

Research Article

Recollection and Taxonomic Placement of *Alpinia apoensis* (Zingiberaceae; Alpinioideae): An Imperfectly Known Philippine Endemic Species

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ABSTRACT

A recent exploration on the Mt. Kalatungan Range Natural Park of Bukidnon and Mt. Madjaas of Antique resulted in the recollection of *Alpinia apoensis*. It is an endemic Zingiberaceae species of uncertain identity that was first collected and described by Elmer over 90 years ago. As there is no comprehensive revision of the family Zingiberaceae in the Philippines, it is meanwhile important to clarify its taxonomic identity. This study contributes a comprehensive description of the species leading to the determination of its sectional and subsectional placements. Information on its geographical distribution, phenology, ecology, and coloured photographs are also provided.

Keywords: Alpinieae, sect. *Alpinia*, Antique, endemic, subsect. *Presleia*, Zingiberaceae

Introduction

The family Zingiberaceae, represented by 56 genera and about 1337, is distributed mainly in the tropics and subtropics with its centre of distribution in Southeast Asia [1, 2]. *Alpinia* Roxb. is the largest genus in the family, represented by approximately 230 species distributed across Southeast Asia to Australia [3]. In the Philippines, about 37 species are recorded so far [4].

Materials of an interesting unknown *Alpinia* specimens were collected during the first author's expedition in the Mt. Kalatungan Range Natural Park (MKaRNP), Bukidnon, Philippines last October 2015. In October 2017, the second and third authors collected the same species in Mt. Madjaas, Antique. After a meticulous examination of its morphology including protologues and digitized type specimens of *Alpinia* species from the Phil-

ippines, it matches with the imperfectly known *Alpinia apoensis* in having ovately oblong to oblong leaves with sharply acuminate, recurved apex, fruits ovoid to obovoid, green to yellow and becoming dull red when matured. This species is recollecting after more than 90 years. Like many other Zingiberaceae species in the country, no botanical illustrations or photographs were ever published, adding to the unclear identity of this species [5]. *A. apoensis* was described by Elmer (1915) based on the specimen collected from the province of Davao del Sur [6]. The next short note on this taxon appeared some 7 years later in Enumeration of Philippine Flowering Plants where Merrill (1922) transferred the species as *Languas apoensis* (Elmer) Merr. Ramos and Edano have then recollecting it in the province of Catanduanes on 18 August 1928, however, no flowers have also been

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observed [7]. Smith (1990) then considered the taxon as an imperfectly known species due to the fact that the type specimens designated by Elmer as well as the collections of Ramos and Edano have no flowers [8]. Thus, its sectional and sub-sectional placements in the family remain uncertain. Recollection of this interesting endemic species allowed a detailed taxonomic account in the family.

Material and Methods

The measurements and descriptions were based on fresh, dried, and spirit materials. The terminology in general follows Beentje (2016) [9]. Flowers were preserved in formalin-acetic-acid-alcohol (FAA) for further study. All original materials under *Alpinia* sect. *Alpinia* subsect. *Presleia* from the Philippines were examined in different herbaria (viz. BM, C, E, FI, G, GH, K, L, P, PR, S, U, US, W) through high-resolution images accessed at <https://plants.jstor.org/>. Detailed descriptions and coloured photographs of the species as well as notes on its distribution, phenology, and ecology are provided.

Results and Discussion

Alpinia apoensis Elmer, *Leafl. Philipp. Bot.* 8: 2888, 1915. (Figure 1)

Type: PHILIPPINES, Mindanao, Davao del Sur, Todaya, Mt. Apo, elev. 1335 m, Sept. 1909, Elmer A.D.E. 11889 (lectotype: NY [00320208 & NY00320186], designated here; isolectotypes: BISH1005374, F0047144F, G00008021, GH00030629, P00686661, U0007203).

(=) *Languas apoensis* (Elm.) Merr. in *Enum. Philipp. Fl. Pl.* 230. 1923.

Terrestrial, perennial herb. Rhizome at or just below the soil, yellowish brown externally, covered with papery thin sheath, 1–2 cm in diameter. Leafy shoots erect to slightly ascending, green with small white patches, glabrous to pulverulent, 3–6 mm in diameter, loose clump of 2–5 shoots, shoot 0.8–1.5 m tall with 14–22 leaves, base slightly swollen. Leaves petiolate, subcoriaceous, ascending, 10–17 cm long; ligule hyaline red to green, oblong to elliptic, puberulent, 1–5 mm long, apex rounded to truncate, sparsely ciliated; petiole short, yellowish green, canaliculate, puberulent, 5–8 mm long; blades ovately oblong to oblong, adaxially sparsely pubescent, green, shiny, abaxi-

ally densely pubescent, paler green, 10–16 cm by 4–5.4 cm, margin entire to wavy, apex acuminate, recurved; midrib adaxially pale green, canaliculate, sparsely puberulent, abaxially protruding, densely puberulent. Inflorescence thyrses, erect, up to 10 cm long; flowers bearing part light green, pubescent, 15–23 cm long; peduncle green, 5–7 cm long; bracts oblanceolate, papery, brown, dorsally pubescent, up to 35 cm long, usually dried when flowering; bracteoles not seen; Flowers 2–3 per cincinnus; pedicel very short, pubescent, 2–3 mm long; calyx tubular, striate, white, 1–1.2 cm long, inflated, trilobed, incision 1–1.5 mm long, acute, apex sparsely or minutely hairy; corolla tube longer than calyx, white, partially translucent, glabrous, 1.2–1.4 cm long; dorsal corolla lobe elliptic, cucullate, concave, with numerous distinct veins, 5–6 by 3–4 mm, glabrous, apex obtuse; lateral corolla lobes narrowly elliptic, cucullate, concave, with numerous distinct veins, 5–6 by 2–3 mm, glabrous, apex obtuse; lateral staminodes obscure, white to purplish, acicular, inclined, glabrous, 1–1.2 mm long, apex acute; labellum 4 lobed, cuneiform–broadly obovate, white with purple bands, slightly fleshy, glabrous, 5–7 by 3–4 mm, lateral lobes 4–5 by 2 mm, entire, elliptic, apex obtuse, midlobe 5–6 by 1.5–2 mm, entire to erose, slightly recurved, apex emarginate to retuse; stamen arching, slender, 1–1.1 cm long; filament slightly fleshy, whitish, sparsely puberulent, 0.7–0.8 cm long; anther 3–3.5 cm long, with a small entire anther crest; ovary globose, sparsely puberulent, 2.5–3 mm long; style 1.8–2 cm long, glabrous; stigma infundibuliform, apex ciliated; epigynous gland 2, entire, 3–4 mm long, clasping the base of the style. Fruits ovoid, green to yellow when young, becoming obovoid, dull red when matured, shiny, glabrous, 0.8–1 by 0.6–0.7 cm.

Distribution

This Philippine endemic species has been observed and documented in Catanduanes of Luzon; Davao Del Sur and Bukidnon of Mindanao; and Antique of Visayas (Figure 2) [5, 6].

Ecology

Terrestrial herb found growing in montane evergreen broad-leaved close canopy primary forest with damp soil and humid environment at elevations 1,400 to 1,900 meters above sea level.

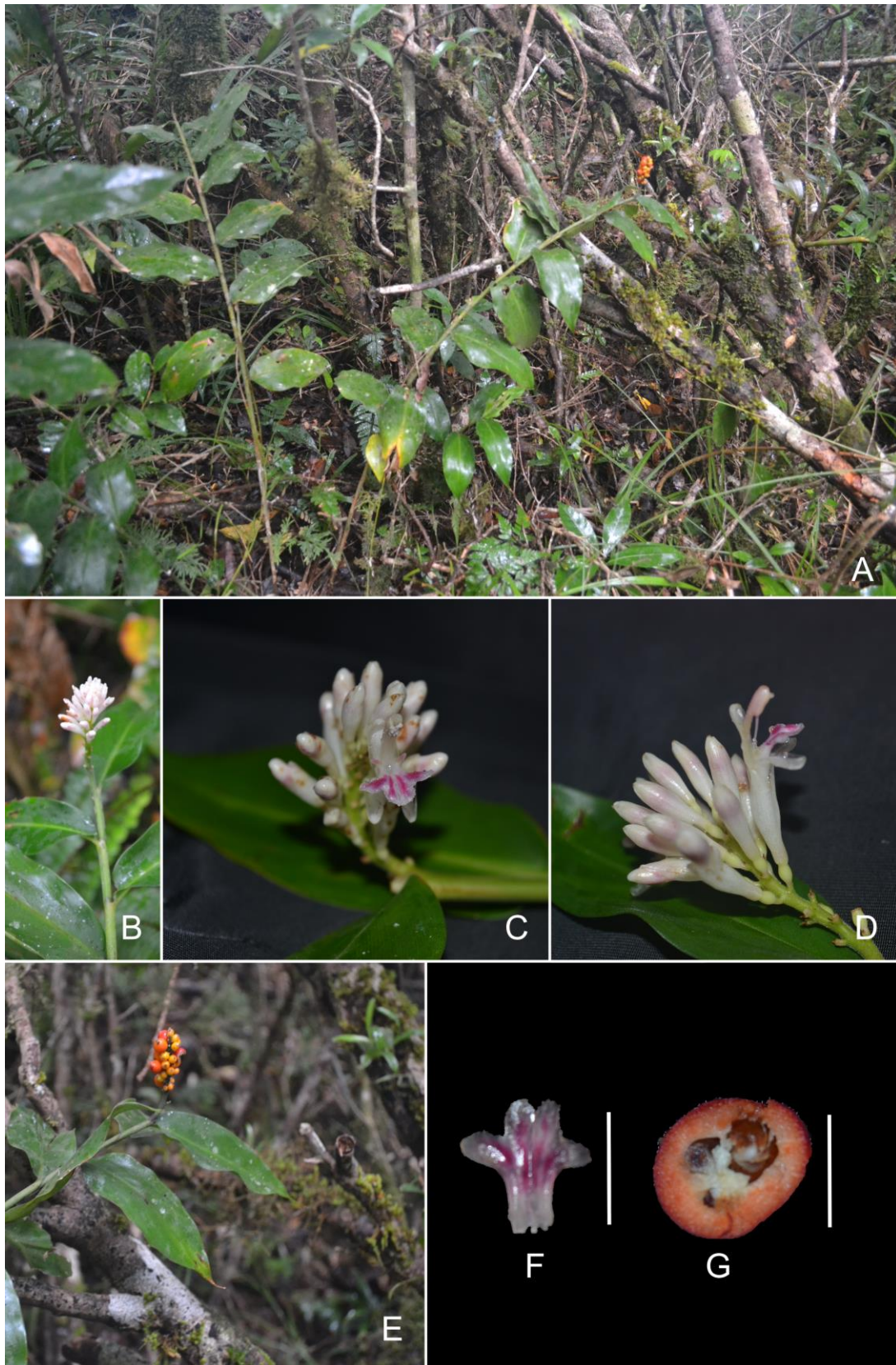


Figure 1. *A. apoensis* Elmer. A. Habit B. Inflorescence C. Detail of flower (front view) D. Detail of flower (profile view) E. Inflorescence F. Detail of labellum (scale bar: 5 mm) G. Dissected fruit (scale bar: 7 mm). Photos by: Jade Ann Grace Dalisay.

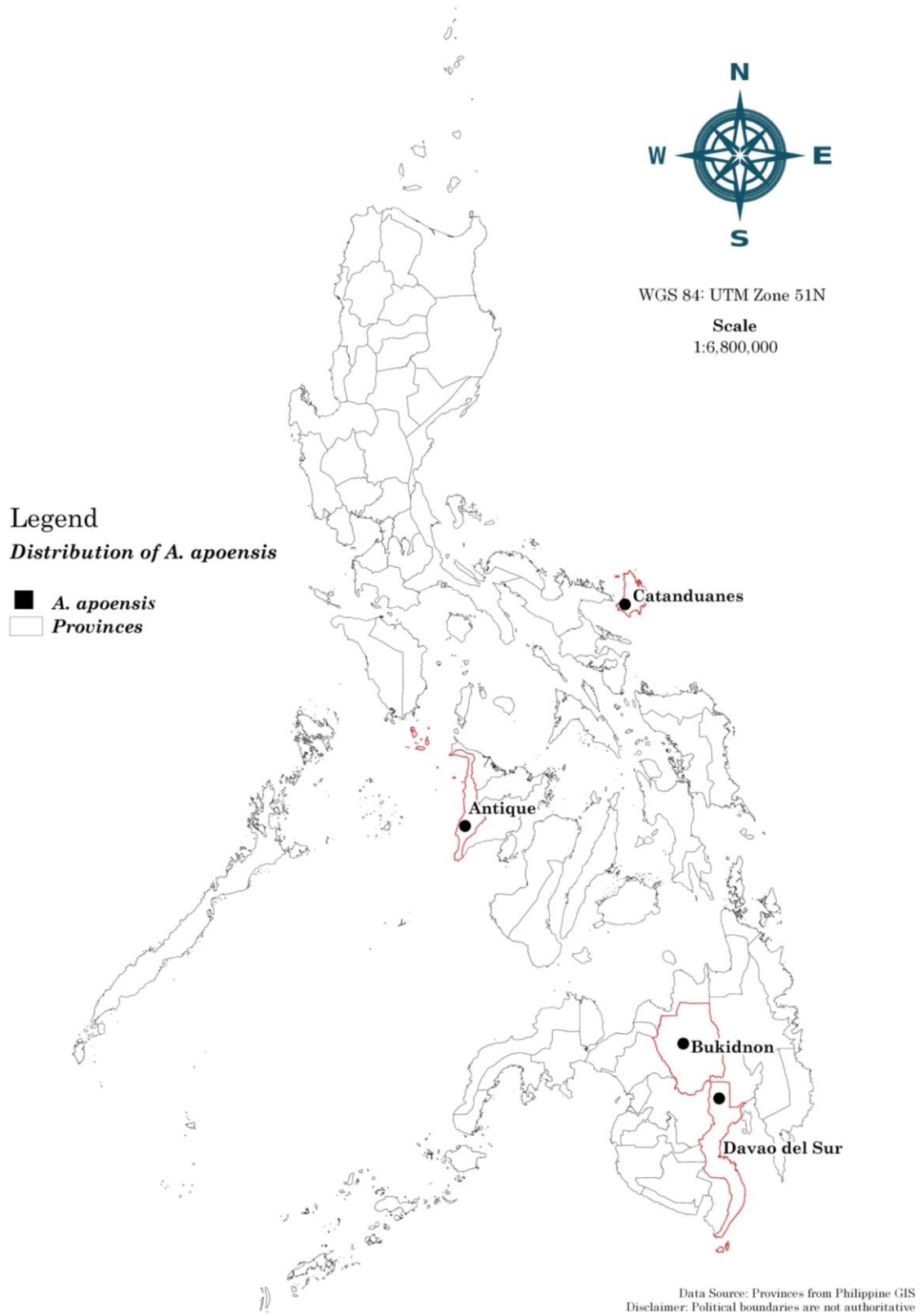


Figure 2. Distribution map of *A. apoensis* Elmer

Phenology

Observed flowering and fruiting from July to November.

Etymology

The species was described by Elmer (1915) [6] and the specific epithet denotes the type locality where the specimens were first collected.

Vernacular name

Known as “Otin-otin” by the local people of the type locality or Bagobo [6].

Conservation status

The area of distribution of *A. apoensis* is about 1,600 km² and consists of less than 10 localities, mainly in the Mt. Kalatungan Range Natural Park. Based on the IUCN Red List Categories and Criteria [10], we propose a conservation status of Vulnerable (VU B1ab(iii)). However, as the habitat of *A. apoensis* is affected by human activities and is in decline, the taxon is likely to qualify in the near future for the Endangered category.

Specimens examined

PHILIPPINES, Mindanao, Bukidnon, Municipality of Pangantucan, Baranagay Portulin, Mt. Kalatungan Range Natural Park, 1537 m, along the forest trail, 31 October 2015, M.A. Naive 02/2015 (CMUH); Visayas, Antique, Municipality of Culasi, Mt. Madjaas, 1,450 m, 17 October 2017, J.A.G. Dalisay 001/2017 (new provincial record, USTH).

Alpinia apoensis is one of the least known Zingiberaceae species in the Flora of the Philippines. This species was first collected by Elmer in 1909 and introduced to science in 1915. There are some deficiencies in the description of the type specimen due to a lack of flower and was evaluated as “species imperfectly known” by Smith (1990) [8]. Lack of flowers makes the determination of its section and subsection impossible. Thus, recollection of the species in full bloom on its natural habitat has made it possible to describe the species in detail. Furthermore, its sectional and subsectional placements were clarified.

By having an erect, branched inflorescence; bracts often soon deciduous; flowers in cincinni, very small; labellum 4-lobed; filament well formed; stigma infundibuliform, small; epigynous

gland narrow, ventrally fused; and fruits ovoid indicate that this taxon belongs to section *Alpinia* subsection *Presleia*. Subsection *Presleia* is a well-defined group, which is distributed in Malaysia, Indonesia, New Guinea, Japan, Taiwan and the Philippines.

Based on overall morphology, *Alpinia flabellata* and *Alpinia graminea*, are the closest ally of *A. apoensis*. However, it differs significantly with *A. flabellata* Ridl. [11] in having a shorter leafy shoot (up to 1.5 m tall vs. up to 3 m tall), oblong to elliptic ligule (vs. ovate), narrowly ovate to ovate leaves (vs. narrowly lanceolate leaves), shape of the corolla lobes and emarginate to truncate midlobe of the labellum (vs. bifid midlobe of the labellum). *A. apoensis* is also comparable to *A. graminea* Ridl. however, it differs significantly in having a narrowly ovate to ovate leaves (vs. linear leaves), presence of petiole or petiolate (vs. sessile) and emarginate to truncate midlobe of the labellum (vs. deeply bifid).

Elmer (1915) in his original description cited the type as “Type specimen number 11889, A.D.E. Elmer, Todaya (Mt. Apo), District of Davao, Mindanao, September 1909” [6]. We were able to trace eight sheets that are all designated as isotypes, as to where the holotype is unknown. We hereby designate the best sheet NY (NY00320208 & NY00320186) as the lectotype of *A. apoensis* as it has the same date and it agrees well with the protologue. All other specimens with an identical collection number and collection dates mentioned in the protologue, i.e. September 1909 (BISH1005374, F0047144F, G00008021, GH00030629, P00686661, U0007203) are treated here as isolectotypes.

Conclusion

Botanical excursions in the MKaRNP and Mt. Madjaas has led to the rediscovery of *A. apoensis* after a lapse of over a century. The species clearly belongs to sect. *Alpinia* subsect. *Presleia* based on the morphological features stated above. With this finding, there are now thirteen (13) species under subsect. *Presleia* in the Philippines.

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