



Nomenclatural Notes on *Cryptocarya* R. Br. (Lauraceae) from Madagascar

Author: Werff, Henk, van der

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Introduction

KOSTERMANS (1950) recognized both *Cryptocarya* R. Br. and *Ravensara* Sonn. in his treatment of the *Lauraceae* for the *Flore de Madagascar et des Comores*. He accepted 18 species in *Ravensara*, a genus endemic to Madagascar, and eight species in *Cryptocarya*, a large, pantropical genus. This treatment was based on his studies in the late 1930's (KOSTERMANS, 1939). Subsequently Kostermans published 15 additional species of *Cryptocarya* (KOSTERMANS, 1957) and nine additional species of *Ravensara* (KOSTERMANS, 1958). The sole difference between *Cryptocarya* and *Ravensara* is found in the fruits: fruits of *Ravensara* are ruminant, whereas *Cryptocarya* fruits are not. Because ruminant fruits have also been reported from *Cryptocarya* species outside Madagascar, VAN DER WERFF (1992) proposed to merge the two genera and conserve *Cryptocarya* over *Ravensara*. This proposal was accepted. The taxonomy of *Cryptocarya* (including *Ravensara*) on Madagascar is poorly known. KOSTERMANS (1957, 1958) did not include a key to species and described several based on few collections, with some known only in fruit, others only in flower or even based on sterile collections. It seems prudent to transfer the *Ravensara* species to *Cryptocarya* only once they are better known because it is possible (and likely) that some species may have been described twice, once in *Cryptocarya* and once in *Ravensara*. VAN DER WERFF (2008) started this process and transferred eight *Ravensara* species to *Cryptocarya*. In this contribution an additional five species are transferred which necessitates two new combinations and two new names. Due to a new synonymy, a third new name is not necessary for the fifth species.

Nomenclature

Cryptocarya oblonga (Kosterm.) van der Werff, **comb. nova.**
= *Ravensara oblonga* Kosterm. in Bull. Jard. Bot. Etat Bruxelles 28: 184. 1958.

Typus: MADAGASCAR. Prov. Toliara: Mandena, Fort-Dauphin, 1.V.1955, st., *Service Forestier 13163* (holo-: P [P00853162]!; iso-: BO, P [P00540966], TEF [TEF000298]).

Observations. – The type (the only collection known when the species was described) is sterile. Four recent collections have broadened our knowledge of this species. *Dumetz 696* (st.) is also from Mandena, at an altitude of 10 m. *Rajoharison & al. 222* is from Antsotso, and occurs in “forêt sur sable”. Its fruits are round, smooth, ca 1.3 × 1.3 cm, with the tepals persisting on top of the fruits, and its infructescences are short, up to 3 cm long. *Ramison & Rabehevitra 557* is from Sainte Luce in “forêt littorale”. The inflorescences are short, ca 2 cm long, clustered distally on the twigs and resemble a terminal inflorescence. The young growth is densely ferruginous pubescent although the indument wears off quickly. Leaves of this species are to 10 cm long, with an obtuse to rounded base and a rounded or emarginated apex. Lateral veins are immersed on the upper leaf surface and immersed or weakly raised on the lower surface. The fruits are ruminant.

Cryptocarya oblonga, a small tree to 10 m tall, is restricted to a small area of coastal forest on sand N of Tolagnaro (Fort Dauphin).

Recent collections seen. – MADAGASCAR. Prov. Toliara: Mandena, 24°57'S 47°00'E, 0-10 m, 17.IV.1989, st., *Dumetz 696* (MO); Ampasy, 24°57'25"S 47°00'04"E, 0-10 m, 30.IX.2000, st., *Rabenantoandro & al. 296* (MO); Iabakoho, Antsotso, 24°35'S 47°12'E, 27.V.2007, fr., *Rajoharison & al. 222* (MO); Mahatalaky, Sainte Luce, 24°47'S 47°11'E, 2.II.2008, fl., *Ramison & Rabehevitra 557* (MO).

***Cryptocarya polyneura* (Kosterm.) van der Werff, comb. nova.**

= *Ravensara polyneura* Kosterm. in Bull. Jard. Bot. Etat Bruxelles 28: 188. 1958.

Typus: MADAGASCAR. **Prov. Toamasina:** Manakambahiny Est, Ambatodrazaka, Zahamena, 28.II.1950, fl., *Réserves Naturelles 1936* (holo-: P [P00540957]; iso-: P [P00540955, P00540956, P00853160]!, TEF [TEF000291]).

Observations. – The type of *Ravensara polyneura* is only in bud. Kostermans cited four additional collections, with flowers or fruits, but did not include those in his description. This species has long and narrow, coriaceous leaves, at least three times as long as wide, dark green when dry and with an obtuse to rounded base. Mature leaves are glabrous and the midrib and lateral veins are raised on the lower surface. The inflorescences are short, to 3 cm, densely dark brown pubescent with nearly sessile flowers arranged in dense clusters. The young growth has a similar dark brown pubescence as the flowers and inflorescence, but the twigs become soon glabrous. The fruits are ruminant.

Recent collections all come from the area between Moramanga and the Zahamena reserve at altitudes between 900 and 1160 m.

This species has been confused with *Cryptocarya pervillei* Baill., another species with long and narrow leaves. It differs in having a light brown to golden brown indument (not dark brown), less coriaceous leaves with a more persistent indument. I had previously identified *Rakotomalaza 1334* and *Andriatsiferana & al. 2109* as *C. myristicoides* Baker, but that species has stiffly chartaceous (not coriaceous) leaves with immersed veins, and longer, less condensed inflorescences. The collection *Antilahimena 5915* was previously identified as *C. acuminata* Merr. (an error for *Ravensara acuminata* (Meisn.) Baill. = *Cryptocarya litoralis* van der Werff), a coastal species also with less coriaceous leaves, brown pubescence (not dark brown) and often conduplicate (rather than flat) leaves. Duplicates may have been distributed under these identifications.

Recent collections seen. – MADAGASCAR. **Prov. Toamasina:** Phelps Dodge project site, 15 km NE of Moramanga, 18°51'02"S 48°18'24"E, 950 m, 13.II.1997, fl., *Andriatsiferana & al. 2109* (MO); Moramanga, Andasibe, Ambatovy forest, 18°48'29"S 48°18'50"E, 1060 m, fr., *Antilahimena & al. 3004* (MO); Moramanga, Andasibe, Menalamba, 18°51'06"S 48°18'39"E, 1119 m, 18.XII.2005, fr., *Antilahimena & Edmond 4457* (MO); Moramanga, Ambohibary, Ambatovy/Andranoverly forest, 18°52'04"S 48°18'15"E, 1031 m, 24.X.2007, fr., *Antilahimena & Marcellin 5915* (MO); Moramanga, Andasibe: Forêt d'Analamay, 18°50'51"S 48°19'29"E, 990 m, 8.VI.2007, fr., *Bernard 559* (MO); Route Analamay, 18°49'47"S 48°18'48"E, 1160 m, 16.V.1997, y. fr., *Rakotomalaza & al. 1334* (MO). Réserve forestière Sandrangato, Moramanga, 30.X.1964, fr., *Service Forestier 21904* (MO); Périnet, Analamazaotra, Moramanga, 28.IX.1966, fr., *Service Forestier 26105* (MO).

***Cryptocarya ambrensis* van der Werff, nom. nov.**

= *Ravensara areolata* Kosterm. in Not. Syst. (Paris) 8: 107. 1939 [non *Cryptocarya areolata* Gamble in Bull. Misc. Inform. Kew 1910: 144. 1910].

Typus: MADAGASCAR. **Prov. Antsiranana:** Roussettes, Diégo Suarez, s.d., fl., *Ursch 187* (holo-: P [P00540982]; iso-: BO, P [P00853166]!).

= *Ravensara acutifolia* Kosterm. in Bull. Jard. Bot. Etat Bruxelles 28: 175. 1958 [non *Cryptocarya acutifolia* H. W. Li in Acta Phytotax. Sin. 17: 69. 1979]. **Typus:** MADAGASCAR. **Prov. Antsiranana:** J.B. 19, Roussettes, Diégo Suarez, 11.XI.1954, fl., *Service Forestier 11014* (holo-: P [P00853165]!; iso-: P [P00540987]).

Observations. – *Cryptocarya ambrensis* is an inconspicuous species with small (to 7 × 3 cm), chartaceous, elliptic, glabrous leaves. Terminal buds and inflorescences are minutely brown puberulous; twigs are glabrous except for the very tips. Inflorescences are laxly flowered and up to 5 cm long; fruits are ruminant. Numerous small gland dots are visible on the lower leaf surface, but there is some variation in leaf shape from distinctly acute apices to blunt apices.

I have not seen the two paratypes of *Ravensara acutifolia* cited by KOSTERMANS (1958) which were collected in "Tianarantsoa", believed to be an error for Fianarantsoa, in south-central Madagascar. The type and all recent collections are from the Montagne d'Ambre in the far north of Madagascar, between 840 and 1240 m elevation. The collection *Gautier & Chatelain 4973*, collected near Daraina 85 km SE of Montagne d'Ambre resembles *Cryptocarya ambrensis* vegetatively; however, it lacks the gland dots on the lower leaf surface and the fruit is not ruminant; it represents an unknown *Cryptocarya* species.

Recent collections seen. – MADAGASCAR. **Prov. Antsiranana:** Montagne d'Ambre, 1.X.2005, buds, *Acevedo-Rodriguez 14514* (MO); Montagne d'Ambre PN, Lac Maudit, 12°34'S 49°09'E, 1100-1250 m, 3-10.VI.1993, fr., *Andrianantoanina & Bezana 143* (MO); *ibid. loc.*, *Andrianantoanina & Bezana 166* (MO); Montagne d'Ambre, près d'Antsalaka, 12°27'S 49°13'E, 250-500 m, 19-26.VII.1993, fr., *Andrianantoanina & al. 229* (MO); Parc National de Montagne d'Ambre au Grand Lac, 12°35'S 49°09'E, 1475 m, 9-17.IX.1993, fr., *Andrianantoanina 327* (MO); Montagne d'Ambre, à la Station des Roussettes vers la piste d'Ankorefo, 12°31'30"S 49°10'17"E, 800-1000 m, 26.IX.1995, *Andrianantoanina & Bezana 872* (MO); Montagne d'Ambre National Park, at Cul de Sac, 12°31'36"S 49°10'20"E, 840 m, fr., *Harder & al. 1642* (MO); Montagne d'Ambre, partie centrale, 12°34'S 49°10'E, 1249 m, 11.XI.2007, buds, *Ranirison & al. 1167* (MO); Montagne d'Ambre, partie nord, 12°28'S 49°10'E, 1015 m, 30.V.2008, fr., *Trigui & al. 460* (MO).

Three other *Cryptocarya* species have been reported from the North of Madagascar, including two others from Montagne d'Ambre.

Cryptocarya septentrionalis van der Werff (type *Ursch 96*, prope Diego Suarez) differs from *C. ambrensis* by its lanceolate leaves; the eight recent collections are from lowlands up to 320 m.

Cryptocarya ocoteifolia Kosterm. is based on a type collected in the forêt d'Ambre (*Service Forestier 7208*) which consists of a leafy twig and a detached fruit. KOSTERMANS (1957) also cited four sterile paratypes. However, KOSTERMANS (1962) noted that Capuron had pointed out that the type collection was a mixture, consisting of *Cryptocarya* fruits and leafy *Ocotea* twigs. Because neither detached *Cryptocarya* fruits nor sterile *Ocotea* twigs can be identified with any confidence, I consider *Cryptocarya ocoteifolia* an incompletely known species.

Cryptocarya rotundifolia Kosterm. is only known from the type collected in the Forêt d'Ambre near Antsiranana (*Service Forestier 7192*). The specimen consists of leafy twigs and detached fruits; the leaves are large, broad (to 14 × 8 cm) and chartaceous. The fruits are old and the fleshy outer layer has disappeared. The fruits are not ruminant. The large, rather thin leaves are unlike any other collection of *Cryptocarya* from the north of Madagascar. It is possible that the type is also a mixed collection. More and better collections are needed to establish *C. rotundifolia* as a good species.

***Cryptocarya rigidifolia* van der Werff, nom. nov.**

= *Ravensara elliptica* Kosterm. in Not. Syst. (Paris) 8: 110. 1939 [non *Cryptocarya elliptica* Schltr. in Bot. Jahrb. Syst. 39. 108. 1906].

Typus: MADAGASCAR. Prov. Toamasina: Forêts montagneuses de l'Est, fl., Louvel 229 (holo-: P [P00853161]!).

Observations. – *Cryptocarya rigidifolia* is very similar to *C. retusa* (Nees) van der Werff, but the type (*Du Petit Thouars s.n.*: holo-: B; iso-: P [P00540954]) of the latter lacks flowers, and the slight vegetative differences have made it difficult to decide whether or not they represent separate species, the type also lacks any indication of the collection locality. Examination of recent flowering collections that could be referred to one or other of these species has shown that lowland (5-20 m altitude) specimens have dorsally pubescent anthers and weakly raised secondary veins, while collections from higher altitude (950-1440 m) have glabrous anthers (although the filaments are pubescent) and more strongly raised secondary veins. Leaves of the type of *C. retusa* agree with the leaves of the lowland specimens, while the type of *C. rigidifolia* agrees with the specimens from higher altitude in leaf and flower characters. Therefore I accept *C. retusa* as a lowland species characterized by its pubescent anthers and weakly raised lateral veins and *C. rigidifolia* as an interior species from higher elevations with glabrous anthers and more pronounced raised lateral veins. Fruits of *C. rigidifolia* are ruminant.

Ravensara coriacea Kosterm. is also very similar to *Cryptocarya rigidifolia* and *C. retusa*. The type specimen (*Service Forestier 12356*) is from Menagisy-Brickaville and has young inflorescences. As long as flowers are unknown, it is difficult

to determine if *Ravensara coriacea* is a synonym of *Cryptocarya rigidifolia* or *C. retusa* or a distinct species. Both *C. rigidifolia* and *C. retusa* have priority over *Ravensara coriacea*.

Recent collections seen. – MADAGASCAR. Prov. Antananarivo: Antananarivo, Ankozobe, Ankafobe, 18°07'14"S 47°11'30"E, 1442 m, 24.II.2005, fr., Lehavana & al. 286 (MO); 7 km E of Anjozorobe, 18°22'S 48°00'E, 1300 m, 12.V.1987, fr., Schatz & al. 1388 (MO). Prov. Toamasina: Phelps Dodge project site, 15 km NE of Moramanga, 18°51'02"S 48°18'24"E, 950 m, 13.II.1997, st., Andriatsiferana & al. 2088 (MO), Alaotra-Mangoro Region, Ambohibary, Ambatovy, 18°50'48"S 48°17'51", 1050 m, 3.V.2007, fr., Antilahimena & al. 5516 (MO); Toamasina, 2 to 4 km E of Perinet, 1000 m, 24.IV.1974, fr., Gentry 11251A (MO); Antetampandranana, pk 27-28, route Moramanga-Anosibe, s.d., fl., *Service Forestier 26842* (MO).

***Cryptocarya spathulata* Kosterm.** in Bull. Jard. Bot. Etat Bruxelles 27: 185. 1957.

Typus: MADAGASCAR. Prov. Toamasina: Analamazaotra, 18.I.1950, fl., *Service Forestier 1476* (holo-: P [P00853164]!).

= *Ravensara laevis* Kosterm. in Not. Syst. (Paris) 8: 100. 1939 [non *Cryptocarya laevis* Mart. in Flora 21: Beibl. 64. 1838].

Typus: MADAGASCAR. Prov. Toamasina: Analamazaotra, 20.VI.1919, buds, Thouvenot 98 (holo-: P [P00540973]; iso-: P [P00853163]!, P [P00540974]), **syn. nov.**

Observations. – Although *C. spathulata* is a later heterotypic synonym of *Ravensara laevis*, it is the earliest available name in *Cryptocarya* and should be used for this species. The types of both names came from the same locality and both were in flower. Because the sole difference between *Cryptocarya* and *Ravensara* is a fruit character, this example illustrates the difficulty of assigning flowering specimens to either *Cryptocarya* or *Ravensara*, when these genera were considered distinct.

***Cryptocarya occidentalis* van der Werff, nom. nov.**

= *Ravensara perrieri* Dubard & Dop in Bull. Soc. Bot. France 54: 156. 1907 [non *Cryptocarya perrieri* Danguy in Bull. Mus. Hist. Nat. (Paris) 33: 523. 1927. = *Aspidostemon perrieri* (Danguy) Rohwer].

Typus: MADAGASCAR. Prov. Mahajunga: Ambongo, rives de la Mahavavy, VIII.1904, fl., Perrier de la Bâthie 1789 (holo-: P [P00540958] image seen; iso-: P [P00853160]!, P [P00540959]).

Observations. – This species is widespread in the western parts of Madagascar and can be recognized by its glabrous, chartaceous, lanceolate to oblong-lanceolate leaves with inconspicuous venation (secondary veins poorly visible). The inflorescences and flowers are minutely brown puberulous. The fruits are ruminant.

DUBARD & DOP (1907) recognized the difficulty of assigning this species to either *Cryptocarya* or *Ravensara* because the type was in flower. They went ahead with the description because “Dans tous les cas, l’espèce est nouvelle, quel que soit le genre auquel elle appartient”.

Dubard & Dop cited as type collection *Perrier de la Bâthie I* and as type locality “Rivière Mahoudedy supérieure”, while KOSTERMANS (1939) cited *Perrier de la Bâthie 1789* and gave as type locality “Mahomavy”. The scan of the holotype shows that the collection number *1789* has been scratched out and replaced with *I*. The handwritten type locality seems to be “Mahavavy”, not “Mahoudedy” or “Mahomavy”, but the writing is not entirely clear.

Recent collections seen. – **MADAGASCAR. Prov. Antsiranana:** Forêt d’Ampasindava, 7.VII.1956, fl., *Service Forestier 16517* (MO); Beravina, 18.VIII.1955, fl., *Service Forestier 15141* (MO); Beravina, 19.VIII.1956, fl., *Service Forestier 16355* (MO). **Prov. Mahajanga:** Melaky, Maintirano, au N de Belitsaky, le long de la rivière de Manomba, 17°52’23’’S 44°28’52’’E, 140 m, 25.X.2009, fr., *Andriamihajarivo & al. 1802* (MO). **Prov. Toliara:** Beroroha à 4 km avant Antsoa, 21°15’43’’S 45°10’04’’E, 461 m, 3.XII.2010, fr., *Andriantiana & al. 1004* (MO); Atsimo-Andrefana Region, Makay Massif, along the Menampandaha River, 21°11’57’’S 45°20’15’’E, 510 m, 23.XI.2010, fr., *Phillipson & al. 6201* (MO); Beroroha, Betorabato, 21°34’04’’S 45°34’34’’E, 296 m, 13.I.2011, fr., *Razakamalala 6001* (MO).

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