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ATHENE CUNICULARIA IN BOLIVIA

ENVIRONMENTAL EDUCATION IN BELIZE

Asio stygius & other Owls in Colombia

HARPIA HARPYJA IN COSTA RICA



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New Record of Burrowing Owl (Athene cunicularia) in the Bolivian Amazon

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An individual A. cunicularia observed along the edge of the road. Photo © Enrique Richard

he Burrowing Owl (*Athene cunicularia*) is a small owl with a very wide geographic distribution in the Americas. It ranges from Canada to southern Chile and Argentina (Burn 1999), including in human-altered and extremely arid environments such as the Atacama Desert (Carevic

2011, Gomez et al. 2013), among others (Baladrón et al 2016). Although in the Americas the species has been associated with fossorial mammals such as prairie dogs (*Cynomys spp*) in North America and vizcachas (*Lagostomus maximus*) and armadillos (*Chaetophractus villosus*) in South Ame-



Relative location of the first (Miserendino 2007) and second (this note) records of *Athene cunicularia* in the Bolivian Amazon. Note the advance of the agricultural borders (light green) around the roads and records of the species in two large deforested patches of jungle.

rica (Machicote et al 2004, Villareal et al. 2005), it is also associated with areas of anthropogenic activity such as suburban and even urban areas (ER and DCZ pers. obs.), especially those related to the agricultural advance on the Amazon jungle (Gómez et al 2013).

In fact, logging in the Amazon, along with agricultural development, has altered the water cycle and consequently the rains, resulting in a savanization of the Amazon (Oyama and Nobre 2003). This, apparently, has allowed this species to advance into these areas (Gomez et al 2013). The Burrowing Owl, described as a generalist and opportunistic raptor (Carevic 2011, Gomez et al 2013, inter aliis) seems to be expanding its distribution along the agricultural frontier in the

Amazonian area. The first record for this species in the Amazon region of Bolivia occurred in 2007 in the Pando Department, in an area where the forest had been replaced by grasslands for agricultural use. It is important to note that several biodiversity surveys (Mise-rendino 2007) had been carried out in the area over the past two decades without previous records for Burrowing Owl.

On 16 June 2015 in the consolidated access road locally known as "Carretera 19 Extrema" – which runs from the city of Cobija to the Tahuamanu Biological Station, Amazon University of Pando, in the town of Mukden – we were able to photograph two Burrowing Owls at 10:45 a.m. One of them was on a termite mound along the road



Panoramic view of the area where we documented to individual Burrowing Owls. Photo © Enrique Richard

and the other on a log a very short distance from the first one (4-5 m). The observations of these two individuals occurred at an altitude of 120 m, at the coordinates: 19L 0507484, UTM 8769306 (110 7' 58,5962'' S and 680 55' 53,2724'' W) (GPS Garmin Etrex H). This observation is the second record for Burrowing Owls in the Department of Pando, in the Bolivian Amazon.

We met with two local people who indicated that, like the rest of the owl species, Burrowing Owls are heavily persecuted because they are considered to be birds of bad omen. Probably, because this species is relatively new to the region, the two locals we spoke with identified the Burrowing Owl by the name "sumurucucu" a name that in general applies to the native Tropical Screech-owl (*Otus choliba*). The Burrowing Owl is known as "chiñi" elsewhere in Bolivia.

This most recent record, while confirming the presence of the species in the Bolivian Amazon and Pando Department, also supports the hypothesis that the species is expanding in the re-



Above: Individual A. cunicularia on a termite mound. Below: Second individual perched on a log, roughly 5 m from the other. Photos © Enrique Richard

gion due to the transformation of the forest into pastures for agricultural use and the consequent savanization of the Amazon (Miserendino 2007, Gomez et al 2013, inter aliis).

References

Baladrón, A., J. Isacch, M. Cavalli and M. Bó.
2016. Habitat selection by Burrowing Owls *Athene cunicularia* in the Pampas of Argentina: A multiple-scale assessment. Acta Ornithologica 51 (2016) (2): 137 – 150.

Burn, H. 1999. Burrowing Owl/*Athene cunicularia*. Pp. 227–228 in del Hoyo, J., A. Elliott, & J. Sargatal (eds.). Handbook of the birds of the world. Volume 5: Barn owls to hummingbirds. Lynx Edicions, Barcelona, España. Carevic, F. S. 2011. Rol del pequén (*Athene cunicularia*) como controlador biológico mediante el análisis de sus habitos alimentarios en la Provincia de Iquique, norte de Chile. IDESIA (Chile), 29 (1): 15 – 21.

Gomes, F. B., M. H. M. Barreiros and T. B. K. Santana 2013. Novos registros da expansão geográfica de Athene cunicularia na Amazônia central com especial referencia as atividades humanas. Atualidades Ornitológicas 172: 12 – 14.

Machicote, M., L. C. Branch y D. Villareal. 2004. Burrowing owls and burrowing mammals: Are ecosystem engineers interchangeable as facilitators? Oikos 106: 527 - 535.

Miserendino, R. S. 2007. Registro del chiñi (*Athene cunicularia*) para la Amazonía Boliviana. Kempffiana 3 (2): 23 - 24.

Oyama, M. D. C. A. Nobre. 2003. A new climatevegetation equilibrium, state for Tropical South America. Geophysical Research Letters 30 (23): 2199 - 2203.

Villareal, D., M. Machicote, L. Branch, J. J. Martinez and A. Gopar. 2005. Habitat patch size and local distribution of burrowing owls (*Athene cunicularia*) in Argentina. Ornitología Neotropical 16: 529 - 537.

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Our encounter with Stygian Owl (Asio stygius) in the Humedal de la Florida (Bogota, Colombia) and comments on its natural history

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he Stygian Owl (*Asio stygius*) (Wagler 1832) is a large owl, reaching between 38 and 46 cm. It is robust and dark with few spots. Its abdomen is opaque with thick "fishbone" markings. It has conspicuous ears which are very close to the forehead and it has a striking pale frontal patch (ABO 2000, Arizmendi et al. 2010, Chaparro-Herrera et al 2015, Peñuela et al. 2016).

This owl is distributed discontinuously throughout the American continent. It is resident in the Greater Antilles, from Mexico to Nicaragua, and in the Andes from Venezuela to the north of Argentina, mainly between 1700 and 3000 masl (ABO 2000). However, it has been recorded from sea level (Holt et al., 2014). Although the Stygian Owl has a wide distribution, it is a little known species, and Stotz et al. (1996) classifies it as a species of high research priority. It is strictly nocturnal, rare and local in its distribution. It inhabits humid mountain forests, primary and secondary forest, forest edges, open areas, scrubs with tall, dense tree patches in rural areas and some wellwooded urban parks (Hilty & Brown 1986, ABO 2000).

According to the data compiled by Chaparro-Herrera et al. (2015), in Colombia, this owl's known distribution includes the Cordillera de los Andes, Magdalena Valley, Sierra Nevada de Santa Marta and probably the Llanos Orientales. In the Institute of Natural Sciences of the National University there is a specimen from the foothills collected in the municipality of Santa Maria, Boyacá at 800 masl. In Bogota, where we observed the Stygian Owl, the species is common. Here,



Stygian Owl (A. stygius) photographed 7 January 2016 in the Humedal de la Florida. Photo © Diana Balcázar.

we highlight a few of the records: 1. Eastern Hills: e.g. Hills of Monserrate, Reserva del Delirio (Vanegas 2011), Quebrada la Vieja, Parque Ecológico Distrital de Montaña Entre Nubes); 2. Wetlands: e.g. Capellanía, Conejera and Meandro del Say. See Chaparro-Herrera, S. and D. Ochoa (Eds.) (2015) for other records in the wetlands of Bogotá; 3. Urban Parks: e.g. Parque el Virrey (Caicedo Pers. Comm.), Casa Linda el Tunal en Ciudad Bolívar, (Hernández Pers. Comm.) Barrio Castilla (Delgado with pers.), Parque de Villa Carmenza, Modelia Parque (Rodríguez Pers. Obs); and 4. University Areas: e.g. National University of Colombia (GOUN 2012) and National Pedagogical University Valmaría headquarters (UPN-O 2016 in press).

In regards to its diet, Borrero (1967) reported that pigeons of the genus Zenaida, as well as Purple Gallinule (*Porphirio martinicus*), Eastern Meadowlark (*Sturnella magna*) and Vermillion Flycatcher (*Pyrocephalus rubinus*) form part of the prey of this owl. From personal observations and an analysis of stomach contents in specimens collected, this author reports small mammals (e.g. bats of the genus *Artibeus* and rodents) and large beetles as part of the owl's diet.

In Colombia, the Stygian Owl's nest has not yet been described. According to Hilty & Brown (1986), in other countries, it nests on the ground and can take advantage of old nests of other birds located in trees or shrubs. Lopes et al. (2004) describe a nest on the ground whose chicks were probably predated by feral dogs.

On 7 October 2016 we observed a Stygian Owl in the Humedal de la Florida at 09:45 h. (Coordinates: 4 ° 43'50.78" N - 78 ° 8'56.68"W, altitude: 2549 masl) during a bird observation course entitled Knowing the Birds of Bogota (elective course of the Faculty of Science and Technology from the National Pedagogical University), which was led by the UPN-O ornithology group. It was an activity as part of a celebration of International Migratory Bird Day with the aim of recognizing the diversity of birds associated with the wetland ecosystem and identifying the main migratory birds that use the area. In addition, it is a strategy for future graduates of the UPN to integrate these bird watching activities for teaching about and conserving Colombian biodiversity.

The owl was perched on a branch of Humboltd's Willow (*Salix humboldtiana*) next to the main trunk of the tree at a height of seven meters. It was about 15 meters away from the body of water.

It had feathers on its face and ears, which were very visible with binoculars. Its facial disc and frontal patch did not contrast with the rest of the face, that is to say its coloration was uniform in respect to the rest of the face. We also saw some down feathers on the face, so, we inferred that it could be an immature though its age would be very difficult to estimate due to the lack of information about the reproductive biology of this species.

The Humedal de la Florida represents a strategic place for the protection of birds, since it houses important species of high conservation interest, such as the Apolinari Wren (Cistothorus apolinari apolinari), the Bogota Rail (Rallus semiplumbeus), Spot-flanked Gallinule (Porphyriops melanops bogotensis), Ruddy Duck (Oxyura jamaicensis andina), Yellow-hooded Blackbird (Chrysomus icterocephalus bogotensis), and Subtropical Doradito (Pseudocolopteryx acutipennis), as well as migratory species with some degree of threat such as the Cerulean Warbler (Setophaga cerulea) and the Olive-sided Flycatcher (Contopus cooperi). In addition, we have reported Lesser Scaup (Aythya affinis) regularly in groups of 15 individuals in the last three years. This species no longer reaches the Savanna of Bogotá (ABO 2000). These records indicate that

the Florida wetland is a strategic ecosystem for the conservation of birds. It is imperative to especially manage this wetland with the aim of maintaining, recovering and strengthening the quality of this highland wetland ecosystem in the Andes of Colombia to conserve regional biodiversity, because the avifauna of the Altiplano Cundiboyacense is recognized for having endemic species and subspecies, both extinct and threatened (ABO 2000, Rosselli & Stiles 2012, Rosselli et al. 2013).

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References

Arizmendi, M. C., C. Rodríguez-Flores, C. Soberanes-González, & T. S. Schulenberg. 2010. Stygian Owl (*Asio stygius*), Neotropical Birds Online (T. S. Schulenberg, Editor). Ithaca: Cornell Lab of Ornithology; retrieved from Neotropical Birds Online: http://neotropical.birds.cornell. edu/portal/species/overview?p_p_spp=214936

ABO. 2000. Aves de la Sabana de Bogotá: Guía de campo. Asociación Bogotana de Ornitología y Corporación Autónoma Regional. Bogotá D. C., Colombia.

Borrero, J. I. 1967. Notas sobre hábitos alimentarios de *Asio stygius robustus*. Hornero 010 (04): 445-447.

Chaparro-Herrera, S. y D. Ochoa (Eds.). 2015. Aves de los Humedales de Bogotá: Aportes para su Conservación. Asociación Bogotana de Ornitología-ABO-. Bogotá D.C., Colombia.

Chaparro, S., Córdoba, S., López, J., Restrepo, J and Cortés, O. 2015. Los Búhos de Colombia. En: Enríquez, P. Edt. 2015. Los Búhos Neotropicales. Diversidad y Conservación.

GOUN. 2012. Guía de aves del campus de la Universidad Nacional de Colombia. Grupo de Ornitología de la Universidad Nacional-GOUN-Bogotá D.C. Colombia.

Grupo de Ornitología de la Universidad Pedagógica Nacional (UPN-O). 2016. Guía fotográfica de las aves de la Universidad Pedagógica Nacional y experiencias pedagógicas en Ornitología. Universidad Pedagógica Nacional. Bogotá D.C. Colombia.

Hilty, S. L. and W. L. Brown. 1986. A guide to the birds of Colombia. Princeton University Press, Princeton. Holt, D.W., J.L. Yuxó, S. Hiro and O. Méndez. 2014 Nest record of the Stygian Owl (*Asio stygius*) in Guatemala. Spizaetus 17:14 - 17.

Lopes, L.E., Goes, R., Souza, S. and de Melo Ferreira, R. 2004. Observations on a nest of the Stygian Owl (*Asio stygius*) in the central Brazilian Cerrado. Ornit. Neotrop. 15:423 - 427.

Peñuela-Díaz, G., B. Calonge-Camargo, and H. Aristizabal-G. 2016. Aves y mamíferos presentes en el distrito regional de manejo integrado Cuchillas Negra y Guanaque. Ecopetrol. Corporación Autónoma Regional de Chivor. E-qual servicios ambientales.

Rosselli, L., Jaramillo, A., Cabrera, L. and Niño J. 2013. Vivo a pesar de todo: el curso alto del río Bogotá. En: Kattan, G, M. A. Echeverry-Galvis and M. López-Victoria (Eds.). Libro de resúmenes del IV Congreso Colombiano de Ornitología. Sello Editorial Pontificia Universidad Javeriana, Cali. Stotz, D. F., J. W. Fitzpatrick, T. Parker III, and D. K. Moskovits. 1996. Neotropical birds: Ecology and conservation. Univ. of Chicago Press, Chicago, Illinois.

Vanegas, R. 2011. Búho Real en el Delirio. Disponible en: https://www.youtube.com/ watch?v=DupVZxGWPJQ

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IMPORTANT FACTORS TO CONSIDER IN A PROTOCOL FOR EVALUATING HARPY EAGLE HARPIA HARPYJA (ACCIPITRIFORMES: ACCIPITRIDAE) HABITAT IN COSTA RICA

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he Harpy Eagle (*Harpia harpyja*) is a large and strong raptor, adapted to hunting diverse types of prey in tropical forests. This bird is considered an umbrella species, and is found discontinuously throughout the neotropics. In order for this raptor to maintain a sustainable reproductive population, its habitat must meet certain requirements. For example, the Harpy Eagle depends on extensive and healthy humid tropical forests, which are scarce or fragmented in Central America. However its habitat has been explored and its niche has been characterized in various biological and ecological studies in recent years (Hilty and Merenlender, 2000, Lerner et al., 2009).

Despite the information that is known and the projects carried out for the recovery, conservation and reintroduction of the Harpy Eagle, there is no published standard protocol for evaluating its habitat, a tool that is indispensable for those wanting to carry out programs for the protection, conservation or reintroduction of the population throughout its range of distribution. The fo-llowing study is proposed as a general theoretical basis, focused on those factors to be taken into account for the evaluation of Harpy Eagle ha-bitat mainly in Costa Rica, but applicable to other sites. This document does not pretend to be a protocol as such, but rather a contribution of ideas for the eventual development of a standardized tool to evaluate the habitat of *Harpia harpyja* in Costa Rica and to other areas where the existence of the species is known.

Analysis of sites to evaluate

When evaluating bird habitat specifically, Hilty and Merenlender (2000) suggest starting with a baseline study to define the sites where the habitat is to be evaluated. It is important to know, in advance, the macro features of the habitat that are necessary for the success of the study species. In other words, a general analysis of its habitat must first be carried out. In addition, it is important to know the historical distribution of the species in question.

The Harpy Eagle is a large raptor whose habitat is limited to large extensions of humid tropical forest, generally below 800 masl. It is principally found in dense primary forest with large trees with little or no alteration (Lerner et al. 2009). Keeping this in mind, it isn't necessary to consider the entire country of Costa Rica when evaluating Harpy Eagle habitat, since the large majority of the country isn't suitable for the species. To perform a general study of *H. harpyja* habitat, some of the analyses can be applied with remote sensors, such as Geographic Information Systems (GIS), with which information must be generated in the form of maps:

<u>1. Vegetative Cover</u>: The primary forest layers between 0 and 350 masl should be taken into account. Although the Harpy Eagle has historically been reported up to 2000 m above sea level on the Caribbean side of Costa Rica, throughout its distribution it prefers to remain below 1000 m and nest under 350 m as shown in other studies in the southernmost latitudes of the continent (Fowler and Cope 1964, Chebez 1990, Galetti and Carvalho 2000, Muñiz-López 2007, Piana 2007, Vargas-González and Vargas 2011).

<u>2. Vegetative Cover (1) versus Protected Areas:</u> Areas with suitable vegetative cover should also be un-

der some type of protection to avoid anthropogenic disturbances, such as direct persecution, which is the second cause of decline in the population of the Harpy Eagle throughout its range (Vaughan 1983, Garcia 1985). In Costa Rica there are 132 sites with different categories of protection according to the law. However, not all contain the habitat characteristics that Harpy Eagles need, so a large amount will be discarded when applying the chosen methodology.

<u>3. Zones that border locations of historical and cur-</u> <u>rent Harpy Eagle sightings:</u> These include, for example, the borders of both Costa Rica and the Osa Peninsula – including historical reports in national and foreign territory. These sites are of vital importance because Harpy Eagles have been reported in places near the borders with Panama (Angehr & Dean 2010, Curti & Valdez 2010) and Nicaragua (Múnera-Roldán et al. 2006, Vargas-González et al. 2006).

4. Altered neighboring areas that are close to the sites determined in 1 and 2: When analyzing these areas on a map, one could define where the hazards to which the species is exposed may be present.

5. Distribution of principal prey of H. harpyja: We propose generating a distribution map of the Harpy Eagle's main prey – animals of the families Bradypodidae, Megalonychidae, Cebidae, Atelidae, Didelphidae, Dasyproctidae, Cracidae, and Psittacidae, among others. <u>6. Connectivity of suitable nesting areas</u>: Once the sites with niches that Harpy Eagles could inhabit have been defined, an analysis should be made to better understand the connectivity between these sites both inside and outside the country to determine if the genetic flow of Harpy Eagles and their prey is feasible. This is important to take into account to keep populations healthy over time.

Analysis of potential vegetation for nesting

Once the potential sites where this species can be found are determined, a more precise analysis should be carried out to look at the potential vegetation for Harpy Eagle nesting, such as that done by Morales-Salazar et al. (2012) wherein they studied the diversity and horizontal structure of plants. Stiles and Skutch (2007) mention that the eagle prefers to nest in giant emergent trees, so the vegetation analysis must be done by focusing on these plants, such as, trees of the families Bombacaceae (Malvaceae), Caesalpinaceae, Papilionaceae, Anacardiaceae and Lecythidaceae of the genus Ceiba, Cavanillesia, Huberodendron, Couratari, Hymenaea, Dipteryx, Enterolobium, Astronium, Hymenolobium and Tabebuia (Luz 2005, Aguiar-Silva et al. 2012).

Not only is it important to determine the species of trees present, but the morphometric characteristics of individuals as defined by Luz (2005), must be taken into account for each tree: a. Average height of 43.7 m.

- b. Diameter at Breast Height of 1.4 m (average).
- c. Few main branches, three on average

d. Emergents on average 10.6 m with respect to the canopy top.

e. Forks with large surface areas

f. Fairly open angles between main branches and trunk of not less than 45 degrees.

g. Well-distributed canopy

Apart from the above-mentioned factors, Vargas-González et al. (2014) evaluated characteristics of Harpy Eagle nesting areas based on vegetation structure (number of tree families present, number of trees, height of each tree, number of bushes, diameter at breast height of each tree, canopy and understory cover) in order to identify which of these variables condition the presence of Harpy Eagle nests in a certain area. In this case, research was conducted around sites where there were known Harpy Eagle nests, so these are variables applicable to a protocol of habitat evaluation as proposed in the present study.

Analysis of prey

For an animal at the top of the food chain, the abundance and availability of its main prey should be analyzed. In the case of the Harpy Eagle, it is known that it has a varied diet (Aguiar-Silva et al., 2014), which includes many species that are not present in Costa Rica. For this reason, we take into account Harpy Eagle prey known from the literature. However, potential prey can also be included. Some species to be monitored are included in Table 1. Sampling with camera traps for terrestrial mammals and the intensive search of arboreal mammals, birds and other possible prey may be sufficient to carry out the analysis of these prey. It is also appropriate to sample tracks, scat and, for birds that are potential prey, one could implement the use of "playback" to detect their presence.

Analysis of nearby disturbances

Although the Harpy Eagle has been classified as a species that is not tolerant to habitat alteration, it has also been reported repeatedly in forests close to small villages (Muñiz-Lopez 2007, Vargas-González and Vargas 2011), agricultural areas and forest exploitation areas (Vargas et al., 2006). Based on these statements, it is not necessary to worry about avoiding forest edges in the evaluation of Harpy Eagle habitat, but rather we must take into account the monitoring of the possible prey that frequent those sites and the emerging trees that are observed in these areas.

Analysis of dangers

The Harpy Eagle has been subjected to great pressures throughout its entire range of distribution. Some of the main ones it faces are direct persecution through hunting or commercialization, loss and fragmentation of its habitat, and scarcity of prey. For example, in Panama and Venezuela, eagles have been reported with gun shots caused by indigenous community members and campesinos (Vargas et al., 2006). This has also been documented in Costa Rica (Cortés 1998, G. Stiles, pers. comm. 2014, M. Saborio, pers. comm. 2014). These birds are often seen as amulets, trophies and are even hunted for human consumption (Freitas et al., 2014). Therefore, it also becomes relevant to including within a habitat assessment the possible dangers to which the species is exposed. Wildlife hunting data should be taken into account as well as sites frequented by hunters. In order to determine the presence of hunters, social research methodologies can be used, such as surveying the people living in the villages closest to the study sites, the people who work nearby and the park rangers, in the cases of protected areas. Little is known about natural predators of the Harpy Eagle, so it is not determinant to include them in a habitat assessment.

Analysis of possible competitors

Humans are the main competitors with Harpy Eagles and other large predators, since some of this raptor's prey are also hunted by poachers. Natural competitors are represented by other large birds of prey such as Crested Eagles (*Morphnus guianensis*) and *Spizaetus spp*. (Vargas-González and Vargas 2011).

Regarding nest competition, it has been reported that the only bird that could compete with Harpy

Family	Species	
Bradypodidae	Bradypus variegatus	
Megalonychidae	Choloepus hoffmanni	
Atelidae	Alonatta palliata	
	Ateles geoffroyi	
Cebidae	Cebus capucinus	
	Saimiri oerstedii	
Dasyproctidae	Dasyprocta punctata	
Cuniculidae	Cuniculus paca	
Procyonidae	Potos flavos	
	Nasua narica	
	Bassaricyon gabbii	
Dasypodidae	Dasypus novemcinctus	
	Cabassous centralis	
Cervidae	Mazama americana	
	Odocoileus virginianus	
Didelphidae	Didelphis marsupialis	
Tayassuidae	Tayassu tajacu	
Erethizontidae	Sphiggurus mexicanus	
Myrmecophagidae	Tamandua mexicana	
Mustelidae	Eira barbara	
Canidae	Urocyon cinereoargenteus	
Cracidae	Crax rubra	
	Penelope purpurascens	
Psittacidae	Ara macao	
	Ara ambiguus	
	Amazona spp.	
Ramphastidae	Ramphastos spp.	
Iguanidae	Iguana iguana	
Others: rodents, snakes, medium and larg	e birds, and small felines (<i>Leopardus spp.</i>).	

Table 1. Known and potential Harpy Eagle prey present in Costa Rica (Bierregaard et al. 2013, García 1985.).

Eagles is the Crested Eagle; however, this does not occur because this species does use large trees but does not necessarily nest in emerging treess (Luz 2005). Other large predators, such as big cats (Felidae) could be competition for the Harpy Eagle for prey. However, it has been found www.neotropicalraptors.org that large cats, such as Jaguar (*Panthera onca*) and Puma (*Puma concolor*) also prefer large prey such as cattle (Bovidae), Paca (*Agouti paca*), White-lipped Peccary (*Tayassu pecari*), Collared Peccary (*Tayassu tajacu*), White-tailed Deer (*Odocoileus virginianus*), Rabbits (*Sylvilagus spp.*), Nine-banded Armadillo PAGE - 15 (Dasypus novemcinctus), Green Iguana (Iguana iguana), Spectacled Caimain (Caiman crocodilus), and turtles, among other, principally terrestrial animals. Smaller cats such as Jaguarundi (Puma jaguarundi) and Leopardus spp. hunt rodents (Rodentia), marsupials (Didelphidae), bats (Chiroptera) and a small amount of birds and other small and medium-sized prey (Chinchilla 1997, Polisara et al. 2003, Silva-Pereira et al. 2011).

To determine the presence of these competitors it is possible to use camera traps, tracks, scat and intensive searches. In the case of other birds that can be competing, using playbacks can be added to the methodology to detect them.

Conclusions

The evaluation of Harpy Eagle habitat should first and foremost focus on a macro analysis of habitat wherein potential sites for the species are determined. One must also take into account the presence of appropriate vegetation for Harpy Eagle nesting, in order to preserve not only the species but also the forested areas and surroundings. This type of bird must have vegetation that provides high perches, ease of movement between the vegetation and the different strata of the forest, and material to build or rebuild their nests. Also, vegetation cover can affect the hunting success of birds of prey in general (Vargas et al., 2014).

Although the Harpy Eagle is one of the first

species to disappear from areas colonized by humans, it has been observed and documented in a wide range of locations with varying degrees of development such as agricultural, livestock, and logging sites (Álvarez-Cordero 1996 and Trinca et al. 2008). Moreover, Vargas et al. (2006), Piana (2007), and Vargas and Vargas (2011) reported Harpy Eagle nests in forests with varying degrees of human intervention in the southern part of the continent. In addition, the Harpy Eagle is able to select heterogeneous habitats with plant families associated with levels of intermediate disturbance, which may be associated with greater availability of prey. However, deforestation, fragmentation of forest cover, poaching, persecution, and commercialization are direct threats to the Harpy Eagle. These processes are what have seemingly led to the local disappearance of H. harpyja in many places (Vargas et al. 2014).

The ecological and popular knowledge about Harpy Eagle habits is key to determining relevant aspects such as possible threats, direct competitors, and prey, because this predatory bird, besides being a relative specialist and associated with a specific type of forest, has been pursued directly for hunting and commercialization (Freitas et al., 2014). Finally, it is key to carry out the evaluation of potential places where the Harpy Eagle could be found in Costa Rica, because in recent years there have been important reports about the presence of this species in the country (Nelson 2008, May, 2010, Campos pers. com. 2014).

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References

Aguiar-Silva, F.H., T.M. Sanaiotti, and B.B. Luz. 2014. Food habits of the Harpy Eagle, a top predator from the Amazonian rainforest canopy. Journal of Raptor Research 48(1):24 – 35.

Aguiar-Silva, F.,H. T. Sanaiotti, O. Jaudoin, A. Srbek-Araujo, Siqueira and G. A. Banhos. 2012. Harpy eagle sightings, traces and nesting records at the "Reserva Natural Vale", a Brazilian Atlantic Forest remnant in Espírito Santo, Brazil. Revista Brasileira de Ornitología 20(2), 148 – 155.

Álvarez-Cordero, E. 1996. Biology and conservation of the Harpy Eagle in Venezuela and Panama. Ph.D. diss., Univ. of Florida, Florida, USA.

Angehr, G. and R. Dean. 2010. The birds of Panama: A field guide. San José, Costa Rica. Zona Tropical. 55.

Bierregaard, R. O., G. M. Kirwan, and A. Bonan. 2013. Harpy Eagle (*Harpia harpyja*). In: del Hoyo, J., A. Elliott, J. Sargatal, D.A. Christie, and E. de Juana. (eds.).(2013). Handbook of the Birds of the World Alive. Lynx Ediciones, Barcelona. (retrieved from http://www.hbw.com/node/53150 on 3 February 2015).

Chebez, J., M. Silva, A. Serret and A. Taborda. 1990. La nidificación de la Harpía (*Harpia harpyja*) en Argentina. Hornero 13(02), 155 – 158.

Chinchilla, F. 1997. La dieta del jaguar (*Panthera onca*), el puma (*Felis concolor*) y el manigordo (*Felis pardalis*) (Carnivora: Felidae) en el Parque Nacional Corcovado, Costa Rica. Rev. Biol. Trop. 45(3), 1223 - 1229.

Cortés, J. 1998. En busca del águila arpía. MERTEC, Costa Rica. Recuperado de https:// www.youtube.com/watch?v=hOa_UXufIHc.

Curti, M. and U. Valdez. 2010. Incorporating Community Education in the Strategy for Harpy Eagle Conservation in Panama. The Journal of Environmental Education 40(4), 3 - 16.

Fowler, J. and J. Cope. 1964. Notes on the Harpy Eagle in British Guiana. The Auk 81(3), 257-273. Galetti, M. y O. Carvalho. 2000. Sloths in the Diet of a Harpy Eagle Nestling in Eastern Amazon. The Wilson Bulletin 112(4), 535 – 536.

Freitas, M. A., D. Mendes-Lima and F. B. R. Gomes. 2014. Registro de abate de gaviões-reais *Harpia harpyja* (Accipitridae) para consumo humano no Maranhão, Brasil. Atualidades Ornitológicas 178, 12 – 15.

García, M. 1985. Fauna: El águila harpía. Biocenosis 2(1), 23 – 24.

Hilty, J. and A. Merenlender. 2000. Faunal indicator taxa selection for monitoring ecosystem health. Biological Conservation 92, 185 – 197.

Lerner, H., J. Johnson, A. Lindsay, L. Kiff and D. Mindell. 2009. It's not too late for the Harpy Eagle (*Harpia harpyja*): High Levels of Genetic Diversity and Differentiation Can Fuel Conservation Programs. PLoS ONE 4(10), 1 - 10.

Luz, B.B. 2005. Características de árvores emergentes utilizadas por gavião-real (*Harpia harpyja*) para nidificação no centro e leste da Amazônia Brasileira. Dissertação Mestrado INPA/UFAM. 80p.

May, R. 2010. Comunicaciones. Zeledonia, 14(1), 33 – 34.

Morales-Salazar, M., B. Vílchez-Alvarado, R. Chazdon, M. Ortega-Gutiérrez, E. Ortiz-Malavassi and M. Guevara-Bonilla. (2012). Diversidad y estructura horizontal en los bosques tropicales del Corredor Biológico de Osa, Costa Rica. Revista Forestal Mesoamericana Kurú 9(23), 19 – 28.

Moreno, R. S., R. W. Kays and R. Samudio. 2006. Competitive release in diets of ocelot (*Leopardus pardalis*) and puma (*Puma concolor*) after jaguar (*Panthera onca*) decline. Journal of Mammalogy 87(4); 808 – 816.

Múnera-Roldán, C., M. Codoy, R. Schiele-Zavala, B. Sigel, S. Woltmann and J. Peter. 2006. New and noteworthy records of birds from south-eastern-Nicaragua. Bull B.O.C. 127(2), 152 – 161. Muñiz-López, R. 2007. Revisión de la situación del Águila Harpía *Harpia harpyja* en Ecuador. Cotinga 29, 42 – 47.

Nelson, J. 2008. The Chat: Montgomery County Chapter. 39(2), 2 p.

Piana, R. 2007. Anidamiento y dieta de *Harpia harpyja Linnaeus* en la Comunidad Nativa de Infierno, Madre de Dios, Perú. Rev. Peru. Biol. 14,135–138.

Polisara, J., I. Maxit, D. Scognamillo, L. Farrell, M. Sunquist and J. Eisenberg. 2003. Jaguars, pumas, their prey base, and cattle ranching: ecological interpretations of a management problem. Biological Conservation 109, 297 – 310.

Silva-Pereira, J., R. Moro-Rios, D. Bilski, and F. Passos. 2011. Diets of three sympatric Neotropical small cats: Food niche overlap and interspecies differences in prey consumption. Mammalian Biology 76, 308 – 312.

Stiles, G. and A. Skutch. 2007. Guía de aves de Costa Rica 4 ed. Santo Domingo de Heredia, Costa Rica: INBio. 680 p.

Trinca, C. T., S. F. Ferrari and A. C. Lees. 2008. Curiosity killed the bird: Arbitrary hunting of Harpy Eagles *Harpia harpyja* on an agricultural frontier in southern Brazilian Amazonia. Cotinga, 30,12 – 15.

Vargas-González J., D. Whitacre, R. Mosquera, J. Albuquerque, R. Piana, J. Thiollay, C. Márquez, J. Sánchez, M. Lezama-López, S. Midence, S. Matola, S. Aguilar, N.Rettig, and T. Sanaiotti. 2006. Estado y distribución actual del águila arpía (*Harpia harpyja*) en Centro y Sur América. Ornitología Neotropical 17, 39 – 55.

Vargas-González, J. and F. Vargas. 2011. Nesting Density of Harpy Eagles in Darien with Population Size Estimates for Panama. J. Raptor Res. 45(3),199 – 210.

Vargas, J., F. H. Vargas, D. Carpio and C. J. Mc-Clure. 2014. Características de la vegetación en sitios de anidación del águila arpía (*Harpia harpyja*) en Darién, Panamá. Ornitología Neotropical 25, 207 – 218. Vaughan, C. 1983. Report on dense forest habitat for endangered wildlife species in Costa Rica. Environmental Sciences School Universidad Nacional. Heredia, Costa Rica, 43 – 44 p.

* * *

ENHANCING ENVIRONMENTAL AWARENESS ABOUT TYTO ALBA IN BELIZE

By Sharon Matola

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effort to provide a home for a collection of wild animals, that had been used in making documentary films about tropical forests. Shortly after the backyard "zoo" began, it quickly became clear that many of the visitors, including local Belizeans, were unfamiliar with the different species of wildlife with which they shared their country. This very aspect fomented the commitment to develop the little zoo into a dynamic wildlife education center.

Today, The Belize Zoo and Tropical Education Center is settled upon 29 acres of tropical savanna and exhibits over 170 animals, representing over 45 species, all native to Belize. The zoo keeps animals, that were orphaned, rescued, born at the zoo, rehabilitated, or sent to The Belize Zoo as donations from other zoological institutions.

Though the education program focuses on a Instead, the man gathered up the owlets and, number of different species, the goal is to provide along with his wife and kids, brought them to the

he Belize Zoo was founded in 1983 in an educational activities that teach about those species that are particularly misunderstood and/or persecuted by humans. Unfortunately, the Barn owl (Tyto albo) in Belize falls under both of these categories. They are often viewed as the "Bird of Death, Evil and Misery", and as a result, they are often persecuted.

> The Belize Zoo attempts to counteract these beliefs with aggressive education specifically aimed at changing people's perspectives about Barn Owls. A live female Barn Owl named Magic is the star of this program, entitled "Growing Up With Magic." The story of how Magic the owlet arrived to her home at the Belize Zoo is a touching one. An American man living in southern Belize ordered one of his Belizean employees to "get those things out of the attic and throw them in the river." The "things" he was talking about were three barn owlets.



"Magic, the Barn Owl" visiting a primary school in Belize. Photo © The Belize Zoo

zoo. The two male owlets did not survive. The female did. She was named "Magic." Now, she is the star of her own show at the Belize Zoo. Though children are the main target audience, other visitors "meet and greet" Magic the Barn Owl and learn about the important ecological role these birds of prey play in Belize. Besides learning about their love for eating rats, audiences enthusiastically learn about the acute hearing abilities of Barn Owls, and their exquisite silent flight profile. The program ensures that accepting and eager Belizean young and not-so-young minds embrace the natural history of these extraordinary birds. As a result, a new and positive perspective is embraced. Though Magic had a rough beginning, she has found a wonderful home at the Belize Zoo and a very important job – she is already touching hearts and improving traditional outlooks about her species here in Belize.

* *

OWLS IN THE CUNDINAMARCA DEPARTMENT, COLOMBIA

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Fledgling of Asio clamator. Bogotá, Cundinamarca, Colombia. Photo © Darwin Ortega

of the most owl-rich countries, as well, along with knowledge of owls in Colombia (Chaparro-He-Mexico, Peru and Ecuador (König et al. 2008, rrera et al. 2015).

olombia has the highest number of bird Chaparro-Herrera et al. 2015). However, studies species in the world. Of the more than 1,980 spe- of owls in Colombia have been limited and little cies (Remsen et al. 2016), 28 are owls (including is known about their distribution throughout the Tyto alba-Tytonidae). This makes Colombia one country. As a result, there are great gaps in our The Cundinamarca Department is located in the center of the country along the eastern range of the Colombian Andes. It encompasses an area of 24,210 km², and includes diverse habitats such as dry forest, alto-andean wetlands, and paramos. It is the region with the greatest bird diversity in the country, with more than 900 species present (ABO 2000, Franco et al. 2009, Chaparro-Herrera et al. unpublished data, http://www.cundinamarca.gov.co/).

To determine which owl species are present in Cundinamarca we made a detailed review of the bibliographic sources (books, articles, technical reports, graduate theses, among other sources), databases of species collections (Biomap 2006, ICN 2015, IAVH 2013), sound collections (IAvH 2015, www.xeno-canto.org), and the eBird database (http://www.ebird.org), as well as personal field data collected between 2009 and 2017.

For our study, we followed the taxonomy of Remsen et al. (2016). However, we clarified or made notes throughout the text regarding taxonomic divisions set forth by König et al. (2008). Fifteen species were reported for the department (of eight genera: *Tyto, Megascops, Pulsatrix, Bubo, Glaucidium, Ciccaba, Aegolius* and *Asio*) of which

Stygian Owl (Asio stygius), Bogotá, Cundinamarca-Colombia. One of the owl species present in the Cundinamarca Department. Photo © Sergio Chaparro-Herrera.



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eight have been recorded from the work compiled by Olivares (1969) – which was the first estimate of the avifauna in this department (Table 1). None of the species is considered threatened or endangered, and one, the Short-eared Owl (*Asio flammeus*), possibly participates in altitudinal-local migrations, which must be confirmed (Chaparro-Herrera pers. obs.). In continuation we present some notes on the extension of the range of distribution, elevation or ecological data of importance for some of these species:

<u>Megascops ingens or Otus ingens according to König</u> <u>et al. (2008)</u>: It was registered in the Bojacá municipality in 2016 (A. Bautista pers. com.), expanding its known range in the country. There are also vocal records taken by M. Álvarez in the Medina municipality (IAvH 2012) that require confirmation. König et al. (2008) mentioned that the species is distributed along the eastern range of the Andes between 1,200 and 2,500 masl. However, very few locations are known for the species in the country and along the eastern range: western flank of the Serranía del Perijá, La Guajira (Hiroca), Santander (Florida & Encino), and Boyacá (Pajarito) (Hilty and Brown 1986, Chaparro-Herrera et al. 2015).

<u>Ciccaba nigrolineata or Strix nigrolineata according to</u> <u>König et al. (2008):</u> Registered in the Ubalá municipality, by Mámbita in 2014. It was also registered in this location by Stiles (1998) confirming its presence in the northern part of the eastern hillside of the Eastern Andes range. One speci-

Table 1. Owls present in the Cundinamarca Department, Colombia. The elevation corresponds to the present information for the country (taken by: Chaparro-Herrera et al. 2015); the species marked by an asterisk (*) were registered by the author in different areas of the department.

ORDER	FAMILY	SPECIES	ELEVATION (masl)
	TYTONIDAE	Tyto alba*	0-3500
	STRIGIDAE	Megascops choliba*	0-3000
STRIGIFORMES		Megascops ingens	1200-2250
		Megascops albogularis*	2000-3200
		Pulsatrix perspicillata*	0-1000
		Bubo virginianus	0-4000
		Ciccaba virgata*	0-2300
		Ciccaba nigrolineata*	0-2000
		Ciccaba albitarsis*	1700-3700
		Glaucidium jardinii*	1500-3500
		Glaucidium brasilianum*	0-1000
		Aegolius harrisii	1500-2900
		Asio clamator*	0-2600
		Asio stygius*	1700-3000
		Asio flammeus	500-3700



Rufescent Screech-owl (Megascops ingens), observed in the Bojacá municipality, Cundinamarca, which was the first record for the department. Photo © Arcadio Bautista.

men was collected in the Anoliama municipality in 1913 (AMNH 130624) which was the only record to date for the department on the western slope (Biomap 2006).

<u>Aegolius harrisii:</u> Few records exist for this species in the country. On the eastern range it is only known in the municipalities of Bojacá and Zipacón (Cundinamarca), and in the Herrán municipality of the Norte de Santander Dept. (Córdoba-Córdoba and Ahumada 2005). König et al. (2008) mentions that the species is distributed throughout the eastern range, and that it seems to be scattered and local and may be a species that has been overlooked in several areas of its potential distribution. <u>Asio clamator</u>: In Colombia, this species mainly frequents areas below 500 masl, with records up to 1600 masl in the Valle del Magdalena (Hilty and Brown 1986). However, it is present at higher elevations, such as in Sabana de Bogotá where it was recorded at 2600 masl. The first record for the species occurred in 1997 in the Parque Ecológico Distrital Humedal La Conejera en Bogotá (ABO 2000). The area has been well-colonized by the species over the past 20 years. It is now documented throughout the city (Chaparro-Herrera 2015).

<u>Asio flammeus:</u> In Colombia the subspecies *bogotensis* was present and common in the Sabana de Bogotá (Borrero 1962, Olivares 1969) but it is currently rare possibly due to the loss of native grasslands, affecting its prey base (it appears to be endangered in Sabana de Bogotá) (ABO 2000, Chaparro-Herrera et al. 2015).

<u>Megascops petersoni</u>: This species inhabits between 1400 and 1820 masl. There is an audio record for the municipality of San Antonio del Tequendama, Cundinamarca (J. Bradley, http://www.xeno-canto.org/265392) increasing its known distribution range in the country. However, this requires confirmation which is why it is not included in the list of owls found in the department. The previous compilation is an invitation for further study of owls, looking at both ecological and biological factors, in Cundinamarca and in the entire country, in general. Without this base information it is difficult to know the current state and population trends (Enríquez et al., 2006) and therefore makes it difficult to take immediate action regarding the conservation of owls as a key group in ecological processes in both urban and rural areas.

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Immature Striped Owl (*Asio clamator*) in Bogotá, Cundinamarca-Colombia. A species registered since 1997 in the Sabana de Bogotá – the location with the highest elevation in the country (2,600 masl). Photo © Sergio Chaparro-Herrera.



well as for sharing the find of *M. ingens* in the department, and to D. Ortega for the photo of *A. clamator* used in this article.

References

ABO. 2000. Aves de la Sabana de Bogotá, guía de campo. Asociación Bogotana de Ornitología y Corporación Autónoma Regional de Cundinamarca CAR. Bogotá D. C.

Biomap. 2006. Base de Datos Darwin: Proyecto BioMap base de datos de distribución de la avifauna Colombiana.

Borrero, J. I. 1962. Notas varias sobre *Asio flammeus bogotensis* en Colombia. Revista Biología Tropical 10(1):45 – 59.

Chaparro-Herrera, S. 2015. Avifauna registrada en 14 Parques Ecológicos Distritales de Humedal (PEDH) de Bogotá. Pp: 68-91. En: Chaparro-Herrera, S. and D. Ochoa (Eds). Aves de los Humedales de Bogotá, Aportes para su Conservación. Asociación Bogotana de Ornitología -ABO-, Bogotá D. C.

Chaparro-Herrera, S., S. Córdoba-Córdoba, J. P. López-Ordóñez, J. S. Restrepo Cardona and O. Cortes-Herrera. 2015. Los Búhos de Colombia. Pp: 271-323. En: P. Enríquez (Ed.). Los Búhos Neotropicales: Diversidad and Conservación. ECOSUR, México.

Córdoba, S. and J. Ahumada. 2005. Confirmation of Buff-fronted Owl *Aegolius harrisii* for the Cordillera Oriental of Colombia. Bulletin of the

British Ornithologists' Club 125(1): 56 – 58.

Enríquez, P. L., D. H. Johnson and J. L. Rangel-Salazar. 2006. Taxonomy, distribution and conservation of owls in the neotropics: a review. Pp.254-307. En: Rodríguez-Estrella, R. (Ed.). Current Raptor Studies in Mexico. Centro de Investigaciones Biológicas del Noroeste and CONABIO. México, D.F.

Franco, A. M., J. D. Amaya-Espinel, A. M. Umaña, M. P. Baptiste and O. Cortés (Eds). 2009. Especies focales de aves de Cundinamarca: estrategias para la conservación. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt y Corporación Autónoma Regional de Cundinamarca. Bogotá D. C.

Hilty, S. L. and W. L. Brown. 1986. A guide to the birds of Colombia. Princeton University Press. Princeton, N.J., USA.

IAvH. 2012. Colección de Sonidos Animales. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Bogotá, Colombia. (Accedido a través del portal de datos del SIB Colombia, http://data.sibcolombia.net/datasets/resource/4).

IAVH. 2013. Colección de Aves de Colombia del Instituto Humboldt, 13463 Registros, aportados por el Instituto de Investigación de Recursos Biológicos Alexander von Humboldt. Villa de Leyva, Colombia, En línea http://ipt.sibcolombia. net/iavh/resource.do?r=aves_iavh, publicado el 13/09/2013.(accedido a través del portal de datos del SIB Colombia, http://data.sibcolombia. net/datasets/resource/7).

König, C., F. Weick and J-H. Becking. 2008. Owls of the world. Second Edition. Christopher Helm, London.

Olivares, A. 1969. Aves de Cundinamarca. Universidad Nacional de Colombia. Facultad de Ciencias. Instituto de Ciencias Naturales. Bogotá. Remsen, J. V., Jr., J. I. Areta, C. D. Cadena, A. Jaramillo, M. Nores, J. F. Pacheco, J. Pérez-Emán, M. B. Robbins, F. G. Stiles, D. F. Stotz and K. J. Zimmer. 2016. Version [April 2016]. A classification of the bird species of South America. American Ornithologists' Union. http://www.museum.lsu. edu/~Remsen/SACCBaseline.html.

RNOA. 2013. Red Nacional de Observadores de Aves de Colombia. Censo Nacional de Aves, 413272 registros. En línea, http://ipt.sibcolombia.net/rnoa/resource.do?r=censo_aves_rnoa.

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Of Interest...

Conferences –

World Owl Conference

http://www.woc2017.uevora.pt/en/

The conference will take place between **26 and 30 September 2017**. This conference will bring together the world's leaders in all aspects of owl science, conservation, education, genetics, habitat, and ecology. As all attendees are passionate about owls, we are structuring the conference so that all attendees can hear all presentations. As with prior conferences, we welcome attendees from all walks of life, educational backgrounds, and from all corners of the world.

The World Owl Conference 2017 - Owls in Science and Society will take place at the university city of Évora, inside its UNESCO World Heritage Centre, filled with historical buildings and surrounded by a breathtaking landscape – the perfect combination of a large scientific conference and a great cultural experience.

Located in the Province of Alentejo, Évora has over 50,000 inhabitants. Évora has a central geographical location, within 1h40 from Lisbon and 3h00 from Faro airports.

Grants -

American Ornithological Society

http://www.americanornithology.org/content/ aos-international-grants

The AOS International Grants program gives support to Latin American students to complete benchmark surveys of bird communities in Latin America. Benchmark surveys have the purpose of establishing baseline information on the richness and abundance of birds in Neotropical locations during this dynamic time in history. Deadline is 15 March each year. \$1,000 – \$2,000.

Club300 Bird Protection

http://www.club300.se/Birdprot/Birdprotection.aspx

They give grants up to \$5,000 US for projects that support the conservation of species listed as Critically Endangered (CE), Endangered (EN), or Data Deficient (DD) according to the IUCN. Contact birdprotection@club300.se for more information. The application should be written en English. Deadline to apply is **31 July of each year**.



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