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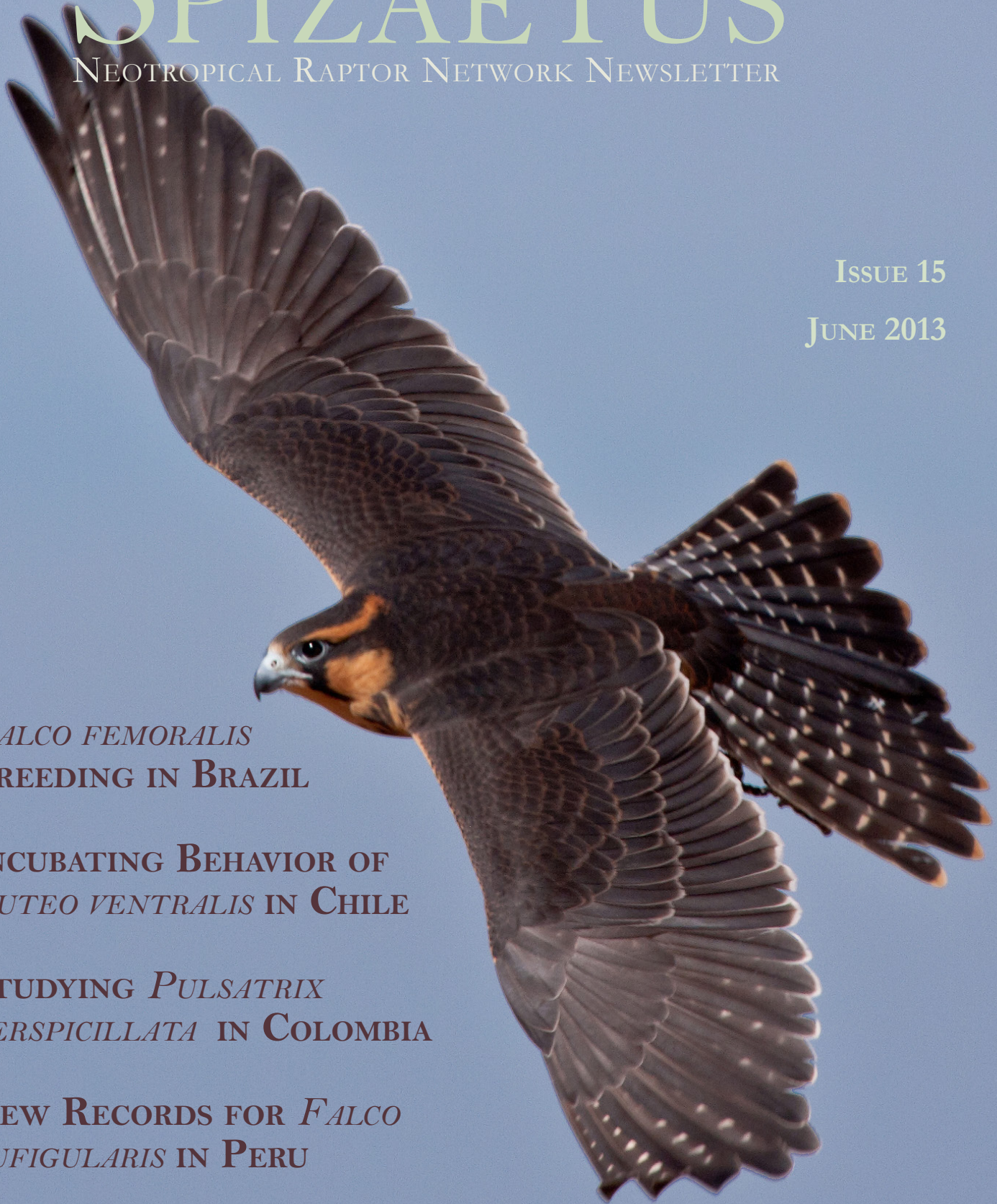
FALCO FEMORALIS
BREEDING IN BRAZIL

INCUBATING BEHAVIOR OF
BUTEO VENTRALIS IN CHILE

STUDYING *PULSATRIX*
PERSPICILLATA IN COLOMBIA

NEW RECORDS FOR *FALCO*
RUFIGULARIS IN PERU

RAPTOR MIGRATION
IN EL SALVADOR



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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.

APLOMADO FALCON (*FALCO FEMORALIS*) BREEDING IN AN URBAN AREA IN NITERÓI, RIO DE JANEIRO, BRASIL

By **Antonio Carlos da Silva Bressan**¹ and **Mosar Lemos**²: ¹Faculdade de Veterinária, Universidade Federal Fluminense (aposentado), ²Programa Nacional de Pós-Doutorado PNPd/CAPES/Universidade Federal Fluminense
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The Brazilian Atlantic Forest is characterized by a great diversity of flora and fauna, and is an important area for bird endemism. However, the process of colonization, occupation and rapid urbanization of land in the State of Rio de Janeiro have caused significant changes and reductions in the Atlantic Forest and its associated wildlife. In light of this, the green areas of the city of Niterói are increasingly of greater local and even regional importance, and are true islands of refuge for much of the remaining flora and fauna in the region (Lemos 2010).

The municipality of Niterói (22° 52' 51" S and 43° 06' 15" W) encompasses one hundred thirty square kilometers and is located in the micro-region called "Grande Rio", in the state



The last fledgling to leave the nest © Antonio Carlos Bressan

of Rio de Janeiro, Brazil, and is within the Atlantic Forest biome. It has a warm and humid tropical climate, and the temperature ranges between seventeen and thirty degrees Celsius throughout the year. The altitude varies from sea level to 412 m,

with the highest point located within the Serra da Tiririca State Park (Wehrs, 1984).

Among the more than 200 bird species occurring in the province, at least 21 are birds of prey, including the Aplomado Falcon (Lemos, 2001; Lemos and Freitas, 2009). The Aplomado Falcon (*Falco femoralis*) is a medium sized falcon which inhabits fields and cities where it hunts birds, rodents, lizards and bats (Sick, 1997). The adult pair often flies together, sometimes accompanied by their young. This species occurs from the United States to Argentina and is valued as a falconry bird (Castro, 2005). Aplomado Falcons usually do not build their own nests, but often use those that have been abandoned by other birds.

In Veracruz and Chiapas, Mexico, nests are found in large arboreal bromeliads (U.S. Fish And Wildlife Service, 1990).

The average outside diameter of five nests in eastern Mexico ranged from 28 cm to 100 cm, and ranged from 6-18 cm in height. The smallest nest was probably built by

Black-winged Kite (*Elanus caeruleus*) and the largest by Southern Crested Caracara (*Caracara planiceps*) (U.S. Fish And Wildlife Service, 1990). Aplomado Falcon breeding season usually occurs between the months of August and December. The female usually lays 2-4 pinkish-white eggs which are covered with bright or reddish brown spots, and measure 40-48 mm long and 31-36 mm at their widest part (Brown and Amadon, 1989; Sick, 1997).

Mader (1981) reported an Aplomado Falcon nest in the town of Calabozo in Guárico State, Venezuela. The nest, located in a palm tree (*Copernicia tectorum*), produced three fledglings in March - the dry season in Venezuela. The author observed the adults capturing and feeding on bats, which they also used to feed their young. Hector (1985) studied the feeding behavior of *Falco femoralis* in eastern Mexico and found that 97% of the biomass of prey captured by this falcon

was composed of birds, although insects made up 65% of prey captured. The average weight of the prey was 65 grams. Except for bats, all oth-



Map of Brazil showing the location of Niteroi



An adult feeding its young
 © Antonio Carlos Bressan

er vertebrate prey were birds. Columbidae birds were more abundant, with 30% of the catch represented by the genus *Columbina*. Although insects are present in the Aplomado Falcon's diet, relatively they are not very important. Though they sometimes represent up to 50% of prey caught, they contribute only 3% of total prey biomass (Mader, 1981, Hector, 1985, Jimenez, 1993).

In Jacareí, São Paulo, Brazil Lencioni Neto (1996) observed a pair of falcons copulating on 8 August and on 25 October their chicks fledged. This pair used an abandoned *Elanus leucurus* nest built in

the previous year. Granzinoli et al (2002), has monitored five Aplomado Falcon breeding attempts in the city of Juiz de Fora, Minas Gerais, Brazil. He reported that, although no pair was observed building a nest, two individuals carried twigs and branches to their nests. Nest height varied from 5.2 m to 7.2 m. The pairs laid a total of 15 eggs (three in each nest), which produced 8 hatchlings and 7 fledglings. The largest nest was 77 cm wide, 32 cm high and 25 cm deep.

Meyer and Williams III (2005) monitored the nests of two pairs of Aplomado Falcons during two consecutive breeding seasons (2001 and 2002) in New Mexico (USA). Incubation began in March and May in both seasons, with one pair beginning reproductive activity later than the other in both seasons. The number of eggs varied from 1 to 3, with a total of four eggs produced per year. Three offspring from a single nest were produced in 2002. The incubation period ranged from 31-32 days and the young left the nest in early August, after 38 days of age. The pair nested in a yucca (*Yucca elata*).

A Case Report

During the period from September 25 to November 20, 2012 we studied a pair of these falcons nesting in the top of a fishtail palm (*Caryota sp*) in the urban area of Niteroi, State of Rio de Janeiro, Brazil. We were unable to verify the number of eggs in the clutch, but three chicks hatched. The



Aplomado Falcon nest © Antonio Carlos Bressan

nest was about 9 meters high, and had been built between the leaves of the palm. The young were sighted off the nest for the first time on 5 October and remained in the area until 20 November.

The adults fed the young mainly Ruddy Ground Dove (*Columbina talpacoti*). Other small birds were captured, including a small young Jacana (*Jacana spinosa*). After fledging, two young concentrated their activities around the palm where the nest was located and one about 20 feet away. They remained in the area until they reached indepen-

dence. Throughout the period of observation we did not see predation of lizards, bats or rodents. On 11 October, seven days after the young left the nest, we photographed the pair copulating. However, this pair did not lay a second clutch.

The information presented here demonstrates the capacity for adaptation that this species has to an urban environment, where the vegetation and bird life is relatively well-preserved. However, the principle prey utilized by this pair was the Ruddy Ground Dove, the most abundant bird in large



An adult pair copulating © Antonio Carlos Bressan

cities according to Sick (1997).

Contrary to what was reported for Mexico by Mader (1981) we did not observe this pair preying on bats; nor on lizards as has been reported by Jiménez (1993); or on rodents (Rojas and Stappung 2005). The use of Ruddy Ground Dove as their principle prey coincides with Hector's (1985) observation, who, in a study in eastern Mexico, found that among Columbidae species captured by the Aplomado Falcon, 30% were of the species of the genus *Columbina*.

The reports of various authors and our observations support the claim that birds are the main component of the Aplomado Falcon's diet. Although this falcon is able to capture birds as large as Cattle Egret (*Bubulcus ibis*), Plain Chachalaca (*Ortalis vetula*) and *Columba* spp (Granzinolli and Motta-Junior, 2006; U.S. Fish And Wildlife Service, 1990; Hector, 1985), the average weight of their prey varies from 67.0 g to 34.29 g (Hector, 1985; Jimenez, 1993; Rojas and Stappung 2005).

If we take into consideration that the weight of *Columbina talpacoti* may vary from 35-56

grams (mean 45.5 g), and that the pair of Aplomado Falcons in Niterói fed mainly on this species, the average weight of their prey was lower than that observed by Hector (1985), and Rojas and Stappung (2005) and Granzinolli and Motta-Junior (2006), but was higher than that observed by Jimenez (1993). We should note that the subspecies found in the U.S. and Mexico, *Falco femoralis septentrionalis*, is larger and heavier than that found in Brazil, *Falco femoralis femoralis*, thus the former is able to capture larger prey.



Feeding on a dove © Antonio Carlos Bressan

The nesting period matches that documented by Lencione Neto (1996) in the State of São Paulo and Granzinolli et al (2002) in the State of Minas Gerais. The number of offspring per pair, the time spent in the nest and the breeding season also agree with reports by Lencioni-Neto (1996), Granzinolli et al (2002), U. S. Fish and Wildlife Service (1990) and Meyer and Williams III (2005), although the latter authors observed the nests in the months of March to August.

Some reports mention the use of *Brazilian Handroanthus* sp, (Bignoniaceae) as a nesting site for this falcon (Lencioni-Neto, 1996; Granzinolli et

al, 2002), but Mader (1981) found that in Venezuela the pair nested in a palm tree (*Copernicia tectorum*), which is similar to reports in Niterói, where the nest was also located in a palm tree (*Caryota* sp.).

Other interesting information is the use of abandoned White-tailed Kite (*Elanus leucurus*) nests in different places in Mexico (U.S. Fish And Wildlife Service, 1990) and Brazil (Lencioni Neto, 1996). In Niterói, the nesting pair did not reuse an abandoned nest built by another species, but rather they used the natural cavity formed between the leaves and the trunk of the palm.

Referencias

- Brown, I.; Amadon, D. Eagles, hawks & falcons of the world. New Jersey: The Wellfleet Press. 1989, 945p.
- Castro, M. A. Entendendo o falcão-de-coleira. Boletim ABFPAR. Niterói: Associação Brasileira de Falcoeiros e Preservação de Aves de Rapina. v.8, n.1, p.8-19, 2005.
- Granzinolli, M. A. M; Rios, C. H. V; Meireles, L. D; Monteiro, A. R. Reprodução do falcão-de-coleira *Falco femoralis* Temminck 1822 (*Falconiformes*: Falconidae) no município de Juiz de Fora, sudeste do Brasil. Biota Neotropica, v.2, n.2, p.1-6, 2002.
- Granzinolli, M. A. M; Motta-Junior, J. C. Predation on the Cattle Egret (*Bubulcus ibis*) and consumption of the Campo Flicker (*Colaptes campestris*) by the Aplomado Falcon (*Falco femoralis*) in Brazil. Revista Brasileira de Ornitologia v.14, n.4, p.453-454, 2006.
- Hector, D. P. The diet of the Aplomado falcon (*Falco femoralis*) in eastern México. The Condor. n.87, p.336-342, 1985
- Jiménez, J. E. Notes on the diet of the Aplomado falcon (*Falco femoralis*) in northcentral Chile. Journal of Raptor Research, v.27, n.3, p.161-163, 1993.
- Lemos, M. Ocorrência e status de algumas aves de rapina no município de Niterói, Estado do Rio de Janeiro. Boletim ABFPAR. Niterói: Associação Brasileira de Falcoeiros e Preservação de Aves de Rapina. v.4, n.2, p.6-11, 2001.
- Lemos, M. Avifauna de Niterói: Um guia para residentes e visitantes. Ornitoaves, 2010. Disponível em www.ornitoaves.blogspot.com. Acessado em 03.11.2012.
- Lemos, M; Freitas, A. A. R. Occurrence of the Black-banded Owl (*Strix bubula*) in the urban area of Niteroi, Rio de Janeiro State, Brazil. Neotropical Raptor Network Newsletter, n.8, p.10-11, dec.2009.
- Lencioni Neto, F. Reprodução sincrônica entre *Elanus leucurus* (Vieillot, 1818) e *Falco femoralis* Temminck, 1822 (Aves, Accipitridae; Falconidae). Comunicação do Museu de Ciência e Tecnologia. PUCRS. Série Zoologia, v.9, p.37-44, dez. 1996.
- Mader, W. J. Notes on nesting raptors in the Llanos of Venezuela. The Condor, n.83, p.48-51, 1981.
- Meyer, R. A; Williams III, S. O. Recent nesting and current status of Aplomado falcon (*Falco femoralis*) in New Mexico. North American Birds, v.59, p.352-356, 2005.

- Rojas, R. A. F; Stappung, E. S. C. Seasonal diet of the Aplomado falcon (*Falco femoralis*) in an agricultural area of Araucania, southern Chile. Journal of Raptor Research, v.39, n.1, p.55-60, 2005.
- Sick H. Ornitologia Brasileira. Rio de Janeiro: Nova Fronteira. 1997, 912 p.
- U. S. Fish And Wildlife Service. Northern Aplomado Falcon recovery plan. New Mexico: U. S. Fish and Wildlife Service. 1990, 56p.
- Whers, C. Niterói cidade sorriso. A história de um lugar. 1.ed. Rio de Janeiro: Edição do autor. 1984, 366p.

* * *

A NOTE ON INCUBATION BEHAVIOR OF RUFIOUS-TAILED HAWK (*BUTEO VENTRALIS*) IN SOUTHERN CHILE

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The Rufous-tailed Hawk (*Buteo ventralis*) is a specialized forest raptor endemic to the temperate forests of southern Chile and Argentina (Ferguson-Less & Christie 2001, Trejo *et al.* 2006). The species has been listed as rare (Clark 1986, Bierregaard 1995) and many authors consider that it deserves research and conservation priority (Jaksic & Jiménez 1986, Rottmann & López-Calleja 1995, Ubeda & Grigera 1995, Jaksic *et al.*, 2002, Trejo 2007 Pincheira-Ulbrich *et al.* 2008). Due to the limited information on its biology, the species has been classified as data deficient (Estades 2004, Trejo 2007), although recently information has been published on its nesting habitat and reproductive behavior (Rivas-Fuenzalida *et al.*, 2011, Norambuena *et al.*, 2012, Rivas-Fuenzalida & Asciones-Contreras, Accepted). To date, the only information on incubation behavior comes from a pair studied in Cerro Ñielol, southern Chile (Norambuena *et al.* 2012). The results of that study

suggest that the female is fully responsible for incubation, while the male's role is limited only to providing prey.

Here we present observations on the incubation behavior of several pairs of Rufous-tailed Hawks which better clarify the behavioral pattern of the species during this stage of the reproductive cycle.

Materials and Methods

Between October and December 2012 we studied the incubation behavior of Rufous-tailed Hawks at three nesting sites located in different locations in southern Chile. Nest sites were numerically designated from north to south as follows: Nest 1, Nest 2, and Nest 3. Nest 1 was found in the Andean foothills of the Araucanía region, almost 20 miles east of Curacautin (38 ° 28'S, 71 ° 39'W); nest 2 was located in the area of Pilolcura (39 ° 40 'S, 73 ° 20'W), Valdivia Coast,



Figure 1. Incubating female Rufous-tailed Hawk (*Buteo ventralis*) Nest 2. © Javier Medel Hidalgo.

Los Rios Region; and nest 3 was found in the area of Los Guindos (40 ° 00'S, 73 ° 03'W), near Pailaco, Los Rios Region. Nesting platforms at these three sites were built on the ledge of a cliff, on the top of *Laureliopsis philippiana*, and *Nothofagus dombeyi*, respectively (see details of nests 1 and 2 in Rivas-Fuenzalida *et al.*, 2011, Rivas-Fuenzalida & Asciones-Contreras, Accepted).

We made a total of 18 visits to three nests totaling 117.6 hrs of observation during incubation. Most

of the observations were performed between 9:00 to 19:00 hrs and the mean observation time was 6.5 hours daily. In Nest 1 we were able to record activities from dawn (07:50 hrs). The observations were made either through 10x45 binoculars, a 20-60 x 80 telescope, or the naked eye. To avoid affecting the behavior of the hawks, observations were made from blinds located at > 100 m away. The cup of the three nesting platforms could be viewed in full as there were no branches or other objects that obstructed visibility.

The information was supplemented by occasional observations in three other nests. Two of these nests were monitored during October 2008 in Contulmo (38 ° 02'S, 73 ° 13'W), Bio-Bio Region. One nest was built on top of a *Laurelia sempervirens* and the other in a mature *Pinus radiata*. The third nest was monitored during October 2011 in Cerro Adencul, near Victoria (38 ° 14'S, 72 ° 31'W), Araucania Region. The nesting platform in the latter site was established in the top of *Austrocedrus chilensis* (see details of these nests in Rivas-Fuenzalida *et al.* 2011).

To differentiate males from females we rely on reverse sexual dimorphism (Ferguson-Less & Christie 2001), individual variation in plumage coloration patterns (eg, patterns of spots or marbling, dark morph vs clear morph) and the presence of natural markings (eg, damaged remiges or rectrices) (Rivas-Fuenzalida *et al.*, 2011, Norambuena *et al.* 2012).



Figure 2. Female (rt.) Rufous-tailed Hawk (*Buteo ventralis*) relieving the male (lft.) from incubation duties. Nest 1. © Tomás Rivas Fuenzalida

Results

In Nests 1-3, the females did the majority of the incubating (83.2 hrs, 81.2% of total incubation time = 102.4 hrs, N = 64, Figure 1), while the males were responsible mainly for bringing prey, although they were observed incubating 29 different times (19.2 hrs, 18.8% of the total incubation time). Incubation sessions averaged 78 min for females (range = 3-360 min) and 42 min for males (range = 4-120 min).

During the day, the males took over incubation duties when the females left the nest (Fig. 2) to feed on the prey that the males provided (N = 8) or to exercise (N = 9) either by flying, stretching or preening on the branches of the trees near the nest (60-80 m approx.). The contribution of

prey by the males appears to be stimulated by the constant vocalizations of the females. However, even when no prey exchange took place, females vocalized requesting the presence of males to take over incubation. Males brought food directly to the nest, which was received and carried by the females into the branches of trees near the nest site (<250 m), where it was consumed. After eating their prey, females returned to the nest to relieve the males. On one occasion, after feeding, the female flew over the area for about half an hour, traveling over 1 km away before returning to replace the male on the nest.

On two occasions, at Nest 1, we were able to observe the behavior of the adults during sunrise. On both occasions the female vocalized at the

start of the day from a perch near the nest (80 m away), while the male remained on the eggs. He did not vocalize. On the first occasion, after vocalizing for 17 min, the female flew to the nest at 0822, replacing the male, who flew to perch in a nearby tree. On the second occasion, the female vocalized for 5 min from the same perch and flew to the nest at 0951. She replaced the male who had remained incubating for at least 111 min from sunrise. The male then flew off toward his hunting grounds almost immediately after. On three occasions we documented the male incubating from late afternoon until dusk (from 1904 – 2200, once at Nest 2 and twice at Nest 3).

During the hottest hours of the day, particularly at noon, incubation was carried out almost exclusively by the females. They provided shade to the eggs (Fig. 3) by positioning themselves over the nest, standing with their backs toward the sun, their wings and tails semi-extended, their head and neck plumage bristling, and their beaks held open (N = 3). Females also stood on the nest to change their position during incubation (N = 19), at which time they also stretched, preened and turned the eggs with their beaks. On eight occasions the females left the nest though the males did not take over incubation duties. This usually occurred when temperatures were lower, such as on cloudy days (N = 4) or in the evenings (1800 to 1900 h) on clear days, when the sun's rays didn't directly impact the nests (N = 2). It was rare for

the nest to be left unattended during hot days or hours (N = 2). Nest 1 was left unattended an average of 7.5 min (range 5-10 min, N = 2). Nests 2 and 3 were unattended for 34.76 min on average (N = 25), with a maximum of 5 hours during our last visits. At Nest 2 the adults were absent all day on 6 December. We subsequently discovered that the nest had failed, and only the remains of a single egg could be found in the nest. On 11 December, we only observed the male at Nest 3, who visited only occasionally. The female was not seen for the rest of the season. Later we discovered that this nest (like Nest 2) failed before hatching. We were unable to determine why.

The males mostly incubated during cooler parts of the day, during the early morning or late afternoon (N = 12). However, we also observed males incubating at noon (N = 5), right after they brought in prey.

At all three nests, visibility at the nest platforms was occasionally hampered by dense vegetation around the nest trees, so most of the time it was difficult to determine which member of the pair remained in the nest incubating. However, at the three nests we clearly saw the male taking over incubation duties from the female after prey exchanges occurred (N = 5).

Discussion

The behavior we recorded during our study of Rufous-tailed Hawk incubation conforms to

that described for most species of diurnal raptors (Newton 1979). Although in some species of birds of prey the male apparently does not incubate at all, and in others both the male and the female incubate in an almost equal amount, the common pattern in most species is for the female to be responsible for the majority of incubation, being replaced by the male only when she leaves the nest to feed on the prey that he has brought (Newton 1979).

In a previous study on the reproductive behavior of Rufous-tailed Hawks, only the female was observed incubating while the male's contribution was limited to bringing prey (Norambuena *et al.* 2012). By contrast, in our study we observed 22 male-female replacements in six nests during incubation, even without prey exchanges taking place. This suggests that in this species it is common that both the male and female incubate, even if the time investment is much smaller for the males. A similar pattern has been observed in three other species of buteoninae in southern Chile and Argentina: i) Black-chested Buzzard Eagle (*Geranoaetus melanoleucus*, Pavez 2001), ii) Variable Hawk (*Geranoaetus polyosoma*, De Lucca 2011) and iii) White-throated Hawk (*Buteo albicollis*, Trejo *et al.* 2004).

It is possible that Norambuena *et al.* (2012) did not document the males incubating due to the high plant density at the site, which prevented the direct observation of the nest platform (Noram-

buena *et al.* 2012). In fact, during our study dense vegetation in some nesting sites did not allow good visibility of the platforms, greatly hindering the observation of the nest and the movements of the pair. Thus, it can be very difficult to determine the occurrence of male-female replacements in the nest, especially when both partners have the same morph and general plumage patterns. On the other hand, the findings of Norambuena *et al.* (2012) could be explained by the fact that within any species, behavior may vary somewhat among pairs. Each pair of many diurnal raptor species may demonstrate different incubation patterns, and in some cases, the female may control the situation and determine the behavior of the male (Newton 1979). Thus, it is possible that the pair observed by Norambuena *et al.* (2012) represents an exceptional case where the female dominated the male and prevented him from incubating.

The fact that we repeatedly observed a male incubating during the early hours of the morning while the female vocalized from a perch near the nest (possibly her roost), suggests that the male may have been incubating all night. This overnight incubation behavior by the males has been described for several species of diurnal raptors (Green 1976, Liversidge 1962, Rowan 1921, Willoughby & Cade 1964, Hengstenberg & Vilella 2005).

The excessive time that Nests 2 and 3 were left

unattended during our last visits clearly indicated that the nests had failed at the incubation stage. Fuenzalida Rivas *et al.* 2011 indicated that human persecution is one of the common causes of death in adult, nestling and juvenile Rufous-tailed Hawks. Thus, the disappearance of the female at Nest 3 before the hatching of the eggs could be due to direct human persecution, which caused this nest to fail.

More detailed studies on Rufous-tailed Hawk breeding behavior would help to more clearly determine possible variations between pairs and to better understand the role that each sex plays in distinct times throughout the day and night. It is also important to determine the reasons that

these nests fail during incubation. Only in this way will we be able to generate better guidelines for its management and conservation.

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Figure 3. Female Rufous-tailed Hawk (*Buteo ventralis*) shading her nest with her wings. Nest 1. © Tomás Rivas Fuenzalida



References

- Bierregaard, R. O., Jr. 1995. The biology and conservation status of Central and South American Falconiformes: a survey of current knowledge. *Bird Conservation International* 5: 325-340.
- Clark, W. S. 1986. What is *Buteo ventralis*? *Birds of Prey Bulletin* 3: 115-118.
- De Lucca, E. D. 2011. Observaciones del Aguilucho común (*Buteo polyosoma*) en el centro y sur de la Argentina. *Nótulas faunísticas. Segunda serie* 77: 1-15.
- Estades, C. F. 2004. Estrategia Nacional para la Conservación de las Aves. Santiago: UNORCH/ Programa Interdisciplinario de Estudios en Biodiversidad (Universidad de Chile).
- Ferguson-Less, J. & Christie, D. A. 2001. *Raptors of the World*. Boston: Houghton Mifflin.
- Figueroa, R. A., J. E. Jiménez, C. A. Bravo and E. S. Corales. 2000. The diet of the Rufous-tailed hawk (*Buteo ventralis*) during the breeding season in southern Chile. *Ornitología Neotropical* 11: 349-352.
- Green, R. 1976. Breeding behaviour of Ospreys *Pandion haliaetus* in Scotland. *Ibis* 118: 475-490.
- Hengstenberg, D. W. & F. J. Vilella. 2005. Nesting ecology and behavior of Broad-winged Hawks in Moist Karst Forest of Puerto Rico. *Journal of Raptor Research* 39 (4): 404-416.
- Jaksic, F. M., & J. E. Jiménez. 1986. The conservation status of raptors in Chile. *Birds Prey Bulletin* 3: 96-104.
- Jaksic, F. M., J. A. Iriarte, & J. E. Jiménez. 2002. The raptors of Torres del Paine National Park, Chile: biodiversity and conservation. *Revista Chilena de Historia Natural* 75: 449-461.
- Liversidge, R. 1962. The breeding biology of the Little Sparrowhawk (*Accipiter minullus*). *Ibis* 104: 399-406.
- Newton, I. 1979. *Population ecology of raptors*. Buteo Books, Vermillion, South Dakota, USA.
- Norambuena, H. V., V. Raimilla and J. E. Jiménez. 2012. Breeding behavior of a pair of Rufous-tailed Hawks (*Buteo ventralis*) in Southern Chile. *Journal of Raptor Research*. 46 (2): 211-215.
- Pavez, E. F. 2001. Biología reproductiva del águila *Geranoaetus melanoleucus* (Aves: Accipitridae) en Chile central. *Revista Chilena de Historia Natural*, 74: 687-697.
- Pincheira-Ulbrich, J., J. Rodas-Trejo, V. P. Almanza, & J. R. Rau. 2008. The conservation status of raptors in Chile. *Hornero* 23: 5-13.
- Rivas-Fuenzalida, T., J. Medel H., & R. A. Figueroa. 2011. Reproducción del Aguilucho colarojiza (*Buteo ventralis*) en remanentes de bosque lluvioso templado de la Araucanía, sur de Chile. *Ornitología Neotropical* 22:405-420.

- Rivas-Fuenzalida, T. & N. Asciones-Contreras. Aceptada. Aguilucho de cola rojiza (*Buteo ventralis*) nidificando en un acantilado precordillerano de la Araucanía, sur de Chile. Hornero.
- Rottmann J., & M.V. López-Callejas. 1992. Estrategia nacional de conservación de aves. Servicio Agrícola & Ganadero, Ministerio de Agricultura. Serie Técnica 1: 1-16.
- Rowan, W. 1921. Observations on the breeding habits of the Merlin. British Birds 15: 122-129.
- Trejo, A., Ojeda, V., Sympson, L. & Gelain, M. 2004. Breeding biology and nest characteristics of the White-throated hawk (*Buteo albigula*) in northwestern Argentine Patagonia. Journal of Raptor Research 38: 1-8.
- Trejo, A., R. A. Figueroa, & S. Alvarado. 2006. Forest-specialist raptors of the temperate forests of southern South America: a review. Revista Brasileira de Ornitología 14: 317-330.
- Úbeda, C. & D. Grigera, eds. 1995. Recalificación del Estado de Conservación de la Fauna Silvestre, Región Patagonia. Secretaría de Recursos Naturales y Ambiente Humano, Consejo Asesor Regional Patagónico de la Fauna Silvestre. Buenos Aires, Argentina.
- Willoughby, E. J. & Cade, T. J. 1964. Breeding behavior of the American Kestrel (Sparrow Hawk). Living Bird. 3: 75-96.

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SPECTACLED OWL (*PULSATRIX PERSPICILLATA*) IN DRY FOREST FRAGMENTS OF VALLE DEL RÍO CAUCA IN NEIRA, CALDAS, COLOMBIA

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The Spectacled Owl (*Pulsatrix perspicillata*) is the largest Neotropical owl in both weight (571-980 gr) and size (41 to 48cm) (Stiles and Skutch 1995, König and Weick 2008).

Its range extends from southern Mexico through Central America and parts of South America including Colombia, Ecuador, Venezuela, the Guianas, eastern Peru, the Brazilian Amazon, and Argentina (König and Weick, 2008). It is a relatively common species, though one that is rarely observed. It roosts in branches from between 2 m high to those within the rainforest canopy (Hilty and Brown, 1986).

This owl eats a wide variety of prey including insects, small crustaceans, reptiles, birds and mammals; and depending on an individual's size it may

feed on larger prey such as opossum (*Didelphis* sp) and sloths (*Bradypus variegatus*) (Mikkola, 1992; Gómez De Silva, 1997; Bryson et al., 2009).



Spectacled Owl (*Pulsatrix perspicillata*) documented in dry secondary forest fragments in Río Cauca, Neira, Caldas © José Alfredo Bañol, 20 November, 2011.

The Spectacled Owl is generally considered a species of contiguous lowland moist forest and foothills, though it utilizes different habitats throughout its distribution. In Mexico it inhabits riparian areas, extensive fragments of tropical evergreen forest associated with open areas, and forest edges (Enríquez *et al.*, 1993; Rivera *et al.*, 2012); in Costa Rica it is also uses open areas near forests where it roosts, hunts, and nests

(Enríquez y Rangel, 1997); in Ecuador it can be found in patches of giant bamboo and bamboo cane (Freile *et al.*, 2011), while in Peru it more often utilizes primary forest with extensive areas

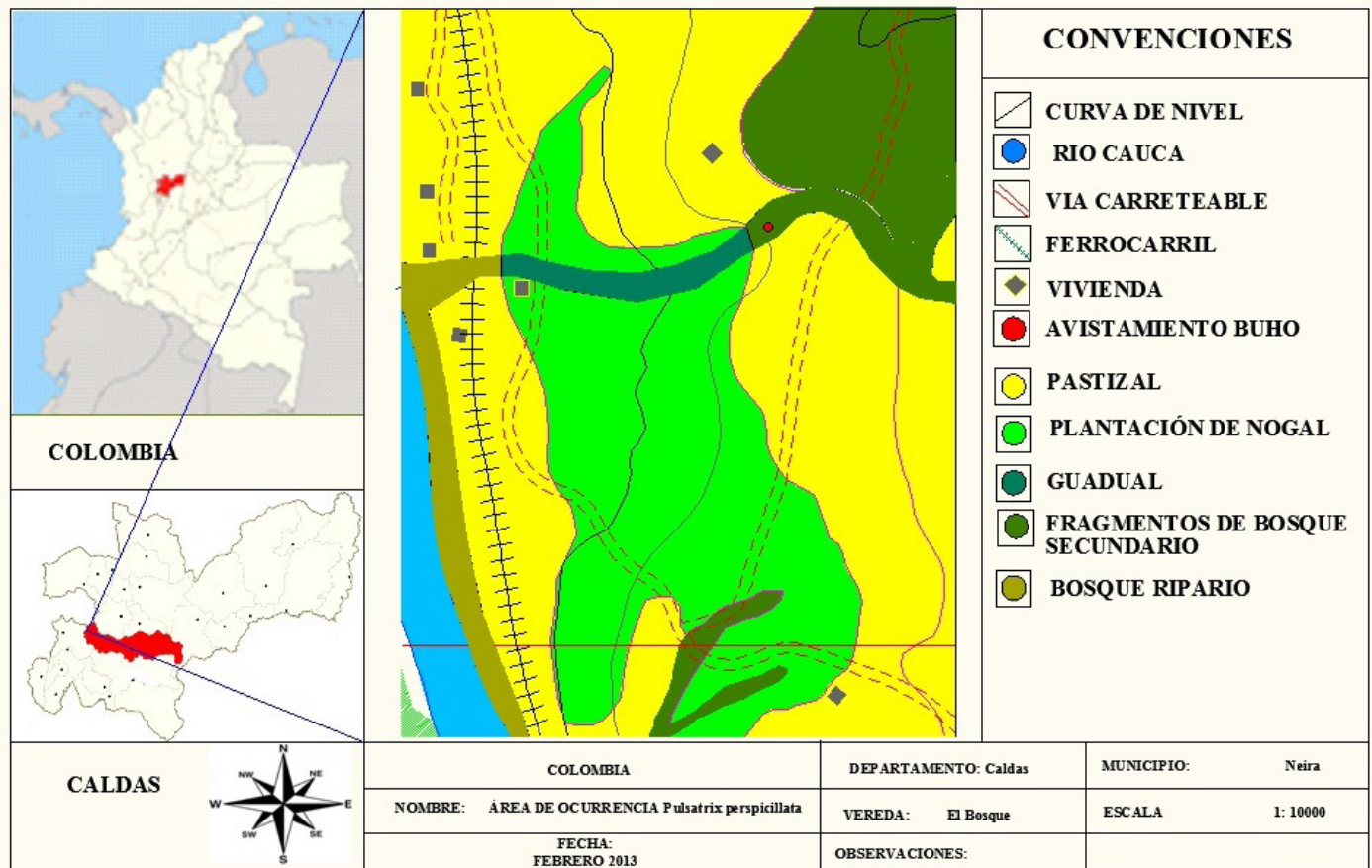


Fig. 1 Location of Hacienda El Bosque, Neira, Department of Caldas, Colombia

of bamboo (*Guadua weberbaueri*) (Lloyd, 2003). Though the size requirements for its breeding habitat is unknown (Hume, 1991), forested areas are critical for nesting and roosting (Stiles and Skutch, 1989).

In Colombia the Spectacled Owl is found in low-land areas of the Pacific region, the Caribbean, parts of the Valle del Cauca, high and middle valleys of Rio Magdalena, in the Orinoquia and toward the Amazonian region, although in the latter two locations few records exist (Hilty and Brown, 1986). In the Department of Caldas, it has been reported up to 1300 masl.

In this article, we present a description of Spectacled Owl habitat in fragmented dry forest in the foothills of the Cauca River Valley (Valle del Cauca), an ecosystem not previously considered for this species in the Central Range of Colombia. This constitutes the first record for the species in the municipality of Neira, Department of Caldas, Colombia.

Methods

The study site was located at the Hacienda El Bosque, located in El Bosque (05 ° 12'norte, 75 ° 41'occidente), on the western slope of the Cordillera Central, Municipality of Neira, Caldas De-

partment, Colombia. The area lies between 800 and 950 meters, has an average temperature of 28 ° C and is classified as tropical dry forest (Holdridge, 1967). The area is a mosaic dominated by grasses, including *Cynodon nlemfuensis* and *Axonopus scoparius*, destined for livestock consumption (52.5%), small crops of corn primarily on the Cauca River alluvial terrace, and some remaining natural areas (Ideam, 2010). The riparian forest (4%) is composed mainly of *Gynerium sagittatum* and other native plant species such as *Psidium guajavas*, forming small remnants of what was once dry forest on the banks of the Cauca River and the El Caño, El Bosque and La Julia streams. There are also two remaining forest plantations dominated by *Cordia alliodora* and *Cedrela odorata* (25.10%) for agro-industrial purposes. In addition, other plants such as *Guadua angustifolia* (2.5%), and three secondary forest remnants in regeneration (12.27%), which have similarly floristic composition, are present in the area. This whole area covers 90 acres.

We tracked a pair of Spectacled Owls during the dry season between November and December 2011. On four different occasions, between 1630 and 1730, we observed the pair roosting in *Cordia alliodora*, in a secondary forest fragment (1.5%) located in steep terrain in the foothills near the banks of the Cauca River. The pair's roosting site is located next to a waterfall about 50 m high. Here, the forest has been altered with little

new growth occurring. The area is dominated by shrubs and trees such as *Anibia barteri*, *Mucana musticiana*, *Carludo bicapalmata*, *Ipomea sp*, *Piper anduncum*, *Urtica dioica*, *Miconia resima*, *Secropia peltata*, *Coffea sp.*, *Inga spectabilis*, *C. alliodora*, *Ficus elástica* and *C. odorata*.

On all four occasions when we observed the pair of *P. perspicillata*, both individuals adopted evasive "fleeing" behavior when they became aware of our presence. They both flew toward a forest plantation of *C. alliodora* and *C. odorata*, located about 156 m to the south. Once there, we were unable to locate them again.

Discussion

In Colombia the dry tropical forest habitat of the Spectacled Owl is considered one of the three most degraded, fragmented and least known ecosystems (IAvH, 1998). And though it seems that this species tolerates a certain amount of habitat alteration (Freile *et al.*, 2011) the Valle del Rio Cauca and its associated dry tropical forests already were critically affected in 1957, when the introduction of sugar cane farming became one of the principle causes of forest degradation (Cvc, 1994) in the area. Additionally, much of the remnants of the dry tropical forest that still exist in Valle de Cauca are privately owned (Cvc, 1996) making it impossible, in many cases, for conservation actions to take place in these zones.

Conclusion

The Spectacled Owl is widely distributed throughout the Neotropics (Enríquez et al., 2006). It eats a varied diet, and occupies the top level of the food chain. It is important for biologists to understand the importance of this species in the management of ecosystems in those areas where it has been documented, given that the main threat facing the Spectacled Owl is the deforestation of its natural habitat (König and Weick, 2008). Detailed studies of its populations are required to understand habitat features and how these vary among different habitats and regions (Freile et al., 2011 Chaparro et al. 2013).

In addition, given its charismatic appearance, the Spectacled Owl should be promoted as a flagship species (Enriquez & Rangel, 2004) for conservation programs that could increase public awareness of this species and its benefits to the ecosystem, to humans as well as to other species of owls. We hope that the information presented here can contribute to the development of guidelines for the management and conservation of threatened ecosystems, such as the tropical dry forest in Colombia.

Acknowledgements

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References

- Botero, J.E. 2010a. El Búho de Anteojos esta en Manizales. Merganetta. Boletín Informativo de La Sociedad Caldense de Ornitología (SCO). No: 032.
- Botero, J. E. 2010b. El Búho de Anteojos esta en Manizales. Merganetta. Boletín Informativo de La Sociedad Caldense de Ornitología (SCO). No: 031.
- Bryson V.J., K. Roland., M.D. Lowman., y M. Wikelski. 2009. Evidence for Three-Toed Sloth (*Bradypus variegatus*) predation by Spectacled Owl (*Pulsatrix perspicillata*). Edentata Journal 8-10:15-20.
- Chaparro-h.S., S.C. Cordoba., J.P. Lopez., J.S. Restrepo. y O.H., Cortes. (in press) 2013. Búhos de Colombia. (en) Enríquez, P.L. (ed.) Búhos Neotropicales: Diversidad y Conservación.
- Corpocaldas y Asociación Calidris., 2010. Estado de conocimiento de las aves en el departamento de Caldas. Prioridades de conservación y vacíos de información. Corporación Autónoma regional de Caldas, Manizales. 105 pp.
- Cvc., 1994.- Informe 90-7. Comparación de la cobertura de bosques y humedales entre 1957 y 1986 con delimitación de las comunidades naturales críticas del valle geográfico del Río Cauca. Cali. Documento interno.

- Cvc., 1996. La conservación del Bosque seco Tropical, un reto para la humanidad. Centro de datos para la conservación. Documento interno.
- Enriquez, P. L., J.L. Rangel., y D. W. Holt. 1993. Presence and distribution of mexican owls: a review. *Journal Raptors Res.* 27(3) 154-160.
- Enriquez, P. L., y J.L. Rangel. 1997. Intra and interspecific calling in a tropical owl community. Pp 525-532. In J. R. Duncan, D. H. Johnson and T. H. Nicholls (Eds.). *Biology and Conservation of Owls of the Northern Hemisphere*. 2nd. International Symposium. Winnipeg, MB. Gen. Tech. Rep. NC-190. St. Paul, MN: US Department of Agriculture, Forest Service, North Central Research Station. 635p. USDA Forestry Service General Technical Report NC-GTR-190
- Enriquez, P.L., y J.L. Rangel. 2004. Conocimiento popular sobre los búhos en los alrededores de un bosque húmedo tropical protegido en Costa Rica. *Etnobiología* 4: 41-53
- Enríquez, P.L., D.H. Johnson., y J.L. Rangel. 2006. Taxonomy, distribution and conservation of owls in the neotropics: a review: 254-307 (en) Rodríguez, E. R. (ed.) *Current Raptor Studies in México*. Centro de Investigaciones Biológicas del Noroeste and CONABIO. México, D.F.
- Freile, J.F., D.F. Castro., y S., Varela. 2011. Estado de conocimiento, distribución y conservación de aves rapaces nocturnas en Ecuador. *Ornitología Neotropical* 23(suppl): 241-250.
- Gómez de Silva, G., 1997. Diet of the spectacled owl (*Pulsatrix perspicillata*) during the rainy season in northern Oaxaca, México. *Journal of Raptor Research* 31(4): 385-387.
- Hilty, S.L., y W. L., Brown., 1986. *A guide to the Birds of Colombia*. Princeton University Press, New Jersey.
- Holdrige, L.R., 1967. Life zone ecology. Tropical Science Center. San José de Costa Rica. 206 p.
- Hume, R., 1991. *Owls of the world*. Running Press. Philadelphia, PA U.S.A.
- Instituto Alexander Von Humboldt., 1998. El Bosque Seco Tropical (Bs-T). Programa de Inventario de la Biodiversidad. Grupo de Exploraciones y Monitoreo Ambiental GEMA.
- Ideam, 2010. *Leyenda Nacional de Coberturas de la Tierra*. Metodología Corine Land Cover adaptada para Colombia Escala 1:100.000. Instituto de Hidrología, Meteorología y Estudios Ambientales. Bogotá, D. C.
- König C., y F. WEICK. 2008. *Owls of the world*, second edition. Christopher Helm, Londres, Reino Unido.
- Lloyd, H. 2003. Population densities of some nocturnal raptor species (Strigidae) in Southeastern Peru. *Journal of Field Ornithology* 74(4): 376-380.

- Mikkola, H., 1992. Wood Owls: 108-140 (en) Burton, J. A. (ed.) *Owls of the World*. Peter Lowe. Eurobook, Italy.
- Rivera, R.E., P.L., Enriquez., A. Flamenco., y J.L., Rangel. 2012. Ocupación y abundancia de aves rapaces nocturnas (Strigidae) en la Reserva de la Biosfera Selva El Ocote, Chiapas, México. *Revista Mexicana de Biodiversidad* 83: 742-752
- Stiles, F.G. y A. F. Skutch. 1989. *A guide to the birds of Costa Rica*. Cornell University Press, Ithaca, NY. U.S.A.
- Stiles, F.G. y A. F. Skutch. 1995. *Guía de Aves de Costa Rica*. Traducción al Español: Loretta Roselli. Ilustrado por Dana Gardner. Instituto Nacional de Biodiversidad (INBio). Heredia, Costa Rica.
- Verhelst, J.C., J. C., Rodríguez, O., Orrego., J. E. Botero., J.A. López., M. V. Franco., y A. M., Pfeifer. 2001. Aves del Municipio de Manizales- Caldas, Colombia. *Biota Colombiana* 2(3): 265-284.

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NEW RECORDS OF BAT FALCONS (*FALCO RUFIGULARIS*) IN NORTHWESTERN PERU

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The Bat Falcon (*Falco ruficularis*) is a Neotropical raptor. It is found from northern Mexico south through the lowlands of Central and South America. Its distribution extends from west of the Andes as far south as Peru and east of the Andes through Amazonia to northern Argentina (Misiones) and southern Brazil. It inhabits forests, forest edges, open habitats, palm savannas, agricultural fields, along rivers and streams and even in urbanized areas (Global Raptor Information Network 2013).

Falco ruficularis in Caracucho, Morropón, Piura, March 2010, feeding on an insect © Jorge Novoa



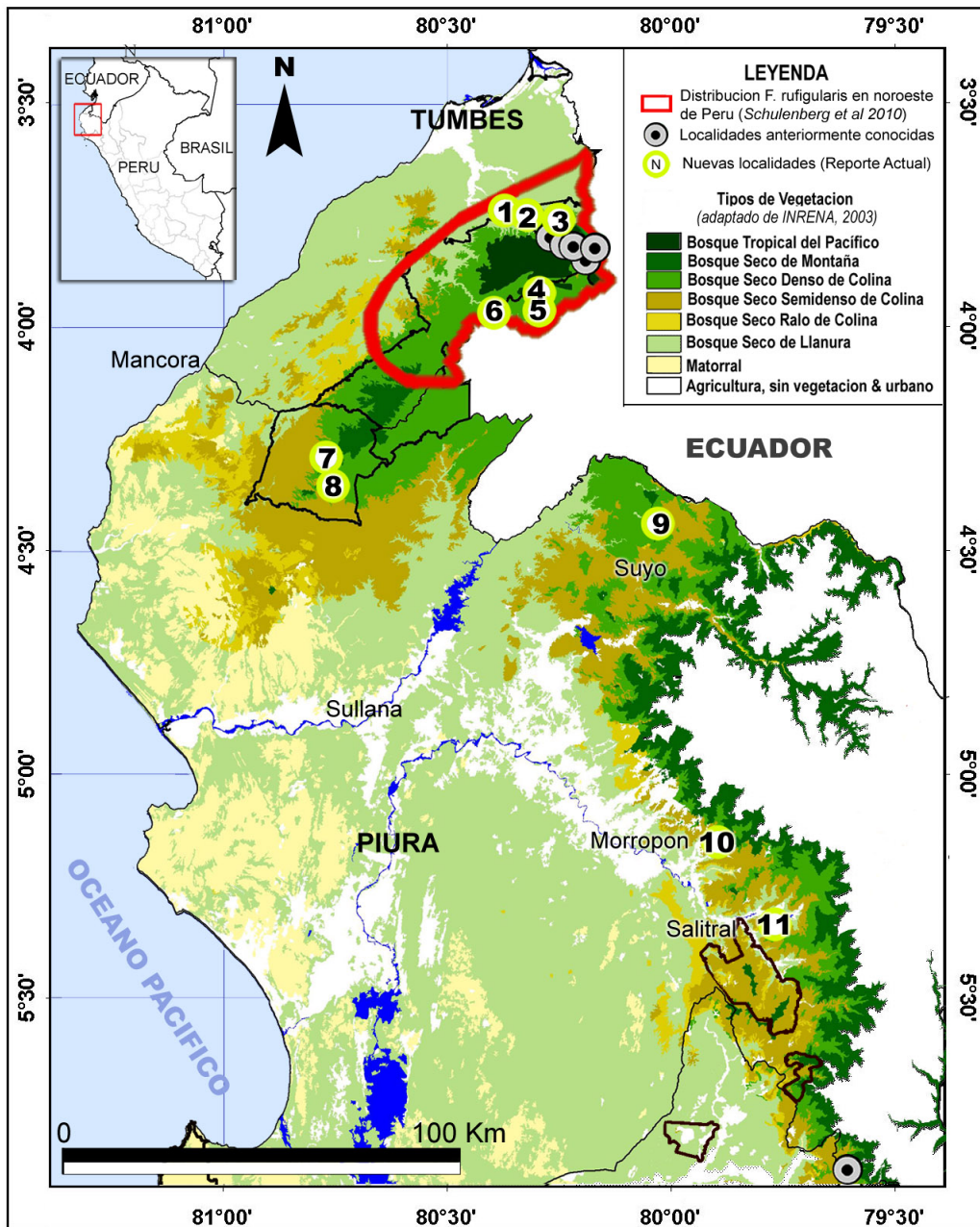


Figure 1. Map of the distribution and new sightings of *Falco rufigularis* in northwestern Peru.

There are three subspecies of Bat Falcon: *F. r. petoensis*, which is distributed from northern Mexico south along both sides of Central America to Peru and the western slope of the Andes, through Colombia and Ecuador; *F. r. rufigularis*, located at the base of the eastern Andes from the Guianas, through Colombia, southeastern

Ecuador, the eastern Peruvian Andes, northern Bolivia, southern Brazil and northern Argentina; and *F. r. ophryophanes*, distributed from central Brazil and adjacent Bolivia, Paraguay and northern Argentina (Global Raptor Information Network 2013). The species is considered of Least Concern (BirdLife International 2013).



Falco ruficularis in Caracucho, Morropón, Piura, March 2010, spreading its wings © Segundo Crespo

In Peru, the species is fairly common and is widely distributed in the Amazon up to 1500 masl. However, it is rare and local in the northwest (Schulenberg et al. 2010). On the western slope of the Andes in northwestern Peru, the first published record occurred on 18 May 1978 in Rio Tocto (200 m) in the department of Lambayeque (Schulenberg & Parker 1981) (circle further south in Figure 1). Furthermore, the species has been reported in the towns of Quebrada Faical / El Caucho (450 m), Pozo del Pato (840 m), El Cruce (950 m), Camp Verde (772 m) and Cotrina (800 m) in the Cerros de Amotape National Park and in the northeast of Tumbes National Reserve in

the department of Tumbes (Parker et al. 1995, Whiffin & Sadgrove 2001, Walker 2002, Piana 2011) (Figura 1).

Study Area

The study area is located in the dry forests of the departments of Tumbes and Piura (INRENA 2003a, 2003b) in northwestern Peru. To obtain the distribution of this species in northwestern Peru, we compiled observations made by the authors and other researchers between November 2006 and December 2011, detailing for each case, the geographic location and site description obtained *in situ*.

Results

We describe eleven new areas for the species in northwestern Peru. Of these, six are in the department of Tumbes and five in the department of Piura (Figure 1). The records of the species were of solitary individuals or pairs, who were spotted perched or flying. We also report a juvenile who was being fed by a parent. The locations are listed from north to south.

Departament of Tumbes

1) Quebrada Angostura, Parque Nacional Cerros de Amotape (03°47'8"S / 80°18'30"O; 208m): SC observed an individual on 5 July 5 2010 at 1000 perched in a Ceiba tree (*Ceiba trichistandra*) (Malvaceae) on the Quebrada Angostura road leading to El Caucho.

2) Mirador de Angostura, Área de Conservación Regional Angostura–Faical (03°45'25"S / 80°21'13"O; 340 m): on 15 and 16 May 2009 FAP and SC observed an individual perched on the top of a branch of *C. trichistandra*, on a hillside facing the Angostura creek. This individual was photographed by FAP.

3) El Pitón, Área de Conservación Regional Angostura–Faical (03°45'32"S / 80°15'42"O; 360m): On 18 May 2009 SC observed an individual perched on *C. trichistandra* at about 12 m above the ground, on the access road that leads to the Angostura look out.

4) Agua Nueva de Pachacas, Reserva Nacional

de Tumbes(03°55'51"S / 80°16'45"O; 670m): On 19 junio 2008 SC and AM observed an adult falcon perched high in a *Cavallinesia platanifolia* (Bombacaceae). This area has dense vegetation (characteristic of tropical forest of the Pacific) and is the most humid area of the south side of the Tumbes National Reserve.

5) Cebollas, Reserva Nacional de Tumbes (03°57'55"S / 80°19'22"O; 355m): On 22 May 2008, AM and SC observed an individual flying over cattle pastures on the access road to the Jurupe Creek towards Cebollas.

6) Quebrada Don Pablo, Reserva Nacional de Tumbes (03°58'56"S 80°23'35"O / 138 m): On 29 June 2010 at 1600 SC observed an individual perched in a *Cochlospermum vitifolium* (Bixaceae) at about 12m high.

Departament of Piura

7) Los Antiguos, Coto de Caza El Angolo (4°18'S / 80°42'O, 900 m): Diego Garcia observed this species on two occasions. On 25 november 2006 at 1430 on the slope of a hill and on 1 June 2007 along the access road to Los Antiguos. The two records were of solitary individuals perched on an exposed branch. The dry forest in the area is dominated by *C. trichistandra*, although it has a lot of pressure from cattle grazing.

8) Sauce Grande, Coto de Caza El Angolo (4°21'54"S / 80°44'26.60"O, 670 m): FAP and

AM saw this species regularly in November and December 2011, perched mainly in *C. trichistandra*. It was photographed and its call recorded on 10 December 2011.

9) Cerro Poto, Suyo (4°32'24.37"S / 79°59'9.31"O; 500 m): On 28 February 2010 at 1600, SC and JN observed an individual perched on a dry trunk about 4m from the ground, close to corn fields growing among natural vegetation near a stream, dominated by *C. trichistandra* and *Eriotheca ruizii* (Malvaceae). This site is under pressure from livestock, crop fields and illegal mining.

10) Quebrada Caracucho, Morropón (5° 7'6.10"S 79°55'30.28"O; 560 m): On 25 March 2010, SC and JN observed two individuals at 1017 perched in *E. ruizii*. One individual was perched on the highest branch, at a height of about 10m above the ground, and the other in a branch about 8m high. They were observed on two occasions eating large insects (approximately 5cm in length) that were captured in flight. The individuals always returned to the same perch to feed. These individuals were observed for 24 minutes, photographed and one was filmed while it was feeding. In the area, the dry forest is dominated by *C. trichistandra* and *E. ruizii* and is under pressure from cattle and goat grazing.

11) Quebrada La Peña, San Juan de Bigote (05°21'10"S 79°43'14"O; 266–500 msnm): This

stream is located in the Dotor Forest which is dominated by trees of *C. trichistandra*, *E. ruizii*, *C. vitifolium* and *Geoffroea striata* (Fabaceae). On 27 and 28 June 2007, SC and A. Juarez saw an adult perched on an *E. ruizii*. The individual was observed at the same tree on two successive days. On 23 June 2008 at 17:30 FAP observed and photographed a pair of *F. ruficularis* in dense dry forest. The male was very active, vocalizing and making short flights around the female, which was perched on a *C. trichistandra*. On 10 March 2010 at 0908 SC and JN observed and photographed an individual perched in a *C. trichistandra* at the junction of the La Peña stream and Jaguey Largo. On the same day at 1424, around 500 m from the previous sighting, we observed, photographed and filmed a juvenile food begging and being fed by a parent, at about 12 m. from the ground in a *C. trichistandra* (<https://www.youtube.com/watch?v=KreJb0k0Qyw>). This site is under pressure from cattle grazing.

Discussion

Locations 1-6 are found within the distribution range described by Schulenberg *et al.* (2010). The remaining locations represent the first records for the department of Piura in northwestern Peru. This work confirms the presence of this species in the western slope of the Andes in the department of Piura with three records (9-11) and updates the general distribution of this species in



Two Bat Falcons in Sauce Grande, Coto de Caza El Angolo, Piura, December 2011 © Alexander More

the northwest region of Peru.

The records presented here were documented between 130 and 950masl. This is below the known maximum altitude (1500masl) reported for Peru (Schulenberg *et al.* 2010). However, this refers to the Amazon. On the western slope of the Andes of Peru, the altitudinal range for this species is between 100 and 950 masl approximately.

With respect to the subspecies of *F. rufigularis* present in northwestern Peru, based on its distribution we assume it is *petoensis* (Global Raptor Information Network 2013). However, in Peru only the subspecies *rufigularis* has been reported (Plenge 2013), distributed on the eastern slope of the Andes.

Of the eleven locations mentioned, 10 are located in dense dry forest hills. This forest is dominated

by *C. trischistandra*, *Terminalia valverdae* (Combretaceae), *E. ruizii*, *C. vitifolium*, with a dense and semi-dense understory (INRENA 2003a, 2003b); This deciduous forest usually grows to heights of 20m with a canopy covered with epiphytes. Location 4 (Agua Nueva de Pachacas) and the locations previously reported (Parker et al. 1995, Whiffin & Sadgrove 2001, Walker 2002) correspond to Pacific tropical forest (INRENA 2003a), characterized by evergreen dense forests that are much more humid and have trees that grow above 20m, dominated by such species as *C. platanifolia*, *Triplaris cumingiana* (Polygoniaceae), *Myroxylon peruvianum* (Fabaceae), *Gallesia integrifolia* (Phytolaccaceae), and *Cedrela* sp. (Meliaceae), among others.

Identified threats to this falcon in different localities include habitat destruction for conversion to crops, livestock grazing and selective logging of forest species. Additionally, in the IBA (Important Bird Area), Suyo - La Tina, (locality 9), the practice of mining for gold is destroying the forest and affecting habitat continuity. This activity has grown significantly in the past five years and to date there have been no conservation actions in this area.

In terms of conservation, in northwestern Peru this falcon can be found in four protected natural areas, located along the Amotapes Range: Cerros de Amotape National Park (Location 1 in this report and 5 previously reported locations, see introductory paragraph), Tumbes National Re-

serve (locates 4-6 in this report), Coto de Caza El Angolo (locations 7 and 8 of this report), and the Angostura-Faical Regional Conservation Area (locations 2 and 3 of this report). This contiguous block of protected areas (around 235,827 hectares) constitutes one of the main refuges for this species and for the raptors found in the northwestern part of the country in general, including endangered and endemic species.

This report updates the distribution of *F. rufigularis* in northwestern Peru, based on eleven sightings made between November 2006 and December 2011. This species was found in four protected areas in the region and its distribution is continuous both in the Amotapes Range as well as the principal range of the Andes. The main habitat of the species is the dense dry forest hills, which are being threatened by conversion to agricultural fields, livestock overgrazing, selective logging and artisanal gold mining. It is necessary to consolidate the actions that lead to the conservation of protected areas where the species is present, and develop research to increase knowledge of the species in northwestern Peru.

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of three endangered species in northern Peru. Thanks to the Headquarters of Protected Areas in Tumbes and Piura (SERNANP) for the facilities for field visits to areas under its administration. Thanks to Renzo Piana, Manuel Plenge and Marta Curti for reviewing the manuscript and their comments, and thanks to Diego Garcia for providing registration information and to Alex Juarez for guiding us in Dotor Forest.

References

- BirdLife International. 2013. Species factsheet: *Falco rufigularis*. <http://www.birdlife.org> (Acceso el 15 de marzo del 2013).
- Global Raptor Information Network. 2013. Species account: Bat Falcon *Falco rufigularis*. <http://www.globalraptors.org> (Acceso el 21 de abril del 2013).
- Instituto Nacional de Recursos Naturales (INRENA). 2003a. Mapa de los bosques secos del departamento de Tumbes. Lima: Ministerio de Agricultura & INRENA.
- Instituto Nacional de Recursos Naturales (INRENA). 2003b. Mapa de los bosques secos del departamento de Piura. Lima: Ministerio de Agricultura & INRENA.
- Parker, T. A., T. S. Schulenberg, M. Kessler, & W. H. Wust. 1995. Natural history and conservation of the endemic avifauna in north-west Peru. *Bird Conservation International* 5: 201–231.
- Piana, R. P. 2011. Las rapaces diurnas del Parque Nacional Cerros de Amotape y la Reserva Nacional de Tumbes. *Boletín Informativo de la Unión de Ornitólogos del Perú (UNOP)*, 6 (1): 4-8.
- Plenge, M. A. Versión [26 Marzo 2013] Especies y subespecies de las aves del Perú. Lima, Perú. Disponible en: <https://sites.google.com/site/boletinunop/subespecies>
- Schulenberg, T. S. & T. A. Parker III. 1981. Status and distribution of some northwest Peruvian birds. *Condor* 83:209-216.
- Schulenberg, T. S., D. F. Stotz, D. F. Lane, J. P. O'Neill, y T. A. Parker III. 2010. Aves de Perú. Lima: Centro de Ornitología y Biodiversidad.
- Walker, B. 2002. Observations from the Tumbes Reserved Zone, dpto. Tumbes, with notes on some new taxa for Peru and a checklist of the area. *Cotinga* 18: 37–43.
- Whiffin, M. & L. Sadgrove. 2001. Tumbes 2000 Project. The threatened birds of Cerros de Amotape National Park and Tumbes Reserved Zone, northwestern Perú. Final rep. Sullana: ProAves Perú.
- Wiedenfeld, D. A., T. S. Schulenberg, & M. B. Robbins. 1985. Birds of a tropical deciduous forest in extreme northwestern Peru. En: Buckley, P. A., Foster, M. S., Morton, E. S., Ridgely, R. S. & Buckley, F. G. (eds.) *Neotropical ornithology. Ornithological Monographs* 36: 305-315

THE FIRST HAWK MIGRATION FULL-SEASON COUNT IN EL SALVADOR

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Hawk migration, one of the most spectacular movements in nature, can be used to monitor populations of these often difficult-to-study species (Bildstein 2004, Hoffman & Smith 2003, Zalles & Bildstein 2000). Raptor monitoring efforts in Mexico, Guatemala, Costa Rica, and Panama have provided significant information about the magnitude and timing of raptor migration along the Mesoamerican land corridor (Bildstein 2004, Bildstein y Zalles 2001). In addition such initiatives have developed an opportunity to educate the public on hawk migration in Mesoamerica (Bildstein 2004, Bildstein y Zalles 2001, Zalles & Bildstein 2000). That said, there remains a need for similar counts in other parts of the corridor including El Salvador and neighboring countries (Bildstein 2004, Bildstein & Zalles 2001).

Records of hawk migration in El Salvador are limited (Bildstein 2004). Dickey & Van Rossem (1938) observed thousands of Swainson's Hawks (*Buteo swainsoni*) and Turkey Vultures (*Cathartes aura*) during the fall and spring migration in the early 1900s. Since then bird watchers and biolo-



Buteo albonotatus in migration © Suchitoto Hawk Watch

gists have recorded migratory raptors country-wide (Thurber et ál. 1987, Komar et ál. unpublished data). However, there is no general feeling regarding the geography of migration within the country.

Here we describe the results of a full season count conducted in autumn 2005 at the Suchitoto hawk watch site, where migrating raptors had been seen passing in previous years. Our hawk-watch represents the first full-season count in El Salvador, as well as the first attempt to use the phenomenon of migration to introduce raptors to locals and tourists.

Study Area

The hawk watch site was established in Suchitoto, a small town in the north-central valley of El Salvador, at 13° 56' N and 89° 01' W and 400 meters asl. The area includes mountains and low hills, valleys and wetlands. A diverse agricultural matrix includes sugar cane plantations and different small-grain fields, small coffee plantations, fruit farms and pastoral fields (MARN 2006, PNOT 2004).

The climate is represented by a tropical dry season from November- March, and a rainy season from May-September. In general, El Salvador is exposed to north-east winds generated in the northern hemisphere, and is warmed by the Gulf of Mexico during October and November (SNET 2007).

Methods

In August 2005 we held a training workshop for biology students that introduced them to raptor identification and hawk migration count protocols. At the same time, we gave presentations to local adults and school children to inform them

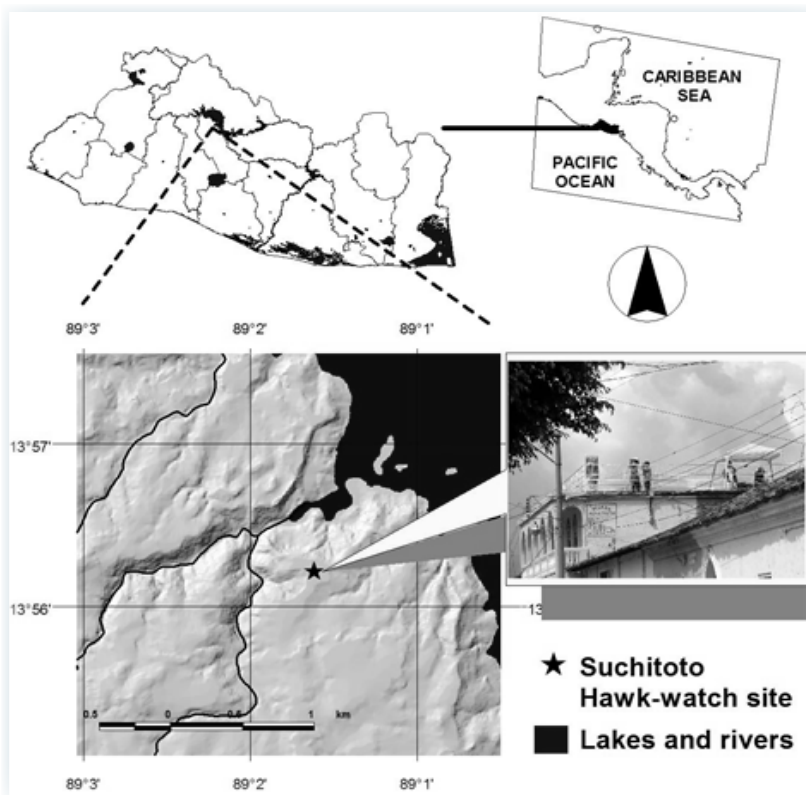
about the hawk migration season as well as to invite them to visit the watch site.

The site was located on the roof of the Hotel Posada Alta Vista (13° 56' 14.7" N and 89° 01' 33.3" W), at 410 meters asl. Full-day counts were made from September to November, coinciding with the bulk of raptor migration through

the region. The site coordinator and two official observers, assisted by one or more volunteers, conducted the counts. They remained at the site for 70 days, and completed a total of 1,561 hours of observation.

Daily counts typically began at 0800 and ended

between 1500-1800, depending on the occurrence of afternoon rain showers. Participants recorded weather conditions hourly, including maximum visibility, barometric pressure, temperature, cloud condition, and wind speed and direction. We also collected information on the estimated height and direction of each migrating raptor, along with the numbers of individuals of each species ob-



Hawk Watch Site in Suchitoto, El Salvador, Central America



Raptors in migration, photographed in Suchitoto © Suchitoto Hawk Watch

served. Data were recorded on HMANA (Hawk Migration Association of North America) hawk migration count sheets using HMANA protocols (Fuller & Tutus 1996). Observers used 8×40 binoculars to scan the sky for birds and a 40x scope to identify distant birds as necessary.

We also collected more subjective field data including maximum visibility (estimated by measuring distances of mountains from the observatory using topographic maps), cloud cover (defined as

the percent of cloud cover in the sky), and the migration flight altitude (using a set of 5 altitude codes to assist with estimation).

Results

Weather systems and atmospheric factors

Over these three months, the maximum visibility average ranged from 35-78 km, however, during September and October -the end of the rainy season- foggy and hazy conditions were common. The daily temperature average ranged from

30 to 32° C, with warmest periods from 1000 to 1600.

A tropical storm in October forced us to shut down the counts for 3 days. At the beginning of November a cold front brought cooler temperatures. Cloud cover was almost constant in September and decreased through the end of the rainy season in late October. November was mainly clear with little or no clouds and no haze.

Hawk migration magnitude and timing

Counts began on 1 September and ended on 22 November. A total of 327,313 diurnal raptors and new world vultures, representing 21 species, were counted. The greatest number of individuals represented three species: Turkey Vultures (*Cathartes aura*), Broad-winged Hawks (*Buteo platypterus*), and

Swainson's Hawks (*Buteo swainsoni*), which passed through mainly in October and November. The lowest counts were for White-tailed Kites (*Elanus leucurus*), Common Black Hawks (*Buteogallus anthracinus*), Harris' Hawks (*Parabuteo unicinctus*), and Merlins (*Falco columbarius*).

Species richness was lowest in September, when mostly kite species and the first Ospreys (*Pandion haliaetus*) passed over the site, and increased through the end of the month and stabilized in October before decreasing again in November. Peak migration occurred in the third and fourth week of October and the first 10 days of November, when we recorded flocks of thousands of birds passing at a time.

The first 10 days in September were character

Raptors in migration, photographed in Suchitoto © Suchitoto Hawk Watch



Table 1. Raptor species seen during September, October, and November 2005 at Suchitoto watch site, in numbers per hour of observation.

Species Name	Mean	Standard Deviation
<i>Coragyps atratus</i>	5.5	16.9
<i>Cathartes aura</i>	220	856
<i>Pandion haliaetus</i>	0.3	0.8
<i>Circus cyaneus</i>	0.01	0.1
<i>Chondrobierax uncinatus</i>	0.02	0.3
<i>Elanus leucurus</i>	0.003	0.06
<i>Elanoides forficatus</i>	0.01	0.2
<i>Ictinia mississippiensis</i>	1.91	35
<i>Ictinia plumbea</i>	0.03	0.6
<i>Accipiter striatus</i>	0.06	0.3
<i>Accipiter cooperi</i>	0.04	0.3
<i>Buteogallus anthracinus</i>	0.003	0.06
<i>Parabuteo unicinctus</i>	0.002	0.05
<i>Buteo brachyurus</i>	0.05	0.3
<i>Buteo platypterus</i>	20	199
<i>Buteo swainsoni</i>	106	725
<i>Buteo jamaicensis</i>	0.04	0.5
<i>Buteo albonotatus</i>	0.1	1.2
<i>Falco sparverius</i>	0.1	0.7
<i>Falco columbarius</i>	0.01	0.09
<i>Falco peregrinus</i>	0.05	0.3
Unidentified Kite	0.002	0.05
Unidentified Accipiter	0.01	0.1
Unidentified Buteo	0.01	0.2
Unidentified Falco	0.01	0.09
Unidentified Raptor	0.002	0.07

ized by flocks of Mississippi Kites (*Ictinia mississippiensis*), which numerically dominated the migration during this month.

Species richness was highest from 0900 to 1100. In September, the birds flew during the warmest part of the day (1000-1300); whereas in October

and November the flight peaked in early morning and late afternoon.

Birds passed along four main pathways : (1) to the south following the ridge line of the Cerro Guazapa (a mountain located to the southwest from Suchitoto town), (2) within 1 km² around

theg the watch site, (3) along the shore of Suchitlan Lake, and (4) across the northern hills, principally in soaring and gliding flight.

Education potential for the watch site

A total of 104 people visited the observatory including locals, tourists, school children, and biology students. On-site talks were developed with visitors, educating them about the importance of monitoring hawk migration, maintaining natural habitats for these birds' survival, their role in the ecosystem, and the necessity to establish a monitoring site in El Salvador.

Public visitation was highest in October, when the observers invited the public to watch the migration, which also coincided with peak flight

days. At the end of November, the hawk watch crew members gave a talk to local people from Suchitoto to share the hawk count results, as well as to emphasize the importance of continuing to monitor hawk migration at the site.

Discussion

Of the 104 raptor species moving seasonally in the Neotropics, at least 40 have been sighted in Mexico and Central America (Bildstein 2004, Bildstein & Zalles 2001, Zalles & Bildstein 2000). About 5 million raptors representing 32 species use the Mesoamerican land corridor during fall migration (Bildstein 2004, Bildstein & Zalles 2001, Ruelas et ál. 2000).

Data gathered at Suchitoto largely confirm these

Local students watching the raptor migration in Suchitoto © Suchitoto Hawk Watch



observations. There are notable exceptions however. The Black Vulture (*Coragyps atratus*) has been considered a resident species (MARN 2005). This species' migratory movements have been recorded in different locations countrywide, but no clear numbers are reported. During our count Black Vultures were seen flocking and moving through with Turkey Vultures. In the 2007 checklist of the birds of El Salvador (Komar *et al.* unpublished data), the Black vulture is considered a partial migratory species.

The Harris's Hawk is considered a resident species in El Salvador (Komar *et al.* unpublished data). Despite this, a few individuals were seen migrating at the site in 2005. Probably, this species migrates in the country, but additional observations are needed. The same is true for White-tailed Kite and Common Black Hawk, both of which were seen migrating at the site in 2005.

Other sightings include the first migratory flocks of Mississippi and Plumbeous Kites (*Ictinia plumbea*), which passed through mostly during September. The observation of Plumbeous Kite (an intratropical migrant species according to Bildstein 2004) in early September was surprising as the species migrates toward South America in early August in Mexico (Ruelas et al. 2000). Cooper's Hawks (*Accipiter cooperi*) and Merlins are considered visiting migrants. At Suchitoto, both species were seen in low numbers, mainly in October.

Conclusions

The peak of fall migration at the site in 2005 occurred between 11 and 25 October, and was prolonged irregularly until 8 November, mostly due to weather. Our count provides a suggestion as to the magnitude of the flight over El Salvador, but information from other locations in the country is needed to know more about the migration in the country and along the Pacific flyway.

The full season count offered an opportunity to educate the public and to share our experiences with them. It is important to continue leading these initiatives to promote the importance of conserving raptors and their habitats. Doubtlessly, more information is needed to provide a better estimate of the magnitude of hawk migration over El Salvador, as well as to know the importance of the country's topography for these species. Future efforts are needed to improve the value of information we collected in 2005.

Acknowledgements

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References

- Bildstein, KL. 2004. Raptor migration in the neotropics: patterns, processes, and consequences. *Ornitología Tropical* 15: 83-99.
- Bildstein, KL; Zalles, JI. 2001. Raptor migration along the Mesoamerican land corridor. In *Hawk-watching in the Americas*. Pennsylvania, USA. p. 119-141.
- Dickey, DR; Van Rossem, AJ. 1938. *The Birds of El Salvador*. Field Museum of Natural History. Chicago, USA. p. 95-140.
- Fuller, MR; Titus, K. 1996. Sources of migrant hawk counts for monitoring raptor populations. *Avian population trends*. p. 41-45.
- Komar, O; Herrera, N; Girón L; Ibarra-Portillo, R. 2007. The 2007 list of birds of El Salvador, with an assessment of national conservation status. *Avian Conservation and Ecology*. In press.
- MARN (Ministerio de Medio Ambiente y Recursos Naturales). 2006. Mapa de uso del suelo de El Salvador: versión shape para ARCVIEW. San Salvador, El Salvador.
- MARN. 2005. Lista de aves de El Salvador: versión actualizada. 18 p. Consulted 4 March 2006. Disponible en: http://www.marn.gob.sv/areas_de_conservacion.htm
- PNOT (Plan Nacional de Ordenamiento Territorial). 2004. Catalogo de espacios naturales (en línea). Consulted October 1st 2006. Available at: <http://www.marn.gob.sv>
- Ruelas I, E; Hoffman, SW; Goodrich, LJ; Tingay, R. 2000. In *Raptor at Risk*. Chancellor, RD; Meyburg, BU (eds). p. 591-596.
- SNET (Servicio Nacional de Estudios Territoriales). 2007. El clima en El Salvador. Consulted September 10th 2006. Available at: <http://www.snet.gob.sv/meteorologia>
- Thoms, A. 1999. Aves de presa del Parque Nacional El Imposible, El Salvador. *SalvaNATURA*. (Unpublished document). 33 p.
- Thurber, W; Serrano, JF; Sermeño, A; Benítez,

- M. 1987. Status of uncommon and previously unreported birds of El Salvador. In Proceedings of the Western Foundation of Vertebrate Zoology Vol. 3(3) 293 p.
- Zalles, JI; Bildstein, KL. (eds). 2000. Raptor match: a global directory of raptor migration sites. Cambridge, UK & Pennsylvania, US. Bird-Life International, Hawk Mountain Sanctuary. 419 p.

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OF INTEREST...

Grants

American Ornithologists Union: Bird Research and Capacity Building (Latin America)

http://rggs.amnh.org/pages/academics_and_research/fellowship_and_grant_opportunities

Small grants, up to \$2,000 US, support ornithological societies and their activities including training of ornithologists, and activities which build strategic alliances in the western hemisphere.

Association of Field Ornithologists - The E. A. Bergstrom Memorial Research Award

<http://www.afonet.org/grants/index.html>

The objective of this prize is to promote the study of birds, helping to support a specific research project.

Association of American Veterinarians

<http://www.aav.org/resources/index.php?content=grants>

Funds are available for research projects which focus on clinical aspects of exotic and wild birds. Diagnostics, practice management and bird conservation. Funds are limited to up to \$10,000.00 US for individual projects.

BBVA Foundation: Research in Conservation Biology (Latin America)

<http://www.fbbva.es/TLFU/tlfu/esp/areas/medio-amb/novedades/index.jsp>

Grants to support biodiversity conservation and research on ecology and conservation.

Conferences

I Worldwide Raptor Conference

<http://www.raptorresearchfoundation.org/conferences/current-conference>

This international conference will take place from 21 to 24 October 2013 in the heart of Nahuel Huapi National Park, Bariloche, Río Negro, Argentina. This conference will be a wonderful opportunity to meet and collaborate with raptor researchers throughout the region.



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