Spizaetus

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Spizaetus ornatus in Mexico and Ecuador

Falco columbarius in Peru

Migratory Raptors in Costa Rica

Chondrohierax uncinatus in Colombia

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Cover Photo: Juvenile *Spizaetus ornatus* hatched in Finca Arroyo Negro in 2014, © Santiago Gibert/ Dimensión Natural S.C.

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THE PEREGRINE FUND

Neotropical Raptor Network

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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, raptor enthusiasts, and other conservationists working in the Neotropics. To join please e-mail the NRN coordinator, Marta Curti, at mcurti@peregrinefund.org, stating your interest in Neotropical raptor research and conservation.

Following the Reproductive Success of Ornate Hawk-eagles (*Spizaetus ornatus*) in Arroyo Negro, Chiapas; A Pioneer Study of Neotropical Raptors in Mexico

By **Alan Monroy-Ojeda[1], Santiago Gibert-Isern[2], & Efraín Orantes-Abadía[3]**

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Successful breeding in Finca Arroyo Negro. The adult female remained in the nest for most of the time, while the male brought food. Photo © Santiago Gibert/ Dimensión Natural S.C.

The Ornate Hawk-eagle (*Spizaetus ornatus*) is a neotropical raptor species distributed throughout the tropical jungles and wet forests of Latin America. Its range extends from Tamaulipas and Jalisco in northern and western Mexico, to the south through Central America and tropical South America, all the way to northern Argentina (Whitacre et al. 2012). Its name reflects its striking plumage, including its tall black crest that extends above the crown of its head, as well as the ochre coloration that adorns its face and neck. Its size, strength and agility place it among the top predators in the tropical ecosystems in which it lives. Generally, this species prefers well-preserved forested habitats. This preference has indirectly lead to a reduction in the species' population, due to the constant loss of forest cover throughout its distributional range. The IUCN (BirdLife International 2012) lists the species as Near Threatened due to the reduction of its global population. In Mexico, *S. ornatus vicarius* is listed as endangered (SEMARNAT 2010). It is considered a priority species and is included in the Program for Recovery of At-Risk Species (Programa de Recuperación de Especies en Riesgo (PROCER) (CONANP 2014).

Concern for the future of Ornate Hawk-eagles in the country, and the urgent need to understand its natural history in Mexico, has led to the Arroyo Negro Initiative, which was formed by Dimensión Natural S.C. and Proyecto Arroyo Negro A.C. The goal of the Initiative is to research and protect what may be one of the healthiest populations of Ornate Hawk-eagles in the country. Here, we describe the research and monitoring efforts conducted for the Ornate Hawk-eagle population in Arroyo Negro, Chiapas, Mexico.

Finca Arroyo Negro, Chiapas, is home to one of the healthiest populations of Ornate Hawk-eagles (*S. ornatus*) in all of Mexico. Its conservation within Arroyo Negro is assured, but incidences of deforestation and other factors in the surrounding areas continue to pose a threat to this population. Photo © Santiago Gibert/ Dimensión Natural S.C.

Study Site

The Finca Arroyo Negro is private property located within the Rio Negrito micro-watershed. Part of the property is within the buffer zone of the Core Area V El Triunfo Biosphere Reserve and another part is within the Frailescana Area for the Protection of Natural Resources, in the vicinity of the Sierra Madre de Chiapas. Finca Arroyo Negro is located right in the transition zone between these two protected areas, which makes it a natural biological corridor for many species including jaguar (*Panthera onca*), Baird's tapir (*Tapirus bairdii*), and Resplendent Quetzal (*Pharomachrus mocinno*), among many others. The vegetation in the basin is characterized by pine, cloud, and evergreen forests.

Arroyo Negro is a high quality coffee plantation with a strong committment to protecting the environment. Of the property's roughly 1,600 ha and the area on loan to the farm, only 100 ha are dedicated to the cultivation of organic shade-grown coffee (Orantes comm. pers.). Because of their production practices, management, and protection of the environment, in 2008 Arroyo Negro was considered by the United Nations and Rainforest Alliance as the only coffee farm in the world to produce "Café de Conservación," - Conservation Coffee (Orantes and Navarro 2011).

Monitoring and Tracking

Monitoring efforts for the species began in 2007 and data were collected on the breeding population of Ornate Hawk-eagles on the property. However, it was only in 2009, with the involvement of Dimensión Natural S.C., that standardized raptor studies began. In 2013, we began continuous observations of the species within the property. The research project consists of monitoring and tracking the Ornate Hawk-eagles throughout the year, with special emphasis on breeding season. Daily monitoring consists of registering different aspects of the natural history of the Ornate Hawk-eagle, such as reproductive ethology, diet, parental care, reproductive success, and habitat characterization, among others. Observations are conducted over approximately six to eight hours daily from towers built explicitly for watching these raptors.

Preliminary Results

During the 2013 breeding season, we located four nests. Three of them had been occupied in past years. Some of the previous nesting attempts had been successful, though others were not. During 2013 we only occasionally observed two breeding pairs: the first one was seen approaching an old nest (known as nest"1") and the second pair was observed building a new nest (nest "4"). However, no real attempt at nesting was detected by either of the pairs.

It is likely that the combination of atypical weath-

er conditions during the year (i.e. severe drought in the first half, followed by heavy rains and hurricanes in the second half) and the continued parental care of juveniles hatched in pevious years, prevented the adults from attempting to nest. In addition, the pine tree (*Pinus maximinoi*) which housed the nest that, until then had been the most productive (nest "1"), was felled by strong winds.

In 2014, breeding season began in mid-February. We observed a female carrying sticks to be used in the construction of a new nest, located in a canyon dominated by *Pinus maximinoi*. Due to the close proximity -50m approximately.- of the new and old nests, it is highly likely that the pair that had occupied nest "1" is the same pair that built the new nest ("1B").

We continued to monitor this new nest until mid-May 2014, when the female finally abandoned the nesting attempt. During the three months of continuous monitoring of nest "1B" we did not detect the presence of any chicks. We don't know why the nest was abandoned. However, it should be noted that we observed the male bring-

The adult male brining an Emerald Toucanet (*Aulacorhynchus prasinus*) to the nest. Photo © Santiago Gibert/ Dimensión Natural S.C.

Juvenile hatched in Finca Arroyo Negro in 2014. At the time the photo was taken, the young bird had just eaten an owl (*Ciccaba sp.*) brought by its parents. Photo © Santiago Gibert/ Dimensión Natural S.C.

ing food to the female less and less. By the end he was brining food to the female only once a week.

During the same 2014 breeding season, we discovered another active nest (nest "3"). In May we observed one young Ornate Hawk-eagle in completely developed juvenile plumage. The juvenile spent the majority of its time at a distance of around 50 to 100m from the nest. Only when the adults brought food did the young eagle return to the nest to feed. As of the publication of this article, the young bird is still being seen in the area around nest "3." Its constant flights and apparent good condition leave us no doubt that is it a healthy bird. We consider this nesting attempt a success.

Conclusions

La Finca Arroyo Negro is unquestionably one of the best places in the country to observe neotropical raptors, especially Ornate Hawk-eagles. Tracking these eagles within the property has allowed us to begin to understand the breeding population at the site, which could even be functioning as a source population for other areas of the Sierra Madre de Chiapas. So far, this is the

only population known in the area to have several active nests and breeding attempts almost every year. This is also the first study that involves continuous monitoring of neotropical raptors in the country.

Conservation and monitoring of this population is assured in the long term within the Finca Arroyo Negro. However, despite the protection that this area affords, there are threats to this population, including the recent permission granted for the extraction of timber in the area as well as incidences of poaching. The future of this powerful eagle, both in the region and in the country, will depend on the will of the authorities, the continued efforts of local actors and the work of the Arroyo Negro Initiative.

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A review of the distribution of Merlin *Falco columbarius* in Perú with Notes on Habitat Use

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F. columbarius en **Sullana. © D. Chavez**

The Merlin (*Falco columbarius*) is a rare boreal migrant in Peru but may be a regular visitor in the northwest coastal plains, and very rare south to Lima. In Peru it may be present from October through March (Schulenberg et al. 2010). Taxonomically, the subspecies present in Peru is *F. c. columbarius* (Plenge 2014a). In adjacent Ecuador, Merlins are also rare to uncommon boreal winter visitors to semi open terrain up to 3000 masl. In recent years, this species has been found mainly on or near the coast, and has been recorded mostly from late October to March (Ridgely & Greenfield 2001).

The first published record of Merlin for Peru is a specimen (probably a female) collected by Lord Brabourne in Trujillo, La Libertad Department, on 1 December 1912 (Chubb 1919). Since then, F. columbarius has been scarce in the Peruvian ornithological literature (Plenge 2014b).

Here we detail a number of sightings of the species, between 1979 and 2013, from Peru's north-

ern and central coast, and the first Peruvian records on the east slope of the Andes. We further discuss the occurrence of this species in Peru and the habitats used on its winter grounds.

Records come from the authors and several other researchers, birdwatchers, photographers and falconers. To search for Merlin records in Peru we used eBird and we sent requests on several Facebook groups and listservs related to Peruvian birds.

Records are presented arranged from north to south on the coast first, and then from west to east; and divided by departments (Peru's biggest political division). For each record we give site name, coordinates, altitude, date, observer and details on the bird observed and habitat. We show all localities in Figure 1.

Records

Tumbes

1. Isla Cocodrilo, Manglares de Puerto Pizarro (3°30'28.22"S/80°23'49.20"W, 1 m). 6 November 2010. SC and A. Garcia saw and photographed an adult male Merlin perched in a leafless Algarrobo tree (*Prosopis pallida*) and later in a Mangrove tree. The bird was observed for 20 minutes. The habitat was dominated by mangrove forest and shrimp farms.

Figure 1. Location of *Falco columbarius* **records in the region**

2. Puerto Pizarro entrance (3°32'5.81"S/ 80°22'41.79"W 20 m). 25 December 1990. OB and L. Bertocchi saw an immature female Merlin flying across the highway at a distance of 8 m. The habitat was open dry forest.

3. Tumbes airport (3°33'3.83"S / 80°23'6.55"W, 27 m.). 14 December 1990. OB, L. Bertocchi and P. Yrigoyen sighted a female Merlin eating a Croaking Ground-Dove (*Columbina cruziana*) at Tumbes airport. It was perched in the canopy of an Algarrobo tree. The habitat was semi-dense dry forest.

4. Corrales (3°37'6.74"S / 80°29'10.70"W, 29 m). 17 December 1990. OB sighted an adult male Merlin perched at 6 m. high on top of a tree. The habitat was semi-dense dry forest.

5. El Tutumo (3°42'42.17"S / 80°15'2.07"W, 150 m). 31 October 2008. R. Piana saw an inmature female Merlin perched on an exposed branch above the canopy of continous evergreen forest at 1.3 km south from the El Tutumo town. The bird was observed for 20 minutes.

6. Quebrada Fernández (4°11'18.81"S/ 80°52'18.11"W, 125 m.). 22 December 1990. OB, L. Bertocchi and P. Yrigoyen saw a male Merlin fly right above them, about 15 m high. The habitat was open dry forest dominated by Algarrobo trees.

Piura

7. Macanche (4°22'53.94"S / 80°46'37.34"W, 723 m). 02 December 2011. F. Angulo saw a female Merlin soaring low at mid day. The area was dominated by semi-dense dry forest dominated by *Ceiba sp.*

8. Sullana (4°53'8.87"S / 80°41'51.84"W, 45 m). 25 November 2012. D. Chavez was informed about an adult male Merlin captured on a mist net. The bird was kept by falconers and trained. The habitat was Agricultural fields. It was photographed on 2 December 2012.

9. Boca del rio Chira (4°53'29.43"S/81° 8'54.23"W, 3 m) 01 February 2012. D. Perrocheau saw an adult male Merlin flying in the mouth of the Chira river. The habitat was open dry scrub with small mangrove plants and agricultural fields.

10. El Arenal (4°54'48.54"S / 81° 0'56.86"W, 20 m) 18 February 2013. P. Venegas saw and photographed a female Merlin perched at a height of 5 m in an Algarrobo tree in an area dominated by this tree species, in the vicinity of the Chira river. It was observed for 45 minutes.

11. Laguna Ramón Grande (5°33'14.06"S/ 80°37'21.84"W, 8 m). 28 February 2009. FAP and SC saw a male Merlin chasing a small bird at late afternoon, close to the Laguna Ramon. The area was open dry forest dominated by Algarrobo trees.

12. Estuario de Virrila (5°46'35.04"S/ 80°52'25.47"W, 1 m). 11 March 2010. A. Garcia and FAP saw a Merlin (sex and age undeter-

Left *F. Columbarius* **in Santiago © P. Piña; Der.** *F. Columbarius* **in Gallito © C Zapparoli**

mined) while counting shorebirds. At that same time there was a Peregrine Falcon (*Falco peregrinus*) in the area some 1.5 km away. The habitat was open dry forest scrub.

13. Paltorán (5°48'15.00"S / 79°39'45.00"W, 400 m) 17 November 1979. T. Love saw an adult Merlin (sex undetermined) chasing a Ochre-bellied Dove (*Leptotila ochraceiventeris*) in a shallow quebrada. The area is dominated by dense dry forest.

Lambayeque

14. Bosque de Pomac. (6°29'19.70"S/ 79°45'40.60"W, 74 m) 9 April 2012. FAP saw an adult male Merlin flying low (ca. 4 m above the ground) and very fast in semi-dense dry forest with scattered trees, dominated by Algarrobos.

15. Chaparri (6°32'22.58"S / 79°28'29.98"W, 400 m) 9 November 2011. R. Webster and R.A. Rowlett saw and photographed a female Merlin perched on a tree in semi dense dry forest.

Lima

16. Club Hipico de Huachipa (12° 0'32.44"S / 76°55'21.66"W, 343 m). On several occasions in December 1993. OB and J.A. Otero regularly sighted a female Merlin hunting at sunset in the Eucalyptus tree (*Eucalyptus sp.*) forest of the Huaycoloro creek. The bird chased Pacific Doves (*Zenaida meloda*) through direct flights. It remained in the area until mid-February 1993. Presumably the same female was observed in mid-February 1994 together with a second Merlin (male) at this same site by OB and J.A. Otero. Both falcons stooped to doves tossed by the observers, suggesting some form of cooperative hunting. This was the only time they saw the male and the last time they saw any of the birds.

17. Chilca Valley I (12°29'32.08"S/ 76°43'7.82"O, 57 m). 27 February 2009. OB and M. Chavez saw an adult male Merlin perched on

an electric wire in front of an Avocado (*Persea americana*) plantation, while they were hunting with an Aplomado Falcon (*F. femoralis*). Presumably the same individual (an adult male) was seen two days later in the same area, and again two weeks later, 7 km away towards the ocean shore. The habitat was agricultural land with open scrub.

18. Chilca Valley II (12°30'29.73"S/ 76°44'32.59"W, 22 m) 10 November 2005. OB and M. Aranda sighted a female Merlin perched near the top of a Fig tree (*Ficus carica*) close to the Panamerican highway. The bird was observed for 15 minutes until it flew away. While soaring, the bird was chased by an adult Peregrine Falcon, yet it escaped and perched again on another Fig tree. From here it made low level flights and chased a small bird. The habitat was agricultural land with open scrub.

19. Asia Valley (12°47'3.95"S / 76°31'34.44"W, 95 m). 20 March 2005. OB and P. Piña sighted a female Merlin east from El Rosario de Asia town. It attacked a trained male Bicolored Hawk (*Accipiter bicolor*) while vocalizing. It then perched on a small hill were it was observed for one minute. When the Merlin flew, it was harassed by a Kestrel (*Falco sparverius*). The habitat was agricultural land with open scrub.

Ica

20. Paracas (13°49'49.60"S / 76°14'38.32"W, 20 m) 13 January 1988. T. Love saw an adult Merlin (sex undetermined) in the vicinity of Paracas town. The habitat was coastal desert.

21. Guadalupe (13°58'0.12"S / 75°46'0.12"W, 440 m.). 17 November 2010. OB and M. Chavez spotted a male Merlin flying near the Panamerican highway and parallel to a line of Eucalyptus trees. The habitat was agricultural land with open scrub.

22. Santiago (14°10'39.07"S / 75°43'11.53"W, 377 m). 12 February 2012. P. Piña and A. Fernandez spotted and photographed a female Merlin eating a Croaking Ground-dove atop an Algarrobo tree. The habitat was agricultural land with open scrub.

Amazonas

23. Abra Patricia (5°41'47.63"S/77°48'40.13"O, 2330 m). 14 November 2008. M. Scheuerman saw a Merlin flying by the Owlet Lodge. It was identified due to its size and dark upperparts, streaked-underparts, and barring in the tail. The site is located in a mountain slope covered by continuous humid montane forest with scattered clearings.

Loreto

24. Gallito (3°48'45.27"S / 73° 9'20.44"O, 90 m). 30 October 2011. D. Osorio, R. Zeppilli and C. Zapparoli saw a light phase female Merlin perched on an Arbol del Pan tree (Artocarpus altilis), at the Amazon river edge, near the community of Gallito. It was spotted from a boat

and photographed by CZ. The habitat was humid rainforest and open areas.

Additional Records

OB also knows of four Merlins arriving to the bird trade section at the Central Market in Lima, between the years 1984 and 2002 (one immature male, one adult male and two females). All four were acquired by young falconers. All these birds were said to come from northern Peru, but locations are unknown and dates were not recorded. One of the females was given to OB after its death and later given to A. Luscombe, who deposited it at the Museo de Historia Natural "Javier Prado" (Catalog number 9986 ED 905).

Discussion

We present 22 records involving 23 individual Merlins from the Peruvian coast, from Tumbes, south to Ica department. Habitats used by migrant Merlins on the Peruvian coast include mangrove forest, dry forest (dense, semi-dense, open), open dry scrub, urban forest, desert and agricultural land. Records go from sea level up to approximately 440 masl.

In the boreal regions, Merlins favor habitats at or near the latitudinal and altitudinal limits of coniferous forests but they are also found around bogs and lakes, old forest burns in mid- successional stages of recovery, along major rivers, and in prairie parklands and forest-steppes (Cade 1982). Coastal records of Merlin in Peru occur in structurally similar habitats to those that the species occupies in North America.

Our records from Ica department are the southernmost for the species along the Pacific coast of South America (and the whole continent), since the species has not been recorded south of this department in Peru or in Chile (Jaramillo 2003, eBird 2014).

We also present the first Peruvian records for the species east of the Andes, both in montane forest and Amazon lowland forests. In central Ecuador, the species has been registered up to 3720 masl (Henry 2012) and several records exist from higher parts of the Andes south to Loja, near the Peruvian border (eBird 2014). Our highest record is at 2330 masl. This is the first record for the species in this habitat in Peru (Schulenberg et al. 2010) but there are several records of this kind of habitat from Colombia and Ecuador (Henry 2012, eBird 2014). Additionally, the record along the Amazon River on the Peruvian eastern lowlands humid forest is the first for this habitat for Perú and the department of Loreto (Wiley et al. 2014). However the species has been registered several times in the Brazilian lowlands in humid forest (Dornas & Torres 2014).

In Peru, Merlins occur from late October to at least early April, which is a slightly longer period than previously reported for the country (Schulenberg et al. 2010). Most of the records are from

Top left: *F. columbarius* **in El Arenal. © P. Venegas; Top right:** *F. columbarius* **in Manglares de Puerto Pizarro © S. Crespo; Bottom center:** *F. columbarius* **deposited in the Javier Prado Natural History Museum © S. Crespo**

November-February (n=19). However, the non-standardized data collection may have created a bias of dates since effors have not been equal over the months and years.

Regarding age and sex, in total, we report records of 29 Merlins in Peru of which 11 were adult males, 11 adult females, 2 adults of undetermined sex, 1 immature male, 2 immature female and 2 of undetermined age and sex. This suggests that most of the migrating Merlins arriving to Peru are adults (24 out of 29).

From our records, we can conclude that the species is more common in the northern part of the Peruvian coast, becoming rarer to the south. The lack of records between Lambayeque and Lima could be due to the lack of observers rather that habitat availability, since habitat between those two departments is similar to other occupied habitat in the country.

Although suspected to be rare, we believe that Merlins have been mostly overlooked in Peru, in part because of their resemblance in size and shape with the much more common American Kestrel and because they were not considered to occupy other habitats outside of coastal plains in northwest Peru. Cautious observation of small

falcons all over the country might yield a larger number of Merlin reports and might expand the limits of its suspected southern and eastern range.

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My Encounter with *Spizaetus ornatus* in Tarangaro, Waorani Community in Ecuador

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The Ornate Hawk-eagle (*Spizaetus ornatus)* is a Neotropical raptor distributed from southern Mexico to northern Argentina. Although it has been studied in various countries throughout its range, there is still a lot to learn about this species, such as how habitat changes may affect its diet, behavior, and even its distribution. For example, new records of this species in northern Peru suggest that it could occupy vacant niches or that it is being forced to move because of the destruction of its habitat in southern Ecuador (Piana et al. 2010). It is a priority to publish information obtained in the field about its general ecology in order to better understand its true conservation status.

Ornate Hawk-eagle photographed on 30 November 2013, 0911h inside the forests of Tarangaro, Pastaza, Ecuador. © Héctor Cadena

An important component to gaining this information, as well as a more complete picture of any species or habitat, is to utilize the wisdom of the local people. Individuals who live in or near the forests or jungles where these species also reside have substantial knowledge about the local fau-

na and flora (eg Macía 2004). Rozzi (2004) has already drawn attention to two native tribes in South America - the Yaganes and the Mapuches - and their awareness of ecology and the importance of birds in ecosystem conservation.

In November 2013, my university undertook a study on biodiversity in a remote area of the Ecuadorian Amazon. One sampling site was Tarangaro - a Waorani community in the Province of Pastaza (01 ° 23'S, 77 ° 23'W, 390 masl). The Waorani people mainly live in eastern Ecuador, between the Napo and Curaray Rivers. They are a society based on hunting and agriculture, and speak Wao Tededo - a language that apparently is unrelated to any other in the region (Beckerman et al., 2009, Cardoso et al., 2012). This particular community, Tarangaro, is made up of only three residents. The rest of the family, who frequently visits the area, lives a day's journey away. Tarangaro is not accessible by car, which is reflected in the well-preserved surroundings. My access was by helicopter. The Tarangaro ecosystem is classified as lowland evergreen Tigre-Pastaza forest (MAE 2013). The zone is predominated by mountainous areas. The forest canopy reaches around 25 m, and is composed of common tree species such as *Iriartea deltoidea, Otoba glycycarpa, Grias neuberthii*, and various species of *Inga* (Buitron et al. 2011).

On 30 November 2013 at 0911h, I was on one of my regular routes taking inventory of the avifauna in the area, when a sharp and short vocalization caught my attention. I looked up and saw a perched adult Ornate Hawk-eagle (*Spizaetus ornatus*). It seemed calm and appeared to simply be resting on a branch not more than 4 m above the ground and about 10 m from me. Carefully I pulled out my camera and took a couple of

Table 1. Ornate Hawk-prey as documented in the literature.

Class	Family	Species
Reptiles	Teiidae (lizard)	*Iguana iguana* and an unidentified snake
Aves		*Meleagris ocellata, Pionus spp., Psarocolius spp., Crax rubra, Ramphastos sulfuratus, R. vitellinus, Pteroglossus torquatus, Tinamus sp., Crypturellus variegatus, Ara macao, A. cf. manilata, Penelope cf. Marail, Penelope cf. jacuacu, P. purpurascens, Ortalis motmot, O. vetula, Porphyrula martinica, Leptotila plumbeiceps*
Mammalia	Phyllostomatidae (bat)	*Sciurus granatensis, S. yucatanensis, Sigmodon spp., Dasyprocta leporina, Didelphis marsupialis, Metachirus nudicaudatus, Myoprocta sp., Coendu sp., Saimiri sciureus, Saguinus fuscicollis* and *Proecomys sp.*

photographs before the eagle flew gently out of sight. It was amazing to see this big animal flying through the trees, through the thick forest, under the canopy. According to Ridgely and Greenfield (2001) it is more common to see this eagle soaring high above the forest.

When I showed my pictures to the native inhabitants of Tarangaro, they told me that in their language, the large and crested raptors (*Spizaetus tyrannus, S. melanoleucus* and *S. ornatus*), are all known as "Guiñamowe." Using field guides (Ridgely & Greenfield 2001 Tirira 2007), they showed me images of the prey they have seen Ornate Hawk-eagles capture: pigeons, tinamous, parrots, toucans, monkeys, squirrels, agouti and paca.

They also told me about one particular sighting, when they observed an Ornate Hawk-eagle perched on one leg on the edge of a hollow trunk. The raptor stretched its other leg into a hole and pulled out a nocturnal primate, *Aotus vociferans* (Tirira 2007) by the head. Locally, this primate is known as Amonca. They observed the eagle as it flew a few feet away to the ground and

Dawn in the Ecuadorian Amazonian lowlands © H. Cadena

Ana Yeti - matriarch of the Tarangaro community, her nephew - holding a blowgun and a spear used in hunting, and the author © N. Tinoco

started feeding. This particular species has not been recorded in the literature as prey for Ornate Hawk-eagles.

Studies in Brazil (Klein et al. 1988) and Guatemala (Madrid et al., 1992 in Naveda-Rodríguez 2004) report that *S. ornatus* consumed more birds than mammals, while in Venezuela Naveda-Rodríguez (2004) found the opposite, with rodents being the most frequent prey. These differences could be attributed to the variability of each region reflected in the diet of Ornate Hawk-eagle or simply a lack of knowledge on the trophic ecology of raptors. To date, this raptor has been reported feeding on birds, mammals and reptiles (Lyon and Kuhnigk 1985, Klein et al. 1988, Clinton-Eitniear 1991 Naveda-Rodríguez 2004, Phillips and Hatten 2013) (Table 1).

In the Amazonian lowlands of Ecuador there are 21 potential raptors, both diurnal and nocturnal, that may predate on primates, and throughout the Neotropics Harpy Eagles (*Harpia harpyja*) and Ornate Hawk-eagles are reported to do so (Moon et al., 2010). However, I've asked local people what the "Guiñamowe" eat and with-

out hesitation they have answered "monkeys and large birds." It is important to document this at the taxonomic level and publish this information.

In regards to nesting, the Waoranis of Tarangaro told me that the "Guiñamowe" nest in the tops of tall trees, pointing directly to a *Ceiba* sp. (Bombacaceae) that we saw at that moment. This coincides with other publications which document them nesting in emergent trees: one nest from Ecuador (Greeney et al. 2004.), two from Guatemala (Lyon and Kuhnigk 1985) and three from Belize (Phillips and Hatten 2013).

It is important to continue to generate more information on raptor ecology, particularly in Ecuador. Native peoples have a wealth of information in their cultural heritage that needs to be compiled using specific methods and then published. As biologists, we should take advantage of this important source of knowledge.

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Update of the Protocol for Monitoring Migratory Raptors: Kèköldi Observatory, Costa Rica

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Every year during spring and autumn, more than five million raptors that nest principally in North America migrate to South America using the Mesoamerican corridor. This corridor is used by at least 32 of the 104 species of neotropical raptors (Bildstein & Zalles 2001, Bildstein & Duncan 2003, Porras et al. 2004), making it one of the most important migratory flyways in the New World. It spans more than 4000 km to northwestern Colombia (Bildstein and Saborío 2000, Bildstein y Zalles 2001, Bildstein and Duncan 2003, Bildstein 2004, Bildstein 2006).

Different from many other species of birds, raptors generally migrate during the day, follow well-established routes (Barreda 2010), and avoid flying over the ocean. These factors, coupled with certain geogeographic characteristics of the land over which they migrate, help to create areas in which high concentrations of raptors can be easily seen. Some such sites include Veracruz, México and Talamanca, Costa Rica (Bildstein y Zalles 2000).

The migration phenomenon provides an opportunity to monitor raptors and to determine certain population tendencies of some species, assuming that a large part of the population consistently passes through one point or region (Ruelas et al. 2010). Here, we present an update of the protocol for monitoring migrating raptors, mainly for the Kèköldi Observatory in Talamanca, Costa Rica, with the idea that this updated protocol may be utilized and adapted for any region in the tropics.

Characterizaion of Kèköldi Observatory and Climatological Variables

The Kèköldi Indigenous Reserve is located in the lowland Caribbean Coast of Costa Rica,

(Limón Province, southwestern Talamanca, 09°38'18"north, -82°46'49" west). Within the reserve, there is an 11m high tower used for the observation and monitoring of raptors. The elevation in Kèköldi ranges from between 0 masl and 300 masl, with average annual precipitation of 2370 mm. There are two dry periods during the year (February–March and September–October). The rainiest months of the year are from July to December.

The predominant life zone is wet tropical forest and coastal zones, with median temperatures from 24°C to 30°C. Approximately 76% of the area is forest (Cobos and Rosales 1999). A large part of the land is designated for the production of plantains, cacao and banana plantations.

Geographic features of the area act as a funnel which causes the migrating raptors to concentrate within the 5 km stretch between the coast line and the Talamanca mountain range (Porras et al. 2004). During fall migration (August-December), counters have recorded more than three million individual raptors. Turkey Vulture (*Cathartes aura*), Broadwinged Hawk (*Buteo platypterus*), Swainson's Hawk (*Buteo swainsoni*) and Mississippi Kite (*Ictinia mississippiensis*) are the species that make up about 98% of all the recorded raptor species (Porras et al. 2004, Herrera et al. 2013). Some species which are expected to be seen, by month, are presented in Tables 3 and 4.

Counting Method at Kèköldi Observatory

Raptor migration counts occur daily during each migration period. For spring migration we suggest beginning counts on 1 February and continuing through to 31 May; and fall migration counts should last from 1 August to 1 December (Bildstein and Saborío 2000). Each count site should have at least one seasoned observer, or as many as four observers if they do not have experience in this type of counting.

A monitoring program should provide three types of information: 1) an estimate of the population size, 2) an estimate of the demographic parameters and 3) a measure of the environmental variables that could affect the two former estimates (Ralph et al. 1996). Many observatories around the world use standard protocols set by the Hawk Migration Association of North America (HMANA; Fund et al. 1991). The protocol presented here can help to further standardize the methods used to study migratory raptors, so that counts are carried out in the same way as in other parts of the world, such as at the Veracruz River of Raptors (Mexico), Hawk Mountain Sanctuary (United States) and Eilat (Israel). Standardized protocol will make it easier to compare migration data between different sites and between years.

At the beginning of each day, it is important to note the year, day and month, clearly establishing whether the count corresponds to spring or fall

migration. Making sure the count days fall within migration periods will ensure that the highest possible numbers of individuals and species are recorded. The names of all counters and volunteers should be written down, so that they may be consulted in case of any discrepencies in the data.

The Kèköldi Observatory relies on a series of basic techniques which are based on hourly recordings of the following variables: 1) monitoring effort (number of observers and minutes of observation per hour), 2) climatic variables (visibility, temperature, cloud cover, wind speed and direction, precipitation and humidity), and 3) variables in flight behavior (direction, distance and position). (Figure 1).

Documenting Weather Conditions

By studying and observing raptor migration, it is possible to infer that the weather, among other environmental variables, affects the flight patterns and routes of migrating birds. Therefore, recording weather conditions and relating them to migratory activity may explain some variations in the number of individuals passing through on certain days in which these phenomena occur. It is important to have a database that contains the numbers and species that migrate (Table 3 and 4) daily as well as information on daily weather patterns. These factors might relate to each other and evaluating them will help determine the effect of extrinsic variables such as precipitation, temperature and cloud cover on migration patterns.

Weather information should be recorded on the data sheet for each hour of the count. Use a thermometer, which should be placed perpendicular and at eye-level, in order to get an accurate reading. Other weather variables don't necessarily require instruments for measurements, but rather may be calculated through visual observation based on standardized criteria.

Número of Individuals of Each Species

During the observation period, record the number of raptors of each species that you are able to count, in 20 minute intervals. Normally, one person should be in charge of writing down the numbers which the counters indicate. When recording the species' names, utilize a code for each species (HMANA Code 1991), as well as the English and Latin names (Table 1).

At times when more than one person is counting the same species simultaneously (for example, if there are a lot of people available to count, and only one species is passing over at the time. In this case, it is recommended that during each interval, the less-experienced counter compares his or her data with a more experienced counter) it will be necessary to get an average of the numbers obtained (rounding to the nearest number). This will be the total number, by species, in each sampled hour.

Examples: In the case of four observers for the same species: SK = 14 + 6 + 12 + 15= 47/4= 11.75 ≈ 12. In the case of two observers for the same species: MK = 243 + 220 =463/2= 231.50 ≈ 231.

Thanks to counts conducted in previous years, a migration pattern for each species has been documented. This helps determine the periods in which each species migrates in the greatest abundance (Tables 3 and 4).

Daily Count: Materials & Data

Each count site should have the following materials: a box to store the equipment, data sheets, pencils (2), erasers, pencil sharpener, anemometer, compass, thermometer which measures in Celsius, hand counters ("clickers"), lens cleaners, telescope, bird I.D. guides, rain gauge (permanent at the tower), and a printed list of all these materials. Materials should be checked both at the start and at the end of each count day, to make sure each item is accounted for and in working order. Any broken instrument should be replaced.

We recommend using 8-10x binoculars and a 20-60x telescope, to be able to find and identify migrating raptors. The use of hand counters ("clickers") are vital for counting large numbers

Table 1: List of migratory species, using their English name, scientific name, and common name in Spanish, and the HMANA code.

English Name	Scientific Name	Spanish Name	HMANA Code
Turkey Vulture	*Cathartes aura*	**Zopilote Cabecirrojo**	**TV**
Osprey	*Pandion haliaetus*	**Águila Pescadora**	**OS**
Swallow-tailed Kite	*Elanoides forficatus*	**Elanio Tijereta**	**SK**
Mississippi Kite	*Ictinia mississippiensis*	**Elanio Colinegro**	**MK**
Plumbeous Kite	*Ictinia plumbea*	**Elanio Plomizo**	**PK**
Hook-billed Kite	*Chondrohierax uncinatus*	**Gavilán Piquiganchudo**	**HK**
Northern Harrier	*Circus cyaneus*	**Aguilucho Norteño**	**NH**
Sharp-shinned Hawk	*Accipiter striatus*	**Gavilán Pajarero**	**SS**
Cooper's Hawk	*Accipiter cooperii*	**Gavilán de Cooper**	**CH**
Broad-winged Hawk	*Buteo platypterus*	**Gavilán Aludo**	**BW**
Swainson's Hawk	*Buteo swainsoni*	**Gavilán de Swainson**	**SW**
Short-tailed Hawk	*Buteo brachyurus*	**Gavilán Colicorto**	**ST**
Zone-tailed Hawk	*Buteo albonotatus*	**Gavilán Colifajeado**	**ZT**
Red-tailed Hawk	*Buteo jamaicensis*	**Gavilán Colirrojo**	**RT**
American Kestrel	*Falco sparverius*	**Cernícalo Americano**	**AK**
Merlin	*Falco columbarius*	**Esmerejón**	**ML**
Peregrine Falcon	*Falco peregrinus*	**Halcón Peregrino**	**PG**

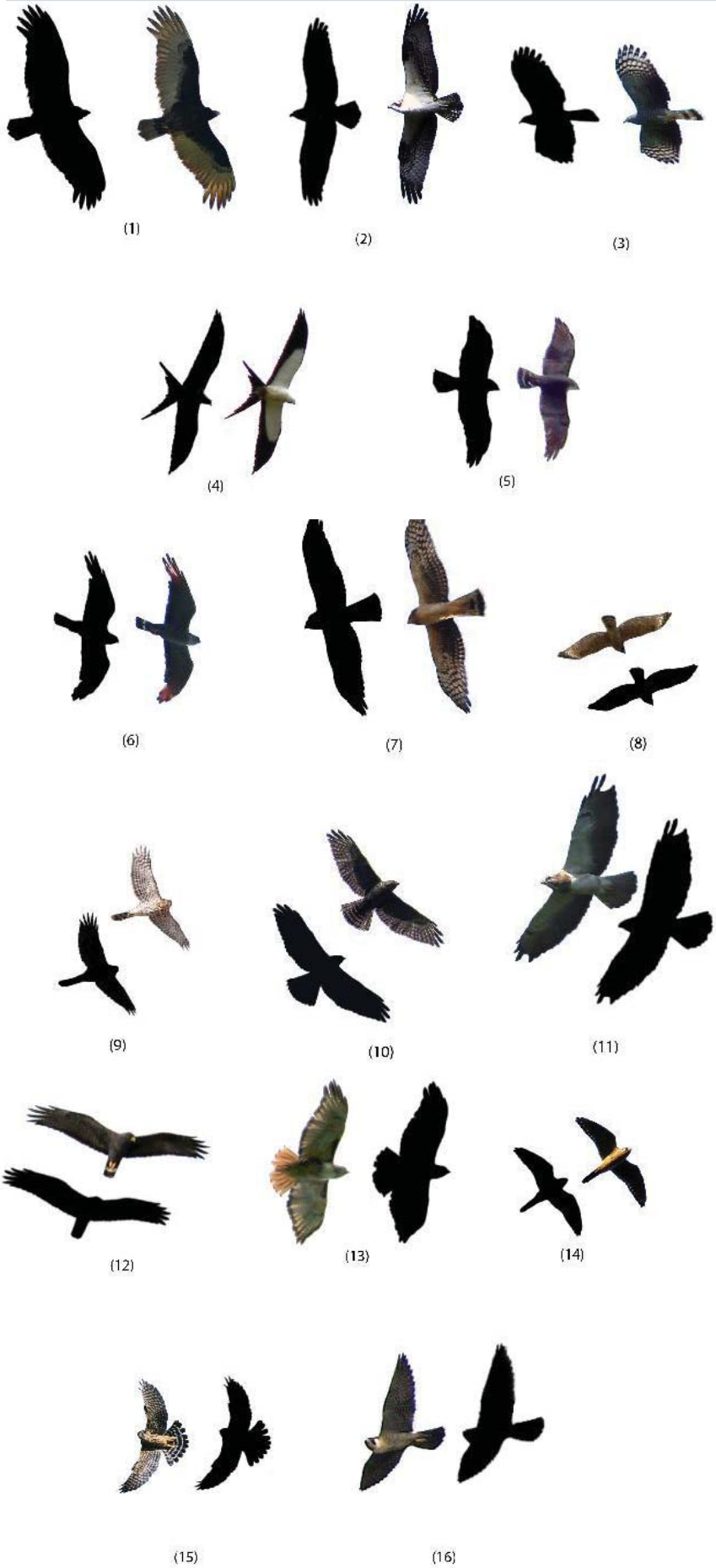

Figure 1: Images and silhouettes of some migratory raptors:*

1. *Cathartes aura* **(wingspan: 160-182 cm)**
2. *Pandion haliaetus* **(wingspan: 127-174 cm)**
3. *Chondrohierax uncinatus* **(wingspan: 89-98 cm)**
4. *Elanoides forficatus* **(wingspan: 119-136 cm)**
5. *Ictinia mississippiensis* **(wingspan: 75-83 cm)**
6. *Ictinia plumbea* **(wingspan: 70-85 cm)**
7. *Circus cyaneus* **(wingspan: 100-121 cm)**
8. *Accipiter striatus* **(wingspan: 48-68 cm)**
9. *Accipiter cooperii* **(wingspan: 64-87 cm)**
10. *Buteo platypterus* **(wingspan: 74-96 cm)**
11. *Buteo swainsonii* **(wingspan: 117-137 cm)**
12. *Buteo albonotatus* **(wingspan: 117-140 cm)**
13. *Buteo jamaicensis* **(wingspan: 107-141 cm)**
14. *Falco sparverius* **(wingspan: 52-61 cm)**
15. *Falco columbarius* **(wingspan: 53-73 cm)**
16. *Falco peregrinus* **(wingspan: 79-114 cm)**

***The images are not to scale, but are an approximation to compare the wingspans between the species.** Images 2-6,10-12 and 16 are by Oscar Ramírez-Alán; Image 4 by Francisco Monge.

of passing birds. Take good care of the equipment. Utilize the lens cleaners regularly to keep the optical equipment clean.

If you choose to use instruments to measure wind and rain, it is important to indicate the model of the instrument being used, as well as to assure that it is being used correctly by reading the manual. The same anemometer and thermometer should be used for the duration of the season to standardize the data. This will be important when comparing and analyzing the data. Finally, the bird identification field guides should be on hand for immediate consultation, for when there are doubts about the identification of the different migratory species.

Whenever possible, have a weekly meeting to talk about situations related to the count: ways to better organize the monitoring effort, changs in protocol, or to discuss doubts about the identification of raptors. Thus all project members, counters and volunteers can get ideas on how to improve everyone's counting methods.

We use data sheets prepared specifically for Kèköldi Observatory to facilitate the recording of variables in the field, and the entering of information into the computer database. As soon as possible after the count, data should be entered into a computer database. Both the official counters and volunteers are responsible for the security of the data. After volunteers have been trained in how to correctly enter information into the database, two people should enter the data together (one to dictate and the other to type) in order to eliminate any possible errors. Original data sheets should be kept in a safe place.

The data can be entered directly into the HMANA data base via their web page http://hawkcount.org/. It should be entered daily and organized following the layout of the data sheet (Table 2). Additional information, such as notes on the behavior of the raptors, observations of local raptors and other migrating birds can also be recorded. It is important to note as much information as possible such as age, sex, distance between the count site and the bird, and its direction in degrees (using a compass).

Information gathered on perching spots and other behavior of migratory raptors can help contribute to our knowledge about these raptors, helping to explain the importance of conserving the areas and habitats they utilize. Although the migration phenomenon is well known, it is still poorly studied (Blidstein 2004). We still lack knowledge on their feeding habits, perching spots, and other behaviors these species engage in during migration (Bildstein and Saborío 2000).

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We would like to thank everyone from the Territorio Indígena Kèköldi of the Association

Table 2. Data form used for recording migrating raptors in Kèköldi.
Note: "…" represents the continuation of the hour or species column, respectively.

Conservation of Migratory Raptors Project - Kèköldi

Hour	6-7	7-8	8-9	9-10	…
Velocidad del viento					
Wind direction					
Temperature (ºC)					
Humidity					
Cloud Cover					
Visibility					
Precipitation and Direction of Precipitation					
No. of Observers					
Distance and Direction of Flight					

OBSERVERS : _____ MONTH ___ DAY ___ YEAR ___

	6-7	7-8	8-9	9-10	…	Total
Cathartes aura **TV**						
Pandion haliaetus **OS**						
Elanoides forficatus **SK**						
⋮						
Other Raptors						
Notes						

Table 3. Projections of observations of migratory raptors in Kèköldi during spring migration.
Table 4. Projections of observations of migratory raptors in Kèköldi during fall migration.

English Name	Scientific Name	March	April	May	June
Turkey Vulture	Cathartes aura				
Osprey	Pandion haliaetus				
Swallow-tailed Kite	Elanoides forficatus				
Mississippi Kite	Ictinia mississippiensis				
Plumbeous Kite	Ictinia plumbea				
Hook-billed Kite	Chondrohierax uncinatus				
Northern Harrier	Circus cyaneus				
Sharp-shinned Hawk	Accipiter striatus				
Cooper's Hawk	Accipiter cooperii				
Broad-winged Hawk	Buteo platypterus				
Swainson's Hawk	Buteo swainsoni				
Zone-tailed Hawk	Buteo albonutatus				
Merlin	Falco columbarius				
Red-tailed Hawk	Buteo jamaicensis				
American Kestrel	Falco sparverius				
Peregrine Falcon	Falco peregrinus				

English Name	Scientific Name	August	Sept.	Oct.	Nov.
Turkey Vulture	*Cathartes aura*				
Osprey	*Pandion haliaetus*				
Swallow-tailed Kite	*Elanoides forficatus*				
Mississippi Kite	*Ictinia mississippiensis*				
Plumbeous Kite	*Ictinia plumbea*				
Hook-billed Kite	*Chondrohierax uncinatus*				
Northern Harrier	*Circus cyaneus*				
Sharp-shinned Hawk	*Accipiter striatus*				
Cooper's Hawk	*Accipiter cooperii*				
Broad-winged Hawk	*Buteo platypterus*				
Swainson's Hawk	*Buteo swainsoni*				
Zone-tailed Hawk	*Buteo albonutatus*				
Merlin	*Falco columbarius*				
Red-tailed Hawk	*Buteo jamaicensis*				
American Kestrel	*Falco sparverius*				
Peregrine Falcon	*Falco peregrinus*				

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Sources of Images in Fig. 1.

1) Turkey Vulture near Morro Bay, CA. mikebaird. everystockphoto: http://www.everystockphoto.com/photo.php?imageId=5685642...(Actualizado 23 abril 2014).

7) Northern Harrier. jkirkhart35. everystockphoto: http://www.everystockphoto.com/photo.php?imageId=6101180... (Actualizado 23 abril 2014)

8) img_2712. cyrusbulsara. imagen tomada del sitio everystockphoto:http://www.everystockphoto.com/photo.php?imageId=8301079... (Actualizado 23 abril 2014).

9) Cooper's Hawk (*Accipiter cooperii*). jkirkhart35. everystockphoto: http://www.everystockphoto.com/photo.php?imageId=8844597... (Actualizado 23 abril 2014).

14) American Kestrel (*Falco sparverius*). BobMacInnes. everystockphoto: http://www.everystockphoto.com/photo.php?imageId=5680253... (Actualizado 23 abril 2014).

15) Merlin in flight. (Merlin (*Falco columbarius)* des. Jim Zipp. visual photos: http://www.visualphotos.com/search.do... (Actualizado 23 abril 2014).

* * *

Migration and First Record of Hook-billed Kite (*Chondrohierax uncinatus*) in Bogotá, Colombia.

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The Hook-billed Kite, *Chondrohierax uncinatus* (Temminck 1822) has a wide geographic distribution, ranging from North and Central America (Ridgely and Gwyne 1989, Stiles and Skutch 1989, Hilty and Brown 2001) through a large part of South America (Hilty and Brown 2001, Márquez et al. 2005, Restall et al. 2006). In Colombia, it is reported at up to 2,000 masl (McMullan et al. 2010), and according to Hilty & Brown (2001) it is mainly found in lowlands up to 1000 masl, though rarely it has been documented at up to 2700 masl. There is a report from Cordillera de Cocapata, Bolivia, of an observation of this species at 3100 masl. (Herzog et al. 1999). This kite mainly inhabits the lower part of the forest canopy and dense understory of tropical forests, forest edges, and open areas with some degree of disturbance. It feeds primarily on land and tree snails of the genus *Polymita,* but it also includes amphibians and insects in its diet. (Bierregaard and Kirwan 2013).

In Colombia, it has been reported principally in lowlands of the Caribbean region, the mid and high valleys of Río Cauca and Magdalena, and in the foothills of the Cordillera Oriental (Meta Department) and the Southern Amazon (Hilty and Brown 2001, Márquez et al. 2005). Additionally, there are reports from the following departments: Antioquia, Magdalena, Bolívar, Caldas, Casanare, Huila, northern Santander, Quindío and Valle del Cauca, Cauca, Nariño and Tolima (Chaves-Fonnegra et al. 2005, Parra-Hernández et al. 2007, Ayerbe-Quiñones et al. 2008, Calderón et al. 2011).

Here we present new records for the species, mainly associated with the area of Sabana de Bogotá, which represent the first confirmed records of *Chondrohierax uncinatus* within Bogotá's city limits (Table 1). We consulted the following sources: Ornithological Collection of the Natural Sciences Institute (Colección de Ornitología del Instituto de Ciencias Naturales) of the Univer-

Figure 1A: Individual collected in Laguna Fuquene in 1943 ; 1B: Individual collected on 26 January, 2009 in Mansión Donoso; 1C: Dead individual found in Barrio Modelia, Fontibón.

sidad Nacional de Colombia (ICN), Biodiversity Information System (Sistema de Información en Biodiversidad (SIB)) of the Alexander von Humboldt Institute and e-bird. These resources gave us an approximate idea of this kite's rarity in the Eastern Andes region.

In the ICN, we found three speciments associated with the Sabana de Bogotá. The first of these was collected in Laguna Fuquene in 1943 by A. Olivares (Fig 1a). The second was an individual collected on 26 January, 2009 in the Mansión Donoso facillities (Cra 7 Calle 225) (4°47'46.48"N, 74° 1'45.12"W 2600 m.), which are located within secondary forest.

The latter individual was identified as a female *C. u. uncinatus* (ICN 37054). She weighed 300 g, had dark brown plumage, a whitish cream-colored iris, and yellowish-green cere. Her lore area

was greenish-yellow, her maxilla was black, her mandible was pale green, and she had yellow legs and black talons. She showed 100% ossification, had developed ovaries, and a corrugated oviduct. In her stomach, there were the remains of snail shells of the genus *Polymita sp.*

The female was captured using a 12x2.5 m mist nest, placed in a fragment of Andean forest in a mountainous enclave that is connected to the Aurora Alta – La Calera forest. This forest constitutes the largest and best preserved forest in the eastern hills of Bogotá, which is made up of a strip between 2600 and 3100 m, and forms part of the Reserva Forestal Protectora Cerros Orientals de Bogotá (CAR 2006) (Fig. 1b). The collection of this specimen was carried out as part of a project to characterize the Reserva Forestal Protectora Bosque Oriental de Bogotá (CAR y CI 2009).

The dominant tree species where the indivdual was observed include *Weinmannia tomentosa, Clusia multiflora, Drimys granadensis, Gaiadendron punctatum* and *Axinaea macrophylla.* The shrub layer is dense, and home to some important species such as *Macleania rupestris, Cavendishia nitida* and *Bejaria aestuans,* as well as *Palicourea sp., Piper sp.* and *Myrica sp.* At various points, the understory is dominanted by bamboo (*Chusquea sp.).* Within the forest there exists a high number of epiphytes, and many of the plants are orchids and bromeliads, as well as

Map of the Region

Vriesea sp., Racinaea sp., Tillandsia turnerii, T. complanata and *T. biflora*, and other ferns and mosses, which proliferate on the trunks and branches of trees (Gutiérrez 2008).

The third specimen was collected on 24 December 2013. It had been found dead in Barrio Modelia, Fontibón (4°39'59.55"N, 74° 7'44.31"O 2551 masl), located northwest of the city of Bogota in the Mallorca residential park, near the Capellanía wetland (Fig. 1c). The individual was identified as a male, based on its plumage. The individual had ectoparasites, but did not have any visible lesions that would help identify its cause of death.

The individual weighed 185g (we weighed it when preparing the skin), and had a blackish cere with some yellow spots. The area around its lores was yellow-green, and he had a pale yellow mandible, black maxilla. yellow legs and black talons. His craneal ossification was at 70%, and his right testical measured 3.9x2.8mm and the left measured 3x2.5mm.

After the skin preparation, we reviewed the individual's stomach contents, however, we found no clear evidence of any specific food item. Instead, we found a yellowish gelatinous material, which by the above description of the female found in the eastern hills, could potentially be the soft parts of snails. Both specimens were deposited in the Ornithological Collection of the Institute of Natural Sciences, National University of Colombia, Bogotá.

There are additional records of other museum specimens and of other sightings from the areas around Sabana de Bogotá (Table 1). The com-

Table 1: Records of Hook-billed Kites (*Chondrohierax uncinatus*) in the Sabana de Bogotá.

Source	Observer	Date	Location	Elevation	Sex	Observations
ICN 3438	Olivares, A.	10/23/1943	Laguna de Fúquene	2550	female	Specimen collected
CBC CSB	Stiles, F. G.	12/14/2002	Cerros de Torca	2700	female	Visual record
ICN 37054	López-O, J. P	1/26/2009	Mansión Donoso, Cerros Orientales	2600	female	Specimen collected
ebird	Bayly, N.	12/26/2010	Parque Chicaque	2500	-	Visual record
ebird	Bayly, N.	6/24/2011	Parque Chicaque	2500	-	Visual record
ebird	Tood, M.	2/18/2013	Laguna Pedro Palo	2100	-	Visual and photgraphic record
ebird	Cueva, D.	12/14/2013	Floresta de la Sabana, Cerros Orientales	2700	female	Visual and photgraphic record
ICN 38893	Pineda, A & P. Camargo	12/24/2013	Barrio Modelia	2551	male	Found dead

piled reports show a discontinuity in the records. However, most occurred between the months of December and February, at a gradient of between 2100 and 2700 masl.

The eastern Andes are part of an obligatory migration route for various raptor species, as well as for warblers and plovers in transit from boreal regions, passing the Magdalena River Valley in search of wintering zones, or on route to more southern regions. Species that use this route include *Falco columbarius, Buteo platypterus,* and *Buteo swainsonii* (ABO 2000; Naranjo et al. 2012). It is also possible that other resident species conduct seasonal movements, traveling from the Andean region to the Orinoquía and the Amazon, and vice versa (Freeman et al. 2011). These movements may be erratic, accidental or simply cases of individuals traveling otuside of their area of distribution, such as in the recent case of *Falco deiroleucus* reported in the Botanical Garden of Bogotá (Ávila et al. 2014).

It is known that the Hook-billed Kite migrates in Mexico, Guatemala, El Salvador, and Costa Rica (Eisermann and Avendaño 2006, Jones and Komar 2006, Porras- Peñaranda and McCarty 2004, Ruelas et al. 2002). According to Bildstein 2004, the species is an altitudinal migrant in the Neotropics. In Colombia, it is probable that this kite is migrating altitudinally during a defined season each year, since most of our records and those from other sources were obtained between the months of December and February. In this case, records could be of individuals that pass the middle valley of the Magdalena River towards Orinoquía and/or viceversa.

Acknowledgments

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Conversations from the Field

By **Markus Jais and Yennifer Hernandez**

Yennifer Hernández is a Masters student (Zoology) and her main interests are the taxonomy and biology of predators. She has participated in a number of biodiversity monitoring projects in her country, Uruguay, as well as in other countries (Namibia, Germany, Argentina and Holland). Her interest in raptors is motivated by the role they play in the ecosystem and the importance of sharing scientific information to increase awareness and help in their conservation. Yennifer recently interviewed Willian Menq about his work with raptors in Brazil. Here is an exerpt from the interview.

Yennifer Hernandez: *Can you tell us about your work and your website (and database on the raptors of Brazil) "Aves de Rapina Brasil" (http://www.avesderapinabrasil.com/)?*

Willian Menq: I am an ornothologist and specialist in Neotropical raptors. I have a Masters in Zoology from the Universidad Estatal de Londrina – UEL (Paraná). Currently I am analyzing habitat use of some species of owls of the Mata Atlántica and of Peregrine Falcons (in winter) in Brazil. I founded the "Raptors of Brazil" site in June 2007. I spent several months writing the text for dozens of species, informative articles, distribution maps, photos, etc. The site is continually being updated. Currently, the site has complete and updated information for all the raptors species of Brazil. It is the best source of information on these birds in the country and has more than 1,000 hits a day. It is a cited reference for academic works, magazines, educational materials, etc.

Conditioning of a Barn Owl (*Tyto*). © Jean Copatti.

YH: *How many raptor species inhabit Brazil?*

WM: According to the official list of the Brazilean Commitee on Ornothological Records "Comité Brasileño de Registros Ornitológicos "(CBRO), considering the following families, Accipitridae, Falconidae, Pandionidae, Cathartidae, Tytonidae and Strigidae, 97 species occur in

Environmental education session with school kids, raising their awareness about the importance of birds of prey. © Fernanda Bittencourt

Brazil. I personally consider this a high number, and it reflects the diversity of our ecosystems and the size of Brasil.

YH: *Which is the least studied species?*

WM: Generally, the little-studied species in Brazil are those that have a shy nature, are rare or are hard to find in the field - true "ghosts" of the forest. This is the case for several species such as *Micrastur gilvicollis, M. mintoni, M. mirandollei, Accipiter superciliosus, A. poliogaster, Buteogallus aequinoctialis, Parabuteo leucorrhous* and some forest owls (*Megascops usta, M. watsonii, M. guatemalae, Lophostrix cristata, Glaucidium minutissmum, G. hardyi, Strix huhula* and *Aegolius harrisii*).

YH: *What are some of the major threats to raptor conservation in Brazil?*

WM: The main threats to raptors in Brazil are the same ones that are threatening these birds in the rest of the continent. The first is the loss and fragmentation of habitats, which causes them to desert their territories, and causes the reduction or extinction of raptor populations. Secondly there is poaching and the persecution of raptors, which is a common practice in a large part of the country, especially in the north, northwest, and central west. Often raptors are threatened by farmers, who

sees these birds as threats to their domestic cattle and poultry. There are also individuals who hunt birds of prey to feed on, or out of curiosity or just to display them as trophies. Other significant threats to raptor populations are poisoning by agro-toxins and / or heavy metals, collisions with windows, and fences and being run over on roads. I know dozens of cases of raptors who have died from colliding with windows while hunting, as in the case of the Peregrine Falcon, Sharp-shinned Haw and Gray-bellied Goshawk. For these birds, collisions while in flight are often fatal due to their high speed of flight.

YH: *What is the impact of illegal poisoning in Brazil? And how has this affected vultures and other scavenging birds?*
WM: In Brazil, the public health agency has banned the use of diverse agro-toxins within the organoclorides group, which are highly harmful for the environment and human health. However, many farmers trying to reduce costs import agro-toxins from abroad. Studies on bio-magnification in birds in Brazil are basically nonexistent, and little is known about the effect of these chemical contaminants in birds of prey, including vultures. We have no studies to monitor raptor populations to estimate the effects of these pollutants. However, Brazil is one of the largest consumers of agro-toxins and considering the use of illegal organochlorides (without inspection) from abroad in Brazilian agriculture, we have to consider weak-shell syndrome in eggs will appear, as well as mortality from poisonings.

YH: *Are Diclofenac and other drugs that could affect vultures and scavenger birds being used in Brazil?*
WM: Yes. Diclofenac is marketed in Brazil, but it is not the only drug that is used and it is not preferred by veterinarians. According to a veterinarian colleague who is an expert in wildlife, Tatiane Bressan, the use of Diclofenac is very diverse in Brasil. In some areas it is the most used (because it is the cheapest), while in other regions other higher quality, safer anti-inflamatory drugs such as flunexin meglumina, cetoprofeno, etc. are used. Knowledge on this subject is scarce. We don't know if vultures or other raptors are being contaminated by the use of these medicines, or how the use of these medications can affect these birds. It is worth mentioning that when a horse or cow dies, for sanitary reasons, farmers bury or burn the carcass to prevent damage to the environment (including to the vultures), and the danger-

A Buff-fronted Owl (*Aegolius harrisii)* observed during an owl-watching session in São Paulo.
© Willian Menq

that it could pose to human health. Since carcasses left to decompose in the open air can transmit a number of diseases to livestock and humans, the custom of burying or incinerating livestock may greatly reduce the possibility of contamination of vultures in Brazil.

YH: *How is falconry contributing to raptor conservation in Brazil?*

WM: In Brazil, falconry is helping to conserve birds of prey in two ways: through the use falconry techniques for raptor rehabilitation and through environmental education. Some rescue and wildlife rehabilitation centers are successfully using falconry techniques for physical conditioning of young, weakened or injured raptors for later release into the wild. In addition, these same centers, some research institutions, falconry associations and private companies also use unreleasable hawks and owls (wingless or with other conditions that prevent them from suriving in the wild) in environmental education campaigns for children and adults through exhibits, mini-courses and exhibition events.

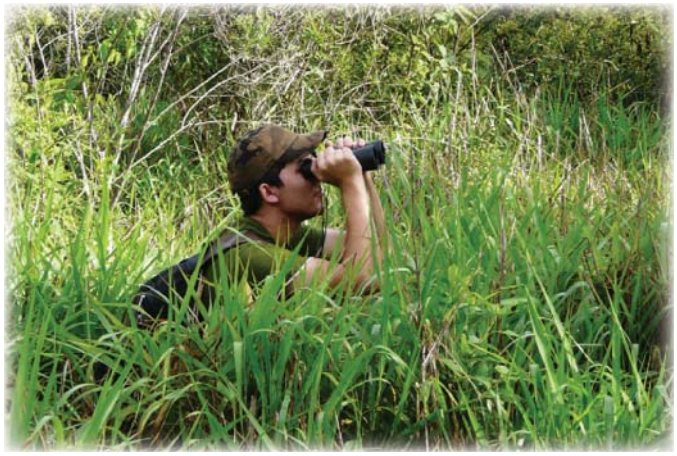
YH: *How do you measure the success of community education campaigns focused on raptor conservation? Are they really changing the attitudes of people about raptors and their conservation?*

WM: In Brazil there are few environmental education projects focused on birds of prey, but the few that exist are doing a good job. I always believed that environmental education campaigns for the community are one of the most effective ways to ensure the conservation of these species. Educating the community through articles, journals, books, presentations or simple dialogue brings impressive and very positive results.

YH: *Where should future research and conservation efforts be directed to?*

WM: There is plenty to do, since little is known about the biology of Neotropical raptors. The search for residual populations of rare species and the study of their natural history, and reproductive, di-

Left: Raptor monitoring in the "Reserva Biológica das Perobas", southern Brazil. © Jean Copatti; Right: Research on the breeding of *Accipiter poliogaster* in southern Brazil. © Willian Menq



etary and habitat requirements are extremely important and of high priority. Apart from this, environmental impact studies on raptor communities are essential to ensure the future of many raptor species.

YH: *How do you see the future of raptors in Brazil?*

WM: The future of some species is uncertain and troubling. Critically endangered species in the Atlantic Forest such as the Harpy Eagle and Crested Eagle, are almost disappearing from this biome, and if nothing is done, we will have several regional extinctions in Brazil. The conservation of these eagles and other raptors in Brazil depends on a joint effort of the community, as different factors are contributing to the decline of the species. Only through increased awareness among the population, protection of forests, implementation of new conservation areas, and increased oversight by the authorities, will we be able to guarantee the conservation of raptors for our future. That is why we believe that environmental education is among the most powerful and effective instruments to promote conservation of raptors and the environment, as there is no conservation without knowledge!

YH: *What was your most amazing experience with raptors?*

WM: I have had many amazing experiences with birds of prey, and it is hard to pick one. But I think the most amazing moment of my career was in June 2009 when I saw the Black-and-white Hawk-eagle for the first time. I was doing some monitoring of a raptor community in a forest in the interior of Paraná (southern Brazil). Near the end of the morning, walking along the edge of the forest, a large raptor emerged and landed on top of a dead tree and stared at me. It was a amazing! It was my first record of the species in the region and my first experience with a wild *Spizaetus*. Therefore, it is one of my favorite species.

* * *

Of Interest...

Grants

IDEA WILD

http://www.ideawild.org/apply.html

IDEAL WILD offers grants to conservation programs focusing on environmental education, research and wildlife management. The grant provides equipment for research, environmental education and biodiversity projects. They require a mailing address within the United States (it may be that of a friend, an NGO or any other person who may carry the equipment to the project country). Proposals may be submitted at any time of the year.

The Mohamed bin Zayed Species Conservation Fund

http://www.speciesconservation.org/grants/

The Fund has been established to provide targeted grants to individual species conservation initiatives, recognize leaders in the field and elevate the importance of species in the broader conservation debate. Its focus is global, and eligibility for grants will extend to all plant, animal and fungi species conservation efforts, without discrimination on the basis of region or selected species. Grants will be awarded based on their ability to meet criteria pre-determined by the Species Fund, and are for maximum of $25,000 for each project.

Walt Disney Conservation Funding

http://thewaltdisneycompany.com/content/conservation-funding

Walt Disney Conservation Funding offers various opportunities to receive funds through their conservation programs, including Disney Rapid Relief Fund (with a maximum of $5,000US); Conservation Heroes; and Annual Conservation Grant, which supports wildlife studies, the protection of habitats, community conservation and education. The objective is to support conservation organizations centered on long-term positive effects on wildlife and their habitats. Deadlines for each specific grant vary.

Conservation Leadership Programme

http://www.conservationleadershipprogramme.org/ApplyNow.asp

CLP grants are directed to early-career conservationists (less than 5 years professional experience in the conservation sector). Successful applicants will: 1.) develop the knowledge, skills and abilities of team members; 2.) implement a focused, high-priority conservation project combining research and action; and 3.) contribute to the long-term success of local conservation efforts. Within the Neotropics, applications are open to those projects being carried out in Mexico and Brazil.