

Twenty-four new species of Memecylon (Melastomataceae) from Madagascar

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Twenty-four new species of *Memecylon* (Melastomataceae) from Madagascar

Robert Douglas Stone

Abstract

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Memecylon L. (Melastomataceae, Olisbeoideae) is a widespread paleotropical genus of forest shrubs and small trees and is one of the ten most species-rich genera of woody plants in Madagascar. All of the Malagasy species are endemic to the island, and most of them are known from just one or two sites. As part of ongoing work toward a comprehensive taxonomic revision, twenty-four new Malagasy species are described and illustrated here: *M. albocoronatum* R.D. Stone, *M. antongilense* R.D. Stone, *M. articulatum* R.D. Stone, *M. atractocarpum* R.D. Stone, *M. betamponense* R.D. Stone, *M. bullatum* R.D. Stone, *M. calcicola* R.D. Stone, *M. dipterum* R.D. Stone, *M. drymophilum* R.D. Stone, *M. florosum* R.D. Stone, *M. fodinae* R.D. Stone, *M. fusiforme* R.D. Stone, *M. futilifolium* R.D. Stone, *M. iantarensense* R.D. Stone, *M. ingens* R.D. Stone & D. Turk, *M. lemuricum* R.D. Stone, *M. marojejense* R.D. Stone, *M. montis-gallicorum* R.D. Stone, *M. naviculiforme* R.D. Stone, *M. pseudomocquersii* R.D. Stone, *M. pseudopulvinatum* R.D. Stone, *M. subaridum* R.D. Stone, *M. subundulatum* R.D. Stone, and *M. triflorum* R.D. Stone. The conservation status of each species is provisionally assessed in accordance with the IUCN Red List Categories and Criteria.

Résumé

STONE, R.D. (2023). Vingt-quatre nouvelles espèces de *Memecylon* (Melastomataceae) de Madagascar. *Candollea* 78: 189–237. En anglais, résumés anglais et français. DOI: <http://dx.doi.org/10.15553/c2023v782a10>

Memecylon L. (Melastomataceae, Olisbeoideae) est un genre forestier d'arbustes et de petits arbres à large distribution paléotropicale. À Madagascar, il est l'un des dix genres ligneux les plus riches en espèces. Toutes les espèces malgaches sont endémiques de l'île, et la plupart d'entre elles ne sont connues que dans un ou deux sites. Dans le cadre de travaux en cours pour une révision taxonomique complète, vingt-quatre nouvelles espèces malgaches sont décrites et illustrées ici: *M. albocoronatum* R.D. Stone, *M. antongilense* R.D. Stone, *M. articulatum* R.D. Stone, *M. atractocarpum* R.D. Stone, *M. betamponense* R.D. Stone, *M. bullatum* R.D. Stone, *M. calcicola* R.D. Stone, *M. dipterum* R.D. Stone, *M. drymophilum* R.D. Stone, *M. florosum* R.D. Stone, *M. fodinae* R.D. Stone, *M. fusiforme* R.D. Stone, *M. futilifolium* R.D. Stone, *M. iantarensense* R.D. Stone, *M. ingens* R.D. Stone & D. Turk, *M. lemuricum* R.D. Stone, *M. marojejense* R.D. Stone, *M. montis-gallicorum* R.D. Stone, *M. naviculiforme* R.D. Stone, *M. pseudomocquersii* R.D. Stone, *M. pseudopulvinatum* R.D. Stone, *M. subaridum* R.D. Stone, *M. subundulatum* R.D. Stone et *M. triflorum* R.D. Stone. Pour chaque espèce, le statut de conservation est évalué selon les Catégories et Critères de la Liste Rouge de l'UICN.

Keywords

MELASTOMATACEAE – *Memecylon* – Madagascar – Conservation – New species – Taxonomy

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Introduction

The genus *Memecylon* L. (Melastomataceae, Olisbeoideae) comprises > 350 species of shrubs or small to medium-sized trees (RENNER et al., 2023) and has a wide distribution in the Old-World tropics, mainly in the understory of evergreen humid forest. In accordance with morphological and molecular findings (JACQUES-FÉLIX, 1978; BREMER, 1982; STONE, 2006a, 2014, 2022a; STONE & ANDREASEN, 2010), it is now circumscribed to exclude the monospecific western and central African genus *Spathandra* Guill. & Perr., the paleotropical *Lijndenia* Zoll. & Moritz, and the African-Malagasy *Warneckea* Gilg. The members of *Memecylon* sensu stricto are characterized by a combination of very hard wood; leaves opposite, estipulate, and apparently 1-nerved (less often “sub-trinerved” sensu JACQUES-FÉLIX et al., 1978; JACQUES-FÉLIX, 1983, 1985a); a general lack of indumentum; flowers small and 4-merous; anther-connectives enlarged and with a dorsal oil-gland (or with gland reduced or absent in some species or species-groups); and fruits baccate with 1-few large seeds and embryo foliaceous and convoluted (STONE, 2022a).

In Madagascar, *Memecylon* is one of the three most important genera of Melastomataceae together with *Gravesia* Naudin and *Medinilla* Gaudich. (ALMEDA et al., 2022). In the most recent revision, JACQUES-FÉLIX (1985a, 1985b) recognized 78 species of Malagasy *Memecylon* of which 33 were newly described. He also placed five previously recognized species in synonymy and transferred 11 species to *Lijndenia* or *Warneckea*. Many new collections have been made in recent years, and much of this material appears to represent species new to science (STONE, 2006b, 2012, 2020, 2022b, 2022c; STONE & CALLMANDER, 2011). *Memecylon* clearly ranks among the ten largest woody genera on the island (cf. SCHATZ, 2001), and all of the Malagasy species are endemic with the majority being known from just one or two sites (STONE, 2012).

Work toward another comprehensive revision of Malagasy *Memecylon* is currently in progress, with approximately 1,000 collections (3,350 herbarium sheets) examined thus far (R.D. Stone, unpubl. data). The infrageneric classification is also in need of revision, in view of molecular analyses (STONE, 2014, unpubl. data; AMARASINGHE et al., 2021) indicating that at least some of the seven sections previously recognized by JACQUES-FÉLIX (1985a, 1985b) are not monophyletic.

Here I describe a further 24 new species of *Memecylon* from Madagascar, all of them belonging to the Malagasy clade (sensu STONE, 2014). Field work and collecting were done in 2001 and 2007–2008. Herbarium material was studied in BR, CAS, G, K, MJG, MO, NU, NY, P, TAN, TEF, and WAG. All specimens cited herein have been seen by me. For each species, the conservation status is provisionally assessed in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012), with the extent of occurrence [EOO] and area of occupancy [AOO] estimated using GeoCAT (2023). Specimen

records can be accessed for each species via the *Catalogue of the Plants of Madagascar* (MADAGASCAR CATALOGUE, 2023). A differential diagnosis is also provided for each species, together with a discussion of affinity. An identification key has not been provided, pending completion of the aforementioned taxonomic revision. With these 24 additions, the total number of endemic species of *Memecylon* in Madagascar now stands at 136.

New Species

Memecylon albocoronatum R.D. Stone, **sp. nov.** (Fig. 1).

Holotypus: MADAGASCAR. **Reg. SAVA [Prov. Antsiranana]:** Masoala Peninsula, W of Ambohitralanana, near Sahafary, 15°16'S 50°22'E, 75 m, 19.VII.1997, fr., McPherson 17101 (MO-6262423!; iso-: CAS!, G [G00642039] image!, K!).

Ob flores ignotos affinitatis incertae; quoad folia ellipsoidea usque obovata ad apicem abrupte obtuseque breviacuminata Memecyloni lemurico R.D. Stone accedens sed ab eo fructibus ellipsoideis 10–16(–20) × 8–11(–15) mm distinguitur; ab omnibus congeneris madagascariensibus mihi cognitis fructibus atropurpureis cum corona calycinas albescente prominente c. 2 mm alta discrepantibus bene distincta.

Shrubs or trees 6–15 m tall, evergreen; branchlets dichotomous or trichotomous, the youngest bisulcate soon becoming terete with age, older branchlets with nodes conspicuously thickened; internodes (2–)2.7–5(–7) cm long. *Leaves* coriaceous, petiolate, dark green and shining on the adaxial surface, dull and brownish abaxially, minutely roughened when dry; petioles mostly 2–3 mm long; blades ellipsoid to obovate, (5.5–)6.7–9.5(–11) × (3.2–)3.8–5(–5.5) cm, 1.5–2 times longer than wide, base cuneate, apex rounded then abruptly short-acuminate (acumen mostly 2–5 mm long, obtuse), margins ± revolute; midnerve clearly visible, canaliculate adaxially, prominent abaxially; transverse veins only faintly visible in dried material, c. 11 pairs oriented at an oblique angle relative to the midnerve, finely impressed on both surfaces. *Flowers* unknown. *Fruits* ellipsoid in outline, 10–16(–20) × 8–11(–15) mm, borne at the defoliated nodes of older branchlets; peduncles and pedicels stout, the former 2–3 mm long, the latter (2–)4–7 mm long; calycinal crown c. 2 mm long, whitish (contrasting with the blackish purple color of the fruit), conspicuously 4-lobed, the lobes broadly rounded, 1–1.5 × 2–3 mm.

Etymology. – The epithet *albocoronatum* is a compound formed from the Latin adjective *albus* meaning “white” and the participle *coronatus* meaning “crowned”. It is a neuter adjective in reference to the whitish calycinal crown (in contrast with the much darker color of the fruit).

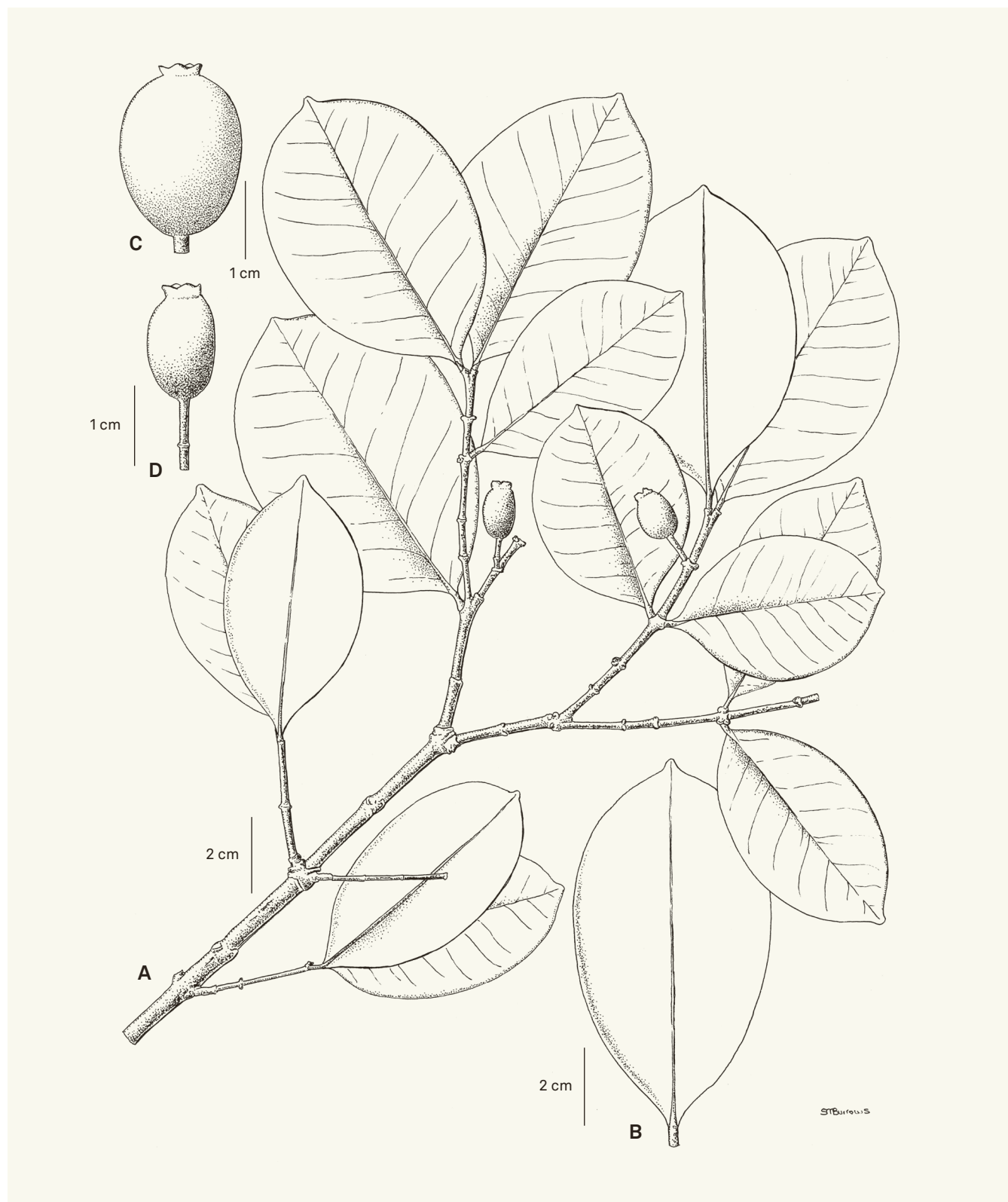


Fig. 1. – *Memecylon albocoronatum* R.D. Stone. A. Fruiting branch; B. Leaf; C, D. Fruits. [A, D: McPherson 17101, MO; B, C: Ravololonanahary & Zera 98, MO] [Drawing: S. Burrows]

Distribution and ecology. – Northeastern Madagascar (SAVA region, Antalaha district), evidently restricted to the Sahafary forest near Ambohitralanana (Cap-Est). Habitat in lowland humid forest at elevations of 30–75 m.

Conservation status. – Because of its estimated AOO of 8 km² and the fact that both of the known locations are outside the boundary of the Masoala National Park in an area where the original forest has largely been converted to agriculture or secondary vegetation (savoka), *Memecylon albocoronatum* is provisionally assessed as “Critically Endangered” [CR B2ab(i,ii,iii)] in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – The ellipsoid-obovate, shortly obtuse-acuminate leaves of *Memecylon albocoronatum* are reminiscent of those seen in *M. lemuricum* R.D. Stone, yet the fruits of the two species are quite different (ellipsoid and mainly 10–16 × 8–11 mm vs. ± globose and 20–24 × 18.5–24 mm). The most distinctive character of *M. albocoronatum* is the strong contrast between the blackish purple color of the fruit and the whitish calycinal crown (unique in this regard among the Malagasy *Memecylon* species known to me). Further comparison with other species is difficult since the flowers are still unknown.

Additional specimens examined. – MADAGASCAR. Reg. SAVA [Prov. Antsiranana]: Antalaha, Ambohitralanana, Sahafary forêt communautaire, 15°17'25"S 50°22'47"E, 20.IX.1997, fr., Ravololonanahary & Zera 98 (CAS, G, MO, P).

***Memecylon antongilense* R.D. Stone, sp. nov.** (Fig. 2).

Holotypus: MADAGASCAR. Reg. Analanjirofo [Prov. Toamasina]: Masoala Peninsula, Andranobe, S of Ambanizana, 15°41'S 49°58'E, 400–480 m, 21.II.1999, fl., McPherson et al. 17649 (MO-5717539!; iso-: BR! [BR0000009337844]!, CAS-973449!).

Memecyloni gracilipedicellato Jacq. – Fél. affine, sed ab eo laminis foliaribus ellipticis (non ovato-lanceolatis) plerumque 1.7–2.1 (non 2.0–2.6)–plo longioribus quam latioribus ad basin cuneatis (non rotundatis), cymulis plusminusve subumbellatis (non axes secundarios graciles 1–2.5 mm longos ferentibus) atque hypantho-calyce majore (1.5–1.75 × 2.5 non 1 × 1.5 mm) differt.

Shrubs or small trees 2–4 m tall, evergreen; branchlets alate-cripsed becoming terete with age (those of the new growth very slender and narrowly 4-winged, not crisped); internodes (1–)1.7–2.8(–4.2) cm long. **Leaves** thinly coriaceous, petiolate, discolored (dark green on adaxial surface, very pale abaxially), dull and minutely roughened on both surfaces when dry, minutely fibrous when torn; petioles slender, 1–3 mm long;

blades elliptic, (3–)3.5–4.7(–6) × (1.5–)1.8–2.4(–3) cm, mostly 1.7–2 times longer than wide, cuneate at base (decurrent on the petiole), obtusely acuminate at apex, acumen 2–7(–9) mm long; midnerve channeled on the adaxial surface, somewhat prominent abaxially; lateral nerves and transverse veins much weaker than the midnerve, only faintly visible in dried material, the laterals 2–4 mm from the margin in the lower half of the blade and 1 mm from the margin in the upper half, the transversals c. 4 pairs oriented at an oblique angle relative to the midnerve. **Cymes** solitary or geminate in the leaf-axils and sometimes also at the intervening ‘aphyllous’ nodes, up to 1 cm long, (2–)3–4-flowered; peduncles slender, 1–3(–5) mm long; additional axes ± absent (the inflorescence thus subumbellate) or sometimes extended by a short internode; bracts lanceolate-cucullate, persistent, to 0.7 mm long; bracteoles similar but smaller. **Flowers** on slender pedicels 2–2.5 mm long; hypantho-calyx campanulate, green, 1.5–1.75 × 2.5 mm, margin sinuate and 4-microdentate; corolla subulate in bud, 2–2.5 mm long; petals white, recurved at anthesis, triangular-subulate, 2.5 × 1 mm, base truncate and without a claw; staminal filaments 2 mm long, violet; anthers dolabriform, 1.75 mm long, thecae situated at the anterior end; connective pale yellow, dorsally keeled and lacking a gland, posterior extremity narrowly conical, acute; epigynous chamber with interstaminal partitions cruciform; style 5.5–6 mm long, white. **Fruits** globose, 4.5 mm in diam., black at maturity; calycinal crown not prominent.

Etymology. – The epithet *antongilense* is a neuter adjective and refers to the type locality on the eastern shore of Antongil Bay.

Distribution and ecology. – Northeastern Madagascar (Analanjirofo region, Maroantsetra district), evidently restricted to the western side of the Masoala Peninsula to the south of Ambanizana. Habitat in littoral and lowland forest, from near sea level to 480 m in elevation.

Conservation status. – *Memecylon antongilense* has an estimated AOO of 8 km² and two known locations, both of which are within the boundary of the Masoala National Park managed by Madagascar National Parks (GOODMAN et al., 2021a). Forest loss within the protected area has been minimal between the years 1996 and 2016, but there are ongoing, plausible threats to littoral and low-elevation forests primarily from slash-and-burn agriculture (GOODMAN et al., 2021a). The new species is thus provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *Memecylon antongilense*

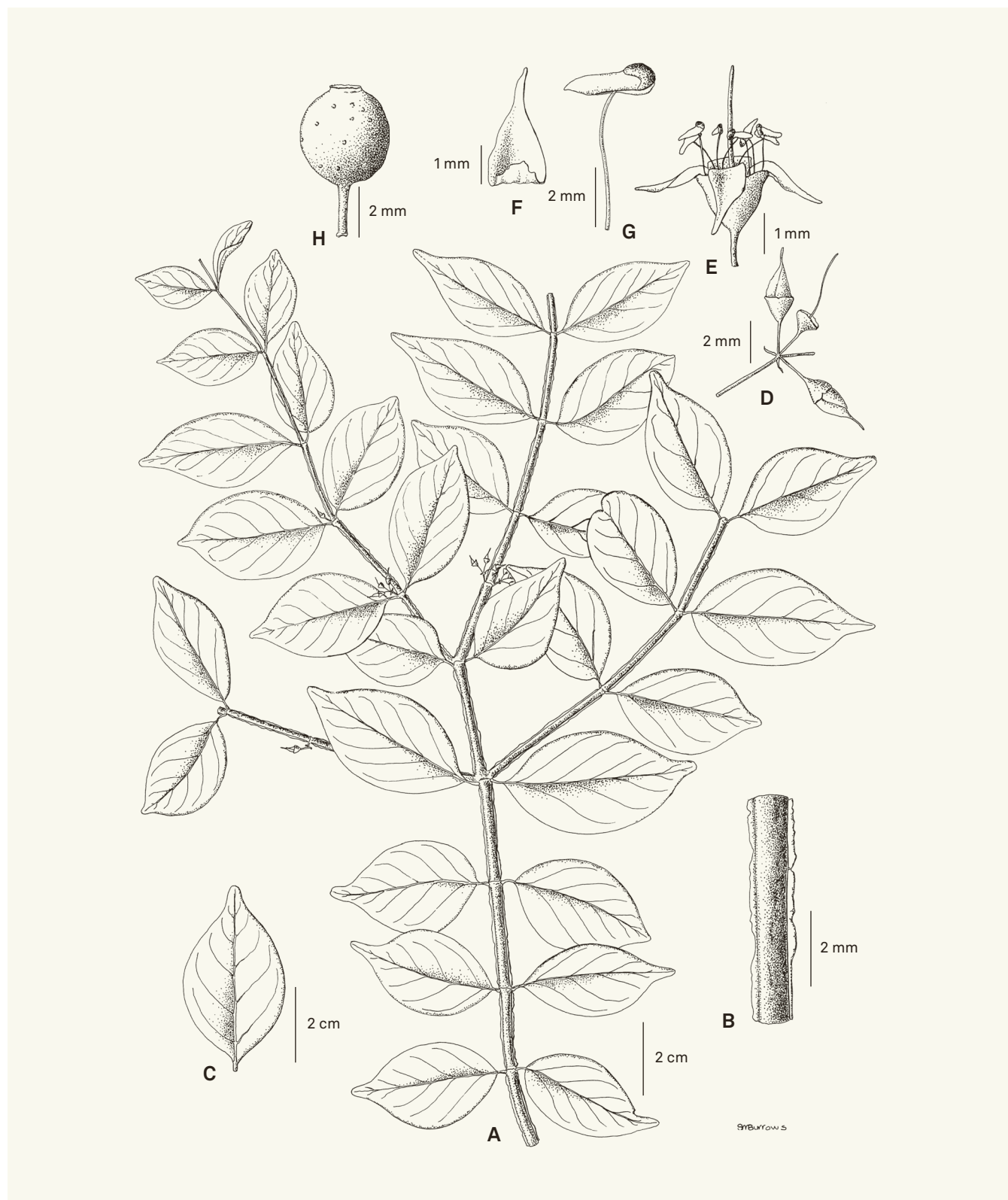


Fig. 2. – *Memecylon antongilense* R.D. Stone. A. Flowering branch; B. Section of branchlet showing narrow wings; C. Leaf; D. Cymule; E. Open flower; F. Petal; G. Stamen; H. Fruit.
[A–G: McPherson et al. 17649, MO; H: Stone et al. 2612, NU] [Drawing: S. Burrows]

would key to *Memecylon* sect. *Pseudonaxiandra* H. Perrier on account of the alate-crisped young branchlets, delicate cymules, $\pm$ truncate calyx margin (the corolla thus well exposed in bud), versatile (dolabriform) anthers, and dorsally keeled connective lacking a gland. Molecular analyses (R.D. Stone, unpubl. data) further suggest that *M. antongilense* is closely related to *M. insolitum* R.D. Stone, *M. interjectum* R.D. Stone, *M. gracilipedicellatum* Jacq.-Fél., and *M. mocquersii* Aug. DC. It is morphologically close to *M. insolitum* and *M. gracilipedicellatum*, differing from the first by having young branchlets alate-crisped (vs. subquadrangular), leaf-apices obtusely acuminate (vs. obtuse to rounded or retuse), petals with base truncate and lacking a claw (vs. short-unguiculate), anther-gland absent (vs. present but vestigial), and fruits 4.5 mm (vs. 6 mm) in diameter with calycinal crown not prominent (vs. erect-spreading). From *M. gracilipedicellatum*, it differs by having leaves elliptic (vs. ovate-lanceolate) and distinctly wider relative to the length, cymules $\pm$ subumbellate (vs. with slender secondary axes 1–2.5 mm long), and a larger hypantho-calyx (see Latin diagnosis above).

Additional specimens examined. – MADAGASCAR. Reg. Analanjirofo [Prov. Toamasina]: Masoala Peninsula, south of Marofototra along foot-path toward Antalaviana, 15°46'30"S 50°00'13"E, 0–25 m, 27.I.2007, fl. & imm. fr., Stone *et al.* 2612 (CAS, MO, NU, P, TAN).

Memecylon articulatum R.D. Stone, **sp. nov.** (Fig. 3).

Holotypus: MADAGASCAR. Reg. SAVA [Prov. Antsiranana]: Marojejy National Park, NW of Mandena, along trail to summit of Marojejy Est, above second camp, 14°26'S 49°45'E, 850–1000 m, 11.II.1989, fl. past anthesis, Miller & Lowry 3971 (CAS-836155!; iso-: K!, MO-3714791!, P [P00500500]!, TAN!, WAG [WAG.1093549]!).

Ob characteres foliaries cum Memecylone cotinifolioides (H. Perrier) Jacq.-Fél. ante confusa, sed ab eo cymulis in axillas foliaries inferiores et ad nodos defoliatos vetustiores (non ad apicem ramulorum) dispositis, floribus sessilibus (non pedicellis 3 mm longis insidentibus) atque fructibus majoribus (plerumque 7–8 non 5 mm diametro) differt.

Trees 8–12 m tall, evergreen; branchlets dichotomous or trichotomous, those of the new growth brown, bilaterally compressed and dorso-ventrally 2-grooved, soon becoming terete and grayish with age; internodes (1–)3–5.5(–8.3) cm long. Leaves coriaceous, petiolate, dark green and shining on the adaxial surface, light green abaxially, granular-wrinkled on both surfaces when dry; petioles mostly 2–4 mm long; blades elliptic to narrowly elliptic or obovate, (3.6–)4.3–5.8(–6.4) $\times$ (1.5–)2–2.5(–3) cm, mostly 2–2.5 times longer than wide, base cuneate to angustate, apex obtuse to rounded or retuse, margins $\pm$ revolute; midnerve clearly visible, canaliculate adaxially, prominent abaxially; intramarginal nerves and transverse

veins invisible or nearly so, the latter 6–8 pairs oriented at an oblique angle relative to the midnerve. Cymules to c. 15 mm long, 2–4-flowered, solitary or in fascicles of 2(–3) in the lower leaf-axils and at recently defoliated nodes, axes articulate; peduncle 2–9 mm long, bilaterally compressed; secondary axes (1–)3–6 mm long; bracts and bracteoles rapidly deciduous, not seen. Flowers borne singly at the end of the inflorescence axes, $\pm$ sessile (true pedicels virtually absent, the base of the flower subtended by an articulation of the axis); hypantho-calyx campanulate, 3 $\times$ 3.5 mm, margin truncate and 4-denticulate; petals reportedly pale blue, rhomboid-acute, 2.5 $\times$ 2 mm, narrowed at base into a very short claw, midnerve conspicuous abaxially; staminal filaments c. 2.5 mm long; anthers c. 1.8 mm long, thecae fronto-ventral, connective dorsally incurved around the gland occupying about a third of the length, posterior extremity sigmoid and narrowly conical-acute; epigynous chamber deep, with membranous interstaminal partitions in a cruciform pattern; style 7 mm long. Fruits globose, 7–8(–9) mm in diam., green becoming reddish; calycinal crown 1 mm long, margin truncate.

Etymology. – The epithet *articulatum* is a neuter Latin adjective meaning “jointed”. It refers to the conspicuously articulated inflorescence axes seen in this species.

Distribution and ecology. – Northeastern Madagascar (SAVA region, Sambava and Andapa districts), evidently restricted to the Marojejy and Anjanaharibe massifs to the west of Sambava. Habitat in montane, humid forest at elevations of 850–1200 m.

Conservation status. – *Memecylon articulatum* is known from five locations with an estimated EOO of 205 km² and an AOO of 20 km². All of the known locations are in protected areas including the Marojejy National Park and the Réserve Spéciale d’Anjanaharibe-Sud, both of which are managed by Madagascar National Parks (GOODMAN *et al.*, 2021a). Marojejy has seen a relatively minor loss of moist evergreen forest between the years 1996 and 2016, and at Anjanaharibe Sud the deforestation rate has been similarly low (GOODMAN *et al.*, 2021a). Based on its limited EOO and AOO but lack of immediate threats, *M. articulatum* is provisionally assessed as “Near Threatened” [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – *Memecylon articulatum* co-occurs with *M. cotinifolioides* (H. Perrier) Jacq.-Fél. and has similar leaves, but its cymules are borne in the lower leaf axils and at the recently defoliated nodes (not terminally on the branchlets). In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *M. articulatum* would key to the

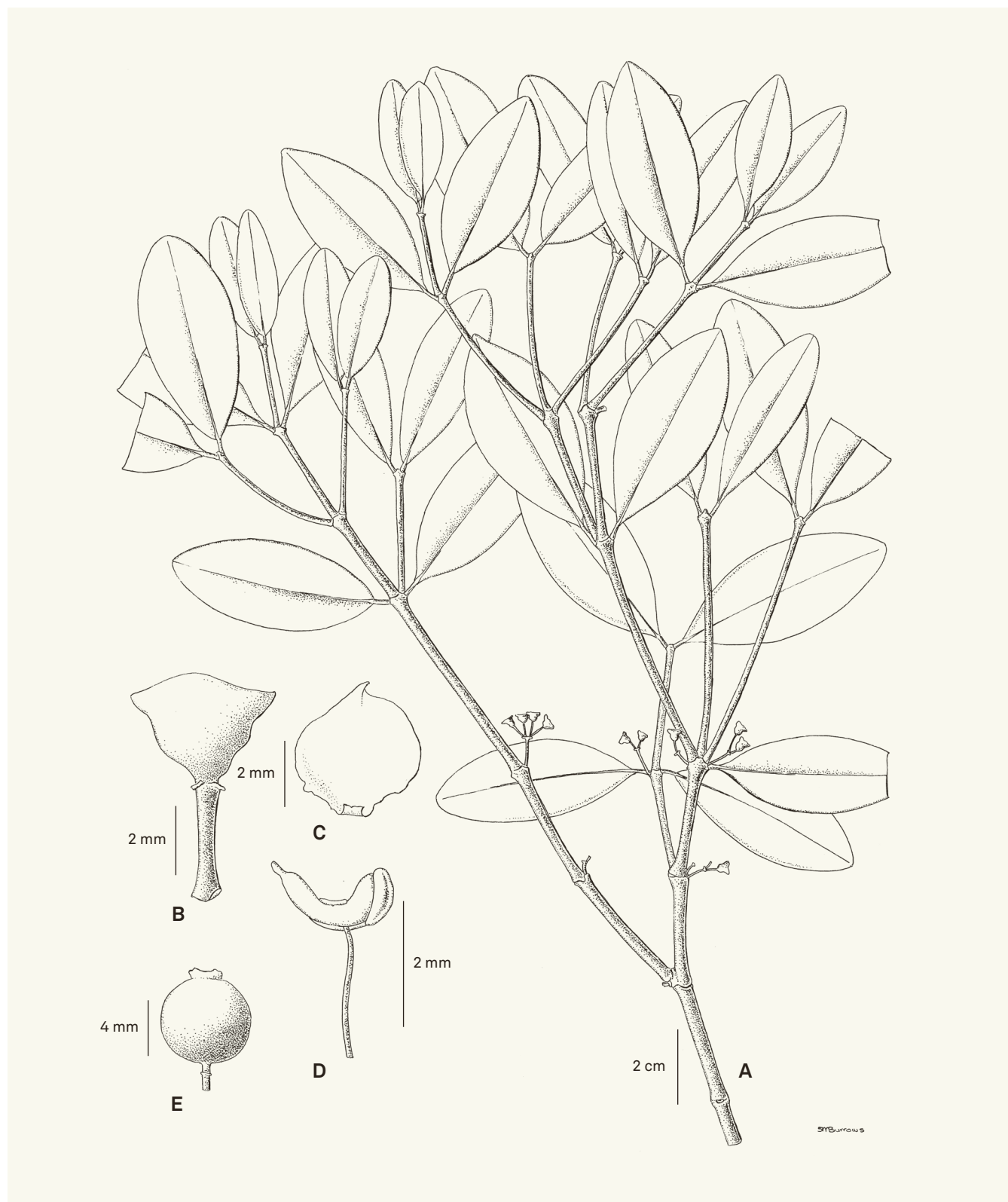


Fig. 3. – *Memecylon articulatum* R.D. Stone. A. Flowering branch; B. Hypantho-calyx subtended by secondary inflorescence axis; C. Petal; D. Stamen; E. Fruit.

[A–D: Miller & Lowry 3971, CAS; E: Razafimandimbison et al. 231, MO] [Drawing: S. Burrows]

group of *M. bernieri* Cogn., *M. peracuminatum* H. Perrier, and *M. bracteatum* Jacq.-Fél. on account of the cymules with internodes jointed at the base of the sessile flowers. However, the elliptic-rounded leaves of *M. articulatum* are quite different from the narrowly oblanceolate ones of *M. bernieri* or the lanceolate-acuminate leaves seen in the other two species. The relatively large flowers of *M. articulatum*, together with its elongated and narrow anther connective bearing an ellipsoid dorsal gland, suggest that its real affinity might be with the species-group that includes *M. eglandulosum* H. Perrier, *M. tsaratananense* (H. Perrier) Jacq.-Fél., *M. planifolium* Jacq.-Fél., *M. bezavonense* (Jacq.-Fél.) R.D. Stone, and *M. convergens* R.D. Stone.

The collection *Gautier 2994* (G, K, P, TAN, TEF) from northwestern Madagascar (Diana region), Manongarivo massif, Mt. Bekolosy remains unplaced to species pending further study. It was previously named as *M. cotinifolioides* but is similar to *M. articulatum* in having cymules at the defoliated nodes below the leaves (rather than terminally on the branchlets). It differs from *M. articulatum* in having persistent bracts (vs. rapidly deciduous) and fruits distinctly but shortly pedicellate (not jointed immediately below the base of the fruit).

Additional specimens examined. – MADAGASCAR. Reg. SAVA [Prov. Antsiranana]: massif du Marojezy [= Marojezy], near third camp, 14°26'S 49°44'E, 1200 m, 11.XII.1996, fr., *Clausing et al.* 318 (MJG); PN Marojezy, 18 km suivant la piste entre Mandena et le sommet de Marojezy, 14°26'10"S 49°44'25"E, 1200 m, III.1995, fr., *Rasoavimbahoaka* 570 (CAS, P); Ambatomenavava, Bezavona, forêt d'Ampiranaomby, 14°23'13"S 49°52'06"E, 836 m, 25.X.2010, fr., *Ravelonarivo & Raharivelo* 3588 (MO, P); RS d'Anjanaharibe-Sud, au S du campement à Mandritsarahely, 14°46'S 49°30'E, 985 m, 10.VII.1996, fr., *Razafimandimbison et al.* 231 (CAS, G, K, MO, NU).

Memecylon atractocarpum R.D. Stone, **sp. nov.** (Fig. 4).

Holotypus: MADAGASCAR. Reg. SAVA [Prov.

Antsiranana]: Masoala Peninsula, W of Ambohitralanana, near Sahafary, 15°16'S 50°22'E, 75 m, 19.VII.1997, fr., *McPherson* 17112 (CAS-960574!; iso-: G [G00642037] image!, MO-6262422!, NU!).

Memecyloni drymophilo R.D. Stone *arcte affine, sed ab eo laminiis foliaribus plerumque 3–3.3 (non 2.5–3)–plo longioribus quam latioribus ad apicem acuminato-obtusis (non acuminato-acutis), venis transversalibus c. 7–8 (non 9–11)–jugis, pedicellis fructiferis brevioribus (1–1.5 non 3–4.5 mm longis) atque fructibus paullo brevioribus (8–10 non 10–11 mm longis) differt.*

Trees 9 m tall, evergreen, cauliflorous; branchlets slender, the youngest subquadrangular and with dark brown bark exfoliating in rectangular patches with age to reveal whitish inner bark; internodes (1.3–)2–3.2(–4.5) cm long. Leaves thinly coriaceous, petiolate, dark green on the adaxial surface, somewhat

paler abaxially, dull on both surfaces and minutely roughened when dry (especially below); petioles 2–4(–5) mm long; blades narrowly elliptic to ovate, (5–)6.2–8.2(–9.3) × (1.6–)1.9–2.7(–3.2) cm, mostly 3–3.3 times longer than wide, base angustate, apex acuminate, acumen mostly 8–12(–14) mm long, obtuse; only the midnerve clearly visible, finely canaliculate adaxially, somewhat prominent abaxially especially toward the base; transverse veins scarcely visible, c. 7–8 pairs oriented at an oblique angle relative to the midnerve. Flowers not seen. Fruits fusiform in outline, 8–10 × 4–5 mm, borne on ligneous thickenings of the trunk, subsessile (pedicels 1–1.5 mm long); bracts at base of pedicel rotundate, 0.5 × 0.5 mm, broadly attached and clasping, ± persistent; calycinal crown light brown (strongly contrasting with the darker color of the fruit), c. 1 mm long, margin ± truncate to shallowly sinuate-dentate.

Etymology. – The epithet *atractocarpum* is a compound formed from the Greek nouns *atraktos* meaning “spindle” and *karpós* meaning “fruit”. It functions as an adjective and refers to the fusiform shape of the fruits.

Distribution and ecology. – Northeastern Madagascar (SAVA region, Antalaha district), known only from the type collection made in the Sahafary forest near Ambohitralanana (Cap-Est). Habitat in lowland humid forest at elevation 75 m.

Conservation status. – Because of its estimated AOO of 4 km² and the fact that its only known location is outside the boundary of the Masoala National Park in an area where the original forest has largely been converted to agriculture or secondary vegetation (savoka), *Memecylon atractocarpum* is provisionally assessed as “Critically Endangered” [CR B2ab(i,ii,iii)] in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – Compared to its close relative *Memecylon drymophilum* R.D. Stone (described below) in *Memecylon* sect. *Prememecylon* sensu JACQUES-FÉLIX (1985a), the leaves of *M. atractocarpum* are somewhat narrower relative to the length and less distinctly acuminate at the apex, have fewer transverse veins and are different in color (dull dark green adaxially and somewhat paler abaxially vs. dull dark green on both surfaces). The fruits of the two species are very similar, but those of *M. atractocarpum* are slightly smaller and on shorter pedicels (see Latin diagnosis above). Further comparison awaits the collection of flowering material of *M. atractocarpum*. The two species are separated by a straight-line distance of at least 50 km (*M. atractocarpum* on the eastern side of the Masoala Peninsula and *M. drymophilum* on the western side).

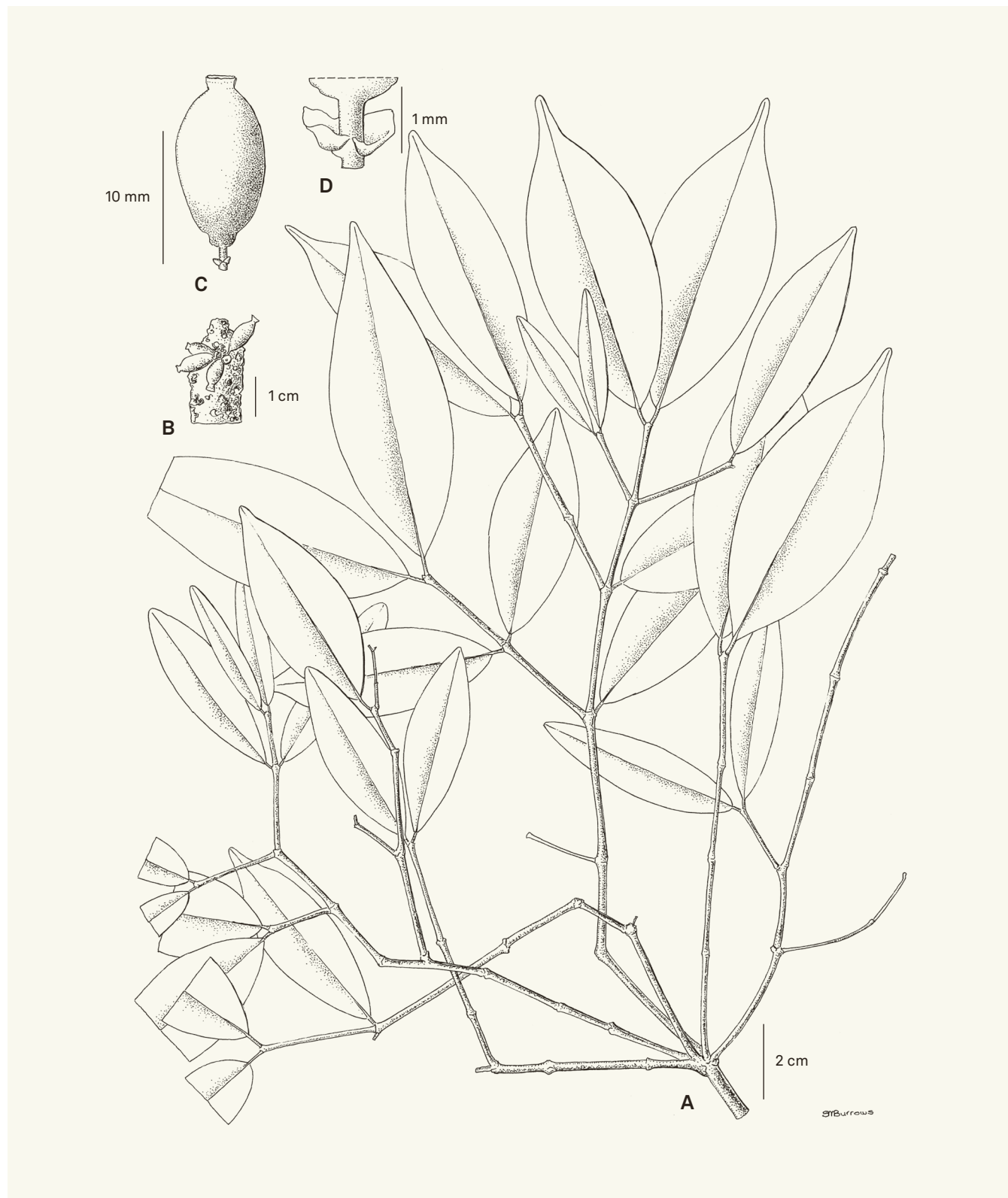


Fig. 4. – *Memecylon atractocarpum* R.D. Stone. **A.** Leafy branch; **B.** Section of trunk showing fructiferous node; **C.** Fruit; **D.** Base of fruit showing pair of bracteoles subtending the pedicel.
[McPherson 17112, MO] [Drawing: S. Burrows]

Memecylon betamponense R.D. Stone, **sp. nov.** (Fig. 5).

Holotypus: MADAGASCAR. **Reg. Atsinanana [Prov. Toamasina]:** fokontany Andratambe, firaisana Ambodiriana, Betampona RNI, piste principale, 17°55'S 49°13'E, 275–650 m, 12.I.2000, fl., *Iambana et al.* 253 (MO [MO-3147309]!; iso-: CAS!).

Memecyloni longicuspi Baker simile, sed ab eo arboribus excelsioribus (15–20 non usque 4.5 m altis), ramulis juvenilibus bisulcatis demum quadrangularibus (non fere quadrangularibus ac anguste alatis), laminae foliaris acumine brevior (8–18 non c. 20 mm longo), cymulis 3–11 (non 1–5)-floris, bracteis bracteolisque brevioribus (0.75 et 0.4 non 1.5 et 1 mm longis), petalis albis (non roseopurpureis) ad basin auriculatis (non unguiculatis) atque fructibus paullo majoribus (10 non 8 mm diametro) differt.

Trees 15–20 m tall, evergreen, DBH 28–30 cm; branchlets slender, those of the new growth light brown and bisulcate, rapidly becoming quadrangular then terete with age, older branchlets whitish; internodes (1–)1.5–2.5(–3) cm long. *Leaves* reportedly bright red when young; fully developed leaves subcoriaceous, petiolate, dark green and shining on the adaxial surface, somewhat paler abaxially, minutely roughened when dry; blades on slender petioles 2 mm long, elliptic to narrowly elliptic, 4.7–6.5(–7) × 1.5–2.7 cm, mostly 2.5–3 times longer than wide, base cuneate, apex acuminate, acumen 8–18 mm long, obtuse to acute; midnerve clearly visible, canaliculate adaxially, very prominent abaxially; intramarginal nerves and transverse veins weaker, faintly visible and subprominent on both surfaces, the transversals 7–10 pairs oriented at an oblique angle relative to the midnerve. *Cymules* up to 10 mm long, (2–)3–11-flowered, solitary or in fascicles of 2–3 in the lowermost leaf-axils and at the defoliated nodes of older branchlets, subumbellate or the peduncle often extended by a short internode; peduncles bisulcate, 1–6 mm long; secondary axes quadrangular, 1–3(–5) mm long; bracts and bracteoles deciduous, the former triangular-cucullate, 0.75 mm long, the latter lanceolate, 0.4 mm long. *Flowers* on pedicels 1.5–2 mm long; hypantho-calyx yellow, campanulate, 1.5 × 2.25 mm, margin shallowly sinuate-dentate to truncate and remotely 4-denticulate, the teeth themselves with a narrow scarious margin; corolla white, rounded-apiculate in bud, 1.75 mm long; petals broadly ovate, c. 2.5 × 1.5 mm, auriculate at base (claw absent), rounded then abruptly acuminate at apex; staminal filaments not seen; anthers 1.5 mm long, thecae fronto-ventral, connective keeled on the dorsal side and with median gland clearly present, posterior extremity acute; epigynous chamber with interstaminal partitions in a cruciform pattern, forming V-shaped notches beneath the petal scars; style 4 mm long. *Fruits* globose, 10 mm in diam. when ripe; calycinal crown not prominent, appressed to the top of the ovary.

Etymology. – The epithet *betamponense* is a neuter adjective and refers to the type locality in the RNI de Betampona.

Distribution and ecology. – Eastern Madagascar (Atsinanana region, Toamasina II district), evidently restricted to the Réserve Naturelle Intégrale de Betampona c. 30 km west of Toamasina [Tamatave]. Habitat in lowland humid forest at elevations of 250–650 m.

Conservation status. – *Memecylon betamponense* has an estimated AOO of 8 km² and two known locations, both of which are within the boundary of the Réserve Naturelle Intégrale de Betampona managed by Madagascar National Parks (GOODMAN et al., 2021a). The integrity of the forest within the protected area over the past two decades is nearly 100 % (GOODMAN et al., 2021a). Based on a lack of immediate threats, the new species is provisionally assessed as “Near Threatened” [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *Memecylon betamponense* would key close to *M. longicuspe* Baker on account of the lanceolate-acuminate leaves, cymules borne in the leaf-axils and at the nodes below the current leaves, bracts deciduous, ± truncate calyx margin (the corolla thus well exposed in bud), and anther-gland present. It differs from *M. longicuspe* by its much larger stature, white petals (vs. violet), and at least six other characters (see Latin diagnosis above). The presence of an anther-gland immediately distinguishes *M. betamponense* from *M. longipetalum* H. Perrier and *M. eduliforme* Aug. DC., both of which have similar, elliptic-acuminate leaves and globose fruits.

Additional specimens examined. – MADAGASCAR. **Reg. Atsinanana [Prov. Toamasina]:** RS N° 1, Ambodiriana (district de Tamatave), 250–500 m, 23.VIII.1957, fr., *Service Forestier* 18132 (P, TEF).

Memecylon bullatum R.D. Stone, **sp. nov.** (Fig. 6).

Holotypus: MADAGASCAR. **Reg. Alaotra-Mangoro [Prov. Toamasina]:** Ambatondrazaka, Imerimandroso, dans la partie NW de la RNI de Zahamena, à 1 km au SW du village d'Antenina, 17°30'28"S 48°46'00"E, 910 m, 15.VIII.1994, fr., *Randrianjanaka & Zafy* 202 (P [P00516174]!; iso-: CAS-1009359!, G [G00642035] image!, K!, MO-6261634!, NU!).

Ob flores ignotos affinitatis incertae, sed a congeneris madagascariensibus mihi cognitis foliis sessilibus subcordatisque laminis bullatis bene distincta.

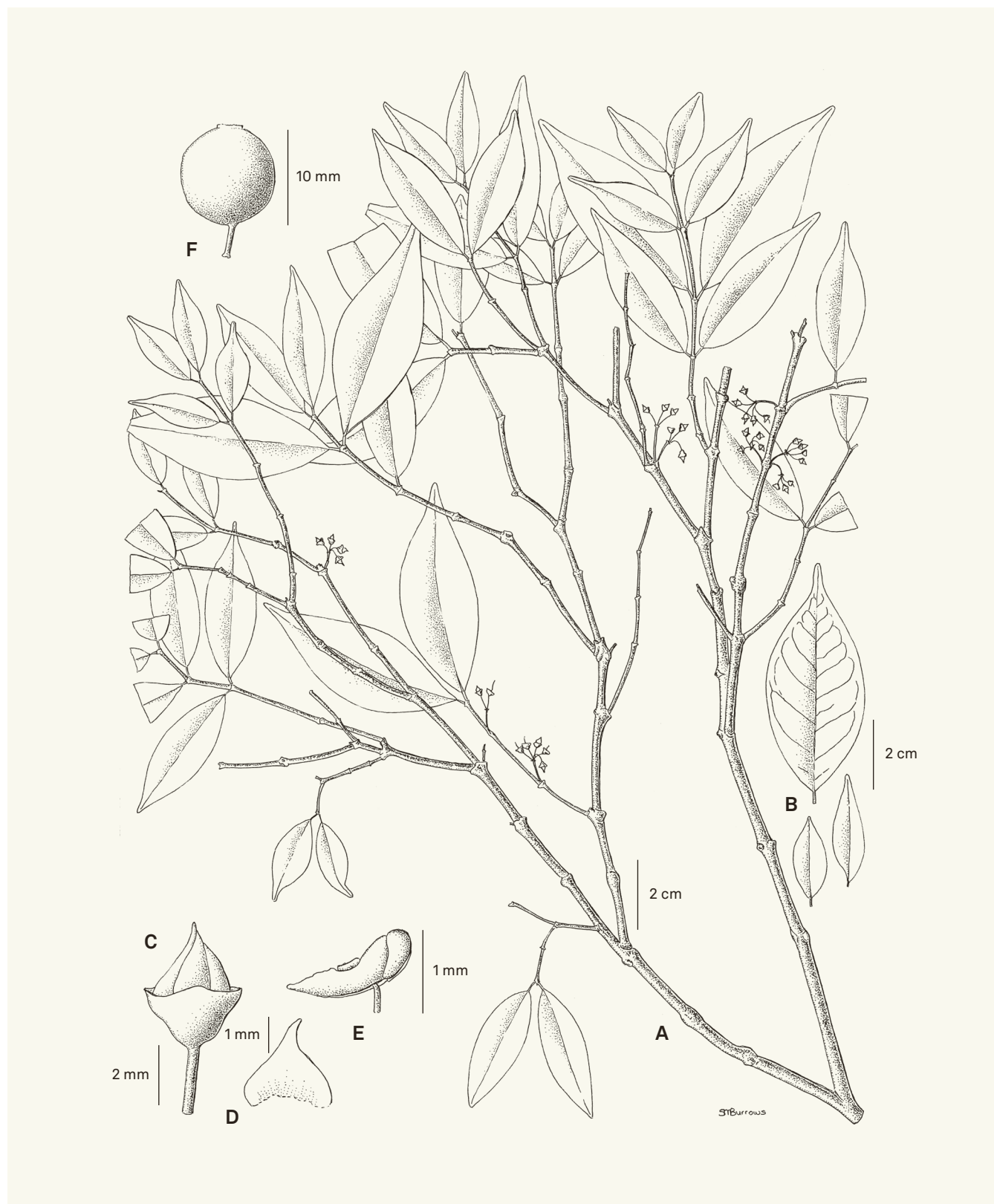


Fig. 5. – *Memecylon betamponense* R.D. Stone. **A.** Flowering branch; **B.** Leaves; **C.** Unopened flower; **D.** Petal; **E.** Anther; **F.** Fruit. [A–E: *Iambana et al.* 253, CAS; F: *Service Forestier* 18132, P] [Drawing: S. Burrows]

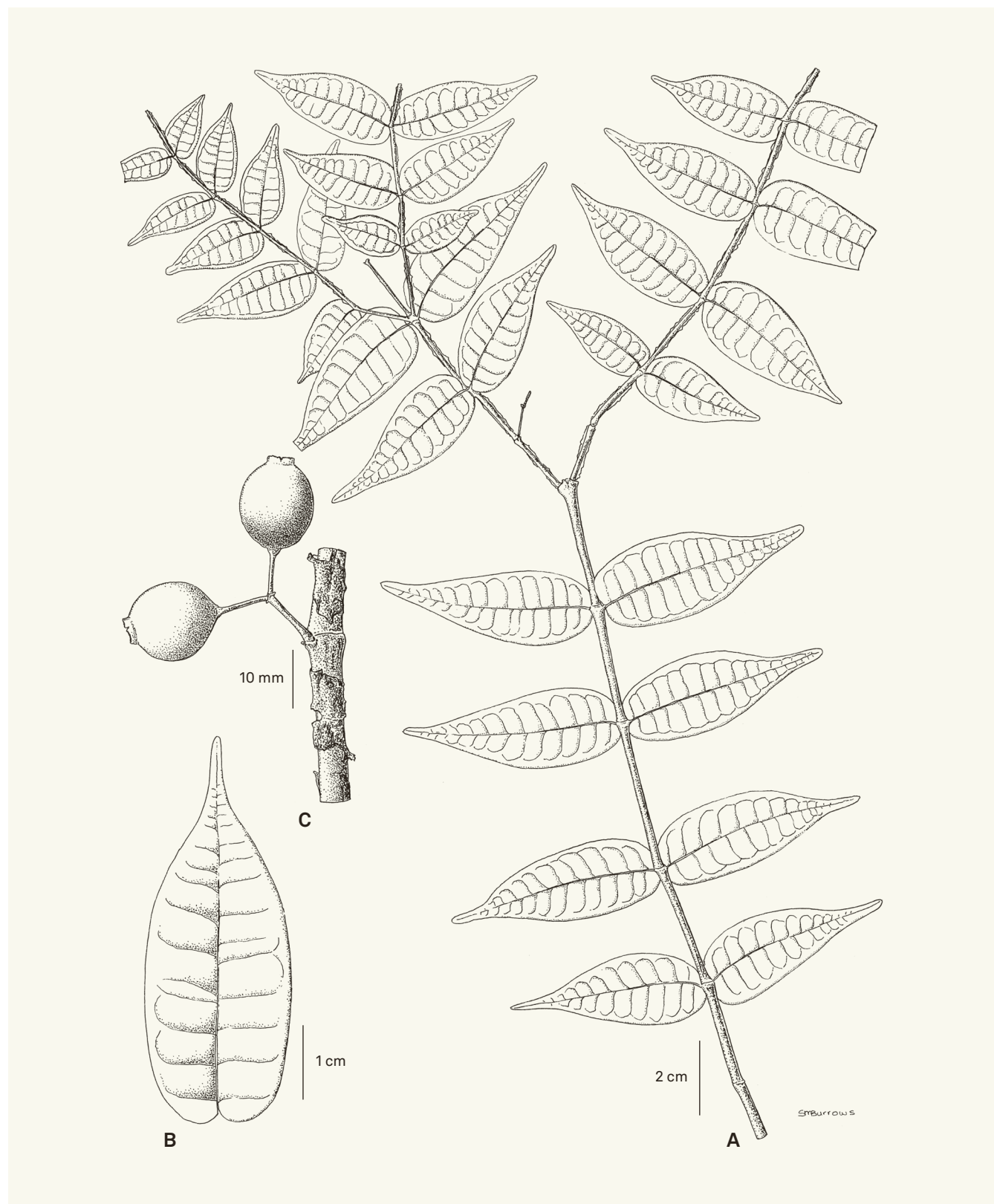


Fig. 6. – *Memecylon bullatum* R.D. Stone. **A.** Leafy branch; **B.** Leaf; **C.** Section of branchlet showing infructescence and fruits. [Randrianjanaka & Zafy 202, P] [Drawing: S. Burrows]

Shrubs 2 m tall, evergreen; branchlets slender, the youngest narrowly quadrangular-alate, bark dark brownish-black soon exfoliating in elongate-rectangular patches to reveal whitish inner bark; older branchlets with nodes thickened; internodes 1.2–3(–4.2) cm long. *Leaves* subcoriaceous, sessile, bullate, dark green and somewhat shining on the adaxial surface, brownish and dull adaxially, minutely roughened on both surfaces when dry; blades ovate-lanceolate to ovate-oblong, (2.3–)2.7–4.5 (–5.7) × 1–1.8(–2.3) cm, mostly 2–2.5 times longer than wide, base rounded-subcordate, apex acuminate, acumen mostly 5–9(–12) mm long, narrowly obtuse; midnerve and transverse veins clearly visible and deeply impressed adaxially, prominent abaxially (the midnerve especially so); transversals 8–11 pairs oriented perpendicular or at a slightly oblique angle relative to the midnerve. *Flowers* unknown. *Fruits* globose, 6.5–7.5 mm in diam., reportedly violet before maturity, borne in the leaf-axils or at recently defoliated nodes; peduncles short, 1.5–4.5 mm long, secondary axes 2.5–3 mm long, pedicel(?) 5.5 mm long, bracts deciduous; calycinal crown c. 1 mm long, slightly spreading, margin truncate and remotely 4-microdentate; epigynous chamber with 8 membranous interstaminal partitions, these raised into short vertical projections surrounding the style scar.

Etymology. – The epithet *bullatum* is a neuter Latin adjective in reference to the distinctive character of the leaves.

Distribution and ecology. – Eastern Madagascar (Alaotra-Mangoro region, Ambatondrazaka district), known only from the type collection made in the northern part of Zahamena National Park at an elevation of 910 m. The habitat was presumably in humid forest (not recorded on the specimen-label).

Conservation status. – *Memecylon bullatum* is known from a single location with an estimated AOO of 4 km². The type locality in the enclave of Antenina is now deforested though there is evidently dense forest remaining nearby. Based on its limited AOO and the apparent threats, *M. bullatum* is provisionally assessed as “Critically Endangered” [CR B2ab(i,ii,iii)] in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – The leaves of *Memecylon bullatum* are most distinctive. Further comparison with other species awaits collection of material with flowers. *Memecylon fofifa* R.D. Stone also has ± bullate, subsessile leaves but differs in having branchlets alate-cripsed (vs. narrowly quadrangular-alate), leaf-blades cordate-amplexicaul at base (vs. rounded-subcordate), fruiting peduncles very slender and 6–24 mm long (vs. stouter and 1.5–4.5 mm), bracts persistent (vs. deciduous), calycinal crown absent (vs. prominent and 1 mm long), and interstaminal partitions not prominent, top of ovary marked by radial lines (vs. partitions prominent and membranous).

Memecylon calcicola R.D. Stone, **sp. nov.** (Fig. 7).

Holotypus: MADAGASCAR. **Reg. DIANA [Prov. Antsiranana]:** Ankara, 11.III.1954, fl., *Service Forestier* 9385 (P [P00500467]!; iso-: P [P05320759 labeled in error as 9386]!, TEF!).

Memecyloni arenicolae R.D. Stone et *M. longipedi* R.D. Stone affine, sed ab ambobus ramulis juvenilibus subquadrangularibus (non teretibus), foliis brevipetiolatis (non sessilibus) petiolis crassis 1–3 mm longis, laminis foliaribus ad basin cuneatis rotundatisve (non rotundato-subcordatis), bracteis cymularum persistentibus (non caducis), pedicellis brevioribus (2–4 non 5.5–9 mm longis) atque fructibus elliptico-obovatis c. 10 × 8 mm (non globosis c. 11 mm diametro vel elliptico-urceolatis plerumque 12–15 × 8–11 mm) differt.

Trees 3.5–15 m tall, evergreen; bark brown, reportedly smooth or cracked into rectangles; branchlets dichotomous or trichotomous, those of the new growth reddish brown and subquadrangular, older branchlets pale gray, terete and with thickened nodes; internodes (1–)1.8–3.4(–6.8) cm long. *Leaves* thickly coriaceous, short-petiolate, bright green, smooth and shining on the adaxial surface, paler or brownish, dull and minutely roughened abaxially; petioles 1–3 mm long, stout; blades ovate to narrowly elliptic or obovate, (3–)4–6.2(–8.7) × (1.7–)2.4–3.7(–4.7) cm, mostly 1.5–2 times longer than wide, cuneate to rounded at base and rounded-obtuse to emarginate at apex; only the midnerve clearly visible, impressed adaxially and somewhat prominent abaxially especially toward the base; transverse veins ± faintly visible in dried material, oriented at an oblique angle relative to the midnerve. *Cymules* c. 1 cm long, glomerulate-fasciculate at the nodes below the leaves; peduncle absent or 1–2 mm long; axes contracted, marked by several pairs of squamiform, imbricate, persistent bracts. *Flowers* on slender pedicels 2–4 mm long; hypantho-calyx cupulo-patellate, 1.5–2 × 2–2.5 mm, margin shallowly sinuate-dentate; lobes acute, scarious-margined; corolla in bud 1.5 mm long, rounded-apiculate; petals reportedly blue and spreading at anthesis, transversely broadly elliptic, 2 × 2.5 mm, claw short, apex apiculate; staminal filaments reportedly blue, 4.5 mm long; anthers dolabriform, 1 mm long, thecae fronto-ventral, reportedly yellow; connective conic-acute, dorsally incurved by the median gland occupying roughly half of its length; epigynous chamber with membranous partitions well developed, forming V-shaped notches beneath the petal scars; style 6 mm long. *Fruits* elliptic-obovate, c. 10 × 8 mm; persistent calycinal crown 0.5–1 mm long, margin shallowly sinuate-dentate to ± truncate; stylopodium prominent, ± filling the epigynous chamber.

Etymology. – The epithet *calcicola* is a compound derived from the Latin combining form *calci-* meaning “limestone” and the agent noun *-cola* meaning “inhabitor”. It is a noun in

apposition functioning as an adjective and refers to the habitat on rocky, calcareous substrates.

Distribution and ecology. – Northern Madagascar (Diana region, Ambilobe & Antsiranana II districts), a near-endemic of the Ankarana plateau. Habitat in dry, semi-deciduous forest on rocky calcareous substrate (rarely on volcanics or unconsolidated sand) at elevations from 85–150 m. Another, isolated location is in the Tsingy de Namoroka (western Madagascar, Boeny region, Soalala district), c. 575 km straight-line distance southwest of Ankarana.

Conservation status. – *Memecylon calcicola* has an estimated EOO of 15,532 km² and an AOO of 32 km². There are eight known locations, six of which are in protected areas including the Réserve Spéciale d'Ankarana and the Tsingy de Namoroka National Park, both of which are managed by Madagascar National Parks (GOODMAN et al., 2021a, b). At Ankarana there has been no measurable loss in hectareage of dry deciduous forest between the years 1996 and 2016 (GOODMAN et al., 2021a), and at Namoroka the integrity of dry forest is nearly 100% (GOODMAN et al., 2021b). Based on its limited AOO but lack of immediate threats, *M. calcicola* is provisionally assessed as “Near Threatened” [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – *Memecylon calcicola* appears closely related to two vegetatively similar species from the northeastern coast (*M. arenicola* R.D. Stone, *M. longipes* R.D. Stone; see Latin diagnosis above) as well as *M. ambrense* Jacq.-Fél., a larger-leaved species from the Montagne d'Ambre. The presence of a stylopodium in fruit seems to confirm this, although the same character is also present in *M. louvelianum* H. Perrier. A flowering collection from the Boeny region, Tsingy de Namoroka (Réserves Naturelles 6153, MO, P, TEF) is disjunct from the main distribution of *M. calcicola* but fits my concept of this species without difficulty.

The type collection of *Memecylon calcicola* (Service Forestier 9385, P, TEF) was previously treated by JACQUES-FÉLIX (1985b) within a broadly defined *M. louvelianum*, as were two of the collections (Service Forestier 10670, P, TEF; Réserves Naturelles 6153, MO, P, TEF) cited below as additional material (paratypes). *Memecylon louvelianum* as presently circumscribed is one of the most widely distributed *Memecylon* species in Madagascar with 55 collections seen, from montane forests at 700–1200(–1620) m elevation in the extreme north (Montagne d'Ambre) to the southeast (Andohahela). *Memecylon calcicola* is ecogeographically quite distinct from *M. louvelianum* and also differs morphologically by its thicker branchlets; leaves thickly (vs. thinly) coriaceous, only the midnerve clearly visible and transverse veins ± faintly visible

(vs. midnerve, intramarginal nerves, and transverse veins all clearly visible); leaf-blades bright green adaxially and drying paler or brownish abaxially (vs. drying dark green to blackish), apex rounded-obtuse to emarginate (vs. long-acuminate), corolla in bud rounded-apiculate (vs. conic), hypantho-calyx 1.5–2 × 2–2.5 mm (vs. 2.5 × 3 mm) with margin shallowly sinuate-dentate (vs. truncate), petals shortly clawed at base (vs. thickened-truncate at base lacking claw), anthers 1 mm long (vs. 2–2.3 mm), and fruits elliptic-obovate, c. 10 × 8 mm (vs. ± globose, c. 10 mm in diameter).

Additional specimens examined. – MADAGASCAR. **Reg. DIANA [Prov. Antsiranana]:** Masorolava, Mahagaga, N d'Anosy, 12°45'54"S 49°01'38"E, 144 m, 22.IX.2007, fr., *Andriamihajarivo et al.* 1373 (CAS, MO); Ambilobe, Réserve Spéciale d'Ankarana, Mahamasina, chemin de la Grotte des Chauves-souris, 12°57'23"S 49°07'05"E, 100 m, 02.XI.1997, fr., *Bardot-Vaucoulon* 900 (K, MO, P); *ibid.* loco, Matsaborimanga, premier canyon, terrasse à droite de la rivière, 12°55'48"S 49°03'57"E, 120 m, 18.XI.1997, fr., *Bardot-Vaucoulon & Andrianantoanina* 973 (K, MO, P); Ambilobe, Andranonakoho, Réserve Spéciale d'Ankarana, bordure forêt de Manapisanga, 12°54'41"S 49°10'44"E, 13.IV.2007, fl., *Bardot-Vaucoulon et al.* 1688 (K, MO, P); Andranovondronina, Anjiabe, forêt de Belamoty, à 3 km au NE, 12°06'09"S 49°19'34"E, 85 m, 10.XI.2006, fr., *Ratovoson et al.* 1156 (CAS, MO, P); J.B. 8, Diégo-Suarez [= «Sentier Botanique» près d'Ambondromifehy], 13.IX.1954, fr., *Service Forestier* 10670 (P, TEF). **Reg. Boeny [Prov. Mahajanga]:** Réserve Naturelle 8, canton Andranomomavo, district Soalala [= PN Tsingy de Namoroka], 28.III.1954, fl., *Réserves Naturelles* 6153 (MO, P, TEF).

Memecylon dipterum R.D. Stone, **sp. nov.** (Fig. 8).

Holotypus: MADAGASCAR. **Reg. Ihorombe [Prov. Fianarantsoa]:** Andringitra, Camp 2, c. 43 km S of Ambalavao, junction of the Sahanivoraky and Sahavatoy rivers, 22°13'40"S 47°00'13"E, 810 m, XI.1993, fl., *Lewis et al.* 868 (MO-4659758!; iso-: P [P00516009!]).

Ob aliquos characteres foliaries Memecyloni louveliano H. Perrier simile, sed ab eo plantis arbustis 3 m altis (non arbusculis 5–12 m altis), ramulis juvenilibus bilateraliter compressis valde bialatis (non bisulcatis), foliis subsessilibus (petiolis 1 non 2–3 mm longis), laminis foliaribus minoribus (plerumque 4.5–6 × 2–2.5 non usque 7.5 × 3.5 cm) ad basin rotundatis (non cuneatis) ad apicem acuminato-acutis (non acuminato-obtusis) venis transversalibus c. 6 (non 10–12)–jugis, pedicellis brevioribus (c. 2 non 3 mm longis) atque hypantho-calyce minore (1.5 × 2 non 2.5 × 2.5 mm) distinguitur.

Shrubs to 3 m tall, evergreen; branchlets slender, the youngest bilaterally compressed and with two prominent wings, becoming terete and smooth with age; internodes (1–)2–3.3(–4.4) cm long. **Leaves** subcoriaceous, appearing subsessile (petiole consistently 1 mm), dark green and smooth on the adaxial surface, drying brownish and minutely roughened adaxially, dull on both surfaces; blades narrowly elliptic to ovate, (4–)4.5–6(–7) × 2–2.5(–3) cm, mostly 2–2.7 times longer than wide, base rounded, apex acuminate, acumen mostly

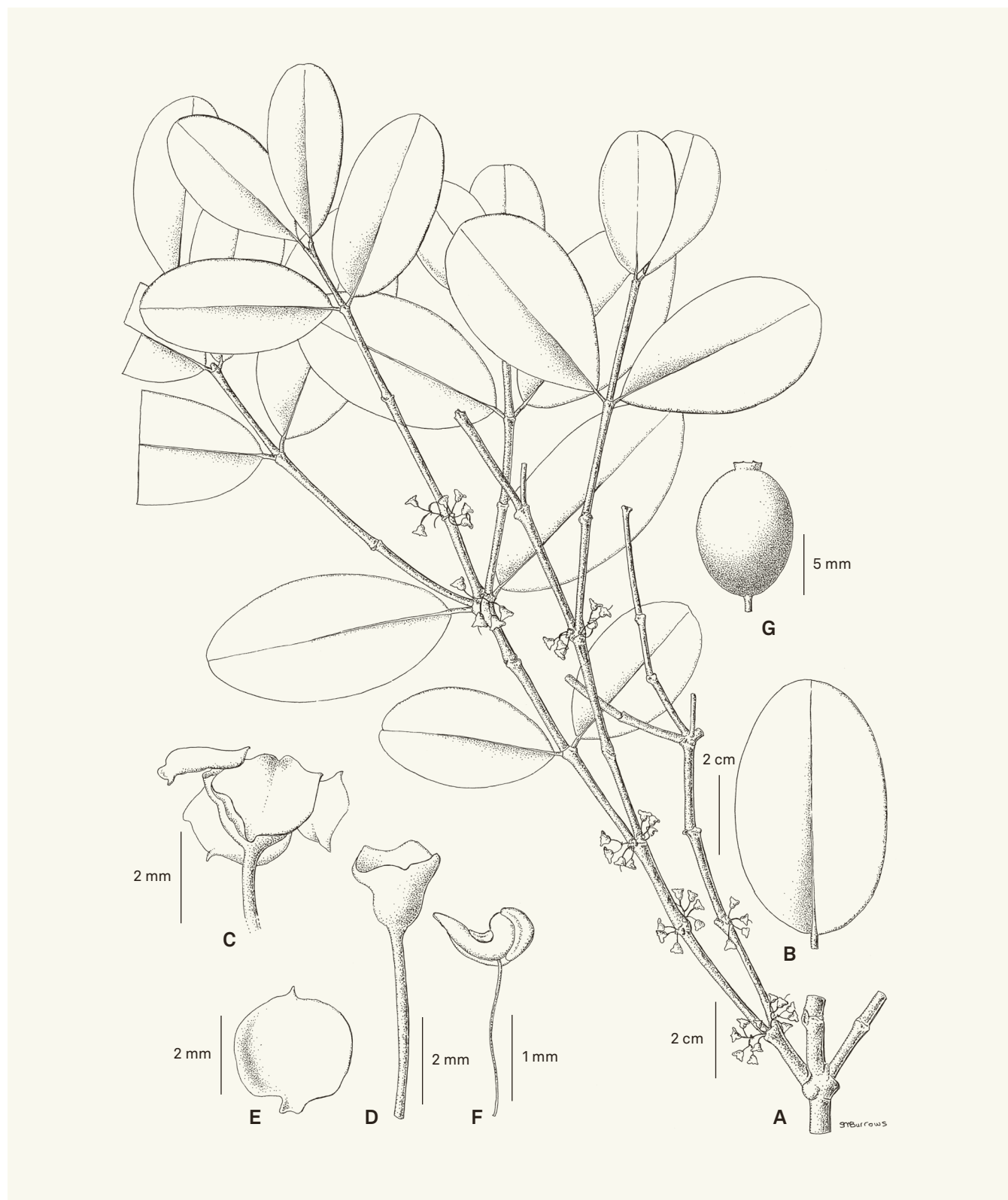


Fig. 7. – *Memecylon calcicola* R.D. Stone. A. Flowering branch; B. Leaf; C. Open flower; D. Hypanthio-calyx past anthesis; E. Petal; F. Stamen; G. Fruit.

[A, C–F: Service Forestier 9385, P; B, G: Bardot-Vaucoulon & Andrianantoanina 973, P] [Drawing: S. Burrows]

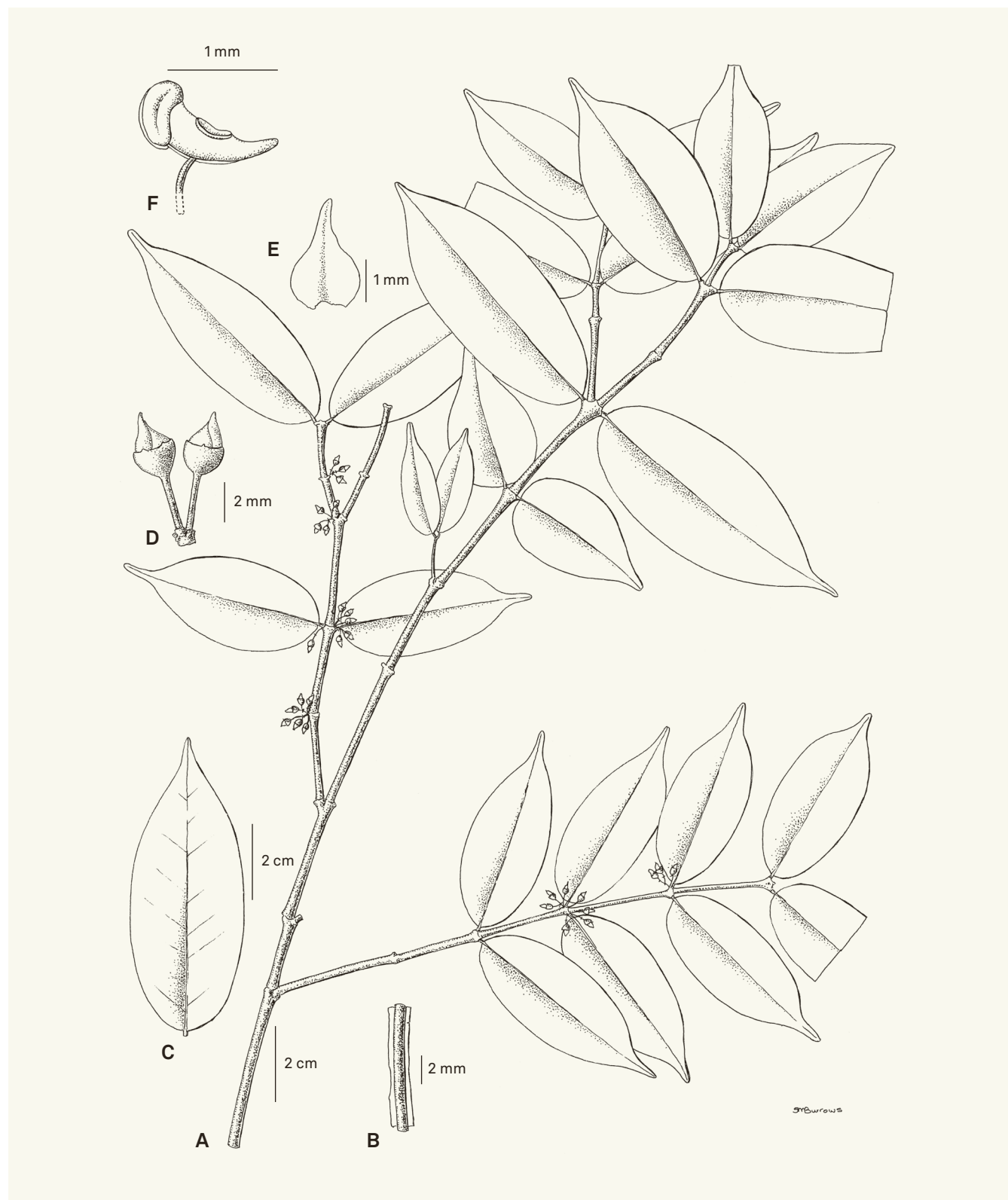


Fig. 8. – *Memecylon dipterum* R.D. Stone. A. Flowering branch; B. Section of branchlet showing wings; C. Leaf; D. Cyme with floral buds; E. Petal; F. Anther.
[Lewis et al. 868, MO] [Drawing: S. Burrows]

5–10 mm long, acute; only the midnerve clearly visible, canaliculate adaxially, prominent abaxially; transverse veins faintly visible in dried material, c. 6 pairs spaced 5–6 mm apart and oriented at an oblique angle relative to the midnerve. *Cymules* contracted, up to c. 1 cm long, solitary or in fascicles of 2–3 in the leaf axils and at recently defoliated nodes, subumbellate and mostly 5–10-flowered; peduncles (0.5–)1–2(–2.5) mm long; bracts lanceolate-cucullate, 0.75 mm long; bracteoles similar but smaller, 0.5 mm. *Flowers* on pedicels c. 2 mm long; hypantho-calyx campanulate, 1.5 × 2 mm, margin truncate and remotely 4-microdentate; corolla in bud conical-acuminate, 2 mm long, reportedly pale pinkish; petals ovate-acuminate, 2–2.5 × 1–1.5 mm, truncate at base, dark midnerve conspicuous; anthers c. 1.3 mm long, thecae fronto-ventral, connective dorsally keeled behind the thecae and with a conspicuous, medial(?) gland, extremity narrowly conical-acute; fully developed staminal filaments and style not seen; epigynous chamber deep, with membranous interstaminal partitions in a cruciform pattern. *Fruits* unknown.

Etymology. – The epithet *dipterum* is a Greek adjective meaning “two-winged,” in reference to the character of the young branchlets (in contrast with four-winged, this being the usual state seen in this genus).

Distribution and ecology. – Southeastern Madagascar (Ihorombe region, Ivohibe district), known only from the type collection made in the Andringitra National Park. Habitat in humid forest at an elevation of 810 m.

Conservation status. – *Memecylon dipterum* has an estimated AOO of 4 km² and a single known location in the Andringitra National Park managed by Madagascar National Parks (GOODMAN et al., 2021a). Within this protected area, the forested habitats are reportedly in excellent condition with minimal loss between the years 1996 to 2016 (GOODMAN et al., 2021a). Based on its limited AOO but lack of immediate threats, the new species is provisionally assessed as “Near Threatened” [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – The leaves of *Memecylon dipterum* resemble those of *M. louvelianum*, but the new species differs in having prominently 2-winged branchlets and subsessile leaves. *Memecylon louvelianum* typically has young branchlets bisulcate becoming terete with age, but in specimens from Ranomafana National Park (Vatovavy region) the branchlets are narrowly 4-winged (Kotozafy 136, MO, P, TAN; Daniels 81, K; Daniels 121, K, MO, P). However, this material also has distinctly short-petiolate leaves.

Memecylon dipterum might also be confused with *M. longicuspe* which differs in having branchlets 4-winged, petiole distinct, 2 mm long (vs. 1 mm, leaves appearing subsessile), leaf-apex with acumen obtuse and ± 2 cm long (vs. acumen acute and mostly 5–10 mm), peduncle 4 mm long (vs. mostly 1–2 mm), and bracts tardily deciduous (vs. persistent?).

***Memecylon drymophilum* R.D. Stone, sp. nov.** (Fig. 9).

Holotypus: MADAGASCAR. **Reg. Analanjirofo [Prov. Toamasina]:** Masoala Peninsula, S of Ambanizana, Andranobe permanent plot, 15°30'30"S 49°57'30"E, 300–400 m, III.1994, fl., Malcomber et al. 2736 (MO-6261631!; iso-: CAS-954084!, G [G00642040] image!, K!, NU!, P [P00516011, P00516012]!).

Memecyloni atractocarpo R.D. Stone arcte affine, sed ab eo laminis foliaribus plerumque 2.5–3 (non 3–3.3)-plo longioribus quam latioribus ad apicem acuminato-acutis (non acuminato-obtusis) venis transversalibus c. 9–11 (non 7–8)-jugis, pedicellis fructiferis longioribus (3–4.5 non 1–1.5 mm longis) atque fructibus paullo longioribus (10–11 non 8–10 mm longis) differt.

Small trees 2–6 m tall, evergreen, trunciflorous; bark reportedly blackish to light gray; slash with blackish outer layer 1 mm wide, medium layer mahogany red 5–6 mm wide, yellowish inner layer 2–3 mm wide; fresh turnip smell. Branchlets slender, the youngest subquadrangular and with dark brown bark exfoliating in rectangular patches with age to reveal whitish inner bark; internodes (1.3–)2–4(–5.3) cm long. Leaves thinly coriaceous, petiolate, dark green and dull on both surfaces, minutely roughened when dry, fibrous when torn; petioles 3–5(–6) mm long; blades narrowly elliptic to ovate, (4–)5–6.8(–7.8) × (1.5–)1.8–2.7(–3) cm, mostly 2.5–3 times longer than wide, base angustate, apex acuminate, acumen mostly 7–13(–17) mm long, acute; only the slender midnerve clearly visible; transverse veins scarcely visible on the abaxial surface of some leaves, 9–11 pairs spaced c. 3–4 mm apart and oriented at an oblique angle relative to the midnerve. *Cymules* subsessile, 1-flowered, borne in dense patches 1–1.5 cm in diam. on ligneous thickenings of the trunk starting from near the base (30 cm above the ground); bracts rotundate, 0.5 × 0.5 mm, broadly attached and clasping at base, persistent. *Flowers* on pedicels c. 1 mm long; hypantho-calyx campanulate, 1.5–2 × 2 mm, margin truncate to shallowly sinuate-dentate; corolla in bud 1–1.5 mm long, rounded-apiculate, reportedly white; petals reportedly pinkish white or lilac-white, broadly ovate to triangular-acuminate, 2 × 2 mm, auriculate at base above the short claw; staminal filaments c. 1.5 mm long; anthers appearing basifixed, 1.25–1.5 mm long, thecae and connective parallel to each other and of the same length, the latter projecting slightly downward or outward at base into a short spur, dorsal gland absent; epigynous chamber deep,

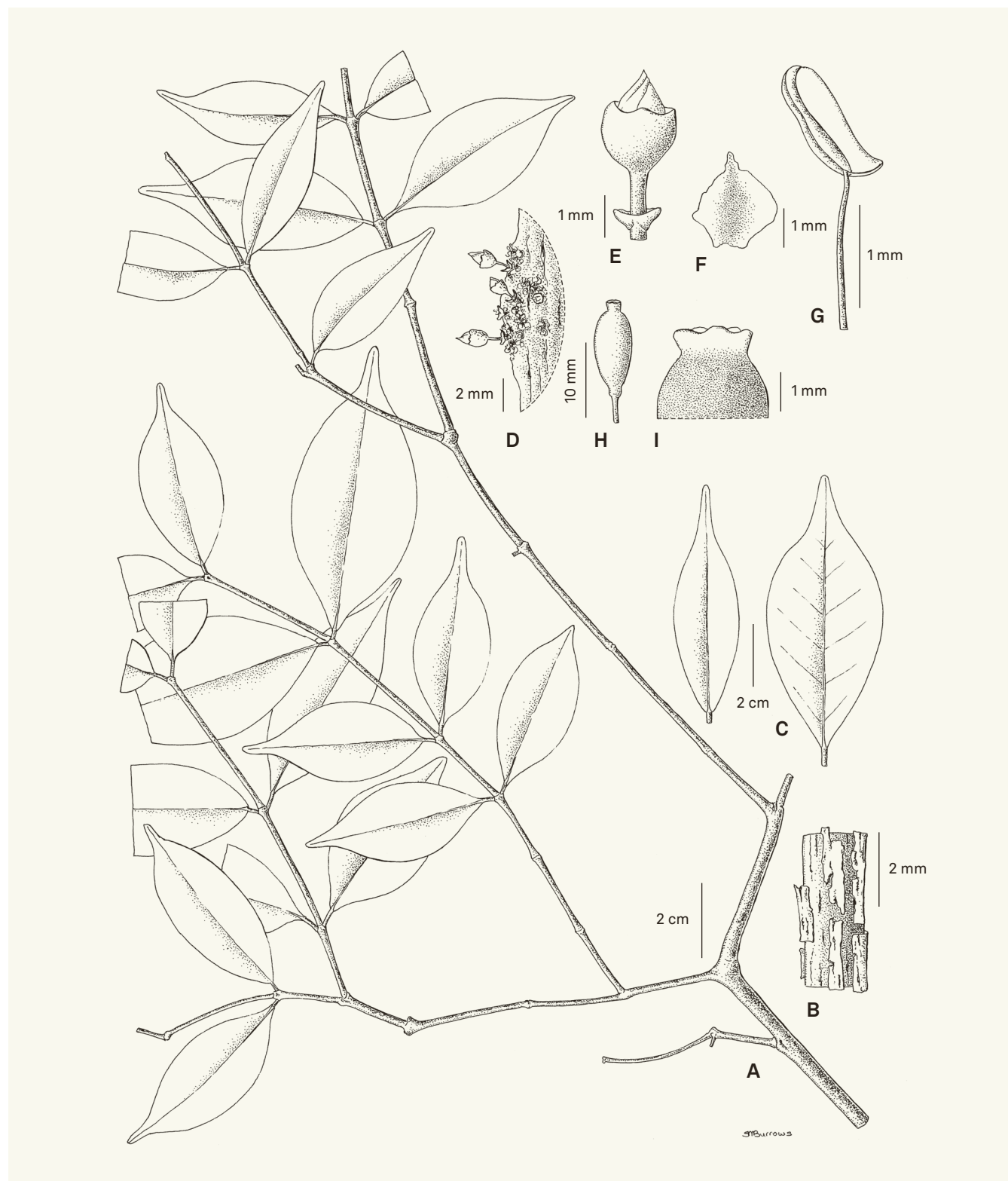


Fig. 9. – *Memecylon drymophilum* R.D. Stone. **A.** Leafy branch; **B.** Section of branchlet showing exfoliating character of bark; **C.** Leaves; **D.** Section of trunk showing cluster of cymes; **E.** 1-flowered cyme showing floral bud and pair of bracteoles subtending the pedicel; **F.** Petal; **G.** Stamen; **H.** Fruit; **I.** Upper part of fruit and persistent calycinal crown.
[A–G: Malcomber et al. 2736, MO; **H, I:** Schatz & Modeste 3050, P] [Drawing: S. Burrows]

marked by 16 radial lines (interstaminal partitions not very pronounced); style c. 2.5(?) mm long. *Fruits* on pedicels 3(–4.5) mm long, fusiform in outline, 10–11 × 4.5–5 mm, green turning purple at maturity; calycinal crown light brown (strongly contrasting with the darker color of the fruit), c. 1 mm long, somewhat spreading.

Etymology. – The epithet *drymophilum* is a compound formed from the Greek noun *drymos* meaning “forest” and the adjective *philos* meaning “loving”. It functions as an adjective and refers to the habitat.

Distribution and ecology. – Northeastern Madagascar (Analajirofo region, Maroantsetra district), evidently restricted to the western side of the Masoala Peninsula near the village of Ambanizana and southward to Andranobe. Habitat in lowland forest, from near sea level to 300–400 m in elevation.

Conservation status. – *Memecylon drymophilum* has an estimated EOO of 7.5 km² and an AOO of 12 km². There are three known locations, two of which are within the boundary of the Masoala National Park managed by Madagascar National Parks (GOODMAN et al., 2021a). Forest loss within the protected area has been minimal between the years 1996 and 2016, but there are ongoing, plausible threats to low-elevation forests primarily from slash-and-burn agriculture (GOODMAN et al., 2021a). The new species is thus provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *Memecylon drymophilum* would key to *Memecylon* sect. *Prememecylon* H. Perrier on account of the ± truncate calyx margin (the corolla thus well exposed in bud), anthers appearing basifixed (the connective of the same length as the pollen sacs and weakly prolonged into a short spur), and dorsal gland absent. The flowers are borne in patches on the trunk as in *M. pulvinatum* Jacq.-Fél., but the leaves are very different (narrowly elliptic-acuminate to ovate-acuminate and mostly 5–6.8 × 1.8–2.7 cm vs. elliptic-rounded and 16–18 × 7–9 cm). The leaves of *M. drymophilum* are of similar size and shape as those of *M. albescens* Jacq.-Fél. but are dark green on both surfaces (vs. light green adaxially and pale whitish green abaxially). Compared to its close relative *M. atractocarpum*, the leaves are somewhat wider relative to the length, are more distinctly and acutely acuminate, have more numerous transverse veins and are different in color (dull dark green on both surfaces vs. dull dark green adaxially and somewhat paler abaxially). The fruits of the two species are very similar, but those of *M. drymophilum* are slightly larger and on longer pedicels (see Latin diagnosis above). The nearest

known localities of *M. drymophilum* and *M. atractocarpum* are separated by a straight-line distance of 50 km (on the western and eastern sides of the Masoala Peninsula, respectively).

Additional specimens examined. – MADAGASCAR. Reg. Analanjirofo [Prov. Toamasina]: Baie d’Antongil, plage d’Ambanizana, 15°30'S 49°58'E, 0–50 m, 12.V.1988, fl., Floret et al. 2005 (MO, P, WAG); Masoala Peninsula, hills south-east of Ambanizana, trail south of Androka river, 15°38'S 49°59'E, 300 m, XII.1990, fr., Schatz & Modeste 3050 (MO, P, TAN).

***Memecylon florosum* R.D. Stone, sp. nov.** (Fig. 10).

Holotypus: MADAGASCAR. Reg. DIANA [Prov. Antsiranana]: Tsaratanana RNI, Fkt. Beangona, à 8 km E de Beangona, 14°02'50"S 48°47'09"E, 1100 m, 27.XI.2000, fl. buds; Razakamalala et al. 8 (P [P00516016]!; iso-: CAS-1104894!, MO-6261641!, NU!).

Memecyloni sambiranensi H. Perrier simillimum, sed ab eo plantis arbusculis 4 m altis (non arbustis 1–1.5 m altis), internodiis longioribus (plerumque 1.3–2 non c. 0.8 cm), petiolis longioribus (plerumque 2–3 non 0.5 mm longis), laminis foliaribus majoribus (plerumque 2.8–3.8 × 1–1.5 non 1.5–2 × 0.6–0.8 cm) ad apicem obtuse acuminatis (non obtusis emarginatisve), cymulis usque ad 9 (non 1–3)-floris, pedunculis plerumque longioribus (usque 7 non 2 mm), pedicellis brevioribus (0.5–1 non 2–4 mm) atque floribus minoribus (petalis c. 1–1.25 × 0.6–0.75 non 2.5 × 1.5 mm, antheris 0.75 non 1.5 mm longis) differt.

Small trees 4 m tall, evergreen; young branchlets quadrangular and narrowly alate-cripsed or alate-undulate, becoming terete and smooth with age; internodes (0.9–)1.3–2(–3) cm long. *Leaves* thinly coriaceous, petiolate, discolored (dark green and shining on the adaxial surface, much paler, dull and minutely roughened abaxially); petioles slender, 2–3(–4) mm long; blades narrowly elliptic or narrowly ovate, (2–)2.8–3.8(–4.2) × (0.8–)1–1.5(–1.8) cm, mostly 2.3–3 times longer than wide, base cuneate, apex obtusely acuminate, acumen mostly 4–7.5(–10) mm long; midnerve clearly visible, canaliculate adaxially, somewhat prominent abaxially; transverse veins ± visible and subprominent on upper surface, 4–6 pairs oriented at an oblique angle relative to the midnerve. *Cymules* solitary or geminate in the leaf-axils and at the recently defoliated nodes below the leaves, up to 1 cm long, 1–3 × branched and 1–9-flowered; peduncles very slender, 1–7 mm long; secondary axes generally shorter; bracts and bracteoles tardily deciduous, the former lanceolate-cucullate, c. 0.75 mm long, the latter narrowly oblong-obtuse, 1–1.25 mm long. *Flowers* on pedicels 0.5–1 mm long; hypantho-calyx campanulate, 1–1.25 × 1–1.5 mm, margin truncate and 4-microdentate; corolla in bud conical-acuminate, 1.25 mm long; petals presumably white, reflexed at anthesis, ovate-acuminate or triangular-acuminate, c. 1–1.25 × 0.6–0.75 mm, ± auriculate at base

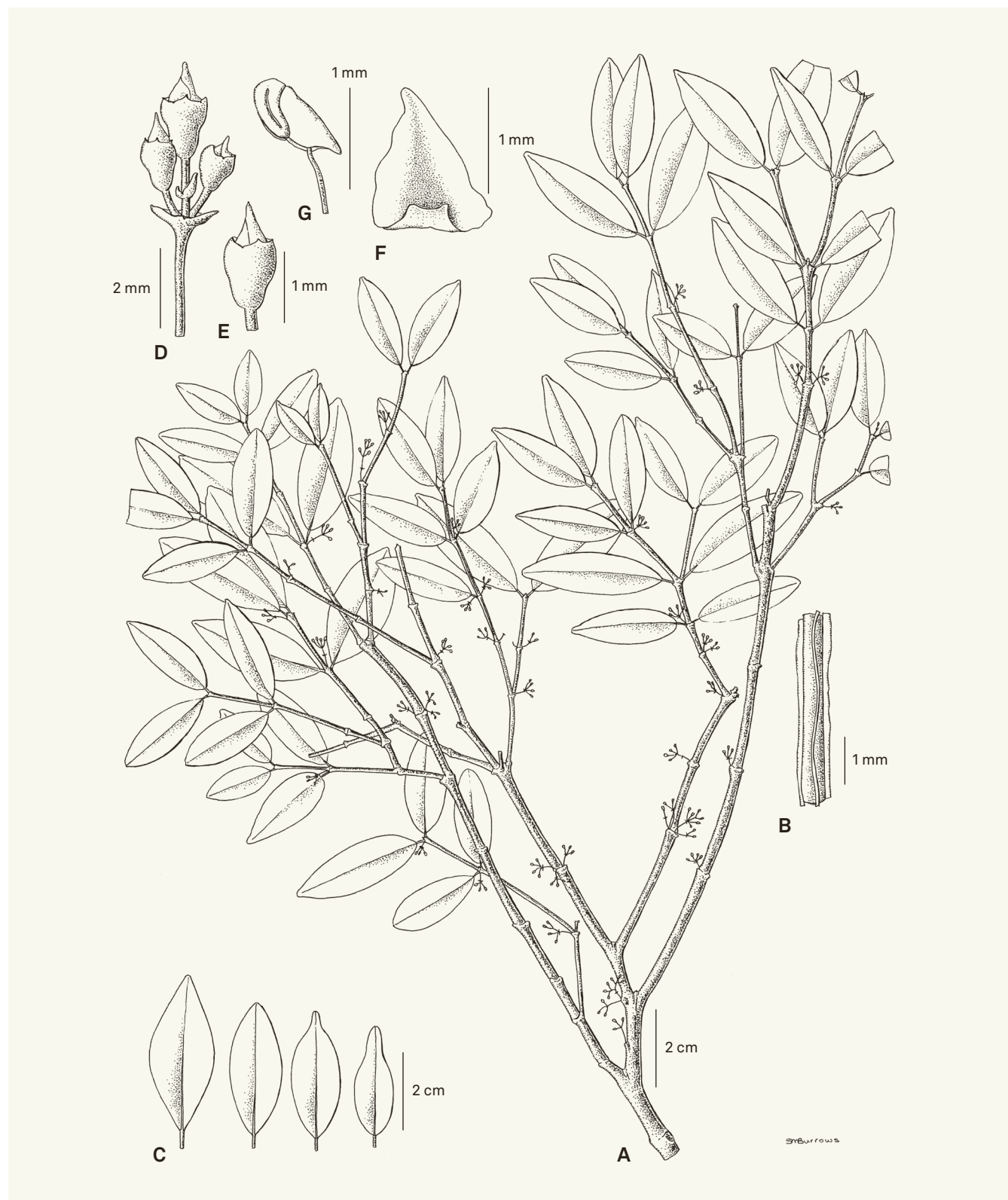


Fig. 10. – *Memecylon florosum* R.D. Stone. A. Flowering branch; B. Section of branchlet showing narrow wings; C. Leaves; D. Cyme with floral buds; E. Floral bud; F. Petal; G. Stamen.

[A–E: Razakamalala et al. 40-bis, P; F, G: Razakamalala et al. 8, P] [Drawing: S. Burrows]

above a short claw; staminal filaments 1–1.25 mm long; anthers c. 0.75 mm long, thecae situated fronto-ventrally, connective dorsally keeled and lacking a gland, posterior extremity short and blunt; epigynous chamber smooth (lacking interstaminal partitions); style 2.5 mm long. *Fruits* not seen.

Etymology. – The epithet *florosum* is a neuter Latin adjective meaning “flowery” or “abounding in flowers”.

Distribution and ecology. – Northwestern Madagascar (Diana region, Ambanja district), evidently restricted to the southwestern flank of the Tsaratanana massif (Haut Sambirano). Habitat in montane forest at elevations of 1100–1500 m.

Conservation status. – *Memecylon florosum* has an estimated AOO of 8 km² and two known locations, both of which are within the boundary of the Réserve Naturelle Intégrale de Tsaratanana managed by Madagascar National Parks (GOODMAN et al., 2021a). Within the protected area, loss of forest cover was 6.3 % between the years 1996 and 2016, and there is an ongoing, plausible threat to forested habitats from slash-and-burn agriculture and uncontrolled fires (GOODMAN et al., 2021a). The new species is thus provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *Memecylon florosum* would key to *Memecylon* sect. *Pseudonaxiandra* on account of the alate-crisped young branchlets, delicate cymules, ± truncate calyx margin (the corolla thus well exposed in bud), versatile (dolabriform) anthers, and dorsally keeled connective lacking a gland. This species is most similar to *M. sambiranense* H. Perrier from the same region but occurs at a higher elevation and differs by its larger stature, longer internodes, larger leaves with apex obtusely acuminate, up to 9-flowered cymules on longer peduncles, shorter pedicels, and smaller flowers (see Latin diagnosis above). Further comparison awaits the collection of fruiting material of *M. florosum*.

Additional specimens examined. – MADAGASCAR. Reg. DIANA [Prov. Antsiranana]: Tsaratanana RNI, fokontany Beangona, à 8 km E de Beangona, 14°01'33"S 48°39'05"E, c. 1500 m, 1.XII.2000, fl. buds, Razakamalala et al. 40-bis (CAS, MO, NU, P).

Memecylon fodinae R.D. Stone, sp. nov. (Fig. 11).

Holotypus: MADAGASCAR. Reg. Alaotra-Mangoro [Prov. Toamasina]: Phelps Dodge mining project site, c. 15 air-km NE of Moramanga, c. 11 km east of Antanambao, Ambatovy, Antsahalava River east, 18°50'54"S 48°17'56"E, 1000 m, 1.II.1997, fl., Rakotomalaza et al. 1092 (CAS-

960579!; iso-: G [G00642038] image!, MO-6261652!, NU!, P [P00516004]!).

Memecyloni bakeriano Cogn. aut *M. subcuneato* H. Perrier fortasse affine, sed a primo ramulis juvenilibus bilateraliter compressis demum quadrangularibus (non teretibus), petiolis longioribus (plerumque 3–4 non 1–2 mm longis), laminis foliaribus plerumque 1.5–1.8 (non 2.4–3)-plo longioribus quam latioribus, cymulis solum ad nodos infra folia (nunquam in axillas foliares) dispositis atque pedunculis brevioribus (2–4 non 10–15 mm longis); a secundo nervis foliaribus intramarginalibus et venis transversalibus vix conspicuis (non superne impressis inferne invisibilibus); ab ambobus plantis arboribus 8 m altis (non arbustis 2–6 m altis) differt.

Trees 8 m tall, evergreen; branchlets dichotomous or trichotomous, those of the new growth reddish purple and bilaterally compressed, becoming quadrangular with age; older branchlets pale gray, subquadrangular to terete and with nodes thickened; internodes (1–)2–4(–5.8) cm long. *Leaves* coriaceous, petiolate, yellowish green, somewhat paler abaxially, dull and minutely roughened on both surfaces when dry; petioles (2–)3–4(–5) mm long, dark purple; blades elliptic to broadly elliptic or obovate, (3.3–)4.2–5.7(–6.3) × (2–)2.4–3.6(–4.2) cm, mostly 1.5–1.8 times longer than wide, base cuneate, apex mostly rounded to retuse (varying to obtuse or subacute); only the midnerve clearly visible, subprominent abaxially especially toward the base; intramarginal nerves and transverse veins faintly visible in dried material, subprominent on both surfaces, the transversals 5–8 pairs spaced 5 mm apart and oriented at an oblique angle relative to the midnerve. *Cymules* up to c. 1 cm long, solitary or in fascicles of 2–4 at the nodes below the leaves, each (1–)3(–5)-flowered; peduncles (1–)2–4(–5) mm long, quadrangular or compressed; secondary axes generally shorter (1–3 mm); bracts and bracteoles rapidly deciduous, leaving conspicuous scars. *Flowers* on short pedicels 1–1.5 mm long; hypantho-calyx broadly campanulate, 2.5 × 4 mm, margin ± truncate to shallowly sinuate-dentate; petals broadly depressed-ovate to rhombiform, 3 × 3 mm, base truncate, apex rounded and abruptly acuminate; staminal filaments 3.5–4 mm long; anthers c. 2 mm long, thecae positioned at the anterior end, connective dorsally incurved by the elliptical gland, posterior extremity extending close to 1 mm past the gland, narrowly conical-acute; epigynous chamber marked by 16 radial lines (interstaminal partitions not very pronounced); style 9 mm long. *Fruits* unknown.

Etymology. – The epithet *fodinae* is a Latin noun in the genitive singular meaning “of the mine”, in reference to the type locality at Ambatovy.

Distribution and ecology. – Eastern Madagascar (Alaotra-Mangoro region, Moramanga district), known only from the

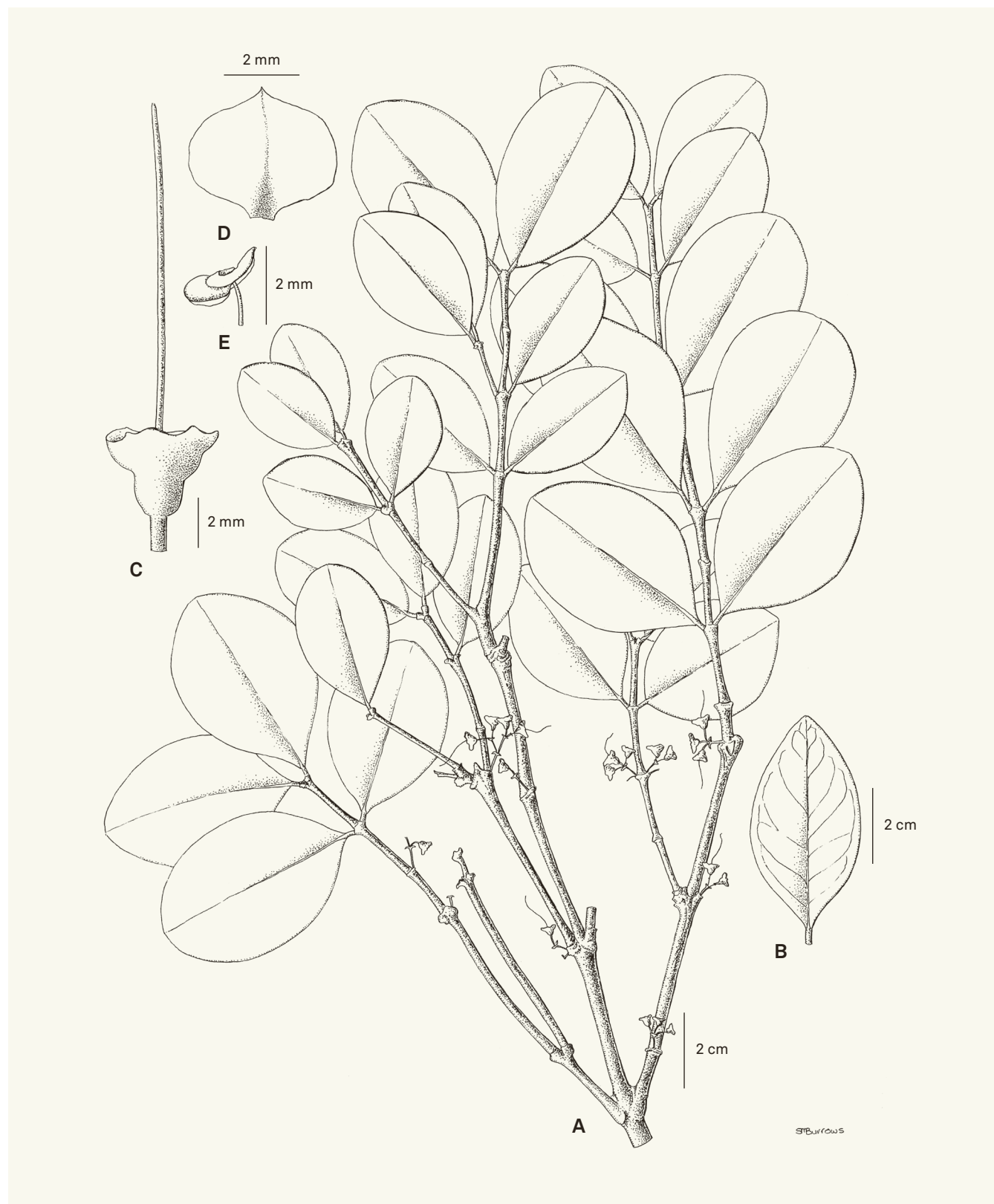


Fig. 11. – *Memecylon fodinae* R.D. Stone. A. Flowering branch; B. Leaf; C. Flower past anthesis (no petals or stamens); D. Petal; E. Anther. [Rakotomalaza et al. 1092, CAS] [Drawing: S. Burrows]

type collection made at the Ambatovy mining site (c. 15 km northwest of Andasibe). Habitat in montane, humid forest at elevation 1,000 m.

Conservation status. – *Memecylon fodinae* has an estimated AOO of 4 km², and the only known location is mapped within the footprint of the Ambatovy-Analamay nickel mine. While better information is needed on this species' local distribution and abundance, it seems certain that development of the mine has led to a reduction in both its population size and available habitat. *Memecylon fodinae* is thus provisionally assessed as "Critically Endangered" [CR B2ab (i,ii,iii,iv,v)] in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – The dark purple petioles of *Memecylon fodinae* are distinctive, especially in contrast with the yellowish green leaf-blades. In the previous treatment by JACQUES-FÉLIX (1985a), it would key near to *M. subcuneatum* H. Perrier, *M. bakerianum* Cogn., *M. utericaupum* Jacq.-Fél., and *M. vaccinioides* Jacq.-Fél. on account of the ± obovate leaves cuneate at the base, cymules borne in the leaf-axils and at the nodes below the current leaves, bracts deciduous, ± truncate calyx margin (the corolla thus well exposed in bud), and anther-gland present. It differs from *M. bakerianum* and *M. subcuneatum* by the characters given above (see Latin diagnosis). *Memecylon vaccinioides* has much smaller leaves (mostly 3 × 2 vs. mostly 4.2–5.7 × 2.4–3.6 cm), and the fruits are sessile and often terminal on the branchlets (vs. cymules to c. 1 cm long with short but distinct axes and borne at the nodes below the leaves). *Memecylon utericaupum* has broadly oblanceolate leaves that are larger (6 × 4 vs. mostly 4.2–5.7 × 2.4–3.6 cm) and often obtusely acuminate at the apex (vs. mostly rounded to retuse). *Memecylon fodinae* could also be compared with *M. thouarsianum* Naudin although the leaves are much smaller (mostly 4.2–5.7 × 2.4–3.6 vs. 12 × 6 cm), and the cymules have short but distinct axes (vs. glomerulate). *Lijndenia roborea* (Naudin) Jacq.-Fél. has similar leaves, but the cymules have a pair of persistent bracteoles fused to form a cupule immediately subtending each flower (STONE, 2017, 2022a), vs. bracts and bracteoles rapidly deciduous in *M. fodinae*.

***Memecylon fusiforme* R.D. Stone, sp. nov.** (Fig. 12).

MADAGASCAR. Reg. Atsinanana [Prov. Toamasina]: forêt d'Analalava à l'W de Foulpointe [Mahavelona], 22.V.1969, fr., Service Forestier 28879 (P [P00516062]!; iso-: P [P04802218]!, TEF!).

Memecyloni pulvinato Jacq.-Fél. et *M. pseudopulvinato* R.D. Stone affine, sed a primo laminis foliaribus minoribus angustioribusque (10.5–15.5 × 4.2–5.3 non 16–18 × 7–9 cm); a secundo ramulis juvenilibus teretibus (non subquadrangularibus) atque laminis foliaribus anguste elliptico-oblongis usque

oblanceolatis (non ellipticis) c. 2.5–3 (non 1.7–2)–plo longioribus quam latioribus ad apicem rotundatis obtusisve (non acutis); ab ambobus plants arbustis (non arboribus 5–9 m altis), foliis manifeste petiolatis (non sessilibus) petiolis 2–3 mm longis atque fructibus minoribus (9–11 × 5 non plerumque 15–17 × 11–12 mm) differt.

Shrubs, evergreen, cauliflorous; branchlets terete, smooth, the older ones with nodes conspicuously thickened; internodes (3.3–)5–10(–12) cm long. **Leaves** thinly coriaceous, petiolate, dark green on the adaxial surface, drying brownish abaxially, shining on both surfaces and minutely roughened when dry; petioles mostly 2–3 mm long, robust; blades narrowly elliptic-oblong to oblanceolate, 10.5–15.5 × 4.2–5.3 cm, roughly 2.5–3 times longer than wide, base cuneate (margins convex), apex rounded to obtuse or shortly and broadly obtuse-acuminate (acumen 4–7.5 mm long); midnerve clearly visible and somewhat prominent on both surfaces, enlarged at its base; intramarginal nerves and transverse veins much weaker but somewhat prominent adaxially in dried material, the transversals of 15–16 pairs departing at an acute angle from the midnerve, and following a sigmoid course; network of venules also subprominent adaxially. **Flowers** unknown. **Fruits** on pedicels c. 1 mm long, fusiform, 9–11 × 5 mm, borne in fascicles on ligneous thickenings of the older branches; calycinal crown 1 mm long, spreading, margin sinuate-dentate, the calyx-lobes broadly triangular, c. 0.5 × 1 mm and rounded-apiculate at apex, each sinus with a minute, V-shaped notch.

Etymology. – The epithet *fusiforme* is a compound formed from the Latin noun *fusus* meaning "spindle" and the adjectival suffix *-formis* meaning "having the form of". It functions as an adjective and refers to the shape of the fruits.

Distribution and ecology. – Eastern coast of Madagascar (Atsinanana region, Toamasina II district), known only from the type collection made in the Analalava forest near Mahavelona [Foulpointe]. Habitat in sublittoral forest on laterite.

Conservation status. – *Memecylon fusiforme* has an estimated AOO of 4 km² and a single known location in the Réserve Spéciale d'Analalava managed by Missouri Botanical Garden (GOODMAN et al., 2021a). Within the protected area there has been no measurable change in forest cover between the years 1996 and 2016, but forested habitats remain threatened by wildfires originating outside of the area and continued exploitation of woody vegetation for timber and charcoal production (GOODMAN et al., 2021a). Based on the new species' limited AOO and the fact that it has not been seen since the type collection was made in 1969, it is assessed here as "Critically Endangered (Possibly Extinct)" [CR (PE)] in accordance

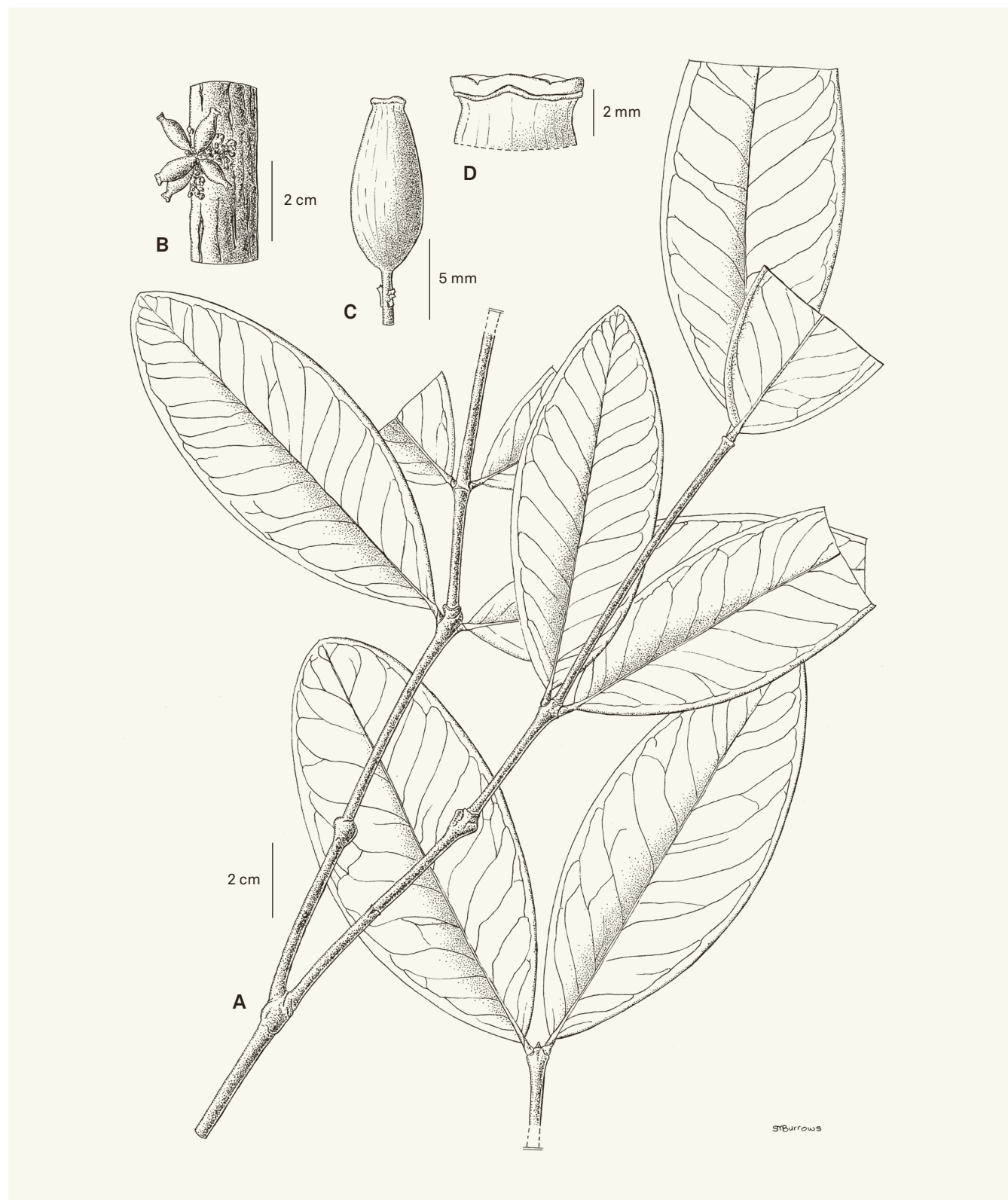


Fig. 12. – *Memecylon fusiforme* R.D. Stone. A. Leafy branch; B. Section of trunk showing fructiferous node; C. Fruit; D. Upper part of fruit and persistent calycinal crown. [Service Forestier 28879, P, TEF] [Drawing: S. Burrows]

with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022). Priority should be given to this species' rediscovery.

Notes. – *Memecylon fusiforme* resembles *M. attractocarpum* in having narrowly ellipsoid, $\pm$ fusiform fruits borne in patches along the trunk. The leaves however are quite different (blades narrowly elliptic-oblong to oblanceolate 10.5–15.5 $\times$ 4.2–5.3 cm, apex rounded-obtuse or with short, obtuse acumen 4–7.5 mm long vs. blades narrowly elliptic to ovate mostly 6.2–8.2 $\times$ 1.9–2.7 cm, apex with obtuse acumen mostly 8–12 mm long). The sigmoid pattern of the transverse veins is reminiscent of that seen in *M. pulvinatum* and *M. pseudopulvinatum* R.D. Stone (described below), but *M. fusiforme* differs from those species by the characters given above (see Latin diagnosis).

Memecylon futilifolium R.D. Stone, **sp. nov.** (Fig. 13).

MADAGASCAR. Reg. Anosy [Prov. Toliara]: Fort-Dauphin, Iaboko [= Iabakoho], Antsotso, forêt d'Ivohibe, 24°33'52"S 47°11'43"E, 386 m, XI.2005, fl., Razakamalala et al. 2532 (P [P06490380]); iso-: CAS!).

Memecyloni acrogeno R.D. Stone simile, sed ab eo ramulis juvenilibus teretibus (non compressis et dorsoventraliter striatis prope apices), petiolis paullo brevioribus (3–5 mm vs. 2–3 mm), laminis foliaribus tenuioribus plerumque 3–3.5 (non 2)–plo longioribus quam latioribus ad apicem caudato-acuminatis (non breviter obtuseque acuminatis), cymulis brevioribus (1.5–2.5 non 3–4.5 cm longis) atque pedunculis brevioribus (plerumque 4.5–10 non 20–35 mm) differt.

Shrubs or trees 5–12 m tall, evergreen; branchlets dichotomous or trichotomous, terete; internodes (1.8)–2.7–4.5(–5) cm long. *Leaves* thinly coriaceous, petiolate, dark green and shining on the adaxial surface, yellowish brown and dull abaxially, granular-wrinkled on both surfaces when dry (sclereids columnar?); petioles 3–5 mm long; blades narrowly elliptic, 6–7.8 $\times$ 1.9–2.4 cm, mostly 3–3.5 times longer than wide, base angustate, margins revolute, apex caudate-acuminate, acumen mostly 12–16(–18) mm long; only the midnerve visible, canaliculate adaxially, somewhat prominent abaxially; intramarginal nerves and transverse veins obscure. *Cymules* 1.5–2.5 cm long, borne in fascicles of 2–3 (rarely solitary) both terminally and subterminally on the branchlets, 3–4 $\times$ branched (?) and up to 8-flowered; peduncles bilaterally compressed to subquadrangular, (3)–4.5–10(–13) mm long, secondary axes (0.8)–2–4.5(–7) mm long; bracts and bracteoles rapidly deciduous, not seen. *Flowers* purplish blue, borne individually at the end of the inflorescence axes, on pedicels 1.5–2 mm long; hypantho-calyx cupulo-patellate, 2 $\times$ 3 mm, margin truncate and remotely 4-microdentate; corolla in bud conical-apiculate, 3 mm long; petals broadly ovate-acuminate, 3.5 $\times$ 2.5 mm, base truncate,

margins scarious, midnerve conspicuous on the dorsal side; staminal filaments 3.5–5 mm long (those of the two whorls notably unequal); anthers 2 mm long, thecae fronto-ventral, connective dorsally incurved around the gland, posterior extremity sigmoid and subulate; style 6 mm long. *Fruits* not seen.

Etymology. – The epithet *futilifolium* is a compound formed by the Latin adjective *fūtilis* meaning “brittle” and the noun *folium* meaning “leaf”. It functions as an adjective and refers to the easily breakable leaves when dry.

Distribution and ecology. – Southeastern Madagascar (Anosy region, Taolagnaro district), evidently restricted to the Ivohibe forest situated c. 56 km straight-line distance to the north of Taolagnaro [Fort-Dauphin]. Habitat in lowland humid forest at elevations of 390–420 m.

Conservation status. – *Memecylon futilifolium* has an estimated AOO of 8 km² and two known locations, both of which are in the northern part of the Réserve de Ressources Naturelles de la Forêt Naturelle de Tsitongambarika, gazetted in 2015 and managed by Asity Madagascar (GOODMAN et al., 2021a). Within this protected area there has been an 8.2% loss of forest cover between the years 1996 and 2016, with ongoing fronts of deforestation in different areas due to illegal logging and slash-and-burn agriculture (GOODMAN et al., 2021a). Based on its limited AOO together with the apparent threats, the new species is provisionally assessed as “Critically Endangered” [CE B2ab(i,ii,iii)] in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – *Memecylon futilifolium* appears closely related to another species that is still undescribed (based on *Ammann et al.* 470 in G) from the Ampasindava peninsula of extreme northern Madagascar (Diana region). Their respective localities are separated by a straight-line distance of c. 1,200 km. In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *M. futilifolium* would key near to *M. faucherei* Danguy, *M. corymbiforme* H. Perrier, and *M. cotinifolioides* (H. Perrier) Jacq.-Fél. on account of the cymules borne terminally and subterminally on the branchlets, $\pm$ truncate calyx margin (the corolla thus well exposed in bud), and anther-gland present. Its lanceolate-acuminate leaves resemble those of *M. faucherei*, but the leaf tissue is brittle (not fibrous) when torn, and it further differs by its shorter petioles (3–5 vs. 6–8 mm long), leaf apex caudate-acuminate (vs. shortly and obtusely acuminate), transverse veins obscure (vs. visible adaxially), cymules branched (vs. $\pm$ umbelliform), shorter pedicels (1.5–2 vs. 3 mm long), petals purplish blue (vs. white), and petal base truncate (vs. shortly clawed). It is also



Fig. 13. – *Memecylon futilifolium* R.D. Stone. A. Flowering branch; B. Leaf; C. Floral bud; D. Petal; E. Stamen. [Razakamalala et al. 2532, NU] [Drawing: S. Burrows]

morphologically close to *M. acrogenum* R.D. Stone, differing by the characters given above (see Latin diagnosis).

Additional specimens examined. – MADAGASCAR. Reg. Anosy [Prov. Toliara]: Fort-Dauphin, Iaboko [= Iabakoho], Antsotso, forêt d'Ivohibe, 24°34'12"S 47°11'42"E, 419 m, XII.2005, fl. buds, Razakamalala et al. 2619, 2621 (P).

Memecylon iantarens R.D. Stone, **sp. nov.** (Fig. 14).

Holotypus: MADAGASCAR. Reg. Ihorombe [Prov. Fianarantsoa]: edge of Andringitra Reserve [Andringitra National Park], Camp I, c. 45 km south of Ambalavao, east bank of Iantara river, along Ambalamanenjana – Ambatomboay trail, 22°13'20"S 47°01'29"E, 720 m, XI.1993, fl. buds & fr., Lewis et al. 806 (P [P00516049]!; iso-: MO-4660344!, WAG [WAG.1923211]!).

Ob characteres foliaries Memecyloni mangiferoidi Jacq.-Fél. simile, sed ab eo ramulis juvenilibus subquadrangularibus (non teretibus), petiolis brevioribus (3–8 non 10 mm longis), apicibus foliaribus attenuato-acutis (non breviter obtuseque acuminatis), pedicellis 1.5 (non 3 mm) longis atque fructibus plusminusve globosis (non ellipsoideis obovatisve) margine corone calycinae truncato et 4-denticulato (non sinuato-dentato lobis rotundatis) differt.

Shrubs or small *trees* 2–6 m tall, evergreen; branchlets slender, the youngest subquadrangular becoming terete with age; internodes (1.5–)2.5–5(–6.7) cm long. *Leaves* thinly coriaceous, petiolate, dark green and smooth adaxially, drying brownish and minutely roughened abaxially; petioles 3–8 mm long, reportedly purple in color; blades lanceolate, (9–)10.7–16.5(–19.3) × (1.5–)2–3(–3.7) cm, mostly 5–6.5(–7) times longer than wide, cuneate at base, attenuate–acute at apex, margins slightly revolute; only the midnerve clearly visible, canaliculate on the adaxial surface, prominent abaxially; transverse veins scarcely visible in dried material, c. 20–25 pairs spaced c. 5–7 mm apart, varying from perpendicular to oriented at a shallowly oblique angle relative to the midnerve. *Cymules* contracted, less than 1 cm long, borne in the lower leaf axils, at the recently defoliated nodes and the intervening 'aphyllous' nodes. *Flowers* at anthesis not seen. *Fruits* ± globose, 8.5–9 mm in diam. when ripe, reportedly red in color and often appearing somewhat bilaterally asymmetrical, on peduncles 3 mm long, pedicels 1.5 mm; calycinal crown c. 1 mm long, margin truncate and 4-microdentate.

Etymology. – The epithet *iantarens* is a neuter adjective and refers to the type locality along the Iantara River.

Distribution and ecology. – Southeastern Madagascar (Ihorombe region, Ivohibe district), evidently restricted to the Iantara river valley on the eastern flank of Andringitra massif.

A possible rheophyte since the holotype was collected on a riverbank. Elevation 720 m.

Conservation status. – *Memecylon iantarens* has an estimated EOO of 3.8 km² and an AOO of 12 km². Of the three known locations, one is lacking precision, and the other two are in or near the eastern edge of Andringitra National Park managed by Madagascar National Parks (GOODMAN et al., 2021a). Immediately to the east is another protected area known as the Ambositra-Vondrozo corridor, gazetted in 2015 and managed by Conservation International (GOODMAN et al., 2021a). The forested habitats at Andringitra are reportedly in excellent condition, with loss of forest cover occurring mostly toward the eastern limit (GOODMAN et al., 2021a). Based on its limited AOO but apparent lack of immediate threats, the new species is provisionally assessed as "Near Threatened" [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – *Memecylon iantarens* is a distinctive species with long, narrow leaves and well-developed calyx lobes that conceal the corolla in the early bud stage. In fruit, the remains of the calyx lobes form prominent points on the otherwise truncate rim of the persistent crown. The leaves resemble those of *M. mangiferoides* Jacq.-Fél., yet the two species differ by the characters given above (see Latin diagnosis). Further comparison with other species is hindered by a lack of material with fully developed flowers.

Additional specimens examined. – MADAGASCAR. Reg. Ihorombe [Prov. Fianarantsoa]: Ivohibe, Ivongo, Ambarongy, RNI Andringitra, 22°13'S 47°01'E, 720 m, 13.X.1994, fr., Razafindrabe et al. 156 (CAS, MO, NU, P); vallée de l'Iantara, Ivohibe – Farafangana, 11.XI.1950, fl. buds, Service Forestier 1483 (P).

Memecylon ingens R.D. Stone & D. Turk, **sp. nov.** (Fig. 15).

Holotypus: MADAGASCAR. Reg. Vatovavy [Prov. Fianarantsoa]: Ranomafana Natl. Park, parcelle 3, S of Natl. Rd. 25 at 7 km W of Ranomafana, Tala-takely trail system, 21°15'30"S 47°25'00"E, 950–1150 m, 15.XII.1992, fl. [photo of fr.], Turk et al. 215 (CAS-799335!; iso-: BR [BR0000009338166]!, G [G00642041]!, MO-5030097!, MO-5717469!, P [P00257933]!, TAN!., WAG [WAG.1093662]!).

Memecyloni corymbiformi H. Perrier affine, sed ab eo laminis foliaribus minoribus angustioribusque (3.2–4.4 × 1.3–2.3 non 4.5 × 2.5–3 cm) ad basin rotundato-truncatis vel subcordatis (non cuneatis) atque stylo 7–8 mm (non 10) mm longo differt.

Trees 17 m tall, evergreen, DBH 41 cm; branchlets dichotomous or trichotomous, those of the new growth reddish brown and bilaterally compressed; older branchlets

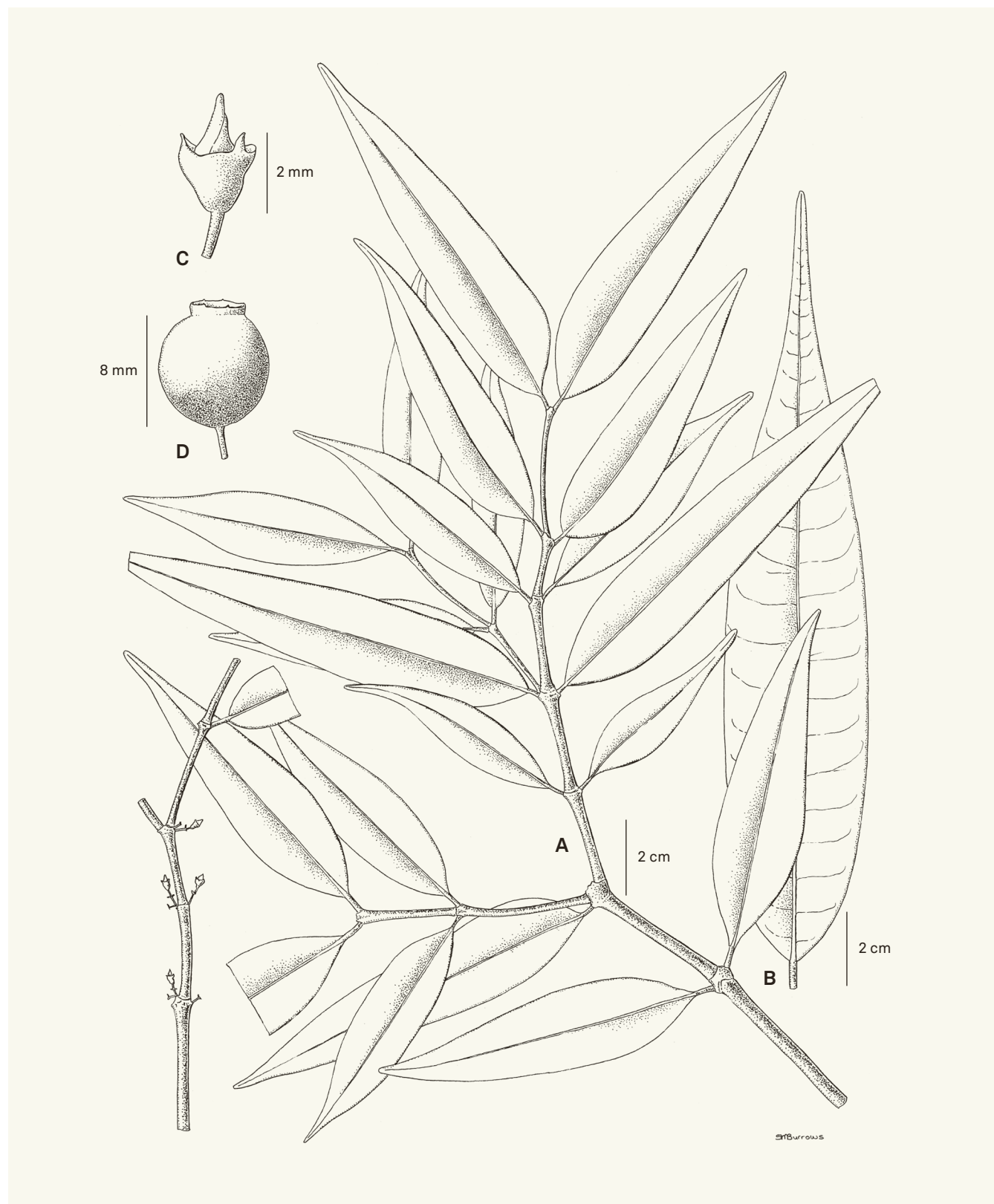


Fig. 14. – *Memecylon iantarensense* R.D. Stone. A. Flowering branch; B. Leaf; C. Floral bud; D. Fruit. [A, C: Service Forestier 1483, P; B, D: Lewis et al. 806, MO] [Drawing: S. Burrows]

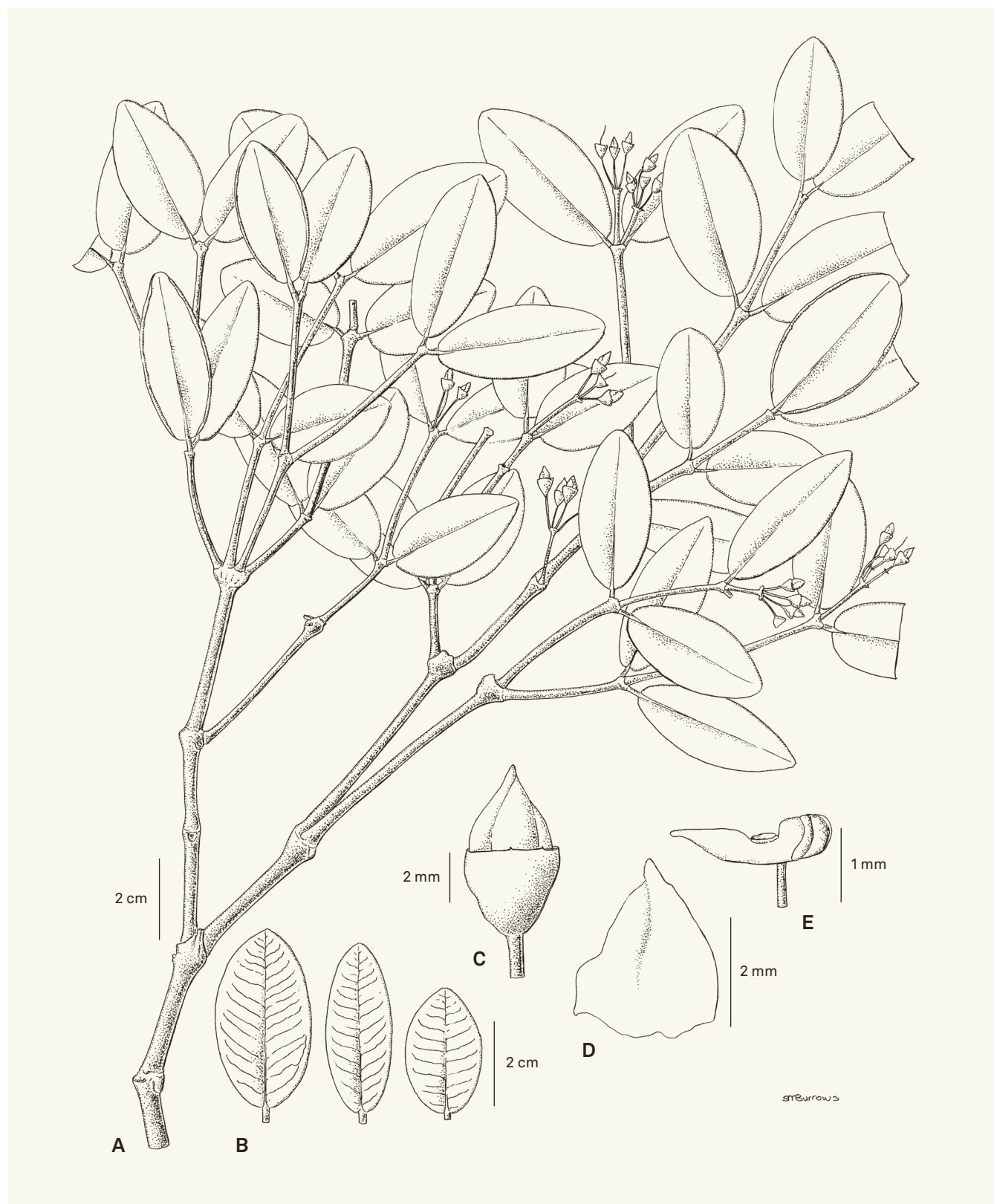


Fig. 15. – *Memecylon ingens* R.D. Stone & D. Turk. A. Flowering branch; B. Leaves; C. Floral bud; D. Petal; E. Anther.
[Turk et al. 215, CAS] [Drawing: S. Burrows]

pale gray, quadrangular and with nodes thickened; internodes (1.6–)2.5–5(–6.3) cm long. *Leaves* coriaceous, short-petiolate, somewhat shining and $\pm$ smooth on the adaxial surface, dull and minutely roughened abaxially; petioles 1–2 mm long, robust; blades elliptic, (2.4–)3.2–4.4 $\times$ 1.3–2.3 cm wide, $\pm$ 2 times longer than wide, base rounded and truncate to subcordate, apex obtuse, margins revolute; midnerve finely impressed adaxially, somewhat prominent abaxially especially toward the base; transverse veins scarcely visible, c. 12–14 pairs, oriented at an oblique angle relative to the midnerve. *Cymules* 2–3 $\times$ branched, in fascicles of (2–)4 (rarely solitary) at the terminal and uppermost leafy nodes; peduncles compressed, (7–)12–21(–30) mm long; secondary axes 2–4(–7) mm long, each 1–3-flowered; bracts deciduous. *Flowers* on pedicels 1.5–2.5 mm long; hypantho-calyx broadly campanulate, 3–3.5 $\times$ 4–5.5 mm, reportedly creamy yellow toward the base, calyx margin truncate and remotely 4-denticulate; corolla in bud conical-acute, 2.5–3.5 mm long; open flowers not seen; petals reportedly purple with white toward the edges; staminal filaments c. 4 mm long, reportedly purple; anthers c. 2 mm long, dorsally incurved by the median gland; style 7–8 mm long, reportedly yellowish; epigynous chamber with scarcely prominent partitions forming V-shaped notches beneath the large petal scars, alternating with radial lines. *Fruits* globose, 10–12 mm in diameter.

Etymology. – The adjectival epithet *ingens* means “great” or “huge”, in reference to the exceptionally large stature of this tree.

Distribution and ecology. – Southeastern Madagascar (Vatovavy region, Ifanadiana district), known only from the type collection made in Ranomafana National Park. Habitat in montane humid forest at 950–1150 m in elevation.

Conservation status. – *Memecylon ingens* has an estimated AOO of 4 km², and its only known location is in the Ranomafana National Park managed by Madagascar National Parks (GOODMAN et al., 2001a). Forested habitats within the protected area remain in good condition despite a 15.3% loss in area covered between 1996 and 2016 mostly associated with increased local human population and slash-and-burn agriculture (GOODMAN et al., 2021a). Based on its limited AOO and the plausible threats, the new species is provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – *Memecylon ingens* has terminal inflorescences, relatively large flowers and appears close to *M. corymbiforme*, differing mainly by its smaller and narrower leaves and subcordate (vs. cuneate) leaf bases. Both species remain poorly

known (e.g., the petals and anthers of *M. corymbiforme* have not yet been seen). Another illustration of the new species can be found in TURK (1995) under the name *M. aff. corymbiforme*. The fruits were described but evidently not preserved.

Memecylon lemuricum R.D. Stone, **sp. nov.** (Fig. 16).

Holotypus: MADAGASCAR. **Reg. Analanjirifo** [Prov. **Toamasina**]: Masoala Peninsula, Andranobe, S of Ambanizana, 15°41'S 49°58'E, 50–100 m, 12.II.1999, fl., McPherson et al. 17573 (CAS-973444!; iso-: BR [BR0000009337060]!, G [G00642034]!, K!, MO-5717537!, WAG [WAG.1094014]!).

Memecyloni brabensi Jacq.-Fél. affine, sed ab eo ramulis juvenilibus plusminusve quadrangularibus bilateraliter compressisque (non teretibus), laminis foliaribus minoribus (plerumque 6–9 $\times$ 2.6–4.3 non usque 17 $\times$ 7 cm) ad basin cuneatis (non plusminusve rotundatis), venis transversalibus 13 (non 16–18)-jugis, cymulis aliquando in axillas foliaries inferiores dispositis (non solum ad nodos defoliatos vetustiores vel truncifloris), bracteis bracteolisque c. 1 (non 2) mm longis, pedicellis brevioribus (5 non 8 mm longis), alabastris junioribus globoso-apiculatis primo calyce calyptrato corollam omnino tegente demum valvatim 4-loba (non corolla semper exposita), lobis calycinis rotundatis (non triangularibus), petalis albis 6 $\times$ 5 mm (non violaceis 4.5 $\times$ 4.5 mm) atque fructibus plusminusve globosis (non ellipsoideis ovato-ellipsoideisve) margine coronae calycinae truncato (non lobis triangularibus) differt.

Trees 8–25 m tall, evergreen; young branchlets dark purple to brownish, $\pm$ quadrangular and bilaterally compressed; older branchlets terete, bark pale gray and with fine longitudinal fissures; internodes (1.7–)2.5–5(–7.3) cm long. *Leaves* coriaceous, petiolate, yellowish green, dull and roughened on both surfaces when dry; petioles 5–10 mm long, dark; blades elliptic to obovate, (5–)6–9(–11.5) $\times$ (2.2–)2.6–4.3(–5.7) cm, mostly 2–2.5 times longer than wide, cuneate at base and decurrent on the petiole, broadly and shortly acuminate-obtuse at apex (acumen mostly 4–5 mm long) or the acumen lacking and the apex merely rounded, margins revolute in some collections; only the midnerve clearly visible, finely canaliculate adaxially, prominent abaxially especially toward the base; intramarginal nerves and transverse veins obscure to faintly visible, the latter with 13 pairs oriented at an oblique angle relative to the midnerve and spaced c. 5 mm apart. *Cymules* 15–20 mm long, 1–2-flowered, solitary or in fascicles of 2–4 in the lowermost leaf axils and at the defoliated, thickened nodes of older branchlets; peduncle 1–3 mm long, extended by a short internode of 1–2 mm; bracts and bracteoles broadly triangular-acute, c. 1 mm long, auriculate-clasping at base. *Flowers* on pedicels 5 mm long; buds globose-apiculate, 4 mm in diam., pale greenish-white, calyx calyptriform and

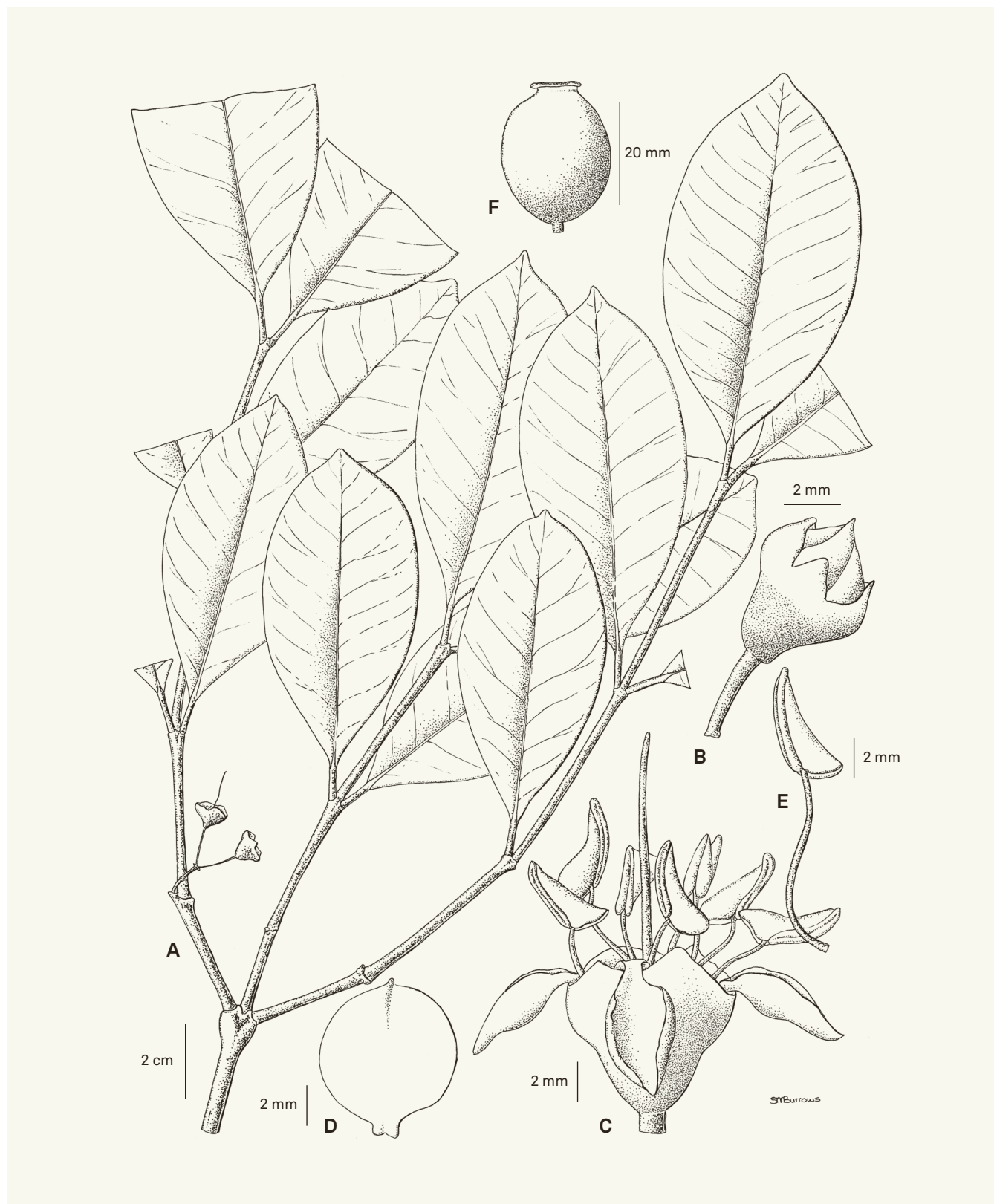


Fig. 16. – *Memecylon lemuricum* R.D. Stone. A. Flowering branch; B. Flower before anthesis; C. Open flower; D. Petal; E. Stamen; F. Fruit. [A–E: McPherson et al. 17573, CAS; F: Schatz et al. 3676, CAS] [Drawing: S. Burrows]

completely covering the corolla before anthesis; hypanthocalyx campanulate, 5 × 8 mm, the calyx margin at anthesis with four regular, thick, rounded lobes each c. 1 × 3.5 mm; petals reportedly white with purple tinge, rotundate, 6 × 5 mm, base auriculate above the claw 1 × 1 mm, apex acute, midnerve conspicuous; staminal filaments 5 mm long; anthers basifixed, 4 mm long, the thecae and connective parallel to each other and of the same length, the former dehiscent apically by means of a pore-like opening, the latter dilated toward the base and projecting outward into a short spur, dorsal gland absent; epigynous chamber smooth (lacking interstaminal partitions); style 11 mm long. *Fruits* on pedicels c. 7 mm long, globose to ± ellipsoid, 20–24 × (16.5–)18.5–24 mm; calycinal crown not prominent to c. 1 mm long, margin thick and truncate.

Etymology. – The epithet *lemuricum* is an adjective in reference to the large fruits of this species, which are reportedly eaten (and dispersed?) by lemurs.

Distribution and ecology. – Northeastern Madagascar, from the vicinity of Maroantsetra and the Masoala Peninsula northward to Makirovana (Analanjirifo region, Mananara Avaratra and Maroantsetra districts and SAVA region, Antalaha and Sambava districts). Another collection is from northwestern Madagascar in the Kalobinono massif (Diana region, Ambilobe district). Habitat in lowland humid forests at elevations of 30–976 m.

Conservation status. – *Memecylon lemuricum* has an estimated EOO of 28,901 km² and an AOO of 48 km². Of the 11 known locations, four are in areas managed by Madagascar National Parks (Masoala NP, Marojejy NP), one is in the Parc Naturel de Makira gazetted in 2012 and managed by the Wildlife Conservation Society, and two are in protected areas gazetted in 2015 and managed by the Missouri Botanical Garden (Makirovana Tsihomanaomby and Galoko-Kalobinono) (GOODMAN et al., 2021a). Based on its limited AOO, the new species could meet the criterion B2 for listing as “Endangered” [EN], but because of its relatively large EOO and occurrence in several protected areas it is assessed here as “Near Threatened” [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *Memecylon lemuricum* would be placed in *Memecylon* sect. *Prememecylon* H. Perrier on account of the anthers appearing basifixed (the connective of the same length as the pollen sacs and weakly prolonged into a short spur) and dorsal gland absent. The calyptriform calyx in bud is not seen in other species of this section. The new species has been confused with *M. strumosum* Naudin which has leaves of a similar size, shape and color in dried

material, yet the fruits of *M. strumosum* are quite different in being ovate-ellipsoid and 20 × 13 mm (vs. ± globose and mostly 20–24 × 18.5–24 mm) with calycinal crown erect and valvate lobes 1 × 3 mm (vs. crown not prominent to c. 1 mm long, margin thick and truncate). As presently circumscribed, *M. strumosum* is restricted to the Toamasina [Tamatave] environs in the northern Atsinanana and southern Analanjirofo regions, while *M. lemuricum* is found further to the north.

Molecular analyses with incomplete sampling (R.D. Stone, unpubl. data) suggest that *Memecylon lemuricum* is closely related to *M. brabense* Jacq.-Fél., which differs morphologically by its larger, basally rounded leaves and ellipsoid to ovate-ellipsoid fruits (see Latin diagnosis above).

Another collection from the Daraina region, forêt de Binara (Gautier & Chatelain 4982, CAS, G, MO, P) remains unplaced to species pending further study. It has also been confused with *M. strumosum* and, in comparison with *M. lemuricum*, the leaves are darker green, more thickly coriaceous, and glossy (not dull) on the upper surface; the petioles are shorter and stouter; and the calycinal crown in fruit is valvately 4-lobed (not truncate).

Additional specimens examined. – MADAGASCAR. **Reg. DIANA [Prov. Antsiranana]:** Kalabenono [Kalobinono] vicinity, 13°38'30"S 48°40'53"E, 976 m, 23.XI.2006, fr., Razafitsalama & Torze 1113 (G, K, MO, P). **Reg. SAVA [Prov. Antsiranana]:** Sambava, Andratamarina, vallée de Bemanasy, forêt d'Ambodivohitra, 14°24'02"S 49°51'51"E, 571 m, 20.X.2010, fr., Ravelonarivo & Raharivelo 3527 (MO, P); Anjangoveratra, Antanandava, Makirovana, 14°09'50"S 49°57'09"E, 764 m, 6.V.2010, fr., Razakamalala et al. 5495 (CAS, MO); Masoala Peninsula, 0–1 km NW of “Tamany Rabe Pierre” watershed of the Anaovandrano River, 15°44'S 50°13'E, 50 m, 16.XI.1996, fr., Schatz et al. 3676 (CAS, MO, P, TEF); presqu'île de Masoala, vallée de l'Iketra, affluent de l'Anaovandrano, piste entre Iketra et Antanambao Rantavato, 15°43'05"S 50°13'05"E, 50 m, 6.XII.2001, fl. buds, Stone et al. 2403 (CAS, MO, P, TAN); presqu'île de Masoala, vallée de l'Ampanavoana vers 6 km à l'W. de Antanambao Rantavato, 15°41'40"S 50°11'15"E, 30 m, 7.XII.2001, fl. buds, Stone et al. 2404 (CAS, P, TAN). **Border of Reg. Analanjirofo [Prov. Toamasina] & Reg. SAVA [Prov. Antsiranana]:** N. de la presqu'île Masoala (vers Antalaha – Maroantsetra), env. du col d'Ambatondradama, entre les bassins de la Mahalevona et de la Sahafihitra, 600 m, 13.XII.1953, fr., Service Forestier 8768 (P, TEF). **Reg. Analanjirofo [Prov. Toamasina]:** Maroantsetra, Ambinanitelo, Marovovonana, village Ambodivato, 15°18'13"S 49°33'13"E, 420 m, 21.XI.2002, fr., Antilahimena et al. 1449 (CAS, K, MO); Maroantsetra, Abinanitelo, Marovovonana, loc. Sahamengo river, 15°17'28"S 49°28'31"E, 690 m, 31.VIII.2004, fr., Antilahimena 2670 (CAS, MO, P); Maroantsetra, Fanpanambo [Fampanambo], forêt de Sahasoa, 200 m, 7.VII.1961, fr., Service Forestier 19939 (TEF).

***Memecylon marojejense* R.D. Stone, sp. nov.** (Fig. 17).

Holotypus: MADAGASCAR. **Reg. SAVA [Prov. Antsiranana]:** Marojejy National Park, along trail between 1st and 2nd camps, 14°26'10"S 49°46'16"E, 500 m, 3.II.2008, fl., Stone et al. 2664 (CAS-1104795!; iso; P [P05206810]!, TAN).

Ab aliis speciebus Memecylonis sect. Pseudonaxiandrae sensu Jacq.-Fél. combinatione internodiorum juvenilium anguste alatorum (non alato-crispatorum) cum laminis foliaribus

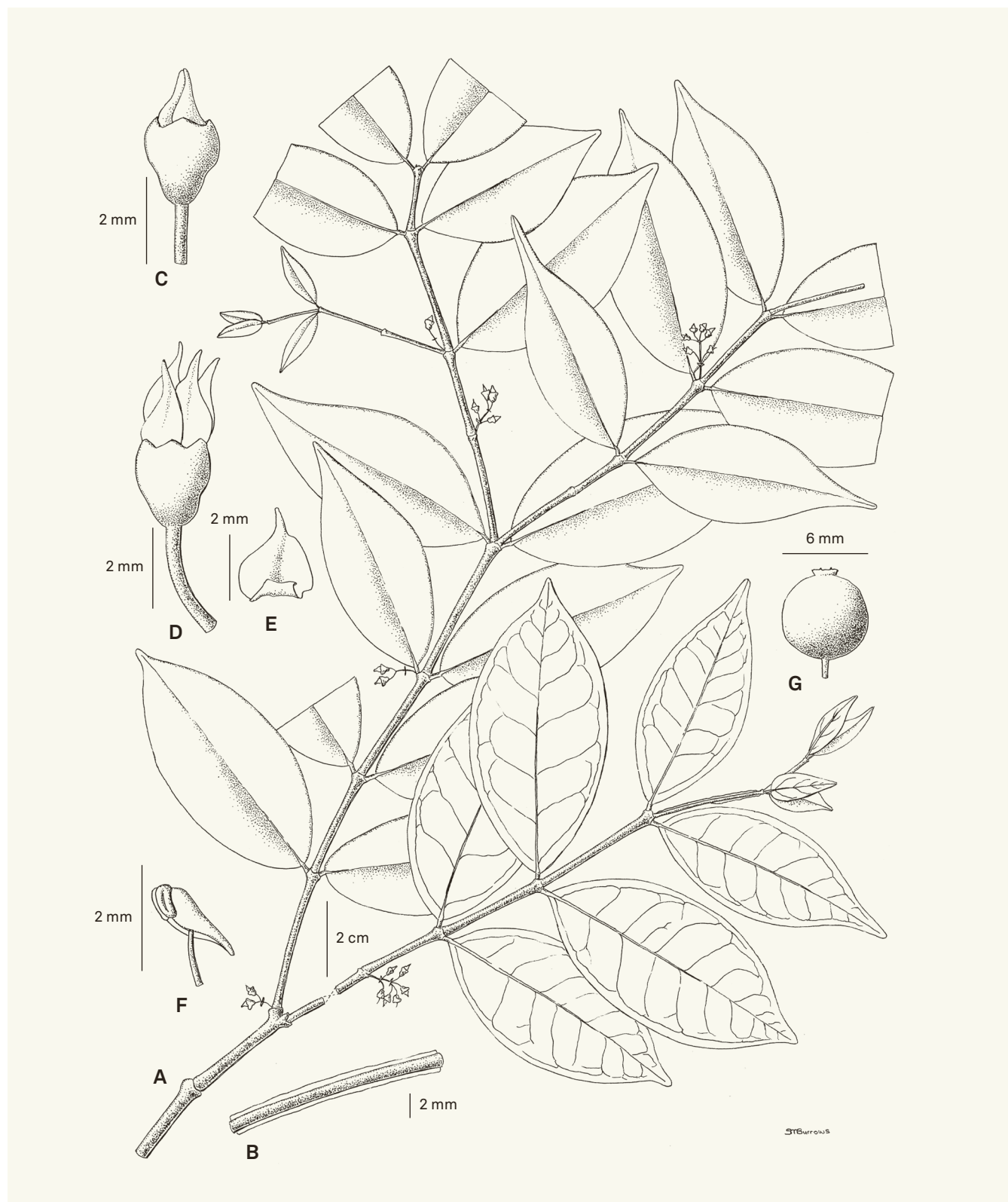


Fig. 17. – *Memecylon marojejense* R.D. Stone. **A.** Flowering branch; **B.** Section of branchlet showing narrow wings; **C.** Floral bud; **D.** Flower before anthesis; **E.** Petal; **F.** Anther; **G.** Fruit.

[**A–F:** Stone et al. 2664, CAS; **G:** Rakotomalaza et al. 744, MO] [Drawing: S. Burrows]

majoribus plerumque 6–8.5 × 2.7–3.6 cm ad basin cuneatis, ad apicem acuminatis acumine plerumque 7–12 mm longo, venis transversalibus 7–8-jugis, cymulis 2–11-floris usque 15 mm longis atque pedunculis 1–4 mm longis distinguitur.

Shrubs or small *trees* 1.5–6 m tall, evergreen; bark reportedly gray; young branchlets bisulcate, becoming narrowly winged and eventually terete with age; internodes (1.8–)2.5–4.5(–6.7) cm long. *Leaves* subcoriaceous, petiolate, discolored (dark green and shining on the adaxial surface, very pale and dull abaxially), minutely roughened when dry; petioles 1–3(–4) mm long; blades elliptic to ovate, (5–)6–8.5(–9.7) × (2.2–)2.7–3.6 (–4.4) cm, mostly 2–2.5 times longer than wide, base cuneate to angustate, apex acuminate, acumen mostly 7–12(–14) mm long, obtuse to acute; midnerve clearly visible, canaliculate adaxially, prominent abaxially; intramarginal nerves and transverse veins weaker than the midnerve but clearly visible adaxially and somewhat prominent in dried material, the transversals 7–8 pairs departing at an acute angle from the midnerve and following a ± sigmoid course; network of venules also subprominent adaxially. *Cymules* 7–15 mm long, 2–3 × branched, 2–11-flowered, solitary or geminate in the leaf-axils and at the intervening ‘aphyllous’ nodes, the recently defoliated nodes, sometimes terminally on the branchlets; peduncles and secondary axes slender, the former 1–4(–8) mm long, the latter 1–2(–4) mm; bracts and bracteoles persistent, lanceolate, the former c. 1 mm long, the latter smaller and sometimes imbricate-decussate. *Flowers* on slender pedicels 2–3 mm long; hypantho-calyx green, campanulate to cupulopatellate, 1.5 × 2 mm, calyx margin shallowly sinuate-dentate to truncate and 4-microdentate; corolla in bud c. 2 mm long, narrowly conical and sharply acuminate; petals white, recurved at anthesis, ovate-acuminate, 3 × 1 mm, shortly auriculate-clawed at base, acumen c. 1 mm long; staminal filaments white, 2–2.5 mm long; anthers pale yellow, 1.75–2 mm long, thecae situated at the anterior end, connective dorsally keeled and lacking a gland, posterior extremity subulate; epigynous chamber deep, with membranous interstaminal partitions forming V-shaped notches beneath the petal scars; style white, 6 mm long. *Fruits* globose, 5–6(–7) mm in diam., becoming violet-black when mature; calycinal crown 0.5 mm long.

Etymology. – The epithet *marojejense* is a neuter adjective and refers to the type locality in the Marojejy massif.

Distribution and ecology. – Northeastern Madagascar (SAVA region, Sambava district), an endemic of the Marojejy massif. Habitat in lowland rainforest at elevations of 350–660 m.

Conservation status. – *Memecylon marojejense* has an estimated EOO of 0.3 km² and an AOO of 8 km². Its only

known location lies entirely within the Marojejy National Park managed by Madagascar National Parks (GOODMAN et al., 2001a). The protected area has seen a relatively minor loss of 846 ha (1.7%) of moist evergreen forest between the years 1996 and 2016 (GOODMAN et al., 2021a). Based on its limited EOO and AOO but lack of immediate threats, the new species is provisionally assessed as “Near Threatened” [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – In the previous treatment by JACQUES-FÉLIX (1985a), the plants described here as *Memecylon marojejense* would key to *Memecylon* sect. *Pseudonaxiandra* H. Perrier on account of the delicate cymules, ± truncate calyx margin (the corolla thus well exposed in bud), versatile (dolabriform) anthers, and dorsally keeled connective lacking a gland. In molecular analyses (R.D. Stone, unpubl. data), *M. marojejense* is moderately supported as sister to a clade consisting of *M. insolitum*, *M. interjectum*, *M. gracilipedicellatum*, *M. mocquersii*, and *M. antongilense*. At the morphological level, it is most similar to *M. gracilipedicellatum* s.str., the type of which (*Réserves Naturelles* 8842, P, TEF) is also from the SAVA region (Andapa district, Marovato commune). However, *M. marojejense* differs by its young branchlets narrowly 4-winged (vs. quadrangular and alate-crisped), generally longer internodes (mostly 2.5–4.5 vs. 1.7–2.7 cm long), leaf-blades elliptic-ovate (vs. ovate-lanceolate) and larger (mostly 6–8.5 × 2.7–3.6 vs. 3–4.5 × 1.3–1.9 cm), base cuneate to angustate (vs. broadly cuneate to rounded), apex with acumen mostly 7–12 mm long (vs. apex obtuse or vaguely acuminate-obtuse, acumen 4–6 mm long when present), cymules with bracts and bracteoles persistent (vs. tardily deciduous), somewhat larger flowers (hypantho-calyx 1.5 × 2 vs. 1 × 1.5 mm, anthers 1.75–2 vs. 1.5 mm long), and petal bases auriculate-unguiculate (vs. truncate and lacking a claw). Further study is needed of other collections from northeastern Madagascar that appear close to *M. gracilipedicellatum*, e.g., *Service Forestier* 27566 (MO, P, TEF) which was cited in the protologue (JACQUES-FÉLIX, 1985a). Another collection *Andrianjafy et al.* 271 (CAS, P) from Zahamena National Park (Analanjirofo region) appears close to *M. marojejense* but is separated from the type region by a straight-line distance of c. 360 km.

Additional specimens examined. – **MADAGASCAR. Reg. SAVA [Prov. Antsiranana]:** Marojejy National Park, trail to summit of Marojejy, NW of Mandena between 1st & 2nd camps, 14°26'S 49°46'E, 380–660 m, 9.II.1989, fr., *Miller & Lowry* 3880 (MO, P); PN Marojejy, Mandena, Maroambihy, près du campement 1, long de la rivière de Manantenina, 14°26'13"S 49°46'32"E, 460 m, 12.X.1996, fr., *Rakotomalaza et al.* 744 (CAS, G, MO, NU, P); Andapa, PN Marojejy, near campement 1, 14°26'26"S 49°46'44"E, 17.X.2011, fr., *Rakotonasolo et al.* 1869 (CAS, K); Marojejy National Park, along trail N of Mandena village, c. 3 km from park entrance & 1 km from 1st camp, near deviation to Piscine naturelle, 14°26'37"S 49°46'53"E, 350 m, 31.I.2008, fl., *Stone et al.* 2654 (CAS, TAN); ibid. loco, along trail between 1st and 2nd

camps, 14°26'07"S 49°46'09"E, 525 m, 1.II.2008, fl., Stone et al. 2655 (CAS, G, K, MO, P, TAN); type loc., 3.II.2008, fr., Stone et al. 2663 (CAS, MO, P, TAN).

***Memecylon montis-gallicorum* R.D. Stone, sp. nov.** (Fig. 18).

Holotypus: MADAGASCAR. Reg. DIANA [Prov. Antsiranana]: Antsiranana II, Mahavanona, Andranomanitra, Ambararata, à 2 km N d'Antafiankoroka, Montagne des Français, 12°21'01"S 49°21'18"E, 165 m, 5.II.2005, fl., Randriambololomamonjy et al. 70 (MO-6261220!).

Memecyloni fissuricolae R.D. Stone arcte affine, sed ab eo plantis arboribus 8–10 m altis (non arbustis arbusculisve 1–4 m altis), cymulis usque 3 (non 1.5–2) cm longis plerumque 4–6 (non 3)–floris, pedunculis longioribus (plerumque 9–14 non 3–7 mm longis), axibus secundariis plerumque 5–9 mm (non 2–4) mm longis atque fructibus paullo majoribus (12–15 × 11–12 non 9–12 × 9–10 mm) differt.

Trees 8–10 m tall, evergreen; bark blackish, longitudinally finely fissured; branchlets slender, those of the new growth compressed and dorso-ventrally 2-grooved, soon becoming quadrangular then terete with age, nodes ± thickened and bark smooth, whitish gray; internodes (1–)1.5–2.5(–4) cm long. Leaves subcoriaceous, petiolate, bright green and somewhat glossy on the adaxial surface, paler and dull abaxially, minutely roughened on both surfaces when dry; petioles 1–2 mm long; blades obovate, (2.1–)2.8–3.7(–4.4) × (1.2–)1.5–2(–2.2) cm, mostly 1.7–2 times longer than wide, base ± angustate and confluent with the petiole, apex rounded to retuse or vaguely obtuse-acuminate; only the midnerve conspicuous; intramarginal nerves and transverse veins invisible or nearly so in dried material, the latter oriented at an oblique angle relative to the midnerve. Cymules to 3 cm long, (1–)4–6(–7)-flowered, solitary in the leaf axils or at recently defoliated nodes, also in fascicles of 2–3 at the terminal nodes of the branchlets; peduncles slender, bilaterally compressed, (5–)9–14 mm long; secondary axes (2–)5–9 mm long; bracts rapidly deciduous, not seen. Flowers borne individually at the end of the inflorescence axes, on very short pedicels 0.3–0.7(–1) mm long; hypantho-calyx green, obconical, 2.5 × 3.5 mm, margin shallowly sinuate-dentate, lobes broadly rounded, scarious margined; corolla in bud conical-apiculate, c. 2–2.5 mm long; open flowers not seen but petals reportedly white with a touch of violet at base, anthers reportedly yellow, 1.5 mm long in bud, thecae fronto-ventral, dorsal oil-gland narrowly elliptical; fully developed staminal filaments and style not seen. Fruits ovoid-ellipsoid, 12–15 × 11–12 mm; persistent calycinal crown 1 mm long, margin truncate and 4-microdentate.

Etymology. – The epithet *montis-gallicorum* is a neuter adjective meaning “of the mountain of the French”. It refers to the type locality on the Montagne des Français.

Distribution and ecology. – Northern Madagascar (Diana region, Antsiranana II district), an endemic of the Montagne des Français near Antsiranana [Diégo-Suarez]. Habitat in dry semi-deciduous forest on rocky calcareous substrate at elevations of 165–290 m.

Conservation status. – *Memecylon montis-gallicorum* has an estimated EOO of 5.3 km² and an AOO of 16 km². It is known from four locations, all of which are within the Paysage Harmonieux Protégé d'Ambohitr'Antsingy Montagne des Français, gazetted in 2015 and managed by the Service d'Appui à la Gestion de l'Environnement (GOODMAN et al., 2021a). Within the protected area there has been no measurable change in dry deciduous forest cover between the years 1996 and 2016, but these habitats remain threatened by ongoing exploitation of woody vegetation for timber and charcoal production (GOODMAN et al., 2021a). Based on its limited AOO together with the plausible threats, the new species is provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – *Memecylon montis-gallicorum* is evidently close to *M. fissuricola* R.D. Stone of the Ankarana massif. The leaves and flowers of the two species are ± identical, but in the material from Montagne des Français the inflorescence axes are longer with more flowers per inflorescence, and the fruits are slightly larger (see Latin diagnosis above). In addition, the petals of *M. montis-gallicorum* are reportedly white with a touch of violet at base (vs. uniformly pale violet in *M. fissuricola*). Their populations are both on calcareous substrates but wholly allopatric, separated by an airline distance of c. 65 km.

Additional specimens examined. – MADAGASCAR. Reg. DIANA [Prov. Antsiranana]: Mahavanona, Andranomanitra, Montagne des Français, Antaolanaomby, lieu dit Andampy, 12°22'07"S 49°21'02"E, 207 m, 13.XII.2006, fr., Andriamibajarivo et al. 1068 (MO); Antsiranana II, Mahavanona, Montagne des Français, Ampitiliantsambo, 12°23'01"S 49°23'09"E, 289 m, 13.VI.2004, fr., Ramananjanahary et al. 14 (CAS, MO, P); Antsiranana II, Mahavanona, Ampitiliantsambo, 12 km à vol d'oiseau à l'Est d'Andranomanitra, Montagne des Français, 12°23'15"S 49°23'04"E, 224 m, 24.VII.2004, fr., Randrianarivelo & Rasolofson 107 (CAS, NU).

***Memecylon naviculiforme* R.D. Stone, sp. nov.** (Fig. 19).

Holotypus: MADAGASCAR. Reg. Vakinankaratra [Prov. Antananarivo]: 16.2 km SE de Tsinjoarivo, forêt d'Ankilahila, le long de la rivière d'Andrindrimbola, 19°42'S 47°50'E, 1550 m, 18.I.1999, fl., Messmer & Andriatsiferana 693 (MO-6144396!; iso-: CAS-1105060!, G [G00642036]!).

Memecyloni corymbiformi H. Perrier simile, sed ab eo plantis arbustis arbusculisve 2–5 m altis (non arboribus 15–20 m altis),

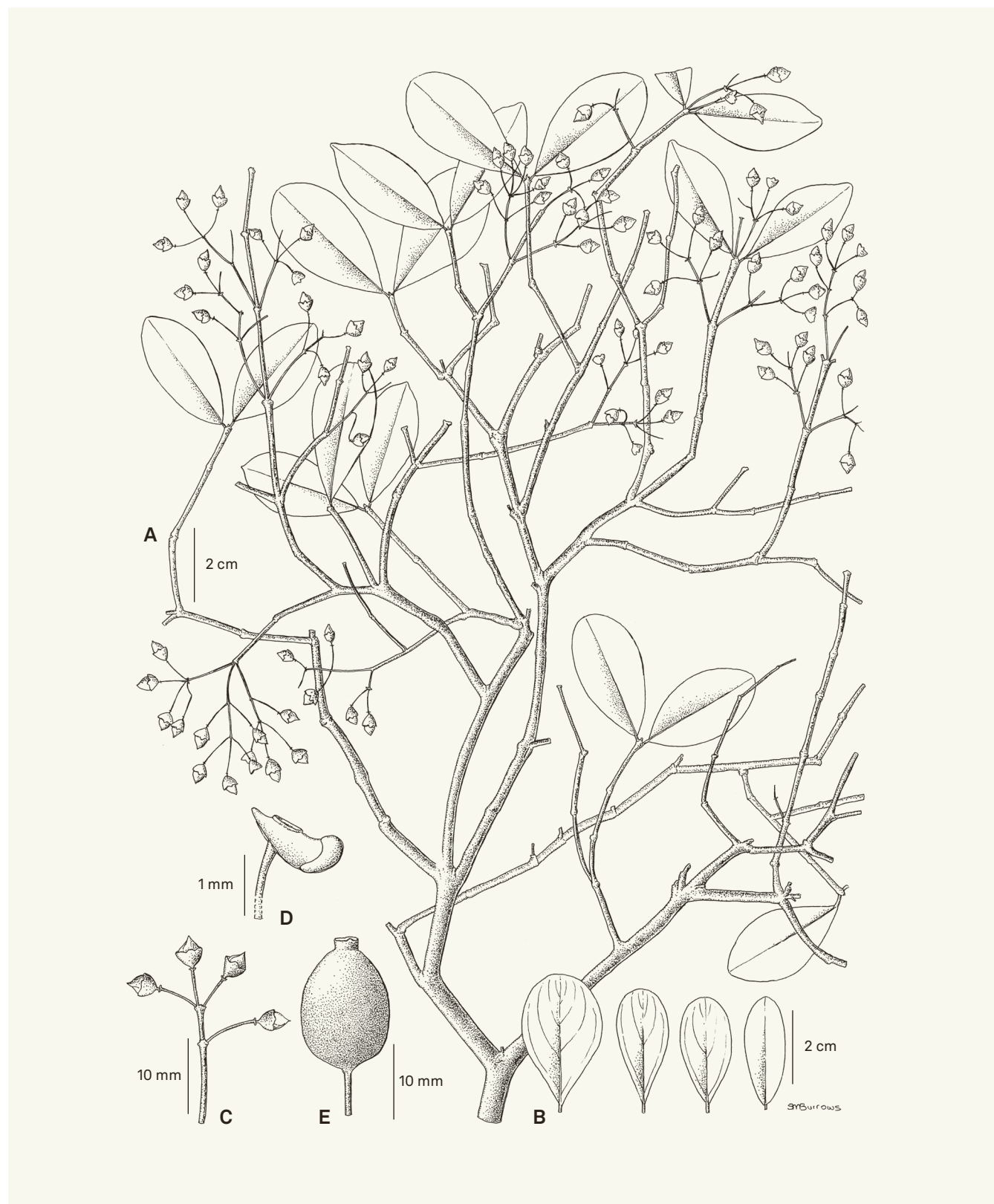


Fig. 18. – *Memecylon montis-gallicorum* R.D. Stone. A. Flowering branch; B. Leaves; C. Cymule and floral buds; D. Stamen; E. Fruit. [A, C, D: Randriambololomamonjy et al. 70, MO; B, E: Ramananjanahary et al. 14, CAS] [Drawing: S. Burrows]

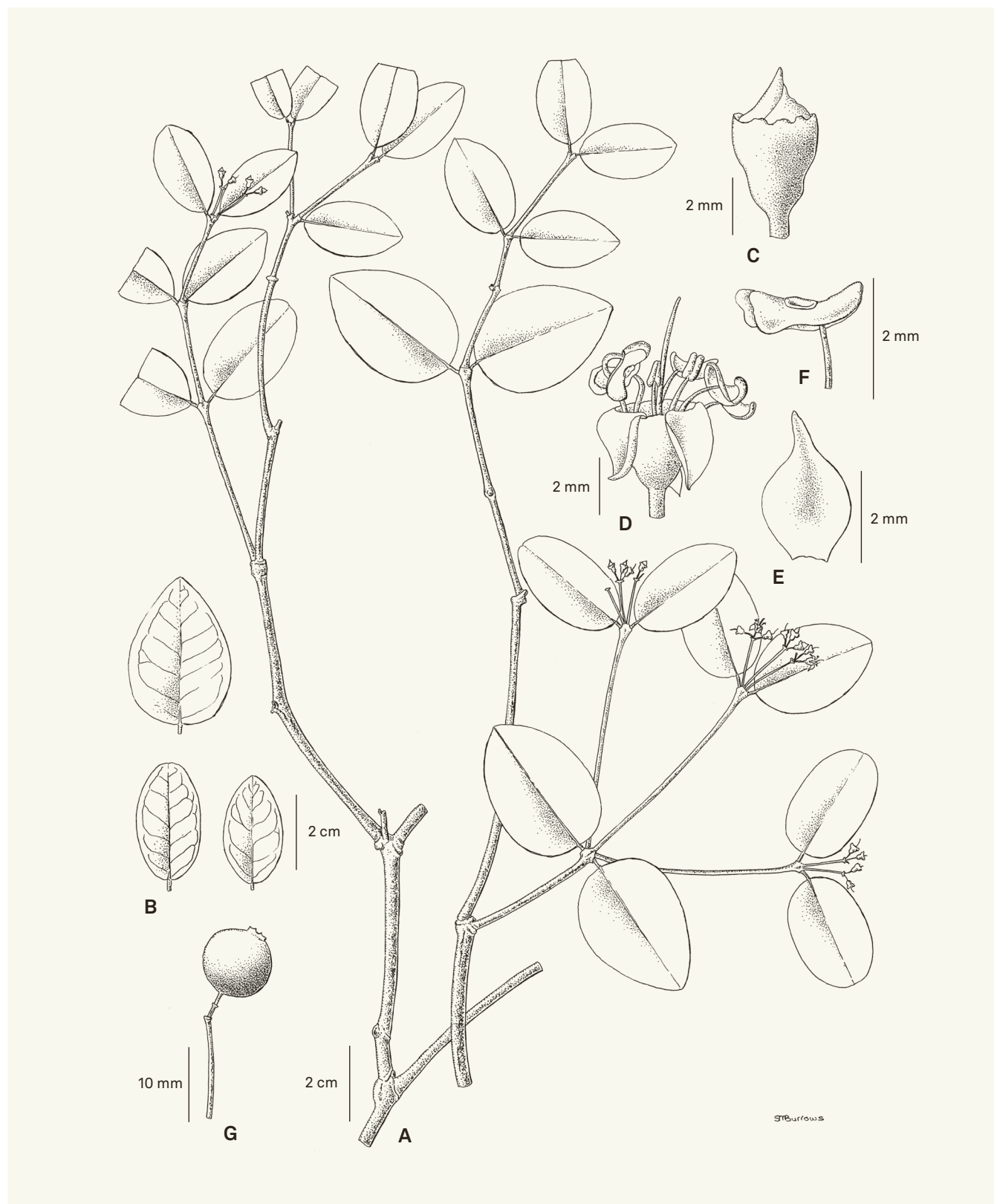


Fig. 19. – *Memecylon naviculiforme* R.D. Stone. A. Flowering branch; B. Leaves; C. Floral bud; D. Open flower; E. Petal; F. Anther; G. Fruit. [A, C–F: Messmer & Andriatsiferana 693, MO; B, G: Kotozafy et al. 156, MO] [Drawing: S. Burrows]

laminis foliaribus minoribus (plerumque 2.5–3.5 × 1.6–2.2 non 4.5 × 2.5–3 cm) ad basin late cuneatis rotundatisve (non modo cuneatis) venis transversalibus 5–7 (non 10–12)-jugis, cymulis axibus secundariis plerumque brevioribus (0.5–2 non 2–7 mm longis), pedicellis brevioribus (0.5–1 non 2–3.5 mm longis), hypantho-calyce minore (2.5 × 3.5 vs. 4 × 5 mm) atque stylo 6 (non 10) mm longis differt.

Shrubs or small *trees* 2–5 m tall, evergreen; branchlets dichotomous or trichotomous, the youngest bilaterally compressed and subquadrangular, soon becoming terete with age; internodes (1–)2–4.5(–7) cm long. *Leaves* coriaceous, short-petiolate, dark green and smooth on the adaxial surface, paler adaxially and minutely roughened when dry; petioles 1–2 mm long, stout; blades elliptic to ovate or rotundate, (2–)2.5–3.5 (–4) × (1.2–)1.6–2.2(–2.6) cm, mostly 1.4–1.7 times longer than wide, base broadly cuneate to rounded, apex rounded to retuse, obtuse or vaguely obtuse-acuminate; midnerve clearly visible on both surfaces, prominent abaxially especially toward the base; transverse veins faintly visible and subprominent in dried material, 5–7 pairs oriented at an oblique angle relative to the midnerve. *Cymules* in fascicles of 2–3 (rarely solitary), borne terminally on the branchlets and sometimes also at the upper leafy nodes, subumbellate, 3–7-flowered; peduncles bilaterally compressed, 8–16(–24) mm long; secondary axes very short, 0.5–2 mm long; bracts and bracteoles rapidly deciduous, not seen. *Flowers* on stout, short pedicels 0.5–1 mm long; hypantho-calyx green to purple, cupulo-patellate, 2.5 × 3.5 mm, attenuate at base, margin sinuate-dentate, each tooth also flanked by two rounded, scarious lobes c. 0.5 mm long (these scarious lobes ultimately deciduous); corolla in bud conical-apiculate, 2 mm long; petals blue-violet, ovate-acuminate, 3 × 2 mm, midnerve conspicuous on the dorsal side; staminal filaments 3.5–4 mm long; anthers 2 mm long, thecae fronto-ventral, connective pale yellow, slightly incurved by the median dorsal gland, posterior extremity naviculiform; epigynous chamber with interstaminal partitions in a cruciform pattern; style 6 mm long. *Fruits* globose, 7–10 mm in diam., on pedicels up to 4 mm long; calycinal crown 4-dentate, evident before maturity but eventually becoming obscured by growth at the top of the ovary.

Etymology. – The epithet *naviculiforme* is a compound formed from the Latin noun *nāvicula* meaning “little boat” and the adjectival suffix *-fōrmis* meaning “having the form of”. It functions as an adjective and refers to the shape of the anthers.

Distribution and ecology. – East-central Madagascar, restricted to the area straddling the eastern edge of the central plateau and the upper limit of the eastern escarpment (Vakinankaratra region, Ambatolampy district and Haute Matsiatra

region, Ambohimahasoa district). Habitat in montane humid forest at elevations of 1200–1550 m.

Conservation status. – *Memecylon naviculiforme* has an estimated AOO of 8 km² and is known from two locations separated by a straight-line distance of 175 km. The type locality at Ankilahila is part of the Tsinjoarivo forest, where the NGO Sadabe has made conservation actions since 2009 and advanced the creation of a new protected area (S.M. Goodman, pers. comm.). The second location is in the upper elevations of Ranomafana National Park managed by Madagascar National Parks (GOODMAN et al., 2021a). Forested habitats in Ranomafana remain in good condition despite a 15.3% loss in area covered between 1996 and 2016 mostly associated with increased local human population and slash-and-burn agriculture (GOODMAN et al., 2021a). Based on its limited AOO and the plausible threats, *M. naviculiforme* is provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – In the previous treatment by JACQUES-FÉLIX (1985a), *Memecylon naviculiforme* would key near to *M. faucherei*, *M. corymbiforme*, and *M. cotinifolioides* on account of the cymules borne terminally and subterminally on the branchlets, sinuate-dentate calyx margin (the corolla thus well exposed in bud), and anther-gland present. Its elliptic to ovate or rotundate leaves resemble those of *M. corymbiforme*, but it differs from that species by the characters given above (see Latin diagnosis).

The terminal inflorescences and ovate to elliptical leaves with rounded bases of *Memecylon naviculiforme* immediately distinguish it from *M. bakerianum* which occurs in the same region (remnant forests of the central plateau at 1000–1700 m elevation) but has inflorescences in the leaf-axils and at the nodes below the current leaves, and the leaves are oblanceolate. The shining leaves of *Kotozafy et al. 156* (cited below as a paratype) are notably different from those of the type, which are dull on both surfaces. The transverse veins of the type are also quite invisible adaxially, while in *Kotozafy et al. 156* they are faintly visible and subprominent on both surfaces.

Additional specimens examined. – MADAGASCAR. Reg. Matsiatra Ambony [Prov. Fianarantsoa]: PN Ranomafana, parcelle n° 1, Ampasina, 13 km au NE du village d’Amboditanimena, 21°13'S 47°22'E, 1200 m, VIII.1993, fr., *Kotozafy et al. 156* (CAS, MO, P, TAN).

Memecylon pseudomocquersii R.D. Stone, **sp. nov.** (Fig. 20).

Holotypus: MADAGASCAR. Reg. Analanjirofo [Prov. Toamasina]: Maroantsetra, Ambinanitelo, Soanafindra, Anjanaharibe forest, 15°11'17"S 49°36'51"E, 421 m, 1.II.2003, fl., *Antilahimena et al. 1826* (MO-6261668!; iso-: CAS!).

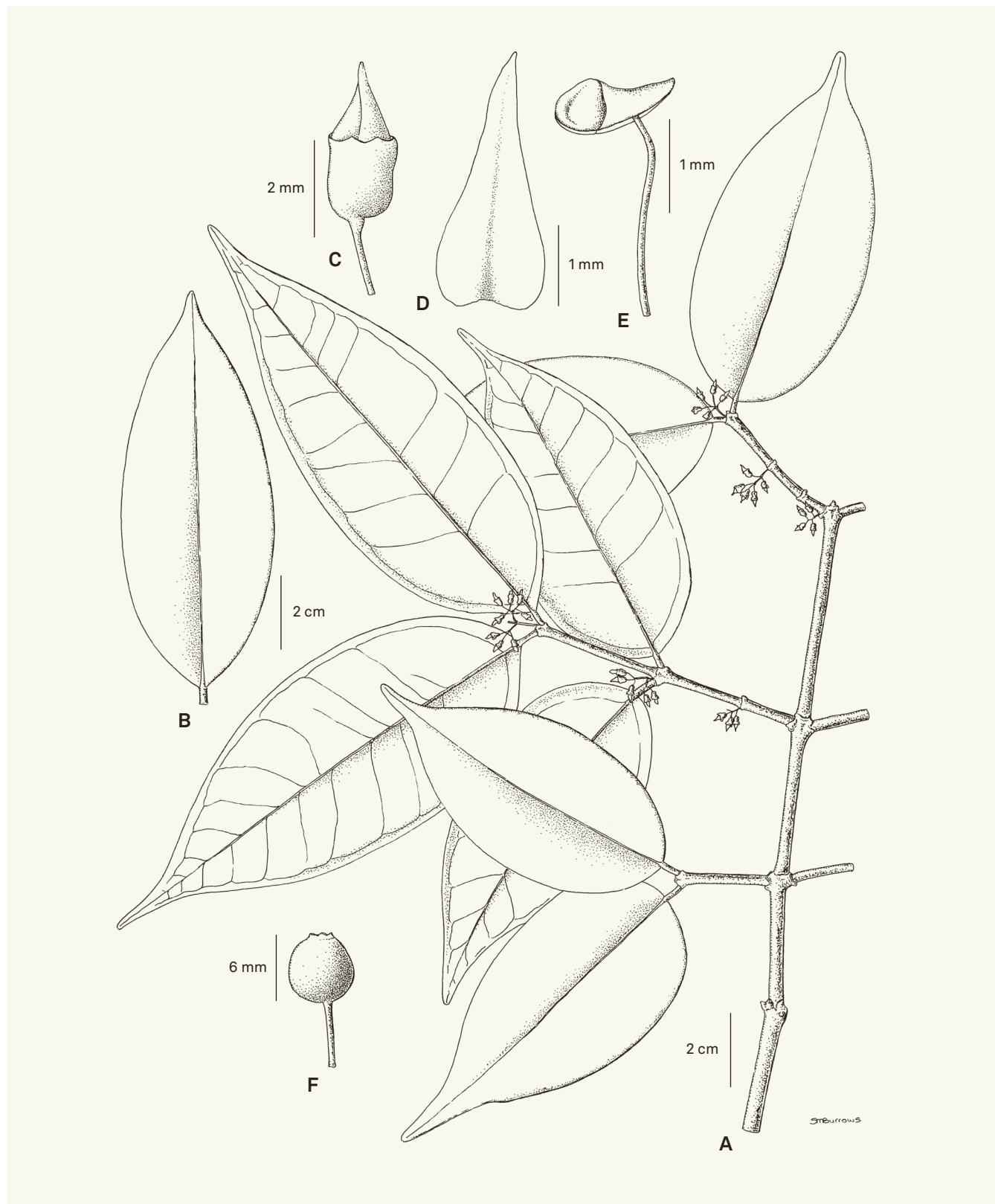


Fig. 20. – *Memecylon pseudomocquersii* R.D. Stone. A. Flowering branch; B. Leaf; C. Floral bud; D. Petal; E. Stamen; F. Fruit. [A, C–E: Antilahimena et al. 1826, MO; B: Aridy et al. 265, P; F: Zjhra & Hutcheon 332, MO] [Drawing: S. Burrows]

Memecyloni mocquersii Aug. DC. affine, sed ab eo ramulis juvenilibus plusminusve teretibus (non alato-crispatis), foliis manifeste petiolatis (non subsessilibus) petiolis plerumque 3–6 mm longis, basibus foliaribus late cuneatis rotundatisve (non cordatis), venis transversalibus vix conspicuis (non superne plane visibilibus), pedunculis brevioribus (plerumque 1.5–6 non 8–14 mm longis), pedicellis brevioribus (1.5–2 non 3–4 mm longis) atque fructibus paullo minoribus (in diam. c. 6 non 7–8 mm) differt.

Shrubs or small *trees* 3–5 m tall, evergreen; branchlets $\pm$ terete (young branchlets bisulcate, becoming narrowly winged and eventually terete with age); internodes (2–)3–5.6(–9) cm long. *Leaves* thinly coriaceous, distinctly petiolate, discolored (dark green and shining on adaxial surface, much paler and dull abaxially), minutely roughened on both surfaces when dry, minutely fibrous when torn; petioles mostly 3–6 mm long; blades ovate to ovate-lanceolate, (4.5–)7.5–12.5 (–13.5) $\times$ (1.6–)3–5(–5.6) cm, mostly 2.2–2.7 times longer than wide, base shortly angustate to broadly cuneate or rounded, apex acuminate, acumen mostly 8–15(–22) mm long, acute to obtuse; only the midnerve clearly visible, canaliculate adaxially, prominent abaxially; intramarginal nerves and transverse veins scarcely visible and subprominent in dried material, the latter 10–14 pairs oriented at an oblique angle relative to the midnerve; network of venules faintly visible and subprominent adaxially. *Cymes* 6–15 mm long, (1–)5–16-flowered, umbelliform or with a secondary axis resembling an extension of the peduncle, solitary or in fascicles of 2–3 in the leaf axils and at the recently defoliated nodes, sometimes terminally on the branchlets; peduncles slender, 1.5–6(–8) mm long, secondary axes 1.5–5 mm long; bracts and bracteoles narrowly deltoid to broadly deltoid-ovate, acuminate at apex, caducous, bracts 1–1.5 mm long, bracteoles < 1 mm long, imbricate. *Flowers* on pedicels 1.5–2 mm long; hypantho-calyx green, campanulate, 1.5 $\times$ 2 mm, margin shallowly sinuate-dentate; corolla in bud conical-acuminate, 2 mm long; petals white, 2.75 $\times$ 1.25 mm, lance-ovate, base truncate (not clawed), apex acuminate, margins scarious; staminal filaments 2.5 mm long; anthers c. 1 mm long, thecae frontal (anterior), not extended on the ventral side, dorsal side of connective keeled and lacking a dorsal gland, posterior extremity conical-acute; epigynous chamber with interstaminal partitions cruciform and forming V-shaped notches beneath the petal scars; style 5 mm long. *Fruits* globose, c. 6 mm in diam., yellow becoming black at maturity; calycinal crown c. 0.5 mm long.

Etymology. – The adjectival epithet *pseudomocquersii* is in reference to the resemblance of this species to *M. mocquersii* (see Notes below).

Distribution and ecology. – Northeastern Madagascar (Analanjirifo region, Maroantsetra district), evidently restricted to the environs of Maroantsetra. Habitat in littoral forest on sand or lowland humid forest, from near sea level to 420 m in elevation.

Conservation status. – *Memecylon pseudomocquersii* is known from three locations with an estimated EOO of 109 km² and an AOO of 12 km². The type locality in the Anjanaharibe forest is part of the Parc Naturel de Makira gazetted in 2012 and managed by the Wildlife Conservation Society (GOODMAN et al., 2021a). Within this protected area there are deforestation fronts still expanding despite a loss of only 2.6% forest cover between the years 1996 and 2016 (GOODMAN et al., 2021a). The other two locations are close to the village of Ambanizana and within or near the boundary of the Masoala National Park managed by Madagascar National Parks (GOODMAN et al., 2021a). Forest loss within the protected area has been minimal between the years 1996 and 2016, but there are ongoing, plausible threats to littoral and low-elevation forests primarily from slash-and-burn agriculture (GOODMAN et al., 2021a). The new species is thus provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – This new species closely resembles *Memecylon mocquersii*, named after Albert Mocquers who was a commercial collector of natural history specimens (CANDOLLE, 1901; DORR, 1997; DORR et al., 2017). Specimen labels in G indicate that the collections *Mocquers* 409 and 410, representing the original material of *M. mocquersii*, were collected from Nosy Mangabe while *Mocquers* 316, cited here as a paratype of *M. pseudomocquersii*, is from «Maro» (one of 20 provinces of the 19th-century Merina kingdom and centered on what is now known as the Masoala Peninsula; fide LLOYD, 1850). *Memecylon mocquersii* was later treated by JACQUES-FÉLIX (1985a) as conspecific with the Tanzanian *M. cogniauxii* Gilg, but subsequent molecular and morphological comparisons have shown it is distinct and should be recognized as a localized endemic of Nosy Mangabe and the western edge of the Masoala Peninsula (STONE, 2014; R.D. Stone, unpubl. data). *Memecylon pseudomocquersii* differs from *M. mocquersii* by its terete (not alate-crisped) branchlets, distinctly petiolate (vs. subsessile) leaves, blades shortly angustate to broadly cuneate or rounded at base (not cordate), and shorter flowering peduncles and pedicels (see Latin diagnosis above).

One unusual collection (*Ravelonariivo* et al. 2654, CAS, P) from the Mananara Avaratra district (at 892 m elevation to the west of Antongil Bay) remains unplaced to species but appears $\pm$ intermediate between *Memecylon pseudomocquersii* and *M. mocquersii*. The inflorescence axes are relatively short

(as in the former), but the branchlets are strongly alate-crisped, and the leaves are nearly sessile and $\pm$ cordate (as in the latter).

Additional specimens examined. – MADAGASCAR. Reg. Analanjirofo [Prov. Toamasina]: Parc National de Masoala, dans le village d'Ambanizana, Anjanahana, 15°37'S 49°58'E, 0–100 m, 22.IV.1996, fr., Aridy *et al.* 265 (CAS, MO, P); Maroa, forêts à l'intérieur de la baie d'Antongil, 1897, fl., Mocquerys 316 (G); Masoala Peninsula, trail A behind MBG house [Ambanizana], 15°39'30"S 49°57'30"E, 270 m, VI.1993, fr., Zjhra & Hutcheon 332 (K, MO, P, WAG).

Memecylon pseudopulvinatum R.D. Stone, **sp. nov.** (Fig. 21).

Holotypus: MADAGASCAR. Reg. Analanjirofo [Prov. Toamasina]: Masoala Peninsula, 1–3 km south of Ambanizana, trail along coast, 15°39'S 49°58'E, 0–10 m, 26.X.1992, fl., Schatz *et al.* 3335 (CAS-898883; iso-: MO-5717468!, TAN!, WAG [WAG.1093992!]).

Memecyloni pulvinato Jacq.-Fél. *et M. fusiformi* R.D. Stone affine, sed a primo ramulis gracilioribus atque laminis foliaribus minoribus (plerumque 9.7–11.7 $\times$ 5–6.4 non 16–18 $\times$ 7–9 cm); a secundo plantis arboribus 5 m altis (non arbustis), foliis sessilibus (non manifeste petiolatis petiolis 2–3 mm longis), laminis foliaribus ellipticis (non anguste ellipticis) plerumque 1.7–2 (non 2.5–3)-plo longioribus quam latioribus atque fructibus majoribus (plerumque 15–17 $\times$ 11–12 non 9–11 $\times$ 5 mm); ab ambobus ramulis juvenilibus subquadrangularibus (non teretibus) atque apicibus foliaribus acutis vel breviter lateque acuminatis (non rotundatis obtusisve) differt.

Trees c. 5 m tall, evergreen, cauliflorous; young branchlets subquadrangular, soon becoming terete with age; internodes (4–)5–8(–9) cm long. Leaves coriaceous, sessile, dark green on the adaxial surface, brownish adaxially, shining on both surfaces and minutely roughened when dry; blades elliptic, (9–)9.7–11.7 (–12.6) $\times$ 5–6.4(–7) cm, mostly 1.7–2 times longer than wide, base cuneate, apex acute to shortly and broadly acuminate, acumen mostly 5–9 mm long; midnerve clearly visible on both surfaces, prominent abaxially especially toward the base; transverse veins 16–18 pairs somewhat prominent adaxially in dried material, departing at an acute angle from the midnerve and following a $\pm$ sigmoid course; network of venules also subprominent adaxially. Cymes subsessile, 1-flowered, borne in dense patches to 2 cm in diam. on ligneous thickenings of the trunk; bracts rotundate-cucullate, c. 1 $\times$ 1 mm, broadly attached and clasping at base, persistent. Flowers subsessile (pedicels up to 1 mm long), subtended by a pair of bracteoles; hypantho-calyx reportedly light pink, campanulate, 4 $\times$ 4 mm, margin sinuate-dentate, the calyx-lobes broadly triangular, 1 $\times$ 2 mm and rounded-apiculate, each sinus with a minute, V-shaped notch; petals reportedly pink-violet, broadly triangular, 4 $\times$ 3 mm, base auriculate above the claw 1 mm long, apex rounded-apiculate; staminal filaments white, 3–4 mm long; anthers yellow, appearing basifixed, 3 mm long, the thecae and connective parallel to each other and of the same length, the latter projecting slightly

downward or outward at base into a short spur, dorsal gland absent; epigynous chamber deep, marked by 16 radial lines (interstaminal partitions not very pronounced); style white, 8 mm long. Fruits ellipsoid-obovoid, 15–17(–20) $\times$ (9.5–)11–12(–14) mm, on short pedicels (c. 1 mm long); calycinal crown c. 1 mm long, $\pm$ spreading, margin $\pm$ truncate but preserving the V-shaped notches in the sinuses.

Etymology. – The adjectival epithet *pseudopulvinatum* is in reference to the earlier confusion between this species and the closely related *M. pulvinatum* (see Notes below).

Distribution and ecology. – Northeastern Madagascar (Analanjirofo region, Maroantsetra district), evidently restricted to the western side of the Masoala Peninsula near the village of Ambanizana and southward. Habitat in littoral and lowland humid forest, from near sea level to 260 m in elevation.

Conservation status. – *Memecylon pseudopulvinatum* has an estimated EOO of 11 km² and an AOO of 16 km². Of the four known locations, two are close to Ambanizana, and the other two are further south and within the Masoala National Park managed by Madagascar National Parks (GOODMAN *et al.*, 2021a). Forest loss within the protected area has been minimal between the years 1996 and 2016, but there are ongoing, plausible threats to littoral and low-elevation forests primarily from slash-and-burn agriculture (GOODMAN *et al.*, 2021a). The new species is thus provisionally assessed as “Vulnerable” [VU D2] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – Compared to its close relative *Memecylon pulvinatum* in *Memecylon* sect. *Prememecylon* sensu JACQUES-FÉLIX (1985a), this cauliflorous species has slender branchlets and smaller leaves, and the leaf apices are subacuminate and acute (vs. rounded). In molecular analyses with incomplete sampling, *M. pulvinatum* and *M. pseudopulvinatum* are strongly supported as sister species (R.D. Stone, unpubl. data).

Additional specimens examined. – MADAGASCAR. Reg. Analanjirofo [Prov. Toamasina]: Ambanizana, 15°38'S 49°58'E, 20 m, V.1999, fr., Ratovoson *et al.* 85 (CAS, MO, P); Masoala Peninsula, south of Marofototra along foot-path toward Antalaviana, 15°46'30"S 50°00'12"E, 0–25 m, 27.I.2007, ster., Stone *et al.* 2613 (CAS, P, TAN); Masoala Peninsula, south of the village of Ambanizana in the Andranobe River watershed, 15°40'24"S 49°57'51"E, 110–260 m, 25.XI.1994, fr., Vasey & Velo 146 (CAS, MO, P).

Memecylon subaridum R.D. Stone, **sp. nov.** (Fig. 22).

Holotypus: MADAGASCAR. Reg. Ihorombe [Prov. Fianarantsoa]: bassin de la Malio (affluent de Mangoky), près d'Ambalabe, 400–450 m, XI.1946, fl., Humbert 19375 (P [P00500443]!; iso-: BR [BR0000019015125]!, K!, MO-4598302!).

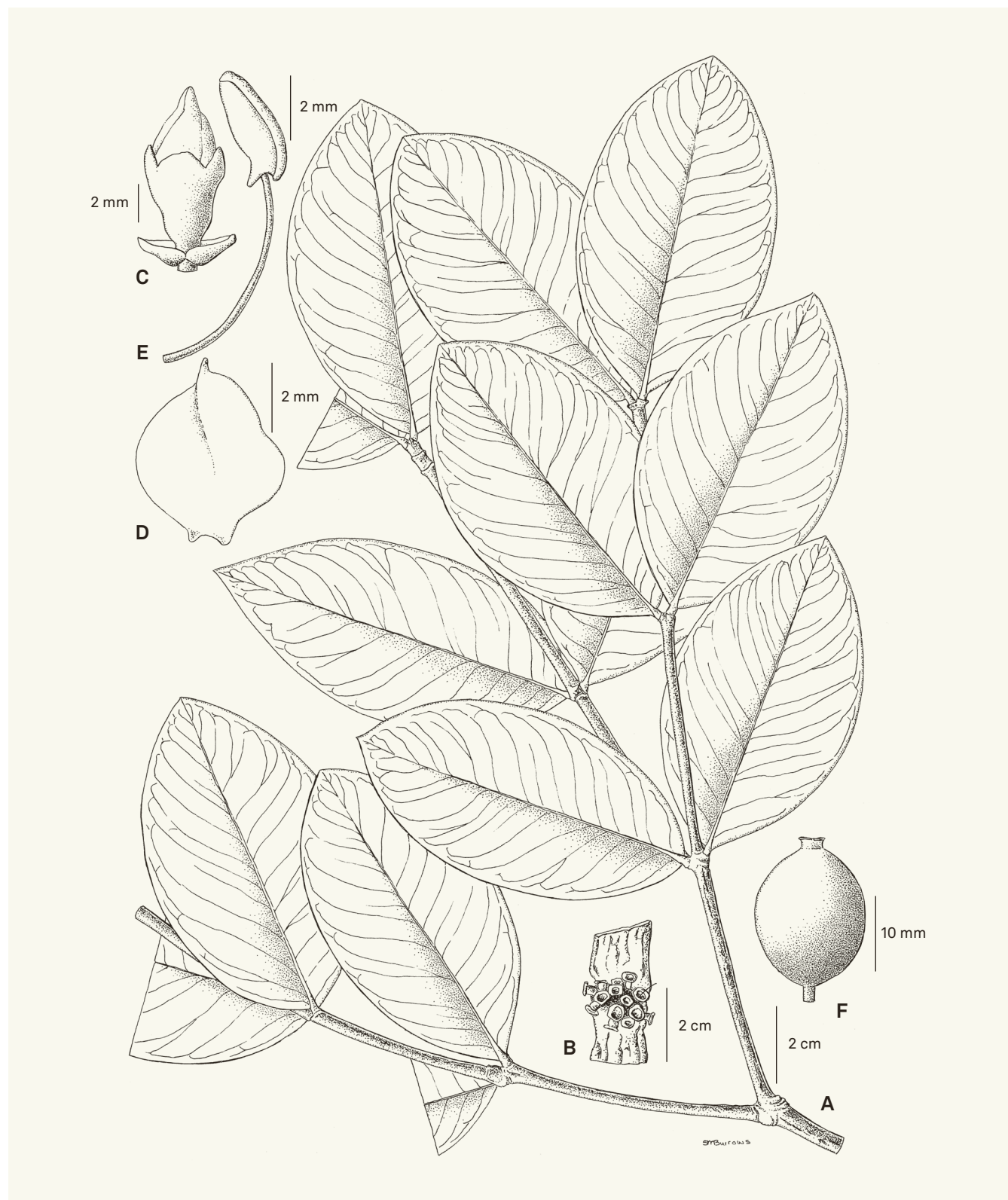


Fig. 21. – *Memecylon pseudopulvinatum* R.D. Stone. A. Leafy branch; B. Section of trunk showing floriferous node; C. Floral bud subtended by a pair of bracteoles; D. Petal; E. Stamen; F. Fruit.

[A, F: Ratovoson et al. 85, CAS; B–E: Schatz et al. 3335, MO] [Drawing: S. Burrows]

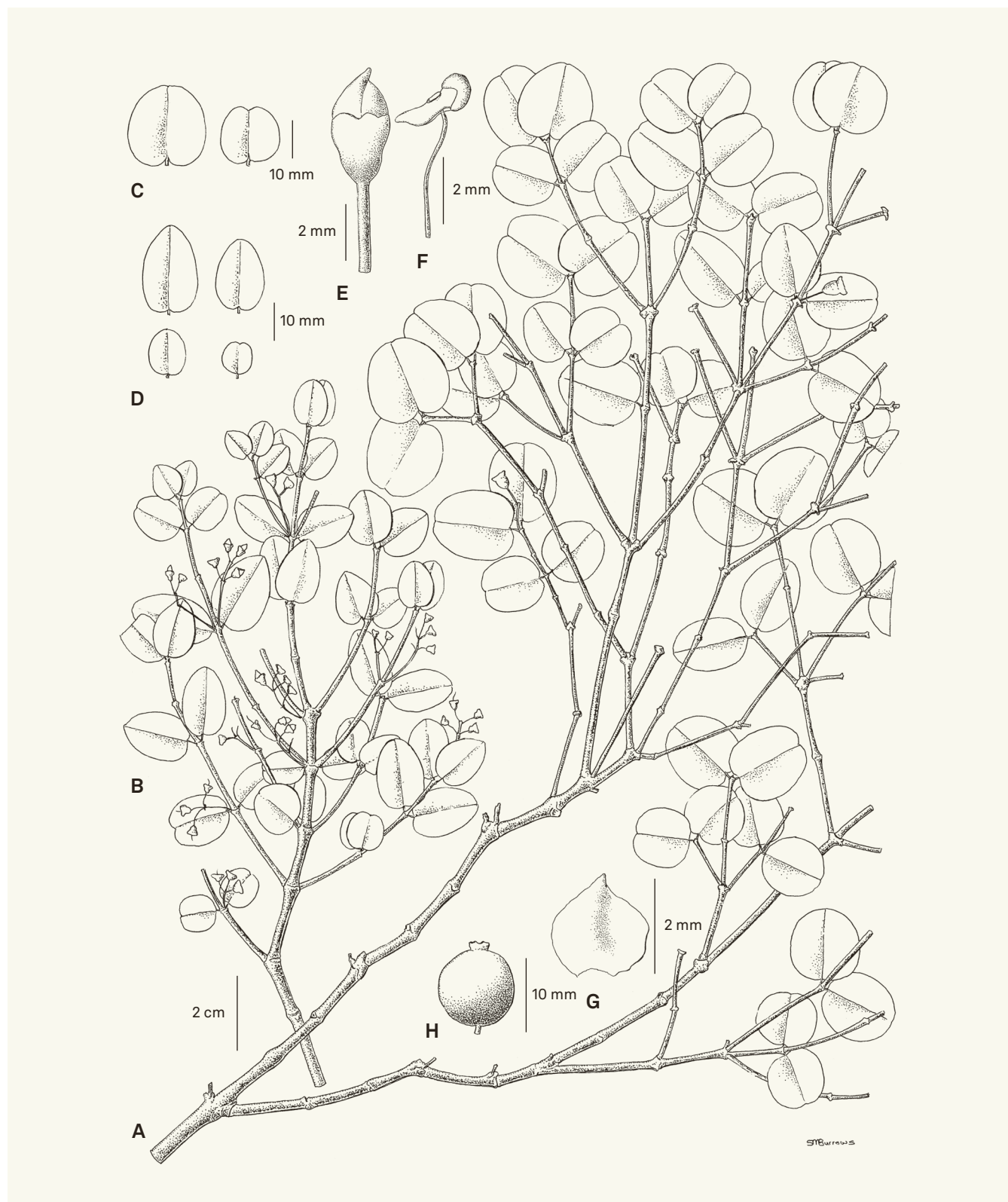


Fig. 22. – *Memecylon subaridum* R.D. Stone. **A.** Branch with young, developing fruits; **B.** Flowering branch; **C, D.** Leaves; **E.** Floral bud; **F.** Stamen; **G.** Petal; **H.** Fruit.

[**A, C:** Razakamalala & Dédé 5982, NU; **B, D–G:** Humbert 19375, P; **H:** Humbert 19372, P] [Drawing: S. Burrows]

Memecyloni boinensi H. Perrier et *M. coursiano* Jacq.-Fél. simile, sed a primo laminis foliaribus late ovatis vel suborbicularis (non oblongis vel late ovatis) ad basin cordatis (non rotundatis); a secundo plantis arbustis arbusculisve 2–6 m altis (non arbustis 1 m altis), cymulis saepe in axillis foliaries (non solum ad nodos defolios vetustiores) dispositis manifeste pedunculatis (non sessilibus) pedunculis plerumque 3–8 mm longis, bracteis bracteolisque caducis (non persistentibus), petalis albis (non caeruleis) truncatis (non unguiculatis) atque filamentis brevioribus (c. 3.5 non 5 mm longis); ab ambobus ramulis juvenilibus quadrangularibus (non subquadrangularis teretibusve), pedicellis longioribus (2–4 non 0.5–2 mm longis) atque fructibus majoribus (c. 10 non 6–7 mm diametro) differt.

Shrubs or small *trees* 2–6 m tall, evergreen; branchlets dichotomous or trichotomous, ± grayish, slender, the youngest quadrangular, becoming terete with age, older branchlets with nodes ± thickened; internodes (0.6–)1–2.5(–4.5) cm long. *Leaves* coriaceous, short-petiolate, dark green or yellowish green, smooth and shining on the adaxial surface, paler and dull abaxially, minutely roughened when dry; petioles 1–2 mm long; blades broadly ovate to suborbicular, (10–)13–22(–28) × 10–17(–24) mm, mostly 1–1.5 times longer than wide (rarely slightly wider than long), base cordate, apex rounded to retuse or vaguely obtuse-acuminate; only the midnerve clearly visible, finely impressed-canaliculate on both surfaces; lateral nerves faintly visible, 1–2 mm from the margin in the lower part of the blade; transverse veins obscure. *Cymes* 1–2 cm long, (1–)3(–5)-flowered, solitary or geminate in the leaf axils, at the nodes below the leaves, and terminating the branchlets (where sometimes in fascicles of 3); peduncle bisulcate, 3–8(–15) mm long, often extended by a secondary axis of 1–3(–4.5) mm; bracts and bracteoles deciduous, not seen. *Flowers* on pedicels 2–4 mm long; hypantho-calyx cupulo-patellate, 2.5 × 3.5 mm, margin shallowly sinuate-dentate; corolla white, conical-acute and 1.5 mm long in bud; petals rhombic, 2 × 2 mm, base truncate (claw absent), apex deltoid-acute; staminal filaments white, c. 3.5 mm long; anthers pale yellow, dolabriform, 1.5 mm long, thecae fronto-ventral, connective strongly incurved dorsally around the gland, posterior extremity narrowly conical-acute; epigynous chamber with interstaminal partitions not very prominent, arranged in a cruciform pattern; style 6 mm long. *Fruits* globose, c. 10 mm in diam., green becoming black at maturity; persistent calycinal crown 1 mm long, ± spreading, margin sinuate-dentate; stylopodium swollen and partially filling the epigynous chamber.

Etymology. – The adjectival epithet *subaridum* refers to the occurrence of this species at the edge of the semi-arid zone in southwestern Madagascar.

Distribution and ecology. – Southwestern Madagascar, centered in the area to the north of the Isalo massif with an isolated locality in the Bevana forest c. 88 km straight-line distance east-northeast of Morondava (Menabe region, Mahabo district; Atsimo-Andrefana region, Beroroha district; and Ihorombe region, Ihosy district). Habitat in dry forest on sand or sandstone at elevations of 300–800 m.

Conservation status. – *Memecylon subaridum* has an estimated EOO of 4,302 km² and an AOO of 16 km². Of the four known locations, three are outside of the protected area network, and the fourth is in the Isalo National Park managed by Madagascar National Parks (GOODMAN et al., 2021b). Dry forests in western Madagascar have been reduced by almost 40% since the 1970s, and the rate of deforestation between the years 2000 and 2005 was 0.42% per year (WAEBER et al., 2015, and references cited therein). Dry forests in unprotected areas are under pressure from clearing for subsistence and commercial agriculture, collecting of firewood and charcoal production, grazing of zebu cattle, and mining or oil exploration (WAEBER et al., 2015). Dry forests in Isalo National Park are threatened mainly by uncontrolled fires (GOODMAN et al. 2021b). Based on its limited EOO and AOO together with the apparent threats, *M. subaridum* is provisionally assessed as “Endangered” [EN B1ab(i,ii,iii)+B2ab(i,ii,iii)] in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – These southwesterly populations were included by JACQUES-FÉLIX (1985b) in the circumscription of *Memecylon boinense* H. Perrier, but the leaves of *M. subaridum* are clearly suborbicular-cordiform (in this respect differing from *M. boinense* and approaching *M. coursianum* Jacq.-Fél.). As in *M. boinense*, there is considerable variation in the size of the leaves among the collections cited.

Additional specimens examined. – MADAGASCAR. **Reg. Menabe [Prov. Toliara]**: région de Morondava, forêt de Bevana, env. 20 km NNE de Mahabo, 4.XII.1962, fl., *Service Forestier* 22152 (K, MO, P, TEF). **Reg. Atsimo-Andrefana [Prov. Toliara]**: district & commune Beroroha, fokontany Betorabato. Abotorabatorano, 21°34'04"S 45°34'34"E, 296 m, 13.I.2011, fr., *Razakamalala & Dédé* 5982 (CAS, MO). **Reg. Ihorombe [Prov. Fianarantsoa]**: entre Tametsoa et Sahanafo, au N de l'Isalo, 700–1100 m, 30.I.1955, fr., *Cours* 5054 (MO, P); type loc., XI.1946, fr., *Humbert* 19372 (P). **Sine loco**: s.d., ster., *Herb. Station Agricole du lac Alaotra* 5054-bis (TAN).

Memecylon subundulatum R.D. Stone, **sp. nov.** (Fig. 23).

Holotypus: MADAGASCAR. **Reg. Analanjirofo [Prov. Toamasina]**: Masoala Peninsula, Andranobe, south of Ambanizana, 15°41'S 49°58'E, 200–260 m, 14.II.1999, fl., *McPherson et al.* 17595 (MO-519974!).

Memecyloni subsessili H. Perrier affine, sed ab eo ramulis juvenilibus quadrangularibus (non teretibus), laminis foliaribus latioribus (plerumque 3.2–4.5 non 3 cm latis) ad

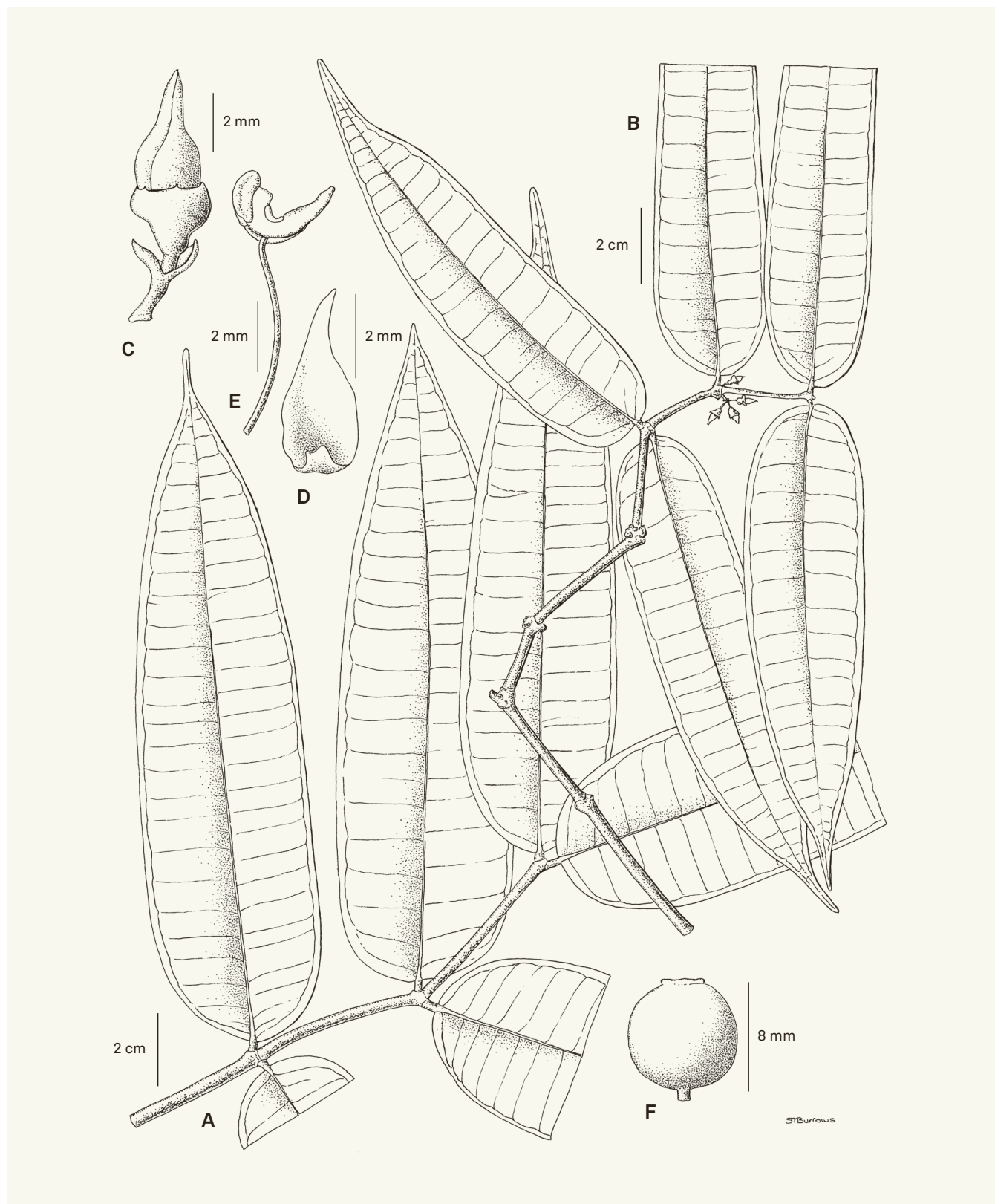


Fig. 23. – *Memecylon subundulatum* R.D. Stone. A. Leafy branch; B. Flowering branch; C. Floral bud; D. Petal; E. Stamen; F. Fruit. [A, C–E: McPherson et al. 17595, MO; B, F: Lowry et al. 4473, MO] [Drawing: S. Burrows]

basin rotundatis (non cordatis), cymulis aliquando ad nodos infra folia dispositis (non solum axillaribus vel interdum terminalibus), margine calycis truncata (non rotundato-lobata), petalis anguste triangulari-attenuatis (non late ovatis) 4 × 1.5 (non 2.5 × 1.5) mm, stylo longiore (8–9 non 6 mm longo) atque antherae connectivo ad extremitatem plusminusve subulato (non breviter conico) differt.

Shrubs or small *trees* 1–5 m tall, evergreen; young branchlets quadrangular and with dark brown bark soon exfoliating in long shreds or shorter, rectangular patches; older branchlets slender ($\pm$ thickened at nodes), whitish, subquadrangular to terete; internodes (2–)3–5(–7) cm long. *Leaves* subcoriaceous, short-petiolate, dark green on the adaxial surface, medium yellow-green abaxially (drying brownish), dull on both surfaces and minutely roughened when dry; petioles (1.5–)2(–2.5) mm long, stout; blades narrowly ovate-lanceolate to lance-oblong, (8.7–)11.5–16.5(–19) × (2.5–)3.2–4.5(–5) cm, roughly 3–4 times longer than wide, base rounded, margins subtly undulate (at least in dried material), apex acuminate, acumen (7–)9–18(–21) mm long; midnerve canaliculate adaxially, prominent abaxially; transverse veins also clearly visible and subprominent (especially on the abaxial surface), mostly 21–29 pairs oriented perpendicular to the midnerve, spaced about 5 mm apart. *Cymules* axillary and at recently defoliated nodes, up to c. 1 cm long, 1–3-flowered; peduncles 1–4(–6) mm long. *Flowers* reportedly white, sessile or nearly so (true pedicel absent or < 0.5 mm long), closely subtended by a pair of lanceolate-cucullate, tardily deciduous bracts c. 2 mm long; hypantho-calyx campanulate, 2.5 × 3.5 mm, margin truncate; corolla in bud ovate-acuminate, 4 mm long; petals narrowly triangular-attenuate, 4 mm long, 1.5 mm wide at base then narrowed into a claw 0.75 mm long; staminal filaments 5–6 mm long; anthers 2.5 mm long, thecae fronto-ventral, connective dorsally incurved around the gland, posterior extremity long and narrow, $\pm$ subulate; epigynous chamber with 8 membranous interstaminal partitions, these raised into short vertical projections surrounding the style; style 8–9 mm long. *Fruits* $\pm$ globose, 8–10 mm in diam., before maturity reportedly very pale yellow green to creamy white, tinged pinkish purple at the apex; calycinal crown appressed to the top of the ovary, not prominent.

Etymology. – The adjectival epithet *subundulatum* is in reference to the subtly sinuate leaf margins.

Distribution and ecology. – Northeastern Madagascar, evidently localized on the Masoala Peninsula (Analanjirifo region, Maroantsetra district and SAVA region, Antalaha district). Habitat in lowland humid forest from near sea level to 300 m in elevation.

Conservation status. – *Memecylon subundulatum* has an estimated EOO of 109 km² and an AOO of 20 km². There are five known locations, all of which are within or near the boundary of the Masoala National Park managed by Madagascar National Parks (GOODMAN et al., 2021a). Forest loss within the protected area has been minimal between the years 1996 and 2016, but there are ongoing, plausible threats to littoral and low-elevation forests primarily from slash-and-burn agriculture (GOODMAN et al., 2021a). The new species is thus provisionally assessed as “Near Threatened” [NT] in accordance with the IUCN Red List Categories and Criteria and their guidelines (IUCN, 2012, 2022).

Notes. – *Memecylon subundulatum* is evidently close to *M. subsessile* H. Perrier, as evidenced by a suite of shared characteristics, such as the brownish-black, rapidly exfoliating bark of the younger branchlets, the long and narrow leaves that are acuminate-acute at the apex, subsessile flowers subtended by a pair of persistent bracteoles, and presence of an anther-gland. The two species are separated by at least eight characters (see Latin diagnosis above).

Additional specimens examined. – MADAGASCAR. **Reg. SAVA [Prov. Antsiranana]:** à 30 km du village de Sahamalaza sur la route d'Ankorabe, 15°47'S 50°14'E, 0–200 m, II.1996, fl., *Aridy* 129 (CAS, MO, P). **Reg. Analanjirofo [Prov. Toamasina]:** dans le village d'Ambanizana, Anjahana, 15°37'S 49°58'E, 0–100 m, 22.IV.1996, fr., *Aridy* et al. 264 (CAS, G, MO, P); Ambanizana, on the Masoala Peninsula, c. 30 km southeast of Maroantsetra, trail leading from south of the village east into the mountains, 15°38'S 49°58'E, 130–300 m, 12.V.1988, fr., *Lowry* et al. 4473 (K, MO, P, TAN, WAG); Masoala Peninsula, forest surrounding research station at Andranobe on western coast, 15°39'30"S 49°57'30"E, 0–600 m, 8.III.1992, fr., *Zjhra & Hutcheon* 195 (MO, WAG).

Memecylon triflorum R.D. Stone, **sp. nov.** (Fig. 24).

Holotypus: MADAGASCAR. **Reg. Anosy [Prov. Toliara]:** Fort-Dauphin, Iaboko [= Iabakoho], Antsotso, forêt d'Ivohibe, 24°56'22"S 47°20'27"E, 440 m, 2.XII.2005, fl. buds, *Razakamalala* et al. 2567 (P [P06490383]!; iso-: CAS!).

Memecyloni humbertii H. Perrier affine, sed ab eo internodiis generaliter longioribus (plerumque 8–19 non 5–10 mm longis), laminis foliaribus plusminusve anguste ellipticis (non late ovatis vel suborbicularis) plerumque 16–18 × 5–6 (non 12 × 10) mm, cymulis usque 12 (non 5) mm longis atque pedunculis plerumque 1–4 mm longis (non subnullis) differt.

Shrubs 3 m tall, evergreen; branchlets dichotomous or trichotomous, the ultimate ones very slender, strongly quadrangular and narrowly alate eventually becoming terete with age, older branchlets with nodes conspicuously thickened; internodes (5–)8–19(–26) mm long. *Leaves* coriaceous, short-petiolate, dark green and shining on the adaxial surface, light

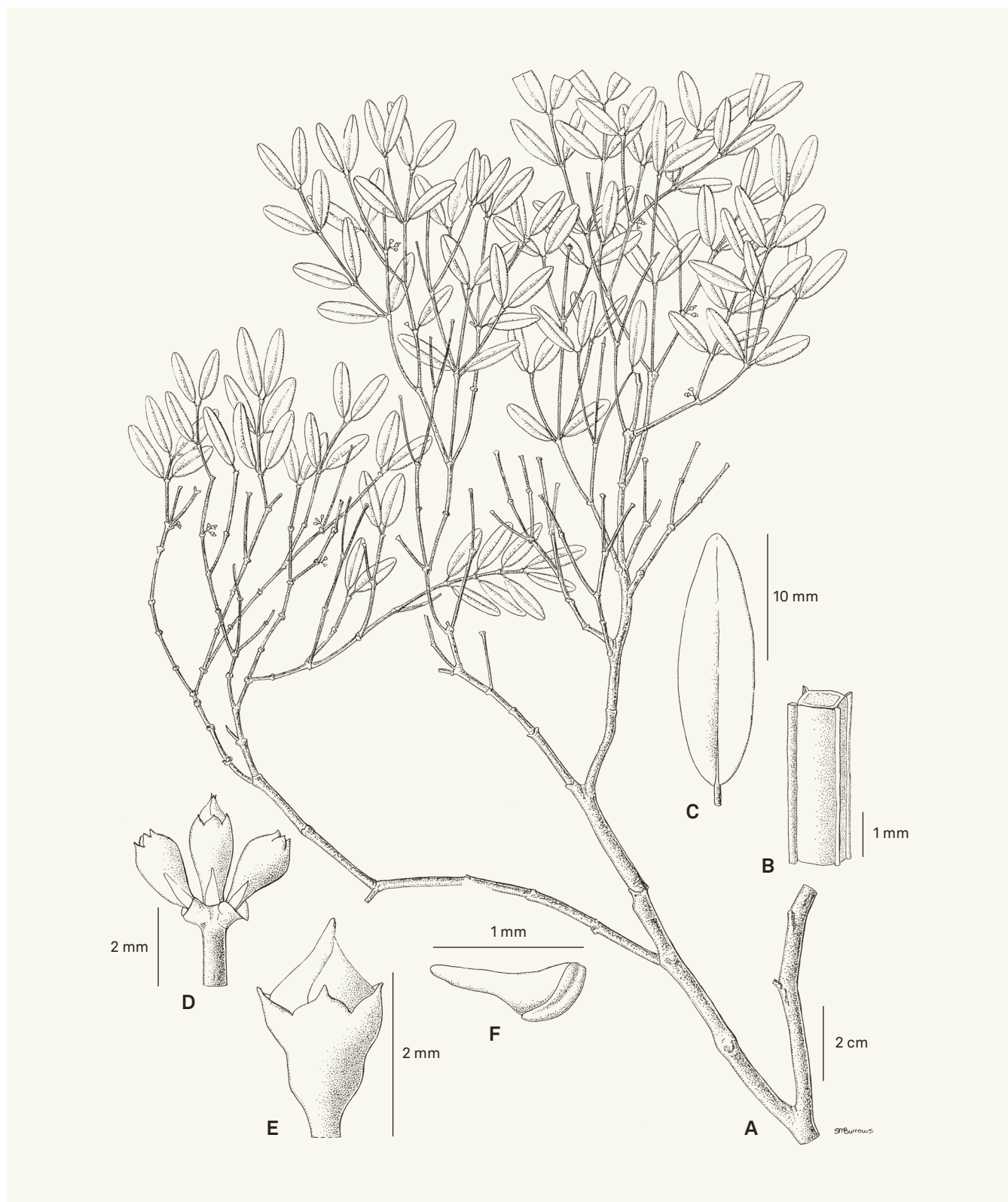


Fig. 24. – *Memecylon triflorum* R.D. Stone. **A.** Flowering branch; **B.** Section of branchlet showing narrow wings on the angles; **C.** Leaf; **D.** 3-flowered cymule with floral buds; **E.** Flower before anthesis; **F.** Anther.
[Razakamalala et al. 2567, CAS] [Drawing: S. Burrows]

green and dull abaxially, minutely roughened on both surfaces when dry; petioles c. 1 mm long; blades narrowly elliptic to oblanceolate or subrhombic?, mostly 16–18 × 5–6 mm, 3–3.5 times longer than wide, base cuneate, apex rounded to retuse; midnerve thin but clearly visible, finely canaliculate on both surfaces; intramarginal nerves also faintly visible on both surfaces; transverse veins obscure. *Cymules* up to 12 mm long, 3-flowered, solitary or in fascicles of 2–3 in the upper leaf axils and terminally on the branchlets; peduncles compressed to quadrangular and narrowly alate, 1–4(–8) mm long; bracts and bracteoles linear, the former 1.5–2 mm long, the latter c. 1 mm long. *Flowers* sessile; hypantho-calyx in bud obconical, 2.25 × 1.25 mm, attenuate at base, margin with triangular-acute lobes c. 0.5 mm long, the lobes themselves narrowly scarious-margined; open flowers not seen; anthers (dissected from bud) not yet fully developed, thecae fronto-ventral; connective dorsally keeled and lacking a gland, posterior extremity narrowly conical-acute. *Fruits* unknown.

Etymology. – The adjectival epithet *triflorum* is in reference to the uniformly three-flowered cymules.

Distribution and ecology. – Southeastern Madagascar (Anosy region, Taolagnaro district), known only from the type collection made in the Ivohibe forest situated c. 56 km straight-line distance to the north of Taolagnaro [Fort-Dauphin]. Habitat in lowland humid forest at elevation 440 m.

Conservation status. – *Memecylon triflorum* has an estimated AOO of 4 km² and a single known location in the northern part of the Réserve de Ressources Naturelles de la Forêt Naturelle de Tsitongambarika, gazetted in 2015 and managed by Asity Madagascar (GOODMAN et al., 2021a). Within this protected area there has been an 8.2% loss of forest cover between the years 1996 and 2016, with ongoing fronts of deforestation in different areas due to illegal logging and slash-and-burn agriculture (GOODMAN et al., 2021a). Based on its limited AOO together with the apparent threat, the new species is provisionally assessed as “Critically Endangered” [CR B2ab(i,ii,iii)] in accordance with the IUCN Red List Categories and Criteria (IUCN, 2012).

Notes. – *Memecylon triflorum* is evidently close to *M. humbertii* H. Perrier, a species known only from the type collection (*Humbert* 6375, P) from mont Papanga in the Beampingaratra massif. The known localities of the two species are separated by a straight-line distance of 35 km, and their leaves are quite different (see Latin diagnosis above). The calyx-lobes of *M. triflorum* are apparently valvate or perhaps very slightly imbricate at base in the early bud stage. This might suggest a major difference with the alternately imbricate calyx-lobes that were described for *M. humbertii* and used in

the diagnosis of *M.* section *Humbertocylon* H. Perrier (PERRIER DE LA BÂTHIE, 1932, 1951; JACQUES-FÉLIX, 1985a). However, after reexamining the type of *M. humbertii*, I must conclude that the character of imbricate calyx-lobes is very hard to see.

Memecylon ivohibense Jacq.-Fél., known from the Iantara River valley (Ihorombe region, Ivohibe district), has similarly small leaves but with leaf apices attenuate (vs. obtuse).

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References

- ALMEDA, F., H. RANARIVelo & R.D. STONE (2022). Melastomataceae, princess flower family. In: GOODMAN, S.M. (ed.), *The new Natural History of Madagascar*: 668–676. Princeton University Press.
- AMARASINGHE, P., S. JOSHI, N. PAGE, L.S. WIJEDASA, M. MERELLO, H. KATHRIARACHCHI, R.D. STONE, W. JUDD, U. KODANDARAMAIAH & N. CELLINESE (2021). Evolution and biogeography of *Memecylon*. *Amer. J. Bot.* 108: 628–646.
- BREMER, K. (1982). *Lijndenia*, a re-established paleotropical genus of the Melastomataceae – Memecyleae. *Nordic J. Bot.* 2: 121–124.
- CANDOLLE, Aug. DE (1901). *Plantae madagascarienses ad Alberto Mocquersio lectae*. *Bull. Herb. Boissier*, sér. 2, 1: 549–587.

- DORR, L.J. (1997). *Plant collectors in Madagascar and the Comoro Islands*. Royal Botanic Gardens, Kew.
- DORR, L.J., F.W. STAUFFER & L. RODRÍGUEZ (2017). Albert Mocquerys in Venezuela (1893–1894): a commercial collector of plants, birds, and insects. *Harvard Pap. Bot.* 22: 17–26.
- GEOCAT (2023). *Geospatial Conservation Assessment Tool*. Royal Botanic Gardens, Kew. [<http://geocat.kew.org>]
- GOODMAN, S.M., M.J. RAHERILALAO & S. WOHLHAUSER (ed.) (2021a). *The terrestrial protected areas of Madagascar: their history, description, and biota*, vol. 2. Association Vahatra, Antananarivo.
- GOODMAN, S.M., M.J. RAHERILALAO & S. WOHLHAUSER (ed.) (2021b). *The terrestrial protected areas of Madagascar: their history, description, and biota*, vol. 3. Association Vahatra, Antananarivo.
- IUCN (2012). *IUCN Red List Categories and Criteria*. Version 3.1. Ed. 2. IUCN Species Survival Commission, Gland and Cambridge.
- IUCN (2022). *Guidelines for using the IUCN Red List Categories and Criteria*. Version 15.1. Standards and Petitions Committee, IUCN Species Survival Commission, Gland and Cambridge. [<https://www.iucnredlist.org/resources/redlistguidelines>]
- JACQUES-FÉLIX, H. (1978). Les genres de Memecyleae (Melastomataceae) en Afrique, Madagascar et Mascareignes. *Adansonia*, sér. 2, 18: 221–235.
- JACQUES-FÉLIX, H. (1983). Mélastomatacées. In: SATABIÉ, B. & J.-F. LEROY (ed.), *Fl. Cameroun* 24.
- JACQUES-FÉLIX, H. (1985a). Les Memecyleae (Melastomataceae) de Madagascar (1^{re} partie). *Bull. Mus. Natl. Hist. Nat., B, Adansonia* 6: 383–451.
- JACQUES-FÉLIX, H. (1985b). Les Memecyleae (Melastomataceae) de Madagascar (2^e partie). *Bull. Mus. Natl. Hist. Nat., B, Adansonia* 7: 3–58.
- JACQUES-FÉLIX, H., J.A. MOUTON & M. CHALOPIN (1978). Nervation et types foliaires chez les Memecylon (Melast.) africains. *Adansonia*, sér. 2, 18: 67–81.
- LLOYD, J.A. (1850). Memoir on Madagascar. *J. Roy. Geogr. Soc.* 20: 53–75.
- MADAGASCAR CATALOGUE (2023). *Catalogue of the Plants of Madagascar*. Missouri Botanical Garden, St. Louis & Antananarivo. [<http://www.tropicos.org/Project/Madagascar>]
- PERRIER DE LA BÂTHIE, H. (1932). Les Mélastomacées de Madagascar. *Mém. Acad. Malgache* 12.
- PERRIER DE LA BÂTHIE, H. (1951). Mélastomatacées. In: HUMBERT, H. (ed.), *Fl. Madagascar Comores* 153.
- RENNER, S.S., D. TRIEBEL, F. ALMEDA, R.D. STONE, C. ULLOA, F.A. MICHELANGELI, R. GOLDENBERG & H. MENDOZA (ed.) (2023). *MEL names – a database with names of Melastomataceae*. Botanische Staatssammlung München. [<http://www.melastomataceae.net/MELnames>]
- SCHATZ, G.E. (2001). *Generic tree flora of Madagascar*. Royal Botanic Gardens, Kew and Missouri Botanical Garden, St. Louis.
- STONE, R.D. (2006a). Phylogeny of major lineages in Melastomataceae, subfamily Olisbeoideae: utility of nuclear glyceraldehyde 3-phosphate dehydrogenase (GapC) gene sequences. *Syst. Bot.* 31: 107–121.
- STONE, R.D. (2006b). New species of Memecylon L. and Warneckea Gilg (Melastomataceae) from Madagascar and Mayotte. *Adansonia*, sér. 3, 28: 337–358.
- STONE, R.D. (2012). Endemism, species richness and morphological trends in Madagascan Memecylon (Melastomataceae). *Plant Ecol. Evol.* 145: 145–151.
- STONE, R.D. (2014). The species-rich, paleotropical genus Memecylon (Melastomataceae): molecular phylogenetics and revised infrageneric classification of the African species. *Taxon* 63: 539–561.
- STONE, R.D. (2017). Revised treatment of the genus Lijndenia (Melastomataceae, Olisbeoideae) in Madagascar. *Candollea* 72: 67–86.
- STONE, R.D. (2020). New species of Memecylon L. (Melastomataceae) from Madagascar: treasures of the TEF Herbarium. *Candollea* 75: 219–239.
- STONE, R.D. (2022a). Phylogeny and circumscription of the subfamily Olisbeoideae. In: GOLDENBERG R., F.A. MICHELANGELI & F. ALMEDA (ed.), *Systematics, Evolution, and Ecology of Melastomataceae*: 167–192. Springer, Cham.
- STONE, R.D. (2022b). Ten new species of Memecylon (Melastomataceae) from Madagascar. *Candollea* 77: 81–103.
- STONE, R.D. (2022c). Revised treatment of Memecylon section Buxifolia (Melastomataceae) in Madagascar. *Candollea* 77: 173–191.
- STONE, R.D. & K. ANDREASEN (2010). The Afro-Madagascan genus Warneckea (Melastomataceae): molecular systematics and revised infrageneric classification. *Taxon* 59: 83–92.
- STONE, R.D. & M.W. CALLMANDER (2011). Two new combinations in Memecylon L. (Melastomataceae) of Madagascar. *Candollea* 66: 402–403.
- TURK, D. (1995). *A guide to trees of Ranomafana National Park and central eastern Madagascar*. United States Agency for International Development, Washington, D.C.
- WAEBER, P.O., L. WILMÉ, B. RAMAMONJISOA, C. GARCIA, D. RAKOTOMALALA, Z.H. RABEMANANJARA, C.A. KULL, J.U. GANZHORN & J.-P. SORG (2015). Dry forests in Madagascar: neglected and under pressure. *Int. Forest. Rev.* 17(S2): 127–148.