NEW SPECIES

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Species

Goniothalamus luzonensis (Annonaceae) a new species from Bataan, Luzon, Philippines

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ABSTRACT

Goniothalamus luzonensis, a new species is herein described and illustrated. The new species is allied to *G. dolichopetalus* by having similarities on the length of petiole, glabrous leafblade, width of the outer petals and inner petals. However, it is differentiated by having smaller leaves 6–11 × 2–4 cm (vs. 11–20 × 2.5–5 cm), narrowly lanceolate leafblade (vs. lanceolate to oblong-lanceolate, rarely oblanceolate), attenuate apex (vs. acuminate), obute base (vs. acute), larger broadly ovate sepals (vs. smaller, triangularly ovate) and shorter broad lanceolate outer petals (vs. longer linear-lanceolate).

Keywords: Annonaceae, *Goniothalamus*, Malesia, Philippine endemic

1. INTRODUCTION

Annonaceae (Custard Apple family) a monophyletic group from the order Magnoliales (Chatrou *et al.,* 2012) are composed of ca. 2500 species classified in 108 genera (Tang *et al.,* 2015) of trees, shrubs, and woody vines or lianas (Couvreur *et al.,* 2012) thriving in various habitats in the tropics. One of the most species richmembers of the family is the genus *Goniothalamus* (Blume) Hook.f & Thomson with ca. 130 species of trees and shrubs thriving in lowland and forested regions of tropical Asia (Thomas *et al.,* 2017). *Goniothalamus* is easily recognized by a combination of the following morphological characters; three outer petals which are slightly spreading, three smaller inner petals that forms a mitreform dome curving over the sexual organs and stames that have broad connective with truncate to apiculate shape (Yuyen *et al.,* 2007). Although the center of diversity of the genus is in western Malesia (Borneo, Sumatra and Peninsular Malaysia) (Nakkuntod *et al.,* 2009), the Philippines contributes to the richness of the genus with 22 currently recognized species. In the recent molecular phylogenetic study of *Goniothalamus* (Tang *et al.,* 2015), the genus forms a robustly monophyletic assemblage.However, only two Philippines species were included in the study namely *G. amuyon* (Blanco) Merr. and *G. palawanensis* C.C. Tang & R.M.K. Saunders. In an attempt to include additional Philippine representatives of *Goniothalamus*, forested regions of the Philippines were botanized. During our fieldwork in Mt Mariveles, Bataan, Philippines, an interesting representative of Annonaceae was collected. Initial observation of field characters clearly shows its affiliation to the genus *Goniothalamus*. Meticulous examination of protologues and herbarium sheets (photo) showed that it approaches *G. Dolichopetalus* Merr. by having similarities on the length of petiole, glabrous leafblade, width of the outer petals and inner petals. However, it can easily be distinguished by several morphological characters as stipulated in table 1. Since there is no exact match with the currently recognized representatives of the genus, we herein describe and illustrate a new species of *Goniothalamus*.

Table 1 morphological difference of *Goniothalamus luzonensis* and *Goniothalamus dolichopetalus*.

	Goniothalamus luzonensis	*Goniothalamus dolichopetalus*
Leaf Blade		
Shape	narrowly lanceolate	lanceolate, rarely oblanceolate
Apex	Attenuate	Acuminate
Base	Obtuse	Acute
Size (cm)	6.0–11.0 × 2.0–4.0	11–20 × 2.5–5.0
Sepal		
Shape	Broadly ovate	Triangular ovate
Size (mm)	9–10 ×5–8	3.5 × 3.0
Outer Petal		
Shape	Broadly lanceolate	Linear-lanceolate
Length	2.4–2.9 cm	10–12 cm

2. TAXONOMY

Goniothalamus luzonensis Ferreras & Arriola, sp. nov. (Fig. 1).

Goniothalamus luzonensis approaches *G. dolichopetalus* however, it can easily be recognized by having smaller leaves 6–11 × 2–4 cm (vs. 11–20 × 2.5–5 cm), leaf blade narrowly lanceolate (vs. lanceolate to oblong-lanceolate, rarely oblanceolate), leaf apex attenuate (vs. acuminate), leaf base obute (vs. acute), sepals broadly ovate, 0.9–10 × 0.5–0.8 mm (vs. triangularly ovate, 3.5 × 0.3 mm) and outer petal broad lanceolate, 2.40–2.90 cm long (vs. linear-lanceolate, 10.0–12.0 cm).

Type: **Philippines**

Province of Bataan, Municipality of Bagac, Sitio Gabon, Mt. Mariveles, N 14°391.900', E 120°26.697', 655 MASL. April 2017. *Arriola, Bernaldo, Cañaveral, Ferreras, Pizarro, Venturina. A17011* (holotype PNH, isotype PNH).

Small trees, less than 5 m tall. Young shoots densely hairy. Petioles 3–6 mm long, 1 mm in diameter, hairy; leaf laminas 6–11 cm long, 2–4 cm wide, narrowly lanceolate, apex attenuate, base obtuse, coriaceous, glabrous both ab- and adaxially; midrib very prominent ab- and adaxially; secondary veins 29–39 on both sides, prominent ab- and adaxially; tertiary veins reticulate, distinct. Inflorescences axillary, solitary, on young branches, pendent, bracts?. Pedicels 1.9–2 cm long, 0.2–0.3 mm in diameter, (sparsely) hairy; Sepals 0.9 mm–1cm long, 0.5–0.8 mm wide, broadly ovate,hairy abaxially, glabrous adaxially, pink, venation indistinct. Outer

petals 2.4–2.9 cm long, 1–1.1 cm wide, broadly to elongated lanceolate, hairy ab- and adaxially, pink, venation indistinct. Inner petals 1.1–1.3 cm long, 3–8 mm wide, ovate, glabrous ab- and adaxially, yellowish white. Stamens ca. 65 per flower, 3 mm long, 1 mm wide. Carpels 34 per flower; ovary 3–5 mm long, 1mmwide, densely hairy with long brown hairs; stigmas and pseudostyles 2–10 mm long; pseudostyles 0.3–1 mm wide, glabrous; stigma obcordate, glabrous. Fruits pink, ovoid, glabrous, 1.4 cm long; 0.8 cm wide.

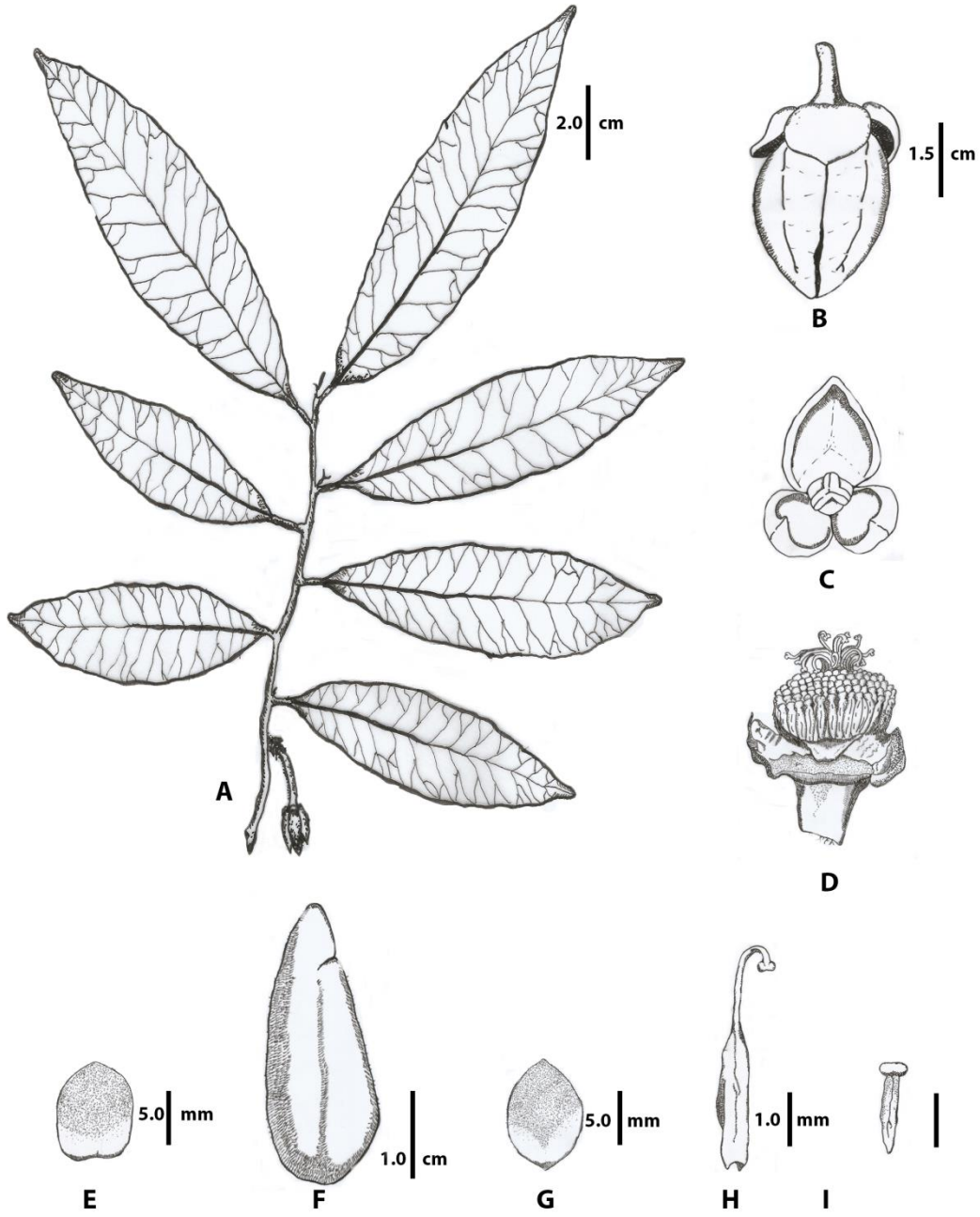

Figure 1 *Goniothalamus luzonensis* (from the holotype). A. Flowering branch. B–C Flower. D. Opened flower. E. Sepal. F. Outer Petal. G. Inner Petal. H. Stamen. I. Carpel (All drawn by H.J.G. Pizarro).

Phenology

Flowering from March to June

Habitat

Secondary forest

Conservation Status

This species is restricted to Mount Mariveles, Pantingan Peak. Fewer than 5 mature individuals were seen from 600masl up to the summit. For these reasons, we assessed *G. luzonensis*as critically endangered species (CR B2), based on the IUCN (2001). Mount Mariveles is one of the forested areas of the Bataan province next to Mt Natib and Bataan National Park. The base of Mt Mariveles provides settlements to various communities while there are various anthropogenic activities present in the area, such as agricultural expansion, forest fires, excessive collection of forest products and infrastructure development. Since *G. luzonensis*is found only in the area this will further promote the conservation of this species as well as the protection of its habitat.

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Conflict of Interest: The authors declare that there are no conflicts of interests.

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