Recovery Implementation Strategy for Five Species from American Sāmoa

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This document describes the partners and project-level activities that are needed to implement the recovery actions identified in the Recovery Plan for Five Species from American Sāmoa. Our intent is to periodically update this document with any new information available from partners about specific projects that are being planned or are in progress. We welcome input on current status, cost projections, or planning details of these activities – please contact Joy Browning (joy_browning@fws.gov) or Grant Canterbury (grant_canterbury@fws.gov).

Acronyms and Abbreviations:

DMWR: American Sāmoa Department of Marine and Wildlife Resources
DOFAW SEPP: Hawai'i Division of Forestry and Wildlife, Snail Extinction Prevention Program
Fiji: Republic of Fiji
Sāmoa MNRE: Sāmoa Ministry of Natural Resources and Environment
NPSA: National Park of American Sāmoa
Sāmoa: Independent State of Sāmoa

1. Survey and protect management units

    1.1. Identify and survey extant populations for all species and the habitats in which they occur to assess current distribution, abundance, and habitat use.

    Pe'ape'a vai [outside of U.S. jurisdiction]: Coordinate with NatureFiji for information from any bat surveys being conducted.

    Ma'oma'o [outside of U.S. jurisdiction]: Coordinate with Sāmoa MNRE for information from any surveys being conducted.

    Tu'aimeo: Studies on Ofu and Olosega by Institute for Bird Populations are not currently in progress, but recovery permit has been renewed. Because tu'aimeo are cryptic and difficult to effectively survey, revisiting this study with improved transmitter technology would be informative about population size and distribution.

    Snails: Compile recent incidental information on distribution from DMWR and NPSA staff and other observers. Coordinate with the State of Hawai'i, Division of Forestry and Wildlife's Snail Extinction Prevention Program (DOFAW SEPP), Bernice Pauahi Bishop Museum, University of Hawai'i, NPSA Inventory & Monitoring, DMWR, or other partners to design a standardized survey methodology to be used in the American Sāmoa islands. Continue to coordinate workshops and training events for field crews and land managers on snail and snail predator taxonomy, identification, survey methods, and other needs as identified. Workshops were held in 2021 covering these topics. Coordinate with NPSA, DMWR, and other partners to continue to gather incidental information in addition to surveys specific for snails.

1.2. Survey historically occupied areas for any persisting populations.

Coordinate with partners to conduct needed surveys and compile current information on areas of historical populations.

Pe‘ape‘a vai [largely outside of U.S. jurisdiction]: Sāmoa, American Sāmoa (particularly Ta‘u), Vanuata, Tonga, and other islands (NatureFiji, Sāmoa MNRE, DMWR, other partners). To survey for possible persisting populations in American Sāmoa, DMWR has acquired a number of bat detectors capable of long-term recording, and is deploying them in caves along the north coast of Tutuila (including coastal areas of National Park and proposed wind project) as well as Ta‘u (historically occupied cave sites, as well as several caves that have been recently discovered or others that may be discovered in future). After the American Sāmoa islands survey is completed, loan of these bat detectors for Sāmoa surveys is possible.

Ma‘oma‘o: Tutuila (DMWR)

Ostodes strigatus*: Tutuila (DMWR, NPSA, American Sāmoa snail survey)*

1.3. Develop fine-scale climate models for these species to identify future suitable habitat based on existing and historical ranges and to determine potential future climate conditions.

Identify appropriate partners with expertise in fine-scale climate modelling for Pacific islands.

1.4. Identify and prioritize areas necessary for habitat protection and restoration.

Coordinate with DMWR and NPSA on identifying high-priority areas in American Sāmoa.

1.5. Ensure long-term protection of management units.

1.5.1. Identify threats specific to the management units.

Coordinate with DMWR and NPSA on threat assessment in high-priority areas in American Sāmoa.

1.5.2. Within management units, construct and maintain fencing and remove ungulates, and identify a long-term funding stream to keep fenced areas free of ungulates.

Coordinate with NPSA on ungulate fencing on Park lands where feasible.

1.5.3. Control or eradicate habitat-modifying invasive plants within management units.

Coordinate with NPSA on invasive plant removal on Park lands where feasible.

1.5.4. Protect management units from human disturbance as necessary.

Pe'ape'a vai [largely outside of U.S. jurisdiction]: NatureFiji and local partners protecting caves and surrounding vegetated areas in Fiji from human disturbance; protection of formerly occupied caves in Sāmoa and American Sāmoa.

1.5.5. Protect forest habitat from disturbance, clearing, and fragmentation.

Work cooperatively with land management agencies, village chiefs and councils, and private landowners to maintain and connect forest habitat. Reforestation needed primarily in parts of 'Upolu [outside U.S. jurisdiction] and on Tutuila.

1.5.6. Control other threats as appropriate.

Work with appropriate partners as needed.

1.6 Monitor management and use results to adapt management actions.

Work with appropriate partners as needed.

2. Control species-specific threats.

2.1. Develop and implement control programs for cats and rats, updating methods as new technology becomes available.

NPSA is currently considering programs for removal of cats on Ofu and Olosega, potentially seeking coordination with New Zealand partners, or veterinarians for trap-neuter-release approaches. Potential for rat removal on smaller islets in American Sāmoa and Sāmoa [outside U.S jurisdiction] should also be evaluated by Sāmoa MNRE and DMWR; for feasibility and logistical considerations also consult with organizations that have experience in island rat eradication efforts (e.g., Conservation International).

2.2. Develop and implement control programs for nonnative invertebrates (*Euglandina*, *Platydemus manokwari*), updating methods as new technology becomes available.

Coordinate with DOFAW SEPP on exclosure design and identifying partners with appropriate expertise to develop genetic control methods for nonnative invertebrates.

2.3. Control other threats to specific species as appropriate.

Work with appropriate partners as needed.

2.4. Monitor management and use results to adapt management actions.

Work with appropriate partners as needed.

3. Expand the distribution of existing wild populations and establish additional populations.

    3.1. Identify areas within management units appropriate for establishing or augmenting populations, using information on climate and habitat suitability.

    Details to be determined in coordination with translocation partners, and pending availability of fine-scale climate models (Recovery Action 1.2)

    3.2. Conduct an assessment or feasibility study on translocation, husbandry, and captive propagation.

    Pe‘ape‘a vai [will require cooperative effort between organizations within and outside of U.S. jurisdiction]: Confirmation that the source population in Fiji is stable, secure, and protected will likely be necessary before translocation efforts could begin. Coordinate with NatureFiji, DMWR, and biologists with relevant expertise in bat capture, husbandry, and translocation in order to assess source population viability, habitat suitability at destination, veterinary care, and international transfer logistics.

    Ma‘oma‘o [will require cooperative effort between organizations within and outside of U.S. jurisdiction]: Coordinate with Sāmoa MNRE, DMWR, and biologists (e.g. Pacific Bird Conservation) with relevant expertise in translocation of forest birds on Pacific islands in order to assess source population viability, habitat suitability at destination, veterinary care, and international translocation logistics.

    Tu‘aimeo: Coordinate with DMWR, Institute for Bird Populations, and biologists (e.g. Pacific Bird Conservation) with relevant expertise in translocation of forest birds on Pacific islands in order to assess source population viability, habitat suitability at destination, veterinary care, and inter-island translocation logistics.

    Snails: After surveying snails and snail predators throughout American Sāmoa, coordinate with DMWR, DOFAW SEPP, University of Hawai‘i, and any other American Sāmoa snail survey partners to assess predator risk and habitat suitability on each island and determine the feasibility of translocating snail populations to lower-risk islands.

    3.3. Select populations for augmentation or sites for reintroduction.

    Details to be determined in coordination with translocation partners.

    3.4. Prepare reintroduction sites.

    Details to be determined in coordination with translocation partners. Site preparation measures would include predator control and habitat restoration as outlined under 1.5, 2.1, and 2.2.

    3.5. Translocate individuals for augmentation or reintroduction with captive propagation if necessary.

Details to be determined in coordination with translocation partners. Captive rearing facilities coud be established for Eua zebrina on American Sāmoa with input from DOFAW SEPP and other species experts on rearing and facility maintenance.

3.6. Release translocated individuals.

Details to be determined in coordination with translocation partners.

3.7. Monitor success of releases and use results to adapt management actions

Details to be determined in coordination with translocation partners.

4. Utilize regulations and policy to support species recovery

4.1. Support protection of endangered species under Territorial law

Coordinate with DMWR on potential establishment of a section 6 cooperative agreement, supported by appropriate modification of Territorial law to clarify the authority of Natural Resources Commission to carry out endangered species conservation programs.

4.2. Develop and implement a biosecurity plan to prevent the influx of new pests and invasive species into the Territory and between islands.

Develop and implement biosecurity measures for American Sāmoa, in coordination among DMWR, USDA, airport and port managers, Coast Guard, and Army Reserve representatives. Per DMWR, shipping traffic and movement of construction equipment between Tutuila and Ofu remains a biosecurity issue and there are probably no inspection checks or equipment cleaning measures in place. Pine trees from the Pacific Northwest are also imported each year during December for the holidays. DMWR has recently hired an invasive species/biosecurity staff member.

5. Conduct additional research essential to recover species and restore the habitats on which they depend.

5.1. Assess current distribution of snail predators.

Compile recent incidental information on distribution of snail predators from DMWR, NPSA staff, American Sāmoa Community College, and other observers. Coordinate with DOFAW SEPP, University of Hawai'i, DMWR, and any American Sāmoa snail survey efforts to design and implement snail predator surveys. Snail workshop (1.1) has discussed identification and survey techniques of currently known predators and potential predators.

5.2. Conduct studies on the habitat, demography, and dispersal of each species.

Pe‘ape‘a vai: Coordinate with NatureFiji [outside U.S. jurisdiction] for information on home range size, habitat and microclimate associations for roosts and foraging localities, and evaluation of pesticide or disease impacts;

Ma‘oma‘o: Coordinate with Sāmoa MNRE [outside U.S. jurisdiction] for information on territory size, preferences for species composition and structure of forest habitat, and the quality and extent of available habitat at potential translocation sites;

Tu‘aimeo: Coordinate with DMWR and Institute for Bird Populations on development of improved survey and population assessment methodologies; and

Snails: Coordinate with DOFAW SEPP, Bernice Pauahi Bishop Museum, University of Hawai‘i, DMWR, and any American Sāmoa snail survey efforts on quantitative assessment of predator-prey interactions, mortality rates, microclimate requirements, and identification of any refugia.

5.3. Conduct a genetic study of all populations of *Eua zebrina*

Coordinate with DOFAW SEPP, Bernice Pauahi Bishop Museum, University of Hawai‘i, DMWR, and any American Sāmoa snail survey efforts to collect samples from management subunits and identify partners with appropriate expertise for genetic assessment.

5.4. Conduct population viability analyses (PVA) for each species as data becomes available.

Coordinate with appropriate academic scientists with PVA expertise. To be determined, pending availability of adequate demographic data to conduct PVAs.