

FEATURE ARTICLES

TEMPORAL VARIATION IN BIRD COUNTS WITHIN A HAWAIIAN RAINFOREST
JOHN C. SIMON¹, THANE K. PRATT^{1,3}, KIM E. BERLIN⁴, JAMES R. KOWALSKY⁵,
STEVEN G. FANCY⁶ AND JEFF S. HATFIELD²

¹ USGS Pacific Island Ecosystems Research Center, P.O. Box 44, Hawai'i National Park, HI 96718-0044

² USGS Patuxent Wildlife Research Center, Laurel, MD 20708-4017

Manuscript received 2 July 2001; accepted 18 April 2002.

³ Corresponding author. Email: thane_pratt@usgs.gov

⁴ Present address: 75 Birch Hill Rd., Mt. Sinai, NY 11766.

⁵ Present address: P. O. Box 171, Winchester, NH 03470.

⁶ Present address: National Park Service, 1201 Oak Ridge Dr., Suite 200, Fort Collins, CO 80525-5589.

Abstract. We studied monthly and annual variation in density estimates of nine forest bird species along an elevational gradient in an east Maui rainforest. We conducted monthly variable circular-plot counts for 36 consecutive months along transects running downhill from timberline. Density estimates were compared by month, year, and station for all resident bird species with sizeable populations, including four native nectarivores, two native insectivores, a non-native insectivore, and two non-native generalists. We compared densities among three elevational strata and between breeding and nonbreeding seasons. All species showed significant differences in density estimates among months and years. Three native nectarivores had higher density estimates within their breeding season (December–May) and showed decreases during periods of low nectar production following the breeding season. All insectivore and generalist species except one had higher density estimates within their March–August breeding season. Density estimates also varied with elevation for all species, and for four species a seasonal shift in population was indicated. Our data show that the best time to conduct counts for native forest birds on Maui is January–February, when birds are breeding or preparing to breed, counts are typically high, variability in density estimates is low, and the likelihood for fair weather is best. Temporal variations in density estimates documented in our study site emphasize the need for consistent, well-researched survey regimens and for caution when drawing conclusions from, or basing management decisions on, survey data.

Key words: bird counts, density estimation, Hawaiian honeycreepers, phenology, rainforest, variable circular-plot.