of a colleague and old friend of American falconry, Donald V. Hunter, Jr. His departure marks the loss of a primary figure among the generation of men who pioneered the sport of falconry in America.

Don was born on the family farm in rural Ulster, Pennsylvania on April 15, 1922. His school years were spent in Chevy Chase, Maryland, a suburb of Washington D.C., where his father practiced law. Don explored and learned all the nearby woods, fishing holes, and hunting spots in that area. During the summers, he enjoyed roaming the outdoors at their Pennsylvania farm along the Susquehanna River. Don had a great love of nature and an interest in wildlife photography. One evening, his father took him to a lecture on falconry. This event changed the course of his life.

Growing up in the D.C. area, Don was a contemporary of such men as Frank and John Craighead, Al Nye, Morgan Berthrong, and other early falconers. Don worked with the local Cooper's and "Duck Hawks"; located their nest sites; and photographed, banded, and trained them. He pursued these interests along with his passion for hunting and fishing until he entered undergraduate school at Cornell University at the age of 16. Since the days of Louis A. Fuertes in the 1920's, Cornell had attracted young men with an interest in falconry, and there Don became friends with several other students who shared his love for birds of prey, particularly Bill Wimsatt, who often accompanied Don on outings along the Susquehanna and Delaware rivers to search for falcon eyries.

Don left his studies prior to the outbreak of WWII to join the Army Air Corps. He flew B-17's, B-25's, and P-38's, but mainly the B-29 bomber as a flight commander in the Pacific Theater where he served two tours of duty. Don's many and varied war experiences made great stories that he occasionally shared. Any one of these stories could make a feature-length Hollywood movie, which makes it difficult to select one experience that best exemplifies what he did and who he was. Perhaps the following vignette serves to convey something about the character of this unique man.

Don's flight of B-29 bombers left the island of Tinian in the Pacific and headed west for Japan. There were several aircraft involved in the raid. Upon reaching their targets in Japan, they were met by heavy ground fire, and all the aircraft were shot down except for Don's. Don and his crew did not escape unscathed, however; their aircraft had over 2000 holes in it. This B-29 was from then on named "Flak Alley Sally." Because of increased drag produced by battle damage, they did not have enough gas to make it all the way back to Tinian and landed on Iwo Jima for fuel. After a few repairs, they limped their aircraft back to Tinian. When they circled around the island to land, the ramp was empty except for a bunch of guys jumping up and down. When they landed, Don discovered that his ground crew had waited there for 12 hours past his scheduled arrival time, hoping against all odds that he and his aircrew would return. Those guys thought a lot of Don, and he thought the world of them. He was an excellent pilot and twice awarded the Distinguished Flying Cross.

After the war, Don married, finished his undergraduate degree at American University in Washington, D.C., and then attended George Washington Law School for two years. Don completed his J.D. in law at the University of South Dakota after moving his growing family to Vermillion, South Dakota to begin a lifelong career in agriculture and public service. A natural leader, he served as President of the Livestock Feeders Association at both the state and national levels, President of the National Cattlemen's Association, and Chairman of the South Dakota Livestock Sanitary Board.

In the late 1950's, with his formal education completed and his career underway, Don's love of falconry was rekindled. He hunted local rabbits with his Red-tailed Hawk/basset hound combination. Boise falconer Rich Howard visited Don in the 1960's and described such a hunt: "It was a hoot. With the basset hound in full cry and the redtail flying from one tree to another, we flushed cottontails and watched this dynamite team work the brush. Two cottontails were bagged that afternoon. I can still remember Don's enthusiastic smile of satisfaction. It was a good hunt." Rich also revealed that, "The most famous moment with Don was seeing someone actually fly a Gyrfalcon from a horse. It was impressive to me--a man living the history of a centuries-old sport." Don's pride and joy for some 17 years was his magnificent white Gyrfalcon named Lena, which was trapped in 1964 during the Hunter-Webster expedition to Northern Mackenzie on the coast of the Beaufort Sea in Canada.

Don's falconry developed into flights with Goshawks from horseback, and his male Gos, Dingbat, together with his pointer, were a deadly combination over the years, taking many South Dakota pheasants "on the rise." Don's falconry finally evolved into a modern version of grouse hawking using Gyrs and Gyr hybrids that would wait-on at high pitches over his cherished "all age" English pointers. Don conducted classic game hawking like this for the rest of his life.

In 1963, falconry gained formal acceptance and recognition as a legitimate field sport in South Dakota as a result of Don's passion for the art. Don was a Founding and Honorary Member of the North American Falconers Association (NAFA) and hosted "field trials," or meets, as we now know them, in 1963, 1964, 1966, and 1968 near his ranch in Centerville, South Dakota. Those gatherings served to focus local, national, and international attention on this "new" and growing sport of falconry, and they no doubt aided many in the refinement of the art as it is practiced today. NAFA has become the fruition of the dreams of the charter members, some 45 of them including Don, who attended the organizational meeting held at Hal Webster's home, "Valkenswaard," near Denver during the Thanksgiving holiday of 1961. Don influenced the growth of NAFA throughout his life and was always a strong supporter of that organization.

During the 1960's and early 1970's, as the breeding populations of Peregrine Falcons in North America were devastated by what we now know were the insidious metabolic effects of DDT, falconers set out to breed these falcons in sufficient numbers for eventual repopulation efforts. Naturally, Don joined in this quest and once again demonstrated his strong and persistent conservation ethic. He experimented with early attempts at falcon propagation and loaned several Peregrines to the eastern Peregrine Fund program.

He attended the famous Madison Peregrine Conference organized by Prof. Joe Hickey in 1965. At the end of that conference, Don chaired a rump meeting of attending falconers and biologists to

discuss the possibility of breeding Peregrines in captivity and to consider how the different parties and interests might cooperate to that end. The formation of The Raptor Research Foundation, Inc. was a direct outgrowth of that meeting. Incorporated by Donald V. Hunter, Jr., Byron E. Harrell, Paul F. Springer, and George Jonkel in 1966 and first headquartered at Vermillion, South Dakota, the foundation began publishing *Raptor Research News* (now *The Journal of Raptor Research*). It was a valuable clearinghouse of information for the developing raptor propagation projects from 1967 to 1974, especially through the quick distribution of the "Breeding Project Information Exchange" and through a series of highly successful and well-attended annual meetings. The Raptor Research Foundation subsequently developed into an international scientific organization with diverse interests in raptor biology. Many of its newer members do not know that the organization started out as a small group of people who were passionately devoted to learning how to breed Peregrines and other raptors in captivity.

Don's forte was working with people of divergent and often contradictory opinions. His mature and calming influence drew people together. He had the stature of a war hero, lawyer, civic leader, and statesman along with the common sense of one who had worked patiently with the soil as a farmer. On his many trips to Washington, D.C. as President of the National Cattlemen's Association, he often had an opportunity to slip in some discussion with high government officials about the conservation of raptors. On one occasion, Don was scheduled to meet with the Secretary of Agriculture about various Cattlemen's issues, but the only thing the Secretary wanted to talk about was Peregrine Falcons and DDT. Evidently, the EPA Administrator, William Ruckelshaus, was about to announce the cancellation of all registered uses of DDT, and the Secretary needed to be reassured that it was the right thing to do.

The establishment of The Raptor Center (TRC) at the University of Minnesota by Doctors Gary Duke and Pat Redig was another priority of Don's. He believed that our birds deserved the best care available, and if a bird should become sick or incapacitated due to infection or injury, that we should learn something positive from the unfortunate experience. Don always supported the work of The Raptor Center and continues to do so even after his death.

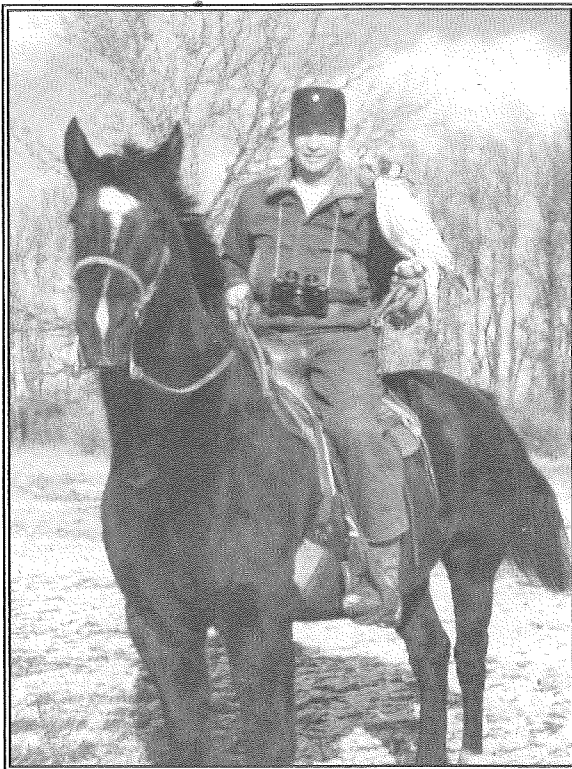
Professor and Director of TRC, Dr. Pat Redig, who knew Don well, recently announced the establishment of the Don Hunter Endowment for Raptor Medicine and Surgery. He states that, "The purpose is to generate a stipend that supports a falconer-veterinarian to fulfill the requirements for 3 years of clinical training in raptor medicine and surgery at TRC and to conduct original research that leads to a master's degree in a clinically important area that expands our knowledge base in this field. Having an endowed fund supported by falconers in Don's name is a terrific legacy."

The South Dakota Raptor Trust (SDRT) was co-founded by Don in 1987 and is a direct extension of his interest in breeding Peregrines for the recovery effort. SDRT provided Peregrine Falcons to many of the eastern states participating in recovery activities and also produced more birds for the mid-western recovery program than any other single entity, an achievement for which he felt great pride. SDRT expanded its captive breeding efforts to focus on Gyrfalcons and other species of special concern following the recovery of Peregrine populations.

Don attended as an honored guest the August 1999 celebration for the Peregrine Falcon's removal from the Endangered Species List, a landmark event that was hosted by The Peregrine Fund at its

World Center for Birds of Prey in Boise, Idaho. While there, Don took the time to meet for several hours in Tom Cade's basement with a group of 13 other falconers who all had concerns about the degradation of our prairie grassland and sagebrush steppe ecosystems. Dramatic declines of various wildlife species and especially grouse that inhabit these vast landscapes indicated serious problems. The North American Grouse Partnership was the direct result of that meeting, and Don became its first Vice-president and a founding board member. Prairie grouse are now recognized as umbrella species for these ecological systems, and NAGP continues its work to achieve the shared vision of a world in which humans demonstrate the wisdom to manage landscapes so that grouse and other wildlife can flourish forever.

Throughout his life, Don continued to encourage wise use of our natural resources and preservation of our cherished natural heritage. As a life-long farmer and rancher, he recognized clearly that agriculture helped build a strong America but that now an overly developed agribusiness threatens the integrity of our natural ecological systems and must be brought into a better balance for the common good. Even during his last days, he expressed deep concern for the continuing degradation of our environment. Although the spark of life has now left the eyes of Don Hunter, his life was and will continue to be an inspiration and guiding light to the many of us who value conservation, humanity, dignity, integrity, and compassion. Upon his passing, his son, Mike, expressed it well when he said, "He taught us how to live, and he taught us how to die." His son, Van, closed the eulogy at Don's memorial service with the proverb, "Mourn not too long that he is gone, but rejoice forever that he was." "À la vol," dear friend.



For further details about the Don Hunter Endowment for Raptor Medicine and Surgery or to make a contribution in Don's name write to The Raptor Center at the University of Minnesota, 1920 Fitch Avenue, St. Paul, MN 55108. "À la vol" was the general cry given by participants at the start of the "royal flight" or "haute volerie" at the heron. Consult the *Traite De Fauconnerie*, Hirschfeld Press, Denver, 1973, p. 59.

LPN GAINS LIFE PROJECT TO RECOVER LESSER KESTREL POPULATION IN PORTUGAL

by Susana Reis

LPN (Liga para a Protecção da Natureza - League for Protection of Nature) has recently started a three-year project concerning the recovery of the Lesser Kestrel (*Falco naumanni*) population in Portugal, which is co-financed at 75% by the European Community Program LIFE-Nature. Lesser Kestrel is classified as one of the more threatened species at a global level due to its recent population decline. Although once considered a common bird in many cities and villages of Portugal, the current national population is estimated at only 270 breeding pairs that are mainly restricted to Baixo Alentejo, in the south.

The priority actions needed for conservation of Lesser Kestrel populations are already identified in the International Action Plan for the species compiled by Birdlife International. The main objectives of this project were defined according to the Action Plan guidelines. These are to preserve and increment available breeding sites, increase the quality of feeding areas, elaborate proposals of Zonal Plans, and promote environmental education activities. Some of the practical actions include construction of new structures for the establishment of new colonies, recovery/improvement of existing ones, and agreements with local land farmers for the promotion of feeding habitat for the species.

For more information about the project and LPN, visit <http://www.lpn.pt> or contact us at Estrada do Calhariz de Benfica 187, 1500-124 Lisboa, Portugal; e-mail: lpn.natureza@mail.telepac.pt.

A STUDY OF WINTERING GREATER SPOTTED EAGLES AT AMVRAKIKOS, GREECE

by S. Zogaris, D. Papandropoulos, Ch. Alivizatos, V. Hatzirvassanis & I. Rigas

Amvrakikos is a Ramsar wetland and proposed National Park in western Greece with an important wintering population of Greater Spotted Eagles (*Aquila clanga*). Since 1999, researchers have studied the numbers, distribution, habitat use, and diet of wintering eagles. The project also has completed restoration actions of degraded wetland habitat types which support the wintering population of Greater Spotted Eagles, including restoration of riparian and savanna-like oak woods, management of reedbeds, coastal lagoon rehabilitation and re-flooding of a large riverine swamp. The project is funded by the European Union (LIFE 99 NAT/GR/006475) until September 2003. The Environmental Consultancy "Oikos-Nature Management Ltd." is coordinating the bird monitoring aspects of the project, and management of the Life-Nature project is undertaken by ETANAM S.A. - The Amvrakikos Development Agency. For more information about the eagle research and habitat management activities at Amvrakikos, contact Stamatis Zogaris, National Center for Marine Research, Institute of Inland Waters, P.O. Box 712, 19 013 Anavyssos, Attiki, Greece; phone: 32-2910-76393; mobile: 693-20-00010; e-mail: zogaris@ncmr.gr; web: <http://www.ncmr.gr>.

NEWS FROM ALTURA

by Stefano Allavena

ALTURA (Associazione per la Tutela degli Uccelli Rapaci e dei loro Ambienti - Association for the Protection of Birds of Prey and their Habitats) was established in 1999 in Rome by a group of Italian raptor enthusiasts. The Association is active in monitoring species of concern like Egyptian Vulture, Griffon Vulture, Bonelli's Eagle, Red Kite, Lanner Falcon, and Lesser Kestrel. Monitoring of Golden Eagle and Short-toed Eagle in some vital areas for these species, particularly Central Italy, is also an important activity of the Association. Breeding pairs of the more threatened species are carefully monitored to ascertain breeding success and to prevent robbing of eggs or young and disturbance.

At the same time, the Association is taking appropriate measures in favour of the species and their vital areas. It supplies food for Red Kite in Latium, Calabria, and Sicily and for Egyptian Vulture in Calabria and Sicily, also to reduce risks of deliberate or accidental poisoning. ALTURA is strongly involved in habitat protection, opposing wind farm projects that threaten important Italian natural areas, and proposals for new hunting laws that threaten birds in general and birds of prey in particular. ALTURA also is planning to reintroduce some species like Griffon Vulture and Red Kite in viable habitat where the species were present until some decades ago and where the situation is now favourable, with approval of the proper authorities. The ALTURA logo is a Red Kite.

For more information, please contact me at the following address: Stefano Allavena, Via degli Estensi, 165 - 00164 Rome, Italy; e-mail: info@alturaweb.net; web: <http://www.alturarapaci.net>.

THE WEST AFRICAN RAPTOR CENTRE - AFRAP

by Africa Nature

Africa Nature International, an international institution created in Europe and Côte d'Ivoire, working in Africa for 15 years, would like to announce to the raptor research community that we are in the process of establishing the West African Raptor Center - AfRap. AfRap is dedicated to the protection of raptors in West Africa by promoting research, education, and conservation activities. AfRap is setting up a scientific and technical center (based in Côte d'Ivoire) and is fervently encouraging regional West African scientists and conservationists to develop a strong and lasting interest in birds of prey research and conservation. AfRap is also developing regional avian veterinarian capabilities.

Africa Nature International is seeking to establish collaborations with raptor research/conservation institutions. Linking regional graduate students with foreign academic institutions is a priority. In this context, we would appeal to international organizations to get involved in West Africa, a region of the world with high raptor species richness, and to collaborate with AfRap in conservation activities. For further information, please contact afnat@afnature.org.

**OWLS OF THE WORLD -
INVENTORY METHODS, TAXONOMY, AND VOCALIZATIONS
Project Proposal Briefing Paper**

by David H. Johnson and the Global Owl Team

This project proposes a 5-year, worldwide project to resolve foundational aspects of taxonomy and conservation for the world's owls. During the last 14 years, 72 species of owls have been recognized, and the discovery of new species and new taxonomic assignments continue at a brisk rate. Formal, peer-reviewed field inventory protocols exist for very few owl species. Existing maps of owl distributions are coarse and rarely adequate for conservation planning. The rate of biodiversity loss occurring in forested environs is a significant global issue; some 197 of 216 (91%) of the currently known owl species are forest-related. Fifty-two owl taxa (25% of the owl species) are on the IUCN Red Data List. Owls have demonstrated their pivotal roles in the management of forests, e.g., the Spotted Owl (*Strix occidentalis*) of the western United States, and the Powerful Owl (*Ninox strenua*) and the Sooty Owl (*Tyto tenebricosa*) of eastern Australia.

Work under this project is focused on six tasks:

- 1. Develop scientifically robust inventory techniques for locating owls and their nests.** Inventory efforts are fundamental to natural resource conservation. Inventory methods will necessarily differ with the species of owl being surveyed, their habitats and habits, available tools and technology, and safety concerns of the surveyors. Products from this task will include practical methods and technologies for locating owls and their nests, as well as a globally-consistent framework from which to undertake comparative, demographic, or monitoring programs.
- 2. Analyze molecular systematics and phylogeny to fully develop the phylogenetic relationships in owls.** DNA studies have become a powerful tool in most areas of biology, in order to understand the phylogeny, systematics, and phylogeography of species, their ecology, population structure, breeding biology, paternity, and other aspects. We will amplify and sequence mainly the mitochondrial cytochrome b gene but will also include nuclear marker genes (intrn DNA). Since cyt b shows a good resolution at the genus level and since we already have a large database for this gene, we propose to use this gene as a platform in this study.
- 3. Acquire high-quality recordings of owl vocalizations.** Along with coloration and plumage, the vocal patterns of nocturnal or crepuscular species significantly aid in identification. In all owls, vocalizations are inherited and therefore are of great taxonomic importance. Owls show little geographical dialect variation. Every vocalization in an owl's vocabulary has a precise meaning. The primary vocalizations of many owls are still not known with certainty. Work under this task will further the collection and analysis of high-quality recordings of owl vocabularies, with a particular focus on their territorial songs, as these have demonstrated to be of particular value in owl inventory programs.
- 4. Conduct detailed analyses on the morphological aspects of the owls.** Of particular interest here is the provision of detailed descriptions of species and subspecies, a number of which will be new to science.
- 5. Refine geographical information system (GIS) data layers depicting the geospatial distributions of owls.** To date, only generalized maps of owl distributions have been produced; these maps are based mainly upon vague locations of observations that can be recent or old, well documented or suspect. Recent large-scale population or habitat changes may alter species ranges. Sponsors will combine GIS and GPS technologies, digitized spatial datasets, and formal peer review to develop refined distribution maps for the species, and greatly enhance the suitability, consistency, and applicability of these maps for use in practical conservation planning. Importantly, these owl distribution maps will be developed in concert with recently published terrestrial ecoregion maps (Olson et al. 2001, *Bioscience* 51(11):933-938).
- 6. Distribute project information via internet page(s), publications, and symposia to a very wide audience, including national and international biodiversity programs.** Work under this task will build

upon/refine existing "species accounts," include products from other project tasks, and place this information on a number of professional/scientific web pages. We will also utilize a web page with owl information designed for the public audience: www.owlpages.com. We expect to give formal presentations to national/international biodiversity conventions and associated forums.

Approach: An international team of owl ecologists and systematists has been formed. Team Leaders have been identified for specific tasks and/or geographic regions. The team, staff, and students will undertake project tasks in differing regions of the world. Substantial coordination with ornithological societies, raptor organizations, and local researchers and biologists is expected and welcomed. A global field inventory form will be developed to support recording and refinement of field methods. Field equipment will be developed to provide consistency in inventory methods. A literature search for inventory methods will be undertaken prior to fieldwork for the owls. No additional field work will be conducted on the small number of owl species for which accepted inventory protocols exist. Taxonomic work will include the collection of blood/tissue samples from some 130+ additional owl taxa (the others have been collected already). Vocalizations of owls will be recorded with high-quality equipment. As the recording of owl calls has been undertaken in earnest in recent years, some 40 species have never been tape recorded, and the vocalizations of numerous additional taxa are not adequately documented. Further, many taxa currently considered subspecies will be elevated to species status once their vocalizations become known. Morphological aspects will be derived from voucher specimens, to aid in the description of new species or subspecies. With appropriate permits, field collection of owl specimens will occur in areas currently without clearly identified voucher specimens. Such voucher specimens will support morphological, vocal, and genetic assessments; voucher specimens will generally remain in their country of origin. The distributional maps of owl species will be based upon a review of observational accounts, voucher specimens, existing published/unpublished maps, habitat relationships, and scientific peer review. Digital databases of owl voucher specimens held in key museums will be established. Species accounts and other project components will be developed and published via internet web pages, symposia, and other forums.

Conservation efforts depend on knowledge of taxonomic status, distribution, and abundance for each of the species. The completion of the phylogenetic assemblage of owl species is one objective of this project. Another key product from the project, *Inventory Techniques Manual for Owls of the World*, will find direct and widespread application under the forestry policy reforms and investments envisaged under such documents as the *2002 Revised Forest Strategy for the World Bank Group* as well as other banking and lending institutions (e.g., International Monetary Fund) and programs (e.g., Program on Forests - PROFOR). Owls have important cultural connotations, and this project will provide significant scientific and conservation advances, as well as providing a framework for global-scale examinations on other taxa.

Main Products: 1) a manual of *Inventory Methods for Owls of the World* to provide practical guidance to managers and others, as well as strengthen the "environmental screens" required of international financial lending institutions; 2) digital databases of owl voucher specimens held in key museums; 3) a phylogenetic tree of the owls; 4) gene sequences for mtDNA, submitted to GenBank; 5) recordings of owl vocalizations (e.g., digital, audio, sonograms) to aid in species identification; 6) species accounts, range maps, and related project information offered via web pages; 7) identification of conservation priorities and ecoregions needing more in-depth work on owls; and 8) monograph(s), and other publications in refereed journals.

Timeframe: Work under this project is planned for the timeframe of 2003-2008.

How You Can Help: We are actively pursuing funding for aspects of this project at this time; if you have insights into funding opportunities, or would like to contribute to this exciting global owl project in other ways, please contact David H. Johnson (djowl@aol.com).

ANNOUNCEMENTS

RAPTOR RESEARCH FOUNDATION, INC. CALL FOR NOMINATIONS

Nominations are open for the election of the following directors for a three-year term to begin in January 2004: **North American Director #2** (USA & Canada), **Director At Large Outside North America** (excluding USA & Canada, replaces International Director #2), **Director At Large #2** (no geographic restriction), and **Director At Large #5** (no geographic restriction). Terms and duties are described in the RRF By Laws (see <http://biology.boisestate.edu/raptor/>). Qualifications for each director position: 1) current membership, 2) resident of the representative geographical district (if applicable), 3) attend the annual board meeting during the annual conference, and 4) communicate on official business by e-mail. Deadline for nominations ends and a biographical sketch of the candidate stating the position for which the nomination is made, must be submitted by May 1, 2003 to Judith Henckel at ednjudy@epix.net or 1752 Robin Hood Road, Mount Bethel, PA 18343 USA.

UPCOMING MEETINGS

2003

March 27-30

**Hawk Migration Association of North America
Corpus Christi, Texas**

Contact: <http://www.hmana.org>.

May 18-23

**6th WORLD CONFERENCE ON BIRDS OF
PREY AND OWLS**

Budapest, Hungary

Contact: <http://www.raptors-international.de>
or World Working on Birds of Prey and Owls,
P.O. Box 52, Towcester NN12 7ZW, England;
phone/fax: 44-1604-862331; e-mail: WWGBP@aol.com
and robin.chancellor@virgin.net (please
send all e-mail to both addresses).

September 3-7

**RAPTOR RESEARCH FOUNDATION
Anchorage, Alaska**

Contact: <http://www.alaskabird.org> or Nancy
DeWitt, Alaska Bird Observatory, P.O. Box
80505, Fairbanks, AK 99708 USA; phone: 1-907-
451-7159; e-mail: birds@alaskabird.org.

October 10-13

**3rd SYMPOSIUM ON ASIAN RAPTORS
Kenting, Taiwan**

Contact: <http://raptor.org.tw/3rd/3index.htm> or
Raptor Research Group of Taiwan, 12 F., No. 309,
Fu-Hsin N. Rd. Taipei 105, Taiwan, R.O.C.;
phone: 886-2-87706470; fax: 886-2-87706469; e-
mail: rrgt@seed.net.tw or yesheu@ccvax.sinica.edu.tw.

2004

November 17-20

**RAPTOR RESEARCH FOUNDATION
Bakersfield, California**

POSITIONS AVAILABLE

**VOLUNTEERS NEEDED FOR STRAIT OF
MESSINA RAPTOR AND ANTI-POACHING
WATCH** As in previous springs since 1984,
volunteers are again sought to survey and protect
the migrating raptors and storks at the Strait of
Messina, southern Italy (between Sicily and
mainland Italy). The Strait of Messina is well
known as a strategic flyway into Europe; almost
all of the raptor species on the Western Palearctic
list have been recorded there, and so far 320+ bird

species have been observed there in total. It is the only place in the Western Palearctic where Amur Falcon may be seen, and it is also the best place for Pallid and Montagu's Harriers, European Lanner, Eleonora's Falcon, Lesser Kestrel, and so on. Almost all the typical Mediterranean bird species may be seen alongside with cetaceans and several butterflies and orchids. The survey begins on April 1st and ends on May 28th. Volunteers may stay for as long as they like. For more information, please contact Andrea Corso, Via Camastra 10, 96100 Siracusa, Italy; e-mail: voloerrante@yahoo.it.

PUBLICATIONS AVAILABLE

1997 OWL SYMPOSIUM PROCEEDINGS STILL AVAILABLE Single, free copies of the 1997 Owl Symposium proceedings (Duncan, J. R., Johnson, D. H., and T. H. Nicholls, eds. 1997. Biology and conservation of owls of the Northern Hemisphere: 2nd international symposium, 1997 February 5-9, Winnipeg, MB. Gen. Tech. Rep. NC-190. U.S. Dep. Agric., For. Serv., North Central Res. Sta., St. Paul, Minn. 635 pp.) are still available, as long as supplies last. The proceedings contains 91 papers authored by 143 people from 13 countries covering biology, ecology, monitoring, habitat-use, status, conservation, education, genetics, toxicology, diet, migration, mortality and related topics concerning owls of the Northern Hemisphere. Thirty-three owl species are discussed. Information presented will be useful in owl conservation, management, identifying research needs and defining conservation priorities. To order a copy, contact Jim Godfrey, North Central Distribution Center, USDA Forest Service, 1 Gifford Pinchot Drive, Madison, WI 53705 USA; phone: 1-608-231-5248; e-mail: jgodfrey@fs.fed.us. A table of contents and individual copies of papers can be seen and/or downloaded at <http://www.ncrs.fs.fed.us/epubs/owl/toc.html>.

"BIRDS OF PREY IN THE AMERICAN WEST" (ISBN 1-887896-38-4) by photographer Tom Vezo and raptor biologist Richard L. Glinski describes 34 species of eagles, hawks, falcons,

vultures, and owls indigenous to the western United States. This 128-page, softbound book contains 80 color photographs and may be purchased for \$US 22.95 from the publisher: Rio Nuevo Publishers, P.O. Box 5250, Tucson, AZ 85703 USA; phone: 1-800-969-9558; fax: 1-800-715-5888; e-mail: info@rionuevo.com; web: <http://www.rionuevo.com>.

DIE VOGELWELT PUBLISHES SPECIAL OSPREY ISSUE *Die Vogelwelt* has published a special issue (2001/3-4) on "The Osprey in the Western Palearctic." It contains 12 original papers (9 in English with German summaries, and 3 in German with English summaries and captions) on the Osprey in Europe and the Middle East, as well as a preface and several black-and-white and color plates. Contents of the special issue may be viewed at <http://www.birdnet.de/Vogelwelt/vw-01-03-4.htm>.

INTERNATIONAL HAWKWATCHER Copies of the first six issues of *International Hawkwatcher* are available still, although a few are in short supply. For further details and cost, please contact Donald S. Heintzelman, Editor and Publisher, *International Hawkwatcher*, dons@enter.net.

MONTEJO RAPTOR REFUGE Dr. Fidel José Fernández y Fernández-Arroyo has completed "Hoja Informativa sobre el Refugio de Rapaces de Montejo" (Information Leaflet on the Montejo Raptor Refuge) number 25 (112 pp.). The Montejo Raptor Refuge, established in 1974 in Castilla y León, supports dense nesting concentrations of Griffon Vultures and Egyptian Vultures; more than 300 other species of vertebrates have been recorded there. This report, which is in Spanish, may be purchased from La Tienda Verde, c/ Maudes 23, 28003 Madrid, Spain; phone: 91-5353810. The text of the report may be viewed at <http://www.naturalicante.cjb.net>. The same web page contains a PDF version of "Breve Reseña sobre la Historia del Refugio de Rapaces de Montejo" (A Brief Review of the History of the Montejo Raptor Refuge), by the same author and also in Spanish. For more information about the Montejo Raptor Refuge, please contact Dr. Fidel José Fernández y

Fernández-Arroyo, c/ Pensamiento 15-3A, 28020 Madrid, Spain; phone: 91-5793345.

NEW COLORING BOOK ON RAPTORS!

"Raptors: The Eagles, Hawks, Falcons, and Owls of North America" (ISBN 1570984050) by Anne Price with illustrations by Don Malick showcases every species of diurnal and nocturnal North American raptor. This 64-page, 8½" x 11", paperback book features 51 full-color illustrations in addition to black-and-white drawings. This activity book appeals to children of all ages as well as adults. It may be purchased for \$US 7.95 + \$US 6 shipping/handling from Raptor Education Foundation, P.O. Box 200400, Denver, CO 80220 USA; phone: 1-303-680-8500; fax: 1-303-680-8502; e-mail: raptor2@usaref.org; web: <http://www.usaref.org>.

"OSPREYS IN OREGON AND THE PACIFIC NORTHWEST" is a new, 4-page fact sheet published by the U.S. Geological Survey (USGS FS-153-02, December 2002). It is loaded with information and many color photos. In addition to basic biological information, subjects covered include population changes, contaminants, use as biological indicators, power poles and channel markers as nest sites, and migration patterns. It was prepared by C. J. Henny, J. L. Kaiser, and R. A. Grove. For a free copy, contact Charles J. Henny, U.S. Geological Survey, Forest & Rangeland Ecosystem Science Center, 3200 Jefferson Way SW, Corvallis, OR 97331 USA; e-mail: charles.j.henny@usgs.gov.

WHITE-TAILED EAGLES IN CENTRAL EUROPE A special issue of *Corax* features 13 papers presented at the White-tailed Eagle conference held in October 2001 in Mölln, Schleswig-Holstein, Germany. Reports from the German federal states, Denmark, Poland, Austria and the Czech Republic give an overview on the development of the White-tailed Eagle population up to the year 2001. Papers on age structure, reproduction, disease and causes of mortality complete the picture presented on this species. An analysis of moulted feathers made in Schleswig-Holstein from 1955 to 2000 is exceptional because of the time period covered. The special issue has 108 pages packed full of

information, with numerous colour photographs of White-tailed Eagles and their habitats. It was published jointly by the Ornithological Study Group for Schleswig-Holstein and Hamburg, the Protection of the White-tailed Eagle Project Group from Schleswig-Holstein, and WWF Germany. The special issue, which is in German with English summaries and figure captions, may be purchased for Euro 20 + postage from either OAG Schleswig-Holstein and Hamburg (contact reiser@ornithologie-schleswig-holstein.de) or Projektgruppe Seeadlerschutz Schleswig-Holstein (contact struwe-juhl@ornithologie-schleswig-holstein.de). German and English summaries of the papers are available at <http://www.ornithologie-schleswig-holstein.de>.

NEWS OF MEMBERS

Mark Martell has taken the position of Director of Bird Conservation at Audubon Minnesota and can be reached at: Audubon Minnesota, 2357 Ventura Drive, #106, Woodbury, MN 55125 USA; phone: 1-651-739-9332; e-mail: mmartell@audubon.org.

FOR SALE

RRF PUBLICATIONS Back issues of *The Journal of Raptor Research* (TJRR) Vol. 1-30 and all Raptor Research Reports may be purchased directly from RRF (Jim Fitzpatrick, Carpenter St. Croix Valley Nature Center, 12805 St. Croix Trail S, Hastings, MN 55033 USA; phone: 1-651-437-4359; fax: 1-651-438-2908; e-mail: jim@carpenternaturecenter.org). Some older issues of TJRR are not available. See [http://biology.boisestate.edu/raptor/rrf.htm#Back issues](http://biology.boisestate.edu/raptor/rrf.htm#Back%20issues) for details and prices. Orders for four or more volumes receive a 30% discount. RRF decals and pins also are available. Vol. 31+ of TJRR may be purchased from the Ornithological Societies of North America (Penny Wendland, P.O. Box 1897, Lawrence, KS 66044 USA; phone: 1-800-627-0629 x233; fax: 1-785-843-1274; e-mail: osna@allenpress.com).

RECENT THESES ON RAPTORS

The U.S. Geological Survey's Richard R. Olendorff Memorial Library would greatly appreciate receiving a copy of each thesis or dissertation abstracted in *Wingspan*. This allows the Library to make theses available to scientists and managers worldwide through its Raptor Information System (RIS, see *Wingspan* 7(1):16). Please send theses to: Olendorff Memorial Library, U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center, Snake River Field Station, 970 Lusk Street, Boise, ID 83706.

Bloxton, T. D., Jr. 2002. PREY ABUNDANCE, SPACE USE, DEMOGRAPHY, AND FORAGING HABITAT OF NORTHERN GOSHAWKS IN WESTERN WASHINGTON. M.S. Thesis, Univ. Washington, Seattle. 70pp.

I studied the prey abundance, space use, and demography of Northern Goshawks (*Accipiter gentilis*) during the breeding season from 1996-2000 in the mesic forests of western Washington. This time period included a strong La Niña event (late 1998/early 1999) which caused unusually high levels of winter precipitation followed by a cold spring. Abundance indices of nine prey species declined following the La Niña winter. Home range sizes of goshawks more than doubled. Survival rates of adult goshawks were reduced by about 36%, with most mortalities occurring during the winter months. Reproduction virtually ceased during the two post-La Niña years; mean number of young fledged per occupied territory declined by 94%. In this study, the use of radiotelemetry allowed me to gain a comprehensive understanding of the effects weather can have on the space use and demography of a generalist predator. I learned a lesson important for managers of goshawk habitat; weather effects may override habitat effects. Regardless of the quality and quantity of habitat provided in an area, goshawks may not breed if weather has impacted prey populations. Additionally, goshawks may not breed for a number of years while maintaining home ranges similar to (but larger than) those during breeding years.

I also used radiotelemetry to study the foraging behavior and habitat use patterns of goshawks in managed forests of western Washington from 1997-2000. Goshawks primarily hunted using the 'short-stay perched-hunting' method, but also hunted "on the wing" ('low soaring' method) when in areas dominated by younger forest where below-canopy flight space was limited. Medium to large birds such as Blue Grouse (*Dendragapus obscurus*), Ruffed Grouse (*Bonasa umbellus*), and Band-tailed Pigeons (*Columba fasciata*) dominated the diet of this goshawk population. Important mammal species include snowshoe hare (*Lepus americanus*), Douglas' squirrel (*Tamiasciurus douglasii*), and northern flying squirrel (*Glaucomys sabrinus*). Of 104 identified prey items, 75% were avian and 25% mammalian species. I identified 52 kill sites of 13 individual goshawks. Kills occurred in stands ranging from relatively open, 13-yr-old regeneration units (pre-canopy stage) to 200-yr-old complex, old-growth forests. Stands ranged from small (0.5 ha) and isolated to large (> 100 ha) and contiguous. Goshawks hunted in all forest types and successional stages except for recent clearcuts and shrub/sapling stages. Univariate comparisons between kill sites and paired random sites showed that goshawks tended to hunt in stands with larger diameter trees and avoided areas composed primarily of small trees (sapling/pole). Kill sites had an average of 35% less tall (≥ 3 m) understory cover than random sites. Low (< 3 m) understory cover varied considerably at both kill and random sites and did not differ statistically. Managers of relatively young (< 60 yr) forests in western Washington can promote use of stands for hunting by goshawks by thinning to reduce densities of small trees and increase remaining tree diameters while maintaining canopy closure and abundance of snags.

(Editor's note: Mr. Bloxton's entire thesis may be viewed or downloaded at <http://www.ruraltech.org/pubs/theses/index.asp>.)

Casagrande, S. 2003. PARENTAL CARE AND HONEST SIGNALS IN THE COMMON KESTREL (*FALCO TINNUNCULUS*). Ph.D. Thesis, Univ. Parma, Italy. 110pp.

This study was conducted in northern Italy during 2000-2002 and focused on some parameters affecting the parental care of the Common Kestrel, and on the importance of the condition-dependent character produced by carotenoids.

I studied the nest defense behavior of 26 pairs at three different states of breeding cycle. A stuffed model of two species of Corvidae was used to elicit the nest defense: a novel (the Raven, *Corvus corax*) and a known (the Carrion Crow, *Corvus corone cornix*) potential nest predator, respectively. Both males and females defended more vigorously the nest during the pre-fledging period ($p < 0.001$ and $p < 0.05$ respectively) than during the previous stages of the breeding cycle, when the benefits of the defense were maximum because of the increased chick survival probability in relation to their growth. Both parents defended the nest with similar intensity during the pre-fledging period, evaluating similarly the benefits of parental investment, because the parental efforts of both parents are comparable in the kestrel. The females defended the nest against the known and less dangerous predator more than males ($p < 0.05$). Otherwise, the males, which are smaller and more agile of the females, defended the nest more than females ($p < 0.05$) with the novel and more dangerous predator.

To investigate the male hunting behavior in a farmland area, 15 radio-tracked adult males were recorded. The more frequent prey were voles (*Microtus*), which were caught 14 times more often than expected ($p < 0.001$) in relation to their availability. Kestrels did not visit the available habitats randomly, preferring the grasslands ($p < 0.05$), where they preyed most often ($p < 0.0001$). The efficiency of both hovering and perching hunting were higher in the grassland ($p < 0.001$ and $p < 0.01$ respectively) than in the other habitats. These results showed that prey availability was predictable in the study area because the habitat selected by kestrels during the survey was coincident with the predation habitat. Hunting efficiency and home-range size were correlated with reproductive success but not with the number of prey delivered to the nest. Therefore it is possible that male home-range and hunting quality were linked to the sire general quality.

In order to understand if the expression of secondary sexual character can signal the male parental quality, I investigated if carotenoid- and melanin-based colorations are in relation to the paternal quality. I found that the kestrel absorbs and uses only xanthophylls, and that these pigments determine only skin coloration, while plumage coloration is only melanin-dependent. Males skin was brighter (more red) than females ($p < 0.02$), and consequently carotenoid based colorations can be considered a secondary sexual character in this species. Males brightness was positively associated with the number of prey delivered to the nest ($p < 0.02$). Such correlation was instead not found for the melanin coloration. Skin colorations then signals the male parental quality, while melanin does not. It is likely that melanin-based colorations have a stronger significance in male-male competition.

Finally, I considered the importance of carotenoid-based colorations in the nestlings, investigating if these colorations can be considered honest signals in the parent-offspring communication. The carotenoid based colouration of 207 chicks was positively associated both with body condition index ($p = 0.02$) and with the age of the chicks ($p < 0.0001$). The carotenoid-based colorations are then in relation to chicks survival probability and can be considered as honest traits that likely work in the parent-offspring communication.

Coleman, J. L. 2001. ECOLOGY OF THE SHARP-SHINNED HAWK (*ACCIPITER STRIATUS*) IN SOUTHERN QUEBEC. M.S. Thesis, McGill Univ., Montreal. 86pp.

The reproductive performance of Sharp-shinned Hawks (*Accipiter striatus*) nesting in southern Quebec was studied during the 1999 and 2000 breeding seasons. In 2000, 37.5% of breeders (equal numbers of males and females) were immature, whereas none were in 1999. In 2000, clutch size and hatching success were 4.4 and 3.1 eggs per nest, respectively. Of 10 pairs monitored in 2000, six hatched at least one chick and five raised young to a bandable age. However, only three pairs successfully fledged at least one young that year, whereas all seven nests observed in 1999 did so. Unseasonable weather in 2000 may have contributed to this decrease in nesting success.

In 2000, levels of organochlorines were measured in blood samples taken from sharpshin females and their young at five of the above-mentioned 10 nests. While most compounds were not detected at all, or at least not at levels likely to affect reproduction, concentrations of DDE and PCB's in these breeding females were much higher than in female migrants previously sampled in the eastern United States or Great Lakes. Whereas global contamination of the environment appears to be the source of PCB exposure, this population may be accumulating DDE on its wintering grounds.

Habitat assessments were conducted at 12 sharpshin nests over both years of the study. Means of the variables measured (among others) were nest tree height, 15.3 m; tree density, 1052/ha; total canopy cover, 86.7%; coniferous cover, 42.95%; and distance to the nearest opening, 17.5 m. Nests were found in a range of forested habitats, but this population did not exhibit a noteworthy degree of plasticity with respect to the measured parameters. That these sharpshins tended to use structurally older stands with more deciduous cover than other populations did may reflect regional differences in habitat availability and/or in the abundance of competitors.

Döttlinger, H. 2002. THE BLACK SHAHEEN FALCON (*FALCO PEREGRINUS PEREGRINATOR* SUNDEVALL 1837) ITS MORPHOLOGY, GEOGRAPHIC VARIATION AND THE HISTORY AND ECOLOGY OF THE SRI LANKA (CEYLON) POPULATION. Ph.D. Thesis, Univ. Kent, Canterbury. 308pp.

The black shaheen *Falco peregrinus peregrinator* is a poorly understood subspecies of the peregrine *Falco peregrinus*. Its taxonomic assignment has been and is still controversial and basic knowledge of its biology and ecology, especially from Sri Lanka is insufficient.

To clarify the taxonomic position of *Falco peregrinus peregrinator* within the peregrine group and to investigate the geographic variation of the black shaheen, morphometric measurements of external characters from a priori classified adult specimens, as well as plumage colouration and plumage pattern were analysed. Additionally DNA sequencing was employed to verify the phylogenetic relationship between the peregrine subspecies.

The a priori classified adult specimens of *Falco peregrinus peregrinator* were significantly different from adult peregrine falcon *Falco peregrinus peregrinus*. The examination on geographic variation of the black shaheen with known provenances separated the members of *F. p. peregrinator* into three groups. The specimens from China, Myanmar, and Hainan were biggest in size and resemble the adjacent peregrine subspecies of *F. p. japonensis* and *F. p. ernesti*. Reclassification for those specimens is suggested. The south Indian specimens which include the Sri Lanka specimens were significantly different from the north Indian provenances. They were smallest in size, unique in colouration and had almost no ventral plumage pattern. Additionally they showed less variability than the specimens from North India. There is a clear break line between these two groups. It is concluded that South Indian and Sri Lanka specimens form a separate subspecies and the name of *Falco peregrinus shaheen* (Jerdon, 1839) is given based on the first description. The northern specimens remain as *Falco peregrinus peregrinator*. Within the *peregrinus* group, unambiguous relationships could not be resolved.

Historical review of peregrine subspecies in Sri Lanka suggests habitat segregation for both peregrine subspecies. The shaheen prefers the central inland whereas the wintering eastern peregrine is found mainly in the coastal zone. Regression analysis showed that population declines of both shaheen and eastern peregrine occurred at the same period as the worldwide peregrine population decline.

In order to gain basic information field surveys were conducted in Sri Lanka from 1995 to 1999. Nest-site counts were carried out to estimate population density and nest-site measurements were taken. Additionally three example nest-site habitats were examined with regard to their land-use. Direct observations and collection of prey remains provide the first data on the shaheen's biology. The total population is estimated to be 62-83 breeding pairs. The results from field surveys suggest that the Sri Lanka shaheen *Falco peregrinus shaheen* is a vulnerable subspecies due to its small population size. The population is stable with the tendency to increase in numbers. It is concluded that the Sri Lanka shaheen is a forest-dependent tropical peregrine subspecies. The hypothesis is postulated that the shaheen is as a

k-selected species.

(Editor's note: Dr. Döttlinger's thesis is available in a book version. For more information, please contact Dr. Hermann Döttlinger, Langer Rain 4, 85301 Sünzhausen, Germany; phone: 49-84447588; e-mail: herdoe@pfaffenhofen.de.)

Fisher, S. A. 2002. COURTSHIP BEHAVIOUR, INCUBATION BEHAVIOUR AND BROOD PATCHES OF AMERICAN KESTRELS (*FALCO SPARVERIUS*) EXPOSED TO POLYCHLORINATED BIPHENYLS. M.S. Thesis, Univ. Saskatchewan, Saskatoon. 102pp.

Historical population declines of raptors have been associated with the bioaccumulation of organochlorine contaminants, including polychlorinated biphenyls (PCBs). PCBs are ubiquitous, persistent environmental contaminants that adversely affect reproduction in raptors. One mechanism associated with decreased reproductive success and population decline could be altered or inefficient behaviour during the breeding season. Captive American kestrels (*Falco sparverius*) were studied during the courtship and incubation periods to determine whether PCB exposure could result in behavioural differences compared to control kestrels. Kestrels ingested approximately 7mg/kg body weight each day of a mixture of PCBs (Aroclors 1248:1254:1260) through their diet of day-old cockerels. PCB-exposure began on 17 March 1998 and encompassed the entire incubation period, with an average exposure length of 100 days. The dietary dosage of Aroclors resulted in environmentally relevant total PCB residues in eggs, averaging 34.1 $\mu\text{g/g}$ wet weight (geometric mean).

Adult kestrels were studied to investigate potential behavioural and hormonal changes during the courtship period, resulting from clinical exposure to PCBs. There was no difference between treatment and control birds in circulating levels of total androgens ($p = 0.44$) or in 17β - estradiol ($p = 0.29$), one week following pairing. Male kestrels exposed to dietary PCBs exhibited significantly more sexual ($p = 0.034$), and flight ($p = 0.026$) behaviours, than did control males. Sexual behaviours of male kestrels included inspecting nest-boxes, soliciting copulations, offering females food and giving food to females. Flight behaviours of the male included flying from one perch to another and aerial display. In addition, the frequency of male sexual behaviours was correlated ($r = 0.605$, $p = 0.001$) with total PCB residues in the eggs of their mates. A concurrent study found that these same PCB-exposed kestrels experienced a delay in clutch initiation as well as more completely infertile clutches (Fernie et al. 2001a).

I investigated whether inefficient incubation behaviour could be attributed to PCB-exposure, possibly leading to poor reproductive success of American Kestrels. PCB exposure resulted in a later clutch completion date ($p = 0.005$), a lengthened incubation period ($p = 0.026$) and differences in the frequency, timing and length of incubation behaviours. Sex-specific differences were evident, with contaminated males spending less time in the nest box ($p = 0.034$) and having fewer incubation bouts ($p = 0.027$) than controls, whereas the behaviour of females did not differ from controls (p 's > 0.33). The length of time PCB-exposed kestrels spent in the nest box ($p = 0.033$), the time the male was in the box ($p = 0.09$), number of male incubation bouts ($p = 0.06$), number ($p = 0.0025$) and length of recesses ($p = 0.02$), number of nest switches ($p = 0.033$), and the time of the last recess began ($p = 0.03$) were correlated with hatching success during some observation periods.

Incubation and brood patches share a related function; therefore, brood patch size could potentially explain hatching failure, or patches may be a confounding factor in the relationship between incubation behaviour and hatching success. Exposure to PCBs resulted in size differences of brood patches in American Kestrels. PCB-exposed male and female non-breeders had two larger brood patches than control non-breeders (p 's < 0.04). Breeding males exposed to PCBs had smaller patches than control breeders (p 's < 0.068), whereas PCB-exposed female kestrels had one larger ($p = 0.035$) and one smaller ($p = 0.03$) patch than controls. Patch sizes were not related to total PCB residue levels in eggs (p 's > 0.21) of exposed birds. Brood patches were not related to incubation behaviour (p 's > 0.08) or hatching success in either control male ($p = 0.75$) and female ($p = 0.42$) or PCB-exposed male ($p = 0.13$) and female ($p = 0.3$) kestrels.

Hipkiss, T. 2002. BROOD SEX RATIO AND SEX DIFFERENCES IN TENGMALM'S OWL (*AEGOLIUS FUNEREUS*). Ph.D. Diss., Umeå Univ., Sweden. 44pp. + 5 papers.

Males and females differ in morphology and behaviour, so that selection acts differently on the two sexes. This changes the relative reproductive success of males and females, and it is beneficial for parents to bias the sex ratio of their broods in favour of the sex with the best survival and breeding prospects.

Differences between the sexes and brood sex ratio in Tengmalm's Owl (*Aegolius funereus*) in northern Sweden were investigated, using a molecular sexing technique based on PCR-amplification of sex-linked CHD1 genes.

Among owls caught during autumn migration, females were commoner than males, especially within juveniles. However, in contrast to earlier studies, it was shown that adult males sometimes undertake migratory movements indicative of nomadism. Measurements of these owls revealed that sexual size dimorphism in Tengmalm's Owl is not as great as previously reported from studies carried out during the breeding season. Females were slightly larger (4% by mass) than males, probably owing to the different roles of males and females during breeding, when this dimorphism is greater.

The size difference between male and female nestlings was found to be similar to that for adults in autumn, and to investigate whether this led to differential mortality, the effect of supplementary feeding on mortality of male and female nestlings was studied. Supplementary feeding reduced male mortality when vole abundance was low, and it was concluded that larger female nestlings out-competed their smaller brothers, who then suffered increased mortality when food was scarce. Recruitment of male nestlings into the breeding population declined with decreasing food supply at the time of fledging, a pattern not observed in females. Juvenile males were therefore more vulnerable to food shortage than females, both in the nest and after fledging.

Mean brood sex ratio varied significantly among years characterized by different phases of the vole cycle and associated vole abundance. Broods were male-biased (63% males) in a year when the food supply was favourable during spring and summer, neutral (50%) in a year with an intermediate food supply, and female-biased (35% males) in a year when food was in short supply. Parents appeared to adaptively adjust the sex ratio of their broods according to the relative mortality risk and reproductive potential of sons and daughters.

Joy, S. M. 2002. NORTHERN GOSHAWK HABITAT ON THE KAIBAB NATIONAL FOREST IN ARIZONA: FACTORS AFFECTING NEST LOCATIONS AND TERRITORY QUALITY. Ph.D. Diss., Colorado State Univ., Fort Collins. 241pp.

The Northern Goshawk has been at the center of controversy over management of its habitat in the western United States for the past 3 decades. Logging and, lately, fire suppression and grazing in coniferous forests are thought to be responsible for altering the composition and structure of forest habitats used by goshawks and their prey, thereby resulting in population declines. Conservation efforts for goshawks in some forest types are focusing on restoring forest structure to pre-settlement-like conditions using a combination of mechanical (logging) and natural (fire) methods.

Past studies of goshawks and their habitat have focused on the hawks' habitat use, food habits, movements, distribution, demographics, and diets; however, no studies have used spatially explicit models to describe the spatial dynamics among pairs of goshawks and between goshawks and their environments. To address this concern, I developed a dynamic spatial simulation model to assess the spatial relationships between goshawk habitat composition and structure and the location of active nests (i.e., those in which eggs were laid). I also examined associations between the amount and arrangement of habitat elements surrounding nests in higher and lower quality territories (determined from annual rate of egg laying and total fledglings produced on territories) and random locations. Relationships among the age and experience of breeding hawks and territory quality were also examined. Prior to assessing these relationships, I developed fine-scale (10-m x 10-m spatial resolution) models of vegetation composition and structure for the 128,500-ha study area and assessed the models' performance. The location of goshawk nests and determination of territory quality were based on a population of uniquely-banded goshawks on 101 territories studied from 1991 through 2000 on the Kaibab National Forest (KNF) in northern Arizona.

Nest locations in adjacent territories in a given year were regularly distributed at a minimum distance of 1.6 km between active nests; however, as the spatial scale (i.e., distance between the nests) increased, the degree of regularity decreased. Important forest structural predictors for nest locations within territories included canopy closure, total basal area, proportion of basal area in ponderosa pine, spruce, fir, and aspen, maximum height of the understory vegetation, and the presence of tree regeneration. Spatial analysis, using a combination of territory spacing and habitat variables, indicated that potential nest locations (i.e., suitable habitat for nests) were abundant and randomly distributed throughout the study area. The availability of locations with high nest habitat potential was, therefore, not limiting the goshawk population on the study area. Instead, territoriality, and what appeared to be non-compressible territories, set the upper limit to the population. Alternatively, the availability of locations with high nest habitat potential within some minimal space limited by neighboring territories probably constrained the ultimate choice of nest location within territories. It is unknown at this time whether territory density on the study area reflected the abundance, quality, and accessibility of prey.

Neither the tenure of breeding females nor the recruitment rate of young male or female adults (sub-adult plumage, ≤ 4 years old) on territories differed among categories of territory quality. Notably, however, annual turnover (replacement) of females was lower on higher quality territories. Because territory quality was estimated from reproduction, higher turnover on lower quality territories suggests that (1) a female's experience on a territory may have influenced the number of young produced on that territory and (2) female survival may have been lower in poorer territories.

Assessments of the habitat within territories were limited to the proportional composition of forest types (pinyon-juniper, ponderosa pine, mixed conifer, spruce- and deciduous-dominated mixes, and openings) and an index of vegetation diversity. Differences occurred between higher quality territories and random plots primarily for the proportions of ponderosa pine, deciduous-dominated mixes, and openings, and vegetation diversity within territories, and between lower quality territories and random plots for the proportion of openings within territories. In particular, less deciduous-dominated vegetation ($< 5\%$ of area) and fewer openings ($\leq 3\%$ of area) within 0.6 km of the sample plots were important in differentiating the above-mentioned territories from random plots. These distances incorporate nest sites and the staging grounds on which young goshawks to learn to hunt, as well as some foraging areas used by adults. Forest openings and deciduous vegetation may diminish the concealment of nests, as well as provide less suitable habitat for hunting, which typically employs a short-sit-and-wait and short flight pattern where the hawks use multiple perches under the forest canopy to search for prey. Openings also provide less suitable habitat for the goshawk's dominant prey (*Sciurus* spp.). Although differences in forest composition and vegetation diversity between higher and lower quality territories were not detected, use of additional variables, such as forest structural components, may discriminate better between these categories of territory quality.

Katzner, T. E. 2002. ECOLOGY AND BEHAVIOR OF FOUR COEXISTING EAGLE SPECIES AT NAURZUM ZAPOVEDNIK, KAZAKHSTAN. Ph.D. Diss., Arizona State Univ., Tempe. 176pp.

Identifying the mechanisms by which similar species coexist is a central problem in ecology. The classical explanation for coexistence depends on resource partitioning driven by interspecific competition. Alternative processes that may also promote coexistence include predation, environmental heterogeneity and resource abundance.

The role of competition and other forces in permitting coexistence was studied among White-tailed Sea (*Haliaeetus albicilla*), Imperial (*Aquila heliaca*), Golden (*A. chrysaetos*), and Steppe Eagles (*A. nipalensis*) at the Naurzum Zapovednik (National Nature Reserve) in Kazakhstan. These species are so similar that many sources consider them ecological equivalents, and classical theory would predict that these species should compete intensely. To evaluate coexistence, spatially-referenced data on nests, reproduction, diet, and prey availability were collected and analyzed for each species. Intraspecific variation in these characteristics was also studied among Imperial Eagles.

Steppe Eagle diet and nesting behavior were distinct from tree-nesting species. All tree-nesting eagles bred in similar habitats, and while their nests were sometimes different in construction, location, and spacing,

these differences were not interspecifically limiting and were not driven by competition. Eagle foraging responded to distributions of the most heavily used prey types, but not to distributions of other prey or other eagles. Thus, while eagle diet depended on nest location and eagle species, location was so important that neighboring heterospecifics often had diets more similar than did more distantly spaced conspecifics.

Intraspecific variation in nests and in diet of Imperial Eagles was as great or greater than interspecific differences. Diet selection of this species was independent of competition, tightly tied only to prey distributions, and positively associated with reproductive output.

Species-specific niche preferences and a diverse resource environment allowed coexistence of steppe- and forest-nesting eagles, and intraspecific demographic factors limited populations of forest-nesting species. Thus, while some resources are partitioned, alternative mechanisms allowed eagles to coexist without competing. Therefore, removal of any one or two species would likely have no demographic effects on remaining eagle populations. This work shows that in complex situations, multiple factors can work together to permit species coexistence without competition, even when classical theory would predict intense interspecific competition.

Paupé, M. D. 2001. PREDATION BY GREAT HORNED OWLS AND RED-TAILED HAWKS IN A PRAIRIE LANDSCAPE ENHANCED FOR WATERFOWL. M.S. Thesis, McGill Univ., Montreal. 80pp.

Several species of raptors are found in prairie landscapes managed and enhanced for waterfowl. Red-tailed Hawks (*Buteo jamaicensis*) and Great Horned Owls (*Bubo virginianus*) may benefit from such management in a manner that is counter to its goals and objectives; that is, waterfowl may comprise a significant proportion of their diet, resulting in a decline in waterfowl numbers. The overall aims of this three-year study were to determine whether the feeding habits of the two raptor species are selective and to determine if waterfowl is a preferred prey group. The diet was determined through pellet analysis, prey remains, and direct nest observations during the nestling growth period. Availability of most prey species was assessed through small mammal trapping and by conducting waterfowl censuses. It was determined that both raptors select for duck species. The average waterfowl biomass consumed per nestling represented 21.5% of the total biomass consumed for Great Horned Owls and 23.5% for Red-tailed Hawks. With very high breeding ducks densities, these values do not represent a high mortality rate for ducks (under 2% for both raptors combined). Although Great Horned Owls and Red-tailed Hawks select waterfowl as a preferred prey, currently they do not have a significant impact on the duck populations in these enhanced habitats.

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Wingspan welcomes contributions from RRF members and others interested in raptor biology and management. Articles and announcements should be sent, faxed, or e-mailed to the editor: Leonard Young, 1640 Oriole Lane NW, Olympia, WA 98502-4342 USA (phone/fax: 1-360-943-7394, e-mail: wingspan@attbi.com). Deadline for the next issue is August 7, 2003.

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INTRODUCTION TO RAPTOR FIELD TECHNIQUES

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