

# Synoptic Revision of the genus *Phanerodiscus* Cavaco (Olacaceae) in Madagascar

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## SUMMARY

The olacaceous endemic genus *Phanerodiscus* Cavaco is revised for Madagascar. Three species are recognized, including a new one, *Phanerodiscus capuronii* V. Malécot, G.E. Schatz & J. Bosser, named in order to designate the taxon bearing the invalid name *Phanerodiscus louvelii* Capuron. *Phanerodiscus perrieri* var. *orientalis* Cavaco & Keraudren is excluded from the genus, as the type specimen belongs to *Anacolosa pervilleana* Baillon, whereas all the remaining specimens belong to *Phanerodiscus capuronii*. The three recognized species are separated mainly on the basis of fruit appendages and distribution. Identification keys are provided in order to distinguish these three species on the basis of fruits, flowers and leaf morphology.

## RÉSUMÉ

Le genre endémique d'Olacaceae *Phanerodiscus* Cavaco est révisé pour Madagascar. Trois espèces sont recensées, dont une nouvelle espèce, *Phanerodiscus capuronii* V. Malécot, G.E. Schatz & J. Bosser, nommée pour désigner le taxon portant le nom invalide *Phanerodiscus louvelii* Capuron. *Phanerodiscus perrieri* var. *orientalis* Cavaco & Keraudren est exclu du genre, l'échantillon type appartenant à *Anacolosa pervilleana* Baillon, alors que tous les autres échantillons cités par ces auteurs appartiennent à *Phanerodiscus capuronii*. Les trois espèces recensées se distinguent principalement à partir des excroissances de leur fruit et de leur distribution. Des clef d'identifications sont fournies pour distinguer ces trois espèces à partir des fruits, des fleurs ou des feuilles.

**Key words:** Olacaceae, *Phanerodiscus*, Madagascar, endemism.

## INTRODUCTION

*Phanerodiscus* is a genus of small trees endemic to Madagascar that Cavaco established in 1954 with the single species *Phanerodiscus perrieri* Cavaco. It belongs to the family Olacaceae and is placed, according to morphological (Cavaco 1954; Malécot & Lobreau-Callen 1999), anatomical (Baas et al. 1982; van den Oever 1984) and palynological (Lobreau-Callen 1980) data near the genus *Anacolosa* (Blume) Blume and *Cathedra* Miers in the tribe Anacoloideae.

*Phanerodiscus* is traditionally defined by its fruit surrounded by an indurial complex and by its calyx with widely developed sepals. In contrast, the two closest genera of Olacaceae, *Anacolosa* and *Cathedra*, have fruits surrounded by an accrescent disk, and a reduced calyx and sepals fused along their entire length. Other diagnostic characters of *Phanerodiscus* mentioned by Capuron (1968) correspond to characteristics of tribe Anacoloideae. This is particularly the cupular disk, free from the calyx and ovary, in which petals and stamens are inserted.

Recent phylogenetic studies suggest that Olacaceae are paraphyletic at the base of Santalales and that genus *Schoepfia* should be excluded (Nickrent et al. 1998; Nickrent & Malécot 2001). Fossil pollen of Olacaceae, known under the name *Anacolosidites* Cookson & Pike, are mainly attributable to tribe Anacoloideae, which is where *Phanerodiscus* belongs. These are present from the Maestrichien (-72 Ma) in both the northern hemisphere and in the southern hemisphere (Muller 1981; Krutsch 1989; Askin 1989), and since the Eocene (-53 Ma) in Africa (Lucas 1994; Kuyl et al. 1955) and India (Thanikaimoni et al. 1984). The members of this tribe probably colonized Madagascar around the same time (Krutsch 1989; Schatz 1996). *Anacolosa*, represented by two species in Madagascar, belongs to the "Lemurian Stepping-stones" taxa of Schatz (1996), whereas *Phanerodiscus* is endemic either due to extinction in other regions or following localized evolution in Madagascar.

In the thesis of one of the authors (Malécot

2002), it is apparent that various nomenclatural problems still existed for this genus of Capuron (1968) who considered it composed of three species. A comparative study of *Phanerodiscus* samples available in major herbaria containing Malagasy material (MO, P, TAN, TEF) led us to follow the taxonomy proposed by Capuron (1968), but mainly to re-examine the nomenclature. This work aims to solve the nomenclatural problems while presenting a detailed study of various species attributable to the genus; a new species is described.

Regarding the exsiccatae, collection locations or the collector's name, noted by Capuron (1968) but not mentioned on the herbarium specimens preserved in various institutions, are indicated in braces {}. Square brackets [] are given to the geographic coordinates assigned *post facto* using the information on place names and Malagasy geography found in the "Madagascar gazetteer", available at <http://www.mobot.org/MOBOT/research/madagascar/gazetteer/>.

## TAXONOMIC HISTORY

The genus *Phanerodiscus* was created in 1954 by Cavaco from material collected in the region of Majunga, north-western Madagascar. At the time, this type had only one species, *Phanerodiscus perrieri* Cavaco.

Capuron (1962), in Part V of his contribution to the study of the forest flora of Madagascar, considered that a taxon described by Perrier de la Bâthie (1952) in the genus *Diospyros* (Ebenaceae) must be placed in the genus *Phanerodiscus*. He then writes the following lines:

*Diospyros sphaerosepala* Baker var. *calyculata* H. Perr., *l.c.*: 141 =

***Phanerodiscus diospyroidea***

R. Capuron nom. nov.

where *l.c.* refers to Mem. Inst. Sci. Madagascar., Series B, IV (1952).

Cavaco & Keraudren (1963) described a new variety, *Phanerodiscus perrieri* Cavaco var. *orientalis* Cavaco & Keraudren. It had as the type specimen *RN 8156* present at P. They also mentioned a small number of paratypes.

In 1968, Capuron, as part of his study of the forest flora of Madagascar, wrote a paper titled "Olacacées, Opiliacées et Santalacées arbustives ou arborescentes de Madagascar" as a typographic document bearing the letterhead of the Centre Technique Forestier Tropical, Section de Madagascar. In this paper, we find the description of *Phanerodiscus perrieri* Cavaco, but also that of *Phanerodiscus diospyroidea* R. Capuron. A third species is also mentioned, *Phanerodiscus louveli* R. Capuron.

As regards this third taxon, Capuron (1968) notes on page 34: Syn.: *Phanerodiscus perrieri* var. *orientalis* Cav. and Ker. (1963) regarding the samples cited excluding the type (cf. *Anacolosa pervilleana* Baill.), and also mentions in his work (p. 24) *Anacolosa pervilleana* Baillon (1860-1863); Syn.: *Phanerodiscus perrieri* var. *orientalis* Cav. and Ker. (1963) regarding the type and description.

Only a few later studies addressed the genus *Phanerodiscus*, mainly in palynological or anatomical studies of the family Olacaceae. Thus, Lobreau-Callen (1980), collected pollen from the sample *SF 11265*, and used the name *P. diospyroidea* Capuron for the illustrated pollen. The same sample was used by Baas et al. (1982) for the study of leaf anatomy of this genus, using the name *P. diospyroidea* [*diospyroides*] Capuron. Lobreau-Callen (1980) also studied the pollen sample *SF 6320*, *P. perrieri* Cavaco var. *orientalis*, and Baas et al. (1982) studied the leaf anatomy of *P. perrieri* Cavaco based on the sample *SF 24226*.

From a nomenclatural point of view, three names have been created according to the rules of the International Code of Botanical Nomenclature, *Phanerodiscus perrieri* Cavaco, *P. perrieri* var. *orientalis* Cavaco & Keraudren, and *P. diospyroidea* Capuron.

*Phanerodiscus diospyroidea* Capuron is not invalid because it is a substitute name for a name validated by Perrier de la Bâthie published with a different rank.

*Phanerodiscus louveli* Capuron, is in part invalid because it was published in a document that is not considered an effective publication since the document is typographic (Greuter et al. 2000, Art. 29.1). In this document, dated 1968, among samples assigned to "*Phanerodiscus louveli*", nothing is mentioned as the type specimen and the name is therefore invalid (Greuter et al. 2000, Art. 37.1). It may be noted that the *Louvel 177* specimen present at P is indicated as the type in the hand of Capuron. One should therefore publish a valid taxon corresponding to "*Phanerodiscus louveli*" Capuron.

From a taxonomic viewpoint, three species are recognized. The type specimen *Phanerodiscus perrieri* var. *orientalis* belongs to *Anacolosa pervilleana* Baillon, while all paratypes belong to *Phanerodiscus capuronii*.

## SYSTEMATIC TREATMENT

### PHANERODISCUS Cavaco

Notul. Syst. (Paris) 15: 11 (1954)

Type. - *Phanerodiscus perrieri* Cavaco

The genus *Phanerodiscus*, endemic to Madagascar, is composed of three species. They differ mainly in the fruit and especially by the shape of the individual investments. The leaves are deciduous at unknown intervals, but probably are annual, falling during the dry season. Flowering usually takes place on leafless branches, two years of age as estimated by Capuron (1968). During the flowering period, some branches may remain leafy and non-flowering. The flowers of different species are very similar morphologically. They have 5 or 6 floral parts per cycle (sepals, petals and stamens). But the number of floral parts is more related to the individual than the species. The floral morphology can hardly be used to distinguish different species. The fruit is a drupe surrounded by an accrescent structure

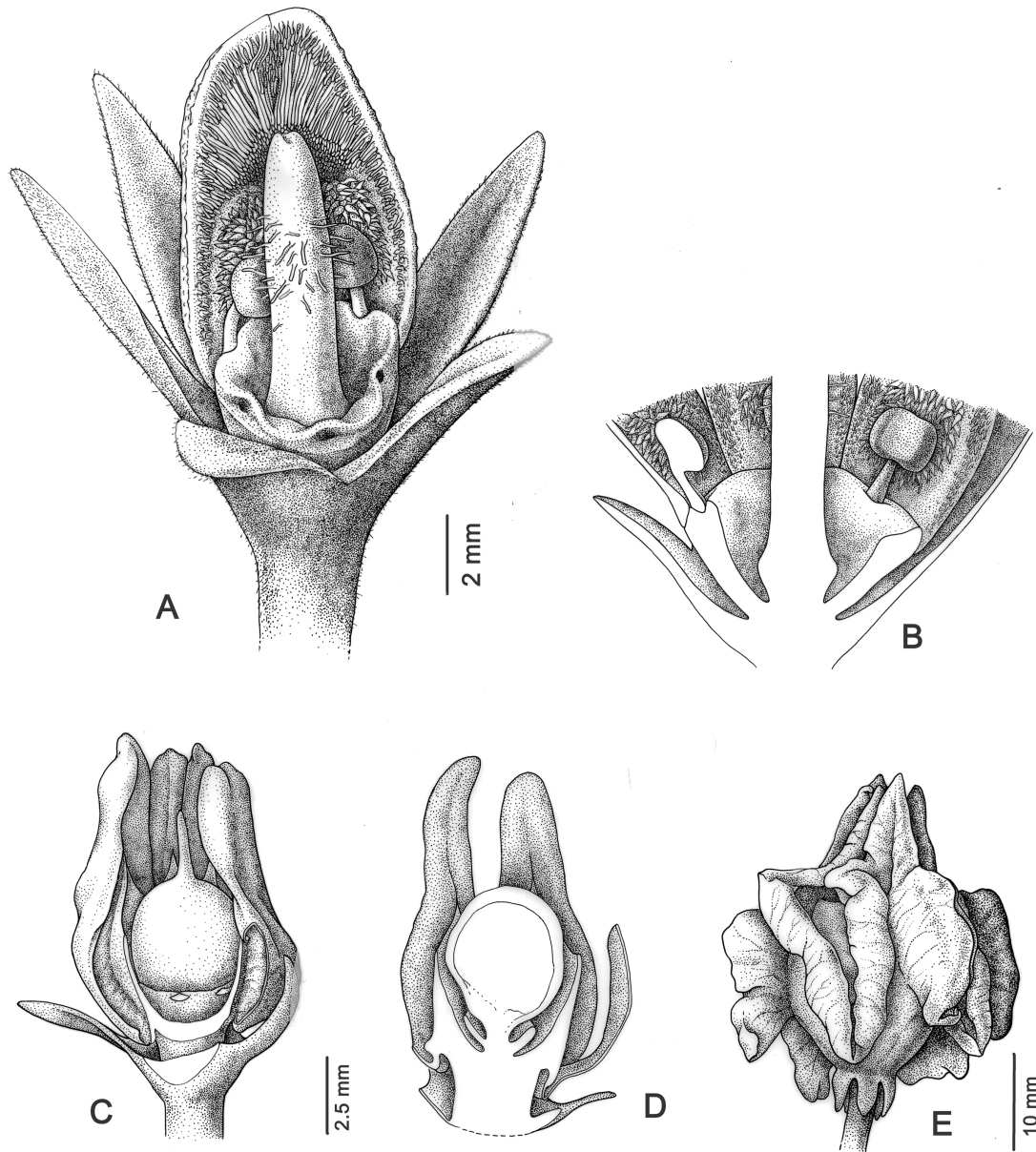


Fig. 1. - *Phanerodiscus diospyroidea*: **A**, flower, three petals and three stamens removed; **B**, detail of the base of the flower in longitudinal section; **C**, very young fruit, two induvial festoons removed, **D**, very young fruit, in longitudinal section; **E**, fruit during growth, induvium almost fully developed. (A-B, *Forest Service 11265*, E-C, *Forest Service 27325*).

or induvium. This structure does not appear to contain a counterpart in the rest of the plant kingdom, since, although placed between the sepals and the “disk” that supports the petals and stamens (Fig. 1C, D), it is completely invisible in the flowers at anthesis (Figs. 1A, B).

Capuron (1968) describes this induvium as follows: “The increased lateral tissue gives rise to a more or less hemispherical cupule (called *coupe induviale*), (thick-walled below, tapering upward until its upper edge is straight truncated or more or less sinuate) and applied to the base of the fruit. On the outside of the induvial cupule arises, either along an almost circular line, or most

often along a very scalloped line (scallops alternating with the sepals), a large membranous expansion (called the induvial membrane) which in the mature fruit is the most visible and most important of induvia; this expansion, driven by numerous longitudinal ribs (anastomosing with each other by some ramifications) is either full or near its peak deeply divided into as many lobes as there are calyx sepals. The induvial cupule and membranous expansions are finely papillose-puberulous, especially on the inside”.

In other words, the induvium consists of two parts:

-- the induvial cupule, which encircles the base of the fruit, whose upper edge (visible only after dissection) is straight and truncated in *Phanerodiscus perrieri* and *P. capuronii*, or sinuous in *P. diospyroidea* (Figs. 2B, C, E).

-- the induvial membrane, which corresponds to one or more membranous protrusions that insert on the induvial cupule, and are the most visible at maturity. In *Phanerodiscus diospyroidea* and *P. capuronii*, this membrane is composed of “festoons”, as many as the petals and alternating with them (Figs. 2C, D). In *P. perrieri* this induvial membrane is complete, approximately cy-

lindrical in shape, and devoid of “festoons” (Fig. 2A). This induvial membrane always inserts on the induvial cupule in a sinuous line.

During fruit development, the induvial membrane develops first. When the fruit is young, the induvial membrane largely exceeds it, and often presents a significantly different morphology in the mature fruit. Such young fruits, with an atypical induvial membrane are visible in the sample *SF 27325* (Fig. 1E), corresponding to *Phanerodiscus diospyroidea*, or *Schatz 3439* shown on the the Missouri Botanical Garden web site, [http://www.mobot.org/MOBOT/Madagascar/Image/638\\_080I.JPG](http://www.mobot.org/MOBOT/Madagascar/Image/638_080I.JPG) and belonging to *P. capuronii*.

The distribution of these three species is clearly disjunct, each is known only from a relatively small geographic area in Madagascar. *Phanerodiscus perrieri* occurs near Mahajanga in northwest Madagascar. *Phanerodiscus diospyroidea* was collected only in the Antsiranana province, in the extreme north of Madagascar. *Phanerodiscus capuronii* is only known from coastal forests south of Toamasina on the east coast of Madagascar (Fig. 3).

### Key to species of *Phanerodiscus* from the fruit

1. Induvial membrane sub-cylindrical, not divided into festoons, 2-2.5 cm in height by 2-2.5 cm in diameter; the fruit (without the induvial membrane) measuring 1.5 cm in height by 1.3 to 1.8 cm in diameter; sepals curving or staying late and erected around the base of the induvial cupule, apex of the induvial cupule straight truncated ..... 1. *Phanerodiscus perrieri*
- 1'. Induvial membrane divided into festoons, as numerous as and alternating with the sepals; fruit (without the induvial membrane) measuring 1.8 to 2.2 cm by 1.5-1.8 cm in diameter, sepals curving quickly, almost always curved and surrounding the stalk of the mature fruit ..... 2
2. Festoons under 1 cm high, their insertion into the induvial cupule more than 0.5 cm from the insertion of the sepals, induvial membrane measuring 2-2.5 cm. high by 3-3.5 cm. in diameter, apex of the induvial cupule sinuate ..... 2. *Phanerodiscus diospyroidea*
- 2'. Festoons over 1 cm high, their insertion on the induvial cupule less than 0.5 cm from sepals, induvial membrane measuring 3.3 to 3.8 cm high by 5-6 cm in diameter, apex of the induvial cupule truncate ..... 3. *Phanerodiscus capuronii*

### Key to *Phanerodiscus* species from leaf morphology

1. Leaves 1.5 to 2 times longer than wide, petiole between 1/15<sup>th</sup> and 1/20<sup>th</sup> of the length of the blade ..... 3. *Phanerodiscus capuronii*  
1'. Leaves from 2 to 2.5 times longer than wide, petiole about 1/10<sup>th</sup> of the length of the blade ..... 2  
2. Leaf base decurrent and apex acuminate ..... 1. *Phanerodiscus perrieri*  
2'. Leaf base rounded and apex acute ..... 2. *Phanerodiscus diospyroidea*

### Key to *Phanerodiscus* species from floral morphology

1. Flower pedicel 1-2 mm long, much shorter than the free part of sepals ..... 3. *Phanerodiscus capuronii*  
1'. Flower pedicel 3-4 mm long, equal or slightly shorter than the free part of sepals ..... 2  
2. Free part of sepals 2-3 mm long by 1-1.5 mm at its greatest width; style long to 2-3 mm ..... 1. *Phanerodiscus perrieri*  
2'. Free part of sepals 3-4 mm long by 1.5-2 mm at its greatest width, style 3-4 mm long ..... 2. *Phanerodiscus diospyroidea*

#### 1. *Phanerodiscus perrieri* Cavaco

Notul. Syst. (Paris) 15: 11 (1954). - Type: *Perrier de la Bâthie* 732, Madagascar, Prov. Mahajanga (Majunga), Firingalava between Maevatanana and Andriba, [15 ° 35'S, 46 ° 55'E], Sept. 1898, fl. (holo-, P!, Iso-, P!)

Small tree, 6-12 m, all parts of which, when bruised or crushed, with a strong smell of bitter almonds. Bark gray, rhytidome in patches, looking pronouncedly platanoid. Branches glabrous. Leaves [3.5] -4.7 - [6.8] cm long by [1.7] -2 - [2.9] cm wide (between 2 times and 2.5 times as long as wide), base decurrent and apex acuminate, blade color appreciably identical on both sides; petiole 4-5 mm long (about 1 / 10<sup>th</sup> of the blade). Flowers arranged in clusters or fascicles in the axils of leaf scars on leafless one-year old twigs (very rarely bearing a few old leaves). Floral pedicel 3-4 mm long. Flowers hermaphroditic; calyx externally puberulous, consisting of six sepals united into a hemispherical cup at the base, the free part of which is 2-3 mm long and about 1-1.5 mm at its greatest width, but not persistent (acrescent) and rarely apparent in the mature fruit; disk hemispheric, glabrous; (5-) 6 petals, caducous, inserted on the margin of the disk, alternate with sepals, triangular, 3-4 mm long by 1.5-2 mm wide, externally pubescent, internally bearded with long hairs in the upper

half, and shorter, probably glandular hairs in the lower half, placed at the level of the anthers; (5-) 6 caducous stamens, opposite the petals, filament of the same length as the anther, anther basifixed, extrorse, provided with 6-8 pores arranged in a horseshoe shape around the periphery of the anther; ovary superior, glabrous, attenuated into a style 3-4 mm long, shortly pubescent in the upper part. Drupe 1.5 cm to 1.3 high and 1.8 cm in diameter, surrounded by original likely receptacular induvium whose sub-cylindric induvial membrane is not divided into festoons over the fruit; induvial membrane inserted in a sinusoidal line on the induvial cupule where the point closest to the point of attachment of the sepals about 0.5 cm in the latter, whose farthest point, corresponding to the top of the induvial cupule is about 0.7-0.9 cm thereof.

Material studied. - Madagascar, *Prov. Mahajanga: Perrier de la Bâthie* 732, Firingalava, entre Maevatanana et Andriba, [15°35'S, 46°55'E], Sept. 1898, fl. (P); *Perrier de la Bâthie* 2010, Madagascar, Tsingy de Namoroka, sans date, fl. (P); *Schatz, Rakotozafy, D'Arcy & Randrianasolo* 1589, 19-20 km N of Port Bergé VaoVao, along Hwy 6, (15°29'S 47°35'E), 23 Sept. 1987, fl., j.fr. (MO, P, TAN), *Service Forestier*

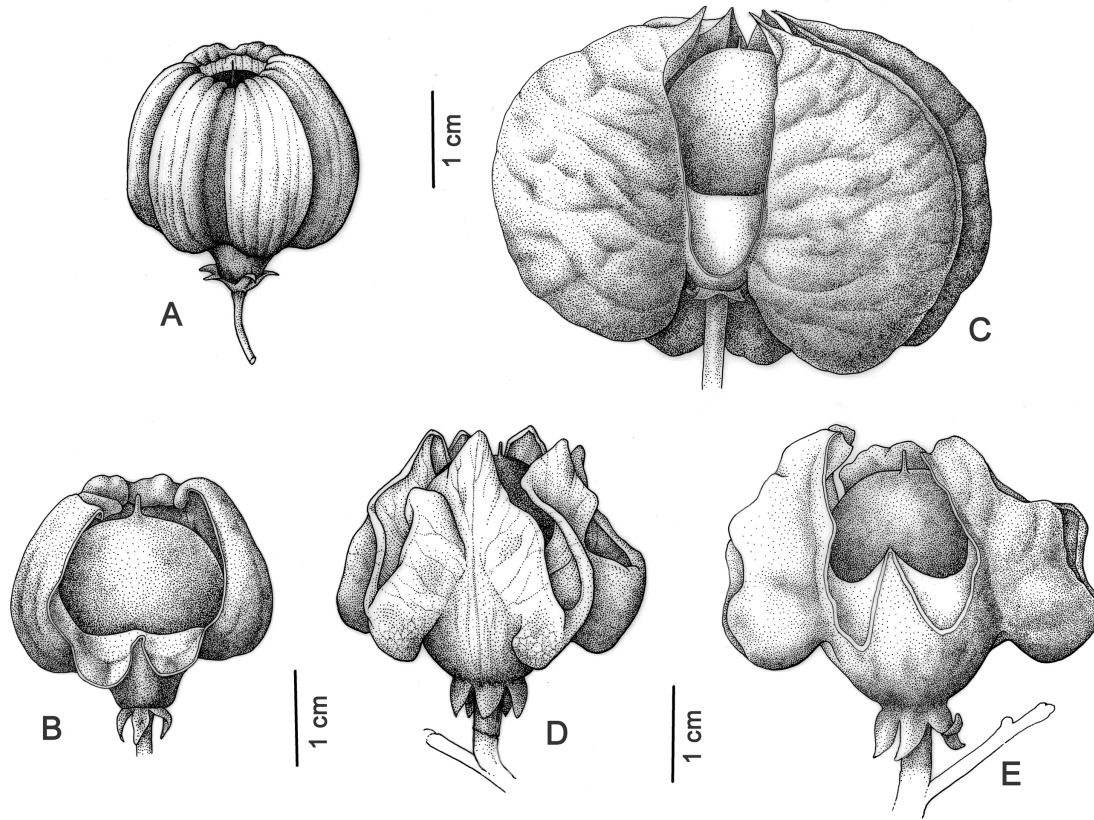


Fig. 2. - *Phanerodiscus perrieri*: **A** mature fruit with induvium, **B**, mature fruit with two lobes of the induvium having been removed, showing the induvial cupule. - *Phanerodiscus capuronii*: **C**, mature fruit with an induvial festoon having been removed, showing the induvial cupule. - *Phanerodiscus diospyroidea*: **D**, mature fruit with induvium, **E**, mature fruit of two induvial festoons having been removed, showing the induvial cupule. (A-B, Forest Service 24226; C, Forest Service 17995, D-E, Forest Service 23057).

18424 leg. Capuron, Ouest sur le plateau d'Antanimena, au S. de la Betsiboka, forêt de la Bekapaika, [16°28'30''S, 46°11'30''E], 12-14 Nov. 1957, fl., fr. (P, TEF); *Service Forestier* 24226 leg. Capuron, Ouest (Ambogo), Mitsinjo, au sud du cap Tanjona, partie nord de la forêt de Tsiombikido [15°47'S, 45°41'E], 19 Nov. 1965, fr. (P, TEF).

**2. *Phanerodiscus diospyroidea* Capuron** *Adansonia* n.s. 2 : 128 (1962). - *Diospyros sphaerosepala* Baker var. *calyculata* H. Perrier de la Bâthie, Mém. Inst. Sci. Madagascar, Sér. B, Biol. Vég. 4 : 141 (1952). - Type : *Ursch* 253, Madagascar, Prov. Antsiranana (Diégo-Suarez), {Montagne d'Ambre}, Forêt de Matsino, 1927, fr. (holo-, P!)

Small tree, 7-14 m, all parts of which, when bruised or crushed, with a strong smell of bitter almonds. Bark gray, rhytidome in patches, looking pronouncedly platanoid.

Branches glabrous. Leaves [2] -4 - [6.8] cm long [1.6] -2 - [3] inches wide (between 2 times and 2.5 times as long as wide), base rounded and apex acute, blade color the same on both sides; petiole 3-4 mm long (about 1/10<sup>th</sup> of the blade). Flowers arranged in clusters or fascicles in the axils of leaf scars on leafless one-year old twigs (very rarely bearing a few old leaves). Floral pedicels 3-4 mm long. Flowers hermaphroditic; calyx puberulous externally, consisting of six sepals united into hemispherical cup at the base, the free part of which is 3-4 mm long and about 1.5-2 mm at its greatest width, but not persistent (accrescent); disk hemispheric, glabrous, petals 6, deciduous, inserted on the margin of the disk, alternate with sepals, triangular, 3-4 mm long by 1.5-2 mm wide, pubescent outside, bearded inside with long hairs in the upper half and shorter hairs, probably glandular, in the lower half, placed at the level of the anthers; stamens

6, deciduous, opposite the petals, filament the same length as the anther, anther basifixed, extrorse, equipped with 6-8 pores arranged in a horseshoe shape around the periphery of the anther; ovary superior, glabrous, attenuated into a style 3-4 mm long, shortly pubescent in the upper part. Drupes 1.8 to 2.2 cm high and 1.5-1.8 cm in diameter, surrounded by the original receptacular induvium whose induvial membrane is divided into festoons reaching two thirds the height of the fruit. Festoons inserted according to a sinusoidal line on the induvial cupule where the closest point of attachment is about 1 cm from the sepals, and whose furthest point is about 1.5 to 1.6 cm from them.

Common name. - Tsiandalavavy.

Material studied. – Madagascar, *Prov. Antsirananana*: *Badré 2067*, Forêt 32 km au Sud de Vohemar, 13°35'S, 50°00'E, 26 Déc. 1988, fl. (P); *Service Forestier 11265 leg. Capuron*, Ouest (Nord), Plateau calcaire de l'Ankarana près de la rivière Adranonakoho, [12°45'S, 49°08'E], 4-6 Oct. 1954, fl. (L, P, TEF); *Service Forestier 15516 {leg. Adanimarobarina}*, {près de Sakaramy}, {Forêt d'Analanandriana, [12°26'S, 49°16'E], 16 Déc. 1955, j.fr. (P, TEF); *Service Forestier 23057 leg. Capuron*, Bassin de la Saharaina, Forêt de Sahafary, [12°34'S, 49°26'E], 27 Dec. 1963, fr. (P, TEF); *Service Forestier 27325 leg. Capuron*, Ouest (Nord), entre Belinta et Ambatrabe, au N. de Vohemar (vestige de forêt) au S. de Maintialaka, [13°21'S, 49°58'E], 10-18 Dec. 1966, j.fr. (P, TEF); *Ursh 253*, Diego Suarez, {Montagne d'Ambre}, Forêt de Matsino, 1927, fr. (P).

**3. *Phanerodiscus capuronii* V. Malécot, G.E. Schatz & J. Bosser sp. nov.**

*Phanerodiscus "louveli"* Capuron, Olacées, Opiliacées et Santalacées arbustives ou arborescentes de Madagascar: 34 (1968), *nomen inval.*

*Species Phanerodiscus perrieri affinis sed fructu magno et foliis differt.*

TYPUS. - *Louvel 177*, Madagascar, prov. Toamasina (Tamatave), coastal forests in the east, 1924, fl. (holo-, P!)

Small tree, 6-15 m, all parts of which, when bruised or crushed, with a strong smell of bitter almonds.. Bark gray, rhytidome in patches, looking pronouncedly platanoid. Branches glabrous. Leaves from 4 to 5.5 cm long and 2-3.5 cm wide (1.5 to 2 times as long as wide), base rounded and apex slightly acuminate; petioles 2-4 mm (between 1/15<sup>th</sup> and 1/20<sup>th</sup> of the blade). Flowers arranged in clusters or fascicles in the axils of leaf scars on leafless one-year old twigs. Pedicels of flowers 1-2 mm long. Flowers hermaphroditic; calyx pubescent outside, composed of five sometimes six sepals united into a hemispherical cup at the base, the free part of which is 2.5-3 mm long, about 1.5-2 mm at its greatest width, persistent but not accrescent; disk hemispheric, glabrous, the margin is at the point of insertion to the petals, 5 sometimes 6 petals, deciduous, alternate with sepals, triangular, 3-4 mm long and 2 mm wide, pubescent outside, bearded internally with long hairs in the upper half, and shorter hairs, probably glandular, in the lower half, placed at the level of the anthers; 5 sometimes 6 stamens, deciduous, the filament of the same length as the anther, anther basifixed, extrorse, provided with 6-8 pores arranged in a horseshoe shape around the periphery of the anther; ovary superior, glabrous, attenuated into a style 3-4 mm long, shortly pubescent in the upper part. Drupe 2 cm high and 1.5 cm in diameter, likely surrounded by original receptacular induvium whose induvial membrane is divided into festoons, well above the height of the fruit, but induvial cupule inserts at the base of the fruit; the festoons are inserted according to a sinusoidal line, where the point closest to the point of attachment of sepals is about 1-2 mm from them, whose farthest point, corresponding to one of the top induvial cupule is approximately 6-7 mm from them.

Common name. - Tsilangotongotra.

Paratypes. – Madagascar, *Prov. Toamasina*: *Schatz, Stevens & Rakotomalaza 3439*,



Ambila Lemaitso, 18°51'S, 49°08'E, 28 Jan. 1993, fr. (MO, P, TAN); *Service Forestier 60-R-233 leg. Rakotozafy*, Ambila Lemaitso, district de Brickaville, canton d'Andevoranto, JB2 Ambila, bas-fond, forêt sèche, sol sablonneux, [18°49'S, 49°08'E], 11 Sept. 1954, st. (TEF); *Service Forestier 855-R-1 leg. Bégué*, Ambila Lemaitso, {forêt sublittorale sur sables}, [18°49'S, 49°08'E], 25 Avr. 1954, st. (TEF); *Service Forestier 4230 {leg. Ecole Forestière}*, Ambila Lemaitso, {forêt sublittorale sur sables}, [18°49'S, 49°08'E], 7 Nov. 1951, j.fr. (P, TEF); *Service Forestier 6320 {leg. Rabetsitonta}*, Ambila Lemaitso, {forêt sublittorale sur sables}, [18°49'S, 49°08'E], 11 Déc. 1952, fl. (P, TEF); *Service Forestier 17732 {leg. André}*, Ambila Lemaitso, district de Brickaville, canton d'Andevoranto, {forêt sublittorale sur sables}, [18°50'S, 49°04'E], 2 Oct. 1957, fl. (P, TEF); *Service Forestier 17995 {leg. André}*, Ambila Lemaitso, district de Brickaville, canton d'Andevoranto, {forêt sublittorale sur sables}, 25 Nov. 1957, fr. (P, TEF); *Service Forestier 28057bis leg. Capuron*, Est, Tampina, {entre Tamatave et Ambila Lemaitso}, partie méridionale de la forêt de Vohibola, au lieu dit Ankany'ny nofy, [18°36'S, 49°15'E], {Déc 1967}, st. (P, TEF); *Service Forestier 32472 leg. Rabevohitra*, Andranokoditra, Akanin'ny nofy, [18°36'S, 49°15'E], 14 Déc. 1982, fr. (TEF).

Capuron (1968) mentions two other samples: *Capuron sn.*, no date (flowers) and *Capuron sn.*, no date (young fruit in alcohol) that have not been found in the consulted herbaria.

### Nomina excludenda

*Phanerodiscus perrieri* var. *orientalis*  
Cavaco & Keraudren

Bull. Soc. Bot. France 110 : 248 (1963) = *Anacolosia pervilleana* Baillon, *Adansonia* 3 : 119 (1862). – Type : *Réserves Naturelles 8156 leg. Randriamiera*, Madagascar, Prov. Andranomava, Soalala, [16°06'S, 45°19'30''E], 28 oct. 1956, fl. (holo-, P! ; iso-, TAN!, TEF!)

In 1967, Keraudren attributed the sample to

*Anacolosia pervilleana* (determined from the sample). This new identification was confirmed and revived by Capuron (1968).

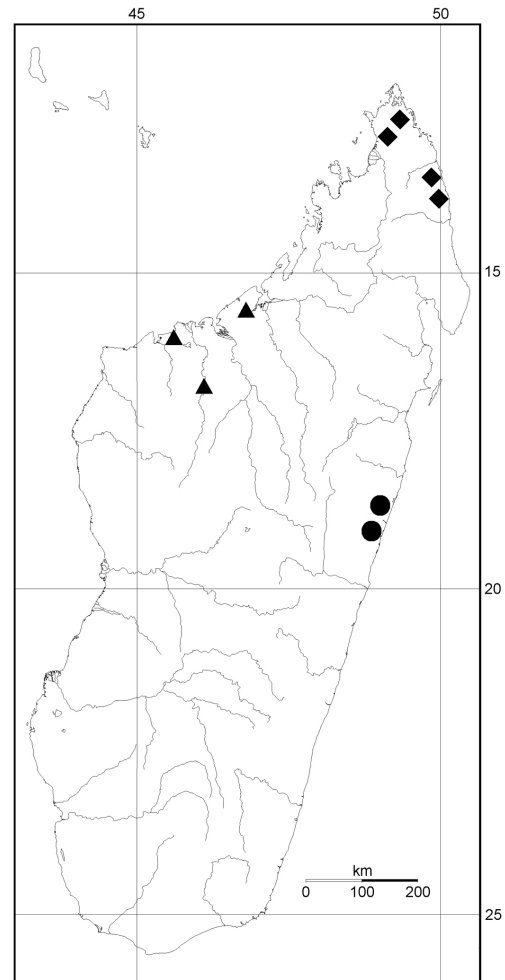


Fig. 3. - Distribution of *Phanerodiscus* in Madagascar. *P. perrieri* (▲), *P. diospyroidea* (◆) *P. capuronii* (•).

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