

CHAPTER 2: APPROACH AND METHODS

APPROACH

Given Hawaii's biological uniqueness on a global scale, the Comprehensive Wildlife Conservation Strategy (CWCS) recognizes the importance of protecting all native terrestrial animals, all endemic aquatic wildlife, other aquatic species threatened with decline, and a broad range of native flora. On the ecological level, the CWCS takes a habitat management approach, adopting a landscape view that takes into account the complex inter-relationships between species and their habitats and the need for change and adaptability. The CWCS builds on and synthesizes information gathered from existing conservation partnerships and cooperative efforts. Additionally, the CWCS highlights these partnerships and their efforts in Hawai'i with a goal to enhance and expand existing and to create new partnerships, ultimately increasing support for implementing Hawaii's CWCS.

The Hawai'i Department of Land and Natural Resources (DLNR) coordinated the development of Hawaii's CWCS, with joint cooperation by the Division of Forestry and Wildlife (DOFAW) and the Division of Aquatic Resources (DAR), the divisions primarily charged with protecting the State's terrestrial and aquatic resources. The CWCS core team consists of staff hired through the Pacific Cooperative Studies Unit (PCSU) of the University of Hawai'i (UH). A broader CWCS team includes DOFAW and DAR staff that directly supported and assisted the development of the CWCS. In addition, other CWCS contributors include advisory groups and committees of representatives from government agencies and partner organizations, other internal and external stakeholders, and technical workshops and public meetings participants. For terrestrial wildlife, informal advisory groups were developed around species or geographic interests, building upon existing working groups (e.g., the Hawaiian Hoary Bat Research Cooperative). For aquatic wildlife, a Statewide Aquatic Wildlife Conservation Strategy Advisory Committee, with representatives from Federal and State agencies, resource user groups, and non-profit organizations was established. The Advisory Committee also assisted DAR in developing their CWCS products and a stand-alone Statewide Aquatic Wildlife Conservation Strategy to be published by PCSU.

METHODS

Multiple methods were used to develop and draft Hawaii's CWCS. The goal of each method was to engage different audiences and groups, garner information to meet the required eight elements, and build support for the strategy and its implementation. The following sections describe the planning process and methods utilized, addressing required elements 7 and 8.

OUTREACH

Public Participation

A variety of methods and opportunities were used to reach out to the public to introduce them to Hawaii's CWCS. The primary method used to engage the public as well as resource managers and technical experts was the CWCS website, www.state.hi.us/dlnr/dofaw/cwcs/index.html. The public was encouraged to comment at all stages of CWCS development, beginning with the draft

list of species covered by the CWCS to taxa-specific fact sheets and the Final Draft Strategy. The website was updated monthly, and whenever new announcements, workshops or public meetings, or products for review were available. Three types of contact information were provided so that people could share information by email, phone, or mail. Each interested person was added to a CWCS Contact List, which was used to keep people updated and engaged in the process. This list was initially developed through an e-mail and a brochure mailing to over 600 individuals, agencies, and organizations.

DLNR also issued press releases between the fall of 2004 and 2005 that resulted in media coverage by the two statewide papers, individual island papers, and local radio stations. Hawaii's CWCS gained national attention when the Associated Press picked up a local article that resulted in coverage in the Washington Post and other major newspapers. During the month of April 2005, several outreach initiatives involving Earth Day celebrations were conducted where the distribution of informational brochures, games, and items such as bookmarks helped to raise public interest and support for Hawaii's CWCS. During the months of June and July, 2005, public meetings were held on six islands to engage the public in developing a Final Draft of Hawaii's CWCS. Following the public meetings, another opportunity to comment on a revised final draft was provided on the website and people were contacted by email, phone, and mail.

Resource Manager and Technical Expert Participation

Conservation and management of natural resources in Hawai'i traditionally have involved strong collaborative efforts. Hawaii's CWCS benefited from this foundation of established partnerships and built upon existing species recovery plans, location-specific management plans, and other available related plans and documents.

The CWCS core team invited resource managers and technical experts to participate in the development of the CWCS through an initial outreach effort, sent both by mail and email, to a wide range of local, State, and Federal agencies, non-governmental organizations, researchers, and private landowners. The CWCS core team also identified existing partners and individually contacted them to introduce the strategy and invite their participation. Members of the CWCS core team attended several professional conferences where additional biologists and researchers were invited to participate in the development of the CWCS. Based on these outreach efforts, informal and formal advisory groups were developed on both a species and habitat level, providing information used to develop the Draft CWCS and reviewing of initial draft products. Technical workshops on four different islands were conducted once the Draft CWCS was complete, to provide a forum for managers and technical experts to review the CWCS, provide comments, and suggest additions for incorporation into the Final Draft of Hawaii's CWCS.

Current major collaborators include a wide range of agencies and organizations that have been integral in building support for the CWCS, sharing data and information, providing comments and recommendations, and assisting in the overall planning effort. Major contributors include the Hawai'i Gap Analysis Program (HI-GAP), Bishop Museum, Nature Conservancy of Hawai'i (TNC), the National Tropical Botanical Gardens (NTBG), Hawai'i Invasive Species Council (HISC), UH, U.S. Fish and Wildlife Service (USFWS), U.S. National Oceanic and Atmospheric Administration (NOAA), U.S. Geological Survey (USGS), U.S. National Park Service (NPS), U.S. Army, and U.S. Marine Corps.

STRATEGY DEVELOPMENT

From the methods described previously, individuals and organizations were identified with information or expertise on species groups or islands and organized into informal reviewer groups. These groups along with the website, technical workshops, and public meetings were used to develop the following components of Hawaii's CWCS.

Identifying Species of Greatest Conservation Need and their Habitats

The Hawaiian Islands are biologically diverse, with fauna characterized by high levels of endemism. In addition, many migratory species spend key parts of their life cycles (e.g., breeding or wintering) in Hawai'i. To recognize the global rarity of these species or the importance of Hawai'i to these species, Hawaii's preliminary list of Species of Greatest Conservation Need (SGCN) was selected using the following criteria: 1) all terrestrial indigenous animals as identified by the Hawai'i list of indigenous species (Hawai'i Administrative Rules Title 13 Chapter 124); 2) all aquatic endemic animals; 3) any animal taxa on the Federal threatened, endangered, candidate, or species of concern list; 4) any animal protected by the U.S. Marine Mammal Protection Act; 5) any native animal on the International Union for the Conservation of Nature and Natural Resources' (IUCN) Threatened Red List or the Convention on International Trade in Endangered Species (CITES) appendices; and 6) additional animals suggested by the Statewide Aquatic Wildlife Conservation Strategy Advisory Committee or by the informal advisory groups as deserving of attention for other reasons. Migratory species with irregular or insignificant presence in the State were not included on the list; neither were introduced species, which by their nature do not represent the natural biodiversity of Hawai'i.

Hawaii's preliminary SGCN list was reviewed by partners, posted on the website for public consideration and comment, and discussed at technical workshops and public meetings. Given the large number of species, for organizational and management purposes, species were grouped into the following categories: terrestrial mammal, birds (forest birds, raptors, waterbirds, seabirds, migratory shorebirds and waterfowl, and Northwestern Hawaiian Islands passerines), terrestrial invertebrates, freshwater fishes, freshwater invertebrates, anchialine pond fauna, marine mammals, marine reptiles, marine fishes, and marine invertebrates.

A consistent theme during public review was the recommendation to include native flora on the list of SGCN for the following reasons: 1) native flora have a high degree of endemism; 2) native flora are in dire need of conservation attention with over 250 species federally listed as threatened or endangered; 3) native flora are highly important to native wildlife, as many native birds and native invertebrates rely upon native plants for food or for habitat.

After review of public comment, the CWCS core team developed a list of Flora Species of Greatest Conservation Need for inclusion in the CWCS using the following criteria: 1) plant species federally listed as threatened, endangered, or as a candidate for listing; 2) plant species identified as Genetic Safety Net (GSN) plants (i.e., plants with less than 50 individuals extant); 3) plant species identified as important elements of native habitats; 4) endemic aquatic plants; and 5) endemic terrestrial and aquatic algae. A plant species was considered an important element of native habitat if it was a dominant or co-dominant member of an identified natural community according to the *Manual of the Flowering Plants of Hawai'i* or if there was evidence

that the plant was known to be a host for native wildlife, a food source for native wildlife, or habitat for native wildlife. The CWCS core team solicited the assistance of the Hawaiian botanical community to develop the list of Flora Species of Greatest Conservation Need, which was posted on the website for further public consideration and comment.

Together, the Fauna Species of Greatest Conservation Need and the Flora Species of Greatest Conservation Need compose Hawaii's SGCN. This broad approach of identifying Hawaii's SGCN recognizes the uniqueness and global rarity of Hawaii's natural environment. However, although this CWCS begins with SGCN, the CWCS focuses on habitats essential to these species, threats to these important habitats, and management strategies needed to preserve these habitats.

Identifying Threats, Conservation Objectives, Research Needs, Monitoring, and Priorities

Hawaii's CWCS core team identified the threats and needs of native wildlife and habitats by using multiple methods and at three levels. The first step was to review and analyze existing plans, policies, and scientific literature from local, State and Federal agencies, private landowners, non-governmental organizations, or academic researchers. The CWCS core team solicited additional information from resource managers and biologists through conversations, emails, and meetings. Based on this research and analysis, draft threats, conservation objectives, research needs, and monitoring issues for species and habitats were determined at a taxa-level, island-level, and statewide-level. At the statewide-level, major threats to and needs of Hawaii's SGCN and their important habitats were emphasized, and seven objectives were identified to address these threats. These seven objectives reflect the conservation priorities for the State without regard to the limitations of the State Wildlife Grants program, recognizing the need to comprehensively identify the State's conservation priorities to enhance the possibility of implementation. Under each objective, strategies of highest priority were labeled, but no further prioritization occurred as all strategies are important priorities and implementation of these strategies depends on several factors beyond relative ecological importance, such as funding, landowner interest, community support, or technological capacity. Because conservation needs in Hawai'i far exceed the resources available, implementation of any of the identified strategies will benefit native wildlife and habitats. Important threats and conservation strategies were highlighted for each island, for the Northwestern Hawaiian Islands, for the marine environment, and for specific taxa.

Maps/Geographic Information System information

The CWCS core team worked closely with HI-GAP to develop spatial information and incorporate Geographic Information System (GIS) analysis into the Strategy. These products were reviewed not only by the HI-GAP team (which consisted of representatives from the Hawai'i Biodiversity and Mapping Program (formerly the Hawai'i Natural Heritage Program), TNC, Bishop Museum, UH, USGS, DOFAW, NPS, and USFWS), but also during the island technical workshops with local specialists. This collaboration was essential to Hawaii's CWCS process of identifying species distributions, management needs, information gaps, and potential new areas for conservation enhancement. In addition to HI-GAP, valuable spatial information was provided by the State of Hawaii's Division of Business and Economic Development, USFWS, USGS, NPS, NOAA, Hawai'i Forest Bird Interagency Database Project, Hawai'i

Biodiversity and Mapping Program (rare species database), and Bishop Museum (Invertebrates database).

The maps in Chapter 7 were based on data from two sources: incidental records and standardized surveys. Incidental records note where a species was located or collected, and provide limited information regarding a species' actual distribution. When the date was available, information post-1900 was utilized due to data limitations pre-1900. Maps based on standardized surveys represent occurrence data at survey or count stations. Density figures are available in Scott et al. (1986), and these figures are currently being updated. Distributions based on these surveys only provide distributional information in the areas surveyed (see Scott et al. 1986 for details). Distributions for the waterbirds are based on weighted occurrences of non-standardized count data (2000-2005). The distribution map for the nēnē was based on information from the USFWS recovery plan for that species. Long-term waterbird trend analyses are in preparation. Maps for certain widespread species were not provided because of a lack of systematic surveys. Maps for seabirds and migratory birds are not provided because many of these species have very limited ranges in Hawai'i or because of a lack of systematic survey data.

Plan Review

Drafts of Hawaii's CWCS were shared through multiple venues including the website, technical workshops, public meetings, and the CWCS contact list. Availability of the Draft CWCS and the schedule of public meetings were publicized by email and direct mail to the CWCS contact list and additional parties, by press release, and on the website. Upon the conclusion of the technical workshops and public meetings, the comments were compiled, reviewed, evaluated, and incorporated as appropriate into the Revised Draft CWCS. In addition, new materials (e.g., fact sheets on terrestrial invertebrates) were made available for public review. This Revised Draft CWCS was posted on the website for review and both emailed and mailed to the CWCS Contact List, followed by another public comment period. Comments were again reviewed and incorporated as appropriate and Chapter 8 was substantially rewritten based on internal review and comment. The CWCS was then finalized and presented to the Board of Land and Natural Resources for approval.