

**Environmental Assessment
(FINAL)
for the
Hakalau Forest National Wildlife Refuge
2021 Station Master Plan
May 2024**



**Prepared by the U.S. Fish and Wildlife Service
Pacific Region**



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Final Environmental Assessment for the Hakalau Forest National Wildlife Refuge 2021 Station Master Plan

Summary

The U.S. Fish and Wildlife Service (Service or USFWS) has decided to adopt the 2021 Hakalau Forest National Wildlife Refuge (Refuge) Station Master Plan (SMP) in accordance with the Refuge's Comprehensive Conservation Plan (CCP), adopted in 2010 (76 FR 29782) with this Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI). The Service released the Draft EA on December 8, 2023 for public review and comment. The Draft EA describes the SMP, the suite of projects to be implemented, their potential environmental impacts, and mitigation measures to reduce those impacts. USFWS sent the Draft EA to agencies and interested parties and notified other potentially affected parties about the availability of the Draft EA, as well as how to request a copy. For further information regarding the comment period and comments received, see the section titled "Public Comments Received on Draft EA and the Service's Responses" in this document.

The Service has prepared this document as an abbreviated Final EA because there have been no substantial changes to the Proposed Action, alternatives, or environmental analysis presented in the Draft EA. This abbreviated Final EA provides changes made to the text of the Draft EA, as well as comments received on the Draft EA and the Service's responses to those comments. This Final EA should be used as a companion document to the Draft EA, dated December 2023, which contains the full text describing the project, its potential environmental impacts, and mitigation measures to reduce impacts. The Draft EA is available at the Big Island NWR Complex office, and on the Hakalau Forest NWR website <https://www.fws.gov/refuge/hakalau-forest>.

Changes to the Draft EA

Changes made to the Draft EA primarily include minor revisions to mitigation measures based on feedback received from USFWS in response to the initial review of the Biological Assessment submitted for formal Section 7 consultation. These revisions are presented below by the chapter and section in which they appeared in the Draft EA. Where text has been modified, deleted text is indicated as "strikethrough" format (~~strikethrough~~) and **new text is underlined and highlighted in blue**.

Alternatives Considered

Alternative A —USFWS adopts the SMP – [Proposed Action Alternative]

Mitigation Measures and Conditions

Table 3 has been revised as follows (Pages 10-20 of the Draft EA):

TABLE 1 - MITIGATION MEASURES

Resource Category	Mitigation Measures
<p>Threatened and Endangered Species and Other Special Status Species</p>	<ul style="list-style-type: none"> • Refuge staff will use maps, flagging, or signs to identify and monitor “sensitive areas” (e.g., near tree stands, water lines, cultural features, and fences). This will minimize unintentional impacts to natural resources and Refuge infrastructure. • Crews will adhere to the Refuge’s Biosecurity Protocols (Appendix 4-2) and any additional protocols provided. • To avoid the introduction of nonnative and invasive species (including little fire ants, <i>Wasmannia auropunctata</i>), all construction equipment, materials, and vehicles will be cleaned and inspected prior to construction and deconstruction activities. • The potential presence of fire ants will be monitored following demolition and construction activities. If any little fire ants are detected, a determination of the full extent of infestation would occur and the infestation would be treated with an approved pesticide. • Gravel used in construction will be sourced at the Refuge or if locally sourced, inspected prior to entry into the Refuge to prevent introduction of nonnative species. • A formal Section 7 consultation will be prepared and reviewed prior to initiating the proposed alternative. • The Refuge biologist will survey areas proposed for construction to ensure there will be no impacts to endangered wildlife species that may utilize the area for foraging, nesting, or roosting. Species-specific protocols are listed below. • Heavy machinery activities will occur outside the endangered species breeding and birthing seasons or as described below. • Avoid construction and deconstruction activities during nēnē breeding season (September 1 to March 31) to prevent displacing nēnē. However, if breeding season cannot be avoided, construction and deconstruction would be restricted within 150 feet of breeding or nesting nēnē, to ensure they are not disturbed. • All work will cease immediately if a nēnē nest is discovered within a radius of 150 feet of proposed work. Work will not commence or continue in that area until the nest is no longer active and the birds have left the area.

- A Refuge biologist will monitor the project component areas for any nēnē activity prior to work starting and regularly during the project.
- If nēnē are observed loafing or foraging near construction activities during the breeding season, work will halt and a biologist familiar with the nesting behavior of nēnē would survey for nests in and around the project area prior to the resumption of work. Surveys would continue for 3 or more days following the observation of nēnē presence (during which the birds may attempt to nest).
- In areas where nēnē are known to be present, the Refuge will inform project personnel and contractors about the presence of threatened species on-site.
- Construction staff will be educated to not approach, feed, or disturb nēnē.
- ~~Project specifications will include specific measures to ensure project work does not impact nēnē, such as requiring all~~ All food-related waste ~~to~~ must be stored in fully sealed refuse containers and removed from the site daily to ensure birds and predators do not have access to the food waste.
- No tree removal will occur during the peak forest bird ('akiapōlā'au, 'alawī, and 'i'iwi) breeding season (January 1 to June 30).
- Prevent the spread or survival of nonnative or invasive species (see 'Vegetation' discussion below).
- Avoid construction activities that result in the creation of standing water.
- Avoid construction activities that may result in fire ignition in grassland habitat.
- Nighttime construction will be prohibited to prevent impacts to the 'ua'u, 'a'o, and 'akē'akē between September 15 to December 15.
- Building design shall include fully shielded outdoor lights so the bulb can only be seen from below and automatic motion sensor switches and controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Any new permanent lighting on buildings will be compliant to reduce impacts to endangered seabirds (minimum necessary, full cutoff, downward directed, amber [560-nanometer or greater] lamping).
- The action area will be surveyed during the 'io breeding season (March 1 to September 30) and if 'io nests are found, no trees will be removed in that area until after the nesting is complete.

- For each SMP project, if work must be conducted during the breeding season, a biologist familiar with the species will conduct a nest search of the project footprint and surrounding areas immediately prior to the start of construction activities. The biologist will continue to monitor potential nest trees during construction activities to ensure nesting federally-listed forest birds are not disturbed.
- Clearing of vegetation or construction activities shall not occur within 1,600 feet of any active 'io nest during the breeding season until the young have fledged.
- Pre-disturbance surveys for 'io are only valid for 14 days. If disturbance of the specific location does not occur within 14 days of the survey, conduct another survey.
- Regardless of the time of year, avoid trimming or cutting trees containing a hawk nest, as nests may be reused during consecutive breeding seasons.
- As part of Leadership in Energy and Environmental Design Certification requirements for the new facilities, this project will include compliance with Pilot Credit 55: Bird Collision Deterrence to minimize impacts to migratory birds. This measure is intended to reduce the chances of bird injury and mortality from in-flight collisions with buildings. This rule requires designers and builders to comply with building façade and site structures that include a lighting and a monitoring plan designed to minimize bird collisions.
- Disturbance, removal, or trimming woody plants and trees greater than 15 feet tall during the 'ōpe'ape'a birthing and pup rearing season (June 1 to September 15) will be avoided.
- Prior to deconstruction and construction, a survey for endangered plants (*Cyanea lindseyana*, *Cyanea shipmanii*, and *Phyllostegia brevidens*) will be completed and where possible, individual plants will be avoided and recommended buffer distances per U.S. Fish and Wildlife Service Pacific Islands Office's (PIFWO) Avoidance and Minimization Measures will be observed, to the extent practicable. Surveys will be completed during the peak time for flowering when identifiable features of the plants are more likely to be visible.
- If avoidance is not possible, the Refuge will work with the U.S. Fish and Wildlife Service Pacific Islands Office (PIFWO) and the Plant Extinction Prevention Program (PEPP) to transplant the plants to suitable undisturbed habitat.
- The Refuge will monitor endangered plants periodically during construction to monitor health and any impacts.
- Retain existing low-growing vegetation where possible, and minimize the use of clearing/grubbing to preserve the roots of low-lying vegetation.

* Measures that are intended to address potential long-term impacts, and which would be implemented during both construction and operations.

Affected Environment and Environmental Consequences of the Action

Table 6 has been revised as follows (pages 30-33 of the Draft EA):

TABLE 2 - AFFECTED NATURAL RESOURCES AND ANTICIPATED IMPACTS

Threatened and Endangered Species and Other Special Status Species
<p>Anticipated Impacts</p> <p>Alternative A: Endangered and threatened forest birds occupy the koa stands near the Station for foraging year-round, as well as for nesting between the months of January through August. Removal of koa trees (approximately 30) from the Station may impact the endangered forest bird species (‘akiapōlā’au, ‘alawī, and ‘i‘iwi) by removing potential foraging, roosting, and nesting sites. However, direct impacts would be mitigated by removing trees during non-breeding periods, and replanting the action area with appropriate native plant species in accordance with the SMP. Dispersal habitat is present on three sides of the action area which would be sufficient to accommodate listed forest birds that may be affected by the Proposed Action. Impacts to listed species that cannot be avoided with these and other mitigation measures (Table 3) would be covered in a formal Biological Consultation with USFWS Pacific Islands Office.</p> <p>Demolition, construction, and restoration activities may result in temporary minor disturbance to nēnē feeding or nesting near the Station. Indirect disturbance or displacement of nēnē individuals foraging or flying to or from nests is also possible due to localized noise and human or vehicle activity associated with deconstruction and construction activities. Project activity would be intermittent but result in short-term impacts by increasing the existing baseline levels of human activity and traffic for the duration of each project. Prior to commencing construction activities, personnel and contractors would be educated to not approach, feed, or disturb nēnē, and a Refuge biologist would monitor the project component areas for any nēnē activity prior to work starting and regularly during the project. With the inclusion of these and other mitigation measures (Table 3), impacts to nēnē from the Proposed Action are anticipated to be short-term, and moderate.</p> <p>Noises and visual stimuli from construction equipment, vehicles, and workers may cause short-term disturbance to ‘akiapōlā’au, ‘alawī, and ‘i‘iwi, causing individuals to move away from the source of the disturbance temporarily. These impacts would be temporary, as sufficient dispersal habitat exists on three sides of the action area to accommodate wildlife that may be affected. Tree removal would be restricted during the peak forest bird breeding season (January 1 to June 30). With the inclusion of these and other mitigation measures (Table 3), we anticipate that implementing the plan would result in short-term, low impacts to ‘akiapōlā’au, ‘alawī, and ‘i‘iwi.</p> <p>The action area is within proposed critical habitat for the ‘i‘iwi. Manmade structures, such as roads and buildings are not included in the proposed critical habitat; however, the removal of koa trees within proposed critical habitat would result in a minor loss of foraging habitat for ‘i‘iwi and may be considered likely to adversely modify the critical habitat. ‘i‘iwi are not known to nest in koa trees (Fancy & Ralph 1998), so koa tree removal is unlikely to impact their breeding habitat. However, disturbance near nesting birds may cause birds to abandon nests; therefore, a qualified biologist will survey for nesting ‘i‘iwi throughout the action area prior to, and during construction activities. With these and other mitigation measures listed in Table 3, impacts to proposed critical habitat for ‘i‘iwi are expected to be short-term, and low to moderate. Formal Section 7 consultation initiated by the</p>

Service addresses the potential impacts to endangered species and their critical habitat, and will include ~~determine~~ specific mitigation measures, which may include compensatory action (such as habitat restoration, a key mission of the Refuge). ~~The Service anticipates that implementation of the Proposed Action would result in a “Not Likely to Adversely Affect” finding, will be determined during a formal ESA Section 7 consultation.~~ Critical habitat for *C. Pyrularea*, *C. Lindseyana*, *C. Paleana*, kīponapona, and hāhā is not present within, or adjacent to the action area and would therefore not be impacted by the Proposed Action.

Outdoor lighting could result in listed seabird (‘ua‘u, ‘a‘o, and ‘akē‘akē) disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to starvation, and predation by introduced predators. Young birds (fledglings) traversing the Refuge between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable to light attraction. Nighttime construction would therefore be prohibited between September 15 to December 15 in order to minimize potential impacts to seabirds. With the inclusion of this and other mitigation measures (Table 3), the Proposed Action is anticipated to cause no impacts to ‘ua‘u, ‘a‘o, and ‘akē‘akē.

Construction activities have the potential to temporarily disturb ‘io using the area, and nest failure could result from the repeated loud, irregular, and unpredictable noises associated with construction, such as heavy equipment use or assembling a structure. In order to minimize impacts to ‘io during the breeding season (March 1 – September 30), pre-disturbance surveys would be conducted by a qualified biologist immediately prior to the onset of construction activities to assess the action area and vicinity for presence of nesting ‘io. If present, no construction activities would be permitted within 1,600 feet of the nest. With the implementation of these and other mitigation measures (Table 3), impacts to ‘io from the Proposed Action are expected to be short-term and low.

Noises and visual stimulus from trucks, equipment, and workers may disturb endangered ‘ōpe‘ape‘a, causing individuals to move away from the action area temporarily. Removal of koa trees from the action area may impact the ‘ōpe‘ape‘a by reducing the number of potential birthing sites. If trees or shrubs 15 feet or taller are cleared during the ‘ōpe‘ape‘a pupping season (June 1–September 15), there is a risk that young ‘ōpe‘ape‘a could inadvertently be harmed or killed since they are too young to fly or may not move away. These impacts would be temporary, since sufficient habitat is available to provide security to displaced wildlife, would be near-negligible to overall species populations, and would be mitigated by removing trees during non-pupping periods and replanting the site with appropriate native plant species in accordance with the site plan (Appendix 3, Figure 2). With the implementation of these and other mitigation measures (Table 3), we anticipate the Proposed Action would result in short-term, low impacts to ‘ōpe‘ape‘a.

Clearing portions of the action area during construction is necessary to permit long-term maintenance and management with heavy equipment (mower, tractor, skid steer). During this process, removal of some native vegetation is unavoidable. Vegetation clearing during implementation of the SMP may affect outplanted ESA-listed plant species by causing physical damage to plant parts (roots, stems, flowers, fruits, seeds, etc.) as well as impacts to other life-requisite features of their habitat which may result in reduction of germination, growth and/or reproduction. Cutting and removal of vegetation surrounding listed plants has the potential to alter microsite conditions (e.g., light, moisture, temperature), damaging or destroying the listed plants and increasing the risk of invasion by nonnative plants.

Soil disturbance or removal has the potential to impact the soil seed bank of listed plant species if such species are present or historically occurred in the action area. Depending on the species, seeds brought to the surface could be impacted by predation, rot, desiccation, or harmful exposure to UV radiation. Removal of soil could result in seed deposition in unfavorable habitat. Construction vehicles, personnel, and construction materials could also be agents for the unintentional introduction and/or spread of non-native or invasive plants and arthropods within the action area and surrounding Refuge. If established, invasive species and disease agents could outcompete, displace, or eliminate native flora and fauna, which would reduce available habitat for native species, and contribute to overall loss of biodiversity at the Refuge. Mitigation measures included in building design and biosecurity protocols as well as measures used during construction, such as vehicle wash stations (see Table 3, and Appendix 4, Table B) would be implemented to reduce the impacts of soil disturbance species on listed plant species.

The Refuge does not anticipate that the short-term impacts of construction at the Station would reduce the baseline condition of the listed plant species' populations. As all founder plants would be protected, any potential impacts to listed plants would be limited to outplants and propagules. Mitigation measures would be implemented to protect outplants and propagules within the action area, including flagging and avoiding known locations during construction, and translocating individuals located within proposed building footprints or disturbance areas. In spite of these and other mitigation measures (Table 3) unavoidable impacts to three species of endangered plants (*C. lindseyana*, *C. shipmanii*, and *P. brevidens*) in the form of individual mortality and localized population decrease could still occur from handling, translocation, and replanting. Impacts to *C. lindseyana*, *C. shipmanii*, and *P. brevidens* are therefore anticipated to be temporary and moderate. Because these individual plants cannot be avoided, the Refuge will initiate a formal consultation with USFWS Ecological Services division.

C. pyrularia, makou, and kīponapona propagules are only found in the Refuge greenhouse ex situ collection or in small populations outside of the action area. Therefore the Proposed Action would result in no impacts to *C. Pyrularia*, makou, and kīponapona.

Once construction is complete, operation of the Station would resume at a level of activity and daily use comparable to or slightly increased from current conditions. Impacts to listed species within and in the vicinity of the Station may include disturbance to foraging and nesting from noise associated with short-term, intermittent vehicle use, equipment operation, or gatherings of staff or volunteers. Some listed wildlife, such as nēnē, may quickly become accustomed to the noise and activity associated with daily Station operation and appear undisturbed or indifferent. Other listed wildlife may move away from daily sources of noise and activity, but impacts from such interruptions would be short-term and negligible. Listed plant populations that may be present at the Station would be marked with appropriate signage and avoided, resulting in no impacts from daily operation.

The implementation of the Proposed Action would result in several beneficial changes for listed species and designated and proposed critical habitat at full build out. Listed species occupancy, movement, and activity in and around the action area would resume to current conditions. The increased housing capacity for staff and volunteers, improved operations and maintenance capability, and new horticulture building, would enhance the scale, scope, quality, and efficiency of plant propagation, habitat restoration activities, and invasive species management throughout the Refuge. As a result, the Refuge is anticipated to see increases in invertebrate and plant populations, and overall species diversity, which would in turn enhance conditions for listed species. The impacts to listed species associated with the increase in extent, diversity, and condition of native and critical habitat would be long-term, moderate, and beneficial.

The Proposed Action is not anticipated to jeopardize the continued existence of any ESA-listed species or adversely modify designated or proposed critical habitats. With the inclusion of mitigation measures (Table 3) and considering the anticipated benefits to Refuge operations, including habitat restoration and invasive species management, it is expected that implementing the Proposed Action would have a long-term, moderate, beneficial impact on threatened and endangered species and their critical habitat.

Reduced quality habitat for listed species would persist within the action area after construction until maturation of restored vegetation, relative to existing conditions. However, because the affected portions of the action area would be expected to fully recover after several years and the surrounding Refuge would ultimately be enhanced above existing conditions, the impacts would be considered temporary and low.

Alternative B: No impact to listed species beyond daily Station operation and ongoing maintenance of existing facilities. Individual projects to improve Station facilities would continue to be proposed and evaluated on a case-by-case basis. Use conflicts within the Station would persist, and daily use would continue to degrade equipment and buildings which are already at the end of their serviceable life. The ability of the Service to meet the Refuge purpose and CCP goals for protection of species and their habitat would continue to be constrained by the dilapidated condition of equipment and structures required for Refuge operation and maintenance, and the insufficient quantity and quality of housing for Service staff and volunteers.

Appendix 2 — Acronyms & Abbreviations, References, and List of Preparers

References have been revised as follows (pages 61-62 of the Draft EA):

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Public Comments Received on Draft EA and the Service's Responses

This section presents comments received on the Draft EA and the Service's response to those comments. Comments were solicited by letter, email, comment form, and on the Refuge's website <https://www.fws.gov/refuge/hakalau-forest>. The official public comment period was from December 8, 2023 to January 6, 2024. The Service received a total of one comment, which was from an organization with an interest in the project. No comments were received from regulatory agencies. The comment and the Service's response are included below:

FIGURES

Figure 1 – Public Comment and Service Response

Friends of Hakalau Forest National Wildlife Refuge

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Refuge Manager
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January 6, 2024

Dear Mr. Cady:

We are submitting comments to you on the draft Environmental Assessment for the 2021 Station Master Plan, as amended in December 2023. We support the proposed action to refurbish a variety of facilities at the Hakalau Field Station, outlined in 2021 Hakalau Forest National Wildlife Refuge Station Master Plan. Successful management of a National Wildlife Refuge, particularly one with the logistical challenges at Hakalau Forest NWR, requires functional and reliable infrastructure and facilities. We recognize that limited budgets and the remoteness of the Refuge have made development and maintenance of your support facilities very difficult. This proposed action will enable you to take a big step forward toward providing the infrastructure you need to carry out your primary mission, managing the habitat on the refuge.

We applaud you for taking this assertive step forward. Managing the vegetation and the invasive species of plants and animals requires equipment, personnel, buildings, utilities, and other provisions. These facilities must tolerate harsh weather conditions, require minimal maintenance, and accommodate staff and volunteers whenever needed. Your attention to these details will serve the mission of the Refuge well.

As you know the Friends of Hakalau Forest National Wildlife Refuge is also interested in exploring development of some modest facilities for visitor use at the Pua Akala site, a couple of miles to the south of the Hakalau Field Station. Reference to other "off-site facility improvements within the Refuge, including greater development for visitor services and experiences in the Pua Akala Barn and Pua Akala Cabin areas" (page 26 of the Station Master Plan) support this idea. We also note that there are aspirations for visitor services for the Maulua Unit, a couple of miles north of the Field Station.

Thus, we don't see any incompatibilities with the proposed improvements to the Hakalau Field Station and initiatives for visitor services in other locations. Please let us

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know if there are any concerns regarding these initiatives that we should consider and discuss as we move forward with our exploration of options for visitor services for the Pua Akala area.

Thank you for the opportunity to comment on this proposed action.

Sincerely,

Peter Stine

Peter Stine PhD

Chair, Legislative and Public Affairs Committee

Friends of Hakalau Forest NWR

USFWS response: Thank you for your comment and support of the proposed action. The Service values your interest in other visitor use opportunities, and looks forward to continuing discussions with your organization.