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The Making of a Dugout Canoe from the Trunk of the Palm Iriartea deltoidea

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The trunks of certain palm species are used in a variety of ways to furnish commercial and subsistence products. The coconut palm trunk, for example, is a source of sawn lumber for general construction purposes, and the wood can also be crafted into panelling, furniture, and parquet flooring. Entire trunks of a number of different palms are cut and used as framing in building construction, as well as for posts, pilings and power transmission poles. Hollowed-out portions of some palm trunks are made into water conduits, blowguns, drums, fermentation vats, water barrels, water troughs, dugout canoes, and even coffins.

Information on palm trunk canoes was sought through a bibliographic search on the subjects of palms and useful plants in general. Only a few references were found on making this unusual type of canoe in Asia and Latin America.

Miller (1964) states that in Indonesia sugar palm (*Arenga pinnata*) trunks are occasionally made into a very durable canoe (*perahu lesung*). Dastur (n.d.) reports that the hollowed-out trunk of the palmyra palm (*Borassus flabellifer*) is used as a dugout in India.

Latin America has the greatest reported incidence of palm canoe-making, and it appears to be the only region where the practice persists. However, John Dransfield informs me that in 1996 he photographed in Madagascar a trunk of *Ravenea musicalis* hollowed out to act as a dugout canoe, but as this palm is known from but one river, this use is unlikely to be very important in the country. The swollen portion of the Cuban belly palm (*Colpothrinax wrightii*) is sometimes made into a canoe (Moore 1960). Pio Corrêa (1987) mentions the making of a trunk canoe as one of the many uses of the miritĭ palm (*Mauritia flexuosa*) in Brazil.

Dugout canoe construction in the Amazon Basin, exploiting the huacrapona palm (*Iriartea deltoidea*), is documented by Bodley and Benson (1979), Henderson (1990), Karsten (1856), Lévi-Strauss (1948), Pio Corrêa (1987), and Wallace (1853). To serve for canoe-making, palms must be of sufficient diameter to produce a vessel able to accommodate a person or persons as well as cargo, and have a tough, durable rind. Diameter is the most important factor. Three of the palms mentioned above have cylindrical trunks of large diameter: *Arenga pinnata* is 40–50 cm, *Borassus flabellifer* grows up to 1 m, and *Mauritia flexuosa* is 30–60 cm. In the two ventricose palms, *Colpothrinax wrightii* has a trunk diameter of 30–40 cm, and is twice as large at the swelling; *Iriartea deltoidea* is 30 cm, and is up to 70 cm at the swollen portion. (An earlier and sometimes still-encountered name for this palm is *Iriartea ventricosa*. The species name refers to its swollen feature.)

As compared to the hard outer trunk rind, the interior tissue of larger trunked palms is relatively soft, which facilitates its excavation. In *Iriartea deltoidea*, the inner tissue in the swollen trunk portion is so soft that chunks can be extricated easily, and it is so saturated that water can be squeezed from it by hand.

A week-long visit was made to Iquitos, in the Peruvian Amazon Region, for the express purpose of acquiring a palm trunk canoe for the Palm Museum being established in Santa Cruz de Tenerife, Canary Islands. It was decided to procure a palm canoe as a unique large object for exhibit. This article is intended to capture a photographic record and description of the canoe-making.

On September 30, 1997, we proceeded to the

1. *Iriartea deltoidea* palm exhibiting its swollen trunk midsection, a common feature among lowland populations below about 300 m in elevation. Photo by Jane MacKnight. 2. *Iriartea deltoidea,* showing its characteristic stilt roots. Guillermo Criollo is wielding the axe. Photo by Jane MacKnight.

3. The swollen section of the palm trunk is marked with a machete prior to being hollowed out. Photo by Jane MacKnight. 4. Cutting through the tough outer rind. Photo by Jane MacKnight.

5. The softer inner material of the trunk is easily removed with a hatchet or machete. Photo by Jane MacKnight. 6. A view toward the bow of the nearly-completed canoe. Photo by Jane MacKnight.

7. The completed palm trunk canoe. Photo by Jane MacKnight.

field from Iquitos in pursuit of a palm canoe, accompanied by a team of four local, skilled woodsmen. Prior reconnaissance had identified a landowner willing to sell one of his *Iriartea deltoidea* palms for our purposes; the price put on the palm was ca. $7.70. The property was ca. 20 km south of Iquitos on the road to Nauta. The farm grew sugarcane, but had some remaining forest patches containing large specimens of the desired palm.

About 1 km from the nearest road a candidate palm was found in the forest (Fig. 1) and was cut down with an axe (Fig. 2). The felled palm measured 24.4 m from ground level to the base of the crown, and its stilt roots accounted for 1.8 m of the palm's height.

The next step was to select and cut away the swollen trunk section to be fashioned into the canoe. The separated trunk section was examined carefully to determine where the excavation should be made, after which an outline was cut into the surface with a machete to guide the process. The larger end would be the stern of the canoe. The swollen portion of the trunk is shown in Fig. 3. It is 4.5 m long and has a diameter at the lower end of 40 cm and at the upper end of 30 cm. At the thickest point, the diameter is 51 cm.

Just visible in the lower right of Fig. 3 is the cylindrical section of the trunk extending from the swelling to the stilt roots; it measured 12.7 m in length. In the upper left there is visible the portion of the trunk above the swelling, which is also cylindrical. It is 5.4 m long. Having at hand a felled palm, the palm heart was extracted. The fresh product proved to be of excellent quality, comparable to the fresh chonta salads served in Iquitos restaurants, which are derived from palm hearts gathered from wild stands of *Euterpe precatoria.*

Using an axe, hatchet and machete, the work crew proceeded to hollow out the swollen trunk section (Figs. 4, 5, and 6). The exterior rind was the most difficult to cut and required an axe. A hatchet and machete were employed to remove the softer inner pulp. The finished canoe is shown in Fig. 7. The stern is cut off nearly straight, but the bow is tapered. Hardwood cross pieces are wedged between the gunnels to enlarge the opening.

The palm canoe was constructed with a labor

input of about one man-day. Normally, the process would extend over two days, primarily to permit spreading further the gunnels through the use of gradually longer sticks. A wider opening provides additional space and gives the canoe greater stability.

From the site in the forest, the palm canoe was skidded to the road, loaded aboard a truck, and transported into the city of Iquitos. At a local carpenter shop, a strong wooden box was constructed to enclose the canoe, and it was shipped to Tenerife without any damage.

We were fortunate to make contact with Guillermo Criollo from Iquitos, an expert on palm canoe construction who guided the process. He had learned the technique in the Bora village on the Río Ampiyacu where he grew up. Criollo told us that the canoes are made to carry people and cargo downstream to market towns, and are then abandoned. Palm canoes are not used for fishing or other purposes. In addition to the Bora, other Amazonian ethnic groups reported to make palm trunk canoes are the Matzés and Aguarunas.

Palm canoes are temporary watercraft. Since the bow and stern are composed of soft material, those parts of the canoe are the most vulnerable to deterioration. Keeping the canoe in water is essential to prevent drying and cracking. Karsten (1856), in his brief account of palm canoe-making, states that along the Pacimoni River, clay is used to stop up the canoe ends.

A palm trunk is said to make a poor canoe because it is heavy and difficult to maneuver. At best, a palm canoe may have a useful life of two or three months. But it serves its purpose in situations of downstream travel, especially on small streams. The greatest advantage is the minimal amount of labor required to make a palm canoe, as contrasted to the larger and more durable dugouts made from tropical hardwoods. The process of making a hardwood dugout requires considerable labor and time, since the core wood must be slowly burned out to form the cavity.

The Tenerife Palm Museum and the surrounding Palmetum are expected to be opened in the year 2000. Palm enthusiasts are invited to visit the Museum to see the canoe described here, as well as the many other useful and ornamental palm objects which will make up the permanent exhibit.

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Left
Metroxylon warburgii (Heim) Becc.

Like most species in the genus, *Metroxylon warburgii*, one of the sago palms, is hapaxanthic, meaning that it dies after flowering. This palm was photographed in 1996, in Western Samoa, but by now this individual is long gone. The bright yellow flowers attract nectar-feeding birds, such as the Scarlet Honeycreeper (*Mysomela cardinalis*). The fruits are the size of tennis balls and are covered with shiny, chestnut brown scales. The seeds germinate readily under moist conditions.—Scott Zona

Right
Mauritia flexuosa L. f.

This photograph was taken in September, 1997, in an almost permanently flooded swamp about 8 km from Iquitos, Peru, along the road to Nauta. The local name for the palm is *Aguaje*, because it is always associated with water (*agua*). It is one of the most widely used palms in the area. This species is dioecious, and the specimen in the photograph is a staminate (male) plant.—Manuel Caballero Ruano