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In Reply Refer To:

Memorandum

To: Regional Director

Sacramento, California

From: Regional Chief, National Wildlife Refuge System

Assistant Regional Director, Ecological Services

Sacramento, California

Subject: Discussion of Differences in Representation of Ashy Storm-Petrel Data Used in Two Recent Service Documents

This memo presents the shared position of the Service’s Ecological Services (ES) and National Wildlife Refuge System (NWRS) programs in Region 8, on topics related to ashy storm-petrel conservation status. Specifically, it documents potential language inconsistencies between two recent Service documents, and the outcome of recent discussions to identify more common language. The recent Service documents are:

* The ES program’s Species Report for the ashy storm-petrel, prepared in support of a forthcoming decision on whether to list the ashy storm-petrel under the federal Endangered Species Act (ESA).
* The NWRS program’s Draft Environmental Impact Statement (DEIS) prepared under NEPA for the proposed South Farallon Islands Invasive House Mouse Eradication Project, on the Farallon National Wildlife Refuge.

Central to potential language inconsistencies are representations of a recent report (Nur *et al*. 2013) that analyzed the impacts of burrowing owl predation on ashy storm-petrels at the South Farallon Islands. The report was prepared for our NWRS program by PRBO Conservation Science as a decision support tool for Farallon Refuge’s DEIS.

**Background**

Nur *et al*. (2013) provides quantitative estimates of the anticipated benefit to ashy storm-petrels on Southeast Farallon Island from proposed house mouse eradication, compared to no removal. Ashy storm-petrels are expected to benefit from house mouse removal because the invasive, non-native mice attract a population of fall migrant burrowing owls, which feed primarily on mice during the fall and early winter. After the mouse population crashes in winter, the owls switch to feeding primarily on storm-petrels. Nur *et al*. (2013) used models and recent data on burrowing owls, ashy storm-petrels, and burrowing owl predation on the storm-petrels in their evaluation. While analyzing ashy storm-petrel population trends was not the purpose of their evaluation, they used models to estimate recent ashy storm-petrel population trends on Southeast Farallon. Their ‘best fit’ model suggested a statistically significant change in trend between 2006 and 2007, from a significant population increase of about 22.1 percent per year from 2000 to 2006 to an estimated 7.19 percent annual decline from 2007 to 2012. However, this latter trend estimate was not statistically significant. Recognizing the uncertainty around this estimate, Nur *et al*. (2013) based modeling of future potential ashy storm-petrel population trends on three potential scenarios of recent, estimated short-term population trends: 1) a “steep decline” scenario of about 7.2 percent per year; 2) a “moderate decline” scenario of about 3.5 percent annual decline; and 3) a “near-stable” scenario of about 0.5 percent annual increase. Nur *et al*. (2013) then used these three scenarios to project potential outcomes of house mouse eradication if there were: 1) no reduction in burrowing owl numbers (i.e., no mouse eradication); 2) a 50% reduction in burrowing owl numbers; and 3) a 71.5% reduction in burrowing owl numbers on Southeast Farallon Island.

The two Service documents evaluate the results of Nur *et al*. (2013), but for different purposes. The DEIS evaluates the environmental effects of house mouse eradication from the South Farallon Islands, including effects on the ashy storm-petrel population on the islands. The Species Report evaluates the conservation status of the ashy storm-petrel species as a whole, to determine whether the species warrants listing under the ESA.

*Differences between documents*. Differing purposes, exacerbated by project timelines and late report revisions by Nur and coauthors, led to language differences between the two Service documents that could be construed as different interpretations of the results. Subsequent to the release of the DEIS, these inconsistencies came to light, leading to meetings between ES and NWRS programs to review their respective descriptions of Nur *et al*.’s (2013) report, and to reach agreement on appropriate representation of the report based on the available science. Specific interpretation issues were:

* While the Nur *et al*. (2013) report’s principal findings, including uncertainty in recent ashy storm-petrel trend estimates, are summarized in the DEIS, certain DEIS sections only referred to a worst case scenario of a recent 7.19 percent decline without recognizing the uncertainty in this trend estimate. *[VERSION 1 of next sentence]: “*Also, the DEIS stated that the No Action alternative (*i.e.,* no house mouse removal) would have significant, long-term negative impacts to the entire ashy storm-petrel population, while assessments of the action alternatives determined that eradication would benefit the Farallon population.” *[VERSION 2 of next sentence]*: “It concludes that house mouse removal would have significant, long-term positive benefits to the ASSP populations on the SFI (DEIS pages 167, 197).” The Species Report evaluated the trend estimates in Nur *et al*. (2013), and concluded that while the population is currently experiencing fluctuations due to various factors, including avian predation, there is no consistent **long-term** trend in the species’ population nesting on SFI.
* Because it is critical of some aspects of Nur *et al*. (2013), the Species Report could be interpreted as questioning the validity of their analyses, and of the likely benefits of house mouse removal.

After careful consideration of the Nur el al. (2013) report and extensive discussion between Ecological Services and Refuges staff, the Service has determined that the following conclusions can be drawn from the report.

*Ashy storm-petrel population trends*. As stated in the Nur *et al*. (2013) report, we find that the ashy storm-petrel population trend estimates in Nur *et al*. (2013), including the 7.19 percent value, should be interpreted cautiously. The study was not designed to examine population trends, but to examine the recent impacts of burrowing owl predation on ashy storm-petrels and project potential future population trajectories if the most recent conditions were to continue. In addition to being subject to model uncertainty and uncertainty about future conditions and trends, the trend estimates in Nur *et al*. (2013) are based on recent, relatively short-term (2007-2012) ashy storm-petrel population index numbers. Nur *et al*. (2013) recognized the uncertainties, and thus evaluated several scenarios of potential future ASSP population trends. While the shorter analytic time-frame is useful for comparing effects of near-future management alternatives for SFI, as was done in the DEIS, use of population data from a longer time period is more appropriate for evaluating the conservation status and risk of extinction for the species, as was done in the Species Report. In addition, Nur *et al*. (2013) estimated that the Farallon ashy storm-petrel population in 2010-2012 was more than double what was estimated in 1992.

*Benefits of house mouse removal*. We also find that the best available science, including the Nur *et al*. (2013) analyses, clearly indicate that regardless of future ASSP trend scenario used, burrowing owl predation is impacting the ASSP population on SFI, those impacts can be expected to continue, and reducing burrowing owl numbers should result in benefits to the ASSP population on SFI. However, the impacts of recent burrowing owl predation are limited to the Farallon colony.

*Actions to be taken.* Changes will be made to the DEIS, the Species Report, and the 12-month finding (if needed) to address inconsistencies and to reflect the common position described above, which is based on our interpretation of the best available scientific information.

**CITATION**

Nur, N., R. Bradley, L. Salas, and J. Jahncke. 2013. Modeling the impacts of house mouse eradication on Southeast Farallon Island. Unpublished report dated July 2013, to the US Fish and Wildlife Service. PRBO Conservation Science, Petaluma, California. PRBO Contribution Number 1880. 53 pages.

**APPROVALS:**

**Regional Chief, National Wildlife Refuge System, Region 8**

Approve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_

**Assistant Regional Director, Ecological Services, Region 8**

Approve \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_