**Ashy Storm-Petrel Species Report Notes for Discussion**

Page 3, paragraph 2:

Reads:

“Studies on SE Farallon Island showed a maximum longevity of 35 years for ashy storm-petrel (Bradley and Warzybok 2003, p. 122; Nur 2012, p. 16).”

Should read:

“Studies on SE Farallon Island showed a maximum observed longevity of 35 years for ashy storm-petrel (Bradley and Warzybok 2003, p. 122; Nur et al. 2013, p. 20).”

Nur et al. (2012) was earlier draft that was replaced by Nur et al. (2013). Nur et al. (2012) is not in lit cited.

Page 17, paragraph 3:

Reads:

“However, data collected at breeding colonies may not account for nonbreeding birds that do not visit the colony (Ainley 1995, p. 8), and estimates of total population size would need to account for those birds (Nur et al. 2102), as we have done above to estimate total population size.”

Should read?:

“However, data collected at breeding colonies may not account for nonbreeding birds that do not visit the colony (Ainley 1995, p. 8), and estimates of total population size would need to account for those birds (Nur et al. 2013?), as we have done above to estimate total population size.”

Page 20, paragraph 3:

**(C) SE Farallon Island; 2000-2012; Nur *et al.* 2013**

First sentence:

“The purpose of the Nur *et al*. study was to evaluate the management benefits of house mouse eradication from the SE Farallon Islands, not to determine future trends in ashy storm-petrel populations on the Island or estimate time to extinction. The study did, however, analyze recent trends in the ashy storm-petrel population index for the SE Farralon Islands, which is based on mist-netting, and used trend results from that analysis to model future storm-petrel population trends with and without house mouse eradication.”

The second sentence conflicts with first sentence regarding estimating, or “determining”, future trends. The report does model potential future trends under various scenarios.

Suggested revision:

“The purpose of the Nur *et al*. (2013) study was to evaluate the management benefits of house mouse eradication on the Sout Farallon Islands ashy storm-petrel colony by analyzing the impacts of burrowing owl predation (which is influenced by mouse presence) on the storm-petrels. In addition to analyzing impacts of owl predation on storm-petrel predation levels and adult survivorship, the study analyzed recent trends in the ashy storm-petrel population index for the South Farallon Islands, which is based on mist-netting, and used recent estimated trends to model potential future storm-petrel population trends with and without a reduction in the number of overwintering burrowing owls. Numbers of wintering burrowing owls are expected to be reduced with no mice on the islands.  ; the latter is recommended as the more reliable interpretation and use for PVA models (Akçakaya and Raphael 1998, p. 891; Beissinger *et al.*1998, p. 832). The efficacy of PVAs for predicting long-term population trends and probability of extinction is widely debated in the literature (Fieberg and Ellner 2000, p. 2046; Coulson *et al.* 2001, p. 221; but see Brook *et al.*2000, p. 836). PVAs are considered much more reliable for comparing the efficacy of management options, as relative results such as management choices are less sensitive to data gaps or assumptions inherent to any statistical model (Akçakaya and Raphael 1998, p. 891; Beissinger *et al.*1998, p. 833, Coulson *et al.*2001, p. 221).  We also note that this study was limited to the SE Farallon Island population, and not to the entire range of the species.

Nur *et al.* used model uses data from a small number of years to predict future population trends which limits its use in determining the current and future status of the species as a whole. Only the most recent 6 years of ashy storm-petrel population index data was incorporated into the model. Only the most recent 3 years of data were used to obtain an average burrowing owl population size, which the model then used to predict future population trends of ashy storm-petrels. This small subset of data used makes the model’s predictions very sensitive to any variations in burrowing owl numbers in the future. A 6 year timeframe is likely too short to produce a significant result with these methods (Nur *et al.* 2013, p. 25). Natural variations and fluctuations in environmental conditions or population parameters are not evaluated in determistic models of the type used in this study. These models indicate that reducing burrowing owls on SE Faralon Island will likely benefit the ashy storm-petrel population on the island. However, because there is no clear long term trend in ashy storm-petrel populations, it is unknown what future population trend trajectory will accurately reflect the effect that burrowing owls will have in the future.

Ashy Storm-Petrel population trends were examined for the period 2000-2012. Using the best fit model, a significant change in trend, from increasing to decreasing, occurred between 2006 and 2007. Thus, subsequent analyses of storm-petrel population trends were split into two different trend sets: one from 2000–2006 and one from 2007–2011. This report found a significant average increase in the ashy storm-petrel population index of 22.1 percent per year from 2000–2006, and a mean non-significant decrease in the ashy storm-petrel population index on SE Farallon Island of 7.19 percent per year from 2007 to 2012 (Nur et al. 2013, p. 25). Because of high interannual variability in the storm-petrel population index, the estimated decline of 7.19% resulted in high confidence intervals. Nur et al. (2013) also recognized that the six year time frame analyzed may have been too short to detect a significant trend.

To model potential future ashy storm-petrel population projections, the recent estimated “steep” declining trend of 7.19% was input into a model to determine what effect the reduction of 50 percent or 71.5 percent of the overwintering burrowing owl population on the islands (i.e., due to mouse eradication) would have. Because of uncertainty in this trend estimate, , this report also modeled two other population trend scenerios :one based on an estimated recent decline of 3.4%( or plus one standard erro of the mean; “moderate decline scenario”); and one based on an estimated recent increase of 0.63% (or plus two standard errors of the mean; “near stable scenario”). Each of these scenerios models future population trends with “no burrowing owl reduction, 50 percent reduction, and 71.5 percent reduction”. The results indicated that a reduction of burrowing owl abundance on SE Farallon Island will decrease instances of burrowing owl predation of ashy storm-petrels on the island with resulting benefits to the population .

Nur et al. 2013 (p. 26) used the last three years of ashy storm petrel capture data to estimate the current number of breeding birds on the island. They concluded with a 95 percent confidence interval that there are between 3790 and 8778 breeding birds on SE Farallon Island, with a mean of 5768 breeders. This mean value is 117% higher than the previous Sydeman et al. (1998) estimate in 1992. Thus, despite projections of a potential declines since 2007, numbers are substantially higher than in 1992.