

Searching for Sumatran *Begonia* described by William Jack: following in the footsteps of a 19th century Scottish botanist

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ABSTRACT. Eight species of *Begonia* were described from Sumatra in 1822 by the Scottish botanist William Jack. All of the type material associated with these names was destroyed in a fire in 1824, and an expedition was mounted in August 2010 to re-visit Jack's collecting localities in an effort to find material suitable for neotypification. Of the eight species, two (*Begonia bracteata* Jack and *B. racemosa* Jack) could be neotypified with certainty, whilst others require further work. It is possible that some of the species described from Bengkulu province may have become extinct due to loss of forest habitat.

Keywords. *Begonia*, Sumatra, William Jack

Introduction

William Jack (1795–1822) was the son of the Principal of Aberdeen University. He is celebrated as “one of the most able botanists ever to become associated with the incredibly rich and the then very little known flora of the Malay Peninsula and Archipelago” (Merrill 1952). According to Don (1834), his “well known indefatigable labours in natural history have long ago entitled him to the highest respect” and tribute has been paid to “the astonishing accuracy of [his] work and his descriptive powers” (Noltie 2009). Two tragedies throw these accolades into relief; Jack's untimely death at the age of 27, and the destruction of the bulk of his biological collections by fire.

After finishing his medical training in London, Jack left England for India in 1813 to work for the British East India Company as a surgeon. Whilst in India he commenced correspondence with Nathaniel Wallich in Calcutta, who recommended Jack to Sir Stamford Raffles as a suitable appointment to his staff as both a medical man and botanist. This appointment led Jack to Sumatra, where the British East India Company was hoping to strengthen its influence, and where Jack would be able to make his name as one of the most prolific and brilliant botanists of his time. He made collections from the island during 1819–1822, visiting North Sumatra (Tapanoeli),

West Sumatra (Pulau Pegang and neighbours, and the Nias Islands) and Bengkulu (Gunung Bungkok and the interior of the province). Jack published a fascinating account of his 1821 ascent of Gunung Bungkok (“Gunong Benko” or “Sugar Loaf Mountain”; Jack 1822a), where locals pleaded with Jack and his party not to climb the mountain, as they feared the vengeance of evil spirits if they achieved the sacred summit. However, he was undaunted:

“The next acclivity terminated at the head of another ravine, where their progress was again checked by a jutting rock rendered moist by the trickling of a small spring of water from among its crevices. Here the guides declared that further ascent was impracticable, and that from thence the party might return as soon as they pleased. The fact is, they were extremely averse to their proceeding, fearing the vengeance of the evil spirits if they conducted strangers to the summit; they were, therefore, advising to return at every difficulty, and the ascent was ultimately accomplished without their aid, or rather in spite of them.”

And reached the summit in spite of the very difficult terrain:

“The last of these precipices was perhaps the most dizzy and dangerous, as it was necessary to make a step or two on a narrow ledge on the face of a cliff of such height that the eye could not discern the bottom, and thence catch at a dry stump barely within reach, by swinging from which it was possible with a considerable effort to clear the rock. The denseness of the moss and the stunted appearance of the trees now indicated their approach towards the top, and at length about two o’clock they found themselves on the summit. This was a bare spot of not more than four or five yards in breadth with a precipice on each side partly concealed by brushwood. Of those who set out together from the foot of the hill a few only reached this point, by far the majority giving up in despair at different parts of the ascent, but the labour of those who persevered was amply recompensed by the view which opened from the summit.”

Within a year, two of the three “mountain defilers” (Noltie 2009), Captain Harry Auber and Jack himself, were dead. Jack contracted malaria during an excursion to Moco-Moco in March 1822, which in combination with the consumption caught during his time in Nepal proved more than his health could bear. His condition became so grave that he was placed on a passage to England aboard the *Layton*; however the departure was delayed to bad weather and due his rapidly deteriorating condition, Jack was moved to Government House in Bengkulu, where he died shortly after. As if to further avenge the trespass, in 1824 all of Jack’s wonderful collections were lost. Raffles had them loaded on the *Fame* along with other irreplaceable manuscripts and drawings and set sail from Bengkulu on the 2nd of February 1824. Allegedly the ship caught fire after a sailor tried to illicitly tap a brandy cask by candle light; all onboard were saved but the entirety of the collections were lost, an enormous tragedy for Malesian botany second only to the death of Jack himself.

In his short career, Jack managed to describe about 200 species and 31 genera of plants. His account of the *Begonia* he collected on Sumatra was published in 1822 in *Malayan Miscellanies* (Jack 1822b):

“The island of Sumatra abounds with *Begoniae*, a tribe of plants which are chiefly found in moist shady situations at the foot of hills and in the recesses of forests. Being succulent herbs they are with difficulty preserved in herbaria, and the specimens are frequently deficient in one or other of the parts of fructification. Descriptions from the living plants in their native soil are therefore particularly desirable, and in this view the following account

of the species which have fallen under my observation will not be uninteresting.”

The loss of Jack’s collections, of which only a few scraps reached Europe prior to the *Fame* disaster, means that vast majority of his plant names have no type material, and this is certainly true for his *Begonia* names. Although Jack had a deserved reputation for writing excellent descriptions, the variation between *Begonia* species on Sumatra can be subtle, and the absence of any comparative diagnoses in Jack’s account means neotypes are a necessity to fully understand the application of his names. To this end, the authors undertook an expedition during August 2010 to re-visit the localities where Jack collected *Begonia* specimens, in an attempt to find material suitable for neotypification. The expedition was based, firstly, in Padang, then Bengkulu (Fig. 1). This permitted collecting on Pulau Pasumpahan and Gunung Bungkok, and in the rapidly diminishing remaining forest scattered throughout Bengkulu province. The trip to Gunung Bungkok was navigated using Jack’s 1822 manuscript and we used the same village as a base, Rejak Bessi. The dense forests which obscured Jack’s view of the mountain have now been cleared (Fig. 2), allowing us to reach the base of the mountain in less than one hour with the aid of motorcycles with tyre chains. It was possible to reach the mountain and return to Bengkulu in the same day, in contrast to Jack’s expedition which lasted eight days in all. Another contrast to Jack’s expedition is that a full ascent was not attempted, due to failing light and a desire by the participants not to suffer the same fate as their 19th century predecessors. The fact that the expedition took place during the Muslim fasting month was another, minor, consideration, although by the time of the descent the elusive *Begonia bracteata* plus another new species had been found.

Taxonomic treatment

Sectional placement

Following examination of descriptions, herbarium specimens and living plants, insights have been gained to allow a more informed sectional classification of Sumatran *Begonia*, leading on from the excellent groundwork laid down by Doorenbos et al. (1998). *Begonia caespitosa*, *B. orbiculata* and *B. sublobata* are transferred from *Begonia* sect. *Diploclinium* to *Begonia* sect. *Reichenheimea*; the former section is no longer represented on the island and the latter probably represents a local radiation, possibly including some species from Peninsular Malaysia such as *B. forbesii* and allies. *Begonia* sect. *Reichenheimea* is currently united by the presence of entire placentae and, on Sumatra at least, a functionally scapigerous habit. The Sumatran species and their allies may eventually require a section of their own to accommodate them, depending on further study of the type of the section, *B. tenera* Dryand. from Sri Lanka. Jack’s suggestion of a resemblance of *Begonia sublobata* to *B. grandis* is most definitely not supported. *Begonia fasciculata* and *B. pilosa* are transferred from *Begonia* sect. *Petermannia* to *Begonia* sect. *Bracteibegonia*, due to the presence of red hairs on the leaves which is so characteristic of the section on Sumatra. *Begonia* sect. *Bracteibegonia* seems to be much more species rich on Sumatra than *Begonia* sect.

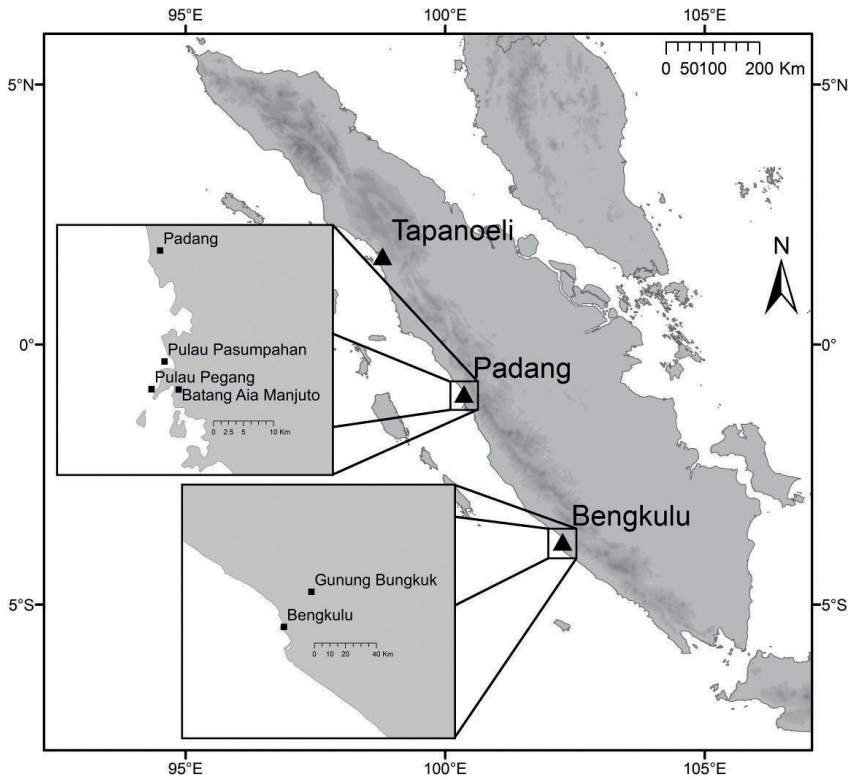


Fig. 1. Map of Sumatra showing localities mentioned in the text.



Fig. 2. The isolated peak of Gunung Bungkok, approximately 30 km northeast of Bengkulu town.

Petermannia, which is characterised by being glabrous and having larger inflorescences. *Begonia racemosa* and a *B. geniculata* remain in *Begonia* sect. *Petermannia*.

Species descriptions

Jack's original descriptions and diagnoses (Jack 1822b) are reproduced here, arranged first by current sectional placement and then alphabetically. Following each is a discussion of the success or failure to find a neotype, and where possible, an account of comparative diagnostic characters to related taxa.

Begonia bracteata Jack [*§ Bracteibegonia*], Malayan Misc. 2(7): 13 (1822); Miquel, Pl. Jungh. 417 ('1855', 1857); Candolle, Prodr. 15(1): 316 (1864); Golding, Phytologia 54(7): 494 (1984). *Diploclinium bracteatum* (Jack) Miq., Fl. Ned. Ind. 1(1): 688 (1856). TYPE: Sumatra, Bengkulu Province, Gunung Bungkok, 3°35'3"S 102°25'24"E, 610 m, 15 Aug 2010, D. Girmansyah & M. Hughes DEDEN1495 (neotype here designated BO; isoneotypes ANDA, E, K, SING). (Fig. 3)

Foliis duplicato-serratis acuminatis pilosis, pedunculo 1–3 floro bracteis numerosis appressis vestito, capsulis basi bibracteatis; alis equalibus rotundatis.

Near the foot of Gunung Bunko in the interior of Bencoolen.

Suberect, strong and branching, very villous, shaggy. Leaves alternate, short petioled, ovate, semicordate at the base, acuminate, duplicato-serrate, pilose, 3–4 inches long. Stipules large, pilose. Peduncles oppositifolious, generally supported by a smaller leaf, invested particularly towards the base with many pair of opposite ovate acute pilose ciliate bracts, which are pressed flat against each other; the uppermost pair is distant from the rest and supports from one to three pedicels. Flowers white. Male. Corolla four petalled; the outer two large subrotund. Stamina numerous. Female. Corolla five petalled; petals nearly equal. Styles three. Stigmata lunate, villous with yellow short glandular hairs. Capsule embraced by two bracts at the base, three celled, three winged; wings equal, rounded.

Notes. Neotypification was very straightforward for this species, due to the precise locality and this being the only *Begonia* sect. *Bracteibegonia* in the vicinity, in addition of course to matching the clear description perfectly. This species has been considered a synonym of *Begonia lepida* Blume from Java (Koorders 1912), but is a much hairier plant; Jack's description as 'shaggy' is very apt; it differs in having much longer, erect, translucent hairs on the stem (not reddish appressed hairs), hairier stipules, noticeably bullate leaves and also lacks any red colouration on the stems, leaves and young tepals. It is similar in habit and leaf shape to an undescribed species from Aceh (*Wilkie et al. PW621a*, Gunung Leuser National Park, Ketambe Research Station, BO, E, SING), which differs in having appressed, matted, red hairs rather than erect, translucent hairs on the stem; differences between this taxon and *Begonia lepida* (considered endemic to Java) need to be clarified.

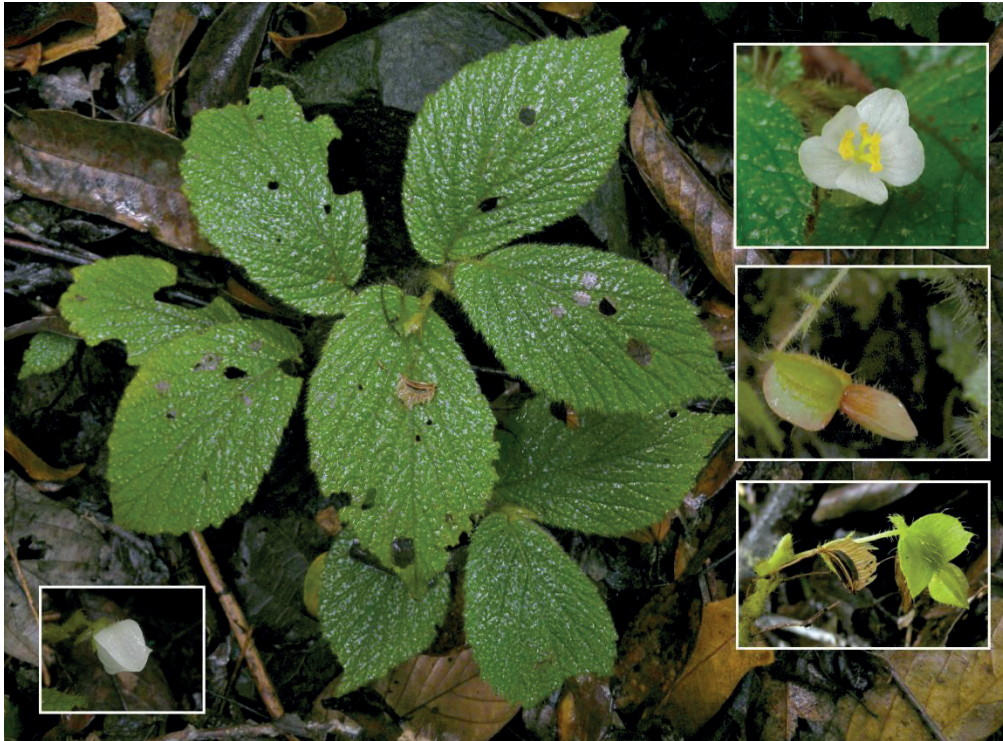


Fig. 3. *Begonia bracteata* Jack. Main image, habit; top right, female flower; middle right, female flower after pollination; bottom right, female flower with developing fruit; bottom left, opening male flower. All from *DEDEN1495*, Gunung Bungbuk, Bengkulu.

IUCN category. In the absence of collections from elsewhere, it is assumed that this species is endemic to Gunung Bungbuk and nearby forests. As the foothills have been cleared of forest for coffee plantations up to the base of the mountain, *Begonia bracteata* will have undergone a significant contraction in range since Jack's expedition, and is now effectively endemic to the slopes of the mountain itself. The steepness of the terrain will afford some protection, but as the forests on Gunung Bungbuk do not belong to a formally designated protected area, *B. bracteata* should be considered as Vulnerable (VUD2).

Begonia fasciculata Jack § [*Bracteibegonia*], Malayan Misc. 2(7): 12 (1822); Candolle, Prodr. 15(1): 322 (1864). *Petermannia fasciculata* (Jack) Klotzsch, Monatsber. Kon. Preuss. Akad. Wiss. Berlin 1854: 124 (1854); Klotzsch, Abh. Kon. Akad. Wiss. Berlin 1854: 195 (1855); Klotzsch, Begoniac. 75 (1855). *Diploclinium fasciculatum* (Jack) Miq., Fl. Ned. Ind. 1(1): 690 (1856). TYPE: Sumatra, Tappanuly, Jack (destroyed).

Foliis inferioribus alternis, superioribus oppositis, oblongo-ovatis basi semicordatis duplicato-serratis pilosis, perianthiis masculis diphyllis, capsulae alis equalibus obtusangulis.

Found at Tappanuly on the west coast of Sumatra.

Caulescent. Stem weak, jointed, thickened at the joints, round, covered with red hairs. Leaves petiolate, the lower ones alternate, the upper ones opposite, oblong-ovate, inequilateral, semicordate at the base, acuminate, irregularly serrate, covered above with red erect subspinescent hairs, beneath with softer and weaker hairs. Petioles densely pilose. Stipules linear, acuminate, pilose. The flowers come in fascicles from the middle of the petioles, and these flower bearing leaves are always opposed to another without flowers; hence it is that the upper leaves are opposite while the lower are alternate. Fascicles composed of male and female flowers; pedicels slender, smooth, white. Bracts several at the base of the blades, acute, pilose, red. Male perianth diphyllous, white. Stamina numerous. Anthers yellow. Female perianth superior, white, cup-shaped five leaved; petals ovate, acute, with a few short red hairs on the outside. Style deeply trifid lobes convolute, infundibuliform. Capsule three-winged, three-celled, wings equal, obtuse-angled.

Notes. The specimen *Argent & Iqbar 9968* (E) from Tapak Tuan 250 km northwest of Tapanoeli is the closest match to this species, but does not have leaves “covered above with red erect subspinescent hairs”. There are hardly any collections from the vicinity of Tapanoeli and the location was not on the itinerary for the 2010 expedition; the area needs to be further explored to search for suitable material.

IUCN category. Data Deficient.

Begonia pilosa Jack [*§ Bracteibegonia*] Malayan Misc. 2(7): 13 (1822). *Diploclinium pilosum* (Jack) Miq. Fl. Ned. Ind. 1(1): 688 (1856). TYPE: Sumatra, Bengkulu Province, *Jack* (destroyed).

Foliis subsessilibus irreguliter serratis acumiatis pilosis subtus rubris, bracteis ad basin pedicellorum subrotundis ciliatis, capsulae alis subaequalibus parallelo rotundatis.

Interior of Bencoolen.

Caulescent, pilose. Leaves alternate, scarcely petiolate, ovate, inequilateral, acuminate, slightly and irregularly serrate, pilose with long red hairs, under surface of a bright red colour; about three inches long. Stipules large, lanceolate, pilose externally. Peduncles oppositifolious, subdichotomous. Bracts at the base of the pedicels, roundish, ciliate. Flowers white. Male: Corolla four petalled, the inner pair smaller. Stamina numerous. Female: Corolla five petalled; the two outer petals larger. Capsule three winged; wings nearly equal, parallel and rounded.

Notes. In addition to *Begonia bracteata*, two other members of *Begonia* sect. *Bracteibegonia* were encountered on the expedition, represented by *D. Girmansyah*

& *M. Hughes DEDEN1493* & *DEDEN1507*, both collected in Bengkulu. Neither have large stipules, one has leaves which are glabrous above and the other has leaves which are pilose but considerable less than three inches long, and hence neither can be ascribed to *Begonia pilosa* Jack. Examination of other specimens of this section in ANDA and BO also fails to provide a convincing match.

IUCN category. Data Deficient.

Begonia geniculata Jack [§ *Petermannia*] Malayan Misc. 1(7): 15 (1822); Candolle, Prodr. 15(1): 321 (1864). *Petermannia geniculata* (Jack) Klotzsch, Monatsber. Kon. Preuss. Akad. Wiss. Berlin 1854: 124 (1854); Klotzsch, Abh. Kon. Akad. Wiss. Berlin 1854: 196 (1855); Klotzsch, Begoniac. 76 (1855). TYPE: Sumatra, *Jack* (destroyed).

Caule geniculato, foliis ovato-oblongis denticulatis acuminatis glabris, pedunculis divaricato dichotomis, floribus superioribus masculis dipetalis, inferioribus femineis, capsulae alis equalibus obtus angulis.

Sumatra.

Caulescent; stems smooth, compressed, channelled, jointed, thickened at the articulations. Leaves alternate, petiolate, semicordate at the base, ovate oblong, acuminate, denticulate smooth. Peduncles oppositifolious, dichotomous, divaricate, many flowered, lower flowers female, upper male. There is often a female flower from the axil. Male perianth two petalled, white. Stamina numerous; anthers oblong, broader above. Female. Capsules long, three winged, wings obtuse-angled, equal, smooth.

Observations by Jack. The leaves of this plant are used by the natives for cleaning and taking out rust from the blades of creeses. It has considerable resemblance to the preceding species [*Begonia racemosa*].

Notes. The description of *Begonia geniculata* is uncharacteristically short for Jack, and it reads like a brief description of *Begonia* sect. *Petermannia* generally. Combined with the lack of a specific locality, it means this species will be near impossible to neotypify. It is feasible that its resemblance to *Begonia racemosa*, typified below, may be of some use in sorting out its true identity once *Begonia* sect. *Petermannia* becomes better known on Sumatra.

IUCN category. Data Deficient.

Begonia racemosa Jack [§ *Petermannia*] Malayan Misc. 2(7): 14 (1822); Candolle, Prodr. 15(1): 322 (1864). *Petermannia racemosa* (Jack) Klotzsch, Monatsber. Kon. Preuss. Akad. Wiss. Berlin 1854: 124 (1854); Klotzsch, Abh. Kon. Akad. Wiss. Berlin 1854: 196 (1855); Klotzsch, Begoniac. 76 (1855). *Diploclinium racemosum* (Jack) Miq., Fl. Ned. Ind. 1(1): 691 (1856). TYPE: Sumatra, Bengkulu Province, Bukit Menyan, 3°36'26"S 102°39'39"E, 1110 m, 19 Aug 2010, *D. Girmansyah* & *M. Hughes*

DEDEN1509 (neotype here designated BO; isoneotypes ANDA, E, K, SING). (Fig. 4)

Foliis obovato oblongis irregulariter dentatis acuminatis glabris, racemis erectis masculis, flore femineo axillari, perianthis masculis diphyllis, capsulae alis equalibus parallelo-rotundatis.

Interior of Bencoolen.

Suberect; stem smooth, jointed. Leaves alternate, short petioled, obovate oblong, attenuated towards the base which is unequally cordate, acuminate, irregularly and unequally dentate, smooth; 6–7 inches long. Stipules large, oblong. Racemes oppositifolious, long, erect, bearing numerous fasciculate male flowers, and having a single female one in the axil. Male. Corolla two petalled, petals very thick. Stamina numerous. Female. Capsule with three equal parallel rounded wings, three celled.

Specimens: Sumatra. Bengkulu, Kaba, 1 Mar 1931, *C.N.A. de Voogd 1053* (BO, L); Bengkulu, Kaba, 10 Mar 1932, *C.N.A. de Voogd 1325* (BO, L); Bengkulu, Sungei Gembung, 100 m, 12 Oct 1993, *J.J. Afriastini 2620* (BO); Bengkulu, Sungei Gembung, 100 m, 12 Oct 1993, *J.J. Afriastini 2625* (BO); Bengkulu, Road from Kapahiang, 3°39'47"S 102°33'46"E, 660 m, 17 Aug 2010, *D. Girmansyah & M. Hughes DEDEN1498* (ANDA, BO, E).

Notes. Matching this name to collections was initially confounded by Jack's description of the inflorescences as *oppositifolius*, as in *Begonia* sect. *Petermannia* they are usually terminal, as was the case in all the specimens of this section collected during the expedition. However, one can easily interpret this terminal inflorescence syndrome as *oppositifolius* when considering a highly branched specimen (e.g., Fig. 4). This species was observed at three localities during the 2010 expedition (Bukit Menyan, Kapahiang and Bukit Kaba), and it seems likely therefore that Jack would also have happened upon it. They key characters are the leaf shape, the long inflorescences, the thick tepals of the male flower and the capsule with rounded wings, all of which match between the description and specimens *D. Girmansyah & M. Hughes DEDEN1498 & DEDEN1509*. Strictly speaking the inflorescence is not racemose, but an elongated cyme. A further distinctive but previously unknown feature of *B. racemosa* is that the female flowers have three tepals, an unusual feature in *Begonia* generally.

IUCN category. Of the known populations of this species, only one is confirmed as being in a protected area (Bukit Kaba). One of the localities, Bukit Menyan, is not under protection and the already small forest fragment is under active encroachment from coffee plantations. However, it is extremely likely that *Begonia racemosa* is present in the extensive nearby Bukit Hitam protection forest, and as long as Bukit Kaba and Bukit Hitam remain in good condition the IUCN category Least Concern is considered appropriate.



Fig. 4. *Begonia racemosa* Jack. Main image, habit; top left, male flower; middle left, female flower, all from *DEDEN1509*, Bukit Menyan, Bengkulu. Bottom left, male portion of inflorescence, Gunung Kaba, Bengkulu.

Begonia caespitosa Jack [*§ Reichenheimea*] Malayan Misc. 2(7): 8 (1822); Candolle, Prodr. 15(1): 397 (1864). *Diploclinium caespitosa* Miq., Fl. Ned. Ind. 1(1): 685 (1856). TYPE: Sumatra, Bengkulu, *Jack* (destroyed).

Subacaulis, foliis inequaliter cordatis angulatis acuminatis glabris, pedunculis dichotome cymosis, capsulae alis equalibus obtusangulis v. rotundatis.

At Bencoolen.

Nearly stemless. Leaves petiolate, oblique, cordate at the base with rounded slightly unequal lobes overlapping each other a little, somewhat falcate, rounded and sublobate on one side, straighter on the other, attenuated into a long acumen or point, spinulose but scarcely serrated on the margin, smooth, shining above, pale and punctate papillose beneath; nerves 5–9, branched towards the margin. The leaves are of unequal size and vary somewhat in shape, the old ones being much rounder and more decidedly lobed than the younger ones, which have the point so much incurved as to be nearly falcate on one side. Petioles red, pilose. Peduncles often as long as the leaves, smooth, bearing a dichotomous cyme of white flowers. Bracts ovate, concave. Male perianth four leaved, the inner pair smaller. Stamina numerous, collected into a head. Female

perianth superior, three leaved, two exterior large, subrotund, applied to each other as in the male flowers, and enclosing the third which is much smaller and oblong. Style trifid. Stimata lunato bifid, yellow and glanduloso-pilose. Capsule three winged, wings nearly equal, obtuse angled or rounded.

Notes. Four species in *Begonia* sect. *Reichenheimea* are represented by specimens from Bengkulu. Species A, with long petioles and large flowers (e.g., *D. Girmansyah* & *M. Hughes DEDEN1508*); species B, smaller with slightly lobed leaves (e.g., *D. Girmansyah* & *M. Hughes DEDEN1506*); species C, with peltate leaves (e.g., *de Voogd 1055*); and species D, with leaves mottled green and brown (e.g., *D. Girmansyah* & *M. Hughes DEDEN1496*). None of these match *Begonia caespitosa* perfectly; species B does have leaves which vary in the degree of lobing according to their age, but no evidence of falcate leaves was observed. The lack of size measurements in Jack's descriptions means none of the species can be ruled out on what would otherwise have been a very simple character. It is possible, given its location ("at Bencoolen") that this is a lowland species which is no longer extant given the almost complete lack of indigenous forest cover on the vicinity of the coastal lowlands.

IUCN category. Data Deficient.

Begonia orbiculata Jack [*§ Reichenheimea*] *Malayan Misc.* 2(7): 9 (1822); Candolle, *Prodr.* 15(1): 398 (1864). *Diploclinium orbiculatum* (Jack) Miq., *Fl. Ned. Ind.* 1(1): 688 (1856). TYPE: Sumatra, Bengkulu, *Jack* (destroyed).

Subacaulis, foliis orbiculatis cordatis crenatis glabris, pedunculis subdichotomis, capsulae alis subequalibus obtusangulis.

Interior of Bencoolen.

Nearly stemless. Leaves petiolate, subrotund, from three to four inches in diameter, slightly oblique, cordate at the base where the lobes overlap each other, remotely crenate, rounded at the point, smooth except for the nerves of the under surface, beautifully and finely punctate above. Stipules scarious, acute. Peduncles erect, subdichotomous, nearly as long as the leaves, i.e. about six or eight inches in height. Flowers white. Male. Corolla four petalled, the outer pair large, oblong; the inner small. Stamina numerous. Female. Capsule three celled, many seeded, three winged; wings obtuse-angled, nearly equal.

Notes. As the inflorescences and flowers of many species of *Begonia* sect. *Reichenheimea* on Sumatra are extremely similar, we are left with only Jack's description of the leaf as diagnostic. Species D, collected from the base of Gunung Bunkuk, matches in having orbiculate crenate leaves, but differs in being distinctly bullate between the veins and being variegated green and purplish brown, rather than "beautifully and finely punctate". The bullate leaves on species D are very obvious, and it seems likely that

Jack would have noticed this; hence we assume there is no material available for the typification of *Begonia orbiculata*.

IUCN category. Data Deficient.

Begonia sublobata Jack [§ *Reichenheimea*] Malayan Misc. 2(7): 10 (1822); Candolle, Prodr. 15(1): 355 (1864). *Diploclinium sublobatum* (Jack) Miq., Fl. Ned. Ind. 1(1): 690 (1856). TYPE: Sumatra, West Sumatra, Pulau Pegang, *Jack* (destroyed).

Repens, foliis cordatis subquinelobis vel angulatis dentato serratis margine reflexis glabris, capsulae alis equalibus obtusangulis.

Found under moist rocks on Pulo Pegang, West coast of Sumatra.

Repent with a thick knotty root. Leaves alternate, petiolate, cordate, sometimes unequally, large and broad, often six or seven inches long, angulate, sometimes with five acute lobes, sometimes nearly ovate, acuminate, dentato-serrate, edges recurved, very smooth, 5–7 nerved, finely punctate, the dots appearing elevated on the upper surface and depressed on the lower. Petioles 4–6 inches long, nearly smooth, furnished immediately below their junction with the leaf with a semiverticil of linear acute appendices or scales. Stipules large, ovate, rather lacinate towards the apex, one on each side the petiole. Peduncles axillary, erect, 6–8 inches long, red, very smooth, terminated by a dichotomous divaricate panicle of white flowers tinged with red. Bracts roundish. Male. Perianth four leaved, leaflets rather thick and fleshy, the two outer ones much larger and subrotund, before expansion completely enclosing the inner two, and having their edges mutually applied to each other in such a manner that they form an acute carina round the unexpanded flower. Stamina, numerous in a roundish head; filaments short, inserted on a central column which rises from the base of the flower. Anthers oblong, cells adnate to the sides of the filaments, bursting longitudinally. Female. Capsules with three equal obtusely angled wings, three celled, three valved, valves septiferous in the middle, sutures corresponding to the wings. Seeds numerous, attached to placentae which project from the inner angle of the cells.

Observations by Jack. The serratures are hard and cartilaginous and recurved in such a manner along with the margin of the leaf, that when only observed on the upper surface their place is perceived by an indentation. It seems to resemble the *B. grandis* Dryand which differs however in having oblique, doubly serrated leaves, and purple flowers.

Notes. A photograph of a plant with red scales at the petiole apex, a unique character in Sumatran *Begonia* and diagnostic for *Begonia sublobata*, led us to Pulau Pasumpahan (Nurainas, pers. comm.), 5 km from the type locality of Pulau Pegang (Fig. 1). About 20 m back from the beach the (limestone?) rocky core of the island proved to be covered on one side with a *Begonia* species which appeared to match *Begonia sublobata* Jack



Fig. 5. *Begonia* sp. aff. *sublobata* Jack. Main image, habit; inset, top left, apex of petiole and leaf underside; top right, male flower; bottom right, female flowers and ovaries; bottom left, juvenile plant showing leaves with reduced lobing. All from *DEDEN1486*, Pulau Pasumpahan, West Sumatra.

in every detail (Fig. 5). This is one of Jack's more lengthy and detailed descriptions, and every character seemed to tally perfectly; the lobed leaf shape, the cartilaginous serratures on the leaf margin, the semiverticil of scales at the petiole apex, the fleshy outer tepals on the male flower, each of which is diagnostic enough when considered singly. However, in the excitement of the moment of discovery, the authors failed to notice that the collection from Pulau Pasumpahan did not have leaves which were "finely punctate, the dots appearing elevated on the upper surface and depressed on the lower"; they were completely smooth. However by the time this was noted several days had passed and there was no time to visit Pulau Pegang to investigate further. Another species, as yet unnamed and manifestly allied to *Begonia sublobata* given the red scales at the petiole apex, was discovered nearby on the mainland at Batang Aia Manjuto. Hence it seems possible that the ancestor of *Begonia sublobata* has fragmented locally into a number of taxa, and that the islands in the bays south of Padang may harbour a number of endemic species. Consequently further work is required to resolve the true identity of *Begonia sublobata*.

IUCN category. Data Deficient.

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