

FEATURE ARTICLES

**PREVALENCE OF POX-LIKE LESIONS AND MALARIA IN FOREST BIRD COMMUNITIES ON LEEWARD MAUNA LOA VOLCANO, HAWAII**

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*Abstract.* Introduced avian pox virus and malaria have had devastating impacts on native Hawaiian forest birds, yet little has been published about their prevalence and distribution in forest bird communities outside of windward Hawaii Island. We surveyed native and non-native forest birds for these two diseases at three different elevations on leeward Mauna Loa Volcano at the Kona Forest Unit of Hakalau Forest National Wildlife Refuge. Prevalence of malaria by both serology and microscopy varied by elevation and ranged from 28% at 710 m to 13% at 1830 m. Prevalence of pox-like lesions also varied by altitude, ranging in native species from 10% at 710 m to 2% at 1830 m. Native species at all elevations had the highest prevalence of malarial antibody and pox-like lesions. By contrast, pox-like lesions were not detected in individuals of four non-native species and only 5% of Japanese White Eye (*Zosterops japonicus*) was positive for malaria. A significantly high proportion of birds with pox-like lesions also had serological evidence of concurrent, chronic malarial infections, suggesting an interaction between these diseases, dual transmission of both diseases by the primary mosquito vector (*Culex quinquefasciatus*) or complete recovery of some pox-infected birds without loss of toes. Results from this study document high prevalence of malaria and pox at this refuge. Development of effective disease control strategies will be important for restoration of remnant populations of the endangered 'Akiapola'au (*Hemignathus munroi*), Hawaii Creeper (*Oreomystis mana*), and Hawaii 'Akepa (*Loxops coccineus coccineus*) that still occur on the refuge.

*Key words:* avian pox virus, Hawaii, honeycreeper, malaria, Plasmodium relictum, serology.