browsing or grazing by alien mammals on certain proposed taxa have been observed, including *Castilleja mollis*, *Gilia tenuiflora* ssp. *hoffmannii*, *Arabis hoffmannii*, and *Thysanocarpus conchuliferus*. In 1993, perhaps as much as 20 percent of the Carrington Point populations of *Castilleja mollis* were consumed by deer. Individual plants were excavated, leaving depressions in the sandy soils where plants had been observed five months earlier (Sarah Chaney, CINP, pers. comm. 1993).

Grazing can completely eliminate plants and prevent the supplement of seed to the seed bank. Of the six collections of *Gilia* in the herbarium at the Santa Barbara Botanic Garden, only two collections made during April 1941 show no signs of browsing. The remaining four collections were made between the months of May and June between 1963 and 1978, and all show signs of having been browsed (Rutherford and Thomas, in litt. 1994). In 1993, Thomas visited the *Gilia* population twice; during the first visit in April, the *Gilia* had not been browsed, but by the second visit in May, the *Gilia* had been browsed (Thomas, in litt. 1993). In response to such browsing, the annual *Gilia* forms multiple side branches; an individual plant may produce a greater number of flowers, but this does not necessarily increase the fecundity of the plant (Painter and Belsky 1993). Flowers produced later in the season out of synchrony with pollinator activity lowers seed productivity.

The Nature Conservancy has been monitoring population sizes for *Arabis hoffmannii* on Santa Cruz Island since 1990. In 1993, only 19 individuals were observed in the Centinela population; this represented a net loss of 13 individuals from the previous year, with mortality of 9 of those plants ''directly attributed to pig rooting'' (Klinger 1994a). Pigs also ''rooted up entirely'' 6 out of 14 populations of *Thysanocarpus conchuliferus* that were monitored in 1993 (Klinger 1994b).

All of the taxa included in this proposal, with the exception of *Berberis pinnata* ssp. *insularis*, have populations that are subject to predation by one or more non-native mammals. Apparently, the roots of *Berberis* species are often toxic (Williams 1993), making consumption by feral pigs unlikely.

The response of plant communities to the removal of grazing depends in part on the degree of disturbance that has already been caused by grazing. Lightly grazed areas may return to pregrazing conditions more quickly. In areas that have been more heavily grazed, the loss of soils and their physical and biotic properties may favor the recovery of certain species over others once grazing has been eliminated. If ecosystem processes have been reduced or eliminated through heavy and/or long-term grazing, pre-grazing conditions may never be attained during the recovery process. The effects of the removal of grazing from the proposed taxa are unknown. While populations of other island taxa have increased once grazing pressure has been removed (Peart *et al.* 1994, Wehtje 1994), other taxa, such as the insular form of Torrey pine (Pinus torreyana), may decrease with a reduction in grazing pressure (Viers and Halvorson 1994). Junak observed that after sheep were removed in 1989, Helianthemum greenei populations increased in size for several years, most likely in response to the release of grazing pressure. However, with grazing pressure removed, other shrub taxa also increased in cover, leading to increased competition for resources, and a subsequent decline in *Helianthemum greenei* population sizes (S. Junak, pers. comm. 1994).

Diseases are not specifically known to threaten any of the taxa included in this proposal.

D. The Inadequacy of Existing Regulatory Mechanisms

Under the Native Plant Protection Act (sec. 1900 *et seq.* of the Fish and Game Code) and the California Endangered Species Act (sec. 2050 *et seq.*), the California Fish and Game Commission has listed *Dudleya nesiotica* and *Galium buxifolium* as rare and *Berberis pinnata* ssp. *insularis* and *Malacothamnus fasciculatus* ssp. *nesiotica* as endangered. The remaining taxa included in this listing proposal, excepting *Dudleya* sp. nov. ''East Point,'' are on List 1B of the California Native Plant Society's Inventory (Smith and Berg 1988), indicating that, in accordance with sec. 1901, chapter 10 of the California Department of Fish and Game Code, they are eligible for State listing. Though both the Native Plant Protection Act and the California Endangered Species Act prohibit the ''take'' of State-listed plants (sec. 1908 and sec. 2080 of the Fish and Game Code), State law appears to exempt the destruction of such plants via habitat modification or land use change by the landowner. After the California Department of Fish and Game notifies a landowner that a State-listed plant grows on his or her property, State law requires only that the landowner notify the agency ''at least 10 days in advance of changing the land use to allow salvage of such plant'' (sec. 1913). Privately owned lands that support populations of the taxa in this proposal include most of Santa Cruz Island, 90 percent of which is owned by TNC; the remaining 10 percent is owned jointly by NPS and a private landowner. On Santa Catalina Island, habitat for *Helianthemum greenei* occurs on land managed by the Catalina Conservancy, a private conservancy owned by the Catalina Island Company. In general, these State regulatory mechanisms would not likely be invoked, because major changes in land use, such as development projects, are not likely to be proposed on these properties. Furthermore, without such proposed changes in land use, the State is unlikely to take regulatory action over ongoing activities, such as cattle, sheep, goat, and bison grazing, and deer browsing.

The California Fish and Game Commission (Commission) also regulates hunting on private and public lands by issuing permits for the take of a specified number of animals and taking measures to manage herd sizes. The Commission issues permits for deer hunting on Santa Catalina Island. In 1993, the Commission issued 300 tags for deer hunting on the island; due to an increasing herd size, the Commission may grant a request from the Catalina Island Company to issue a larger number of tags in 1994 (Ken Mayer, California Department of Fish and Game (CDFG), pers. comm. 1994). Pigs are considered livestock if they are fenced or marked, but considered wild game if they are unfenced and unmarked. The Catalina Island Company has entered into a Memorandum of Understanding (MOU) with CDFG to allow eradication of feral pigs on Catalina Island (Mayer, pers. comm. 1994). A similar MOU between CDFG and TNC exists for the removal of pigs from Santa Cruz Island. Bison, which occur on Santa Catalina Island, are considered livestock and therefore not regulated by any agency. Apparently, the Commission has no regulatory authority over hunting or herd size of deer and elk on Santa Rosa Island, because these ungulates were originally transported there under a game breeder's permit in the early 1900's.

Several Federal laws, Department of the Interior policies, and National Park Service policies and guidelines apply to the management of NPS lands. These laws and guidelines include the National Environmental Policy Act (NEPA), the Endangered Species Act, NPS guidelines for natural resources management (NPS 1991), and the CINP Statement for Management (NPS 1985). The 1980 Congressional legislation enabling purchase of Santa Rosa Island