

Section 7 Wood Taxa Identification

7.1 Introduction

This project included extensive charcoal taxa analysis carried out by Gail Murakami of the International Archaeological Research Institute, Inc. Analysis to determine the taxa of the charcoal was conducted to aid in the selection of charcoal samples for radiocarbon dating and to identify plant species present to aid in the reconstruction of the environment and its potential change over time. This presentation briefly summarizes the rationale for the work, presents data from the few available prior studies in the immediate vicinity, and presents a summary of the results followed by detailed results organized by test excavation and specific provenience.

The particular import of this work for paleo-environmental reconstruction is addressed in a more detailed analysis in the paleo-environmental reconstruction section of this study where the results of charcoal taxa identification are taken into consideration along with the results of pollen analysis (see Volume I, Section 6.7.4).

7.1.1 Charcoal Taxa Identification as an Aid to Selection of Samples for Radiocarbon Dating

The validity of previously reported radiocarbon dates from Polynesian sites has been called into question by many authors with a call for greater “chronometric hygiene” (Spriggs and Anderson 1993). Subsequent re-dating of Polynesian sites has led to a consensus that the dates previously reported for many Polynesian sites from radiocarbon dating were erroneously early (Kirch and McCoy 2007:196).

There are many explanations for erroneously early dates including dating of “unacceptable materials”, marine reservoir carbon uptake, natural burning of ancient tree roots, and inadequate pre-treatment. In addition, one re-current explanation has been the “old wood problem”. The concern is that wood from comparatively long-lived species and from relatively durable timber types can yield dates that are anomalously early by several centuries (reflecting when the long-lived, durable species lived rather than when the wood was burned (Anderson 1991:780-781). The work of Tom Dye (1998, 2000), in particular, has emphasized this as a problem in Hawai'i.

Hence one purpose of the charcoal taxa analysis was to weed out “old wood” by facilitating the identification of charcoal from relatively short-lived Hawaiian species. Charcoal from long-lived Hawaiian species (such as *Acacia koa*) would not be dated. Charcoal from exotic wood such as conifers (pine, fir) and temperate hard woods would also not be dated on the basis that such wood would either have been the result of the post-Contact importation of lumber or the result of the burning of driftwood, which is regarded as having a higher probability of being “old wood.” By inference, wood charcoal samples found in the same provenience as exotic lumber were not dated as they also would more likely be post-Contact.

7.1.2 Charcoal Taxa Identification as an Aid to Environmental Reconstruction

Environmental reconstruction can be undertaken under the assumption that the species present in charcoal are an indicator of the immediate environment. The general premise is that typically people will not carry wood to burn as fuel very far. Hence the concept is that typically the species indicated in charcoal taxa analysis grew within a kilometer or so of where the wood was burned. This may not always be so due to a variety of factors, which are explored in the paleo-environmental reconstruction section of this study (see Volume I, Section 6.7.4).

7.2 Methods

The freshly fractured transverse and tangential facets of each charcoal piece in the selected HHCTCP City Center samples were viewed under magnification of a dissecting microscope. Taxa identifications were made by comparing the anatomical characteristics seen during examination against those of known woods in the Pacific Islands Wood Collection at the Department of Botany, University of Hawai'i at Mānoa, and published descriptions.

7.3 Prior Studies of Wood/Charcoal Identification Along the HHCTCP City Center Alignment

There have been relatively few prior studies of the botanical identification of wood samples from the immediate vicinity of the HHCTCP City Center study area. Two of the more substantive studies are discussed below.

7.3.1 Kekaulike Revitalization Project Data Recovery (Riley et al. 1995)

As part of the Kekaulike Revitalization Project data recovery work (Riley et al. 1995, Appendix F Botanical Identification of Wood Samples) identification of four samples of uncharred wood was undertaken by Gail Murakami of the International Archaeological Research Institute, Inc. Identifications are summarized as follows:

Table 262. Taxa Identification for the Kekaulike Revitalization Project Data Recovery Work

Context	Taxa	Comment
Block C Units J6/J5 Layer VII, Level 2 180 cmbd	<i>Syzygium</i> sp.	Analysis was not conclusive whether the Polynesian introduction <i>S. malaccense</i> ('ōhi'a 'ai) or the native <i>S. sandwicensis</i> was represented, appears to be 'ōhi'a 'ai
Block C Unit D4, Layer V, Level 1, 120 cmbd	<i>Rauvolfia sandwicensis</i> (hao)	An endemic tree or shrub, 3-10 m tall
Block B Makai, Unit B2 "Under P", 158-163 cmbd	<i>Pritchardia</i> sp. (loulou)	Endemic palm, various uses (thatching, esp. for ceremonial houses, basket weaving, seeds were eaten, wood for battle spears)
Block B Units A1 and A2, pond wall, Layer V, Level 3, 150 cmbd	<i>Cordia subcordia</i> (kou)	Polynesian introduction, a favorite shade tree (wood used for bowls, platters, and utensils)

An attempt was made to compare the reported radiocarbon date proveniences from the Riley et al. (1995) data recovery study with the reported proveniences for the wood identifications. However, there appear to be no one-to-one correspondences and no effort was expended to interpolate dates as they may relate to the wood samples analyzed for taxa identification. Thus the time-frame represented by these wood samples is not clear. If indeed the *Syzygium* sp. is 'ōhi 'a 'ai then that wood sample and the *kou* would need to post-date Polynesian arrival.

Athens and Ward (1994) carried out paleo-environmental investigations associated with the Riley et al. (1995) data recovery study that involved identification of one wood sample (*Diospyros* sp., probably *Diospyros sandwicensis* or *lama*). This sample was from a core and dated to 2330 +/- 60 (Athens and Ward 1994:14) or well before human settlement. Because of the context it seems probable this *lama* plant lived in the Kekaulike block area prior to Polynesian arrival.

7.3.2 Kekaulike Diamond Head Block Data Recovery (Goodwin and Allen 2005)

The Goodwin and Allen (2005:445) data recovery work reports the identification of 34 taxa from 45 charcoal samples from a Kekaulike Diamond Head block project (SIHP #50-80-14-4875) in downtown Honolulu. Most of the taxa identified also were identified in the present study. Taxa identified in the Goodwin and Allen (2005:453) data recovery work that were not reported in the present study include:

- *Ilex anomala* (*kāwa 'u*)
- *Calophyllum inophyllum* (*kamani*)
- *Antidesma pulvinatum* (*hame*)
- *Acacia koa* (*koa*)
- *Abutilon* sp. (*ma 'o*)
- *Nestegis sandwicensis*, (*olopua*)
- *Pandanus tectorius* (*hala*)
- *Canthium odoratum* (*alahe 'e*)
- a variety of post-Contact species

7.4 Results of Charcoal Taxa Analysis

A summary of charcoal taxa identified in the course of the HHCTCP City Center archaeological inventory survey is presented in Table 263. Subsequently, in Table 264, a detailed inventory of all taxa identified is presented by individual provenience in numeric order by test excavation number. The depths indicate the bulk sediment sample locations which may differ from the depth range for individual features or strata. The charcoal weights per submitted sample also may vary from the total weight of the charcoal submitted due to partial disintegration during transport or handling. A summary of taxa identified is then presented in order of botanical family (in standard botanical ordering) with a brief discussion of the taxa represented in each family along with the indicated preferred environment and traditional Hawaiian uses.

The results of charcoal taxa species identified are integrated with radiocarbon analysis results in the Volume I wood taxa analysis summary (see Volume I, Section 6.6.6), and integrated with the pollen analysis results within a review of the paleo-environmental reconstruction (see Volume I, Section 6.7.4).

Table 263. Charcoal Taxa Identified in HHTCP City Center Study

Taxon	Common/Hawaiian Name	Origin/ Habitat
<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree
Arecaceae	Palm	
<i>Artocarpus altilis</i>	'Ulu	Polynesian Introduction/Tree
<i>Bidens</i> sp.	<i>Ko'oko'olau</i>	Native+Historic Introductions/Shrub
<i>Bobea</i> sp.	'Ahakea	Native/Tree
<i>Chamaesyce</i> sp.	'Akoko	Native/Shrub
<i>Chenopodium oahuense</i>	'Āheahea, 'āweoweo	Native/Shrub
<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Polynesian Introduction/Tree
Conifer	Pine, fir	Historic Introduction/Tree
<i>Coprosma</i> sp.	<i>Pilo</i>	Native/Shrub-Tree
<i>Cordyline terminalis</i>	<i>Kī</i> (ti)	Polynesian Introduction/Shrub
<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree
<i>Dodonaea viscosa</i>	'A'ali'i	Native/Shrub
<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub-Tree
<i>Lagenaria siceraria</i>	<i>Ipu</i>	Polynesian Introduction/Vine
<i>Metrosideros polymorpha</i>	'Ōhi'a lehua	Native/Tree
<i>Myoporum sandwicensis</i>	<i>Naio</i>	Native/Tree
<i>Osteomeles anthyllidifolia</i>	'Ūlei	Native/Shrub
<i>Pandanus tectorus</i>	<i>Hala</i>	Native/Tree
<i>Pittosporum</i> sp.	<i>Hō'awa</i>	Native/Tree
Poaceae	Grass	
<i>Pritchardia</i> sp.	<i>Loulu</i>	Native/Tree

Taxon	Common/Hawaiian Name	Origin/ Habitat
<i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree
Pteridophyta	Fern	
<i>Rauvolfia sandwicensis</i>	<i>Hao</i>	Native/Shrub-Tree
<i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/Shrub-Tree
<i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub
<i>Styphelia tameiameaie</i>	<i>Pūkiawe</i>	Native/Shrub
<i>Syzygium</i> sp.	<i>'Ōhi'a 'ai</i> (mountain apple), roseapple, Java plum	Native + Historic Introductions/Tree
Temperate hardwood		
<i>Wikstroemia</i> sp.	<i>'Ākia</i>	Native/Shrub

Table 264. Charcoal Taxa Identified by Test Excavation Provenience

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-020: SIHP #-7425 Feature 1 (2.35–2.50 mbs)	1223-1	<i>Diospyros sandiwickensis</i>	<i>Lama</i>	Native/Tree	Wood	8	5.07
	1223-2	<i>Chamaesyce</i> sp.	<i>'Akoko</i>	Native/Shrub	Wood	2	1.23
	1223-3	cf. <i>Dodonaea viscosa</i>	<i>'A'ali'i</i>	Native/Shrub	Wood	6	4.60
	1223-4	cf. <i>Osteomeles anthyllidifolia</i>	<i>'Ūlei</i>	Native/Shrub	Wood	1	1.55
	1223-5	cf. <i>Pittosporum</i> sp.	<i>Hō'awa</i>	Native/Tree	Wood	4	3.22
T-020A: Stratum II, SIHP #-7425 (2.30–2.34 mbs)	1302-2	<i>Styphelia tameiameaie</i>	<i>Pūkiawe</i>	Native/Shrub	Wood	15	0.82
	1302-3	cf. <i>Dodonaea viscosa</i>	<i>'A'ali'i</i>	Native/Shrub	Wood	19	2.42
	1302-4	cf. <i>Osteomeles anthyllidifolia</i>	<i>'Ūlei</i>	Native/Shrub	Wood	7	0.06
T-028: Stratum II (0.40–0.48 mbs)	cf. Conifer (in this one case analysis stopped after the identification of non-Hawaiian wood, thus total of species, count, and weight not included)		Pine, fir	Historic Introduction/Tree	Wood	--	--
T-075: Stratum IIb, SIHP #-7426 (1.68–1.95 mbs)	1302-5	cf. <i>Myoporum sandwicensis</i>	<i>Naio</i>	Native/Tree	Wood	3	0.23
	1302-6	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	3	0.33
	1302-7	Not identified			cf. Pith	1	0.01
	1302-8	Conifer	Pine, fir, etc.	Historic Introduction/Tree	Wood	1	<0.01
T-078: Stratum IIb, SIHP #-7426 (1.80–1.90 mbs)	1302-9	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	3	0.11
	1302-10	cf. <i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Wood	2	0.02
T-078: Stratum IIb, SIHP #-7426 (1.80–1.90 mbs)	1302-9	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	3	0.11
	1302-10	cf. <i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Wood	2	0.02
	1302-11	Conifer	Pine, fir, etc.	Historic Introduction/Tree	Wood	1	<0.01

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-119A: SIHP #-7428 Feature 1a (0.80-0.93 mbs)	1302-12	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	2	0.03
	1302-13	<i>Chamaesyce</i> sp.	' <i>Akoko</i>	Native/Shrub	Wood	2	0.09
	1302-14	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	1	0.08
	1302-15	cf. <i>Metrosideros polymorpha</i>	' <i>Ōhi'a lehua</i>	Native/Tree	Wood	7	0.27
T-119A: SIHP #-7428 Feature 1a (1.25–1.50 mbs)	1302-16	Unknown 1			Wood	1	0.05
	1302-17	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	3	0.05
	1302-18	cf. <i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree	Wood	3	0.22
	1302-19	Unknown 2			Stem	1	0.05
	1302-20	cf. <i>Metrosideros polymorpha</i>	' <i>Ōhi'a lehua</i>	Native/Tree	Wood	1	0.04
	1302-21	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	1	0.03
	1302-22	cf. <i>Lagenaria siceraria</i>	<i>Ipu</i>	Polynesian Introduction/ Vine	Fruit rind	1	<0.01

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-119A: SIHP #-7428 Feature 1a (1.25–1.50 mbs) (cont.)	1302-23	<i>Chenopodium oahuense</i>	'Āheahea, 'āweoweo	Native/Shrub	Wood	1	<0.01
	1302-24	cf. <i>Syzygium</i> sp.	'Ōhi'a 'ai (mountain apple), roseapple, Java plum	Native + Historic Introductions/ Tree	Wood	1	0.02
T-120: SIHP #-7428 Feature 4 (1.12–1.26 mbs)	1228-1	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut- shell	11	0.32
	1228-2	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub- Tree	Wood	2	0.27
	1228-3	Monocot			Stem ?	9	0.48
	1228-4	cf. <i>Wikstroemia</i> sp.	'Ākia	Native/Shrub	Wood	3	0.12
	1228-5	Unidentified			Wood	13	0.39
	1228-6	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native + Historic Introductions/ Shrub-Tree	Wood	10	0.38
	1228-7	cf. <i>Syzygium</i> sp.	'Ōhi'a 'ai (mountain apple), roseapple, Java plum	Native + Historic Introductions/ Tree	Wood	2	0.06
	1228-8	<i>Sida fallax</i>	'Ilima	Native/Shrub	Wood	9	0.17
	1228-9	cf. <i>Osteomeles anthyllidifolia</i>	'Ūlei	Native/Shrub	Wood	1	0.09
	1228-10	cf. <i>Pritchardia</i> sp.	<i>Loulu</i>	Native/Tree	Wood	8	0.22

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-120: SIHP #-7428 Feature 4 (1.12–1.26 mbs) (cont.)	1228-11	<i>Chenopodium oahuense</i>	'Āheahea, 'aweoweo	Native/Shrub	Wood	6	0.12
	1228-12	<i>cf. Lagenaria siceraria</i>	<i>Ipu</i>	Polynesian Introduction/ Vine	Fruit rind	1	<0.01
	1228-13	<i>cf. Coprosma sp.</i>	<i>Pilo</i>	Native/Shrub- Tree	Wood	1	0.02
	1228-14	<i>Chamaesyce sp.</i>	'Akoko	Native/Shrub	Wood	2	0.02
	1228-15	<i>cf. Bobea sp.</i>	'Ahakea	Native/Tree	Wood	3	0.04
	1228-16	Unidentified			Wood	15	0.50
	1228-17	Unidentified			Wood	3	0.04
	1228-18	Unidentified			Wood	4	0.06
T-120: SIHP #-7428 Feature 5 (1.10–1.18 mbs)	1228-19	Monocot			Stem	70	35.94
	1228-20	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut- shell	20	2.28
	1228-21	unidentified			Wood	4	0.49
	1228-22	unidentified			Wood	3	3.21
	1228-23	unidentified			Bark	3	0.50
	1228-24	<i>Chamaesyce sp.</i>	'Akoko	Native/Shrub	Wood	3	0.49
	1228-25	<i>cf. Metrosideros polymorpha</i>	'Ōhi'a lehua	Native/Tree	Wood	3	0.75
	1228-26	unidentified			Wood	12	2.37
	1228-27	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub- Tree	Wood	3	0.05

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-120: SIHP #-7428 Feature 5 (1.10–1.18 mbs) (cont'd.)	1228-28	unidentified			Wood	4	0.64
	1228-29	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	5	0.21
	1228-30	cf. <i>Syzygium</i> sp.	<i>'Ōhi'a 'ai</i> (mountain apple), roseapple, Java plum	Native + Historic Introductions/ Tree	Wood	5	0.58
	1228-31	cf. <i>Coprosma</i> sp.	<i>Pilo</i>	Native/Shrub- Tree	Wood	1	0.06
T-120: SIHP #-7428 Feature 7 (1.04–1.07 mbs)	1228-101	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	4	0.44
	1228-102	cf. <i>Coprosma</i> sp.			Wood		
	1228-103	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut- shell	17	1.04
	1228-104	<i>Chenopodium oahuensis</i>	<i>'Āheahea,</i> <i>'āweoweo</i>	Native/Shrub	Wood	1	0.04
	1228-105	cf. <i>Dodonaea viscosa</i>	<i>'A'ali'i</i>	Native/Shrub	Wood	11	1.03
	1228-106	unidentified			Wood	4	0.37
	1228-107	cf. <i>Pteridophyta</i>	Fern		Stem	5	0.65
	1228-108	unidentified			Wood	1	0.04
	1228-109	unidentified			Wood	2	0.20
	1228-110	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introduction/ Shrub-Tree	Wood	2	0.34
	1228-111	unidentified			Wood	3	0.23
	1228-112	unidentified			Wood	2	0.04
	1228-113	cf. <i>Osteomeles anthyllidifolia</i>	<i>'Ūlei</i>	Native/Shrub	Wood	10	0.60

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-120A: Stratum II, SIHP #-7428 (1.10-1.18 mbs)	1302-25	cf. <i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree	Wood	10	0.83
	1302-26	cf. <i>Syzygium</i> sp.	'Ōhi'a 'ai (mountain apple), roseapple, Java plum	Native + Historic Introductions/ Tree	Wood	3	0.22
	1302-27	cf. <i>Osteomeles anthyllidifolia</i>	'Ūlei	Native/Shrub	Wood	5	0.53
	1302-28	cf. <i>Metrosideros polymorpha</i>	'Ōhi'a lehua	Native/Tree	Wood	7	0.63
	1302-29	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	6	0.36
	1302-30	cf. <i>Artocarpus altilis</i>	'Ulu	Polynesian Introduction/ Tree	Wood	3	0.11
	1302-31	cf. <i>Dodonaea viscosa</i>	'A'ali'i	Native/Shrub	Wood	4	0.12
	1302-32	cf. <i>Rauvolfia sandwicensis</i>	<i>Hao</i>	Native/Shrub-Tree	Wood	4	0.16
	1302-33	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	3	0.08
	1302-35	cf. <i>Coprosma</i> sp.	<i>Pilo</i>	Native/Shrub-Tree	Wood	1	0.02
	1302-36	<i>Chamaesyce</i> sp.	'Akoko	Native/Shrub	Wood	1	0.04
	1302-37	Unknown 3				1	0.02
	1302-38	<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree	Wood	1	0.03

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-120A: SIHP #-7428 Feature 9 (1.28–1.36 mbs)	1302-39	cf. <i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree	Wood	1	0.08
	1302-40	Not identified			Bark	2	0.18
	1302-41	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub-Tree	Wood	2	0.08
	1302-42	cf. <i>Coprosma</i> sp.	<i>Pilo</i>	Native/Shrub-Tree	Wood	1	0.04
T-120A: SIHP #-7428 Feature 10 (1.25–1.37 mbs)	1302-43	<i>Chenopodium oahuense</i>	<i>‘Āheahea, ‘āweoweo</i>	Native/Shrub	Wood	2	0.49
	1302-44	cf. <i>Syzygium</i> sp.	<i>‘Ōhi‘a ‘ai</i> (mountain apple), roseapple, Java plum	Native + Historic Introductions/Tree	Wood	4	0.78
	1302-45	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Nut-shell	2	0.35
	1302-46	<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree	Wood	1	0.05
	1302-47	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/Shrub-Tree			
	1302-48	cf. <i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree	Wood	1	0.15
	1302-49	cf. <i>Dodonaea viscosa</i>	<i>‘A‘ali‘i</i>	Native/Shrub	Wood	2	0.56

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-120A: SIHP #-7428 Feature 12 (1.28–1.32 mbs)	1302-50	<i>Chamaesyce</i> sp.	'Akoko	Native/Shrub	Wood	10	3.43
	1302-51	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	20	1.09
	1302-52	cf. <i>Dodonaea viscosa</i>	'A'ali'i	Native/Shrub	Wood	3	0.20
	1302-53	cf. <i>Metrosideros polymorpha</i>	'Ōhi'a lehua	Native/Tree	Wood	2	0.46
	1302-54	cf. <i>Artocarpus altilis</i>	'Ulu	Polynesian Introduction/ Tree	Wood	2	0.37
	1302-55	cf. <i>Arecaceae</i>	Palm		Peti-ole	5	0.26
	1302-56	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	6	0.40
	1302-57	cf. <i>Arecaceae</i>	Palm		Wood	1	0.08
	1302-58	Unknown 4			Wood	2	0.19
	1302-59	Not identified			cf. tuber	1	<0.01
	1302-60	<i>Poaceae</i>	Grass		Stolon	1	0.04
	1302-61	Unknown 3			Wood	10	0.39

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-124: SIHP #-2963 Feature 1 (1.16–1.36 mbs)	1228-32	unidentified		Native/Tree	Wood	1	0.06
	1228-33	cf. <i>Cordyline terminalis</i>	<i>Kī</i> (ti)	Polynesian Introduction/Tree	Stem	3	0.16
	1228-34	<i>Chenopodium oahuensis</i>	<i>‘Āheaha,</i> <i>‘āweoweo</i>	Native/Shrub	Wood	6	0.18
	1228-35	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introduction/Shrub-Tree	Wood	9	0.15
	1228-36	unidentified			Wood	3	0.07
	1228-37	cf. <i>Syzygium</i> sp.	<i>‘Ōhi‘a ‘ai</i> (mountain apple), roseapple, Java plum	Native + Historic Introductions, Tree	Wood	1	0.07
	1228-38	unidentified			Wood	1	0.01
	1228-39	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Polynesian Introduction/Tree	Nut-shell	1	0.04
	1228-40	Arecaceae	Palm		Stem	1	<0.01
	1228-41	<i>Chamaesyce</i> sp.	<i>‘Akoko</i>	Native/Shrub	Wood	1	<0.01

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-124: SIHP #-2963 Feature 2 (1.16–1.25 mbs)	1228-42	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native + Historic Introduction/ Shrub-Tree	Wood	8	0.29
	1228-43	Monocot			Wood	19	0.39
	1228-44	unidentified			Wood	1	0.05
	1228-45	unidentified			Wood	18	0.31
	1228-46	cf. <i>Syzygium</i> sp.	' <i>Ōhi'a 'ai</i> (mountain apple), roseapple, Java plum	Native + Historic Introductions, Tree	Wood	6	0.04
	1228-47	unidentified			Wood	12	0.23
	1228-48	unidentified			Bark	2	0.02
	1228-49	unidentified			Wood	1	0.07
	1228-50	unidentified			Wood	6	0.13
	1228-51	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub- Tree	Wood	2	0.02
	1228-52	unidentified			Cf. tuber	2	0.05
	1228-53	cf. <i>Chamaesyce</i> sp.	' <i>Akoko</i>	Native/Shrub	Wood	2	0.05
	1228-54	<i>Chenopodium oahuensis</i>	' <i>Āheahea</i> , ' <i>āweoweo</i>	Native/Shrub	Wood	1	0.02
	1228-55	cf. <i>Sida fallax</i>	' <i>Ilima</i>	Native/Shrub	Wood	3	0.05
1228-56	<i>Diospyros sandiwickensis</i>	<i>Lama</i>	Native/Tree	Wood			

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-124: SIHP #-2963 Feature 5 (1.40–1.63 mbs)	1223-9	<i>Diospyros sandiwickensis</i>	<i>Lama</i>	Native/Tree	Wood	3	1.64
	1223-10	cf. <i>Dodonaea viscosa</i>	'A'ali'i	Native/Shrub	Wood	3	0.28
	1223-11	<i>Chenopodium oahuensis</i>	'Āheahea, 'āweoweo	Native/Shrub	Wood	1	0.10
	1223-12	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	1	0.07
	1223-13	Unknown legume	-	-	Wood	1	0.02
T-124: SIHP #-2963 Feature 11 (1.23–1.32 mbs)	1223-6	<i>Diospyros sandiwickensis</i>	<i>Lama</i>	Native/Tree	Wood	1	0.12
	1223-7	cf. <i>Pittosporum sp.</i>	<i>Hō'awa</i>	Native/Tree	Wood	7	2.15
	1223-8	Not identified	-	-	Cf. corm ?	1	0.48
T-141: SIHP #-5820 Feature 4 (0.75–0.95 mbs)	1228-57	unidentified			Wood	4	0.20
	1228-58	Cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	10	0.12
	1228-59	Monocot			Stem	1	0.01

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-142: SIHP #-5820 Feature 8 (0.55–0.70 mbs)	1228-60	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Polynesian Introduction/ Tree	Nut-shell	3	0.07
	1228-61	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	1	0.05
	1228-62	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	4	0.04
	1228-62a	cf. <i>Psychotria</i> sp.	Kōpiko	Native /Tree	Wood	4	0.04
	1228-63	Monocot				3	0.01
T-145: SIHP #-5820 Feature 9 (0.81-0.92 mbs)	1228-64	Monocot				10	0.20
	1228-65	cf. <i>Metrosideros polymorpha</i>	'Ōhi'a lehua	Native/Tree	Wood	25	0.56
	1228-66	Monocot				5	0.09
	1228-67	cf. <i>Sida fallax</i>	'Ilima	Native/Shrub	Wood	5	0.08
	1228-68	<i>Diospyros sandiwickensis</i>	<i>Lama</i>	Native/Tree	Wood	3	0.03

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-145: SIHP #-5820 Feature 10 (0.95-1.10 mbs)	1228-69	unidentified			Wood	4	0.01
	1228-70	unidentified			Wood	2	<0.01
	1228-71	Monocot				1	<0.01
	1228-72	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	1	<0.01
	1228-73	cf. Conifir	Pine, fir	Historic Introduction/ Tree	Wood	1	<0.01
T-146A: SIHP #-5820 Feature 12 (0.75-0.90 mbs)	1302-62	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	2	0.33
	1302-63	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub- Tree	Wood	5	0.15
	1302-64	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Nut-shell	2	0.14
	1302-65, 67	cf. <i>Chamaesyce</i> sp.	<i>'Akoko</i>	Native/Shrub	Wood	2	0.02
	1302-66	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	3	0.03
	1302-68	Unknown 5			Wood	2	0.03
	1302-69	cf. <i>Dodonaea viscosa</i>	<i>'A'ali'i</i>	Native/Shrub	Wood	1	<0.01

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-146A: SIHP #-5820 Feature 13 (0.83–0.94 mbs)	1302-70	Unknown 6			Wood	2	0.17
	1302-71	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	3	0.22
	1302-72	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	2	0.08
	1302-73	cf. <i>Metrosideros polymorpha</i>	' <i>Ōhi'a lehua</i>	Native/Tree	Wood	2	0.04
	1302-74	Unknown 7			Wood	1	<0.01
	1302-75	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub-Tree	Wood	1	<0.01
T-146A: SIHP #-5820 Feature 14 (0.84–0.95 mbs)	1302-76	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Nut-shell	1	<0.01
	1302-77	cf. <i>Metrosideros polymorpha</i>	' <i>Ōhi'a lehua</i>	Native/Tree	Wood	1	<0.01
T-146A: SIHP #-5820 Feature 15 (0.84–0.92 mbs)	1302-78	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	2	0.19
	1302-79	Not identified			cf. Pith	1	0.04
	1302-80	Not identified			Bark	2	0.04
	1302-81	cf. <i>Coprosma</i> sp.	<i>Pilo</i>	Native/Shrub-Tree	Wood	1	<0.01
	1302-82	Unknown 7				3	0.18

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-150: SIHP #-5820 Feature 19 (0.70–0.95 mbs)	1228-74	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	56	1.99
	1228-75	unidentified			Wood	7	0.24
	1228-76, 78	cf. <i>Senna</i> sp.	<i>Kolomana</i>	Native+Historic Introduction/ Shrub-Tree	Wood	11	0.25
	1228-77	Not identified			cf. Bark	13	0.34
	1228-79	cf. <i>Metrosideros polymorpha</i>	<i>‘Ōhi‘a lehua</i>	Native/Tree		10	0.17
	1228-80	cf. <i>Sida fallax</i>	<i>‘Ilima</i>	Native/Shrub	Wood	1	0.05
	1228-81	Monocot				4	0.07
	1228-82	<i>Chenopodium oahuensis</i>	<i>Āheahea,</i> <i>‘āweoweo</i>	Native/Shrub	Wood	1	0.01
T-150: SIHP #-5820 Feature 20 (0.90–1.30 mbs)	1228-83	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	2	0.07
	1228-84	Monocot			Stem	2	0.04
	1228-85	unidentified			Wood	5	0.25

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-151: SIHP #-5820 Feature 25 (0.90–1.07 mbs)	1228-86	cf. <i>Bidens</i> sp.	<i>Ko'oko'o-lau</i>	Native + Historic Introductions/ Shrub	Wood	6	0.06
	1228-87	unidentified			Wood	5	0.05
	1228-88	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut- shell	2	<0.01
T-167: SIHP #-7429 Feature 3 (1.40–1.48 mbs)	1228-89	cf. Conifer	Pine, fir	Historic Introduction/ Tree	Wood	1	<0.01
	1228-90	unidentified				1	0.02
	1228-91	unidentified			Wood	4	0.03
	1228-92	unidentified			Wood	1	<0.01
	1228-93	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	1	<0.01
	1228-94	unidentified			Wood	1	<0.01
T-168B: SIHP #-7429 Feature 5 (1.60–1.65 mbs)	1228-95	cf. Conifer	Pine, fir	Historic Introduction/ Tree	Wood	6	0.16
	1228-96	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	1	0.27

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-189: Stratum IIb, SIHP #-6636 (1.55–1.65 mbs)	1302-83	Unknown 8			Wood	1	0.04
	1302-84	cf. <i>Rauvolfia sandwicensis</i>	<i>Hao</i>	Native/Shrub-Tree	Wood	1	0.03
	1302-85	Not identified			Bark	1	<0.01
	1302-86	cf. Temperate hardwood			Wood	2	0.01
	1302-87	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Wood	1	<0.01
	1302-88	cf. Arecaceae	<i>Palm</i>		Wood	2	<0.01
	1302-89	cf. <i>Dodonaea viscosa</i>	<i>'A'ali'i</i>	Native/Shrub	Wood	1	<0.01
T-226A: Stratum II, SIHP #-2918 (0.60–0.97 mbs)	1302-90	Conifer	Pine, fir, etc.	Historic Introduction/Tree	Wood	1	0.22
	1302-91	Not identified			Bark	2	0.48
	1302-92	<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree	Wood	1	0.08
	1302-93	cf. <i>Dodonaea viscosa</i>	<i>'A'ali'i</i>	Native/Shrub	Wood	15	0.67
	1302-94	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Nut-shell	14	1.19
	1302-95	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub-Tree	Wood	4	0.29
	1302-96	<i>Chamaesyce</i> sp.	<i>'Akoko</i>	Native/Shrub	Wood	3	0.17
	1302-97	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/Shrub-Tree	Wood	3	0.13
	1302-98	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	6	0.35

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-226A: Stratum II, SIHP #-2918 (0.60–0.97 mbs) (cont.)	1302-99	Unknown 8			Wood	2	0.15
	1302-100	cf. Temperate hardwood			Wood	3	0.10
	1302-101	cf. <i>Myoporum sandwicensis</i>	<i>Naio</i>	Native/Tree	Wood		0.12
	1302-102	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	6	0.33
	1302-103	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Polynesian Introduction/Tree	Nut-shell	1	0.15
	1302-104	cf. <i>Syzygium</i> sp.	<i>'Ōhi'a 'ai</i> (mountain apple), roseapple, Java plum	Native + Historic Introductions/Tree	Wood	1	0.06
T-226A: SIHP #-2918 Feature 1 (0.92–1.04 mbs)	1302-114	Cf. Temperate hardwood			Wood	5	0.24
	1302-115	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/Shrub-Tree	Wood	2	0.05
	1302-116	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	24	0.68
	1302-117	cf. <i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree	Wood	3	0.15
	1302-118	Unknown 9			Wood	2	0.05
	1302-119	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	6	0.14
	1302-120	cf. <i>Lagenaria siceraria</i>	<i>Ipu</i>	Polynesian Introduction/Vine	Fruit rind	1	0.04
	1302-121	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub-Tree	Wood	1	0.02

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-226A: SIHP #-2918 Feature 1 (0.92–1.04 mbs) (cont.)	1302-122	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	6	0.28
	1302-123	Unknown 8			Wood	2	0.02
	1302-124	<i>Chenopodium oahuense</i>	'Āheahea, 'āweoweo	Native/Shrub	Wood	1	<0.01
	1302-125	<i>Pandanus tectorus</i>	<i>Hala</i>	Native/Tree	Fruit key	1	0.02
	1302-126	<i>Chamaesyce</i> sp.	'Akoko	Native/Shrub	Wood	6	0.11
T-226A: SIHP #-2918 Feature 2 (0.82–0.92 mbs)	1302-105	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	14	0.43
	1302-106	<i>Cocos nucifera</i>	<i>Niu</i> , coconut	Polynesian Introduction/ Tree	Nut-shell	4	0.12
	1302-107	Not identified			Bark	4	0.06
	1302-108	cf. <i>Metrosideros polymorpha</i>	'Ōhi'a lehua	Native/Tree	Wood	6	0.10
	1302-109	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub- Tree	Wood	3	0.04
	1302-110	cf. <i>Artocarpus altilis</i>	'Ulu	Polynesian Introduction/ Tree	Wood	1	0.02
	1302-111	<i>Styphelia tameiamea</i>	<i>Pūkiawe</i>	Native/Shrub	Wood	1	0.02
	1302-112	<i>Chamaesyce</i> sp.	'Akoko	Native/Shrub	Wood	1	0.01
1302-113	Conifer	Pine, fir, etc.	Historic Introduction/ Tree	Wood	2	0.01	

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-226A: SIHP #-2918 Feature 3 (0.87–1.00 mbs)	1302-127	cf. <i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree	Wood	4	0.29
	1302-128	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/Tree	Nut-shell	113	5.69
	1302-129	cf. <i>Cordyline terminalis</i>	<i>Kī</i> (ti)	Polynesian Introduction/Shrub	Stem	8	0.51
	1302-130	cf. <i>Chamaesyce</i> sp.	<i>‘Akoko</i>	Native/Shrub	Wood	30	1.24
	1302-131, 143	cf. Temperate hardwood.			Wood	2	0.18
	1302-132	cf. <i>Metrosideros polymorpha</i>	<i>‘Ōhi‘a lehua</i>	Native/Tree	Wood	2	0.08
	1302-133	<i>Chenopodium oahuense</i>	<i>‘Āheahea, ‘āweoweo</i>	Native/Shrub	Wood	5	0.06
	1302-134	cf. <i>Artocarpus altilis</i>	<i>‘Ulu</i>	Polynesian Introduction/Tree	Wood	2	0.04
	1302-135	cf. <i>Osteomeles anthyllidifolia</i>	<i>‘Ūlei</i>	Native/Shrub	Wood	3	0.04
	1302-136	cf. <i>Sida fallax</i>	<i>‘Ilima</i>	Native/Shrub	Wood	7	0.19
	1302-137	Not identified			cf. tuber	2	0.04
	1302-138	<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree	Wood	2	0.04
	1302-139	Not identified			Bark	12	0.29
	1302-140	Poaceae	Grass		Stem	1	0.03

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-226A: SIHP #-2918 Feature 3 (0.87–1.00 mbs) (cont.)	1302-141	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	6	0.14
	1302-142	cf. <i>Lagenaria siceraria</i>	<i>Ipu</i>	Polynesian Introduction/ Vine	Fruit rind	1	0.03
	1302-144	Unknown 8			Wood	3	0.05
	1302-145	Unknown 10			Wood	4	0.04
T-226B: SIHP #-2918 Feature 4 (0.81–0.87 mbs)	1304-1	cf. <i>Metrosideros polymorpha</i>	<i>‘Ōhi‘a lehua</i>	Native/Tree	Wood	1	0.13
	1304-2	<i>Chenopodium oahuense</i>	<i>‘Āheahea,</i> <i>‘āweoweo</i>	Native/Shrub	Wood	4	0.09
	1304-3	cf. <i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	9	0.14
	1304-4	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	7	0.37
	1304-5	Unknown 1			Wood	1	0.09
	1304-6	cf. <i>Artocarpus altilis</i>	<i>‘Ulu</i>	Polynesian Introduction/ Tree	Wood	2	0.05
	1304-7	cf. <i>Coprosma</i> sp.	<i>Pilo</i>	Native/Shrub-Tree	Wood	1	<0.01
	1304-8	Unknown 2			Twigs	15	0.26

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-226B: SIHP #-2918 Feature 5 (0.80–0.90 mbs)	1304-9	Unknown 3			Wood	2	0.02
	1304-10	<i>Chamaesyce</i> sp.	'Akoko	Native/Shrub	Wood	3	0.05
	1304-11	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	1	0.02
	1304-12	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	2	0.05
T-226B: SIHP #-2918 Feature 6 (0.82–0.93 mbs)	1304-13	<i>Hibiscus tiliaceus</i>	<i>Hau</i>	Native/Shrub-Tree	Wood	2	0.26
	1304-14	cf. <i>Metrosideros polymorpha</i>	'Ōhi'a lehua	Native/Tree	Wood	1	0.06
	1304-15	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	9	0.26
	1304-16	Poaceae	Grass		cf. stolon	2	0.10
	1304-17	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Nut-shell	3	0.06
	1304-18	cf. <i>Cordyline fruticosa</i>	<i>Kī</i> (ti)	Polynesian Introduction/Shrub	Wood	3	0.05
	1304-19	Unknown 2			Stem	2	0.03

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-226B: SIHP #-2918 Feature 6 (0.82–0.93 mbs) (cont.)	1304-20	<i>cf. Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Wood	1	0.03
T-226B: SIHP #-2918 Feature 7 (0.80–0.95 mbs)	1304-21	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Nut-shell	4	0.18
	1304-22	Unknown 4			Wood	1	0.04
T-226B: SIHP #-2918 Feature 8 (0.76–0.90 mbs)	1304-23	Unknown 1			Wood	1	0.09
	1304-24	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Nut-shell	1	0.06
	1304-25	<i>Chamaesyce</i> sp.	<i>'Akoko</i>	Native/Shrub	Wood	4	0.12
	1304-26	<i>cf. Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	5	0.11
	1304-27	Unknown 2			Wood	2	0.03
	1304-28	<i>cf. Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	1	<0.01
	1304-29	<i>Chenopodium oahuense</i>	<i>'Āheahea,</i> <i>'āweoweo</i>	Native/Shrub	Wood	2	0.02
	1304-30	<i>cf. Cordyline fruticosa</i>	<i>Kī</i> (ti)	Polynesian Introduction/ Shrub	Wood	2	<0.01
	1304-31	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut-shell	2	<0.01

Provenience	WIDL No.	Taxa	Common/Hawaiian Name	Origin/Habit	Part	Count	Weight (g)
T-226B: SIHP #-2918 Feature 8 (0.76–0.90 mbs) (cont.)	1304-32	<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree	Wood	1	<0.01
	1304-33	Not identified			cf. Tuber	1	<0.01
T-226B: SIHP #-2918 Feature 9 (0.76–0.85 mbs)	1304-34	Unknown 5			Wood	1	<0.01
	1304-35	Unknown 6			Wood	1	<0.01
	1304-36	Monocotyledonae			Stem	2	<0.01
T-226B: SIHP #-2918 Feature 10 (0.75–0.87 mbs)	1304-37	Not identified			Bark	1	<0.01
	1304-38	Unknown 4			Wood	2	0.05
	1304-39	cf. <i>Metrosideros polymorpha</i>	<i>'Ōhi'a lehua</i>	Native/Tree	Wood	6	0.08
	1304-40	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	4	0.04
T-226B: SIHP #-2918 Feature 11 (0.78–0.94 mbs)	1304-41	Unknown 2			Wood	4	0.06
	1304-42	cf. <i>Senna</i> sp.	<i>Kolomona</i>	Native+Historic Introductions/ Shrub-Tree	Wood	2	0.03
	1304-43	<i>Cocos nucifera</i>	<i>Niu</i> (coconut)	Native/Tree	Nut- shell	4	0.15
	1304-44	Not identified			Bark	1	0.03
	1304-45	cf. <i>Sida fallax</i>	<i>'Ilima</i>	Native/Shrub	Wood	3	0.06
	1304-46	<i>Aleurites moluccana</i>	<i>Kukui</i>	Polynesian Introduction/ Tree	Nut- shell	1	0.03
T-227A: SIHP #-2918 Feature 23 (1.08–1.31 mbs)	1302-146	cf. <i>Psychotria</i> sp.	<i>Kōpiko</i>	Native/Tree	Wood	3	0.07
	1302-147	<i>Diospyros sandwicensis</i>	<i>Lama</i>	Native/Tree	Wood	1	<0.1
	1302-148	Not identified			Bark	1	<0.01

7.5 Taxa Identified by Botanical Family

AGAVACEAE

Cordyline fruticosa (Kī, ti)

This Polynesian introduction is a shrub cultivated in mesic valleys and forests of all the main Hawaiian Islands except Kaho'olawe. The leaves, arranged in a close spiral at the tips of the stems, were used for house thatch, food wrappers, raincoats, and sandals (Wagner et al. 1990:1348-1349). The swollen fleshy roots were baked for food or, in the post-Contact period, used to produce an alcoholic beverage (Neal 1965:203).

APOCYNACEAE

Rauvolfia sandwicensis (Hao)

This endemic species is a tree or shrub, 3 to 10 m tall, found primarily in mesic forests but also in dry forest or dry shrub land and on lava flows, on all the main Hawaiian Islands except Kaho'olawe at 100- to 800-m elevations (Wagner et al. 1990: 220).

ARECACEAE

Cocos nucifera (Niu, coconut)

This Polynesian introduction is a palm that grows up to 30 m tall and is widely cultivated today. Coconut appears to be sparingly naturalized in coastal areas where it is thought to have been originally cultivated. All parts of the plant were used by the Hawaiians. Many uses were made of the plant: house posts, drums, and food containers from the trunk; baskets, thatching, brooms, and *kukui* nut lamp supports from parts of the leaves; rope from the husk; utensils for eating or drinking from the shell; and the flesh and water of the fruit were eaten (Wagner et al. 1990:1362-1363).

Pritchardia sp.

The *loulou* or fan palms include 19 taxa endemic to the Hawaiian Islands. Two species are known from O'ahu (*P. kaalae*, *P. martii*) (Wagner et al. 1990:1364-1375). Pollen studies indicate these palms were formerly very abundant on O'ahu.

CHENOPODIACEAE

Chenopodium oahuense ('Āheheha, 'āweoweo)

This endemic species is usually a shrub in the coastal lowlands but may become arborescent at higher elevations (Hillebrand 1888:380). Its known distribution in the main Hawaiian Islands includes coastal, dry forest, and subalpine shrubland at 0 to 2,520 meters elevation (Wagner et al. 1990:538). The soft wood was probably not used by the ancient Hawaiians but the leaves were cooked and eaten as greens (Hillebrand 1888:380; Malo 1951:23).

CUCURBITACEAE

Lagenaria siceraria (Ipu)

The fruit of this annual spreading vine, a native of tropical Asia or Africa, was brought to the Hawaiian Islands by the early Hawaiian settlers (Neal 1965:810). Smaller gourds were used as receptacles for food or water and rattles for dances, while larger gourds served as drums or places to hold *kapa* bark cloth or other articles (Pukui and Elbert 1986:103).

EBENACEAE

Diospyros sandwicensis (Lama)

This small endemic tree, 2 to 10 m tall, is found in wet or dry regions of all the main Hawaiian Islands (Rock 1913:395; Wagner et al. 1990:587). Its hard wood was once used by Hawaiians for houses, enclosures for certain idols (Malo 1951:21), and chisel handles (Buck 1964:38). Hillebrand (1888:275) reported that the small fruits were eaten by the Hawaiians.

EPACRIDACEAE

Styphelia tameiameaie (Pūkiawe)

This trailing shrub often forms a principal component of vegetation in mesic forests, 15 to 3230 m (Wagner et al. 1990:590-591). "When a high-ranking chief wanted to mingle with commoners, he would enter a smoke house and be smudged with smoke of *pūkiawe* wood while a priest chanted a prayer for dispensation. The plant is often used in lei." (Wagner et al. 1990:591).

EUPHORBIACEAE

Aleurites moluccana (Kukui)

Once cultivated, this Polynesian introduction has escaped into the native forest, where the pale foliage of the 10 to 20 m trees (Wagner et al. 1990:598) can be seen in abundance in moist gulches and valleys. Dyes were once extracted from the bark and roots (Buck 1964:187), the oily kernel was burned for light (Buck 1964:107) or eaten as a relish after baking (Buck 1964:48), and net floats and dugout canoes were made from the soft wood (Buck 1964:297).

Chamaecyse spp. ('Akoko)

The distribution of the 15 endemic shrubs and small trees in this genus range from coastal environments to upper forest zones on the main Hawaiian Islands. Nine of these native species are found on O'ahu (Wagner et al. 1990:602-617; Rock 1913:243-262). 'Akoko was once valued for firewood by the Hawaiians (Hillebrand 1888:396). In the post-Contact period, the milky sap was once considered a possible source for rubber (Rock 1913:261).

FABACEAE

Senna sp.

One native shrub, *Senna gaudichaudii (kolomona)*, and six naturalized species of *Senna* can be found on O'ahu. The indigenous shrub *S. gaudichaudii* has been recorded primarily from

leeward sites, but also rocky coastal sites, disturbed *hala* (*Pandanus*) forest, dry forest, and occasionally lower parts of the mesic forest (Wagner et al. 1990:698-702).

MALVACEAE

Hibiscus tiliaceus (Hau)

This indigenous plant is described by Handy and Handy (1972:232-233) as a “large leaved shrublike tree,” which was planted near houses and gardens. The straight-stemmed variety was planted for bast fibers from which cords, ropes, and coarse *kapa* cloth were made. Its soft wood was used to make canoe outriggers, fishnet floats, and fire by rubbing a harder wood against it. The creeping variety was used for windbreaks. This species occurs primarily along coasts, streams, and other wet areas up to 1,220 m in elevation (Wagner et al. 1990:888).

Sida fallax (‘Ilima)

This indigenous shrub was planted in the past, as it is today, near houses to provide flowers for *lei* making (Neal 1965:553). It has been found along coasts, on open lava fields, and in dry to mesic forests on all of the main Hawaiian Islands (Wagner et al. 1990:898). The entire plant had many uses for the native Hawaiians. The erect stems were tied to the frame of the sleeping house upon which *pili* grass (*Heteropogon contortus*) was lashed. Whole ‘ilima bushes tied together also were used to secure mounds of taro plantings in swampy areas. The prostrate coastal ‘ilima was used as floor coverings under mats (Handy and Handy 1972:228). The roots and flowers were used medicinally (Neal 1965:553).

MYOPORACEAE

Myoporum sandwicense (Naio)

The habit of this indigenous tree ranges from a shrub 1 m tall in coastal areas to a 15 m tall tree at higher elevation. Its elevational distribution has been documented as 0 to 2,380 m on all the main Hawaiian Islands except Kaho‘olawe (Wagner et al. 1990:928-929). The fragrant wood was once used by Hawaiians for house posts (Buck 1964:83) and was harvested during the sandalwood trade with China when the supply of native sandalwood became low (Rock 1913:429).

MORACEAE

Artocarpus communis (‘Ulu)

This Polynesian introduction was a staple in the Society Islands. The fruit can be baked or boiled or mashed into a paste that can be preserved for long periods. The light wood was used for canoes and the bark could be used as a source for *kapa*. The sap was used for caulking canoes, as a lime for catching birds, and as a chewing gum (Neal 1965:303).

MYRTACEAE

Metrosideros polymorpha (‘Ōhi‘a lehua)

This endemic species ranges in habit from prostrate shrubs to tall trees and in distribution from sea level to 2,200-m elevation in many ecological situations (Wagner et al. 1990:967). The

hard wood was used for making spears and mallets, idols, posts, and rafters for houses, and enclosures around temples (Buck 1964:87; Malo 1951:20; Neal 1965:638).

Syzygium sp.

Four species of these trees may be found on O'ahu. Two species, *Syzygium cumini* (Java plum) and *S. jambos* (rose apple), have naturalized in the mesic forests after their introduction prior to 1871 and in 1825, respectively. The Polynesian introduction *S. malaccense* (mountain apple, 'ōhi'a 'ai) may be found in low mesic to wet forests while the native *S. sandwicensis* ('ōhi'a hā) seems to be restricted to ridges and slopes on Kaua'i, O'ahu, Moloka'i, Lāna'i, and Maui (Wagner et al. 1990:975-976).

Syzygium malaccense ('Ōhi'a 'ai, mountain apple)

This tree is believed to have been introduced into Hawai'i by the early Polynesian settlers. The 8 to 25 m tall trees can be found naturalized in low mesic to wet forests (Wagner et al. 1990:975-976). The trunks from these trees were once used for posts, house rafters, and temple enclosures; idols also were carved from the wood. The fruit was eaten and the bark, flowers and leaves were used medicinally (Rock 1913:323). A dye for clothing was extracted from the bark (Buck 1964: 187).

PITTOSPORACEAE

Pittosporum sp. (Hō'awa)

The three species of *Pittosporum* which occur on O'ahu are small trees. *P. confertiflorum* is found in dry to wet forests, *P. flocculosum* occurs on ridges and wet forests, and *P. glabrum* inhabits the mesic to wet forests (Wagner et al. 1990:1040-1044).

PTERIDOPHYTA

Several genera of native ferns form large erect stems (caudex). The inner portion of the caudex is composed of a starchy pith, which was eaten after cooking by humans or eaten raw by pigs. The fine golden hairs of *Cibotium* (*hapu'u*) caudex apex were used as a dressing for wounds and to embalm the dead (Neal 1965: 10).

ROSACEAE

Osteomeles anthyllidifolia ('Ūlei)

This indigenous plant can often be found sprawling among the rocks along the coasts but may become an erect shrub up to 3 m tall in other environments. *Osteomeles* is found on all the main islands except Ni'ihau and Kaho'olawe and ranges in distribution from sea level to 2300 m in elevation (Wagner et al. 1990:1104-1105). In the past, the hard wood was used to make digging sticks ('ō'ō), fishing spears, carrying poles ('auamo), and a musical bow ('ukeke) (Buck 1964:12, 357, 14, 388). The flexible smaller branches were bent into hoops for fishnets (Neal 1965:387).

RUBIACEAE

Bobea sandwicensis ('Ahakea)

These endemic trees are up to 10 m tall and have been documented from the Wai'anae Mountains and southern Ko'olau Mountains on O'ahu, and on Moloka'i, Lāna'i, and Maui in dry to mesic forest and on open lava flows (Wagner et al. 1990:1117-1118). 'Ahakea wood was formerly used for canoe rims (Pukui and Elbert 1986:6) and *poi* boards (Malo 1951:20).

Coprosma (*Pilo*)

These include 13 endemic Hawaiian species of shrubs and trees, of which at least three species (*C. foliosa*, *C. longifolia*, and *C. ochracea*) are reported from O'ahu, occurring in mesic to wet forests (Wagner et al. 1990:1121-1131).

Psychotria sp. (*Kōpiko*)

This large genus is distributed over tropical regions of both the New and Old Worlds. The 11 species of *Psychotria* in Hawai'i are small to medium sized endemic trees that are found in the mesic to wet forests (Wagner et al. 1990:1160-1170). Five species are known from O'ahu. *Kōpiko* wood was previously used as firewood and to make *kapa* logs (Malo 1951:21).

SAPINDACEAE

Dodonaea viscosa ('A'ali'i)

These indigenous shrubs or small trees are 2 to 8 m tall and range in distribution from coastal dunes to dry, mesic, and wet forest, at 3 to 2,350 m elevations on all of the main Hawaiian Islands except Kaho'olawe (Wagner et al. 1990:1227-1228). The red papery fruit capsule clusters and leaves of some varieties were made into *lei* (Pukui and Elbert 1986:3).

THYMELAEACEAE

Wikstroemia species

These 12 species of Hawaiian shrubs and small trees are found in a wide variety of environments. "Species of *Wikstroemia* have furnished one of the strongest Hawaiian fibers, used in making ropes and braids" and was also used for *kapa*, for stupefying fish, and as a poison for executing criminals (Wagner et al. 1990:1283).