



**SAFE HARBOR AGREEMENT
TRUSTEES OF THE ESTATE OF BERNICE P. BISHOP, DBA
KAMEHAMEHA SCHOOLS
KEAUHOU AND KĪLAUEA FOREST LANDS
HAWAI'I ISLAND, HAWAI'I**

October 2016

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This Safe Harbor Agreement (“Agreement”) is made and entered into by and among Trustees of the Estate of Bernice P. Bishop, dba **Kamehameha Schools** (“Permittee” or “KS”); the **U.S. Department of the Interior, Fish and Wildlife Service** (“Service”); and the **State of Hawai‘i, Department of Land and Natural Resources** (“DLNR”), by its Board of Land and Natural Resources; hereinafter collectively called the “Parties”. This Agreement follows the Service’s Safe Harbor Agreement final policy (FR 64:32717) and applicable final regulations (FR 64:32706), and implements the intent of the Parties to follow the procedural and substantive requirements of section 10(a)(1)(A) of the Endangered Species Act (“ESA”) and Hawai‘i Revised Statutes (“HRS”) §195D-22.

RECITALS

1. INTRODUCTION

The Federal and State Safe Harbor programs encourage proactive conservation efforts by non-Federal landowners while providing them certainty that future property-use restrictions will not be imposed if those efforts attract species listed as endangered or threatened to their property, or result in increased populations of endangered or threatened species already present. In return for voluntary conservation commitments, the Agreement gives the Permittee incidental take assurances allowing future alteration or modification of the enrolled property back to its original baseline conditions. This cooperative effort provides landowners with a way to manage enrolled lands to support the conservation of listed species while conducting certain other land-use practices. Without this cooperative government/private effort, the enrolled property would be less valuable to the recovery of endangered or threatened species in the foreseeable future.

This Safe Harbor Agreement between the Service, DLNR (collectively referred to herein as the “agencies”) and Kamehameha Schools describes how the Parties will work together toward the restoration and enhancement of habitat for native plants and animals on certain privately owned lands of Kamehameha Schools in the district of Ka‘ū on the southeastern slope of Mauna Loa on the island of Hawai‘i (the “Enrolled Property”) totaling 32,280 acres. The term of the Agreement is 50 years. The Agreement promotes recovery of the Federal- and State-endangered Hawai‘i Creeper (*Loxops mana*), Hawai‘i ‘Ākepa (*Loxops coccineus*), ‘Akiapōlā‘au (*Hemignathus wilsoni*), ‘Iiwi (*Vestiaria coccinea*), ‘Io or Hawaiian Hawk (*Buteo solitarius*), Nēnē or Hawaiian Goose (*Branta sandvicensis*), ‘Alalā or Hawaiian Crow (*Corvus hawaiiensis*), ‘Ōpe‘ape‘a or Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) and twenty-five endangered plant species (collectively referred to as the “Covered Species”) through habitat restoration and management practices. The activities implemented under this Agreement will aid in increasing the current range of the Covered Species, restoring these species to part of their historic ranges, increasing the total population of these species, and reestablishing wild populations of these species, thus contributing to their overall recovery. Additionally, the Agreement will reduce habitat fragmentation by connecting a network of protected and managed state, federal, and private lands within the south central region of Hawai‘i Island and will also benefit other native species.

When signed, this Agreement will serve as the basis for the Service to issue to KS an ESA Section 10(a)(1)(A) Enhancement of Survival Permit for the incidental taking of the wildlife Covered Species, and for DLNR to issue to KS an HRS §195D-4 Incidental Take License (collectively referred to as “Permits”) for the incidental taking of the wildlife and plant Covered Species on the Enrolled Property. Incidental take is defined as take that is incidental to and not the purpose of, otherwise lawful activities and does not include shooting, capture or other directed take of animals or plants. The Permits will authorize KS to incidentally take individuals of the Covered Species, provided that baseline conditions specified in this Agreement are maintained throughout the Agreement term. Although the Permits will authorize incidental take of individuals above the baseline, the Parties anticipate that the maximum level of take under the Permits will never be realized. Permit issuance will not preclude the need for KS to abide by all other applicable Federal, State, and local laws and regulations that may apply.

2. LIST OF SPECIES COVERED IN THIS AGREEMENT

Three extensive surveys and reports have been compiled and appended here for the purpose of developing this Agreement among the Parties (Appendices 2-4). Table 1 and Table 2 (below) list the wildlife and plant species, respectively, covered under this Agreement and the estimated statewide population and distribution of each. The Service and DLNR have determined that site conditions have not changed since these surveys were completed and that these survey results therefore accurately represent current species occurrences and distributions. Each of these Covered Species, with the exception of ‘Iwi (as of September 2016), are listed as endangered under the ESA and HRS. The Covered Species under this Agreement refer to both plant and wildlife species. While the ESA generally does not prohibit the take of endangered plant species on private property, state law (HRS Chapter 195D) does. Therefore, the incidental take authorization discussed in this Agreement with respect to plant species pertains exclusively to state law. However, at the Federal level, the Service nevertheless encourages non-Federal landowners to enter into Safe Harbor Agreements to restore and enhance habitat for listed plant species in order to promote their conservation and recovery.

Population declines for the Covered Species are due primarily to destruction and loss of habitat and negative effects from non-native species. Beneficial management activities, such as those described in this Agreement, will contribute to the recovery and conservation of the Covered Species by maintaining, enhancing, and restoring habitat, controlling non-native species, and potentially expanding the range and distribution of the Covered Species within the Enrolled Property.

Table 1. Wildlife species covered under this Safe Harbor Agreement.

Species	Status Federal/State	State Population Estimate* [†]	Current Distribution by Island*
‘Akiapōlā‘au, (<i>Hemignathus wilsoni</i>)	Endangered	1,900	Hawai‘i
Hawai‘i Creeper, (<i>Loxops mana</i>)	Endangered	14,000	Hawai‘i
Hawai‘i ‘Ākepa (<i>Loxops coccineus</i>)	Endangered	12,000	Hawai‘i
‘Iwi (<i>Vestiaria coccinea</i>) [^]	Proposed for	>500,000	Hawai‘i, Maui,

Species	Status Federal/State	State Population Estimate* [†]	Current Distribution by Island*
	Listing as Threatened		Kaua‘i
‘Io, Hawaiian Hawk (<i>Buteo solitarius</i>)	Endangered	1,223	Hawai‘i
‘Alalā, Hawaiian Crow (<i>Corvus hawaiiensis</i>)	Endangered	116 individuals in captivity	None in the wild
Nēnē, Hawaiian Goose (<i>Branta sandvicensis</i>)	Endangered	2,457-2,547	Hawai‘i, Maui, Kaua‘i, Moloka‘i, O‘ahu
‘Ōpe‘ape‘a, Hawaiian Hoary Bat, (<i>Lasiurus cinereus semotus</i>)	Endangered	Widely distributed but population unknown	Hawai‘i, Maui, Kaua‘i, Moloka‘i, O‘ahu

*Hawai‘i DLNR 2012, USFWS 2006, Mitchell et al. 2005, Camp et al. 2009, NRAG pers. comm 2012

[†]Estimates may not reflect current population status.

[^]Information on this species from 2016 Federal Register/ Vol. 81, No. 182 pp. 64414-64426. Not indicated under Current Distribution column are Moloka‘i and O‘ahu where only few individual birds have been sporadically detected..

Table 2. Covered Plant Species under this Safe Harbor Agreement.

Species	Status Federal/State	Current Distribution by Island [†]	Current Presence on the Enrolled Property
<i>Asplenium peruvianum</i> var. <i>insulare</i>	Endangered	Hawai‘i, Maui	Present
<i>Clermontia lindseyana</i> , ‘Ōhā wai	Endangered	Hawai‘i, Maui	Present
<i>Cyanea shipmanii</i> , Hāhā	Endangered*	Hawai‘i	Present
<i>Cyanea stictophylla</i> , Hāhā	Endangered*	Hawai‘i	Present
<i>Phyllostegia racemosa</i> , Kīponapona	Endangered*	Hawai‘i	Present
<i>Phyllostegia velutina</i>	Endangered	Hawai‘i	Present
<i>Plantago hawaiiensis</i>	Endangered*	Hawai‘i	Present
<i>Vicia menziesii</i>	Endangered*	Hawai‘i	Present
<i>Argyroxiphium kauens</i> , ‘Āhinahina	Endangered	Hawai‘i	Not Present
<i>Clermontia peleana</i> . ‘Ōha	Endangered*	Hawai‘i, Maui	Not Present
<i>Cyanea tritomantha</i> , ‘Akū	Endangered	Hawai‘i	Not Present
<i>Cyrtandra giffardii</i> , Ha‘iwale	Endangered	Hawai‘i	Not Present
<i>Cyrtandra tintinnabula</i> , Ha‘iwale	Endangered	Hawai‘i	Not Present
<i>Hibiscadelphus giffardianus</i> , Hau kuahiwi	Endangered*	Hawai‘i	Not Present
<i>Joinvillea ascendens</i> , ‘Ohe	Endangered	Hawai‘i, Maui, Kaua‘i, Moloka‘i, O‘ahu	Not Present
<i>Melicope zahlbruckneri</i> , Alani	Endangered*	Hawai‘i	Not Present
<i>Neraudia ovata</i>	Endangered*	Hawai‘i	Not Present

Species	Status Federal/State	Current Distribution by Island ⁺	Current Presence on the Enrolled Property
<i>Nothocestrum breviflorum</i> , ‘Aiea	Endangered	Hawai‘i	Not Present
<i>Phyllostegia floribunda</i>	Endangered*	Hawai‘i	Not Present
<i>Phyllostegia parviflora</i>	Endangered*	Hawai‘i, Maui, O‘ahu	Not Present
<i>Ranunculus hawaiiensis</i> , Makou	Endangered*	Hawai‘i, Maui	Not Present
<i>Sicyos alba</i> , ‘Ānunu	Endangered*	Hawai‘i	Not Present
<i>Sicyos macrophyllus</i> , ‘Ānunu	Endangered*	Hawai‘i	Not Present
<i>Silene hawaiiensis</i>	Endangered	Hawai‘i	Not Present
<i>Stenogyne angustifolia</i>	Endangered	Hawai‘i, Maui, Moloka‘i	Not Present

* Hawai‘i Plant Extinction Prevention Program listed species

⁺Fraiola and Rubenstein 2007

3. BACKGROUND

3.1 Current Management and Goals

Kamehameha Schools’ management and stewardship practices have contributed to preserving some of the last remaining intact native forests in Hawai‘i. Keauhou Forest and portions of Kīlauea Forest owned by KS support native habitat for numerous endangered species. The Kīlauea Forest portion has never been logged and has retained intact high quality habitat through fencing and ungulate removal efforts implemented by KS and partners. The area is highly valued for its natural and cultural resources and is currently under protection and restoration by KS pursuant to its Natural Resources Management Plan. These efforts implemented by KS are expected to result in a further increase in biodiversity in the region. In addition, KS continues to provide educational opportunities through interactions with healthy native ecosystems now and for future generations.

The aim of this Agreement is to encourage the continued conservation efforts already employed by KS and to establish a successful public-private partnership. The location of the Enrolled Property under this Agreement will augment a contiguous area of protection that will benefit endangered and threatened species. These protected areas include Pu‘u Maka‘ala Natural Area Reserve, Hawai‘i Volcanoes National Park, Mauna Loa Forest Reserve and Kīpuka ‘Āinahou Nēnē Sanctuary.

3.2 Species Accounts

A brief description of the endangered bat and bird species covered by this Agreement (listed above in Table 1) is appended here as Appendix 5: Species Accounts. These accounts are taken directly from Hawai‘i’s Comprehensive Wildlife Conservation Strategy (Hawai‘i DLNR 2015).

Only a small portion of the original Hawaiian avifauna known before human settlement have survived, and at least 13 historically known species that could have occurred in the Keauhou-Kīlauea region are now either extinct or have been extirpated from the area (Banko and Banko

2009). The result is that only nine forest birds—‘Io, Hawai‘i ‘Elepaio, ‘Ōma‘o, Hawai‘i ‘Amakihi, ‘Akiapōlā‘au, Hawai‘i Creeper, Hawai‘i ‘Ākepa, ‘I‘iwi, and ‘Apapane—persist in the Keauhou-Kīlauea region.

Forest Birds (‘Akiapōlā‘au, Hawai‘i Creeper, Hawai‘i ‘Ākepa, and ‘I‘iwi)

All the species except ‘I‘iwi are listed as endangered under both the federal ESA and HRS §195D. The Service proposed to list the ‘I‘iwi (*Vestiaria coccinea*) as threatened on September 20, 2016 (Federal Register/ Vol. 81, No. 182, pp. 64414-64426). The ‘I‘iwi is included in this Agreement as a Covered Species as a contingency should it be listed in the future.

The endangered forest birds ‘Akiapōlā‘au, Hawai‘i Creeper, and Hawai‘i ‘Ākepa, are found in a few disjunct populations above 1,500 meters (about 5,000 feet) across the island of Hawai‘i where native forests exist, including montane wet and montane mesic habitats. The ‘I‘iwi is also found in high elevation forests. As summarized in the Service listing proposal in the Federal Register notice cited above, the ‘I‘iwi occurs on the three largest Hawaiian islands (Hawai‘i, Maui, Kaua‘i) and a few birds are sporadically detected on O‘ahu and Moloka‘i. It is listed as endangered under state law but only on the islands of O‘ahu, Moloka‘i, and Lāna‘i. ‘I‘iwi is “found primarily in closed canopy, montane wet or montane mesic forests composed of tall stature ‘ōhi‘a (*Metrosideros polymorpha*) or koa (*Acacia koa*) tree mixed forest” above approximately 3,937 feet in elevation. Surveys in the Agreement area in the period 1994-2008 documented a strong declining trend in ‘I‘iwi densities (Camp et al. 2010). These declines are occurring throughout Hawai‘i as described in the Federal Register notice cited above.

‘Io or Hawaiian Hawk

‘Io are listed as endangered under both the federal ESA and HRS chapter 195D. ‘Io are found throughout the island of Hawai‘i in native and non-native forests and adjacent habitats (Gorresen et al. 2008). The current status of forest birds in the Keauhou-Kīlauea region is described in Appendix 2: Technical Report of Native Bird Populations on Kamehameha Schools Keauhou and Kīlauea Lands (Camp et al. 2010).

‘Alalā or Hawaiian Crow

The ‘Alalā was endemic to the island of Hawai‘i historically and is thought to have been extirpated from the wild in 2002. A captive propagation program for this species began in 1970, and in 2011 a Working Group was formed as part of the recovery actions outlined in the Revised Recovery Plan for the species (USFWS 2009). A reintroduction plan for the ‘Alalā has been developed, and future high-priority reintroduction sites are likely to be located in close proximity to the Enrolled Property. The first releases will occur on adjacent State protected land (Pu‘u Maka‘ala Natural Area Reserve) in a five-year effort beginning in 2016. Historically, the ‘Alalā was known to be present from the North Kona District to the vicinity of Kīlauea Crater in the Ka‘ū District of Hawai‘i. The voluntary land management actions that KS has employed, and will continue to employ under this Agreement, are expected to benefit the ‘Alalā should they enter into the Enrolled Property. Thus, a potential exists that the ‘Alalā could establish resident populations in the Keauhou-Kīlauea region.

Nēnē or Hawaiian Goose

The Nēnē was on the brink of extinction in 1949, numbering perhaps fewer than 30 birds, when a captive propagation and reintroduction program was initiated by the territorial government of Hawai‘i (State of Hawai‘i 2012). From 1960 to 2008, approximately 2,800 birds were released at sites on Hawai‘i Island, Maui, Moloka‘i, and Kaua‘i (USFWS 2004, DLNR 2010). On the island of Hawai‘i, seven Nēnē release sites were identified that included the Keauhou Nēnē Site, encompassing approximately 8,100 acres within the Enrolled Property. Nēnē were released at Keauhou under a Cooperative Refuge Development and Management Agreement between the State and KS. The DLNR’s Division of Forestry and Wildlife (“DOFAW”) continues to maintain a cabin at this site though Nēnē have not been released at Keauhou since 1993.

From 2012 to 2015, the DLNR under direction of the Governor’s Proclamation (14 April 2011) moved hundreds of Nēnē deemed a risk to aviation safety from Kaua‘i to Pi‘ihonua on the island of Hawai‘i in the upper elevations of the Hilo Forest Reserve (State of Hawai‘i 2012). The location of this release site is approximately seven miles from the Enrolled Property. In addition, Nēnē populations are managed in Kūlani and at adjacent national park areas.

Therefore, it is reasonably expected that the current management actions for Nēnē in the region have the potential to lead to an increase in the population of Nēnē in the Keauhou area region in the future.

‘Ōpe‘ape‘a or Hawaiian Hoary Bat

The ‘Ōpe‘ape‘a or Hawaiian Hoary Bat is the only native terrestrial mammal present in the Hawaiian Islands (USFWS 1998a). Very little is understood about this small, solitary, insectivorous bat. The U.S. Geological Survey (“USGS”) conducted surveys for the Hawaiian Hoary Bat at Keauhou every trimester or bi-monthly (every other month) from March 2008 to July 2012 (see Appendix 3: Report of the Hawaiian Hoary Bat Populations on Kamehameha Schools Keauhou and Kīlauea Lands). During these surveys, acoustic detectors were placed along the slopes of Mauna Loa at high elevations (6,000-6,250 feet) and low elevations (4,000-4,400 feet) to monitor for bat presence (See Appendix 3, Figure 1). Survey results indicate that Keauhou exhibits a moderate to high level of bat occupancy. It is not yet possible to determine the actual size of the bat population; however, surveys conducted from 2008 to 2012 indicate stable bat activity. Increased activity has been observed in higher elevations during the winter foraging months and at lower elevations during the summer breeding season.

Covered Plant Species

The endangered plant species covered under this Agreement (listed above in Table 2) have been described in a technical report by Fraiola and Rubenstein (2007), which is appended here as Appendix 4: Baseline Information on Endangered Plant Populations on Kamehameha Schools Keauhou and Kīlauea Lands.

4. DESCRIPTION OF THE ENROLLED PROPERTY

The Enrolled Property (Figure 1) is the area over which Safe Harbor assurances will apply and on which incidental take of the Covered Species will be authorized under the Permits. The Enrolled Property consists of KS parcels (Figure 2) in Keauhou (approx. 27,180 acres) and

Kīlauea (approx. 2,955 acres). These lands encompass Tax Map Key Nos. (“TMK”) (3) 99-001-004, (3) 99-001: por. 007, (3) 99-001: por. 024, (3) 99-001: por. 034) and lower leased agricultural lands and ranch lands (TMKs (3) 99-001-017, (3) 99-001-018, (3) 99-001-019, (3) 99-001-020, (3) 99-001-021, (3) 99-001-027, and (3) 99-001-035). Together the Enrolled Property encompasses 32,280 acres of land on the southeastern slope of Mauna Loa.

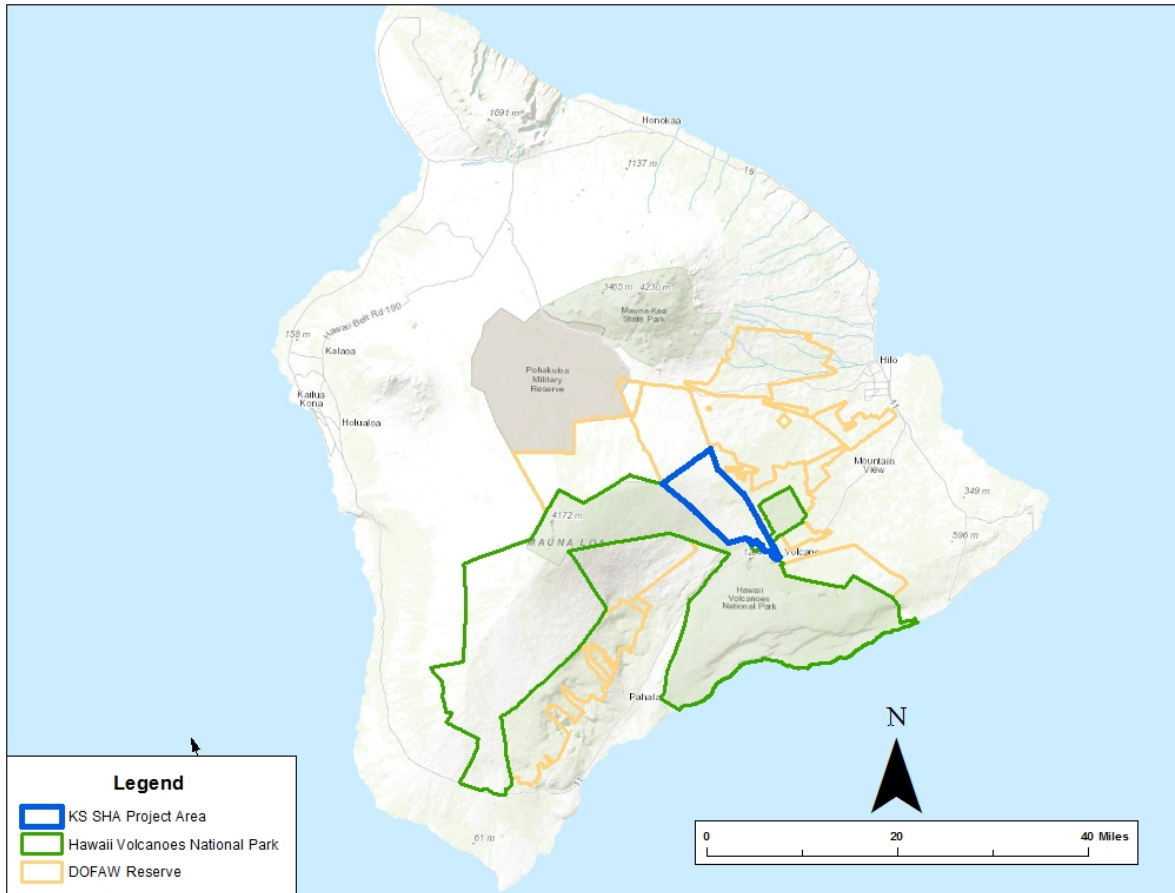


Figure 1. Enrolled Property Location

The Enrolled Property consists of lands owned or otherwise controlled by KS on the island of Hawai‘i, including lands conveyed to KS under the Will of Princess Ruth Ke‘elikolani dated January 24, 1883, in Probate No. 2009, filed in the Supreme Court of the Hawaiian Islands, but expressly excluding that portion of any land areas under license, right of way, or lease upon which any utility or communication tower and related improvements are situate on the Enrolled Property, including, without limitation, such lands underlying the cable television transmitter tower and improvements covered by Lease No. 21,963 dated April 14, 1973 by and between KS as lessor, and Camp, Incorporated, as lessee, recorded in the Bureau of Conveyances of the State of Hawai‘i in Liber 19498 at Page 724, affecting TMK (3) 99-001: por. 034; Lease No. 13,366 dated September 1, 1963, by and between KS, as lessor, and Hawaiian Telephone Company, as lessee, recorded in said Bureau in Liber 4769 at Page 47, affecting TMK (3) 99-001: por. 024, and any amendments thereto, which lessee’s interest was assigned to Insite Towers Development, LLC; and Unrecorded License No. 399-55 dated June 6, 2013, by and between KS, as licensor, and Oceanic Time Warner Cable, LLC affecting TMKs (3) 99-001: por. 007, (3)

99-001: por. 024, and (3) 99-001:por. 034. It is the intent of the Parties that any loss of Covered Species resulting from such improvements, including power lines, if any, are not intended to be covered by this Agreement.

The Enrolled Property is bounded by Federal lands to the west and south (Hawai‘i Volcanoes National Park), State lands to the east (Pu‘u Maka‘ala Natural Area Reserve) and north (Mauna Loa Forest Reserve), and State leased lands to the north (Kīpuka ‘Āinahou Nēnē Sanctuary). The forests of Kīlauea and Keauhou are separated by the Palakea fence line and are actively protected and managed by KS for their natural and cultural resources. Kīlauea Forest (2,955 acres) and 26,130 acres of Keauhou are managed and maintained as zero-tolerance for feral ungulates. A detailed description of the Enrolled Property is contained in two attached technical reports (Appendix 2 and Appendix 4). Portions of the Enrolled Property are in the State of Hawai‘i’s Conservation District, Protective subzone (Figure 2).

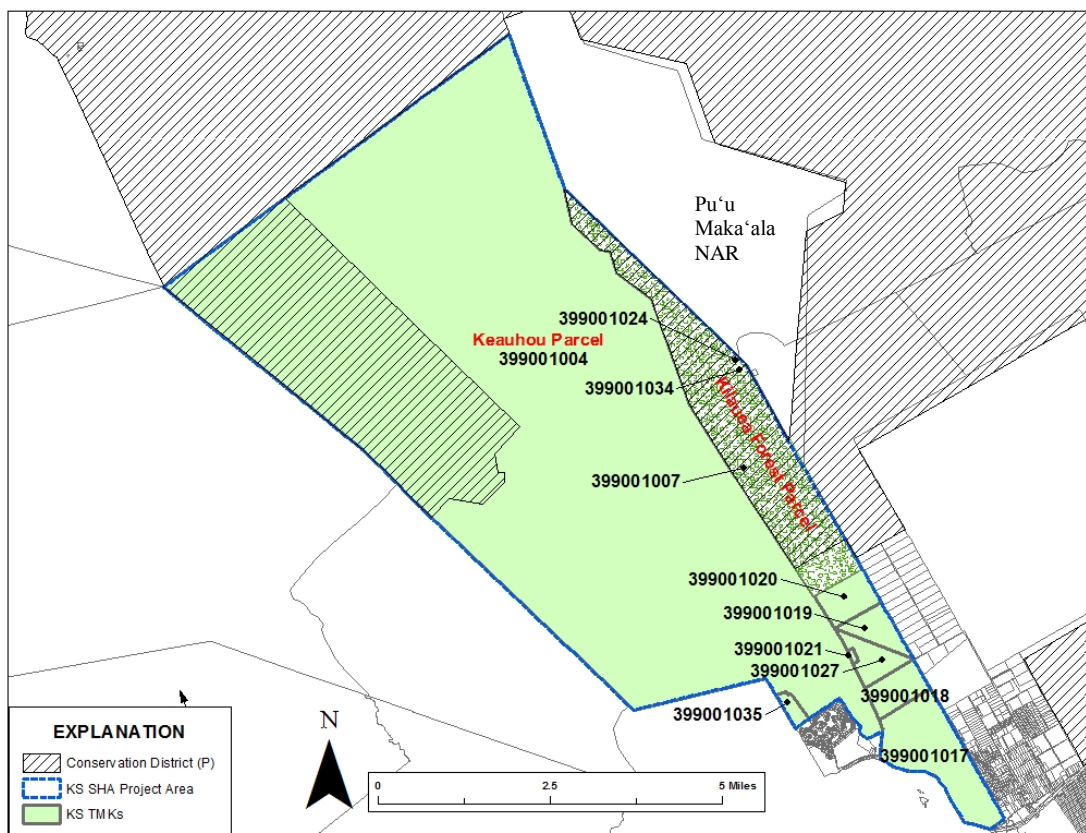


Figure 2. Enrolled Property TMKs and Conservation District Protective (P) subzone

The Enrolled Property encompasses a large area that includes various vegetation zones, substrate types, and elevation and moisture gradients. The climate varies from subalpine in the west to montane and wet forest areas to the east and southeast. A map of the climate areas can be found in Appendix 4, page 7. ‘Ōhi‘a (*Metrosideros polymorpha*), koa (*Acacia koa*), and hāpu‘u (*Cibotium spp.*) are the main structural plants found in the area with varying degrees of dominance. Three main plant communities have been described by Frairola and Rubenstein (2007; Appendix 4):

1) Montane Wet - Natural communities between 1,000 and 2,000 m (3,000 - 6,000 ft) elevation, receiving greater than 75 inches annual precipitation.

- 'Ōhi'a /Hāpu'u Forest – Portions of Kīlauea Forest, especially the lower elevation sections, contain 'ōhi'a mixed with other native trees and hāpu'u tree fern, native fern and shrub understory. Portions of the 'ōhi'a forest canopy have undergone defoliation and regeneration (a natural phenomenon known as "'ōhi'a dieback") at various times, resulting in native plant succession including 'ōhi'a saplings.
- Koa/'Ōhi'a Forest – Portions of Kīlauea and Keauhou contain tall stature koa and 'ōhi'a, with other native trees and an understory of hāpu'u, native shrub and fern. The wet and mesic koa forest communities are generally found on older substrates.

2) Montane Mesic - Natural communities between 1,000 and 2,000 m (3,000 - 6,000 ft) elevation, receiving between 50 and 75 inches annual precipitation.

- Koa/'Ōhi'a Forest - Portions of Kīlauea Forest and Keauhou contain tall stature koa/'ōhi'a forest with other native trees and a hāpu'u tree fern, native shrubs and ground fern understory. This forest type differs from the wet koa/'ōhi'a in that wet forest tends to have higher densities of hāpu'u than mesic areas, which have more native trees and shrubs in the understory. Unless disturbed, both forest types have a diverse ground cover dominated by ferns.
- 'Ōhi'a Forest - Portions of Keauhou and upper Kīlauea contain plant communities composed primarily of open to closed canopy 'ōhi'a and an understory of native trees, shrubs, ferns and grasses without the prominent hāpu'u component. This community can be found on intermediate aged lava flows as well as on young lava flows in association with other pioneer or substrate-colonizing vegetation.

3) Subalpine – Natural communities between 2,000 m (6,000 ft) and 3,000 m (9,000 ft) elevation.

- Pioneer vegetation on younger lava flows.
- Dry Native Shrub with scattered 'Ōhi'a - This plant community is found on younger lava flows and forested kīpuka, especially in the higher elevation, drier parts of Keauhou.
- Dry 'Ōhi'a Forest with mixed native trees and native shrub understory - This plant community is found on young to intermediate aged lava flows in the higher elevation, drier parts of Keauhou.

The Enrolled Property located in the Kīlauea Forest area has been largely unaltered and has long been recognized for its native bird populations. The area within the Keauhou boundary was formerly altered by ranching and logging operations. Currently cattle ranching operations only occur south of the Kīlauea forest area, and both Keauhou and Kīlauea are managed to preserve and restore the native forests via ungulate removal, reforestation, and out-plantings of native and rare species. In addition to native forest restoration activities, portions of Keauhou (but not Kīlauea) will include forest management practices for the purposes of sustainably harvesting native hardwoods.

5. BASELINE DETERMINATION

Baseline conditions are defined as the existing estimated population size and/or the extent and quality of habitat for the Covered Species on the Enrolled Property. Baseline conditions are species-specific and have been determined by surveys of the Enrolled Property undertaken by a person(s) deemed qualified by the Service and DLNR. The Service and DLNR have determined that site conditions have not changed since these surveys were completed and that these survey results therefore accurately represent current species occurrences and distributions. Due to lack of statistical power in quantifying population numbers for rare forest bird species and 'Io, and the inability to quantify population size for bats with current known methodologies, habitat was used as the baseline metric for these species. Table 3 and Table 4 below show baseline conditions for each of the Covered Species under this Agreement.

Below are descriptions of each baseline condition respective to the Covered Species. Baselines are depicted in maps and referenced under each species baseline description.

'Akiapōlā'au, Hawai'i Creeper, Hawai'i 'Ākepa, 'I'iwi

Baselines for the 'Akiapōlā'au, Hawai'i Creeper, and Hawai'i 'Ākepa, are based on the extent and quality of habitat occupied by the species. Habitat baselines were delineated for two areas based on occupancy for the three forest birds currently present on the Enrolled Property: "Forest Bird Stratum 1" and all other areas. Separation into these two areas was determined by species-specific occupancy and vegetative characteristics. This approach allows for clear management or monitoring decisions to be made based on species occupancy and habitat conditions.

The Camp et al. 2010 technical report included in Appendix 2 was generated to determine the occupancy and status of these birds in the Keauhou and Kīlauea forests. Population estimates of these forest bird species were difficult to reliably assess due to the rarity of occurrences in the survey data collected (Appendix 2, page 10). Instead, the data simply illustrates the existence of these birds at low densities and can be used as a measure for tracking the change in density over time. Though not an ideal quantitative approach, this method can reveal patterns and shifts in bird distribution on the Enrolled Property.

The baseline survey results showed that the 'Akiapōlā'au, Hawai'i Creeper, and Hawai'i 'Ākepa were found to be solely present on the Enrolled Property in the area marked Forest Bird Stratum 1 (see Figure 3 below). The 'I'iwi are also found in Forest Bird Stratum 1. Forest Bird Stratum 1 consists of approximately 4,155 acres of upper elevation montane wet and montane mesic habitats dominated by mesic and wet koa and 'ōhi'a forests (Appendix 1: Maps 2-4).

Habitat within Forest Bird Stratum 1 and the remainder of the Enrolled Property was categorized based on canopy cover of habitat. Canopy cover is used as a measure of habitat quality for the forest bird species as well as other covered wildlife. The definitions used are as described by Jacobi (1989; for references in the quote below see that reference):

The definition of closed canopy used (60% cover) coincides with Mueller-Dombois and Fosberg's (1974) closed forest unit. This cover class can easily be determined in the field or on aerial photographs when most of the tree crowns are interlocking. The cover range for an open tree canopy was 25 - 60%, generally corresponding to the traditional

definition of a woodland (Mueller-Dombois and Ellenberg 1974). For tree cover < 25%, two cover classes were recognized: scattered trees (5 - 25% cover) and very scattered trees (~5% cover). This latter class was established because of the importance of even very reduced tree cover to certain bird populations.

The Hawai‘i Creeper and ‘Ākepa nest in tall mature koa and ‘ōhi‘a trees greater than 65 cm dbh, (diameter at breast height) and the ‘Akiapōlā‘au nests in ‘ōhi‘a trees from 7 – 22 meters above ground (Pratt, 2005, Freed, 2001). ‘I‘iwi nest sites are typically found in the upper canopy of ‘ōhi‘a trees (2012 Federal Register/ Vol. 77, No. 15 pp. 3423-3432). Baseline for the Akiapōlā‘au, Hawai‘i Creeper, Hawai‘i ‘Ākepa, and ‘I‘iwi is represented by the current occupied habitat, determined to be habitat with a tree cover of closed canopy, open canopy, scattered trees and very scattered trees (See Table 3 and Figure 3).

Table 3. Baseline for wildlife species covered under this Agreement.

Species	Baseline
‘Akiapōlā‘au, (<i>Hemignathus wilsoni</i>) Hawai‘i Creeper, (<i>Loxops mana</i>) Hawai‘i ‘Ākepa (<i>Loxops coccineus</i>), ‘I‘iwi (<i>Vestiaria coccinea</i>)	<ul style="list-style-type: none"> • Approximately 4,162 acres of habitat in the Forest Bird Stratum 1 baseline area. Current habitat condition in the Forest Bird Stratum 1 are depicted in Figure 3.
Hawaiian Hawk, ‘Io (<i>Buteo solitarius</i>)	<ul style="list-style-type: none"> • Approximately 18,517 acres on the Enrolled Property. • Current habitat condition as depicted in Figure 4 provide 4,530 acres of closed and 13,987 of open canopy tree cover habitat
Hawaiian Crow, ‘Alalā (<i>Corvus hawaiiensis</i>)	<ul style="list-style-type: none"> • Zero individuals
Hawaiian Goose, Nēnē (<i>Branta sandvicensis</i>)	<ul style="list-style-type: none"> • Zero individuals
Hawaiian Hoary Bat, ‘Ōpe‘ape‘a (<i>Lasiurus cinereus semotus</i>)	<ul style="list-style-type: none"> • Approximately 18,517 acres on the Enrolled Property. • Current habitat condition as depicted in Figure 4 provide 4,530 acres of closed and 13,987 of open canopy tree cover habitat.

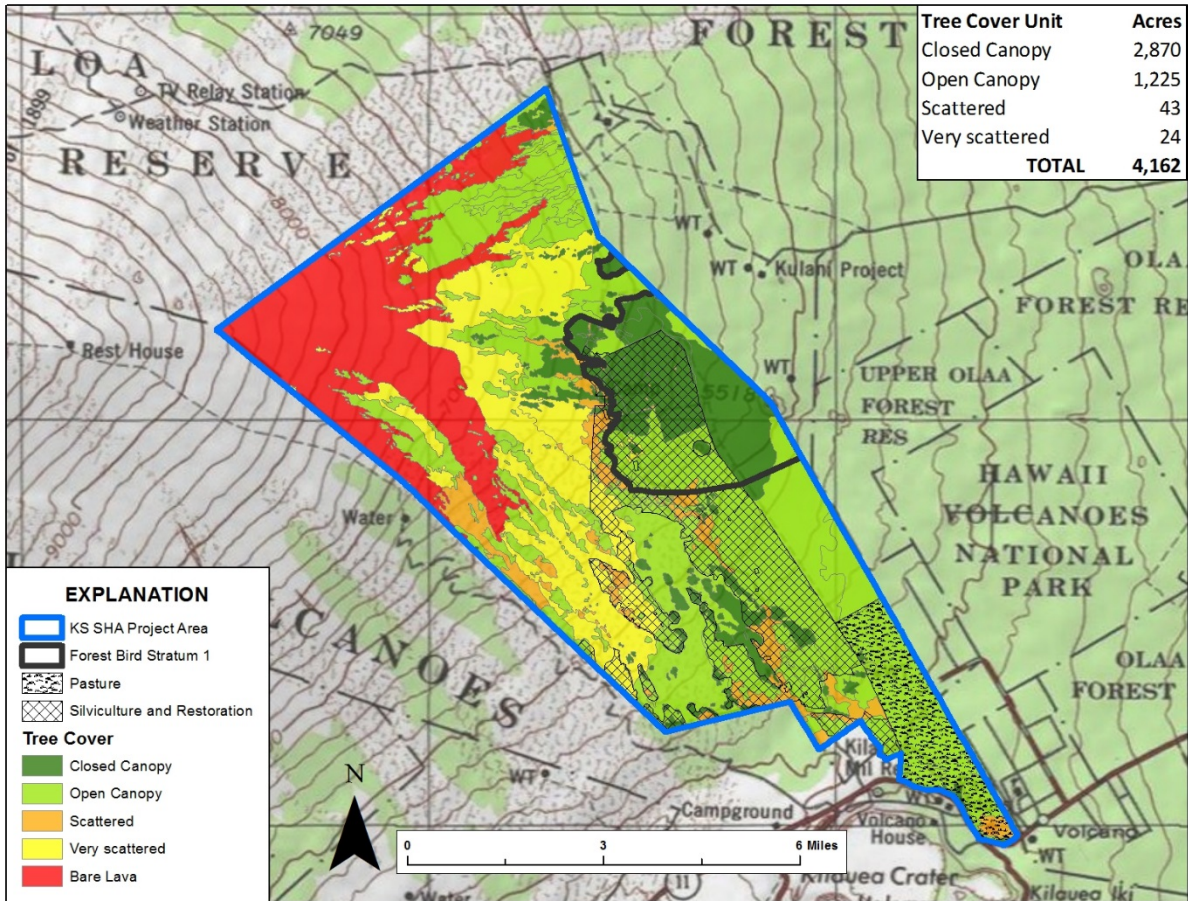


Figure 3. Baseline area for the ‘Akiapōlā‘au, Hawai‘i Creeper, Hawai‘i ‘Ākepa and ‘I‘iwi depicted by tree canopy cover in occupied habitat within the outlined Forest Bird Stratum 1 (4,162 acres).

‘Alalā

The ‘Alalā currently is extinct in the wild. The habitat conditions in the Forest Bird Stratum 1 rank high in potential and quality of habitat for the ‘Alalā (Price and Jacobi, 2007). Though currently ‘Alalā are not present here or anywhere in the wild, potential release efforts adjacent to the Enrolled Property at the Pu‘u Maka‘ala Natural Area Reserve (see Figure 2 for location of this area) indicate a high likelihood for ‘Alalā to subsequently occupy the area. Baseline maintenance of habitat for the other forest bird species above is likely to also provide protected habitat for the ‘Alalā.

Since this species does not exist in the wild, the baseline for the ‘Alalā is zero (0).

‘Io

‘Io are found throughout the island of Hawai‘i with increased densities in mid- to tall-stature trees with a small degree of canopy closure (Gorresen et al., 2008). ‘Io can be difficult to monitor due to their large territories and high mobility. Surveys for ‘Io were conducted in the Keauhou and Kīlauea forests, and ‘Io were found to be present on the Enrolled Property (Gorresen et al.,

2008). Similar to the other forest birds covered under this Agreement, low densities of the ‘Io on the Enrolled Property made it difficult to reliably estimate population numbers for this species (Appendix 2, page 10). Furthermore, the Gorresen et al. 2008 report indicates low density of ‘Io on the Enrolled Property at about one bird every 2 km².

The baseline for ‘Io is approximately 18,511 acres of open or closed canopy tree cover as depicted on Figure 4. A majority of this habitat consists of native dominated koa and ‘ōhi‘a trees (Appendix 1, Maps 2-4).

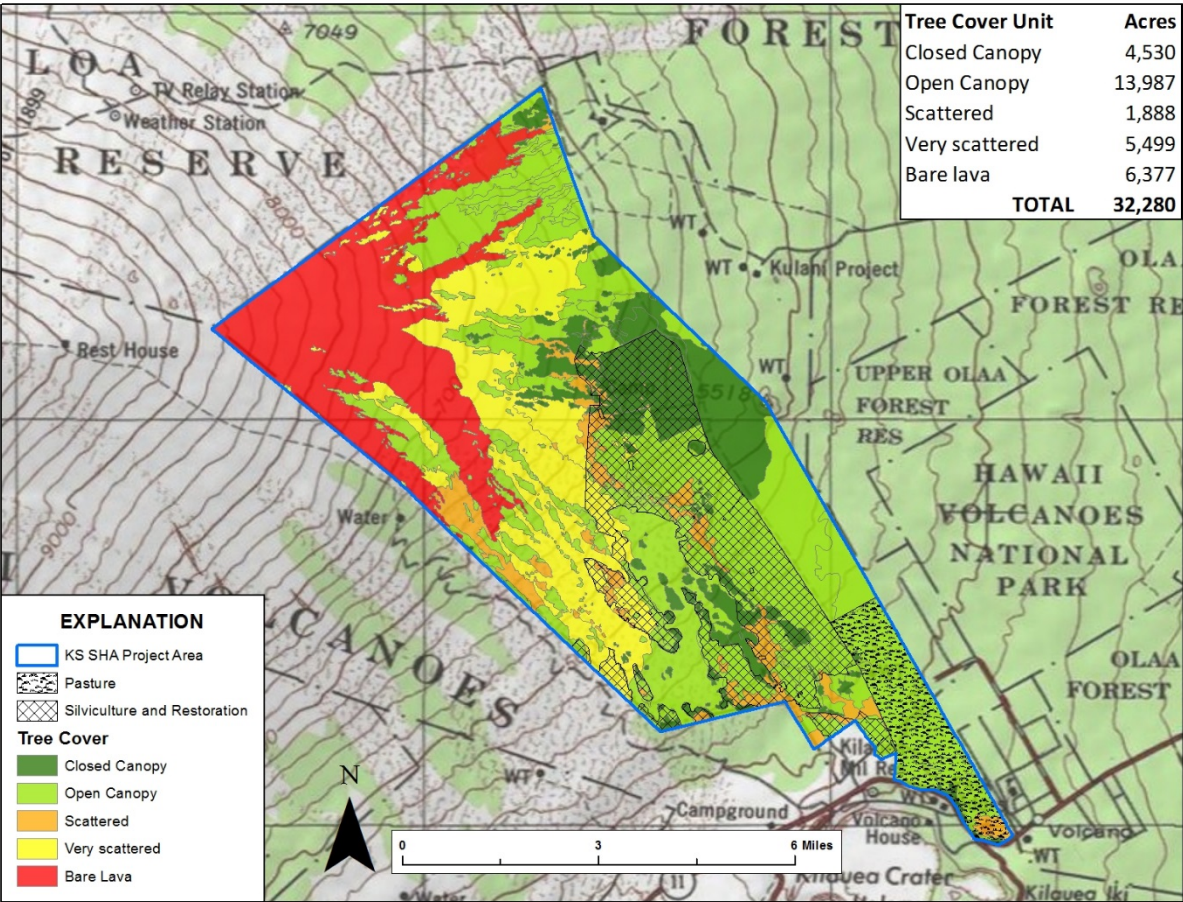


Figure 4. Baseline area for the Hawaiian hawk, ‘Io, and Hawaiian Hoary Bat, ‘Ōpe‘ape‘a depicted by open and closed canopy tree cover in the project area (18,517 acres).

Nēnē

DOFAW conducted weekly Nēnē surveys on the Keauhou and Kīlauea portions of the Enrolled Property between October 2012 and February 2013 and portions of KS leased lands between October 2014 and February 2015. The 2012-2013 Nēnē surveys included known nesting sites, previous Nēnē release sites, Nēnē telemetry locations, DOFAW’s Nēnē sanctuary cabin site, reservoirs and known watering sites. Results and methodology from these surveys are included and appended here as Appendix 6: Nēnē Population on Kamehameha Schools Keauhou and Kīlauea Lands.

The surveys estimate that two breeding pairs (four Nēnē) still utilize the Keauhou Ranch area near the Keauhou Bird Conservation Center (“KBCC”) and approximately another 20 non-breeding Nēnē were observed on the property (See Appendix 6: Nēnē Population on Kamehameha Schools Keauhou and Kīlauea Lands). Non-breeding Nēnē may transit the property but are not resident and are not dependent on the Enrolled Lands for breeding, feeding, or sheltering. Results of the survey indicated that one or two pairs of Nēnē were often observed in the vicinity of the DOFAW Nēnē cabin predator exclosures (Figure 5).

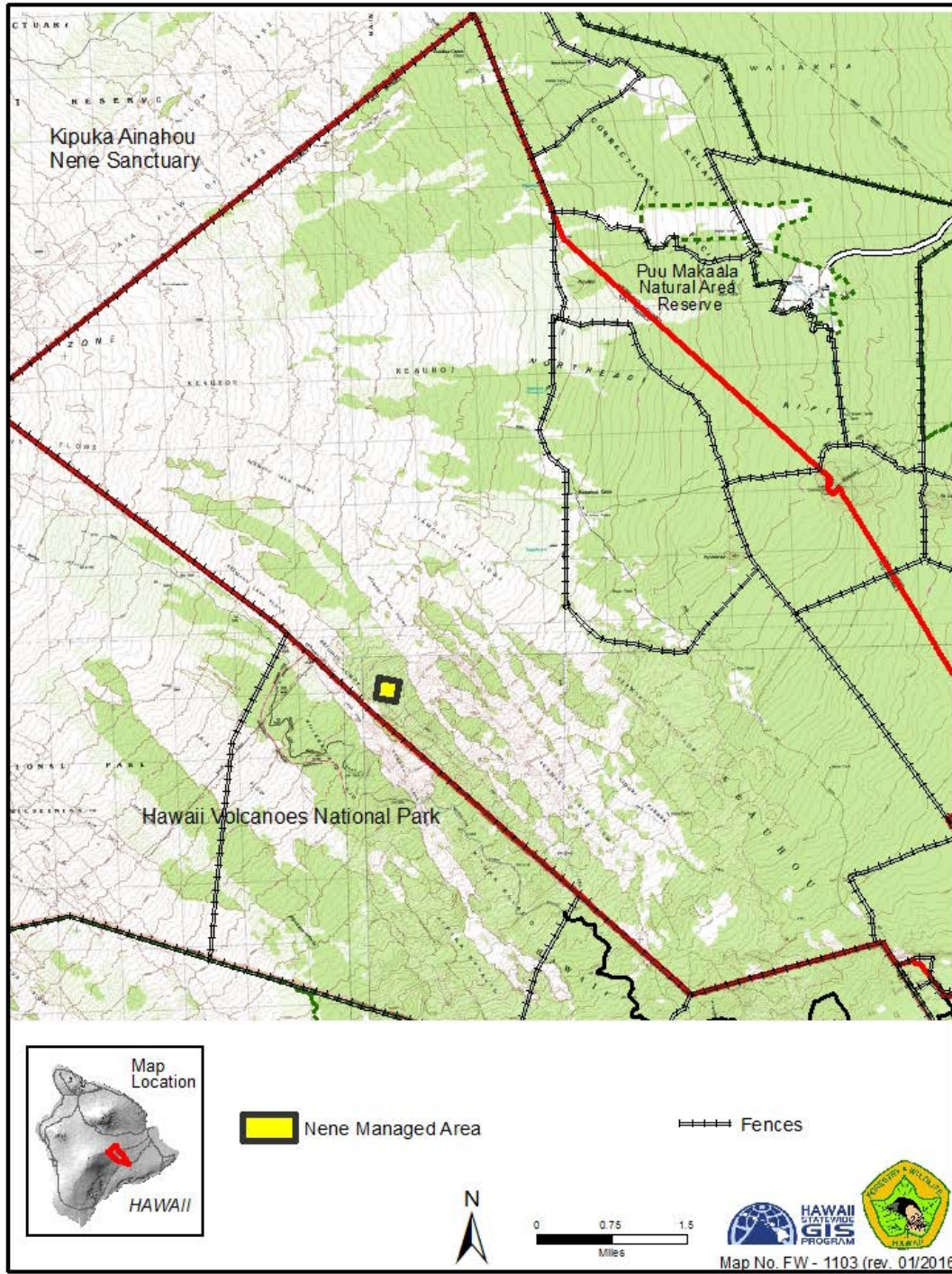


Figure 5. Nēnē Management Area

No Nēnē nests were observed during the KS leased lands surveys in 2014-2015 although some nesting behavior was observed for a single pair at one location.

Although KBCC is used by Nēnē, since 2003 biologists from the Hawai‘i Volcanoes National Park (“HAVO”), KBCC, DOFAW, and the Service have been working to encourage Nēnē nesting in areas away from KBCC, because breeding amongst the buildings and parking lots of KBCC is not likely to result in successful fledging. If Nēnē nests become established near KBCC, Nēnē families are moved to ‘Āinahou at HAVO shortly after successful nests hatch out goslings. Thus far this strategy has been successful, as offspring that are moved shortly after hatching have not returned to nest at KBCC and are indeed nesting in HAVO. This management strategy increases the likelihood that Nēnē will become more prolific in areas where human interaction is minimized.

Based on the above information, for purposes of this SHA, the baseline for Nēnē is set as zero individuals. For Nēnē near KBCC, the goal is to move them to HAVO because they are best equipped to have birds and they have the management facilities such as pens.

‘Ōpe‘ape‘a

A five-year acoustic monitoring study for the presence of the Hawaiian Hoary Bat in Keauhou began in March of 2008 by the USGS. Reported results and methodology from these surveys are included and appended here as Appendix 3: Report of the Hawaiian Hoary Bat Population on Kamehameha Schools Keauhou and Kīlauea Lands. Results indicate that bat activity at Keauhou at high and low elevation sites was high all year round. Generally, peak occupancy occurred around September 15 at the end of the Hawaiian Hoary Bat reproductive period and in areas with mature forest cover (Gorresen et al., 2013).

Hawaiian Hoary Bat day roosting sites are associated with trees above 5 meters in height. Approximately 18,511 acres of open and closed canopy tree cover exist on the Enrolled Property (Figure 4) where bats are known to be present. A variety of vegetation types and habitats including montane wet, mesic, and dry forests, and shrubland communities are currently present on the Enrolled Property.

Bat populations are not possible to measure, but evidence of activity from acoustic data has revealed that bats are using the Enrolled Property for most of the year. Due to the paucity of life history information for the species it is unknown at this time what, if anything, limits this species and what actions are benefitting this species. Bats are known to inhabit forested habitats, especially koa dominated and co-dominated forests, on the island of Hawai‘i and it is expected that management for either native forest restoration or silviculture practices that are sensitive to bat pupping periods will provide additional habitat for the species.

Due to the inability to quantify the number of bats present, the baseline determination was delineated by habitat as described by canopy cover. Baseline conditions are the same as for ‘Io, and consist of approximately 18,511 acres of habitat demarcated in Figure 4 as open and closed canopy trees, of which a majority is native dominated koa and ‘ōhi‘a trees (as depicted in Appendix 1, Map 4).

Endangered Plant Species

Baseline conditions for endangered plant species found on the Enrolled Property were determined based on the Fraiola and Rubenstein (2007) report appended here in Appendix 4 and as agreed upon by the State of Hawai‘i’s Endangered Species Recovery Committee (“ESRC”) on September 12, 2008. These species and the baseline numbers of plants are listed in Table 4 and the area where these species are known to occur are shown in Figure 6. Founder plants are defined here as individual plants that occur naturally and whose ancestors are also thought to have occurred naturally. For some Covered Species outplanting has occurred. The ESRC evaluated the data available on the presence of Covered Species, including outplants, and recommended a baseline number for species that were known at that time to be present on the Enrolled Property (Table 4).

Success of the outplants has been mixed as indicated in Table 4. Because of the documented poor survival of outplants of some species, the long-term uncertainty of survival for outplants not regenerating naturally, and lifespan considerations, the baseline for outplants may be modified administratively with approval by the agencies and the ESRC. Revision would only occur based on a comprehensive survey of all outplants currently in the baseline for a species, documenting the number of individuals still alive and dead. The new baseline would be the baseline in Table 4 minus the dead individuals that died of natural causes. Acceptance of the baseline revision will only occur upon submission of a report documenting the survey methods and results submitted to the agencies within the first two years of the Agreement.

Seventeen endangered plant species included in this Agreement are not currently known to be present on the Enrolled Property. These plants were determined to either have the potential to spread naturally onto the Enrolled Property or be reintroduced by KS in the future. The baseline for these plants is zero (Table 4).

Eight listed plant species are currently known to exist on the Enrolled Property. A detailed description of these plants can be found in Appendix 4. In some cases, plant characteristics make it difficult to differentiate between individuals due to species-specific characteristics (e.g. ferns and vines). Three of these eight covered plant species occur on the Keauhou property (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*) in very low numbers (hereafter collectively termed the “special-concern” plant species) and therefore require additional protective measures, as detailed below.

Table 4. Summary of baselines for covered plant species.

Species	2008 Baseline Concurrency [^]	2008 No. of Founder plants ^{^^}	2008 No. Out-planted ^{^^}	2014 No. Out-planted plants ^{^^}	Survivor-ship of Out-planted plants ^{^^}	Final SHA Baseline
<i>Asplenium peruvianum</i> var. <i>insulare</i> ,	128	128	NA	NA	NA	128
<i>Clermontia lindseyana</i> , ‘Ōhā wai	24	5	19	19	100%	24
<i>Cyanea shipmanii</i> , Hāhā ⁺	474	0	474	463	98%	463
<i>Cyanea stictophylla</i> , Hāhā ⁺	104	0	104	104	100%	104

Species	2008 Baseline Concurrency [^]	2008 No. of Founder plants ^{^^}	2008 No. Out-planted ^{^^}	2014 No. Out-planted plants ^{^^}	Survivor-ship of Out-planted plants ^{^^}	Final SHA Baseline
<i>Phyllostegia racemosa</i> , Kīponapona ⁺	24	0	24	4	16%	4
<i>Phyllostegia velutina</i>	38	29	9	9	100%	38
<i>Plantago hawaiiensis</i> ⁺	1	1	NA	NA	NA	1
<i>Vicia menziesii</i> ⁺	33	27	96	0	0%	27
<i>Argyroxiphium kauens</i> , ‘Āhinahina	0	0	NA	NA	NA	0
<i>Clermontia peleana</i> , ‘Ōha ⁺	0	0	NA	NA	NA	0
<i>Cyanea tritomantha</i> , ‘Akū	0	0	NA	NA	NA	0
<i>Cyrtandra giffardii</i> , Ha‘iwale	0	0	NA	NA	NA	0
<i>Cyrtandra tintinnabula</i> , Ha‘iwale	0	0	NA	NA	NA	0
<i>Hibiscadelphus giffardianus</i> , Hau kuahiwi ⁺	0	0	NA	NA	NA	0
<i>Joinvillea ascendens</i> , ‘Ohe	0	0	NA	NA	NA	0
<i>Melicope zahlbruckneri</i> , Alani ⁺	0	0	NA	NA	NA	0
<i>Neraudia ovata</i> ⁺	0	0	NA	NA	NA	0
<i>Nothoestrum breviflorum</i> , ‘Aiea	0	0	NA	NA	NA	0
<i>Phyllostegia floribunda</i> ⁺	0	0	NA	NA	NA	0
<i>Phyllostegia parviflora</i> ⁺	0	0	NA	NA	NA	0
<i>Ranunculus hawaiiensis</i> , Makou ⁺	0	0	NA	NA	NA	0
<i>Sicyos alba</i> , ‘Ānunu ⁺	0	0	NA	NA	NA	0
<i>Sicyos macrophyllus</i> , ‘Ānunu ⁺	0	0	NA	NA	NA	0
<i>Silene hawaiiensis</i>	0	0	NA	NA	NA	0
<i>Stenogyne angustifolia</i>	0	0	NA	NA	NA	0

[^]ESRC September 2008 letter of baseline concurrence.

^{^^}Fraiola and Rubenstein 2007, T. Rubenstein pers. comm. 2013, R. Robichaux pers. comm.. 2014.

⁺ Plant Extinction Prevention Program listed species.

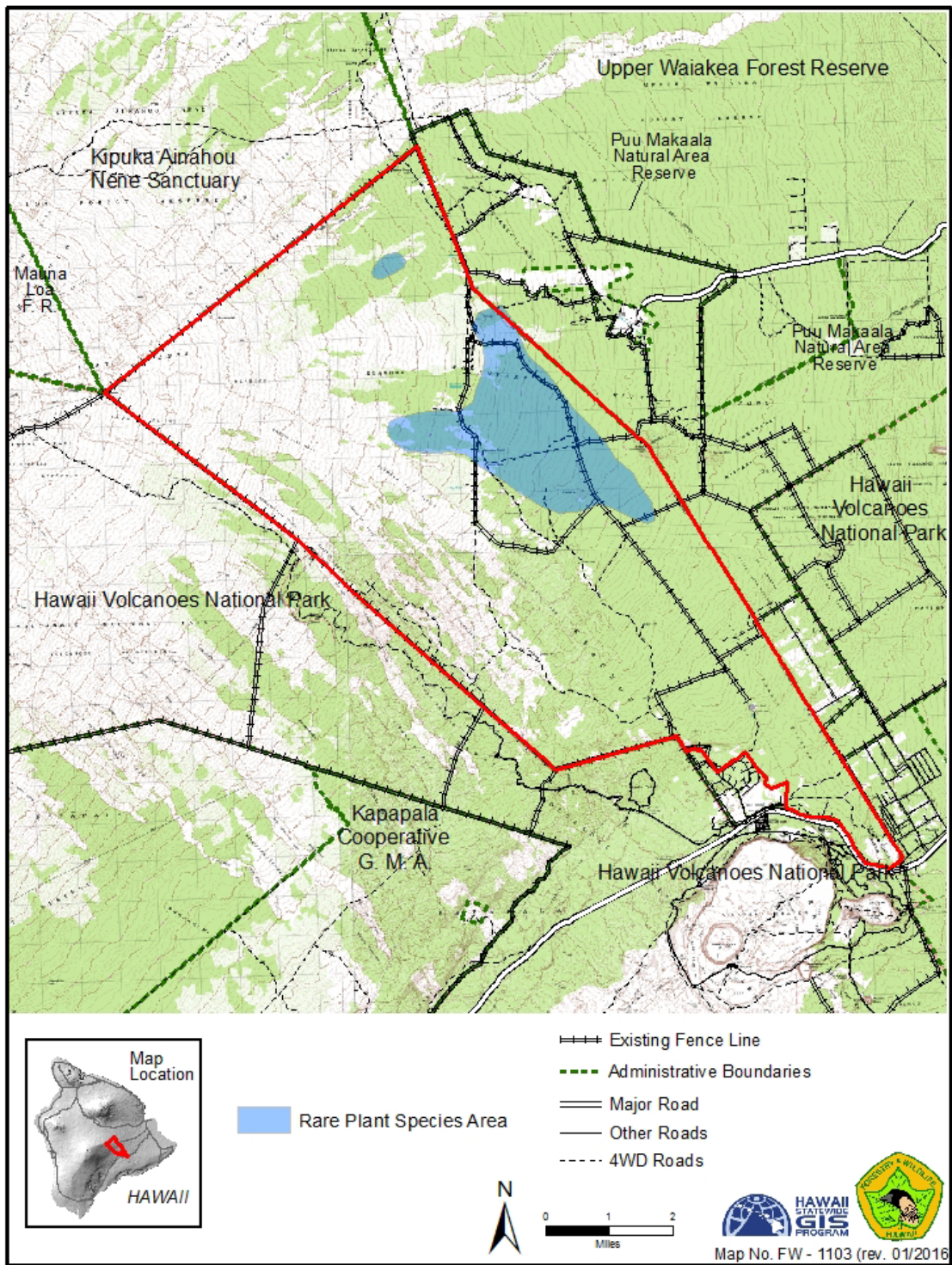


Figure 6. Occupied Habitat of Covered Plants included in the Plan

“Special-Concern” Endangered Plant Species and Associated Areas Requiring Additional Conservation Commitments

The three “special-concern” endangered plant species which occur on the Enrolled Property exist in very low numbers: *Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*. Due to their low population numbers, additional conservation commitments are required for these three species in order to sustain the species and meet recovery objectives (USFWS 1984a). An area of 3,192 acres at Keauhou Ranch was established that contains habitat that meets the ecological requirements for these three species and is part of their historic range (see Figure 7) at Keauhou Ranch and Kīlauea Forest (Warshauer and Jacobi 1982; Clarke et al. 1983; Jacobi pers. comm. 2015). These commitments are described in Section 6.2.1 and pertain only to this area. All three species are designated as species that fall under the Hawai‘i Plant Extinction Prevention Program (“PEPP”) which identifies species that have 50 or fewer plants remaining of the species/taxon (for information on partner organizations working on KS lands see the introduction to Section 9).

Vicia menziesii is a perennial vine in the legume family often extending upward in the canopy (USFWS 1984a, USFWS 2012a). The species is only found on the island of Hawai‘i and currently occupies about 1% of its original estimated distribution (Warshauer and Jacobi, 1982). The Service’s *Vicia menziesii* Recovery Plan estimated that 1,500-2,000 plants existed at Keauhou and Kīlauea Forest in 1980 (Clarke et al. 1983, USFWS 1984b). Today the Enrolled Property supports the only known founder population of *V. menziesii* in the world. The area of distribution for the species falls entirely inside Forest Bird Stratum 1. Thirty-three individual plants were identified on the property in the Fraiola and Rubenstein study (2007). Out of these 4 were outplants and 2 were seedlings, therefore the baseline for this species is 27 plants.

Phyllostegia racemosa or Kīponapona is a vine in the mint family found only on the island of Hawai‘i (USFWS, 1998c). The life span of *P. racemosa* is less than 10 years and population distribution of this species can vary (J. Yoshioka, pers. comm. 2014). This species was considered extinct in the wild in 2010 (USFWS 2012b). Four outplanted individuals are currently known to exist on the Enrolled Property as of 2014, which is determined as the baseline for this species. No known founder plants of *P. racemosa* are known to be present on the Enrolled Property. The area of distribution for the species falls entirely inside Forest Bird Stratum 1.

Cyanea stictophylla or Hāhā is found only on the island of Hawai‘i (USFWS, 1996). The life span of this species is estimated to be about 12 years (J. Yoshioka, pers. comm. 2014). No known *C. stictophylla* founder plants exist on the Enrolled Property. The population baseline for this species is 104 plants (Fraiola and Rubenstein 2007), all outplanted and all still alive as of 2014. The area of current distribution for the species falls entirely inside Forest Bird Stratum 1.

Other Existing Plant Species

Asplenium peruvianum var. *insulare*, a member of the spleenwort family, is a fern found on Hawai‘i and Maui (USFWS, 1998b). The species, often associated with lava tubes, is not long lived, likely to be no more than 5 - 10 years, and is susceptible to drought conditions (J. Yoshioka, pers. comm. 2014). The baseline for this species is set at 128 plants, however this species has a clumping habit and it is difficult to differentiate between individual plants.

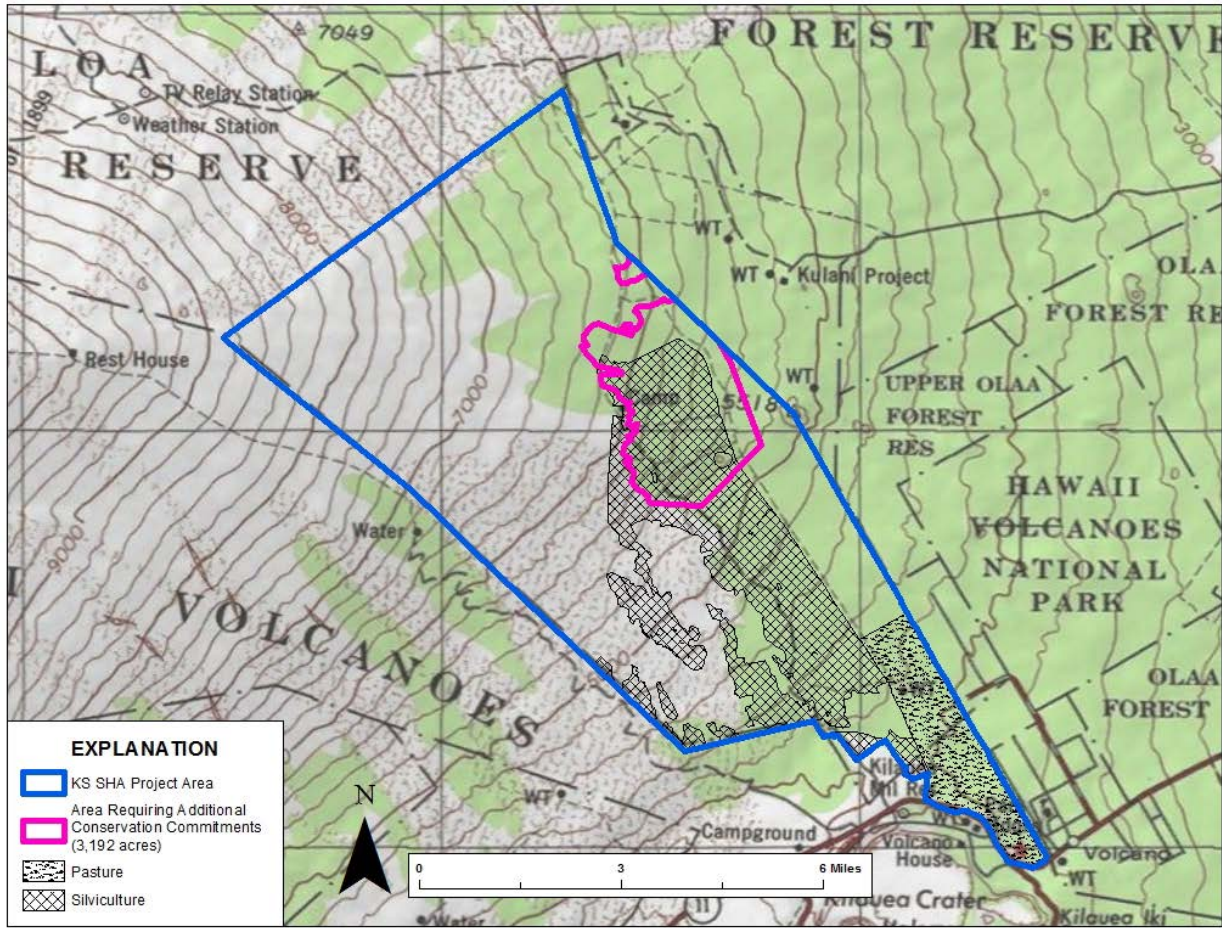


Figure 7. Area Requiring Additional Conservation Commitments for *Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*.

Clermontia lindseyana or ‘Ōhā wai is a small-branched tree found on the islands of Hawai‘i and Maui (USFWS, 1996). The species is a perennial that either grows terrestrially or epiphytically on other plants. Limited information is available on the life history characteristics of this species. This species has been outplanted on KS lands, which augments the few remaining founder plants on the property. The baseline for this species is 24 plants.

Cyanea shipmanii or Hāhā is a sparsely branched shrub found only on the island of Hawai‘i (USFWS, 1996). The *Cyanea* species’ life span is estimated to be about 12 years (J. Yoshioka, pers. comm. 2014). No known *C. shipmanii* founder plants exist on the Enrolled Property; all plants present are outplants. The baseline for this species is 463 plants (Fraiola and Rubenstein 2007).

Plantago hawaiiensis is a short-lived (likely less than 10 years) perennial herb found only on the island of Hawai‘i (USFWS, 1996, J. Yoshioka, pers. comm. 2014). Only one individual founder plant is found on the Enrolled Property. The baseline for this species is 1 plant.

Phyllostegia velutina is a vine in the mint family found only on the island of Hawai‘i (USFWS, 1998c). *P. velutina* is not long lived and population distribution of this species can vary (J. Yoshioka, pers. comm. 2014). *P. velutina* has been outplanted on KS lands, and a few founder

populations of the species are found on the Enrolled Property. This baseline for this species is 38 individuals (Rubenstein and Fraiola 2007).

KS and the agencies will monitor the Covered Species relative to the baseline conditions through survey protocols established in this Agreement (Appendix 9). The survey reports that are the basis for establishment of the baselines are provided in Appendices 2-4 and Appendix 6.

All other plant Covered Species have a baseline of zero since they do not currently occur on the Enrolled Property but are known from the Keauhou-Kīlauea region historically. These species may naturally spread into the Enrolled Property or be outplanted by KS over the life of this Agreement.

6. COVERED ACTIVITIES AND PROTECTIVE MEASURES

6.1 *Covered Activities*

As part of the development of this Agreement, the Parties have identified “covered activities” that KS, and/or other entities acting with KS’ consent, will implement on the Enrolled Property. These activities are being implemented to promote the conservation and recovery of the Covered Species or to allow for koa silviculture or exercise of cultural practices. A summary of net benefits to Covered Species is addressed in Section 7 below. The “Covered Activities” are activities conducted on the Enrolled Property that are: (1) likely to result in the incidental take of the Covered Species during the term of this Agreement and associated permits, or (2) activities that fully avoid the likelihood of take of Covered Species through the implementation of specific avoidance and minimization measures. These activities are described in the subsections below. Nothing in this Agreement prevents KS from implementing other management activities not described in the Agreement, as long as such actions maintain the original baseline conditions defined herein, are not likely to result in incidental take of the Covered Species and do not adversely affect the net conservation benefits to Covered Species described in Section 7 of this Agreement.

Emergency situations arising from natural disasters (e.g., wildfire, lava flows, volcanic eruptions, or hurricanes) may require the rapid initiation of certain land management actions that may result in the incidental take of the Covered Species. The Service and DLNR acknowledge that survey and/or relocation may be impossible in these urgent situations. KS will notify the Service and DLNR within 10 days of such a situation, and will allow entry of personnel and equipment and make other reasonable accommodations to the Service and/or DLNR for survey and/or relocation of Covered Species individuals.

6.1.1 Removal of Predators

The Covered Species under this Agreement are extremely vulnerable to mammalian disturbance and predation. Predator control strategies provide protection to both native plants and animals and increase survivorship. Under this Agreement, predator control strategies will target rats, cats, mongoose, and dogs. KS will remove feral dogs on the property to eliminate the threat of feral dogs to Nēnē and other Covered Species.

The ‘Alalā Working Group (or other designated entity) will conduct predator control efforts

for feral cats, mongooses, and rats on KS lands if ‘Alalā are determined by the Working Group to be vulnerable to predation on the Enrolled Property in the future. Access and methods for predator control efforts and monitoring should ‘Alalā occupy habitat on KS land will be specified in an access agreement issued by KS. Efforts to protect the ‘Alalā on KS lands will likely have direct benefits to the other covered forest birds species in this Agreement.

No adverse impacts to any Covered Species are anticipated from predator control activities.

6.1.2 Restoration Outplanting

Forest restoration that includes out-planting of common native and rare species or improvement of existing forested areas conducted by KS will continue year-round to increase biodiversity and native forest cover. Work could occur anywhere on the Enrolled Property outside of leased areas in the southeastern corner. Restoration outplanting actions continuously support the most critically endangered forest bird species and plants on the island of Hawai‘i. Plans by KS to expand these natural and cultural resources through help from stewardship collaborators, contractors, and volunteers will undoubtedly further increase habitat suitable for endangered plants and animals. A minimum of 20,000 seedlings will be outplanted each 5-year period across the Enrolled Property. Some forest bird activity could be supported in these outplanted areas within 10 years. Existing open- and closed-canopy forest or scattered trees will receive outplanting of a mix of native plant species. This work will complement the koa silvicultural activities (described below in Section 6.1.3).

Forest restoration efforts such as outplanting of native plants are expected to provide high quality habitat for forest birds, ‘Io, ‘Alalā, and bats under the Agreement.

Table 5. General breeding periods for Covered Species using forested habitats.

Species	Breeding Period
‘Akiapōlā‘au, (<i>Hemignathus wilsoni</i>)	February – July
Hawai‘i Creeper, (<i>Loxops mana</i>)	January – June
Hawai‘i ‘Ākepa (<i>Loxops coccineus</i>)	March – September
‘I‘iwi (<i>Vestiaria coccinea</i>)	January to June
Hawaiian Hawk, ‘Io (<i>Buteo solitarius</i>)	March – September
Hawaiian Hoary Bat, ‘Ōpe‘ape‘a (<i>Lasiurus cinereus semotus</i>)	June – September 15

Site preparation for outplanting may include the use of herbicide, mechanical spot cultivation, scarification, or hand clearing. All plants will be grown in facilities that employ best management practices for propagation, including phytosanitation protocols.

Genetics, historic range, habitat suitability, climate change, and best practices will be considered in collection, propagation, site selection and out-planting. Propagule collection, storage and propagation of all rare plant species will be coordinated with the Volcano Rare Plant Facility or other designated entity. All activities involving PEPP species will be coordinated with PEPP or other designated entity. KS will use the best biological information available and recommendations from experts when selecting rare plant species outplant locations.

Minimization/avoidance measures for restoration activities will ensure minimal impact to Covered Species through the following procedures:

- All personnel working on forest restoration will receive training on the tasks they are performing and on avoiding impacts to Covered Species prior to starting work, or be directly overseen by an individual so-trained during field work.
- Buffer distances of a minimum of 50 ft will be established where no disturbance will occur around known individual founder plants of Covered Species.
- No work will occur around known nests of birds during the breeding seasons (Table 5).

Restoration activities may result in the loss or destruction of individuals of plant Covered Species (outplants, propagules), excluding special-concern species. Additionally, due to the ephemeral nature of some of these species life histories, individual plants may be missed during surveys, resulting in their loss or destruction from silviculture activities. The impact of this loss is anticipated to be minor or negligible to the survival and recovery of the Covered Species. Based on additional specific protective measures employed (see Section 6.2.1) no adverse impacts are expected to the three special-concern plant species (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*). No adverse impacts to Covered Species of wildlife are anticipated from restoration activities.

6.1.3 Koa Silviculture

Koa silviculture will include stand improvement that will create new forest in formerly logged areas and degraded pasture lands, increase soil-water retention capacity, and provide nesting and foraging habitat for Hawaiian forest birds, the Hawaiian hawk and the Hawaiian Hoary Bat.

Reforestation also may occur in former pasture lands and other areas depicted as silviculture areas in Figure 4. KS will conduct silviculture practices in a way to ensure minimal impact to Covered Species through the procedures described below. Specific activities that will be conducted are described below.

Silviculture activities may result in the loss or destruction of plant individuals of Covered Species (outplants, propagules), with the exception of the three special-concern species (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*), for which no adverse impacts are likely due to the inclusion of additional conservation commitments (Table 7). Additionally, due to the ephemeral nature of some Covered plant species' life histories, individual plants may be missed during surveys, resulting in their loss or destruction from silviculture activities. The impact of this loss is anticipated to be minor or negligible to the survival and recovery of the Covered Species.

No adverse impacts to Covered Species of wildlife are anticipated from koa silviculture activities within Forest Bird Stratum 1 due to the incorporation of avoidance and minimization measures. Adverse effects to Covered Forest Bird ('Akiapōlā'au, Hawai'i Creeper, Hawai'i 'Ākepa, 'I'iwi) species are likely to occur from silviculture activities outside Forest Bird Stratum 1 if those species become established in koa stands, as described below.

Koa Silvicultural Activities within Forest Bird Stratum 1

Planned management of existing and new koa stands will include 20-30 % thinning of up to 50-100 acres per year in Forest Bird Stratum 1 and will be based on the size and density of the forested area, generally within the first 10 years and again 25 years after planting. Koa stand management practices will reduce the density of koa and improve the health of the stand. Planned reforestation over the term of the Agreement will provide the tree cover as described in Section 5 for birds and the Hawaiian Hoary Bat.

Thinning of young koa stands for stand improvement is an effective management practice to increase growth rates of koa trees by reducing the proximity of competing trees. Selective thinning of koa stands by KS will be employed via two techniques, girdling trees or basal cutting, and will be dependent on the access and type of forest (i.e. density, understory, etc.). Thinning or other harvest of trees will take place outside of the breeding season of Covered Species that are shown in Table 6.

Table 6. Periods Allowed for Tree Trimming, Harvesting, and Thinning

Stratum	Period during which tree trimming, harvesting, and thinning may occur (outside of sensitive breeding periods)
Forest Bird Stratum 1	October 1 – December 31*
Remainder of Enrolled Property (Outside of Forest Bird Stratum 1)	Vegetation below 15-feet tall: year round Vegetation greater than 15-feet tall: October 1 – March 1**

* Outside of this time window covered bird species have their breeding seasons (see Table 5).

**Outside of this time window is the 'Io and Hawaiian Hoary Bat breeding season (see Table 5).

Koa Silvicultural Activities outside Forest Bird Stratum 1

Silviculture practices outside Forest Bird Stratum 1 will be accomplished by KS by planting of seedlings, scarification, and/or a combination of scarification supplemented with direct planting. Mechanical site-preparation techniques will be utilized to establish koa stands. A koa stand is defined as a contiguous group of trees planted during the same year. The size of each stand may vary in size and shape. During the time period of the Agreement KS will establish a minimum of 1,000 acres of new koa stands. This work will be a continuation of the existing 600 acres of koa established since reforestation began in 2005. From years 0 thru 4 (establishment period), stand improvement activities will include manual cutting of excess stems and pruning.

At approximately age 10 the first entry of thinning individual stands will occur. The anticipated target is 30% thinning in each stand, but the final thinning level will be dependent on the density of the trees. Methods will involve girdling and leaving snags as well as manual cut and removal. Criteria and approach for the first thinning are intended to maintain forest health and include:

1. Elimination of trees < 6" dbh (treat no more than 30% of each stand)
2. Retain all trees >6" dbh unless the tree is split (forked), doesn't contain one 6 ft. length of trunk, or is diseased.

These trees are too small to support breeding of the forest bird Covered Species, and therefore no adverse impacts to these species are likely to occur. Thinning will only be conducted in

accordance with the timing specified in Table 6 for ‘Io, Nēnē and Hawaiian Hoary Bats in accordance with restrictions in their breeding seasons (Table 5), therefore no adverse impacts to these species are likely to occur. No take of ‘Alalā is likely to occur as the species is not likely to utilize areas outside of Forest Bird Stratum 1.

KS will implement a second thinning at approximately age 25. A maximum of 200 acres of thinning will occur per year. Stand improvement and thinning prescriptions may change over time in relation to density but will treat no more than 40% of the existing koa management unit. KS expects that during this phase of thinning there will be a cohort of shade-tolerant native trees and sub-canopy developing in the understory.

These stands are large enough that they may support low densities of breeding forest bird Covered Species. While thinning actions are likely to make the stand more suitable for forest bird use, it is also likely that thinning will result in the take of forest bird nests (either from disturbance caused by thinning activities or direct loss). No adverse impacts to ‘Io, Nēnē and Hawaiian Hoary Bats are likely to occur with implementation of the thinning restrictions specified in Table 6. No take of ‘Alalā is likely to occur as the species is not likely to utilize areas outside of Forest Bird Stratum 1.

KS will implement initial harvest of individual silviculture stands after the stand reaches 40 years old, which would begin in 2036 and extend through the life of the Agreement (minimum of 1,600 acres). A maximum of 250 acres of selective harvest will occur per year. The selective harvest will involve a combination of techniques including manual felling and mechanical transport. It is not anticipated that all trees in an individual stand will be removed; instead, it is anticipated there will be a well-developed sub-canopy of shade-tolerant native trees and shrubs with a cohort of young koa developing in the understory. At the end of the Agreement, it is anticipated the remaining forest will consist of mixed age classes and diameter distributions which will require an uneven-age management system of selective harvest.

At the time of harvest, it is anticipated that an individual stand will support low densities of breeding forest bird Covered Species. While selective harvest will still continue to provide valuable habitat for forest bird use, it is also likely that harvest will result in the take of forest bird nests (either from disturbance caused by harvest activities or direct loss). No adverse impacts to ‘Io, Nēnē and Hawaiian Hoary Bats are likely to occur with implementation of the thinning restrictions specified in Table 6. No take of ‘Alalā is likely to occur as the species is not likely to utilize areas outside of Forest Bird Stratum 1.

Minimization/avoidance measures for koa silviculture activities will ensure minimal impact to Covered Species through the following procedures:

- Stand improvement activities (selective thinning) or harvest in young koa stands (trees smaller than a 65 cm dbh), will occur only in the periods specified in Table 6 to avoid sensitive breeding seasons (Table 5).
- Buffer distances of a minimum of 50 ft will be established where no disturbance will occur around known individual founder plants of Covered Species.
- No more than two live standing old growth ‘ōhi‘a and koa trees > 10 m in height and > 65 cm dbh will be cut every 10 years in the Forest Bird Stratum 1.

6.1.4 Fences and Ungulate Control

Fence lines provide protection to native habitats by keeping animals such as pigs, goats, sheep, and deer out of sensitive areas. KS will maintain fence lines in Keauhou and Kīlauea to ensure woody vegetation around fences are cleared and inspected for damage from tree falls and ungulate ingress. Fences to be maintained are those fencelines required to maintain zero tolerance for feral ungulates on KS lands, as described in Section 4. Inspection frequency is dependent on fence condition, fence location and potential risk to fence damage (e.g. wind storms). Although all top-line barbed wire has been removed from management fences, barbed wire remains on old interior ranch fences and active pasture leases. The Hawaiian Hoary bat has been known to be killed by barbed wire fences (Zimpfer and Bonnacorso 2010).

Shared fence boundaries with the DLNR Natural Area Reserve System and Forest Reserve, National Park Service and HAVO are managed through the Three Mountain Alliance watershed partnership. Management goals with these neighbors of KS are in line with this Agreement, namely to prevent ungulate ingress within fenced management units. Any changes or issues with these shared fence lines will be resolved through the watershed partnership

The large Keauhou fenced unit contains a very low level of feral pigs (<10) and KS is actively removing them. Scouting along transects is conducted annually in the upper section of the Keauhou unit where there are signs of ungulates. The other fenced units are zero-tolerance for ungulates. KS will continue to actively manage the Enrolled Property as an ungulate-free area inside fenced conservation management units (~29,000 acres) throughout the duration of the Agreement. Hunting with dogs will only occur when dogs are under the direct control of a handler, and will not be used as a management tool in areas where molting or nesting Nēnē are known to occur, which takes place between the months of October and April.

Kamehameha Schools will check fences at least quarterly. Fencelines will be replaced as their condition deteriorates during the life of the Agreement.

Minimization/avoidance measures for fencing and ungulate control activities will ensure minimal impact to Covered Species through the following procedures:

- Since Hawaiian Hoary Bats are known to be killed by barbed wire, barbed wire above grass level will not be used on any new management fences.
- Remaining barbed wire will be replaced on adjacent ranch lands as leases are renewed by KS. Additionally, any barbed wire from remnant ranch fencing which remains exposed above grass will be removed by KS.
- New and replacement fence routes will be planned to follow natural topographical features when possible and planned to avoid Covered Species of plants. Tree/shrub removal will be restricted as described in Table 6.

Existing internal fences that have not yet been retrofitted do pose a possible threat to Hawaiian Hoary Bats, however, the likelihood of take is discountable (extremely unlikely to occur). No adverse impacts to other Covered Species of wildlife are anticipated from fencing and ungulate control activities.

Although any new fence lines will be planned to fully avoid Covered Species plants there is the

possibility that some listed plant species could be missed during surveys and therefore impacted by the construction of a new fence line; however, this threat is considered discountable (extremely unlikely to occur).

6.1.5 Weed Control

Weed control and suppression on the Enrolled Property support the increase and diversity of native plant populations. Past weed control efforts have focused on priority weeds including faya (*Morella faya*), ginger (*Hedychium gardnerianum*), strawberry guava (*Psidium cattleianum*) and Himalayan raspberry (*Rubus ellipticus*). Methods to suppress, contain, prevent, and eliminate priority weeds may include use of chemical (ground based, systemic, and foliar), mechanical removal and manual removal. KS will suppress priority weeds below 10% on the Enrolled Property within conservation fences provided that adjacent landowners management includes continued weed control. If this level cannot reasonably be achieved due to increased weed pressure, a description of the issue will be provided to the Agencies and a new level established via a minor amendment (as described in section 13.2).

Aerial herbicide application in grasslands and low stature tree stands (e.g. blackberry stands) may be considered by KS in areas where Covered Species are not present. Additionally, KS may consider the application of aerial pesticides in their forestry management operations. If KS anticipates aerial spraying of herbicides or pesticides in Forest Bird Stratum 1, KS will coordinate with the agencies on appropriate avoidance and minimization measures.

Minimization/avoidance measures for weed control activities will ensure minimal impact to Covered Species through the following procedures:

- All personnel working on weed control will receive training on the tasks they are performing and on avoiding impacts to Covered Species prior to starting work, or be directly overseen by an individual so-trained during field work.
- Buffer distances of a minimum of 50 ft will be established where no disturbance will occur around known individual founder plants of Covered Species.
- No work will occur around known nests of birds during the breeding seasons (Table 5).
- Inside Forest Bird Stratum 1 no chemical herbicides (or chainsaws) will be used on trees with known nests of Covered Species or within 50 feet of known nest trees during the breeding season.
- Inside and outside Stratum 1, no chemical herbicides or chainsaws will be used within 50 feet of known Nēnē or ‘Io nests during their breeding seasons.
- Low-impact weed suppression such as herbicide spraying with a backpack may occur year-round on the Enrolled Property provided that 50 foot buffers are established near known nests of Covered Species.

For bird Covered Species (forest birds, ‘Io, and Nēnē), even with the avoidance measures incorporated, the occasional use of mechanical methods to remove weeds outside of the 50-foot buffer may result in harassment of breeding adults, leading to nest abandonment or reduced fitness or survivorship of dependent young. Additionally, due to their cryptic

nature, some forest bird nest trees may be missed during surveys, and therefore not receive the protective buffer. Mechanical weed control around nests that were not found and protected with the 50-foot buffer are likely to cause such nests to be abandoned or have reduced success. No adverse impacts to the Hawaiian hoary bat are anticipated from weed control activities.

Weed control activities may result in the loss or destruction of individuals of plant Covered Species (outplants, propagules), excluding special-concern species. Additionally, due to the ephemeral nature of some of these species life histories, individual plants may be missed during surveys, resulting in their loss or destruction from weed control. The impact of this loss is anticipated to be minor or negligible to the survival and recovery of the Covered Species. Based on specific protective measures employed (see Section 6.2.1) no adverse impacts are expected to the three special-concern plant species (*Vicia menziesii*, *Phyllostegia racemosa*, and *Cyanea stictophylla*).

6.1.6 Fire Threat Management

Fire continues to be a threat on the Enrolled Property. The last fire on the Enrolled Property was in 2012 and spread to 6 acres. KS continues to work on fire risk reduction and fire preparedness to protect natural and cultural resources found on the property. Water sources at Keauhou will be maintained and will be available in the event of a fire. In addition, KS's fire prevention plan includes employee education and awareness, continued good neighbor relations, and awareness of present fire conditions. KS works cooperatively with NPS and DLNR with fire suppression assistance. KS will maintain a similar storage capacity (225,000 gallons) and distribution of water as exists today. Actual locations of water sources may change over time. Primary access routes will be maintained, which is vital for fire management and suppression activities. Controlled burning may be utilized in the event of a fire to minimize spread.

Minimization/avoidance measures for fire threat management activities will ensure minimal impact to Covered Species through the following procedures:

- Except in the situation of suppression of an active fire, tree/shrub cutting restrictions shown in Table 6 will be followed.

No adverse impacts to any Covered Species are anticipated from fire threat management activities.

6.1.7 Response to Rapid 'Ōhi'a Death

Due to the recent outbreak of Rapid 'Ōhi'a Death ("ROD") on Hawai'i Island special procedures will be required to prevent the spread of this disease or related epidemic diseases. Any activities related to ROD or other disease epidemics that would be implemented on the Enrolled Property and that may affect Covered Species would be those prescribed by regulatory agencies or researchers from universities or government agencies and these activities would be coordinated with the agencies.

Minimization/avoidance measures for Response to ROD activities will ensure minimal impact to Covered Species through the following procedures:

- Unless otherwise directed by the Service and DOFAW in writing, all tree/shrub cutting restrictions as shown in Table 6.
- All personnel working will receive training on the tasks they are performing and on avoiding impacts to Covered Species (animal and plant) prior to starting work, or be directly overseen by an individual so-trained during field work.
- To prevent the spread of ROD the most up to date guidance will be followed.
- All actions taken will avoid direct impacts to Covered Species plants.

No adverse impacts to any Covered Species are anticipated from response activities related to ROD.

6.1.8 Other Activities on the Enrolled Property

Covered activities described below may or may not be realized during the term and will be dependent on financial and managerial decisions within the KS management and leadership team. All participants in these Covered Activities will receive information describing the Covered Species in the area proposed for the activity and any applicable restrictions imposed by this SHA. The Enrollee will incorporate restrictions into all new, and renewals of, access agreements, leases, licenses and other similar agreements that provide for access so others are aware of the avoidance measures included in the Agreement and act in accordance with its provisions. Access agreements will also specify that any sub-access agreements issued by KS lessees and licensees must also include such restrictions. KS will not be held responsible for impacts to Covered Species by parties not under the control of KS that have been issued access agreements that contain or have reference to all the applicable restrictions within this Agreement, or by parties issued sub-access agreements by KS lessees or licensees. Some activities listed below will be restricted to areas that are not designated Conservation District Land, as per applicable requirements specified in State law and implementing rules unless applicable permits are obtained.

Activities that could occur anywhere on the Enrolled Property:

- Educational activities.
- Ecotourism activities, such as guided hikes and overnight stays. Filming and photography.
- Scientific research to be conducted on the Enrolled Property.
- Restoration of existing man-made structures, including Keawewai cabin (located in Forest Bird Stratum 1).
- Traditional and cultural practices.
- Gathering of non-timber forest products for cultural and educational purposes.
- Natural resources management trainings, such as primary bird counting and rare plant identification.
- Construction and operation of a network of trails. Trail construction activities may result in the loss or destruction of individuals of plant Covered Species (outplants, propagules), excluding special-concern species. Additionally, due to the ephemeral nature of some of these species life histories, individual plants may be missed during surveys, resulting in their loss or destruction from construction or use of trails. The impact of this loss is anticipated to be minor or negligible to the survival and

recovery of the Covered Species.

- Road construction activities. Road construction and maintenance is vital for natural resource management activities. Road construction activities may result in the loss or destruction of individuals of plant Covered Species (outplants, propagules), excluding special-concern species. Additionally, due to the ephemeral nature of some of these species life histories, individual plants may be missed during surveys, resulting in their loss or destruction from road construction activities. The impact of this loss is anticipated to be minor or negligible to the survival and recovery of the Covered Species.
- Gathering of non-timber forest products, excluding Covered Species propagules, for commercial purposes with the proper permits obtained.
- Salvaging of any tree that is dead and fallen or dead standing trees.

Activities that May Occur on the Enrolled Property Only Outside of Forest Bird Stratum 1:

- Construction and maintenance activities such as for ecotourism infrastructure, (cabins, camp sites, raised platforms for bird viewing, etc.), a cultural interpretive center, or management infrastructure to include office and baseyard facilities, nursery facilities, decontamination facility, management shelters, composting toilets, water catchment/storage, or fire-control infrastructure.
- Construction and operation of a field station to support conservation activities conducted by partners as well as education opportunities for students. The field station will enhance the ability to collect information for conservation and management purposes.
- Natural resource management trainings, such as all terrain vehicle, chainsaw, wilderness first aid, and wildland fire.

Minimization/avoidance measures for activities described in this section will ensure minimal impact to Covered Species through the following procedures:

- Helicopter landing zones will not be designated in areas where Covered Species of birds (‘Akiapōlā‘au, Hawai‘i Creeper, Hawai‘i Ākepa, Nēnē, ‘Alalā, and ‘Io) are known to nest.
- Any clearing activities for trails will occur outside the breeding period for Covered Species (Table 5) and with the tree/shrub cutting restrictions listed in Table 6.
- Any road construction activities would occur outside the breeding season for Covered Species within Forest Bird Stratum 1 (Table 5) and with the tree/shrub cutting restrictions listed in Table 6 and disturbance would be kept to the minimum necessary to conduct these activities.
- When salvaging trees that are dead and fallen or dead standing trees any salvaging will be done outside the breeding season for Covered Species within Forest Bird Stratum 1 (Table 5) and with the tree/shrub cutting restrictions listed in Table 6.
- Construction of infrastructure facilities will not occur during the breeding season of any Covered Species known to have an active nest in the area.
- Natural resource management activities will comply with the tree/shrub cutting restrictions listed in Table 6.

With the above avoidance and minimization measures, no adverse impacts to Covered Species are anticipated for the activities described in this section.

6.2 Additional Protective Measures

6.2.1 Area Requiring Additional Conservation Commitments for “Special-Concern” Plants

Additional conservation commitments are required for the three “special-concern” endangered plant species *V. menziesii*, *P. racemosa*, and *C. stictophylla* in the area outlined in Figure 7. Specific monitoring surveys are required for the special-concern plant species as well as other endangered plant species covered by these additional conservation commitments and they are described in Section 8.3.

KS will implement the measures outlined in Table 7 to fully avoid negatively affecting these special-concern species.

Table 7. Specific Required Protective Measures for Covered Activities within the Area Requiring Additional Conservation Commitments¹

Required Protective Measure (indicated by checkmark)	Covered Activity Undertaken						
	Out-plant Restore	Koa Thin/Cut	Soil Scarify	New/Replacement Fence	Weed Pull	Herbicide Use	Rd/Tr Const.
Training of persons conducting activity by PEPP staff or other recognized experts on species ID, habitat of special-concern plants and specific precautions.	✓	✓	✓	✓	✓	✓	✓
Before activity ensure a survey of the 50-ft buffer area around each known or known recent location of <i>special-concern plant</i> (those locations established in the <i>Fraiola and Rubenstein (2007) report</i> or later surveys) by a botanist familiar with their identification.		✓	✓	✓		✓	✓
Prohibit ground-disturbing machinery within a marked approximate 50- ft buffer around each <i>special-concern plant</i> or known recent location (those locations established in the <i>Fraiola and Rubenstein (2007) report</i> or later surveys).	✓	✓	✓	✓	✓	✓	✓
No large trees felled that would fall within the established 50 ft buffer of any <i>special-concern plant</i> .		✓		✓			✓
Conduct monitoring after a disturbance has occurred within 50 ft buffer of any <i>special-concern plant</i> ; any negative results reported to PEPP and the agencies within 2 months of each survey and in annual report.	✓	✓	✓	✓		✓	✓

¹ Additional conservation measures are specified under the individual Covered Activities.

6.2.2 Phytosanitation

Due to the recent outbreak of ROD on Hawai‘i Island, Covered Activities may require procedures to minimize the spread of this disease. Phytosanitation procedures recommended by regulatory agencies would be employed to prevent the spread of ROD or other diseases.

7. NET CONSERVATION BENEFIT

KS agrees to manage the Enrolled Property to produce a cumulative “net conservation benefit” (the term used by USFWS in its Safe Harbor Policy) and “net environmental benefits” (the term used in HRS chapter 195D) to the Covered Species. Chapter 195D also requires that the SHA “be designed to result in an overall net gain in the recovery of Hawaii’s threatened and endangered species” (HRS § 195D-30) and “increases the likelihood that the endangered or threatened species for which a take is authorized will recover” (HRS § 195D-22).

This Agreement will enhance, create, and conserve habitat for the long term recovery of the Covered Species. Through this Agreement, KS will provide a large expanse of suitable habitat for multiple animal and plant species to increase their range and populations. The 50-year Agreement duration (see Section 10 below) is considered to be sufficient to establish and maintain these goals.

Forest restoration activities will provide educational outreach and volunteer participation which contributes to the overall awareness of and support for conservation in Hawai‘i and species recovery.

The cumulative management activities which will be implemented pursuant to this Agreement directly support recovery actions and conservation objectives outlined in conservation and recovery plans for the Covered Species (USFWS 1984a, USFWS 1984b, USFWS 1996, USFWS 1998a, USFWS 1998b, USFWS 1998c, USFWS 2004, USFWS 2006, USFWS 2009, Hawai‘i DLNR 2015, and Fraiola and Rubenstein 2007) including: protection, management, restoration, and conservation of suitable and known habitat, ungulate control, alien species control, and reestablishing connectivity of current fragmented habitats.

Through the Covered Activities described in Section 6, baseline conditions will be enhanced for the benefit of Covered Species in Forest Bird Stratum 1, resulting in a net benefit. Outside Forest Bird Stratum 1, at a minimum, baseline conditions will be maintained over the life of the Agreement.

Based on the described practices, this Agreement will result in the following net conservation benefits to the Covered Species:

1. Increased population sizes;
2. Establishment of new populations and/or habitat where they do not currently exist;
3. Increased ranges for species thereby helping to protect against catastrophic loss of the species;
4. Increased genetic diversity;

5. Reduced protected area fragmentation in the region and an increase in habitat connectivity through habitat restoration, enhancement, and creation efforts on the Enrolled Property and by creating a bridge between large protected areas for movement of wildlife (Figure 8); and
6. Protection of intact, high quality native forest resulting in increased biodiversity and ecosystem resilience through maintenance of fences protecting the entire Enrolled Property from ungulate damage, predator control, protection from wildfire damage, invasive species management, and outplanting of native plants.

Therefore, the cumulative results of this Agreement and the activities it covers, which are facilitated by the permitted incidental take, will provide a net benefit to all of the Covered Species. The net benefit for the species that occur within the high quality Kīlauea Forest parcel is particularly important because that parcel has never been logged and it is highly valued for its cultural and natural resources.

Specific net conservation benefits to Covered Species will be assured due to KS implementation of the following activities:

Forest Birds, 'Io, Hawaiian Hoary Bat, and 'Alalā

1. Collaboration for research and predator control activity
2. Reduction in habitat fragmentation
3. Increased numbers of individuals
4. Increased genetic diversity by attracting individuals from other areas
5. Prevention and management of wildfire

Nēnē

1. Collaboration for predator control activity
2. Prevention and management of wildfire
3. Increased numbers of birds

Covered Species Plants

1. Weed control
2. Maintenance of fencing and ungulate control
3. Increased populations
4. Increased genetic diversity
5. Prevention and management of wildfire

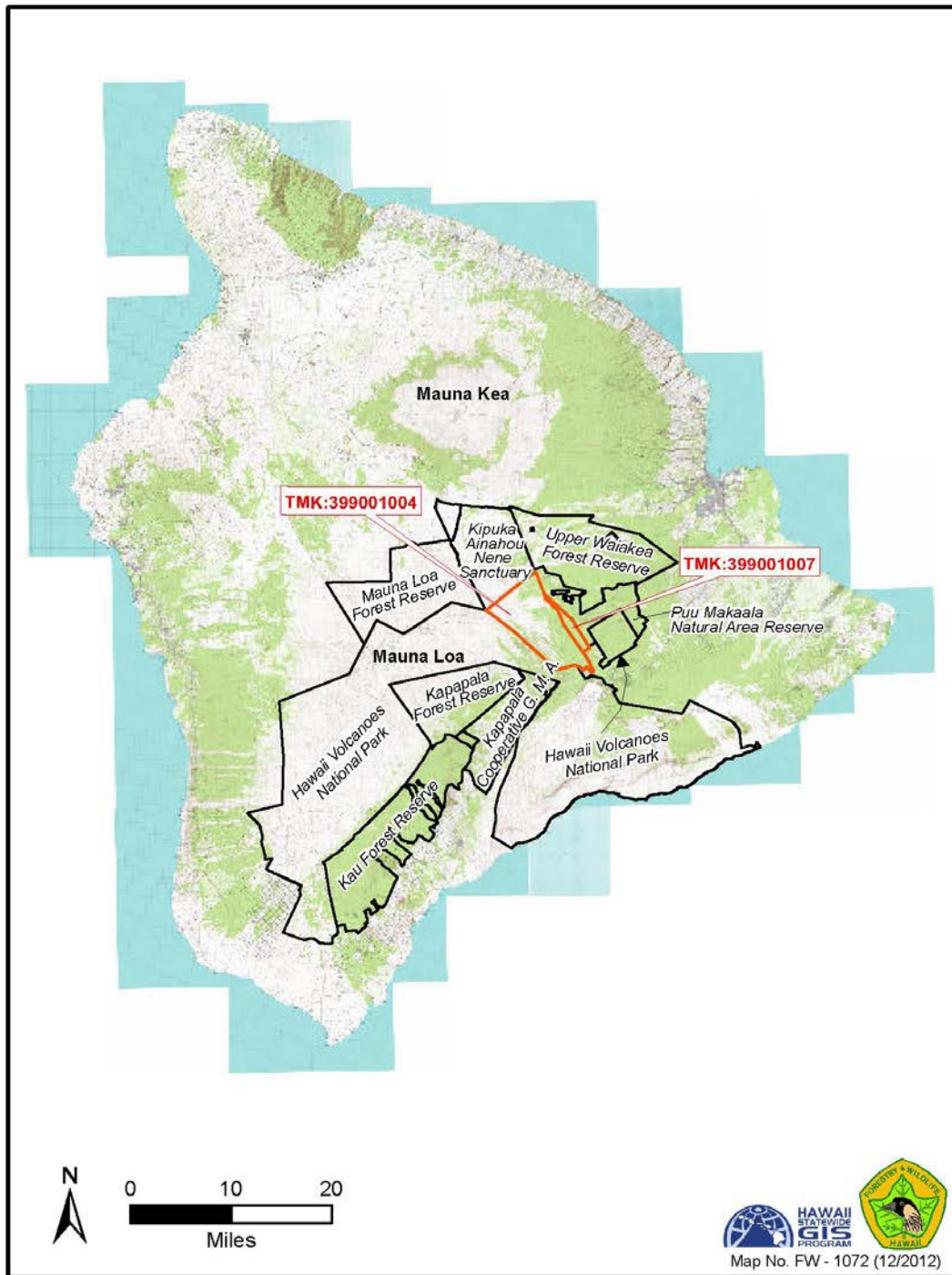


Figure 8. Connectivity of Enrolled Property with other Protected Areas

Forest Birds, 'Io, and Hawaiian Hoary Bat Benefits

Implementation of activities to create, enhance, restore, and maintain native forests would be highly beneficial to current populations of 'Akiapōlā'au, Hawai'i Creeper, Hawai'i 'Ākepa, 'I'iwi, 'Io, and the Hawaiian Hoary Bat and/or would potentially provide the opportunity to increase their numbers and distribution. Additionally, the protection of native forests adjacent to potential 'Alalā release sites will increase the success of such release programs.

The specific activities that will enhance, restore, and maintain/protect native forests on the Enrolled Property are removal of predators (described in Section 6.1.1), forest restoration (described in Section 6.1.2), koa silviculture (described in Section 6.1.3), fences and ungulate control (described in Section 6.1.4), weed control (described in Section 6.1.5), and fire threat management (described in Section 6.1.6).

For forest birds (‘Akiapōlā‘au, Hawai‘i, Creeper, Hawai‘i ‘Ākepa, and ‘I‘iwi) an increase in closed canopy tree cover through koa silviculture (Section 6.1.3) or any increase in any other tree cover without a decrease in higher density tree cover categories, as evaluated every 10 years, will be a net benefit by providing more habitat and nesting opportunities.

For ‘Io and the Hawaiian Hoary Bat, an increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover, as evaluated every 10 years, will be a net benefit. An increase in canopy cover above baseline will provide new nesting opportunities for ‘Io and new breeding and roosting sites for Hawaiian Hoary Bats.

The young koa stands planted by KS will increase the habitat and food availability for forest birds and may serve as important foraging areas for rare bird species (Appendix 2, page 10). In addition outplanting of native vegetation and understory plants (described in Section 6.1.2) and natural regeneration will help with recovery of Covered Species bird populations.

Threats to the recovery of native plants and birds include browsing by feral ungulate species and encroachment of non-native plant species into native-dominated plant communities. The maintenance of existing ungulate free areas (as described in Section 6.1.4) will provide a direct net benefit throughout the permit term to Covered Species.

Other net benefits to the bird species described above and the Hawaiian hoary bat include:

- Outplanting a minimum of 20,000 native plants each 5-year period
- Thinning to reduce the density of koa and improve the health of the stand.
- Establishment of minimum 1,000 acres of new koa stands outside Forest Bird Stratum 1.
- Zero-tolerance of ungulates in fenced units.
- Maintenance of roads and water sources for fire suppression.
- Maintenance of fencelines.
- Maintenance of old growth trees in Forest Bird Stratum 1.
- Suppression of priority weeds below 10% on portions of the Enrolled Property provided that adjacent landowners management includes continued weed control.

Nēnē

Feral dog removal by KS will result in a net benefit for the species. This Agreement provides access by KS for DOFAW predator control of known Nēnē breeding sites and maintenance of short grass habitat around the DOFAW Nēnē cabin. Monitoring of Nēnē at this location will also be conducted by DOFAW. The management actions described in Section 5 at KBCC potentially decrease likelihood of future Nēnē nesting at that site, however it is expected that Nēnē will successfully reproduce and establish new pairs on the Enrolled Property in the area of the Nēnē cabin.

Plants

USFWS Recovery Plans for listed plants has determined that habitat management and reduction

of threats by ungulate browsing is a priority in the recovery of the covered endangered plant species listed in this Agreement (USFWS, 1996, USFWS 1998a, USFWS 1998b). Habitat management benefits will be provided by forest restoration (described in Section 6.1.2), koa silviculture (described in Section 6.1.3), fences and ungulate control (described in Section 6.1.4), weed control (described in Section 6.1.5), and fire threat management (described in Section 6.1.6). A reduction in threats by ungulate browsing will be achieved through maintenance of fencing and ungulate control (described in Section 6.1.4).

In addition, targeted predator control efforts in sensitive areas (described in Section 6.1.1) will increase the likelihood of seedling recruitment.

8. MONITORING AND REPORTING

Reporting under this Agreement will follow the template and guidelines provided in Appendix 8: Reporting Template.

Compliance Monitoring. Annual reports will cover the period from July 1 – June 30 of each year and be due August 21st of each year. The agencies will provide any information/reports pertinent to their contributions under the Agreement to KS by July 15th. KS will ensure reports are compiled and made available to all Parties and will include periodic verification that baseline(s) are being maintained (at a minimum) outside Forest Bird Stratum 1 and enhanced in Stratum 1 to achieve an overall net benefit.

Biological Monitoring. Monitoring for each species specific baseline will follow the regime outlined below. The monitoring program described here is intended to be a cooperative effort of the KS and the agencies.

8.1 *Monitoring for ‘Akiapōlā‘au, Hawai‘i Creeper, Hawai‘i ‘Ākepa, and ‘Iwi and ‘Alalā*

Baseline monitoring for forest birds will involve canopy cover assessment every 10 years and species occupancy surveys every 5 years.

Baseline Monitoring (Habitat)

Baseline monitoring of Forest Bird Stratum 1 will be conducted by KS for the ‘Akiapōlā‘au, Hawai‘i Creeper, Hawai‘i ‘Ākepa, and ‘Iwi. Changes in habitat from baseline tree cover defined in Table 3 can be assessed through the use of satellite or other applicable imagery comparable to the baseline method described by Jacobi (2016, in prep.), or through field verification using methods to be developed that are approved by the agencies. Evaluation will be at a minimum frequency of every 10 years subsequent to issuance of the Enhancement of Survival Permit and Incidental Take License.

A decrease in closed canopy tree cover or any decrease in any other tree cover category without an equivalent or greater increase in a denser tree cover category in Forest Bird Stratum 1 would be considered a reduction of baseline conditions. Net Conservation Benefit is described in Section 7 as an increase in closed canopy tree cover or any increase in any other tree cover without a decrease in higher density tree cover categories.

Forest Bird Surveys

An assessment of occupation of habitat will involve forest bird surveys that are planned on an annual basis following protocols described in Appendix 9. Surveys will be conducted by the Three Mountain Alliance, the Service, DOFAW, USGS, or other government or non-profit organization as time and budget appropriations allow, with access and other logistical assistance to be provided by KS. In the event that the agencies listed above are not able to conduct the surveys, KS will be responsible for completing them within Forest Bird Stratum 1 at a minimum of every 5 years. Results from all surveys will be included in annual reports for this Agreement. If no survey has occurred in the past year, a planned or estimated schedule for the next forest bird survey will be provided.

8.2 *Monitoring for 'Io*

Baseline Monitoring (Habitat)

Baseline monitoring of habitat will be performed as described in Section 8.1, above. A decrease in closed canopy tree cover or decrease in open canopy tree cover category without an equivalent or greater increase in closed canopy tree cover anywhere on the Enrolled Property would be considered a reduction of baseline conditions. As described in the Net Conservation Benefit section 7 above, an increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover, as evaluated every 10 years would be considered a net benefit.

'Io Surveys

Occupancy surveys for 'Io are planned every 5 years. Surveys will be conducted by the Service, DOFAW, USGS or other government or non-profit organization as time and budget appropriations allow, with access and other logistical assistance to be provided by KS. Methodology for the surveys is described in Appendix 9. Results from all surveys and monitoring will be included in annual reports for this Agreement. If no survey has occurred in a given year, a planned or estimated schedule for the next 'Io survey will be provided.

8.3 *Monitoring for Hawaiian Hoary Bat*

Baseline Monitoring (Habitat)

Baseline monitoring of habitat will be performed as described in Section 8.1, above. A decrease in closed canopy tree cover or decrease in open canopy tree cover category without an equivalent or greater increase in closed canopy tree cover anywhere on the Enrolled Property would be considered a reduction of baseline conditions. As described in the Net Conservation Benefit section above, an increase in closed canopy cover or an increase in open canopy tree cover without a decrease in closed canopy tree cover, as evaluated every 10 years would be considered a net benefit .

Bat Surveys

Occupancy surveys involving acoustic monitoring for Hawaiian Hoary Bat activity is planned

every 5 years. Surveys will be conducted by Three Mountain Alliance, the Service, DOFAW, USGS or other government or non-profit organization as time and budget appropriations allow, with access and other logistical assistance to be provided by KS. Methodology for the surveys is described in Appendix 9. Results from all surveys and monitoring will be included in annual reports for this Agreement.

8.4 *Monitoring for Nēnē*

Baseline Monitoring and Species Surveys

Nēnē surveys serve as the baseline monitoring. Baseline conditions for Nēnē were determined by the number of breeding pairs present on the Enrolled Property.

Surveys during the Nēnē breeding season, as described in Appendix 9, are planned on an annual basis and will be conducted by DOFAW and included in the annual reporting. Reporting will provide information on population estimates, nesting success, and fledgling success.

8.5 *Monitoring for Endangered Plant Species*

Baseline Monitoring and Species Surveys

For plants, species surveys serve as the baseline monitoring. Baseline conditions for the endangered plant species were determined by the number of individuals present on the Enrolled Property.

Plant surveys will be conducted as outlined in Appendix 9 to determine the number of individuals present on the Enrolled Property and include status of newly outplanted plants per methods outlined in Appendix 9. To the extent possible, plant surveys will be conducted during the appropriate time of year in order to maximize the likelihood of species detection. Surveys for the endangered plant species in the area requiring additional conservation commitments will be conducted by biologists knowledgeable of the habitat and characteristics of the three “special-concern” species and who have conducted surveys for these species, or related species, or are individuals trained by them to recognize the species.

Plant surveys for PEPP species will be conducted by PEPP, and surveys for all other covered plant species will be conducted by agencies or associated cooperating entities agreeable to KS. Surveys are planned on the following schedule as time and funding allow: PEPP founder plant surveys for PEPP plants (specified in Table 4) are planned on an annual basis, other endangered founder plants biannually, and outplants every 5 years but this may be adjusted based on species status and PEPP program goals and objectives. These survey intervals will be applied to all individual plant species in this Agreement and are provided in Appendix 9. In the event that the agencies or entities specified above are not able to conduct the plant surveys/monitoring, KS will conduct surveys for all Covered Plant Species at a minimum frequency of once every five years. Results from all surveys and monitoring will be included in annual reports required for this Agreement. If no survey has occurred in a given year, a planned or estimated schedule for the next plant surveys will be provided.

9. RESPONSIBILITIES OF THE PARTIES

The Parties to this Agreement will implement the specific responsibilities detailed below pursuant to this Agreement. The Parties may seek the assistance and support of other partners to implement these actions, but involvement from these outside groups shall in no way change the full responsibility and obligation for the Parties to implement the actions identified within this Agreement and associated Enhancement of Survival Permit and Incidental Take License. These other entities (which are not Party to this Agreement and therefore have no formal responsibilities) include the Hawai‘i Silversword Foundation (“HSF”), Three Mountain Alliance watershed partnership, U.S. Geological Survey Biological Services Division, Hawai‘i Plant Extinction Prevention Program, and the University of Hawai‘i. Currently KS has a Conservation License Agreement with HSF.

9.1 KAMEHAMEHA SCHOOLS Responsibilities

- a. Implement this Agreement.
- b. Within the first 5 years of execution of this Agreement, KS will plant 20,000 seedlings (across the Enrolled Property), implement feral dog control, execute a right of access agreement for ‘Alalā monitoring and predator control, maintain fencelines necessary to maintain zero tolerance of feral ungulates, control weeds, and conduct fire management activities (according to the descriptions in 6.1.1 - 6.1.7). All avoidance and minimization measures references for each Covered Activity will be implemented as described.
- c. Provide notice to the Service and DLNR within three (3) working days of known Covered Species mortalities, injuries, or disease observed on the Enrolled Property.
- d. Follow procedures detailed in Appendix 7: Protocol for Handling Downed or Injured Wildlife to handle injured Covered Species of wildlife, or their carcasses, and contact the agencies within three (3) working days of any Covered Species wildlife mortalities, and as soon as possible for any injuries or disease of Covered Species wildlife observed on the Enrolled Property throughout the term of the DLNR Incidental Take License and the Service Enhancement of Survival Permit.
- e. For situations in which KS cannot implement the Avoidance and Minimization Measures during the term of the Agreement, KS may seek technical assistance from the agencies on alternative ways to avoid and minimize impacts to the Covered Species associated with a particular activity other than those described above. The agencies will provide technical assistance to KS, to the extent practicable within 20 days of receipt of such a request, on ways in which KS can avoid and minimize impacts associated with the activity, such as waiting until the end of a Covered Species breeding season, avoiding the use of certain equipment, changing the activity location from one area to another, or restricting the number of hours per day that the activity is conducted. All parties will make a good faith effort to identify such alternatives. KS may proceed with the action using alternative methods to avoid and minimize impacts as long as the agencies determine in writing that the effects to Covered Species and incidental take levels are not materially different than those anticipated under the Agreement and associated Permits.
- f. Pursuant to this Agreement, KS has the right to return to baseline conditions on the Enrolled Property at any time after five years during the term of the Agreement so long as the return to baseline does not result in any take not permitted in the Enhancement of Survival Permit issued with this Agreement. Kamehameha Schools will provide 60-day

notice to the agencies if return to baseline is planned in order to provide the agencies an opportunity to salvage or translocate Covered Species to other suitable habitat, if they so choose.

- g. With 30-day advance notification, allow access to the Enrolled Property by the Service, DLNR, or other agreed-upon party for purposes of ascertaining compliance with this Agreement. Nothing in this Agreement restricts the Service's otherwise applicable authorities to conduct investigations pursuant to 16 U.S.C. 1540.
- h. With 30-day advance notification allow access to the Enrolled Property by the Service, DLNR, or other agreed-upon party to conduct management related activities or in some circumstances relocate individuals of the Covered Species.
- i. Implement all of the Avoidance and Minimization Measures as described in Section 6 (all measures are also provided in table form in Appendix 10).
- j. Except in situations authorized by the Service and DLNR under this Agreement and associated Permit/License (detailed under Section 6, Covered Activities and Protective Measures), refrain from conducting activities likely to result in incidental take of Covered Species.
- k. Notify the agencies of any transfer of ownership of the Enrolled Property at least 120 days prior to the intended ownership transfer.
- l. With a minimum 30-day advance notification, provide access and logistical assistance with surveying and access to the agencies or other qualified party for the monitoring of any Covered Species on the Enrolled Property as described in Section 8.
- m. Conduct monitoring as described if the Service, DLNR, or other cooperating entities are not able to conduct monitoring, as described in Section 8 of this Agreement.
- n. Provide annual reports as per a format agreed to by the Parties to cover the period from July 1st to June 30th every year and submit the report to the Parties by August 21st of each year the Agreement is in effect. The report will describe all covered activities that occurred during the annual period, and results of monitoring efforts. The report will also describe compliance or non-compliance with the terms of this Agreement, problems or challenges, successes, and include any recommendations and adaptive management strategies.

9.2 U.S. FISH AND WILDLIFE SERVICE Responsibilities

- a. Upon signing of the Agreement and a determination that all applicable federal requirements are met, the Service will issue a permit to KS in accordance with ESA section 10(a)(1)(A), authorizing incidental take of the Covered Species as a result of lawful activities within the Enrolled Property. The term of the permit will be 50 years except as described under Modifications below.
- b. Monitor compliance with the terms of the Agreement and provide comments on the annual report.
- c. Provide technical assistance, to the maximum extent practicable. Respond to KS requests for assistance in a timely manner (within 20 days to the maximum extent practical) after a receiving a written request.
- d. Provide staff to survey or assist in the surveys of forest birds, plants, 'Io, bats, and Nēnē on the Enrolled Property as time and budget appropriations allow.
- e. If warranted, recommend procedures that KS can take to avoid future incidental take based on incidental take described in past annual reports.
- f. For situations in which KS cannot implement the Avoidance and Minimization Measures

- during the term of the Agreement the Service will provide technical assistance to KS, to the extent practicable within 20 days of receipt of such a request, on ways in which KS can avoid and minimize impacts associated with the activity.
- g. Provide KS with information/reports by July 15th on work that the USFWS contributed to under this Agreement. Annual reports cover the period from July 1st to June 30th every year the Agreement is in effect.
 - h. Provide staff to assist, as needed and as time and budget appropriations allow, in the implementation of a predator control program with the assistance from KS and the DLNR to address predators likely to impact the Covered Species.
 - i. Provide technical assistance, including recommendations and coordination regarding predator control program, habitat improvements, etc., to KS when requested throughout the term of the Enhancement of Survival Permit, within limits of staff and funding resources.
 - j. To the extent practicable, provide assistance to KS for the submission of applications for cost-share funding and, if awarded, provide technical assistance to KS for implementation. Nothing in this agreement, however, is a requirement that the Service must obligate, appropriate, or expend federal funds. The ability of the Service to provide any future funding assistance, which is subject to the Anti-Deficiency Act, depends on the availability of such funds and the ranking of the Landowner's proposal relative to other competing requests.
 - k. As requested by the Landowner, to the extent practicable, the Service will seek reasonable opportunities to provide funds or technical experts to assist with occupancy surveys for both 'Io and bats.

9.3 DEPARTMENT OF LAND NATURAL RESOURCES Responsibilities

- a. Upon signing of this Agreement, DLNR will issue an Incidental Take License to KS in accordance with HRS §195D-22 authorizing incidental take of the Covered Species as a result of lawful activities within the Enrolled Property. The term of the license will be 50 years except as described under Modifications below.
- b. Provide technical assistance to the maximum extent practicable, when requested. Respond to KS requests for assistance in a timely manner (within 20 days to the maximum extent practical) after receiving a written request.
- c. Monitor SHA compliance with the terms of the Agreement and provide comments on the annual report.
- d. Provide staff to assist, as needed, to survey or assist in the surveys forest birds, plants, 'Io, bats, and Nēnē on enrolled lands as time and budget appropriations allow.
- e. As time and budget appropriations allow DOFAW will conduct predator control and monitoring activities around known Nēnē nesting sites not in the KBCC area during the Nēnē breeding season to include trapping of feral cats and mongoose. Methods will include live and/or kill traps. Trapping around nest sites will be prioritized during the breeding season (from egg-laying through fledging) and will be extended to cover any additional breeding activity if deemed necessary. Traps will be checked once a week. Short grass habitat for Nēnē will be maintained around the Nēnē cabin site if there is potential for nesting. If warranted, recommend procedures that KS can take to avoid future incidental take based on incidental take described in past annual reports.
- f. For situations in which KS cannot implement the Avoidance and Minimization Measures

during the term of the Agreement the DLNR will provide technical assistance to KS, to the extent practicable within 20 days of receipt of such a request, on ways in which KS can avoid and minimize impacts associated with the activity.

- g. Provide KS with information/reports by July 15th on work that the DLNR contributed to under this Agreement. Annual reports cover the period from July 1st to June 30th every year the Agreement is in effect. The report will describe predator control efforts, any occurrences of take, the number and species of any out-plantings completed, and results of monitoring efforts. The report will also describe compliance or non-compliance with the terms of this Agreement, problems or challenges, successes, and include any recommendations and adaptive management strategies.
- h. Provide staff to assist, as needed and as time and budget appropriations allow, in the implementation of a predator control program with the assistance from KS and the Service to address predators likely to impact the Covered Species.
- i. Provide technical assistance, including recommendations and coordination regarding predator control program, habitat improvements, etc., to KS when requested throughout the term of the Incidental Take License, within limits of staff and funding resources.
- j. For Nēnē and forest birds, DOFAW receives Federal Pittman-Robertson funds each year that are available for Nēnē surveys on all islands and can be used for conducting Nēnē and forest birds surveys as described in Sections 8.1 and 8.4, contingent on other budgetary considerations.

10. AGREEMENT DURATION

The Agreement, including the obligations of the Parties and any commitments related to funding, will be in effect for 50 years from the date of its signing. The rights to incidental take will extend for the duration of the section 10(a)(1)(A) permit issued by the Service and the incidental take license issued by the DLNR. The Permits do not extend beyond the life of the Agreement. The Permits may be extended after 50 years as described in section 13.2 (Amendment of the Agreement).

The rights and obligations in this Agreement under State law shall run with the ownership of the Enrolled Property, which shall be recorded by DLNR in the Bureau of Conveyances or the Land Court, as may be appropriate, according to HRS § 195D-22(e).

The Agreement and Permits may be extended beyond their specified durations through amendment, with concurrence of all Parties and in compliance with applicable legal requirements in place at that time.

11. INCIDENTAL TAKE

Incidental take is any take otherwise prohibited, if such taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity (50 CFR 17.3 and HRS § 195D-4). The Permits authorize incidental take of the Covered Species and their progeny, or alteration of occupied habitat, resulting from the implementation of measures and activities specified in this Agreement within the Enrolled Property, from the time this Agreement is signed until the expiration of the Permits.

Nothing in this Agreement prevents KS from implementing other management activities not

described in the Agreement, as long as such actions maintain the original baseline conditions defined herein, are not likely to result in incidental take of the Covered Species and do not adversely affect the net conservation benefits to Covered Species described in Section 7 set forth in the Agreement.

12. FUNDING

KS will provide the necessary funding to implement the required monitoring and reporting (as described in Section 8), avoidance and minimization measures (Section 6), and net benefit measures (Section 7).

To assist them with these obligations, KS may continue to partner with the following organizations, which may commit staff time and/or project funding to the extent they are available through government appropriations, grants, or other sources for the actions described in this Agreement:

- U.S. Fish and Wildlife Service – Monitoring/Reporting.
- Hawai‘i Department of Land and Natural Resources, Division of Forestry and Wildlife – Nēnē Management to include Removal of Predators; Monitoring/Reporting.
- Hawaiian Silversword Foundation and Three Mountain Alliance watershed partnership - Removal of Predators; Restoration Activities; Fences and Ungulate Control; Weed Control; Surveys in the Area Requiring Additional Protective Measures; Monitoring/Reporting.
- U.S. Geological Survey, Biological Services Division – Vegetation Evaluation; Monitoring/Reporting.
- Plant Extinction and Prevention Program - Surveys in the Area Requiring Additional Protective Measures; Monitoring/Reporting (plants only).
- University of Hawai‘i – Monitoring/Reporting

These partners may enhance the quality or frequency of monitoring regimes, conduct Covered Activities (such as predator control and restoration activities) in consultation with KS, and provide reports on their activities. These partners may aid in KS’s implementation of the Agreement, but do not replace KS obligations as described in Section 9.

KS currently has a conservation license agreement with the HSF for work on KS lands.

13. MODIFICATIONS

13.1 Assurances. After the Agreement and Enhancement of Survival Permit is signed, the Service and DLNR may not impose any new requirements or conditions on, or modify any existing requirements or conditions applicable to, the landowner or successor in interest to the landowner, except as stipulated in 50 CFR 17.22(c)(5) and 17.32(c)(5), and HRS §195D-23(a).

13.2. Amendment of the Agreement. Any party may propose amendments to this Agreement to accommodate changed circumstances, in accordance with 50 CFR 13.23 and HRS §195D-23 and other applicable law. The Service and DLNR must approve all proposed amendments that may affect any federal- or state-listed species, respectively. The procedure for amendments is described below.

Minor Amendments:

Minor amendments involve routine administrative revisions and minor changes to operations and management, covered activities implementation, species monitoring, and other activities described in this Agreement that do not diminish the level of the net conservation benefit or increase the anticipated level of take. Such minor amendments do not materially alter the terms of the Agreement and associated Enhancement of Survival Permit. The Parties will use their best efforts to respond to proposed modifications within 60 days of receipt of such notice. Minor amendments will become effective upon the written concurrence of all Parties.

Major Amendments:

Other amendments that alter the level of take likely to occur under the Agreement and Enhancement of Survival Permit, or materially change the activities intended to ensure a net benefit to the Covered Species would be considered major amendments to the Agreement. Two examples of a major amendment would be: 1) adding a new species to the list of Covered Species; 2) changing the Avoidance or Minimization Measures for a Covered Activity in a way that would materially increase the effects to a Covered Species. A major amendment requires the submittal to the Service and DLNR of a written request and implementation of all permit processing procedures applicable to an original Safe Harbor Agreement.

It is anticipated that KS may seek an extension of the existing Agreement and associated Enhancement of Survival Permit at the end of the 50 year term. Such request should be made in writing to the Service and DLNR a minimum of six months prior to the expiration of the Agreement and Enhancement of Survival Permit. If provided for by the regulations existing at that time, the Agreement and Enhancement of Survival Permit will remain valid and in effect during the processing of this request if all regulatory criteria are met.

13.3. Adaptive Management. Adaptive management allows for mutually agreed-upon changes to the Agreement's conservation measures in response to changing conditions or new information. If the conservation measures do not yield the expected results and appear ineffective, then management activities can be changed or alternative activities undertaken to achieve those expected results. Decisions related to adaptive management will be based primarily on an evaluation of the compliance and biological monitoring results detailed in the annual reports.

Adaptive management decisions can be made at any time as deemed necessary by the Parties, however, a major evaluation of this Agreement will be carried out after the tenth annual report is submitted, to ensure that it is achieving its conservation goals. Conservation measures will be evaluated to determine whether they result in increased protection to the Covered Species on the Enrolled Property. The evaluation will also include an assessment of incidental take that has occurred to determine if take associated with the implementation of the Covered Activities may be preventing the recovery of the species and if take can be prevented or reduced through modifications to management actions. If management actions or conservation measures need to be altered to improve benefits for the species, this will be done through mutual agreement of all parties and be documented via written agreement/consent. Strategies to reduce incidental take, if necessary, will be reviewed with KS and implemented where appropriate on a voluntary basis.

13.4. Termination of the Agreement. This Agreement may be terminated by the Permittee in compliance with applicable State and Federal laws and regulations in effect at that time, but in no event may the Permittee seek termination of its Federal obligations under the Agreement until

after the fifth anniversary of the date of the Agreement's signing. If at any time before expiration of this Agreement the Permittee decides to terminate its Federal obligations under this Agreement, or if the Service suspends or revokes the federal Enhancement of Survival Permit under the provisions of Section 13.6 of this Agreement, then the Permittee would no longer be in compliance with its obligations under this Agreement. Such early termination of the federal Enhancement of Survival Permit would be the basis for the Board of Land and Natural Resources (Board) to determine that the Permittee has breached its obligations under the Agreement and has failed to cure the breach in a timely manner, and the effect of the breach is to diminish the likelihood that the Agreement will achieve its goals within the time frames or in the manner set forth in the Agreement, thereby requiring that the Board suspend or rescind the Agreement pursuant to HRS section 195D-22(c). Within one year of termination of the Agreement, KS shall demonstrate to the Agencies that habitat and/or species population levels are equal to or greater than the applicable baseline levels established in this Agreement.

13.5. Expiration of the Agreement. The Permittee has the right to return the Enrolled Property to baseline conditions during and/or at expiration of this Agreement, provided a net benefit is achieved for each of the Covered Species or species groups, as specified in Section 7. Within one year of termination of the Agreement, KS shall demonstrate to the Agencies that habitat and/or species population levels are equal to or greater than the applicable baseline levels established in this Agreement.

13.6. Suspension or Revocation. The Service may suspend or revoke the section 10(a)(1)(A) permit for cause in accordance with the laws and regulations in force at the time of such suspension or revocation. The Service also, as a last resort, may revoke the permit in accordance with applicable regulations in effect at the time (currently codified at 50 CFR 17.22(c)(7) and 17.32 (c)(7)). Prior to revocation, the Service would attempt to remedy the situation pursuant to 50 C.F.R. 17.22(c)(7). The DLNR may suspend or revoke the state incidental take license for cause pursuant to HRS §195D-22(c).

13.7. Baseline Adjustment. *Force majeure* events such as lava flows, volcanic eruptions, hurricanes, rainstorms, severe drought, lethal forest fires, and insect/disease epidemics are beyond the reasonable control of the Permittee, and could either extirpate the Covered Species from the Enrolled Property or render their habitat on the Enrolled Property unsuitable for continued occupation. For Covered Species natural senescence and death may also occur. These events may reduce Covered Species population numbers or habitat below original baseline conditions through no fault of or negligence of the Permittee. In such circumstances the Parties shall work collaboratively to reach agreement to revise the baseline conditions to reflect the new circumstances.

13.8. Remedies. Each Party shall have all remedies otherwise available to enforce the terms of the Agreement and the Permits, except that no Party, either in a personal or fiduciary capacity, shall be liable in damages for any breach of this Agreement, any performance or failure to perform an obligation under this Agreement or any other cause of action arising from this Agreement.

13.9. Dispute Resolution. The Parties agree to work together in good faith to resolve any disputes, using dispute resolution procedures agreed upon by all Parties.

14. ADDITIONAL MEASURES

14.1. Neighboring Lands. In general, the Service will make every effort to include neighboring landowners as signatory parties to a Safe Harbor Agreement. If the Permittee's voluntary conservation actions result in Covered Species' occupying adjacent properties not covered by a Safe Harbor Agreement, the Service will use the maximum flexibility allowed under the ESA to use the existing incidental take permit to minimize neighboring property owners' liabilities for these Covered Species. Implications to neighboring landowners with non-enrolled lands will be determined on a case-by-case basis.

14.2. Succession and Transfer. This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors and transferees, in accordance with applicable regulations (50 CFR 13.24 and 13.25). The rights and obligations under this Agreement and the State's Incidental Take License shall run with the ownership of the Enrolled Property and are transferable to subsequent property owners pursuant to HRS §195D-22(d). Transfer of the Federal Enhancement of Survival Permit to any successor or transferee must be done in accordance with 50 CFR 13.24 and 13.25. In the event that Permittee decides to transfer ownership of the Enrolled Property to another party(ies), the Permittee will notify the Service and DLNR at least 120 days prior to the intended ownership transfer to allow the agencies the opportunity to contact the intended new property owner(s).

14.3. Reassignment and Transfer of Baseline Responsibility ("Shifting Baseline" Requirements). In some cases, the Permittee may wish to modify or develop portions of original Baseline wildlife habitat, in exchange for creating an equivalent amount of occupied habitat in areas where the Baseline was originally zero. The amount of Baseline habitat and the Baseline number of Covered Species must remain the same before and after the transfer. If possible, the Covered Species from the original Baseline area may be relocated to the newly created habitat or to suitable habitat on other ownerships, as approved by the Service and DLNR. The Permittee must request and receive written approval to transfer and reassign Baseline responsibility and the subsequent incidental taking from the Service and DLNR through a permit amendment process in accordance with applicable federal and state law before carrying out modification of original Baseline habitat. In addition, the Permittee must give the Service and DLNR a minimum of a 60-day prior notice to remove any remaining species from the former Baseline habitat to be impacted, and no impacts may occur during the breeding season of Covered Species.

14.4. Availability of Funds. Implementation of this Agreement by the Service is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds. The Parties acknowledge that the Service and DLNR will not be required under this Agreement to expend any Federal or State agency's appropriated funds unless and until an authorized official of that agency affirmatively acts to commit to such expenditures as evidenced in writing.

14.5. No Third-Party Beneficiaries. This Agreement does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to this Agreement to maintain a suit for personal injuries or damages pursuant to the provisions of this Agreement. The duties, obligations, and responsibilities of the Parties to this Agreement with respect to third parties shall remain as imposed under existing law.

14.6. Other Listed Species, Proposed and Candidate Species, and Species of Concern. This

Agreement covers one species proposed for listing as threatened or endangered, the ‘I‘iwi. The possibility exists that other listed, proposed or candidate species or species of concern, in addition to the ‘I‘iwi, may occur in the future on the Enrolled Property. If biological surveys determine one or more of these species are present on the Enrolled Property, the Parties may, at the Permittee’s request, and after compliance with applicable legal requirements, agree to amend the Agreement and Permits to cover additional species. If all individuals of the listed, proposed, or candidate species, or species of concern are present as a direct or indirect result of the Permittee’s voluntary conservation actions through this Agreement then the baseline for these additional species will be set at zero in the amended Agreement. However, if the presence of individuals of the listed, proposed, or candidate species, or species of concern on the Enrolled Property is not a result of the Permittee’s voluntary conservation actions through this Agreement then the baseline for these additional species may be set at a number or area of Baseline habitat above zero.

14.7. Notices and Reports. Any notices and reports, including monitoring and annual reports, required by this Agreement shall be delivered to the persons listed below, as appropriate. Names and addresses may be changed by written notice to all Parties.

Permittee
 Director, Natural and Cultural Resources
 Kamehameha Schools
 567 South King Street, Suite 200
 Honolulu, Hawai‘i 96813

Field Supervisor, Pacific Islands Office
 U.S. Fish and Wildlife Service
 300 Ala Moana Boulevard, Room 3-122
 P.O. Box 50088
 Honolulu, Hawai‘i 96850

Wildlife Program Manager
 Hawai‘i Department of Land and Natural Resources
 Division of Forestry and Wildlife
 1151 Punchbowl Street
 Honolulu, Hawai‘i 96813

14.8. Native Rights. Nothing in this Agreement or the Permits affects the exercise of native Hawaiian rights as guaranteed by Haw. Const. Art. XII, § 7. KS will not be held responsible for impacts by parties not under the control of KS that exercise such native Hawaiian rights without obtaining an access agreement, or by parties that trespass on the property. However, nothing in this paragraph shall be construed as affecting the obligations of such parties to comply with applicable Federal and State laws and regulations.

14.9. Relationship to the ESA and Other Authorities. The terms of this Agreement shall be construed in accordance with the ESA and other applicable laws. Nothing in this Agreement is intended to supersede the requirements of the ESA or limit the authority of the Service to enforce or otherwise fulfill its responsibilities under the ESA. Nothing in this Agreement will limit the right or obligation of any federal agency to engage in consultation required under Section 7 of

the ESA or other federal law.

14.10. Applicable Laws. All activities undertaken pursuant to this Agreement must be in compliance with all applicable state and federal laws and regulations.

14.11. No Federal Contract. Notwithstanding any language to the contrary in this Agreement, this Agreement is not intended to create, and shall not be construed to create, an enforceable contract between the Parties.

15. REFERENCES CITED

Banko, W. E., and P. C. Banko. 2009. Decline and extinction in the historic period. Chapter 2 in T. K. Pratt, C. T. Atkinson, P. Banko, J. Jacobi, and B. L. Woodworth (Eds.), *Conservation Biology of Hawaiian Forest Birds: Implications for island avifauna*. Yale University Press, New York, U.S.A.

Bonaccorso, F. and C. Pinzari. March 2010. 2009 Progress Report for Three Mountain Alliance: Hawaiian Hoary Bat Ultrasound Surveys at Keauhou Ranch and Lupea. 5pp

Camp, R.J, P.M. Gorresen, T.K. Pratt, and B.L. Woodworth. 2009. Population Trends of Native Hawaiian Forest Birds 1976-2008. Hawai'i Cooperative Studies Unit Technical Report HCSU-012. 120 pp.

Camp, R.J., T.K. Pratt, J.D. Jacobi, P.M Gorresen, and T. Rubenstein. 2010. Status and trends of native birds in the Keauhou and Kīlauea Forest, Hawai'i Island. Hawai'i Cooperative Studies Unit Technical Report HCSU-016. University of Hawai'i at Hilo. 63 pp., incl. 4 figures, 8 tables & 3 appendices.

Clarke, G. G., L. W. Cuddihy, J. A. Davis, S. J. Anderson. 1983. A botanical survey of Keauhou Ranch and Kīlauea Forest, Hawai'i with emphasis on the endangered plant species *Vicia menziesii* Spreng. Endangered Plant Species Program, Department of Land and Natural Resources, Division of Forestry and Wildlife, Hilo, Hawaii. 221 pp.

Fraiola, H and Rubenstein, T. 2007. Endangered Plant Distribution Kamehameha Schools Lands at Kīlauea and Keauhou. Report prepared for 'Ōla'a-Kīlauea Partnership. June5, 2007. 31pp

Freed, L.A. 2001 Significance of old-growth forest to the Hawai'i 'Ākepa. *Studies in Avian Biology* 22:173-184.

Jacobi, J.D. 1989. Technical Report 68 Vegetation Maps of Upland Plant Communities on the Islands of Hawai'i, Maui, Moloka'i, and Lāna'i. Cooperative National Park Resources Studies Unit, University of Hawai'i at Manoa. 25 pp.

Gorresen, P. M., R. J. Camp, J. L. Klavitter, and T. K. Pratt. 2008. Abundance, distribution and population trend of the Hawaiian Hawk: 1998-2007. Hawai'i Cooperative Studies Unit Technical Report HCSU-009. University of Hawai'i at Hilo. 53 pp., incl. 8 figures, 3 tables & 1 appendix.

- Hawai‘i Department of Land and Natural Resources. 2010. Nēnē surveys. Annual report. Wildlife Restoration Program.
- Hawai‘i Department of Land and Natural Resources. 2012. Kaua‘i Nēnē Relocation Project: Workplan. Division of Forestry and Wildlife, January 15, 2012. Honolulu, Hawai‘i. 68 pp.
- Hawai‘i Department of Land and Natural Resources. 2015. Hawai‘i’s State Wildlife Action Plan. Prepared by H. T. Harvey and Associates, Honolulu, Hawai‘i.
- Price, J. and J. D. Jacobi 2007. Rapid assessment of vegetation at six potential ‘Alalā release sites on the island of Hawai‘i. Hawai‘i Cooperative Studies Unit Technical Report HCSU-006. University of Hawai‘i at Hilo. 37 pp., incl. 3 figures, 8 tables, & 3 appendices.
- U.S. Fish and Wildlife Service. 1984a. The Hawaiian Hawk Recovery Plan, dated May 9, 1984, prepared by the U.S. Fish and Wildlife Service under contract with Curtice R. Griffin, Missouri Cooperative Wildlife Research Unit.
- U.S. Fish and Wildlife Service. 1984b. *Vicia menziesii* recovery plan. U.S. Fish and Wildlife Service, Portland, Oregon. 54 pp.
- U.S. Fish and Wildlife Service. 1996. Big Island Plant Cluster Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 202+ pp.
- U.S. Fish and Wildlife Service. 1998a. Recovery Plan for the Hawaiian Hoary Bat. U.S. Fish and Wildlife Service, Portland, Oregon. 50pp.
- U.S. Fish and Wildlife Service. 1998b. Recovery Plan for Four Species of Hawaiian Ferns. U.S. Fish and Wildlife Service, Portland, Oregon. 78 pp.
- U.S. Fish and Wildlife Service. 1998c. Big Island II: Addendum to the Recovery Plan for the Big Island Plant Cluster. U.S. Fish and Wildlife Service, Portland, Oregon. 80 pp + appendices.
- U.S. Fish and Wildlife Service. 2004. Draft Revised Recovery Plan for the Nēnē or Hawaiian Goose (*Branta sandvicensis*). U.S. Fish and Wildlife Service, Portland, Oregon. 148 + xi pp.
- U.S. Fish and Wildlife Service. 2006. Revised Recovery Plan for Hawaiian Forest Birds. Region 1, Portland, Oregon. 622 pp.
- U.S. Fish and Wildlife Service. 2009. Revised Recovery Plan for the ‘Alalā (*Corvus hawaiiensis*). Portland, Oregon. xiv + 104 pp.
- U.S. Fish and Wildlife Service. 2012a. *Vicia menziesii* (Hawaiian Vetch) 5-Year Review Summary and Evaluation. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office.
- U.S. Fish and Wildlife Service. 2012b. *Phyllostegia racemosa* (Kiponapona) 5-Year Review Summary and Evaluation. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office.

Zimpfer, J. and F. Bonaccorso. 2010. Barbed wire fences and Hawaiian Hoary Bats: what we know. Hawai'i Conservation Conference abstract.

[\(Remainder of page intentionally left blank. Signature page follows.\)](#)

IN WITNESS WHEREOF, THE PARTIES HERETO have executed this Safe Harbor Agreement to be in effect as of the date last signed below.

Permittee

Date

Chairperson
Board of Land and Natural Resources
Hawai'i Department of Land and Natural Resources

Date

Deputy Regional Director
U.S. Fish and Wildlife Service
Portland, Oregon

Date

LIST OF APPENDICES

- Appendix 1. Maps of Enrolled Lands
- Appendix 2. Technical Report of Native Bird Populations on Kamehameha Schools Keauhou and Kīlauea Lands
- Appendix 3. Technical Report of the Hawaiian Hoary Bat Populations on Kamehameha Schools Keauhou and Kīlauea Lands
- Appendix 4. Baseline Information on Endangered Plant Populations on Kamehameha Schools Keauhou and Kīlauea Lands
- Appendix 5. Species Accounts
- Appendix 6. Nēnē Population on Kamehameha Schools Keauhou and Kīlauea Lands
- Appendix 7. Protocol for Handling Downed or Injured Wildlife
- Appendix 8. Reporting Template
- Appendix 9. Inventory/Monitoring Protocols
- Appendix 10. Avoidance and Minimization Measures