

# Hawaiian Bird Conservation Action Plan

October 2012



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**Cover photos:** clockwise from top left: ‘Akiapōlā’au, Laysan Albatrosses, Palila, Laysan Duck, Brown Boobies, ‘Iiwi, O’ahu ‘Elepaio, and Bristle-thighed Curlew. All photos © Eric VanderWerf except ‘Iiwi © Jack Jeffrey.

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If you have comments on the current documents or ideas for improvements and additional actions please send them to either:

Eric VanderWerf, Pacific Rim Conservation; [eric@pacificrimconservation.com](mailto:eric@pacificrimconservation.com)

Mike Green, U.S. Fish and Wildlife Service; [michael\\_green@fws.gov](mailto:michael_green@fws.gov)

Dr. Eric A. VanderWerf  
Pacific Rim Conservation  
Honolulu, Hawaii  
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## INTRODUCTION

The Hawaiian Islands are home to a unique assemblage of bird species, including at least 113 endemic (found nowhere else) species or subspecies, some of the largest tropical seabird colonies in the world, and an assortment of migratory and resident waterfowl and shorebirds. The Hawaiian honeycreepers (Drepanidinae), with their remarkable array of bill sizes and shapes that evolved from a single species of ancestral finch (Fringillidae), are one of the most spectacular examples of evolution and adaptive radiation (Pratt 2005). The Northwestern Hawaiian Islands support some of the most intact marine habitats on earth and provide nesting sites for 14 million seabirds of 21 species. Yet the Hawaiian Islands and the birds they support are frequently overlooked by many North American ornithologists, conservation biologists, law makers, and the general public.

Sadly, 71 bird species are known to have gone extinct in Hawaii, and many remaining birds are imperiled. At least 48 bird extinctions followed the arrival of Polynesian people in Hawai'i starting about 800 years ago, and at least 23 more species have been lost since the arrival of Europeans in 1778 (Olson and James 1982, Scott et al. 2001, Wallace and Leonard 2011, Wilmschurst et al. 2011). Of the 42 surviving endemic bird species and subspecies, 33 are listed as threatened or endangered under the U.S. Endangered Species Act (ESA). Hawaii is often ignominiously called the extinction capital of the United States, if not the world (Wallace and Leonard 2011). Worse, some extant Hawaiian birds are considered by some to be unrecoverable because of the gloomy extinction history in Hawai'i or because their threats appear so daunting. In reality, the threats faced by many Hawaiian birds are manageable, though long-term commitment to their conservation is needed to ensure their survival (Reed et al. 2012).

Multiple factors have contributed to the decline and extinction of Hawaiian birds, and these same factors continue to threaten the remaining species. Habitat loss and degradation has been perhaps the most pervasive threat and has affected all species on all islands. Complete loss of habitat may be avoidable because most areas in the Hawaiian Islands that are important to birds are now legally protected to at least some degree (VanderWerf 2008); but, some "protected" areas receive little or no management and birds in these areas continue to be at risk from habitat degradation by invasive alien species, including plants, ungulates, diseases, and predators. Habitat protection may be largely sufficient to ensure the continued survival of birds in continental areas, but in Hawaii and other oceanic islands, habitat protection alone is not sufficient (Clout 2001). There are a few encouraging examples of Hawaiian birds evolving natural responses to alien pathogens and predators (Woodworth et al. 2005, Foster et al. 2007, VanderWerf 2012), but many islands birds require active management of alien predators, invasive alien plants, and diseases even within protected habitats.

The effects of global climate change are expected to be particularly severe for many Hawaiian birds, almost all of which were categorized as having high vulnerability to climate change ([http://www.stateofthebirds.org/2010/results-for-species/Hawaii\\_Scores.pdf](http://www.stateofthebirds.org/2010/results-for-species/Hawaii_Scores.pdf)). These effects can be grouped into four broad categories: 1) inundation of low-lying islands resulting from sea level rise, storm surge, and high wave events associated with increased frequency and intensity of storms (Vermeer and Rahmstorf 2009, Krause et al. 2012). Several endemic species and many seabirds occur on atolls that have an average elevation of just a few meters. 2) Inundation and incursion of salt water into coastal fresh water and brackish wetlands used for foraging and nesting by five waterbird species endemic to the main Hawaiian Islands. These waterbirds generally prefer fresh water and are precariously concentrated in small wetlands along the narrow coastal shelf (USFWS 2009). 3) Avian diseases that are transmitted by non-native

mosquitoes, particularly avian malaria (*Plasmodium relictum*) and avian pox-virus (*Poxvirus avium*), have decimated the Hawaiian avifauna, and today most endemic Hawaiian passerines are restricted to forests above 1,500 meters in elevation, where cooler temperatures inhibit the survival and reproduction of mosquitoes and malaria parasites (van Riper et al. 1986, Atkinson and LaPointe 2009a). Rising temperatures are anticipated to exacerbate the threat of disease by facilitating the spread of mosquitoes into higher elevations (Benning et al. 2002, Harvell et al. 2002, Atkinson and LaPointe 2009b). Rising temperatures coupled with declining precipitation also could facilitate outbreaks of avian botulism in wetland habitats (Work et al. 2010). 4) Rising temperatures, decreasing precipitation, and changing atmospheric circulation patterns, particularly elevation of the inversion layer, could result in long-term shifts in distribution of forest habitats vital to many Hawaiian forest birds and hinder reforestation efforts (Loope and Giambelluca 1998).

#### THE HAWAIIAN BIRD GAP

Conservation biologists have worked hard in Hawai'i to manage these threats and recover the imperiled avifauna (Scott et al. 2001, Pratt et al. 2009), however, it can be argued that a lack of support for conservation measures has limited conservation successes (Restani and Marzluff 2002, Male and Bean 2005, Leonard 2008). Despite the uniqueness and urgent conservation needs of many Hawaiian birds, they have received little attention or funding compared to their continental counterparts. There are 33 Hawaiian bird taxa listed under the ESA, more than one-third of all birds listed in the U.S. (Appendix 1). Yet from 1996-2004, Hawaiian bird taxa listed under the ESA received on average 15 times less funding than North American species on that list and only 4% of total recovery expenditures (Leonard 2008). None of the top-20 funded bird species was Hawaiian, and the Red-cockaded Woodpecker (*Picoides borealis*) received five times more funding than all Hawaiian birds combined (Leonard 2008). This funding discrepancy is unrelated to the urgency and need for recovery efforts. Compared to mainland taxa, a higher percentage of listed Hawaiian birds are full species rather than sub-species, a higher percentage are endangered rather than threatened, and the mean recovery priority ranks assigned by the USFWS are similar in Hawaiian and North American birds. This is not to say that funding should be redistributed away from existing efforts for mainland birds, but rather an argument for increased funding and attention for Hawaii's listed birds.

The disparity between North American and Hawaiian birds also has extended to legal protection. Until recently, most endemic Hawaiian birds were not protected under the Migratory Bird Treaty Act (MBTA). This situation was largely rectified in 2010 when the list of species included under the MBTA was revised (USFWS 2010). In that revision, 23 species of Hawaiian honeycreepers (Drepanidinae), the Millerbird (*Acrocephalus familiaris*), and 28 other species found only on other U.S. Pacific Islands were added to the MBTA list because they belong to families covered by the international conventions underlying the MBTA. Several other birds were added because they are now considered to be full species within such families, including the Hawaiian Petrel (*Pterodroma sandwichensis*), Hawaiian Coot (*Fulica alai*), Pacific Golden-Plover (*Pluvialis fulva*), Kama'o (*Myadestes myadestinus*), and 'Oloma'o (*Myadestes lanaiensis*). The three 'elepaio species (*Chasiempis* spp.) now have the dubious distinction of being the only bird species native to the U.S. that are not protected under the MBTA (other than upland gamebirds). The 'elepaios were not included in the recent revision because they are members of a family, the Monarchidae, which does not occur elsewhere in the United States and is not mentioned in the underlying international conventions to the MBTA. The O'ahu 'Elepaio

(*C. ibidis*) is listed under the Endangered Species Act and thus is provided Federal protection, but the Hawai'i 'Elepaio (*C. sandwichensis*) and Kaua'i 'Elepaio (*C. sclateri*) still are not protected by Federal law.

Hawaiian birds are not included in many programs and documents that have been used to raise awareness and generate funding for bird conservation in North America, and they are short-changed by methods used to allocate funding in several Federal grant programs (Leonard 2008, 2009). Additionally, Hawaii's landbirds fall outside the geography of concern (North America) to major bird conservation partnerships on the mainland, for example Partners in Flight (Berlanga et al. 2010). Hawaiian birds are similarly excluded from the North American Bird Conservation Initiative (NABCI) and the Neotropical Migratory Bird Conservation Act, and there are no counterparts to these programs in the Pacific region. However appropriate this might be, the result is that Hawaiian birds do not receive the same conservation attention as landbirds on the mainland (with more secure populations). Although fewer migrants pass through the Hawaiian Islands than other areas of the United States and Canada, the Pacific region contains critical flyways for some species (Gill et al. 2008) and is an important wintering area for several species of migratory waterfowl and shorebirds (Brown et al. 2001, Udvardy and Engilis 2001).

Population monitoring has also suffered from the relative lack of attention paid to Hawaiian birds. There are no Breeding Bird Survey routes (<http://www.pwrc.usgs.gov/bbs/>), or MAPS stations (Monitoring Avian Productivity and Survival; <http://www.birdpop.org/maps.htm>) for Hawaii's landbirds. The status and distribution of Hawaiian forest birds was investigated in the late 1970s and early 1980s (Scott et al. 1986), but monitoring efforts have been less consistent and thorough since (Camp et al. 2009, Gorresen et al. 2009), mostly due to a lack of funding and staff. These data are important in assessing species' status and measuring efficacy of conservation actions (e.g., Camp et al. 2010), but detecting population trends in Hawaiian forest bird species and estimating population sizes has been hampered by variation among years in survey coverage and frequency (Camp et al. 2009). Wetland birds in Hawaii are monitored statewide semiannually, coordinated by the Hawai'i Division of Forestry and Wildlife. However, data from these counts have not been fully analyzed since 1987 (Engilis and Pratt 1993). Subsets of the data have been analyzed for population trends of some species on some islands (Reed and Oring 1993, Reed et al. 2011), and to estimate abundance (U.S. Fish and Wildlife Service 2011), but a comprehensive analysis of the complete data set is needed.

The relative neglect of Hawaiian birds is related to several factors (Leonard 2009), perhaps the most pervasive of which is Hawaii's remote location. Hawaiian birds are not included in any recent North American bird field guides and are not included in the American Birding Association's area of primary interest (Leonard 2009, Schunke 2011); these are both 'missed opportunities' for raising awareness, interest which leads to concern and ultimately to funding and action.

The threats faced by many Hawaiian birds are somewhat different than those faced by many North American birds. Conservation issues in Hawaii are more similar to those on other Pacific islands, but Hawaiian birds also have received little attention or funding from international programs such as BirdLife International and the Secretariat of the Pacific Regional Environmental Programme (SPREP; <http://www.sprep.org/>) because Hawai'i is part of the U.S. and thus often viewed as well-funded. National Audubon Society, the Birdlife International partner in the U.S., funded the identification of Important Bird Areas (IBAs) in Hawaii (VanderWerf 2008), but otherwise has not been engaged in Hawaii. Thus, in the realm of bird

conservation, Hawaii (and other U.S. territories and possessions in the Pacific) has for years sat between two worlds, not enjoying the full attention and benefits of either.

Recent efforts have helped to better address the conservation needs of Hawaiian birds and begin bridging the funding gap, but much remains to be done (Leonard 2009, Wallace and Leonard 2011). One example is the State of the Birds (<http://www.stateofthebirds.org/>), an initiative sponsored by multiple agencies and organizations to provide an assessment and overview of the status of bird species in the U.S., their threats, and conservation needs. Hawaiian birds have been featured prominently in each of the annual reports issued by the State of the Birds from 2009-2011 and 2013, and these efforts helped trigger additional Federal funding for Hawaiian birds. The American Bird Conservancy began developing a Hawai'i Program in 2006 (<http://www.abcbirds.org/abcprograms/oceansandislands/hawaii/index.html>), has worked to increase attention and funding for Hawaiian birds, and has actively participated in several important projects. The National Fish and Wildlife Foundation adopted conservation of Hawaiian forest birds in 2009 as one of their keystone initiatives, which has provided critical funding for several projects aimed at conservation of Hawaii's most endangered birds.

It has been estimated that recovering Hawaii's endangered birds and the habitats upon which they depend will cost upwards of one billion dollars over the next 10 years (USFWS 2006, Wallace and Leonard 2011). While this may seem exorbitant, it is not unprecedented; similar restoration efforts for the Everglades (<http://www.evergladesplan.org/>), Chesapeake Bay (<http://www.chesapeakebay.net/track/restoration>), and Great Lakes (<http://greatlakesrestoration.us/>) have estimated costs of \$3.9 billion over 30 years, \$1 billion over 10 years, and \$5 billion over 10 years, respectively. Most of what remains of the unique Hawaiian avifauna, which is under management responsibility of the United States, may be lost without a similar investment.

## PURPOSE

The purpose of this Hawaiian Bird Conservation Action Plan is to continue to fill the "Hawaiian bird gap" by drawing attention to the plight of Hawaiian birds, increasing awareness of their conservation needs, and ultimately, increasing the amount of funding available for their conservation. The species profiles that form the core of this plan are intended to provide concise and up to date summaries which can be used by decision-makers, funding agencies, managers, and land owners to quickly access information. Each profile provides a brief summary of a particular species (or group of species), its status, the threats it faces, and conservation actions that are needed and can be implemented in the next five years. Because the species profiles can serve as stand-alone documents, they can be revised easily and updated on an individual basis as conservation actions are completed and new actions are identified.

Some of the species included in these profiles are listed under the U.S. Endangered Species Act and recovery plans have been written for these species (USFWS 1983, 1984, 2004, 2006, 2008, 2009, 2011). The species profiles presented here are not intended to replace those recovery plans, which are more comprehensive and long-term, but rather to complement them. Compared to the recovery plans, the species profiles are more concise, include only a subset of the most urgently needed conservation actions, and develop these actions in more detail. Some species also have been addressed in national or regional conservation plans aimed at groups of species, such as seabirds and shorebirds (Brown et al. 2001, USFWS 2005). The Hawai'i Comprehensive Wildlife Conservation Strategy written by the Hawai'i Division of Forestry and

Wildlife (Mitchell et al. 2005) is similar in some ways but provides fewer details on conservation actions and does not provide cost estimates.

## HOW TO USE THIS ACTION PLAN

Each of the species profiles follows roughly the same format and has the section headings listed below. Each profile also includes one or more photographs of the species and sometimes a photograph of their habitat. Immediately following the photographs is a box that summarizes the status of each species, including their Federal, State of Hawai'i, and IUCN status. In the case of Hawaiian birds that currently are considered subspecies of other taxa (Newell's Shearwater, Hawaiian Gallinule, and Hawaiian Stilt), the IUCN status is not listed because subspecies are not considered separately by the IUCN. The box also includes three measures of conservation concern: 1) A conservation score and rank using species assessment criteria developed by Partners in Flight (Panjabi et al. 2012); 2) the status in the 2007 Watchlist of birds that are in immediate need of conservation help developed by the National Audubon Society and the American Bird Conservancy (<http://birds.audubon.org/species-by-program/watchlist/hawaiian-species>); and 3) the climate vulnerability score as calculated for the State of the Birds 2010 report on climate change ([http://www.stateofthebirds.org/2010/results-for-species/Hawaii\\_Scores.pdf](http://www.stateofthebirds.org/2010/results-for-species/Hawaii_Scores.pdf)).

**Synopsis.** Each profile begins with a synopsis that briefly summarizes the most important information. This section can serve as an Executive Summary for readers with limited time.

**Population Size and Trend.** This section provides the best available information on the abundance of the species and whether its numbers are increasing, decreasing, or stable. For many species the estimates are rough, but the error associated with estimates has been included whenever possible.

**Range.** The range, or distribution, of each species is described. For species with broad ranges the description may be fairly general, but for species with very small ranges the description is more detailed and includes specific locations. Most profiles include a map showing the range of the species, broad land ownership categories, and important locations and features mentioned in the text.

**Essential Biology.** This section is deliberately brief and is not intended to provide a comprehensive description of each species' life history, which can be found in various other sources, such as *The Birds of North America*, and recovery plans in the case of species listed under the ESA. Rather, this section summarizes aspects of the species' biology that are directly relevant to its conservation and the actions discussed in the profile.

**Primary Threats:** The major threats are listed with subheadings, but are not necessarily listed in order of severity. Some threats are inter-related, such as habitat degradation, invasive alien plants, and alien ungulates; in some cases these factors are combined, while in others they are treated separately to highlight their importance.

**Conservation Actions to Date:** This section describes actions that have been taken to conserve the species, including regulatory protection, land acquisition, habitat protection and management,

predator control, research, monitoring, etc. The actions are roughly grouped by type and are not presented chronologically or in order of importance. In some cases the actions are ongoing and also are mentioned in the section on conservation actions needed.

**Planning/Research Needs:** This section lists conservation-oriented research topics that will help inform management decisions. For many species, planning documents such as regulatory compliance documents, translocation plans, predator control plans, or public outreach materials also are needed to improve and coordinate conservation efforts.

**5-Year Conservation Goals:** These are short-term goals that, if accomplished, would indicate progress is being made toward recovery. Some are general in nature, such as obtaining greater public support for conservation efforts, while others are more specific and focused, such as creation of additional populations by translocation.

**Conservation Actions Needed in the Next Five Years.** The 5-year time frame is somewhat arbitrary but is a reasonable period over which to plan actions and gauge progress. Some actions, such as control of invasive alien plants and predators, will be needed in perpetuity and will not be complete after five years. Other actions may be largely completed within 5 years but there may be a time-lag until the benefits to the species are realized. The starting year for this 5-year period is 2013, but the desired schedule may be delayed, though in most cases this would not decrease the need for the actions.

**Summary and Estimated Costs of Conservation Actions.** The costs provided are estimates and should not be viewed as the actual cost of completing the prescribed action. If there is interest in funding and implementing a particular action, the managing agency or other entity and any potential partners should be contacted for more details about the project and budget.

**Potential Partners:** This is a list of agencies and organizations that have been involved in conservation efforts for the species previously, agencies that are mandated to manage natural resources, landowners, and other stakeholders. Potential partners are not necessarily limited to those listed; private foundations may be interested in funding projects, and university researchers and their students may be interested in helping to conduct research projects.

**Ancillary Species:** This list includes other native bird species that would benefit from conservation actions aimed at the focal species. In general these are more common and widespread bird species that are not the focus of a profile. The list does not include non-native bird species. In general, numerous species of native plants and invertebrates also would benefit from the same actions, many of which are rare or endangered, but these are not listed here.

#### LIST OF SPECIES PROFILES

- Albatrosses (Laysan, Black-footed, Short-tailed)
- Nene
- Koloa or Hawaiian Duck
- Laysan Duck
- Hawaiian Waterbirds (Hawaiian Coot, Hawaiian Gallinule, Hawaiian Stilt)
- Puaiohi or Small Kaua'i Thrush

- O'ahu 'Elepaio
- 'Alalā or Hawaiian Crow
- Northwestern Hawaiian Island Passerines (Millerbird, Nihoa Finch, Laysan Finch)
- Palila
- Kaua'i Honeycreepers ('Anianiau, 'Akikiki or Kaua'i Creeper, 'Akeke'e or Kaua'i 'Ākepa)
- Maui Honeycreepers (Maui Parrotbill, 'Akohekohe or Crested Honeycreeper, Maui Creeper)
- Hawai'i Honeycreepers ('Akiapōlā'au, Hawai'i Creeper, Hawai'i 'Ākepa)
- 'I'iwi
- Hawaiian Hoary Bat

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