

TABLE 1.—SUMMARY OF ISLAND DISTRIBUTION OF 37 SPECIES FROM LANAI—Continued

Species	Island distribution						
	Kauai	Oahu	Molokai	Lanai	Maui	Hawaii	N.W. Isles, Kahoolawe, Niihau
<i>Neraudia sericea</i> (NCN)			C	H	C		Ka (H)
<i>Phyllostegia glabra</i> var. <i>lanaiensis</i> (NCN).				H			
<i>Portulaca sclerocarpa</i> (poe)				C		C	
<i>Sesbania tomentosa</i> (ohai)	C	C	C	H	C	C	Ni (H), Ka (C), NW Isles (C)
<i>Silene lanceolata</i> (NCN)	H	C	C	H		C	
<i>Solanum incompletum</i> (popolo ku mai).	H		H	H	H	C	
<i>Spermolepis hawaiiensis</i> (NCN) ...	C	C	C	C	C	C	
<i>Tetramolopium lepidotum</i> ssp. <i>lepidotum</i> (NCN).		C		H			
<i>Tetramolopium remyi</i> (NCN)				C	H		
<i>Vigna o-wahuensis</i> (NCN)		H	C	C	C	C	Ni (H), Ka (C)
<i>Viola lanaiensis</i> (NCN)				C			
<i>Zanthoxylum hawaiiense</i> (ae)	C		C	H	C	C	

Key

C (Current)—occurrence last observed within the past 30 years.

H (Historical)—occurrence not seen for more than 30 years.

R (Reported)—reported from undocumented observations.

* NCN—No Common Name.

The Island of Lanai

Lanai is a small island totaling about 360 square kilometers (sq km) (139 sq miles (mi)) in area. Hidden from the trade winds in the lee or rain shadow of the more massive West Maui Mountains, Lanai was formed from a single shield volcano built by eruptions at its summit and along three rift zones. The principal rift zone runs in a northwesterly direction and forms a broad ridge whose highest point, Lanaihale, has an elevation of 1,027 meters (m) (3,370 feet (ft)). The entire ridge is commonly called Lanaihale, after its highest point. Annual rainfall on the summit of Lanaihale is 760 to 1,015 millimeters (mm) (30 to 40 inches (in)), but is considerably less, 250 to 500 mm (10 to 20 in), over much of the rest of the island (Department of Geography 1998).

Geologically, Lanai is part of the four-island complex comprising Maui, Molokai, Lanai, and Kahoolawe, known collectively as Maui Nui (Greater Maui). During the last Ice Age about 12,000 years ago, when sea levels were about 160 m (525 ft) below their present level, these four islands were connected by a broad lowland plain. This land bridge allowed the movement and interaction of each island's flora and fauna and contributed to the present close relationships of their biota (Department of Geography 1998).

Changes in Lanai's ecosystem began with the arrival of the first Polynesians about 1,500 years ago. In the 1800s, goats (*Capra hircus*), pigs (*Sus scrofa*), and sheep (*Ovis aries*) were first

introduced to the island. Native vegetation was soon decimated by these nonnative ungulates, and erosion from wind and rain caused further damage to the native forests. Formal ranching was begun in 1902, and by 1910, the Territorial forester helped to revegetate the island. By 1911, a ranch manager from New Zealand, George Munro, instituted forest management practices to recover the native forests and bird species which included fencing and eradication of sheep and goats from the mountains. Mouflon sheep (*Ovis musimon*) and axis deer (*Axis axis*) were introduced to Lanai in 1954 and 1920 respectively, leading to renewed impacts on the native vegetation. By the 1920s, Castle and Cooke had acquired more than 98 percent of the island and established a 6,500 ha (16,000 ac) pineapple plantation surrounding its company town, Lanai City. In the early 1990s, the pineapple plantation closed, and two luxury hotels were developed by the private landowner, sustaining the island's economy today (Hobdy 1993).

There are no military installations on the island of Lanai.

Discussion of Plant Taxa**Species Endemic to Lanai*****Abutilon eremitopetalum* (NCN)**

Abutilon eremitopetalum is a long-lived shrub in the mallow family (Malvaceae) with grayish-green, densely hairy, and heart-shaped leaves. It is the only *Abutilon* species on Lanai whose flowers have green petals hidden within

the calyx (the outside leaf-like part of the flower) (Bates 1999).

Abutilon eremitopetalum is known to flower during February. Little else is known about the life history of this species. Its flowering cycles, pollination vectors, seed dispersal agents, longevity, specific environmental requirements, and limiting factors are unknown (Service 1995).

Historically, *Abutilon eremitopetalum* was found in small, widely scattered colonies in the ahupuaa (geographical areas) of Kalulu, Mahana, Maunalei, Mamaki, and Paawili on the northern, northeastern, and eastern parts of Lanai. Currently, about seven individuals are known from a single occurrence on privately owned land in Kahea Gulch on the northeastern part of the island (Caum 1933; Geographic Decision Systems International (GDSI) 2000; Hawaii Natural Heritage Program (HINHP) Database 2000; Service 1995).

Abutilon eremitopetalum is found in lowland dry forest at elevations between 108 and 660 m (354 and 2,165 ft), on a moderately steep north-facing slope on red sandy soil and rock, usually near gulch bottoms. *Erythrina sandwicensis* (wiliwili) and *Diospyros sandwicensis* (lama) are the dominant trees in open forest of the area. Other associated native species include *Dodonaea viscosa* (aalii), *Nesoluma polynesianum* (keahi), *Psydrax odorata* (alahee), *Rauvolfia sandwicensis* (hao), *Sida fallax* (ilima), or *Wikstroemia* sp. (akia) (HINHP Database 2000; Service 1995).

The threats to *Abutilon eremitopetalum* are habitat degradation