Brian Seasholes
The Endangered Species Act at 40: Species Profiles

HAWAIIAN HAWK

Image by Kanalu Chock, available on Wikimedia Commons

HAWAIIAN HAWK
(*BUTEO SOLITARIUS*)

Range:

Historic: the big island of Hawaii (prehistorically, the hawk existed on Molokai, Kauai, and perhaps Oahu).

When listed: same as historic, but reduced in area

When proposed for downlisting in 1993: same as when listed

When downlisting withdrawn and delisting proposed in 2008: same as when listed

Listed status: Endangered [32 FR 4001] 3/11/67, and then carried over to the ESA of 1973.

Current status: Unchanged. Proposed for downlisting from endangered to threatened, [58 FR 41684-41688] 8/5/93. Downlisting proposal withdrawn and re-proposed for delisting [73 FR 45680-45689] 8/6/08.

Official reasons for listing: Presumed imperilment because the FWS knew almost nothing about the hawk's population and because most raptors worldwide were experiencing population declines.[1]

Recovery criteria:

Downlist—A self-sustaining population of 2,000 adults, as distributed in 1983, with stable and secure habitat.[2]

Delist: No criteria.

Population:

Historic-Unknown

When listed: Unknown, but guessed to be in the low 100s

When proposed for downlisting in 1993: Roughly 1,400-2,500

When proposed for delisting in 2008: 3,085-3,239 (This likely does not represent a population increase because it was the result of a different methodology than previous estimates. But when data that previously estimated the population at around 1,500 were reanalyzed using this new methodology the population estimate was around 3,085).

---

[1] U.S. Fish and Wildlife Service. ND. *Threatened and Endangered Animals in the Hawaiian Islands*.

[2] U.S. Fish and Wildlife Service 1984i, p.25.

CLAIMS THAT THE HAWAIIAN HAWK IS AN ESA SUCCESS STORY

1) An ESA "Success Story" according to the U.S. Fish & Wildlife Service: "Population increase - The Hawaiian hawk was listed in 1967 with scant information and is now believed to number between 1,500 and 2,000 birds. The increase in numbers and stabilization of the population is the result of reduction of harassment and shooting, management of habitat and better availability of prey. The Service is considering reclassifying this species from endangered to threatened."[3]

2) "We've got a group of species that would almost certainly be extinct by now if it weren't for the protection of the Endangered Species Act…And all of them show increasing populations, they're on the rebound. In fact, we have a total of about forty-four members of the class of '67 that are now either recovered, well on the road to recovery or at stable populations because of the Endangered Species Act"—David Wilcove, then with Environmental Defense Fund, currently Princeton University, talking about members of the first cohort of species, listed in 1967 under the ESA's predecessor, the Endangered Species Preservation Act of 1966, and then carried over to the ESA of 1973, one of which is the Hawaiian hawk.[4]

3) The hawk has been termed a "stable species" due to the ESA by Environmental Defense Fund.[5]

[3.] U.S. Fish and Wildlife Service 1993e, p.3.

[4] National Public Radio 1993.

[5] David Wilcove et al., 1993, p.12.

CONSERVATION OF THE HAWAIIAN HAWK

The status of the Hawaiian hawk is something to celebrate, especially because it is one of the very few birds native to Hawaii that did not suffer a catastrophic population decline as a result of human colonization, starting with Polynesians some 1,600 years ago. Hawaii is the epicenter of species extinction in the U.S. for a number of reasons: many of the plants and animals are endemic only to the state; Hawaii is composed of islands so if species run out of habitat or are otherwise threatened there is nowhere else to go; due to the islands' geography and topography, many species have very limited habitats; and over a thousand years of human settlement, starting with the Polynesians, has led to massive habitat destruction and degradation.

Even though the Hawaiian hawk survived when so many other native Hawaiian birds went extinct or teeter on the brink of extinction, the hawk cannot be considered an ESA success story for several reasons; it may well be a case of data error, its population appears not to have increased since it came under the Act's protection in 1973, the Act did essentially nothing to conserve the hawk, and what were thought to be threats to the hawk's existence turned out not to be threats, to be much less significant threats than originally thought, or turned perhaps to be beneficial.

The FWS and others have constructed a narrative in order to justify the hawk's listing and tenure under the ESA, even though the narrative does not apply to the hawk. The narrative is basically the same as for most other Hawaiian endangered species: the arrival of man, especially Europeans and their descendants marked the end of Eden as evidenced by the extinction and imperilment of so much of the islands' native fauna and flora. The only problem is that the hawk is an anomaly because it, unlike other Hawaiian birds, has been able to thrive during this extinction spasm.

There are nine issues relating to the Hawaiian hawk that will be examined; population data, unthreatening threats, possible data error, listing process, literature, conservation efforts, human colonization of Hawaii, Babbitt's proof, and delayed delisting.

POPULATION DATA

One reason it is not possible to attribute much, if any, of the Hawaiian hawk's proposed delisting to the ESA is, according the FWS's own data, the hawk's population has likely not increased since being listed under the Act. The hawk may not even have stabilized under the ESA because the population was likely stable prior to the Act's passage. It was not until the mid-1970s that the FWS tried to obtain an estimate of the hawk's population. From 1976-1983 the FWS undertook a survey of the forest birds of all the Hawaiian Islands, one of which was the hawk. While a reliable range wide population estimate for the hawk was not arrived upon, the survey did make very rough estimate of 2,000 hawks.[6] More importantly, the survey concluded about the hawk; "Species is widespread, very adaptable in habitat and prey use; has good reproduction, high population densities for a raptor. In no immediate danger of extinction."[7]

It was not until 1980, however, that the FWS bothered to fund in-depth research on the hawk because there was "an almost complete lack of biological information on the 'io," as the agency admitted ('io is the native Hawaiian name for the hawk).[8] The FWS funded a comprehensive study of the hawk by a graduate student at the University of Missouri-Columbia named Curtis Griffin and his advisor, a professor at the same university. This study ran from 1980-1982 and resulted in a population estimate of between 1,400 and 2,500 individuals.[9] When the FWS published the Hawaiian hawk's recovery plan in 1984, the agency used this same estimate.[10] And when the FWS proposed to downlist the hawk in 1993, the agency again relied on the same estimate.[11]

Yet the FWS did not act on the proposed downlisting because of concerns that there was only one study of the hawk and the study was out of date. So in the 1990s, the FWS funded two additional studies of the Hawaiian hawk, both of which arrived at population estimates. The first

---

[6] Scott et al., 1986, p.374.

[7] Scott et al., 1986, p.79.

[8] U.S. Fish and Wildlife Service 1984i, p.20.

[9] Griffin 1985.

[10] U.S. Fish and Wildlife Service 1984i, p.7.

[11] U.S. Fish and Wildlife Service 1993a, p.41685.

study, published in 1997, estimated a total of 1,600 hawks, of which 560 were pairs (or 1,120 adults), and a stable population since at least the time of the 1980-82 study.[12] The second study, published in 2003, came up with an estimate of 1,457 hawks and found that the population had likely been stable for the previous twenty years.[13] These two studies used rigorous methods to survey the entire island of Hawaii—the hawk lives only on the big island, which is also known as Hawaii—and constituted the first reliable estimates of the hawk's population. Even so, it is striking that the population estimates arrived upon by these two studies are very much within, or close to, the range estimated by Griffin and the FWS forest bird survey. More importantly, by the early 2000s all indications were that the hawk's population had been stable for at least two decades.

Then in 2007 the FWS funded yet another survey, which was published in 2008. This survey used the same survey methodology as the one published in 2003 but used a different method of crunching the numbers. The result was likely the most accurate and sophisticated method of estimating the population, which resulted in 3,085 hawks. The authors of the 2008 survey also applied this newest method of number crunching to the data collected in the 1998-1999 survey and arrived at a revised population estimate of 3,239 hawks for that survey.[14] While it may appear that these two estimates demonstrated a marked population increase over the studies that estimated the population in the range of 1,500-2,500, this would be unwarranted because different methodologies were used. However, given the consistency of the population estimates in all the studies preceding the 2008 study, it is entirely plausible that if these other studies had used the same survey and data processing methodologies as the 2008 study, they, too, would have arrived at a population estimate of between 3,000-3,250 hawks.

The upshot of all these studies and population estimates is that in all likelihood the Hawaiian hawk's population has not change appreciably in the more than thirty years since the first study of the hawk was undertaken. Given the hawk's apparently stable population over this time period, it would also be reasonable to assume that the hawk's population had not changed

[12] Hall et al., 1997.

[13] Klavitter et al., 2003.

[14] Gorreson et al., 2008.

much in the seven years between the ESA's passage in 1973 and the beginning of the first reliable study of the hawk in 1980.

Even supporters of the ESA have been forced to admit that the hawk likely has a healthy population and that the hawk was listed on essentially non-existent data. "In the past, some biologists have claimed that 'Io numbers were reduced over previous levels; however, there were no population studies conducted to support this assertion," states the FWS. "A 1982 'Io study showed 'Io nests in a variety of habitats, both native and nonnative, and estimated the population between 1,400 and 2,500 hawks. Current estimates are still within this range."[15] The Nature Conservancy characterizes the hawk as being "still relatively common."[16] And the National Audubon Society asserts that the hawk's population is 2,150, despite providing no validation of this claim and that this figure is not within the range of either of the two studies conducted in the 1990s.[17]

Two of the ESA's boosters has gone so far as to claim that the hawk's population is on the upswing, even though there are no data to support this, in an apparent attempt to link the hawk's purported population increase with the ESA. "The 'io population has increased during recent years" claims the Natural Resources Defense Council (NRDC) even though no evidence of this is provided. "Rarely seen in the 1960s and 1970s, hawks are now frequently observed from the coast to the tree line on mountain slopes."[18] Similarly, Defenders of Wildlife claims the hawk's "numbers have been increasing in recent years."[19] The lack of substantiation of these claims by NRDC and Defenders, in addition to the use of the nonspecific term "recent years," means that serious doubt must be cast on the validity of these claims.

UNTHREATENING THREATS

The other main reason the Hawaiian hawk cannot be considered an ESA success story is that almost all of the factors that were thought to be threats, and were used by the FWS as

[15] U.S. Fish and Wildlife Service. ND. *Threatened and Endangered Animals in the Hawaiian Islands*.

[16] Nature Conservancy 2004.

[17] National Audubon Society. ND. Hawaiian Hawk.

[18] Natural Resources Defense Council. ND.

[19] Defenders of Wildlife. ND. *National Wildlife Refuges*.

justification to list the hawk and keep it listed under the ESA for decades, turned out not to be threats, vastly overstated threats, or even turned out perhaps to be beneficial.

When the FWS initially listed the Hawaiian hawk in 1967 under the Endangered Species Preservation Act, a predecessor to the ESA, there was no specific information about the hawk's population or threats to it. Then when Congress passed the ESA in 1973, the FWS carried-over the hawk to the Act, meaning the agency granted the hawk protection under the ESA without any substantive reassessment of its status.

It was not until the publication of the recovery plan in 1984 that the FWS officially provided justification for the hawk's listing under the ESA. The agency prefaced its enumeration of these threats by stating: "A number of factors have been suggested as causing the decline of native Hawaiian birds (Warner 1968, Atkinson 1977, Berger 1981). Although none appear to be severely limiting, several are believed to be detrimental to the 'io."[20] In short, the FWS assumed that factors detrimental to many of the birds of Hawaii were also threats to the hawk. The five factors identified by the FWS were:[21]

1) Predation of hawks and their eggs by introduced cats, rats, and mongoose
2) Disease introduced by humans (avian pox and avian malaria)
3) Human made chemicals (organochlorines and secondary poisoning from rodenticides)
4) Harassment and shooting
5) Habitat destruction and degradation

The first three threats were largely wild speculation on the part of the FWS and turned out not to be threats. The FWS seemed to have been aware of this because of the ways in which the agency characterized these so-called threats. Harassment and shooting appeared to be logical threats—because unfortunately some people like to harass and shoot large, slow-moving birds like hawks—despite no real evidence they were actually threats. Lastly, while it would appear that habitat destruction and degradation undoubtedly posed threats—because these factors are threats to most wildlife, but especially wildlife on a relatively small, isolated island like the big island of Hawaii—it is not clear that this was the case because of the hawk's ability to adapt to anthropogenic habitat change.

[20] U.S. Fish and Wildlife Service 1984i, p.8.

[21] U.S. Fish and Wildlife Service 1984i, p.11.

NON-EXISTENT THREAT OF NON-NATIVE MAMMALS

Contrary to the picture painted by the FWS, non-native mammals, primarily rats, may well have been beneficial because they comprise the majority of the hawk's diet. In addition, the FWS has no solid evidence that non-native mammal predation on hawks has been a problem, and the agency even admits this.

The FWS stated in the recovery plan, "there is no evidence they [non-native mammals] are significantly affecting the 'io. However, all of these predators overlap the range of the 'io, and in the instances when a relatively young chick falls from the nest, it is likely the chick would be eaten by one of these predators."[22] So after admitting that predation was not a threat, the FWS then tried to characterize it as such. The problem with this argument is that if a chick or young, as-yet-unable-to-fly hawk were to fall out of the nest, it would likely die from a variety of factors independent of predation, such as starvation, exposure to the elements, or dehydration. Perhaps realizing the tenuousness of this line of reasoning, the FWS concluded the recovery plan's section on predation with the following: "Considering that adult 'io commonly take all these predators as prey, with the possible exception of the cat, it is very unlikely that they pose any major threat to the 'io population."[23] Concluding a point by retracting it does not, to say the least, make for a very strong argument.

In 1993 when the FWS published the proposal to downlist the hawk, the agency again asserted that predation by non-native animals was not a threat. "[T]here has been no evidence that the hawk has been significantly affected by any introduced mammals."[24] Yet the FWS was still trying to leave the door open that predation by mammals was a potential problem, albeit minor, because the agency used the term "significantly." However, even this was still a misrepresentation because of two factors. First, there was no evidence of predation on hawks by non-native mammals. Second, non-native animals comprise essentially the hawk's entire diet. So any minor amount of predation by non-native mammals is almost certainly far outweighed by

[22] U.S. Fish and Wildlife Service 1984i, p.11.

[23] U.S. Fish and Wildlife Service 1984i, p.11.

[24] U.S. Fish and Wildlife Service 1993a, p.41686.

the overwhelming importance of such mammals to the hawk's diet.

In 2008, when the FWS proposed to delist the hawk, the agency was still trying to hedge on the issue of non-native mammals. While the FWS gave up on the issue of predation by non-native mammals, the agency still would not admit that non-native mammals were the hawk's most important source of food. "[T]here is no evidence of predation by these species [rats, cats, mongooses] on Hawaiian hawks or their eggs. There is evidence, on the other hand, that introduced mammalian species are a food resource for the hawk."[25] The FWS also stated that the hawk "appears to be adaptable in its ability to exploit non-native species as prey."[26] Introduced mammals were not merely "a" food source, they are the most important food source, and the hawk did not "appear" to be able to exploit non-native animals as prey, it depended on them.

BENEFIT OF NON-NATIVE ANIMALS

The paramount importance of non-native mammals, as well as well as non-native birds and invertebrates, as food sources for the hawk was first established by Griffin's research in the early 1980s. When Griffin conducted his research he tallied prey items brought by hawks to their nests and he observed prey items consumed by hawks away from nests. Of the total number of prey items Griffin was able to identify, 98.3% consisted of non-native birds, mammals and invertebrates. Thus, only 1.7% of all prey items were native species. When the portion of prey items was calculated by biomass, or weight, the difference was roughly the same—nonnative prey made up 99.0% of the hawk's diet while native prey only 1.0%. Of all prey items, introduced mammals were most significant because they constituted 75.0% of the hawk's diet as measured by biomass.[27] Rats (black, Norway and Polynesian) were by far the most common prey item, constituting 65% of the hawk's total prey biomass.[28] In terms of sheer number of prey items, hawks utilized seventeen identifiable species of which only three (all birds) were native.[29]

---

[25] U.S. Fish and Wildlife Service 2008d, p.45686.

[26] U.S. Fish and Wildlife Service 2008d, p.45683.

[27] Griffin 1985, pp.143-145.

[28] Griffin 1985, pp.143-145.

[29] Griffin et al.,. 1998, p.659.

Prior to human settlement of the Hawaiian Islands, there was only one native land mammal, the hoary bat. Given the paucity of mammals, the hawk's prehistoric diet very likely consisted largely of birds. But with the arrival of humans, which began with colonization by Polynesians some 1,600 years ago, many mammals as well as birds were introduced, and these species, especially mammals, came to comprise virtually all of the hawk's diet. The hawk's reliance on these introduced species is likely why the hawk is generally found in highest densities and greatest numbers in habitats that have been modified by humans, such as orchards, agricultural fields and other areas where there is what is known as "edge" habitat. Edge habitat occurs when patches of forest or trees have been cleared thus creating habitat that represents the edge of forest or other types of wooded areas. A more detailed discussion of this appears in the section of the profile that deals with habitat modification. The introduced species on which the hawk feeds generally thrive in edge habitat because the higher amounts of sunlight reaching the ground translates into more primary (i.e., plant) production. In turn this means more food for non-native animals, and therefore higher populations of these species than would exist in a native forest with a more closed canopy.

The chronology of Griffin's research and the publication of the recovery plan also make clear that the FWS could have incorporated his data on prey selection into the recovery plan but did not. Griffin conducted his research from April 1980 through July 1982. The FWS approved the recovery plan in May 1984. The FWS's failure to incorporate Griffin's findings raises the possibility that the FWS purposely omitted the importance of nonnative prey, especially mammals, from the recovery plan because this fact seriously undermined the so-called threat posed by nonnative mammals. This fact also undermined the larger FWS narrative of the hawk as a yet another Hawaiian bird species imperiled by human destruction of native forests and the introduction of animals and diseases. When Griffin, along with two co-authors, one of whom was his collaborator on the research, finally published their findings in a peer reviewed journal in 1998, the results were, of course, no different than in Griffin's 1985 study/Ph.D. dissertation.[30]

The truth about the Hawaiian hawk's prey preferences has been unsettling to the FWS and environmental pressure groups. One group has gone so far as to misrepresent the hawk's preference for non-native prey. The hawk, "has learned to hunt the rodents that have been

---

[30] Griffin et al., 1998.

introduced into the ecosystem, thus augmenting its ancient diet of forest birds," claims the Nature Conservancy.[31] This, however, paints a highly misleading picture because the hawk has done far more than "augment" its diet—it switched, likely decades if not centuries prior to the ESA's passage, to a diet consisting almost entirely of non-native species, most of which are rodents. In addition, the Nature Conservancy neglects to mention that non-native mammals are overwhelmingly preferred to birds of any sort, native and non-native, as a food source.

DISEASE

As for the threat posed by disease, it, like predation by non-native predators, turned out not to be a threat, and the first indication of this came from Griffin's study in the early 1980s. Griffin examined two things to determine whether avian malaria was affecting the hawk, nest success and the presence of the malaria parasite in hawk blood samples. Griffin compared nest success above and below 1,500 meters elevation, the point above which mosquitoes, which transmit avian malaria, are much less prevalent. He found that hawks above and below 1,500 meters did not have significantly different rates of nest success, which suggested that avian malaria had little, if any, impact on the hawk. To determine if malaria was present in the Hawaiian hawk, Griffin analyzed seventy-five samples blood taken from thirty-two separate hawks. The samples turned up negative, "indicating the species has very high immunogenetic capabilities for avian malaria," according to Griffin.[32] The other disease cited by the FWS as a potential threat to the hawk, avian pox, was also look for by Griffin. Of forty-four hawks he examined, "'pox-like' lesions" were only found on two. However, Griffin obtained no skin samples so it was not clear whether these lesions were pox.[33]

When the FWS proposed to downlist the hawk in 1993, the agency had to admit that avian pox and avian malaria were not threats to the hawk. "Compared with the other endemic forest birds that are extremely vulnerable to the two introduced avian diseases, neither disease appears to be a significant factor affecting the hawk population," stated the FWS.[34] When

[31] Nature Conservancy. ND. *Hawaii's Birds*.

[32] Griffin 1985, p.105.

[33] Griffin 1985, p.107.

[34] U.S. Fish and Wildlife Service 1993a, p.41686.

Griffin et al. published their findings in 1998, the results were derived from Griffin's field work and so were no different from his 1985 conclusions that these diseases were essentially not threats.[35] Klavitter et al. in their 2003 publication examined disease and found "no evidence that…avian pox, avian malaria, or *T. gondii* limited this population."[36] As all this evidence makes clear, avian malaria and pox have not been threats to the Hawaiian hawk. In 2008, when the FWS proposed to delist the hawk, it again had to admit that these two diseases were not factors in the hawk's conservation.

CHEMICALS

Chemical compounds—in particular organochlorines, most notably DDT that led to catastrophic population declines in other raptors such as the bald eagle and peregrine falcon—were found to pose little or no threat to the hawk, and the FWS admits this in the recovery plan. "[O]rganochlorine compounds do not appear to be a factor affecting 'io populations," according to the FWS in the 1984 recovery plan. The reason for this is because very little of these chemicals were used in Hawaii and because the FWS found just trace amounts in several eggs and carcasses that were sampled.[37] The hawk's recovery plan identifies inadvertent poisoning by rodenticides as another of threat. Yet the recovery plan then states "there is no direct evidence of secondary poisoning of 'io."[38] Several pages after this admission, the recovery plan provides a more honest evaluation of the threat posed by organochlorines. The plan states the threat was "considered essentially nonexistent."[39] As with predation by nonnative mammals, contradiction and retraction are not especially effective method of argument.

The FWS admits in the recovery plan that the potential for poisoning was considered by the agency to be "low" because of "the currently limited use of rodenticides in Hawaii and the

---

[35] Griffin 1985, p.107.

[36] Klavitter et al., 2003, p.171.

[37] U.S. Fish and Wildlife Service 1984i, pp.12-13.

[38] U.S. Fish and Wildlife Service 1984i, p.13.

[39] U.S. Fish and Wildlife Service 1984i, p.21.

highly sedentary and territorial nature of the 'io."[40] Still, the FWS tried in the recovery plan to salvage the issue of chemical poisoning by suggesting that it could be a future threat. "Future uses of rodenticides in Hawaii are unclear," the agency intoned. "Changes in agricultural practices and types of rodenticides could possibly result in some impact to the 'io."[41] True, and a massive hurricane, known as a typhoon in the Pacific Ocean, or climate change, or any number of factors could potentially pose serious threats to the Hawaiian hawk. There will always be future unanticipated threats to the hawk, just as there will be to many species of wildlife in Hawaii and the mainland U.S. However, by couching the potential threat to the hawk posed rodenticides in such speculative terms the FWS was clearly grasping at straws in a desperate effort to make the "threat" appear more significant than it actually was.

As with the portrayal of the "threat" of organochlorines, a few pages after painting this seemingly ominous picture of the threat posed by rodenticides in the recovery plan, the FWS provided more a more candid assessment of the threat posed by the two rodenticides in question, zinc phosphide and fumarin.

> "No field experiments were conducted on the potential effects of these two rodenticides on [the] 'io, but laboratory experiments have indicated that owls fed rats killed with fumarin appear to be unaffected by this rodenticide (Mendenhall and Pank 1980). Furthermore, zinc phosphide is considered relatively safe for non-target species due to its rapid decomposition into harmless products (Hood 1972). Today, Hawaiian agriculture uses few anticoagulant rodenticides, and depends primarily on zinc phosphide for rodent control."[42]

Because the recovery plan was based largely on Griffin's research, he reached virtually identical conclusions about rodenticides and organochlorines. However, as the FWS pointed out in the recovery plan, the agency knew about the lack of threat from zinc phosphide since 1972 due to Hood's publication. And the FWS knew since 1980, with the publication of Mendenhall and

[40] U.S. Fish and Wildlife Service 1984i, p.13.

[41] U.S. Fish and Wildlife Service 1984i, p.13.

[42] U.S. Fish and Wildlife Service 1984i, pp.20-21.

Pank's article, that fumarin posed little threat to raptors in general.

When the FWS proposed in 1993 to downlist the hawk, and in 2008 when the agency proposed to delist, no mention was made of rodenticides as potential threats. Unlike predation by non-native mammals, the FWS folded its tent on the so-called threat posed by these chemicals and did not even attempt to broach the topic because the agency seemed to have realized the futility of doing so.

That left organochlorines as the remaining chemical compounds originally thought by the FWS to be contributing to the hawk's decline. "However, relatively few of these compounds are used in Hawaii," stated the FWS in the recovery plan, "and only trace amounts have been found in 'io eggs and carcasses which have been analyzed (Berger 1981; C.R. Griffin unpubl. data). Thus, organochlorine compounds do not appear to be a factor affecting the 'io population."[43] As with rodenticides, the FWS made no mention of the "threat" of organochlorines in the proposed downlisting or delisting. In 2003, Klavitter et al. reexamined this issue and came to the conclusion that organochlorines were not a threat. "We found no evidence that environmental contaminants…limited this population."[44]

The FWS got the idea that organochlorines were a potential threat from Andrew Berger, an ornithologist who wrote a book on Hawaii's birds. Apparently Berger found trace amounts of DDT and PCBs in a single Hawaiian hawk egg, and this formed the entire basis for the purported threat of these chemicals. However, Berger's possible misrepresentation of these chemicals in the hawk egg cast doubt on this entire issue. When Curtis Griffin did his research in the early 1980s, he collected three eggs and the carcass of one chick and compared the amounts of chemicals found in them with the amounts found in Berger's egg. "[R]elatively few of these [organochlorine] compounds are used in Hawaii (L.F. Pank, pers. comm.), and none or only trace amounts were found" in the material collected by Berger and himself, according to Griffin.[45] In addition, Berger never bothered to do two crucially important things; specify the quantities of the "trace" amounts of DDT and PCBs found in the egg he collected, and compare these amounts to the quantities known to cause reproductive failure in other raptors. These data on other raptors

[43] U.S. Fish and Wildlife Service 1984i, pp.12-13.

[44] Klavitter et al., 2003, p.171.

[45] Griffin 1985, p.107.

were contained in a large body of peer reviewed literature that would have been easily accessible to Berger.

HARASSMENT AND SHOOTING

In contrast to the foregoing three so-called threats to the hawk (non-native mammals, disease, and chemicals), harassment and shooting appears to have been a real threat, albeit speculative and likely fairly insignificant. "The current extent of these losses [of hawks from harassment and shooting] is unknown," stated the FWS in the 1984 recovery plan. "However, with urbanization and access to the back country by plant pickers, marijuana growers, sportsmen and hikers, the problem can be expected to increase."[46] In the 1993 proposed downlisting the FWS noted that "Shooting by people who considered the hawk to be a threat to small farm animals may have been a significant factor to the population in the past. Nest site disturbance may increase with increased urbanization and modification of native habitat. Shooting is probably insignificant, given greater exposure of endangered species issues and public education."[47] The salient point, however, is the ESA was not necessary for successful public relations efforts to occur for the Hawaiian hawk because this could have been accomplished under either of the Act's two predecessors, under similar legislation not containing the ESA's land-use regulations, or even without any endangered species legislation at all.

As with many of the so-called threats to hawk, the supposed threat of shooting can be traced back to Andrew Berger's account of the hawk in his book on Hawaiian birds.[48] "The chief reasons for the decline in numbers of this interesting and beneficial bird are believed to be shooting by uninformed people, who consider all hawks to be 'chicken hawks," Berger stated.[49] The term "chicken hawks" is in reference to the belief by some people that all hawks prey on domestic chickens, not that there were any raptor species in Hawaii other than the Hawaiian hawk. Yet Berger provides no substantiation or citation with which this claim about people

[46] U.S. Fish and Wildlife Service 1984i, p.9.

[47] U.S. Fish and Wildlife Service 1993a, p.41686.

[48] U.S. Fish and Wildife Service 2008d, p.45685.

[49] Berger 1981, p.83.

shooting Hawaiian hawks can be attributed or verified.

Despite the near total lack of evidence on shooting and harassment, the National Audubon Society weighed in on the issue. "It is believed that disturbance of nesting birds and the illegal shooting of Hawaiian Hawks might be the most important threats facing this species, but it is difficult to accurately determine the level of shooting and trapping," according to the Society.[50]

There are several problems with this assertion. First, habitat destruction coupled with introduced animals and pathogens, not direct persecution and disturbance, has been believed by many to have posed the greatest threat to the hawk. "Conversion of native forest to residential [housing], large-scale agriculture, exotic forestry, and to business and industrial areas have been and will continue to have the greatest negative impact on this species," states the FWS.[51] Even though this gives the misleading impression that the hawk lives exclusively in native forest, the overall point is that destruction of habitat—here defined as land, including land modified by humans, that has not been subjected to intensive or semi-intensive residential or commercial development—is detrimental to the hawk. Indeed, habitat destruction is the single leading cause of imperilment for species worldwide, and the Audubon Society should be well aware of this. Second, the FWS and the various scholarly publications on the hawk never cited trapping as a threat; in the recovery plan, the proposed downlisting or delisting, or by any of the experts cited in this profile of the hawk—Griffin, Griffin et al., Hall et al, Klavitter et al.

It is perfectly reasonable to assume harassment, both inadvertent and intentional, could be a threat to the hawk. However, this assumption is debatable because of the increased proximity of people and hawks due to anthropogenic alteration of native forests. This is because, as will be discussed below in the sub-section on habitat destruction and degradation, it has become increasingly clear that the Hawaiian hawk prefers certain types of human altered habitat for many activities to contiguous, old growth, closed canopy native forests. Given that this is the case, it would appear that the hawk is relatively tolerant of humans.

---

[50] National Audubon Society. ND. Hawaiian Hawk.

[51] U.S. Fish and Wildlife Service. ND. *Threatened and Endangered Animals*.

HABITAT UTILIZATION

At first glance, it would seem to be axiomatic that the widespread anthropogenic destruction and degradation of native forests that has occurred over much of the island of Hawaii (the only of the Hawaiian Islands where the hawk has been known to exist historically) has been detrimental to the hawk. After all, habitat destruction and degradation is the leading cause of species imperilment worldwide, and these two factors are the leading causes of the imperilment and even extinction of many of the Hawaiian Islands' native birds species.

It is not at all clear, however, that this narrative of human-caused habitat destruction applies to the hawk. It may even be that the very habitat destruction and degradation that has proved so devastating for the vast majority of the Hawaiian Islands' native birds has been beneficial to the hawk because of the hawk's preference for "edge" habitat, which is often created by clearing portions of native forests. On the other hand, the hawk does require large trees, preferably the native ohia tree, for nesting. Native trees constitute 86% of the hawk's nest sites, and nests in the ohia tree alone comprise 81% of the total nest sites.[52] The results of the handful of studies of the hawk reveal that as long as there is sufficient number of large native trees for nesting, and even if these trees exist in highly modified habitats such as orchards or agricultural fields, the hawk not only persists but thrives. The relationship between the hawk and habitat types is somewhat complex so in order to examine this it is useful first to look at how the FWS and some environmental pressure groups have characterized the hawk's habitat requirements. This will be followed by an examination of the conclusions by the three in-depth studies of the hawk and its habitat utilization.

The FWS and especially the National Audubon Society mischaracterize the issue of habitat degradation and destruction as it pertains to the Hawaiian hawk, specifically the hawk's use of areas consisting of non-native vegetation, especially agricultural fields, for foraging. Hawks "depend on native forest for nesting, but are able to use a broad range of habitats for foraging, including papaya and macadamia nut orchards, as well as forests dominated by native and introduced vegetation, from sea level to 6,500 feet elevation," according to the FWS.[53]

---

[52] Clarkson and Laniawe 2000.

[53] U.S. Fish and Wildlife Service. ND. *Threatened and Endangered Animals*.

"Most successful nesting, however, is confined to higher elevation native forest with ohia trees," asserts the National Audubon Society. No mention is made of foraging in areas of non-native vegetation.[54]

Both of these statements give the impression that the Hawaiian hawk is dependent on native forests, which over much of the island of Hawaii means moist tropical forests that are composed of large trees forming a fairly dense canopy over an understory of shrubs, ferns and small trees. But it has been known since at least the time of the publication of Griffin's study in 1985 that hawks nest and hunt successfully in highly modified habitat, such as the orchards mentioned by the FWS, but that they prefer to nest in native ohia trees. 81% of the nests found in the 2003 study were in the ohia tree.[55] Griffin, however, found no difference in nest success rate between native forest habitat and habitat in which nonnative vegetation was dominant.[56]

It is interesting to note that of the eight hawks Griffin radio-tagged during the course of his study in the early 1980s, so that he could gather data on their daily movements, the one with the smallest home range lived in an agricultural area.[57] Griffin speculated that this may have been due to the abundance of food, especially rats and mongoose, both of which are non-native species, in the area. The preference of hawks for human modified habitats, such as agricultural areas with sufficient number of adjacent or nearby large trees for nesting, is supported by the research of Hall et al. and Klavitter et al. These researchers documented that the hawk favors modified habitats that have at least a few large native trees, rather than the type of contiguous, old growth native forest that hawks had been thought to favor.

After Griffin's study, it became clear that the hawk readily used human modified habitats. "As these modified areas expand with an increasing human population, the hawk may be one of the few native Hawaiian birds with the versatility to adapt to a changing landscape," admitted the FWS in 1993 when the agency proposed to downlist the hawk.[58] Unfortunately, this candor proved to be an aberration because the FWS appears to have realized this admission casts

---

[54] National Audubon Society. ND. Hawaiian Hawk.

[55] Klavitter et al., 2003, p.170.

[56] Griffin et al., 1998.

[57] Griffin 1985, p.173.

[58] U.S. Fish and Wildlife Service 1993a, p.41685.

doubt on the hawk's listing under the ESA because, after all, anthropogenic habitat destruction and degradation was a reason for listing. So when the agency proposed to delist the hawk in 2008, it made no such admission.

The two studies published in 1997 and 2003 provide confirmation of Griffin's findings regarding the hawk's ability to live and nest in non-native habitats, albeit habitats that contained at least a few large native trees in which hawks could nest. The peer reviewed study published in 1997 by Hall et al. found that hawks prefer to nest in modified habitats as the following table indicates:[59]

Hawk density (hawks/hectare)	**Habitat Type**
0.009	Residential area with scattered exotic and native vegetation
0.005	Native trees and grassland; non-pioneer community
0.005	Mixed exotic and native trees, sometimes with mixed exotic and native shrubs or grass
0.004	Grassland with scattered exotic and/or native trees (especially ohia); scattered homes
0.003	Native tees and native shrubs occasionally with scattered orchard trees, or exotic understory and homes
0.003	Macadamia nut or papaya orchard with native and/or exotic trees or shrubs at edges
0.002	Sugar cane fields with exotic and/or native trees or shrubs at edges, as windrows
0.0004	Short or tall exotic trees with exotic shrubs, and sometimes exotic grasses

One especially striking aspect of these habitat types is that they all contain, to varying degrees, non-native vegetation. The "grass" and "grassland" cited is almost certainly non-native, as are the agricultural areas. It is apparent that the Hawaiian hawk requires relatively large trees, which tend to be native, especially the ohia, but that these trees do not have to exist in large, contiguous forests. In fact, as these data show, hawks exist in greatest densities in human modified habitats. The hawk is not often seen in "small patches of mixed native and exotic forest surrounded by open fields or orchards, they were commonly observed over the open areas, or in open places, with scattered native and/or exotic trees," according to Hall et al. "For example, in sugar cane fields with ribbons of native or exotic trees between fields, or with trees extending down from higher elevations forests; in open pasture land with scattered native trees;

[59] Hall et al., 1997, pp.12-13.

in orchards (especially macadamia nut) with taller native and/or exotic trees at the perimeters."[60]

The other study of the Hawaiian hawk, published in 2003, has similar findings about the hawk's preferences for various habitat types.[61]

Hawk density (hawks/km.²) totaled over four separate time periods	**Habitat Type**
8.75	Native trees and mixed exotic and native shrub vegetation on lava; a pioneer community
8.50	Native and/or exotic shrubs dominate the landscape; lava occasionally visible
8.50	Residential areas with scattered exotic and native vegetation
5.75	Mixed exotic and native trees, sometimes with mixed exotic and native shrubs or grass
4.75	Areas dominated by grass with few or none native and/or exotic trees; scattered homes
4.50	Mature native forest (mature native trees and shrubs dominate)
4.00	Short or tall exotic trees with exotic shrubs and grasses
3.75	Sugar cane fields with exotic or native trees or shrubs at edges
2.25	Macadamia nut, papaya, or other orchard with native and/or exotic trees or shrubs at edges
2.25	Mixed exotic and native trees, sometimes with mixed exotic and native shrubs and grasses

The habitat utilization differences between the two studies are relatively minor when compared to the overall similarities, which is that the Hawaiian hawk is found most frequently in habitats that have been modified, often extensively, by humans. "These [preferred] habitats have numerous and accessible perch sites, an open understory, seldom-used dirt roads, and many introduced birds and small mammals," according to 2003 study.[62] "[L]ogging and grazing in mature native forests [that] have created this type of 'edge' habitat (Cuddihy and Stone 1990:47), which has led to increased densities of *Buteo* elsewhere."[63] *Buteo* is the taxonomic classification for the Hawaiian hawk and other hawks similar hawks that are characterized by broad tails, rounded wings and are often seen soaring. The most well-known *Buteo* in the contiguous U.S. is

[60] Hall et al., 1997, p.14.

[61] Klavitter et al., 2003, pp.167,169.

[62] Klavitter et al., 2003, p.172.

[63] Klavitter et al., 2003, p.172.

the red-tailed hawk, which, like the Hawaiian hawk, is often seen in modified "edge" habitat because of the abundance of prey and its ability to live in relatively close proximity to humans.

As Klavitter et al., the authors of the 2003 study, allude to, it is possible that habitat destruction and degradation may actually have led to the Hawaiian hawk existing in greater densities than it would have in contiguous native forests. The habitat preferences found by Klavitter et al., as well as Hall et al., the authors of the 1997 study, provide strong support for this. In addition, as Klavitter et al. found, 68% of the hawk's entire population lives in these modified habitats while the other 32% lives on federal and state protected lands, portions of which have the type of native forest habitat supposedly preferred by the hawk.[64] Many of these federal and state lands were created with the purpose of conserving native habitats, including the type of forest thought to be essential to the hawk's existence. But the fact that the hawk does not prefer this type of habitat presents the FWS and environmental pressure groups with an uncomfortable reality. One of the primary reasons for the hawk's initial and continued listing is habitat destruction and degradation. But these factors turn out to be much less, and more nuanced, threats. Indeed, the hawk has been able to adapt so well that it occupies 58.7% (2,372 sq. miles) of the island of Hawaii.[65]

Perhaps just as important as the total amount of land occupied by the hawk is the composition and security of the land occupied. Of the land occupied, 55% is zoned for agriculture and 44.7% for conservation.[66] And of the conservation land, 39% is owned by the state, 6% by the federal government, and less than 1% by counties.[67] Lastly, less than 1% of the hawk's habitat consists of urban or rural land that could potentially be destroyed or degraded by development. The reason for this is that the County of Hawaii, which consists entirely of the Island of Hawaii, and the State of Hawaii have some of the strictest zoning and land use control laws and regulations in the nation. In 1961 Hawaii became the first state to establish a statewide land use control mechanism through the creation of the Land Use Commission. Since then the state has gained a well-earned reputation as a difficult place to get land use permits not only

[64] Klavitter et al., 2003, p.170.

[65] Klavitter et al., 2003, p.170.

[66] U.S. Fish and Wildlife Service 2008d, p.45684.

[67] Gorresen et al., 2008, p.26.

because of the Commission but also because of county-level counterpart entities.[68] "Changes in zoning from one category to another (e.g., agriculture to urban) are made through petitions to the State Land Use Commission," as the FWS pointed out when it proposed to delist the hawk. "There are currently no pending petitions that would change current agriculture, conservation, or rural zones to urban on the island of Hawaii."[69] Given the Commission's well-deserved reputation for putting the brakes on development, or even simply rezoning land, the hawk's habitat is very secure.

One of the intriguing findings of the 2003 study by Klavitter et al. is that the hawk appears to have "saturated mature native forest with grass understory, lower-elevation forests, grasslands, and plantations with forest edges."[70] These habitats constitute most of the hawk's most preferred habitat types, with mature native forest with native shrub understory being the one habitat type not saturated with hawks. Furthermore, if the hawk has saturated virtually all of its most preferred habitat then this would mean that the overall population is at or near carrying capacity.

The combination of the hawk's clear preference for modified "edge" habitat, and that the hawk will nest in this type of habitat as long as it has a sufficient number of large native trees, is ironic because one of the primary reasons for listing the hawk under the ESA was the loss of native forest habitat and the creation of modified "edge" habitats. Overall, the hawk's preference for edge habitat, provided there are sufficient number of large, native trees for nesting is good news for the hawk and its prospects for maintaining a large, healthy population in the future.

FWS HANGING ON TO THREATS, OLD and NEW

Despite all of this good news about the types and security of habitat used by the Hawaiian hawk, the FWS tried to see it otherwise. Between the proposed downlisting of the hawk in 1993 and proposed delisting in 2008, the FWS came up with another threat to the hawk; conversion of sugarcane fields to monocultures of macadamia or eucalyptus trees due to the demise of

[68] Economist 2007.

[69] U.S. Fish and Wildlife Service 2008d, p.45684.

[70] Klavitter et al., 2003, p.172.

Hawaii's sugarcane industry in the mid-1990s. As of 2008, 24,000 acres were being cultivated for eucalyptus and additional thousands of acres were being planned for conversion. In reality, the threat was minimal, as the FWS admits. "[E]ven if all 80,000 acres of the best potential land for cultivating forest on the island were converted to eucalyptus trees in the future, that would represent…less than 5 percent of Hawaiian hawk habitat," states the FWS.[71] A more significant potential threat is from conversion of agricultural lands to crops that will be used to produce biodiesel fuel. If all 185,000 acres with the potential for biodiesel were put into production, this would represent 13% of the hawk's habitat. But this is a very unlikely prospect according to the FWS.[72]

In addition to the new threat of land conversion to agriculture and forest, the FWS has persisted in hanging on to the old threats even in the face of a growing body of research showing that these threats are either not threats or are much less substantial threats than they were originally believed to be.

In the 1993 proposed downlisting, the FWS stated, "According to Griffin (1985), the Hawaiian hawk has adapted adequately to increased habitat modification and the introduced predators."[73] Then in the 2003 proposed delisting, the FWS stated:

1) "There is evidence, on the other hand, that introduced mammalian species are a food resource for the hawk."[74]
2) "The Service published a proposed rule to reclassify the Hawaiian hawk from endangered to threatened on August 5, 1993 (58 FR 41684), based on Griffin's (1985, p. 25) preliminary population estimate of 1,400 to 2,500 adult birds and because it was discovered that the species occupied, and nested in, non-native forests and exploited non-native prey species as a food resource."[75]
3) "The Hawaiian hawk reproduces and forages in native and non-native habitats on the

[71] U.S. Fish and Wildlife Service 2008d, p.45684.

[72] U.S. Fish and Wildlife Service 2008d, p.45685.

[73] U.S. Fish and Wildlife Service 1993a, p.41685.

[74] U.S. Fish and Wildlife Service 2008d, p.45686.

[75] U.S. Fish and Wildlife Service 2008d, p.45682.

> island of Hawaii (Griffin 1985, pp. 102–103; Morrison *et al.* 1994, p. 23; Hall *et al.* 1997, pp. 13–14; Griffin *et al.* 1998, p. 658; Klavitter 2000, pp. 38–39, 56; Klavitter *et al.* 2003, pp. 169–171) and appears to be adaptable in its ability to exploit non-native species as prey."[76]

The FWS's portrayal is quite inaccurate and misleading. In reality, as documented by research, the hawk has done far more than "adapted adequately" to eating non-native prey, or that introduced mammals are "a" food source, or that the hawk "appears to be adaptable" due to its ability to prey on non-native species. Another indication of the FWS's attempt to downplay the significance of non-native prey, especially mammals, is that in the proposed delisting the agency repeatedly quantifies the threat posed, or lack thereof, to the hawk by anthropogenic habitat destruction. But when the issue turns to non-native prey, the agency resorts to qualitative data, and misleadingly at that, despite very detailed quantifiable data could easily have been obtained from Griffin's research.

Closely related to the issue of non-native mammals is that of habitat change because this, specifically the creation of "edge" habitat, likely contributed to the enormous populations of non-native animals, rats in particular, on which the hawk relies for 99% of its food biomass. In addition, the Hawaiian hawk seems to be relatively tolerant of the presence of humans, as are other *Buteo* hawks such as the red-tailed hawk. Indeed, a number of the habitats most preferred by the hawk are those in which the hawk is necessarily in relatively close proximity to humans. So long as there are sufficient number of large native trees, preferably native ohia trees, the hawk can thrive in a wide range of habitats including those that are non-native and highly modified by humans. The general lack of threats to the hawk brings into question not only the validity of listing the hawk under the ESA but also why the FWS has retained the hawk under the Act for decades.

The so-called threats to the hawk have, if nothing else, proven to be very durable. In 2005 the state of Hawaii released a document titled *Hawaii's Comprehensive Wildlife Conservation Strategy* so that the state could be eligible to receive funding through a program administered by the FWS called State Wildlife Grants. The stated purpose of the program, which has been in existence since 2001, is to provide funding for non-game wildlife, especially

[76] U.S. Fish and Wildlife Service 2008d, p.45683.

"species in greatest need of conservation."[77] One of the species Hawaii identified in such need was the Hawaiian hawk. **"**'Io are likely susceptible to the same factors that threaten other native Hawaiian birds, including: loss and degradation of habitat, predation by introduced mammals, and disease," according to the report.[78] The report then goes on to identify three main types of threats; "Shooting, trapping and harassment," "Contaminants or toxins," and "Disease."[79] As discussed, these three factors are either fairly speculative or insignificant (shooting, trapping and harassment), or are negligible, if even that (contaminants or toxins and disease). Given this, and that accurate information debunking these "threats" was available well prior to the publication of the *Strategy*, it would seem that the state of Hawaii is simply invoking these so-called threats as a means to bolster their case for federal funding.

CONCLUSIONS ON THREATS

Almost all of what were thought to be threats to the Hawaiian hawk have either turned out not to be threats (predation by non-native mammals, disease, chemicals), likely beneficial (non-native animals as a prey source), perhaps beneficial in some circumstances (non-native habitat), or were overblown (urbanization and conversion of agricultural land to plantations). Of all of these factors, the hawk's use of non-native animals, especially mammals, as the overwhelming source of prey has been the most discomfiting to the FWS and pressure groups because it runs directly contrary to the narrative for Hawaiian birds in which non-native animals have devastated native bird species.

PROBABLE DATA ERROR

The Hawaiian hawk may well be a case of data error, meaning that it never merited being listed under the ESA because it has always had a large and healthy population. Indeed, the hawk's population may be at or near its prehistoric, or at least pre-ESA, levels. Five pieces of

[77] U.S. Fish and Wildlife Service 2004f.

[78] Mitchell et al., 2005, Chapter 7, Raptors: 'Io.

[79] Mitchell et al., 2005, Chapter 7, Raptors: 'Io.

information point to this; population stability, expert opinion, habitat use, prey preference, and minimal habitat conservation.

POPULATION STABILITY AND EXPERT OPINION

By all indications, as the above-cited studies indicate, the hawk has had a stable population since the early 1980s and likely since at least the time of listing under the ESA in 1973. The FWS was forced to concede in the recovery plan that by the early 1980s the large and stable population "indicat[es] that the 'io is more common than previously thought."[80] When the FWS proposed to downlist the hawk in 1993, the agency was more specific. "The result of information gained during recovery activities, such as conducting censuses, which resulted in substantial improvement in the knowledge of the distribution of this species, indicating that the bird was more numerous than reported when it was listed in 1967," stated the FWS.[81] In the proposed downlisting the FWS also discussed some of the historical population data on the hawk. "Tomich (Banko 1980) suggested that in the late 1960's and early 1970's the population in one of the districts in Hawaii was more numerous than in earlier years. Tomich (Banko 1980) and Morrison's (1969) surveys may have been the first indications that the Hawaiian hawk was indeed more numerous than previously reported."[82] Yet in 2008 when the FWS withdrew the proposed downlisting and substituted it with the proposed delisting, the agency made no such explicit admissions that the hawk was a possible case of data error.

The 1997 and 2003 peer reviewed articles on the hawk also concluded that the population was stable since at least the time of Griffin's study in the early 1980s. "[O]ur results were similar to those found 10 years earlier by Griffin (1985,1989), indicating the likelihood of a relatively stable population during the past decade," stated the authors of the 1997 survey.[83] "Population size has not changed appreciably for 20 years and may be similar to historic population size," according to the authors of the 2003 paper.[84]

---

[80] U.S. Fish and Wildlife Service 1984i, pp.7-8.

[81.] U.S. Fish and Wildlife Service 1993a, p.41684.

[82] U.S. Fish and Wildlife Service 1993a, p.41685-41686.

[83] Hall et al., 1997, p.14.

[84] Klavitter et al., 2003, p.172.

HABTIAT USE

The Hawaiian hawk prefers disturbed habitat, at least for feeding and resting, not intact native forest as was initially thought, in part because of higher prey densities in disturbed habitat. In addition, the hawk can successfully nest in disturbed habitat so long as enough large trees to construct nests. As was demonstrated by the data from the 1997 and 2003 studies, these trees can exist in highly disturbed habitat such as the edges of pastures and agricultural fields. Indeed, the hawk appears to prefer "edge" habitat to contiguous forest. Given this preference, and that much of the island of Hawaii consists of edge habitat, it is possible the hawk has a higher population historically than it did prehistorically. The Hawaiian hawk does not fit the historical narrative in which anthropogenic habitat destruction and degradation has been detrimental to Hawaii's birdlife. To the contrary, the Hawaiian hawk may well have benefitted from human colonization of Hawaii.

PREY PREFERENCE

The Hawaiian hawk's ability to switch prey sources, from its pre-human colonization diet that consisted largely of native birds, to its post-colonization diet of primarily non-native mammals, has a number of implications. One implication is that the hawk's preference for non-native mammals likely was a key factor in the hawk's probable population stability since at least the time it was listed under the ESA.

One way of looking at the issue of prey preference is to consider the hawk's diet pre-and-post human colonization. Prior to human colonization, the only native mammal was the hoary bat and it is not clear if the hawk preyed on it. The rest of the hawk's diet had to have consisted almost entirely of birds. While the percentage of the hawk's diet that consisted of bird biomass is unknown, it is a reasonable assumption that it was fairly substantial, if not the majority. But with human colonization, starting with the Polynesians around 400 A.D. and then accelerating with Europeans in the late 1700s, a wide array of bird and mammal species were introduced. This proved devastating for Hawaii's native birds, as many of them went extinct. What this massive bird extinction meant for hawk's bird prey biomass is unclear. The introduction of bird

borne diseases and nonnative mammals drastically reduced the amount, as measured by biomass, of available indigenous bird prey. However, non-indigenous birds took up some of the slack, meaning that with the advent of human colonization potential bird prey for the hawk was not necessarily lost because it was, to some degree, replaced by nonnative birds.

For the sake of comparison, let's assume that the amounts of bird biomass available to hawks prehistorically and historically are roughly the same, although, of course, the specific species that compose this biomass have changed radically. If, after the introduction of mammals, hawks preferred birds over mammals then one would expect birds, as measured by biomass, to make up the majority, or at least a substantial portion, of the hawk's diet. Not only is this not the case, but the fact that birds constitute such a miniscule portion of the hawk's diet—1.0% as measured by biomass and 1.7% as measured by individual prey items—very strongly suggests that the hawk prefers mammals, especially rats, to birds. In other words, the hawk did not simply substitute introduced birds for native birds because a new, more attractive prey source was also available—mice, mongoose and especially rats. There are likely a number of reasons for this, including that rats are easier to catch and have more average biomass per individual than native or non-native birds.

The implications of the hawk's preference for non-native animals, particularly mammals, are significant. With the introduction of exotic small mammals and birds to Hawaii, the availability of prey exploited by the hawks "increased dramatically," according to the FWS.[85] With a greater quantity of more-easily-caught-food available, the hawk population was likely able to increase, either by expanding into previously unused or little used habitats or by existing in higher concentrations in long-used habitats.

One result of this dramatic increase in prey availability has been the hawk's ability to reproduce successfully and sustain a healthy population. "The species has relatively high breeding success, in part because of the prevalence of introduced birds and mammals in the hawk's diet," concluded Griffin et al.[86] In turn, this suggests the hawk may have the ability to maintain a larger total population than it did prior to human colonization, or, at the very least, to

---

[85.] U.S. Fish and Wildlife Service 1993a, p.41684.

[86] Griffin et al., 1998, p.661.

maintain a similar population size by being able to offset the detrimental impacts of anthropogenic habitat loss.

A related issue is the ease, in terms of energy expended, with which the hawk captures prey. The Hawaiian hawk takes more time rearing its young than any other *buteo* hawk species except perhaps for the one other. Griffin et al. speculate that this has occurred because the Hawaiian hawk evolved eating primarily birds, "which are difficult to capture."[87] As a result, more effort, and hence more energy, was required by the hawk to obtain sufficient native prey biomass, i.e. birds, to raise its young successfully. With the advent of non-native prey, rats in particular, the hawk seems to have been able to obtain a higher proportion of food biomass to energy expended. In short, the hawk is able to obtain more food with less energy. This means that adult hawks have been healthier since human colonization, more likely to breed and raise young successfully, and young hawks starting out on their own will be more likely to survive to adulthood. In general, the entire species will likely be fitter, or more likely to survive in good health.

Another facet of prey preference stems from the Hawaiian hawk's habitat preferences and relative tolerance of the presence of humans. The hawk's preference for "edge" habitat likely has to do with the presence of rats in this type of habitat, as well as the hawk's tolerance of certain amounts anthropogenic activity and development.

The combination of the hawk's preference for non-native prey and its ability to nest and live in human modified habitat means that the hawk is thriving and perhaps existing at population levels greater than existed prehistorically. It does not seem likely that the hawk suffered significantly from human colonization. What is more likely is that the hawk benefitted from human colonization. At the very least, it is extremely unlikely the hawk was threatened with extinction, or even imperiled, when the FWS initially listed in 1967 and when the agency carried over to the ESA in 1973.

[87] Griffin et al., 1998, p.660.

HABITAT CONSERVATION

The final piece of the possible data error puzzle is habitat conservation, or the lack thereof. In the ten years from the time of listing in 1973 to the publication of the recovery plan (in which the FWS admitted the hawk had a large and healthy population) the Hawaiian hawk went from the brink of extinction to a stable population without the "benefit" of much, if any, ESA-related on-the-ground conservation efforts (e.g., habitat protection, direct protection of hawks from shooting and human harassment). This will be discussed in greater detail in the section below titled, "Conservation Efforts."

CONCLUSION ON DATA ERROR

When the detrimental anthropogenic factors—habitat destruction, decline in traditional food, direct persecution—are weighed against the beneficial anthropogenic factors—creation of edge habitat, almost exclusive preference for nonnative prey, especially mammals, because they provide proportionally more food for energy expended than the prehistoric diet of bird, and that disease and chemicals have turned out not to be threats to the hawk—what emerges is the very distinct possibility that the hawk has not suffered significantly from human colonization and likely benefited. Given that it likely benefitted, the hawk in all likelihood was never imperiled and never merited being listed under the ESA.

LISTING PROCESS

The process by which the FWS listed the Hawaiian hawk under predecessor legislation to the ESA and then carried over the hawk to the ESA upon the Act's passage sheds a good deal of light on how the agency constructed the narrative of the hawk's purported imperilment. The process is remarkably similar to that under which the FWS listed four other birds from the tropical Pacific; the Palau owl, Palau flycatcher, Palau ground dove, and Tinian monarch. In the case of the hawk and these four species, the FWS relied on data that was essentially invalid to

justify listing, and it is very plausible the agency knew these data were invalid.

FLAWED NARRATIVES

The FWS listed the Hawaiian hawk because the agency incorrectly presumed two narratives applied to the hawk. First, the hawk had suffered a catastrophic population decline due to human colonization of the islands, as had most other Hawaiian bird species. Second, the hawk had declined simply because a number of raptor species in the U.S.—most notably the bald eagle, peregrine falcon and osprey—had also declined in the post-World War II era from a variety of factors, most notably massive reproductive failure induced by the pesticide DDT.

The FWS even admits that it had little, if any, evidence that either human colonization or DDT were in any way relevant to the hawk, or that the hawk was imperiled. "The Hawaiian Hawk was listed as an endangered species in 1967 under the Federal Endangered Species Act because little was known about this species and raptors worldwide were experiencing significant declines," stated the FWS in 2005.[88] As the link between DDT and raptor reproductive failure became more apparent in the mid-to-late 1960s, the FWS merely assumed it applied to the Hawaiian hawk. Largely as a result of its detrimental effects on raptors, DDT was banned in Canada in 1970 and the U.S. in 1972. The Hawaiian hawk was simply lumped in with the narrative of DDT causing raptor populations to crash even though the narrative was not applicable to the hawk.

UNSUBSTANTIAL SUBSTANCE

The "substance" of the hawk's listing in 1967 consisted simply of a single page in the *Federal Register* that contained a list of 78 species, along with their common and scientific names. The FWS, which published the listing, provided no specific information about species' status, including the hawk.[89] When the ESA was passed in 1973, this list of species, including the hawk, was simply carried over to the Act without any apparent evaluation of whether the species on it merited being listed under the newly passed law.

---

[88] U.S. Fish and Wildlife Service. ND. *Threatened and Endangered Animals*.

[89] U.S. Department of the Interior 1967.

Evidence as to how the FWS listed the Hawaiian hawk under the ESA can be found in the lists of imperiled species compiled by the FWS and the IUCN (the World Conservation Union) prior to 1973. During the mid-to-late 1960s there was increasing urgency in Congress and the Interior Department to pass imperiled species legislation. In 1965, as such legislation was being contemplated, the Interior Department compiled a draft list of species purported to be faced with extinction and among them was the Hawaiian hawk. The list was circulated to experts for comments, and one of these experts was apparently Jack Vincent, the compiler of the IUCN's initial *Red Data Book* for birds, which was the first effort to assemble a worldwide list of birds threatened with extinction. The IUCN published the *Red Data Book* in January 1966, and it included the Hawaiian hawk. The hawk was assigned that status of "1(a)**," which meant the hawk was: Category 1, "very rare and believed to be decreasing in numbers." The designation of (a), meant it was a full species, as opposed to a subspecies; and ** denoted "giving cause for considerable anxiety," [emphasis not added] because the hawk was a "species or subspecies of special importance."[90] The *Red Data Book* estimated the hawk's population at "less than 200 birds," and the source for all of this information was the Interior Department's 1965 draft list of imperiled species.[91]

A year-and-a-half later, in July 1966, the Interior Department published a final list titled, *Rare and Endangered Fish and Wildlife of the United States*. The list classified the hawk as "Endangered," which was the most imperiled status. However, the Interior Department based the listing on data that was extremely flimsy.

In the 1966 list of endangered species, the Interior Department characterized the hawk's endangered status as; "Much reduced in numbers and in need of greater protection. During field work between 1956 and 1957 William H. Elder saw this hawk only twice."[92] The list cited a publication by Elder, but it was in lit., the abbreviation for something still being written that has not even been submitted for publication. The list provided further information about the hawk's status under the heading, "Estimated numbers," in which the listed stated, "Less than 200 (Peterson). Probably now less than 100 (Ripley)."[93] As with the Elder citation, these two

[90] Vincent 1966, p.2/65.

[91] Vincent 1966, p.2/65.

[92] Bureau of Sport Fisheries and Wildlife 1966, Sheet B-14.

[93] Bureau of Sport Fisheries and Wildlife 1966, Sheet B-14.

citations also consist of publications in lit. Citing a publication in lit. is an extremely flimsy, to say nothing of questionable, form of citation because there is no guarantee that the publication will actually be published, which can be due to the author's inability or unwillingness to finish it or the publisher's unwillingness to publish it because it is deemed unworthy. In the case of the Hawaiian hawk, the logical conclusion is the Interior Department cited these as-yet-to-be-published articles because there was so little data on the hawk.

Another clue as to why Interior cited these in lit. publications is that they were by notable people. Peterson was none other than Roger Tory Peterson, renowned artist and author of the first widely available field guide to the birds of America. And Ripley was S. Dillon Ripley, Secretary, or leader, of the Smithsonian Institution from 1964-1984 and an ornithologist of some note. However, a search for the three in lit. authors in the references of almost all the publications specifically on the hawk—such as the Recovery Plan, the *Federal Register*, and various studies published from the mid-1980s to the mid-2000's—reveals no publication on the Hawaiian hawk by Elder, Peterson or Ripley.[94] Of the three, only Elder published anything on Hawaii after 1966, and that was on the Hawaiian goose and in a co-authored report published in 1990.[95] Ripley's expertise was of the birds of southern Asia. Given these three people's lack of knowledge about the Hawaiian hawk, it seems that the Interior Department cited their as-yet-to-be-finished publications in an effort to draw on the prestige of these well-known authors, especially Peterson and Ripley, in an effort to lend credibility to the hawk's inclusion on the list of imperiled species.

Once the Hawaiian hawk was listed on these two seemingly authoritative compilations of imperiled species that in reality were essentially devoid of any reliable or meaningful data—the IUCN's *Red Data Book* and the Interior Department's *Rare and Endangered Fish and Wildlife of the United States*—the Hawaiian hawk's status as a species on the brink of extinction was solidified. As a result, the FWS listed the hawk under the 1966 Endangered Species Preservation Act, carried the hawk over to the 1969 Endangered Species Conservation Act, and, of course,

---

[94] Morrison 1969; Baldwin 1969; Banko 1980; U.S. Fish and Wildlife Service 1984i, p.20; Griffin 1985; Griffin 1989.; U.S. Fish and Wildlife Service 1992a; Hall et al., 1997; Griffin et al., 1998; Clarkson and Laniawe 2000; Klavitter et al., 2003.

[95] Banko and Elder 1990.

carried it over again to the ESA of 1973. Both times the FWS carried over the hawk there is no evidence that the agency undertook any sort of meaningful reevaluation of the hawk's status.

The perception that the hawk was faced with extinction was abetted by its continued listing not only under the ESA but also under the subsequent edition of the *Red Data Book*. When the IUCN published the second *Red Data Book* for birds in 1979, the hawk was categorized as "Rare," even though, as is clear from the literature cited in the hawk's profile, no systematic survey to determine the total population or the health of the population had even been conducted at that point.[96] Even so, the "Rare" category—defined as, "Taxa with small world populations that are not at present endangered or vulnerable, but are at risk. These taxa are usually localized within restricted geographical areas or habitats or are thinly scattered over a more extensive range"—represented a reclassification of the hawk to a less imperiled status.[97] The Rare category was the third most imperiled status after Endangered and Vulnerable.

Perhaps this change in the hawk's status was because in the late 1970s the IUCN was starting to recognize what the FWS was apparently unable to acknowledge; the Hawaiian hawk was not threatened with extinction. When the IUCN published the third edition of the *Red Data Book* in 1992, the Hawaiian hawk was no longer included.[98] While the *Red Data Book* provided no explanation for why this occurred, the clear inference is the IUCN no longer considered the hawk imperiled and so the hawk did not merit inclusion in the *Red Data Book*. Despite the "downlisting" of the hawk in the 1979 *Red Data Book* and the delisting of the hawk in the 1992 *Red Data Book*, the FWS did not change the hawk's status under the ESA.

Curtis Griffin's study of the hawk in the early 1980s was the first time anyone conducted a systematic and comprehensive study of the hawk. "Prior to Griffin's (1985) study, the hawk population was believed to be severely reduced in numbers due to habitat encroachment by humans," admits the FWS. "Both urban development and agricultural practices of land-clearing for grazing and logging were determined to be factors leading to the hawk's decline (Berger 1981). As with many other native species of Hawaiian birds, the hawk was presumed to rely exclusively on native habitat so that the loss of this habitat would naturally lead to decline.

---

[96] King 1979.

[97] King 1979, preamble 3.

[98] Collar et al., 1992.

Moreover, the introduction and proliferation off alien mammals that prey upon native species' nests were assumed to be a [negative] factor in the hawk's reproductive success."[99] As a seeming result of these two factors, the FWS concluded, "At the time of listing, the population was believed to number in the low hundreds (Berger 1981)."[100]

An examination of the one publication the FWS cited in support of the hawk's listing, (Berger 1981), reveals three things. First, it is curious that a publication from 1981 has been used to justify the listing of a species that was initially listed in 1967, under the first predecessor law of the ESA, and then carried over to the ESA in 1973. As it turns out, 1981 was the publication date for the second edition of Berger's book; 1972 was when the first edition was published. So it would seem that the FWS would have wanted to cite the 1972 first edition in order to provide a plausible citation with which to justify the hawk's listing in under the ESA of 1973. Even if the FWS had done this, the agency still not get around the fact that it cannot cite any publication at or prior to 1967, which is the key year because there appears not to have been any additional data on the hawk's status gathered between 1967 and 1973.

Second, the portion of Berger's publication on the Hawaiian hawk is a discursive one-page account. The account consists almost entirely of a review of other publications on the hawk, contains no reliable range wide population estimate, and misrepresents, at best, threats to the hawk.[101] Berger's observations of Hawaiian hawks consisted of seeing a total of two hawks

---

[99] U.S. Fish and Wildlife Service 1993a, p.41685.

[100] U.S. Fish and Wildlife Service 1993a, p.41684.

[101] The only mention Berger makes of his first-hand observation of the hawk consisted of the following; "I saw three hawks over a distance of three miles along the road near the Dillingham Ranch at Puuwaawaa on August 8, 1969" (Berger 1981, p.83). This observation provides not only an indication of Berger's minimal direct experience with assessing the hawk's abundance but perhaps why he considered the hawk to have a small population. The Puuwaawaa is a dryland forest on the northwestern side of the island of Hawaii, and it consists of some 3,800 acres, almost all of which is state owned (Mitchell et al., 2005, p.6-80). This portion of the island tends to be relatively poor habitat for the hawk because it is relatively arid and hence has less prey and fewer of the large trees favored by the hawks for buildings nests. Maps of the hawk's range, made by Griffin and Klavitter et al., the authors of another study on the hawk published in 2003, provide visual depictions of this. The hawk's range extends in a more-or-less continuous band around the island below 7,000 feet in elevation, except for a gap on the northwest side of the island. The reason for the relative aridity of this portion of the island is that it lies to the leeward side of Mauna Kea, which at 13,000 feet, is one of the two massive extinct volcanoes that dominate the island. With the prevailing winds out of the northeast, Mauna Kea blocks much moisture laden air from reaching the puuwaawaa. So it is not surprising that the poor quality of the puuwaawaa habitat contained only thirteen pairs of hawks in 2002 (State of Hawaii 2002, p.70).

Berger goes on to note in his comments on the hawk that "[o]ur ignorance of the basic biology of the endemic birds is truly incredible" (Berger 1981, p.83). Despite his limited observations of the hawk, that he knew next to nothing about the hawk's biology, and that he admitted ignorance about Hawaii's birds, Berger was able to opine with confidence about the hawk's relative abundance and the reasons for the hawk's decline. He cited Morrison's study of the hawk between 1938 and 1949 in Volcanoes

over the course of 41.4 hours of research on Hawaiian forest birds.[102] From this scant handful of hours Berger was apparently able to estimate the population of hawks as being in the low hundreds.

Third, the FWS is alone in giving so much credence to Berger's rambling account of the Hawaiian hawk. In 1986, Scott et al. published the results of their monumental survey of Hawaii's forest birds, *Forest Bird Communities of the Hawaiian Islands: Their Dynamics, Ecology, and Conservation*. The survey ran from 1975-1983 and was the first comprehensive assessment of Hawaii's forest birds.[103] Scott et al. included a profile of the Hawaiian hawk. Even though the data collected on the hawk were insufficient to arrive at a population estimate, Scott et al. did review the historical literature on the hawk's abundance. Tellingly, Berger is omitted. Scott et al. knew of Berger's book, because they refer to it repeatedly in their publication, but the omission of it from the Hawaiian hawk account is a very clear indication that they likely thought Berger's information on the hawk to be of such low quality that it did merit being mentioned.

In short, the FWS listed the Hawaiian hawk under the ESA based on the agency's feeling

---

National Park in which Morrison estimated that the hawk was relatively common in the park. "Nevertheless, 62 sightings of hawks over a period of two years does not suggest a large population, and the Hawaiian hawk has been placed on the list of rare and endangered species" (Berger 1981, p.83). What Berger fails to mention is that the park constituted only an extremely small portion of the hawk's potential range so Morrison's observations could in no way be interpreted as a range-wide population estimate. Undeterred by this, Berger pressed on. "The total population has been estimated by personnel of the Bureau of Sport Fisheries and Wildlife to be probably in the how hundreds" (Berger 1981, p.83). When the Bureau of Fisheries was transferred to the Department of Commerce in 1970, and renamed the National Marine Fisheries Service, the FWS took responsibility for all endangered species issues at the Interior Department.

"The chief reasons for the decline in numbers of this interesting and beneficial bird are believed to be shooting by uninformed people, who consider all hawks to be 'chicken hawks,' and the drastic alteration of the environment by man and the animals he introduced," stated Berger (Berger 1981, p.83). This statement is then followed by the about how ignorant people are about the hawk's biology. Given such ignorance, coupled with Berger's limited first-hand observations—which did not in any way constitute a systematic, scientifically-based population estimate—it is curious that Berger was able to enumerate with such clarity not only the reasons for the hawk's decline but that, based on Morrison's extremely limited survey, the hawk must have a small population. The reality is that Berger's account of the hawk is almost totally composed of a review of existing literature and therefore contains little, if any, new information on the hawk or threats to it. In addition, it seems that Berger misrepresented the threat posed by DDT and PDBs.

So the FWS's citation of Berger as a source of information on the threats to the hawk that led to its listing leads in a circle back to a handful of publications that consisted largely of anecdotal data for only limited portions of the hawk's range. In short, Berger's 1981 publication provides virtually no original data that could justify the hawk's listing, and the one shred of original data, DDT and PCBs in a single egg, is invalid because it was not quantified and compared to data from other raptors.

[102] Banko 1980.

[103] Scott et al., 1986.

the hawk was imperiled, not any valid, range wide data on the hawk's abundance or the threats to it. The FWS simply manufactured the reasons why the hawk should be listed—DDT, threats posed to Hawaiian birds by introduced animals and pathogens—because of a belief that these factors had led to the hawk's assumed decline. In addition, the FWS cited non-existent and shoddy publications to justify listing the hawk.

LITERATURE

One of the curious aspects about the Hawaiian hawk's tenure under the ESA is that the FWS used inconsistent standards for assessing the legitimacy of literature in an apparent attempt to accomplish two things; bolster the legitimacy of the hawk's listing under the Act, and give the ESA credit for playing an important role in the hawk's conservation. As detailed in the foregoing discussion, the information on which the FWS listed the hawk was extremely flimsy, most notably the three in lit. publications that were apparently never published, as well as Berger's discursive account. Yet in 2008 when the FWS proposed to delist the hawk the agency changed course and tried to discredit a non-yet-published article. "The dissertation cited 'Griffin *et al.* in prep' for this estimate [of 1,400-2,500 hawks], but no details were provided on how it was derived, and Griffin *et al.* (in prep.) was never published," states the FWS's proposal to delist.[104] This statement is both untrue and ironic.

The statement is untrue because in 1989 Griffin, albeit not with coauthors, did publish a paper, in the proceedings of a scholarly conference, on the Hawaiian hawk in which he provided a detailed explanation of the methodology by which he derived his population estimate.[105] The irony is twofold. First, the FWS cited not-yet-completed or yet-published work for the Hawaiian hawk. Second, the FWS routinely uses non-peer reviewed publications, including those with even less weight than Griffin's 1989 paper. For example, the agency cited Morrision et al. in the proposed delisting of the Hawaiian hawk. But Morrison et al. is a 1994 unpublished FWS report of a population survey of the hawk.[106] It is also interesting that Griffin's 1989 publication in

[104] U.S. Fish and Wildlife Service 2008d, p.45681.

[105] Griffin 1989, pp.155-160.

[106] Morrison et al., 1994.

which he substantiates his population estimate has not been cited by the FWS since at least the time of the 1993 proposed downlisting. This is odd because the combination of two factors—Griffin's 1989 publication was in the proceedings of a well-known conference, and so little had been published by 1993 on the hawk—makes it difficult to imagine that the omission of Griffin's publication was simply an oversight due to sloppy research. The only other plausible explanation is that the FWS has purposely omitted Griffin's publication because it did not comport with the agency's narrative of hawk's purported imperilment.

CONSERVATION EFFORTS

Since the passage of the ESA in 1973, the FWS undertook very little in the way of on-the-ground conservation efforts for the Hawaiian hawk—meaning such things as habitat conservation and direct protection of hawks from human-related harassment and persecution. While habitat used by the hawk has been acquired by the federal government and the state of Hawaii, the presence of the hawk has been largely incidental. Lands were acquired for many reasons, with the hawk apparently being fairly low on the priority list, if even on it at all. About all the federal government did for the hawk is fund research on the hawk's population, biology and ecology. However, the ESA is not necessary for this to have occurred. The ESA is distinguished from its two predecessors, passed in 1966 and 1969, by its ability to restrict land and resource use, and this is why the Act is so cherished and vigorously defended by its proponents. Indeed, studies of the hawk funded by the FWS—Griffin in the early 1980s, Hall et al. in the mid-1990s and Klavitter et al. in the late 1990s—just so happen to have occurred under the auspices of the ESA, but the ESA of 1973 was not necessary for these studies to have been funded. Indeed, funding could have occurred under one of the two pieces of legislation preceding the ESA.

As for actual habitat conservation, the FWS resorts to misleading claims in order to justify the hawk's listing and tenure under the ESA. "[T]he range of the hawk extends partially over private property that is used for grazing, logging, or agriculture," according to the FWS. "In some modified areas, densities of hawks are similar to native habitats, and the birds are able

to exploit introduced mammals as prey."[107] While this is accurate, what follows is a very misleading characterization of habitat utilized by the hawk, specifically that non-native and edge habitat is inferior.

> "However, these areas are not managed specifically for the hawk and the current land use could change the habitat (e.g., areas with few or no trees). In addition, to habitat change, the prey densities could change and the hawk may not adapt quickly. Therefore, although modified habitat can be occupied by the hawk, managed native habitat is also a key to the recovery of the species. Hakalau National Wildlife Refuge, Hawaii Volcanoes National Park, and State of Hawaii Puu Waawaa Wildlife Sanctuary are sites that are managed for native bird populations. Given that the hawk shows site fidelity and maintains territories year-round, the importance of maintaining the necessary habitat requirements is significant."[108]

As the foregoing discussion of habitat utilization made clear, the hawk depends on native habitat for nesting and non-native habitat for hunting.

In addition, this statement by the FWS about habitat conservation is an example of two things. First, the ESA's punitive nature breeds a narrow mindset in which the FWS looks askance at private lands' contribution to species conservation. A reason for this is the FWS well knows that private landowners tend to fear the presence of endangered and threatened species on their property because species have the very real potential to restrict land-use. So species are often seen as financial liabilities and property owners take measures to make their lands inhospitable to endangered species. Second, the hawk does not require "native" habitat (i.e., large contiguous tracts of intact forest), and the FWS knew this in 1993 when it made the above statement. The hawk does very well in human altered habitats so long as there are big enough clumps of large trees in which to nest. The FWS is trying to pass the hawk off as a denizen of Hawaii's ancient native forests because the agency justified the listing of the hawk on a narrative, not actual evidence, in which the decline of native forest habitat is a key reason for the

[107] U.S. Fish and Wildlife Service 1993a, p.41685.

[108] U.S. Fish and Wildlife Service 1993a, p.41685.

hawk's purported endangerment. In short, the FWS appears to realize that its narrative is invalid, but the agency sticks to it. Rather than admit a mistake was made in listing the hawk, the FWS decided to do what it has done in the cases of so many of the other so-called ESA success stories; retrench, hunker down and try to fob-off species, in this case the Hawaiian hawk, as meriting being listed and protected by the Act. The FWS is desperate to try to salvage as much of its Hawaiian hawk narrative as it can so as to justify the hawk's listing and so-called conservation under the ESA.

The FWS makes more specific claims about these protected areas, but these claims are misleading.[109] A broader view of the role of protected lands to the hawk's conservation is provided by the authors of the 2003 peer reviewed article who concluded that only 32% of the hawk's population is found on public protected lands. Furthermore, "[v]ery few high-density areas (0.40-0.57 'io/km²) were protected, while some of the moderate-density (0.15-0.39 'io/km²) were protected."[110] Without the opportunity to point to specific habitat conservation measures, the FWS resorts to making vague and misleading claims about the effectiveness and important role played by habitat conservation.[111] And, as discussed above under the subsection titled "Human Caused Habitat Destruction and Degradation," by the FWS's own standards the hawk's habitat is very secure, with 44.7% publicly owned and dedicated towards conservation and 55% zoned for agriculture.[112] Of the conservation land, 39% is owned by the state, 6% by the federal

[109] The agency cites the creation of the Hakalau Forest National Wildlife Refuge as attributable in part to the Hawaiian hawk, as the hawk is one of five endangered species for which the refuge was created (U.S. Fish and Wildlife Service. ND. *National Wildlife Refuges*). The 32,733 acre "Hakalau Forest NWR was set aside in 1985 to protect and manage endangered forest birds and their rain forest habitat," according to the FWS (U.S. Fish and Wildlife Service. ND. *The Hawai'i (Big Island)*). However, the hawk does not prefer rain forest habitat, in which the tree canopy is relatively closed, but rather edge habitat. The FWS also cites Volcanoes National Park as providing habitat for the hawk (U.S. Fish and Wildlife Service 1993a, p.41686). The park was initially created in 1916 and added to over the years (Hamilton, Dwight 2003). However, the park would have been created whether the Hawaiian hawk ever existed or was imperiled because its original purpose was to conserve Kilauea, Hawaii's only active volcano, and its surrounding lava fields. Lastly, the FWS cites the state of Hawaii's Puuwaawaa Wildlife Sanctuary as habitat conserved for the hawk (U.S. Fish and Wildlife Service 1993a, p.41686). But, of course, the sanctuary is state land and so is unconnected to federal implementation of the ESA.

[110] Klavitter et al., 2003, p170.

[111] In the proposed downlisting published in 1993, the FWS included a section titled, "Available Conservation Measures." This section consists of a recitation of the various actions that are prohibited by the ESA, such as habitat modification, but with no specific reference to the hawk or how these provisions of the ESA have been applied to the hawk (U.S. Fish and Wildlife Service 1993a, p.41687). It is not clear why the FWS included this section in the downlisting proposal. However, given these two factors about this section of the proposal to downlist the hawk, as well as the FWS's efforts to make the hawk appear to be an ESA success story, it is very likely the agency included the Available Conservation Measures section as an attempt, albeit relatively crude, to exaggerate the role played by the ESA in the hawk's conservation.

[112] U.S. Fish and Wildlife Service 2008d, p.45684.

government, and less than 1% by counties.[113] Lastly, less than 1% of the hawk's habitat is urban or rural land that could potentially be destroyed or degraded by development.

Despite this reality, some pressure groups also make vague and misleading claims about the ESA's role conserving the hawk. "The endangered Hawaiian hawk appears to be stable and is successfully nesting and foraging in both native and disturbed habitat," asserted the Environmental Defense Fund in a report published to celebrate the ESA's 25th anniversary. "The species has benefited from Endangered Species Act prohibitions against take and Section 7 consultations, and it may be downlisted or removed from the endangered species list pending further survey results."[114] The source cited for these claims is Karen Rosa of the FWS's Hawaii office.

The National Audubon Society put the hawk on its 2007 WatchList, a compilation of imperiled birds published every few years. Audubon categorized the hawk as a "red" species, meaning the most imperiled. "Species in this category are declining rapidly and/or have very small populations or limited ranges, and face major conservation threats," Audubon states. "These typically are species of global conservation concern."[115] Audubon's profile of the hawk is remarkable because it is rife with errors. Under the heading "Threats" the following appears:

> "It is believed that disturbance of nesting birds and the illegal shooting of Hawaiian Hawks might be the most important threats facing this species, but it is difficult to accurately determine the level of shooting and trapping. The degradation of native forest habitat is another significant threat to this species. Introduced pigs and other ungulates have had a devastating impact on native Hawaiian plant species, directly reducing their numbers while also facilitating the spread of exotic plants that then out-compete remaining native plants. Hawaiian Hawks show a strong preference for nesting in native 'ohi'a trees, but this tree species is almost completely absent on Hawai'i below an elevation of 2,000 feet, due to competition from introduced plants."[116]

---

[113] Gorresen et al., 2008, p.26.

[114] Environmental Defense Fund 1998b, p.8.

[115] National Audubon Society 2007a.

[116] National Audubon Society 2007b.

Audubon's information is almost completely inaccurate, as is apparent in above-mentioned section on so-called threats. Audubon speculates disturbance and shooting are threats, but they have never been well documented, either quantitatively or qualitatively. Audubon implies the hawk is yet another Hawaiian bird species suffering because of the destruction of native habitat and the introduction of non-native species, but, of course, this is far from the truth. And the hawk is found below 2,000 feet elevation and in non-native vegetation, as has been abundantly documented by various studies. Audubon provides no substantiation for these outlandish claims. It seems Audubon simply lumped the hawk with the other Hawaiian birds that suffered from anthropogenic habitat destruction. It is remarkable that such basic errors could be made because Audubon is an organization dedicated to bird conservation, and it promotes its WatchList as an authoritative source of information on imperiled birds. Audubon has acknowledges, albeit tacitly, that the ESA has done essentially nothing to conserve habitat for the hawk. Under the heading "Conservation," all that is mentioned is "population surveys." Similarly, under the heading "What Can You Do?" Audubon states, "The Endangered Species Act has helped protect the Hawaiian Hawk and made it possible to learn critical information about its biology."[117] But the ESA was not necessary for research to occur and no specifics are provided for how the ESA protected the hawk.

There are two main points about habitat conservation. First, the ESA has had very little to do with habitat conservation specifically for the hawk. Second, the hawk's ability to live in human-altered "edge" habitat belies the notion put forth by ESA proponents that conservation of large swaths of contiguous native forest is crucial to the conservation of the hawk.

HUMAN COLONIZATION OF HAWAII

The Hawaiian hawk places the FWS, environmental pressure groups, and some of the advocate-scientists that have conducted research on the hawk, especially Klavitter et al., in an awkward position because the hawk does not conform to the narrative of anthropogenic habitat destruction that has proved so devastating to most of Hawaii's native birds. Part of this narrative

[117] National Audubon Society 2007b.

is that Hawaii began its descent from Eden with the arrival of Europeans/Caucasians when Captain Cook landed in 1778. Much of the rationale behind listing the hawk under the ESA was that the hawk fit into the familiar narrative of Hawaii's native birds; the hawk was portrayed as yet another native forest bird imperiled by human, especially European, colonization. But the hawk did not fit this narrative because it was relatively unaffected by the factors that were driving so many of Hawaii's native birds extinct or to the brink of extinction.

The place to begin an examination of the effects of colonization on Hawaii's birdlife is not when Europeans/Caucasians arrived nearly 250 years ago but, rather, when Polynesian colonists arrived some 1,600 years ago. The effects of Polynesian colonists on Hawaii were profound. They introduced pigs, the Polynesian rat, dogs, and numerous other animals as well as plants. In addition, Polynesians farmed most of the land on the islands below approximately 2,000 feet elevation.[118] Due to these and other factors, Polynesian colonists were responsible for the extinction of about 50% of Hawaii's endemic birds.[119] More bird species went extinct before Cook's arrival, due to colonization by Polynesians around 400 A.D., than after Cook's arrival in 1778. Due to Polynesian colonization, around 35-57 species of birds are known to have gone extinct.[120] This, however, is almost certainly an undercount because it represents only the bones and fossilized remains of birds that have been discovered. It is estimated that the known extinct bird species are about half the 70-90 bird species that went extinct due to Polynesian colonization. These 70-90 species represent 56%-62% of the 125-145 total number of bird species known to have inhabited the Hawaiian Islands.[121]

When Captain Cook showed up in 1778, there were 71 species of birds that had survived Polynesian colonization. Since 1778 an additional 35 more species of birds have gone extinct, leaving a total of 36 as of 2007.[122] The data after Cook's arrival are much more accurate than before his arrival because, as they were wont to do, the newly arrived Caucasians were ardent bird collectors for scientific research. As for the Hawaiian hawk, the most likely explanation for

---

[118] Kirch 1982.

[119] Pimm et al., 1994; Banko et al., 2001.

[120] Boyer 2008; Athens et al., 2002.

[121] Pimm et al., 2006.

[122] Conant 2007.

its extirpation from Molokai, Kauai, and perhaps Oahu is Polynesian colonization, specifically agriculture-related habitat destruction and direct killing for food and feathers for ceremonial and status-denoting clothing, such as headdresses.[123]

In response to the larger number of extinctions of Hawaiian birds caused by Polynesians, the FWS and some environmental pressure groups simply fail to mention much, if anything, about this inconvenient truth that does not comport with their narrative of extinctions due to Euro-Caucasian colonization. An example is the following statement by the Environmental Defense Fund:

> "[T]he islands' natural splendor masks a brutal, often desperate battle against extinction. Facing an onslaught of habitat loss and competition from nonnative species, fragile plants and animals are fast disappearing. Since Captain Cook arrived in 1778, more than one-third of the state's native birds have vanished—and 60% of those that remain are imperiled. 'Hawai`i is such a beautiful place that it's hard to think anything is wrong,' says our ecologist Dr. Tim Male. 'The situation today is as close to an ecological disaster as one is likely to find anywhere.'"[124]

By failing to acknowledge the far more significant role, as measured by number of extinctions, played by Polynesians, Environmental Defense Fund provides a very inaccurate and misleading picture of human-caused bird extinctions on Hawaii.

The devastation to Hawaii's indigenous bird species wrought by Polynesian colonization also calls into question one of the environmental movement's favorite icons; the ecologically noble savage. What is meant by this is that the environmental movement, especially the second movement that got underway in the 1960s, has portrayed native peoples, or at least those not of European dissent, as ecologically benign, as living in harmony with their surroundings. By contrast, Europeans are depicted as ecologically destructive. This dichotomy, however, has a number of problems, not the least of which is it can run aground of reality, as seen by the devastating impact Polynesians had on Hawaii's bird species. A number of those who have

---

[123] Gorresen et al., 2008, p.3.

[124] Environmental Defense Fund 2006.

conducted research on Polynesian-caused extinctions have also noticed this. "The not-so-noble savages," is the heading in an article authored by Stuart Pimm, then with the University of Tennessee and currently Duke University, and colleagues on human-caused bird extinctions in the central Pacific region.[125] This dichotomy is also inherently racist because it ascribes normative values to people based on their skin color; brown people are in tune with nature and ecologically benign, while white people are in conflict with nature and environmentally destructive.

In addition, this dichotomy between Polynesians and Euro-Americans has strong echoes of Protestant notions of original sin, salvation and apocalypse. Ironically, the environmental movement also likes to castigate the Judeo-Christian tradition for what is perceived as its anti-environment precepts. This contradiction can be reconciled by understanding that the environmental movement in the U.S. has been heavily influenced by Protestantism. David Vogel, professor at the Haas School of Business at the University of California-Berkeley, has termed this "the protestant ethic and spirit of environmentalism."[126] And Robert Nelson, professor of public affairs at the University of Maryland, calls it "the ecological gospel."[127]

BABBITT'S PROOF

In May 1998, then Interior Secretary Bruce Babbitt held a press conference at which he claimed that thirty-four species, one of which was the Hawaiian hawk, would be delisted in the near future and that this was proof the ESA worked. "Our new policy, to emphasize delisting, could alter the terms of debate over the future of the landmark 1973 conservation law. For we can now finally prove one thing conclusively: The Endangered Species Act works. Period."[128] (A detailed analysis of Babbitt's "proof" can be found in conclusions of this book). Following Babbitt's boast, the Hawaiian hawk's status did not change. Perhaps this is because the Interior

[125] Pimm et al., 1994, p.27.

[126] Vogel 2002.

[127] Nelson 1995.

[128] U.S. Department of the Interior 1998.

Department realized the hawk could not be claimed as an ESA success story and delisting or downlisting the hawk would have drawn unwanted attention to this inconvenient fact.

DELAYED DELISTING

While it is very likely the Hawaiian hawk never should have been listed under the ESA, it is certain the hawk never should have been retained under the Act for almost forty years. The FWS's retention of the hawk under the ESA is yet another example of the reluctance to delist species due to the agency's desire to retain a source of funding and a potential land use control tool. In the mid-1980s, when Griffin finished his dissertation, the FWS should have moved to downlist the hawk from endangered to threatened or delist entirely. When the FWS published the recovery plan in 1984 it appeared the agency was headed in this direction. "[C]onsidering the current size and distribution of the 'io population, the species' high breeding success, the relatively low levels of predation and human disturbance, and the absence of environmental contaminants affecting the 'io, the population appears to be in a more secure condition than previously thought," the recovery plan stated. "This information, based on completed research, indicates that reclassification to threatened status may be warranted."[129]

Yet the agency did nothing for nine years until 1993 when it finally issued a proposal to downlist. Even though the FWS proposed to downlist the hawk, the agency had considered delisting. "The Service will recommend that this species be delisted when recovery criteria as outlined in the recovery plan are reached."[130] And the only reason specified by the FWS for why the hawk was downlisted but not delisted was and insufficient amount of secure habitat.[131] But this was a red-herring. If there was insufficient habitat, then the hawk's population should have exhibited a decline. Yet every indication in 1993 was that the hawk's population was healthy and stable since at least Griffin's 1985 study. A more likely explanation for the FWS's refusal to consider delisting the hawk was the agency's realization that delisting would draw more

[129] U.S. Fish and Wildlife Service 1984i, p.38.

[130] U.S. Fish and Wildlife Service 1993a, p.41685.

[131] U.S. Fish and Wildlife Service 1993a, p.41686.

attention and publicity than downlisting, and if this occurred the added scrutiny might reveal that the ESA had virtually nothing to do with the hawk's so-called recovery. Apparently even downlisting the hawk was too much for the FWS. According to the FWS, no action was taken on the proposed downlisting because some of the comments received objected to downlisting based on only one study (Griffin's) that was ten years old.

So in 1993 and 1994 the FWS funded research, which resulted in a population estimate of 1,600 birds consisting of 1,120 adults (560 pairs). This research was published in two sources by the same three authors; an internal FWS report in 1994, and a peer reviewed journal article in 1997. According to the 1994 report, "the recovery plan set a [recovery] target that was unlikely to ever be met, given that Griffin's estimate assumed total saturation of hawks on forested land on the island [which resulted in an overestimate]. Reevaluation of the Recovery target is thus indicated, and should be based on more reasonable estimates of the distribution and abundance of 'io."[132] And the 1997 peer reviewed article stated, "our results were similar to those found 10 years earlier by Griffin (1985, 1989), indicating the likelihood of a relatively stable population during the past decade. Thus, we concluded that downlisting to threatened status was supported."[133] Even though all indications were that the hawk's population was stable and secure, the authors urged the FWS "to initiate a long-term demographic study…Such as study is necessary before delisting from threatened status is considered."[134]

Instead of downlisting or delisting the Hawaiian hawk to match the increasingly strong evidence that the hawk did not merit its endangered status, and perhaps any status under the ESA, in 1997 the FWS formed the Io Recovery Working Group, an independent body to provide, among other things, guidance to the agency on recovery goals. The Working Group was to submit a report with their recommendations to the FWS. After its first meeting in December 1997, the Io Group drafted a document in which the Group found, "there was no substantive information to support listing of the io under the provisions of the Endangered Species Act, and there is no quantitative evidence the io was ever threatened or endangered."[135] The FWS ignored

---

[132] As quoted in; U.S. Fish and Wildlife Service 2008d, p.45682.

[133] Hall et al., 1997, p.14.

[134] Hall et al., 1997, p.14.

[135] As quoted in: U.S. Fish and Wildlife Service 2008e, p.2

this uncomfortable conclusion from the panel of experts it had convened for the express purpose of, according to the agency, "provid[ing] oversight and advice on aspects of the recovery of the Hawaiian hawk."[136] The FWS did, however, act on the Io Group's recommendation for yet more studies of the hawk's population numbers and trends.

By this point, one can detect a trend. Research is conducted and published showing that the hawk has a large and stable population and that the species does not merit being listed under the ESA. Even so, researchers seemingly contradict their recommendation of downlisting or delisting by calling for yet more research. And the FWS is all too willing to play along. More research almost invariably provides new insights, but there comes a point of diminishing returns when the insights have progressively less value. Furthermore, when research funds are finite, it makes the most sense to spend them where they will have the most impact, not on species like the Hawaiian hawk that, by all indications, is healthy and secure. The successive rounds of research on the Hawaiian hawk look less like prudent research than they do a jobs program for the people conducting and supervising the research.

In 1998 and 1999 the FWS funded a second round of research. In 2000, upon receiving the results from that research, the Io Group recommended the hawk be delisted due to a lack of evidence of two factors: declines of population, productivity and survival rates; and habitat destruction and degradation.[137] Again, the FWS ignored the Io Group's recommendation.

Then in 2003 the people who conducted the 1998/1999 study published their results in a peer reviewed journal article in which they recommended downlisting, not delisting. As discussed already in this profile, the 2003 study by Klavitter et al. had very similar results to the 1997 study by Hall et al., especially with regard to the total population estimate and the types of habitat preferred by the hawk. Klavitter et al., however, conducted more detailed research in order to measure three parameters affecting the hawk's population; survival, fecundity, and finite rate of population increase. In terms of survival, the study found that young of the year had a significantly higher survival rate in mixed native and exotic habitat and in exotic habitat (0.82), than in solely native habitat (0.27). Obviously, something was causing this difference, and it may have been the greater amount of food available in exotic and mixed exotic/native habitat—

[136] U.S. Fish and Wildlife Service 2008d, p.45682.

[137] U.S. Fish and Wildlife Service 2008d, p.45683.

recall the benefits of "edge" habitat. In terms of fecundity, Klavitter et al., "found no difference…between native…and mixed..., native and exotic…, or mixed and exotic habitats."[138] Finally, no difference was found between these different habitat types for the finite rate of population increase.[139]

Klavitter et al. were clearly troubled by the fact that the hawk was doing fine in habitat modified to varying degrees by humans. So they raised the specter of threats, one of which was the purportedly insufficient amount of protected habitat (i.e., owned by the federal or state governments or a conservation organization like the Nature Conservancy). However, when the authors estimated the number of hawks on these lands, the results was 469, or 32% of the total population. That leaves 988 hawks, or 68% of the population, on so-called unprotected lands. This disparity between "protected" and "unprotected" lands raises two issues. First, whether protected land is truly so important to the hawk. Second, is the wisdom of spending large amounts of money protecting and restoring native forest habitat for the hawk. However, Klavitter et al. did not spend much time considering these crucially important issues. Instead, they were more concerned with a wide range of potential threats. And, like Hall et al., Klavitter et al. recommended the hawk be downlisted, not delisted.

Klavitter et al. elaborated their reasons for opposing delisting in much greater detail than did Hall et al. These reasons ranged from the implausible and absurd, to issues about which the ESA has little if any control.[140] Klavitter et al. warned against delisting because the hawk's small and isolated population made it vulnerable to anthropogenic and natural habitat change. Klavitter et al. posited that future human development, especially for housing, posed a serious threat to the hawk. "[B]ut future growth [of the human population] is difficult to predict." This, however, did not stop them from using a worst case, and extremely unlikely, scenario in order to paint an apocalyptic future due to human-related population destruction. "If growth and

---

[138] Klavitter et al., 2003, p.170.

[139] Klavitter et al., 2003, p.171.

[140] Under the heading of "Is the 'Io Recovered," Klavitter et al., stated; "'Io are abundant and well distributed on Hawaii, but basing recovery solely on population levels is not sufficient. Evidence of population stability and the projected ability to remain viable in the face of expected land-use change is needed" (Klavitter et al., 2003, p.172). Klavitter et al.,. then went on to enumerate the ways in which the population was healthy; a large population distributed over much if not all of its range, and a finite rate of population growth rate that was stable (Klavitter et al., 2003, p.172). These factors, plus the conclusion that the "[p]opulation size has not changed appreciably for 20 years and may be similar to historic population size," was apparently not good enough reason to delist (Klavitter et al., 2003, p.172).

development continued to a point where all lands (except those protected by reserves, parks, and refuges) were converted to urban, we calculated a minimum of 244 'io would still remain."[141] Instead of using unlikely scenarios and scare tactics, the relevant point is what is *likely* to occur in the near future, and it is very, very unlikely that the hawk will be jeopardized in the foreseeable future by anthropogenic habitat destruction. Furthermore, the hawk's demonstrated ability to thrive in areas highly modified by humans means that in all likelihood the hawk will be fine in the future.

Klavitter et al. reach their most absurd and scaremongering heights about potential future threats to the hawk when discussing possible natural habitat changes. "The island of Hawaii is comprised of 3 active volcanoes any of which could quickly change habitat suitability for 'io by replacing forest with lava."[142] This sentence follows directly after a sentence starting with, "We caution against removing the 'io from the list of species covered by the Endangered Species Act…", which leaves little doubt about Klavitter et al.'s real agenda; using any rationale, however unlikely or implausible, to keep the hawk listed under the ESA. Immediately following the volcanoes scenario was yet another problem. "Most islands are relatively small in terms of land area, resulting in species with naturally small population sizes. Based on small population sizes and limited distributions, by definition, nearly every island species could be considered threatened under the ESA."[143] Klavitter et al. suggest a new type of ESA classification for species like the hawk, "vulnerable," based on the system used by the IUCN (the World Conservation Union). When the FWS proposed to downlist the hawk in 1993, the agency took a more measured view of the fact that the hawk's range is limited to a single island. "The island of Hawaii is relatively large, as is the hawk's range on the island, so the species is unlikely to suffer greatly from natural environmental catastrophes, although hurricanes can be considered potential threats."[144]

As could be expected following the 2003 publication by Klavitter et al., the FWS did nothing. In 2007 the FWS followed a predictable pattern; it funded yet another study of the

---

[141] Klavitter et al., 2003, p.173.

[142] Klavitter et al., 2003, p.173.

[143] Klavitter et al., 2003, p.173.

[144] U.S. Fish and Wildlife Service 1993a, p.41686.

hawk's population and habitat. The study arrived at a population estimate of 3,085 hawks, which may appear to have been a dramatic increase over the previous estimates but in all likelihood this is not the case because the new study used a different methodology to arrive at its population estimate.

It is possible the FWS would have continued this pattern of delay-by-yet-another-study had it not been for a February 1997 petition to delist the hawk from the National Wilderness Institute, a now defunct non-profit organization. The FWS responded almost a year-and-a-half later in a letter to NWI, despite the ESA's mandate that they make an initial finding of merit or no merit in ninety days and, if merit is found, a final determination in twelve months, and all of this published in the Federal Register. When the FWS finally responded to the petition the agency claimed it "could not immediately work on the petition due to higher priority listing and delisting actions."[145] The FWS has a rather liberal notion of its mandate to respond to petitions. It took the agency 11½ years to respond to the National Wilderness Institute's petition. The FWS folded the response into the 2008 proposal to delist the hawk.[146]

The similarities between opposition to delisting the Hawaiian hawk and the American peregrine falcon are striking. Those opposed to delisting these species—in the case of the falcon, Pagel et al., and in the case of the hawk, Hall et al. and especially Klavitter et al.—resorted to the "kitchen sink" approach, meaning they dredged up almost any reason, however implausible, tangential or speculative to the conservation of these birds in order to justify their opposition to delisting.

Klavitter et al. are so eager to paint a pessimistic picture of the hawk's future that almost their entire discussion under the heading, "Is the 'Io Recovered?", is devoted to problems facing the hawk, most of them ranging from potential to implausible. Klavitter et al. make no mention of the flip side of the coin; the optimistic aspects of the hawk's existence, namely that the hawk has been able to survive and thrive under conditions that have decimated and driven to extinction a very large portion of Hawaii's native bird species, and that the hawk has a large and stable population. The Hawaiian hawk's ability to adapt and succeed in human altered habitats would seem to be a cause for celebration. But not in the doom-and-gloom world of Klavitter et al. where keeping the research gravy train rolling is seemingly more important than celebrating the

[145] U.S. Fish and Wildlife Service 2008d, p.45683.

[146] U.S. Fish and Wildlife Service 2008d, p.45683.

rare and unusual good fortune of the Hawaiian hawk's survival and bright prospects for the future.

UNNECESSARY MONITORING

The ESA requires delisted species to be monitored for at least five years to ensure they remain healthy. In 2008, even though the hawk had not yet been delisted, the FWS released a draft post-delisting monitoring plan for the Hawaiian hawk that appears to have been heavily influenced by Klavitter et al.'s suggestions. Klavitter et al.'s primary suggestion in lieu of delisting is, not surprisingly, more studies of the hawk. "We recommend monitoring survival with a radio tagging study at 5-year intervals, tagging a minimum of 30 birds (probably $\geq$ 100 birds for statistical power) from various habitats around the island."[147] In addition, "'Io abundance should be monitored island wide using survey methods developed by Klavitter."[148] Furthermore, "…reproduction should be monitored" by "monitoring a minimum of 30 nests in a mixture of habitats dispersed around the island every 10 years."[149]

In the eyes of Klavitter et al., the Hawaiian hawk is facing so many threats that it probably should never be delisted, but the hawk should be monitored, likely in perpetuity, using some of the techniques developed by none other than Klavitter himself. And, since Klavitter has the best understanding of these techniques, he naturally is best qualified to conduct such research. Economists call this type of behavior "rent seeking" because it means individuals and organizations seek to influence government action in their favor so they can collect the financial benefits, or, in economic terms, rents. In the case of Klavitter et al., they are ideally positioned to capture any potential rents, which, in the case of the hawk, would be research contracts. This situation is similar to what occurred when Pagel et al. opposed delisting the American peregrine falcon. Pagel et al. saw that if the falcon was delisted, the gravy train of federal funding would grind to a halt.

---

[147] Klavitter et al., 2003, p.173.

[148] Klavitter et al., 2003, p.173.

[149] Klavitter et al., 2003, p.174.

Klavitter et al. are actually John Klavitter, biologist with the FWS, John Marzluff, professor of biology at the University of Washington, and Mark Vekasy, biologist with the U.S. Geological Survey. But when Klavitter co-authored this article on the Hawaiian hawk he was a graduate student of Marzluff. After receiving his Master's degrees, he went to work for the federal government where, as it so happened, he was ideally positioned to capture the Hawaiian hawk rents he had suggested be created because he went to work at the FWS's Midway Atoll National Wildlife Refuge, which is relatively close to Hawaii.

In 2008 when the FWS proposed to delist the hawk, the prospect of federal funding for hawk studies drying up became very real. So it was not surprising that the authors of the hawk's draft monitoring plan—under the ESA every recovered species is required to be monitored for at least five years—recommended monitoring the hawk for twenty years, from 2012-2032, at five year intervals using the methodology developed by Klavitter et al. But before monitoring could start, the plan recommends yet another study to refine the survey methods.[150] The recommended study was to use a specific methodology for gathering data, and it just so happened that Klavitter and Marzluff were experts in this methodology. A year before the draft monitoring plan's publication, Klavitter and Marzluff published a peer reviewed paper on just such a methodology, using the Hawaiian hawk as their research subject.[151] The draft monitoring plan also recommended surveys to determine the abundance and distribution of the Hawaiian hawk using methodologies developed by Klavitter and several collaborators.[152] In addition, the authors of the draft monitoring plan thank a number of people for their help preparing the plan, and not surprisingly one of them is John Klavitter.

This rent seeking behavior, primarily by Klavitter but also others, reveals a larger point. Klavitter et al., the authors of the draft monitoring plan and, to a lesser degree, Hall et al., have lost sight of two things. First, the ultimate purpose of the ESA is to delist species, not keep them listed longer than necessary. Second, one of the primary goals of biodiversity conservation is that scarce funds should go to those species most in need. Clearly, the Hawaiian hawk is not one of these species, especially when measured against some of the highly imperiled Hawaiian forest bird species, a number of which are teetering on the brink of extinction.

---

[150] U.S. Fish and Wildlife Service 2008e.

[151] Klavitter et al., 2007.

[152] Gorresen et al., 2008.

This reality could not be starker than in the case of the Hawaiian Islands, which, as of May 2009, contained 330 species listed under the ESA, or 24% of all U.S. species listed under the Act (foreign species can be listed as well). Many of these species are close to extinction, but they, as well as those that are approaching the brink, may be prevented from oblivion through concerted conservation efforts. Such efforts, however, tend to be capital and labor intensive. Rather than spend scarce resources on a species like the Hawaiian hawk, that has been secure for at least the past forty years and in all likelihood will continue to be secure in the foreseeable future, it would be far wiser to invest in those species that truly need a helping hand. The picture painted by Klavitter et al. is so out of whack with reality that it relies on bringing up such things as volcanic eruptions as a reason for keeping the hawk listed. But volcanic eruptions are all the more reason to shift resources to other species, like plants or animals with highly restricted ranges that might be driven to extinction by an eruption because they cannot simply fly away like the hawk.

The unwillingness of the FWS and others, like Hall et al. and Klavitter et al., to support delisting of the hawk, prompted a number of the world's most prominent raptor biologists and conservationists in 1997 to call for the agency to delist the hawk along with a number of other species. "Some people ask why the *anatum* peregrine should be de-listed when the bald eagle (*Haliaeetus leucocephalus*), which exists in much larger numbers south of Canada than the peregrine does, was only down-listed to threatened," stated Tom Cade and Lloyd Kiff of the Peregrine Fund, James Enderson of Colorado College and Clayton White of Brigham Young University. "Our answer is that the bald eagle should have been de-listed as originally proposed, but the Fish and Wildlife Service made a political decision to down-list when faced by opposition from litigious environmental groups. Other species that should have been de-listed long ago include the Hawaiian hawk (*Buteo solitarius*) and California brown pelican (*Pelecanus occidentalis*)."[153] That these normally reserved people would make such a strong statement about the Hawaiian hawk is an indication of how unwarranted its continued listing is.

The FWS's refusal to downlist or delist the Hawaiian hawk is also a prime example of the precautionary principle at work, specifically how it can be abused and work against the best interests of wildlife conservation. As Tom Cade and colleagues pointed out in the case of

[153] Cade et al., 1997, p.735.

resistance to delisting the American peregrine falcon; "Delisting the peregrine will remove the temptation to continue projects beyond their useful tenures and will free up scarce funds to help truly endangered species, such as the Hawaiian endemic birds."[154] Substitute "Hawaiian hawk" for "peregrine" and the same argument applies. By keeping the hawk listed long past when it should have been delisted, the FWS has perpetuated precisely what Cade and colleagues warned about in the case of the American peregrine. If nothing else, the FWS has been consistent because most of the so-called recovered species, as well as the species proposed to be delisted due to recovery, could have been delisted years before when they were delisted, or proposed to be delisted, but for resistance from the agency and those with narrowly focused special interests.

CONCLUSIONS

The Hawaiian hawk cannot possibly be considered an ESA success story because it is likely a case of data error and because, on net, it has not benefited from the Act, in particular the ESA's land-use restrictions that make the law so powerful. If the Hawaiian hawk is an ESA success story then such a characterization essentially has no meaning because the hawk received very, very little meaningful help from the Act. If all the ESA did for the hawk was to fund studies of the bird's biology and ecology, then the hawk had no need for the Act. The distinguishing characteristic of the ESA is its "teeth," the punitive provisions that give it the ability to control land and resource use on habitat the FWS deems necessary for the conservation of species listed under the Act. Funding of research could be accomplished if there were no ESA, especially an ESA without land-use controls, such as the two predecessors to the Act, one passed in 1966 and the other in 1969.

The Hawaiian hawk likely never should have been listed because its large and stable population did not merit protection under the ESA. Yet the FWS listed the hawk based on virtually non-existent evidence. As it turned out, almost all of the threats invoked by the FWS as reasons to list the hawk, and to continue to keep it listed, turned out either not to be threats or were beneficial to the hawk. In addition, the hawk prefers habitat that has been modified by humans so long as there are enough large, native trees in which the hawk can nest, loaf and rest.

---

[154] Cade et al., 1997, p.735.

The ESA's lack of much, if any, role in the hawk's conservation is likely why the Act's proponents have refrained from making their typical claims of success, in terms of the quantity and intensity, which they make for other species. Another contributing factor is that the hawk is simply not a high profile species, and so the FWS and environmental pressure groups are not eager to invest much time and effort promoting it as a poster species of the ESA.

Even though that the Hawaiian hawk simply cannot be considered an ESA success story, some supporters of the Act maintain otherwise in the hope that their views, although basically unsubstantiated, will convince the public. Leading the way has been the National Audubon Society.[155] In addition, as cited above in the section titled, "Conservation measures," Environmental Defense Fund has made a more specific claim about the ESA's role protecting habitat, but there are a number of reasons to doubt the validity of this and other claims of ESA-induced protection.[156]

Opponents of delisting the hawk would do well to heed words Tom Cade and colleagues used in response to those opposed to delisting the peregrine falcon. "We believe that when a species no longer meets the biological criteria for threatened or endangered it should be removed from the list; otherwise, the Endangered Species Act becomes a fake, and fakery ill serves both science and conservation."[157] Fakery, indeed, in the case of the Hawaiian hawk.

There is cause for genuine celebration about the Hawaiian hawk, but it is unrelated to the ESA. The Hawaiian hawk is an anomaly and its good fortune should be the cause for rejoicing, not the pessimism characterized by the FWS, environmental pressure groups, and environmental researchers/activists. The hawk is extraordinarily lucky because not only has it been able to survive the human-induced extinction spasm that has tragically erased forever some 66% of all

---

[155] National Audubon Society. ND. Hawaiian Hawk.

[156] First, the claims, in particular the one made in Environmental Defense's report, are nonspecific. Second, Environmental Defense's claim of success hinges on communication with a single FWS employee. This constitutes the opinion of just one person who works for a governmental agency that is hardly unbiased when it comes to evaluating the effectiveness of the ESA. Third, Environmental Defense makes no mention of the Hawaiian hawk in similar reports published in 1996 and 1992 (Environmental Defense Fund 1996; Endangered Species Coalition 1992). Surely the hawk did not suddenly become a success story in just the two years between the publication of the 1996 and 1998 reports. Fourth, in 1993, Environmental Defense put out yet another publication, this one "commemorating the 26th anniversary of the first endangered species list" published in 1967 (Wilcove et al., 1993, p.2). In it, Environmental Defense claimed that forty-four species, out of the cohort of seventy-eight originally listed in 1967, "have stable or increasing population due to protection under the ESA" (Wilcove et al., 1993, p.12). The Hawaiian hawk was placed in the "stable" category, but no information, much less citations, was provided to substantiate this claim (Wilcove et al., 1993).

[157] Cade et al., 1997, p.735.

of Hawaii's birds, but the hawk has been able to thrive with little, if any, of the expensive and labor intensive conservation efforts that have helped to prevent some of Hawaii's remaining native birds from tipping into the abyss of extinction. The talents of the people involved in this struggle to save Hawaii's remaining bird species, and the limited resources devoted to it, would be much better spent on species that are truly imperiled, not the Hawaiian hawk.