Comments on the proposal by the US Fish and Wildlife Service (USFWS) to remove the Hawaiian Hawk or `Io from the US endangered species list.

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Recovery criteria: The goal of the Hawaiian Hawk recovery plan (USFWS 1984) was to "ensure a *self-sustaining population* in the range of 1,500 to 2,500 *adult* birds in the wild, as distributed in 1983, and *maintained in stable, secure habitat*" (my italics). The recovery plan indicated that criteria for delisting would be developed (USFWS 2008) but apparently were not. However, an `Io Recovery Working Group, established in the 1990s, recommended that the Hawaiian hawk be delisted due to: (1) the lack of evidence of current declines in population numbers, survival rates, or productivity and, (2) the lack of evidence of current substantial loss or degradation of preferred nesting or foraging habitats.

Population: The `Io population was estimated at 1,457 individuals (95% CI = 1,149-1,847) in 1998. Data were re-analyzed using new methods which more than doubled that estimate to 3,239 hawks (95% CI = 2,610-3,868). A comparison of the revised 1998 estimate with that for 2007 data (3,085 hawks; 95% CI = 2,496-3,680) suggested no population trend over the past decade (Gorresen et al. 2008). Assuming 70% fully adult individuals (Klavitter 2000), a total population of 3,085 would include 2,160 adult birds.

Population estimates over significant periods of time can help determine if wildlife populations are self-sustaining. However, 10 years is often insufficient to allow for such a determination. Earlier `Io population estimates of 1,400-2,500 (1985) and 1,600 (1994) (USFWS 2008) were not compared with current estimates apparently because of methodological issues and doubt as to their accuracy. Given that only two reliable population estimates were considered, the claim that the population has been stable for at least 20 years (USFWS 2008) appears unwarranted. Moreover, "*lack of evidence* of *current* declines in population numbers, survival rates, or productivity" is an inadequate criterion for judging population sustainability.

Habitat condition and trend: The USFWS (2008) recognized that loss of habitat for the Hawaiian hawk will occur over the next 20 years, with estimated potential losses of <1% from urbanization, <5% to eucalyptus plantations (plus somewhat more given lands with less potential for such), possible loss of up to13% to biofuels production, and potential impacts from fire to 26% of the hawk's range. However, these factors are not the only ones threatening `Io habitat. The following should be evaluated in terms of threatened forest acreage. In some cases, field assessments may be needed:

1. Forest degradation from grazing by domestic and feral ungulates (multiple literature references in Gorresen et al. 2007);
2. Ongoing or potential loss of native forests of high value to the `Io;
3. Degradation of habitat by invasive plants. Strawberry guava, for example, has the

potential to invade and degrade up to 36% of `Io breeding range (Gorresen et al. 2007); 4. Other proposed activities that would eliminate or degrade habitat, such as tree harvest and production of palm oil tree.

Little analysis is provided on these threats (USFWS 2008), and in some instances it is not helpful. Consider, for example, the statement that "the best available data indicate that, despite the introduction of a variety of invasive plant species on the island of Hawaii, the population size and distribution of the Hawaiian hawk has remained relatively unchanged for the past 20 years, and no reliable extrapolation from current information suggests that this circumstance will change in the future." First, available data do not warrant a conclusion of an unchanged population over two decades, as indicated above. Second, there is no differentiation in terms of invasive species, when they arrived, how fast they have spread, and their likely or projected invasion of `Io habitats. Third, the reader is not informed as to what "current information" is available on invasive plants and on their potential impact on hawk habitat, only that "the effect of various invasive species on total vegetation cover has not been well studied."

Analysis is also needed to determine cumulative acreage likely to be impacted by the totality of habitat threats, given that about 55% of `Io breeding range is in private ownership and subject to economic pressures and development that can adversely impact the species (Gorresen et al. 2008). Another 39% of the range is held by the state of Hawaii – however, it is unclear as to how secure `Io habitat is within that acreage.

USFWS (2008) does not discuss the significance of old growth and other native forest types to the `Io population, and the conservation status of these forests. A majority of `Io nest sites have been found in native ohia trees, and few high density hawk areas, such as native forests with grass understory, are protected (Klavitter 2000).

Disease risk assessment: USFWS (2008) dismissed the threat to the Hawaiian hawk from imported bird diseases, particularly West Nile Virus (WNV), as speculative. Yet biologists are concerned about the spread of WNV, for instance, via infected mosquitoes that may arrive by airplane (Kilpatrick et al. 2006). USFWS (2008) provides a very limited assessment of WNV introduction risk and mitigation for it. For example, the de-listing proposal does not evaluate the state's pre-arrival isolation requirement and Bird Import Permit system for preventing entry of avian diseases, the adequacy of current measures to prevent the arrival of mosquito stowaways by aircraft or control their subsequent spread, our ability to control existing mosquito species that can transmit WNV, or the risk of WNV arrival through avian migration or other routes. Risk assessment models are available to help address these matters (Kilpatrick et al. 2006). Given that the `Io is a K-selected raptor with normally high adult survivorship and low reproduction (Griffin et al. 1998; Klavitter 2000), and considering high vulnerability of endemic island birds to introduced pathogens, the impact of introduced WNV on the species could be devastating.

Conclusions:

1. Further data is needed to determine population trend and distribution for Hawaiian hawk, and additional analysis is needed to gain confidence in new estimates of hawk abundance. Gorresen et al. 2007 recommended more comprehensive assessment of the hawk's demography and abundance, a strengthening of population estimates by re-designing surveys, and further examination of the relationship of observed and unobserved movement of hawks responding to playback broadcasts.

2. USFWS (2008) claimed that estimated or potential loss of habitat would not change the conservation status of the Hawaiian hawk over the next 20 years. However, this claim is not supported by complete analysis of factors that can lead to significant habitat loss and degradation, or by an evaluation as to how the hawk population will respond to anticipated habitat changes. Given that habitat is being lost and degraded, specific management agreements and plans should be in place to protect and recover habitat needed to sustain the species.

3. Removal of the Hawaiian hawk from the US list of endangered species is, in my view, unadvisable given its limited population size and breeding range (restricted to one island), uncertainty as long-term population dynamics, ongoing habitat loss/degradation of unclear magnitude, apparent lack of regulatory mechanisms or specific plans to ensure the security and stability of essential habitat, and substantial risk to the population with potential arrival of West Nile Virus and other avian diseases to the Hawaiian Islands.

References:

Gorresen, P.M., R.J. Camp, J.K. Klavitter, T.K. Pratt, and P.J. Hart. 2008. Abundance, distribution and population trend of the Hawaiian hawk: 1998-2007. Hawaii Cooperative Studies Unit Technical Report HCSU-009. University of Hawaii at Hilo.

Griffin, C. R., P. W. C. Paton, and T. S. Baskett. 1998. Breeding ecology and behavior of the Hawaiian hawk. Condor 100:654-662.

Kilpatrick, A.M., P. Daszak, S.J. Goodman, H Rogg. L.D Kramer, V. Cedeno, and A. A. Cunningham. 2006. Predicting pathogen introduction: West Nile Virus spread to Galapagos. Conservation Biology 20 (4): 1224–1231.

Klavitter, J. L. 2000. Survey methodology, abundance, and demography of the endangered Hawaiian hawk: Is delisting warranted? Masters Thesis. University of Washington.

U.S. Fish and Wildlife Service (USFWS). 1984. Hawaiian hawk recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2008. Withdrawal of Proposed Reclassification of the Hawaiian Hawk or Io (*Buteo solitarius*) From Endangered to Threatened; Proposed Rule To Remove the Hawaiian Hawk From the Federal List of

Endangered and Threatened Wildlife. Federal Register: August 6, 2008 (Volume 73, Number 152).