

## ABSTRACT

The Maui Parrotbill Working Group and Hawai‘i Forest Bird Recovery Team have identified key objectives toward recovery of the critically endangered Maui Parrotbill (*Pseudonestor xanthophrys*). Among these are the development of a captive propagation and release program and the identification of habitat requirements for parrotbill. The Manawainui rainforest of Haleakalā National Park was identified as one of three potential future release sites. Research was conducted on the habitat use of the Maui Parrotbill in Manawainui to determine if the existing habitat was suitable for release of captive-bred birds. The primary goal of this study was to provide a quantitative assessment of habitat that could guide future management decisions regarding potential reintroductions of this species. I studied habitat suitability for Maui Parrotbill at 21 10-hectare sites (10 used, 11 unused) in mixed ‘ōhi‘a-koa (*Metrosideros polymorpha-Acacia koa*) forest in Manawainui from February-August 2005 and January-August 2006. A combination of bird and vegetation surveys were utilized to compare vegetation parameters between used and unused areas at different spatial scales of macrohabitat (home range) and microhabitat (foraging site). I found that parrotbill occurred in 49% of the 210 hectares of habitat surveyed for birds and vegetation. Parrotbill exhibited non-random habitat use at multiple spatial scales. At the macrohabitat scale, vegetation structure and composition differed significantly between used and unused areas. Parrotbill were associated with areas typified by large diameter trees and higher densities of understory, subcanopy and canopy vegetation layers. Significant indicator species of parrotbill habitat use at the macrohabitat scale were ‘ōlapa (*Cheirodendron trigynum*), kawa‘u (*Ilex anomala*), and ‘alani (*Melicope* spp.). At the microhabitat scale, parrotbill selected foraging sites non-randomly and were most influenced by overall species composition. Birds selectively foraged on ‘ōlapa, ‘alani, koa, and ‘ākala (*Rubus hawaiiensis*) in disproportion to their availability. Overall vegetation structure did not differ significantly between used and unused foraging plots, however parrotbill did selectively forage on smaller diameter trees and used the subcanopy and canopy more than expected. These data highlight the importance of diverse, well developed forest for this species and have important management and conservation implications.