***Dodonaea viscosa* (L.) Jacq.** ‘a‘ali‘i
SAPINDACEAE

Synonymns: *Dodonaea angustifolia* L.
Dodonaea eriocarpa Sm.
Dodonaea sandwicensis Sherff
Dodonaea scottsbergii (Sherff) Degener & I. Degener
Dodonaea spathulata DC.

General Description.—‘A’ali’i is also known as a’ali’i-ku ma kua, a’a’li’i ku makani, lampuaye, hop bush, hopseed bush, togovao, and akeake. It is usually a many-branched shrub or small tree reaching a height of 4.5 to 9.0 m, and 7.5 cm in diameter (Little and Skolmen 1989). The bark is reddish brown to gray or blackish gray, finely furrowed, black heartwood. Leaves are simple, alternate, and membranous to chartaceous, 3 to 10 cm long and 1 to 3 cm wide and vary in shape from elliptic to spatulate, oblanceolate or lanceolate, entire margins, finely hairy when young, yellow green, sticky coating, slightly shiny above, and paler below. Petioles are 0.1 to 1.1 cm long and slightly winged (Wagner and others 1990, Little and Skolemen 1989, Lamb 1981).

Range.—‘A’ali’i has a pantropical distribution occuring in temperate regions of Australia, Africa, Mexico, New Zealand, India, Samoa, Guam, Northern Mariana Islands, Virgin Islands, Puerto Rico, Florida, Arizona, South America, Hawaii and elsewhere (West and Noble 1984). ‘A‘ali‘i occurs on all the main Hawaiian islands except Kaholawe.

Ecology.—‘A’ali’i grows on most types of soils and substrates in Hawaii, from old deeply leached soils, to fertile soils high in organic materials, to barren ‘a‘a and pahoehoe lava, and ash and cinder. A’ali’i seedlings are considered fairly shade intolerant and usually grow in open sites (Williams and Buxton 1989). The ‘a‘ali‘i has a broad ecological amplitude and can occur from near sea level up into the sub-alpine zone, and from wet forests to arid shrub and grasslands. It resists droughts well and is generally one of the heartiest plants in the arid shrublands of leeward Hawaii. In response to wildfire ‘a’ali’i resprout from both the root crowns and from seed. Following wildfire in diverse ‘a‘ali‘i-dominated montane shrublands, it doubled its preburn density within 1 year. Its density, however, declined over subsequent years but did regain preburn cover values 4 years following the burns (Sherry and others 1999). In Hawaii, a’ali’i can be affected by a yellowing disease distinguished by chlorotic witches’-brooms. Infected areas of the plants fail to produce flowers, while flowering is normal on the nonafflicted parts of the same plants. The terminal leaves of the portion of the afflicted branches become chlorotic, crinkled, and reduced in size. This disease can affect all stages of maturity, and plants will eventually die. A relatively small portion of these plants are infected in Hawaii, but this disease is spreading and can be found on all the major islands (Borth and others 1995).

Reproduction.—The flowers are unisexual, sometimes perfect, in paniculate inflorescences usually 1 to 5 cm long, clustered at the ends of the twigs (Wagner and others 1990). The flowers are sticky with fine hairs, three to five sepals, and without petals. Female flowers have four stigmas and male flowers have ten stamens (Little and Skolmen 1989). Male and female flowers are born on different trees. The fruit is a capsule straw-colored to dark reddish purple, exceedingly variable, turgid to inflated bladder or compressed. Seeds are compressed-ovoid, about 3 mm long. The two to four-winged, papery capsules are either dispersed by wind or adhere to plumage of birds (Burrows 1995). The seed coats of most of the ‘a’ali’i seeds are impermeable to water and there also appears to be a micropylar plug present. The hard seed coat and the micropylar plug may play a role in delayed germination. Some evidence suggests that higher

temperatures, which may enhance the breakdown of the plug, as well as scarification of the seed coat, may be necessary for germination (Burrows 1995). ‘A‘ali‘i is able to reproduce through sprouting following disturbance.

Growth and management.—‘A‘ali‘i is popular as an ornamental in xeriscape gardens. Seedlings should be planted from containers after last frost in any kind of soil. Water infrequently once established and prune if a more formal appearance is desired. Plant emits strong odor during pollen season. Plant is frost damaged at approximately –6.6° C (Anonymous 1999).

Benefits.—‘A‘ali‘i has enormous potential as a landscape species. ‘A’ali’i also possesses many medicinal properties and has been used by native peoples from all regions where it is found. Its leaves can be used to combat rheumatism, skin infections, fevers, swellings, aches, and “gastrointestinal disorders” including diarrhea, and can be used as a antispasmodic agent (Rojas and others 1996). The Australian aborigines used the leaves and roots as a painkiller to soothe toothaches and headaches (Crib and Crib 1981). The flowers (or hops) of ‘a’ali’i are used as a “home-brew” substitute to bestow a bitter flavor, and also used as a tonic. A red dye is extracted from the fruit, and the capsules are also commonly used in leis (Little and Skolmen 1989). In India the seeds are used as fish poison (Wagner and others 1987). The wood from ‘a’ali’i is extremely hard and has been used for tools, spears and weapons (Lamb 1981). In India ‘a’ali’i is an important source of fuelwood (Jain 1998).

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