

KIUC Draft HCP Eric VanderWerf comments

ES-4.1. for the proportion of petrels on Kauai a better reference is needed than Raine pers. Comm. There are several relevant references that provide this number, a pers. Comm. Is not appropriate for this purpose.

Objective 1.3. Metrics 1-3. These do not make sense and are not consistent with each other. The goal of metric 1 is lower than the goals of metrics 2 and 3 and is thus does not add anything. To achieve that target values in metric 2 (2371 pairs in 25 years and 4313 pairs at the end of the permit term) would require a growth rate higher than the target listed in metric 3 (1.0% per year). For example, with a growth rate of 1% per year and a starting population size of 1264 breeding pairs, after 25 years there would be 1605 pairs, which would not meet the target in metric 2. These need to be reworked so they are consistent with each other.

Metric 4. An average reproductive success rate of 87.2% is unrealistically high and is unlikely to be achieved. Even in colonies of Procellariiform seabirds on remote predator-free islands the rate of reproductive success is rarely this high. I thought Raine et al. 2020 reported data on nest success of HAPE and NESH, but I could only find the percent increase following predator control. Those data must be available somewhere and should be used as a reference and a guide for what is achievable. For comparison, at Kaena Point Natural Area Reserve on Oahu, annual reproductive success of Wedge-tailed Shearwaters was higher after a predator exclusion fence was built (50%±8%) than during the 3 years before the fence was built (21±5%) (VanderWerf et al. 2014), but never approached the 87% listed as a goal here.

VanderWerf, E. A. L. C. Young, S. E. Crow, E. Opie, H. Yamazaki, C. J. Miller, D. G. Anderson, L. S. Brown, D. G. Smith, and J. Eijzenga. 2014. Increase in Wedge-tailed Shearwaters and changes in soil nutrients following removal of alien mammalian predators and nitrogen-fixing plants at Kaena Point, Hawaii. *Restoration Ecology* 22:676-684. DOI 10.1111/rec.12126.

Objective 2.3. Same comments as for Objective 1.3.

Objective 3.3. Control of invasive Barn Owls is important and should be added as an objective for Newell's Shearwater and Hawaiian Petrel.

ES 5.2.4. I think too much emphasis is being placed on social attraction; four sites is too many. Protection of existing colonies is likely to be more cost-effective and produce results sooner. Although the goal of having at least 1 breeding pair at each of the four social attraction sites in 10 years is low and may be achievable, having a single pair at each site is not that valuable in conservation terms. How much does that advance conservation of the species? There are a limited number of young, non-breeding individuals of each species, and the sites with social attraction will be competing with each other for those same individuals. The goal of expanding existing colonies through social attraction is mentioned, but the attracted birds must come from somewhere, so expansion of one colony occurs at the expense of another colony. This is only beneficial if the site to which they are attracted is better in some way than the source colony.

4.4.2.5. Predator removal. It states that feral cats and dogs will be removed and transferred to a suitable animal shelter or sanctuary. This wording I vague and should be clarified. Also there

must be a contingency specified in the event that no “suitable” shelter is available or is willing to accept the feral animals. If this happens, it must be made clear that the predator removal must still be implemented. This may mean that some animals will have to be euthanized.

p. 4-11. There must be greater justification for 2,500 breeding pairs and 10,000 individuals constituting a viable population. A pers. Comm. Is not sufficient for this. Even if there is no PVA available, there must be some explanation of how this was determined. It seems to be the basis for a large portion of the metrics.

p. 4-49. A few of the predator fence specifications can be modified:

- skirt- we have found that a 30-cm wide skirt is not sufficient in some circumstances for preventing animals from digging under a fence; a wider skirt may be needed in some circumstances. Also, burying to a depth of 4 inches also may not be adequate; the skirt must be secured to the substrate so that the edge of the skirt is not exposed.
- hood- the hood does not have to be V-shaped, it can be rounded, but must be sloped and must not allow predators to get traction and climb over.
- pedestrian gates- its says there will be a single gate, but also that there will be gates every 1640-3281 feet, these are contradictory. The number of pedestrian gates desired can vary with the terrain and access needs.

p. 4-52. Artificial nest boxes. A few aspects of the should be modified:

- If the box cannot be buried half way by digging, then it can be covered, but this is done with soil obtained at the site, not with sand, which would have to be brought in to montane areas.
- Similarly, to weight down the box lids, bags of soil from the site can be used, not sand. This reduces the cost and avoid the potential of bringing in non-native seeds, insects, and pathogens.
- Paint. It is most important to paint the lid to reduce the change of overheating, and this should be done with reflective roof paint. Painting the whole box can be useful to prevent wood rot and prolong the life of the box, but this does not require reflective paint. The inside of the box should not be painted to prevent ingestion of paint by the birds.

p. 5-52. Social attraction. This section is very short and could be expanded with the following information:

- there can be local call dialects and calls used for social attraction should be from Kauai.
- The system must be resistant to rain and insects and other pests to ensure prolonged operation.