World tropics, is naturalized on all of the main islands, except perhaps Niihau and Kahoolawe (Wagner et al. 1990). Common guava is a serious weed that invades disturbed sites, forming dense thickets in dry as well as mesic and wet forests (Smith 1985, Wagner et al. 1990). On Kauai, common guava poses a threat to a population of *Isodendrion* longifolium in Waioli Valley (Lorence and Flynn 1993). In the Waianae Mountains of Oahu, this alien plant threatens the largest populations of Schiedea hookeri and Schiedea nuttallii, while on the island of Hawaii, common guava threatens the only known population of Achyranthes mutica (HHP 1994m13, 1994n2; HPCC 1992a)

Ageratina adenophora (Maui pamakani) and Ageratina riparia (Hamakua pamakani), both native to tropical America, have naturalized in dry areas to wet forest on Oahu, Molokai, Lanai, Maui, and Hawaii (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). In the Waianae Mountains of Oahu, two populations of Schiedea hookeri are threatened by both Maui pamakani and Hamakua pamakani, and the largest population of Phyllostegia parviflora is threatened by Maui pamakani (HHP 1994m16, 1994m17, 1994y1). On Hawaii, the only known population of Achyranthes mutica is threatened by Hamakua pamakani (HPCC 1992a).

Rubus argutus (Prickly Florida blackberry) was introduced to the Hawaiian Islands in the late 1800s 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). The largest population of Cenchrus agrimonioides on Oahu is threatened by prickly Florida blackberry, as well as other alien plant taxa (HHP 1994d8). Leucaena leucocephala (koa haole) is a naturalized shrub which is sometimes the dominant species in low elevation, dry, disturbed areas on all of the main Hawaiian islands (Geesnick et al. 1990). On Kauai, the only known population of Panicum niihauense is threatened by several alien plants, including koa haole (HHP 1994j3, HPCC 1992b). Oahu's only known population of *Cyperus* trachysanthos is threatened by alien grasses and possibly by koa haole (HHP 1994f1; J. Lau, pers. comm. 1994). Prosopis pallida (kiawe) was introduced to Honolulu from a single seed grown on the Catholic Mission Grounds in 1828. In the early part of this century,

pods were collected and sold to ranchers for cattle ration. The seeds pass through the digestive system of cattle and spread rapidly throughout the drier habitats of the Hawaiian islands (Geesnick et al. 1990). The only known population of Panicum niihauense is threatened by kiawe (HHP 1994j3, HPCC 1992b). Recently introduced to Hawaii, Cyathea cooperi (Australian tree fern) is being promoted for commercial propagation in Hawaii to decrease exploitation of native tree ferns. Australian tree fern has recently become established on the island of Maui, and seriously threatens the largest known population of Cyanea grimesiana ssp. grimesiana (Cuddihy and Stone 1990; A. Medeiros, pers. comm. 1994).

Pennisetum clandestinum (Kikuyu grass), an aggressive, perennial grass introduced to Hawaii as a pasture grass, withstands trampling and grazing and is naturalized on four Hawaiian Islands in dry to mesic forest. It produces thick mats which choke out other plants and prevent their seedlings from establishing and has been declared a noxious weed by the U.S. Department of Agriculture (7 CFR 360) (O'Connor 1990, Smith 1985). Kikuyu grass is a threat to the only known population of Achyranthes mutica (HPCC 1992a). The introduced fern Blechnum occidentale was noted by Dr. Clifford Smith of the University of Hawaii as a potential pest in 1985 (Cuddihy and Stone 1990, Smith 1985). Found in mesic forests, Blechnum occidentale is a threat to one population of Schiedea kauaiensis (HHP 1994n18). Conyza bonariensis (hairy horseweed) is nearly cosmopolitan in distribution, although it is perhaps native to South America. It was naturalized in Hawaii prior to 1871 and is a common weed in various urban and non-urban areas throughout Hawaii, generally in dry habitats. It threatens the only known population of Achyranthes mutica (HPCC 1992a, Wagner et al. 1990). Opuntia ficus-indica (panini) was introduced to Hawaii prior to 1809 from Mexico and has become naturalized in dry, disturbed habitats on Kauai, Oahu, Maui, Kahoolawe, and Hawaii. Panini threatens the only known population of Achyranthes mutica (HPCC 1992a, Wagner et al. 1990). Axonopus *fissifolius* (narrow-leaved carpet grass) is native to subtropical North America and the New World tropics. Introduced to Hawaii in 1912, narrow-leaved carpet grass has become common in wet pastures, disturbed wet forest, and bogs on Kauai, Oahu, Lanai, Maui, and Hawaii. Narrow-leaved carpet grass is a threat to one population of Sanicula purpurea on Oahu (HHP 1994L1,

O'Connor 1990). *Kalanchoe pinnata* (air plant) is an herb which occurs on all the main islands except Niihau and Kahoolawe, especially in dry to mesic areas (Wagner *et al.* 1990). Air plant threatens one population of *Schiedea kauaiensis* (HPCC 1992c2).

Fire poses a potential threat to populations of six of the proposed taxa—Cenchrus agrimonioides, Cyanea grimesiana ssp. grimesiana, Euphorbia haeleeleana, İsodendrion longifolium, Schiedea hookeri, and Schiedea nuttallii (HHP 1994e1, 1994e34, 1994g5, 1994g6, 1994g10, 1994i2, 1994m8, 1994m12, 1994m15 to 1994m17). 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 fireadapted than native taxa and quickly exploit suitable habitat after a fire (Cuddihy and Stone 1990). On Oahu, unintentionally ignited fires have resulted from military training exercises in Makua Military Reservation and Schofield Barracks Military Reservation and pose a possible threat to populations of Cenchrus agrimonioides, Euphorbia haeleeleana, and Schiedea nuttallii that grow in dry and mesic forest on those installations (Environment Impact Study Corp. 1977; HHP 1994a, 1994b, 1994d11, 1994g5, 1994g6, 1994g10, 1994n14; Yoshioka et al. 1991). Accidentally or maliciously set fires in residential areas near the Lualualei Naval Magazine and the Makua Military Reservation could easily spread and pose a possible threat to one of the four populations of Cenchrus agrimonioides, most of the island's individuals of Euphorbia haeleeleana, one population of Isodendrion *longifolium*, several populations of Schiedea hookeri, and one population of Schiedea nuttallii (HHP 1994d11, 1994g5, 1994g6, 1994g10, 1994i2, 1994m8, 1994m15 to 1994m17, 1994n14

Erosion, landslides, and rockslides due to natural weathering result in the death of individual plants as well as habitat destruction. This especially affects the continued existence of taxa or populations found on cliffs and steep slopes that have limited numbers and/ or narrow ranges such as the Oahu populations of *Cyanea grimesiana* ssp. *grimesiana*, the Pahole-Makua Ridge population of *Schiedea nuttallii* on Oahu, and the Kalalau Valley population of *Schiedea kauaiensis* on Kauai (HHP 1994n2; HPCC 1992c2; L. Mehrhoff, pers. comm. 1995).