



The rediscovery of Philippine *Begonias*

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Key words

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Abstract We present the first results of a new revision of the Philippine species of *Begonia*, starting with the sect. *Diploclinium*, using field surveys in order to find as many species as possible again. Out of the 39 recorded species of sect. *Diploclinium*, 32 have been found back in the wild. Three new species have been discovered, as well as four possible subspecies of *Begonia nigritarum* (Kamel) Steud. Most species occur in a single locality and the numbers of individuals are small. With rampant logging and unchecked quarrying, many species are threatened by habitat disturbance or destruction.

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A RENEWED SEARCH FOR PHILIPPINE *BEGONIAS*

Begonias are used world-wide as ornamental plants. It is therefore surprising that the last comprehensive account of Philippine *Begonia*, recording 59 species (Merrill 1911) is now about a century old. Golding & Wasshausen (2002), on *Begoniaceae* in general, list 104 Philippine species. Globally, c. 1 500 species have been named and scientists believe there are more to be discovered. Asia, from the Himalayas to southern China and Malesia, is the secondary centre of diversity for *Begonias* after South America (Tebbutt 2005). In Southeast Asia, the Philippines ranks first in the diversity of endemic *Begonias* with 104 species, followed by Borneo (95), New Guinea (79) and Burma (57) (Hughes 2007). This confirms once more that the Philippines is correctly listed as one of the 17 nations that are 'Megadiversity countries' (Mittermeier et al. 1997).

A SYSTEMATIC STUDY OF SECTION *DIPLOCLINIUM*

This work forms a portion of the first author's PhD on the systematic studies on Philippine *Begonia*. It started with field surveys in order to find as many species as possible, returning to the type localities. Currently extensive research is conducted which include re-examination of the morphological characters and considering new features such as anatomy, palynology and molecular studies. In addition, *Begonia* specimens were also loaned from various herbaria. The results will provide data for a taxonomic revision of the genus *Begonia* in the Philippines.

The 104 Philippine species of *Begonia* are classified in three sections (Doorenbos et al. 1998). The majority is placed in sect. *Petermannia* (63) and sect. *Diploclinium* (39). Section *Baryandra* and one possible new section contain one species each. This study is limited to sect. *Diploclinium*, since the Philippines is the centre of *Diploclinium* diversity (Hughes 2007) with 39 species, followed by Thailand (15), Burma (9) and New Guinea (7) (Hughes 2007).

In the Philippines and elsewhere, *Begonias* are found in shaded, damp ravines, on banks and cliffs along small streams, on slopes with seepage, more rarely on the forest floor well away from water. Some are found on more or less exposed cliffs

that dry out completely during the dry season, a few others are restricted to montane mossy forest. Most species have a very limited range, and so far have been found in a single locality with few individuals only, but *B. manillensis* A.DC., *B. mindorensis* Merr. and *B. nigritarum* (Kamel) Steud. are widely distributed. Most species have a restricted altitudinal range, but *B. nigritarum* (Kamel) Steud. extends from sea level in some regions to c. 1 200 m elsewhere. Within *B. nigritarum* 4 subspecies may be distinguished from the following provinces: Laguna, Palawan, Panay Island and Mindanao. So far, 3 new *Begonia* species have been found: one in Quezon, another in Cavite and one at Panay Island. More novelties will be discovered, because so far the survey has extended only over the type localities of known species. Other localities with a suitable habitat will be visited soon. The first three years of the field survey (started December 2004) have yielded the following distribution of *Begonia* sect. *Diploclinium* around the Philippine archipelago (Table 1).

Table 1 Regional distribution of Philippine *Begonia* sect. *Diploclinium*.

Cordillera Administrative Region	— <i>B. klemmei</i> Merr. <i>B. vanoverberghii</i> Merr.
Region 1 – Ilocos Region	— <i>B. hernandioides</i> Merr.
Region 2 – Cagayan Valley	— <i>B. castilloi</i> Merr. <i>B. choloroneura</i> P.Wilkie & Sands <i>B. fenicis</i> Merr. <i>B. isabelensis</i> Quisumb. & Wassh.
Region 3 – Central Luzon	— <i>B. neopurpurea</i> L.B.Sm. & Wassh.
Region 4 – Calabarzon	— <i>B. longinoda</i> Merr. <i>B. rufipila</i> Merr. <i>B. tayabensis</i> Merr. <i>B. trichocheila</i> Warb.
Region 4B – Mimaropa	— <i>B. coronensis</i> Merr. <i>B. gitingensis</i> Elmer <i>B. pinamalayensis</i> Merr. <i>B. suborbiculata</i> Merr. <i>B. wadei</i> Merr. & Quisumb.
Region 6 – Western Visayas	— <i>B. copelandii</i> Merr. <i>B. obtusifolia</i> Merr. <i>B. rubrifolia</i> Merr. <i>B. serpens</i> Merr.
Region 8 – Eastern Visayas	— <i>B. billanensis</i> Merr. <i>B. longiscapa</i> Warb.
Region 10 – Northern Mindanao	— <i>B. acuminatissima</i> Merr. <i>B. anisoptera</i> Merr.
Region 13 – Caraga	— <i>B. elmeri</i> Merr.

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HORTICULTURAL AND MEDICAL POTENTIAL AND THREATS

Its beautiful foliage and ornamental flowers have made *Begonia* a popular ornamental world-wide. In some cases wild species are taken into cultivation, but over 10 000 artificial hybrids have been registered already. From the native species of the Philippines *B. colorata* Warb. and *B. luzonensis* Warb. are already in cultivation. We feel that more Philippine species are sufficiently attractive to be used as ornamentals, and that they could also be used as parents for new hybrids. So far, few attempts to cultivate the native species have been made in the Philippines. The chief reason may be that in and around Metro Manila the climatic conditions are not especially favourable to cultivate species that require a relatively high humidity. Local people report that some species are edible, while others are being used as a medicine. This, too, needs to be explored. But the survival of *Begonia* in the wild hangs in the balance for similar reasons. Logging of our forests causes the local climate to dry out. The Philippine forests, and with them the herbaceous forest plants, are rapidly disappearing (Walpole 1999). Even if the riparian environment is spared immediate destruction, an increased silt load in the stream beds will affect the places where many *Begonia* grow: on rock surfaces and boulders. Limestone hills, another preferred habitat by *Begonia* species, are threatened by uncontrolled quarrying. The facts that many species are known for a single locality, or from very few localities, and that the populations tend to be small, only compounds the problem.

CONCLUSIONS

Philippine *Begonia* is threatened by habitat change or destruction, and several species are likely to become extinct in the wild. Ex-situ conservation could save some, and promoting Philippine *Begonia* as ornamentals could help. Their potential as food plants and their medicinal value needs to be explored.

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