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A Note on Indigenous Uses of *Dypsis decaryi* in Southern Madagascar

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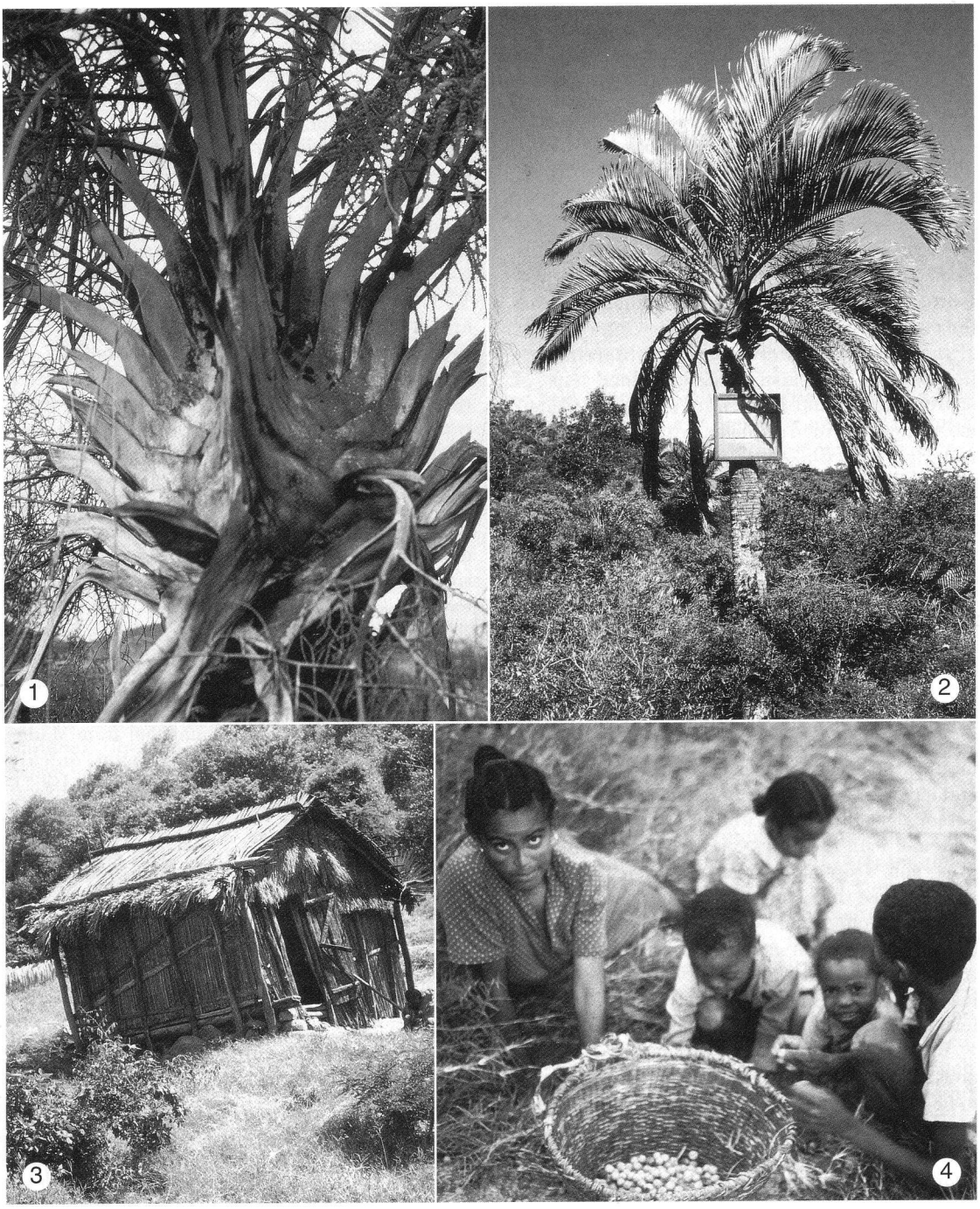
Despite now being fairly well known in cultivation, the Madagascar "triangle palm" *Dypsis decaryi* (Jum.) Beentje & J. Dransf. (formerly known as *Neodypsis decaryi* Jum.) is very narrowly restricted in its native range in southeastern Madagascar (Fig. 1). It is known principally from parcel number 3 of the Andohahela nature reserve (Réserve Naturelle Intégrale d'Andohahela), a 500-ha portion of the reserve that was established by the French colonial government in 1939 specifically to protect this palm species (Fig. 2). Parcel number 3 is just west of the village of Ranopiso and about 40 km northwest of the provincial capital of Fort Dauphin. More importantly, and perhaps explaining the triangle palm's narrow range, the palm is found in an area of transition between the spiny forest to the west and the humid forest to the east. Isolated individuals of the palm exist beyond the reserve borders for several kilometers, but the number of palms outside the reserve continues to diminish. Dransfield and Beentje (1995:187) recently estimated that a mere 1000 trees exist in the wild.

During the course of anthropological field work, one of us (WW) lived in various Tatsimo villages in southern Madagascar from 1994 to 1996. While the focus of this field work was to compare Tatsimo or indigenous concepts of nature to Western ideas regarding conservation, there was ample opportunity to observe how villagers interacted with specific plants in their environment. The local population of the Tatsimo ethnic group, which inhabits the perimeter of parcel number 3 of the Andohahela reserve, places its own value on trees of *Dypsis decaryi*, which they know as *làfa*. Although recent studies (Ratsirarson 1993, Ratsirarson et al. 1996, Ratsirarson and Silander 1997) of the population biology and conservation of *D. decaryi* have alluded to this, few detailed descriptions of Tatsimo or other indigenous uses of the palm exist. Oliver (1886:83) included *làfa* among the native plants used for making rope and twine, but he neither identified the plant nor provided details as to its provenance. Decary (1964) simply noted that the leaves of *D. decaryi* were formerly used for thatching roofs, while Dransfield and Beentje (1995:187) reported without elaboration that the leaves are used for thatching, the fruits are eaten by children, and the fruits were formerly used to prepare a fermented drink. Presumably the sources of Dransfield and Beentje's information were local contacts whom they interviewed in 1989 and 1992 when they collected herbarium material in the reserve and Ranopiso. In addition, they noted that almost all the seed of *D. decaryi* now is harvested for export to satisfy the horticultural trade (and undoubtedly to create a source of cash income for those living near the reserve). We can confirm that the Tatsimo indeed use *D. decaryi* for the construction of houses, as a source of food, and more recently, as a commodity. That the economic value assigned to this palm has changed over time, in large part due to the palm's status as a protected species, is an important, and usually neglected, piece of information to add to a broader understanding of the history of conservation and human–environmental relations in Madagascar.

The Tatsimo villages that now surround parcel number 3 of the Andohahela reserve were first established at the turn of the century. Families moving up from the southern coast, some 20 km away, in search of new lands for farming and cat-



1. The Madagascar "triangle palm" *Dypsis decaryi*. 2. *Dypsis decaryi* marking the boundary of parcel number 3 of the Andohahela reserve. 3. A Tatsimo house thatched with *Dypsis decaryi*. Note the palm behind the house and the maize (corn) drying in the sun. 4. Tatsimo children eating the fruits of *Dypsis decaryi*, which they have gathered in a basket.

tle grazing, were the pioneers. These settlers used the wood of *Dypsis decaryi* for the construction of houses. The outer walls of their traditional one-room rectangular houses (normally 3 × 4 m) were made of palm planks that villagers valued for their physical characteristics. These planks are very light and durable when dried, they are porous and "breathe" well in the hot climate, and they are labor effective, since the trees are easy to fell. The petioles and leaves of the palm were used to thatch the roofs (Fig. 3), providing shelter from the sun and protection from the misty rains that fall during the winter months of June to August. Beyond their utilitarian merits, the palm trees also created a valued sense of egalitarianism and uniformity among the Tatsimo. They provided villages with a shared raw material that villagers transformed into an aesthetic and an architecture characteristic of this particular corner of Madagascar.

The 1939 French colonial decree that created the Andohahela nature reserve also established a new set of rules that forbade the cutting of *Dypsis decaryi* within the reserve boundaries. More recent state forestry regulations have made it mandatory for people to get permits to cut trees for construction. In many cases the permits must be purchased, and so wealth and access to money have increasingly become factors determining the types of houses being constructed, and have had an impact on other community and personal values as well. Although houses thatched with *làfa* leaves are cooler, corrugated iron roofs are sought today for their durability and because they constitute evidence of wealth. A *làfa*-thatched house, ironically, has now become a sign of a person or family without means. At the same time, the ability to gather palm leaves has also been hindered by the fact that few palms remain outside of the reserve.

While *Dypsis decaryi* is less frequently used now by the Tatsimo for construction, it continues to be used in another and rather different way. It is a favorite sweet and snack for children and occasionally adults. Young boys who tend to the family cattle, head each morning into the hills and collect large baskets of the fruits (during the months of January–March). The small green fruit, which is about the size of a large marble, has a smooth, thick epicarp that peels away to display a thin, custard-like mesocarp covering the fibrous endocarp. Children either gnaw on the fruit as a snack (Fig. 4), or bring home the baskets of fruit and empty them into a large rice mortar. Small amounts of water are added to the mortar, and as the fruits are pounded, the epicarp separates and the custard-like mesocarp is loosened and mixed. After all the fruits have been opened and thus processed, the mixture is served in large bowls and eaten with spoons. It tastes like a sweet vanilla-coconut custard.

In the past 10 years, a new source of demand for *Dypsis decaryi* has been created that extends well beyond the reserve's meager boundaries. With the growth in popularity of *D. decaryi* as an ornamental, villagers have often been approached by outside middlemen to collect the seeds for overseas markets. In 1995, the price received per large basket of seed (roughly 2 kg) was 2000 FMG or 50 cents US. This is a phenomenal price when compared to the price of rice, the staple crop in Madagascar, which at the same time sold in local markets for 500 FMG per *kapok*. (A *kapok* is an unusual, but fairly standard measure throughout Madagascar for dried rice. Often an empty tin can, a *kapok* is more or less equivalent to an 8-oz cup.)

We do not know when *D. decaryi* was first introduced into cultivation. The first herbarium specimens date from 1928 and the species was first described in 1933. The Fairchild Tropical Garden in Miami acquired material from Madagascar in July 1947 and the palm quickly showed its ornamental potential (Read 1961). Collections in other botanical gardens such as the Longwood Gardens, Kennett Square, Pennsylvania, can be traced to material provided by Fairchild. It is only in recent years that seed of *D. decaryi* has become more widely available in the horticultural trade.

Western interest in *Dypsis decaryi,* whether it be for its conservation or horticultural potential, is but one recent development in the history of this species as it relates to both the human and natural environment. What is remarkable is that not only are the small native populations of *D. decaryi* in Madagascar affected by the use the Malagasy make of the palm, but also that foreign definitions of the value of the palm and the proscriptive behavior patterns that are dictated by conservation concerns have an impact on the cultures and societies of the area. As we have tried to suggest with this example, the history and social aspects of plants, while often neglected by botanists and conservationists, are, or should be, very much part of the ethnobotanical and conservation picture.

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PALM LITERATURE

Proceedings of an International Workshop on Lethal Yellowing-like Diseases of Coconut, Elmina, Ghana, November 1995. S. J. Eden-Green and F. Ofori (eds). Natural Resources Institute, Chatham, UK. 1997.

As a past chairman of the now-defunct International Council on Lethal Yellowing. I am aware of the benefits of international conferences and happy to review this workshop. A workshop is an opportunity for scientists working on these diseases, and for administrators responsible for dealing with the social and economic consequences, to record research and experience that would not be published in scientific papers. These particular proceedings are interesting reading and a valuable reference. The information is, however, two years old.

The papers presented describe much information that is already well known to those of us involved in Lethal Yellowing (LY) but the basic facts listed below bring us up to date, inform us on how much progress has been made with this difficult problem, and enable us to determine the next steps.

LY-like diseases are caused by phytoplasms (previously known as mycoplasma-like organisms or MLO) in the phloem. The incubation period for Caribbean LY ranges from 3–9 months in young coconut palms to 7–15 months in mature palms.

The symptoms briefly comprise (a) yellowing or browning of fronds commencing with the oldest, (b) abscission of immature nuts, (c) necrosis and drooping of young inflorescences, (d) necrosis and wilt of the "spike" (youngest frond), and (e) death.

The vectors of phytoplasms are phloem-feeding leafhoppers and planthoppers. The vector of LY in Florida was found to be *Myndus crudus* van Duzee, which is common in coconut areas and breeds on the roots of several tropical lawn grasses. One might comment that searching for the vector(s) of other LY-like diseases of coconut is very onerous and not likely to lead to a cure. LY does not appear to be transmissible in coconut seeds.

LY-like diseases have so far been found in the Bahamas, Belize, Cameroons, Cayman Islands, Cuba, Dominican Republic, Ghana, Haiti, Jamaica, Kenya, eastern Mexico, Mozambique, Nigeria, Honduras, Tanzania, Togo, and mainland USA. History indicates that more countries will soon be added to this list, e.g., the Ivory Coast and Nicaragua. Of importance but seldom mentioned are countries where LY-like disease DOES NOT occur, e.g., Benin, Sao Tome, the Ivory Coast, St. Lucia, Costa Rica, Puerto Rico, and the Pacific coast of Central America. Such countries might constitute a source of coconut germ plasm without the taint of LY-like disease, provided that no other coconut disease or pest is present.

Diseased palms exhibit many physiological and biochemical abnormalities, some of which have been studied historically as causes of the disease and are still being studied. However, it seems probable that these abnormalities are caused by the disease rather than causing it.

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