Preliminary Results: KESRP Auditory Surveys Wainiha Valley

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The following report is a preliminary effort to communicate aims, methods and key results from a recent survey effort to search for Newell's shearwater (*Puffinus newelli*) and Hawaiian petrel (*Pterodroma sandwichensis*) breeding activity in the Wainiha Valley. A more complete report is due following completion of 2008 fieldwork.

Newell's shearwater (NESH) and Hawaiian petrel (HAPE) are endemic to the main Hawaiian Islands and listed as threatened and endangered under the US FWS ESA, respectively. Both are forest nesting pelagic seabirds, returning to Hawaii between April and November to breed, and remaining at sea for the remainder of the year. Knowledge of their breeding distribution is patchy due to remote nesting areas and cryptic breeding behavior. Efforts are underway to locate breeding sites, with particular emphasis on those where practical conservation efforts can be undertaken.

Survey aims:

1. Identify the presence / absence of Newell's shearwater and Hawaiian petrels, including direct evidence of breeding (burrows, birds seen taking off, ground calling) and indirect evidence of likely breeding (calling & flight activity 'hotspots'). Describe breeding habitat where found.
2. Describe potential threats to these endangered burrowing seabirds, including predators (Barn owls, cats, pigs, rats) and other habitat modification, including goats and invasive vegetation species.

Survey Methods:

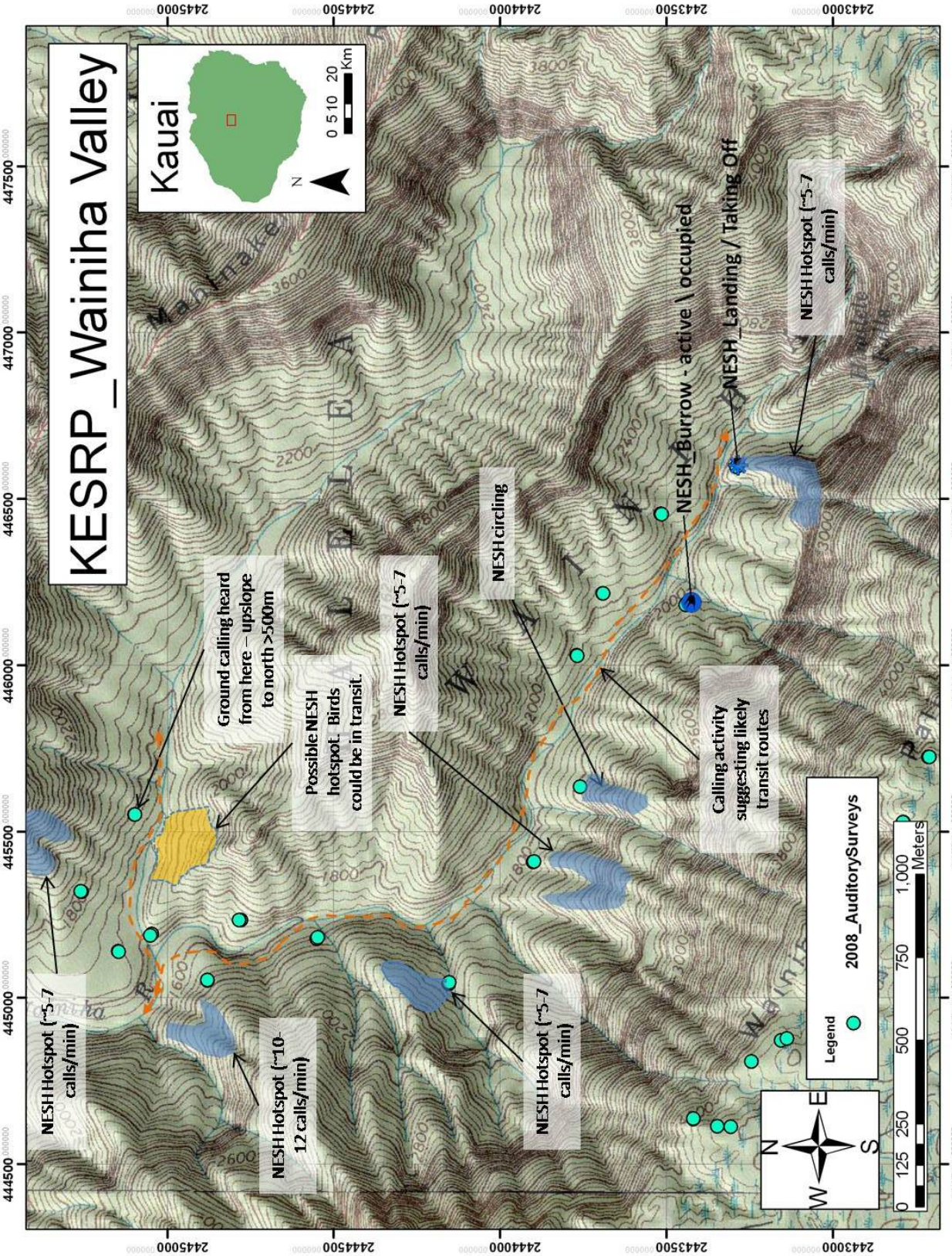
1. Auditory surveys were undertaken from 0 – 120 min after sunset and 120 – 30 min before sunrise, coinciding with arrival and departure times of NESH and HAPE to breeding sites, and when calling rates are highest. HAPE detections are typically only recorded during evening surveys. Calling activity is primarily undertaken by non-breeding birds (2-6 year olds learning to

breed) who visit the colony between July – September. Breeding birds tend to only call when both partners are present at the nest (one night every 7-10 days).

2. Under good conditions (little wind, no rain, no topographic barriers), NESH can be heard up to a kilometer away, HAPE less than 500 m. Vocalizations also appear to be influenced by available moonlight, with calling activity decreasing with increasing surface moon visibility. The Wainiha river was a major limitation to these survey efforts.
3. Habitat assessments and descriptions of threats are made opportunistically throughout the surveys, typically when in transit between survey sites.

Key results:

1. Over four days, a total of 15 auditory surveys were undertaken in the morning and 15 in the evening, with five staff. Fewer calls were recorded in the evening surveys, consistent with the reduction in non-breeding (calling) NESH expected at this time of year. No HAPE breeding areas were detected but note that breeding is suspected in this region at higher elevation (beyond auditory range of these surveys). Background noise from the river reduced likely hearing distance of all surveys.
2. During morning surveys, 6 calling and flight activity hotspots were recorded, and are likely indicators of breeding at these sites (see map). In addition, other evidence of breeding was recorded, including an active breeding burrow, multiple incidences of birds circling an area, and birds observed landing on the ground.
3. Birds were heard transiting in the southern drainage, with the highest numbers recorded at the confluence of the northern and southern drainages. Although only one survey was undertaken in the northern drainage, calling recorded birds are likely to be breeding there too.
4. Newell's shearwaters appear to be breeding in low densities along the north facing slopes of the southern drainage of the Wainiha Valley. Habitat in these regions appear to be relatively intact native forest, including vegetation structure typical of other known NESH breeding sites (15-25% tree canopy: *Metrosideros, Cheirodendron*; with a dominant shrub layer of *Dicranopteris*).
5. Threats to birds include a) pigs as potential habitat modifiers, b) barn owls, and c) invasive plants known to modify vegetation structure including *Psidium cattleianum*. Cats and rats were not detected but are likely to be present in this region. Large landslips were also dominant features on steep slopes in this region, and may also be a threat to breeding sites.


KESRP_Wainiha Valley
Kauai
0 5 10 20 Km
N
NESH Hotspot (~5-7 calls/min)
NESH Hotspot (~10-12 calls/min)
Ground calling heard from here – upslope to north >500m
Possible NESH hotspot. Birds could be in transit.
NESH Hotspot (~5-7 calls/min)
NESH circling
NESH Hotspot (~5-7 calls/min)
NESH_Burrow - active \ occupied
NESH_Landing / Taking Off
Calling activity suggesting likely transit routes
NESH Hotspot (~5-7 calls/min)
Legend
2008_AuditorySurveys
0 125 250 500 750 1,000 Meters
N
S
E
W