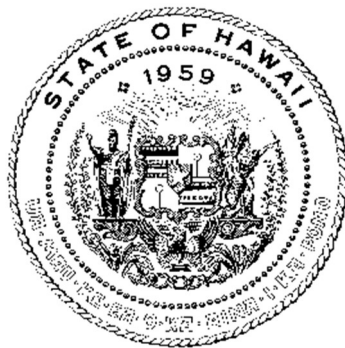


**REPORT TO THE THIRTY-SECOND LEGISLATURE
STATE OF HAWAII
2024 REGULAR SESSION**

**STATUS OF THE ISSUANCE OF INCIDENTAL TAKE
LICENSES FOR ENDANGERED, THREATENED, PROPOSED,
AND CANDIDATE SPECIES
AND
THE CONDITION OF THE ENDANGERED SPECIES TRUST FUND
FOR THE PERIOD JULY 1, 2022 – JUNE 30, 2023
AND
SAFE HARBOR AGREEMENTS SUMMARY**



Prepared by

**THE STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE**

In response to Section 195D-26, Hawaii Revised Statutes
and
Act 37, Session Laws of Hawaii 2016

Honolulu, Hawaii
December 2023

**STATUS OF THE ISSUANCE OF
INCIDENTAL TAKE LICENSES FOR ENDANGERED, THREATENED,
PROPOSED, AND CANDIDATE SPECIES
AND
THE CONDITION OF THE ENDANGERED SPECIES TRUST FUND
FOR THE PERIOD JULY 1, 2022 – JUNE 30, 2023**

PURPOSE

Act 380, Session Laws of Hawai‘i (SLH) 1997, amended the State Endangered Species Law, Chapter 195D, Hawai‘i Revised Statutes (HRS), to provide for the preparation and implementation of Habitat Conservation Plans (HCPs) and Safe Harbor Agreements (SHAs) and to provide additional incentives for private landowners to recover and protect threatened and endangered species on their lands. Specifically, Section 195D-26, HRS, requires that an annual report be prepared by the Department of Land and Natural Resources (DLNR) on:

- The effectiveness of HCPs and SHAs issued under Chapter 195D, HRS, and the status of all species for which incidental take licenses have been issued;
- A description of the condition of the Endangered Species Trust Fund (ESTF) established under Section 195D-31, HRS; and
- Recommendations to further the purposes of Chapter 195D, HRS.

Incidental Take Licenses (ITLs) are issued in conjunction with an approved HCP or SHA for the legal take¹ of threatened or endangered species if such take is incidental to an otherwise lawful activity. Habitat Conservation Plans and Safe Harbor Agreements are important management tools in the State of Hawai‘i and accomplish the following:

- Resolve conflicts between endangered species protection and legitimate use of natural resources;
- Contribute to endangered species recovery efforts through partnerships and proactive planning; and
- Provide essential ecological information for Hawai‘i’s resource managers by requiring a strong monitoring component in all HCPs.

This annual report is submitted to fulfill the reporting requirement for Fiscal Year (FY) 2023 and provides detailed information for 11 HCPs and six SHAs for which ITLs have been issued. The report is organized by HCP project type, provides an overview of SHAs, describes the condition of the ESTF, and concludes with recommendations to further the purposes of Chapter 195D, HRS.

¹ “Take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect endangered or threatened species of aquatic life or wildlife, or to cut, collect, uproot, destroy, injure, or possess endangered or threatened species of aquatic life or land plants, or to attempt to engage in any such conduct (§195D-2, HRS).

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SUMMARY OF INCIDENTAL TAKE STATUS FOR ENDANGERED WILDLIFE SPECIES COVERED BY HABITAT CONSERVATION PLANS

General locations for the HCPs are shown in Figure 1.

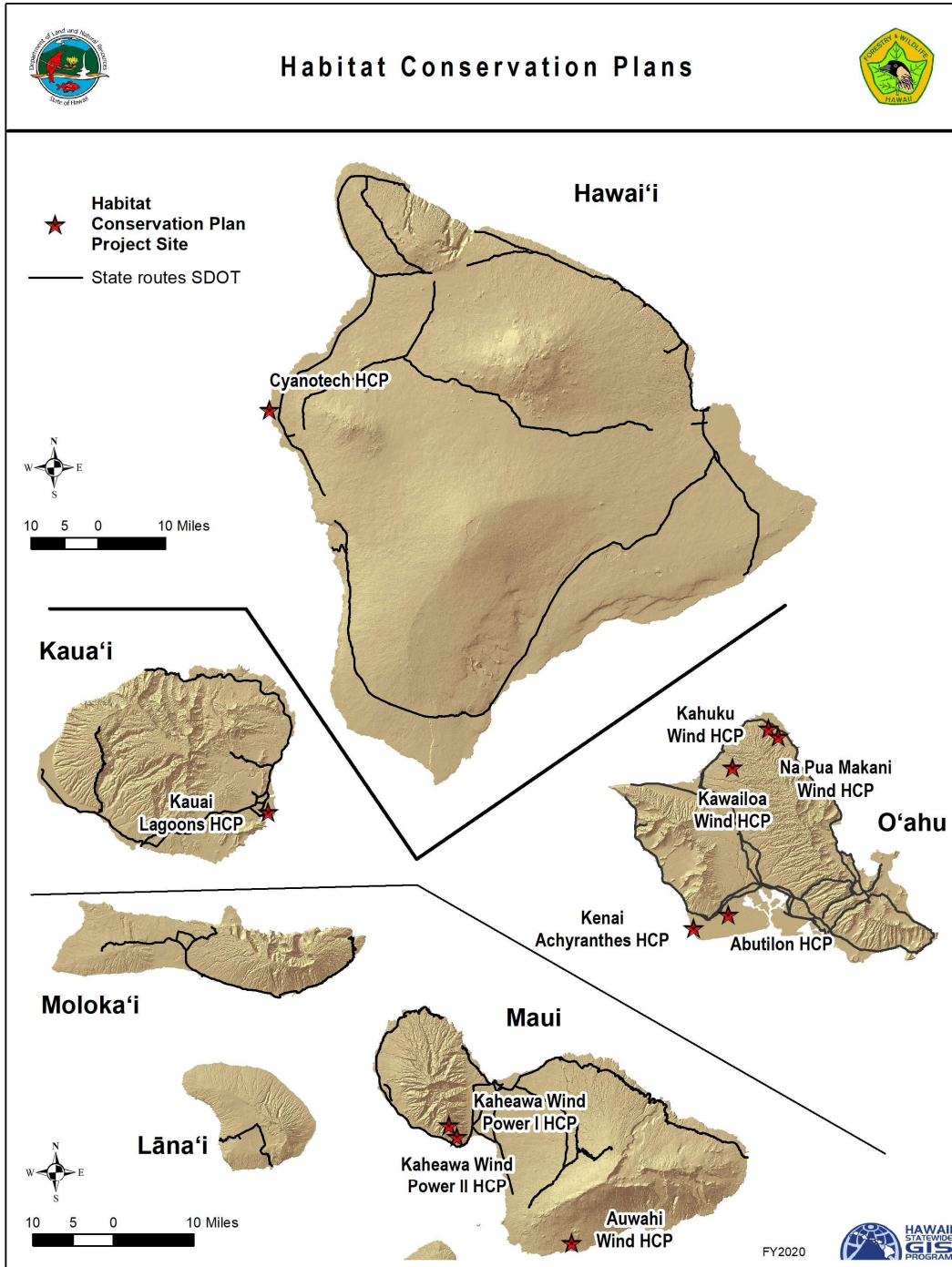


Figure 1. Habitat Conservation Plan Locations

A summary of permit status combining take of all Covered Species of wildlife since ITLs were issued is depicted in Figure 2a. The incidental take shown combines observed, modeled, and indirect take to estimate a total take as of the end of FY 2023. This summary shows that for all species the estimated take is substantially below the total permitted take level. There was no take of plant species in FY 2023 for the two HCPs that cover plant species. Those two HCPs permitted take of plants occurred during a limited timeframe and do not have ongoing take.

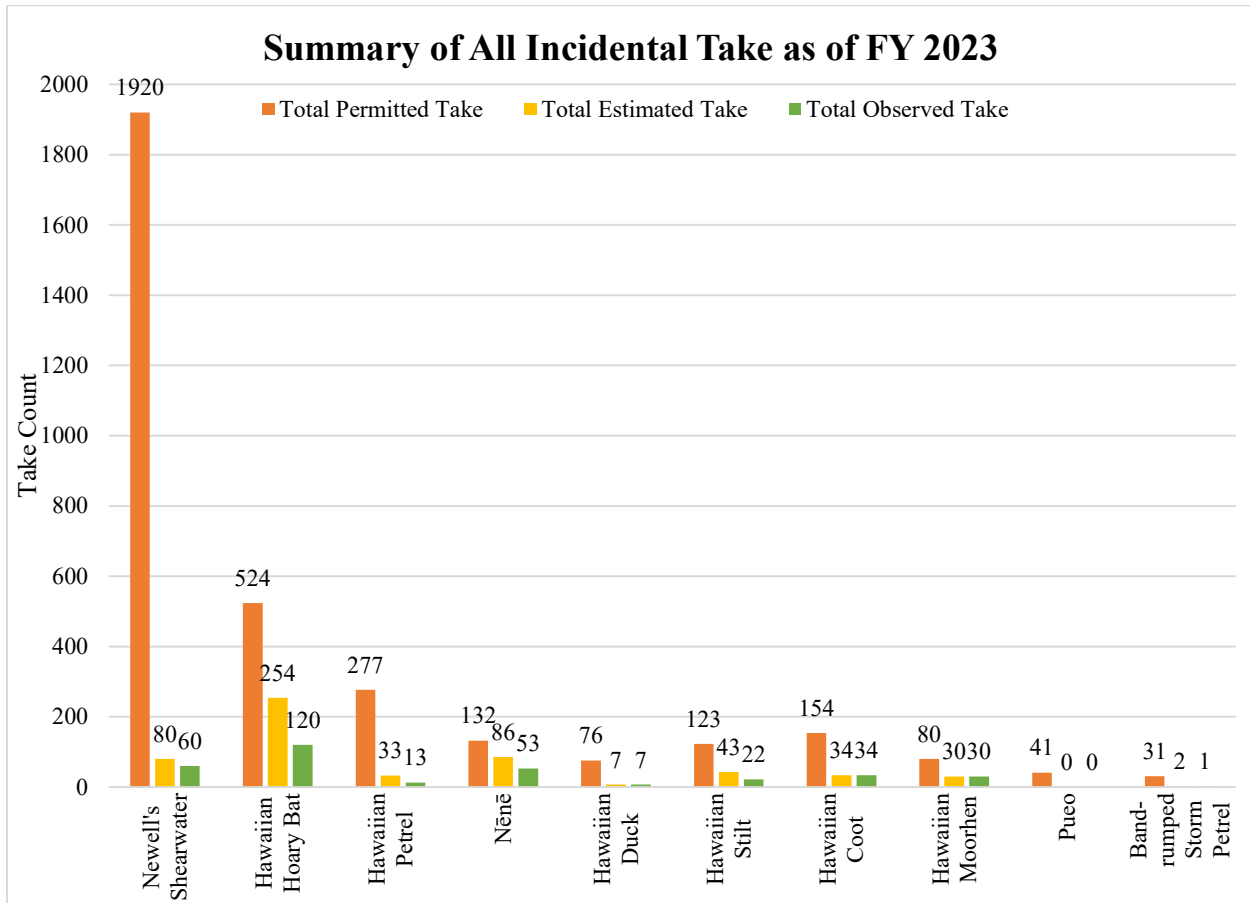


Figure 2a. Total permitted take, observed take, and estimated take (includes indirect take and, for wind energy sites, modeled unobserved take at the 80% upper confidence level) of HCP-covered wildlife species for all approved HCPs as of June 30, 2023.

Note: Estimated take for HCP-covered species under the Hōkūala or Kaua‘i Lagoon HCP not included.

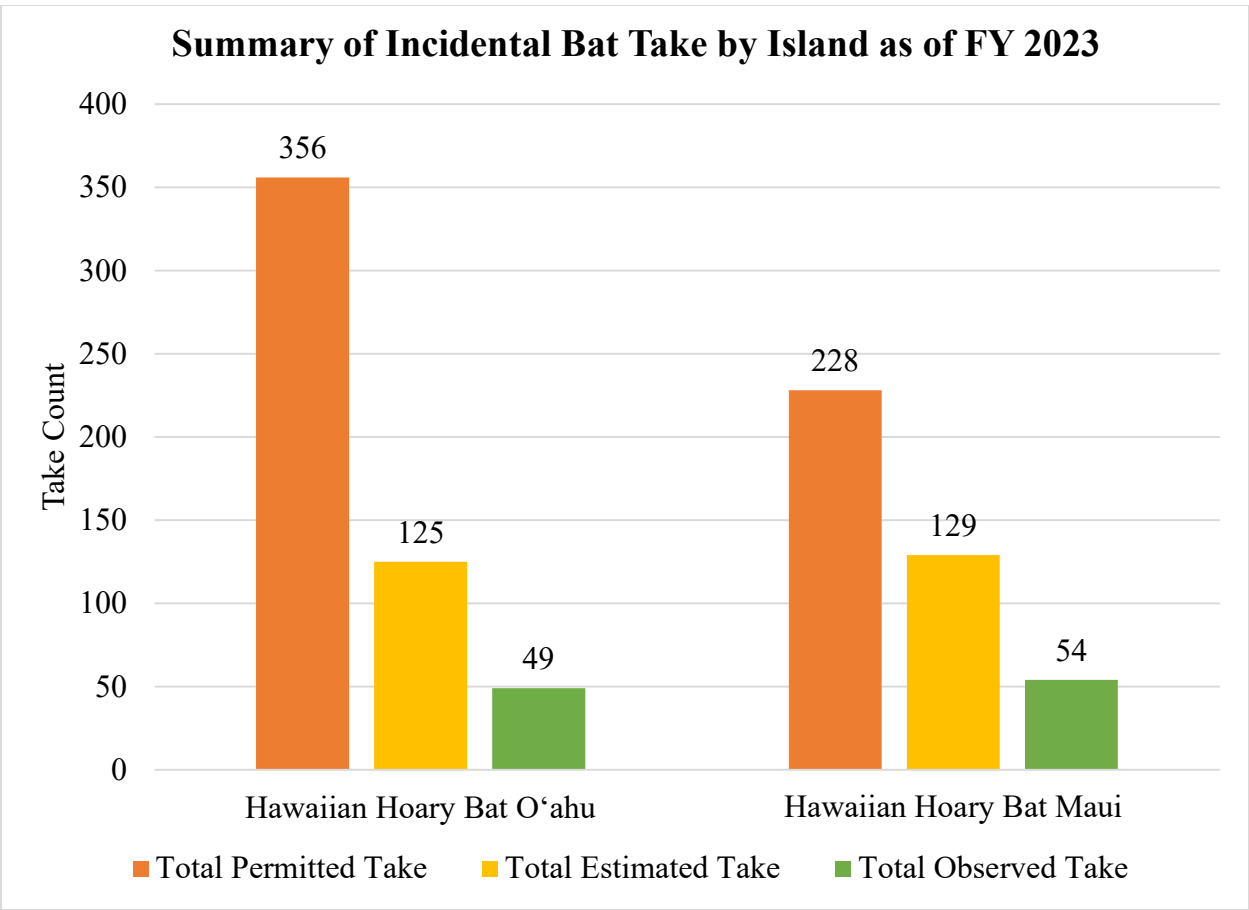


Figure 2b. Total permitted take, observed take (includes systematic observations only), and estimated take (includes indirect take and, for wind energy sites, modeled unobserved take at the 80% upper confidence level) for the Hawaiian Hoary Bat for approved HCPs on O'ahu and Maui as of June 30, 2023.

**SUMMARY OF HABITAT CONSERVATION PLANS AND ASSOCIATED
INCIDENTAL TAKE LICENSES BY PROJECT TYPE**

Wind Energy Facilities and Structures

Kaheawa Pastures Wind Energy Generation Facility (KWP I) Habitat Conservation Plan, Maui, Hawai'i. Approved 2006.

ITL Licensee: Kaheawa Wind Power, LLC
(Terraform Power owns KWP, LLC)

Project: Twenty wind turbine generators (WTGs) with a total 30-megawatt (MW) energy generating capacity

ITL Duration: January 30, 2006 – January 30, 2026 (as of end of FY 2023, 17.5 years (87.5%) through the permit term)



Kaheawa Wind Power project in West Maui above Ma'alaea.

Take Authorization Over 20-year Term:

Table 1. Take Authorization for KWP I.

Common Name	Scientific Name	Baseline Limit (Tier 1) ¹	Higher Limit (Tier 2) ¹
‘Ua‘u or Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	25	38
‘A‘o or Newell’s Shearwater	<i>Puffinus auricularis newelli</i>	4	8
Nēnē or Hawaiian Goose	<i>Branta sandvicensis</i>	60	n/a
‘Ōpe‘ape‘a or Hawaiian Hoary Bat	<i>Lasiurus cinereus semotus</i>	20	50 ^a

¹ Take authorization is delineated by Baseline and Higher Limits (Tiers). Upon reaching Higher Limits additional mitigation measures or funding are triggered to ensure that mitigation keeps pace with take.

^a This higher limit for the Hawaiian Hoary Bat was approved by minor amendment in 2016.

Status of ITL: There was take of three Nēnē and one ‘Ōpe‘ape‘a (Table 2).

Table 2. Documented fatalities of HCP covered species during the reporting period.

Common Name	FY2023 Fatalities
Nēnē	3
‘Ōpe‘ape‘a	1

Beginning in April 2015, the downed wildlife search area was reduced relative to the previous 10 years and now consists of graded roads and WTG pads found within a 70-meter radius circle centered on each turbine. Beginning in October 2015, canine-assisted searching was implemented, with visual searching as a secondary method. In FY 2023, all searches were performed by a canine-assisted team.

In October 2019, wildfires destroyed bat monitoring equipment at the wind turbines and as a result the number of ground-based acoustic detectors was reduced from nine to five thereafter.

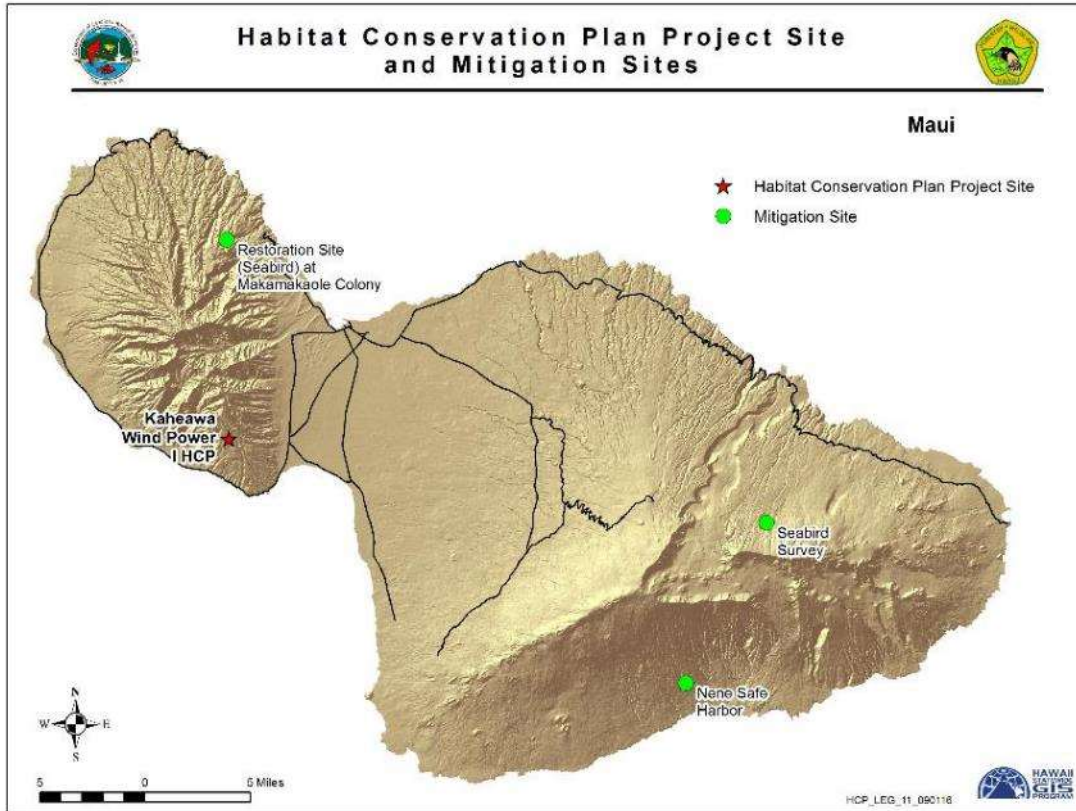


Figure 3. Location of Kaheawa Wind Power I HCP and Mitigation Sites

Table 3 provides an estimate of the overall total adjusted take that has occurred since KWP I ITL issuance. The take rate through FY 2023 for all covered species would keep the project under the permitted take.

Table 3. Total observed fatalities and estimated total take since ITL issuance under the KWP I ITL as of June 30, 2023.

Common Name	Total Observed Take ¹	Estimated Unobserved Take ²	Indirect Take using HCP multipliers	Total Estimated Take
Hawaiian Petrel	7	10	5	23
Nēnē	27	25	2	54
Hawaiian Hoary Bat	10	18	4	32

¹ Excludes takes that were incidental and not observed during systematic monitoring (incidental takes are evaluated as part of the EoA modeling software and therefore accounted for in the unobserved take).

² Based on the 80% credible maximum using the following model: Dalthorp, D., M. M. P. Huso, and D. Dail. 2017. Evidence of absence (v 2.0) software user guide: U.S. Geological Survey Data Series 1055.

In addition to the total estimated take, accrued lost productivity from mortality of individuals due to the lag in mitigation are also evaluated and mitigated for, but are not counted against permitted take levels. Accrued lost productivity calculations for the Nēnē are not currently calculable without mitigation data. Accrued lost productivity calculations for Hawaiian Petrel is unavailable at the time of this report. Although not listed as endangered on Maui it is noteworthy that 16 fatalities of the Hawaiian Short-eared Owl of Pūeo (*Asio flammeus sandwichensis*) have been reported in the KWP I project vicinity since the ITL was issued, all

prior to FY 2020. Reports indicate that the majority of the fatalities, not necessarily all, are due to project operations.

Mitigation Status:

Hawaiian Petrel & Newell's Shearwater. Mitigation for the two seabird species (Hawaiian Petrel and Newell's Shearwater) is being implemented concurrently with Kaheawa Wind Power II. The primary mitigation entails management of two constructed (approximately four acres) predator-free fenced enclosures (one for each species), provisioned with artificial burrows and social attraction, at the Makamaka'ole site in West Maui. Three species of seabirds, Hawaiian Petrel, Newell's Shearwater, and Bulwer's Petrel (*Bulweria bulwerii*) have frequented burrows within both enclosures between the months of March and October since June 22, 2015. Only Newell's Shearwater nesting activity has been observed in FY 2023. A total of 22 burrows were consistently active during the breeding season, 14 of which were reproductively active with 18 eggs and one chick produced. As of December 5th, 2022, KWP projects completed their mitigation obligations at Makamaka'ole, credited with 148 adults and two fledglings. After the transfer of management of Makamaka'ole to DOFAW in February 2023, Brookfield became aware that portions of the predator enclosures at the site required repair or replacement. Brookfield will discuss this issue with DOFAW and USFWS during FY 2024 to learn more about the nature and extent of the potential problem.

Work in FY 2023 at Makamaka'ole included predator trapping and tracking, ongoing maintenance of both enclosures, seabird social attraction, artificial burrow checks, and game camera operation. Traps and bait stations were deployed and a total of 39 mongooses, 54 rats and 16 mice were captured. All mongooses were captured outside the enclosures while 26 of the rats and 11 mice were captured inside the enclosures.

To mitigate for the loss of productivity accrued from Hawaiian Petrel estimated take not yet mitigated for at Makamaka'ole, Hawaiian Petrel nesting colony management and predator control by Pūlama Lāna'i on Lāna'i Island was conducted during FY 2020, from which 36 fledglings were produced.

In FY 2023, the two KWP projects adaptively managed their seabird mitigation programs by providing funds to Pūlama Lāna'i. A total of 9 cats and a minimum of 228 rodents (understood to be an extreme underestimate) from the 150-acre petrel nesting area in FY 2023. During the 2022 breeding season 224 known burrows were estimated to have produced 78 Hawaiian petrel chicks above baseline. Results from the 2023 breeding season will be reported in the FY 2024 annual report.

At the close of this reporting period, KWP I was awarded 89.72 mitigation credits for the Hawaiian petrels across projects. In FY 2023, USFWS acknowledged KWP I met its Hawaiian Petrel mitigation obligation.

Nēnē. Nēnē baseline mitigation continued through funding operation of the Haleakalā Ranch pen in FY 2023. Management at the pen included: monitoring; vegetation management; fence, pond, and infrastructure maintenance; road improvements; and predator control. KWP I was informed of the funding amount used from 2020 to 2023 and is working with DOFAW to correct funding inconsistencies and Nēnē gosling credit allotment. Nēnē fledgling production credit will

be discussed with KWP I and DOFAW for the five goslings produced in FY 2023 . In FY 2024, KWP I will continue co-management of the Haleakalā Ranch release pen concurrently with the KWP II Wind Project.

Hawaiian Hoary Bat. Baseline mitigation for 20 bats was funded in 2006 and is complete. A mitigation project accounting for take of an additional 15 bats was completed in FY 2020 for a total contract cost of \$750,000. This mitigation project consisted of Hawaiian Hoary Bat ecological research in East Maui, contracted to H.T. Harvey Ecological Consultants, and evaluated the species' habitat preferences, prey availability, foraging ranges, core use areas, and diet over 34,226 hectares on Haleakalā. Bat detectors were installed at 45 sites in nine habitat types for a total of 315 deployments. To radio tag bats, mist netting occurred from June 2017 through September 2018 in three general areas: Haleakalā National Park, Olinda Road, and Lower Kula. H.T. Harvey researchers radio-tracked 16 bats on 109 nights during the mist netting period, and sampled insects in the nine habitat types for seven sampling periods from August 2017 through August 2018. From the acoustic data it was determined bats spent more time foraging in gulch, low-density developed, and grassland habitats, although differences existed between months.

The study showed bats were much less likely to call on nights with rainfall. The mean core use area used by the bats for foraging was 3,700 hectares, but there was a wide range of values among individual bats. Most guano samples were collected from adult males, adult females, and subadult females, and showed bats ate primarily moths (68%), as well as flies (12%), termites (9%), crickets and katydids (5%), beetles (4%), and true bugs (2%). Insects eaten were both native and non-native, and the dietary data suggested the bats were somewhat selective in their prey choices when compared to the abundance of insect species available in the insect samples. Finally, the results demonstrated the Hawaiian Hoary Bats on Maui were able to forage in different habitats during different seasons.

KWP I is also partially funding another Hawaiian Hoary Bat ecological research project on Hawai'i Island contracted to the U.S. Geological Survey Hawaiian Hoary Bat Research Group that began in FY 2018. This project is intended to better inform future bat habitat restoration and conservation and provides mitigation benefits to account for the remaining 15 bats of Tier 2. The total project contribution to this contract, in combination with KWP II, was \$1,831,500, exceeding the \$1.7M obligation. This mitigation project is studying movements, roosting behavior, and diet of the Hawaiian Hoary Bat, and is expected to be completed in December 2023 with completion of the final publications, technical results, and data releases.

Kaheawa Wind Power II Wind Energy Generation Facility (KWP II) Habitat Conservation Plan, Maui, Hawai‘i. Approved 2012.

ITL Licensee: Kaheawa Wind Power II, LLC
(Note that Terraform Power owns KWP II, LLC)

Project: Fourteen WTGs with a total 21-MW energy generating capacity. Project is adjacent and downslope of KWP I

ITL Duration: January 5, 2012 – January 30, 2032 (as of end of FY 2023, 11.5 years (57.5 %) through the permit term)



Kaheawa Wind Power II project in West Maui above Ma‘alaea.

Take Authorization Over 20-year Term:

Table 4. Take Authorization for KWP II.

Common Name	Scientific Name	Level of Take ¹	5-year Limit	20-year Limit
‘Ua‘u or Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	Tier 1	8 adults/ juveniles & 4 chicks/eggs	19 adults/ juveniles & 9 chicks/eggs
		Tier 2	16 adults/ juveniles & 8 chicks/eggs	29 adults/ juveniles & 14 chicks/eggs
‘A‘o or Newell’s Shearwater	<i>Puffinus auricularis newelli</i>	Tier 1	2 adults/ juveniles & 2 chicks/eggs	2 adults/ juveniles & 2 chicks/eggs
		Tier 2	5 adults/ juveniles & 3 chicks/eggs	5 adults/ juveniles & 3 chicks/eggs
Nēnē or Hawaiian Goose	<i>Branta sandvicensis</i>	Tier 1	8 adults/ juveniles & 1 fledgling	18 adults/ juveniles & 3 fledglings
		Tier 2	12 adults/ juveniles & 3 fledgling	27 adults/ juveniles & 3 fledgling
		Tier 3 ³	Not applicable	44 adults
‘Ōpe‘ape‘a or Hawaiian Hoary Bat ²	<i>Lasiurus cinereus semotus</i>	Tier 1	7 individuals	7 bats
		Tier 2	11 individuals	11 bats
		Tier 3 ³	Not applicable	30 bats
		Tier 4 ³	Not applicable	38 bats

¹ Take authorization is delineated by Tiers. Upon reaching higher Tiers additional mitigation measures or funding are triggered to ensure that mitigation keeps pace with take.

² Minor amendment to clarify permitted bat take processed on November 26, 2014.

³ New tier approved in a major amendment on November 8, 2019.

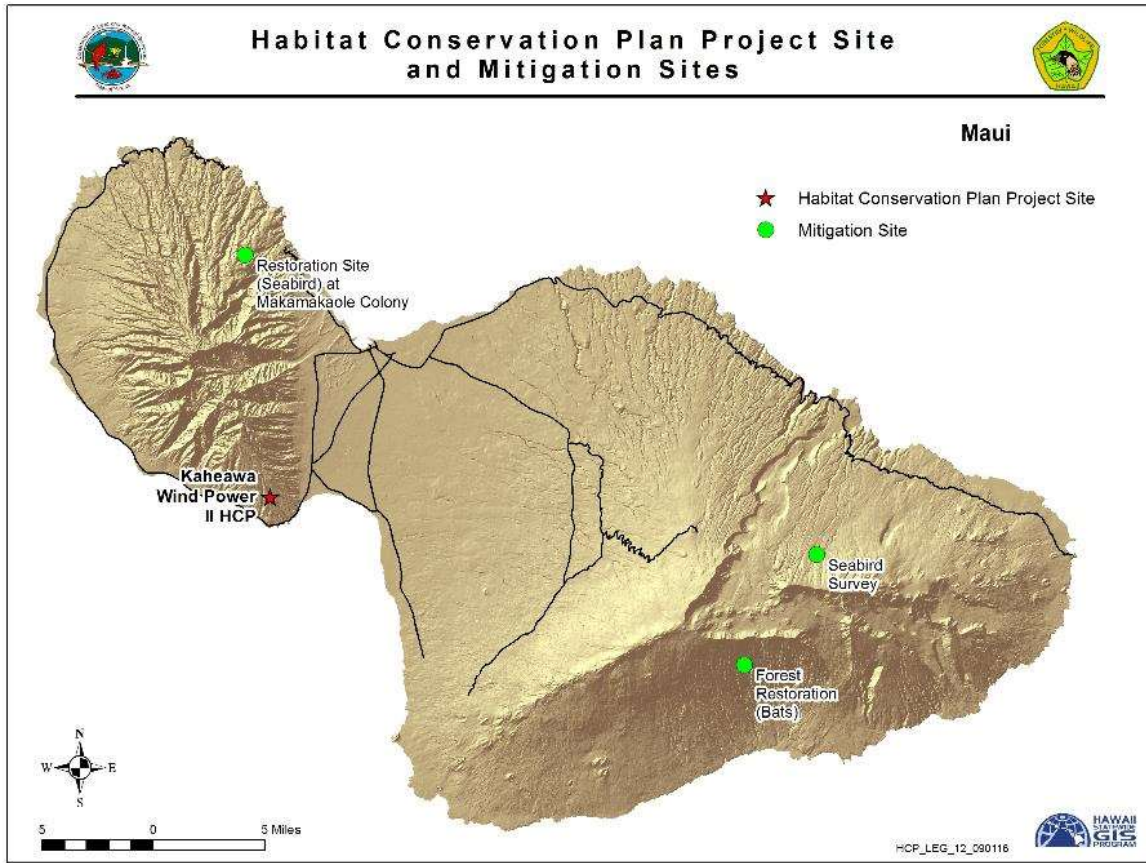


Figure 4. Location of Kaheawa Wind Power II HCP and Mitigation Sites

Status of ITL: There was no take of HCP covered species at KWP II in FY2023.

The incidental take authorized includes both observed and unobserved take, including indirect take that occurs when an adult individual is taken during its respective breeding season. Table 6 provides an estimate of the overall total adjusted take that has occurred since KWP II ITL issuance. In addition to the total estimated take, accrued lost productivity from mortality of individuals due to the lag in mitigation are also evaluated and mitigated for, but are not counted against permitted take levels. Accrued lost productivity calculations for Nēnē are not calculable without mitigation credit data.

Beginning in July 2015 the search plot areas were reduced in size relative to the size of plots searched prior to July 2015. The reduced search area includes only roads and graded WTG pads found within a 70-meter circle of radius centered on each WTG. Canine-assisted searching accounted for 100% of the downed wildlife monitoring searches in FY 2023.

In October 2019 wildfires destroyed bat monitoring equipment at the wind turbines and as a result the number of ground-based acoustic detectors was reduced from eight to five thereafter.

Table 5. Total observed fatalities and estimated total take since ITL issuance covered under the KWP II ITL as of June 30, 2023.

Common Name	Total Observed Take ¹	Estimated Unobserved Take ²	Indirect Take using HCP multipliers	Total Estimated Take
Nēnē	9	16	2	27
Hawaiian Hoary Bat	3	8	1	12

¹ Excludes takes that were incidental and not observed during systematic monitoring (incidental takes are evaluated as part of the EoA modeling software and therefore accounted for in the unobserved take).

² Based on the 80% credible maximum using the following model: Dalthorp, D., M. M. P. Huso, and D. Dail. 2017. Evidence of absence (v 2.0) software user guide: U.S. Geological Survey Data Series 1055

As the total estimated take of 12 bats (with 80% statistical certainty) exceeded both the Tier 1 and Tier 2 permitted take levels for bats and take of Nēnē (with 80% statistical certainty and indirect take) has been occurring at a rate that could exceed both Tier 1 and Tier 2 permitted take levels for Nēnē, KWP II submitted an amended HCP and associated ITL to the agencies for review in FY 2020. The amendment added an additional tier of Nēnē take and an additional two tiers of bat take. The amended HCP was approved on November 8, 2019, and the adjusted take authorization can be found in Table 4.

Mitigation Status:

Hawaiian Petrel and Newell’s Shearwater. Mitigation for the two seabird species (Hawaiian Petrel and Newell’s Shearwater) is being implemented concurrently with Kaheawa Wind Power I. Tier 1 mitigation for estimated seabird take at the project continues at the Makamaka‘ole seabird enclosures (detailed in the section pertaining to KWP I, above). These efforts include trapping and monitoring for potential predators, maintenance of enclosure fences, erosion control, seabird social attraction and monitoring seabird activity within the Makamaka‘ole Stream drainage area and near artificial burrows within the enclosures. Site surveys of an alternative seabird mitigation site, as required by the HCP, were completed in East Maui in FY 2016. Only Newell’s Shearwater nesting activity was observed at Makamaka‘ole in FY 2023. A total of 22 burrows were consistently active during the breeding season, 14 of which were reproductively active with 18 eggs and one chick produced.

As part of predator control in FY 2023, traps and bait stations captured 39 mongooses, 54 rats, and 16 mice. All mongooses were captured outside the enclosures while 26 of the rats and 11 mice were captured inside the enclosures.

To mitigate for the loss of productivity accrued from Hawaiian Petrel estimated take not yet mitigated for at Makamaka‘ole, Hawaiian Petrel nesting colony management and predator control by Pūlama Lāna‘i on Lāna‘i Island was conducted during FY 2020, from which 36 fledglings were produced.

In FY 2021, the two KWP projects adaptively managed their seabird mitigation programs by providing funds to Pūlama Lāna‘i. A total of 9 cats and a minimum of 228 rodents (understood to be an extreme underestimate) from the 150-acre petrel nesting area in FY 2023. During the 2022 breeding season 224 known burrows were estimated to have produced 78 Hawaiian petrel chicks above baseline. Results from the 2023 breeding season will be reported in the FY 2024 annual report.

At the close of the reporting period, KWP II was awarded 89.72 mitigation credits for the Hawaiian petrel across projects. In FY 2023, USFWS acknowledged KWP I met its Hawaiian Petrel mitigation obligation .

Nēnē. Nēnē mitigation had been contracted to DOFAW for Tier 1 estimated take in prior fiscal years for the Pi‘iholo Ranch Nēnē pen, and in conjunction with KWP I at the Haleakalā Ranch Nēnē pen. In Fiscal Year 2020, however, no funding was provided for either pen by KWP II. Although KWP II intended to resume funding the Pi‘iholo Ranch Nēnē pen in FY 2021, the future ownership status of the ranch was uncertain that fiscal year. In June 2021, DOFAW received notification that the ranch had been sold and, after written inquiry by the agency, that the new owner (La Maddalena, LLC) conveyed no interest in continuing its association with either State or Federal wildlife agencies. No funding credit was therefore available to KWP II in FY 2021, and no mitigation benefits were accrued in FY 2022.

In FY 2022, KWP II initiated planning efforts in coordination with DOFAW to move the wind farm’s Nēnē mitigation to Haleakalā Ranch. KWP II assumed co-management of the ranch’s release pen in FY 2023 concurrently with the KWP I Wind Project. KWP II plans to work with the agencies to determine how to split the mitigation credit of the five Nēnē goslings with KWP I.

Hawaiian Hoary Bat. In accordance with the KWP II HCP, baseline mitigation for the Hawaiian Hoary Bat was implementation of bat habitat improvement measures on at least 338 acres. Mitigation for Tier 1 and Tier 2 estimated bat take has been completely funded and continues as vegetation outplanting at Kahikinui State Forest Reserve. Mitigation for Tier 3 estimated take in the form of bat ecological research on Hawai‘i Island has been contracted. This work is intended to better inform future bat habitat restoration and conservation and began in FY 2018 by the U.S. Geological Survey Hawaiian Hoary Bat research group. The project (KWP II) contribution to this contract was \$205,500 in FY 2021, which fulfilled its obligation to the contract. This mitigation project is studying movements, roosting behavior, and diet of the Hawaiian Hoary Bat, and is expected to be completed in December 2023 with submission of final publications, technical results, and data releases.

Pueo. Although the Pueo is not a listed species on Maui, KWP II included Pueo in their HCP and provided mitigation compensation in the form of \$25,000 paid to DOFAW in FY 2013 to be directed toward Pueo research efforts on O‘ahu. With these and other funds DOFAW funded a Pueo research project in 2017 on O‘ahu which was completed in FY 2018 and can be viewed at <https://www.pueoproject.com>.

Auwahi Wind Energy Habitat Conservation Plan, Maui, Hawai'i. Approved 2012.

ITL Licensee: Auwahi Wind Energy, LLC (as of 8/15/2023 American Electric Power Energy Supply (AEP Energy) has sold its interest in Auwahi Wind Energy, LLC. to IRG Acquisition Holdings, LLC)

Project: Eight WTGs with a total 21-MW energy generating capacity

ITL Duration: February 9, 2012 – February 9, 2037 (as of end of FY 2023, 11 years (46%) through the permit term)



Auwahi Wind Power, Maui

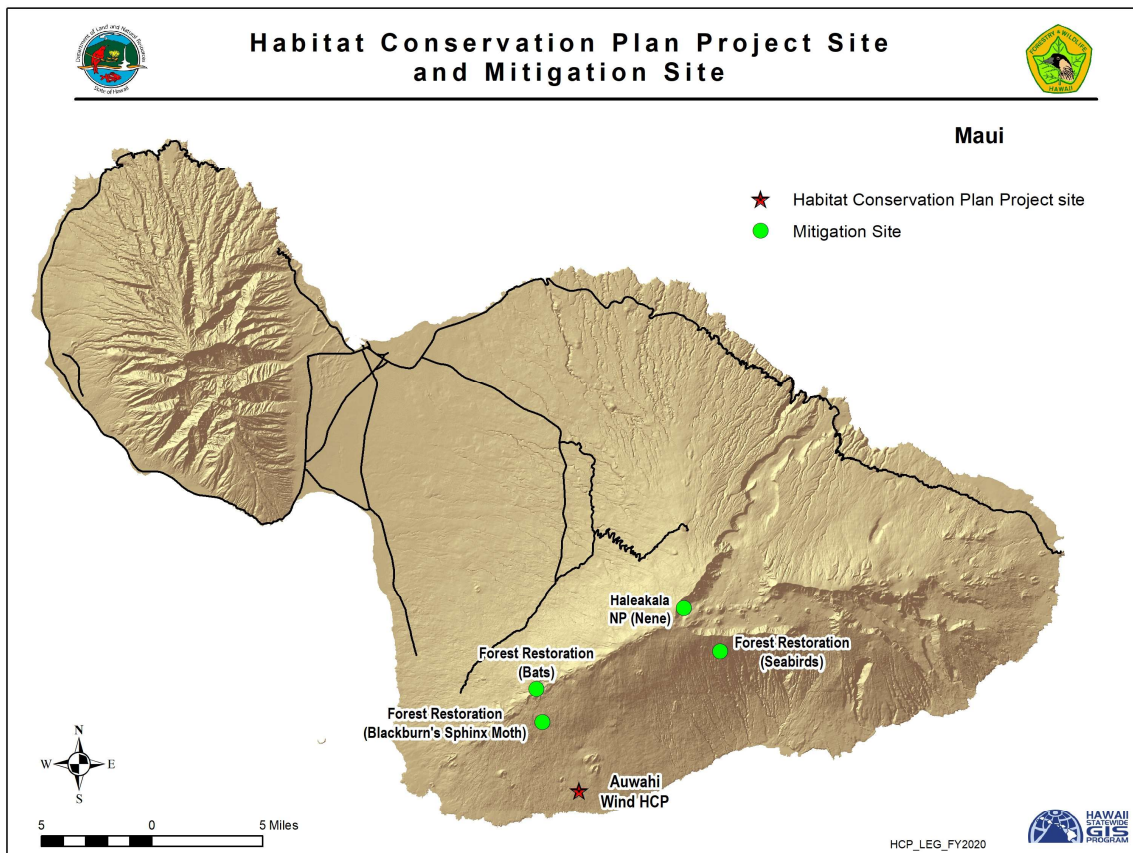


Figure 5. Location of Auwahi HCP and Mitigation Sites

Take Authorization Over 25-year Term:

Table 6. Take Authorization for Auwahi Wind HCP.

Common Name	Scientific Name	Level of Take	25-year Limit
‘Ua‘u or Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	Tier 1	19 adults/ immatures & 7 chicks/eggs
		Tier 2	32 adults/ immatures & 12 chicks/eggs
		Tier 3	64 adults/ immatures & 23 chicks/eggs
Nēnē or Hawaiian Goose	<i>Branta sandvicensis</i>	Length of permit	5 adults/ immatures
‘Ōpe‘ape‘a or Hawaiian Hoary Bat ¹	<i>Lasiurus cinereus semotus</i>	Tier 1	5 bats
		Tier 2	11 bats
		Tier 3	21 bats
		Tier 4 ²	81 bats
		Tier 5 ²	115 bats
		Tier 6 ²	140 bats
Blackburn’s Sphinx Moth	<i>Manduca blackburni</i>	Not applicable	28-acres permanently disturbed habitat is an index of take

¹ Take authorization for bats are converted to adult bats based on HCP and clarified by email from J. Charier of USFWS to Marie VanZandt of Auwahi on March 2, 2015.

² New tier approved in a major amendment on August 23, 2019.

Status of ITL: Take of six Hawaiian Hoary Bats was reported at the Auwahi Wind Energy facility in FY 2023 (Table 7). No take was reported for other HCP covered species at the facility.

Table 7. Documented fatalities of HCP covered species and species of concern at Auwahi during the reporting period.

Common Name	FY2023 Fatalities
Hawaiian Hoary Bat	6

In FY 2023, all weekly fatality monitoring searches were conducted by a canine-assisted search team along turbine pads and roads within a 100-meter radius of turbines and a 10-meter radius of the meteorological tower. The searches around the meteorological tower were discontinued once the tower was removed in FY 2023.

Table 8 provides an estimate of the overall total adjusted take that has occurred since Auwahi Wind ITL issuance.

The total estimated take of bats exceeded the total permitted take for bats on the original ITL by June 2016 and Auwahi Wind submitted an amended HCP and associated ITL to the agencies for review in FY 2019, which added an additional three tiers of bat take and implemented low wind speed curtailment at 6.9 m/s. The amended HCP was approved in FY 2020 and the adjusted take authorization can be found in Table 7. During FY 2020 the rate of bat take exceeded the projected threshold required to be met in order to remain within the amended take limit over the remainder of the 25-year permit term. Auwahi Wind implemented its adaptive management plan and installed acoustic deterrents on all eight turbines in June and July 2020 and continued their use through FY 2022. In FY 2021, Auwahi Wind initiated coordination with the DOFAW

Forestry Program to use of portions of the Kamehamehenui Forest Reserve to offset Hawaiian hoary bat take as mitigation in advance of exceeding Tier 5 level of take.

Table 8. Total observed fatalities since ITL issuance and estimated total adjusted take covered under the Auwahi Wind Energy ITL as of June 30, 2023.

Common Name	Total Observed Take ^{1,3}	Estimated Unobserved Take ²	Indirect Take	Total Estimated Take
Hawaiian Hoary Bat	41	25	8	85
Hawaiian Petrel	1	1	1	4
Band-rumped Storm Petrel	1	ND	ND	ND

¹ Excludes takes that were incidental and not observed during systematic monitoring (incidental takes are evaluated as part of the EoA modeling software and therefore accounted for in the unobserved take).

² Based on the 80% credible maximum using the following model: Dalthorp, D., M. M. P. Huso, and D. Dail. 2017. Evidence of absence (v 2.0) software user guide: U.S. Geological Survey Data Series 1055.

³ Includes observed take of one injured bat rehabilitated in FY 2020.

ND - Not determined.

In FY 2022, Auwahi Wind updated and submitted additional minimization measures as part of their Adaptive Management Plan that included removal of the meteorological tower, which was approved by the agencies. The demolition of the tower was completed in February 2023. Auwahi Wind also supplied acoustic detectors for a test of acoustic bat deterrent function at a wind farm in Minnesota after results of monitoring on Maui showed no difference between deterrent and non-deterrent turbines. Auwahi Wind continued to investigate bat fatality events at the project turbines. Despite the implementation of the bat deterrents, fatalities were still documented at the turbines, with a slight increase in fatality rate from FY 2019 (6.84 bats per year in FY 2023; 6.28 bats per year in FY 2019).

Mitigation Status:

Hawaiian Petrel. Mitigation for take of Hawaiian Petrels in FY 2023 (2022 breeding season) consisted of continued petrel burrow monitoring at Kahikinui Forest Reserve to obtain an estimate of the number of active petrel burrows and reproductive (fledging) success. One new burrow located was marked, mapped, and added to the monitoring dataset. In the most recent breeding season, 78 petrel burrows were being monitored, 34 of which showed signs of activity throughout the breeding season, and 28 burrows were consistently active. Fifteen burrows successfully fledged a chick and the remaining 13 either failed or showed signs of occupation by a non-breeding Hawaiian Petrel. There were cat detections at the burrows during the 2022 breeding season, consistent with one cat visiting the site. There were no signs of predation.

The predator control strategy continued to assess rat and mongoose activity across the entire management area. One hundred thirty-five traps were deployed in FY 2023. Traps were checked and baited every two weeks and were operational year-round. Trapping effort in FY 2023 resulted in the removal of 31 mice and two rats; no mongooses or cats were captured.

Nēnē. Auwahi Wind provided a one-time payment of \$25,000 to the Haleakalā National Park on April 17, 2012, to cover mitigation expenses for the Hawaiian Goose.

Hawaiian Hoary Bat. Tier 1 mitigation for the Hawaiian Hoary Bat consists of the restoration of approximately 132 acres of pastureland in the Waihou Mitigation Area (the Pu‘u Makua parcel)

to create roosting and foraging habitat for the Hawaiian Hoary Bat. The fence was inspected quarterly in FY 2023 and was repaired after storm damage ; the parcel remained ungulate free at the close of the fiscal year. Invasive plant species control continued to meet success criteria targets and supplemental outplanting of native Hawaiian plants continued in FY 2023. Additional native plant species were outplanted in the grasslands and koa (*Acacia koa*) plots. With the Maui Plant Extinction program, Auwahi Wind helped collect plant information within the fenced area, specifically for naio (*Myoporum spp.*).

Year five monitoring of percent vegetative cover along all transects in FY 2020 showed an overall percent cover of native woody vegetation of 27.7 percent, and non-native vegetation of 23.9 percent. Additional vegetation monitoring in FY 2021 included collection of information on tree height and leaf area index. Results showed that plots planted with koa (*Acacia koa*) 20 years ago at 3 x 3-meter densities were found to have an average leaf area index (LAI) of 0.69 and average height of 7.7 meters. Additional Hawaiian native plants, including 'ōhi'a (*Metrosideros polymorpha*) and a'ali'i (*Dodonaea viscosa*), were outplanted in the existing koa plots in FY 2022.

As part of Tier 1 mitigation, habitat restoration efforts were expanded to the surrounding Tier 4 mitigation lands in FY 2022, which added additional ungulate barriers to this parcel. Cattle grazing continues by the landowner on the surrounding ranch lands including the Tier 4 mitigation lands.

Tier 2 mitigation is completed. Auwahi worked with Frank Bonaccorso of the U.S. Geological Survey (USGS) to develop a research project combining radio telemetry and acoustic monitoring to track the success of mitigation efforts at Waihou, as well as to provide more information on the ecology of the Hawaiian Hoary Bat. Implementation of the plan began in March 2015 with the deployment of six acoustic detectors. Monitoring occurred under Tier 2 for one year and results have been reported previously.

The Tier 3 bat mitigation study conducted by the U.S. Geological Survey in the Pu'u Makua Restoration Area within the Waihou mitigation area is completed, and results were reported in FY 2019.

Tier 4 mitigation for the bat consists of protecting, managing, and enhancing 709 hectares of bat foraging and roosting habitat at 'Ulupalakua Ranch, and planning work began in FY 2020. The 709 hectares of land will be placed in a conservation easement held by the Hawaiian Islands Land Trust and the final conservation easement was fully executed on December 7, 2020. As part of management activities, Auwahi Wind began fence construction in FY 2021, with a total of 44 hectares was fenced off from cattle. A total of 30 hectares was planted with approximately 10,000 koa plantings within the newly constructed hedgerow areas. Quarterly fence inspections also began in FY 2021 and two 50,000-gallon capacity ponds were constructed.

In FY 2022, Auwahi Wind completed construction of the next 100-acre parcel. Maintenance and fence improvements occurred in FY 2023. Within the fenced in area, 115 acres were planted with approximately 3,000 native seedlings.

Insect and acoustic bat monitoring was initiated by the Project throughout the mitigation site in FY 2020, was continued in FY 2023. Three malaise traps were set (one at a pond, one at a

pasture and one at a hedgerow) and checked semi-annually. The final monitoring results observed only insects in the order Lepidoptera. A significant median Insect Capture Rate was observed between the months of July to August while a greater median capture rate was shown for pasture habitat when data were pooled for the entire year. Insect sampling was scheduled to continue twice per year in FY 2022. Results from future sampling years will be compared to baseline values established in FY 2021 to inform adaptive mitigation measures, if required.

In terms of acoustic monitoring for Tier 4 mitigation, the average detections throughout the study area was 11.85 ± 0.68 calls per detector night in FY 2021. The highest detection rate occurred at two upper elevation detector sites located within mesic land cover types, one of which was located next to a pond. The second year of acoustic monitoring was completed in FY 2022, and in FY 2023, it was found that the average number of Hawaiian hoary bat detections remained stable throughout the study area and increased in the second year of monitoring.

As obligated in the approved HCP amendment, Auwahi Wind began funding a single year occupancy study of the Hawaiian Hoary Bat on Leeward Haleakalā during the reporting period. The study area spans from Ahihi-Kinau Natural Area Reserve to the Kaupō gap, and from the summit of Haleakalā to the coast. The results, made available in FY 2021, show that overall bat detection and occupancy rates were much higher than a similar study performed over a 3-year period on O‘ahu. Bat activity rates were 80 percent at the Leeward Haleakalā study site over a 1-year period compared to 3 percent over a 3-year period on O‘ahu.

In preparation for the anticipated Tier 5 mitigation needs, Auwahi Wind deployed acoustic detectors in May 2021 to gather baseline information on bat acoustic activity at the proposed mitigation area at Kamehamenui; these detectors were checked regularly in FY 2023. The first year of monitoring for bat detections during acoustic surveys from May 11 – September 17, 2021, resulted in a total call abundance (bat calls / detector-nights) of 39.04 ± 3.81 and a nightly detection (nights bats detected / total detector-nights) of 0.98.

A fourth and fifth draft of the Tier 5 Site Specific Mitigation Implementation Plan (SSMIP) for the Hawaiian hoary bat was submitted by Auwahi wind in FY 2023. In addition, on March 29, 2023 Auwahi presented to the ESRC a draft of thier SSMIP for their review and comments. Auwahi Wind will continue to coordinate closely with DOFAW and USFWS in the development of Auwahi Wind’s site-specific mitigation implementation plan.

Blackburn’s Sphinx Moth. Baseline mitigation for Blackburn’s Sphinx Moth (BSM) consisted of a contribution of \$144,000 to the Leeward Haleakalā Watershed Restoration Partnership in 2012, to restore dryland forest by planting the equivalent of six acres of native endangered ‘Aiea (*Nothocestrum latifolium*) throughout the Auwahi Forest Restoration Project. ‘Aiea is known to serve as a host plant for the endangered BSM. In FY 2019 the goal of planting 1,500 ‘Aiea plants on 11 acres was reached and Auwahi Forest Restoration Project fulfilled the MOU requirements. During FY 2021 47 tree tobacco (*Nicotiana glauca*) plants, a non-native invasive host plant for the moth, were removed from the wind farm site. In FY 2023, 140 tree tobacco plants were removed from the Project with most plants observed to be in the immature vegetative state. Auwahi continued monthly field surveys for BSM in FY 2023, with detections noted every month.

Kahuku Wind Power Habitat Conservation Plan, O'ahu, Hawai'i. Approved 2010.

ITL Licensee: Kahuku Wind Power, LLC
(Note that Terraform Power owns Kahuku, LLC)

Project: Twelve WTGs with a total 30-MW energy generating capacity

ITL Duration: June 7, 2010 – June 7, 2030 (as of end of FY 2023, 13 years (65%) through the permit term)



Kahuku facility on the North Shore of O'ahu.

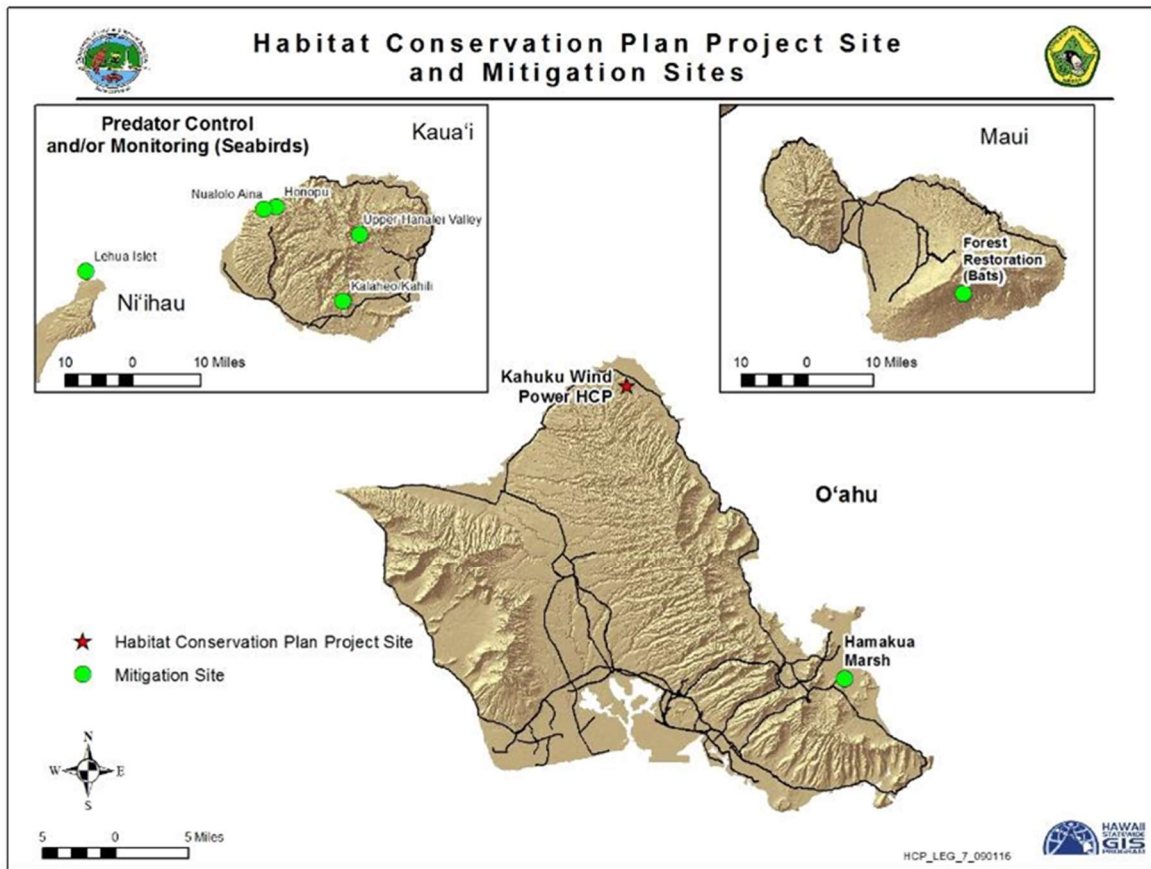


Figure 6. Location of Kahuku HCP and Mitigation Sites

Take Authorization Over 20-year Term:

Table 9. Take Authorization for Kahuku Wind HCP.

Common Name	Scientific Name	Level of Take ¹	Annual Take Limit ²	5-year Take Limit ³	20-year Take Limit ³
'Ua'u or Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	Baseline	4	8 adults/ juveniles	8 adults/ juveniles
		Higher	8	12 adults/ juveniles	12 adults/ juveniles
'A'o or Newell's Shearwater	<i>Puffinus auricularis newelli</i>	Baseline	3	9 adults/ juveniles	12 adults/ juveniles
		Higher	6	12 adults/ juveniles	18 adults/ juveniles
Koloa Maoli or Hawaiian Duck	<i>Anas wyvilliana</i>	Baseline	4	12 adults/ juveniles	16 adults/ juveniles
		Higher	8	16 adults/ juveniles	24 adults/ juveniles
Ae'o or Hawaiian Stilt	<i>Himantopus mexicanus knudseni</i>	Baseline	3	9 adults/ juveniles	12 adults/ juveniles
		Higher	6	12 adults/ juveniles	18 adults/ juveniles
'Alae Ke'oke'o or Hawaiian Coot	<i>Fulica alai</i>	Baseline	3	9 adults/ juveniles	12 adults/ juveniles
		Higher	6	12 adults/ juveniles	18 adults/ juveniles
'Alae 'Ula or Hawaiian Moorhen	<i>Gallinula chloropus sandvicensis</i>	Baseline	4	10 adults/ juveniles	14 adults/ juveniles
		Higher	7	14 adults/ juveniles	20 adults/ juveniles
'Ōpe'ape'a or Hawaiian Hoary Bat ⁴	<i>Lasiurus cinereus semotus</i>	Baseline	7	14 individuals	16 individuals
		Higher	14	16 individuals	25 individuals
Pueo or Hawaiian Owl	<i>Asio flammeus sandwichensis</i>	Baseline	4	12 adults	16 adults
		Higher	8	16 adults	24 adults

¹ Take authorization is delineated by Baseline and Higher Limits (Tiers). Upon reaching Higher Limits additional mitigation measures or funding are triggered to ensure that mitigation keeps pace with take.

² Exceeding the Annual Take Limit (including observed and unobserved take) will require one or more of the following: adaptive management, increased mitigation, or a major ITL amendment.

³ "5-Year" and "20-year" take limits are cumulative for the respective period of years.

⁴ Minor amendment to clarify permitted bat take processed on November 26, 2014.

Status of ITL: There was documented take of two female Hawaiian Hoary Bat, but no other HCP covered species at Kahuku Wind Power (KAH) during FY 2023 reporting period (Table 10).

Table 10. Documented fatalities of HCP covered species during the reporting period.

Common Name	FY2023 Fatalities
Hawaiian Hoary Bat	2

Table 11 provides an estimate of the overall total adjusted take that has occurred since Kahuku Wind ITL issuance.

Table 11. Total observed fatalities and estimated total take since ITL issuance under the Kahuku Wind Power ITL as of June 30, 2023.

Common Name	Total Observed Take	Estimated Unobserved Take ¹	Indirect Take using HCP multipliers ²	Total Estimated Take
Hawaiian Hoary Bat	8	9	3	20

¹ Based on the 80% credible maximum using the following model: Dalthorp, D., M. M. P. Huso, and D. Dail. 2017. Evidence of absence (v 2.0) software user guide: U.S. Geological Survey Data Series 1055.

² DNA results have identified the sex of five of the eight bat fatalities detected at the Project, confirming that three of the fatalities were female. Sex identification of one carcass did not yield a confirmed sex, and the sex of the remaining two bat fatalities will be incorporated once confirmed by genetic testing.

In December 2014 the downed wildlife search area was reduced relative to previous years to a 35-meter radius plot centered on each turbine, and in April 2015 search frequency was increased from monthly to weekly. For FY 2022, starting in January 2021 weekly searches primarily occurred over two consecutive days with searches conducted at six of the 12 WTGs on each day; searches, however, were occasionally completed at all turbines on a single day. All searches were conducted by canine teams in FY 2023.

Kahuku additionally monitored bat activity at the project site with four ground-based acoustic detectors located at each WTG. Between June 1, 2021, and May 31, 2023, Hawaiian hoary bats were detected on 50 nights out of 1,281 detector-nights (3.9 percent of detector-nights). Seasonal patterns of detection rates were comparable with previous years.

Kahuku continues to implement adaptive management measures including adjustments in vegetation management and scavenger control efforts at the project site, and the Low Wind Speed Curtailment (LWSC) regime initiated in April 2012. As the result of a bat fatality at WTG two on August 19, 2021, Kahuku discovered the 2021 LWSC program had not been triggered in April of that year. This issue was immediately corrected and investigated thoroughly to verify that each of the 12 turbines was properly set to operate under the prescribed LWSC regime. Kahuku has implemented checks to ensure the LWSC programming is operating as intended.

Mitigation Status:

Hawaiian Petrel & Newell’s Shearwater. In accordance with the Kahuku Wind HCP, the seabird mitigation plan for Newell’s Shearwater and Hawaiian Petrel requires the ITL holder to fund seabird colony-based protection and management measures on the island of Kaua’i. Kahuku Wind also funded the Kaua’i Endangered Seabird Recovery Project to deploy and then analyze data from Wildlife Acoustics SM2TM Song-meters at multiple locations in Kaua’i’s remote mountains to survey for Newell’s Shearwater and Hawaiian Petrel nesting colonies. All seabird mitigation work was completed prior to FY 2021.

Hawaiian Stilt, Hawaiian Coot, Hawaiian Moorhen, and Hawaiian Duck. Baseline mitigation for the four waterbird species covered under the ITL consisted of payments to DOFAW to conduct predator control and wetland restoration at Hāmākua Marsh, part of the State’s Kawainui- Hāmākua Marsh Complex, for four years from FY 2012-2015. All waterbird mitigation work was completed prior to FY 2021.



‘Alae ‘Ula or Hawaiian Moorhen swimming at Hāmākua Marsh

Hawaiian Hoary Bat. In accordance with the Kahuku Wind Power HCP, baseline bat mitigation consisted of a \$150,000 payment to DOFAW (procured on May 31, 2012) for preserving or enhancing foraging and/or roosting habitat by constructing an ungulate-proof fence around a roughly 280-acre section of the State Kahikinui Forest Reserve and State Nakula Natural Area Reserve. In FY 2015, approximately 2,500 meters of fence were installed to enclose the unit. In FY 2020, Kahuku Wind Power, LLC began mitigation planning for the higher level of take and contributed funding to the U.S. Geological Survey for future Hawaiian Hoary Bat ecological research.

During FY 2022, Kahuku submitted a draft Tier 2 Mitigation Plan, which identifies habitat modification actions that are additive and complementary to the broad management goals and forest management activities identified and previously executed by DOFAW O‘ahu Branch at the Helemano Section of the ‘Ewa Forest Reserve. Discussions with DOFAW and USFWS regarding Tier 2 bat mitigation final approval is still underway. Tier 2 mitigation planning continued in FY 2023 with two separate rounds representing the third and fourth revisions of the Draft Mitigation Plan revisions presented to agencies. KAH is targeting a mitigation program that restores and enhances bat habitat quickly. KAH has consulted individually with members of ESRC, from which suggested comments and approaches were incorporated by KAH. KAH is working through final approval with USFWS and DOFAW, including a presentation to the ESRC. In FY 2023, Kahuku received agency permission in October 2022 to begin baseline monitoring. In March 2023, baseline acoustic monitoring for bat activity began and insect sampling is set to commence in August 2023.

Pueo. Obligations for Pueo mitigation were complete prior to FY 2016. These included payments of \$50,000 for Pueo research on O‘ahu aimed at determining population status and management priorities. With these and other funds DOFAW funded a Pueo research project in 2017 on O‘ahu, which was completed in FY 2018 and can be viewed at <https://www.pueoproject.com>. Funding of \$25,000 was also provided to the Hawaii Wildlife Center prior to FY 2021.

Kawailoa Wind Power Habitat Conservation Plan, O'ahu, Hawai'i. Approved 2012.

ITL Licensee: Kawailoa Wind Power, LLC
(Note that DESRI IV, LLC now owns Kawailoa Wind Power, LLC; it is an investment fund managed by D.E. Shaw Renewable Investments, LLC)

Project: Thirty WTGs with a total 69-MW energy generating capacity

ITL Duration: January 6, 2012 – January 6, 2032 (as of end of FY 2023 11.5 years (57.5 %) through the permit term)



Kawailoa Wind Power, O'ahu

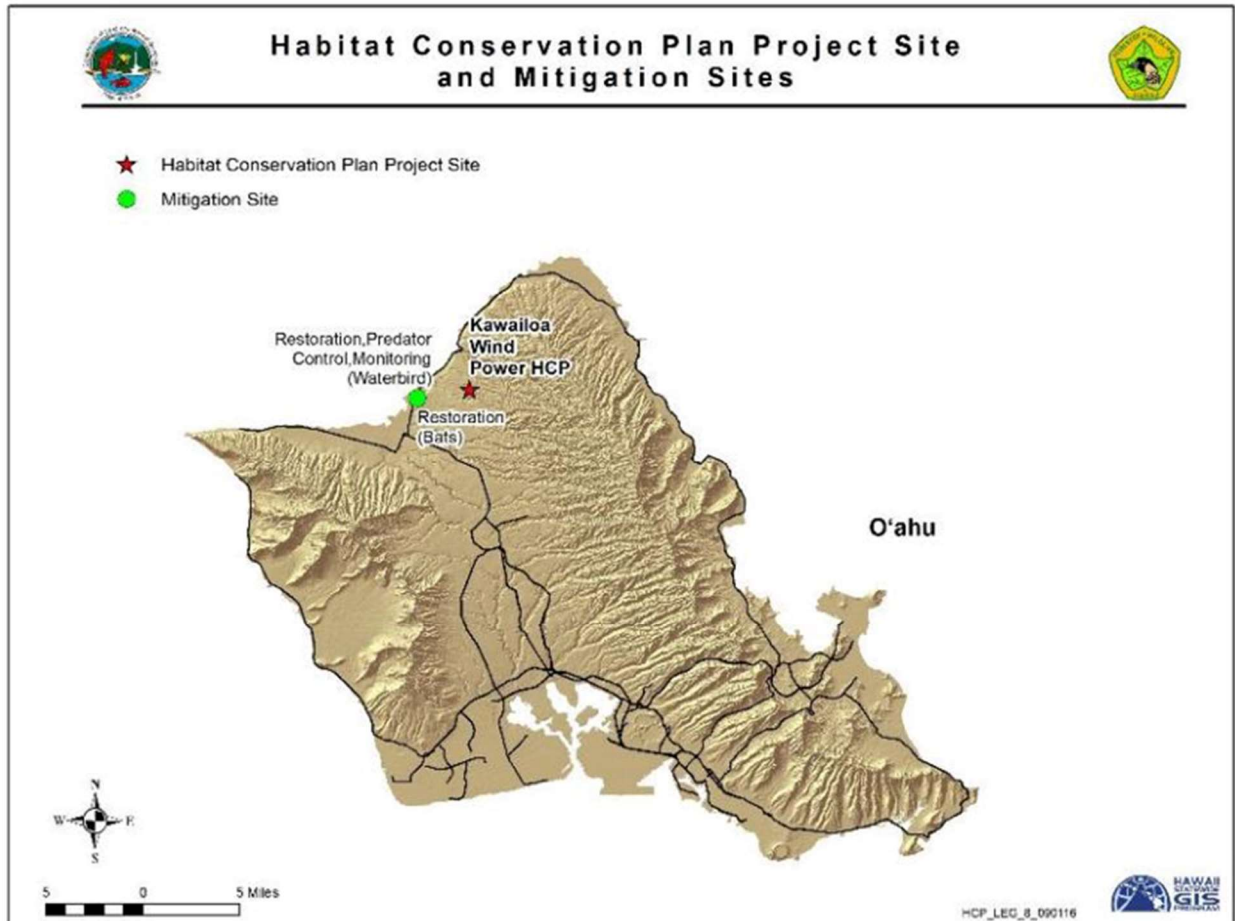


Figure 7. Location of Kawailoa HCP and Mitigation Sites

Take Authorization Over 20-year Term:

Table 12. Take Authorization for Kawaiiloa Wind HCP.

Common Name	Scientific Name	Level of Take ¹	5-year Take Limit ²	20-year Take Limit
'A'o or Newell's Shearwater	<i>Puffinus auricularis newelli</i>	Tier 1	3 adults/ juveniles & 2 chicks/eggs	3 adults/ juveniles & 2 chicks/eggs
		Tier 2	6 adults/ juveniles & 3 chicks/eggs	6 adults/ juveniles & 3 chicks/eggs
Koloa Maoli or Hawaiian Duck	<i>Anas wyvilliana</i>	Tier 1	4 adults/ juveniles & 4 ducklings	4 adults/ juveniles & 4 ducklings
		Tier 2	6 adults/ juveniles & 6 ducklings	6 adults/ juveniles & 6 ducklings
Ae'o or Hawaiian Stilt	<i>Himantopus mexicanus knudseni</i>	Tier 1	6 adults/ juveniles & 3 fledglings	8 adults/ juveniles & 4 fledglings
		Tier 2	8 adults/ juveniles & 4 fledglings	12 adults/ juveniles & 6 fledglings
'Alae Ke'oke'o or Hawaiian Coot	<i>Fulica alai</i>	Tier 1	6 adults/ juveniles & 3 fledglings	8 adults/ juveniles & 4 fledglings
		Tier 2	8 adults/ juveniles & 4 fledglings	12 adults/ juveniles & 6 fledglings
'Alae 'Ula or Hawaiian Moorhen	<i>Gallinula chloropus sandvicensis</i>	Tier 1	6 adults/ juveniles & 3 fledglings	8 adults/ juveniles & 4 fledglings
		Tier 2	8 adults/ juveniles & 4 fledglings	8 adults/ juveniles & 4 fledglings
Pueo or Hawaiian Owl	<i>Asio flammeus sandwichensis</i>	Tier 1	4 adults & 4 owlets	4 adults & 4 owlets
		Tier 2	6 adults & 6 owlets	6 adults & 6 owlets
'Ōpe'ape'a or Hawaiian Hoary Bat ³	<i>Lasiurus cinereus semotus</i>	Tier 1	20 individuals	20 individuals
		Tier 2	40 individuals	40 individuals
		Tier 3	60 individuals	60 individuals
		Tier 4	Not applicable	55 individuals
		Tier 5	Not applicable	85 individuals
'Ua'u or Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	Not Applicable	Not Applicable	19 adults/fledglings and 5 chicks/eggs

¹ Take authorization is delineated by Baseline and Higher Limits (Tiers). Upon reaching Higher Limits additional mitigation measures or funding are triggered to ensure that mitigation keeps pace with take.

² Exceeding the 5-year Take Limit (including observed and unobserved take) will require one or more of the following: adaptive management, increased mitigation, or a major ITL amendment.

³ Minor amendment to clarify permitted bat take processed on November 26, 2014.

Status of ITL: There was no documented fatal take of Hawaiian Hoary Bats and Hawaiian Petrels during the reporting period at the Kawaiiloa Wind Power facility in FY 2023.

Table 13 provides an estimate of the overall total adjusted take that has occurred since Kawaiiloa Wind ITL issuance.

Table 13. Total observed fatalities and estimated total take since ITL issuance under the Kawaiiloa Wind Power ITL as of June 30, 2023.

Common Name	Total Observed Take ¹	Estimated Unobserved Take ²	Indirect Take using HCP multipliers	Total Estimated Take
Hawaiian Hoary Bat	40	50	9	101
Hawaiian Petrel	0	2 adults	2 chicks/eggs	2 adults and 2

¹ Excludes hoary bat takes that were incidental and not observed during systematic monitoring (incidental takes are evaluated as part of the EoA modeling software and therefore accounted for in the unobserved take).

² Based on the 80% credible maximum using the following model: Dalthorp, D., M. M. P. Huso, and D. Dail. 2017. Evidence of absence (v 2.0) software user guide: U.S. Geological Survey Data Series 1055.

ND - Not determined.

Fatality monitoring at the Project continued throughout FY 2023 at all wind turbine generators (WTG). In FY 2023, search areas consisted of 55-meter-radius circles centered on each turbine and roads out to 75 meters from each turbine. For the two unguyed meteorological towers, the search area consisted of a 50-meter-radius circle centered on each tower. The mean search interval for both turbines and the meteorological towers in FY 2023 was 7.0 days. In previous years when conditions limited the use of dogs (e.g., weather, injury, availability of canine search teams), search plots were visually surveyed by Project staff; however, canine teams conducted 100 percent of the WTG searches in FY 2023.

The total estimated take of 101 Hawaiian Hoary Bats (with 80% statistical certainty and indirect take) falls within the Tier 4 bat take request for the species detailed in the amended HCP. Kawaiiloa submitted an application and an amended HCP to the agencies for review and approval in FY 2019 to increase the amount of Hawaiian Hoary Bat take and add the Hawaiian Petrel to their ITL. After the contested case hearing for this amendment was dismissed in January of 2021, the BLNR unanimously voted to approve the HCP amendment in February of 2021. The amended ITL was issued by DOFAW on February 26, 2021 and signed by Kawaiiloa Wind on March 30, 2021.

To minimize Hawaiian Hoary Bat take, in FY 2019 Kawaiiloa Wind reduced the number of turbine stop/start events per night by extending the rolling average time used from 10 to 20 minutes. However, the 20-minute rolling average resulted in unanticipated wind turbine behavior and the project returned to a 10-minute rolling average in FY 2020. In FY 2021, the rolling average was again reverted to 20-minute averaging in January 2021. Following agency review of Tetra Tech’s analysis, however, Kawaiiloa returned to 10-minute averaging in April of 2021 where it remained till the end of FY 2022. The Project continued to operate under the 10-minute rolling average LWSC regime for all of FY 2023. The project additionally installed acoustic deterrents at all 30 project turbines in May and June 2019. Based on data provided by NRG, the total sitewide deterrent availability for the Project was 98.2 percent in FY 2023.

Mitigation Status:

Newell’s Shearwater. Tier 1 mitigation for Newell’s Shearwater as described in the HCP consisted of (1) providing funding for adapting a resetting trap for use in Hawai‘i, (2) field testing traps at a suitable location where predators are known to occur, and (3) supporting a one-year pilot study to provide localized predator control in an area where Newell’s Shearwater are known to be breeding. Item number three was completed for a project on Kaua‘i. Projects that fulfilled these obligations were completed by end of FY 2015.

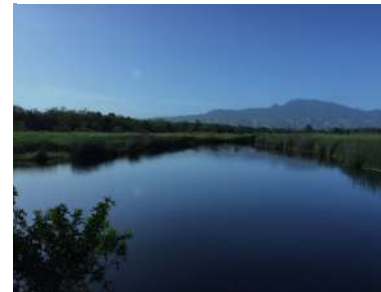
Hawaiian Petrel. To mitigate for impacts to this species, Kawailoa funded one year of monitoring and predator control at the Hanakāpī‘ai and Hanakoa seabird colonies within the Hono O Nā Pali Natural Area Reserve on Kaua‘i in 2020. Final reports from Kaua‘i Endangered Seabird Recovery Project and Hallux Ecosystem Restoration LLC for this mitigation project were included in the FY 2021 Annual Report, which confirmed completion of Kawailoa Wind’s mitigation obligations for the Hawaiian Petrel.

In response to a contested case settlement, Kawailoa Wind provided \$250,000 to Pacific Rim Conservation in October 2021 (FY 2022) to carry out research related to Hawaiian Petrels on O‘ahu. The goal of this project is to determine whether Hawaiian Petrels detected in previous surveys were prospecting or breeding on O‘ahu. Pacific Rim Conservation’s research related to Hawaiian petrels on O‘ahu continued in FY 2023 using funds provided by Kawailoa Wind. Pacific Rim Conservation is conducting ground searches and auditory surveys, as well as deploying automated acoustic recording units to accomplish this goal. The funds from Kawailoa Wind will also be used for the 2024 to 2026 breeding seasons (L. Young/Pacific Rim, per. comm., July 2022).

Hawaiian Duck, Hawaiian Stilt, Hawaiian Moorhen, & Hawaiian Coot. The ‘Uko‘a Wetland mitigation program for Tier 1 mitigation continued for waterbirds during FY 2023. In FY 2016 USFWS and DOFAW provided written confirmation permitting adaptive management for the original waterbird mitigation. Some activities completed for waterbird mitigation at ‘Uko‘a Wetland (e.g., invasive vegetation removal, predator control, fence maintenance) overlap with bat mitigation requirements. In FY 2023, waterbird surveys were conducted weekly from July 2022 through August 2022 and then again from December 2022 through June 2023. A total of 39 waterbird surveys were completed in FY 2023. In addition to the weekly surveys, a biologist conducts waterbird surveys prior to any invasive vegetation control. The purpose of these surveys is to identify if listed waterbird nests or chicks are present in the vicinity of the planned work area. If present, control work is modified to avoid and minimize impacts to endangered Hawaiian waterbirds.



Water hyacinth within removal area before removal work was initiated (Top), and after removal was complete (Bottom).



In FY 2023, Hawaiian gallinules (either adults, chicks, or fledglings) were observed on every survey date and were recorded at seven out of the nine PC stations. Two gallinule breeding events were observed in FY 2023. The breeding event observed in April 2022 resulted in the successful fledging of one gallinule. The second event was observed in late April 2023, so the outcome of this breeding effort has yet to be determined; as of June 30, 2023, one gallinule chick was still present. In total, 14 Hawaiian common gallinule/‘alae ‘ula (*Gallinula chloropus sandvicensis*) fledglings have been recorded at ‘Uko‘a since monitoring began following management. In FY 2023, Hawaiian stilts were observed on 13 of the 39 survey dates. Hawaiian stilt detections have increased in comparison to previous fiscal years, but individual Hawaiian stilt numbers continue to be low. Due to the recent increase in stilt detections, the Project removed invasive pluchea (mostly *Pluchea indica*) within an approximately 1-acre area near PC 4 in FY 2023 to improve stilt nesting habitat. No

Hawaiian stilt nests, chicks, or evidence of reproductive activity have been observed at ‘Uko‘a Wetland since comprehensive surveys began. Since comprehensive waterbird surveys began in January 2017, only one Hawaiian coot has been detected during the surveys; a single adult Hawaiian coot was recorded in March 2017. Although no waterbird take has been recorded at Kawailoa to date, the Project is required to replace 20 gallinule fledglings, 24 stilt fledglings, and 20 coot fledglings. As a result of minimal observed breeding events at the site (particularly for stilts and coots), Kawailoa Wind is in discussion with USFWS and DOFAW regarding adaptive management of waterbird mitigation.

Hawaiian Hoary Bat. During FY 2023, acoustic bat surveys continued at the Project and management activities and acoustic bat surveys for Tier 1 mitigation continued at ‘Uko‘a Wetland. At the Project, using the permanent acoustic detectors stationed at WTGs 1, 10, 21, and 25, Hawaiian hoary bats were detected on 248 of 1451 (17.1 percent) detector-nights sampled throughout the 2023 Bat Sampling Period. During the 2023 Bat Sampling Period, elevated detection rates were observed during the lactation reproductive period (mid-June through August), reaching an initial peak during the early post lactation (September) reproductive period. A decline in detection rates occurred following the initial peak in September and the transition



Female Hawaiian Hoary Bat caught at ‘U‘koa Wetland, Oahu.

to the post-lactation (September to mid-December) reproductive period. In FY 2023, activities associated with Tier 1 bat mitigation at ‘Uko‘a Wetland included invasive vegetation removal, predator control and monitoring of predator presence, fence monitoring and maintenance, bat acoustic monitoring, bat lane maintenance, and insect sampling analysis. In FY 2023, Hapa Landscaping conducted maintenance visits to remove any areas of water hyacinth (*Eichhornia crassipes*) or other invasive vegetation that regenerated in the previously cleared, open water area including water lettuce (*Pistia stratiotes*) and California grass (*Urochloa mutica*). In FY 2023, a total of 119 predators were removed from ‘Uko‘a Wetland including 23 pigs, 79 mongoose, 16 rats, and 1 cat (Grey Boar 2022a, Grey Boar 2022b, Grey Boar 2023a, Grey Boar 2023b). In FY 2023, tracking tunnels were set out in September 2022, December 2022, March 2023, and June 2023. Twenty-five tracking tunnels were used to detect predator presence in FY 2023. Rat activity varied between 8.0 and 22.2 percent and showed the highest activity rates of the predators. Mice and cats were only detected during the September 2022 deployment. During FY 2023, several sections of fence were repaired. During the 2023 Bat Sampling Period (June 2022 to May 2023) of acoustic surveys, Hawaiian hoary bats were detected on 534 nights out of 2,708 detector-nights sampled (19.7 percent). The annual detection rate in the 2023 Bat Sampling Period was similar to the annual detection rate during the previous sampling year (23.0 percent). During FY 2023, bat lane maintenance occurred on several lanes on November 15 and 16, 2022, and again on January 6, 2023.

A follow-up insect assessment was approved by both agencies in April and May 2021 to compare bat prey availability prior to and after management activities at ‘Uko‘a Wetland. Insect sampling was conducted from June to September 2021 and nearly 17,700 insect taxa were collected. This insect assessment fulfills the insect monitoring obligation outlined in the Kawailoa Wind HCP for Tier 1 mitigation for the Hawaiian hoary bat. The results of this study show that Lepidoptera and Coleoptera are present at ‘Uko‘a Wetland. Overall, Lepidoptera may

be more abundant at ‘Uko‘a Wetland compared to other insects, with a total of 29,482 moths collected over the study. Other insects that are known to be consumed by the Hawaiian hoary bat, such as Diptera (flies) and Blattodea (termites) (Jacobs 1999, Todd 2012, Pinzari et al. 2019) are also present at ‘Uko‘a Wetland. This study also found that light traps were the most effective at collecting insects at ‘Uko‘a Wetland. This result is not surprising given that light traps actively draw insects into the traps. Light traps were particularly effective at collecting Lepidopterans compared to other trap types. In contrast, aquatic emergence traps generally had the lowest capture rates of all trap types. Acoustic detectors at ‘Uko‘a Wetland have documented year-round use of the area by Hawaiian hoary bats. Insect sampling coincided with the Hawaiian hoary bat lactation and early post-lactation reproductive periods, when elevated detection rates have been detected at ‘Uko‘a Wetland compared to other times of the year (Tetra Tech 2022). Feeding buzzes have also been recorded at every detector location throughout ‘Uko‘a Wetland. Additional dietary studies would be needed to determine what prey items are being consumed by Hawaiian hoary bats at ‘Uko‘a Wetland, but since known and potential Hawaiian hoary bat prey is present and feeding buzzes have been recorded, it is assumed that ‘Uko‘a Wetland is providing foraging habitat for the Hawaiian hoary bat.

Mitigation for Tiers 2 through 4 is complete. USFWS- and DOFAW-approved bat research projects for Tiers 2/3 mitigation were completed in FY 2022. WEST conducted a multi-year Hawaiian Hoary Bat acoustic survey study to examine the distribution and seasonal occupancy of the Hawaiian Hoary Bat on O‘ahu. Although Kawailoa Wind paid the remaining funding obligations for this research project in FY 2022, Kawailoa provided an additional \$10,000 to WEST in FY 2023 to support continued monitoring of a subset of the deployed detectors during a fifth year. This funding was outside the Tier 2/3 mitigation obligations, which were complete in FY 2022.

Tier 4 Hawaiian Hoary Bat mitigation was completed in FY 2019 with the acquisition and long-term protection of Helemano Wilderness Area.

Tier 5 bat mitigation will consist of the implementation of one or a combination of the following: 1) funding contributions to acquire property that will protect bat roosting and foraging habitat in perpetuity, and/or 2) bat habitat management/restoration to improve bat foraging and/or roosting habitat at the Central Ko‘olau area, Helemano Wilderness Area, Waimea Native Forest, or similar sites. In accordance with the mitigation planning requirements under the HCP Amendment, a Site-Specific Mitigation Implementation Plan for Tier 5 mitigation was submitted to USFWS and DOFAW on May 1, 2020. Kawailoa Wind, however, has continued planning for Tier 5 mitigation and is exploring new options as potential sites for this mitigation utilizing information from recent research and other management/restoration projects.

Pueo. A contribution of \$12,500 was made to the Hawai‘i Wildlife Center for Pueo rehabilitation in FY 2012. An additional \$12,500 was provided to DOFAW to complete the mitigation obligation in the second quarter of FY 2017. With these and other funds DOFAW funded a Pueo research project in 2017 on O‘ahu which was completed in FY 2018 and can be viewed at <https://dlnr.hawaii.gov/wp-content/uploads/2017/10/FW18-Pueo-Rpt.pdf>.

Nā Pua Makani Wind Energy Project Habitat Conservation Plan, O‘ahu, Hawai‘i. Approved 2019.

ITL Licensee: Nā Pua Makani Power Partners, LLC
(Note that AES Corporation owns Na Pua Makani Power Partners, LLC)

Project: Eight WTGs with a total 24-MW energy generating capacity

ITL Duration: April 30, 2019 – April 30, 2040 (as of end of FY 2022, 4 years (19%) through the permit term)



Na Pua Makani Wind Energy Project, O‘ahu

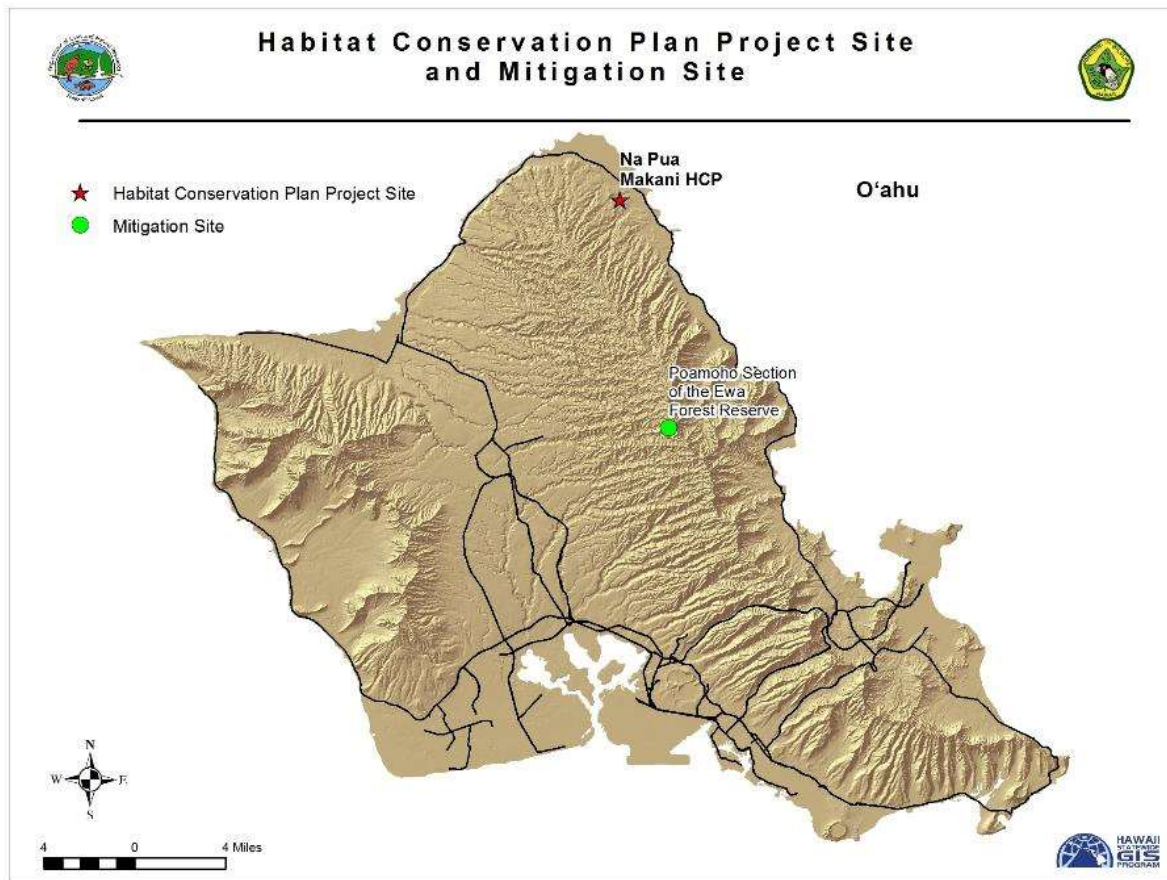


Figure 8. Location of Nā Pua Makani HCP and Mitigation Site

Take Authorization Over 21-year Term:

Table 14. Take Authorization for Nā Pua Makani Wind Energy Project HCP.

Common Name	Scientific Name	Level of Take	21-year Take Limit
‘Ōpe‘ape‘a or Hawaiian Hoary Bat	<i>Lasiurus cinereus semotus</i>	Tier 1	34 bats
		Tier 2	51 bats
‘A‘o or Newell’s Shearwater	<i>Puffinus newelli</i>	Length of permit	4 adults/immatures and fledglings & 2 chicks/eggs
Nēnē or Hawaiian Goose	<i>Branta sandvicensis</i>	Length of permit	6 birds
Koloa Maoli or Hawaiian Duck	<i>Anas wyvilliana</i>	Length of permit	4 birds
Ae‘o or Hawaiian Stilt	<i>Himantopus mexicanus knudseni</i>	Length of permit	4 birds
‘Alaekē‘oke‘o or Hawaiian Coot	<i>Fulica alai</i>	Length of permit	8 birds
‘Alae ‘ula or Hawaiian Moorhen	<i>Gallinula chloropus sandvicensis</i>	Length of permit	8 birds
Pueo or Hawaiian Short-eared Owl	<i>Asio flammeus sandwichensis</i>	Length of permit	4 adults/fledged young & 4 chicks/eggs

Status of ITL: There was no take of HCP covered species at Nā Pua Makani in FY2023

In FY 2019 the Project began construction, which continued throughout FY 2020; the project began commercial operations in December of 2020. Although there was no take of covered species at the Nā Pua Makani Wind Energy facility in FY 2021, one endangered Hawaiian Petrel was found near a wind turbine prior to facility operation. This take was attributed to likely attraction by security lights. Nā Pua Makani is working with the agencies to amend its HCP and ITL to include the Hawaiian Petrel as a covered species. As of FY 2023, the project has a cumulative estimated take of four Hawaiian Hoary Bats (with 80% statistical certainty and indirect take) (Table 15). No night work requiring lights that could attract wildlife occurred in FY 2023. Throughout FY 2023 downed wildlife monitoring at the Project consisted of standardized fatality monitoring according to the Project’s PCMM Implementation Plan (Tetra Tech 2022b) and a revised plan submitted in April 2023, following an agency site visit (Tetra Tech 2023). The PCMM Implementation Plan describes how the Project implements the PCMM program provided in the HCP based on the Project construction footprint, current land use patterns, and topography. Under the PCMM Implementation Plan as performed in FY 2023, NPMPP conducted weekly searches with trained canine search teams within systematic search areas. These systematic search areas consist of areas that were cleared and graded during Project construction at each of the Project’s eight turbines and can be practicably maintained in low-growing vegetation through mowing. In addition, as site conditions allowed, a canine search team performed supplemental searches within active agricultural areas. All such areas that can be searched consistently during any fiscal quarter will be incorporated into fatality estimate(s). Nā Pua Makani Wind Energy performed associated bias correction trials and searches throughout

FY 2023 and incorporated consistently searched supplemental search area results into the analysis of the take estimate.

Table 15 Total observed fatalities and estimated total take since ITL issuance under the Na Pua Makani Wind Energy ITL as of June 30, 2023.

Common Name	Total Observed Take ¹	Estimated Unobserved Take ²	Indirect Take using HCP multipliers	Total Estimated Take
Hawaiian Hoary Bat	1	2	1	4

¹ Excludes hoary bat takes that were incidental and not observed during systematic monitoring (incidental takes are evaluated as part of the EoA modeling software and therefore accounted for in the unobserved take).

² Based on the 80% credible maximum using the following model: Dalthorp, D., M. M. P. Huso, and D. Dail. 2017. Evidence of absence (v 2.0) software user guide: U.S. Geological Survey Data Series 1055.

Mitigation Status:

Newell's Shearwater. In FY 2021, Nā Pua Makani provided the required mitigation funds to the National Fish and Wildlife Foundation (NFWF). Although no programs have yet been funded with these funds, mitigation status and results for Newell's Shearwater will be reported when NFWF identifies an appropriate mitigation project.

Hawaiian Hoary Bat. The mitigation plan for the Hawaiian hoary bat in the HCP includes preparation and implementation of research and management plans targeting actions that will improve and protect bat habitat in the Poamoho Management Area and study the effectiveness of habitat restoration activities on improving the availability of bat food resources, increasing bat activity, or other appropriate variables. In FY 2023 (Quarter 2) revised drafts of the associated research and Nā Pua Makani HCP Annual Report FY 2023 Nā Pua Makani Wind Energy Project management plans were submitted and reviewed by DOFAW and USFWS, in Quarter 4 (DOFAW) and Quarter 3 (USFWS). NPMPP and Tetra Tech are working with the Ko'olau Mountain Watershed to address agency comments and submit revised versions for approval by USFWS, DOFAW, and the Endangered Species Recovery Committee (ESRC).

In Quarter 1 FY 2023, NPMPP and Tetra Tech submitted a bat deterrent research plan for review and received input from DOFAW and USFWS in Quarter 4. Pending some additional input from DOFAW, NPMPP will submit a revised research plan for review by the ESRC. Post construction monitoring for bat activity began in September 2020 and is currently in the second monitoring year. Monitoring was conducted at four locations (turbines 1, 4, 6, and 9) using groundbased recording units. Across the four turbines monitored during FY 2023 (June 2022 – May 2023), Hawaiian hoary bats were detected on 130 nights out of the 1351 (9.6 percent) detector-nights sampled. Detection rates were highest from July through November during the lactation and post-lactation reproductive periods, with a peak (0.23) occurring in the month of August. Following November, bat activity continued to decline throughout the prepregnancy reproductive period, with a lowest detection rate (0.01) observed in the month of February. Detection rates increased again in April and May of the pregnancy reproductive period. The annual detection rate during the FY 2023 monitoring period (9.6 percent) was higher than the observed annual detection rate (6.1 percent) for the previous FY 2022 monitoring period.

Hawaiian Short-eared Owl. Nā Pua Makani provided the required mitigation funds to DOFAW's Endangered Species Trust Fund in September of 2020. An MOU was finalized between Nā Pua Makani and DOFAW in February of 2021 to cover use of funds and reporting requirements. DOFAW used these funds to support a University of Hawai'i graduate research

project on Hawaiian short-eared owl breeding ecology including nest site selection and nesting success, and the timing of courtship and nesting. A preliminary report for the first year of study was submitted to DOFAW in July of FY 2022. DOFAW has reported that a final report is being prepared (pers. comm. M. Giraldo-Perez, July 2023). When available, this report will be included in a subsequent draft of this document or the next annual report.

Hawaiian Goose. The Hawaiian Goose was extirpated from O‘ahu prior to the construction and operation of the Project and DOFAW and Nā Pua Makani have agreed that the Project currently poses no risk to the species. The wind farm will therefore modify the mitigation framework for the Hawaiian Goose via an HCP major amendment to most likely remove the Hawaiian goose from the HCP and incidental take license.

Hawaiian Waterbirds. DOFAW and Nā Pua Makani agreed that a modified program implemented at Hāmākua Marsh, which reduces fatalities and/or increases productivity of the resident waterbird species, is appropriate mitigation for take at the facility (the fencing, public outreach, and staffing program identified in the HCP was determined to be no longer viable). Based on this need, NPMPP has submitted and received agency comments on multiple drafts of an Nā Pua Makani HCP Annual Report FY 2023 Nā Pua Makani Wind Energy Project 18 updated Hawaiian waterbird mitigation plan, including two in FY 2023 (Quarter 1 and Quarter 4). NPMPP and Tetra Tech are working with DOFAW and USFWS to approve final edits and initiate implementation in FY 2024.

Transportation Projects

Relocation of *Abutilon menziesii* Habitat Conservation Plan, Kapolei, O'ahu. Approved 2004.

ITL Licensee: Hawai'i Department of Transportation (HDOT)

Project: Development of 1,381-acre East Kapolei Master Plan project and construction of the North-South Road arterial highway bisecting the property

ITL Duration: March 18, 2005 – July 31, 2021 (100% through the permit term)



*Ko'oloa'ula (Abutilon menziesii),
Island of O'ahu.*

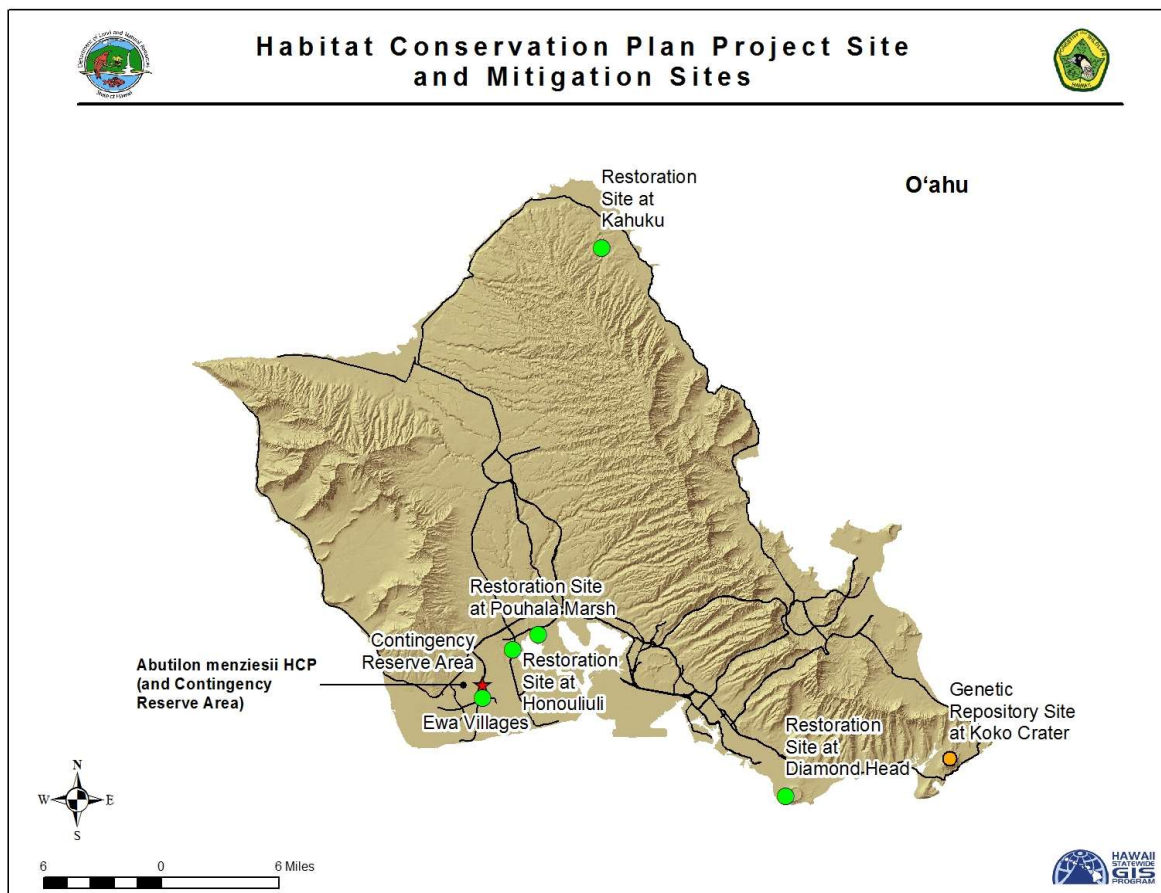


Figure 9. Location of *Abutilon* HCP and Mitigation Sites

Take Authorization:

Table 16. Take Authorization for *Abutilon* HCP.

Common Name	Scientific Name	Total Authorized Over ITL Duration
Ko'oloa'ula	<i>Abutilon menziesii</i>	All individual plants within the 1,381-acre project area

Status of ITL: All plants have been moved. Five mitigation sites were established, and a genetic repository location contains plants with genetic representation of the translocated plants. A Contingency Reserve Area was established where additional plantings were to remain until success criteria was met at the three mitigation sites. The HCP officially concluded a month after the end of the FY 2021 fiscal year (July 31, 2021) without success criteria being met.

Sub-permittees under this HCP, which includes the Department of Hawaiian Homelands (DHHL), HART, UH West O'ahu, and the City and County of Honolulu, were interested in obtaining continued take coverage of *Abutilon* on their properties. They were not able to obtain coverage under the now expired HCP because HDOT was unwilling to extend the HCP and ITL term. In February of FY 2022, DHHL initiated discussions with DOFAW to plan the development of a new HCP for *Abutilon menziesii*. Discussion and planning will be ongoing in FY 2024.

Mitigation Status:

The goal of the HCP was to initiate and sustain a program that will result in an overall net gain in the number of endangered *Abutilon menziesii* plants on O'ahu. The end goal was the establishment of three wild sites that are protected self-sustaining populations of *A. menziesii* from the single degraded Kapolei population. Wild populations of *A. menziesii* have been successfully established at the following sites: 1) Diamond Head State Park; 2) Honouliuli Refuge, part of the U.S. Fish and Wildlife Service's O'ahu National Wildlife Refuge Complex; and 3) Pouhala Marsh on City and County property in Waipahu. Three new sites were established in FY 2018 in the attempt to bring this species' conservation efforts into current DOFAW projects with long-term project investment by the DOFAW O'ahu Branch. They are: Hāmakua Marsh in Kailua, Makua Kea'au Forest Reserve in western O'ahu, and a Wai'anae Mountains Watershed Partnership restoration site in Wai'anae Kai. The species was being incorporated within these already established efforts to help ensure long-term progress at little to no added cost of expansion and maintenance efforts. Additionally, some outplanting occurred at the 'Ewa Villages Golf Course which has successfully maintained 39 individuals, although due to irrigation it is not considered a wild site. The main genetic reserve site established at Koko Crater Botanical Garden currently has 139 mature (reproductive) plants (63% genetic representation).

The success criteria were not met by the end of the first month of FY 2022, when the ITL expired. The Contingency Reserve Area (1,381-acre project area) can therefore not be developed. As of early 2021, the Contingency Reserve Area population had 22 individual plants, a decline from 29 mature *A. menziesii* plants present in FY 2020, and 35 mature plants in FY 2019. Owing to the lack of funding provided by the HDOT to do mitigation work, the last time O'ahu Branch surveyed the Contingency Reserve Area for remaining plants was on July 28, 2020. From an original founder population of 133 plants on the project site in 2002, outplanting efforts have resulted in 107 founders genetically represented at all the sites. When the last

surveys were completed in FY 2020, 628 mature *A. menziesii* plants were present across all the HCP populations at the targeted wild sites, the genetic reserve sites, and the Contingency Reserve Area. No new plants were outplanted during the FY 2021 reporting period nor by the expiration of the ITL.

In FY 2020, DOFAW completed a full monitoring survey of all the management sites. This monitoring data showed that the long-term criteria has not been met and additional management is required. The main reason for the lack of seedling recruitment and survivorship may be a lack of sufficient moisture on a regular basis, which may be due to a variety of factors. However, the expansion of populations via clonal growth (such as rooting of the overhanging branches) has been observed and could have warranted a revision to the measures of success in the HCP.

Funding Source and Status: Funding to implement mitigation activities was provided to DOFAW from HDOT and were exhausted in January 2020. DOFAW was committed to managing the project through the remaining ITL term, and during FY 2021 continued to seek discussions with HDOT on achieving the HCP's success criteria. By the end of FY 2021, however, HDOT did not respond to requests to continue funding the project in order to meet success criteria.

Other Development Projects

Cyanotech Aquaculture Facility Habitat Conservation Plan, Keahole Point, Hawai'i. Approved 2003.

ITL Licensee: Cyanotech Corporation

Project: Commercial microalgae farming operation

ITL Duration: Original Endangered Species Permit: April 2002 (short term); Subsequent ITL December 24, 2003 – March 17, 2016; Renewal application for 2016-2035 in process

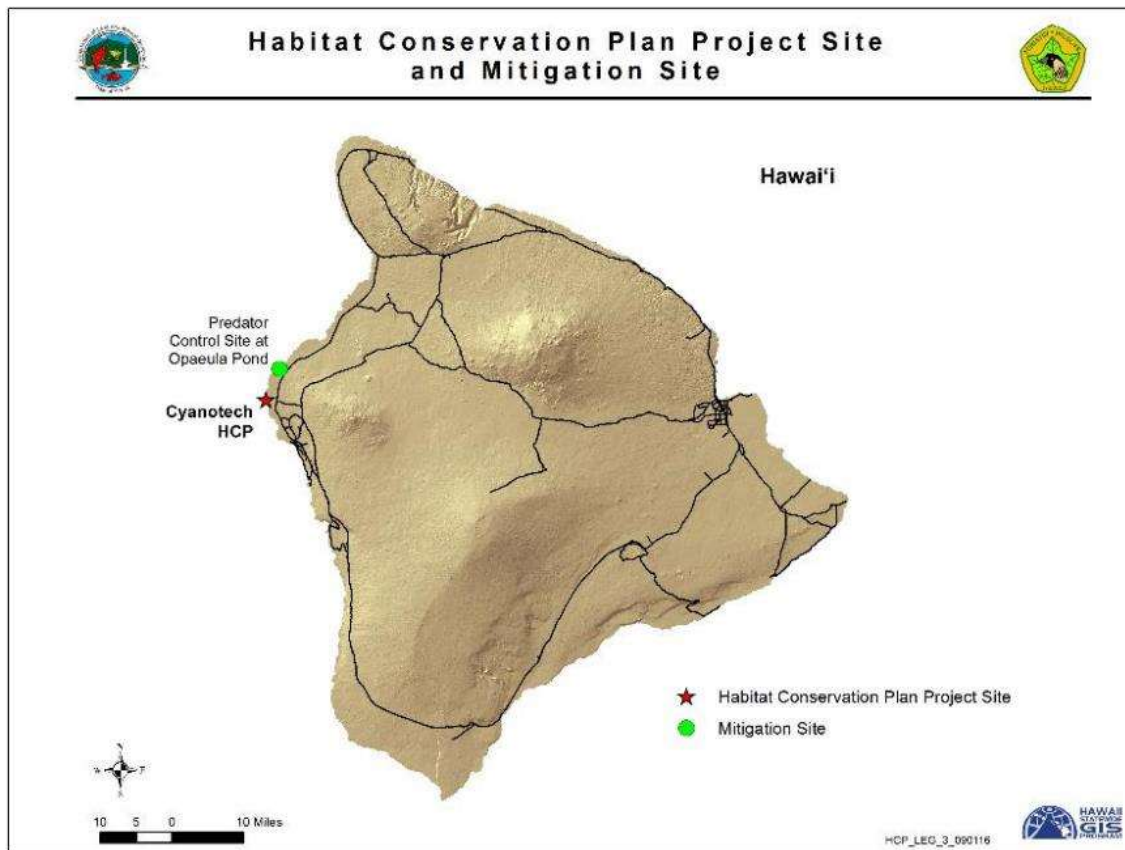


Figure 10. Location of Cyanotech HCP

Take Authorization Over 13-year Term:

Table 17. Take Authorization for Cyanotech HCP.

Permit Period	Common Name	Scientific Name	Total Authorized Over ITL Duration
2002-2016	Ae'o or Hawaiian Stilt	<i>Himantopus mexicanus knudseni</i>	The greater of, 45, or the number of chicks produced to offset losses
2016-2035* (requested renewal)	Ae'o or Hawaiian Stilt	<i>Himantopus mexicanus knudseni</i>	38 (requested)

*not yet approved

Status of ITL: There was one reported fatality of an Ae’o chick. There was no other documented fatality of any species listed as threatened or endangered in Hawai’i at the Cyanotech facilities during the FY 2023 reporting period.

Surveys for incidental take are conducted once per week during the nesting season (March-August) and once per month during the non-nesting season (September-February). Monitoring for injured wildlife is conducted daily as part of normal operations of the production raceways.

The nesting season in FY 2023 started in early April and ended in late July. Monitoring in FY 2023 documented a total of twenty-five nests producing a total of seventy-six eggs, which produced thirty-four hatchlings, of which five fledged. Most mortality of eggs and hatchlings were of unknown reasons. Late in the season a nest of four eggs were lost due to a wind event that required employees to use construction equipment to keep the plastic raceway linings from being ripped apart by the strong winds. One hatchling was found dead (floating in raceway) due to possible drowning or flooding (rain event). One late nest of at least two eggs were determined lost due to flooding from recent rain events.

Least Terns were seen using the facility for loafing (adults and fledglings). The facility is located halfway to their nesting area across the Kona Airport runway construction area this season.

Operation activity was different this season due to low use of raceways. Many raceways were not used for production (freshwater) and left either full of seawater or empty. The low production (shallow freshwater/saltwater) and operation activity (fewer employees/carts driving around) may have given the stilts more opportunities to nest.

Table 18 provides an estimate of the overall total adjusted take that has occurred since Cyanotech ITL issuance.

Table 18. Total observed fatalities since ITL issuance and estimated total adjusted take covered under the Cyanotech ITL as of June 30, 2016.

Common Name	Total Observed Take	Total Adjusted Take ¹
Hawaiian Stilt	18 adults, 4 chicks	43 fledglings

¹ Total adjusted take represented as number of fledglings, based on the survival rate of 2.17 fledglings with respect to incidental take of adult as described in the 2006 Cyanotech Amendment.

Mitigation Status:

Hawaiian Stilt. Prior to the HCP, mitigation occurred onsite at a lake that was managed as nesting and foraging habitat for stilts. Concerns about the proximity to the airport led to the onsite mitigation site being closed in 2002, with hazing implemented to discourage further nesting. Prior to being shut down, the on-site lake resulted in 237 fledglings, 48 of which fledged in 2002 and were “credited” to the HCP for the first year of permit coverage. According to a 2006 minor amendment, Cyanotech mitigation was to be satisfied by funding and implementing predator control at an off-site location. ‘Ōpae‘ula (now Kapo‘ikai) pond is a 3.24-hectare coastal wetland located in the North Kona district of Hawai’i Island and was identified as a viable location for predator control efforts. Cyanotech worked with the private landowner to fund predator control efforts at ‘Ōpae‘ula pond to meet mitigation obligations to satisfy the HCP.

Renewal: In June 2016, Cyanotech requested a renewal of their ITL and HCP, with a requested take of 38 Hawaiian Stilts for the following 19 years (2016-2035). Cyanotech is required to propose a suitable potential mitigation project within one year of approval. Cyanotech is working on an agreement with the County of Hawaii to provide predator control at the Kealakehe Wastewater Treatment Plant as part of their off-site mitigation.

Kaua'i Lagoons Habitat Conservation Plan, Kaua'i, Hawai'i. Approved 2012.

ITL Licensee: Kaua'i Lagoons, LLC

(Note that Tower Kaua'i Lagoons, LLC is the current name of the entity holding the license)

Project: Oceanfront resort encompassing approximately 600 acres

ITL Duration: April 11, 2012 – April 11, 2042 (as of end of FY 2023, 11 years (37%) through the permit term)



Kaua'i Lagoons, Kaua'i.

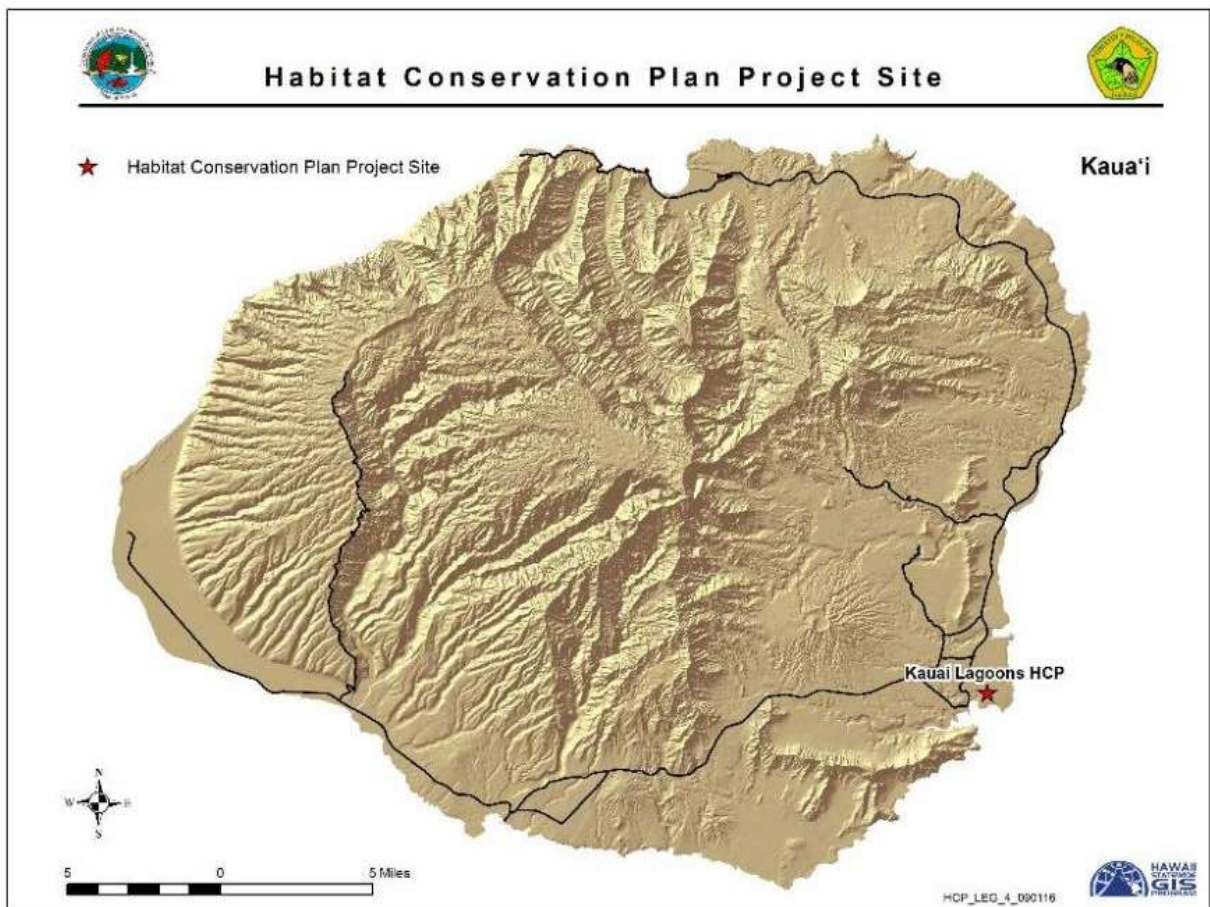


Figure 11. Location of Kaua'i Lagoons HCP

Take Authorization Over 30-year Term:

Table 19. Take Authorization for Kaua‘i Lagoons HCP.

Common Name	Scientific Name	Type of Take	Total Authorized Over ITL Duration
‘A‘o or Newell’s Shearwater	<i>Puffinus auricularis newelli</i>	Life of permit	29 ^a
Koloa Maoli or Hawaiian Duck	<i>Anas wyvilliana</i>	Mortality or Non-Lethal	36
Ae‘o or Hawaiian Stilt	<i>Himantopus mexicanus knudseni</i>	Mortality or Non-Lethal	38
‘Alae Ke‘oke‘o or Hawaiian Coot	<i>Fulica alai</i>	Mortality	110
		Non-Lethal	180
‘Alae ‘Ula or Hawaiian Moorhen	<i>Gallinula chloropus sandvicensis</i>	Mortality	40
		Non-Lethal	30
Nēnē or Hawaiian Goose	<i>Branta sandvicensis</i>	Mortality or Non-Lethal	17
‘Ua‘u or Hawaiian Petrel	<i>Pterodroma sandwichensis</i>	Life of Permit	1
‘Akē‘akē or Band-rumped Storm Petrel	<i>Oceanodroma castro</i>	Life of Permit	1

^{an} Authorized level of take changed from 27 to 29 as processed under the September 2013 minor amendment.

Status of ITL: As of 9/1/2023 DOFAW HCP has not received Kaua‘i Lagoons FY 2023 report. Table 20 provides a listing of all notified documented incidental take during FY 2023.

Table 20. Documented incidental take of Covered Species at the Kaua‘i Lagoons site during the FY 23 reporting period.

Common Name	FY 2023 Fatalities
Hawaiian Moorhen	2
Hawaiian Coot	3
Hawaiian Goose	2
Newell’s Shearwater	1

Table 21 provides tentative observed mortalities that have occurred since Kaua‘i Lagoons ITL issuance. At the close of FY 2022, DOFAW found disparities in the licensee reported observed take for Hawaiian Moorhen and Hawaiian Coot, which had not been rectified prior to this reporting. Licensee has yet to address the concern of the disparities in take. Of additional concern in Table 24 is the rate of Hawaiian Moorhen take. Although only 33% of the license term is complete, well over 75% of the permitted Hawaiian Moorhen lethal take has been reached as of the end of FY 2022 (a value that will likely be greater still after the above-mentioned reporting disparity for the species are rectified).

Table 21. Total observed incidental take since ITL issuance under the Kaua‘i Lagoons ITL as of June 30, 2023.

Common Name	Total Observed Take ^a
Newell’s Shearwater	9
Nēnē	5
Hawaiian Moorhen	32
Hawaiian Duck	7

Common Name	Total Observed Take ^a
Hawaiian Stilt	0
Hawaiian Coot	34

^a Only includes take that was considered caused by project operations. Total take reported here are likely inaccurate. This will be corrected for FY 2024

In accordance with the Kaua‘i Lagoons HCP, DOFAW assumes that the Kaua‘i Lagoons Resort (Resort) continued to implement the following minimization measures during this reporting period:

- On-site predator control;
- Comprehensive endangered species awareness training to all Resort employees, with updated modules, and retraining for all staff and contractors after the new owners took over;
- Deployment of construction monitors and biological monitors during construction operations to prevent harm to ITL covered species;
- Education program to inform golfers of the presence of endangered species and implement measures to avoid harm to such species while golfing;
- Program to minimize light-induced attraction of seabirds to Resort facilities by installing appropriate lighting fixtures, and implementing appropriate seasonal restrictions and practices; and
- Maintenance of on-site nesting areas.

In FY 2020, the ITL-holder submitted an HCP amendment request to reflect the property’s current name, implementing entity, and financial assurances. In FY 2023, was still being processed and will be on-going in FY 2024.

Mitigation Status:

Nēnē, Hawaiian Stilt, Hawaiian Coot, Hawaiian Moorhen, & Hawaiian Duck. Baseline mitigation for waterbirds consists of providing and maintaining approximately 35 acres of lagoons on the property that are an important habitat for endangered waterbird species, including predator control trapping and wildlife monitoring. Predator control efforts during the FY 2022 reporting period included deploying up to 25 live traps on the property. Live traps were deployed throughout the year and were placed in areas in response to sightings of mammalian predators; traps were checked daily.

Trapping resulted in the removal of 42 cats, 7 pigs, and one dog. Additionally, 890 chickens were removed via either live traps or the use of air rifles. Hōkūala also contributed mitigation funding of \$85,000 to DOFAW in May 2012 to be used to conduct predator control and/or manage Nēnē at a translocation site(s) after the completion of the State’s five-year translocation project ending in 2016. The FY 2023 Annual report has not been received as of 9/5/2023.

Newell’s Shearwater, Hawaiian Petrel, & Band-rumped Storm Petrel. The minor amendment in 2013 increasing Newell’s Shearwater take specified contribution of mitigation funding for seabird take in the amount of \$10,000 annually to the National Fish and Wildlife Foundation (NFWF) account, to be held until such time as a Kaua‘i island wide seabird HCP was finalized and approved. On September 15, 2023, \$10,000 will be provided to NFWF to cover the FY 2024 season. In FY 2020, the Kaua‘i Seabird HCP was approved.

**Relocation of Round-leaved Chaff Flower (*Achyranthes splendens* var. *rotundata*)
Habitat Conservation Plan, Kenai Industrial Park, Kapolei, O’ahu, Hawai’i. Approved
2014**

ITL Licensee: CIRI Land Development Company (In September 2014 CIRI Land Development Company sold the property under the ITL to AKC Leasing Corporation)

Project: Industrial development on a 0.75-acre parcel

ITL Duration: February 10, 2014 – February 9, 2024 (as of end of FY 2023, 9 years (90%) through the permit term)



Achyranthes splendens var. *rotundata*.

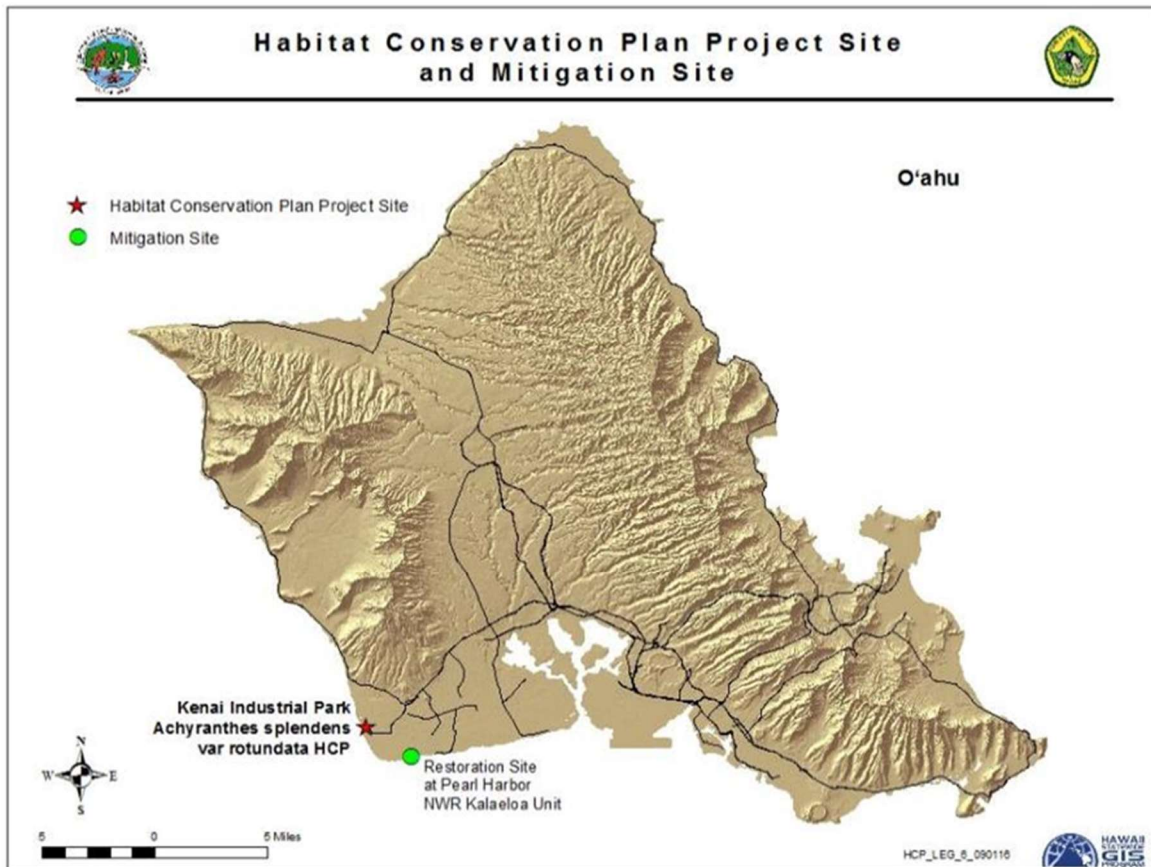


Figure 12. Location of Kenai Industrial Park HCP

Take Authorization Over 10-year Term:

Table 22. Take Authorization for Kenai Industrial Park.

Common Name	Scientific Name	Total Authorized Over ITL Duration
Round-leaved Chaff Flower	<i>Achyranthes splendens</i> var. <i>rotundata</i>	3 individuals and their seed bank

Status of ITL: All plants at the site have been removed under supervision of the State Botanist. Approximately 23,000 seeds were collected in 2014. Approximately 400 of the seeds collected were used to germinate plants at Hui Kū Maoli Ola native plant nursery, the remainder are in storage at the Lyon Arboretum seed facilities. The seeds at Hui Kū Maoli Ola were propagated and were used for out-planting at the mitigation site.

Mitigation Status:

Round-leaved Chaff Flower. In accordance with the HCP, seeds were collected from the project site and were either stored or propagated for future out-planting at the mitigation site located at the Kalaeloa Unit of the Pearl Harbor National Wildlife Refuge.

A total of 159 plants were installed in four plots within the Kalaeloa Unit in November and December 2014. Each planting plot is approximately 12 × 12 meters (39.5 × 39.5 feet). In addition, four individual plants of Round-leaved Chaff Flower were planted outside of the Plots 1–4 in November 2014 and this area was designated Plot 5. As of June 29, 2021, there were 0



Plot 1 outplants on 4/25/17

outplants (0% of 159 planted) surviving; therefore, the 75% survival by Year 5 outlined in success criteria 1 would not have been met if it were still valid. In all, two seedlings reached at least six inches in height in FY 2021. In June 2021, 57 live newly outplanted individuals were included in the count bringing the total number of individual progeny at the project site to 121. Success criteria that apply to Year 5 of the monitoring include no fewer than 120 mature plants surviving, no mature kiawe present within the plots, less than 25% cover of herbaceous non-native plants, and more than 25% cover of native plants. At the end of FY 2021, there were 121 plants at the site (57 recently planted and not yet considered established), native plant cover ranged from 17-50% in the plots, and non-native plant cover ranged from 8-67% in the plots, and no mature kiawe were present in the plots. Weeding took place to ensure all plots met other success criteria.

Reports on the life expectancy of round-leaved chaff vary and range from two to 10 years; however, restoration managers generally agree that this species has a relatively short lifespan, relying on its high reproductive output to perpetuate its populations in the harsh, dry environments in which it is found. For this reason, in FY 2019 the ITL licensee and DOFAW discussed adjusting the survivorship criterion in the HCP to reflect that the species' lifespan often falls below this time period. In FY 2021, DOFAW finalized the ESRC's approval to omit success criteria 1 as requested by the permittee.

DOFAW paid a site visit to the Kalaeloa Unit on September 27, 2021, and determined that only 64 *Achyranthes* still occurred there in FY 2022. None of these plants were those originally planted in 2014, and not all plants were mature. The mortality rate of adult plants, therefore, had exceeded recruitment of new individuals, resulting in fewer remaining *Achyranthes* than were in the founding population. Outplantings and seedlings had been watered throughout the dry season and were observed still being watered during the site visit in early FY 2022. The provenance of the plants grown or outplanted for the project had additionally not been suitably tracked. Recruitment of seedlings that survive through the dry season, therefore (in the absence of any supplemental watering) and seed production by at least 25% of the outplanted lineages still could not be determined in FY 2022. Excluding criterion 1, DOFAW concluded that three out of the six remaining success criteria had not yet been met.

In April of FY 2022 DOFAW met with the licensee to discuss the fate of 100 *Achyranthes* cuttings in the licensee's possession that were taken from the mitigation site. While the licensee prefers to hand these cuttings over to DOFAW, the agency feels that they do not have the capacity to tend to them and instead suggested the licensee look for an alternative mitigation site at which to plant them. Although the Kalaeloa Heritage Park in Kapolei was discussed as a suitable site no firm decision was made and no further discussion or follow-up occurred between the licensee and DOFAW-HCP by the end of the fiscal year. However, the licensee proceeded to work with Kalaeloa Heritage Park to secure a site for the newly grown plants once achieved maturity. The licensee also applied and obtained a Threatened/Endangered Rare Plant Permit through DOFAW, which became effective as of June 27, 2022.

During FY 2023, on September 12, 2022, the licensee transferred 103 plants from the Native Ecosystem Nursery to the DOFAW Nursery on Waimano, where they were cared for by DOFAW O'ahu Branch staff for just under five months. Then, on February 3, 2023, the licensee retrieved those plants and transported them to the Kalaeloa Heritage Park for outplanting. Those plants and any progeny that naturally recruit will remain at that site indefinitely. Pursuant to the DOFAW Permit I5122, the licensee will monitor the plants quarterly until February 2024.

On May 18, 2023, DOFAW received a letter from the Law Office of Jennifer A. Lim LLC, on behalf of AKC Leasing Corporation, requesting that the associated bond for this HCP be terminated/released because the licensee considers it has met all the obligations, conditions and success criteria of the HCP and ITL. This is currently under consultation with the State Attorney General's Office.

Funding Status: In September of 2014, CIRI Land Development Company (original owner of the property under the ITL) sold the property to AKC Leasing Corporation. AKC Leasing Corporation has acknowledged and understands that ownership of the property is subject to conditions under the approved Incidental Take License Number ITL-18 and the associated HCP for Kenai Industrial Park. AKC Leasing Corporation is required to provide all funding necessary to fulfill obligations outlined in the approved HCP including funding assurances. In FY 2021 and 2022, AKC Leasing Corporation used their own procurement processes to fulfill HCP obligations.

Kaua’i Seabird Habitat Conservation Plan, Kaua’i Island, Hawai’i. Approved 2020.

ITL Licensees:

- Alexander & Baldwin, Inc.
- County of Kaua’i
- Hawai’i Department of Transportation
- Royal Sonesta Resort (Essex House Condominium Corporation)
- Kaua’i Coffee Company, LLC
- NCL (Bahamas) Ltd.
- 1Hotel Hanalei (XI Kaua’i PV Hotel) (formerly known as Princeville Resort)
- Sheraton Kaua’i (Kauai Blue, Inc)



Newell’s Shearwater (Puffinus auricularis newelli)

Project: The Kaua’i Seabird Habitat Conservation Plan (KSHCP) is an Island wide conservation plan approved in FY 2020 and addresses artificial nighttime lighting threats and light attraction on covered seabirds and the Hawaiian Green Sea Turtle (*Chelonia mydas*).

ITL Duration: June 12, 2020 – June 12, 2050

Take Authorization Over 30-year Term:

Table 23. Take Authorization for All Participating Entities.

Participant	Authorized Take over Permit Term			
	(lethal/non-lethal) fledglings			
	Newell’s Shearwater (‘A‘o)	Hawaiian Petrel (‘Ua‘u)	Band-rumped Storm Petrel (‘Akē‘akē)	Green Sea Turtle (Honu)
Kaua’i Marriott Resort	33 / 22	1 / 1	1 / 1	0
Kaua’i Coffee	34 / 27	-	-	0
Sheraton Kaua’i	81 / 64	1 / 1	3 / 3	0
NCL	30 / 30	6 / 6	6 / 6	0
Princeville Resort	125 / 476	6 / 6	1 / 1	0
County of Kaua’i	276 / 217	17 / 4	4 / 0	0
Hawai’i Dept. of Transportation	103 / 144	5 / 12	1 / 2	0
Alexander & Baldwin	104 / 80	3 / 3	1 / 1	0

Status of ITL: The Kaua’i Seabird Habitat Conservation Plan (KSHCP) was approved in FY 2020 and addresses artificial nighttime lighting threats and light attraction on covered seabirds and the Hawaiian Green Sea Turtle (*Chelonia mydas*).

Table 24. Calculated seabird take for all Participants in FY 2023

Property or Facility	Newell's Shearwater		Hawaiian Petrel		Band-rumped Storm Petrel	
	Lethal	Non-lethal	Lethal	Non-lethal	Lethal	Non-lethal
A&B- Multiple	10.72	5.28	0	0	0	0
Kauai County-Multiple	0	0	0	0	0	0
HDOT-Lihue Airport	2.69	2.64	0	0	0	0
HDOT-Nawiliwili Harbor	0.23	0.88	0	0	0	0
HDOT-Port Allen	2.24	1.76	0	0	0	0
Kauai Coffee	1.12	0.88	0	0	0	
Royal Sonesta	3.36	2.64	0	0	0	0
NCL	1.12	0.88	0	0	0.12	0.88
Princeville Resort Kaua'i	0	0	0	0	0	0
Sheraton Kauai Resort	8.96	7.04	0	0	0	0
Total FY 2023 Take	28.66	22	0	0	0.12	0.88
Take prior to 2022	11.47	9.4	1.1	0	0	0
Cumulative Participant Fledgling Take Since May 2020	40.13	31.4	1.1	0	0.12	0.88
Maximum Anticipated Total Fledgling Annual Take*	30	45	2	2	1	1
Maximum Anticipated Total Fledgling 30-year Take*	900	1350	60	60	30	30

In total, 28 Newell's shearwaters and one Band-rumped storm petrel were found on KSHCP participant covered properties during the 2022 seabird fallout season. This is a significant increase over the nine Newell's shearwaters and one Hawaiian petrel documented in 2021. In 2022, twenty-five (25) of the Newell's shearwaters were released alive, one was found dead, one escaped capture and is presumed dead, and one was euthanized in SOS care. The one Band-rumped storm petrel was released alive.

Facility changes: There were no changes in ownership during the 2022 seabird season; however, three A&B facilities were sold prior to the 2022 season and are no longer included in the KSHCP.

Minimization status: Overall, the participants in the KSHCP ensured that lighting at their facilities was reduced and modified in compliance with the guidelines set forth in the KSHCP. In some cases, lights were completely turned off at the properties for the duration of the season. For tourism-based properties (1 Hotel Hanalei Bay and NCL), lighting was significantly decreased as a result of closed facilities and/or greatly reduced occupancy due to the COVID 19 pandemic.

Only 25/47 of those properties conducted predator control across all Participants, resulting in significant gaps in coverage of predator control. Of the 25 properties that did conduct predator control, only 12 were deemed to be effective based on meeting the minimum number of trap nights and trap placement, which is an improvement from only nine in 2021.

Take Monitoring: Each Participant's ITP and ITL requires that the participant "calculate their annual lethal and non-lethal take using the methodology described in the KSHCP and with the discovery rate within their approved Participant Inclusion Plan." This summary of take

monitoring first summarizes Participants' covered seabird monitoring, and then presents tables comparing Participants' actual rates of take to requested amounts. In 2021, a Searcher Efficiency Trial was conducted at multiple participant facilities to determine the efficacy of searching for downed seabirds. Sheraton and Sonesta, with a proposed 50% discovery rate, were tested again in 2022. The searcher efficiency rate for the Royal Sonesta in 2022 was 40% in contrast to 17% in 2021. The searcher efficiency rate of Sheraton Kauai Resort in 2022 was 65% in contrast to 5% in 2021. 1Hotel Hanalei, which was unavailable for testing due to remodeling, will be evaluated in the upcoming seabird season.

Mitigation Status: The Kaua'i Seabird Habitat Conservation Plan (KSHCP) was developed and finalized in 2020 to address light attraction impacts to the listed seabirds on the island of Kaua'i. The KSHCP also addresses the impacts of lights on the Central North Pacific distinct population segment (DPS) of the green sea turtle (*Chelonia mydas*, Hawaiian name: honu, hereafter honu).

Hawaiian Petrel, Newell's Shearwater & Band-rumped Storm Petrel. The funding design of the KSHCP features a cost-sharing structure. Total costs of the KSHCP, including implementation, mitigation, monitoring, Adaptive Management as needed and reporting, is shared amongst the permit recipients according to the relative amounts of take authorized.

Under the KSHCP, the participants will mitigate their take, in part, by enhancing, protecting, and managing suitable seabird breeding habitat on Kaua'i to facilitate successful production of covered seabirds. This will be accomplished through 1) the construction and maintenance of a predator proof enclosure installation, 2) long-term maintenance of social attraction equipment within the enclosure, and 3) eradication of predators from within the enclosure, and implementation of long-term predator control at the site. The KSHCP identified the Kahuama'a Flats within the Kōke'e State Park as a suitable location for the mitigation/social attraction site. The Kahuama'a seabird preserve site was selected during the HCP process to create a fenced, predator-free seabird preserve in the northwest region of Kaua'i. Owing to a large landslide that occurred at the originally proposed site, an alternative preserve site was selected 102 meters away from the original site resulting in changed circumstances being initiated almost immediately upon the adoption of the HCP. The new site selected provides comparable area and habitat to the originally proposed site. In FY 2021, construction of the 9.2-acre seabird reserve was completed. Biological monitoring of forest birds, seabirds and habitat at the preserve site were completed prior to the initiation of construction in FY 2020 and continued into FY 2021; all required surveys were completed during that time to provide an inventory of the flora and fauna present in the area. Intensive burrow searching indicated that seabirds do not appear to be nesting in the immediate project area but based on high rates of detection during auditory surveys they were clearly transiting the area daily during the breeding season. With the deployment of social attraction infrastructure and installation of 100 artificial burrows in 2021, it is expected they will readily find the mitigation site.

The social attraction speaker system was installed prior to the 2022 seabird season and plays a mix of Newell's shearwater calls from dusk until dawn to mimic natural attendance patterns at the colony during the seabird breeding season. Auditory surveys began in mid-May 2022 and were conducted every two weeks with two surveys per survey-day until August. Newell's shearwaters were detected in relatively high frequency during every survey conducted and are regularly prospecting within the area.



Figure 13. Photographs of completed artificial nest boxes installed at Kahuama'a Seabird Preserve

SUMMARY OF SAFE HARBOR AGREEMENTS AND ASSOCIATED INCIDENTAL TAKE LICENSES

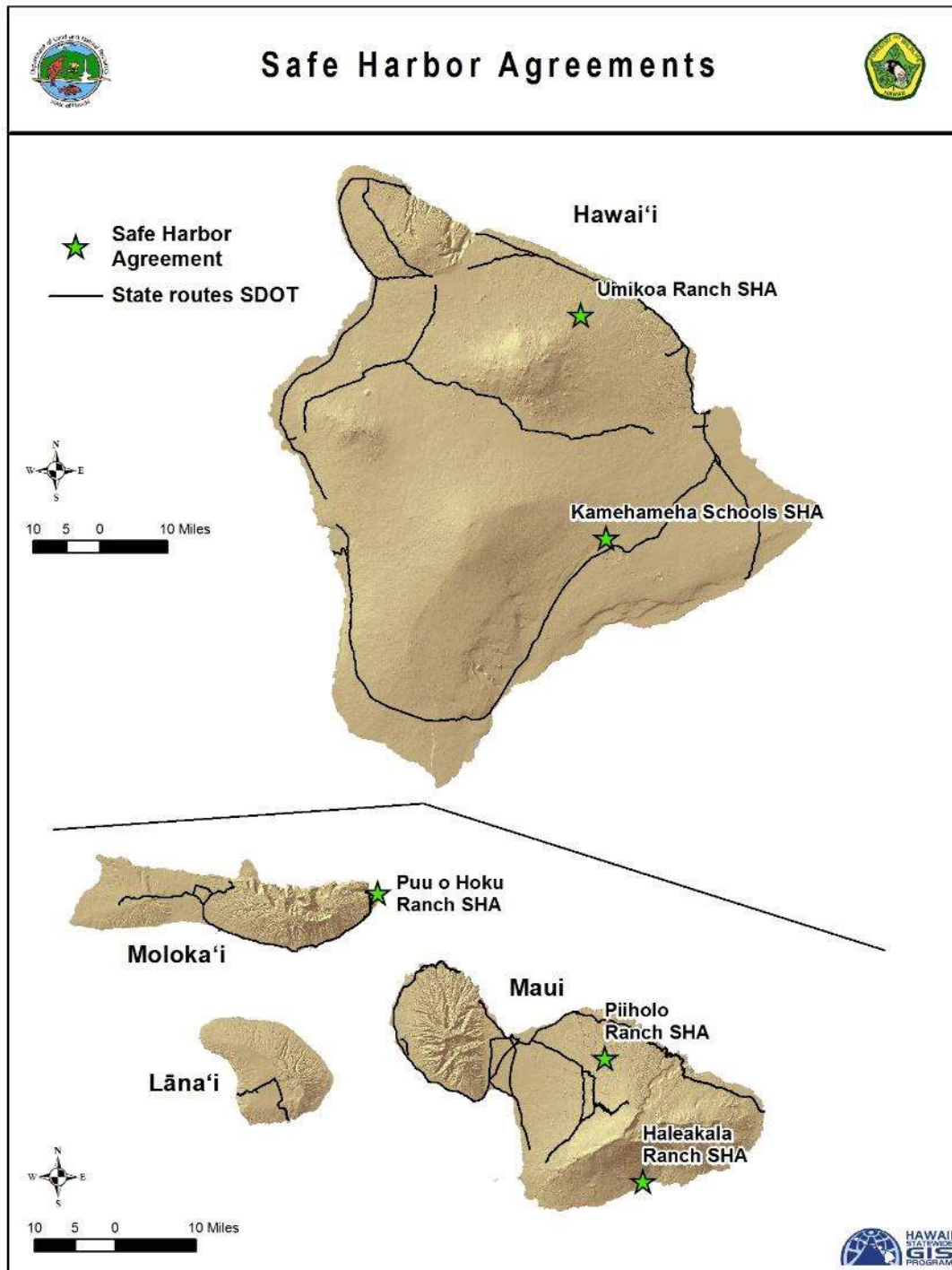


Figure 1. Location of Safe Harbor Agreements

Safe Harbor Agreement for Pu‘u o Hōkū Ranch, Moloka‘i.

ITL Licensee: Pu‘u o Hōkū Ranch, Limited.

Project: Reintroduce Nēnē (*Branta sandvicensis*) to Pu‘u o Hōkū Ranch, Moloka‘i.

ITL and SHA Duration: ITL has no specific expiration and is valid unless rescinded; SHA period was from September 4, 2001, to September 3, 2008 (DOFAW is currently in discussion with Pu‘u o Hōkū Ranch to enter into a new agreement).



Nēnē, official bird of the State of Hawai‘i, resting in the foreground.

Take Authorization: Incidental take of Nēnē on lands owned or otherwise controlled by Pu‘u o Hōkū Ranch, Limited.

Baseline Condition: At the time of agreement execution, there was no wild Nēnē on Moloka‘i. Therefore the baseline condition is zero wild Nēnē on Pu‘u o Hōkū Ranch property. The SHA allowed for reintroduction of Nēnē on Pu‘u o Hōkū Ranch property, construction of a release pen, provision of habitat for Nēnē grazing and breeding, and control of predators in the release pen and breeding areas.

Status of ITL and SHA: In FY 2023 there was no take of Nēnē at Pu‘u o Hōkū Ranch. Nēnē monitoring was performed on a weekly basis by DOFAW personnel throughout December 2022. Additional staff from Maui were sent to Moloka‘i throughout the remaining reporting period due to DOFAW personnel retiring. Observations from surveys throughout the reporting period resulted in a total of six birds, which was the estimated population size. Island-wide Nēnē survey was conducted on Molokai on August 25th, 2022, during which time only four individuals were recorded.

During the August through April nesting season no nests were recorded within the open-top release pen at Pu‘u o Hōkū Ranch and no additional nests were located on the ranch or adjacent areas.

Maintenance at the three-acre open-top release pen in FY 2023 included monthly checks and repairs of fences, weekly checks of waterlines and water troughs, and mowing the half-acre around the pen. Ten feet of fence line was repaired, and one water trough was repaired to prevent leaking. A total of 1.0 acres of alien vegetation (Lantana and Haole Koa) was removed from the pen. Twenty acres within the ranch were mowed by DOFAW staff in addition to 850 acres mowed by Ranch personnel.

Sixteen live traps were checked regularly at the pen and a total of 25 mongooses and one cat were removed around the open-top release pen at Pu‘u o Hōkū Ranch in FY 2023.

A total of 74 birds were translocated to the Pu‘u o Hōkū Ranch from 2002-2005. Table 1 provides survey data for the original 74 birds translocated to the Pu‘u o Hōkū Ranch. The percentage of the original 74 birds that were re-sighted is a factor of survey effort and does not

account for any unknown mortality or emigration from the ranch and may not necessarily be a measure of translocation success.

Table 1. Observations of Nēnē translocated to Pu‘u o Hōkū Ranch

Year	No. of Birds Translocated	Total Birds Translocated	No. of Known Fatalities	No. of Birds Sighted	Percentage (%) of Translocated Birds Sighted (excluding known fatalities)
2023	0	74	0	0	0
2022	0	74	0	0	0
2021	0	74	0	0	0
2020	0	74	0	0	0
2019	0	74	0	1	2
2018	0	74	0	1	2
2017	0	74	0	1	2
2016	0	74	0	2	3
2015	0	74	0	4	5
2014	0	74	0	6	9
2013	0	74	0	6	9
2012	0	74	0	6	9
2011	0	74	0	7	11
2010	0	74	0	8	13
2009	0	74	0	18	28
2008	0	74	1	33	52
2007	0	74	0	38	58
2006	0	74	5	29	45
2005	11	74	2	47	67
2004	8	63	1	42	69
2003	41	55	1	54	100
2002	14	11	0	14	100

Programmatic Safe Harbor Agreement for Nēnē, Moloka‘i.

ITL Licensee: DOFAW to issue Certificates of Inclusion under authority of §195D-22, HRS, to landowners signing Cooperative Agreements.

Project: Encourage private landowner management activities to benefit Nēnē and provide regulatory assurances if Nēnē occupy or breed on their property.

ITL Duration: April 7, 2003 – April 6, 2053.

Take Authorization: Any Nēnē or Nēnē habitat above Baseline Conditions, as defined in respective landowner Cooperative Agreements.

Baseline Condition: To be set in each landowner Cooperative Agreement.

Status of ITL and SHA: During the reporting period and to date, there are no landowners enrolled under this SHA; discussions with interested landowners are ongoing.

Safe Harbor Agreement for the Introduction of Nēnē to Pi‘iholo Ranch, Maui.

ITL Licensee: Pi‘iholo Ranch, LLC.

Project: Establish a Nēnē population on Pi‘iholo Ranch.

ITL Duration: The ITL is valid for 50 years from September 21, 2004, to September 20, 2054; the SHA is currently expired. The original period was from September 21, 2004, to September 20, 2014.

Take Authorization: Incidental take of Nēnē on lands owned or otherwise controlled by Pi‘iholo Ranch, LLC.



Pi‘iholo Ranch on Maui.

Baseline Condition: Following Nēnē reintroduction efforts on Maui that began at Haleakalā National Park in 1962, DOFAW began establishing a population in west Maui through a reintroduction program at Hana‘ula in 1995. However, prior to the development of the SHA, there had been no known Nēnē sightings at Pi‘iholo Ranch premises by DOFAW staff or Ranch personnel. The baseline condition, therefore, was determined to be zero. Under the SHA Pi‘iholo Ranch was to maintain or improve approximately 600 acres of Nēnē habitat for a period of 10 years.

Status of ITL and SHA: There was take of six Nēnē, all goslings at Pi‘iholo Ranch this fiscal year. The activities under the SHA were construction of a Nēnē release pen, predator control activities around Nēnē nesting and breeding sites, and out-planting native plant species known to be Nēnē food sources. There were 18 nests in FY 2023, all of which were located in the open-top release pen. Of the 18 nests, only seven nests produced goslings; six nests were abandoned, and five were unknown. Six of the goslings died of unknown causes, the outcome of seven goslings were unknown, and two goslings fledged the open-top release pen. Nēnē monitoring recorded 33 banded birds on the Ranch in FY 2023. An island wide annual Nēnē survey was not conducted this fiscal year. Overall, there was a total of 40 birds sighted in FY 2023 (33 banded, 7 unbanded).

The open-top pen’s fence line was continuously checked and maintained throughout the fiscal year. A foot-long hole was repaired on the outer fence. No repairs were needed for the waterline and water troughs. A two-foot perimeter along the fence was weed-whacked, totaling eight acres.

Predator control efforts from 70 traps employed in FY 2023 resulted in a total of 15 mongooses, two cats, and one rat removed around the open-top release pen this past season.

Table 2 provides survey data for the original 48 birds released to the Ranch. The percentage of the original 48 birds that were re-sighted is a factor of survey effort and does not account for any unknown mortality or emigration from the Ranch and may not necessarily be a measure of release success.

Table 2. Observations of Nēnē translocated to Pi‘iholo Ranch

Year	No. of Birds Translocated	Total Birds Translocated	No. of Known Fatalities	No. of Birds Sighted	Percentage (%) of Translocated Birds Sighted (excluding known fatalities)
2023	0	48	0	0	0
2022	0	48	0	0	0
2021	0	48	0	0	0
2020	0	48	0	1	2
2019	0	48	0	3	6
2018	0	48	0	3	6
2017	0	48	0	4	9
2016	0	48	0	9	20
2015	0	48	0	10	23
2014	0	48	0	10	23
2013	0	48	0	11	25
2012	0	48	0	11	25
2011	0	48	1	16	36
2010	0	48	0	23	51
2009	0	48	1	26	58
2008	10	48	0	30	65
2007	25	38	2	26	72
2006	8	13	0	12	92
2005	5	5	0	5	100

Safe Harbor Agreement for the Reintroduction of Nēnē to Haleakalā Ranch, Maui.

ITL Licensee: Haleakalā Ranch Company.

Project: Establish a Nēnē population on Haleakalā Ranch, Maui.

ITL Duration: The ITL is valid for 50 years from May 22, 2012, to May 21, 2062; the SHA has been finalized as of August 2019.

Take Authorization: Incidental take of Nēnē on lands owned or otherwise controlled by Haleakalā Ranch.

Baseline Condition: There had been no Nēnē sightings at Haleakalā Ranch by DOFAW staff or ranch personnel prior to execution of the SHA, therefore the baseline condition was determined to be zero.

Status of ITL and SHA: There was take of three Nēnē at Haleakalā Ranch (one adult and two goslings) reported this fiscal year. DOFAW in cooperation with Haleakalā Ranch has constructed a two-acre Nēnē release pen, conducts predator control activities around Nēnē nesting and breeding sites, and maintains access roads leading to the Nēnē release pen.

DOFAW conducted regular monitoring during July 2022-mid December 2022 at Haleakalā Ranch. Trapping and maintenance duties were taken over by KWP I and KWP II on December 8, 2022. DOFAW staff recorded a total of 24 banded birds at the pen, of which 20 wild-banded birds and four were Kaua‘i translocated birds. After the Tetra Tech projects took over (from December 8, 2022 to June 30, 2023), 13 distinct banded adults and three unique un-banded adults were observed at the Ranch.

A total of three nests were found in FY 2023, all located inside the open-top release pen . Of the three nests, a total of five goslings were produced and successfully fledged.

Maintenance activities included checking fences and automatic waterers monthly. The water unit was checked and maintained monthly. DOFAW staff reports that ten holes were patched in the closed-topped pen. A quarter-mile of road was cleared of rock and holes were filled where needed. In total 9.5 acres were mowed in and around the pen to maintain short grass, and 4.5 acres of weed eating occurred. A total of 0.5 acres of alien vegetation including lantana, guava, fireweed, and bur, was removed. Tetra Tech reports that the pond was drained and cleaned twice a month and refilled with clean water. The water system’s shutoff valve was replaced after leaking was observed. New electric fence insulators, solar batteries, and grounding states/wires were installed to get the electric fence perimeter working again. Weekly mowing was conducted to maintain the open-top release pen during breeding season. Mowing then occurred every other week during the non-breeding season. On December 18th, 2022, there was a large storm event which damaged many of the surrounding trees, the pen entrance door, and the water catchment/mower shed. The downed trees and damaged items were repaired, and unusable materials were removed.

Predator control efforts from 70 traps resulted in a total of 10 mongooses and four rats removed around the open-top release pen. From the total DOFAW staff removed one mongoose and one rat.

A total of 53 birds were translocated to Haleakalā Ranch between 2011 – 2016. Three birds were translocated in FY 2023. All three birds were injured and released in the pen. Table 3 provides survey data for the 56 translocated birds. The percentage of the original 53 birds that were re-sighted is a factor of survey effort and does not account for any unknown mortality or emigration from the Ranch and may not necessarily be a measure of release success.

Table 3. Observations of Nēnē translocated to Haleakala Ranch

Year	No. of Birds Translocated	Total Birds Translocated	No. of Known Fatalities	No. of Birds Sighted	Percentage (%) of Translocated Birds Sighted (excluding known fatalities)
2023	3	56	0	Pending	Pending
2022	0	53	0	2	4
2021	0	53	1	8	15
2020	0	53	0	10	19
2019	0	53	0	10	19
2018	0	53	0	13	25
2017	0	53	0	19	40
2016	8	53	0	28	60
2015	8	45	1	25	64
2014	0	37	2	23	84
2013	7	37	1	31	91
2012	20	30	2	30	100
2011	10	10	0	10	100

Safe Harbor Agreement for the Koloa Maoli or Hawaiian Duck (Anas wyvilliana) and the Nēnē or Hawaiian Goose (Branta sandvicensis) on ‘Umikoa Ranch, Hawai‘i Island.

ITL Licensee: Umikoa Ranch.

Project: Establish a Koloa and Nēnē population on privately owned lands of ‘Umikoa Ranch in the Hamakua District of Hawai‘i Island.



Koloa Maoli or Hawaiian Duck, endemic to the Hawaiian Islands.

ITL Duration: The ITL was valid from December 5, 2001, to December 4, 2021; the SHA period went from December 5, 2001, to December 4, 2021.

Take Authorization: Incidental take of Nēnē and Koloa, including their progeny, on lands owned or otherwise controlled by ‘Umikoa Ranch, provided that such take is above established baseline conditions.

Baseline Condition: The Baseline Conditions for Koloa and Nēnē were determined from monthly biological surveys conducted between January and October 2000. During this time there were five existing ponds ranging from 0.12 to 0.30 acres, providing approximately one acre of open water habitat, in addition to five acres of adjacent upland habitat. Surveys indicated that the ‘Umikoa wetland area was frequented by a single pair of wild Koloa. Therefore, the baseline for Koloa was determined to be two individuals, one acre of open water habitat, and five acres of adjacent upland habitat. The baseline for Nēnē was determined to be zero.

Status of ITL: It is unknown if there was take of covered species at ‘Umikoa Ranch in FY 2022 or FY 2023 due to the Safe Harbor agreement being expired.

In FY 2021, USFWS terminated the Federal ITP for ‘Umikoa Ranch and DOFAW rescinded the ranch’s ITL due to lack of reporting and communication. No waterbird surveys were conducted in FY 2022 or FY 2023.

Safe Harbor Agreement for Kamehameha Schools, Keauhou and Kīlauea Forest Lands, Hawai‘i Island

ITL Licensee: Trustees of the Estate of Bernice P. Bishop, DBA Kamehameha Schools.

Project: Restoration and enhancement of habitat for native plants and animals.

ITL Duration: The ITL is valid from June 22, 2018, to June 21, 2068.



Example species in the Kamehameha Schools SHA.

Take Authorization and Baseline Condition:

Table 4. Take Authorization for Kamehameha Schools SHA

<u>Common Name</u>	<u>Scientific Name</u>	<u>Incidental Take Permitted No. of Individuals or Habitat</u>	<u>Baseline Individuals or Habitat</u>
Forest Birds: ‘Akiapōlā‘au, Hawai‘i Creeper Hawai‘i ‘Ākepa ‘I‘iwi	<i>Hemignathus wilsoni</i> <i>Loxops mana</i> <i>Loxops coccineus</i> <i>Vestiaria coccinea</i>	Any habitat for the four forest birds above the baseline identified on the Enrolled Property	Approximately 4,162 acres of habitat in Forest Bird Stratum 1 on the Enrolled Property
Hawaiian Hawk, ‘Io	<i>Buteo solitarius</i>	Any habitat for the ‘Io above the baseline identified on the Enrolled Property	Approximately 18,517 acres of habitat on the Enrolled Property
Hawaiian Crow, ‘Alalā	<i>Corvus hawaiiensis</i>	Any individual on or at the Enrolled Property	Zero Individuals
Hawaiian Goose, Nēnē	<i>Branta sandvicensis</i>	Any individual on or at the Enrolled Property	Zero Individuals
Hawaiian Hoary Bat, ‘Ōpe‘ape‘a	<i>Lasiurus cinereus semotus</i>	Any habitat for the ‘Ōpe‘ape‘a above the baseline identified on the Enrolled Property	Approximately 18,517 acres of habitat on the Enrolled Property
None	<i>Asplenium peruvianum var. insulare</i>	Any individual on or at the Enrolled Property	128 Individuals
‘Ōhā wai	<i>Clermontia lindseyana</i>	Any individual above the baseline on the Enrolled Property	24 Individuals
Hāhā	<i>Cyanea shipmanii</i>	Any individual above the baseline on the Enrolled Property	463 Individuals
Hāhā	<i>Cyanea stictophylla</i>	Any individual above the baseline on the Enrolled Property	104 Individuals
Kīponapona	<i>Phyllostegia racemosa</i>	Any individual above the baseline on the Enrolled Property	4 Individuals
None	<i>Phyllostegia velutina</i>	Any individual above the baseline on the Enrolled Property	38 Individuals
None	<i>Plantago hawaiiensis</i>	Any individual above the baseline on the Enrolled Property	1 Individual
None	<i>Vicia menziesii</i>	Any individual above the baseline on the Enrolled Property	27 Individuals

<u>Common Name</u>	<u>Scientific Name</u>	<u>Incidental Take Permitted No. of Individuals or Habitat</u>	<u>Baseline Individuals or Habitat</u>
‘Āhinahina	<i>Argyroxiphium kauens</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
‘Ōha	<i>Clermontia peleana</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
‘Akū	<i>Cyanea tritomantha</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
Ha‘iwale	<i>Cyrtandra giffardii</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
Ha‘iwale	<i>Cyrtandra tintinnabula</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
Hau kuahiwi	<i>Hibiscadelphus giffardianus</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
‘Ohe	<i>Joinvillea ascendens</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
Alani	<i>Melicope zahlbruckneri</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
None	<i>Neraudia ovata</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
‘Aiea	<i>Nothocestrum breviflorum</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
None	<i>Phyllostegia floribunda</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
None	<i>Phyllostegia parviflora</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
Makou	<i>Ranunculus hawaiiensis</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
‘Ānunu	<i>Sicyos alba</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
‘Ānunu	<i>Sicyos macrophyllus</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
None	<i>Silene hawaiiensis</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals
None	<i>Stenogyne angustifolia</i>	Any individual above the baseline on the Enrolled Property	Zero Individuals

Status of ITL: Kamehameha Schools (KS) first presented a baseline revision request to wildlife agency staff during a meeting on May 1, 2020, and submitted a draft written request on June 10, 2021. In FY22, DOFAW staff notified KS that as the written report on the comprehensive survey of outplants had not been submitted to DOFAW by the second anniversary of the agreement (June 22, 2020), the Attorney General had determined that DOFAW would be unable to follow the specific baseline revision process described in Section 5 of the Agreement. KS will therefore be proposing an amendment to the Agreement. The amendment will include: 1. Revision of covered plant species baselines to account for outplant mortality during the first two years of the agreement. 2. Inclusion of two new covered plant species: *Exocarpus menziesii* and *Sanicula sandwicensis*. The amendment will not include revision of baseline for ‘io and ‘ōpe‘ape‘a habitat due to the 2018 wildfire. While this was a *force majeure* event, KS silviculture and restoration activities in this area are showing success, and the wildfire is not expected to have a long-term impacts on ‘io and ‘ōpe‘ape‘a habitat.

In FY23, 12,057 native plants, including 7,616 koa seedlings were planted on the Enrolled Property, for a total of 74,484 native plants of 38 species planted over the first five years of the Agreement. All restoration outplanting occurred outside of Forest Bird Stratum 1 in FY23. Planting areas were concentrated in the lower portions of the Enrolled Property . Outplanting was conducted by collaborators and vendors and included 14 staff plantings and 20 educational group plantings for school and community members. A total of 544 volunteers of all ages helped with these reforestation efforts and learned about native plants, forest ecology, and the importance of watershed restoration. In FY23, silviculture activities did not occur within Forest Bird Stratum 1. Outside of Forest Bird Stratum 1, 59 acres of new koa stands were planted, for a total of 417 acres of koa planted over the first five years of the Agreement. Koa was planted at a spacing of 20' x 20' (density of 108 trees per acre) to reduce the need for thinning in the future. Other stand improvement activities included singling of 162 acres within stands planted in FY21 and FY22 to remove competitive branches at the top of each koa seedling, pruning of lower branches from the base to 5-8 ft in height across 131 acres within stands planted in FY20 and FY21 to improve stem form, as well as fertilization of 221 acres of koa planted in FY21, FY22, and FY23.

In FY23, all Keauhou fencelines (approximately 39.6 miles) were inspected at least semi-annually, with most fences inspected 3-4 times per year. Minor repairs and routine maintenance such as adding pins or skirt and repairing damage from treefalls were conducted as needed. Additional fence work to prevent further ingress into Keauhou included replacement of the Pu'u Lālā'au makai fenceline which separates the Pu'u Lālā'au unit from the area in lower Keauhou where pig ingress is occurring. The current 9-49" wire is deteriorating and is being replaced with the smaller mesh 13-48" hogwire that is standard size used to prevent potential ingress of small piglets. Approximately 1,150 meters of fence was replaced in FY23.

Ungulate presence within fenced conservation management units was monitored. In upper Keauhou, for the eighth consecutive year, no fresh or intermediate ungulate sign was observed along annually monitored transects that traverse forested kipukas. Pig ingress first observed in Lower Keauhou in FY20, continues to be a problem. A total of 125 pigs were removed from this area in FY23, with an estimated 150 pigs remaining. A strategy has been developed to return this unit back to near-zero levels within two years (by the end of FY25) and additional ungulate management has been contracted. This strategy will include additional corral traps, regular hunts, and increased fence inspection/maintenance. In addition, TMA has secured State CIP funding through DOFAW to install 4,600 meters of new fencing along Powerline Road, which will split the large Keauhou fenced unit into two smaller units.

The wildfire in August 2018 consumed 3,739 acres including 649 acres of the enrolled property in addition to the much larger area in the adjacent Volcanoes National Park. In response to the 2018 wildfire, an 18,000-foot firebreak was installed along the property boundary with National Park in FY 2019. In FY23, KS inspected and maintained all water sources (four catchments, 12 tanks, and three reservoirs), access routes (27.5 miles of primary and 3.5 miles of secondary roads), and the fire break that was installed in FY19.

In FY23, KS suppressed weed species across 2,396 acres on the Enrolled Property (see Figure 8). Suppression activities occurred on 2,182 acres within Forest Bird Stratum 1 and 1,065 acres on the remainder of the Enrolled Property. In addition to the four priority weed species, targets of

suppression efforts included blackberry (*Rubus argutus*), banana poka (*Passiflora tarminiana*), and Japanese anemone (*Anemone hupehensis* var. *japonica*). Overall, survey efforts from FY23 indicate that populations of the four priority weed species remain well below 10% cover on the Enrolled Property within conservation fences. KS assessed 3,254 acres for target weed species via ground surveys. In addition to prioritizing areas for weed control, these assessments located a population of suspected Andean raspberry (*Rubus glaucus*), as well as a single Australian tree fern (*Cyathea cooperi*) in lower Keauhou along the Palakea fenceline. This was the first time Andean raspberry was detected at Keauhou. This species is naturalized on Maui and has previously been observed near Wright Road.

Die-off from Rapid ‘Ōhi‘a Death (ROD) has been observed in portions of lower Keauhou in areas outside of conservation fences since June 2017. In FY23, the number of trees appearing to be symptomatic continued to increase across lower Keauhou. TMA and BIISC crews sampled suspect ROD trees in Lower Keauhou in July 2022, October 2022, January 2023, and March 2023. Each time, nine to eleven trees were sampled, but only one of the 35 trees tested positive for ROD. A pathologist from the U.S. Forest Service joined TMA and BIISC staff in April to further investigate the dieback and sampled five recently dead trees. Results are pending.

Forest bird surveys were conducted in late February 2023. Due to inclement weather (heavy rain), two additional days in March and April were needed to finish the survey. A total of 159 stations along seven transects were surveyed primarily within Forest Bird Stratum 1; 150 stations were located on KS lands and nine were located on adjacent State lands. Even with the added survey days, crews were not able to count at five stations (four on KS lands and one on State land). All four species of forest birds covered by the Agreement were detected. Survey results are located in Table 5.

Due to high mortality of ‘Alalā released at Pu‘u Maka‘ala Natural Area Reserve, the AWG recaptured the remaining released birds in the fall of 2020 and brought them back into captivity to reassess the release site and causes of mortality. At this time, there are no released birds in the wild.

Table 5. Forest Bird survey results for the Kamehameha SHA in FY 2023

Common Name	Scientific Name	# Detected	Stations Occupied
‘I‘iwi	<i>Drepanis coccinea</i>	2465	104/159
‘Akiapōlā‘au	<i>Hemiganthus wilsoni</i>	4925	31/159
‘Ākepa	<i>Loxops coccineus</i>	12	9/159
‘Alawī	<i>Loxops mana</i>	4129	25/159
‘Io	<i>Buteo solitarius</i>	01	0/159

Baseline monitoring for ‘Io involves canopy assessment every 10 years and species occupancy every five years. Occupancy is determined via circular variable plot count methodology and will be conducted by the Agencies or associated cooperating parties agreeable to KS. Canopy assessment will be completed by FY28 and occupancy surveys were completed in FY23. An ‘io species occupancy survey was conducted by TMA, DOFAW, and KBCC staff in late June 2023, following the methods used in the Safe Harbor baseline surveys. Ten stations were

surveyed by playing recordings of adult ‘io from a game caller. One ‘io was recorded at a survey station (station 2) during the survey on June 23, 2023. An unbanded adult flew in during playback, perched near the vehicle and speaker, and began preening. Playback was halted when the bird flew in. Based on its size, observers suspected the individual to be male but were not confident. It was also suspected that this was the same bird previously observed between stations 1 and 2 based on timing and the direction of the hawk’s approach and departure, however it is possible that one or both were a different individual.

Surveys during Nēnē breeding season (October-March) are conducted by DOFAW staff on an annual basis and provide information on population estimates, nesting success, and fledging success. DOFAW staff conducted Nēnē activity and nesting surveys once a month during Nēnē breeding season. Visual ground surveys were conducted at each site once a month from October 2022 through March 2023. A mean of 6.7 Nēnē were observed during monthly surveys (range = 0 – 13) in FY 2023 in the Keauhou, Ka‘ū, portion of the enrolled property and a mean of 1.86 (range = 0 – 7) at the ‘Ōhi‘a Ranch portion. Nēnē pairs were observed from October to February, with the highest number of pairs (four pairs) observed in October and December. Two “Downed Wildlife Forms” were submitted to the wildlife agencies. On October 4, 2022, a nēnē carcass was discovered approximately 20 meters northeast of the Nēnē Cabin Reservoir, beneath pukiawe shrubs. The carcass was completely desiccated and likely died several months earlier. On February 14, 2023, an abandoned nēnē nest containing one whole egg and several eggshell shards was discovered approximately 35 meters west of the Nēnē Cabin Reservoir.

Baseline monitoring for ‘Ōpe‘ape‘a involves canopy assessment every 10 years and species occupancy every five years. Occupancy is determined via acoustic monitoring and will be conducted by the Agencies or associated cooperating parties agreeable to KS. Canopy assessment will be completed by FY28 and occupancy surveys were scheduled to occur in FY23. As the agencies were not able to conduct ‘ōpe‘ape‘a occupancy surveys in FY23, KS will be conducting occupancy surveys in FY24, in association with TMA.

Baseline monitoring for threatened and endangered plant species follow protocols established or approved by the Plant Extinction Prevention Program (PEPP). Going forward, KS will target outplantings for both species and an additional survey for *P. hawaiiensis*. These surveys also resulted in detection of two new endangered species (*Exocarpus menziesii* and *Sanicula sandwicensis*) that were not previously known from the Enrolled Property and one rare but unlisted species (*Phyllostegia macrophylla*), which is currently the only extant wild individual known. In FY23, KS secured a State Rare Plant Permit, which has allowed KS to survey, monitor, collect, and implement threat controls to rare plant populations on KS lands, in collaboration with DOFAW. Under this permit, KS and DOFAW collected cuttings from seven additional *V. menziesii* founders. To date, cuttings from 12 of 20 *Vicia* individuals have been taken and deposited at the Volcano Rare Plant Facility (VRPF). As of July 2023, material representing six founders have successfully rooted; some with multiple replicates. Additional *Vicia* cuttings are also on the facility’s mist bench and additional founder representation is expected. Cuttings from the remaining eight founders were not taken due to small plant size and limited plant material. Continued and increased monitoring, as well as additional collections are planned for *Vicia* in FY 24. Also of note, the first *Vicia* seeds were collected and accessioned. As of April 2022, multiple cuttings were rooted, with some having new growth. Given the success of these cuttings, KS will collect cuttings from additional *V. menziesii* populations in FY23 and will continue working with DOFAW on planned *V. menziesii* recovery efforts, including

increased monitoring of wild plants, securing propagule collections, and establishing reintroduced populations across the species' historic range.

In mid-December 2022, a strong Kona low produced heavy rainfall and damaging winds across the Hawaiian Islands. The strong southerly winds, blowing opposite the direction of regular wind patterns, caused numerous trees falls, but was not as damaging as the slower moving Kona low from December 2021, which caused extensive damage to fencelines and the *V. menziesii* population at the summit of Pu'u Kipu.

CONDITION OF THE ENDANGERED SPECIES TRUST FUND

Act 144, SLH 2004 established the Endangered Species Trust Fund, with purposes set forth in Section 195D-31, HRS.

Description	Expenditure	Revenue	
Beginning Cash Balance		\$2,672,146.00	
Outstanding Encumbrances FY 2022			\$142,948.00
Expenditures in FY 2022	\$-		
Total in Encumbrances from previous years			\$367,556.00
Funds to Implement Obligations of a Habitat Conservation Plan	\$-	\$-	
Contributions for the Management and Recovery of Hawai'i's Native Wildlife	\$336,882.00	\$1,287,219.00	
Subtotal Ending Balance			\$3,622,484.00
Total in Encumbrances			\$510,514.00
Total in ESTF in FY 2023			\$4,132,998.00
Funds rolled over from previous year's HCP Technical Assistance Program		\$-	
Funds Received as Payment for the Use of the HCP Technical Assistance Program		\$3,337.00	
Expenditures in FY 2019 for personnel		\$-	
Total in ESTF (including outstanding encumbrances)			\$4,136,335.00

RECOMMENDATIONS TO FURTHER THE PURPOSES OF CHAPTER 195D, HRS

Habitat Conservation Plans and Safe Harbor Agreements are necessary tools in Hawai'i to achieve threatened and endangered species protection while balancing growth and addressing the need for energy independence. FY 2023 marks the 25th year since implementation of Chapter 195D, HRS, to include the issuance of Incidental Take Licenses. The program has demonstrated numerous successes since its inception.

The following are recommendations to further improve implementation of Chapter 195D, HRS.

- Increase staff capacity statewide for HCPs by providing for four (4) fully funded State civil service position to effectively track and monitor funds and expenditures related to each Habitat Conservation Planning project. The staff within DLNR-DOFAW-HCP are currently three contracted members in administration managing all HCP and SHA projects throughout the islands in addition to reviewing all projects statewide with the potential to impact threatened or endangered species. Supplemental staff are supported by grants to produce stand-alone HCPs. Additional staff capacity would allow for more timely processing of HCP applications, development of administrative rules for the program, development of procedures for promoting consistency in HCPs, conducting follow-up monitoring for development projects, and implementation and management of mitigation and other projects that are extremely beneficial for the recovery of Hawai'i's threatened and endangered species.
- Continue fostering partnerships between DLNR/DOFAW, other State and Federal agencies, and private landowners to ensure program success.
- Conduct additional outreach to further educate private landowners and developers on the benefits of HCPs and SHAs.
- Support legislation authorizing DLNR-DOFAW to establish a conservation banking system and in-lieu fee mitigation program under Chapter 195D, HRS.
- Establish administrative rules under Chapter 195D, HRS, to provide guidelines, limitations, and parameters specific to the authority provided under Chapter 195D, HRS.

For information on DLNR's Endangered Species Recovery Committee, please see <http://dlnr.hawaii.gov/wildlife/esrc/>. For a full listing of the State's Habitat Conservation Plans and license-holder annual reports, please see <http://dlnr.hawaii.gov/wildlife/hcp/approved-hcps/>.

For further information on the State's Habitat Conservation Plans contact:

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