Lasianthus Jack (Rubiaceae) comprises more than 180 species, most of which are understory shrubs of primary forests (Zhu et al. 2012). Although the genus is pantropical, some 160 species occur in tropical Asia with one species extending into Australia (Zhu et al. 2012) and three species in warm temperate regions of Japan, the northern limit of the genus (Yamazaki 1993). Twenty three species are in Africa (Jannerup 2006), and three species are known from New World (Urban 1899, Robbrecht 1982, Zanoi 1989). Whereas some species are quite widely distributed in Asia, at least 69 taxa are local endemics. In Borneo and Peninsular Malaysia, 32 of 71 and 18 of 54 taxa, respectively, are endemic (Zhu et al. 2012). Lasianthus could be interesting for the study of speciation and biogeography in Southeast Asia.

Within the Asian regions, recent taxonomic revisions have been published for Thailand (57 species, Zhu 2001a, Zhu 2002b), China (33 species, Zhu 2002a, Zhu & Taylor 2011), and the Malesian region (131 species, Zhu et al. 2012). Preliminary taxonomic treatments have been published for Cambodia (Dy Phon 2000) and Vietnam (Hô 2000), and new species have been described from Vietnam (Zhu & Roos 2002) and India (Karthigeyan et al. 2011, Kumar et al. 2014). Despite these publications, taxonomic studies of Lasianthus in Asia are still required.

Pitard (1922–1924) documented 37 species of Lasianthus from the French Indochina region, with nine of them from Cambodia. Since then...
further taxonomic studies were interrupted by civil conflicts in the latter part of the 20th century (Davis et al. 2009). Following that chaotic period, fieldwork and taxonomic studies of the plants of Cambodia have been reactivated. Several publications of new records and new species from Cambodia (e.g. Sridith & Larsen 2003, Tagane et al. 2015) suggest that additional species of Lasianthus can be expected to be found.

A floristic survey to assess plant diversity was conducted in southern Bokor National Park, Kampot Province, southern Cambodia, from December 2011 to December 2013 (Fig. 1, see Tagane et al. 2015, for more detail). Bokor National Park covers 1,400 km$^2$, and includes a sandstone plateau known as the Elephant Mountains, which rise sharply from sea level to an elevation of 1,079 m (Rundel et al. 2003). The steep south-facing slopes and geographical proximity to the sea bring the Bokor mountain area more than 5,000 mm of annual precipitation. The area is known as one of the most humid places on the Indochina peninsula (Tixier 1979). Supported by the abundant rainfall, evergreen forests extend the Bokor mountain area (see Tagane et al. 2015, for more detail). High diversity in plant species, especially in Lasianthus, was observed during our botanical inventories in the region. Here, 24 species of Lasianthus, including four new and nine newly recorded species in Cambodia, including all the nine species previously reported from Cambodia (Pitard 1922–1924), are listed and described. Of the four new species, three are currently known only from Bokor National Park; Lasianthus stephanocalycinus is known only from Bokor National Park and Hon Ba Nature Reserve, Khanh Hoa, southern Vietnam (Fig. 1).

The flowers of Lasianthus are not useful diagnostically because they are lacking in many herbarium specimens (Zhu et al. 2012). In the present study, we identified and described the species of Lasianthus in Bokor National Park using mainly vegetative characters, such as the shape and indumenta of the twigs, leaves, and stipules. The shape of the calyx is also used. Two species, comprising only three specimens, could not be identified.

Voucher specimens were deposited in the Forest Administration of Cambodia (here abbreviated as Cam) and the Herbarium of the Museum of Kyushu University (FU), Fukuoka, Japan. Some specimens were also deposited in the Herbarium of the Kyoto University Museum (KYO), Kyoto, Japan, the Forest Herbarium (BKF), Bangkok, Thailand, the Royal Botanic Garden Kew (K), London, UK, and the Muséum National d’Histoire Naturelle (P), Paris, France.
Key to the species of *Lasianthus* in Bokor National Park

1a. Twigs glabrous or glabrescent ................................................................. 2
1b. Twigs hairy ................................................................................................. 6
2a. Leaves sessile; blade (14.5–)17–23 cm long, secondary veins more than 15 pairs .. 5. *L. cambodianus*
2b. Leaves petiolate; blade less than 18 cm long, secondary veins less than 11 pairs ................. 3
3a. Secondary veins looped .......................................................................... 22. *L. viridiramulis*
3b. Secondary veins curved to the margin, not looped .................................. 4
4a. Apex of stipules round; tertiary leaf veins reticulate, inconspicuous when dry ..... 18. *L. repoeuensis*
4b. Apex of stipules acute to acuminate; tertiary leaf veins parallel, conspicuous when dry .. 5
5a. Petioles 1–1.5 cm long; leaf blade 5–7 cm wide ....................................... 16. *L. latifolius*
5b. Petioles 0.5–1 cm long; leaf blades 2–4.5 cm wide ...................................... 15. *L. inodorus*
6a. Leaf blade more than 20 cm long ............................................................ 12. *L. giganteus*
6b. Leaf blade less than 20 cm long ............................................................... 7
7a. Base of leaf blade cordate ........................................................................ 1. *L. attenuatus*
7b. Base of leaf blade cuneate ....................................................................... 8
8a. Leaf blade less than 3.5 cm long ............................................................... 3. *L. biflorus*
8b. Leaf blade more than 3.5 cm long ............................................................ 9
9a. Twigs and petioles villous or hirsute ....................................................... 10
9b. Twigs and petioles neither villous nor hirsute, trichomes appressed .......... 15
10a. Bracts conspicuous ................................................................................. 13. *L. hirsutus*
10b. Bracts inconspicuous or absent ............................................................. 11
11a. Midrib of leaves pubescent on both surfaces .......................................... 6. *L. chevalieri*
11b. Midrib of leaves pubescent only on abaxial surface ................................. 12
12a. Tertiary leaf veins densely parallel ....................................................... 13
12b. Tertiary leaf veins reticulate ................................................................. 14
13a. Hairs on twigs more than 0.5 mm long .................................................. 20. *L. stephanocalycinus*
13b. Hairs on twigs less than 0.5 mm long .................................................... 24. *L. sp. 2*
14a. Calyx lobes longer than calyx tube ....................................................... 10. *L. curtisi*
14b. Calyx lobes shorter than calyx tube ..................................................... 14. *L. hispidulus*
15a. Stipules oblong to oblong-triangular ..................................................... 8. *L. chrysoneurus*
15b. Stipules triangular ................................................................................ 16
16a. Leaf blade chartaceous ......................................................................... 17
16b. Leaf blade coriaceous to subcoriaceous ................................................ 18
17a. Leaf blade elliptic to oblanceolate; petiole 7–10 mm long ....................... 17. *L. oblanceolatus*
17b. Leaf blade elliptic; petiole 1–2 mm long ............................................... 19. *L. sarmentosus*
18a. Secondary veins 10–12 pairs; leaf blade more than 14 cm long .......... 7. *L. chinensis*
18b. Secondary veins less than 10 pairs; leaf blade less than 14 cm long .......... 19
19a. Secondary veins 8 or 9 pairs ................................................................. 21. *L. verticillatus*
19b. Secondary veins less than 8 pairs .......................................................... 20
20a. Midrib near base (1/3–1/4) of leaf pubescent adaxially ........................ 23. *L. sp. 1*
20b. Midrib of leaf completely glabrous adaxially ....................................... 21
21a. Calyx lobes elliptic to oblanceolate ..................................................... 2. *L. austrosinensis*
21b. Calyx lobes triangular ......................................................................... 22
22a. Calyx lobes longer than calyx tube ................................................. 4. *L. bokorensis*
22b. Calyx lobes shorter than calyx tube .................................................... 23
23a. Leaves darkish green adaxially when fresh; calyx densely strigillose .... 9. *L. clementis*
23b. Leaves green adaxially when fresh; calyx sparsely pubescent .............. 11. *L. fordii*
Species of Lasianthus in Bokor National Park

   var. attenuatus — Fig. 2A.


   Lasianthus plagiophyllus Hance, J. Bot. 13: 196 (1875).


   Nonatelia hispida Wall., Fl. Ind. 2: 187 (1824).


   Specimen examined. CAMBODIA. Bokor National Park, alt. 903 m, 10°39'35.42"N, 104°03'03.09"E, 13 May 2012, Toyama et al. 3137 (Cam, FU, KYO).

   Distribution. Cambodia (new record), China, Indonesia, Malaysia, Philippines, Thailand, Vietnam.

   Note. Only one small population of Lasianthus biflorus, a shrub, 1–2 m tall in a moist evergreen forest near Popokvil waterfall, is known.


   Specimens examined. CAMBODIA. Bokor National Park, alt. 903 m, 10°39'35.42"N, 104°03'03.09"E, 13 May 2012, Toyama et al. 3146 (Cam, FU); in the same location, May 2012, Toyama et al. 3173 [fl. bud] (Cam, FU, K, KYO).

   Distribution. Cambodia (new record), China, Indonesia, Malaysia, Philippines, Thailand, Vietnam.

4. Lasianthus bokorensis Naiki, sp. nov. — Figs. 2D–G & Fig. 3.

   Similar to L. fordii in the strigillose twigs and elliptic leaves, but different in having narrower leaves, 9–13 × 2.5–4.5 cm, and much longer calyx lobes, 3–4.5 mm long. Mature fruit color is orange in L. bokorensis, but blue in L. fordii.

   Typus. CAMBODIA. Bokor National Park, alt. 888 m, 10°37'15.48"N, 104°05'10.71"E, in moist evergreen forest, 9 Dec. 2011, Toyama H., Tagane S., Ide T., Chhang P., Nagamasu H., Yahara T. 1842 (holotype–KYO; isotypes–Cam, K).

   Description. Shrubs, evergreen, 1–1.5 m tall; twigs terete, ca. 2 mm in diam., densely strigillose. Leaves opposite; petiole 6–9 mm long, densely stigrose; blade narrowly elliptic, 9–13 × 2.5–4.5 cm, subcoriaceous, base cuneate, margin entire, revolute when dry, villous hairs scattered along the margin, apex narrowly acute to acuminate, aristate, arista 1–2 mm long, strigillose, abaxially strigillose especially on midrib and sec-
secondary veins, adaxially glabrous, other parts of blade minutely strigillose; abaxial midrib and secondary veins prominent, adaxial midrib and secondary veins depressed; secondary veins 5–7 pairs, ascending at an angle of 50–70° from midrib, curved to margin and joining veins above, weakly forming a looped venation; tertiary veins subparallel. Stipules triangular, 2–3 × 1–1.5 mm, apex acute or acuminate, persistent, pubescent. Inflorescence sessile, congested, cymose, 1–3 flowered; bracts linear, less than 1 mm long, densely pubescent. Flowers sessile or short pedicellate; pedicel to 0.5 mm long; calyx tube pink, cupulate, 1.7–2 mm long, strigose, deeply dentate; calyx lobes pinkish pale yellow, linear-triangular, 3–4.5 mm long, both surfaces strigose; corolla white, salverform, 5.5–6 mm long, 6–6.5 mm in diam., lobes 5 or 6, ovate, puberulous outside, villous inside. Fruit drupaceous, orange, globose, ca. 4 mm in diam., sparsely strigose, crowned by persistent, strigose calyx lobes; pyrenes 5 or 6.

Additional specimens examined. CAMBODIA. Bokor National Park, alt. 888 m, 10°37′15.48″N, 104°05′10.71″E, 10 Dec. 2011, Toyama et al. 1913 (Cam, FU); 16 Jul. 2012, Tagane et al. 3978 [fr.] (Cam, FU, P).

Distribution. Cambodia (currently known only from Mt. Bokor).

Note. Lasianthus bokorensis is rare, in primary evergreen forests near top of plateau.


Specimens examined. CAMBODIA. Bokor National Park, alt. 888 m, 10°37′15.48″N, 104°05′10.71″E, 9 Dec. 2011, Toyama et al. 1873 (BFK, Cam, FU); 935 m, 10°39′05.31″N, 104°03′38.97″E, 22 Dec., Toyama et al. 2539 [fl. bud] (Cam, FU); 970 m, 10°37′35.2″N, 104°03′57.30″E, 22 Oct. 2012, Yahara et al. 4384 (Cam, K).

Distribution. Cambodia (new record), China (Hainan), Thailand, Vietnam.


Specimens examined. CAMBODIA. Bokor National Park, alt. 888 m, 10°37′15.48″N, 104°05′10.71″E, 9 Dec. 2011, Toyama et al. 1894 (Cam, FU); in the same location 10 Dec. 2011, Toyama et al. 1972 (Cam, BKF); 903 m, 10°39′35.42″N, 104°03′03.09″E, 13 May 2012, Toyama et al. 3118 (Cam, FU, KYO, P); 941 m, 10°39′05.31″N, 104°03′38.97″E, 22 Dec., Toyama et al. 2539 [fl. bud] (Cam, FU); 970 m, 10°37′35.2″N, 104°03′57.30″E, 22 Oct. 2012, Yahara et al. 4384 (Cam, K).

Distribution. Cambodia (new record), China (Hainan), Thailand, Vietnam.


Specimens examined. CAMBODIA. Bokor National Park, alt. 888 m, 10°37′15.48″N, 104°05′10.71″E, 10 Dec. 2011, Toyama et al. 1937 (Cam, FU, P); in the same location, 16 Jul. 2012, Tagane et al. 3979 [fr.] (Cam, FU); 903 m, 10°39′35.42″N, 104°03′03.09″E, 17 Jul. 2012, Tagane et al. 4039 [fr.] (Cam, FU); in the same location, 13 May 2012, Toyama et al. 4288 [fr. & fr.] (Cam, FU, KYO); 962 m, 10°38′44.67″N, 104°01′36.78″E, 17 Oct. 2012, Tagane et al. 4068 (Cam, FU, K); 1014 m, 10°38′12.59″N, 104°02′06.37″E, 17 Jul. 2012, Toyama et al. 1570 (Cam, FU, KYO); ‘L. dinhensis’, Cam Chay, prov. Kamput, Apr. 1870, Pierre 3257 (P); ‘L. dinhensis’, mont. De l’éléphant, alt. 1000 m, 10 Aug. 1919, Poilane 283 (P).

Distribution. Cambodia, China, Laos, Malaysia, Philippines, Taiwan, Thailand, Vietnam.
Fig. 2. Lasianthus attenuatus Jack (Toyama et al. 3137): A. branch. Lasianthus austrosinensis H. S. Lo (Toyama et al. 3096): B. branch with flowers. Lasianthus biflorus (Blume) M. Gangop. & Chakrab. (Toyama et al. 3146): C. branches. Lasianthus bokorensis Naiki, sp. nov. (Toyama et al. 1842): D. branch with flower; E. portion of abaxial leaf surface; F. flower; G. fruit.
Fig. 3. Line drawing of *Lasianthus bokorensis* Naiki, sp. nov. (Toyama et al. 1842): A. branch; B. abaxial leaf surface; C. calyx; D. flower; E. fruit. Drawn by K. Mase.
Fig. 4. Lasianthus cambodianus Pit. (Tagane et al. 4015): A. branch; B. flower and bracts; C. portion of abaxial leaf surface. Lasianthus chevalieri Pit. (Toyama et al. 2539): D. branches; E. stem and stipule; F. portion of abaxial leaf surface; G. flower bud.
Note. Poilane 283 (P), from Bokor, was identified as *L. dinhensis* by Pitard (1922–1924) who distinguished *L. dinhensis* from *L. chinensis* in having unreflexed calyx lobes. The type specimens of both *L. dinhensis* from Vietnam (Pierre 3257, BM, K, MO, P) and *L. chinensis* from China (lectotype: Champion? 112, K, designated by Zhu (2001b)) have reflexed calyx lobes. The two specimens cannot be distinguished. In contrast, our flowering collections from Bokor differ from typical *L. chinensis* in having shorter, unreflexed calyx lobes. *Lasianthus chinensis* from Bokor may be varietally different, but further studies are needed to elucidate the nature of the calyx lobes over its entire range.

Among the specimens listed above, the twigs of Tagane et al. 4068 and Tagane et al. 4288 are nearly glabrous and black when dried.


Specimens examined. CAMBODIA. Bokor National Park, alt. 741 m, 10°38′04.41″N, 104°05′18.55″E, 19 Jul. 2012, Tagane et al. 4095 [fl. & fr.] (Cam, FU, K, KYO); 917 m, 10°39′30.82″N, 104°03′15.44″E, 25 Oct. 2012, Toyama et al. 4580 [fr.] (BKF, Cam, FU).

Distribution. Cambodia (new record), Indonesia, Papua New Guinea, Philippines.


Specimens examined. CAMBODIA. Bokor National Park, alt. 741 m, 10°38′04.41″N, 104°05′18.55″E, 19 Jul. 2012, Tagane et al. 4095 [fl. & fr.] (Cam, FU, K, KYO); 917 m, 10°39′30.82″N, 104°03′15.44″E, 25 Oct. 2012, Toyama et al. 4580 [fr.] (BKF, Cam, FU).

Distribution. Cambodia (new record), Indonesia, Papua New Guinea, Philippines.


Specimens examined. CAMBODIA. Bokor National Park, alt. 903 m, 10°39′19.53″N, 104°03′36.61″E, 9 May 2012, Toyama et al. 2825 [young fr.] (Cam, FU).

Distribution. Cambodia (new record), China, Indonesia (Sumatra), Japan (Kyushu, Okinawa), Malaysia (Peninsular), Taiwan, Thailand, Vietnam.


Note. Bokor is the type locality of *L. hoaensis* var. *microphyllus* (Poilane 233, isotypes K, E).
Fig. 5. Lasianthus chinensis (Champ.) Benth. (A & D. Tagane et al. 4039; B, C, E–G: Tagane et al. 4288): A & B. branches; C. portion of abaxial leaf surface; D. stem, calyces and stipule; E. flower; F. fruit; G. cross section of a stem. Lasianthus chrysoneurus (Korth.) Miq. (Toyama et al. 3112): H. branches; I. portion of abaxial leaf surface; J. stipule.
Fig. 6. Line drawing of *Lasianthus chinensis* (Tagane et al. 4068): A. branch with fruit; B. portion of abaxial leaf surface; C. flower; D. fruit; E. dried fruit. Drawn by K. Mase.
Fig. 7. *Lasianthus clementis* Merr. (Tagane et al. 4095): A. branch with flower buds; B. portion of abaxial leaf surface; C. flowers; D. fruit; *Lasianthus curtisi* King & Gamble (Toyama et al. 3110): E. branch; F. immature fruits. *Lasianthus fordii* Hance (Tagane et al. 4073): G. branch; H. portion of abaxial leaf surface and immature fruit; I. branch with a flower.


Specimens examined. CAMBODIA. Bokor National Park, alt. 707 m, 10°37′41.02″N, 104°05′37.43″E, 11 Dec. 2011, Toyama et al. 2029 (BKF, Cam, FU); 760 m, 10°38′02.73″N, 104°05′17.73″E, 24 Oct. 2012, Yahara et al. 4490 (Cam, FU); 25 Oct. 2012, Yahara et al. 4542 [fr.] (Cam, FU, KYO), 4549 [fl. & fr.] (Cam, FU, KYO); 888 m, 10°37′15.48″N, 104°05′10.71″E, 9 Dec. 2011, Toyama et al. 1814 [young fr.] (Cam, FU, P), 1911 (Cam, FU); 890 m, 10°36′52.07″N, 104°02′42.80″E, 18 Oct. 2012, Tagane et al. 4325 [fr.] (Cam, K); 903 m, 10°39′35.42″N, 104°03′03.09″E, 13 May 2012, Toyama et al. 3095 (Cam, FU); 917 m, 10°39′30.82″N, 104°03′05.14″E, 25 Oct. 2012, Toyama et al. 4579 (Cam, FU), 928 m, 10°39′19.53″N, 104°03′36.61″E, 9 May 2012, Toyama et al. 2773, 2774, 2785 [fr.] & 2826 (Cam, FU); in the same location, 10 May 2012, Toyama et al. 2835 (Cam, FU); 17 Jul. 2012, Tagane et al. 4011 [fr.] (Cam, FU); 962 m, 10°38′44.67″N, 104°01′36.78″E, 18 Jul. 2012, Tagane et al. 4073 [fl.] (Cam, FU); 1014 m, 10°38′12.59″N, 104°02′06.37″E, 4 Dec. 2011, Toyama et al. 1480 (Cam, FU); in the same location, 5 Dec. 2011, Toyama et al. 1632 (Cam, FU).

Distribution. Cambodia, China, India (northeast), Indonesia (Irian Jaya, Java, Lesser Sunda Islands, Moluccas, Sulawesi), Japan (Kyushu, Okinawa), Papua New Guinea, Philippines, Taiwan, Thailand, Vietnam.

Note. The twigs, stipules and veins on the abaxial surface of the leaves of all the specimens from Bokor National Park listed above are striose or strigillose. Lo (1993) described L. fordii var. trichocladus H. S. Lo from southern China (Guangdong, Guangxi, and Hainan) as having densely appressed pubescent twigs. None of the specimens from Bokor National Park can be attributed to L. fordii var. trichocladus.

The apex of the leaves of some specimens (Toyama et al. 1480, 2785, 2835, and Tagane et al. 4073) are narrowly acuminate to caudate, as in L. saxorum, but this feature is variable and continuous between L. fordii and L. saxorum. Further study of L. fordii and related species, L. clementis, L. formosensis, and L. saxorum is required.

12. Lasianthus giganteus Naiki, sp. nov. — Figs. 8A–D & Fig. 9.

Similar to L. cambodianus, but differing in having broader bracts and the adaxial surface of the leaf blade almost flat.

Typus. CAMBODIA. Bokor National Park, alt. 960 m, 10°38′44.67″N, 104°03′36.78″E, in moist evergreen forest, 17 Oct. 2012, Tagane S., Fuse K., Choeun H. N. 4279 (holotype–KYO; isotypes–Cam, K).

Description. Treelet, evergreen, to 2 m tall; twigs terete, 4–7 mm in diam., youngest twigs villous, hairs caducous and older twigs almost glabrous. Leaves opposite; petiole 15–25 mm long, villous when young, sparsely pubescent abaxially in age; blade elliptic to lanceolate, 21–31 × 9–11 cm, thickly coriaceous, base oblique (asymmetric), margin entire, apex acute or aristate, arista 1–2 mm long, adaxially glabrous except for small villous part (3–4 mm × 1–3 mm) near base of narrower half of blade, abaxial midrib sericeous, other parts pubescent, abaxial midrib and veins prominent, adaxial midrib and veins slightly depressed to flat; secondary veins 16–17 pairs, ascending at an angle of 50–70° from midrib, curved to margin; tertiary veins subparallel. Stipules triangular, 3–7 × 3–5 mm, persistent, pilose. Inflorescences sessile, with bracts and many bracteoles; bracts oblong to oblanceolate, 15–18 × 5–7 mm, apex acuminate or apiculate, apiculi ca. 4 mm long, sericeous with brown hairs, densely so along axis outside, densely sericeous inside, bracteoles narrowly lanceolate to linear, 5–18 mm long, densely pilose on both surfaces, more densely so inside. Flowers not seen. Fruit drupaceous, blue, conical, 12 mm long, 10 mm in diam., sparsely pilose, more densely so near persistent calyx lobes; pyrenes 5 or 6.

Additional specimen examined. CAMBODIA. Bokor National Park, alt. 928 m, 10°39′19.53″N, 104°01′36.78″E, 17 Jul. 2012, Tagane et al. 4012 (BKF, Cam, FU, P).

Distribution. Cambodia (currently known...
Fig. 8. *Lasianthus giganteus* Naiki, sp. nov. (*Tagane et al. 4279*): A. habit; B. branch; C. portion of abaxial leaf surface and bracts; D. fruits and bracts. *Lasianthus hirsutus* (Roxb.) Merr. (*Tagane et al. 5853*): E. branch with flowers; F & G. flowers with bracts; H. fruits. Photographs by K. Fuse.
Fig. 9. Line drawing of *Lasianthus giganteus* Naiki, sp. nov. (Tagane et al. 4279): A. branch; B. shoot apex; C. portion of abaxial leaf surface; D. leaf base and bracts; E. fruits; F. bracts (left two: inner ones, right two: outer ones); G. seeds; H. vertical section of fruit. Drawn by M. Tagane.
only from Mt. Bokor).

Note. Lasianthus giganteus is occasional, but locally abundant, especially in semi-shaded primary evergreen forests near Popokvil Sphagnum bog on the plateau.


Triosteum hirsutum Roxb., Fl. Ind. (Carey & Wallich ed.) 2: 180 (1824).


Distribution. Bangladesh, Cambodia, China, Japan (Okinawa), India, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Taiwan, Thailand, Vietnam.


Distribution. Bangladesh, Cambodia, China (Yunnan), India (northeast), Indonesia (Java, Sumatra), Thailand, Vietnam.

Note. Mt. Bokor is the type locality of L. poilanei (Poilane 234, Mont de l’Eléphant, alt. 1000 m, holotype P, isotype E, K).


Mephitidia latifolia Blume ex DC., Prodr. 4: 239 (1895).

**Specimens examined.** CAMBODIA. Bokor National Park, alt. 741 m, 10°38'04.41"N, 104°05'18.55"E, 19 Jul. 2012, Tagane et al. 4097 [fr.] (BKF, Cam, FU).

**Distribution.** Cambodia (new record), Indonesia (Borneo, Java, Sumatra).

*Note.* Lasianthus latifolius, a shrub 2–4 m tall, is occasional in evergreen forests between 600 and 750 m.

17. Lasianthus ob lanceolatus Naiki, Tagane & Yahara, sp. nov. —Figs. 11A–C & Fig. 12.

Similar to *L. sarmentosus* in its sparsely pubescent to glabrescent twigs, chartaceous leaf blade, but differing in having longer petioles and larger, elliptic to oblanceolate leaf blades.

**Typus.** CAMBODIA. Bokor National Park, alt. 903 m, 10°39'35.42"N, 104°03'03.09"E, in moist evergreen forest near a stream, 13 May 2013, Toyama H., Tagane S., Mishi ma T., Tagawa K., Chhang P., Iwanaga F., Nagamasu H. & Yahara T. 3108 (holotype–KYO; isotypes–Cam, FU).

**Description.** Shrubs, evergreen, ca. 1 m tall; twigs terete, 1.5–2.5 mm in diam., sparsely pubescent to glabrescent. Leaves opposite; petiole 7–10 mm long, pubescent to sparsely pubescent; blade oblanceolate to elliptic, 11–12.5 × 3.5–4 cm, chartaceous, base cuneate or slightly oblique, margin entire, slightly revolute, apex acuminate to slightly caudate, young leaves densely pubescent, later abaxial veins sparsely strigose, adaxially glabrous; midrib prominent abaxially, depressed adaxially; secondary veins 6 or 7 pairs, ascending at an angle of 60–80° from midrib, curved near margin and joining secondary veins above one, weakly forming a looped venation, prominent abaxially, depressed adaxially; tertiary veins subparallel, faintly visible abaxially. Stipules triangular, 1.5–2 × 1 mm, persistent, pilose, apex acute. Inflorescences cymose, sessile or pedunculate; peduncle ca. 0.5 mm long; bracts absent. Flowers sessile, congested; corolla not seen; calyx tube of young buds campanulate, 1 mm long, densely villous; calyx lobes triangular-elliptic, 1 mm long, pubescent on both surfaces, open corolla not seen. Fruit drupaceous, blue, globose 4–5 mm in diam., sparsely strigillose; pyrenes 4 or 5.

**Additional specimen examined.** CAMBODIA. Bokor National Park: alt. 903 m, 10°39’35.42”N, 104°03’03.09”E, 17 Jul. 2012, Tagane et al. 4051 (Cam, FU, K).

**Distribution.** Cambodia (currently known only from Mt. Bokor).

*Note.* Lasianthus ob lanceolatus is rare in moist primary evergreen forest near Popokvil waterfall.


**Specimens examined.** CAMBODIA. Bokor National Park, alt. 444 m, 10°36’24.04”N, 104°05’35.85”E, in moist evergreen forest near a stream, 11 May 2012, Toyama et al. 2978 (Cam, FU, KYO); 529 m, 10°36’18.59”N, 104°06’03.12”E, 13 Dec. 2011, Toyama et al. 2176 (Cam, FU, KYO); in the same locality, 19 Dec. 2011, Toyama et al. 2326 (BFK, Cam, FU).

**Distribution.** Cambodia, Thailand, Vietnam.


**Specimens examined.** CAMBODIA. Bokor National Park, alt. 760 m, 10°38’02.73”N, 104°05’17.73”E, 23 Oct. 2012, Yahara et al. 4469 [young fr.] (Cam, FU).

**Distribution.** Cambodia (new record), Thailand (Chantaburi).

*Note.* Lasianthus sarmentosus is characterized by having glabrous, greenish branchlets and thinner leaves.
FIG. 11. *Lasianthus ob lanceolatus* Naiki, Tagane & Yahara, sp. nov. (Toyama et al. 3108): A. branch; B. stipule; C. fruit. *Lasianthus repoeuensis* Pierre ex Pit. (D, F & G: Toyama et al. 2176, E: Toyama et al. 2326): D. branch; E. portion of abaxial leaf surface; F. stipule; G. calyx; *L. sarmentosus* Craib (Yahara et al. 4469): H. branch, I. portion of abaxial leaf surface; J. immature fruit.
Fig. 12. Line drawing of *Lasianthus oblanceolatus* Naiki, Tagane & Yahara, sp. nov. (*Toyama et al. 3108*): A. branch with fruit; B. portion of abaxial leaf surface; C. stipule; D. fruit. Drawn by H. Seto.
20. Lasianthus stephanocalycinus  

Naiki, Tagane & Yahara, sp. nov. —Figs. 13A–E & Fig. 14.

Similar to L. hispidulus in its villous twigs and elliptic leaves, but differing in the larger calyx lobes and depressed midrib and secondary veins on the upper surface of the leaves.

**Typus.** CAMBODIA. Bokor National Park, alt. 903 m, 10°39'35.42"N, 104°03'03.09"E, in moist evergreen forest, 13 May 2012, Toyama H., Tagane S., Mishima T., Tagawa K., Zhang M., Chhang P., Iwanaga F., Nagamasu H. & Yahara T. 3100 (holotype—KYO; isotypes—Cam, K, P).

**Description.** Shrubs, evergreen, ca. 1.5 m tall; twigs terete, 1.5–3 mm in diam., villous. Leaves opposite; petiole 3–5 mm long, villous; blade elliptic, 8–9.5 × 3–3.5 cm, coriaceous, base cuneate, margin entire, apex narrowly acute to aristate, arista 2–3 mm long, villous, abaxially villous especially on the midrib and secondary veins, adaxially glabrous, other part sparsely villous; midrib and secondary veins prominent abaxially, depressed adaxially; secondary veins 4–9 pairs (4–6 in plants of Mt. Bokor, 4–7–9 in plants of Mt. Hon Ba), ascending at an angle of 50–60° from midrib, curved to margin; tertiary veins parallel. Stipules triangular, 2–3 by 1–1.5 mm, persistent, villous. Inflorescences cymose, sessile, 1–7 flowered; bracts linear, 1 mm long, pilose. Flowers congested; pedicel 0.5–1 mm long; calyx tube campanulate, ca. 2 mm long, 2 mm in diam., pilose; calyx lobes 5 or 6, narrowly triangular, 2.5–3 mm long, apex acute or acuminate, pubescent on both surfaces; corolla not seen. Fruit drupaceous, immature, hemispheric, 3–4 mm long, 5 mm in diam., pubescent (on Mt. Bokor) to sparsely villous (on Mt. Hon Ba), crowned by persistent pubescent triangular (3 × 2 mm) calyx lobes; pyrenes 5.

**Additional specimens examined.** VIETNAM. Khanh Hoa Province: Mt. Hon Ba, in moist evergreen forest along stream, alt. 400 m, 14 Jul. 2014, Tagane et al. V1618 (FU, VNM, the herbarium of Hon Ba Nature Reserve); in evergreen forest, alt. 919 m, 16 Jul. 2014, Tagane et al. V1711 (FU, P, VNM, the herbarium of Hon Ba Nature Reserve).

**Distribution.** Cambodia (Mt. Bokor), Vietnam (Mt. Hon Ba).

**Note.** Plants on Mt. Hon Ba are more densely hairy (Figs. 13D & E) than those on Mt. Bokor (Figs. 13A–C).

**Note.** Lasianthus stephanocalycinus is occasional in primary evergreen forests and along streams.


Dasus verticillatus Lour., Fl. Cochinch. 1: 141 (1790).


**Specimens examined.** CAMBODIA. Bokor National Park, alt. 444 m, 10°36'24.04"N, 104°05'35.85"E, 12 May 2012, Toyama et al. 3018 (Cam, FU).

**Distribution.** Cambodia, China, India (Andaman and Nicobar Islands), Indonesia (Java, Lesser Sunda Islands, Sulawesi, Sumatra), Japan (Okinawa), Laos, Malaysia (Peninsular, Sabah), Myanmar, Papua New Guinea, Philippines, Sri Lanka, Taiwan, Thailand, Vietnam.

22. Lasianthus viridiramulis Tagane, nom. nov. —Figs. 15A–C.


Saprosma brevipes (Craib) H. Zhu, Acta Phy-
Fig. 13. *Lasianthus stephanocalycinus* Naiki, Tagane & Yahara, sp. nov. (A–C: Toyama et al. 3100, from Mt. Bokor, Cambodia; D–E: Tagane et al., V1618 from Mt. Hon Ba, Vietnam): A. branch with calyces; B. immature fruits; C. portion of abaxial leaf surface and immature fruit. D. branch with immature fruit; E. immature fruit. *Lasianthus verticillatus* (Lour.) Merr. (Toyama et al. 3018): F. branches; G. portion of abaxial leaf surface; H. stipule.
Fig. 15. Lasianthus viridiramulis Tagane, nom. nov. (Toyama et al. 6057). A. branch; B. portion of abaxial leaf surface; C. stipule. Lasianthus sp. 1 (D & E: Yahara et al. 4324, F: Toyama et al. 2048): D. branches; E. portion of abaxial leaf surface; F. stipule and immature flower buds. Lasianthus sp. 2 (Toyama et al. 2372): G. branch; H. portion of abaxial leaf surface; I. stipule.
October 2015

NAIKI & AL.—New species and records of *Lasianthus* from Cambodia

Specimens examined. CAMBODIA. Bokor National Park, alt. 529 m, 10°36′18.59″N, 104°06′03.12″E, 13 Dec. 2011, Toyama et al. 2159 (Cam, FU); 602 m, 10°36′44.87″N, 104°06′00.79″E, 8 Dec. 2013, Toyama et al. 6057 (BFK, Cam, KYO); 707 m, 10°37′41.02″N, 104°05′37.43″E, 11 Dec. 2011, Toyama et al. 2024 (Cam, FU, K); 888 m, 10°37′15.48″N, 104°05′10.71″E, 10 Dec. 2011, Toyama et al. 1931 (Cam, FU, P).

Distribution. Cambodia (new record), Thailand.

Note. *Lasianthus viridiramulis* is conspecific with *L. brevipes* Craib (1933), which was transferred to *Saprosma* Blume by Zhu (2001a). Phylogenetic analyses using chloroplast DNA (*matK* and *rps16* intron) indicated that it is a member of *Lasianthus* (Dang & Toyama, in prep.). *Lasianthus brevipes* Craib (1933) is an illegitimate name because of *L. brevipes* Valeton (1927). *Lasianthus brevipes* Valeton is based on a specimen of a different species from New Guinea. We therefore propose the replacement name *Lasianthus viridiramulis* Tagane.

23. *Lasianthus* sp. 1 —Figs. 15D–F.

Specimens examined. CAMBODIA. Bokor National Park, alt. 704 m, 10°37′41.02″N, 104°05′37.43″E, 11 Dec. 2011, Toyama et al. 2048 (Cam, FU); 760 m, 10°38′02.73″N, 104°05′17.73″E, 24 Oct. 2012, Yahara et al. 4524 (Cam, FU).

Note. Plants of *Lasianthus* sp. 1 resemble *L. bokorensis*, but differ in having smaller leaves and the midrib of the leaves pubescent near the base (1/3–1/4) adaxially.

24. *Lasianthus* sp. 2 —Figs. 15G–I.

Specimen examined. CAMBODIA. Bokor National Park, alt. 529 m, 10°36′18.59″N, 104°06′03.12″E, 19 Dec. 2011, Toyama et al. 2372 (Cam, FU).

Note. *Lasianthus* sp. 2 resembles *L. fordii* and *L. clementis*, but has hairier twigs and abaxial leaf veins than those two species. The tertiary veins of the leaves are inconspicuous, unlike in *L. clementis*.

The authors would like to thank the Cambodian Ministry of the Environment and that of Agriculture, Forestry and Fisheries for permitting our botanical inventories in Bokor National Park and staffs of these organizations who assisted our field surveys. We cordially thank the staff and rangers of Bokor National Park and Hon Ba Nature Reserve for their kind help during our field work. We are grateful to the curators and staff of the herbaria BKF, KYO, SING and VNM for providing us opportunities to examine their collections. We are also grateful to Keiko Mase, Misa Tagane, Hirotaka Seto and Kazuki Tagawa for preparing the illustrations and to Kengo Fuse for providing photos. This study was supported by the Environment Research and Technology Development Fund (S9) of the Ministry of the Environment, Japan, and also by a JSPS grant for Global Center of Excellence Program ‘Asian Conservation Ecology as a basis of human-nature mutualism’.

References

Beddome, R. H. 1868. Icones plantarum Indiae orientalis; or plates and descriptions of new and rare plants, from Southern India and Ceylon. Gantz Brothers, Madras.


Blume, C. L. 1823. Catalogus van eenige der merkwurdigste zoo in- als uitheemsche gewassen, te vinden in's lands plantentuin te Buitenzorg. Lands Drukkerij, Batavia.

Blume, C. L. 1826. Bijdragen tot de flora van Nederland sch Indië. Lands Drukkerij, Batavia.


Zhu, H. 2002b. Four new species and one new record of *Lasianthus* (Rubiaceae) from Thailand. Nordic J.

Received November 15, 2014; accepted April 15, 2015