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A NEW SPECIES OF BEGONIA (BEGONIACEAE) FROM SAGEA LAGOON, WEDA BAY, HALMAHERA ISLAND, NORTH MOLUCCAS INDONESIA

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ABSTRACT
WIRIADINATA, H. 2012. A new species of Begonia (Begoniaceae) from Sagea Lagoon, Weda Bay, Halmahera Island, North Moluccas, Indonesia. Reinwardtia 13 (3): 263–270. — A new species of Begonia sageaensis Wiriadinata (Begoniaceae) from south of Mt. Sohra Ecoregion, Sagea Lagoon, Weda Bay, Halmahera, North Moluccas, Indonesia is described and illustrated. This species close to B. holosericea Teijsm. & Binn. in small herb habit but it differ in red hirsute hairs on both leaf surface and on its petiole, persistence equitant bracts, longer pedicels of male flowers and fruit has three equal wings with both flat ends.

Keywords: Begonia sageaensis, Begoniaceae, Halmahera, Indonesia, taxonomy.

INTRODUCTION
Indonesia has many species of Begonia especially in mountain forests of Java, Sumatra, Sulawesi and Papua. Begonia can also be found in many small islands such as Wawonii island, east of Kendari (the capital of South East Sulawesi), Biak, Japen and Raya Ampat islands of Papua. Celebes itself has many species of Begonia (Hughes, 2006; Thomas & Hughes, 2008; Thomas et al., 2009 a, 2009 b); the total named that has been recorded is 36 species (Hughes, 2008). Contrary to Celebes, in Halmahera island, province of North Moluccas, which located close to Menado, especially regarding endemic species of Begonia are poorly known. According to Hughes, Province of Moluccas has only 5 species of Begonia (Hughes, 2008). After a decade, recent Begonia exploration conducted by Herbarium Bogoriense staff of the Indonesian Institute of Sciences (LIPI) in 2007 and found only one species, Begonia holosericea (Teijsm. & Binn.) Teijsm. & Binn. from Ternate. In June 2010 this species was also found in Aketajiawe Lolobata National Park, Halmahera. So far no other addition of Begonia collection from Halmahera (Girmansyah & Sunarti, 2011).

In August 2010 on a young karstic rock of South slope Mt. Sohra Ecoregion, close to Sagea lagoon on South Halmahera a small population of an attractive hirsute red hairs on young leaves of herbaceous Begonia was found. The male inflorescence has equitant bracts, the male flower has long pedicels and 2 tepals; the female flower erect and the fruit has 3 equal wings but all the tepals had been dropped out, so I could not know how many tepals of that female flower. I collected the plant and cultivated it in my garden at Bogor. After one year in cultivation, the plant produced male and female flowers. The female flower has 5 white unequal tepals. The further study on that living plant found that this Begonia is new to science and it is proposed here as a new species named Begonia sageaensis Wiriadinata sp. nov. It is a rhizomatous herb, with ovate leaf blades with adpressed hirsute red hairs on the both surface, permanent equitant bracts on the male inflorescence, white flowers; female flower with 5 tepals and the male with 2 tepals. The fruits has 3
equal wings, three-locular with axil, bilamellate placentae and it belongs to Begonia section Petermannia (Klotzsch, 1855, Dorenboos et al., 1998). The method for Begonia description pattern followed description made by Kiew (Kiew, 2005).

**Begonia sageaensis** Wiriadinata sp. nov. — Figs. 1–8.

*Begonia holosericea* (Teijsm. & Binn.) Teijsm. & Binn. affinis sed *Begonia sageaensis* lamina hirta rubra, pedicelus masculis longioris patentis equitant bracteis, ovariae alae differt. — Type Indonesia, North Moluccas, Halmahera Island, Weda Bay, young karstic of Mt. Sohra Ecoregion foot, sagu forest edge close to Sagea Lagoon, 0º 47' 07" N. 127º 21' 26" E. 50 m asl. 14 Aug 2010. Harry Wiriadinata, HW13860 (Holotype: BO).

This species differs from *B. holosericea* (Table 1) due to adpressed red hirsute hairs on leaf surface, young leaf slightly fringed on its margin, male inflorescence with persistent equitant bracts and male flowers have long pedicels, ovary with 3 equal wings which flat at both ends, while in *B. holosericea* the upper surface of leaf glabrous, the bracts of male inflorescence not equitant and male flowers with short pedicels, wings of ovary with acute base.

*Herbaceous* plant. Stem rhizomatous, succulent, nodes not swollen, slender, green, than 4.5 cm long, ca. 8-10 mm thick. Stipules triangular, ca. 16–25 mm × 6 mm, margin and out side midrib with white long hairs, especially near the apex. Leaves at internodes ca. 1.5–4.5 cm apart, young leaf with dense hirsute red hairs; petiole 11–20 cm long, 6–10 mm thick, green, long white hairs with violet or red base; blade ovate, slightly asymmetric, 10–14 × 11-18 cm; both surface adpressed hirsute red hairs, margin not toothed but conspicuously fringed by hairs, apex blunt; venation distinct, raised beneath, palmate-pinnate, 3-4 pairs of veins at the base, 2-3 times branching along the mid rib; slightly leathery when dried. Female flowers erect, single or in pairs; bracts triangular, boat shaped, midrib with white hairs, apex acuminate, margin entire, ca. 3 × 1 cm; pedicel ca. 6 cm long, pinkish white, not hair; tepals 5, white, unequal size, inner one smallest, elliptic, white, 10–13 × 5–6 mm, the largest ones obovate, 12–14 × 10–12 mm; ovary white, oblong, capsule 10 × 3 mm, with sparse adpressed red hairs, locules 3, placenta bifid; style three, one branches, stigma in a spiraled band; wings 3, equal, rounded or flat at both ends, 10 × 5 mm. Male inflorescence in an erect raceme with persistent equitant bracts. Male flowers bracts triangular, greenish white, glabrous; peduncles erect ca. 1.5 cm long, pinkish white; pedicels ca. 4-5 cm long, glabrous, pinkish; tepals 2, glabrous, white, orbicular-reniform, ca. 13 × 15 mm; androecium spherical, on ca. 1 mm column; stamens many, anthers yellow, obovate. Fruit erect, whitish green, 1 cm long, equal winged; wings 5 mm wide, rounded at both ends, 3 locules, placenta bifid.

Fig. 1. Morphology of living *Begonia sageaensis* Wiriadinata. Photo: H. Wiriadinata.
Fig 2. Begonia sageaensis in cultivation. Photo: H. Wiriadinata

Fig. 3. Short pedicels of female flower (left), long pedicels of male flowers (middle) and persistent white colored equitant bracts (right). Photo: H. Wiriadinata.
Fig. 4. Male flower. Photo: H. Wiriadinata.

Fig. 5. Female flower (open) and male flower (in bud). Photo: H. Wiriadinata.
A new species of Begonia from Halmahera Island, North Moluccas Indonesia

Fig. 6. Female flower. Photo: H. Wiriadinata.

Fig. 7. Female flower with 3 locules and dichotomous placenta. Photo: H. Wiriadinata.
Fig. 8. Herbarium specimen. Photo: H. Wiriadinata.
A new species of Begonia from Halmahera Island, North Moluccas Indonesia

**Distribution.** Endemic to Halmahera Island

**Habitat.** In forest margin, on a small rocks of young karstic of Mt. Sohra Ecoregion close to Sagea lagoon at about 50 m asl.

**ACKNOWLEDGEMENTS**

The author would like to thank to the reviewers for their comments and critical read the manuscript. The author appreciate the assistance of Prof. Dr. Gono Semiadi, Zoology Division, Research Center for Biology who accompanied him looking the specimen and to PT Weda Bay Nickel for the permit to undertake field work in Halmahera.

**REFERENCES**


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**Table 1. Comparative characters between Begonia sageaensis and Begonia holosericea**

<table>
<thead>
<tr>
<th>Characters</th>
<th>Begonia sageaensis</th>
<th>Begonia holosericea</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaf</strong></td>
<td>green, hirsute 11-20 cm long</td>
<td>pinkish green, densely hirsute 10-11 cm long</td>
</tr>
<tr>
<td>Blade</td>
<td>ovate</td>
<td>ovate</td>
</tr>
<tr>
<td>basal leaf</td>
<td>overlapped</td>
<td>not or shortly overlapped</td>
</tr>
<tr>
<td>upper surface</td>
<td>appressed red hairs</td>
<td>glabrous</td>
</tr>
<tr>
<td><strong>Female flower</strong></td>
<td>single, erect</td>
<td>single, erect</td>
</tr>
<tr>
<td>Tepals</td>
<td>5, unequal</td>
<td>5, unequal</td>
</tr>
<tr>
<td>Ovary</td>
<td>finely white hairs</td>
<td>densely erect red hirsute</td>
</tr>
<tr>
<td><strong>Male inflorescences</strong></td>
<td>glabrous, 1 cm long</td>
<td>hairy, 2.5-3 cm long</td>
</tr>
<tr>
<td>Bracts</td>
<td>equitant, long persistant</td>
<td>not equitant, short persistant</td>
</tr>
<tr>
<td>Pedicels</td>
<td>4.5-5 cm long, glabrous, pinkish</td>
<td>1.5-2 cm long glabrescens, pinkish white</td>
</tr>
<tr>
<td>Tepals</td>
<td>2, white, outside glabrous ca. 14 x 15 mm</td>
<td>2, white, outside poorly addpressed red hairs ca.13 x 15 mm</td>
</tr>
<tr>
<td><strong>Fruit</strong></td>
<td>equal</td>
<td>equal</td>
</tr>
<tr>
<td>Placenta</td>
<td>bifid</td>
<td>bifid</td>
</tr>
</tbody>
</table>

ERRATUM

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1. Please change the existing word in p. 213, LINE 7 on ABSTRAK (written in Bahasa Indonesia version) with the following:

   Keberadaan dua jenis terakhir melampaui distribusi yang sebelumnya hanya diketahui di barat garis Wallace.

2. Please change the existing epithet name in p. 214, COLUMN 1, LINE 40 on Key to the species of Marantaceae in Sulawesi number 5.a. after Phrynium:

   ........................................ Jongispicum
INSTRUCTION TO AUTHORS

*Reinwardtia* is a scientific journal on plant taxonomy, plant ecology, and ethnobotany. Manuscript intended for a publication should be written in English represent an article which has not been published in any other journal or proceedings. Every manuscript will be sent to two blind reviewers.

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Taxonomic identification key should be prepared using the aligned couplet type.

Strict adherence to the International Code of Botanical Nomenclature is observed, so that taxonomic and nomenclatural novelties should be clearly shown. Latin description for new taxon proposed should be provided and the herbaria where the type specimens area deposited should be presented in the long form that is name of taxon, authors name, year of publication, abbreviated journal or book title, volume, number and page.

Map, line drawing illustration, or photograph preferably should be prepared in landscape presentation to occupy two columns. Illustration must be submitted as original art accompanying, but separated from the manuscript. On electronic copy, the illustration should be saved in jpg or gif format at least 350 pixels. Legends or illustration must be submitted separately at the end of the manuscript.

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