1994d5, 1994g1, 1994g5, 1994h1, 1994h12 to 1994h14, 1994j6, 1994L4 to 1994L6, 1994m7, 1994n4, 1994o1, 1994o13, 1994o37, 1994o38, 1994o44, 1994o46, 1994p15, 1994p16, 1994q7, 1994q11, 1994u2, 1994u3, 1994v27, 1994v36, 1994w3, 1994dd9, 1994dd12; Smith 1985).

Christmas berry, introduced to Hawaii before 1911, is a fast-growing tree or shrub that invade mesic to wet lowland areas of the major Hawaiian Islands (Wagner et al. 1990). Christmas berry is distributed mainly by feral pigs and fruit-eating birds and forms dense thickets that shade out and displace other plants (Cuddihy and Stone 1990, Smith 1985, Stone 1985). It is a pervasive threat in the Koolau and Waianae Mountains and threatens one or more populations of Chamaesyce herbstii, Cyanea acuminata, Delissea subcordata, Eragrostis fosbergii, Labordia cyrtandrae, Lepidium arbuscula, Lobelia monostachya, Melicope saint-johnii, Phyllostegia hirsuta, Phyllostegia kaalaensis, Pritchardia kaalae, and Schiedea kealiae (HHP 1994c1, 1994c2, 1994c4, 1994e11, 1994m1, 1994m7, 1994n4, 1994p16, 1994q4, 1994q5, 1994q7, 1994q9 to 1994q11, 1994t3, 1994t4, 1994t13, 1994t14, 1994v19, 1994v31, 1994v34, 1994v35, 1994w3, 1994w4, 1994aa2, 1994bb4, 1994bb6, 1994ff).

Maui pamakani and Hamakua pamakani, both native to tropical America, have naturalized in dry areas to wet forest on Oahu and four other islands (Wagner et al. 1990). These two noxious weeds form dense mats with other alien plants and prevent regeneration of native plants (Anderson et al. 1992). Five of the proposed taxa in both Oahu mountain ranges are threatened by competition with Maui pamakani and/or Hamakua pamakani-Cyanea acuminata, Lepidium arbuscula, Lobelia monostachya, Melicope saintjohnii, and Pritchardia kaalae (HHP 1994e1, 1994q5, 1994q9 to 1994q11, 1994t14, 1994aa2, 1994ff).

Huehue haole, a vine native to tropical America, is found in dryland habitats and mesic forest on Oahu, Maui, and Hawaii, where it thrives in the subcanopy layers and smothers shrubs, small trees, and the ground layer (Escobar 1990, Smith 1985, Wester 1992). Huehue haole threatens one or more populations of four of the proposed taxa, all in the Waianae Mountains—Chamaesyce herbstii, Melicope saint-johnii, Phyllostegia hirsuta, and Phyllostegia kaalaensis (HHP 1994c1, 1994t3, 1994t4, 1994t13, 1994t14, 1994v31, 1994v34, 1994v35, 1994w3, 1994w4).

Prickly Florida blackberry was introduced to the Hawaiian Islands in the late 1800's from the continental U.S. (Haselwood and Motter 1983). The fruits are easily spread by birds to open areas such as disturbed mesic or wet forests, where the species forms dense, impenetrable thickets (Smith 1985). In the Waianae Mountains, populations of five of the proposed taxa are threatened by this noxious weed—Cyanea longiflora, Gardenia mannii, Labordia cyrtandrae, Phyllostegia hirsuta, and Pritchardia kaalae (HHP 1994h1, 1994o1, 1994p14, 1994p15, 1994v2, 1994v3, 1994aa5).

Lantana, native to the West Indies, is an aggressive, thicket-forming shrub that produces chemicals that inhibit the growth of other plant species. Lantana is now found on all of the main Hawaiian islands in mesic forests, dry shrublands, and other dry, disturbed habitats (Cuddihy and Stone 1990, Smith 1985, Wagner et al. 1990). In the Waianae Mountains, lantana negatively affects populations of four of the proposed taxa—Delissea subcordata, Lepidium arbuscula, Melicope saint-johnii, and Phyllostegia hirsuta (HHP 1994q5, 1994q10, 1994t13, 1994v19, 1994v31; Takeuchi and Shimabukuro (s.n.) 1987).

Silk oak, native to Queensland and New South Wales, Australia, was planted extensively in Hawaii for timber and is now naturalized on most of the main islands (Smith 1985, Wagner et al. 1990). Silk oak negatively affects populations of four of the proposed taxa that grow exclusively in the Waianae Mountains—Chamaesyce herbstii, Eragrostis fosbergii, Lepidium arbuscula, and Melicope saint-johnii (HHP 1994c1, 1994n4, 1994q10, 1994q11, 1994t14).

Kalanchoe pinnata (air plant) is an herb that occurs on all the main islands except Niihau and Kahoolawe, especially in dry to mesic areas (Wagner et al. 1990). Air plant poses a significant threat to the only population of Lobelia monostachya (HHP 1994ff).

Leucaena leucocephala (koa haole), a naturalized shrub which is sometimes the dominant species in low elevation, dry, disturbed areas on all of the main Hawaiian islands, is a major threat to Schiedea kealiae (Geesnick et al. 1990; HHP 1994bb1, 1994bb4, 1994bb6).

Melinis minutiflora (molasses grass), a perennial grass brought to Hawaii for cattle fodder, is now naturalized in dry to mesic, disturbed areas on most of the main Hawaiian Islands. The mats it forms smother other plants and fuel more intense fires than would normally affect an area (Cuddihy and Stone 1990, O'Connor 1990, Smith 1985). Molasses grass threatens Lepidium arbuscula and

the only known population of *Lobelia* monostachya (HHP 1994q4, 1994q5, 1994q11, 1994ff).

Myrica faya (firetree), native to the Azores, Madeira, and the Canary Islands, was introduced to Hawaii before 1900 for wine-making, firewood, or as an ornamental. Firetree was planted in forest reserves in the 1920's. By the mid-1980's, firetree had infested over 34,000 hectares (84,000 acres) throughout the State, with the largest infestations on the island of Hawaii. It is now considered a noxious weed (Cuddihy and Stone 1990, DOA 1981). Firetree can form a dense stand with no ground cover beneath the canopy. This lack of ground cover may be due to dense shading or to chemicals released by firetree that prevent other species from growing. Firetree also fixes nitrogen and increases nitrogen levels in Hawaii's typically nitrogen-poor volcanic soils. This may encourage the invasion of alien plants that would not otherwise be able to grow as well as native species in Hawaii's low-nitrogen soils (Cuddihy and Stone 1990). Firetree threatens Melicope saint-johnii and one of the largest populations of Lepidium arbuscula (HHP 1994q11, 1994t14).

The perennial grass *Paspalum* conjugatum (Hilo grass) has become naturalized in moist to wet, disturbed areas on most Hawaiian Islands. It produces a dense ground cover, even on poor soil (Cuddihy and Stone 1990). Sacciolepis indica (Glenwood grass) is an annual or perennial grass naturalized on five islands in Hawaii in open, wet areas (Wagner et al. 1990). Hilo grass and Glenwood grass threaten the largest population of *Viola oahuensis* (HHP 1994dd13).

Fire does not pose an immediate threat to the 25 proposed taxa, although species that grow in dry and mesic shrubland and forest may be susceptible to fire (see Table 1). Because Hawaii's native plants have evolved with only infrequent naturally occurring episodes of fire (lava flows, infrequent lightning strikes), most species are not adapted to fire and are unable to recover well after recurring fires. Alien plants are often more fire-adapted than native taxa and will quickly exploit suitable habitat after a fire (Cuddihy and Stone 1990). Unintentionally ignited fires have resulted from ordnance training practices in Makua Military Reservation and Schofield Barracks Military Reservation and from other military training practices in Kawailoa and Kahuku Training Areas and pose a possible threat to the five proposed species that occur on those military installations—Cyrtandra subumbellata, Delissea subcordata, Gardenia mannii,