

A New Locality for *Marojejya* *darianii* in Madagascar

ADAM BRITT
*Herbarium, Royal Botanic
Gardens, Kew, Richmond,
Surrey, U.K. TW9 3AB*

BERNARD IAMBANA
*Madagascar Fauna Group
(MFG), PO Box 147,
Toamasina 501, Madagascar*

AND

TIANJANAHARY
RANDRIAMBOAVONJY
*RBG Kew, Lot II J 131 B,
Ambodivoanjo, Ivandry,
Antananarivo 101,
Madagascar*



1. A mature individual of
Marojejya darianii at Iketra.
(Photo: J. Dransfield)

Marojejya darianii has been discovered in a new locality in the Betampona Reserve in Madagascar, over 250 km from the type locality.

The impressive, entire-leafed palm, *Marojejya darianii* J. Dransf. & N.W. Uhl (Arecaceae, Arecoideae, Areceae, Masoalinae), was first discovered in 1983 (Dransfield & Uhl 1994). The type locality for this species is a small upland swamp in a valley bottom (altitude 400 m) near to the village of Sahavary at the northern end of the Masoala peninsula in north-eastern Madagascar. Another two populations were discovered by Philip Guillery of Projet Masoala near to Iketra (Fig. 1), also on the Masoala peninsula (J. Dransfield, pers. comm.). This paper gives notice of the discovery of a further population of *M. darianii* in the Réserve Naturelle Intégrale No. 1, Betampona, around 40km north-west of the city of Toamasina. This site is more than 250 km south of the type locality. Herbarium specimens were collected from this new population in March 2003 and their identity as *M. darianii* was confirmed by John Dransfield. The conservation status of *M. darianii* is rated as critical (Dransfield & Beentje 1995). The chances for the survival of this unique and magnificent palm have been considerably strengthened by the discovery of a further small population within a protected area.

History of the discovery

The first author became aware of the possible occurrence of *M. darianii* in the Betampona Reserve in December 2001. One of the ANGAP (l'Association Nationale pour la Gestion des Aires Protégées) conservation agents for Betampona, Didier Tsilanizara, had previously (about a year earlier) mentioned sighting a strange palm in the reserve that he had seen nowhere else. At the time no description was forthcoming. However, in December 2001 Didier was examining the Madagascar Fauna Group's copy of *The Palms of Madagascar* (Dransfield & Beentje, 1995) and declared "Voilà l'espèce de palmier que j'ai trouvé". The species in question was *M. darianii*. Despite the first author's great excitement and urgent desire to confirm this, the Christmas and New Year holiday intervened. Finally on the 9th of January 2002 the site was visited by a joint MFG/ANGAP team and the occurrence of *M. darianii* was confirmed.

Description of Habitat

All specimens of *M. darianii* were located within an area of approximately 2 ha at an altitude of 290 m. The terrain was flat, which is very unusual at Betampona! Plants were observed close to a very small brook (less than 50 cm in width) and a larger stream (approx. 2 m in width). No plants were observed growing more than 10 m from water.



2. A mature individual of *M. darianii* at Betampona. (Photo: A. Britt)

One mature specimen and numerous young plants grew right at the stream edge and would presumably be submerged at the base during heavy rainfall. A further young plant was found growing in the middle of the small brook.

The surrounding vegetation was slightly degraded primary rain forest, at the edge of more intact forest, with a mean canopy height of 10–15 m. Several large specimens of the distichous palm, *Orania trispatha*, were observed in the same area. Soil was peaty and moist. Several young plants were observed growing amongst scrubby vegetation on previously cleared land (*savoka*) at the forest edge, and the remains of the trunk of a mature tree, which had been recently felled, were discovered in the same vegetation type.

At Iketra this species similarly occurs on flat terrain, but in very narrow valley bottoms (J. Dransfield, pers. obs.). At the type locality it occurs in a peaty swamp on flat terrain in a broad valley bottom (Dransfield & Beentje 1995).

The Conservation status of *Marojejya darianii* — Adam Britt and John Dransfield

At present *Marojejya darianii* is known from four confirmed localities.

1. The type locality near Sahavary at the northern end of the Masoala Peninsula. Here the palm occurs in a population estimated in 1986 to consist of 50 mature individuals growing in an upland swamp.

2. and 3. Iketra on the eastern side of the Masoala Peninsula, two colonies discovered by Philip Guillery and his colleagues from Projet Masoala and visited by JD in 1996, one beside the path between Sahamalaza and Tanany Fred consisting of a few immature and two mature individuals (this outside the boundary of the Masoala National Park), and the other about one and a quarter hours direct walk west of Tanany Fred consisting of many (20+) mature individuals and an abundance of juveniles and seedlings (this within the Masoala National Park). Both localities are in flat but narrow valley bottoms. In the second locality in 1996 there had been cutting for palm heart, said to be at least a year and a half previously, but these individuals could have been more recently felled. The second locality seemed pretty remote, yet the palm is known to villagers and has been cut.

4. The newly discovered population in Betampona. Besides these four confirmed localities there have been other unconfirmed sightings. Two students from Université d'Antananarivo who had visited the large and mostly botanically unexplored reserve Ambatovaky inland from Soanierana-Ivongo in 1999 claimed to JD to have seen a colony of *Marojejya darianii*. JD and Bill Baker from Kew saw no sign of it on their visit to the reserve in 1999, but the reserve is very large and they visited only the southern margin. There are also unconfirmed reports of a locality near Toamasina, mentioned in Dransfield & Beentje (1996). Now that we know that the leaf in mature *M. darianii* is distally irregularly pinnate in some populations, the most reliable diagnostic character is the grooved seed (smooth in *M. insignis*). It is possible that such irregularly pinnate leaved populations of *M. darianii* may have been overlooked. For example, in Palms of Madagascar (Dransfield & Beentje 1996) a juvenile irregularly pinnate-leaved palm was illustrated as '*kona be*' from a valley bottom swamp in the Mananara-Avaratra Biosphere Reserve. We now strongly suspect that this is *Marojejya darianii*.

Of the confirmed localities of this palm, three are within protected areas, the fourth (one of the Iketra populations) not so. Using IUCN Red List Categories and Criteria Version 3.1 (IUCN 2001) we suggest that the conservation status of *Marojejya darianii* should be classified as Critically Endangered. This judgment is based upon its extent of occurrence being estimated at less than 100 km², with severe fragmentation, evidence of a continuing decline in the number of mature individuals and a population size estimated at fewer than 250 mature individuals with no sub-population estimated to contain more than 50 mature individuals.

Description of specimens

A total of eight mature sized trees were located and examined. Fig. 2 clearly illustrates the conspicuous pointed auricles on the leaf sheaths (Dransfield & Uhl 1984). However, this small population at Betampona differs from specimens on the Masoala peninsula in that the leaves are both basally and distally irregularly pinnate (Fig. 2). In contrast specimens from the Masoala have leaves which are entire with the exception of the distal portion which is irregularly pinnate. Six of the eight trees were in fruit in January 2002. Fruit grows in multiple clusters attached to one or two large interfoliar infructescences. The fruit of five of these trees was green. Dransfield & Beentje (1995) state that the fruit of *M. darianii* is pink when young, turning green and then red. The fruit of the sixth tree was a rusty brown colour. The seeds of fruits collected from this tree were not yet

fully formed. One tree was observed with two dead staminate inflorescences, but the remaining specimens were sterile. In March 2003 only one tree was in fruit, the remainder were sterile. The fruits were red in colour (Figs. 3 & 4) and contained seed that was approaching maturity, showing the characteristic deep, broad, mainly longitudinal grooves.

A mean trunk height of 8.75 m was recorded (range: 6–10 m, n = 8), with a crown height estimated at roughly 2 m. The number of leaves in the crown ranged from 18–24. Dead leaves remained attached, hanging downward at the distal part of the trunk. A mean trunk diameter at breast height of 30.0 cm was recorded (range: 26.5–36.5 cm, n = 8). A strangling fig (*Ficus lutea*) was growing on one specimen. The same mature tree growing right at a stream edge had a bulbous trunk base with surface roots. More than 50 young



3 (above). *M. darianii* in fruit at Betampona. 4 (below). *M. darianii* individual fruit cluster. (Photos: A. Britt)

plants were growing in the immediate area, ranging from two-leafed seedlings to plants with mature sized leaves but no trunk (Figs 5 & 6).

Conservation action

One suggestion to improve the conservation of *M. darianii* at Betampona is to transplant seedlings from the current known population to other areas of similar habitat type within the reserve. The presence of *Orania trispatha* could perhaps indicate habitat of suitable quality. It is recommended that research into the feasibility of such a scheme be initiated immediately.

While it is possible that other populations of *M. darianii* may be awaiting discovery at Betampona, the evidence suggests that this palm has very specific habitat requirements and that its distribution is naturally extremely localized. On showing photographs of this species to local people, no-one claimed ever to have seen it. The local name on the Masoala peninsula is "Ravimbe" meaning "big-leaf," but no local name was forthcoming in the Betampona region. It is extremely gratifying to have found *M. darianii* at Betampona, but the small size of the population and the area of occurrence make it extremely vulnerable. The propagation of this palm as part of the proposed living palm collection at the MFGs Parc Ivoloïna is strongly recommended.





5 (above). *M. darianii* seedlings at Betampona growing at the edge of a stream. 6 (below, right). *M. darianii* at Betampona with mature-sized leaves but no trunk. (Photos: A. Britt)

Acknowledgments

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