



Easter Island Statue Project

EASTER ISLAND STATUE PRESERVATION FOUNDATION

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Supplementary Material:

Three Laboratory Reports to Jo Anne Van Tilburg, Project Director and Principle Investigator, Rano Raraku Quarry *moai* Excavations (RR-001-156)

Murakami, G. 2014. Table 1: Taxa Identifications in Charcoal Samples Collected During the Phase 2, Season 2, Unit 156 Easter Island Excavations (May 30)

Huebert, J. 2015 Charcoal Identification Report FINAL Beginning sample 176/2994, 2995 Sq. 5 Lvl 325 cm, 8 pp. (1 April)

Huebert, J. 2015 Charcoal Identification Report PRELIMINARY Beginning sample: C-1 (66) Season 2, Unit 156, Sq-Lvl 0-50 cm UMU, 2 pp. (1 April)

Huebert, J. 2015 Charcoal Identification Report FINAL Beginning sample: C-11, Season 2, Unit 156, Sq. ?, Lvl 212-230 cm, Layer H. (30 May)

Preliminary Results by Gail Murakami, October 15, 2014

Table 1. Taxa Identification in Charcoal Samples Collected During the Phase 2, Season 2, Unit 156 Easter Island Excavations.

Log ID/ EAID	Collection Information	Taxa ID No.	Taxa	Common/ Rapanui Name	Origin/Habit	Part	Count	Weight, g	
251B/ 3231	Square 01, 330-412 cm	251B-1	cf. <i>Pittosporum</i> sp.			Wood	4	1.43	
		251B-2	<i>Cordyline terminalis</i>	<i>Ti</i>		Wood	17	3.29	
		251B-3	<i>Sophora toromiro</i>	<i>Toromiro</i>		Wood	33	9.04	
		251B-4	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>		Wood	20	2.74	
		251B-5	Unknown 3					1	0.08
		251B-6						3	0.33
		251B-7	<i>Thespesia populnea</i>	<i>Mako'i</i>			Wood	4	1.97
		251B-8	cf. palm				Wood	2	0.24
		251B-9	cf. Monocotyledonae-1				Parenchyma	4	0.41
		251B-10	cf. Monocotyledonae-3	Monocotyledon			Parenchyma	1	0.49
		251B-11	cf. Monocotyledonae-2	Monocotyledon			Parenchyma	4	1.07
		251B-12	Unknown 4				Wood	1	1.07
193/ 2997	Square 02, 250-322 cm	193-1	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	105	17.35	
		193-2	cf. Areaceae	Palm		Wood	9	0.66	
		193-3	<i>Cordyline terminalis</i>	<i>Ti</i>	Aboriginal Introduction/Shrub	Wood	7	0.75	
		193-4	cf. Monocotyledonae-1			Parenchyma	2	0.23	
		193-5	cf. <i>Pittosporum</i> sp.			Wood	1	0.06	
		193-6	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	9	0.64	
		193-7	Unknown 1			Wood	1	0.21	
		193-8	cf. Monocotyledonae-2	Monocotyledon			Parenchyma	12	1.14
		193-9	<i>Thespesia populnea</i>	<i>Mako'i</i>			Wood	5	0.29
		193-10	Unknown 2					3	0.15
210/ 3014	Square 02, 250-322 cm	210-1	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	45	14.21	
		210-2	<i>Thespesia populnea</i>	<i>Mako'i</i>		Wood	2	0.44	
		210-3	cf. <i>Elaeocarpus</i> sp.			Wood	2	0.47	
		210-4	cf. Areaceae	Palm		Wood	14	1.86	
		210-5	cf. Monocotyledonae-1	Monocotyledon			Parenchyma	4	0.34
		210-6	Poss. flacourtiaceae				Wood	1	0.61

Preliminary Results by Gail Murakami, October 15, 2014

Table 1. Taxa Identification, cont.

Log ID/ EAID	Collection Information	Taxa ID No.	Taxa	Common/ Rapanui Name	Origin/Habit	Part	Count	Weight, g
209/ 3013	Square 02, 330-368	209-1	cf. Monocotyledonae-2	Monocotyledon		Parenchyma	6	0.68
		209-2	<i>Cordyline terminalis</i>	<i>Ti</i>	Aboriginal Introduction/Shrub	Wood	5	1.07
		209-3	<i>Thespesia populnea</i>	<i>Mako'i</i>		Wood	1	0.17
		209-4	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	3	0.84
240A/ 3739	Square 03, 363-420 cm	240A-1	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	9	3.00
		240A-2	<i>Cordyline terminalis</i>	<i>Ti</i>	Aboriginal Introduction/Shrub	Wood	5	0.45
		240A-3	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	7	1.74
		240A-4	cf. Monocotyledonae-1	<i>Monocotyledon</i>		Parenchyma	1	0.23
		240A-5	cf. <i>Pittosporum</i> sp.			Wood	2	0.09
		240A-6	<i>Thespesia populnea</i>	<i>Mako'i</i>		Wood	5	0.46
240B/ 3740	Square 03, 363-420 cm	240B-1	Unknown 4			Wood	3	0.16
		240B-2	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	7	1.86
		240B-3	<i>Cordyline terminalis</i>	<i>Ti</i>	Aboriginal Introduction/Shrub	Wood	3	0.55
		240B-4	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	3	0.19
		240B-5	cf. Monocotyledonae-1	Monocotyledon		Parenchyma	3	0.82
		240B-6	cf. <i>Arecaceae</i>	Palm		Wood	3	0.34
240C/ 3207	Square 03, 363-420 cm	240C-1	<i>Cordyline terminalis</i>	<i>Ti</i>	Aboriginal Introduction/Shrub	Wood	4	0.68
		240C-2	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	28	13.24
		240C-3	cf. Monocotyledonae-1	Monocotyledon		Parenchyma	15	3.08
		240C-4	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	8	0.73
		240C-5	<i>Thespesia populnea</i>	<i>Mako'i</i>		Wood	11	1.24
		240C-6	cf. Monocotyledonae-3	Monocotyledon		Parenchyma	1	0.10
		240C-7	Poss. <i>flacourtiaceae</i>			Wood	2	0.22
		240C-8	cf. <i>Pittosporum</i> sp.			Wood	3	0.08

Preliminary Results by Gail Murakami, October 15, 2014

Table 1. Taxa Identification, cont.

Log ID/ EAID	Collection Information	Taxa ID No.	Taxa	Common/ Rapanui Name	Origin/Habit	Part	Count	Weight, g
212/ 3058	Square 04, 250-297	212-1	Not identified			cf. Bark	10	3.24
		212-2	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	15	4.88
		212-3	cf. Monocotyledonae-2	Monocotyledon		Parenchyma	4	1.38
		212-4	Agavaceae			Wood	4	0.93
		212-5	<i>Thespesia populnea</i>	<i>Mako'i</i>		Wood	1	0.05
		212-6	cf. <i>Elaeocarpus</i> sp.			Wood	4	0.38
		212-7	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	10	0.93
207/ 3011	Square 04, 250-300 cm	207-1	Agavaceae			Wood	1	1.82
231/ 3129	Square 04, 297-337 cm (0.25 subsample)	231-1	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	31	7.05
		231-2	cf. Monocotyledonae-3	Monocotyledon		Parenchyma	13	3.11
		231-3	cf. <i>Pittosporum</i> sp.				3	0.20
		231-4	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	2	0.12
		231-5	<i>Thespesia populnea</i>	<i>Mako'i</i>		Wood	1	0.13
		231-6	<i>Cordyline terminalis</i>	<i>Ti</i>	Aboriginal Introduction/Shrub	Wood	6	0.40
		231-7	Unknown			Wood	1	0.22
		231-8	Unknown			Wood	1	0.10
201/ 3135	Square 04, 300-310 cm	201-1	cf. Monocotyledonae-3	Monocotyledon		Parenchyma	3	2.03
		201-2	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	10	15.65
		201-3	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	6	0.38
		201-4	cf. Monocotyledonae-1	Monocotyledon		Parenchyma	1	0.05
221/ 3054	Square 04, 300-310	221-1	cf. Monocotyledonae-3	Monocotyledon		Parenchyma	1	0.59
		221-2	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	3	0.66
		221-3	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	16	0.54
—/ 3736	Square 04, 369-476 cm	3736-1	cf. Monocotyledonae-1	Monocotyledon		Parenchyma	14	2.36
		3736-2	<i>Thespesia populnea</i>	<i>Mako'i</i>		Wood	10	2.03
		3736-3	Unknown 5			Wood	2	0.14
		3736-4	cf. <i>Elaeocarpus</i> sp.			Wood	3	0.28
		3736-5	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	13	3.90

Preliminary Results by Gail Murakami, October 15, 2014

Table 1. Taxa Identification, cont.

Log ID/ EAID	Collection Information	Taxa ID No.	Taxa	Common/ Rapanui Name	Origin/Habit	Part	Count	Weight, g
048/ 2837	Square 06, 250-280 cm (0.50 subsample)	048-1	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	21	2.30
		048-2	cf. <i>Pittosporum</i> sp.			Wood	29	2.41
		048-3	Unknown			Wood	16	1.17
		048-4	cf. Monocotyledonae-3	Monocotyledon		Parenchyma	7	0.57
		048-5	<i>Cordyline terminalis</i>	<i>Ti</i>	Aboriginal Introduction/Shrub	Wood	1	0.06
		048-6	cf. <i>Coprosma</i> sp.			Wood	1	0.13
		048-7	Not identified			cf. Tuber	2	0.28
		048-8	Unknown			Wood	1	0.04
073/ 2865	Square 06, 250-280 cm	073-1	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	1	1.32
090/ 2883	Square 06, 280-330 cm	090-1	cf. Areaceae	Palm		Wood	23	3.61
		090-2	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	62	9.92
		090-3	<i>Thespesia populnea</i>	<i>Mako 'i</i>		Wood	1	0.22
		090-4	cf. Monocotyledonae-1	Monocotyledon		Parenchyma	5	0.24
		090-5	Unknown				2	0.11
		090-6	cf. <i>Broussonetia papyrifera</i>	<i>Mahute</i>	Aboriginal Introduction/Shrub	Wood	4	1.50
		090-7	Agavaceae			Wood	1	0.16
023/ 3277	Square 06, 280-330 cm	023-1	Unknown 3			Wood	1	0.51
		023-2	<i>Thespesia populnea</i>	<i>Mako 'i</i>		Wood	1	0.13
		023-3	cf. Monocotyledonae-1	Monocotyledon		Parenchyma	5	0.20
		023-4	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	8	0.42
		023-5	cf. Monocotyledonae-3	Monocotyledon		Parenchyma	2	0.03
270/ 3738	Square 06, 420 cm	270-1	cf. Monocotyledonae-3	Monocotyledon		Parenchyma	1	1.88
		270-2	<i>Thespesia populnea</i>	<i>Mako 'i</i>		Wood	5	1.47
		270-3	<i>Sophora toromiro</i>	<i>Toromiro</i>	Native/Shrub-Tree	Wood	4	5.20
		270-4	Agavaceae			Wood	5	0.29
		270-5	cf. <i>Elaeocarpus</i> sp.			Wood	4	0.22

Preliminary Results by Gail Murakami, October 15, 2014

Table 1. Taxa Identification, cont.

Samples Not Analyzed:		
Log ID/ EAD	Collection Information	Sample Contents
230/3130	Square 04, 297-337 cm	Charcoal and soil aggregates: charcoal mixed into soil; few intact but very friable pieces of charcoal
200/3132	Square 04, 300-310 cm	Charcoal and soil aggregates: charcoal mixed into soil; few intact but very friable pieces of charcoal
208/3012	Square 04, 300-310 cm	Charcoal and soil aggregates: charcoal mixed into soil; few intact pieces
219/3735	Square 04, 300-310 cm	Charcoal and soil aggregates: charcoal mixed into soil; few intact pieces include Unknown

Charcoal identification report - FINAL

1 April 2015

For: Jo Anne Van Tilburg

Project Location: Rapa Nui

Project Name: Easter Island Statue Project, Phase 2, Season 2, Unit 156

Notes on the identifications: Anatomical descriptions of the woods, and some notes about the classifications, are included at the end of this report.

Sample number: **176 / 2994, 2995**, Sq. 5, Lvl. 325 cm

Total weight: 38.4 g. Portion identified: 25%. Some obsidian flakes noted.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Wood	2	
<i>Coprosma</i> sp.	Wood	1	
<i>Sophora toromiro</i>	Wood	22	
<i>Thespesia populnea</i>	Wood	2	
Unknown 01	Wood	1	
<i>Cordyline fruticosa</i>	Woody stem	5	Bag marked Asparagaceae stem
Poaceae cf. Panicoideae	Stem	1	Compare with <i>Miscanthus</i> and <i>Saccharum</i>
Monocotyledon	Stem	3	Several types
Parenchyma	Storage tissue	2	Several types
Indeterminate	Wood	7	One is very small (7 mm dia.) hardwood twig (good for dating) One is small hollow hardwood stem (also good for dating) One could be a rhizome bud (very tentative) – bagged separately Other fragments this category are in generally poor condition or lack diagnostic features

Sample number: **189 / 3004**, Sq. 5, Lvl. 334-380

Total weight: 75.95 g. Portion identified: ~25%. Some obsidian flakes noted.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Wood	1	
<i>Coprosma</i> sp.	Wood	5	One is very small diameter
<i>Sophora toromiro</i>	Wood	13	One twig with pith, ~7 mm dia.
Unknown 01	Wood	3	1 frag. only cf. with this taxon
<i>Cordyline fruticosa</i>	Woody stem	3	Bag marked Asparagaceae stem
Arecaceae	Woody stem	3	Vascular bundles larger; not coconut
Poaceae	Stem	4	Several have recognizable morphology including intact nodes. One measured 7 mm dia.

Taxon	Plant part	Qty. ID	Note
Monocotyledon	Stem	5	Not large palms; several types noted
Parenchyma	Storage tissue	2	<1 cm
Indeterminate	Wood	11	One small (1 cm long) hollow hardwood stem (good for dating) One small-diameter with converging rays (bagged separately) Other fragments this category are in generally poor condition or lack diagnostic features
Indeterminate	Unknown	1	Small (<1 cm), bulbous

Sample number: **196 / 3065**, Sq. 5, Lvl. 325-371

Total weight: 30.92 g. Portion identified: 25%. Some obsidian flakes noted.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Wood	3	
cf. <i>Myrsine</i> sp.	Wood	1	
<i>Sophora toromiro</i>	Wood	10	
<i>Thespesia populnea</i>	Wood	1	
<i>Cordyline fruticosa</i>	Woody stem	12	One fragment from stem at least 2 cm dia. Bag marked Asparagaceae stem
Areaceae	Woody stem	1	Not coconut
Monocotyledon	Stem	2	From smaller plants; one may be fern root
Parenchyma	Storage tissue	5	Several types, though few diagnostic characteristics
Indeterminate	Wood	9	One is .5 cm dia. wood with hollow centre (good for dating) One is a whole small-diameter stem of some sort Several are probably <i>Sophora</i> Other fragments this category are in generally poor condition or lack diagnostic features

Sample number: **229 / 3300**, Sq. 5, Lvl. 325-368

Total weight: 64.94 g. Portion identified: ~20%. Some larger pieces were wrapped in a foil packet.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Wood	1	
<i>Coprosma</i> sp.	Wood	1	
<i>Sophora toromiro</i>	Wood	21	Several large fragments
<i>Thespesia populnea</i>	Wood	7	
Poaceae cf. Panicoideae	Stem	3	Compare with <i>Miscanthus</i> and <i>Saccharum</i>
Parenchyma	Storage tissue	2	One is large (4 cm) lump
Indeterminate	Large seed	1	2 cm x 1.5 cm, poss. heart shaped, somewhat

Taxon	Plant part	Qty. ID	Note
			flattened, thin testa flaked away in places revealing pitted surface, inside is well-preserved cotyledon
Indeterminate	Wood	5	One small twig with pith 7-8 mm dia. bagged separately (good for dating). Other fragments this category are in generally poor condition or lack diagnostic features
Indeterminate	Unknown	1	

Sample number: **093 / 2886**, Sq. 30, Lvl. 323 cm - column this sq., Bag 1 of 2.

Total weight: 26.56 g. Portion identified: 30%.

Taxon	Plant part	Qty. ID	Note
<i>Sophora toromiro</i>	Wood	15	
<i>Cordyline fruticosa</i>	Woody stem	1	Bag marked Asparagaceae stem
Indeterminate	Woody stem	1	Large monocot
Indeterminate	Wood	2	One is small hollow twig (good for dating).

Sample number: **F029 / 3017**, Sq. 30, Lvl. 395-397

Total weight: 14.43 g, though most is sediment. Portion identified: 100%

Taxon	Plant part	Qty. ID	Note
<i>Thespesia populnea</i>	Wood	2	
<i>Cordyline fruticosa</i>	Woody stem	3	Bag marked Asparagaceae stem
Indeterminate	Wood	3	Some are probably Asparagaceae, other fragments this category are in generally poor condition or lack diagnostic features

Sample number: **077A / 2870**, Sq. 30, Lvl. 328-395 (Bag 1 of 3)

Total weight: 39.25 g. Portion identified: 25%

Taxon	Plant part	Qty. ID	Note
cf. <i>Broussonetia papyrifera</i>	Wood	1	
<i>Broussonetia papyrifera</i>	Wood	1	
<i>Coprosma</i> sp.	Wood	4	
<i>Sophora toromiro</i>	Wood	9	Includes one twig with pith ~8mm dia.
Unknown 01	Wood	1	
Unknown 02	Wood	1	
<i>Cordyline fruticosa</i>	Woody stem	5	One small stem is whole (good for dating). Bag marked Asparagaceae stem
Arecaceae	Woody stem	2	Large palm, not coconut, 1 fragment has epidermis
Monocotyledon	Stem	1	
Poaceae (small)	Stem	1	

Taxon	Plant part	Qty. ID	Note
Poaceae cf. Panicoideae	Stem	1	Compare with <i>Miscanthus</i> and <i>Saccharum</i>
Indeterminate	Wood	2	Other fragments this category are in generally poor condition or lack diagnostic features

Sample number: **077B / 2870**, Sq. 30, Lvl. 328-395 (Bag 2 of 3)

Total weight: 87.99 g. Portion identified: 25%

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Wood	2	One (cf.) a hollow twig perhaps once 1.5 cm dia.
<i>Coprosma</i> sp.	Wood	1	large fragment
<i>Sophora toromiro</i>	Wood	19	
Unknown 05	Wood	2	
<i>Cordyline fruticosa</i>	Woody stem	7	1 is small-diameter: ~1cm x 3cm long, hollow. Bag marked Asparagaceae stem
Arecaceae	Woody stem	1	Not coconut
Parenchyma	Storage tissue	2	Several types
Parenchyma	Storage organ	2	1.5 cm long fragment of tapered end of root tuber, very hard, fissured Second fragment with similar internal cell structure and surface texture (but having indistinct external morphology) <i>Could be sweet potato, but possibly some other root</i>
Indeterminate	Wood	9	One part of twig with pith 5 mm dia (good for dating), another twig bagged separately. Other fragments this category are in generally poor condition or lack diagnostic features

Sample number: **077C / 2870**, Sq. 30, Lvl. 328-395 (Bag 3 of 3)

Total weight: 18.96 g. Portion identified: 50%

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Wood	1	Small diameter
<i>Sophora toromiro</i>	Wood	5	
Unknown 01	Wood	1	
<i>Cordyline fruticosa</i>	Woody stem	5	One is possibly bark. Bag marked Asparagaceae stem
Arecaceae	Woody stem	1	Not coconut
Poaceae cf. Panicoideae	Stem	1	Compare with <i>Miscanthus</i> and <i>Saccharum</i>
Parenchyma	Storage tissue	1	
Indeterminate	Wood	6	One tiny twig (3 mm dia.) from a hardwood (good for dating). Other fragments this category are in

Taxon	Plant part	Qty. ID	Note
			generally poor condition or lack diagnostic features

Sample number: 107 / 2905, Sq. 31, Lvl. 96-122

Total weight: 10.19 g. Portion identified: ~35%.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Wood	3	One small-diameter wood with pith bagged separately
<i>Sophora toromiro</i>	Wood	7	
<i>Cordyline fruticosa</i>	Woody stem	3	Bag marked Asparagaceae stem
Parenchyma	Storage tissue	1	Large cells
Indeterminate	Wood	3	Other fragments this category are in generally poor condition or lack diagnostic features

Anatomical descriptions of woods identified

Monocots

Arecaceae woody stem

TS: Vascular bundles ~400um with several vessels and very thick-walled fibres, margins abrupt; surrounded by smaller-celled parenchyma.

* Arecaceae stems described are all from some type of palm that is not coconut. They could be from a larger palm but may be from a smaller plant - my comparative collection of palms was very limited.

***Cordyline* sp.** (Asparagaceae or Agavaceae – has been reassigned many times)

TS: No vessels; small cauline bundles of mainly xylem arranged in radial rows, surrounded by rows of parenchyma;

* Asparagaceae *sensu lato* is a very large family that includes *Cordyline* and agaves such as *Dracaena*, both of which have very similar looking wood. I was advised by Jean-Yves Meyer that there are no other plants indigenous to Rapa Nui that we currently know of from this group, so they were classified as *Cordyline fruticosa* (*ti*). The bags, however, are still marked “Asparagaceae stem”.

Poaceae cf. Panicoideae stem (compare with *Miscanthus* and *Saccharum*)

TS: Vascular bundles around 300um, vessels about 50um and fibres thick-walled, surrounded by large-celled parenchyma; arrangement similar for the large plants in this family (sugarcane, corn).

* Poaceae stems were noted from both large and small grasses. The larger grasses (denoted Panicoideae) include *Miscanthus* and *Saccharum* (sugarcane); my comparative collection has neither but some anatomical references suggest they have very similar anatomical features.

Dicots

Broussonetia papyrifera (Moraceae)

TS: Growth rings noted (when fragments large enough); Vessels in many sizes ~80-135um diameter, earlywood vessels large diameter and can occur in tangential groups or clusters; Fibres thin walled; overall appearance can be similar to *Artocarpus* TS;

TLS: Rays (1) 2-3 cells wide and frequently fissured, vary from short to long, cells mainly very small and round - characteristic of Moraceae; Intervessel pits alternate and lie several to a channel, 5.5-7.5um but display some variability; Walls of some vessels have spiral thickenings; Vessel segments short;

RS: Ray cells mainly procumbent with 1-2 rows uprights; Vessel-ray pits similar to IVP;

***Coprosma* sp(p)** (Rubiaceae)

TS: Vessels ~60-100um, most solitary or 2(3); Rays mostly wider than vessels; Some parenchyma noted;

TLS: Frequent wide to very wide rays of 5-6+ cells, sheath cells on most, of mixed cell types; brown crystals in some cells; Intervessel pits alternate, 7-8um; No spiral thickenings noted in vessel walls;

RS: Perforations appear simple; Rays frequently fill most of these sections;

***Sophora toromiro* (Fabaceae)**

TS: Vessels 40-50um and not wider than rays, clustered in diagonal bands; Axial parenchyma surrounds vessel and is 2-3 (4-5-6) cells wide; Very thick walled fibres, lumens almost completely closed in charcoal (glitters without magnification); Intervessel pits 4-5um; TLS: Rays 2 (3) and 5+ cells wide, can be very tall; Vessel walls have prominent spiral thickenings;

RS: Ray cells very uniform in shape, procumbent, sometimes with 1 row square cells at end; Vessel-ray pits similar to IVP, some very slightly larger and rounded;

***Thespesia populnea* (Malvaceae)**

TS: Vessels (60)-120um diameter, solitary or sometimes in rows 2-3; chainettes of axial parenchyma frequent and evenly distributed in TS; Rays never wider than vessels;

TLS: Rays 2-(3-4) cells wide, most body cells small with one larger at ends, taller rays have occasional upright or square within; Intervessel pits (6)7-8um diameter; Vessel segments range from under 300um to longer; Abundance of fusiform and 2-cell axial parenchyma make this a very distinctive section; Fibre pitting sometimes abundant;

RS: Ray cells mainly procumbent with one or several square cells at ends;

Unknown 01

TS: Vessels (40-50)-70-100um diameter, solitary or sometimes in rows of 2-3 up to 5-6, almost as wide as the wide rays; Fibre walls of average thickness;

TLS: Rays of 2 sizes: 1-seriate (frequent) and (2)-3 seriate (less frequent), many cells square and upright, upright cells at many ends, large rays can be very (very) tall; Intervessel pits alternate, 7-8um;

RS: Vessel-ray pits similar to IVP but at least one instance appeared to be somewhat enlarged (#176); Ray cell composition mixed and in places covers the entire RS of specimens, some have chambers (empty);

Probably not: *Elaeocarpus* (which has spiral thickenings in vessel walls, and very large IVP);

Pittosporum (which has spiral thickenings, and smaller IVP);

Could be: *Premna*;

Unknown 02

TS: Vessels about 50um diameter, solitary and in groups and clusters, some distance between vessels; rays seem to be of 2 sizes; Some parenchyma could be associated with vessel groupings;

TLS: Rays range from 1-2-3-4 cells wide, many short and wide with larger cells, while others 1-2 cells wide and of mainly square and upright cells, frequent in some areas; Fibre walls frequently pitted; Intervessel pits 4-5um;

RS: Ray cells often square and upright, large and shiny; Fibre walls frequently pitted;

Probably not: *Psychotria*;

Unknown 05

TS: Vessels ~50um diameter, solitary and radial by 2-(3); Large axial parenchyma glitter in TS but arrangement uncertain - not strongly banded;

TLS: Rays 2-3-4-6 cells wide with distinct sheath cells; Intervessel pits 10-11um; Parenchyma very frequent and notable in TLS;

RS: Rays of procumbent cells with 3-4+ rows upright at ends; Vessel-ray pits similar to IVP;
Probably not: Broussonetia, Elaeocarpus, Trema
Could be: Ficus? (but sheath cells an uncommon feature) - perhaps Sterculia, which does (but
little ref material avail.)

Charcoal identification report - PRELIMINARY

1 April 2015

For: Jo Anne Van Tilburg

Project Location: Rapa Nui

Project Name: Easter Island Statue Project, Season 2 and 5, Units 156-8

Notes on the identifications: Anatomical descriptions of the woods, and some notes about the classifications, are included at the end of this report.

Sample number: **C-1 (66)**, Season 2, Unit 158, Sq. -, Lvl. 0-50 cm UMU

Total weight: 16g. Portion identified: 35%.

Taxon	Plant part	Qty. ID	Note
<i>Sophora toromiro</i>	Wood	4	
<i>Cordyline fruticosa</i>	Woody stem	7	Bag marked Asparagaceae stem
Poaceae cf. Panicoideae	Stem	6	Compare with <i>Miscanthus</i> and <i>Saccharum</i> One 17mm dia. with node, one ~1cm dia.
Poaceae	Stem	2	Small grass stems
Monocotyledon	Stem	2	One is 2cm dia. Large vascular bundles, could be another kind of grass
Indeterminate	Wood	1	One small (~1 cm long) hollow twig with bark (good for dating)

Sample number: **C-2 (RR-001-156-062)**, Season 5, Unit 156, Sq. 7, Lvl. 425- cm

Total weight: 1g. Portion identified: 80%.

Taxon	Plant part	Qty. ID	Note
cf. Pteridophyte (fern)	Stem	1	Has epidermis with scales
Indeterminate	Unknown	2	Not hardwoods Fragments this category are in generally poor condition or lack diagnostic features

Sample number: **C-3 (RR-001-157-172)**, Season 5, Unit 157, Sq. 4, Lvl. 330 cm

Total weight: <1g. Portion identified: 100%.

Taxon	Plant part	Qty. ID	Note
<i>Coprosma</i> sp.	Wood	1	
<i>Sophora toromiro</i>	Wood	2	
Indeterminate	Unknown	1	Small, flat stem could be grass (probably short-lived)

Sample number: **C-4 (RR-001-156-116)**, Season 5, Unit 156, Sq. 7, Lvl. 474-500 cm
 Total weight: 3g. Portion identified: 0%.

Taxon	Plant part	Qty. ID	Note
			No plant parts could be identified.

Sample number: **C-5 (RR-001-157-175)**, Season 5, Unit 157, Sq. 4, Lvl. 434- cm
 Total weight: 1g. Portion identified: 100%.

Taxon	Plant part	Qty. ID	Note
Poaceae cf. Panicoideae	Stem	2	Compare with <i>Miscanthus</i> and <i>Saccharum</i>
Indeterminate	Wood	2	One small hollow twig with bark and pith (good for dating) One indeterminate juvenile wood with thin bark

Sample number: **C-6 (RR-001-156-132)**, Season 5, Unit 156, Sq. 8, Lvl. 420-500 cm
 Total weight: <1g. Portion identified: 100%.

Taxon	Plant part	Qty. ID	Note
<i>Sophora toromiro</i>	Wood	2	

Sample number: **C-7 (RR-001-156-165)**, Season 5, Unit 156, Sq. 9, Lvl. 434-496cm
 Total weight: 2g. Portion identified: 100%.

Taxon	Plant part	Qty. ID	Note
cf. <i>Sophora toromiro</i>	Wood	1	
Indeterminate	Wood	1	One very small twig with bark and pith (good for dating)

Sample number: **C-8 (RR-001-156-143)**, Season 5, Unit 156, Sq. 8, Lvl. 420cm
 Total weight: <1g. Portion identified: 100%.

Taxon	Plant part	Qty. ID	Note
cf. <i>Broussonetia papyrifera</i>	Wood	1	Very small fragment (3mm)

Charcoal identification report - FINAL

30 May 2015

For: Jo Anne Van Tilburg

Project Location: Rapa Nui

Project Name: Easter Island Statue Project, Season 2, Unit 156 light fraction float samples

Notes about this assemblage: The overall aim of this examination was to scan for taxa not found in the assemblages recovered by screening. One small fragment of a new taxon, resembling *Caesalpinia* sp., was encountered in #C11. These small pantropical shrubs with sharp prickles have no known cultural uses in the region (Brown 1935) and have previously been identified in Rapa Nui charcoal assemblages (Orliac 2000).

Some samples contained root hairs and materials other than charcoal – this is typical for light fraction float samples. Some contained a quantity of very small charcoal fragments, many of which were small-diameter stems from hardwoods and some grasses. I usually have little success identifying charcoal taxa under 4 mm in size from East Polynesian contexts, so I avoided most of the very small fragments.

Notes on the identifications: Anatomical descriptions of the woods, and some notes about the classifications, are included at the end of this report.

Sample number: **C11**, Season 2, Unit 156, Sq. ?, Lvl. 212-230 cm, Layer H

Total weight: N/A. Portion identified: ~20% - a large sample.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Woody stem	3	1 tiny twig, several larger fragments
cf. <i>Caesalpinia</i> sp.	Woody stem	1	Very small; only occurrence
<i>Coprosma</i> sp. – type A	Woody stem	1	
Unknown05	Woody stem	4	Most very small
Indeterminate	Parenchyma	1	Hard, fissured, 2.5x2 cm. Probably root tissue.
Indeterminate	Woody stem	several	This sample contains many small-diameter stems (5 mm dia. or less).

Sample number: **C13**, Season 2, Unit 156, Sq. ?, Lvl. 250-280 cm, Layer G

Total weight: N/A. Portion identified: ?% - a large sample.

Taxon	Plant part	Qty. ID	Note
<i>Cordyline fruticosa</i>	Woody stem	1	
<i>Broussonetia papyrifera</i>	Woody stem	2	
<i>Coprosma</i> sp. – type A	Woody stem	1	
<i>Sophora toromiro</i>	Woody stem	2	
Unknown05	Woody stem	3	Pending final review, but close to a determination. Hardwood.
Indeterminate	Woody stem	several	This sample is also mainly small-diameter stems (5 mm dia. or less).

Sample number: **C14**, Season 2, Unit 156, Sq. ?, Lvl. 280-300 cm, Layer 4

Total weight: N/A. Portion identified: ?%.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Woody stem	2	
<i>Sophora toromiro</i>	Woody stem	2	
Unknown01	Woody stem	2	Hardwood
Indeterminate	Parenchyma	1	
Indeterminate	Woody stem	several	Tiny hollow stems; some resemble <i>Broussonetia</i> wood, others grass stems

Sample number: **C15**, Season 2, Unit 156, Sq. ?, Lvl. 312-325 cm, Layer E

Total weight: N/A. Portion identified: 100%.

Taxon	Plant part	Qty. ID	Note
<i>Cordyline fruticosa</i>	Woody stem	1	
<i>Sophora toromiro</i>	Woody stem	3	
Indeterminate	Parenchyma	1	
Indeterminate	Woody stem	several	Tiny hollow stems

Sample number: **C16**, Season 2, Unit 156, Sq. ?, Lvl. 325-341cm, Layer D

Total weight: N/A. Portion identified: ~80%.

Taxon	Plant part	Qty. ID	Note
Poaceae cf. Panicoideae	Stem	1	
<i>Broussonetia papyrifera</i>	Woody stem	3	
Unknown05	Woody stem	2	Pending final review, but close to a determination. Hardwood.

Sample number: **C17**, Season 2, Unit 156, Sq. ?, Lvl. 341-369 cm, Layer C

Total weight: N/A. Portion identified: ?%.

Taxon	Plant part	Qty. ID	Note
Poaceae cf. Panicoideae	Stem	2	Compare with <i>Miscanthus</i> and <i>Saccharum</i>
<i>Sophora toromiro</i>	Woody stem	2	Very small pieces
Indeterminate hardwood	Woody stem	1	Several other indeterminate fragments noted, some probably <i>Sophora</i> others may be <i>Broussonetia</i> , but too small.

Sample number: **C18**, Season 2, Unit 156, Sq. ?, Lvl. 364-380 cm, Layer B lens

Total weight: N/A. Portion identified: ?%.

Taxon	Plant part	Qty. ID	Note
Poaceae	Stem	1	~4 mm diameter grass stem internode
Arecaceae	Woody stem	1	Large palm, not coconut; very small
<i>Cordyline fruticosa</i>	Woody stem	1	
<i>Broussonetia papyrifera</i>	Woody stem	2	
<i>Sophora toromiro</i>	Woody stem	3	
<i>Thespesia populnea</i>	Woody stem	2	
Indeterminate	Woody stem	1	Twig with pith and thin bark
			One small obsidian flake

Sample number: **Fea 1/2**, Season 2, Unit 156, Sq. 30, Lvl. 397 cm, base of B

Total weight: N/A. Portion identified: 100%.

Taxon	Plant part	Qty. ID	Note
<i>Broussonetia papyrifera</i>	Woody stem	1	Small; juvenile wood with simple rays
<i>Coprosma</i> sp. - type B	Woody stem	1	
<i>Sophora toromiro</i>	Woody stem	2	

Sample number: **Fea 2/2**, Season 2, Unit 156, Sq. 30, Lvl. 397 cm, base of B

Total weight: N/A. Portion identified: 0%.

Taxon	Plant part	Qty. ID	Note
none			Fragments too small

References cited

- Brown, F. B. H. 1935. *Flora of Southeastern Polynesia: Dicotyledons*. Vol. 3. Bernice P. Bishop Museum Bulletin No. 130, Bayard Dominick Expedition Publication No. 22. Honolulu: Bishop Museum.
- Orliac, Catherine. 2000. "The Woody Vegetation of Easter Island between the Early 14th and the Mid-17th Centuries A.D." In *Easter Island Archaeology: Research on Early Rapanui Culture*, edited by C. Stevenson and W. Ayres, 211–20. Los Osos: Easter Island Foundation.