16.3 Taxon Summary: *Alsinidendron obovatum*

Photographer: J. Obata

Scientific name: *Alsinidendron obovatum* Sherff
Hawaiian name: None known
Family: Caryophyllaceae (Pink family)
Federal status: Listed endangered

Description and biology: *Alsinidendron obovatum* is a shrub reaching up to 1 m (3.3 ft) tall. Its leaves are oppositely arranged, usually elliptic to broadly elliptic in shape, and measure 4-11 cm (1.6-4.3 in) long. The congested inflorescences arise in the leaf axils and bear 7-12 flowers. The flowers lack petals, but the calyx lobes are petal-like in appearance. These calyx lobes measure 7-8 mm (ca. 0.3 in) long, are initially green and white in color, and become purple and fleshy as the capsule matures. The capsules are egg-shaped or roundish, measure 9-12 mm (0.4-0.5 in) long, and contain numerous black seeds.

Alsinidendron obovatum flowers and fruits year round, but flowering is usually heaviest in the winter and spring. The species has perfect (possessing both male and female reproductive parts) flowers and is normally self-fertilizing (Weller pers. comm. 2000). Since it is a selfing taxon, it is likely that it has no regular pollinating agent. As the fruit matures, the calyx lobes stay alive and become purple and fleshy. This ‘false berry’ is very likely to attract fruit-eating birds that may disperse the species' seeds (Carlquist 1970). The longevity of individual plants is unknown, but since the plants are small shrubs, it is assumed they live less than 10 years. The plants are thus short-lived for the purposes of the Implementation Plan.

Known distribution: *Alsinidendron obovatum* has been recorded from two separate areas in the Waianae Mountains. The northern portion of its range includes the gulches of Pahole, Kahanahaiki, Keawapilau, and West Makaleha. The southern portion of its range extends from

Palehua to Kaaikukai Gulch. The species has been recorded at elevations of 560-760 m (1,850-2,500 ft).

Population trends: The number of known plants of *A. obovatum* in the north has decreased significantly in the last two decades. It is no longer found at some of its recorded locations, including all of its sites in Pahole Gulch. In 1977 and 1978, 59 plants were counted in the subgulch where the last known Pahole plants were growing (Nagata 1980). In 1999 the plants in the subgulch numbered 20 or less, and by 2001 all of them had disappeared.

The southern *A. obovatum* stock was last observed in the 1970's in the Palehua area. There is perhaps still some chance that plants remain in the Palehua area or elsewhere in the southern Waianae Mountains.

Current status: Fewer than 5 individuals of this species are known to remain. They are in the gulches of Pahole, Kahanahaiki, Keawapilau, and West Makaleha, all of which are within the Makua action area. The species' current population units are listed in Table 16.7 and their sites are plotted on Map 16.6. All of the current population units are proposed for management for stability. Their sites are characterized in Table 16.8 and threats to the species at these sites are identified in Table 16.9.

Habitat: *Alsinidendron obovatum* typically grows on slopes on or near the ridge crests. It is usually in the understory of mesic *koa/ohia* (*Acacia koa*/*Metrosideros polymorpha*) forests.

Taxonomic background: The endemic Hawaiian genera *Schiedea* and *Alsinidendron* constitute a complex of species descended from a single colonizing ancestor (Wagner *et al.* 1995). There are four species of *Alsinidendron*: two on Kauai and two on Oahu. The Oahu species are *A. obovatum* and the closely related *A. trinerve*.

Outplanting considerations: Since *A. obovatum* is a naturally selfing plant (Weller pers. comm. 2000), plants from different stocks should not be mixed together in outplantings.

Alsinidendron trinerve, like *A. obovatum*, is an endangered plant. The ranges of the two species do not overlap geographically. *Alsinidendron trinerve* is known only on the sides of Kaala and on the ridge between Kaala and Puu Kalena to the south. The two *Alsinidendron*s also occur in different habitats. *Alsinidendron trinerve* occurs in wetter forests and at higher elevations than *A. obovatum*. *Alsinidendron obovatum* should not be reintroduced within the range or habitat of *A. trinerve*.

In many cases *A. obovatum* is located in the same drainages as its relatives *Schiedea nuttallii, S. pubescens* var. *purpurascens*, and *S. kaalae*. Natural hybridization between species of *Schiedea* has been documented in the Waianae Mountains. Although hybrids between *Alsinidendron* and *Schiedea* have yet to be found in nature or created experimentally, the possibility of hybridization between the two exists, so *Alsinidendron* should not be outplanted near *Schiedea* species.

Due to the large gap between the northern plants and the possibly extirpated southern plants, it is presumed that the southern plants are, or were, genetically distinct. If rediscovered, the southern stock should be preserved separately from the northern stocks. Northern stock should not be planted in the southern Waianae Mountains as long as there remains some chance that southern plants still persist. Outplanting lines have been drawn limiting the outplanting of the northern and southern stocks to their respective ends of the mountain range.

Threats: Major threats to *A. obovatum* include feral pigs, which degrade the species' habitat, and harm the plants by feeding on them, trampling them, or uprooting them while rooting for food. Alien plants also threaten the species by altering its habitat and competing with it for sunlight, moisture, nutrients, and growing space.

Nowadays seedlings and immature plants of *A. obovatum* are uncommon. This may be the result of predation by introduced slugs and snails upon the seedlings (Weller pers. comm. 2000). Experiments have been conducted using barriers to prevent mollusks from gaining access to the areas around mature plants of *A. obovatum*. The installation of these barriers has resulted in the appearance of numerous seedlings within the barriers, whereas the areas under neighboring plants not so protected have shown no regeneration (Rohrer pers. comm. 2000).

The decline and possible extirpation of the southern stock of *A. obovatum* can at least partially be attributed to human actions. Most of the southern *A. obovatum* territory is now included in the residential portion of Palehua, where there are a number of scattered residences. Other portions of what used to be *A. obovatum*'s favored habitat in the Palehua area are now occupied by military installations. Most of the land at Palehua not being utilized for residences or military installations is forested with alien trees planted in reforestation efforts of the early 1900's. Although alien-dominated, these forests do contain some remnants of the original native vegetation, and could possibly harbor surviving plants of *A. obovatum*.

Table 16.7 Current Population Units of *Alsinidendron obovatum*. The numbers of individuals include mature and immature plants, and do not include seedlings. Population units proposed for management are shaded.

Island	Population Unit Name	Total Number of Individuals	No Management Proposed	Management Proposed
Oahu:	Kahanahaiki	0+	0	0+
	Keawapilau	0*	0	0*
	Pahole	0*	0	0*
	West Makaleha	3	0	3

+ The original naturally-occurring plant died in 2001. However, since viable seeds may still exist in a seed bank at the site and since the original plant's progeny were outplanted at the site prior to the plant's death, the population unit will continue to be treated as a managed for stability population unit.

* The plants have died. However, since viable seeds may still exist in a seed bank at the site, the population unit will continue to be treated as a managed for stability population unit.

116 **Table 16.8. Site Characteristics for Population Units of *Alsinidendron obovatum* Proposed for Management for Stability.**

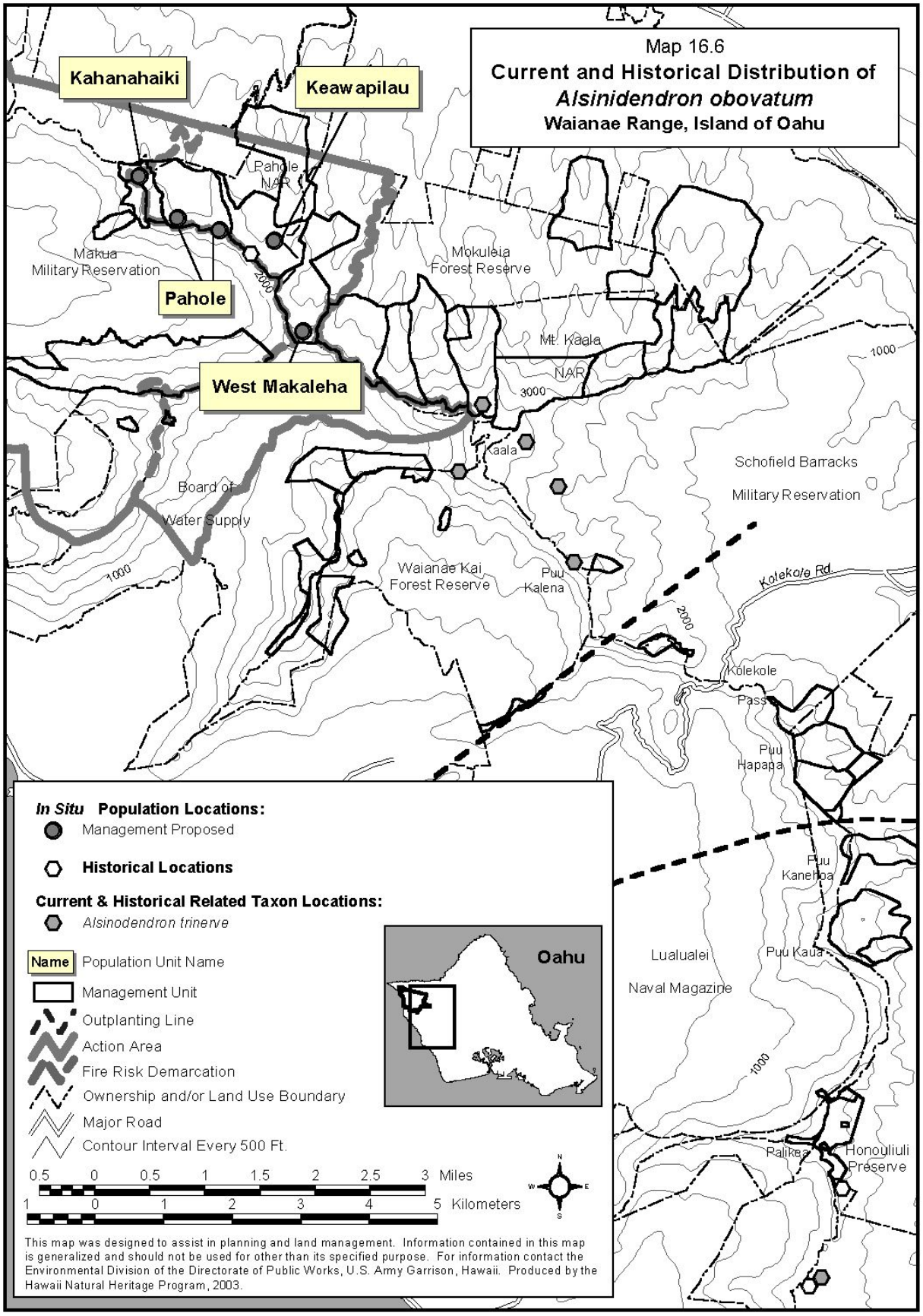
Population Unit:	Site Characteristics:			
	Habitat Quality	Terrain	Accessibility	Existing Fence
Kahanahaiki	High – Medium	Steep	High	Large
Keawapilau	High – Medium	Moderate	High	None
Pahole	Medium – Low	Moderate	High	Large
West Makaleha	Medium – Low	Steep	High	None

118

120 **Table 16.9 Threats to Population Units of *Alsinidendron obovatum* Proposed for Management for Stability.**

Population Unit:	Threats:										
	Pigs	Goats	Weeds	Rats	Black Twig Borer	Slugs and Snails	Other Arthro-pods	Fire Ignition	Fire Fuels	Erosion	Human Distur-bance
Kahanahaiki	Low	Low	Medium	N/A	Unknown A	Unknown A	Unknown A	Very high	Medium	Low	Medium
Keawapilau	High	Medium	Medium	N/A	Unknown A	Unknown A	Unknown A	Very high	Medium	Low	Medium
Pahole	Low	Low	Medium	N/A	Unknown A	Unknown A	Unknown A	Very high	Medium	High	Medium
West Makaleha	High	Medium	Medium	N/A	Unknown A	Unknown A	Unknown A	Very high	Medium	Low	Medium

122


Map 16.6
Current and Historical Distribution of
Alsinidendron obovatum
Waianae Range, Island of Oahu
Kahanahaiki
Keawapilau
Pahole
West Makaleha
Pahole NAR
Makua Military Reservation
Mokuleia Forest Reserve
Mt. Kaala NAR
Kaala
Board of Water Supply
Waianae Kai Forest Reserve
Puu Kalena
Schofield Barracks Military Reservation
Kolekole Pass
Kolekole Rd.
Puu Hapapa
Puu Kanehoa
Lualualei Naval Magazine
Puu Kaua
Palikea
Honouliuli Preserve
1000
2000
3000
In Situ Population Locations:
Management Proposed
Historical Locations
Current & Historical Related Taxon Locations:
Alsinodendron trinerve
Name Population Unit Name
Management Unit
Outplanting Line
Action Area
Fire Risk Demarcation
Ownership and/or Land Use Boundary
Major Road
Contour Interval Every 500 Ft.
Oahu
0.5 0 0.5 1 1.5 2 2.5 3 Miles
1 0 1 2 3 4 5 Kilometers
N
W
E
S
This map was designed to assist in planning and land management. Information contained in this map is generalized and should not be used for other than its specified purpose. For information contact the Environmental Division of the Directorate of Public Works, U.S. Army Garrison, Hawaii. Produced by the Hawaii Natural Heritage Program, 2003.