

June 30, 1997

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Subj: BURROWING OWL POPULATION AT MOFFETT FEDERAL AIRFIELD

Dear Mr. Chao,

I am responding to your letter of April 3, 1997 which requested my opinion on the health of the burrowing owl (*Speotyto cunicularia*) population at Moffett Federal Airfield. I have been studying the owls at Moffett since 1992 and am familiar with ecology of the owls there and the management of the Airfield.

Over the past six years, from 1992 to 1996, the adult population of burrowing owls at the Airfield has remained very stable (Fig. 1). At least two factors contribute this positive situation. First, the Navy and NASA personnel, as well as their contractors, are very sensitive to protecting the bird. They involve me in the planning of projects and are careful to avoid harm to the owls or their habitat. Second, the open lands at the Airfield are managed in a manner conducive to owl survival and reproduction. The very nature of an airfield provides large areas of open, short grassland, which is required by the owls. In addition, the Airfield managers have purposefully shifted from discing to mowing open lands, they tolerate ground squirrels where ever possible, and they have worked to eliminate red foxes. All these management practices benefit burrowing owls.

This said, I remain concerned about the fairly low reproductive rate of the owls at the Airfield. The average brood size over six years (1992-1996) is 2.7 chicks fledged ($N=74$, $sd=1.46$), much lower than reported in other studies in the western U.S. (see attached table). Over the last six years approximately 70% of pairs produced broods, which compares well to the other studies. It is not clear whether this brood size is typical of Moffett only or of the south San Francisco Bay, in general. I found a similar, low reproductive rate at Shoreline At Mountain View, adjacent to Moffett.

Some birds at Moffett do live in soils on remediation sites. The average brood size of pairs at one such site, the Fuel Farm, was 2.0 chicks fledged ($N=9$) between 1992 and 1995. A statistical comparison with Moffett, as a whole, is not possible. While the Fuel Farm average is smaller than the Moffett six-year average of 2.7 chicks fledged, in my opinion, this difference does not appear meaningful.

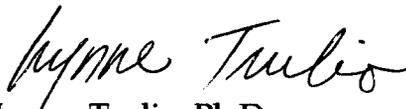
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However, given the small brood sizes at Moffett, in general, compared to other studies, I believe toxicological study of the birds is warranted. To be valid, the study would also need to test birds at a site which is not in need of remediation.

Despite the brood sizes, I have been very pleased with the stability of the owl population, the percent of birds producing young and the management of the Airfield. The Navy and NASA personnel are a joy to work with. Because of Moffett's unique history and current management, this site now protects the largest population of burrowing owls in the South Bay. Outside the Airfield, owls are threatened constantly by habitat loss to discing and development. But, at Moffett, the owls find a haven from these threats.

In my estimation, Moffett Airfield is the best habitat for burrowing owls in our region. I am always pleased to assist with protecting the Airfield and improving it for this species.

Sincerely,



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Figure 1. Number of Adults During the Breeding Season Each Year

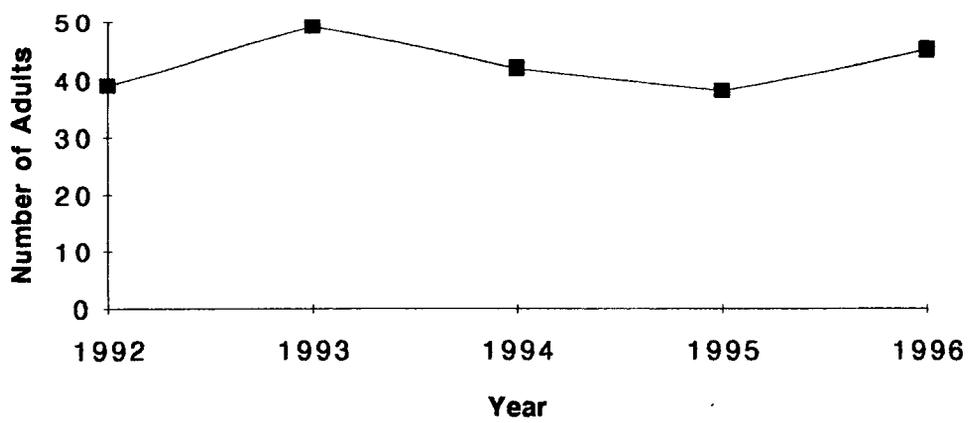


TABLE 1. Habitat and demographic parameters reported in western burrowing owl studies.

| STUDY | YEAR | HABITAT | ADULT DENSITY | AVERAGE BROOD ¹ | % OF PAIRS W/CHICKS |
|----------------------|------|---------------------------------|--|----------------------------|---------------------|
| Gleason & Johnson | 1985 | sage brush- Idaho | 0.00014/acre | 3.6 | |
| Green | 1983 | sage brush- Oregon | --- | --- | 57%, 50% |
| Haug & Oliphant | 1990 | prairie/ag- Saskatchewan | 0.1/acre, 0.07/acre | --- | --- |
| Butts | 1971 | prairie- Oklahoma | 0.15/acre (dog towns) 0.00017/acre outside dog towns | 4.7 | 79% |
| Wedgewood | 1976 | prairie- Saskatchewan | 0.00045 | 4.6 | 86% |
| Martin | 1973 | desert grassland- New Mexico | --- | 4.9 | --- |
| Coulombe | 1971 | open arid land-California | 0.03 | --- | --- |
| Thomsen ² | 1971 | urban grass land-California | 0.17/acre | 3.9 | 75% |

1 Average brood size at fledging; 2 Data for two years averaged.