pers. comm. 1993, Krantz, in litt. 1993). For example, unpermitted grading destroyed a portion of the Castle Glen pebble plain in 1991 (Krantz, in litt. 1993). Ĝenerally, when such an event occurs, restoration is not undertaken since the persons responsible for the habitat destruction usually cannot be identified, and the Forest Service has insufficient staffing and funding to adequately restore all such disturbed areas. The cumulative effects of unauthorized off-road vehicle use resulted in the almost complete devegetation of a pebble plains site in the SBNF near Sugarloaf (Neel and Barrows 1990). Privately owned pebble plains habitat is unprotected at several locations, including the Big Bear Lake and Sawmill population complexes. In addition, unregulated off-road vehicle activity degraded part of the Horseshoe pebble plain (Sawmill complex) under both Forest Service and private ownership (Krantz, in lift. 1993). See Factor D for additional information.

Chaparral and forest habitats in the Garner Valley and Lake Hemet areas containing Arabis johnstonii continue to be destroyed or degraded by livestock trampling, and residential and recreational developments, including groundwater drawdown by numerous wells (Hamilton, pers. comm. 1993). These activities contributed to the decline of A. johnstonii in the region. The Garner and Wellman grazing allotments may affect several populations of A. johnstonii in Garner Valley. The clay substrate is especially vulnerable to trampling and disruption by cattle during the saturated period in winter and early spring. Berg and Krantz (1982) noted evidence of cattle-induced impacts to the substrate in the vicinity of Quinn Flat, located in central Garner Valley, which contains a dense population of A. johnstonii.

*The decline of Poa atropurpurea* and *Taraxacum californicum* can be attributed to a number of activities that destroyed and degraded their habitat, including urbanization, livestock, offroad vehicles, and hydrologic alteration. For example, the creation of Big Bear Lake inundated hundreds of acres of meadows that provided habitat for several sensitive taxa (Krantz 1981b). Subsequent urbanization and recreational developments at the lake eliminated or fragmented many populations of P. atropurpurea and T. californicum (Krantz 1980; California Natural Diversity Data Base 1992).

At least 70 percent of the remaining *Poa atropurpurea* habitat is unprotected. In several areas of the San Bernardino Mountains, *P. atropurpurea* is sympatric with two State and

federally listed endangered species, Sidalcea pedata (pedate checkermallow) and Thelypodium stenopetalum (slender-petaled mustard), and was similarly impacted by urbanization and development of meadow habitat. For example, development of the Big Bear airport facilities and the expansion of Bear Mountain Ski Area destroyed two populations of P. atropurpurea. A portion of another site was intentionally graded by the landowner in 1991, which also destroyed S. pedata habitat (CDFG 1991, Krantz, in litt. 1993). Since most of the remaining populations of *P*. atropurpurea are very small, their longterm survival is questionable (Krantz, in litt. 1993) (See Factor E). By 1979, half of the four known Poa atropurpurea populations in Laguna Meadow (San Diego County) were damaged by cattle trails, telephone line trenching, and soil removal for the construction of an earthen dam at Big Laguna Lake (Sproul 1979). The long-term alteration of surface and subsurface hydrology in Laguna Meadow through dam construction and livestock presence resulted in soil disturbance. In addition, several prolonged drought events in the early 1950's, middle 1970's, and late 1980's may have contributed to the decline of *P. atropurpurea* in this area (Curto 1992)

B. Overutilization for commercial, recreational, scientific, or educational purposes. Overutilization is not known to be a threat for any of the taxa under consideration in this proposed rule. All of the taxa proposed herein could potentially suffer vandalism either directly, or indirectly due to habitat destruction. An example of vandalism to pebble plains habitat is the incident at North Baldwin Lake (see Factor A), where a construction vehicle was driven over the plant site even though the site was completely fenced and posted as rare plant habitat. The plant habitat was extensively damaged (Tim Krantz, consultant, in litt. 1993).

C. Disease or predation. Disease is not known to be a factor affecting any of the taxa under consideration in this rule. However, consumption by livestock is a threat to Arenaria ursina, Castilleja cinerea, Eriogonum kennedyi var. austromontanum, Poa atropurpurea, and Taraxacum californicum (Krantz 1981a, Krantz, in litt. 1993). Krantz (1981b) noted that since animals grazed during the flowering period of P. atropurpurea, seed set and sexual reproduction are reduced. T. californicum is vulnerable to consumption as its flower heads and leaves are erect and readily removed by grazers (Krantz in litt. 1993). In the Big

Bear Basin, wild burros forage in and around pebble plain and wet meadow habitats. Feral burros have been observed at North Baldwin and on the pebble plains of Gold Mountain and Sawmill Complex. Though levels of use and degrees of impact from burro grazing and trampling have not been systematically recorded, browsed plants and hoof prints in wet clay soils were noted (Neel and Barrows 1990).

D. The inadequacy of existing regulatory mechanisms. Existing regulatory mechanisms that could provide some protection for these species include: (1) Listing under the California Endangered Species Act, (2) provisions under the California Native Plant Protection Act, (3) consideration under the California Environmental Quality Act (CEQA), (4) Forest Service management policies, (5) land acquisition and management by Federal, State, or local agencies, or by private groups and organizations, (6) State wilderness area management policies, (7) conservation provisions under the Federal Clean Water Act, and (8) local laws and regulations.

The Native Plant Protection Act (Chapter 10, Sec. 1908 et seq.) and the California Endangered Species Act (Chapter 1.5, Sec. 2080 et seq.) prohibit the "take" of State-listed plants. State law does not, however, protect the plants from taking via habitat modification or land use change by the landowner. After the CDFG 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" (Chapter 10, Sec. 1913).

Although State laws could provide a measure of protection to the species, these laws are not adequate to protect the species in all cases. Numerous activities do not fall under the purview of the laws, such as certain projects proposed by the Federal government and projects falling under State statutory exemptions. Where overriding social and economic considerations can be demonstrated, these laws allow project proposals to go forward, even in cases where the continued existence of the species may be jeopardized, or where adverse impacts are not mitigated to the point of insignificance.

The taxa in this rule are included in the California Native Plant Society inventory, but none have been listed by the State. Hence, the California Endangered Species Act currently provides no protection for these species. Since the Native Plant Protection Act only applies to plant species listed by