Review of report entitled:

“Owl Diet on Southeast Farallon Island, California 1996-2004” (Mills, 2006)

By Sara Chandler

The stated goal of the Mills (2006) report is to “investigate the diet of migratory owls on Southeast Farallon Island, California, [...] and how their diet changes in response to time of year and prey availability.” While the author does present data on this subject and draw conclusions with respect to owl diet composition and foraging ecology, many of these conclusions are not adequately supported either due to unclear presentation of or lack of relevant data. The following review critiques the report’s methods, analyses, and conclusions with the aim of improving future studies and reports.

General Comments:

While there is excellent background information presented, there is however a lack of appropriate citation/support for statements of fact that the author makes throughout the document. For example, in the Introduction, Mills (2006) explains that many owls that migrate to Southeast Farallon Island (Island) “remain over the winter because of this [mice] abundant food supply” and that the mouse population decreases “in response to the onset of rains in the late winter that flood out burrows.” Mills further concludes that the wintering owls “appear to shift their diet from mice to other prey, including two seabird species.” Because the goal of the research presented in the report is to investigate this very matter, without the proper context/source citation it appears the author has already determined the answers to the query at hand.

Another example is the mention of “mouse-population suppression by rabbits resulting in fewer wintering owls before 1973;” while cited as a personal communication, no further explanation is offered. One is left to speculate on the connection between mice and rabbits there.

Methods:

The stated hypotheses of this study are: (1) “between November and March, owl diet consists almost entirely of mice,” and (2) “between April and October, when the mouse population is low, owls switch their diet from mainly mice to mainly birds.” The choice of specified months for these hypotheses is somewhat puzzling because in the paragraph prior October was purported to be the peak of the mouse population and when burrowing owls arrive. If the time periods are designated based on mouse population data, then there needs to be clear supporting source data. If specific time periods are based on seasonality of the owls or climate, then that also needs to be logical and clearly supported. Alternatively, perhaps a more general approach to time frame (fall/spring) is appropriate in this case.

On the other hand, the vagueness of “almost entirely” and “mainly mice to mainly birds” makes interpreting results qualitative and not very definitive. Is >50% an appropriate benchmark, or does >95% qualify as almost entirely? Perhaps using statistics to determine a significant difference between prey types would have been a more useful approach.

The explanation of how pellets were used needs to be more explicitly stated. In essence, only pellets from years 2000 through 2003 were analyzed for diet changes. What is the relationship between pellets and owl diet - does one pellet equal one meal? This may be important to define depending on how the data are presented. How the pellets were analyzed - dissection and counting of prey - needs to be explained as well.

Results:

The results section is unclear - the confusion lies primarily with how the data are presented. Within the text the author refers to *quantities* of prey, however none of the graphics appear to depict this data. Instead, the graphs seem to show *percent of pellets* that have the different prey types. The author refers to these figures when making statements about quantity (percent predation, percent composition of pellets); however, the amount of pellets containing mice does not necessarily translate to amount of mice eaten, especially when dealing with pellets from two morphologically very different owl species (burrowing versus barn owl). The barn owl pellet may contain up to seven mice, while a burrowing owl pellet likely will have two or three mice at most. The author could have more effectively presented results using the actual quantities of mice and birds counted. Figure 3 may actually show percent quantities, but the inclusion of insect percentages is confounding, since the methods state that insects were only documented by presence/absence.

Similarly, the presentation of mice trap data versus mice in pellets in Figure 5 is misleading. The “mice in traps” probably refers to percent trap success rather than actual number of mice trapped, and the percentage of pellets with mice does not necessarily relate to mouse population without normalizing by number of pellets and type of owl.

Discussion:

Some of the conclusions seem weak. The discussion about insects in the owl diet draws some tenuous conclusions about scarcity of prey and without proper background on typical owl diets (specialists vs. generalists); this portion of the discussion was not useful.

The author suggests that mice are “preferred prey” for owls because “when owls eat mice, they eat few birds” and vice versa. This argument based on that statement alone is speculative, since that behavior could also suggest a foraging strategy based on prey availability.

The discussion focuses on the burrowing owl, although the report indicates that both burrowing owls and barn owls are primarily the owls that shift in diet from mice to birds. The bias seems to be against the burrowing owl throughout the report, since little information is given for the barn owl and its effects on the seabird population as evidenced in the diet study.

The final conclusion (in the Recommendations section) is that the mice keep the migrating owls on the islands “longer than they would naturally stay if the mice were absent.” There is no supporting information on what the “natural” length of stay would be, so this conclusion appears to be conjecture. Therefore, the suggestion to remove mice from the Island to decrease predation on seabirds also guesses at the outcome for the seabirds and the owls in question. Owl foraging ecology and behavior is at the heart of this question, so more information about this topic needs to be presented before making such a conclusion/recommendation.

Despite the lengthy comments provided here, the study presented is a valuable look into the diet of owls on the Island. The data could have been presented more clearly, and that would have likely informed more appropriate conclusions. Future studies should be careful to use the data appropriately and with clear graphical representation, and be wary of drawing definitive conclusions without strong supporting documentation.