One or more populations of five of the proposed taxa, including Delissea subcordata, Eragrostis fosbergii, one of the largest populations of Lepidium arbuscula, the largest population of Melicope saint-johnii, and more than half of the individuals of Pritchardia kaalae, are currently threatened by direct damage from feral goats, such as trampling of plants and seedlings and erosion of substrate (Culliney 1988; HHP 1994m20, 1994n5, 1994n6, 1994q5, 1994q8, 1994q9, 1994q11, 1994t14, 1994aa2, 1994aa4, 1994ee; Scott et al. 1986; van Riper and van Riper 1982).

Habitat disturbance caused by human activities may pose a threat to rare plant populations that grow on lands on which military training exercises and ground maneuvers are occasionally conducted. However, as most of the proposed taxa grow on moderate to steep slopes, ridges, and gulches, habitat disturbance is probably restricted to foot and helicopter traffic. Trampling by ground troops associated with training activities, and construction, maintenance, and utilization of helicopter landing and drop-off sites could affect populations of 14 of the proposed taxa (Chamaesyce rockii, Cyanea acuminata, Cyanea koolauensis, Cyanea longiflora, Cyrtandra subumbellata, Cyrtandra viridiflora, Delissea subcordata, Gardenia mannii, Labordia cyrtandrae, Lepidium arbuscula, Myrsine juddii, Phyllostegia hirsuta, Pritchardia kaalae, and Viola oahuensis) that occur on land leased or owned by the U.S. Army (HHP 1994d2, 1994d4, 1994d5, 1994e2 to 1994e5, 1994e7, 1994g1 to 1994g3, 1994g22 1994h12 to 1994h14, 1994k6, 1994L4, 1994L6, 1994L7, 1994m7, 1994m9 to 1994m11, 1994o1, 1994o2, 1994o4, 1994013, 1994018, 1994037 to 1994040, 1994o43, 1994o44, 1994p2, 1994p14 to 1994p16, 1994q7 to 1994q9, 1994u1 to 1994u3, 1994v2, 1994v19, 1994v26, 1994v30, 1994v32, 1994v33, 1994aa2, 1994aa5, 1994dd5, 1994dd9, 1994dd10, 1994dd12, 1994dd15, 1994dd16; Wagner et al. 1985).

B. Overutilization for commercial, recreational, scientific, or educational purposes. Overutilization is not a known factor, but unrestricted collecting for scientific or horticultural purposes and excessive visits by individuals interested in seeing rare plants could seriously impact all of the proposed taxa, but especially *Cyanea koolauensis, C. st.-johnii, Eragrostis fosbergii,* and *Lobelia gaudichaudii* ssp. *koolauensis,* which have populations close to trails or roads and are thus easily accessible to collectors, and therefore possibly threatened by overcollection, trampling, and/or road maintenance (HHP 1994g22, 1994i9, 1994n3 to 1994n6; L. Mehrhoff, pers. comm. 1994).

C. Disease and predation. Disease is not known to be a significant threat to any of the proposed taxa. However, a tiny beetle, the black twig borer (Xylosandrus compactus), is known to infest a wide variety of common plant taxa, including *Melicope* in the Koolau Mountains (Davis 1970). The black twig borer burrows into branches, introduces a pathogenic fungus as food for its larvae, and lays its eggs. Twigs, branches, and even entire plants can be killed from an infestation. In the Hawaiian Islands, the black twig borer has many hosts, disperses easily, and is probably present at most elevations up to 670 m (2,500 ft) (Howarth 1985). In the Koolau Mountains, the black twig borer is known to threaten the Kapakahi Gulch population of Gardenia mannii. The black twig borer occurs throughout the Waianae Mountains and therefore may pose a threat to all Melicope saintjohnii plants that occur there (HHP 1994o41, 1994t1 to 1994t4, 1994t7, 1994t13, 1994t14; J. Lau, pers. comm. 1994).

Of the ungulates introduced to Oahu, pigs are currently the most significant modifiers of native forests (Cuddihy and Stone 1990, Stone 1985). Not only do they destroy native vegetation through their rooting activities and dispersal of alien plant seeds (see Factor A), but pigs also feed on plants, preferring the pithy interior of large tree ferns and fleshystemmed plants from the bellflower family (Stone 1985, Stone and Loope 1987). Although there is no conclusive evidence of predation on the eight members of the bellflower family included in this proposal, none of them are known to be unpalatable to pigs. Pigs have definitely eaten federally endangered Cyanea crispa plants immediately adjacent to Cyanea acuminata plants. Predation is therefore a probable threat to Cyanea acuminata, C. humboldtiana, C. koolauensis, C. longiflora, C. st.-johnii, Delissea subcordata, Lobelia gaudichaudii ssp. koolauensis, Lobelia monostachya, and Trematolobelia singularis in areas where pigs have been reported (J. Lau and J. Yoshioka, pers. comm. 1994).

Predation of Hawaii's native vegetation by goats and the extensive damage caused by them have been well documented (Tomich 1986, van Riper and van Riper 1982). Although there is no evidence of predation on *Delissea* subcordata, Eragrostis fosbergii, Lepidium arbuscula, Melicope saintjohnii, and Pritchardia kaalae, all of which occur in areas where goats have been reported, none of those plants are known to be unpalatable. Direct predation by goats is therefore a possible threat to those five taxa (HHP 1994m20, 1994n5, 1994n6, 1994q5, 1994q8, 1994q11, 1994t14, 1994aa2, 1994aa4, 1994ee).

Two rat species, the black rat (*Rattus* rattus) and the Polynesian rat (Rattus exulans), and to a lesser extent other introduced rodents, eat large, fleshy fruits and strip the bark of some native plants, particularly fruits of the native palms (Pritchardia) and plants in the bellflower and African violet families that have fleshy stems and fruits (Cuddihy and Stone 1990; Tomich 1986; Wagner et al. 1985; J. Lau, pers. comm. 1994). Rat predation on fruits threatens the largest population of Pritchardia kaalae, as indicated by the lack of reproduction and seedlings (HHP 1994aa2). Rat damage has also been observed in the only known population of Lobelia monostachya (HHP 1994ff). It is possible that rats eat the fruits of 11 other proposed taxa, all of which produce fleshy fruits and stems, and grow in areas where rats occur-Cyanea acuminata, C. humboldtiana, C. koolauensis, C. longiflora, C. st.-johnii, Cyrtandra dentata, C. subumbellata, C. viridiflora, Delissea subcordata, Lobelia gaudichaudii ssp. koolauensis, and Trematolobelia singularis (J. Lau and Joan Yoshioka, pers. comms. 1994).

D. The inadequacy of existing regulatory mechanisms. Of the 25 proposed taxa, 20 have populations located on private land, 22 on State land, 10 on City and County of Honolulu land, and 18 on land under Federal jurisdiction. Of those under Federal jurisdiction, 14 taxa have populations that occur on land owned by the Federal government and 15 have populations on land leased to the Federal government by State, City and County of Honolulu, and/or private parties. While 22 of the taxa occur in more than one of those 3 ownership categories, the other 3 taxa are restricted to a single category—Lobelia gaudichaudii ssp. koolauensis is found only on private land, Lobelia monostachya is found only on State land, and *Labordia cyrtandrae* is found only on Federal land.

There are no State laws or existing regulatory mechanisms at the present time to protect or prevent further decline of these plants on private land. However, Federal listing would automatically invoke listing under Hawaii State law. Hawaii's Endangered Species Act states, "Any species of aquatic life, wildlife, or land plant that has been determined to be an endangered species pursuant to the