577 Hotspot Distribution of Black Rats In a Montane Mesic Forest

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Background

Black rats were trapped in four sites within Hawaii Volcanoes National Park from 2015-2017. Plots were paired, with one pair at lower elevation and the other at higher elevation.Trapping sessions consisted of 4 consecutive days of trapping, and there 2 sessions during each fall and spring (8 sessions total). The Hagaruma basket traps were first pre-baited with shredded coconut for 2-3 days before being set and baited with coconut chunks.
We present the results of trapping illustrated by overall trap catches of unique rats. We also provide a summary of demographic parameters for the populations including adult body weight, longevity, and male to female ratio. We present these as spatial (elevation) and temporal (seasonal) trends.

Hotspots; Low Elevation

Kīpuka Puaulu (1220 M.A.S.L.) had 2 stations with zero captures, and 8 traps with 10 or more captures.
Kīpuka Kī (1340 M.A.S.L.) had 13 traps with zero captures, and no traps with 10 or more unique rats. It was also the site with the highest level of vegetation complexity.

Hotspots; High Elevation

Lower Keʻāmoku (1700 M.A.S.L.) had 2 traps with zero captures, and 1 trap with 10 or more unique rats.
Upper Keʻāmoku (1830 M.A.S.L.) had 1 trap with zero captures, and 10 traps with 10 or more unique rat captures. It was also the site with the lowest vegetative complexity.

Vegetation Class; LOW

% Traps in each available vegetation class.
% Rat captures on each class of vegetation. Results show a possible preference for Koa/Koali'awa - Mamaki Woodland, however they utilized all available habitat classes to some degree.
Vegetation class data from NPS.

Summary

• Rats were captured in all available vegetation classes.
• Broad vegetation classes do not explain the distribution of hotspots.
• A fine scale approach detailing vegetation at each trap location, as well as coarse woody debris and substrate type might help to better explain distribution of hot spots.
• If there are relationships that could be predictive of rat density, it would help managers prioritize areas for rat control, determine appropriate spacing between traps, and target high-density areas.

Vegetation Class; HIGH

% Traps in each available vegetation class.

% Captures in each vegetation class. High elevation plots had low diversity in vegetation class. Fine scale vegetation sampling might shed light into habitat preferences.