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STUDYING THE GALAPAGOS HAWK

Possible Evidence of Breeding Among Condors in Colombia

Reintroduction of a Harpy Eagle in Panama

Recovery of a Harpy Eagle in Brasil

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The NRN is a membership-based organization. Its goal is to aid the research and conservation of Neotropical raptors by promoting communication and collaboration among biologists, ornithologists, raptor enthusiasts, and other conservationists working in the Neotropics.

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Cover photo: *Harpia harpyja* hatched in captivity as part of The Peregrine Fund's Harpy Eagle captive breeding and release program in Panama. © Angel Muela



Articles were edited and/or translated by Angel Muela, Hernan Vargas, and Marta Curti **Back cover photo:** *Glaucidium brasilianum* photographed near the Chiquibul Forest, Belize. © Ryan Phillips



THE GALAPAGOS HAWK (BUTEO GALAPAGOENSIS): LIVING IN AN EVER-CHANGING ENVIRONMENT

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As we sit, observing the nest, six Galapagos Hawks suddenly appear from behind us, , flying around in circles like a twister of high pitched calls approaching quickly. We soon realize they are after something as, a small bird, barely escaping from their talons, flies desperately in an attempt to save its life. When the female hears the other hawks, she leaves the nest and her two week-old chick in a hurry. From within the gully a hidden male appears. Both are responding

to the calls and rushing to aid in the hunt. All eight hawks dive in - one after the other - and as soon as they dive down they come right back up, circling around and finding another impulse to attempt to catch the prey. Finally, nearing the horizon... SUCCESS!!! They all disappear from our view and so we quietly sit there waiting, eager to see what type of bird they were after. Will they bring their catch back to the nest? Will ALL that effort go into raising a single chick?

A group of Galapago Hawks. Photo © Hector Cadena



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Juvenile Galapagos Hawks feeding on goat meat (bait used to capture and band the hawks). Photo © Mari Cruz Jaramillo

Cooperative polyandry is the type of breeding behavior the Galapagos Hawk (Buteo galapagoensis) exhibits; one female breeding with two to eight males, all caring for the young equally, all copulating with the female and all fiercely defending territory against invaders year round (Faaborg and Patterson 1981). Though this unusual way of breeding has captured the interest of many scientists, the species exhibits more than one breeding strategy. Across the islands they inhabit, including Española, Santa Fe, Pinzón, Santiago, Isabela, Fernandina, Marchena and Pinta, we have observed different percentages of polyandry being displayed. Along with the differences in behavior they also show great variation in morphology between islands (Bollmer et al. 2003). On Santiago Island the Galapagos hawks nests predominantly on Bursera graveolens trees but, in more arid islands, they may also nest on rocky outcrops, barren lava and sometimes on other species of tress such as Opuntia, Erythrina, Pisonia, Piscidia, Psidium and Zanthoxylum (De Vries 1973).

Less than 300,000 years ago a group of Swainson's Hawks (Buteo swainsoni) arrived to the archipelago, radiated quickly and became settlers of the Galapagos Islands (Bollmer et al. 2006). Since the arrival of the first human inhabitants in

Galapagos land iguana and lava lizard. Young land iguanas and adult lava lizards are prey for Galapagos Hawks. Photo © Mari Cruz Jaramillo





Mari Jaramillo and two juvenile Galapagos hawks, overlooking James Bay study area. Photo © Hector Cadena

the 1800s, hawks have been persecuted and extirpated from Floreana, San Cristobal and Santa Cruz (only juveniles are seen occasionally); and the remaining populations on eight other islands face yet other challenges. For over two hundred years invasive species have been brought to the islands, where rising concerns about their impact on the native community generated several eradication campaigns. The complete removal of feral goats (Capra hircus) from Santiago Island, 585 km2, made this the world's largest island in which eradication of goats has been successfully completed (Cruz et al. 2009). This, along with the lack of a significant herbivore population in the environment, has resulted in a remarkable vegetation recovery. This eradication was successfully completed in 2006. In 2008, The Peregrine Fund, the University of Missouri Saint Louis, the Charles Darwin Foun- mented before goat removal) to more arboreal

dation and the Galapagos National Park Service (after goat removal), in order to adapt. Therefore, joined efforts to study the effects of goat eradi- we are keeping a close eye on their prey populacation on the Galapagos Hawk. As part of this tions (mainly introduced rats) to determine changcooperative project, two students from Ecuador, es in abundance as a consequence of increased Mari Cruz Jaramillo and Jose Luis Rivera, had the vegetation. In 2010, we conducted observations opportunity to conduct research for their Masters for 60 hours, from a hut 25-60 meters away to programs in Biology at the University of Mis- document what prey species are delivered and souri - Saint Louis (USA). While Jose Luis stud- which individual brings the prey to the nest. We ied the survivorship of hawks, Mari is focusing have nearly completed our first field season and

her research on their feeding ecology. Jose Luis, using banding data from 1998 to 2009, detected a lower survivorship in the population of hawks after 2006 when goat eradication was com-

Land iguanas (Conolophus subcristatus), which were common when Charles Darwin visited Santiago in 1835, are now extinct on this island probably due to food competition with introduced goats and predation by feral pigs. The Galapagos Tortoise (Geochelone elephantopus) population was decimated by first human settlers and is now the only remnant large herbivore on Santiago Island, with just 500-700 individuals (McFarland et al. 1974).

were able we observe - 9 to nests with a total of 274 prey items delivered. Although our sample size is still small, we are starting to

cation of goats and Mari is performing observa- pagos National Park. tions for years after the eradication (2010-2011). How, then, will the Galapagos hawks' diet have changed in order to adapt to its new environment without goats?

If vegetation recovery jeopardizes the hawk's suc- DeVries, M.S. Struve, P.G. Parker. 2003. Variacess in capturing certain prey, we hypothesize that tion in morphology and mating system among their diet should shift from ground based (docu- island populations of Galápagos Hawks. The

pleted (Rivera et al. submitted). A previous feed- see a shift from ground to arboreal prey. We hope ing ecology study in 1999–2000 (Donaghy Can- to continue with a second field season next year non 2001, unpublished master thesis) will provide and that our results and conclusions serve to ina basis of comparison for years before the eradi- form future management decisions at the Gala-

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Female Galapagos Hawk in the nest with two chicks. Photo © Daniela Bahamonde

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Female Galapagos Hawk providing shade for her young. Photo © Hector Cadena



Possible Evidence of Breeding in Reintroduced Condors (Vultur gryphus) in Colombia

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The Andean Condor (Vultur gryphus) is categorized as Near Threatened worldwide, and its population is in decline (IUCN 2010; BirdLife 2010). This is why, in recent years, conservationists have begun to reintroduce captive-bred condors back into parts of their range in Colombia, Venezuela, Peru, Argentina and Chile (Lambertucci 2007). In Colombia, between 1989 and 2005, 65 individuals (born in captivity in various zoos in the U.S. and the Cali Zoo, Colombia) have been reintroduced into the wild in six different repopulation nuclei in the Andes (2006 MA-VDT .) It is estimated that 78% of those released have survived, although reproduction of reintroduced individuals has not yet been documented (Márquez et al. 2005).



Juvenile Andean Condor Photo © Santiago Zuluaga Casteñada

In this paper, I will share some observations made at one repopulation nucleus located in the Los Nevados Natural National Park (NNP); as well as the observation of a juvenile found in this area, which suggests the possibility that the condors reintroduced in Colombia may be starting to breed in the wild.

Between 2004 and 2010, using binoculars (10 x 50) and cameras, I made non-systematic observations from high vantage points with broad views and along transect lines (Márquez & Rau 2003) in the buffer zone of Los Nevados NNP, in the central mountain range of the Colombian Andes. In July 2010, at coordinates 4 ° 55.02 'N and 75 ° 26.97' W, at an altitude of 3600 m, I photographed a juvenile condor estimated to be approximately three years of age, based on its plumage characteristics. It is probable that this individual hatched in Los Nevados NNP, which makes this the first evidence of possible reproduction among the condors reintroduced in Colombia. The juvenile was seen flying, accompanied by a reintroduced adult condor. From 1997 to 2001, 16 juvenile condors were released in the Los Nevados NNP. All these condors should have already been in adult plumage by July 2010, thus, the presence of a young condor suggests it hatched locally or is a bird which possibly dispersed from elsewhere in Colombia, where wild condors are known to breed. However, the latter is less likely, because these breeding condors exist in very small numbers and they are restricted to a few isolated mountain areas (MAVDT 2006) in the Cocuy NNP and Sierra Nevada de Santa Marta, about 417 and 682 km from the Los Nevados NNP, respectively.

I made 14 visits to the study area with an average of 2.3 visits per year. During each visit, I recorded the presence of condors and behavioral observations. In addition, I interviewed people in the community about their sightings of this species. Through my observations I documented condor behavioral patterns in relation to foraging and roosting, and the presence of solitary individuals and pairs.

Observations of feeding behavior showed that when food is found, the condors do not immediately descend upon it, but rather they remain a good distance away, in places where they can observe their quarry over long periods of time. This behavior coincides with that described by Speziale et al. (2008) who argued that, generally, the species is very cautious and may wait days be-

Juvenile Andean Condor. Photo © Santiago Zuluaga Casteñada





First documented Andean Condor roost site in Colombia. Photo © Santiago Zuluaga Casteñada

fore deciding to go down to eat.

Two roost sites have been recorded. The first, found in 2007, is located on a rock wall about 50 m high, with shrubs and trees that isolate the interior. There has been little activity at this site. On only one occasion did I observe three individuals in the afternoon hours. The second roost, found more recently, was first recorded in January 2010. It is located on a 300 m rock wall with some shrubbery. There I observed a solitary individual arrive at sunset and leave in the early hours of the morning over three consecutive days. Subsequently, in May 2010, there were two individuals using this roost site.

Observed individuals belong to a repopulation nucleus, established in 1997 as a center of dispersal for the species in the central mountains of the country (MAVDT 2006). From the beginning, these individuals were marked with patagial tags on both wings, and in addition, were fitted with a microchip for individual identification (pers com. G. Corredor). However, it seems that most individuals have lost their wing tags, which makes it impossible to identify them in the wild. In addition, there is little or no knowledge of the biology of this core group, due to the lack of monitoring and limited availability of resources that would allow us to document their current status. These are perhaps the main reasons why this juvenile condor had not been previously observed. It is worth noting also, that before this discovery, residents in the area claimed that they saw a group of three individuals, one possibly a juvenile, feeding in the area.

In addition to this, it is presumed that there are juveniles of this species in different parts of the country. However, no conclusive evidence exists to prove the veracity of these assumptions.

Second documented Andean Condor roost site in Colombia. Photo © Santiago Zuluaga Casteñada



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It is, therefore, necessary to confirm these records, and to seek funds to obtain accurate data and precise knowledge of population dynamics within these repopulation nuclei. In this way we hope to evaluate the effectiveness of releases as an appropriate conservation strategy.

The observations discussed here and the documentation of a juvenile condor represent a contribution to the knowledge of the population status of condors reintroduced into the Los Nevados NNP, and the need for verification of wild reproduction, as a measure to assess the success of implementing Action Plan 2006-2016 (MA-VDT 2006) for the conservation of the condor in Colombia

German Corredor, leader of the Cali Zoo captive breeding program, says that confirmation that reintroduced condors are reproducing naturally will undoubtedly be of great importance to the scientific community and, especially, will mean good news for efforts to restore Andean Condor populations in Colombia.

I would like to thank Sergio Lambertucci, researcher at the Universidad Nacional del Comahue, Bariloche, Argentina, for his comments and support. I would also like to especially thank Olga Lucía Núñez, Germán Corredor, Hernán Vargas and Cesar Márquez, for their comments.

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EXPERIENCES WITH THE REINTRODUCTION OF A CAPTIVE-BRED HARPY EAGLE (HARPIA HARPYJA) INTO A WILD ECOSYSTEM IN DARIÉN, PANAMÁ

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Harpy Eagle, KC, with a sloth Photo © José de Jesús Vargas-González

Two seasons have gone by since the release of the Harpy Eagle (Harpia harpyja) called KC, well-known in the local communities as Nepono, which means "flower" in the indigenous Embera language. KC was released into the Chepigana Forest Reserve, Darien with several goals in mind - all of which are aimed at developing guidelines for a successful reintroduction of captive-bred Harpy Eagles in natural environments where wild Harpy Eagles already live. We released KC in the forest surrounding the community of La Marea in the hopes of influencing a courtship between our captive-bred bird and a resident wild male Harpy Eagle that recently lost his mate.

KC hatched on December 31, 2004 at The Peregrine Fund's Neotropical Raptor Center in Panama. More than a year after hatching, she was released in Soberania National Park, in the Panama Canal Area, where she successfully adapted to her environment. In January of 2009, we trapped KC and temporarily held her in quarantine to make sure she was healthy before we re-released her into the forests of the Darien Province of Panama. On February 21, we transported KC to



José checking for KC's signal Photo © José de Jesús Vargas-González

the study region, and released her a month later, after having witnessed vocal interactions between her and the wild male Harpy Eagle.

In order to collect data after KC was released, we followed her for at least five hours each day to document any interactions she had with the wild male Harpy Eagle or other individuals. Though our intention to bring KC and the wild male together was not successful, many hypotheses can explain why these two birds did not mate, such as KC's young age. Nevertheless, we learned a lot from this unsuccessful part of the experiment. We documented intra-specific interactions with wild Harpy Eagles and collected data to gain a better understanding of the tolerance level and adaptability of this species in different types of ecosystems. Today, our preliminary data suggest that: 1. KC is not a resource competitor for other adult and juvenile Harpy Eagles; 2. KC has adapted successfully to a natural environment; 3. KC had positive interactions with other individuals of her species; 4. KC can use different types of forests, with homogeneous and heterogeneous ecosystems, including areas of some human disturbance; and 5. KC is an excellent icon to raise awareness in local communities about the conservation of this species.

During this past year of constant monitoring effort, KC travelled roughly 130 km from the release site in La Marea. Most recently, she has been located in the Serrania del Sapo, an amazing contiguous forest near Puerto Piña. We have documented three different interactions between KC and three adults males and one juvenile female Harpy Eagle, as well her visits into active breeding territories of other Harpy Eagles. It is incredible how much we have learned and continue to learn from this experience with KC. The interactions we witnessed were both visual and vocal, and may have lasted for hours, without any instances of intimidation or aggressive behaviour. In fact, on several occasions, KC was seen with a different wild male. At times, they were observed



Female Harpy Eagle, KC. Photo © José de Jesús Vargas-González

perching close together - at distances of under 5 meters in the same tree. They sometimes vocalized back and forth and even flew together. We considered these interactions as positive. This led us to conclude that captive bred Harpy eagles can live with wild Harpy Eagles and that, in the event they enter occupied territory, they can disperse without any aggressive behaviour occuring.

Before her release in Darien, we had several concerns, mainly regarding the survivorship of KC in an environment where we knew wild Harpy Eagles were present. Today we can support the claim of "survival of the fittest", as KC has shown to be a very fit individual. The survival of this eagle is clear proof of the great value of all the rearing, development and reintroduction efforts made by our team at The Peregrine Fund.

In the Darien's very diverse and amazing ecosystems, KC has captured a wide variety of prey, such as sloths, primates, and carnivores, among others. We have documented how KC searches for, chooses and captures her prey, always following a cost-benefit rule. On some occasions KC watched her prey for several hours, but did not attempt to hunt it, despite it seeming, at least to us, an easy catch. Perhaps the site was not the best for making the capture, or there was some risk of KC getting hurt. All of these observations and theories enrich our study and feed our desire to learn more.

We monitored KC's movements through mature forests with open understory vegetation as well as through complex habitats where the dense vegetation made it very difficult to move. This Harpy Eagle has utilized mainly mature forests with large homogeneous extensions. But we have also followed her into mangrove forests, cativales, and secondary forests, as well as agricultural fields. This diversity of habitat use suggests this species' great adaptability, as long as it is not killed by humans.

What motivates KC to move great distances? We can speculate that it is because she is a young eagle, wandering without direction. Or it may just be due to disorientation from being in a completely new environment. Perhaps she is looking for an ideal area that meets her requirements, or maybe it is because she found other eagles in the surroundings and prefers an empty territory. Perhaps it is because she is young and is searching for a mate, and later a territory and a good place to build her nest. There are many questions that arise from KC's movement patterns. Day by day we collect more data and we are better equipped to study her habitat requirements and closer to understanding her behaviour. Anthropogenic barriers, such as deforested areas, may force KC to deviate from her path, causing her to use forest remnants to bypass poor habitats and reach better areas. Each inference that we make from observations of KC creates new concerns regarding the requirement for healthy populations of Harpy Eagles, especially in contrast to the growing trend in soil use and deforestation.

Today, in the study area, our work team is known as the "Harpy Eagles". Both children and adults call us that and ask us about Nepono, who has become a popular individual, especially among children. This is the result of the radio advertisments that we broadcast regularly so that the community learns about Harpy Eagles, especially about Nepono.

KC visited some indigenous and farmers' lands as part of her exploratory travels, and thanks to our communication efforts she has not fallen victim to hunters. Whenever we have the opportunity, we talk informally with local people to teach them about our project and the presence of KC. This way we avoid that she will be hurt due to ignorance.

A lot more work is necessary to accomplish our research with KC, but we have the energy and enthusiasm to continue following our wild flower "Nepono."

* * *

RECOVERY OF A HARPY EAGLE (HARPIA HARPYJA) IN THE PRIVATE NATURAL HERITAGE RESERVE REVECOM Paulo Roberto Neme do Amorim. Reserva Particular do Patrimônio Natural REVECOM, <u>revecombr@bno.com</u>. br; Roberto da Rocha e Silva. Curso de Medicina Veterinária, Universidade Estácio de Sá, <u>rrochaesilva@gmail</u>. com; Môsar Lemos, ABFPAR – Associação Brasileira de Falcoeiros e Preservação de Aves de Rapina, <u>lemosmo-</u> sar@hotmail.com e Maria Lucia Barreto. NAL – Núcleo de Animais de Laboratório, UFF – Universidade Federal Fluminense, <u>mlbarreto@gmail.com</u>

The rehabilitation of injured birds of prey found or seized by environmental agencies is part of the routine at most wildlife rehabilitation centers. Raptors, due to their particular characteristics, represent a unique challenge since they depend on the integrity of their talons, their flying ability, and overall excellent physical condition for safe release and survival back into the wild.

Located on the left bank of the Amazon River in the state of Amapá (Brazil), the REVECOM Private Natural Heritage Reserve (RPPN - for its acronym in Portuguese), encompasses about 17 acres including a small river basin (Igarapé Manguerinha). It was established (Portaria nº. 54/98 - N - IBAMA, and considered of public utility by law No. 109) by the government of Amapá on May 29, 2007. In addition to sheltering a rich Amazonian fauna, it is being used as a center for the Forestry Battalion. Seized animals are admitted and given clinical, microbiological, and other tests to assess their physical and mental condition before being released back into the wild. The center is also used in environmental education activities and attends to various schools

in the region. It also promotes specific courses for university students or graduates interested in natural resource conservation (Fig 1 and 2).

Case Report

An adult female Harpy Eagle (Harpy harpyja), or "Uiraçu" (a name of Tupi-Guarani origin) was found by a local resident in early January 2007 on a dirt road near a chromite mine, 40 km from the town of Cupixi or Vila Nova (00 ° 07'09 .6 "S and 51 ° 38'12 .6" W), about 180 km from Macapá - Amapá's capital. After three hours of travel the eagle was brought to REVECOM (admission document No. 3147 - GEA - SEMA -06/01/2007 CCF) for initial observations. At the time of capture the bird was on the ground and extremely lethargic. It could not stand up and was slightly covered with mud(Fig 4 and 5). The initial clinical examination revealed lesions on the inside of the right wing (with some joint exposure); the right pectoral region had significant loss of feathers with dermal exposure and abrasion; foreign bodies were found under the nictitating membrane, and it had traumatic keratitis and episcleritis with secondary bacterial infection in its right eye. The eagle was treated with hydration and antibiotic therapy.

Its feces initially presented as semi-liquidy with a lot of greenish mucus with bloody traces. We administered 30mg/kg trimethoprim sulfamethoxazole (Bactrim) twice daily for seven days, which gave good results, considering that the eagle's feces returned to normal. Lesions on the wing and pectoral region were bathed with a mixture of saline, iodine and hydrogen peroxide administered with manual pressure pumping equipment, and then a fibrinolytic ointment with chloramphenicol was applied. The skin lesions healed by the second treatment. On the 20th of January we administered a single dose of Abendazol at 10 mg / kg and again 15 days later. In addition, as initial therapy support, the bird received a multivitamin for 15 days which was added to its food and water. Initially, the eagle's daily diet consisted

of a mixture of lean beef, beef liver oil and a puree of chicken bones. After 10 days the bird began to refuse food. We allowed the eagle to fast, as it is normal for wild Harpy Eagles to go for several days without eating between successful hunts. Beginning on 25 January it began exercising its wings. On 27 January 2007 it was very active and, when given food, partially opened its wings - which is typical juvenile behavior. It began to exercise its legs by alternately liften them with the support of the perches. The eagle also went back and forth between perches regularly going from a 15 cm perch to a branch 30 cm in diameter. It also began to interact with its environment and showed interest in a sloth (Choloepus sp.), a kinkajou (Potus flavus) and a juvenile howler monkey (Allouatta sp.) that were housed nearby. Upon seeing these animals it lowered all of its crest feathers as if it were ready to fly and capture prey. The eagle wasn't interested, however, in the almost featherless macaw that was





Figure 1. (lt.) Amazon River in the coastal state of Amapá (Brazil), where the REVECOM is located (a green oasis in the urban center of Puerto de Santana).

Figure 2. (rt.) The state of Amapá (Brazil) Coast (Atlantic Ocean) and the Amazon River.



Figures 4 and 5. (lt.) Harpy Eagle's arrival to REVECOM Photo © Paulo Roberto Neme do Amorim

nearby. On 27 January the bird showed signs of recovery. It would not let us touch its back and its eye injury healed after 20 days of treatment with ophthalmic ointment (Maxitrol) and boric acid. The eagle had been rescued on 1 March and on 14 April he was transferred to a new facility built according to the REVECOM model (AMORIM et al, 2010 - submitted for publication), where he began to exercise more and even fly. He adapted to this new site after 10 days (Fig 6 and 7). Flight was encouraged by the supply of live white rats.

Harpy Eagle Conservation

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The conservation of large predators is becoming increasingly difficult, not for lack of protected



Figures 6 and 7. (rt.)Harpy Eagle in its chamber after being treated. Photo © Paulo Roberto Neme do Amorim

areas, but due to limited and fragmented habitat. Large winged predators such as the Harpy Eagle, Black Hawk-Eagle (Spizaetus tyrannus) and Ornate Hawk-Eagle (Spizaetus ornatus) need large areas in order to survive (Willis, 1979). However, many of them have disappeared from some regions where forest still exists, as these areas do not anymore meet the needs of the species. It is a mistake to believe that the existence of protected areas guarantees the conservation of the most demanding species. The same applies to some mammals like the jaguar (Panthera onca), tapir (Tapirus terrestris), peccary (Tayassu peccary and Pecari tajacu), the giant anteater (Myrmecophaga tridactyla) and the giant armadillo (Priodontes maximus) (Chiarello, 2000). Space is the most important factor for their conservation. More demanding species require large, contiguous habitats because any fragmentation could prevent much of their prey from surviving in these changed environments.

Although information exisits which indicates the possibility of large predators surviving in areas near human communities, in our view, this simply represents an attempt on their part to adapt to local conditions. We have not done long-term monitoring to assess exactly how those changes may affect current and future generations of Harpy Eagles. It is a fact, for example, that deforestation can interfere in both their breeding and in their ability to raise their young. Human degradation of ecosystems leads to the disappearance of those species that make up the Harpy Eagle's diet. It is possible that the lack of wildlife in the region could cause the eagles to hunt domesticated animals, such as has occurred in the case of the jaguar. This fact may cause people to see the eagle as a threat and to kill it. Others may shoot the eagle due to its size, or simply as a trophy hunt. Illegal hunting, persecution and trafficking of this species should be considered as real threats. In the Amazon, large-sized predatory birds are killed for consumption, exacerbating the problem since the Harpy Eagle is a rare bird that has a slow maturation rate, with the adult individuals crucial for population stability

(Chiarello, 2000; ICMBio, 2008). According to the list of endangered fauna of Brazil, this species is placed in the category of Near Threatened at the national level (MACHADO et al. 2005). However, the status of the species in the Atlantic Forest is worse, being cited in the state red lists from the south and southeast as "probably extinct" in Rio Grande do Sul (MARQUES et al. 2002); "Critically Endangered " in Minas Gerais (DRUMMOND et al, 2008), Paraná (MIKICH and Bernils 2004), São Paulo (Silveira et al, 2009) and Espírito Santo (Simon et al, 2007); and "Endangered" in Rio de Janeiro (ALVES et al. 2000).

Most Recent Records of Harpya harpyja in Brazil

The most recent Harpy Eagle records are concentrated in large conserved areas of the northern region (Table 1). Vargas et al. (2006) compiled records of 21 nests of the species in Brazil. These records reported by Vargas et al (2006) include Galetti et al (1997), Borges et al (2001), Marigo (2002), Silveira (2002), Henriques et al (2003), Pacheco et al (2003), Pires et al (2003), Santos (2003), Luz (2005), Silveira et al (2005), Pivatto et al (2006) and Olmos et al (2006).

Conclusion

There is no doubt that the recovery and maintenance of raptors in captivity can be a challenge for their rehabilitators, especially when it comes to birds the size of Harpy Eagles, which require

STATE	LOCATION OF OBSERVATION RECORD	YEAR
Acre	Sena Madureira	2006
Amapá	Vila Nova (Lat. 00°07'09,6''S e Long. 51°38'12,6''W)	2007
Amazonas	PARNA Jaú, REDES Mamirauá	2001, 2006
Pará	Rio Trombetas, RESEX Tapajós-Arapiuns, FLONA Tapajós, Moju (Ag- ropalma), Paragominas (Fazenda Cauaxi), PE do Cristalino.	2003, 2005, 2006
Roraima	ESEC Maracá, PARNA Viruá	1985, 2003
Mato Grosso	Ricardo Franco (Serra), Vila Bela da Santissima Trindade	2002
Mato Grosso do Sul	Serra da Bodoquena (Fazenda Salobra), PARNA Serra da Bodoquena	2006
Bahia	Serra das Lontras, PARNA Pau Brasil	1991, 2005
Espírito Santo	Pedro Canário, REBIO Sooretama, REFLO Linhares (CVRD), REBIO Augusto Rischi	1997, 2000, 2003, 2006
Minas Gerais	RPPN Feliciano Miguel Abdala, PE do Rio Doce, Tapira (comunidade de Palmeiras), Fazenda Montes Claros	2002, 2006
Rio de Janeiro	PARNA Itatiaia, PARNA Serra dos Órgãos, PE Serra do Mar	2000, 2002, 2003
São Paulo	Cananéia, Ariri	1989, 1993
Santa Catarina	PE Tabuleiro	1995

Table 1. Most recent records for Harpy Eagles in Brazil

more space and more experienced staff to handle **References** their management. In this particular case, the initial situation of the bird favored its rapid recovery as important structures like wings and talons suffered no permanent damage. The availability of a suitable enclosure is a decisive factor in the rehabilitation process, particularly when falconry techniques in which the bird is kept on a proper perch and is exercised daily with vertical jumps, followed by free flight until they gain enough muscle condition and self-confidence to return to the wild, are not employed.

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NEOTROPICAL RAPTOR LITERATURE NOTES

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Martínez-Sánchez, J.C., and T. Will (eds.). 2010. Thomas R. Howell's Check-list of the Birds of Nicaragua as of 1993. Ornithological Monographs no. 68. 108 pp.

"long awaited" would be a major understatement. Thomas Howell, a Professor at the University of California Los Angeles, began his studies of the Nicaraguan avifauna in the early 1950s at a time when there was virtually no other ornithological research being undertaken anywhere in Central America, aside from Alexander Skutch's life history work in Costa Rica. By the end of the 1960s, Howell visited Nicaragua on 13 extended trips, and he and his assistants amassed one of the most important collections of birds for any Central American country. He always planned to do a major avifaunal treatment for Nicaragua, and from the 1970s to the early 1990s, he worked intermittently on his manuscript. Regrettably, he eventually ran out of energy and commitment before the book was completed. Luckily, two other experts on Nicaraguan birds, Juan Carlos Martínez-Sánchez and Tom Will, were in regular contact with Howell during his later years, and their persistence and hard work resulted in the welcome publication of the present volume by the American Ornithologist's Union, as a part of the Ornithological Monographs series. Appropriately, they limited the content of this volume to the period of Tom Howell's actual involvement,

To say that this just-published volume has been carefully editing his notes and partially finished manuscript with only a few discreet changes in nomenclature and ecological jargon. The resulting monograph includes a fascinating history of ornithological work in Nicaragua and provides a useful summary of specimen records, distribution, status, and habitat preferences of all species known from the country as of 1993, including 51 species of diurnal raptors and 12 species of owls. It establishes a solid baseline which should be helpful to the editors of the monograph to produce their own up-to-date treatments of the birds of the largest country in Central America.

Raptor Information System:

For several decades, the most important single bibliographic database on raptors has been the Raptor Information System, which has been administered by the U.S. Geological Survey from its offices in Boise, Idaho. This vast collection of reprints, reports, and theses contained over 38,000 titles by mid-2010. It was originally formed in the late 1980s by the merger of the "Raptor Management System," created by the late "Butch" Olendorff, and a similar database created by raptor biologists associated with the Snake River Birds of Prey National Conservation Area. The RIS database has been maintained online for nearly 15 years, and has been a rich source of hard-tofind "gray literature" (mostly unpublished manuscripts and agency reports) on raptors. Although the database is focused mainly on North American species and topics, it contains many references of interest to Neotropical researchers.

The USGS recently decided to discontinue its involvement with the RIS, and the entire holdings were moved to The Peregrine Fund Research Library on 20 October 2010. Although it will remain online in its present form for an indefinite period, the RIS electronic database is gradually being merged into the Global Raptor Information Network bibliography, and requests for PDF copies of any of the RIS records should now be directed to library@peregrinefund.org. The original paper copies of the RIS references will be preserved in The Peregrine Fund library collections, and most of the duplicates resulting from the merger will be sent to Hawk Mountain Sanctuary. Combining the collections is expected to generate duplicate copies of over 300 hardbound books on raptors, and these will be sold to support new acquisitions for The Peregrine Fund Research Library. A full listing of these titles will be available on The Peregrine Fund website (www.peregrinefund.org) by late January under "Research Library" and "Books for Sale."

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Additional Resources

Aves Rapaces y Conservación: una perspectiva Iberoamericano

Of special interest to researchers, naturalists and conservationists interested in raptor conserservation - this book integrates reports and communications about raptor conservation biology with special emphasis on Neotropical and Latin

American species.

For more information visit: www. tundraediciones.es





New World Vultures: A Children's Activity Book

This book teaches about the diet, habitat and behavior of all New World vultures.

To download a PDF copy, go to: http://hawkmountain.org/media/New_World_Vulture_Activity_Book_2010_2.pdf

UPCOMING CONFERENCES

GYRFALCON AND PTARMIGAN IN A CHANGING WORLD 1-3 February 2011, Boise, Idaho, USA. For more information visit: <u>http://www.peregrinefund.org/gyr_conference/</u>

THE WILSON ORNITHOLOGICAL SOCIETY, THE ASSOCIATION OF FIELD ORNITHOLOGISTS, AND THE COOPER ORNITHOLOGICAL SOCIETY JOINT CONGRESS 9-13 March 2011, Kearney, Nebraska, USA. For more information visit: <u>http://</u> <u>snr.unl.edu/kearney2011/index.asp</u>

IX NEOTROPICAL CONGRESS 8-14 November 2011 Cusco, Peru. For more information visit: <u>http://www.neotropicalornithology.org/</u>



To join the NRN please send an e-mail to Marta Curti, NRN coordinator, at <u>mcur-</u> <u>ti@peregrinefund.org</u>, introducing yourself and stating your interest in Neotropical raptor research and conservation.



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