

## ABSTRACT

The Kahuku Unit of the Hawai'i Volcanoes National Park (HAVO) was surveyed for native and non-native birds from January to September of 2005. Bird habitat comprised of forest, woodland, and grassland was divided into five separate regions, and these were surveyed with variable circular plot count methodology to generate estimates of abundance and occurrence. Sampling coverage was more intensive (i.e. several times more count transects and stations) than in past surveys, for more accurate estimates of range and population size. In addition to point counts, we recorded incidental observations to supplement the survey. Ten native and 14 non-native bird species were detected within the region. The most abundant and widespread native forest birds observed were the 'Ōma'ō (*Myadestes obscurus*), Hawai'i 'Amakihi (*Hemignathus virens virens*), 'Iiwi (*Vestiaria coccinea*), and 'Apapane (*Himatione sanguinea sanguinea*). The second largest populations of three endangered forest bird species in Hawai'i—'Akiapōlā'au (*Hemignathus munroi*), Hawai'i 'Ākepa (*Loxops coccineus*), and Hawai'i Creeper (*Oreomystis mana*)—were centered in the Ka'ū Forest Reserve and extended into the Kahuku Unit. The detections within the boundaries of the unit now add these endangered species to HAVO. The Hawai'i 'Elepaio (*Chasiempis sandwichensis*) shows evidence of a regional population decline. The two native species that use habitat other than forest—Hawaiian Hawk (*Buteo solitarius*) and Pacific Golden-Plover (*Pluvialis fulva*)—were rarely detected in the study areas. The Japanese White-eye (*Zosterops japonicus*) and Northern Cardinal (*Cardinalis cardinalis*) were the most abundant non-native species. The remaining non-native species were uncommon to rare and were restricted to either the dry leeward or wetter windward sides of the Kahuku Unit.

## INTRODUCTION

With the acquisition of the 47,350 ha Kahuku Unit in 2003, the Hawai'i Volcanoes National Park nearly doubled in size and took on the exceptional challenge of managing a large expanse of highly diverse native habitats. The unit extends from about 3,800 m elevation down the south flank of Mauna Loa to about 600 m and consists mostly of exposed lava terrain to about 2,200 m (Figure 1). However, the Kahuku Unit (hereafter Kahuku) also contains tracts of native forest and woodland, and perhaps most importantly, borders several areas managed for the conservation of biological resources: the Ka'ū and Kapāpala Forest Reserves and the Manukā and Kīpāhoehoe Natural Area Reserves administered by the State of Hawai'i Department of Land and Natural Resources, Division of Forestry and Wildlife, and the Kona Hema Preserve managed by The Nature Conservancy. Together, Kahuku and the adjoining areas harbor habitat critically important to native bird populations, and many of the island's other indigenous, endemic, and endangered flora and fauna.

Over the past century, native bird species in Hawai'i have suffered dramatic declines attributed to habitat destruction, introduced predators, and introduced diseases (Scott *et al.* 1986). However, much of the bird habitat in Kahuku is situated above elevations at which avian diseases impact native birds, and these habitats are important refugia. The

forested areas historically managed for cattle also have great potential for restoration and the reestablishment of native bird populations, and they currently supply `ōhi`a (*Metrosideros polymorpha*) nectar to several species of honeycreepers.

The Hawai`i Forest Bird Survey (HFBS) in 1976 (Ka`ū) and 1978 (Kona) covered portions of Kahuku, and the results from these surveys provided regional population estimates on Hawaiian forest bird species (Scott *et al.* 1986). At that time, portions of Kahuku were identified as harboring important populations of three endangered forest bird species: `Akiapōlā`au (*Hemignathus munroi*), Hawai`i `Ākepa (*Loxops coccineus*), and Hawai`i Creeper (*Oreomystis mana*). However, the population estimates and range maps are now out-dated as some of the surveyed area has undergone habitat change and bird populations show evidence of change in size and distribution.

In 1998, Congress approved the National Park Omnibus Management Act to support the development of natural resource management planning for National Parks. In response, the National Park Service created the Inventory and Monitoring Program (I&M) to acquire the data needed to support effective management and protection of the diversity and integrity of the native habitats located on park lands. Towards this end, biologists have carried out surveys of native and non-native bird species within and adjacent to the boundaries of Kahuku. The scope of the surveys was greatly increased over past forest bird surveys; approximately three times as many transects and stations were counted to give more accurate estimates of range and population size. This report is the result of a cooperative agreement between the Pacific Cooperative Studies Unit (University of Hawaii at Manoa and the National Park Service with the participation of the Hawai`i Forest Bird Interagency Database Project at the USGS Pacific Island Ecosystems Research Center (PIERC). The report presents an analysis of the occurrence and abundance of bird species in the park's new addition. A companion study of the distribution, population size and trends in the density of forest birds in the Ka`ū region is currently in preparation (Gorresen *et al.* In prep.).

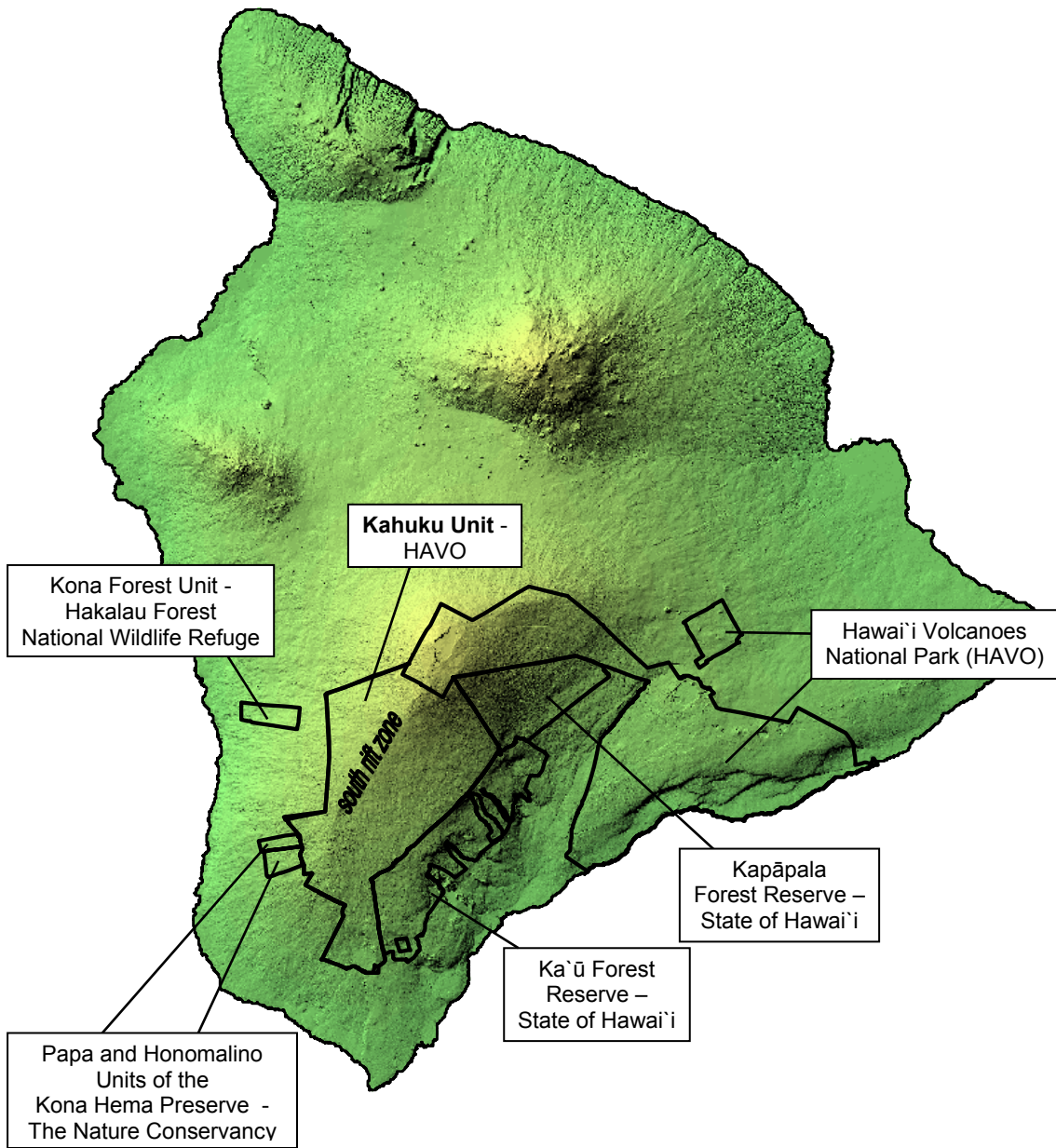


Figure 1. Hawai'i Island land ownership boundaries addressed in the 2005 Kahuku study area.