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LAND
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April 2, 2025

Endangered Species Recovery Committee
State of Hawaiʻi
Honolulu, Hawaiʻi

SUBJECT: Request for ESRC Review and Vote on the Approval of the Nā Pua Makani Power Partners LLC, Hawaiian Hoary Bat Tier 1 Mitigation Habitat Management and Research Plans for the Poamoho Management Area

Dear Committee Members,

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) is respectfully requesting the Endangered Species Recovery Committee (ESRC) to review and vote on the approval of the Nā Pua Makani Power Partners LLC, Hawaiian hoary bat Tier 1 Mitigation Habitat Management and Research Plans for the Poamoho Management Area (PMA). Tetra Tech prepared the mitigation and research plans on behalf of Nā Pua Makani Power Partners, LLC (licensee) as part of the obligations of the Nā Pua Makani Wind Energy Project Habitat Conservation Plan (HCP; Tetra Tech 2016) and State Incidental Take License (ITL; ITL-21).

BACKGROUND

The Nā Pua Makani Power Partners LLC (licensee) HCP/ITL authorizes the incidental take of 34 ʻōpeʻapeʻa or Hawaiian hoary bat (*Lasiurus semotus*) under Tier 1 of their HCP. The biological goal of the Mitigation Plan is to fully offset the take and provide a net benefit to the species.

Under the terms of the HCP, to fully offset the take of the 34 ʻōpeʻapeʻa, the licensee developed a mitigation plan with an associated research plan. The mitigation plan is the primary means to offset the take, and the research plan was designed to better understand the impacts of the proposed management activities on the species. The management and research actions outlined in these plans span eight years and will directly impact the State of Hawaiʻi, ʻEwa Forest Reserve—Poamoho Management Area (PMA).

DOFAW HCP Section staff have worked through several iterations of these documents with the licensee, their consultants, the Endangered Species Recovery Committee (ESRC), DOFAW O‘ahu Branch staff, Ko‘olau Mountains Watershed Partnership (KMWP) staff, O‘ahu Invasive Species Committee (OISC) staff, and the U.S. Fish and Wildlife Service (USFWS). The plans presented here represent the culmination of these revisions.

ANALYSIS

The mitigation plan focuses on implementing targeted invasive species removal, with a supplemental out-planting component and fence repair (as needed) to protect previously unmanaged pockets of suitable bat foraging and roosting habitat within the fenced PMA. Due to the challenges of identifying these areas, the licensee has requested mitigation credits based on a funding proxy—$50,000/bat, agreed upon in the 2015 approved ESRC bat recovery guidance document. Additionally, the application of this proxy was contemplated in their approved HCP (Tetra Tech, 2016). It should be noted that while the presence of bats in this general area has been demonstrated, there are no known roosting trees.

Multiple agencies, referred to hereafter as the PMA Management Partners, operate in the PMA, including DOFAW O‘ahu Branch Native Ecosystem Protection and Management (NEPM), KMWP, and the O‘ahu Invasive Species Committee (OISC). These agencies regularly work collaboratively to complete similar management actions across the PMA. This partnership is essential to effecting landscape-level change within the PMA. The licensee and Tetra Tech have committed to coordinating with these agencies to ensure that mitigation actions are separate and directly attributable to the compensatory mitigation required but feed into landscape-level management goals for this unit.

The research plan acts as a control for the mitigation plan and will investigate how management actions can positively impact native vegetation essential to bat survival and their prey availability. The control plots will be located outside of the PMA fence. They will allow for comparing bat prey abundance and the effects of varying levels of invasive vegetation cover on these prey items.

<u>Biological Goals and Objectives</u>
According to the Hawaiian hoary bat guidance, “Biological goals and objectives that establish specific, measurable outcomes that describe the targets that the mitigation is expected to achieve and serve as the measures of success.”

There are four biological goals and associated objectives outlined in the plan. The goals are to **1)** fully offset the incidental take of 34 Hawaiian hoary bats required for Tier 1 mitigation and provide a net benefit to the species; **2)** restore structural diversity and prevent further deterioration of Hawaiian hoary bat foraging habitat in the PMA; **3)** reduce invasive plant species cover to significantly increase bat prey availability in the PMA for the Hawaiian hoary bat; and **4)** increase native biological diversity to significantly increase Hawaiian hoary bat activity in the PMA.

Management Actions

"Implementation plans that specify how the work will be accomplished to reach the targets and include a schedule of activities" (Hawaiian Hoary Bat Guidance Document).

Management actions are described in the plan as **1)** the management of five priority invasive weed species invasive mule's foot fern (*Angiopteris evecta*), manuka (*Leptospermum scoparium*), Moluccan albizia (*Falcataria falcata*), strawberry guava (*Psidium cattleyanum*), and cane tibouchina (*Chaetogastra herbacea)*; **2)** outplanting at least 30 acres, but no more than 100 acres of native tree species to create bat foraging and roosting habitat; and **3)** fence repair on an as-needed basis as determined by the PMA management partners.

Concerns/Recommendations

- Management actions focused on invasive species removal require regular, intensive collaboration between all PMA Management Partners.
    - Nā Pua Makani must commit to regular coordination with management partners operating in the PMA. Currently, the selection of management focus areas where invasive vegetation control will occur is determined on an annual basis. Due to the fluid nature of management in this unit, check-ins should occur at least quarterly.
- The plan does not specify the intensity of the invasive species removal work that will occur, spatially how much of the PMA will undergo management, or track herbicide limits.
    - Nā Pua Makani should collect and provide any geospatial information produced during invasive vegetation control, including **1)** point data for all priority weed treatments listing species and treatment methods, **2)** daily track lines for all weed removal activities, and **3)** polygon data for all large treatment areas clearly listing weed taxon and treatment method.
- The out-planting component of this plan does not take into account a variety of factors including **1)** the current state of propagule availability, **2)** DOFAW's potential capacity to generate the required number of plants for 30 acres, **3)** a general methodology for out-planting (e.g., collecting geospatial data for outplant locations, addition of soil amendments, pot size deemed appropriate for out-planting, etc.), **4)** or include language specific to ongoing monitoring of all outplants up to six months after installation for little fire ant or LFA (*Wasmannia auropunctata*).
    - Nā Pua Makani should work closely with the PMA Management Partners to assess the current state of propagule availability, DOFAW's ability to produce the required number of outplants, and develop a generalized outplanting methodology. Nā Pua Makani should also refine their language to address post-outplant LFA monitoring as prescribed by the Hawai'i Ant Lab and OISC.

Monitoring

"Monitoring plans that establish schedules of activities designed to assess progress toward goals and objectives, with time-specific targets that will provide a meaningful indicator of whether the implementation is successfully on track to achieve success" (Hawaiian Hoary Bat Guidance Document).

The monitoring plan is designed to quantify changes in vegetation, bat prey and acoustic activity, and the percent survival of out-planted species within the Nā Pua Makani Power

Partners (NPMPP) Mitigation Area during the performance period of eight years. Bat prey, acoustic activity, and vegetation conditions will be tracked at 15 monitoring plots distributed semi-randomly throughout the Management Focus Areas. Monitoring will occur in Years 1, 3, 5, and 8. Periodic generation of orthomosaic images in Years 1, 5, and 8 of managed areas produced using sUAS platforms—drones will provide landscape level updates of invasive species removal. After installation, outplant survivorship data will be collected for out-planted trees at Year 5.

Concerns/Recommendations

- Though this plan mentions outplant survivorship monitoring, this will only occur at Year 5 following out-planting.
    - DOFAW recommends monitoring six months after outplants are installed to assess initial survivorship and check for signs of LFA.

Measures of Success

"It is recommended that monitoring at a mitigation site be able to provide a quantitative assessment of whether the project is on track to meet its mitigation goals" (Hawaiian Hoary Bat Guidance Document).

Nā Pua Makani is using statically significant changes to measure success criteria for an increase in prey abundance, an increase in plant species richness, a reduction in invasive plant species absolute percent cover, total acres of invasive plant species treated in each Management Focus Area (MFA), and an increase in bat acoustic activity. Nā Pua Makani states they will use an alpha number of 0.05 to help analyze the statistically significant changes to show that these changes are not due to chance.

Concerns/Recommendations

- A measure of success is the statistically significant increase in plant species richness over baseline by Year 8. Ideally, native species would recruit in treated areas and increase plant species richness. However, invasion by other weedy species into treated areas would also increase plant species richness.
    - DOFAW recommends changing the statement "statistically significant increase in plant species richness" to "statistically significant increase in **native** plant species richness."

Adaptive Management

"Adaptive management approaches are based on the results of monitoring and describe alternative actions that will be implemented in mitigation targets are being reached by the proposed implementation actions" (Hawaiian Hoary Bat Guidance Document).

Adaptive management is triggered in Year 5 if there is no increase in bat activity and no statistically significant increase over the baseline in plant species richness and arthropod abundance. Adaptive management will include the out-planting of native species, an increase in management intensity, or the identification of additional target areas for increased management. If adaptive management is triggered, further monitoring will occur in Year 6 and 7. If by Year 7, there is a statistically significant increase in bat activity, Nā Pua Makani will forgo monitoring and adaptive management. If success criteria are not met in Year 8, the

potential adaptive management responses are an extended management duration and/or the identification of additional target areas for increased management.

Concerns/Recommendations

- Table 5—Adaptive Management Trigger and Responses shows out-planting in Year 5 as a potential adaptive management response; however, the narrative does not mention it.
    - DOFAW recommends adding an adaptive management response to the plan narrative to prevent confusion.

Associated Research Plan

The associated research plan is a straightforward means of comparing how management actions can positively impact the environment for ʻōpeʻapeʻa. It adds a controlled study to the Habitat Management evaluative monitoring program and aims to better understand in what way and how quickly habitat degradation affects arthropod communities that are important for Hawaiian hoary bats. The study will specifically investigate **1)** the rate at which established target invasive species modify the biomass and presence of arthropod communities; **2)** how these communities change in response to changes in the dominance of invasive species within a plot; **3)** correlations between abiotic factors and the rate of recruitment and spread of invasive species within plots; and **4)** how management actions and ungulate exclusion influence observed changes. The combined activities and monitoring in both plans will allow for an investigation of how degradation impacts these factors and if management actions influence the arthropod prey base or bat presence.

Up to nine control plots will be delineated outside but adjacent to the PMA fence. There will be three types of control plots representing three vegetation situations: **1)** no presence of target weed species; **2)** one of the five target invasive plant species is established but has not dominated the plant community; and **3)** where the selected invasive species is the dominant cover. Please note that no work will be done within any of these control plots.

AGENCY RECOMMENDATIONS

After the internal review process of the Nā Pua Makani's Tier 1 Mitigation Plan and the associated Research Plan, DOFAW will issue approval of the management and research plans upon receipt of the updated plan copies, no later than three months after this meeting, which incorporate the guidance and recommendations contained within this document. Should the updated plan copies not be received, DOFAW will not approve these plans. If you have any questions, please contact Jesse W. Adams, Protected Species HCP Associate, at jesse.w.adams.researcher@hawaii.gov.

Respectfully submitted,

DAVID G. SMITH
Administrator