Marantaceae in the Philippines

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ABSTRACT: The Marantaceae are represented in the Philippines by 2 genera, *Donax* and *Phrynium* with 8 native species of which 3 are endemic and three near-endemic. All species are poorly documented in the literature and the most contemporary taxonomic treatments are more than 80 years old. We provide an up to date taxonomic treatment of the Philippine Marantaceae including a key to the species, morphological descriptions, and notes on their distribution, vernacular names, ecology and uses. Three species are lectotypified; two species is neotypified, and one new combination is made.

KEY WORDS: *Donax*, *Monophrynium*, *Phacelophrynium*, *Phrynium*, Marantaceae, Philippines.

INTRODUCTION

The Philippines consist of more than 7,000 islands located in the western part of the Pacific Ocean. Due to a strong degree of isolation from both the Asian mainland and the Malesian archipelago the flora of the Philippines is unique with species level endemism exceeding 60 percent. At the generic level endemism is less pronounced, ca. 1.7 percent (Madulid, 1991). Much of the flora of the Philippines remains poorly known as illustrated by the fact that some of the best general sources of knowledge of the Philippine flora are Merrill's publications made almost a century ago (Merrill, 1912, 1922-26).

A general problem facing the study of the Philippine flora is the relatively few existing herbarium specimens. The herbarium of the Philippine National Museum was destroyed during World War II and although efforts have been made to rebuild these collections the ca 200,000 specimens at PNH are clearly not enough to give a reasonable representation of the country's estimated at more than 8,000 vascular plant species (Lim et al., 2000). Nevertheless the PNH herbarium represents the largest single collection of Philippine plants.

The pantropical prayer plant family Marantaceae includes about 29 genera and 550 species worldwide (Andersson, 1998, Suksathan et al., 2009), most of which occur in the Neotropics. Six genera with about 55 species occur in tropical Asia. Two genera, *Donax*: (1 sp.) and *Phrynium* (6 spp., incl. *Phacelophrynium* and *Monophrynium*) reach the Philippines. The genus *Schumannianthus*, a close relative to *Donax* that is distributed in Indochina and west Malesia, has not been recorded in the Philippines. Likewise *Stachyphrynium*, a prominent taxon in the Indochinese area and in Borneo, is absent from the archipelago. Most of the Marantaceae that do occur in the Philippines are endemic or sub-endemic to that country and hence warrant special attention. Nevertheless, their taxonomy is poorly known, and the most contemporary treatments are more than 80 years old (Ridley, 1909; Merrill, 1925).

In this paper we provide a taxonomic account of the Philippine Marantaceae. The data presented is based on examination of available herbarium specimens from a range of herbaria (AAU, BK, BO, C, E, K, KEP, KLU, MO, NY, P, PNH, PUH, QBG, S, SING, US) together with field observations made in September 2003. For taxa that have been included in recent floristic treatments for other regions only short diagnoses are provided. Less well documented taxa are described in more detail. A list of all specimens seen is appended. Generic delimitation follows Suksathan et al. (2009). Descriptive terminology regarding inflorescence structure follows Clausager and Borchsenius (2003). The term 'special paraclade' refers to the basic unit of the inflorescence while 'fertile bracts' refer to those bracts that subtend a special paraclade.

Key to the species of Marantaceae in the Philippines

1a. Stem tall and richly branched; fruit a berry, white at maturity ……..
……..……..……..… 1.1. *Donax canniformis*
1b. Stem short and unbranched, terminated in an inflorescence; fruit a capsule, green to red, never white [*Phrynium*]. ……..…….. 2
2a. Fruits red; inforescence capitate two outer staminodes ..……..……
……..…….. 2.5. *Phrynium pubinerve*
2b. Fruits green brown or orange; inflorescence usually with clearly discernable branches; one outer staminode. ……..…..… 3
3a. Flowers solitary; inflorescence branches fasciculate. …..……
……..…….. 2.2. *Phrynium fasciculatum*
3b. Flowers in pairs; inflorescence branches not fasciculate. ……..….. 4
4a. Inflorescence branches short and thick; fruits evenly spaced, scattered along the branches, or hidden by the inflorescence bracts. …… 5
4b. Inflorescence branches long and slender; fruits clearly visible, borne in clusters separated by long internodes. ……. 6

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5a. Inflorescence bracts small, less than 1 cm long. …… ……..…….. 2.4. *Phrynium minutiflorum*
5b. Inflorescence bracts large, more than 2 cm long. ……..…… ……...…… 2.1. *Phrynium bracteosum*
6a. Plant up to 2 m tall; fruit orange. …….. 2.3. *Phrynium interruptum*
6b. Plant to 1 m tall; fruit green. ……...…….. 2.6. *Phrynium simplex*

TAXONOMIC TREATMENTS

1. ***Donax*** Lour., Fl. Cochinch. 1: 11. (1790).

One species ranging from India (Andaman islands) to the New Hebrides (Vanuatu islands) in the South Pacific Ocean. The genus is diagnosed by its caulescent habit and by the combination of ultimate flower clusters with extended axes; flowers arranged in pairs; presence of glandular (nectariferous) bracteoles on the pedicels; and fleshy, indehiscent fruit.

1.1. ***Donax canniformis*** (G. Forst.) K. Schum. Fig. 1A

Donax canniformis (G. Forst.) K. Schum., Bot. Jahrb. Syst. 15(4): 440. (1893). Basionym: *Thalia canniformis* G. Forst., Fl. Ins. Austr.: 1 (1780). Type: Vanuatu islands, The New Hebrides, *J.G.A. Forster s.n.* (holotype, BM!). There are numerous synonyms of this name. For a full nomenclatural account see Suksathan & Borchsenius (2005).

Plant to 3 m tall, with a richly branched aerial stem. Leaves clustered towards the tip of the branches; blades to 30 cm long and 20 cm wide. Inflorescences several, lax or richly branched, composed of 2-3 major branches of increasing orders, each to 30 cm long. Flower white, 25-30 mm long, with 2 outer staminodes. Fruit globose, white at maturity, c 1 cm in diameter.

Distribution: Andaman Islands, India to Vanuatu islands, the New Hebrides, north to Taiwan (Orchid Island).

Habitat: Lowland dipterocarp forest from sea level to *c* 400 m alt.

Vernacular names: Aralu (Lanao–Mindanao; *Rocero, Sr. M.* 205), Bamban (Tagalog; *Liborio Ela Ebalo* 827, 878, *Mendoza, D.R.* 65-119), Banban (Tagalog- Polillo Island & Mindoro; *Fox, R.B. 34*), Basayan (Agta-E Cagayan-NE Luzon; *Allen, M.S.* 41-81), Binbin (Casiguran-Tagalog - Polillo Island; *Fox, R.B.* 34), Bonbon (Bicol–Camarines; *Canvocar, P.* 59), Buldong (Palawan; *Ebalo, L.* 1370), Bunban (Bisaya-Mindanao; *Ebalo, L.E.* 1093), Manban (Samar-Bisaya; *Sulit, M.D.* 2803).

Uses: Stems are used in construction of drying racks. Epidermis fibers are used to tie together material in house construction. Fibers are also used for making baskets (Polillo Island).Young shoots are used as a betel nut substitute (NE Luzon).The ripe fruit is edible.

Discussion: A widespread and common species throughout SE Asia. Philippine populations of *D. canniformis* tend to have flowers that are larger than in other areas (25-30 mm long vs. 15-25 mm in Borneo and Thailand). Also, inflorescences tend to have fewer branches (2-3 vs. up to 10 in other areas). Full botanical descriptions of *Donax canniformis* in Borneo and Thailand, respectively, can be found in Clausager & Borchsenius (2003) and Suksathan & Borchsenius (2008).

2. **Phrynium Willd**, Sp. Pl., ed. 4 (Willdenow) 1(1): 1, 17 (1797).

About 35 species of rosulate forest plants ranging from India and Sri Lanka to Indo-China and throughout the Malesian region to New Guinea. Six species occur in the Philippines. The genus is diagnosed by the combination of a rosulate habit, brachyblastic flower groups (i.e., with axes strongly condensed), 0 (-1) bracteole, sepals at least half as long as the corolla tube, and an ovary with three fertile locules. The former genera *Monophrynium* K. Schum. and *Phacelophrynium* K. Schum. are included in synonymy following Suksathan et al. (2009).

2.1. ***Phrynium bracteosum*** (Warb. ex K. Schum.) Suksathan & Borchs. *comb. nov.* Fig. 2A

Phrynium bracteosum (Warb. ex K. Schum.) Suksathan & Borchs., *comb. nov.* Basionym: *Phacelophrynium bracteosum* Warb. ex K. Schum., Pflanzenr. (Engler) Marant. 123 (1902). Lectotype (selected by Clausager & Borchsenius 2003): *Vidal 3976* (K!), Philippines, Luzon, Albay province

Rosulate, clustering herb, to 1.5 m tall, often forming large clones. Leaf blade 26-56 cm long and 9-19 cm wide. Inflorescence 12-20 cm long; first order branches 3-6, erect, to 11 cm long, distichously arranged, the proximal ones usually with a few higher order branches; fertile bracts up to 20 per branch, arranged in 2 rows forming an *c.* angle of 60-70 degrees, 3-4 cm long, pale green to whitish; flower pairs 3-4 per special paraclade, associated prophylls 2.5 x 1 cm, interphylls *c.* 2 x 0.6 cm. Flowers white, 27-30 mm long; sepals 8-10 mm long; corolla tube 10-12 mm long, lobes 13-14 x *c.* 5 mm; outer staminode 1, the free part 7-8 x *c.* 5 mm, entire; callose staminode *c.* 7 mm long, including a short, to 8 mm wide petaloid flap; cucullate staminode *c.* 4 mm long; fertile stamen *c.* 4 x 1 mm. Fruit ellipsoid, *c.* 10 mm long, green to brown, dehiscent; seeds 3, 7-8 mm long, brown; aril white, bilobed, *c.* 5 mm long.

Distribution: Philippines and N Borneo.

Habitat: Lowland dipterocarp forest, lower montane forest and disturbed areas from sea level to *c.* 1,000 m alt.

Vernacular names: Bunbun (Cebuano, Mindanao; *A.N.U.* 1678), Hagikhik (Samar; *Sulit, M.D.* 4145),

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Fig. 1. A: *Donax canniformis*. B: *Phrynium minutiflorum*, near Summit village, Catanduanes Island, Sep 2003. C: *P. pubinerve*. D: *P. fasciculatum*, Aurora Province, Sep 2003.

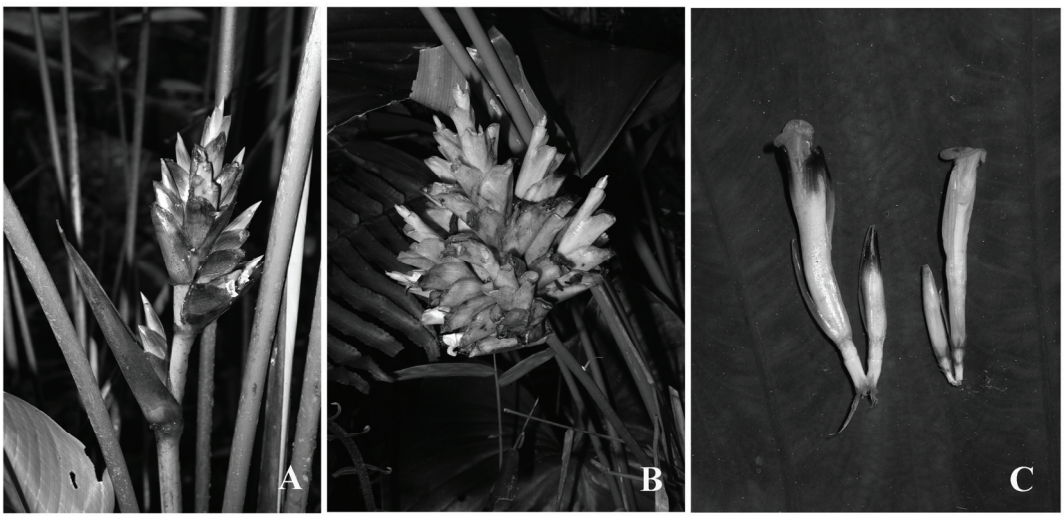


Fig. 2. A: *Phrynium bracteosum*, Gigmoto, Catanduanes Island, Sep 2003. B: *Phrynium maximum*, Borneo, Sabah, road Kota Kinabalu-Tenom, km 39, Sep 2004). C: Comparison of flowers of *P. maximum* (left) vs *P. bracteosum* (right), same locality.

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Luket (S-Cotabato-Mindanao; *Gutierrez,Yen & Reynoso* 22), Talipopo (Samar; *Gutierrez, H.G. et al.* PNH no. 117519).

Uses: "Leaves occasionally used as G-string" (S Cotabato-Mindanao; *Gutierrez,Yen & Reynoso* 22).

Discussion: Clausager & Borchsenius (2003) included *P. bracteosum* in synonymy of *P. maximum* (Blume) Suksathan & Borchs. (Fig. 2B) as they found that the characters used in the literature to distinguish the two were not useful. Detailed studies of fresh and pickled flower material, however, demonstrate that differences do exist. *Phacelophrynium bracteosum* has smaller flowers (27-30 mm long) than *P. maximum* (30-35 mm long) with shorter sepals (8-10 mm vs. 13-15 mm) and a shorter and broader petaloid lobe of the callose staminode (c 7 x 8 mm vs. 10 x 7 mm; Fig. 2C). Furthermore, its inflorescence bracts are whitish green to pale brown, versus green to chestnut brown in *P. maximum*, and they tend to be inserted at a wider angle. Some of the differences listed above were noticed by Clausager and Borchsenius, who suggested that two forms of *P. maximum* occurred in N Borneo. The material available to them was, however, inadequate to substantiate the differences, particularly with respect to flower size. DNA sequence data (Suksathan *et al.* 2009) support the conclusions drawn from morphology. Bornean *Phrynium maximum* (as *Phacelophrynium maximum 1*) clustered with *Phrynium aurantium* Clausager & Borchs., a Bornean endemic species, while *Phrynium bracteosum* from the Philippines (as *Phacelophrynium maximum 2*) clustered with Bornean material with similar flower morphology (as *Phacelophrynium maximum 3*). Some geographic variation occurs among the two subpopulations of *P. bracteosum*. In the Philippines bracts are typically whitish green and flowers are white while in Borneo bracts are often pale brown and flowers are yellow to orange. Flower morphology is, however, similar as is bract structure and overall inflorescence shape.

2.2. ***Phrynium fasciculatum*** (Presl.) Horan. Fig. 1D

Phrynium fasciculatum (Presl.) Horan., Prod. Scitam.: II (1862); *Monophrynium fasciculatum* (Presl.) K. Schum., Pflanzenr. (Engler) Marant. 68 (1902). Basionym: *Calathea fasciculata* Presl., Reliq. Haenk. 1: 108 (1830). Lectotype (here designated): Plate in Reliq. Haenk. 1: tab XVI (1830).

Monophrynium congestum Ridl., Philipp. J. Sci., C. 4: 197 (1909); *Phrynium congestum* (Ridl.) Suksathan & Borchs., Bot. J. Linn. Soc. 159: 394 (2009). – Type: *Curran For. Bur. 9548* (holotype PNH destroyed). Philippines, Luzon, Laguna-Tayabas, from Paete to Piapi. Neotype (here designated): *Fenix, E. sn*., Bureau of Science no. 28245 (SING!; isotype: BO!), Philippines, Luzon, Kalinga-Apayao prov.

Rosulate, clustering herb, to 1 m tall. Shoots spaced 2-3 cm along the rhizome, the fertile shoots with a 30-50 cm tall stem, bearing one basal, petiolate leaf and one sesssile leaf inserted immediately under the inflorescence. Leaves of variable shape and colour, from lanceolate and dark green in shady, moist environments to elliptic or ovate and lighter green in more exposed areas; leaf blade 20-40 cm long and 5-9 cm wide. Inflorescence with 2-3 basal branches, the longest to 13 cm, each supporting 1-5 higher order branches bearing up 25 equally spaced, distichous, clearly overlapping fertile bracts, these brown, pubescent, *c.* 10 mm long; special paraclades with a single, 1-flowered flower group; prophyll associated with the flower group 6-7 mm long. Flowers white, 9-10 mm long; sepals 2-2.5 mm long; corolla tube 3-4 mm long, lobes 5-7 x 2-3 mm; outer staminodes 2, the free lobes 5-5.5 x 3-4.5 mm; callose staminode 7-8 mm long, petaloid lobe *c.* 4 mm wide; cucullate staminode *c.* 4 mm long; fertile stamen *c.* 4 x 1 mm. Fruit green, triangular in cross-section, 7-8 mm tall, the sides *c.* 10 mm wide; seeds angular, *c.* 5 mm long, 5 mm maximum width, dorsally with a series of transverse ridges; aril white, bilobed, lobes 3-4 mm long.

Distribution: Philippines (no records from Mindoro and Palawan) to E Indonesia (Maluku).

Habitat: Dipterocarp and lowland evergreen forest, 0-700 m alt., often in areas with some influence from ultramafic rock.

Vernacular names: Hagikhik (Samar-Bisaya; *Gutierrez, H.G. et al.* 690).

Discussion: *Phrynium fasciculatum* is a clearly distinct species that has been recorded in several localities in the NE part of Luzon Island in moist to wet mountain forest. In the mountains W of Baler it is quite common in the forest understory. According to the original description *P. congestum* resembles *P. fasciculatum* in having solitary flowers but is different in its strongly condensed, capitate inflorescence. The type was lost in the fire of the PNH herbarium in the last days of the Second World War. As neotype we have selected a collection from the Kalinga-Apayao province in N Luzon (*E. Fenix, B.S. 28245*, BO!, SING!) referred to *P. congestum* by Merril (1925), who had access to the type collection before this was destroyed. This collection is no different from *P. fasciculatum* and the name seems merely to represent a depauperate form of *P. fasciculatum*.

2.3. ***Phrynium interruptum*** (Warb. ex K. Schum.) Suksathan & Borchs. Figs. 3A & B

Phrynium interruptum (Warb. ex K. Schum.) Suksathan & Borchs., Bot. J. Linn. Soc. 159: 394 (2009). Basionym: *Phacelophrynium interruptum* Warb. ex K.

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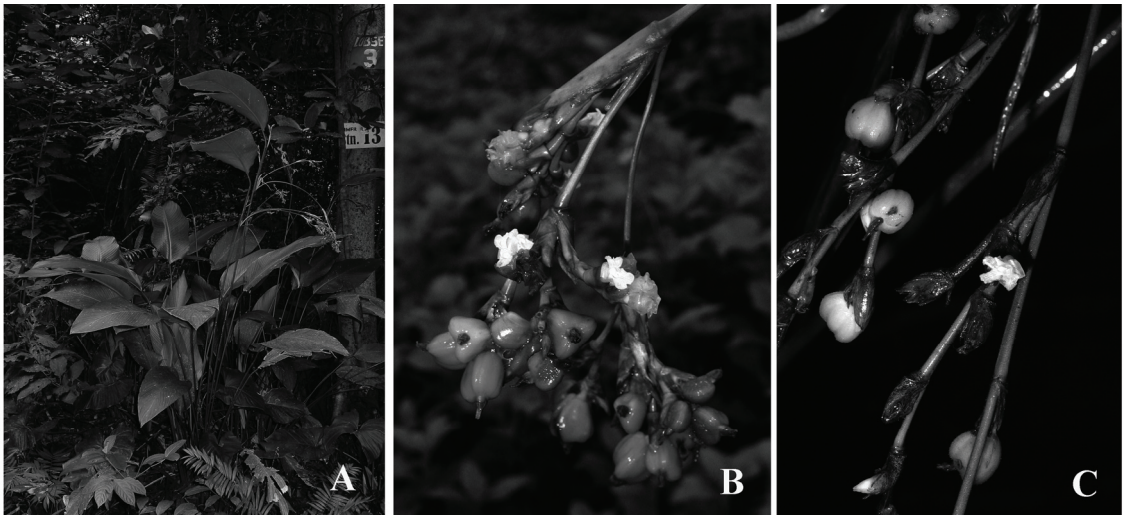


Fig. 3. A-B: *Phrynium interruptum*, Mt. Maquiling, Sep 2004. C: *P. simplex*, Luzon, Mt. Banahao, Majayjay Falls, Sep 2003.

Schum., in Engler, Pflanzenr. 4(48): 121 (1902). Syntypes: *Warburg 12495* (B destroyed), Philippines, Manila, Mt. Alban, March, 1888; *Warburg 12160* (B destroyed), Philippines, N Luzon, Eurile; *Warburg 14585* (B destroyed) Philippines, Mindanao, Davao, Mt. Dagatpan. Neotype Philippines, Luzon, Sorsogon prov., Mt. Balusan, Irosin, Oct, 1915 *A.D.E. Elmer 14552*, (PNH!; isotypes: BO!, NY!, P!, S!; designated here).

Rosulate, clustering herb, to 2 m tall, often forming large clones. Leaf blade 26-56 cm long and 9-19 cm wide. Inflorescence varying in size, from 8 cm long with just 1-2 basal branches, to > 50 cm long with 4-5 basal branches; each branch with a number of widely spaced bracteate nodes from which higher order branches that repeat the structure of the mother-branch emerge. Fertile bracts *c*. 14 mm long, brown, pubescent, clustered towards the tip of the branches, typically 3-5 per branch inserted over a distance of 1.5-3 cm; special paraclades with 1 (-2) flower pairs, the second apparently never developing beyond small buds; prophyll associated with the first flower pair 9-10 mm long; interphyll *c*. 8 mm long. Flowers white, 8-10 mm long; sepals 5-6 mm long; corolla tube 2-3 mm long, lobes 4-5 x 2-4 mm; tapering; outer staminode 1, the free part 6 x 3 mm, bilobed; callose staminode 5-6 mm long, petaloid flap *c*. 4 mm wide, bilobed; cucullate staminode *c*. 3 mm long; fertile stamen *c*. 3 x 1 mm. Fruit orange, triangular in cross-section with rounded corners, *c*. 12 mm tall, the sides to 13 mm wide; pedicel 3-7 mm long; seeds black, angular, 7-8 mm long, *c*. 5 mm wide, dorsally with a series of transverse ridges; aril orange, with two blunt lobes, *c*. 2 mm long.

Distribution: Philippines to E Indonesia (Maluku).

Habitat: Lowland forest and disturbed areas from sea level to 500 m alt.

Vernacular names: Bayenhon (Cebu, Bisaya and-Mindanao; *A.N.U.* 1723), Hagikhik (Tagalog-Luzon; *Sulit, M.D.* 1658), Uddin (Ifugao-Luzon; *Banlugan et al*. 276).

Uses: Basket weaving (NE Luzon; *Ramos, M.* Bureau of Science no. 1041).

Discussion: *Phrynium interruptum* is the most commonly collected species of Marantaceae in the Philippines, found throughout the archipelago in forest as well as in disturbed vegetation, roadsides, or even plantations. It is easily identified by its lax, richly branched inflorescence, small flowers, and orange capsular fruit with black seeds and a conspicuously orange aril. We have not been able to locate any of the Warburg syntype collections cited by Schumann (1902). As neotype we have chosen the collection *A.D.E. Elmer 14552*, Irosin (Mt. Balusan), Sorsogon prov., Luzon, as this collection corresponds precisely to the original description and includes five duplicates distributed to major herbaria worldwide.

2.4. ***Phrynium minutiflorum*** Suksathan & Borchs. Fig. 1B

Phrynium minutiflorum Suksathan & Borchs., Bot. J. Linn. Soc. 159: 394 (2009). Basionym: *Phacelophrynium cylindricum* Merr., Philipp. J. Sci., C 13: 269 (1918). Type: Philippines, Catanduanes, Mt. Mariguidon, Nov. 23, 1917, in damp forests, *M. Ramos 30503* (holotype PNH destroyed. Lectotype (here selected): K!; isotype US!).

Rosulate herb, to *c*. 1 m tall, forming clones up to 2 m in diam. Rhizome creeping, with densely positioned erect shoots, each with 1-2 leaves. Leaf blade 20-25 x 12-13 cm. Inflorescence terminal, borne on a slender

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peduncle in the axil of an accompanying leaf, peduncle 5-10 cm long, inflorescence branches 1-3, 2-7.5 cm long, cylindrical, with numerous densely inserted spirally arranged fertile bracts, 1-1.5 cm long; special paraclades with 1 flower pairs, prophyll *c.* 9 x 4 mm, interphyll 4-5 mm long. Flowers inconspicuous, white, to 12 mm long; sepals 6-9 mm long; corolla tube 4-7 mm long, lobes 4-5 x 2-4 mm, rolled back; outer staminode 1, the free part 2.5-3 x *c.* 2 mm, bilobed; callose staminode with a petaloid flap *c.* 3 x 2.5 mm almost square, just briefly emarginate at tip; cucullate staminode 2-3 mm long; fertile stamen *c.* 3 x 1 mm. Fruit green, mostly triangular in cross-section with 3 seeds, but occasionally flat with only 2 seeds, *c.* 1 cm long. Seeds straw-coloured, *c.* 5 mm long, with a pale bifid aril *c.* 2 mm tall.

Distribution: Endemic to the Philippines (SE Luzon: Catanduanes Island; Panay Island).

Habitat: Mountain-ridge scrubs, 600-700 m alt.

Vernacular names: Hagikhik (Bicol-: Catanduanes; *Suksathan, P. & Borchsenius, F.* 3531, referring to the heckling sound made by the leaves when they rubble together in the breeze).

Discussion: *Phrynium minutiflorum* is immediately distinguishable by its short, erect inflorescence branches with numerous, small, spirally arranged bracts (Fig. 1D), almost giving the appearance of a Cyperaceae inflorescence. It is known only from a small number of collections in two localities. The type was collected in the central part of Catanduanes Island by M. Ramos in 1917 and that population was recently relocated by the authors. A second collection was made by M. Ramos and G. Edaño in Panay Island in 1918 but the status of that population is unknown. The extant population in Catanduanes Island appears to be of a reasonable size, but occurs in a disturbed region of grazing land and could be vulnerable. In spite of its unusual morphology, DNA analyses indicate a close relationship between *P. minutiflorum* and other small-flowered Philippine species such as *P. interruptum*, *P. simplex* and *P. fasciculatum*.

2.5. ***Phrynium pubinerve*** Blume Fig. 1C

Phrynium pubinerve Blume, Enum. Pl. Javae 1: 38 (1827). Type: Indonesia, Java, *Blume s.n.* (holotype L!).

Phrynium philippinense Ridl., in Elmer, Leaflets Philipp. Bot. ii. 570 (1909). Type: *A.D.E. Elmer 7289* (holotype: PNH destroyed; lectotype, designated by Suksathan & Borchsenius in 2005, BO!; isotype NY!), Philippines, Leyte at Palo. There are numerous other synonyms - for a full nomenclatural account see Suksathan & Borchsenius (2005).

Rosulate plant 1-2(-3) m tall, sometimes forming dense clusters up to several metres in diameter. Leaf blade 23-82 x 9-30 cm. Inflorescence strongly congested, capitate, 4-8 cm in diameter, bracts subtending the proximal branches dark brown, partially sheathing the entire inflorescence, quickly withering and dissolving distally into a decaying fibrous mesh. Flowers pinkish-white, *c.* 18 mm long. Fruits bright red, *c.* 15 mm long, dehiscent. Complete botanical descriptions of *P. pubinerve* are provided by Clausager & Borchenius (2003) and Suksathan & Borchsenius (2008).

Distribution: India, Myanmar, Indo-China, Malaysia, Indonesia, Philippines, and Papua New Guinea.

Habitat: Lowland forest from sea level up to 600 m alt.

Vernacular names: Ahuket (Agta-E Cagayan, NE Luzon; *Allen, M.S.* PNH no. 150112), Agi-git (Tagbanwa-Palawan; *Reynoso, E.J. sn.* PNH. No. 87851), Buldo-buldong (Palawan; *Ebulo, L.* 1376).

Discussion: P*hrynium pubinerve* is readily recognized by its capitate inflorescence, with tattering brown bracts, and red capsular fruits with gray seeds. Plants are strongly variable in size at reproductive maturity. The Philippine population has been described as separate species, *P. philippinense*, but shows no differential characters relative to populations of *P. pubinerve* in other areas.

2.6. ***Phrynium simplex*** (Elmer) Suksathan & Borchs. Fig. 3C

Phrynium simplex (Elmer) Suksathan & Borchs., Bot. J. Linn. Soc. 159: 394 (2009). Basionym: *Monophrynium simplex* Elmer, Leafl. Philipp. Bot. 1: 276 (1908). Lectotype (here designated): Philippines, Luzon, Tayabas prov., Lucban, Mt. Banahao, 750 m. alt. near steams, *A.D.E. Elmer 9147* (BO!; isotypes K!, US!). Paratype: same locality, *A.D.E. Elmer 7611* (K!).

Rosulate, clustering herb, to 1 m tall. Leaf blade 25-35 cm long and 7-10 cm wide. Inflorescence with 3-5 basal branches, to 40 cm long, these proximally with widely spaced bracteate nodes, up to 18 cm apart, distally with regularly spaced nodes, 1.5-3 cm apart, each bract subtending a short side-branch with *c.* 2 fertile bracts, occasionally the proximal nodes subtending a higher order branch repeating the structure of the mother branch. Fertile bracts *c.* 8 mm long, brown, pubescent; special paraclades with 1-2 flower pairs; prophyll associated with the first flower pair *c.* 6 mm long; interphyll *c.* 6 mm long. Flowers white, 8-9 mm long; sepals 5-6 mm long; corolla tube *c.* 2 mm long, lobes 5 x 3 mm; tapering; outer staminode 1, the free part 5 x 4 mm, bilobed; callose staminode 5 mm long, petaloid flap *c.* 5 mm wide, bilobed; cucullate staminode *c.* 3 mm long; fertile stamen *c.* 3 x 1 mm. Fruit green, triangular in cross-section with rounded corners, *c.* 9 mm tall, the sides to 11 mm wide; pedicel *c.* 4 mm long; seeds angular, 7-8 mm long, *c.* 4 mm wide, dorsally with a

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series of transverse ridges; aril white, with two tapering lobes, *c.* 4 mm long.

Distribution: Endemic to the Philippines (Luzon: Tayabas, Apayao; Camarines Sur, Mt. Isarog).

Habitat: Mountain forest, at low elevations, near streams.

Discussion: *Phrynium simplex* was originally described by Elmer (1908) as a species of *Monophrynium*, but examination of its inflorescence reveals that flowers are in fact paired and not solitary as characteristic of that former genus. It strongly resembles *P. interruptum*, from which it differs in the branching pattern of the inflorescence. In *P. simplex* each main branch has a series of regularly spaced, very short side branches with just 1-2 fertile bracts. Long side branches repeating the structure of the mother branch are rare. In *P. interruptum*, long side branches are common from the proximal nodes of the main branches, and fertile bracts are clustered towards the tip of the branches, typically 3-5 in number. The color of the mature fruits also differs between the two species (green at maturity in *P. simplex* versus orange in *P. interruptum*) and finally *P. simplex* is a smaller plant, typically just about 1 m tall, while *P. interruptum* often achieves twice that size. *Phrynium simplex* is endemic to the Philippines where it has been recorded in a few localities on Luzon Island and on Camarines Sur. Very few herbarium collections exist. In contrast, *P. interruptum* has been collected frequently in most parts of the Philippines. Given the morphological. similarity of the two species it seems unlikely that the apparent rarity of *P. simplex* should be a collection artifact

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APPENDIX 1: List of specimens examined

Donax canniformis (G. Forst.) K. Schum.

LUZON: Bagio Cove, Cagayan, Mar 1981, *Allen, M.S. 41-81, PNH no. 150124,* (PNH); Mt. Maquiling, Laguna prov., Apr. 1948, *Canicasa, E. 167,* (PNH); Tabalago, Pili, Camarines Sur, Jun 1947, *Canvocar, P. 59,* (PNH); Anibawan, Polillo Island, Dec. 1948, *Castro, A.P. 059,* (PNH); Irosin, Sorsogon prov., May 1957, *Edaño, G. & Gutierres H. 73,* (PNH); Mt. Cadig, Camarines Norte, Jun. 1959, *Edaño, G.E. PNH no. 9558,* (PNH); Polillo Island, Nov.-Dec. 1948, *Fox, R.B. 34,* (PNH); Mt. Pinatubo, Zambales prov., Jun.-Jul. 1948, *Fox, R.B. 68,* (PNH); Mangoratao, Ilocos Norte, 22 August 1992, *Gaerlan, F.J.M. et al. 9865,* (KEP); Atimonan, Tayabas prov., Aug. 1904, *Gregory, V.B. 100,* (PNH); Camiguin Island, Babuyan Islands, Nov. 1964, *Hatusima, S. & Sata, M. 29307,* (PNH); Manluluwag, Pangasinan, Feb. 1974, *Madulid & dela Cruz 3157,* (PNH); Bo, Katimo, Tagkawayan, Quezon prov., Mar. 1967, *Mendoza, D.R. 65-119,* (PNH); Kiangan, Ifugao, 15 Aug. 1992, *Reynoso, Sagcal & Garcia 7282,* (KEP); Mt. Palay Palay National Park, Cavite, 23 Mar. 1995, *Reynoso, E., Sagcal & Fuentes 14966,* (KEP); Maquiling National park, Laguna prov., May 1946, *Salvoza, F.M. 1010,* (PNH); Bo. Lube, Polillo Island, Jun. 1946, *Salvoza, F.M. 1069,* (PNH); Tagaytay City, Nov. 1956, *Steiner, M.L. 1142,* (PNH); Atimonan, Quezon prov., Jun. 1958, *Steiner, M.L. 1389,* (PNH); Garden Manila, Mar. 1956, *Steiner, M.L. 816,* (PNH); Paete, Laguna prov., Sep. 2003, *Suksathan, P. & Borchsenius, F. 3524,* (AAU, PNH, QBG); Mt. Maquiling, Laguna prov., May 1947, *Sulid, M.D. 1642,* (PNH); Mt. Makiling, Laguna province, May 1947, *Sulid, M.D. 8315,* (BK); Mt. Yagaw, Mansalay, Mindoro prov., Nov.-Dec. 1952, *Sulit, M.D. & Conklin, H.C. 4641,* (PNH); LEYTE: So-ong Lake, Palo, Mar. 1957, *Frohne, G.M. 57-36,* (PNH); So-ong Lake Road, Tacloban, Apr. 1957, *Frohne, G.M. 57-50,* (PNH); Curahan trail, Palo, Jun. 1957, *Frohne, G.M. 57-84,* (PNH); MINDORO: Calapan, Mindoro Or., May 1953, *Briton, B.B. sn. PNH no. 19520,* (PNH); Boliran, Naujan, Sep. 1947, *Celestino, M. & Castro A. 105,* (PNH); Mts. Budburan and Namalayan, Nov. 1939, *Ebalo, L.E. 221,* (PNH); Bongabon and Pinamalayan, Feb.-Apr. 1941, *Maliwanak, E. 182,* (PNH); Pangalkagan, Sablayan, Occidental Mindoro, Oct. 1961, *Reed, R. 51,* (PNH); Sabang river, Dec. 1964, *Reed, R. b 27,* (PNH); NEGROS: Cuernos De Negros,

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Negros Oriental, May 1949, *Edaño, G.E. PNH no. 7274,* (PNH); Maeti Dam, Negros Oriental, 27 May 1991, *Reynoso, E.J., Fuentes & Garcia 1148,* (KEP); PALAWAN: West of Talakaigan, R. Apis, Aborian, Aug. 1947, *Ebalo, L. 1370,* (PNH); Quezon, Apr. 1964, *Espiritu, R.A. sn. PNH no. 91459,* (PNH); Baraki, Dec. 1950, *Fox, R.B. 1,* (PNH); St. Paul's Bay, Mt. Bloomfield, 4 May 1984, *Podzorski, A.C. 2008,* (KEP); Puerto Princesa, 28 June 1996, *Reynoso & Majaducon, R. 24340,* (KEP); SAMAR: Liquilocon, Wright, Apr.-May-1948, *Sulit, M.D. 2803,* (PNH); Loquilocon, Wright, April-May 1948, *Sulid, M.D. 6073,* (BK); MINDANAO: Tungao, Agusan prov., May 1950, *Añonnuevo, P. PNH no. 13730 ,* (BK, PNH); Between Mindagat & Malitbog, Bukidnon prov., Mar.-Apr. 1950, *Añonnuevo, P. PNH. No. 13546,* (PNH); Tungao, Agusan Norte, 11 May 1991, *Barbon, E.B., Romero, E.M. & Fernando, L.S. 1754,* (KEP); UP grant, Isabela, Basilan Island, Oct. 1953, *Briton, B.B. sn.,* (PNH); Gubang and Mt. Mupo, Mar. 1941, *Ebalo, L.E. 1093,* (PNH); Taglawig sitio, Maco, Davao prov., Oct. 1946, *Edaño, G.E.1100,* (PNH); Paglaum, Dumalinao, Zamboanga del sur, Jun 1985, *Filomena, Sr. 143,* (PNH); Dikus, Zamboanga del Norte, Sep. 1957, *Frake C. & C. PNH no. 35972,* (PNH); Cotabato prov., Oct.-Nov. 1956, *Kerr, H.,* (PNH); Mt. Lina Sanito, near Kabasalan, Dec. 1940, *Liborio Ela Ebalo 827,* (PNH); Isabela de Basilan, Land grant of UP, Jan 1941, *Liborio Ela Ebalo 878,* (PNH); Tungao, San Mateo, Butuan, Agusan river, Agusan prov., May-Jun. 1961, *Mendozo, D.R. 61-166,* (PNH); Mt. Koronon, Santa Cruze, Dacao, Apr. 1964, *Reynoso, E.J. 29,* (PNH); Linao, Tuguegarao, Cagayan, Jun. 1980, *Rocero, Sr. M. 205,* (PNH); Coronon valley near Santa Cruz, Davao prov., Apr. 1964, *A.N.U. 1712,* (PNH); Biliran, Dec. 1972, *Leyuno, C.C. 85,* (PNH).

Phrynium bracteosum (Warb. ex K. Schum.) Suksathan & Borchs.

LUZON: Sarapan, Camarines, Oct. 1928, *Edaño, G.,B.S. no. 76178,* (NY); Irosin (Mt. Bulasan); Sorsogon prov., Dec. 1915, *Elmer, A.D.E. 15240,* (K, MO, NY, P); Mt. Buluzan, Sorsogon prov., May 1916, *Elmer, A.D.E. 16145,* (NY, PNH, S); Catanduanes, Jul.-Sep. 1928, *Ramos, M.& Edaño, G. sn.,B.S. no. 75324,* (NY, SING); Road Gigmoto-Summit, Catanduanes, Sep. 2003, *Suksathan, P. & Borchsenius, F. 3530,* (AAU, PNH, QBG); Mt. Buluzan, Sorsogon prov., Jul.-Aug. 1947, *Sulit, M.D. 1820,* (MO, PNH); Albay province, *Vidal,* (lectotype: K); LEYTE: Lake Danao, Ormoc, Mar. 1950, *Edaño, G. 2195,* (PNH, SING); Mt. Mamban, Ormoc, Apr. 1950, *Edaño, G.E.2580,* (PNH); Mt. top Dagami, Jul. 1957, *Frohne, G. 57-133,* (PNH); Jun. 1913, *Wenzel, C.A. 232,* (MO); PALAWAN: Panalingajan river, Mar. 1929, *Edaño, G.,B.S. no. 77390,* (NY); SAMAR: Mt. Sohoton, Basey, Mar.-Apr. 1970, *Gutierrez, H.G. et al. PNH no. 117519,* (K, PNH); Catubig river, Oct. 1906, *Merrill, E.D. 5206,* (NY); Mt. Cansayao, Catarman, Mar.-Apr. 1959, *Sulit, M.D. 4145,* (PNH); *Sulit, M.D. 5259-4,* (PNH); Mt. Cansayao, Catarman, Mar.-Apr. 1959, *Sulit, M.D. sn., PNH no. 14337,* (PNH); Loquilocon, Wright, Apr.-May 1948, *Sulit, M.D. sn., PNH no. 6170,* (PNH); Mt. Calbiga, Wright, Apr.-May 1948, *Sulit, M.D. sn., PNH no. 6395,* (PNH). MINDANAO: Gumate dist., E slope of Mt. Apo, Apr. 1964, *A.N.U. 1678,* (PNH); UP land grant, Isabela de Bisilan, Zamboaga prov., Jan. 1941, *Ebalo, L.E. 913,* (PNH); Dikus, Zamboanga del Norte, Sep. 1957, *Frake, C. & C. 121,* (PNH); Tasaday forest, S Cotabato, Jul.-Aug. 1972, *Gutierrez,Yen & Reynoso 22,* (PNH); Lingayao, Tungao, Gogg. Camp. Mindanao, Jan. 1968, *Mabesa, C. & Escolinas, J. 67-97,* (PNH); Florida, San Mateo, Batuan, Agusan prov., May-Jun. 1961, *Mendoza, D.R. 61-514,* (PNH); Agusan river, Butuan subprovince, Oct. 1910, *Merrill, E.D. 7288,* (P); 70 Km. NE of Zamboanga, Santa Cruz,Sapamoro, Dec. 1961, *Olsen, S. 925,* ©, Sax river, Zamboanga prov., Feb. 1905, *Williams R.S. 2320,* (NY); Dansalan, Lanao prov., Sep.1938, *Zwickey, A.L. 223,* (NY).

Phrynium fasciculatum (Presl.) Horan.

LUZON: Mt. Pico de Loro, Ilocs Norte prov., Feb.-Mar, 1953, *Edaño, G.E. 5120,* (K, PNH); Mt. Magnas, Apayao subprov., Jun. 1953, *Edaño, G.E. 6281,* (PNH); Cayatalay, Laguna prov., , *Edaño, G.E. sn. PNH no. 6481,* (PNH); Apayao sub-prov., May 1917, *Fenix E. sn., B.S. no. 28082,* (P); Apayao sub-prov., May 1917, *Fenix, E. sn., B.S. no. 28245,* (BO, SING); Mt. Binuang, Tayabas prov., May 1917, *Ramos, M.& Edaño, G., B.S. no. 28589,* (BO, P); Llavac, 250-350 m, Mar. 1975, *Stone, B.C. 12207,* (KLU); Km 172-180 Road from Manila to Baler, Aurora prov., Sep. 2003, *Suksathan, P. & Borchsenius, F. 3526,* (AAU, PNH, QBG); SAMAR: Tagaslian Borongan, Jun. 1948, *Castro, A PNH no. 5785,* (PNH); Mt. Sohoton, Basey, Mar.-Apr. 1970, *Gutierrez, H.G. et al. 690,* (PNH); Mt. Calbiga, Wright, Apr.-May 1948, *Sulit, M.D. 2984,* (PNH); Mt. Cansayao, Catarman, Mar.-Apr. 1959, *Sulit, M.D. 4146, PNH no. 14338,* (KEP, PNH, SING); VISAYAS: Mt. Suiro (N. slope); Biliran, Apr.-May 1954, *Sulit, M.D. 5289,* (PNH).

Phrynium interruptum (Warb. ex K. Schum.) Suksathan & Borchs.

LUZON: Lugu, Banauc, Mountain prov., Aug. 1961, *Banlugan et al. 276,* (PNH); Magapit, Cagayan prov., Oct. 1935, *Bartlett, H.H. 14858,* (PNH); mud springs, Mt. Maquiling, Laguna prov., Sep. 1935, *Bartlett, H.H. 15665,* (PNH); Irosin (Mt. Balusan); Sorsogon prov., Oct, 1915, *Elmer, A.D.E. 14552,* (neotype PNH; isotypes BO, NY, P, S); Mt. Maquiling, Laguna prov., Jun.-Jul. 1917, *Elmer, A.D.E. 17502,* (BO, P), Los Baños (Mt. Maquiling); Laguna prov., Jun.-Jul. 1917, *Elmer, A.D.E. 17823,* (BO, MO, NY, P, S); Sarsogon prov,, Nov. 1905, *Elmer, A.D.E. 7316,* (BO, NY); Baguio, Benguet prov., Mar. 1907, *Elmer, A.D.E. 8955,* (BO, E, NY); Polillo Island, Nov.-Dec. 1948, *Fox, R.B. 39,* (PNH); Mt. Pinatubo, Zambales prov., Jun.-Jul. 1948, *Fox, R.B. 494,* (PNH); Norzagaray, Bulacan prov., Jan. 1914, *Foxworthy, F.W. sn.,B.S. no. 12285,* (BO); Manilla, Nov 1836, *Gaudichaud, M. 1191,* (P); Paete, Laguna prov., Oct 1894, *Langlasse s.n.,* (P); Rio Marcep, Montalban, *Loher., A. sn.,* (K); Tanay, Rizal prov., May 1903, *Merrill, E.D. 2263,* (NY); Laguimanoe, Tayabas prov., Mar. 1905, *Merrill, E.D. 4014,* (NY); Montalban, Rizol prov., Mar. 1906, *Merrill, E.D. 5058,* (NY); Batangas prov., Aug. 1914, *Ramos, M. 1885,* (BO, MO, NY, P, SING); Mar. 1909, *Ramos, M. 7729,* (BO); Bosoboso, Rizal prov., Jul. 1906, *Ramos, M. sn., B.S. no. 1041,* (BO, NY, SING); Rizal prov., Aug. 1914, *Ramos, M., B.S. 13557,* (P); Mt. Bagacay, Camarines prov., Nov.-Dec. 1918, *Ramos, M.& Edaño sn, B.S. no. 33915,* (NY); Alabat, Sep.-Oct. 1926, *Ramos, M.& Edaño, G. sn., B.S. no. 48115,* (NY); Peñablanca, Cagayan prov., Mar.-May 1929, *Ramos, M. sn., B.S. no. 76738,* (NY); Rizal prov., May 1909, *Robinson, C.B. sn,, B.S. no. 6770, ,* (P); Infanta, Tayabas, Laguna prov., Aug. 1909, *Robinson, C.B. sn., B.S. no. 6809,* (BO); Polillo, Aug 1909, *Robinson, C.B., B.S. no. 9219,* (E); Los Baños, Laguna prov., Feb. 1954, *Steiner, M.L. 521,* (PNH); Paete, Laguna prov., Sep. 2003, *Suksathan, P. & Borchsenius, F. 3523,* (AAU, PNH,QBG); Road Baler-Dipacuiao, Aurura prov., Sep. 2003, *Suksathan, P. & Borchsenius, F. 3527,* (AAU, PNH,QBG); near Gigmoto fall, Catanduanes, Sep. 2003, *Suksathan, P. & Borchsenius, F. 3528,* (AAU, PNH, QBG); Mt. Maquiling, Laguna prov., May 1947 , *Sulit, M.D. 1658,* (PNH); LEYTE: Palo, Leyte prov., Jan 1905, *Elmer, A.D.E. 7297,* (BO, E, NY); NEGROS: Kinabkaban river, Negros Oriental, Mar. 1954, *Edaño, G.E. PNH no. 7239,* (PNH); Cuernos De Negros, Negros Oriental, May 1948, *Edaño, G.E. PNH no. 7243,* (PNH); Dumaguete (Cuernos Mts.) Negros Oriantal prov., Jun. 1905, *Elmer, A.D.E. 10243,* (E, MO, NY); PANAY: Jamindan, Capiz prov., Apr.May 1918, *Ramos, M.& Edaño, G. sn., B.S. no. 31234,* (BO, P); SAMAR: Bo Kagpolangi, Dolores, Dec. 1973, *Dela Cruz, F. 103,* (PNH); Mt. Cansayao, Catarman, Mar.-Apr. 1959, *Sulit, M.D. PNH no. 56725,* (SING). MINDANAO: Coronon valley, near Santa Cruz, Davao prov., Apr. 1964, *A.N.U. 1723,* (PNH); Davao, Mar. 1904, *Copeland, E.B. 469,* (NY, P); Mt. Kapok, Davao prov., Aug.-Sep. 1949, *Edaño, G.E. 1720,* (PNH); Mt. Kapok, Davao prov., Aug.-Sep. 1949, *Edaño, G.E. 1764,* (PNH); Baguan river, Davao prov., Mar. 1949, *Edaño, G.E. 759,* (PNH); Todaya (Mt. Apo); Davao prov., Jul. 1905, *Elmer, A.D.E. 11068,* (BO, E, MO, NY); Lake Mainit, Surigao prov., Mar.-Apr. 1931, *Ramos, M. & Convocar sn., B.S. no. 83401,* (NY); Santa Cruz, Davao prov., May 1905, *Williams, R.S. 2768,* (NY); Catalnan, Davao, Aug. 1933, *Kanehira, R. 2496,* (NY).

Phrynium minutiflorum Suksathan & Borchs.

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LUZON: Mt. Mariguidon, Catanduanes, Nov.-Dec. 1917, *Ramos, M. 30503,* (lectotype K; isotypes P, US); Summit village, trail to Gigmoto, Catanduanes, Sep. 2003, *Suksathan, P. & Borchsenius, F. 3531,* (AAU, PNH, QBG); PANAY: Jamindan, Capiz Province, April-May 1918, *Ramos, M.& Edaño, G., B.S. no. 31271,* (K).

Phrynium pubinerve Blume

LUZON: Bagio Cove, Cagayan, Mar 1981, *Allen, M.S. PNH no. 150112,* (PNH); Mt. Isarog, Camarines sur prov., Jun. 1947, *Convocar, P. 192,* (PNH); Irosin, Sorsogon prov., May 1957, *Edaño, G. & Gutierres, H. 114,* (PNH); Mt. Juban, Sorsogon prov., Jun. 1956, *Edaño, G.,B.S. no. 37113,* (PNH); Kilingkiling river, Cagayan prov., Jun. 1930, *Edaño, G.,B.S. no. 79567,* (NY); Irosin (Mt. Bulasan); Sorsogon prov., Nov. 1915, *Elmer, A.D.E. 14994,* (MO, NY); Haribon Foundation for the Conservation of Natural Resources (Bicol National Park). Camarines Sur, Ocampo Del Rosario access track facing PLDT. To summit. Alt. 110-800 m., May 16-20 1991, *Hernaez, B.F. and Cajano, M.A.O. 57540,* (UPLB); Haribon Foundation for the Conservation of Natural Resources (Bicol National Park). Camarines Sur, Ocampo Del Rosario access track facing PLDT. To summit. Alt. 110-800 m. , May 16-20 1991, *Hernaez, B.F. and Cajano MAO 57541,* (UPLB); Alabat, Dec. 1916, *Merrill, E.D. 10456,* (NY, P); Mt. Makiling, , *Odona et al. 801,* (UPLB); Peñablanca, Cagayan prov., Mar.-May 1929, *Ramos, M. sn., B.S. no. 76852 ,* (NY); Los baños, Laguna prov., Apr. 1909, *Robinson, C.B., B.S. no. 6712,* (NY); Mt. Maquiling, Laguna prov., May 1947, *Sulit, M.D. 1681,* (PNH); Mt. Buluzan, Sorsogon prov., Jul.-Aug. 1947, *Sulit, M.D. PNH no. 3680,* (MO); Atimonan, Tayabas prov., Aug-Sep 1904, *Whitford, H.N. 634 ,* (P); LEYTE: Lake Danao, Ormoc, Mar. 1950, *Edaño, G.E. 2098,* (PNH); Palo, Leyte prov., Jan. 1906, *Elmer, A.D.E. 7289,* (type of *Phrynium philippinense*: lectotype, BO; isotype, NY); Palo, Apr. 1941, *Piper, C.V. sn.* (P); PALAWAN: W Talakaigan R., Apis, Aborlan, Aug. 1947, *Ebulo, L. 1376,* (PNH); Tarateon river, Aborlan, Mar.-Apr. 1951, *Edaño, G.E. 2699,* (PNH); Baraki, Dec. 1950, *Fox, R.B. 78,* (PNH); Taytay, May 1913, *Merrill, E.D. 9328,* (NY, P); Penigisan, Sep. 1961, *Olsen, S. 255,* (C); Makagwa, Sep. 1961, *Olsen, S. 380,* (C); Bo. Undergrownd, Quezon, Dec. 1963, *Reynoso, E.J. sn. PNH. No. 87851,* (PNH); PANAY: Libacao, Capiz prov., May-Jun. 1919, *Martelino, A. and Edaño, G. BoS 35427,* (P); MINDANAO: Tawitawi Island, Sulu Aechipelago, Jan. 1940, *Alcasid, G. & Celestino, M. sn. PNH no. 7495,* (PNH); Tungao, Agusan, Aug. 1967, *De Leon, M. 810,* (PNH); Madaum, Davao prov., Oct. 1946, *Edaño, G. 1137,* (PNH); Todaya (Mt. Apo); Davao prov., Jul. 1909, *Elmer, A.D.E. 11234,* (NY); Cabadbaran (Mt. Urdaneta); Agusan prov., Aug. 1912, *Elmer, A.D.E. 13512,* (C, MO, NY, P); Tawi-tawi Island, Sulu Aechipelago, Jan.-Feb. 1957, *Kondo, Y. & Edaño, G.E. 8967,* (PNH); Tuñgao, So., San Mateo Ba, Butuan, Agusan prov., May-Jun. 1961, *Mendoza, D.R. 61-388,* (PNH); MINDORO: Baco river, Jul. 1909, *McGregor, R.C, 314,* (NY); ORIGIN UNKNOWN: no locallity, *Elmer, A.D.E. 18056,* (C, NY, P).

Phrynium simplex (Elmer) Suksathan & Borchs.

LUZON: Mt Isarog, secondary forest, Camarines Sur, June 1947, *Convocar, P. 177,* (AAU); Lucban, Tayabas prov., May 1902, *Elmer, A.D.E. 7611,* (BO); Lucban, Tayabas prov., May 1902, *Elmer, A.D.E. 9147,* (lectotype, BO; isotypes, K, NY, US); Lucban, Tayabas prov., May 1902, *Elmer, A.D.E. 9149,* (BO); Kalinga-Apayao prov., *Felix sn., Bur. Sci. 28266,* (US); Mt. Banahao, Majayjay falls, Lucban, Sep. 2003, *Suksathan, P. & Borchsenius, F. 3525,* (AAU, PNH, QBG).

菲律賓竹芋科之分類研究

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摘要：菲律賓竹芋科包括竹葉蕉屬 (*Donax*) 及柊葉屬 (*Phrynium*) 等 8 個原生種 (其中 3 種為特有種，另外 3 種為近似特有種)，然除了與這些物種相關文獻稀少外，最近的分類處理也已經是 80 年前。本文除了更新菲律賓產竹芋科分類處理外 (包括 3 物種的選模式標本、2 物種的新模式標本及 1 組合名稱)，並提供種之檢索表、分類描述、分布、生態環境、俗名及用途。

關鍵詞：*Donax*、*Monophrynium* 、*Phacelophrynium* 、*Phrynium*、竹芋科、菲律賓。

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