

The Black Solitary Eagle:

Harpyhaliaetus solitarius, also commonly known as the Solitary Eagle, Black Solitary Eagle, or Montane Solitary Eagle, is listed as “Near Threatened” by the IUCN Red List of Threatened Species (2013). *H. solitarius* is currently facing various anthropogenic threats contributing to its decreasing population size. To date, there are no known conservation actions underway to assist the species (IUCN Redlist of Threatened Species, 2013) and a severe lack of data with regards to all ecological aspects make conservation proposals difficult to formulate. There is however a program called the Solitary Eagle Project in place to collect further information on the species (Belize Raptor Research Institute, 2013). *H. solitarius* has a large latitudinal range, stretching from northwest Mexico to northwest Argentina (BirdLife International, 2014).

Despite its large range, sightings of the species are rare due to small estimated populations and fragmented habitat. Many reported sightings are confused with *Buteogallus urubitinga* (Great Black Hawk), or *B. anthracinus* (Common Black Hawk) due to its very similar appearance (IUCN Redlist of Threatened Species, 2013).



Black Solitary Eagle (*H. solitarius*).
Photo from: <http://www.birdphotos.com>.

Description of the species based on best available information:

The Solitary Eagle is entirely dark grey or dull silver-grey which becomes darker toward its wingtips (Cornell Lab of Ornithology, 2010). The uniformity of its color and appearance often make the eagle look black (BirdLife International, 2014). Unique from the other similar looking birds within its geographic range, are subtle white banded markings through the center of the tail feathers, as well as white tips on the tail (Cornell Lab of Ornithology, 2010). A small tuft of feathers on the head is common and contributes to the confusion between a very similar endangered bird within the region; *B. coronatus* (Crowned Solitary Eagle), however; the two prefer quite different habitats. A more brown shade of coloration is found on female Solitary Eagles than males, and they both share yellowish eyes. The cere, or fleshy patch of skin near the bird's beak as well as its legs are yellow (BirdLife International, 2014). Differing reports estimate a weight between 2.5 and 3.5 kg (5.51-7.71 lbs), a length of 65-75 cm (25.6-29.5 inches), and a wingspan of 157-180 cm (62-71 inches) in full grown adult Solitary Eagles. Juvenile Black Solitary Eagles have a different appearance until they reach adult plumage after about three years. Until adulthood, they are known have reddish-brown feather edges around the head, with brown, eyes and greenish-white legs (BirdLife International, 2014).

Ecology of the species and the role it plays in the ecosystem:

Due to extreme lack of knowledge with regard to most aspects of the Solitary Eagle's ecology, its role and importance to ecosystem functions within its range is largely unknown.

The preferred habitat of *H. solitarius* is dense tropical and subtropical forest. Throughout the neo-tropics in mountainous forests it is found at elevations ranging from 600-2,200 meters

(2,000-7,200 feet) (Ferguson-Lees et al. 2001). Despite the species' large range, its habitat is fragmented and populations are suspected to be low (Ferguson-Lees et al. 2001). Because of the similar appearance to the Great and Common Black Hawks and the Crowned Solitary Eagle; which prefer more open habitats, *H. solitarius* is often misidentified in lowland open areas. False reports contribute to the lack of knowledge with regard to habitat and population trends (BirdLife International, 2014). Many areas of crucial habitat for the Solitary Eagle are in jeopardy of deforestation; therefore, they are likely under threat of habitat loss and fragmentation. Measures for conservation propose studies to better understand the ability for the species to live in diminished, degraded, or fragmented habitats as well as conduct further surveys to solidify the actual population size (BirdLife International, 2014). Information is unknown about the habitat size requirement for individuals.

There is little information about the specific diet of the Solitary Eagle; however, it is accepted that the primary food source is snakes and other reptiles (The BirdLife International, 2014). Observed in a study by Seminario et al. in 2011, *H. solitarius* was seen on six different occasions in possession of prey, four of the six times, the eagle was consuming medium to large snakes, once consuming a large lizard. Other prey was unidentifiable. While inhabiting mostly dense tropical forests, the Solitary Eagle has been found soaring and hunting over large areas that include marshland, open areas, and sparse tall trees (Ferguson-Lees et al. 2001).

The species' population status and trend with reference to historic baseline:

There have been fewer than 80 confirmed Solitary Eagle sightings between the 1800's and today over the entirety of its population distribution (Belize Raptor Research Institute,

2013). There are varied reports about the current population. In 2001, reports suggested that the total population was between 250-999 individuals (Ferguson-Lees et al. 2001); however, BirdLife International suspects that number to be improbably low given its large distribution. Currently, the total population is estimated to be between 1,500 and 4,000 individuals (BirdLife International, 2014). Although there is some confusion with regard to the total population of *H. solitarius*, the population is declining (IUCN, 2013).

The species current and historic range:



Current distribution and range of *H. solitarius*. Photo from: <http://www.planetofbirds.com>

The total distribution of *H. solitarius* spans between 28°N and 26°S latitudes stretching from northern Mexico through South America (IUCN Redlist of Threatened Species, 2013). Countries within that latitudinal range in which the Solitary Eagle has been confirmed include Mexico, Argentina, Belize, Honduras, Guatemala, Nicaragua, Costa Rica, El Salvador, Panama, Columbia, Venezuela, Guyana, Peru, Ecuador, and Bolivia (BirdLife International, 2014). The extent of its historic range or distribution is unknown (BirdLife International, 2014).

Its legal status (protected status):

H. solitarius is listed as Near Threatened by the IUCN (IUCN Redlist of Threatened Species, 2013). The species is listed as critically endangered in Belize (Belize Raptor Research

Institute, 2013). As more data becomes available with regard to the species, it is likely to be up-listed to Vulnerable (Cornell Lab of Ornithology, 2010).

Relevant and interesting natural history and ecology:

The Solitary Eagle has close genetic relation to the hawk genus *Buteogallus*, and had also been considered a sub species of *H. coronatus* (Crowned Solitary Eagle). The taxonomy has recently been clarified; DNA evidence has revealed that the two are distinct enough to be classified as separate species (BirdLife International, 2014).

There are however, two subspecies. *H. s. sheffleri*, found in Western Mexico, is named after W.J. Sheffler, who discovered a nest of the Black Solitary Eagle in 1947 (Harrison et al. 1977). *H. s. solitarius* is found in the remaining distribution of the species; northeastern Mexico and Central America south to Venezuela, Ecuador, Peru, Colombia, Bolivia, Paraguay, and northwestern Argentina (Harrison et al. 1977).

There have only been 5 total Black Solitary Eagle nests found; two in Mexico and one each in Ecuador, Peru, and Belize (Belize Raptor Research Institute, 2013). In 1947, near Ranch Guirocoa, Mexico, a group of hunters and locals set out to investigate a large nest that had been reported about 25km NE of the town. After a rigorous journey, they approached the nest to find a large female



Black Solitary Eagle nestling. Photo from Harrison et al.

Black Solitary Eagle. The specimen was shot and collected. The next day, the party ascended the tree and found a nestling that was just old enough to sit upright on its own. The team also

observed the male Solitary Eagle bringing a snake back to the nest and feeding its young (Harrison et al. 1977).

The nest was found situated in the crotch of a pine tree 27m above the ground. It measures 1.5m in diameter and consisted of large coarse sticks insulated with smaller twigs, dead and fresh leaves as well as palm fronds (Harrison et al. 1977). One year later, W.J. Sheffler obtained a male Solitary Eagle approximately 18km N of the nest site (Harrison et al. 1977).

The threats to the species' existence and opportunities for renewed abundance:

The main threat to the Black Solitary Eagle is habitat loss and fragmentation (BirdLife International, 2014). It's necessary habitat of tropical forest makes it vulnerable to the consequences of deforestation and resource extraction as well as agricultural expansion and farming (BirdLife International, 2014). The preferred habitat of the Solitary Eagle is ideal for human uses as well. This competition leads to habitat loss, as well as unfavorable contact with people. *H. solitarius* is also threatened by hunting (BirdLife International, 2014). The Great Black Hawk is known for eating farmer's chickens, and with a similar appearance, The Solitary Eagle is often shot by mistake (BirdLife International, 2014).

Developments in conservation of the species:

Current, accurate knowledge of *H. solitarius* is limited and needs is the focus of groups concerned with the conservation of neo-tropical birds of prey. Most sources do not report any conservation effort with regard to the Solitary Eagle; however, the Belize Raptor Research Institute (BRRI) has a long-term, comprehensive program in place designed to collate new

information about the ecology and natural history of *H. solitarius* (Belize Raptor Research Institute, 2013). BRRI's "Solitary Eagle Project" seeks new data with regard to population demographics, distribution, and breeding biology. BRRI's project takes place solely in Belize and incorporating community educational outreach for the citizens who share the environment with the Solitary Eagle.

The Solitary Eagle Project's objectives as described by Belize Raptor Research Institute:

- Provide critical scientific data on this little-known enigmatic eagle species to the scientific community
- Use data collection on how Solitary Eagle's utilize the Mesoamerican Biological Corridor and understand the importance of habitat connectivity, as well as movement linkages for dispersing individuals and connection of populations or isolation of populations
- Mapping the historic and current distribution of the species
- Data will assist in the preparation of a Species Conservation Action Plan on the Solitary Eagle and the conservation of the species
- Heightening biodiversity appreciation and education
- Developing conservation communities by engaging Belizeans in field monitoring, training in advanced

Contact with the BRRI for further information and development of the Solitary Eagle Project was unsuccessful.

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