

## NEWLY DESCRIBED SPECIES OF ENDIANDRA (LAURACEAE) FROM NEW GUINEA

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### ABSTRACT

ARIFIANI, D., BASUKRIADI, A. & CHIKMAWATI, T. 2012. Newly described species of *Endiandra* (Lauraceae) from New Guinea. *Reinwardtia* 13(4): 341–346. — Two new species of *Endiandra* (Lauraceae), i.e. *Endiandra areolata* Arifiani and *Endiandra lanata* Arifiani are described from New Guinea. Both species have staminal glands, but their form is different in the two species. Moreover, *E. areolata* Arifiani is characterized by its prominent areolation formed by the minor venation, and *E. lanata* Arifiani is easily recognized by the presence of a dense curly indument on its twig, leaves, inflorescences and flowers.

**Key words:** *Endiandra*, Lauraceae, staminal glands, minor venation, New Guinea.

### ABSTRAK

ARIFIANI, D., BASUKRIADI, A. & CHIKMAWATI, T. 2012. Jenis baru *Endiandra* (Lauraceae) dari Pulau Niu Guini. *Reinwardtia* 13(4): 341–346. — Dua jenis baru *Endiandra* (Lauraceae) dari Niu Guini, yaitu *Endiandra areolata* Arifiani dan *Endiandra lanata* Arifiani dipertelakan. Kedua jenis tersebut mempunyai kelenjar benang sari, namun bentuknya berbeda. Lebih jauh, *E. areolata* Arifiani dicirikan dengan reticulum memata jala yang jelas yang terbentuk dari urat daun minor, sedangkan *E. lanata* Arifiani dapat dikenali dengan mudah karena adanya rambut ikal yang lebat pada ranting, daun, perbungaan dan bunga.

**Kata kunci:** *Endiandra*, Lauraceae, kelenjar benang sari, pertulangan daun minor, New Guinea.

### INTRODUCTION

The genus *Endiandra* R.Br. is a genus within the laurel family (Lauraceae) which consists of over 100 tree species distributed from South China across the Malesian region to Australia and several Western Pacific Islands (Rohwer, 1993; van der Werff, 2001). *Endiandra* can be recognized by the paniculate inflorescence in which the ultimate cyme are not strictly opposite, bisexual flowers with 3 stamens (rarely 2 or 6) having 2 loculated of anthers, producing fruits which are free on receptacles. *Endiandra* was first described by

Robert Brown (1810) and is currently grouped together with the genera *Beilschmiedia*, *Potameia*, *Cryptocarya* and *Triadodaphne* in the tribe *Cryptocaryeae* based on the inflorescence type and wood anatomy (van der Werff & Richter, 1996).

New Guinea is thought to be the main center of distribution of the genus, with a high number of endemic species. During the preparation of a taxonomic treatment of *Endiandra* in New Guinea, several specimens with different characteristics compared to other *Endiandra* species were recognized. Detailed observation of the characters in each specimen suggested that the specimens represent two undescribed species.

1. *Endiandra areolata* Arifiani, *spec. nov.* – Fig. 1, 3.

*Endiandra areolata* is recognized by stiffly coriaceous leaves with prominently areolate minor venation, and by erect flowers. The stiffly coriaceous leaves are similar to *E. oviformis* Kosterm., but the latter has smooth leaves, without prominent minor venation as in *E. areolata*. — Type: Indonesia, West Papua, Sorong, Remoe, 1 Sep 1948, *Pleyte 733* (Holotype BO!; Isotype L!, LAE).

*Tree* up to 25 m tall, up to 20 cm in diameter. *Twigs* brown, solid, striate, glabrous. *Terminal buds* narrowly elliptic, straight, 2–3 mm long, with dense appressed hairs. *Leaves* slightly clustered; petiole thin, slightly canaliculate, 1–1.2 cm long, glabrous; blade stiffly coriaceous, broadly elliptic, 9–11.4 × 4.2–5.6 cm, glabrous, apex acute to obtuse, with a short acumen of a few millimeters, base broadly cuneate to attenuate; midrib flat to slightly impressed above, raised below, glabrous; lateral veins obscure, thread-like, slightly raised on both surfaces, as prominent as minor veins; minor venation coarsely areolate, prominent. *Inflorescences* paniculate, axillary or terminal, ca. 5 cm long, with numerous flowers, sparsely pubescent, glabrescent; bracts caducous; pedicel slender, 0.5–1 mm long, pubescent. *Flowers* light brown (fresh), very small, erect, ca. 1.5 mm in diameter, pubescent; tepals ovate, ca. 0.6 mm long, pubescent outside, glabrous inside; stamens 3, each with a pair of glands at the base; anthers somewhat rectangular, ca. 0.7 × 0.3 mm, sessile, glabrous; locules small, nearly rounded; staminodes none; receptacles shallow, glabrous inside; ovary ovoid, 0.6–0.7 mm long, glabrous; style 0.5 mm long, stigma un conspicuous. *Fruits* unknown.

**Distribution.** The species is known from Indonesia *i.e.* Moluccas (Halmahera) and Papua (Sorong) and up to Idenburg River area (Jayawijaya Mountains).

**Habitat and Ecology.** Secondary rain forest or swamp forest on clay, rocky subsoil.

**Etymology.** Named after its prominent areolate venation.

**Additional specimens examined.** Indonesia, Papua, 4 km SW of Bernhard Camp, Idenburg River, 1 Mar 1939, Brass & Versteegh 13142 (BO, L); Moluccas, Morotai, Mt. Parapara, 28 May 1949, Kostermans 1260 (BO, L).

**Notes.** *Endiandra areolata* is different from other

species of *Endiandra* in New Guinea because of its stiffly coriaceous leaves in which the lateral veins are obscured by prominent areolate minor veins, and by its small, erect flowers. Coriaceous leaves are also found in *E. oviformis* Kosterm., but in that species the dried leaves are pale and smooth, not dark and prominently areolate, as in *E. areolata*. Additionally, *E. areolata* has somewhat rectangular anthers, which is an uncommon shape in *Endiandra*, with a pair of small staminal glands at the base of each stamen. Flowers of New Guinean species of *Endiandra* vary in the presence and absence of staminal glands. When present, the glands can be separate, with a pair of glands at the base of each stamen, or fused to form a disc-like structure around the base of the 3 stamens.

The specimen label of Kostermans 1260 shows the locality is Morotai, G. (Mount) Parapara. However, Mt. Parapara is not in Morotai Island, instead two localities are recorded as Parapara mountain location, *i.e.* Halmahera and Bacan Islands (<http://www.traveljournals.net/explore/indonesia/locations/p/52.html>). According to notes on Kostermans collecting localities, in 1949 he did an exploration in Moluccas especially in Morotai and Halmahera Islands but none was mentioned that he went further south to Bacan Island (de Wilde & Baas 1995; <http://www.nationaalherbarium.nl/fmcollectors/k/KostermansAJGH.htm>). Therefore, we consider that Mt. Parapara that Kostermans went to was the one in Halmahera Island and we assume that Kostermans may accidentally put Morotai for G. Parapara. This is also the case with other specimens where he put Morotai for Tobelo, whereas Tobelo is actually located in Halmahera Island.

2. *Endiandra lanata* Arifiani, *spec. nov.* – Fig. 2, 3.

*Endiandra lanata* is recognized by dense curly hairs on lower leaf surfaces, inflorescences, and flowers. The species is almost similar to *E. papuana* Lauterb., but the latter has more numerous flowers in its inflorescences, and bigger leaves. — Type: Papua New Guinea, Fergusson Island, Milne Bay, Esa'ala, track between Tutubea and Lake Lavu, 12 Nov 1976, *Croft 68764* (Holotype BO!; Isotype BO!, SING!, LAE).

*Tree* up to 20 m tall, 50 cm in diameter. *Twigs* solid, dark brown, with dense curly hairs, sparser on older twigs. *Terminal buds* conical, 3–5 mm long, with dense curly hairs. *Leaves* alternate; petiole thin, terete, 0.8–1.5 cm long, flat above, curly pubescent; blade chartaceous, elliptic or subobovate, 7.5–13.5 × 4–6.5 cm, glabrous above, with curly

hairs, whitish or glaucous below, apex acute to obtuse, with a small acumen, base cuneate to attenuate; midrib slightly impressed above, with sparse curly hairs, raised below, with dense curly hairs; lateral veins 5–7 pairs, slightly impressed or flat, with sparse curly hairs above, raised with dense curly hairs below; minor venation finely reticulate. *Inflorescences* paniculate, length up to 17 cm or more, axillary or subterminal, fewer-numerous flowered, rusty brown, densely curly pubescent; bracts linear or lanceolate, 1–2 mm long; pedicels slender, 2.5–3 mm long, with dense curly hairs. *Flowers* yellow (fresh), spreading, up to 8 mm in diameter; tepals subequal, the inner ones smaller, ovate or broadly ovate, 2.2–2.5 × 1.5–2.5 mm, glabrous inside, with dense curly hairs outside; glands united to form a disc-like structure; stamens 3; anthers ovate, protruding from the fused glands, glabrous; locules roundish, small; staminodia none; receptacle deep, pubescent inside; ovary ellipsoid, 0.5 mm long, glabrous; style short; stigma inconspicuous. *Fruits* unknown.

**Distribution.** The species found in Papua New Guinea, in the districts of Morobe, Gulf and Milne Bay.

**Habitat & Ecology.** Lowland rain forest to lower montane forest, alt. 150–823 m.

**Etymology.** Named after its dense curly indument (woolly = *lanatus*).

**Local name.** Kovitiomatanga (Middle Waria).

**Additional specimen examined.** Papua New Guinea, Gulf District, near Putei, junction of Tauri and Kapau Rivers, 9 Mar 1966, Craven & Schodde LAE947 (BO, L); Morobe District, Titapuba, 1 Oct 1966, Streimann & Kairo NGF26160 (BO, LAE).

**Notes.** *Endiandra lanata* is a species with fused staminal glands, unlike *E. areolata* that has separate

glands. The species has inflorescences with very dense curly hairs similar to *E. papuana* Lauterb., but *E. lanata* is distinct from *E. papuana* in bearing fewer flowers and having smaller leaves (7.5–13.5 × 4–6.5 cm in *E. lanata* vs. 10–19 × 7–10 cm in *E. papuana*). Additionally, the minor leaf veins of *E. lanata* are fine and prominent on the upper surface versus obscure and smooth in *E. papuana*. *Endiandra lanata* also shows affinity to *E. gemopsis* Kosterm., but the former has more hairs on the twigs and inflorescences compared to *E. gemopsis*. Additionally, *E. gemopsis* has pale bark and small flowers (1.5–2 mm), whereas *E. lanata* has dark-brown bark and flowers up to 8 mm.

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#### REFERENCES

- BROWN, R. 1810. Laurinae. In *Prodromus Florae Novae Hollandiae et Insulae Van Diemen*. Typis Richardi Taylor et Socii, London.
- DE WILDE, W. J. J. O & BAAS, P. 1995. In memoriam professor A. J. G. H. Kostermans (1906–1994). *Blumea* 40: 1–13.
- <http://www.traveljournals.net/explore/indonesia/locations/p/52.html>. Accessed 14 December 2011.
- <http://www.nationaalherbarium.nl/fincollectors/k/KostermansAJGH.htm>. Accessed 15 February 2012.
- ROHWER, J. G. 1993. *Lauraceae*. In: K. Kubitzki, J. G. Rohwer, V. Bittrich (eds.). *The Families and Genera of Vascular Plants II*. Springer Verlag, Berlin.
- VAN DER WERFF, H. & RICHTER, H. G. 1996. Toward an improved classification of *Lauraceae*. *Annals of Missouri Botanical Garden* 83: 409–418.
- VAN DER WERFF, H. 2001. An annotated key to the genera of *Lauraceae* in the flora Malesiana region. *Blumea* 46: 125–140.

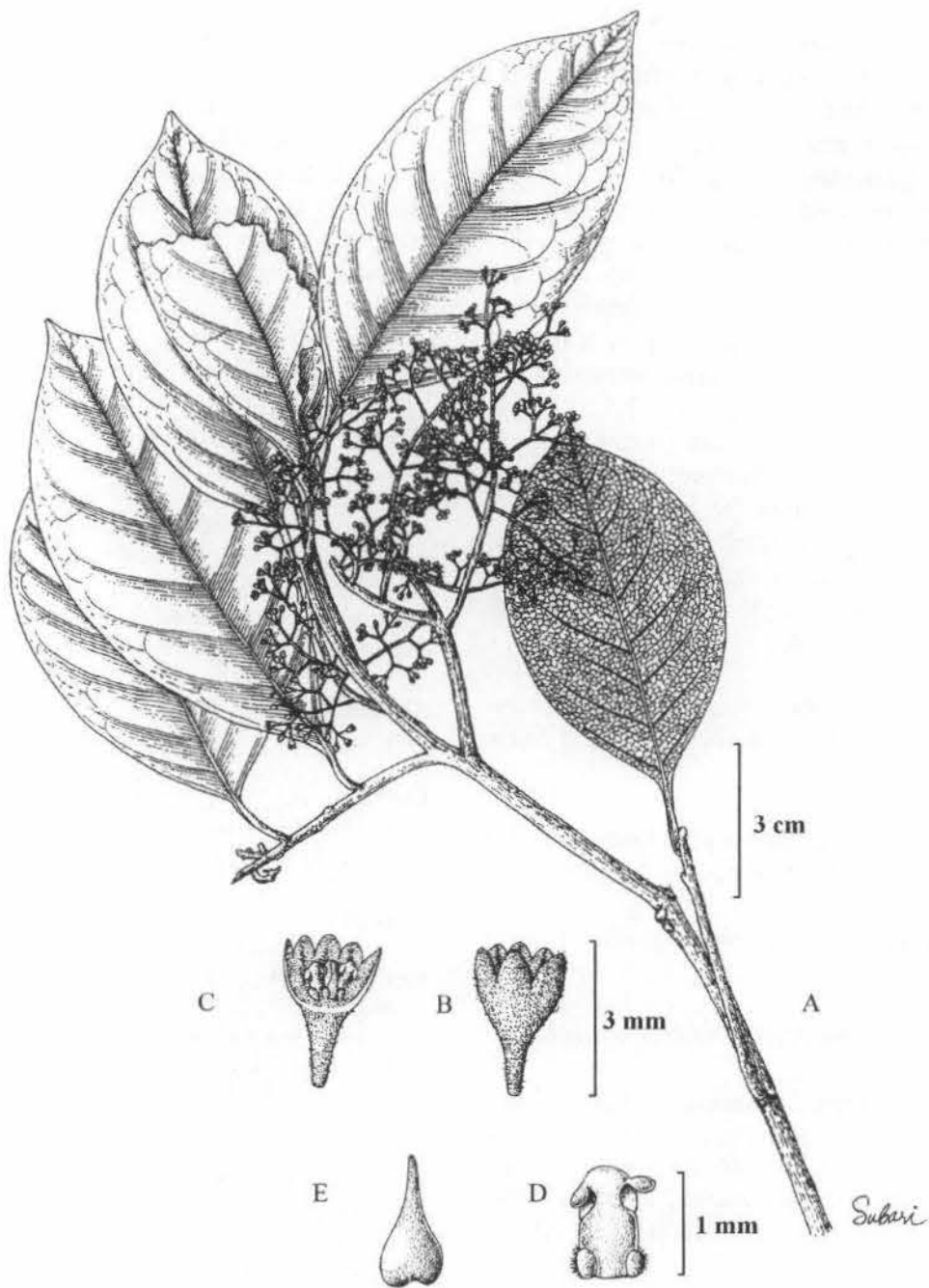


Fig. 1. *Endiandra areolata* Arifiani. A. Habit; B. Intact flower; C. Flower (front tepals removed); D. Anther with a pair of glands; E. Pistil (*Pleyte 733*). Drawn by Subari (BO).

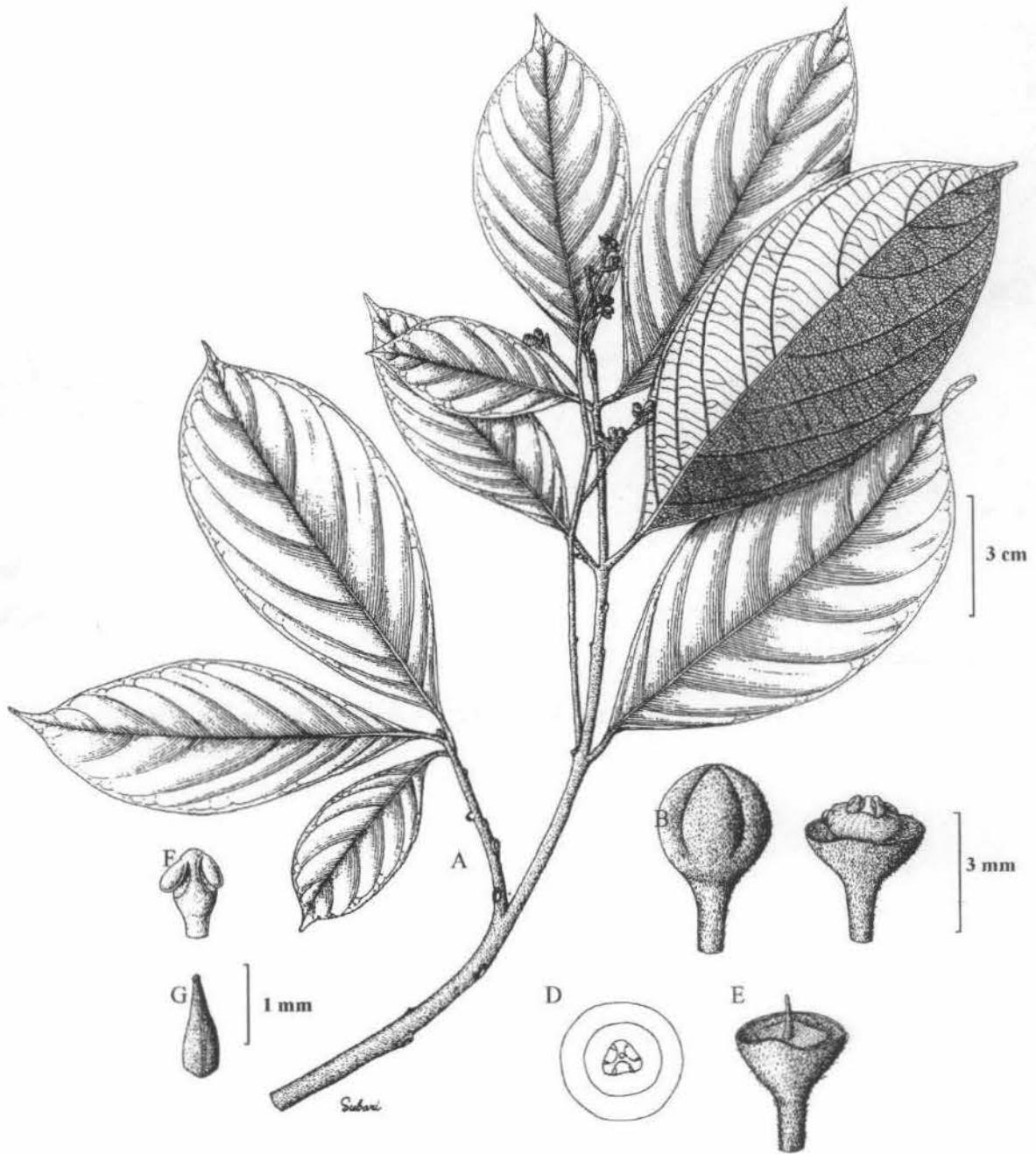


Fig. 2. *Endiandra lanata* Arifiani. A. Habit; B. Intact flower bud; C. Flower (tepals removed); D. Flower scheme (top view); E. Receptacle showing style; F. Anther; G. Pistil (Croft LAE 68764). Drawn by Subari (BO).

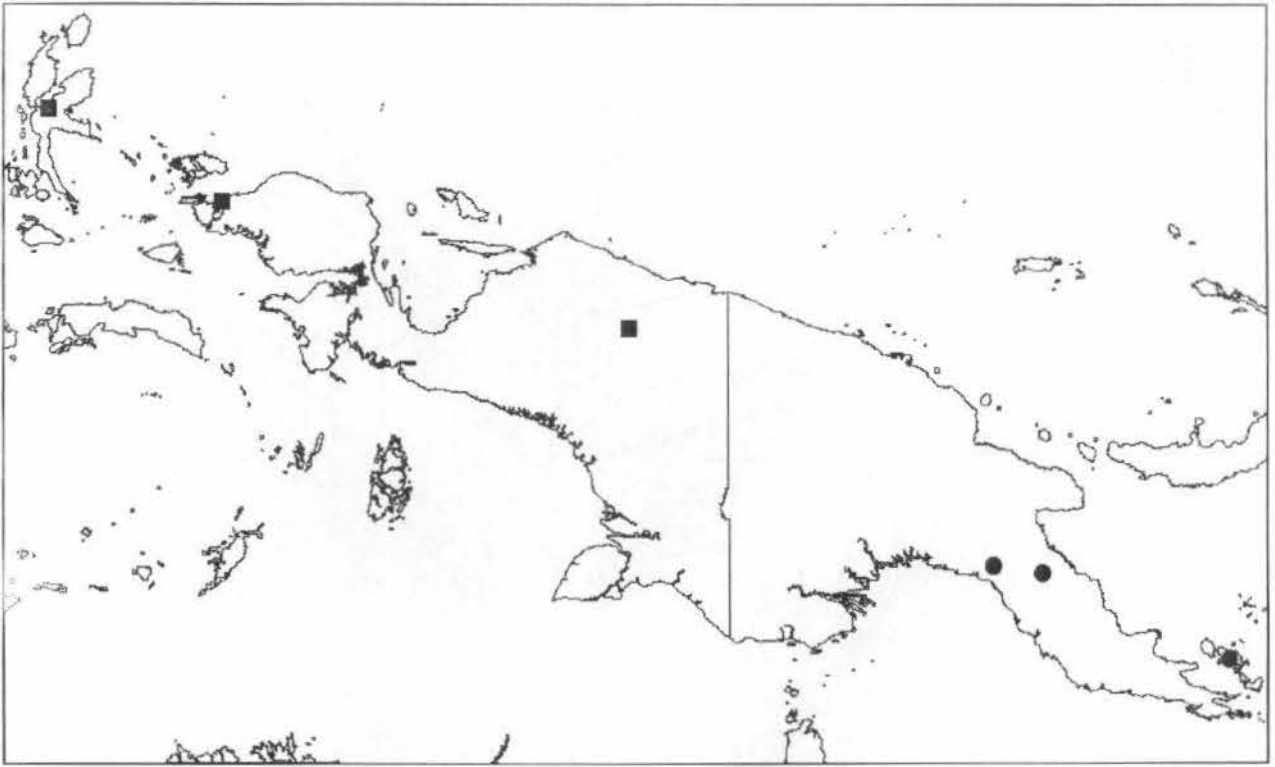


Fig. 3. Distribution of *E. areolata* Arifiani (■) and *E. lanata* Arifiani (●) in New Guinea