2024 KSHCP ANNUAL REPORT

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EXECUTIVE SUMMARY

Three species of seabirds in Hawai‘i are listed under the U.S. Endangered Species Act and by the State of Hawai‘i: the Newell’s Shearwater (*Puffinus auricularis newelli*, Hawaiian name ‘a‘o, abbreviation NESH), the Hawaiian Petrel *Pterodroma sandwichensis*, Hawaiian name ‘ua‘u, abbreviation (HAPE), and the Hawai‘i distinct population segment (DPS) of the Band-rumped Storm-petrel (*Hydrobates castro*, Hawaiian name ‘akē‘akē, abbreviation BANP). All three of these species are vulnerable to attraction and fallout associated with artificial lights, which has been documented on Kaua‘i for decades. 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). This report documents and evaluates the activities conducted in 2024, which is the fifth year of the KSHCP, by both the KSHCP participants and their selected prime contractor (Pacific Rim Conservation), towards fulfilling the objectives of the KSHCP as approved by the Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife, and the U.S. Fish and Wildlife Service (the regulatory agencies). This report includes sections on the Kahuama’a Seabird Preserve management (the mitigation site), take, minimization measures, compliance effectiveness monitoring, and the financial status of the KSHCP.

The location of the Kahuama’a seabird preserve was selected during the KSHCP process to create a fenced, predator-free preserve in the northwestern region of Kaua‘i. Due to a large landslide that occurred at the originally proposed site, an alternative site was selected 102 meters west of the original site, which resulted in changed circumstances being initiated almost immediately upon the adoption of the KSHCP. The new site selected previously was a rare plant restoration area and provides comparable area and habitat to the originally proposed site. In 2021, construction of a predator exclusion fence around the 2-hectare (4.5-acre) seabird reserve was initiated and completed. In 2020, prior to fence construction, a biological inventory of seabirds and their habitat at the preserve site was completed and monitoring has continued annually since then. Intensive searching indicated that seabirds were not nesting in the immediate project area, but based on high rates of detection during auditory surveys they were clearly transiting the area during the breeding season. Predators were eradicated from the fenced area shortly after the fence was completed, though there have been occasional incursions of rats and mice inside the fence. Control of feral cats was initiated in 2021 to protect colonies that could serve as sources of birds that could colonize the Kahuama’a Preserve, with 22 live traps along Kalalau Rim near the Kahuama’a Preserve and an additional 16 live traps along the Alaka’i Swamp Trail. In 2024, 11 feral cats were caught during a total of 3,734 trap-nights, and a total of 37 cats have been removed from 2021-2024. A social attraction program consisting of artificial nest boxes and a solar-powered sound system that broadcasts Newell’s Shearwater calls has been operated at the Kahuama’a seabird preserve during the seabird breeding season since 2021. Single Hawaiian Petrels were documented with trail cameras to have visited the social attraction site on multiple night in 2023 and again in 2024. No seabirds have nested at the site yet.

In addition to the creation and management of the Kahuama’a seabird preserve and associated predator control activities implemented by the prime contractor, participants in the KSHCP (“Participants”) were required to minimize and document seabird take at their facilities, vessels, and properties (“Facilities”).[1] Participants have 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 Participants’ Facilities for the duration of the season. Based on the reports and photos provided, all participants have made significant efforts towards reducing light attraction exposure risk to listed seabirds at their Facilities. Each Participant also conducted annual outreach and training for workers at their Facilities that is specific to the Covered Seabirds to help workers find downed seabirds and know how to respond properly and in a timely manner. Overall, outreach at each participant property was adequate and professionally presented.

In addition to light reduction and training requirements, all covered Facilities were required to control non-native predators to protect any downed birds at their Facilities from depredation. Of the 191 Facilities included in the KSHCP as of 2024, 47 properties were required to do predator control. In 2024, predator control was conducted at 25 of those 47

[1] As used in this report, the term “Participants” refers to entities that are participants in the KSHCP by virtue of having been issued an incidental take permit and incidental take license. The Participants own a variety of properties, facilities and vessels covered by their incidental take permits and incidental take licenses which for simplicity in this report are simply referred to as “Facilities.”

properties. Although there are still gaps in predator control, this was an improvement over 2023, when predator control was conducted at 19 Facilities. Of the Facilities where predator control was not conducted, 19 out of 32 covered Facilities owned by Kaua'i County. Of the remaining 25 Facilities that did conduct predator control, all but one were deemed to be effective based on the duration of trapping and trap placement which is a dramatic improvement from only 12 /25 Facilities in 2022. In total, 326 feral cats were removed from participant Facilities during the 2023 seabird fallout season- an increase of 19% over the 274 cats removed in 2022. Predator control efficacy has increased across all Facilities with each year of the KSHCP as each participant has refined their methods and made improvements.

Compliance monitoring evaluates whether the actions described above are being properly implemented and is used to ensure that each enrolled Participant meets its obligation under this KSHCP and the individual PIPs. In total, 53 NESH and two HAPE were found on participants' Facilities during the 2023 seabird fallout season which was the first documented HAPE take of the program, and more than double the NESH take from 2022. Both HAPE, and 49/53 of the downed NESH were released alive after being brought to the Save our Shearwaters (SOS) facility. No downed Band-rumped Storm-petrels or Honu nests were found during the 2024 season.

Overall, the objectives of the KSHCP were partially met in 2024, but deficiencies continue to improve over earlier years. Details and reasons for discrepancies are described in detail below.

INTRODUCTION

Three species of seabirds in Hawai‘i are listed under the U.S. Endangered Species Act and by the State of Hawai‘i: the Newell’s Shearwater (*Puffinus auricularis newelli*, Hawaiian name ‘a‘o, abbreviation NESH), the Hawaiian Petrel *Pterodroma sandwichensis*, Hawaiian name ‘ua‘u, abbreviation (HAPE), and the Hawai‘i distinct population segment (DPS) of the Band-rumped Storm-petrel (*Hydrobates castro*, Hawaiian name ‘akē‘akē, abbreviation BANP). These species are part of the unique natural and cultural heritage of Hawai‘i, and the island of Kaua‘i provides important breeding habitat for all three species. Protecting and managing that habitat to support viable populations of these species is critical for their long-term survival.

Among the threats known to impact the listed seabird species is attraction to artificial lights and subsequent fallout or grounding of birds, which has been observed and documented on Kaua‘i for decades. The Kaua‘i Seabird Habitat Conservation Plan (KSHCP) was developed and adopted in 2020 to address the 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). The proposed duration of the KSHCP is for 30 years and the geographic scope of the KSHCP coverage is the island of Kaua‘i and Hawaiian waters.

Light attraction and fallout of seabirds on the island of Kaua‘i is widespread, with certain geographic areas having concentrated, higher amount of observed fallout. The vast majority of fallout occurs in the autumn months, coinciding with the seabird fledgling season. Many different entities on Kaua‘i (resorts, businesses, and governmental agencies) have documented seabird fallout on their Facilities and at their facilities resulting from the effects of light attraction. Light attraction on Kaua‘i is an island-wide problem that negatively impacts the listed seabird species and is collectively attributable to many different entities.

The KSHCP relies on a unique structure to best meet the need for an effective and efficient response to the widespread nature of light attraction impacts on Kaua‘i. The structure of the KSHCP enables multiple individual entities on Kaua‘i to apply for incidental take authorization for light attraction impacts to the listed seabird species under one coordinated framework. This framework takes advantage of economies of scale and enables a pooling of resources to collectively achieve conservation goals. The requirements of the KSHCP, and the enrollment and approval process for listed species take authorization are defined in the KSHCP and consist of two parts: 1. the KSHCP document with associated appendices; and 2. material submitted by each applicant providing detailed descriptions of on-site minimization measures, covered activities, a monitoring plan and the amount of take authorization being requested, which are outlined in the individual Participant Inclusion Plans (PIPs).

In 2020, applicants to the KSHCP were each issued an approved Incidental Take Permit (ITP) from the U. S. Fish & Wildlife Service (USFWS) and Incidental Take Licenses (ITL) from the State of Hawai‘i Department of Land and Natural Resources (DLNR). The mitigation and minimization measures contained in the KSHCP were developed to inform the preparation of individual applications for listed seabird incidental take authorization permits. The KSHCP defines a set of actions to minimize and mitigate the effects of light attraction on the listed seabirds and to meet conservation goals. The KSHCP provides a suite of minimization actions and requires that each Applicant to the KSHCP implement all the measures that are applicable to their facility and operational needs. Minimization measures emphasize reducing the amount of light that shines upward and reducing the amount of light output or intensity, which have been shown to reduce the effects of light attraction. Under the KSHCP, the minimization measures include:

- Deactivation of unnecessary lights.
- Use of full cut-off light fixtures (or their functional equivalent).
- Shielding of existing light fixtures.
- Angling lights downward.
- Lowering the light output or intensity.
- Use of motion sensor light fixtures.
- Decreasing the visibility of interior lights.

Under the KSHCP, mitigation actions were designed to provide a net conservation benefit to the covered species as required by Hawaii law. Because some seabirds grounded by light attraction are found alive and deemed healthy, or can

be rehabilitated, those birds are released back into the wild and are considered non-lethal take. For seabirds that are found dead, those not found but assumed to have been impacted by light attraction, and for those birds that could not be released back into the wild, these are considered lethal date. For these unavoidable impacts to covered seabirds, approved mitigation consists of predator control and the creation of a fenced seabird preserve (known as the Kahuama'a Seabird Preserve) in the northwest region of Kaua'i. In this preserve, predators have been removed and seabirds are being lured to the site via social attraction, with the goal of creating a breeding colony that is safe from non-native predators, a well-established conservation technique for the creation of new seabird breeding colonies; details of the progress of this activity are documented below. The absence of predators will enable the seabirds to breed more successfully and with higher reproductive success rates than in areas outside the preserve, thereby providing a conservation benefit to the seabird populations. The preserve site is located in Kōke'e State Park along the rim of Kalalau Valley. Predator control will be conducted in the vicinity of the preserve to reduce the impacts of predation on seabirds breeding nearby.

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, are shared amongst the permit recipients according to the relative amounts of take authorized. Compliance and effectiveness monitoring has been conducted to ensure that authorized amounts of take are not exceeded and to enable the wildlife agencies to determine that mitigation actions are meeting conservation goals. The purpose of take monitoring is to determine when and where take of covered species occurs, and documents monitoring efforts. There are three types of monitoring addressed in the KSHCP: compliance, effectiveness, and take monitoring.

1. "Compliance monitoring" verifies implementation of the HCP terms and conditions by the individual Participants and the Prime Contractor. Annual reports and reporting requirements (as outlined in Section 6.6) were provided by each Participant and the Prime Contractor to document that the Participant has performed all of the required tasks and activities. (Actions on site to reduce/eliminate light attraction).
2. "Effectiveness monitoring" evaluates the success of the HCP to minimize and mitigate take of listed species to the maximum extent practicable; evaluating whether minimization measures are effective and sufficient; and the extent to which mitigation measures are successful.
3. "Take monitoring" determines when and where take of Covered Species occurs, and documents monitoring efforts.

The purpose of this report is to compile, document, and evaluate the effectiveness of the activities conducted in 2024, which is Year 5 of the KSHCP, by the participants and by their selected prime contractor towards fulfilling the objectives of the KSHCP as approved by the regulatory agencies. An additional purpose of this report is to describe compliance and effectiveness monitoring of mitigation at the Kahuama'a Seabird Preserve as required by KSHCP 6.6.2.4 and Table 6-1. The goal is to synthesize and summarize several hundred pages of information from lengthy reports into a succinct easy to read document that will allow the participants and agencies to evaluate the annual effectiveness of the KSHCP implementation. Thus, for the sake of readability, tables and figures are used frequently to present information in a clear and easy to understand format. The report is divided into six sections:

1. Kahuama'a seabird preserve management.
2. Summary of KSHCP participants' annual reports.
3. Mitigation effectiveness monitoring.
4. Take monitoring effectiveness.
5. Compliance monitoring and summary of changes.
6. Financial report.

1. KAHUAMA'A SEABIRD PRESERVE MANAGEMENT

INTRODUCTION AND BACKGROUND

The Kauai Seabird Habitat Conservation Plan (KSHCP) Participants' Committee, on behalf of all the individual Applicants, entered into an agreement with the Prime Contractor, Pacific Rim Conservation (PRC), to perform mitigation and project management measures outlined in the KSHCP. PRC has conservation biology and project management experience and holds recovery permits necessary to conduct its work under Section 10(a)(I)(A) of the Endangered Species Act and/or Sections 13-124-4 and 13-124-6 of the Hawaii Administrative Rules.

The KSHCP program comprises several mitigation activities, one of which was the establishment of a seabird preserve in Koke'e State Park. This preserve is now known as the Kahuama'a Seabird Preserve. The preserve was created by construction of a predator-proof fence (PPF) enclosing approximately 2 hectares of suitable seabird breeding habitat and establishing a seabird social attraction site (SAS) within the fenced area. This report describes the management activities conducted at the Kahuama'a Seabird Preserve in 2024 by PRC. This report also will be included as part of the larger report on the KSHCP program. The specific management activities associated with this component of the KSHCP include:

1. Construction and long-term maintenance of the 2-hectare predator-proof fence.
2. Installation and long-term maintenance of seabird social attraction equipment (sound system, speakers, solar panel, artificial nest boxes) within the enclosure.
3. Eradication of predators from the enclosure and implementation of long-term predator control at the site.
4. Monitoring for predator incursions within the enclosure.
5. Barn owl control around the preserve and in the surrounding Kalalau Valley area.
6. Feral cat control around the SAS and neighboring source colonies in Kalalau Valley.
7. Invasive plant control within the enclosure and along a 50m 'predator defense zone' outside the fence.
8. Monitoring of the covered seabirds and the artificial nest boxes, including the physical handling and banding of birds by trained, permitted staff.
9. Monitoring of other listed species (plants, forest birds, etc.) within the enclosure.
10. Downed seabird recovery, evaluation, rehabilitation, and release.

Table 1: Timeline of activities at the Kahuama'a Seabird Preserve since its inception in 2020.

	2020					2021												2022-2025											
	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Infrastructure installation																													
Fence construction						x	x	x	x																				
Sound system installation									x																				
Artificial nest box installation								x																					
Habitat restoration																													
Weeding								x		x		x			x		x	x				x		x			x		x
Out planting									x																				
Botanical surveys			x			x				x		x			x		x	x				x		x			x		x
Predator control																													
Rodent trapping inside fence								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cat control inside fence								x	x	x																			
Cat control outside fence		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Seabird monitoring																													
Acoustic surveys	x	x	x	x				x	x	x	x	x	x	x						x	x	x	x	X	x				

Fence maintenance

The predator exclusion fence was completed on 28 June 2021, and since then the focus has been on maintenance of the fence. Dedicated fence inspections are done monthly, and the fence also is checked opportunistically when working in the area. Fence inspections include checking the integrity of the hood, mesh, posts, and skirt, clearing any fallen branches or other obstructions, and covering any exposed areas of the skirt. The path surrounding the outside of the fence experiences soil erosion due to traffic from humans, pigs, goats, and deer, and also from rainfall and drainage. The fence is in good condition overall and required no major fence maintenance in 2024, but various small fence maintenance actions were conducted in most months. Activities included covering areas of the skirt where it had been exposed by erosion from rain or rooting of feral pigs, weed-whacking along the exterior of the fence to remove invasive plants and facilitate fence inspections, and removal of occasional fallen branches.

Seabird Surveys, Social Attraction, and Biological Monitoring

Biological monitoring

To facilitate effective, long-term monitoring at the site, in 2020 a monitoring grid was installed to conduct bird, vegetation, and rodent surveys (Figure 1). The grid consists of stations inside the fence spaced 25 m apart and marked with white PVC poles. The grid is maintained monthly.

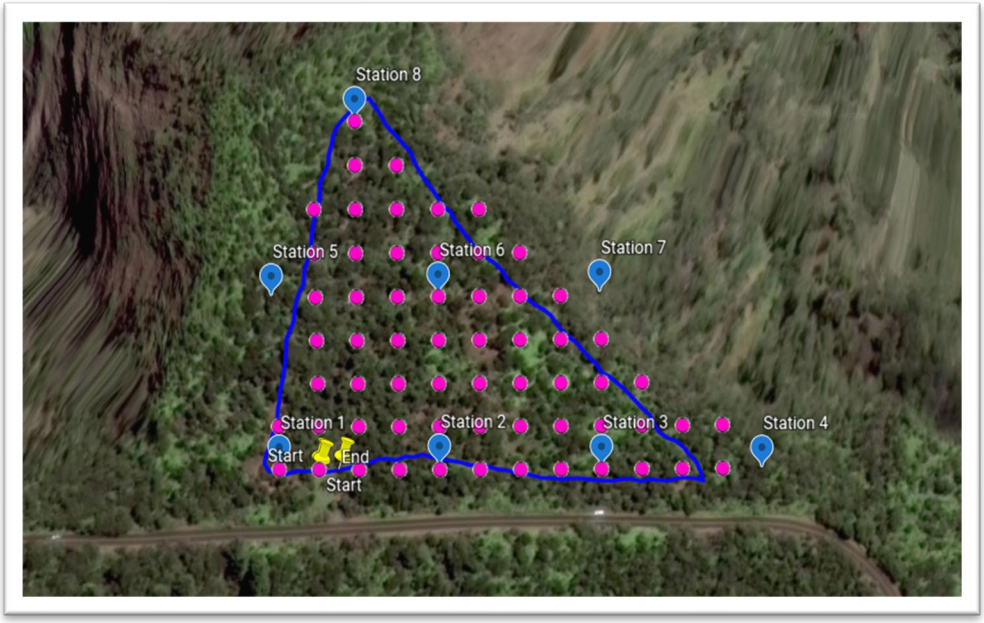

Figure 1**.** Biological monitoring grid installed at the Kahuama‘a Seabird Preserve. The blue line is the fence, the pink dots are the 25-meter grid points, and the blue stations were used for forest bird surveys but are no longer in use.

Seabird Surveys

Ground Searching

Prior to fence construction, auditory surveys and burrow searches were conducted at the Kahuama‘a Seabird Preserve to document whether any seabirds were present and ensure that construction activities did not impact any nesting seabirds. Survey areas were organized into three transects covering each side of the fence line: one covering the 80-m section of old ungulate fence line facing east, one covering the 300-m northeastern facing fence line, and one encompassing the 50-m section facing west (Figure 2). All transects were measured to match the length of the designated seabird habitat perimeter along the ungulate fence line. All three transects were further divided into perpendicular transects flagged 3 m apart, and staff walked these transects checking for seabird eggshells, guano, feathers, and scent. Two transects were created for the seabird burrow surveys inside the ungulate fence, covering a total area of 0.39 acres. Transects were spaced 5 m apart, running parallel to the northeastern side of the fence line. Two staff equipped with GPS units and pink flagging walked each transect from east to west, checking under tree roots

for seabird eggshells, guano, feathers, and scent. The total seabird survey area covered was 14,172.1m^2 (3.50 acres): a combined area of 10,614.88m^2 (2.62 acres) outside the fence line and 1583.48m^2 (0.39 acres) inside the fence line. No Newell's Shearwater or Hawaiian Petrel chicks, adults, or burrows were detected during surveys.

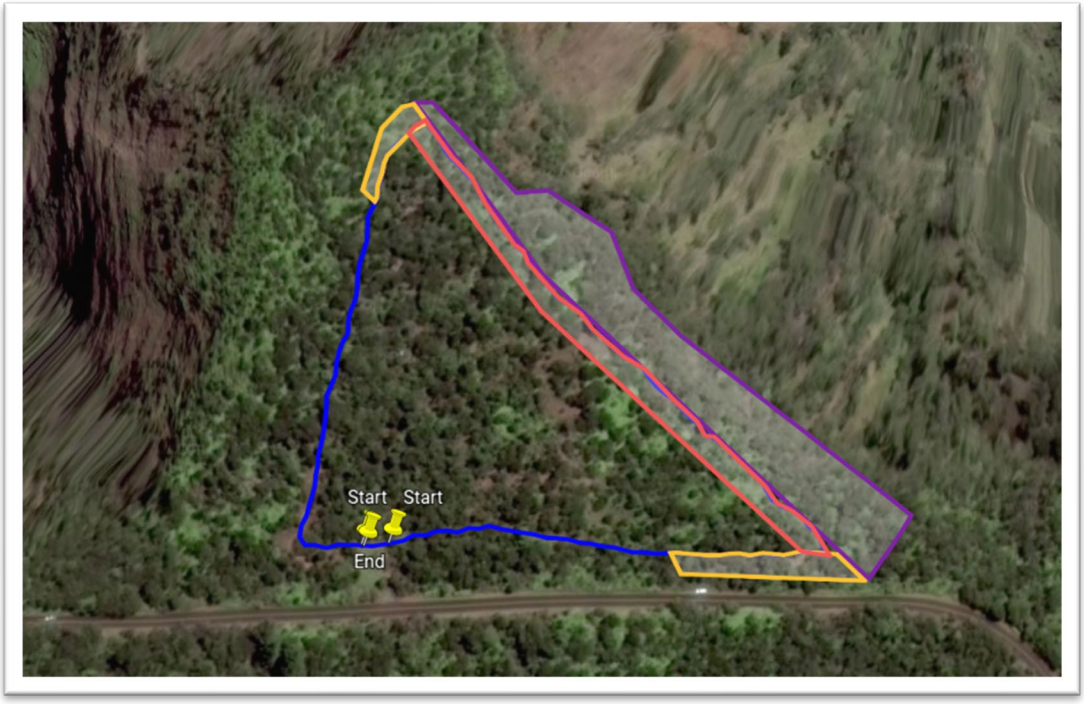

Figure 2: Seabird survey area at Kahuama'a. The blue line is the fence, and the yellow, pink, and purple polygons are the areas of potential seabird nesting habitat in which thorough ground searches were done before fence construction.

Seabird Auditory Surveys

Auditory surveys were conducted on six dates in 2024: 21-22 May, 19-20 June, 22-23 August. On each pair of dates, two observers conducted surveys for two hours after sunset and then again for two hours before sunrise, which are the peak calling times for HAPE and NESH, respectively. Some surveys were shorter than prescribed because of weather, and there were a total of 16 hours of data collection. During auditory surveys, an observer listened and looked for seabirds. When seabirds were observed, the following data were collected: species, time, number of individuals detected, number of calling bouts, compass bearing, and estimated distance from observer. During auditory surveys, the sound system broadcasting NESH calls was turned off to ensure that it did not interfere with the survey.

Table 2: Total number of detections and average calling rate of seabirds detected during nocturnal auditory seabird surveys at Kahuama'a in 2024.

Species	Total # detections	Average calls per hour
Newell's Shearwater	242	15.1
Hawaiian Petrel	99	6.2
Band-rumped Storm-petrel	0	0

Newell's Shearwaters were the most frequently detected species, as in all previous years, but the average hourly calling rate in 2024 (15.1 calls/h) was lower than that in 2023 (35 calls/h). The average hourly calling rate of Hawaiian Petrels also was lower in 2024 (6.2 calls/h) than in 2023 (12 calls/h). Band-rumped Storm-petrels were not detected at all in 2024 but were detected in 2023. No Barn Owls were detected during auditory surveys in 2024, compared to two detected in 2023 and 19 detected in 2022. While no seabirds were observed on the ground during auditory surveys, Hawaiian Petrels and Newell's Shearwaters both were observed flying very closely overhead on several surveys and appeared to be circling the site (Figure 3).

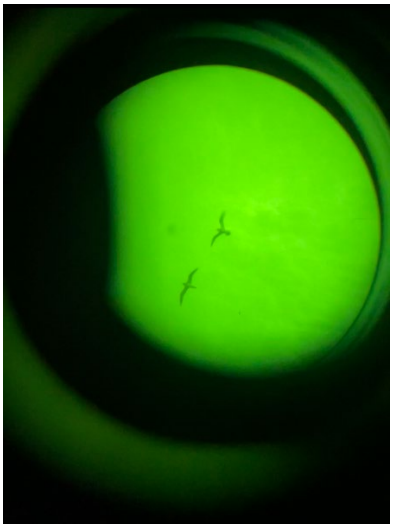

Figure 3. Photo of a pair of Hawaiian Petrels circling close to the Kahuama‘a fence on 20 May 2024, as seen through a night-vision scope and photographed with a phone.

Seabird Social Attraction

Once the predator-proof fence was completed, the social attraction component of the project was implemented to encourage the target seabird species to visit the project site and eventually breed. Social attraction is a well-established conservation strategy to encourage seabirds to breed in a prescribed location by simulating colony activity through the playback of recorded calls. The installation of artificial nest boxes can make the site more attractive and can decrease the response time, and eventually increase colony productivity by providing ready-to-use nest sites.

The sound system was designed and built by Eric VanderWerf (PRC) and was installed on 12 May 2021. The system consists of a solar panel, a rechargeable 12-volt marine battery, two directional waterproof speakers, and a waterproof pelican case that houses a solar charge controller, an mp3 file player, and an amplifier. The speakers are directed towards the northeastern facing slope to attract birds that are flying in Kalalau Valley.

The system played a mix of several different Newell’s Shearwater calls from dusk until dawn to mimic natural attendance patterns at the colony during the seabird breeding season. Recordings were of multiple birds (simulating a colony) and included different calls typical of colony sounds to make it as attractive as possible. The system automatically turned on at sunset and off at sunrise. The system was deployed from March to October, which is the period of highest prospecting activity by all three target seabird species. During times when acoustic surveys were being conducted, the sound system was turned off to assist in detecting real birds.

In addition to the acoustic attraction system, 100 artificial nest boxes suitable for both Hawaiian Petrels and Newell’s Shearwater were constructed and installed at the site in 2021. These artificial nest boxes are an important part of best management in a social attraction site because they provide nest sites that are ready to use and thus can expedite the process of establishing a breeding colony at a new site. Burrow excavation by a newly established breeding pair can take a year or more. Artificial burrows have been used in almost all successful social attraction sites documented in the literature. Not only do they increase the likelihood of earlier success at the social attraction site and increase the density of nesting pairs in an area, they also make the monitoring of nests easier and less likely to cause disturbance to burrows and birds. Burrows were constructed by a local contractor using the specifications below and treated with reflective roofing sealant to reduce the chances of rot and reduce overall temperature. Burrows were installed along the northeastern ridge on the steepest slopes within the reserve and within the area where the sound system was deployed. Burrows were monitored weekly during the breeding season in 2024.

Figure 4: Photographs of artificial nest boxes installed at the Kahuama‘a Seabird Preserve.

A Hawaiian Petrel was documented in trail camera images visiting the social attraction site inside the Kahuama‘a fence on multiple nights in 2024, including 22, 23, and 24 May and 16, 17 June. A single Hawaiian Petrel also visited the social attraction site on multiple nights from June through August 2023. Thus far, these are the only known visits to the site by any of the target species. The sound system operated properly during the entire season. It is hoped that visitation by Hawaiian Petrels will increase in future years and that Newell’s Shearwaters will begin visiting the social attraction site.

Figure 5. Photos of a Hawaiian Petrel visiting the social attraction site on 23 May 2024 (left) and 17 June 2024 (right).

HABITAT RESTORATION

The Kahuama‘a Seabird Preserve predator-proof fence is expected to benefit native vegetation and rare plants, in addition to providing high-quality seabird nesting habitat. The habitat at the site is dominated by native vegetation, but certain invasive plants are present, especially within the understory. Seabird habitat suitability mapping exercises consistently identify native vegetation as an important component for successful nesting. Conversely, habitat modification by invasive plant species has been correlated with a reduction in seabird breeding. The suite of invasive plant species that have been identified as significant seabird habitat modifiers and that are present and targeted for removal at the Kahuama‘a Seabird Preserve are listed in Table 3.

Table 3: Seabird habitat modifying plant species targeted for removal at Kahuama‘a Seabird Preserve.

Common Name	**Scientific Name**	**Priority**
Strawberry guava	*Psidium cattleianum*	*1*
Himalayan (kahili) Ginger	*Hedychium gardnerianum*	*1*

Australian tree fern	*Sphaeropteris cooperi*	*1*
Blackberry	*Rubus argutus*	*2*
Banana poka	*Passiflora tarminiana*	*2*
Beardgrass	*Schizachyrium microstachyum*	*2*
Koster's curse	*Clidemia hirta*	*2*
Daisy fleabane	*Erigeron karvinskianus*	*3*
Air plant	*Kalanchoe pinnata*	*3*

In 2024, PRC removed invasive species regularly during their other field work. The dominant species addressed were Himalayan ginger, banana poka, and blackberry. Primary areas in which the team weeded were along the main trails of the monitoring grid, the social attraction site, and the fence perimeter. The team focused on clearing weeds near the burrows so that the predominant plant present was the native uluhe (*Dicranopteris linearis*), which is known to promote seabird breeding.

PREDATOR CONTROL AND ERADICATION

The susceptibility of the covered seabirds to predation by feral cats and barn owls suggests that feral cat and barn owl control will result in an increase in the reproduction and numbers of seabirds breeding in Kalalau Valley. Based on the locations of breeding colonies within the Kalalau Valley (Section 5.4, Figure 5-1 and *Appendix A: Kahuama'a Seabird Preserve Management Plan*), it was estimated that trapping along the rim of Kalalau Valley would achieve a 30% reduction in the number of shearwaters predated by feral cats. Therefore, cat trapping locations were selected to follow the rim of Kalalau Valley to protect key seabird nesting populations in Kalalau Valley and at key ingress points into Kalalau Valley. Feral cats are known to use the roads and trails in the vicinity of the Kahuama'a Seabird Preserve as ingress points to prey upon nearby established colonies in the Kalalau Valley and Rim, Pihea (part of the Hono O Nā Pali Natural Area Reserve), and Honopū, all of which are expected source populations for the Kahuama'a Seabird Preserve.

Site Descriptions

Kalalau Rim. The Kalalau rim is a high cliff area which falls over a thousand meters into the Kalalau Valley. Due to the steepness and inaccessibility of the cliffs, there are many rare, endemic plants which have survived undisturbed by humans, giving the Kalalau rim unique characteristics. The vegetation at the site is a subtype of 'Ōhi'a Lowland Mesic Forest, with 'uluhe fern comprising much of the ground cover. Koke'e road follows the Kalalau rim and was selected as a logical location for trap placement.

Alaka'i Swamp Trail. Feral cats have been observed on the road to Pihea by Hawaii Division of Land and Natural Resources (DLNR) staff, and DLNR camera data reflects significantly higher numbers of cats moving along trails and fence lines than in densely vegetated areas. The Alaka'i Swamp Trail was chosen in consultation with Hallux Ecosystem Restoration and the Hawaii DLNR, who do the majority of predator control in the Alaka'i region. This area covers critical ingress points into seabird colonies and was not being managed for cats prior to the KSHCP and thus fills a critical need in protecting key listed seabird populations.

Cat Trapping Methods

Detailed trapping methods can be found in the appendix of the KSHCP. In summary, Tomahawk live traps have been used each year to accomplish cat trapping objectives. Tomahawk traps are walk-in live-capture traps that can either be baited (single-door) or un-baited/blind-set (double-door), capturing animals as they pass through the trap. The traps used at both sites are a combination of single door (36"x10"x9") and double door (36"x9"x9") Tomahawk traps. All Tomahawk Traps were either baited with food or had lures inside designed to attract the attention of predators. Baits used included sardines in olive oil, wet cat food, and dry cat food mixed with Wildlife Control Supplies Shellfish Oil contained in an empty cat food can in the rear of the trap. Lures used included cat toys, metal lids, pieces of foil, compact discs as flashers, and liquid lures such as Booty Call, Triple Treat, Silent Stalker, Catnip Oil, Feline Exciter, Alley Cat, and bobcat urine. Traps were generally open five days per week for two weeks of the month for a total of 10 trap nights per trap every month. Traps that were not monitored by real-time transmitting cameras (described below) were manually checked every 48 hours. Traps with cameras attached were generally opened on a Monday and closed on Friday, and their transmitting cameras were checked daily. When traps were not active, they were locked open without

bait to allow cats to enter and become familiar with them, increasing the likelihood of successful trapping during subsequent visits.

The number and location of traps has varied somewhat in each year of the KSHCP. Traps have been relocated occasionally because of issues with theft or vandalism or in an attempt to increase the chance of trapping cats and avoiding non-target animals. In 2024, 16 Tomahawk live traps were located every 100 m along the last 1.4 km of the Alakaʻi Swamp Trail, starting about 1 km from the trailhead on Camp 10 road. Care was taken to locate traps off the trail where they were not visible to the public and to cover them with specifically designed trap covers and/or foliage. An additional 22 Tomahawk live traps were located along the western side of the road along Kalalau Rim extending about 0.5 km along the road from Puʻu O Kila lookout and 0.5 km surrounding the Kahuamaʻa Enclosure. Traps were placed 5-10 m off the road and camouflaged using the same protocols described above.

Trail Cameras

Initially, 15 of 16 cat traps along the Alakaʻi Swamp Traill and 18 of 22 traps along the Kalalau Rim were accompanied by a Cuddelink Cuddeback camera, which was intended to transmit pictures in real time via cellular service to PRC predator technicians to alert them to possible captures. These cameras were used for both camera trapping and monitoring purposes. The cameras were deployed in a chain to transmit pictures to a "home" camera where all images could be viewed in the field and retrieved by replacing a single SD card. The Cuddelink "home" camera was located near Pihea Junction, which allowed for traps to be checked without physically visiting each trap. Camera data were used to evaluate the level of interaction with each trap by any given predator. Images of predators are saved on an external hard drive, and images of cats, specifically, are saved in a shared Google Drive to determine effectiveness. Although Cuddeback Cameras offer a cell version of their cameras to be used in areas skirting cell service availability, there is currently no cellular service close enough to either trapline to warrant use of this type of camera.

There have been problems with theft of cameras and with functionality of the automated Cuddeback camera system because of poor cellular coverage. After the theft of two cameras in 2022 and four more in 2023, all cameras were removed from traps on the Alakaʻi Swamp Trail in early 2024. Some of the cameras were repositioned on traps along the Kalalau Rim instead, so that all traps in that area have a camera. Four additional trail cameras have been placed along the predator fence to help monitor for the presence of cats. If cats are photographed along the fence, additional Tomahawk traps are deployed in an effort to catch them.

Rat Eradication and Control

Efforts to eradicate rats from inside the fence began in 2021 shortly after the fence was completed (Table 1), using a combination of bait stations and traps. At each of 63 points in the 25-m grid in the fenced area (Figure 1), a tamper-resistant Protecta ® plastic bait station (Bell Laboratories, Madison, Wisconsin, USA) was placed to shield bait from rain and reduce the risk of poisoning to non-target species. Each bait station was filled with up to eight 1-oz Ramik mini-bars® (HACCO Inc., Randolph, Wisconsin, USA) containing 0.005% diphacinone. Diphacinone is the only rodenticide approved for conservation purposes in Hawaiʻi and thus was the only option available for this project. Bait stations were serviced twice per week during the first month. After that, the frequency was adjusted based on level of consumption to ensure that an adequate supply of bait was available at all times. In addition to bait stations, 24 Goodnature A24 rat traps were deployed inside the fence the month before fence construction was completed in May 2021. At every other grid point, rat tracking tunnels (N=31) were deployed as an additional method to measure the level of rodent presence and were run over a 24-hour period every 1-3 months.

Fifteen out of 16 cat traps on the Alakaʻi Swamp Trail and 18 out of 22 cat traps along the Kalalau Rim also have Goodnature A24 rat traps deployed near them to reduce bait removal from the traps by rats. The Goodnature traps inside the Kahuamaʻa fence were deployed in January 2023.

Barn Owl Control

Barn Owl control in the Kahuamaʻa area is done by Hallux Ecosystem Restoration. PRC previously had intended to conduct Barn Owl control before or after evening auditory surveys if Barn Owls were observed, but PRC has observed very few Barn Owls in general and has refrained from doing Barn Owl control so as to not interfere with efforts by Hallux. During the 2024 season, PRC observed zero Barn Owls during auditory seabird surveys.

Results

Kahuama‘a Predator Eradication

No cats were detected within the fence upon fence completion and thus were considered to have been eradicated through passive methods, since cats can escape from inside the fence but cannot re-enter. Rats and mice were abundant in the fence area prior to fence construction, with about half of tracking cards having rat or mouse track, or both (Figure 6). Rats and mice were thought to have been eradicated by the end of 2021 based on tracking tunnel data, but both rats and mice have been detected on tracking cards inside the fence since then (Figure 6). It is not clear if these individuals represent a small remnant population or occasional incursions into the fence. A resurgence of Polynesian rats was documented in October 2022 (Figure 6), after which the entire baiting grid was re-activated, because Polynesian rats are more difficult to remove with traps. The baiting grid has been maintained continuously since then, and 10 A24 rat traps also have been deployed continuously. Data from tracking cards indicate mice have been eradicated from within the fence, with a small incursion in late 2023, but a small number of Polynesian rats, possibly just a single individual, remain inside the fence and have not been removed despite the presence of traps and bait.

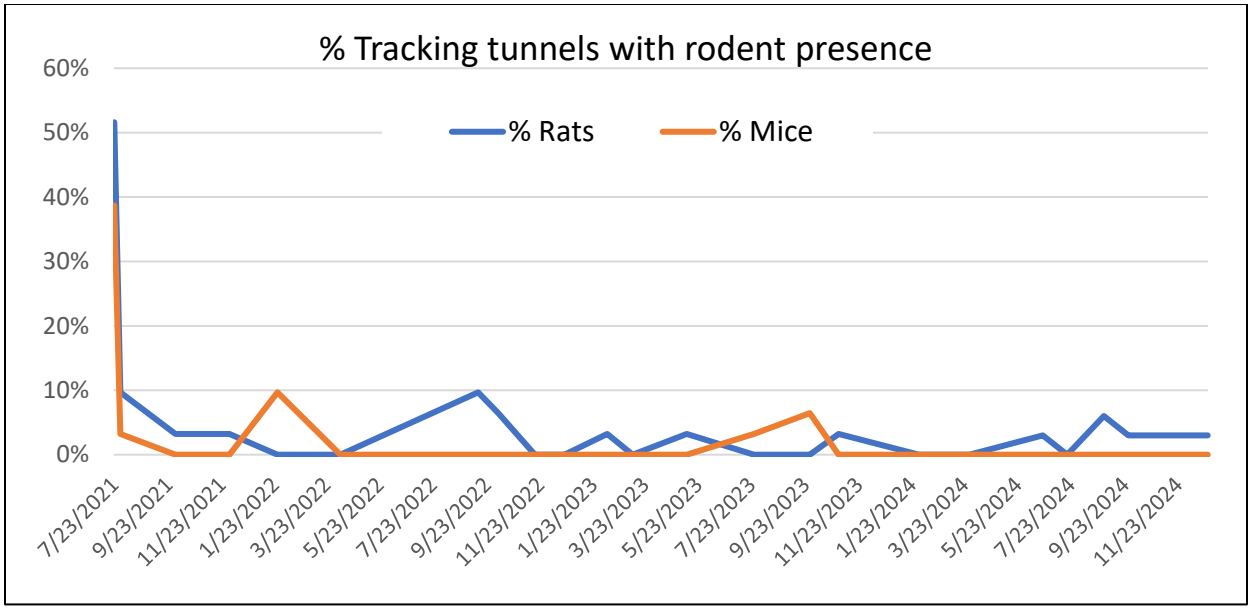

Figure 6. Proportion of tracking tunnels with rat and mouse tracks over time at the Kahuama‘a Seabird Preserve.

Cat trapping

Cat traps were operated for a total of 3,734 trap-nights in 2024, including 2,172 trap-nights along the Kalalau Rim Trail and 1,554 trap-nights along the Alakai Swamp Trail (Figure 7). The KSHCP prescribes that cat traps be operated for a minimum of 300 nights per month. This goal was achieved in 2024 in all months except February and June. This goal has generally been achieved in most months since the KSHCP began, with a few exceptions caused by bad weather that prevented access or staff availability. The number of trap-nights has remained fairly steady in each year of the KSHCP, with a slight increase over time as the procedures and logistics have been improved each year (Figure 8).

Eleven cats were captured in 2024, including six along the Kalalau Rim and five on the Alaka‘i Swamp Trail, resulting in an overall catch rate of 0.003 cats/trap-night. As required by the KSHCP, all cats were humanely euthanized. A total of 145 rodents were incidentally captured in cat traps between the two sites in 2024, including 130 black rats (*Rattus rattus*), 8 Norway rats (*R. norvegicus)*, and 5 Polynesian rats (*R. exulans*), and 2 house mice (*Mus musculus*); all rodents were humanely euthanized. Most cats were captured during the spring and summer months (Figure 9), perhaps related to increased movement of cats and the presence of young during the cat breeding season. The number of rodents trapped varied among months, with a decrease during the summer months (Figure 9). Of note, four feral piglets were captured in three cat traps along the Kalalau Rim in January 2024 (Figure 10); these are the first pigs captured during the trapping program. In addition, the A24 rat traps on the Alaka‘i Swamp Trail and Kalalau Rim Trail removed a minimum of 109 and 78 rats, respectively, in 2024. The numbers of cats and rodents trapped have varied among years (Figure 11). Trapping effort and trap locations have been similar among years, and the yearly variation is thought to be random.

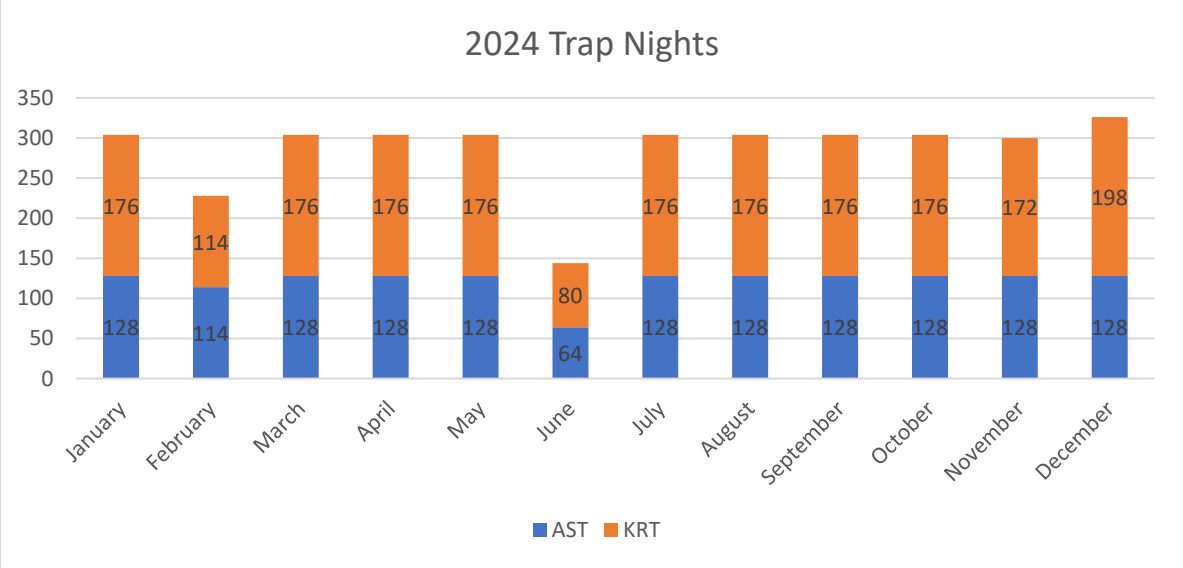

Figure 7. Number of cat trap-nights in 2024 on the Alakaʻi Swamp Trail (AST) and Kalalau Rim Trail (KRT). The KSHCP prescribes a minimum of 300 trap-nights per month.

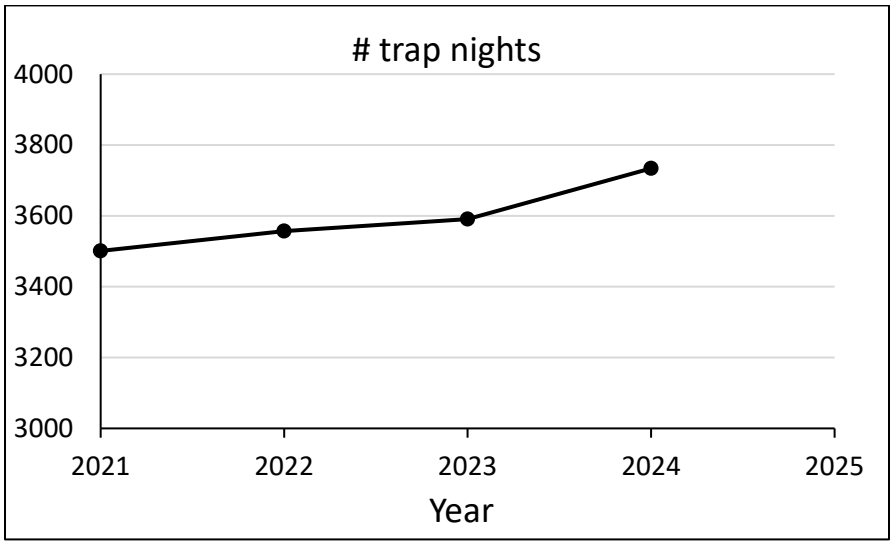

Figure 8. Number of cat trap-nights each year of the KSHCP.

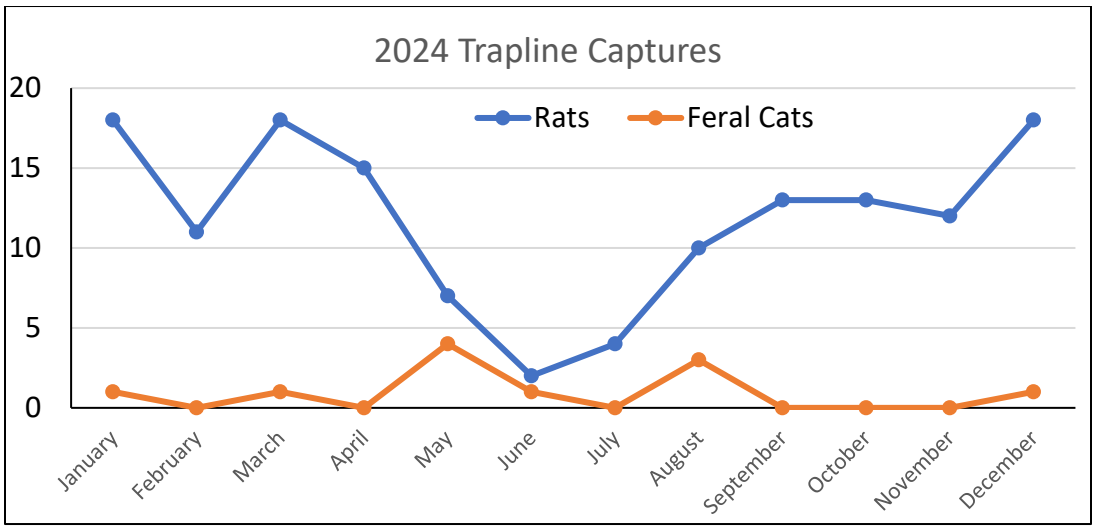

Figure 9: Total number of rodent and feral cat captures along traplines in 2024.

Figure 10. Two of four feral piglets trapped along the Kalalau Rim in January 2024.

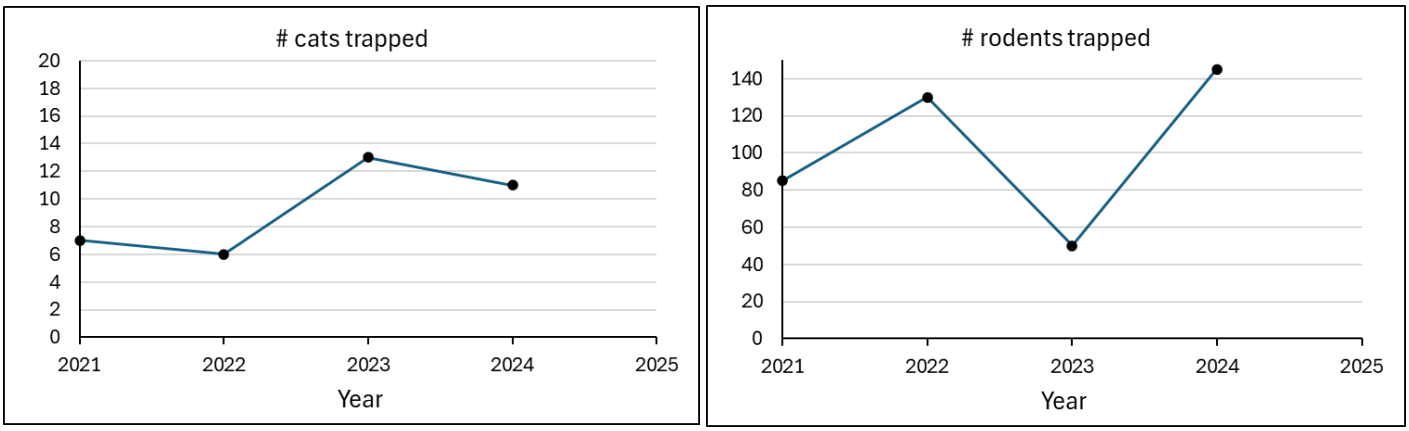

Figure 11. Numbers of cats and rodents trapped in each year of the KSHCP. Note the difference in scales for numbers of cats and rodents.

Camera monitoring

All trail cameras were removed from traps along the Alakai Swamp Trail in early 2024 because of chronic problems with theft and vandalism. All 22 traps on the Kalalau Rim Trail still have cameras, as there has been no problem with theft in that area, and there are four additional cameras positioned along the predator fence. The automated Cuddeback system is no longer enabled, since it did not work as intended because of poor cell coverage and camera connectivity in the dense forest. Cats were observed in images from trail cameras on multiple occasions throughout the year. The color pattern of cats visible in photos matched those of cats trapped, suggesting that all cats known to be in the area were eventually removed. Rats and mice have been observed on every camera deployed on the Kalalau Rim. Black Rats made up the majority of trail camera observations. Other animals such as pigs, dogs, and black-tail deer have been observed on game cameras occasionally. Dogs are commonly observed on game cameras at both Alakaʻi Swamp Trail and Kalalau Rim. Dogs have been photographed inspecting, crawling into, and sniffing traps that are baited.

Discussion

Objectives and protocols for monitoring progress and success are described in detail in *Appendix A: Kahuamaʻa Seabird Preserve Management Plan* for the KSHCP. These objectives involve three aspects of biological monitoring:

1. predator eradication/suppression;
2. vegetation (habitat) management; and
3. seabird response to management.

The predator exclusion fence was completed during the prescribed time frame and has been maintained as needed. Some maintenance has been required, but overall the fence has held up well and has been effective at excluding ground predators.

All predators were eradicated from the fenced area, including feral cats, rats, and mice, and the fence has been maintained in a largely predator-free state since it was completed. Monitoring with tracking cards has shown that a small number of Polynesian rats, possibly just a single individual, have persisted inside the fence and have been difficult to remove despite the present of numerous traps and bait stations. This low level of Polynesian rat presence is not a serious threat to seabirds, and efforts will continue to remove the remaining individual(s).

Biological monitoring of seabirds and their habitat commenced on schedule in 2021, and all required surveys were completed during that time to provide an inventory and baseline of the flora and fauna present at the Kahuamaʻa Seabird Preserve. Prescribed surveys have been completed each year since then to monitor responses. Auditory surveys have shown that all three listed seabird species regularly fly past the site, with Newell's Shearwater in particularly high numbers based on call rates.

The social attraction program, consisting of 100 artificial nest boxes and a solar-powered sound system that broadcasts Newell's Shearwater calls, was installed as prescribed and has been maintained and operated properly each year. Monitoring of the social attraction site inside the fence has documented the presence of single Hawaiian Petrels on the ground in 2023 and again in 2024. All possible actions have been taken to make the site as attractive as possible, and it is hoped that Hawaiian Petrels will continue to visit, that Newell's Shearwaters will begin to visit soon, and that both species will begin breeding. It is somewhat unexpected that only the Hawaiian Petrel has visited the site thus far, since only Newell's Shearwater calls are played by the sound system, and that species is known to be more abundant in the area based on auditory surveys. The proximity of a large Newell's Shearwater colony was one of the reasons that Kahuamaʻa was selected as the social attraction location, but it is possible that having such a large, loud Newell's Shearwater colony just downslope from the project site is actually a deterrent to birds colonizing Kahuamaʻa because the social attraction calls are less attractive than the existing large colony that presumably has many breeding pairs already. Hawaiian Petrel colonies are located further away, and yet that species appears to be more attracted to the site.

Cat control along the Alakaʻi Swamp trail and Kalalau Rim has been implemented successfully in each year of the KSHCP, and a total of 37 feral cats have been removed from the area. These cats could have accessed seabird colonies and their removal likely has helped to protect existing seabird colonies and maintain them as sources of birds to colonize Kahuamaʻa.

Table 4: Progress towards biological objectives stated in Table 7-4 of the KSHCP.

Biological Objective	Status
2.A. Construct a predator-proof fence and install social attraction equipment (nest boxes, speakers) within the fenced area at mitigation site in Year 1 of KSHCP implementation.	Completed.
2.B. Remove predators from within the fenced enclosure with monitoring confirmation of their absence, and activation of social attraction equipment by Year 2; predator eradication within fenced enclosure maintained for the life of project.	Completed.
2.C. Ground activity by Covered Seabirds documented at the mitigation site by Year 4 of KSHCP implementation.	Partially complete. Hawaiian Petrels have been documented in the preserve.
2.D. Breeding activity by Covered Seabirds documented at the mitigation site by Years 5-7 of KSHCP implementation.	Not yet achieved.

2.E. Cumulative upward trend in Covered Seabird breeding documented at the mitigation site by Year 10 of KSHCP implementation.	Not yet achieved.
2.F. Continued cumulative upward trend in Covered Seabird breeding documented at the mitigation site by Year 20 of KSHCP implementation.	Not yet achieved.
2.G. Maintain high quality seabird habitat at the mitigation site by removing habitat modifying invasive plants in Year 1 and annually throughout the 30-year duration of the KSHCP.	Ongoing.
2.H. Protect nesting birds inside mitigation fence and in nearby source colonies by implementing predator control of 1) barn owls within the area surrounding the fenced enclosure and the Kalalau Valley, and 2) feral cats at ingress points to source colonies in the Kalalau Valley, beginning in year 1 and annually throughout the 30-year duration of the KSHCP.	Ongoing.
2.I. Annual protection of any Honu nests adjacent to facilities via shielding or other measures to avoid light attraction take.	Ongoing.

2. SUMMARY OF KSHCP PARTICIPANTS' ANNUAL REPORTS

A consolidated summary of each Participant's annual report is provided below; reports are presented in alphabetical order. This includes sections on downed bird search effort, lighting and facilities, predator control, and training and outreach. For participants with multiple Facilities (Alexander & Baldwin and the County of Kaua'i), they are grouped for the purpose of readability. The exceptions to this are State of Hawaii facilities which are presented individually.

Alexander & Baldwin, Inc. (A&B)

Alexander & Baldwin, Inc. facilities covered by the KSHCP include Hokulei Shopping Village, The Shops at Kukuiula (TSAK), and A&B's Port Allen commercial properties (five properties grouped together as one "facility" for reporting purposes). One of A&B's properties, Waipouli Town Center, was sold in October 2024 and is no longer covered by the A&B permits; however, all KSHCP activities required under the permits (including but not limited to nightly downed seabird searches and predator control) continued at this facility through the date of the sale. Other facilities that were originally covered by the permits but were sold in prior years include the bulk fertilizer storage facility at Port Allen (sold in 2023), the McBryde Resources Wainiha and Kalaheo Hydroelectric Plants and Pump 3 (sold in 2022), the Kukuiula Development (sold in 2021), and the Port Allen Solar Facility (sold during 2020).

Take

A total of four NESH were found at A&B facilities during the 2024 season, one at Port Allen and three at TSAK. The Port Allen NESH was found at Port Allen Marina Center by searchers from Archipelago Research and Conservation, while the three TSAK NESH were found by A&B search teams. All of these birds were turned in to SOS and released alive. Four additional NESH were found by A&B personnel in the Port Allen vicinity, but not on A&B property; three were released alive and one was found dead. A Wedge-tailed shearwater was also found by A&B searchers at TSAK; this bird was turned in to SOS and was released alive.

Downed bird search effort

A&B's Downed Seabird Monitoring and Recovery Plan was updated in September 2024 and searchers were trained on the revised plan. Self-monitoring (downed seabird search and recovery) efforts were conducted in accordance with the plan by the predator control contractor at all A&B facilities, except that morning searches at TSAK were conducted by landscaping and building maintenance contractors. Aside from one search that was missed at Hokulei Village due to a scheduling error, all searches were completed and logged as required. At all A&B facilities, searches were conducted twice nightly every night during the seabird fallout season from September 15 to December 15. The first search was conducted three to four hours after sunset, and the second search was conducted one hour prior to sunrise. At Hokulei Village, persistent vagrancy continues to be a problem at this property and has, at times, interfered with completion of searches. Searches must occasionally be curtailed - albeit to a very limited degree - for safety reasons to avoid areas where vagrants are observed loitering (in one case, a searcher was followed by a vagrant and had to leave the area). Increased security presence is needed to control the influx of vagrants into the shopping center.

The in-house Downed Seabird Searcher Effectiveness Monitoring and Improvement Program developed and implemented in 2023 was continued throughout 2024 with weekly placement of seabird decoys at all facilities by A&B Environmental Affairs personnel. This program helped to ensure effective searching was conducted throughout the year and to identify areas requiring improvement. At The Shops at Kukuiula in particular, a specific training need was identified early in the season as a result of this program, and additional training of in-house searchers performing morning searches at this facility was conducted, resulting in improved in-house searcher performance. Based on results of this program, searcher performance across all facilities was assessed to be far better than that measured during the 2021 Searcher Efficiency Trials with performance well in excess of the default 50% searcher efficiency used in take calculations. It was noted that the program also positively impacted searcher motivation, with searchers competing to be the top performer and taking a personal interest in self-improvement whenever a decoy was missed.

Following the success of the in-house Downed Seabird Searcher Effectiveness Monitoring and Improvement Program during the 2023 season, it was decided to initiate a third-party Searcher Recovery Rate Trial during the 2024 season. This trial was designed and conducted by H.T. Harvey & Associates, and preliminary results are consistent with those from the in-house Downed Seabird Searcher Effectiveness Monitoring and Improvement Program, which serves to validate the data from that program. A formal report of the third-party Searcher Recovery Rate Trial is being prepared.

Lighting and facilities

Lighting at most A&B-covered facilities had been previously modified in order to be in compliance with KSHCP guidelines. Plans for further lighting improvements are under development based on the most recent lighting audit.

At Port Allen, semi-opaque panels on the roof and sides of the Steel Warehouse had been observed to transmit light from inside the building, and this was addressed in 2023 through tenant control of interior lighting during the fledging season. Monitoring of tenant performance was conducted on an ongoing basis during 2024 to assess the need for further action. While the tenant made obvious efforts to comply, there remains room for further improvements. Options for further improvements will be evaluated during 2025 for possible implementation during the 2025 season. Several tenant-owned/installed lights were addressed in 2024 to ensure they were dark-sky compliant. These included replacement of floodlights installed at Port Allen Center I and Port Allen II tenant spaces, modification of an exposed light inside the Port Allen Sunset Grill and Bar, and replacement of a floodlight and installation of a window shade on an illuminated doorway window at the Steel Warehouse. During 2023, two downed seabirds were found at the northern property boundary of Port Allen Marina Center and light dark-sky compliant parking lights reflecting off a white plastic fence on the boundary of the adjacent property was suspected of being a contributing factor. During 2024, black shade cloth was installed on the fence with the permission of the adjacent property owner, and this appears to have effectively prevented light reflection. No fallout was observed in this area during 2024.

At Hokulei, one tenant-owned light identified as requiring repairs (due to shielding that had been removed or fallen off) remained uncorrected throughout the season. An improved process for ensuring tenants take prompt action to address non-conforming lights needs to be implemented at this facility prior to the 2025 season. A 14,820 square foot building pad (Pad 2) leased to Walgreens remains undeveloped. The pad will be developed at an unknown date in the future, either by Walgreens or another tenant, and such development will include additional lighting. When developed, lighting will be compliant with KSHCP requirements.

At TSAK, plans for facility-wide lighting improvements, including budget programming, remain under development. As part of this process, and in conjunction with energy efficiency improvements, existing dark-sky compliant parking lot lights around the facility were transitioned to 2700K LED lamps, which emit a very low percentage of blue light (typically less than 2%) and are therefore consistent with the very restrictive lighting ordinance adopted on Maui in 2022 for the protection of seabirds (the Maui ordinance was consulted since Kauai does not currently have an analogous ordinance).

Predator control

At Port Allen, Hokulei Shopping Village, and TSAK, animal control activities were contracted to a professional wildlife control firm. These efforts were executed well and overall appear to have been successful in reducing the number of predators on the landscape, though challenges have arisen at TSAK. Out of a cumulative 1,099 trap nights across all three properties, predator capture rates were 0.0455. Below are the summaries presented from each of the properties describing the site-specific predator control efforts and challenges experienced.

At Port Allen, pre-season trapping commenced on August 16 and daily trapping continued throughout the season. During the pre-season and throughout the season at least three traps were placed at the Port Allen facilities and for a portion of the season four traps were placed, resulting in a total of 397 trap nights. Tampering with/theft of traps was generally not a problem as it had been in the past, though one trap had to be removed over concerns about a cat colony operator on an adjacent property. Traps were checked, baited, reset and maintained on a nightly basis. The presence of feral chickens in and around the property likely impacted the trapping program to an extent, but appeared less of an issue than in past years. Only two instances of cat feeding on the property were logged. Predator control "snapshot" surveys were conducted prior to the start of trapping and then before, during, and after the season, none of which indicated any significant predator presence on the property. This is consistent with results during previous years' surveys. Twice-nightly monitoring for the presence of predators on the properties in conjunction with seabird searches indicated that the cat population was near zero over the course of the season. No more than two cats were observed on the property during any search and only 27 cats were sighted during 184 searches; on average, 0.3 predators were seen per night over the course of the season, and predator sightings remained near or below this level for the majority of the season with a maximum of 0.6 predators observed during one two-week period. The predator control contractor also monitors for the presence of predators on the property during their regular trap checks, and this information is used to help inform trap placement. One third of all predators caught at Port Allen were trapped during the month prior to the

start of the season. Evidence of cat feeding on or near the property was observed only rarely. One loose dog was observed during the season (which appeared to be non-feral), while rodents appear to be under control as a result of the separate pest control program.

At Hokulei Shopping Village pre-season trapping commenced on August 16 and continued daily throughout the season. During the pre-season three traps were placed at the facility nightly, and three traps were placed for the majority of the season (increased to four during the final week) for a total of 362 trap-nights. Traps were checked, baited, reset and maintained on a nightly basis. Predator control "snapshot" surveys were conducted prior to the start of trapping and then before, during, and after the season, none of which indicated any significant predator presence on the property. This is consistent with results during the 2023 surveys. Twice-nightly monitoring for the presence of predators on the properties in conjunction with seabird searches indicated that the cat population was near zero over the course of the season. No more than two cats were observed on the property during any search and only 30 cats were sighted during 184 searches; on average, 0.32 predators were seen per night over the course of the season, and predator sightings remained near or below this level for the majority of the season, peaking during the first two weeks of the season at 0.7 cats per night. Half of predator captures occurred during the month prior to September 15, demonstrating the value of pre-season trapping efforts. The predator control contractor also monitors for the presence of predators on the property during their regular trap checks, and this information is used to help inform trap placement. No significant rat or dog activity was observed; rodents are controlled under a separate pest control program. Feral chicken activity on this property was minimal. Tampering with traps was infrequent. No instances of cat feeding were logged at this property, indicating some success in halting this practice that had been observed in prior years.

At TSAK, predator control efforts in 2024 were somewhat less effective than in prior years due primarily to regular cat feeding occurring on the property near the Longs trash compactor. While the cat population at the facility remained quite low in previous years despite these unauthorized activities, clandestine feeding appears to have increased, the presence of kittens on multiple occasions indicates ongoing breeding, and traps placed near the colony operation appeared to have been tampered with on multiple occasions and in one case a trap was stolen. Feeding of cats not only attracts more cats but also makes trapping of (well-fed) cats far more difficult. A more directed and aggressive effort to prevent cat feeding and thereby reduce the population is planned to be implemented in advance of the 2025 season. Recent off-site clearing of vegetation along the western boundary of the property that had previously provided an off-site refuge for feral cats may also have driven some cats onto the property. As a result of these factors, the cat population at TSAK was higher than in prior years, with 92 cats sighted during 184 searches over the course of the season. Pre-season trapping commenced on August 15 and continued daily throughout the season. During the pre-season three traps were placed at the facility nightly, and three traps were placed for the majority of the season (up until the Longs trap was stolen in late November) for a total of 340 trap-nights. Traps were checked, baited, reset and maintained on a nightly basis. Predator control "snapshot" surveys were conducted prior to the start of trapping and then before, during, and after the season, none of which indicated significant predator presence on the property (four kittens were spotted during the pre-commencement survey, while 1-2 predators were sighted during the remaining surveys). This is consistent with results during the 2023 surveys. Twice-nightly monitoring for the presence of predators on the property in conjunction with seabird searches indicated that the cat population was lowest during the two-week periods at the beginning and end of the season (averaging 0.6 and 0.5 predators per night, respectively), but trended upward (to 1.5 predators per night at its peak with a high of eight cats sighted in one night) by mid-November before dropping back down. Predator sightings averaged one cat per night over the season as a whole, and about half of all cats sighted were seen in the vicinity of Longs. Just under half of predator captures occurred during the month prior to September 15, demonstrating the value of pre-season trapping efforts. The predator control contractor also monitors for the presence of predators on the property during their regular trap checks, and this information is used to help inform trap placement. No significant rat or dog activity was observed; rodents are controlled under a separate pest control program. Feral chicken activity on this property was high, and chicken trapping was conducted to reduce impacts on predator traps.

Training and outreach

A total of 14 training sessions were conducted for 48 staff members and contractors across all properties to educate staff members on the requirements of the KSHCP and on protocols related to searching, seabird biology and predator control. Additional training was provided for 14 staff members, either to address areas where improvement was needed

or to address facility-specific training needs. Training was primarily done remotely using Power Point presentations, but some in-person training, including in-the-field/hands-on training, was also conducted. Training was conducted primarily by HT Harvey & Associates, but some training was conducted in-house or by contractor supervisory staff.

As in prior years, outreach materials developed and distributed included a tenant outreach letter and a tri-fold brochure to further educate tenants, employees, and visitors on the project at all facilities. Additionally, signs prohibiting the presence of loose predators and the feeding of predators were posted at all facilities.

In light of high fallout in the Port Allen vicinity during recent years and in an effort to help mitigate area-wide lighting issues that may be contributing to fallout , pre-season outreach efforts were significantly expanded to include mailing of informational fliers to landowners in the area and the U.S. Navy (which operates vessels out of Port Allen), as well hand-delivering them to residents of the Hawaii Public Housing Authority project adjacent to Port Allen Marina Center. It was hoped that this would raise awareness of lighting issues among non-KSHCP participants and the general public in the area.

Changed circumstances and facility changes

The Waipouli Town Center was sold in October 2024 and is no longer a KSHCP participating facility. There was a transition in facility management at all facilities in 2024 due to personnel changes.

Kauai Coffee

Take

A single NESH was found on 7 November 2024 at the Kauai Coffee Company equipment shop, where it emerged from under a rolling trash bin. It was delivered alive to the Hanapepe Fire Station the same day.

Downed Bird Search effort

The only information provided about seabird search effort were scans of nine data sheets with dates and times searched and the observer's initials. There were daily entries on the sheets from 29 September to 12 December, the entirety of the duration of lighted harvest operations for the 2024 season Search times were not explicitly noted (shift times were) but all conducted, logged searches took place during the recommended critical time thresholds (2 hours before sunrise and 2 hours after sunset). Designated search areas are illustrated on addendum sheet.

Lighting and facilities

The following image was provided in the 2024 report:

There were other before and after photos of lighting changes at various locations on the addendum sheet.

Predator control

For the 2024 season, pre-season trapping spanning 3000 acres was conducted on property (see predatory control sheet) starting in June 2024. From August through December, predator traps were consolidated to lighted, factory and field areas (see predatory control sheet). Predator trapping was conducted on 46 nights from 24 June to 13 December. Eight traps were deployed on 13 nights from 24 June to 13 July, and four traps were deployed on 33 nights from 22 July to 13 December, for a total of 8x13 + 4 x 33 = 236 trap-nights. A total of 10 cats were trapped, for an average trapping rate of 0.042 cats per trap-night. No cats were reported as being observed during trapping efforts.

Training and outreach

The 2024 report contained 18 scanned images of seabird training sessions, from which the following information was obtained. Trainings were conducted June through September.. Companywide training was conducted in-house (training PowerPoint in addendum sheet): Individual department headcount as follows: (21) Factory/Processing, (49) Orchard, (6) E-Commerce, (5) Roast Plant, (20) Visitors Center, (3) Administrative Office, 104 individuals total. Training covers: program background, identification, response procedures, rescue and recovery, daily search routes. Supplemental training was conducted by Dilek Sahin of the Kauai Endangered Seabird Recovery Project. Supplemental training was focused on individuals directly involved with the 2024 Harvest Season operations: Factory and Orchard (56 total). Hands-on, in-depth training (extensive recovery and ID) for designated searchers (10) was also conducted by D. Sahin on 8/2/24.

Kauai Coffee also initiated in-house decoy bird search and recovery program. Program spanned July-August. 5 zones were designated from the Visitor's Center to the Administrative office with designated search areas for each department. Program had a 100 percent participation rate and a recovery rate in the 90 percentile.

The report contained the following table about outreach:

Date(s) of Outreach Effort	**Description of Outreach Effort (including method of delivery)**	**Property or Facility**	**Outreach Target Audience**	**Printed Materials or Other Media Produced**
ongoing	Posting	KCOF Administrative office	Staff	Information Bulletin Board
ongoing	Kiosk	KCOF Visitors Center	Property Visitors	Coloring and Activity Books

Kauai County

Take

There was take of one listed seabird during 2024 at Kauai County Facilities; a single Newell's Shearwater was reported by SOS to have been found at Faye Park on an unknown date and for which the final disposition was not reported. This is similar to what occurred in 2023, when the only downed seabird was a Newell's Shearwater that also was found at Faye Park by a third party. Searching was not conducted at this facility in 2024 and no predator control was done, because it was reported that there was no light attraction at this Facility during fledgling season this year. However, the fact that birds were found at the site in two consecutive years demonstrates that fallout is happening and that there must be some cause, possibly lighting. The site should be monitored for seabirds, the cause of fallout should be investigated, and predator control should be conducted.

Downed Bird Search effort

Searches were conducted once daily at some category 4 and 5 sites at approximately 6:30am following the monitoring plan in the County's PIP. Searches were conducted by on-site staff and by a contractor who also conducted the predator control.

Lighting and facilities

There are 60 County facilities listed under the KSHCP that require monitoring due to their light classification:

- 37 Category 3 facilities.
- 11 Category 4 facilities
- 12 Category 5 facilities

Lights are off during fledgling season for category 4 and 5 sites with the exceptions of authorized night football games that elicit the support of the agencies to ensure the protection of endangered seabirds as well as ensure compliance with the KSHCP. There are eight fire stations island-wide that are classified as aid stations and take in downed seabirds annually from organizations who do not participate in the KSHCP and community patrons who find downed birds. Of the 8 fire stations island wide, 4 are classified as category 3 facilities under the KSHCP:

1. Waimea Fire and Police Station
2. Kalaheo Fire Station
3. Hanapepe Fire Station
4. Hanalei Fire Station

The additional four seabird aid stations / fire stations not listed above are not listed in the KSHCP as category 3, 4, or 5 facilities but do take in downed seabirds also and assist SOS with efforts to revitalize the endangered seabird population. All fire fighter personnel participate in the annual seabird monitor trainings and perform regular searches of facilities as outlined in the KSHCP.

Predator control

During the 2024 seabird season, a contractor conducted Predator Control at County sites and surveyed the target areas for predators. Category 3 facilities (sites with lights on at night during the fledgling season for safety) with known occurrences of predators were prioritized for predator control efforts. Of the 37 category 3 properties, 32 had lights on and thus required predator control per the KSHCP. In 2024, predator control was conducted at 27 County sites, which was an improvement over the 13 sites in 2023, but still did not include all the sites where predator control was required. Of the 27 County sites where predator control was conducted in 2024, trapping was done during the seabird fallout season at 18 sites, and at 9 sites trapping was done only during the pre-season (March-May) and not during the seabird fallout season. Predator control effort appeared to be insufficient at 10 sites, based on the capture rates per trap-night, which were high (see Table).

The number of traps used at each site and the number of nights on which they were deployed were not reported in 2024, only the number of trap-nights was reported, and the total number of trap-nights did not agree with the numbers of trap-nights reported for individual sites. In 2023 it was reported that cameras were used to monitor presence of feral cats at some county sites, but in 2024 it was not reported whether cameras were used again. The cat trapping rate in 2024 (0.11) was lower than in 2022 (0.14) and 2023 (0.20), but still higher than at other Facilities managed by other Participants (Table 5). While a high trapping rate indicates the trapping is effective a removing cats, if the trapping rate remains high it can indicate that greater effort (more traps or more nights) is needed to reduce the number. Lydgate Park continues to be a problem site, with a large number of cats present, though apparently 35 cats were removed to a private cat sanctuary by a third party in 2024.

Training and outreach

Kauai County reported three training events in 2024, all of which had a reported date of 1/1/2024 to 12/31/2024, and which involved 33, 263, and an unknown number of staff. Training materials consisted of on-line digital resources and videos and printed materials.

HDOT Lihue Airport

There were no changes in key staff, roles, or responsibilities of personnel involved in managing the implementation of the KSHCP at Lihue Airport in 2024.

Take

There were two documented incidents of covered seabirds grounded at Lihue Airport in 2024; one Newell's shearwater, and one Hawaiian petrel. Both were discovered inside the restricted AOA in the vicinity of the terminal ramp. Both were admitted to SOS and released.

Downed seabird search effort

Systematic searches for downed seabirds were conducted twice each day at Lihue Airport as prescribed in the KSHCP and HDOT's Participant Inclusion Plan. Within the publicly accessible areas, H. T. Harvey & Associates trained searchers performed this surveillance each day between September 15 and December 15, within 3-4 hours after sundown and then again within 1 hour of sunrise. The public area consists of the terminals, parking areas, portions of the rental car facilities, several roadways and access corridors which interconnect the various parts of the airport facility, and the outer sections of the North Ramp along Ahukini Road. The Aircraft Operations Area (AOA), where active aviation activities take place, is a restricted area. The AOA was searched twice or more each day by USDA-Wildlife Services biologists in conjunction with the Lihue Airport Wildlife Hazard Management Program (WHMP). The WHMP entails even more frequent and regular wildlife surveillance, facility-wide, both during the fallout season and throughout the year during species migration pulses. During the fallout season, USDA-Wildlife Services also regularly extend their searches into the public areas. As in past years, Airport Security and other trained personnel remained vigilant throughout the season and helped augment monitoring and surveillance capacity in 2024. The coordinated and repetitive on-the-ground surveillance and routine training using custom fabricated seabird decoys helped enhance the dedication and thoroughness of the search effort in 2024. Also in 2024, we began a 2-person search effort that entailed dividing the public access area into distinct sectors which enhanced the coordination and efficiency of the searchers.

The 2024 seabird fallout season represents the fifth consecutive year that HDOT has implemented downed seabird monitoring at Lihue Airport under the KSHCP. The monitoring work (i.e., searches for seabirds grounded due primarily to light attraction disorientation) is achieved by implementing protocols and procedures established in the KSHCP, which are reviewed and fine-tuned each year by HDOT, as needed and in cooperation with the agencies and ESRC, in preparation for the subsequent season. Refinements to the monitoring program stem from observations in the field including the distribution and timing of seabird fallout, variability in search conditions, moon phase as proxy for fallout probability, and the spatial character of Lihue Airport lighting infrastructure. In 2024, a single biologist conducted searches of the public areas during the pre-dawn search from September 15-24, then we switched to two searchers on September 25 and continued this approach for the remainder of the season. For the entire season, the night searches were performed by one biologist 4 nights per week, while two searchers performed the searches on 3 nights. The monitoring program combines the skills of H. T. Harvey & Associates trained field biologists and USDA-Wildlife Services staff biologists who also receive considerable training in seabird ecology and characteristics of seabird fallout. Maintaining measurable discovery rates of searchers that are consistent with approved rates remains an important goal. In addition to seabird-related outreach, we work with airport maintenance personnel to convey the importance of regular grounds-keeping and weed trimming so that any seabirds encountered along edges and in more densely vegetated areas will be visible to searchers. We also used custom fabricated decoys of Newell's shearwaters as a training tool. In 2024, decoys were used to conduct discovery rate trials at Lihue Airport. At this time there are no substantive adjustments to the current monitoring protocols being implemented at Lihue Airport.

Lighting and facilities

Lighting upgrades were implemented in 2020 as part of the Phase 3 lighting improvements for Lihue Airport. A total of 18 high-mast high-pressure sodium-light fixtures in the Airside ramp area were replaced with LED full-cut-off fixtures. Lihue Airport also turns off portions of the high-mast ramp lighting during seabird fallout season on the following schedule: a.) Commercial terminal ramp lights are set to turn off at 12:30 am – 3:30 am, after last flight, and before Hawaiian Airlines crews begin early morning ramp operations in preparation of their morning flights; b.) Cargo,

Commuter and Life Flight ramp lights remain on due to their activity; and c.) North ramp and T-hangar lights turn off at 12:00 am – 5:30 am. Combined, these measures are considered to advance the efficacy of seabird light attraction minimization and contribute to achieving biological goals and objectives. Beyond these already substantive achievements, there are no changes to lighting and facility infrastructure to report for 2024.

Predator control

A year-round animal control program is in place at Lihue Airport consistent with the provisions of the Wildlife Hazard Management Plan that is implemented by USDA-Wildlife Services. This program covers the entire airport property inclusive of the AOA and publicly accessible areas. In addition to avian wildlife the program addresses dogs, pigs, cats and any other free-roaming animals that might present a risk to aviation and public safety. Free-roaming cats present a threat to downed seabirds during the annual seabird fallout season, both within the AOA and publicly accessible portions of Lihue Airport. During the seabird fallout season, HDOT works in coordination with USDA-Wildlife Services to encourage expanded trapping effort targeting the capture and removal of free-roaming cats at Lihue Airport, which includes increasing the number of cat traps in the AOA and public access areas prior to September 15th. Tomahawk-style live traps are baited with commercial cat food and checked daily. Trapping effort at Lihue Airport during the 2024 seabird fallout season consisted of 14 traps distributed inside and outside the AOA. In the public areas, traps were set in the public parking area, rental car cul-de-sac, and occasionally traps were observed adjacent to the employee parking area. Traps were active for the entire fallout season. Inside the AOA traps are placed in a relatively evenly spaced manner along the main terminal ramp and at strategic points as determined by USDA-Wildlife Services. A total of 14 cats were removed from Lihue Airport prior to and during the 2024 fallout season; 8 of these were removed between September 15 and December 15 (AOA and public area combined). All were captured with traps, yielding a capture success rate of 0.006 cats/trap night. Pre-season spot surveys were conducted on 5 nights to assess the general abundance of cats in the public access areas of Lihue Airport. Counts consisted of 10, 6, 2, 2, and 2. This snap-shot provided some idea of the general abundance, but was not robust enough to use as a baseline for evaluating efficacy of the capture and removal program. During the regular counts made during twice daily search activities we documented cats during 78% of the searches that were performed in 2024. Trapping and removal efforts generally focus more on the AOA because most of the fallout is associated with the airfield at Lihue Airport. Although our observations of cats are limited to the public access areas, cats were removed from both the public area and AOA.

Training and outreach

H. T. Harvey & Associates conducted training with search and monitoring personnel which consisted of familiarizing personnel with the search areas, operational aspects of the facility, methods and approaches to ensure high detection capacity and thoroughness of coverage to aid in establishing search profiles, seabird species identification, ecology, and habits exhibited by grounded seabirds, in addition to presenting standard seabird awareness, rescue, and response training that is extended to a broad range of facility personnel. Airport Security and other trained personnel also received training to promote vigilant throughout the season that helped augment monitoring and surveillance capacity. USDA-Wildlife Services performed daily surveillance consisting of early morning and evening searches of the entire AOA.

Outreach consisted of in-person visits to present rental-car company managers and staff with an overview of seabird light-attraction and minimization tools, rescue and reporting procedures, and distribution of the Fact Sheet. Two presentations were made to 32 airport staff in 2024. USDA-Wildlife Services reached 50 participants in the annual Wildlife Hazard Management Program training exercise which includes information on seabirds, light attraction fallout, and procedures that need to be followed when seabirds are encountered anywhere at Lihue Airport. Kauai Airports District Manager issued Airport Notice to All Concerned parties to alert airport personnel and tenants regarding the seabird fallout season, procedures for rescue and reporting when seabirds are found (dead or alive), the role of USDA-Wildlife Services, and to reiterate the airport policy of no cat feeding anywhere at the airport.

A seabird light attraction Fact Sheet containing written materials covering seabird light attraction issues, minimization tools, rescue and reporting procedures was widely distributed among the Lihue Airport workforce with an emphasis on reaching employees and contractors who are active in the AOA. As part of outreach efforts, the Fact Sheet was posted in worker common areas and bulletin boards where it is visible to staff.

Date of Training	Training Topic	Property or Facility	Training Group	Number of Attendees	Training Platform (in-person, video-conference, other)	Printed Materials or Other Media Provided
9/8/2024	Annual Seabird Awareness, Response, and Reporting	Lihue Airport	HDOT Lihue Airport Operations and Management	30	In-Person Airport Conference Room	Yes. Training Module and Fact Sheet, KSHCP Downed Wildlife Reporting Form
9/12/2024	Annual Seabird Awareness, Response, and Reporting	Lihue Airport	HDOT Lihue Airport Operations	2	Microsoft Teams Webinar	Yes. Training Module and Fact Sheet, KSHCP Downed Wildlife Reporting Form
9/11/2024	Airport Public Area Orientations and Search Procedures including Annual Seabird Awareness and Response Training	Lihue Airport	H. T. Harvey & Associates search and monitoring team	4	In-person	Yes. Maps, Training Module, Fact Sheet, discussion of search area characteristics, historic fallout distribution. Airport procedures and safety review.
9/13/2024	Grounded Seabird Search and Recovery Procedures and Search Strategy Training	Lihue Airport	H. T. Harvey & Associates search and monitoring team	4	In-person	Yes. Maps, Training Module and Fact Sheet, KSHCP Downed Wildlife Reporting Form; covered search area reconnaissance and procedures, demonstration of seabird search methods, rescue techniques, review of data sheets, notification procedures and reaching USDA-WS, and additional resources; cat survey.
5/17/2024	Annual Wildlife Hazard Management Program review (139 Training) delivered by USDA-Wildlife Services	Lihue Airport	USDA-Wildiife Services, Aircraft Rescue and Firefighting personnel, Airport Operations and Maintenance, Tenant representatives	50	In-person	KSHCP seabird fallout protocols were reviewed including seabird identification, reporting procedures, and reporting forms (including relevant information concerning the role of the Save Our Shearwaters program and points of contact for reporting downed wildlife incidents at Lihue Airport).

Date(s) of Outreach	Description of Outreach	Property or Facility	Outreach Target Audience	Printed Materials or Other Media Provided

Prior to the beginning of the 2024 Fallout Season then 9/15-12/15.	Revisions and updates to the **SEABIRD LIGHT ATTRACTION FACT SHEET**. The fact sheet contains written descriptions of seabird light attraction issues, minimization tools, rescue and reporting procedures, points of contact for reporting, and visuals. Widely distributed among Lihue Airport workforce with emphasis on reaching many employees and contractors active inside and outside of the AOA. The annual seabird light attraction Fact Sheet was posted in worker common areas and bulletin boards where it is visible to staff.	Lihue Airport	Lihue Airport Staff and many Contractors and tenants.	Lihue Airport seabird awareness and response training module and Fact Sheet.
9/9/2024	Kauai Airports District Manager issued Airport Notice to All Concerned parties to alert airport personal and tenants regarding the seabird fallout season, procedures for rescue and reporting when seabirds are found (dead or alive), the role of USDA APHIS Wildlife Services, and to reiterate the airport policy of no cat feeding anywhere at the airport.	Lihue Airport	All Lihue Airport staff and work teams.	Printed and posted and PDF distributed via email to All Parties concerned.
Week prior to 9/15/2024 and again on several occasions throughout the season	In-person visits (day and early evening) to rental car companies, sharing overview of seabird light attraction and minimization tools, rescue and reporting procedures, and distribution of Fact Sheet; whenever possible we provided short "walk-through" scenario-based orientation on site to familiarize what to watch for and how to handle a downed seabird; stressed importance of Fact Sheet distribution to lot staff and pointed out how and why lights can become an attraction risk for seabirds and encouraged shut offs when possible. Explained risks presented by cats.	Lihue Airport	Rental car company staff and managers.	Provided some managers with the annual seabird awareness and response training module and regularly distributed the Fact Sheet.
Various communications throughout the season	Regular check-ins with staff on duty during search activities reviewing seabirds, the fallout season, light attraction risk, and how to minimize by turning off unnecessary lights.	Lihue Airport	Rental Car Service Employees and Managers	Airport Annual Training Module and Seabird Light Attraction Fact Sheets, verbal characterization of seabird light attraction and how to respond efficiently and perform basic seabird rescue with emphasis on timely notification and reporting.

HDOT Nawiliwili Harbor

Jeremiah Aguilera stepped in to replace retired Robert Crowell as Harbors District Manager, Kauai. There were no other changes in key staff, roles, or responsibilities of personnel involved in managing the implementation of the KSHCP at Nawiliwili Harbor in 2024.

Take

One Newell's shearwater was discovered at Nawiliwili Harbor on 9 October 2024, admitted to SOS on 10 October, and released on 24 October. In addition, there were two Wedge-tailed Shearwaters (*Ardenna pacifica*) found at Nawiliwili Harbor on 15 November and one on 8 December. Each of these seabirds were delivered to SOS.

Downed bird search effort

Searches were conducted twice each day at Nawiliwili Harbor in 2024 as outlined and prescribed in the KSHCP and HDOT's Participant Inclusion Plan. Searches were performed each night within 3-4 hours after sundown and then again within 1 hour of sunrise, on consecutive days beginning on September 15th and concluding on December 15th. H. T. Harvey and Associates assigned one trained field biologist to conduct searches of Nawiliwili Harbor each night and provided training that enabled harbor security personnel to properly conduct dedicated facility-wide seabird surveillance during the hour prior to sunrise (and throughout the night and pre-dawn hours). Harbor security received awareness and response training in addition to an orientation on specifics associated with seabird groundings and how to search for them during routine site-security rounds.

Harbor security is a valued partner in ensuring the highest probability of detecting grounded seabirds and performing quick and efficient rescue and reporting. H. T. Harvey & Associates biologists conducted 90 searches of Nawiliwili Harbor on consecutive nights in 2024 (two sick nights). Harbor security performed 92 consecutive searches within an hour of dawn during 2024 in addition to hourly surveillance of the entire facility throughout the evening and early pre-dawn hours. Harbor security was first to discover two of the three seabirds discovered at Nawiliwili Harbor in 2024 and followed established procedures of coordination with the H.T. Harvey on-site biologist, Harbors Division, and SOS.

Lighting and facilities

Standard security and worker safety procedures at Nawiliwili Harbor require that high mast lights be turned on to full illuminance when active cargo operations are in progress. Supplemental lighting to ensure pedestrian safety at night when cruise ships are in port does not involve port lighting and is limited to the vessel and pedestrian terminal. The standard procedures in place during the seabird season are that when nighttime port operations are completed, high mast lights are reduced to a lower security level setting (roughly 15% of illumination capacity). This procedure was followed uninterrupted for the duration of the 2024 seabird fallout season and is the standard operational procedure in place throughout the year.

Prior to the completion and approval of the KSHCP, HDOT Harbors Division finished replacing the high-mast port lights with new, full cut-off, downward-pointing LED fixtures. The new system upgrades provide more comprehensive system control features that enable programming and manual control capabilities that allow adjustments or corrections to be made quickly. Harbors Division personnel at Nawiliwili Harbor work closely with lighting engineers to ensure sufficient training of harbor security personnel and staff so that proper setting procedures are followed. Maintaining light minimization standards to reduce facility lighting during non-operational periods as a year-round standard operational procedure at Nawiliwili Harbor is considered progressive in terms of continuing to advance biological goals and objectives.

Predator control

HDOT Harbors Division has posted signs regarding the no cat feeding policy in place at Nawiliwili Harbor. Predator control activities at Nawiliwili Harbor in 2024 consisted of broadening the role of the animal control contractor to include trapping and removal. Trapping at Nawiliwili Harbor consisted of deploying 4 Tomahawk-style live cage traps placed at various locations within the facility and moving them around regularly based on observations of the contractor and reports delivered by search and monitoring personnel and harbor security. Traps were baited with commercial cat food and set Monday through Friday, excluding weekends and state holidays, for a total of 95 trap days. Seven cats were

captured and removed from Nawiliwili Harbor in 2024. The contractor helped affirm known points of ingress and helped confirm the relative absence of nearby off-site cat "colonies". Overall, observations of cats at Nawiliwili Harbor were sporadic, reported on 43% of the search nights, and ranging in numbers between 0-4 (average 0.7).

Training and outreach

One in-person training session facilitated by PowerPoint presentation was delivered to six HDOT staff including the District Manager and his management team and operations team at Nawiliwili Harbor and the Fact Sheet and KSHCP Downed Wildlife Protocol were reviewed, discussed, and distributed to attendees. The training was delivered by H. T. Harvey & Associates. Printed outreach material was posted in areas that are visible to harbor staff and tenants.

A total of two PowerPoint presentations were made to nine staff members working at Nawiliwili Harbor that included a review of the Fact Sheet, KSHCP Downed Wildlife Protocol, and Incident Documentation and Reporting Form. These were developed and delivered by H. T. Harvey & Associates. Printed outreach material was posted in areas that are visible to harbor staff and tenants.

Date of Training	Training Topic	Property or Facility	Training Group	Number of Attendees	Method of Training Delivery (e.g., video, in-person, educational materials)	Printed Materials or Other Media Provided
9/13/2024	Combined Seabird Awareness and Reporting and Search and Recovery; inclusive of on the ground searcher training and site familiarity exercises to facilitate searcher effectiveness and proficiency; lighting discussion and operational safety considerations.	Nawiliwili Harbor	H. T. Harvey & Associates and Harbor Security	3	In-person	Yes. Training module and Fact Sheet, KSHCP Downed Wildlife Protocol and Incident Documentation and Reporting Form, maps, discussion of search area characteristics, historic fallout distribution, additional resources.
9/13/2024	Seabird Awareness, Rescue and Reporting	Nawiliwili Harbor	HDOT Harbors Division Staff and Site Security	6	In-person	Yes. Training module and Fact Sheet, KSHCP Downed Wildlife Protocol and Incident Documentation and Reporting Form.

Outreach Dates	Description of Outreach Activities and Delivery Process	Property or Facility	Target Outreach Audience	Printed Materials or Other Media Provided
9/9/2024	Beginning of the season outreach with tenants on seabird light attraction fallout and procedures for notifying facility managers and HDOT personnel; review of proper rescue and reporting procedures, avoidance tips (searching around machinery quickly and efficiently before operations, situational awareness).	Nawiliwili Harbor	Matson team	Provided Fact Sheet containing information to facilitate preparedness, rescue, response, and reporting capacity.

9/12/2024	Beginning of the season outreach with tenants on seabird light attraction fallout and procedures for notifying facility managers and HDOT personnel; review of proper rescue and reporting procedures, avoidance tips (searching around machinery quickly and efficiently before operations, situational awareness).	Nawiliwili Harbor	Young Brothers team	Provided Fact Sheet containing information to facilitate preparedness, rescue, response, and reporting capacity.
Throughout the season	Periodic check-ins with HDOT Harbors Division staff at Nawiliwili Harbor, Matson, and Young Brothers to provide advance notice of periods of higher fallout probability, heighten awareness, and revisit fundamental elements of seabird awareness, rescue, response, and reporting requirements; ensure seabird signage is properly posted inside the passenger terminal to enhance awareness.	Nawiliwili Harbor	HDOT personnel, harbor security, and Nawiliwili Harbor tenants, and the public	Training modules and Fact Sheet
Throughout the season	The seabird awareness Seabird Light Attraction Fact Sheet was posted in the main harbor office, in worker common areas, and on the bulletin board in staff break room in clear view of HDOT-H staff. The Fact Sheet was posted in common areas of the Young Brothers office and in the Matson office and staff staging area in the warehouse, in clear view of tenant staff, and in the security shack, inside the cruise ship passenger terminal movement area, at the main entrance to Nawiliwili Harbor.	Nawiliwili Harbor	HDOT staff, Matson staff, and Young Brothers staff	Seabird Awareness Fact Sheet

HDOT Port Allen

Jeremiah Aguilera stepped in to replace retired Robert Crowell as Harbors District Manager, Kauai. There were no other changes in key staff, roles, or responsibilities of personnel involved in managing the implementation of the KSHCP at Nawiliwili Harbor in 2024.

Take

There were no KSHCP covered seabirds documented at HDOT Port Allen Harbor in 2024.

Downed seabird search effort

Searches were conducted twice each day at Port Allen Harbor as outlined and prescribed in the KSHCP and HDOT's Participant Inclusion Plan. These surveys were performed each night within 3-4 hours after sundown and then again within 1 hour of sunrise, on 92 consecutive days, beginning on September 15th and concluding on December 15th. Port Allen Harbor is open to the public 24 hours per day with no on-site security presence. Three trained field biologists shared the responsibility for conducting the twice daily searches of Port Allen Harbor totaling 184 searches on consecutive nights and mornings in 2024.

In 2024, the downed seabird monitoring at Port Allen Harbor was conducted by 3 trained field biologists – Daneica Muroka, Hunter Grace, and Darrain Muroka. All 3 biologists have been responsible for seabird search and monitoring activities at properties in the Port Allen area for multiple years and quickly became familiar with the harbor facility and the user community. Searcher training in 2024 included site orientation review, discussion of fallout patterns and previously observed distribution, habits of the covered seabirds, and the importance of situational awareness. In addition to the dedicated search effort, HDOT staff and vessel crews are present on site during normal daytime work hours, which increases the probability of detecting downed seabirds and initiating rescue and response procedures.

The effectiveness of the 2024 downed seabird search and monitoring program at Port Allen Harbor was enhanced by the skill of the trained searchers combined with the training and review of procedures prior to the beginning of the seabird fallout season. Port Allen Harbor is a relatively small facility that affords good access to the searchable area. The training and preparations for the fallout season included a thorough review of the search area and past distribution of downed seabirds including the circumstances associated with those incidents. We also reviewed lessons learned about various factors affecting seabird detection, such as vegetation cover and concealed spaces that grounded seabirds might utilize for cover. There were no circumstances that triggered in-season corrections or substantive retraining with respect to the standard monitoring protocols and reporting procedures at Port Allen Harbor in 2024. There are no proposed adjustments to the current monitoring protocols.

Lighting and facilities

Standard security, worker, tenant, and public safety procedures at Port Allen Harbor dictate that some facility lighting must remain on at night. The main light illuminating the parking lot and wall mounted lights along the seaward side of the warehouse are programmed to be on from 18:00 to 20:30 each night to provide for the safety of workers and visitors disembarking from tour boats and departing from the pier and parking area. At 20:30, the main warehouse light, which is shieled, goes off and the wall mounted lights along the south and west sides of the warehouse are reduced to 50% capacity (i.e. every other wall mounted light is turned off) and remain at this level until dawn each day.

Previously reported measures that include replacing warehouse siding and utilizing a grayish color flat texture paint to reduce glare and installation of supplemental light shielding has reduced the amount of light cast in the horizontal plane. and thereby enhanced the effectiveness of light minimization at Port Allen Harbor. Combined, these light minimization measures continue to effectively reduce light attraction exposure risk for seabirds and contribute to achieving biological goals and objectives at Port Allen Harbor.

Predator control

In 2024, HDOT utilized the services of a licensed wildlife control team to handle trapping and removal of free-roaming cats within Port Allen Harbor. Previously, HDOT performed the trapping and contract services were only utilized for the removal component of the program. Cats are scarcer at Port Allen Harbor than in past years. Therefore, we did not direct much time and effort to establish a baseline level of abundance. The contractor deployed and maintained 1 Tomahawk-style live trap at Port Allen Harbor and the trap was moved around as needed, as determined by the contractor. Baits used

included fish, mixed, and dry. Bait selected for use changed on a roughly weekly basis. A single trap remained active for the entire season. One cat was observed on October 15, 2024, and 1 was captured and removed on November 20, 2024. Search biologists record the number and locations of free-roaming cats that are observed during downed seabird search and monitoring activities, during both search periods, and they report those observations to managers. The information gathered in 2024 indicates that on-site animal control efforts are very successful.

Training and outreach

One in-person training session facilitated by PowerPoint presentation was delivered to six HDOT staff including the District Manager and his management team and operations team at Nawiliwili Harbor and the Fact Sheet and KSHCP Downed Wildlife Protocol were reviewed, discussed, and distributed to attendees. The training was delivered by H. T. Harvey & Associates. Printed outreach material was posted in areas that are visible to harbor staff and tenants.

Date of Training	Training Topic	Property or Facility	Training Group	Number of Attendees	Methods of Training Delivery	Printed Materials or Other Media Provided
9/14/2024	Seabird Awareness, Rescue and Reporting	Nawiliwili Harbor	HDOT Harbors Division Staff	6	MS-Teams Webinar	Yes. Training module and Fact Sheet, KSHCP Downed Wildlife Protocol and Incident Documentation and Reporting Form
9/12/2024	Site-Specific Orientations (emphasis on Port Allen Harbor)	Port Allen Harbor	H. T. Harvey & Associates Port Allen Harbor search and monitoring team	2	In person	Yes. Training module and Fact Sheet, KSHCP Downed Wildlife Protocol and Incident Documentation and Reporting Form; Port Allen specific training orientation for staff responsible for performing downed seabird search and monitoring activities at Port Allen Harbor.

Date(s) of Outreach Effort	Description of Outreach Effort (including method of delivery)	Property or Facility	Outreach Target Audience	Printed Materials or Other Media Provided
Throughout the season	Periodic check-ins with HDOT Harbors Division staff at Port Allen and Nawiliwili Harbor to inquire where assistance may be needed, provide advance notice ahead of periods of higher fallout probability (new moon), heighten awareness, and revisit fundamental elements of seabird awareness, rescue, response, predator control, and reporting requirements.	Port Allen Harbor	HDOT personnel assigned to Port Allen Harbor and Nawiliwili Harbor management staff	Seabird Awareness Fact Sheet
9/11/2024 and throughout the season	The seabird awareness Fact Sheet was posted in the window of the harbor agent's office facing the pier where it is visible to staff, tenants, and the public and inside the storage warehouse in plain view to all facility users including worker common areas.	Port Allen Harbor	HDOT staff and tenants	Seabird Awareness Fact Sheet
9/2024 and as needed throughout the season	Copies of the seabird awareness Fact Sheet were delivered to tenants (charter and sightseeing tour boat operators) during the first week of the fallout season. Multiple copies of the 2023 Seabird Light Attraction Fact Sheet were given to the tour company staff who were encouraged to post in offices where customers and staff could view.	Port Allen Harbor	Harbor tenants and visitors	Seabird Awareness Fact Sheet

Norwegian Cruise Lines (NCL)

In 2024, NCL had two vessels (Norwegian Sun and Pride of America) operating in Hawaiian waters during portions of the seabird season. As in 2023, NCL retained Dr. Adrian Gall of ABR, Inc. to serve as the company's seabird biologist. Dr. Gall visited the Norwegian Sun in late May and the Pride of America in early June to inspect lighting and provide training to the Environmental Officers. Throughout the seabird season, Dr. Gall and ABR staff supported the Environmental Officers with remote training and data management and assisted with the preparation of downed seabird reports and the KSHCP annual report.

Take

In 2024, there was take of one listed seabird on the Pride of America. One juvenile Hawaiian Petrel (ʻUaʻu; SOS reference number TES081) was found on 27 November 2024 on Deck 6 midships near Lifeboat 16 while the vessel was en route to Nawilwili Harbor. The bird was transferred to Save Our Shearwaters the same day and died within 24 hours. There was no take of listed seabirds on the Norwegian Sun during 2024.

No problems occurred with Covered Seabirds on the Pride of America in 2024. When a non-endangered species was recovered, however, ABR identified a need to improve communication and documentation of downed birds. On 11 August 2024, a Bulwer's Petrel was found aboard the vessel and left at the guard shack in Kahului Harbor for pickup by a veterinarian sent by HWC. When the veterinarian arrived, the bird had already been picked up by staff from Maui Nui Seabird Recovery Project (MNSRP) who had been called by the Kahului Harbor staff. The bird was ultimately released successfully by MNSRP, but the incident raised questions about ensuring proper communication and documenting a chain of custody for future downed birds. Dr. Gall met with Kahului Harbor, DOFAW, and USFWS personnel. USFWS and DOFAW provided a chain of custody form that was used for birds found on both vessels during November and December 2024.

Downed Bird Search effort

There is no prescribed search route for the vessels. The ships are searched continually by staff and guests. During the seabird fledging season, seabird monitoring was continuous, and coverage was 100% on each vessel Search coverage continues to be 100% during the seabird fledging season. In November 2024, NCL started using a chain of custody form to document each bird recovered from the ships. Chain of custody forms are now standard for all seabirds recovered from NCL vessels. NCL does not propose any additional adjustments to its self-monitoring protocol aboard either vessel.

Lighting and facilities

On 28–29 May 2024, Dr. Gall conducted a lighting audit for Norwegian Sun while it was in port in Victoria, Canada and as it travelled to Seattle, Washington. Lighting reduction measures included turning many lights off, adding shields to existing lights, and training housekeeping and facility staff to draw blinds 30 min after sunset to reduce light spill from windows. The lighting plan was shared with the Resource Agencies on 10 September 2024 and submitted with NCL's 2024 annual report. On 22 November 2024, the Norwegian Sun underwent emergency repair work on a tender boat and employed strategies reviewed by DOFAW and USFWS to control light escape in the construction area.

Dr. Gall inspected lighting aboard the Pride of America on 30 May and again on 12 September. Kelli Yamaguchi (DOFAW) also participated in the lighting review in September. No changes were made to the lighting or facilities aboard the Pride of America in 2024.

NCL does not request changes to minimization efforts on the Norwegian Sun. NCL's vessel Pride of America was the focus of NCL's PIP, but the permit also provides coverage for additional vessels including the Norwegian Sun. NCL adhered to the compliance activities set forth in NCL's PIP including conducting staff seabird training, performing downed bird searches, following KSHCP protocols for downed seabirds, and performing guest outreach. The Chain of Custody form will be used for all birds recovered from the vessel.

Predator control

Biological Objective 1B relates to predator control and is not applicable on a seagoing vessel, thus NCL did not conduct predator control activities on any of its vessels.

Training and outreach

There were significant efforts made to conduct outreach and education to both crew and passengers. In total, 26 presentations were made to 2,267 staff members across both vessels—7 presentations to 1,322 staff members aboard the Norwegian Sun and 19 presentations to 945 staff members aboard the Pride of America.

In 2024, ABR trained 3 Environmental Officers aboard the Pride of America, all of whom had previous experience with the KSHCP Downed Bird protocol, and 3 Environmental Officers aboard the Norwegian Sun that were new to the KSHCP protocol. Training was delivered in a combination of in-person and remote sessions, depending on the vessel location and personnel available.

During the seabird season, the Norwegian Spirit and the Pride of America provide information about seabirds to their passengers in the “Free Style Daily,” NCL’s onboard daily newsletter. Staff aboard each vessel close cabin draperies every afternoon as part of the turn-down service and when cabins are cleaned. Passengers are requested to keep their draperies closed as part of the ship’s green initiative and to conserve natural resources.

Recovery of downed birds

The federal permit and state license require NCL to comply with the KSHCP (see ITP Condition F, and ITL Condition B). Section 5.3.4.2 of the KSHCP requires that “Participants must submit downed seabirds to an appropriately permitted rehabilitation facility...” There are only two permitted rehabilitation facilities in Hawaii: Save our Shearwaters (SOS) and Hawaii Wildlife Center (HWC). When NCL vessels are in Nawiliwili harbor, all downed birds are submitted to SOS. When NCL vessels are in other Hawaii ports, ship staff had been contacting HWC to retrieve the birds.

In October 2023, DOFAW instructed NCL that when NCL vessels are in Kahului Harbor on Maui, birds should be delivered to staff from the Maui Nui Seabird Recovery Project (MNSRP), an entity that is an agent of the state but does not hold rehabilitation permits. Since this instruction contradicts the requirements of the ITP and ITL, a meeting between NCL representatives, DOFAW, and USFWS was held on 15 November 2023. NCL requested during the meeting that the agencies agree upon a protocol for birds that need to be submitted in Kahului, Maui and, if that protocol changes the terms of the KSHCP, that the KSHCP be amended. On 1 November 2024, DOFAW and USFWS issued a joint letter naming DOFAW Maui and MNSRP as the "appropriate first responder to downed seabirds on the island" and updated their standard protocol to reflect this change. This change is not yet reflected in the KSHCP.

1 Hotel Hanalei Bay

After multiple years of renovation and closure, 1 Hotel Hanalei Bay opened in March 2023 and continued normal operations during 2024. In 2024, 1 Hotel Hanelei Bay hired a new Director of Engineering. In August 2024, 1 Hotel hired a new Director of Loss Prevention and hired a contractor to conduct seabird searches twice nightly beginning 16 September and continuing throughout seabird season. In addition, 1 Hotel hired four seabird searchers directly to conduct additional night searches of the property. 1 Hotel Hanalei Bay continued to retain Dr. Adrian Gall, ABR, Inc., as the resort's seabird biologist. Throughout the seabird season, Dr. Gall and ABR staff provided lighting and landscaping evaluation, updates to training materials, on-site and remote searcher training and data management, and they prepared and submitted downed seabird reports and the KSHCP annual report.

Take

Searchers found 29 Newell's Shearwaters and 1 Hawaiian Petrel on the property during 2024. All 29 Newell's Shearwaters were recovered, delivered to SOS, and subsequently released to the wild. The 1 hatch-year Hawaiian Petrel was recovered, delivered, to SOS, and died over 24 hours after it was admitted.

Downed bird and sea turtle search effort

During seabird fallout season, dedicated seabird searchers conducted searches twice daily: once in the early morning prior to sunrise (04:00–06:30) and once in the evening after sunset (18:30-00:00). Each survey took approximately 2–3 hours to complete. On most nights, there were teams from 1 Hotel and the contractor searching, resulting in each route being searched four times per night. No evening search was completed on 16 September due to a staffing shortage, and no evening search was completed on 5 November due to inclement weather. Searchers walked the route shown in the search route map. Additionally, all resort staff search their respective work areas for downed seabirds while on duty.

Seabird searchers worked in shifts of two at a time to conduct nightly searches during downed bird season. The sole responsibility of dedicated seabird searchers was to conduct seabird and predator surveys. The entire Loss Prevention team (19 people) was trained in seabird protocols to assist with the recovery and transfer of any downed birds to SOS. All resort staff are responsible for searching their respective work areas for downed birds during work hours. Resort staff report any found bird to the Loss Prevention team for retrieval. Downed birds are retrieved by the Loss Prevention team or trained seabird searchers from 1 Hotel and the contractor.

In 2024, the Loss Prevention team had decoys available to deploy throughout seabird fledging season to evaluate and improve searcher detection, but they were not systematically used to evaluate searcher efficiency. The Kauai Endangered Seabird Recovery Project (KESRP) conducted an efficacy trial to estimate searcher detection probabilities; results of the decoy trials conducted are not yet available. Proposed adjustments to improve searcher detection include having the Loss Prevention staff deploy decoys for training purposes in the 3 weeks prior to the start of downed bird season 2024 and deploy decoys periodically throughout the seabird season to evaluate searcher detection.

The PIP for 1 Hotel Hanalei Bay states that for Honu searches, groundskeepers “rake the beach every morning shortly after daylight 365 days of the year. Lifeguards and pool attendants are in the area 365 days of the year as well and are trained to see sea turtles”. During honu nesting season (15 May–15 December), a trained and dedicated member of the Loss Prevention team conducted honu surveys of the beach each morning before the landscapers did any raking. No Honu nests or hatchlings were recorded.

Lighting and facilities

Upon evaluating patterns of incidental seabird take from 2023, 1 Hotel's management team implemented further light minimization action in 2024. Dr. Gall reviewed existing lighting during an on-site visit in June 2024 and made recommendations for adjustments that were implemented prior to the start of seabird fallout season. These recommendations are described in the lighting report submitted with the KSHCP annual report.

Minimization efforts were implemented as described in a revised implementation plan submitted to the agencies in August 2023. This plan followed minimization measures described in the original PIP and accounted for the renovations of the facility completed in March 2023.

Predator control

In 2024, 1 Hotel Hanalei Bay hired a commercial pest control service to provide predator control on the property. The pest control contractor deployed and checked 3 traps 5 days per week between 5 August and 13 December 2024 for a total of 252 trap-nights. A total of five cats were trapped, one of which escaped as it was being transferred from the trap. Resort staff are trained to search for and report predators. Trained searchers and security personnel inspected the grounds of 1 Hotel at least twice daily during the fledging season (September-December) and recorded any predator sightings, reporting them to the pest control agency for adaptive trapping. 1 Hotel posted signs within the property prohibiting the outdoor feeding of cats. There were no changed or unforeseen circumstances that triggered adaptive management changes to minimization measures per the KSHCP Sections 6.9, 6.11, and 6.12.

Training and outreach

Dr. Gall visited the resort at the start of the seabird fallout season to inspect lighting and provide observer training to 1 Hotel's new Director of Loss Prevention and members of the search team. Additionally, the entire Loss Prevention team of 19 people was trained to assist with recovery and transfer of any downed birds to Save Our Shearwaters. The Director of Loss Prevention and Director of Engineering conducted awareness trainings for hotel staff, making 8 presentations to 56 people during August–December 2024.

Sheraton Kauai Resort

In 2024, Dan Sheldon, Loss Prevention Supervisor, continued to oversee implementation of downed seabird protocols at the Sheraton Kaua’i Resort (SKR) in Poipu. SKR continued to retain Dr. Adrian Gall, ABR, Inc., to serve as the company's seabird biologist and to review lighting arrangements at the property. Throughout the seabird season, Dr. Gall and ABR staff supported the Loss Prevention staff with training and data management, preparation of downed seabird reports, and KSHCP annual reports.

Take

During 2024, 2 juvenile Newell's Shearwaters were found at SKR and were later released by Save Our Shearwaters (SOS).

- One shearwater (SOS reference number TES008) was found on 4 October 2024 in the main parking lot and was transferred to SOS the next morning.
- One shearwater (SOS reference number TES023) was found on 23 October 2024 near the east parking lot and was transferred to SOS that day.

Downed bird and sea turtle search effort

Dedicated searchers who are part of SKR's Loss Prevention staff conducted downed seabird searches from 15 September through 15 December. Search times varied but were generally within 1 hour before sunrise (04:00-06:00) and 3-4 hours after sunset (21:00-23:00). Each searcher completed one full search of the entire property separately for a total of 4 searches of the property per night. Each search took approximately 60–75 minutes to complete (i.e., 2–3.5 person-hours per search). In addition, the entire resort staff was responsible for searching their respective work areas during work hours. In 2024, the security team deployed decoys periodically throughout downed bird season to evaluate and improve searcher detections.

Beginning on 15 May, one Loss Prevention officer conducted daily honu searches every morning before sunrise. Honu searches consisted of walking the length of the beach lawn and making visual observations of Poipu Beach.

In 2024, SKR continued its $250 Incentive Program to reward qualifying associates, contractors, and guests who located a downed seabird or bird decoy. This incentive resulted in random searches by associates and guests in addition to the dedicated search by Security personnel. SKR associates, contractors, and guests qualified for the $250 reward if the following criteria were met:

- The first associate(s)/guests to locate a downed bird or decoy must contact Security and remain with the bird until Security could recover the bird and place in SOS Aid Station or report a decoy to Project Technician.
- If multiple associates/guests found a bird at the same time, they could split the reward.
- Associates are required to be on-duty during search.
- Qualifying species included Newell's Shearwaters, Hawaiian Petrels, Band-rumped Storm-petrels, Wedge-tailed Shearwaters, as well as decoys.

Lighting and facilities

In June and September 2024, Dr. Adrian Gall conducted site visits to review lighting arrangements at the property. Based on her recommendations, Dan Sheldon turned off flood lights on the Lava restaurant, turned off spotlights along the beach walk, and reduced the number of wall sconces that were turned on along the open hallways during fledging season. Lighting photos illustrating these changes were included in SKR's 2024 KSHCP annual report.

Predator control

Sheraton Kaua'i Resort hired a commercial pest control service to systematically trap predators during March–December 2024. The service deployed and checked 10 traps nightly from 1 March to 17 December 2024 for a cumulative total of 2,920 trap-nights. This included 920 trap-nights during seabird fledging season. A total of 13 feral cats were trapped. Trained searchers and security personnel inspected the grounds of Sheraton Kaua'i Resort at least twice daily during the fledging season and recorded any predator sightings which they reported to the pest control service for adaptive trapping.

Training and outreach

A total of 240 SKR associates were trained in 2024 to identify covered species and follow procedures for reporting them to Loss Prevention staff. This included 5 members of the Loss Prevention team who attended Dedicated Searcher training led by Dr. Gall and Dan Sheldon. This training placed emphasis on search intensity, search methods, retrieval of downed birds and reporting. Loss Prevention staff were also provided with sunrise/sunset schedule and moon phase calendar at the beginning of each month during fallout season, and they attended monthly department meetings of various hotel departments to remind associates of seabird search efforts and predator control.

As in previous years, SKR placed brochures containing a detailed description of protected seabird species and seabird fledging season in guest rooms and made them available at Front Desk. Seabird coloring pages were available for keiki guests and visitors. Staff also placed a poster in the resort lobby to notify guests about seabird fledging season. In 2024, Dan Sheldon made 2 presentations to Kaua'i high school students about seabirds and honu.

Royal Sonesta Kauai Resort

The Royal Sonesta Kaua'i Resort (Sonesta) continued normal operations in 2024. The Security Manager continued in his role as the facility contact for the KSHCP until late September 2024 when he took an extended leave of absence for the remainder of seabird fledging season. In his absence, the Director of Security assumed responsibility for nightly seabird searches and downed bird reporting, and the Resort Manager assumed responsibility for keeping training logs. Sonesta continued to retain Dr. Adrian Gall, ABR, Inc., to serve as the resort's seabird biologist. Throughout the seabird season, Dr. Gall and ABR staff provided updates to training materials and on-site and remote training and data management, and they prepared and submitted downed seabird reports and the KSHCP annual report.

Take

One juvenile Newell's Shearwater (SOS reference number EKB020) was found near the pool on 22 October 2024. The bird was retrieved by a member of the Security team and transferred to SOS the same day. The bird was released on 26 October 2024.

Downed bird and sea turtle search effort

Dedicated searchers who are part of Sonesta's security staff conducted downed seabird and predator searches twice nightly from 15 September to 15 December. Security officers conduct the searches in pairs and in conjunction with their security rounds, with one officer searching the eastern half of the property and the other searching the western half of the property. Search times varied but generally were within 1 hour before sunrise (04:00-06:00) and 3-4 hours after sunset (21:00-23:00). In addition, the entire resort staff was responsible for searching their respective work areas during work hours. The resort's General Manager and Director of Security were responsible for overseeing the seabird protocols, bird searches and recovery, record keeping, and reporting.

In 2024, the security team had decoys available to deploy throughout seabird fledging season to evaluate and improve searcher detection, but they were not systematically used to evaluate searcher efficiency. The Kauai Endangered Seabird Recovery Project (KESRP) conducted an efficacy trial to estimate searcher detection probabilities; results of the decoy trials conducted are not yet available.

Beginning on 15 May, one trained security officer conducted daily honu searches every morning before sunrise. Honu searches consisted of walking the length of the Kalapaki Beach lawn and making visual observations of the beach and any turtles, turtle tracks, or other indications of turtle nesting.

Lighting and facilities

Sonesta made several additional lighting adjustments in 2024 in response to the fallout patterns observed in 2023. Two adjustments in particular appear to have had a positive impact in reducing seabird attraction. First, spotlights on the eastern side of the property were turned off to eliminate light being reflected by the side of the building. Second, shades were added in the elevator landing areas of the Ha'upu Tower. A detailed list of all other lighting adjustments is included in the lighting report attached to Sonesta's KSHCP annual report.

Predator control

Royal Sonesta Kaua'i Resort hired a commercial pest control service to trap predators systematically during January–December 2024. The pest control contractor deployed and checked 3 traps almost daily between 3 January and 11 December 2024 for a total of 711 trap-days and a capture rate of 0.028 predators per trap-day. Sonesta staff notified the contractor of any additional predator sightings recorded on the property during seabird searches or observed incidentally. There were no changed or unforeseen circumstances that triggered adaptive management changes to minimization measures per the KSHCP Sections 6.9, 6.11, and 6.12.

Training and outreach

A total of 244 staff members were trained during 2024. During August and September, the Security Manager held 21 seabird awareness and response training sessions prior to the start of seabird season. During a September visit to the resort, Dr. Gall trained 6 members of the security team to recover and transfer downed birds to Save Our Shearwaters. Additional employees hired during seabird season were trained within the first day of employment; this included 22 people trained by the Director of Security during 4 sessions between late September and early November.

As in 2023, the hotel staff placed educational cards about seabird fledging in all guest rooms at the resort.

3. MINIMIZATION COMPLIANCE SUMMARY

The purpose of this section is to summarize the results of KSHCP Participant compliance monitoring and implementation of minimization measures at participant facilities, and to enable the agencies to monitor compliance with minimization actions at participant facilities. The Participant Annual Reports are a vital component in this process (KSHCP 6.6.2.2(5) and 6.8.1). Effectiveness monitoring helps identify if and when specific measures are effective, or less effective, and provides information on whether existing or proposed minimization or mitigation measures can or should be modified, through Adaptive Management (see Section 6.9), or whether the KSHCP itself should be considered for amendment.

To facilitate the agencies' effectiveness monitoring, this report summarizes the methods used to minimize light attraction exposure risk for the covered seabirds, ensure sufficient on-site predator control, and that training and outreach, designed to increase the likelihood of finding downed seabirds, is effective. The evaluations presented here are based on the information contained in the Participant Annual Reports. Although not required by the KSHCP, this report suggests evaluation criteria to assist the agencies regarding Participant minimization efforts and efficacy. A separate discussion of the effectiveness of mitigation activities implemented at the Kahuama'a Seabird Preserve in 2024 is provided above.

Lighting and Facilities Minimization

Measures to avoid and minimize the impacts of light attraction on the Covered Species are an integral part of the KSHCP. The avoidance and minimization measures outlined below are detailed in Appendix E of the KSHCP (*Guidelines for Adjusting Lighting at Facilities*) and reflect the best available science on seabird-friendly lighting. Briefly, these light minimization measures include:

- Deactivate non-essential lights
- Install full cut-off light fixtures
- Shield light fixtures
- Angle lights downward
- Place lights under eaves
- Shift lighting according to moon phase (during the fall-out period)
- Install motion sensors for motion-activated lighting
- Decrease lighting levels
- Decrease visibility of interior lights
- Use light-less technologies
- Plant vegetation around lights to reduce light visibility
- Lower height of lights
- Use longer light wavelengths

Overall, the KSHCP Participants ensured that lighting at their Facilities has been reduced or modified in compliance with the guidelines set forth in the KSHCP. Based on the reports and photos provided, all participants have made significant efforts towards reducing light attraction exposure risk to the covered seabirds, at their respective Facilities since the implementation of the KSHCP began in 2020. In some cases, specific lights were completely turned off at the Facilities during the seabird fallout season. The 2024 annual reports in general contained less information about lighting than previous reports in 2020 and 2021, and it is assumed that this is because most of the necessary modifications were made in the first years of the KSHCP, and that those previous modifications are continuing to be implemented. Reports from the following Participants contained information about additional changes made in 2024 and continued implementation of previous changes: Alexander & Baldwin; Hawaii Department of Transportation (Lihue Airport, Nawiliwili Harbor, Port Allen; including many photos); 1 Hotel Hanalai Bay (including photos); Norwegian Cruise Lines (including photos); Royal Sonesta Kaua'i Resort (including photos); Sheraton Kauai (including photos).

Predator Control

Seabirds that are downed at Participant facilities are vulnerable to direct mortality and to depredation by free-roaming dogs, cats, rats, or other predators. Downed seabirds that are subsequently depredated are considered lethal take (see KSHCP Section 4.2.1). In order to receive incidental take authorization from the USFWS and DLNR, KSHCP Participants

are required to reduce the presence of predators at their facilities for the duration of the seabird fallout season. The KSHCP requires that Participants "Conduct a predator trapping and removal program throughout the Covered Property immediately prior to and throughout the fallout season . . . unless alternative methods are included in an approved PIP" (KSHCP Section 5.3.2).

Of the 191 Facilities included in the KSHCP as of 2024, 47 Facilities were required to conduct predator control. In 2024, predator control was conducted at 37 Facilities (Table 6), which is an increase from the 25 Facilities where predator control was conducted in 2023. This apparent increase was due entirely to Kaua'i County conducting predator control at 13 facilities in 2023 and 27 facilities in 2024. However, traps were moved among County Facilities during the year and not all Facilities had predator control during the entire season, and the resulting trapping effort was not sufficient at some sites (see below).

In total, 235 feral cats were removed from Participant Facilities in 2024 (Table 5), which is a decrease from 326 feral cats removed in 2023 and 274 feral cats removed in 2022. Predator control efficacy varied among Participant Facilities and was related to effort, site-specific variables such as proximity to known feral cat colonies, and the experience and skill of contractors selected to conduct the work. The number of cats caught per trap per night was calculated for each facility, and this is a useful measure of animal abundance and can be used to compare trapping rates among sites and over time at individual sites. If trapping is effective at reducing the number of feral cats present, the trapping rate should decline over time and reach a low level. If the rate remains high, it can be an indication that trapping effort is not sufficient, or that cats are being released as part of a cat-feeding colony. For this report, sites where the catch per trap-night was < 0.1 were judged to have sufficient trapping effort. Sites where the trapping rate was > 0.1 were judged to need greater trapping effort. Predator control efforts by most Participants were sufficient and in general have shown improvements compared to the first 3 years of KSHCP implementation. All 10 sites where predator control effort was insufficient were located on Kauai County property. Of 27 County sites where predator control was conducted in 2024, trapping was done during the seabird fallout season at 18 sites, and at 9 sites trapping was done only during the pre-season (March-May) and not during the seabird fallout season. It should be noted that some Participants did not report the numbers of cats trapped at specific locations because of concern about the controversy of trapping feral cats on Kauai, and instead reported overall catch rates or totals across multiple sites.

Table 5: Predator control effort and results for KSHCP Participant Facilities on Kaua'i in 2024.

Participant	Location	# trap nights	catch/trap night	Effort sufficient?
A & B	Hokulei Shopping Village	362		Yes
A & B	Port Allen Commercial properties	397		Yes
A & B	The Shops a Kukuiula	340		Yes
A & B	All sites combined (excluding Waipouli)	1099	0.0455	Yes
County of Kaua'i	Eleele Wastewater	34	0.1471	no
County of Kaua'i	Hanapepe Transfer	46	0.0217	Yes
County of Kaua'i	Hanapepe Veterans	45	0.0444	Yes
County of Kaua'i	Kapaa Transfer	29	0	Yes
County of Kaua'i	Kealia Fire Station	16	0.125	no
County of Kaua'i	KEO	71	0.1408	no
County of Kaua'i	Lihue Police/Vidinha Stadium	44	0.0909	Yes
County of Kaua'i	Lihue Transfer	81	0.1728	no
County of Kaua'i	Lihue Wastewater	47	0	Yes
County of Kaua'i	Lima Ola	68	0.0588	Yes
County of Kaua'i	Lydgate	65	0.6769	no
County of Kaua'i	Spouting Horn	25	0.08	Yes
County of Kaua'i	Brian Baptiste	29	0.2069	no
County of Kaua'i	Hanapepe Fire station	29	0.1379	no
County of Kaua'i	Kalaheo Fire Station	43	0.0233	Yes

County of Kaua'i	Salt Pond Park	29	0.1034	no
County of Kaua'i	Waimea Fire/Police Station	40	0	Yes
County of Kaua'i	Waimea Theatre	39	0.0769	Yes
County of Kaua'i	Koae Workforce Housing	27	0	Yes
County of Kaua'i	Paanau Village Phase I,II	26	0.0385	Yes
County of Kaua'i	Historic County Building	28	0	Yes
County of Kaua'i	Kalepa Village	40	0.1	no
County of Kaua'i	Kanikoo Elderly Housing	34	0	Yes
County of Kaua'i	Lihue Civic Center	26	0	Yes
County of Kaua'i	Transportation Baseyard/Office	30	0.1	no
County of Kaua'i	Hanalei Fire/Police Station	29	0.0345	Yes
County of Kaua'i	Kolopua Workforce Housing	35	0.0857	Yes
County of Kaua'i	All sites combined	1055	0.1109	no
HDOT	Lihue Airport	2333	0.006	Yes
HDOT	Nawiliwili Harbor	95	0.0737	Yes
HDOT	Port Allen	52	0.0192	Yes
Kaua'i Coffee Company	Factory and Fields- Kalaheo	236	0.0424	Yes
Essex House Condominium Corporation	Royal Sonesta Kauai Resort	711	0.0267	Yes
NCL	Two vessels			NA
Sheraton Kauai Resort	Sheraton Kauai Resort	2920	0.0045	Yes
SOF-XI Kauai PV Hotel, LP	1 Hotel Hanalei Bay	252	0.0159	Yes
Total all sites		9852.3	0.0239	

Training and Outreach

An important step in reducing mortality of downed seabirds is quick discovery and rapid and efficient recovery (i.e. finding the bird and taking it to a licensed rehabilitation facility, such as SOS). This is most likely to occur when on-site staff and workers are able to identify the covered seabirds and understand and fully implement the basic procedures for detecting grounded seabirds and safely rescuing them.

Each KSHCP Participant conducted annual training and outreach for workers and personnel at their facilities. The training is specific to the KSHCP and the covered seabirds to help workers find downed seabirds and how to respond in a timely and effective manner. The goal was to train workers who will be responsible for the monitoring of downed seabirds at facilities and who may find a downed seabird incidentally while performing other duties. In 2024, a total of 84 training sessions were conducted that were attended by 3,387 staff and workers associated with the KSHCP Participant Facilities (Table 7). This was an increase from the 2,380 staff and workers trained in 2023. The quality of materials and information presented across all KSHCP Participants was high and Participants should be commended for the amount of effort that was put into staff training in 2024.

In addition to training of workers and staff, Participants also produced and offered seabird outreach materials tailored to their customers, guests, or the public who may be present at their facilities during the seabird fallout season. These materials were meant to supplement efforts of Participant staff members by encouraging more “eyes on the ground” to identify and recover downed seabirds. For tourism-based facilities (1 Hotel Hanalei Bay, Royal Sonesta Kauai Resort, Sheraton, and NCL) outreach to guests was the main form of public outreach. Commercial properties (HDOT, Kaua‘i County and Port Allen Commercial facilities) posted informational fliers in staff rooms and common areas around property to further reinforce training. Tenants at retail properties owned by A&B received a tri-fold brochure, and a letter outlining seabird friendly lighting requirements. Overall, outreach at each KSHCP Participant Facility was adequate and professionally presented.

Table 6. Summary of seabird search training by KSHCP Participants in 2024.

Participant	# training hours	# participants	Methods	Conducted by	Printed materials on property?
A & B	14	62	Powerpoint	HT Harvey biologist	Yes
Kauai coffee	11	96	Powerpoint	Staff	Yes
Lihue Airport	5	90	Powerpoint	HT Harvey biologist	Yes
Essex House Condominium Corp. (Royal Sonesta Kaua'i Resort)	26	250	Powerpoint, in-person demonstrations	Staff and ABR	Yes
Nawiliwili Harbor	2	9	Powerpoint	HT Harvey biologist	Yes
NCL- Pride of America and Norwegian Spirit	70	2270	Powerpoint, in-person demonstrations	ABR	Yes
Port Allen Harbor	2	8	Powerpoint	HT Harvey biologist	Yes
SOF XI Kauai PV Hotel (1 Hotel Hanalei Bay)	12	65	Powerpoint, in-person demonstrations	Staff and ABR	Yes
Sheraton Kauai Resort	10	241	Powerpoint, in-person demonstrations	Staff and ABR	Yes
Kauai County	2	296	online	Staff	Yes
Total all sites	84	3387			

4. TAKE MONITORING EFFECTIVENESS

Take monitoring compares actual rates of take to permitted levels of take, based on each Participant's approved Covered Seabird Monitoring Plan in its Participant Inclusion Plan (PIP). Methods for determining the amount of take of covered species ("take calculations") are set forth in KSHCP Section 6.2.2.1. Each Participant's Incidental Take Permit (ITP) and Incidental Take License (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 effectiveness first summarizes Participants' covered seabird monitoring and then presents tables comparing the Participants' calculated rates of take to permitted amounts. Each permit and license also has a take limit based on a 5-year rolling average, which is not addressed in this report.

The take calculation begins with finding and documenting downed seabirds. Protocols for recovery of downed seabirds are set forth in KSHCP section 5.3.4.1. These general guidelines are summarized in KSHCP table 6-4 (repeated below as Table 8) but are also modified for those Participants who have different site-specific protocols in an agency-approved PIP.

Table 7: Take monitoring components and KSHCP guidelines used by KSHCP Participants.

Take monitoring component	**KSHCP Guideline**
Detailed maps of the property indicating structures and property features (including all light sources); topography; any unsearchable areas; and the proposed search route	All searchable areas must be covered in defined search routes (attach map). Justify "unsearchable areas".[i]
Description of annual training for searchers	Must cover seabird identification, seabird handling, appropriate downed birds search methods, and response procedures. Recommend training to occur immediately prior to Sept 15 (start of fallout season).[i]
Time of Year of searches	Searching should occur twice nightly between Sep 15 and Dec 15.[i]
Frequency of searches	Minimum of twice nightly (or more frequently if possible); searching should be intensified during the peak of fallout (Oct 1 –15).[i]
Time of day of searches	The peak of fallout generally occurs around 2 hours after sunset – **searches should therefore commence 3-4 hours after sunset**. An additional search should take place within **1 hour before sunrise** to find birds that were grounded during the night.[i]
Search methods	Specify, e.g. vehicle versus walking; looking under and around objects as opposed to just patrolling; searching with flashlight, etc.[i]
Record keeping method	Downed Wildlife Form and photographs required for each bird found.
Presence of seabird predators on site (cats, dogs, mongoose)	Record any predators seen during searches and inform management taking actions to reduce predators at facilities, and what action(s) taken to remove predators from the area. Records should include the type and date of predators sighted, and the timing of response actions and outcome. [ii]
Number of searchers needed to cover area.	Depends on site conditions and safety considerations.[i]

i See Section KSHCP Section 5.3.4.1.

ii See Section KSHCP Section 5.3.2.

Honu Monitoring and Protection

It is anticipated that take of Honu will be avoided through monitoring and measures to protect turtle nests. These measures include avoiding and minimizing Honu hatchling disorientation due to lighting at beachfront facilities by implementing best lighting practices as specified in PIPs, and protecting any nests at facilities via shielding as needed. Thus, Participants with the potential to have Honu on their property were required to determine the status of Honu nests and to report on the monitoring and measures taken to avoid take of Honu if nest(s) were found.

Table 8. Summary of results of take monitoring at KSHCP Participant covered properties and facilities on Kaua`i in 2024.

Owner	Property or Facility	# birds found	Search routes provided?	Training documents ?	Search dates	Search times	Methods documented?	Search logs submitted?	Take data submitted?	Predators recorded on site?
A & B	Hokulei Shopping Village	0	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	No	yes	yes
A & B	Port Allen Commercial Properties[1]	1	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	No	yes	yes
A & B	The Shops at Kukuiula	3	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	No	yes	yes
County of Kaua'i	Multiple	1	No	No	Sept 15 – Dec 15	Once daily	No	No	yes	yes
HDOT	Lihue Airport	2	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	Yes	Yes	yes
HDOT	Nawiliwili Harbor	1	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	Yes	Yes	yes
HDOT	Port Allen	0	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	Yes	Yes	yes
Kaua'i Coffee Company	Factory and Fields-Kalaheo	1	Yes	Yes	Sept 29 – Dec 12	Once nightly	Yes	Yes	Yes	yes
Essex House Condominium Corporation	Royal Sonesta Kauai Resort	1	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	Yes	Yes	yes
NCL	Pride of America	1	No	Yes	Sept 15 – Dec 15	Continuously	Yes	Yes	Yes	N/A
NCL	Norwegian Spirit	0	No	yes	Sept 15 – Dec 15	Continuously	Yes	Yes	Yes	N/A
SOF-XI Kauai PV Hotel, LP	1 Hotel Hanalei Bay	30	Yes	Yes	Sept 15 – Dec 15	Twice nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	Yes	Yes	yes
Sheraton Kauai Resort	Sheraton Kauai Resort	2	Yes	Yes	Sept 15 – Dec 15	Four searches nightly beginning at 3-4 hrs after sunset, and within 1 hr of sunrise	Yes	Yes	Yes	yes

Note 1: An additional four downed birds were found and recovered by A&B searchers on non-A&B properties in the Port Allen vicinity.

5. TAKE MONITORING AND SUMMARY OF CHANGES

This section reports on the take of listed seabirds and whether, individually and cumulatively, Participants are in compliance with the terms of the KSHCP.

Seabird fallout at KSHCP facilities was again high in 2024, as it was in 2023 (Figure 12). In 2024, a total of 43 seabirds were found on Participants' Facilities, including 40 Newell's Shearwaters and three Hawaiian Petrels (Table 9). By far the largest number of downed birds was found at 1 Hanalei Bay Hotel (30), with no other site having more than three downed birds (Table 9). 39 of the Newell's Shearwaters were found alive and eventually released after being brought to the Save our Shearwaters (SOS) facility. Two of the Hawaiian Petrels were found alive and released; the third was found alive but died within 24 hours. No downed Band-rumped storm-petrels were found during the 2024 season.

There are several possible reasons for the higher take in 2023 and 2024 than in previous years. In 2020-2022, the Covid pandemic caused fewer lights to be on, and 1 Hotel Hanalei Bay was closed for renovation during those years. The well-documented association between the new moon lunar period and peak fledging of Newell's Shearwaters on Kaua'i was again evident in the 2024 fallout patterns, but the timing was later in 2024 than in previous years because of the date of the new moon, which was on 1 November 2024. Peak fallout typically occurs during a roughly two-week period centered on the new moon, and in 2024 nearly half of the downed seabirds that were documented on KSHCP Participant Facilities were found over a two-week period from 19 October to 3 November (Table 9). The timing of the

moonrise and moonset may further affect light attraction vulnerability of seabirds, particularly for Newell's Shearwaters, during peak fledging. All three Hawaiian Petrels were found toward the end of the season, reflecting their later fledging period. Understanding how the lunar cycle affects seabird fallout vulnerability allows KSHCP Participants to plan accordingly for enhanced search and light attraction minimization vigilance during and leading up to the peak fledging period.

Table 9: Summary of all seabird take documented at KSHCP Participant Facilities in 2024.

Date	Time	Property	Species	Status
10/1/2024	523	1 Hotel Hanalei Bay	NESH	alive, released
10/1/2024	638	1 Hotel Hanalei Bay	NESH	alive, released
10/2/2024	1933	1 Hotel Hanalei Bay	NESH	alive, released
10/4/2024	2217	1 Hotel Hanalei Bay	NESH	alive, released
10/4/2024	2247	Sheraton Kauai	NESH	alive, released
10/5/2024	2246	1 Hotel Hanalei Bay	NESH	alive, released
10/5/2024	2257	1 Hotel Hanalei Bay	NESH	alive, released
10/6/2024	1850	1 Hotel Hanalei Bay	NESH	alive, released
10/9/2024	2147	The Shops at Kukuiula	NESH	alive, released
10/9/2024	2000	Nawiliwili Harbor	NESH	alive, released
10/10/2024	400	1 Hotel Hanalei Bay	NESH	alive, released
10/11/2024	unk	Lihue Airport	NESH	alive, released
10/13/2024	1547	1 Hotel Hanalei Bay	NESH	alive, released
10/19/2024	1948	1 Hotel Hanalei Bay	NESH	alive, released
10/20/2024	2040	1 Hotel Hanalei Bay	NESH	alive, released
10/21/2024	2130	The Shops at Kukuiula	NESH	alive, released
10/22/2024	1715	Royal Sonesta Resort	NESH	alive, released
10/22/2024	2118	1 Hotel Hanalei Bay	NESH	alive, released
10/23/2024	2045	1 Hotel Hanalei Bay	NESH	alive, released
10/23/2024	2106	1 Hotel Hanalei Bay	NESH	alive, released
10/23/2024	2149	1 Hotel Hanalei Bay	NESH	alive, released
10/23/2024	2204	1 Hotel Hanalei Bay	NESH	alive, released
10/23/2024	1625	Sheraton Kauai	NESH	alive, released
10/25/2024	1902	1 Hotel Hanalei Bay	NESH	alive, released
10/26/2024	1850	1 Hotel Hanalei Bay	NESH	alive, released
10/28/2024	2347	Port Allen Properties	NESH	alive, released
10/28/2024	2154	1 Hotel Hanalei Bay	NESH	alive, released
10/29/2024	2345	1 Hotel Hanalei Bay	NESH	alive, released
10/30/2024	545	1 Hotel Hanalei Bay	NESH	alive, released
10/30/2024	1200	1 Hotel Hanalei Bay	NESH	alive, released
11/1/2024	525	1 Hotel Hanalei Bay	NESH	alive, released
11/2/2024	44	1 Hotel Hanalei Bay	NESH	alive, released
11/2/2024	2014	1 Hotel Hanalei Bay	NESH	alive, released
11/2/2024	2320	1 Hotel Hanalei Bay	NESH	alive, released
11/3/2024	635	1 Hotel Hanalei Bay	NESH	alive, released
11/3/2024	2240	1 Hotel Hanalei Bay	NESH	alive, released
11/5/2024	514	1 Hotel Hanalei Bay	NESH	alive, released
11/7/2024	1600	Kauai Coffee	NESH	alive, released

11/21/2024	2245	The Shops at Kukuiula	NESH	alive, released
11/22/2024	2030	1 Hotel Hanalei Bay	HAPE	alive, died
11/27/2024	1700	Lihue Airport	HAPE	alive, released
11/27/2024	2228	NCL Pride of America	HAPE	alive, died in care
unknown	unknown	Faye Park (Kekaha)	NESH	alive, disposition unknown

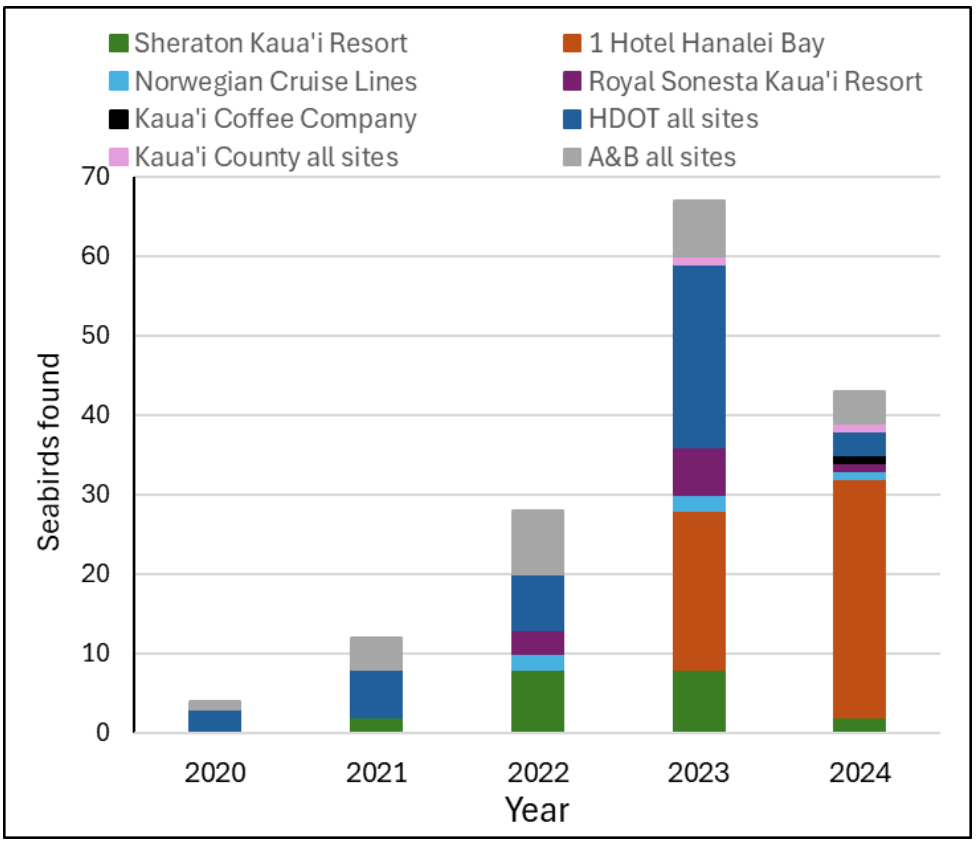

Figure 12. Number of seabirds found on Participant Facilities in each year of the KSHCP.

The presumed actual lethal and non-lethal take by each Participant in 2024 was calculated using formulas prescribed in the KSCHP and is shown in Table 10. The actual take is assumed to be higher than the number of birds found because some birds are likely to have been missed and because some birds may have been taken by predators before they could be found. The detection rate of birds is known to vary among locations, and the following discovery rates were applied to account for missed birds: HDOT Lihue Airport- 75%; HDOT Nawiliwili Harbor- 90%; HDOT Port Allen- 50%; 1 Hotel Hanalei Bay- 90%; all other locations- 50%. In addition, not all released birds are likely to survive, and, as prescribed in the KSHCP, it was assumed that 12% of released birds would not survive and that number was added to the lethal take and subtracted from the non-lethal take.

Table 10: Calculated seabird take for all KSHCP Participants in 2024, based on formulas prescribed in the KCHCP and Participant Inclusion Plans.

2024	**NESH**		**HAPE**		**BANP**	
Property or Facility	Lethal	Non-lethal	Lethal	Non-lethal	Lethal	Non-lethal
A&B- Multiple	4.48	3.52	0.00	0.00	0.00	0.00
Kauai County-Multiple	1.12	0.88	0.00	0.00	0.00	0.00
HDOT-Lihue Airport	0.45	0.88	0.45	0.88	0.00	0.00
HDOT-Nawiliwili Harbor	0.23	0.88	0.00	0.00	0.00	0.00
HDOT-Port Allen	0.00	0.00	0.00	0.00	0.00	0.00
Kauai Coffee	1.12	0.88	0.00	0.00	0.00	0.00

Sonesta Resort	1.12	0.88	0.00	0.00	0.00	0.00
NCL	0.00	0.00	1.12	0.88	0.00	0.00
1 Hotel Hanalei Bay	6.70	25.52	1.11	0.00	0.00	0.00
Sheraton Kauai Resort	2.24	1.76	0.00	0.00	0.00	0.00
Total 2024 Participant Take	17.47	35.20	2.68	1.76	0.00	0.00

Cumulative lethal and non-lethal take by each Participant and by all Participants over the first five years of the KSHCP is shown in Table 11. The Projected 30-year take by each Participant based on the average take over the first five 5 years of the KSHCP in shown in Table 12. These values are based on a 5-year rolling average, meaning that the values are averaged over the most recent five years. For several Participants, if take continues at the same rate as the current 5-year average, the 30-year year total permitted take (Table 13) will be exceeded. For some Participants, such as the Hawaii Department of Transportation, take has declined in recent years (Figure 12), and if that trend continues the rolling average and projected 30-year take also will decline. For other participants, such as 1 Hotel Hanalei Bay, take has increased in recent years (Figure 12), and if this pattern continues the rolling average and projected 30-year take also will increase.

Table 11. Cumulative five-year calculated take from 2020-2024 for KSHCP Participants, based on formulas prescribed in the KCHCP and as described above.

5-year totals	**NESH**		**HAPE**		**BANP**	
Property or Facility	**Lethal**	**Non-lethal**	**Lethal**	**Non-lethal**	**Lethal**	**Non-lethal**
A&B- Multiple	27.28	16.72	0.00	0.00	0.00	0.00
Kauai County-Multiple	3.36	2.64	0.00	0.00	0.00	0.00
HDOT-Lihue Airport	8.29	9.04	0.91	1.76	0.00	0.00
HDOT-Nawiliwili Harbor	4.74	9.68	1.10	0.00	0.00	0.00
HDOT-Port Allen	2.24	1.76	0.00	0.00	0.00	0.00
Kauai Coffee	2.24	1.76	0.00	0.00	0.00	0.00
Royal Sonesta Resort	11.20	8.80	0.00	0.00	0.00	0.00
NCL	2.24	1.76	2.24	1.76	0.12	0.88
1 Hotel Hanalei Bay	11.09	42.24	1.34	0.88	0.00	0.00
Sheraton Kauai Resort	19.68	12.32	0.00	0.00	0.00	0.00
Total Participant Take	92.36	106.72	5.59	4.40	0.12	0.88

Table 12: Projected 30-year take based on average take over the first 5 years of the KSHCP. Yellow shading indicates that calculated take will exceed the 30-year permitted value if the rate over the first 5 years continues.

30-year projected total	**NESH**		**HAPE**		**BANP**	
Property or Facility	**Lethal**	**Non-lethal**	**Lethal**	**Non-lethal**	**Lethal**	**Non-lethal**
A&B- Multiple	163.68	100.32	0.00	0.00	0.00	0.00
Kauai County-Multiple	20.16	15.84	0.00	0.00	0.00	0.00
HDOT-Lihue Airport	49.74	54.24	5.44	10.56	0.00	0.00
HDOT-Nawiliwili Harbor	28.45	58.08	6.60	0.00	0.00	0.00
HDOT-Port Allen	13.44	10.56	0.00	0.00	0.00	0.00
Kauai Coffee	13.44	10.56	0.00	0.00	0.00	0.00
Sonesta Resort	67.20	52.80	0.00	0.00	0.00	0.00
NCL	13.44	10.56	13.44	10.56	0.72	5.28
1 Hotel Hanalei Bay	66.55	253.44	8.05	5.28	0.00	0.00
Sheraton Kauai Resort	118.08	73.92	0.00	0.00	0.00	0.00
Total 2024 Participant Take	554.18	640.32	33.53	26.40	0.72	5.28

Table 13. Total permitted take for all Participants over the 30-year life of the KSHCP.

30-year permitted take	**NESH**		**HAPE**		**BANP**	
Property or Facility	Lethal	Non-lethal	Lethal	Non-lethal	Lethal	Non-lethal
A&B- Multiple	104	80	3	3	1	1
Kaua'i County-Multiple	276	217	17	4	4	0
HDOT-Lihue Airport	22	43	3	6	1	2
HDOT-Nawiliwili Harbor	13	48	2	6	0	0
HDOT-Port Allen Harbor	53	68	0	0	0	0
Kauai Coffee	34	26	0	0	0	0
Royal Sonesta Kauai Resort	33	21	1	1	1	1
NCL	30	30	6	6	6	6
1 Hotel Hanalei Bay	125	475	6	6	1	1
Sheraton Kauai Resort	81	64	1	0	3	1
Total	771	1072	39	32	17	12

*From KSHCP Table 4-1. Table 4-1 also describes maximum anticipated take of adults or sub-adults and eggs/chicks.

Facility changes

During the 2024 season A&B sold their Waipouli property, which thus is no longer included in the KSHCP.

6. FINANCIAL REPORT

The financial report is attached as a separate document produced by the fiscal sponsor, the National Fish and Wildlife Foundation (NFWF). As required by the contract between NFWF and the KSHCP Participants, the report period covers the Federal fiscal year of 1 Oct 2023- 30 Sept 2024. It should be noted that the contract for this project will end in June 2025, and costs may vary after that date depending on the contractor selected for this project and the terms of the contract.