Photo of ‘Io

Raptors

‘Io

Buteo solitarius

SPECIES STATUS:
Federally listed as Endangered
State listed as Endangered
State recognized as endemic
Hawaii Natural Heritage Ranking G2—Imperiled globally

SPECIES INFORMATION: The ‘io, or Hawaiian hawk, is a broad-winged hawk with two color phases. It is considered an ‘aumakua, or family god, by Hawaiians in some regions. Prior to Polynesian arrival in the islands, it was probably exclusively an avian predator; rails and ibises that are now extinct were likely included in its diet. Currently, its diet includes native forest passerines as well as non-native rodents, birds and insects. ‘Io are socially monogamous and limited data indicate a long-term pair-bond. Pairs maintain territories year-round. Nest construction is protracted, beginning up to two months before the first egg is laid, and continuing into the nestling period. Both sexes contribute to nest-building. Clutch size in recent studies has nearly always been one, although clutches of two and three were reported historically. Both sexes incubate: females brood primarily, though males are observed brooding occasionally while females consume prey. Males are the primary provisioners of both chicks and females at the nest. Both adults feed young fledglings away from the nest, though juveniles can feed themselves within 2-3 weeks of fledging. Immature birds sometimes congregate in agricultural areas distant from their natal territories.

DISTRIBUTION: ‘Io are resident on Hawai‘i island from the coast to high elevations (nests are found to 1700 meters (5600’)), except in the Ka‘u desert, and on the northwest side of the island. Their historic range was similar. Fossil evidence indicates they once occurred on Moloka‘i , O‘ahu, and Kaua‘i as well.

Map of ‘Io

ABUNDANCE: The population estimate based on an island-wide survey in 1993 was 1600 birds. A survey conducted in 1998 estimated 1223 birds. Trends are difficult to determine because of varying census methodology, but the population may be stable.

LOCATION AND CONDITION OF KEY HABITAT: ‘Io habitat includes lowland exotic forests, agricultural lands, pasture-lands, and high elevation native forests with both intact and degraded understory. ‘Io nests have been found in ‘ohi‘a (*Metrosideros polymorpha*), koa (*Acacia koa*), lama (*Diospyros ferrea*) and kolea (*Myrsine lessertiana*) trees, as well as in the following exotic tree species: eucalyptus (*Eucalyptus* spp.), ironwood (*Casuarina equisetifolia*), mango

(*Mangifera indica*), coconut (*Cocos nucifera*), and macadamia (*Macadamia integrifolia*). The birds have been reported in subalpine mamane-naio forest (*Sophora chrysophylla - Myoporum sandwicense*) in winter months. Because this species occurs across such a broad range of native and severely human-altered habitat, the condition of its key habitat can only be described as varied. Known habitat ranges from urban to areas actively managed for conservation.

THREATS: ‘Io are subject to the same threats as other native Hawaiian birds, but their presence in lowland and exotic habitats makes these difficult to quantify. Of particular concern are the following:

- Shooting, trapping and harrassment of nesting birds may be the most significant threat to ‘io populations, but the level of this threat is difficult to assess.
- Contaminants or toxins may pose a threat to ‘io. Pesticides (DDT) have been isolated in ‘io in the past, and signs of organophosphate poisoning were noted in one carcass recovered from a macadamia orchard. It is thought that secondary poisoning due to ‘io consumption of rat carcasses poisoned with diphacinone poses little threat, but this needs further study.
- Disease is not known to currently affect ‘io, although early naturalists reported pox-like lesions. Because their range includes low-elevation habitat where malaria is prevalent, ‘io are thought to be immune.

CONSERVATION ACTIONS: Protection and management of high-elevation native forests are the primary conservation actions benefiting ‘io. Additional necessary actions include the following:

- Systematic island-wide population surveys to document status and trends are necessary.
- Maintenance of feeding and nesting habitat including both native and exotic forest types.
- Enforcement of laws prohibiting taking of the species.
- Effects of changes in pesticide use should be evaluated.
- Studies of breeding success across habitat types have been undertaken.

MONITORING:

- Regular island-wide population surveys will be necessary to understand population trends.

RESEARCH PRIORITIES:

- Analysis of population trends and changes in habitat occupancy.
- Assess vegetation in occupied versus unoccupied areas as well as changes in vegetation over time.
- Assessment of mortality associated with human activity including nest disturbance, poaching and secondary poisoning.
- Life history aspects including life span, juvenile dispersal and territory establishment.

References:

Clarkson, K. E., and L. P. Laniawe. 2000. Hawaiian Hawk (*Buteo solitarius*). *In* The Birds of North America, No. 523 (A. Poole and f. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.