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INFORMAL LITERATURE

FOREST PRODUCTS

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HURA WOOD or POSSUMWOOD"Rakuda"Hura crepitans L.Hura polyandra Baill.Family: Euphorbiaceae

U. S. DEPOSITORY

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Common Names

Acuapa.....Colombia	Javarillo.....Puerto Rico
Acupar.....Colombia	Javillo or (a).....Cuba, Puerto Rico,
Arbol del diablo....Mexico	Dominican Republic,
Arenillo.....Colombia	Venezuela
Arenillero.....Colombia	Milnillo.....Puerto Rico
Assacu.....Brazil	Mil-pesos.....Colombia
Bois du diable.....French West Indies	Monkey's dinnerbell...British West Indies
Castaneto.....Colombia	Mune.....Panama
Catahua.....Peru	Ochoho.....Bolivia
Ceiba amarilla.....Colombia	Ovillo.....Mexico
Ceiba blanca.....Colombia,	Papita de San Ignacio..Mexico
Venezuela	Pet du diable.....French West Indies
Ceiba habillo.....Venezuela	Possentrie (Poison
Ceiba de leche.....Colombia,	tree)....Surinam
Venezuela	Postentrie.....Surinam
Ceiba de lechasa....Colombia,	Possumwood.....U. S. trade
Venezuela	Quauhtlatlatzin.....Mexico
Ceibo.....Colombia,	Quauhayohuatli.....Mexico
Venezuela	Rakuda.....U. S. trade
Haba.....Cuba, Mexico	Sablier.....Haiti, French West
Haba de indio.....Mexico	Indies
Haba de San Ignacio..Mexico	Salvadera.....Cuba, Colombia,
Haba de Guatemala...Mexico	Peru
Habillo or (a).....Cuba, Mexico,	Sandbox tree.....British West Indies
Colombia, Peru,	Seda blanca.....Dominican Republic
Venezuela	Solimanche.....Mexico
Havillo.....Mexico	Tatereta.....Guatemala
Hura wood... ..U. S. trade	Tronador.....Panama
Jabillo or (a).....Mexico, Central	Uassacu.....Brazil
America, Venezuela	

Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

Distribution and Habitat

Two closely related species of Hura occur as large trees from the West Indies and southern Mexico to northern Brazil. The Mexican species (H. polyandra Brail.) differs little from the more widely distributed Hura wood (H. crepitans L.) (17).² The best growth is reported to be on the low narrow reefs of the coastal plain near Paramaribo, Surinam, where nearly pure stands, yielding 6,000 to 100,000 board feet per acre and averaging 25,000 board feet per acre over an area of 20,000 acres, are found.

In Colombia, it is common along the tributaries of the Magdalena River, especially in the region about El Banco. In Venezuela, it is found along the banks of streams and in the moist valleys of the coast range and is cut along the shores of Lake Maracaibo.

The Tree

The trees growing in the open may have relatively short, thick trunks, but in the forest they may attain heights of 90 to 130 feet or even as high as 200 feet. The forest trees have straight, fairly regular trunks often free of branches for from 40 to 100 feet and commonly 3 to 5 feet or sometimes 6 to 9 feet in diameter above the rather small buttresses.

These trees often have sharp spines on branches and trunk. They are reported to be associated with workmen's poisoning. The trees are extensively cultivated for shade and decorative purposes in the tropics of both hemispheres.

Bark

The bark is thick and rather smooth except near the base of the tree where it is covered with the short conical spines mentioned (11). It contains a caustic latex that spatters when a tree is cut. This latex is irritating to the eyes and skin and is poisonous if taken internally. It is sometimes used for stupifying fish (16) and also has been used as a remedy for elephantiasis and leprosy.

Leaves

The leaves resemble those of cottonwood.

Flowers and Fruit

The flowers are dark red and borne in the form of a cone.

The structure of the stamens is used in distinguishing species.

The fruits resemble little pumpkins (sandbox) and explode on drying, scattering wafer-like seeds which contain 50 percent of oil and are used to poison animals.

²Underlined numbers in parentheses refer to the list of numbered references at the end of the article.

General Appearance

The wood superficially resembles Simaruba, but lacks the bitter taste.

Color

The wood varies in color from a lustrous creamy white to light buff when fresh, occasionally with indistinct purplish or greenish streaks. When dry, it may appear yellowish brown or pale olive gray.

Weight

The wood is moderately light, comparable to yellow-poplar; specific gravity 0.38 (0.31 - 0.51) based on oven-dry weight and green volume or a weight of about 40 pounds per cubic foot green and 28 pounds air-dry (11).

Texture, Grain, and Figure

The wood is rated as fine to medium textured. It cuts with a more or less woolly surface. Some has an attractive "roe" grain or ribbon stripe on the radial surface, although the figure is usually not pronounced except in crotches. The grain is generally interlocked but may be straight (11).

Luster

Luster is rated as high (11).

Odor and Taste

Odor and taste are lacking (11).

Working Qualities

Although somewhat difficult to saw when green because of the extreme fuzziness of the cut surface, the wood can be readily machined when dry. Lack of clean cutting and chipped and torn grain are frequently encountered with material which has extremely interlocked grain. The wood takes stains well and glues readily (11).

Mechanical Properties (11)

The following data in table 1 were obtained in recent tests conducted at Yale School of Forestry in cooperation with the Office of Naval Research and the Bureau of Ships, U. S. Navy Department, under Contract N6 ori-44 Task Order XV (Project Designation No. NR-033-C20) and published in Tropical Woods No. 97, Rev. 1, 1950, page 74. Comparative data for yellow-poplar obtained at the Forest Products Laboratory are also included.

Compared with species of like density, possumwood is above average in all static-bending properties except stiffness in which it is slightly below average. It is average in hardness, toughness, and resistance to crushing

Table 1.--Comparison of mechanical properties of possumwood and yellow-poplar (11)

Species	Source	Number of logs	Moisture content	Specific gravity	Static bending				
					Percent	P. s. i.	P. s. i.	1,000 P. s. i.	In.-lb. per cu. in.
Possumwood	Panama	3	64.7	0.42	3,630	6,320	1,030	0.70	6.4
(Hura crepitans)	Venezuela	3	60.9	.42	3,650	5,670	950	.88	7.5
	Surinam	1	76.0	.40	4,500	6,940	1,140	1.08	5.7
	Average	7	67.2	.41	3,930	6,310	1,040	.89	6.5
Yellow-poplar ¹									
(Liriodendron tulipifera)	United States		64	.43	3,400	5,400	1,090	.62	5.4

Species	Source	Compression parallel to grain	Hardness: Compression	Tension: Shear	Cleavage: Toughness					
		-----	perpen-	perpen-						
		Fiber stress: Maximum Modulus	dicular	dicular						
		at propor-: crushing: of elas-	to grain	to						
		tional limit: strength: ticity	-----	grain						
			End: Side: Stress at							
			proportion-							
			al limit							
		<u>P. s. i.</u>	<u>P. s. i.</u>	<u>P. s. i.</u>	<u>Lb. per</u>					
					<u>in. of</u>					
					<u>width</u>					
					<u>specimen</u>					
Possumwood	Panama	1,410	2,430	1,090	440	410	330	870	207	78.6
(Hura	Venezuela	1,900	2,670	1,170	460	390	400	730	210	75.4
crepitans)	Surinam	2,580	3,270	1,240	590	500	460	880	480	57.1
	Average	1,960	2,790	1,170	520	440	420	830	300	70.4
Yellow-poplar ¹										
(Liriodendron	United	1,930	2,420		390	340	330	450	740	220
tulipifera)	States									

¹U. S. Dept. Agr. Tech. Bul. 479.

and modulus of elasticity as determined by compression parallel to the grain; above average in shear, cleavage, and compression and tension perpendicular to the grain, and, below average in stress at proportional limit in compression parallel to the grain.

In the tabulation it is compared with yellow-poplar which is of similar density. The two species are much alike in all measured mechanical properties, with possumwood being slightly superior to yellow-poplar in all but stiffness as determined by bending.

Seasoning

Possumwood can be air dried at a fast rate without undue warping and checking. Early rapid drying tends to forestall the development of mold and stain which form rapidly on green material in warm weather.

As indicated in table 2, volumetric shrinkage of possumwood is low, 7.3 percent, which compares favorably with mahogany, 7.7 percent, and white pine, 8.2 percent. The difference between shrinkage radially of 2.7 percent and tangentially of 4.5 percent is moderate, indicating rather uniform shrinkage in these two directions. Longitudinal shrinkage of 0.48 percent does not exceed the limit of variation to be expected of wood characterized by interlocked grain.

Table 2

Species	Source	Shrinkage			
		Radial	Tangential	Longitudinal	Volumetric
		Percent	Percent	Percent	Percent
Possumwood (<u>Hura crepitans</u>)	Panama	2.5	4.6	0.26	6.4
	Venezuela	2.8	4.6	.77	7.5
	Surinam	2.7	4.4	.42	8.0
	Average	2.7	4.5	.48	7.3
Mahogany (<u>Swietenia macrophylla</u>)	Central America	3.5	4.8	---	7.7
White pine (<u>Pinus strobus</u>)	United States	2.3	6.0	---	8.2

Durability

Possumwood has been found to be fairly resistant to fungi and susceptible to damage by termites (4, 27). Tests conducted at Yale (11), showed the wood to have resistance to decay by a white-rot and a brown-rot fungus ranging from nondurable to durable. Tests conducted by the Navy (1) on water absorption and weathering indicate that this wood compares favorably in both respects with Philippine and Central American mahogany. The tests at Yale (11), however, showed possumwood as being somewhat inferior to Central American mahogany in resistance to water absorption.

Uses

The wood is used locally for common lumber for interior construction and carpentry and in making dugout canoes, boxes and crates, and veneers and plywood. In Mexico, it is sometimes used for telegraph poles. It is considered too light and soft to withstand marring for use as a preferred cabinet wood. It rates as a cheap substitute for Spanish cedar (Cedrela). Since possumwood takes glue well, it could probably be used for corestock, utility and face veneer, and millwork.

Commercial Aspects

An effort to introduce this wood into the American market under the name "Rakuda" was made by W. L. Kann, Pittsburgh, Pa., beginning about 1923 (17).

Anatomical Structure (19)

Growth rings are indistinct to distinct.

Pores vary from small to rather large in different specimens and are not very numerous. Vessel ends have simple perforations.

Tyloses are fairly abundant, and light-colored gum deposits are common.

Rays are uniseriate or locally biseriate, mostly less than 20 cells high, and nearly homogeneous.

Ripple marks are generally absent.

List of References

1. Anonymous.
1944. Habillo Wood as a Substitute for Mahogany. U. S. Navy Department, New York Naval Shipyard, Brooklyn, Rept. No. 4568-18.
2. Anonymous.
1949. Select Rept. No. 9. Timber Development Association, 21 College Hill, London, E.C.4.
3. British Standards Institution.
1948. Nomenclature of Commercial Timbers. Provisional Supplement to British Standards 881 & 589:1946, PD841. London, 18 p.
4. Brooks, R. L., Adamson, A. M., Baker, R. E., and Crowdy, S. H.
1941. Durability Tests on Untreated Timbers in Trinidad. Caribbean Forester 2(3):101-119, April.
5. Cooper, G. Proctor
1928. The Forests of Western Panama. Tropical Woods 16:1-9, Dec. (School of Forestry, Yale University, New Haven, Conn.)
6. Cummings, Lewis A.
1929. The Forests of Venezuela. Tropical Woods 18:32-42, June.
7. Daniel, H.
1936. Notas Sobre Algunas Euforbiáceas. Boletín del Colegio de San José (Medellín, Colombia) 37:3-11.
8. Dugand, Armando
1934. The Transition Forest of Atlántico, Colombia. Tropical Woods 40:1-14, Dec.
9. Dugand, Armando
1936. Nomina de las Maderas que se Emplean in Barranquilla par Construcción, Ebanisteria y Otras Obras. Bol. Municipal de Estadística, Ciudad de Barranquilla, 4:24:40-42, Feb.
10. Hernandez
1651. "De Quauhtlatlatzin seu Arbore Crepitanti II" (The Tree is Figured), Thesaurus 88 (see Standley (20)).
11. Hess, R. W., Wangaard, F. F., and Dickinson, F. E.
1950. Properties and Uses of Tropical Woods, II. Tropical Woods No. 97:1-132 (73-76).
12. Jaffé, W. G.
1943. Hurain, a New Plant Protease from Hura Crepitans (Venezuela). Jour. Biochem. 149(1):1-7, July.
13. Lamb, George N.
1947. Foreign Woods: Hurawood. Wood Products 52(9):22, Sept.
14. Le Cointe, Paul
1947. Arvores e Plantas Uteis. Amazonia Brasileira III, Sao Paulo, 506 p.

15. Merker, C. A., Barbour, W. R., Scholten, J. A., and Dayton, W. A.
1943. The Forests of Costa Rica. U. S. Forest Service, Washington,
48 p.
16. Pfeiffer, J. Ph.
1926. De Houtsoorten van Suriname. Amsterdam. 244 p.
17. Record, S. J.
1938. The American Woods of the Family Euphorbiaceae. Tropical Woods
54:7-40(25-26) (with key).
18. Record, S. J. and Hess, R. W.
1943. Timbers of the New World. Yale Press, New Haven, Conn., p. 160.
19. Record, S. J. and Mell, C. D.
1924. Timbers of the Tropica America. Yale Press, New Haven, Conn.,
p. 374-77.
20. Standley, P. C.
1923. Trees and Shrubs of Mexico. Contrib. U. S. Natl. Herbarium
(Washington). 23, Pt. 3:645-46.
21. Standley, Paul C.
1927. Poisonous Trees of Central America. Tropical Woods 9:3-7, Mar.
22. Standley, Paul Co.
1928. Flora of the Panama Canal Zone. Contrib. U. S. Natl.
Herbarium (Washington). 27:1-416, Jan.
23. Standley, Paul C.
1937- Flora of Costa Rica. Field Mus. Nat. Hist. (Chicago), Bot.
1938 Series 18:1-1616.
24. Williams, Llewelyn
1936. Wood of Northeastern Peru. Field Mus. Nat. Hist. (Chicago),
Bot. Series 15:1-587, Dec.
25. Williams, Llewelyn
1939. Maderas Economicas de Venezuela. Bol. Tech. No. 2, Ministerio
de Agri. & Cria. Caracas, 97 p.
26. Williams, Llewelyn
1942. Exploraciones Botanicas en la Guyana Venezolana. Servicio
Botanico, Ministerio de Agri. & Cria. Caracas, 468.p.
27. Wolcott, George N.
1940. A List of Woods Arranged According to Their Resistance to the
Attack of the "Polilla," the Dry-wood Termite of the West
Indies (Cryptotermes brevis Walker). Caribbean Forester
1:4:1-9, July.

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