Taiwania 62(4): 340-344, 2017
DOI: 10.6165/tai.2017.62.340

Etlingera hamiguitanensis (Zingiberaceae; Alpinieae), a new ginger species from Davao Oriental, Philippines

Mark Arcebal K. NAIVE

Purok 5, Dologon, Maramag 8714, Bukidnon, Philippines.
* *Corresponding author's email: arciinaive19@gmail.com*

(Manuscript received 1 April 2017; accepted 12 September 2017; online published 6 October 2017)

ABSTRACT: *Etlingera hamiguitanensis* Naive, belonging to family Zingiberaceae, is described and illustrated from the Philippines as a new species. Although similar to *Etlingera philippinensis,* the new species is clearly distinguished by having a shorter and heart-shaped labellum. It is also allied to *E. penicillata*, however, the new species clearly distinguished by having red sterile bracts.

KEY WORDS: Alpinioideae, *Etlingera*, Mindanao, Mount Hamiguitan, New species, Philippines.

INTRODUCTION

It is quite amazing that Mindanao, the second largest island in the Philippine archipelago, is relatively unexplored botanically. Only the highest peak, Mount Apo at 2,994 metres, in the south-east of Mindanao, is reasonably well explored. There are a number of other high mountains on Mindanao, which warrant exploration, because the possibility of finding species new to science is relatively high, and the distribution knowledge of species will become better known. It is also quite possible that species, which at this time are only known from neighbouring countries, will also be discovered.

At present, the Philippine Zingeberaceae are one of the least known group in our rapidly expanding recent knowledge of the family (Funakoshi and Fujiyama, 2004). Very little progress was achieved after Merill's monograph in 1924 (Merril, 1924). Studies on the taxonomy, biology and ecology of the family Zingiberaceae in the Philippines are few and outdated. Furthermore, many of the existing taxonomic treatments don't have keys, illustrations and there are incomplete descriptions of the species (Naive, 2017).

Etlingera Giseke is a large genus represented by over 150 species, which are widely distributed throughout SE Asia to the western Pacific Islands. The center of diversity is in the evergreen equatorial tropics. So far, only about 7 species are known to occur in the Philippine archipelago (Pelser *et. al.*, 2011).

Etlingera species may be confused with other genera that have radical inflorescences, however, it can be recognized by the presence of tightly overlapping involucre sterile bracts and a rachis condensed into a rather broad, domed receptacle, readily distinguishing *Etlingera* from *Amomum* Roxb.*, Elettariopsis* Baker and *Geocharis* (K. Schum.) Ridl. The presence of a filament and more pronounced staminal tube distinguish *Etlingera* from the closely related genus, *Hornstedtia* Retz. (Leong-Škorničková and Newman, 2015).

During our first sampling in Mount Hamiguitan Range Wildlife Sanctuary, San Isidro, Davao Oriental to collect specimens for our project last October 20-21, 2016, I came across a group of ginger species belonging to the genus *Etlingera* with a ribbon like flower. A search of the relevant literature for the Philippines and neighboring countries was conducted and no matching species could be found (*e.g*. Elmer, 1919; Poulsen, 2006; Poulsen, 2012). I hereby take this opportunity to describe *Etlingera hamaguitanensis* as a new species. Other Zingiberaceae species found on the mountain are *Alpinia rufa* C.Presl.*, Alpinia musaefolia* Ridl.*, Geocharis fusiformis* (Ridl.) R.M. Sm.*, Globba campsophylla* K.Schum. *and Hornstedtia conoidea* Ridl.

Taxonomic key leading to the different *Etlingera* species from the Philippines.

1a. Leafy shoots <4 m tall ……..…..…. 2
1b. Leafy shoots >4 m tall ……..…... 3
2a. Labellum long, central lobe expanded ……..…..….. 4
2b. Labellum short, central lobe not expanded ……. 5
3a. Flowers numerous, labellum short, leaf pubescent abaxially ……. ……..… ***E. pandanicarpa***
3b. Flowers 1-5, labellum long, leaf glabrous both sides …….. 6
4a. Leaves glabrous adaxially and abaxially …… 7
4b. Leaves glabrous adaxially, pubescent abaxially, labellum scarlet red, central lobe obovate-obcordate, apex bilobed …….. ……... ***E. hamiguitanensis***
5a. Leaves with distinct patches of purple, labellum broad, red ……..... ……..…… ***E. brevilabrum***
5b. Leaves without patches of purple, labellum narrow, yellow ……. …… ***E. dalican***
6a. Labellum yellow with red margin, central lobe entire to bilobed ….. …….. ***E. coccinea***
6b. Labellum deep red, central lobe entire, never bilobed ……..……. ……..……..…… ***E. philippinensis***
7a. Lamina conduplicate, margins ciliated, lighter green beneath ……... ……..……..…. ***E sorsogonensis***
7b. Lamina folded, margins glabrous, purplish beneath ..… ***E. purpurea***

TAXONOMIC TREATMENT

Etlingera hamiguitanensis Naive, ***sp. nov.*** **Figs. 1–3**

Type: Philippines, Mindanao, Davao Oriental, San Isidro, La Union, Mount Hamiguitan Range Wildlife Sanctuary, terrestrial in shaded localities near the stream, elev. 568 m a.s.l., 21 October 2016, *Naive 0132016* (**HOLOTYPE**: CMUH; **ISOTYPE:** PNH).

Diagnosis: *Etlingera hamiguitanensis* is most similar to *Etlingera philippinensis* (Ridl.) R.M. Smith, but differs in the shape of the leaf (narrowly elliptic to narrowly obovate vs. broadly lanceolate), ligule (entire oblong, hyaline, reddish transluscent vs. entire triangular–oblong, papery, green) and in pubescent leaves abaxially (vs. glabrous). It also differs by having a shorter and bilobed labellum (vs. longer and entire) and by its 2–3 m tall leafy shoots (vs. 6–7 cm tall). It is also allied to *Etlingera penicillata* (K.Schum) A.D. Poulsen, but differs significantly in having a pubescent leaf abaxially, a much smaller leaf (30–46 × 5–9 cm vs. 67–74 × 12–14 cm), reddish, ovate to obovate sterile bracts (vs. spatulate, cream), hyaline, reddish, notched ligule (vs. entire, green ligule), inflorescence with larger, one to four flowers (vs. inflorescence with smaller, single flower) and a longer labellum (5.5–5.7 cm long vs. 3.6 to 4.2 cm long).

Plant Description: Erect perennial herb 20–3 m tall. ***Rhizome*** woody, branched, main rhizome globose, 16–19 cm long, 4–6 cm wide, externally light brown, internally cream white. ***Leafy shoots*** greenish with maroon streaks, 2–3 m tall. ***Leaves*** distichous, narrowly elliptic to narrowly obovate, glabrous except the pubescent abaxial leaf surface, green adaxially, brownish abaxially, 30–46 cm long 5–9 cm wide, base oblique, apex attenuate, margin entire and with yellow coloration. ***Ligule*** hyaline, reddish, glabrous or puberulent in centre, notched, margin ciliate, entire, oblong, 0.8–1.0 cm long, 0.4–0.5 cm wide. ***Petiole*** maroon, short, 1.1–1.3 cm long, 0.6–0.9 cm wide. ***Inflorescence*** lateral, embedded in the ground near the base of the leafy shoot, one-four flowered. ***Peduncle*** short, 2–4 cm long, creamy white. ***Peduncular scales*** yellowish to pale brown, apex acute, loose. ***Spike*** 7–9 cm long, 1.5–2.5 cm wide. ***Sterile bracts*** increasing in size, broadly ovate-obovate, striate, sparsely pubescent, margin ciliate, overlapping, coriaceous, stiff, apex attenuate, pointed, reddish except the white basal half. ***Fertile Bracts*** striate, narrowly obovate, apex acute, papery, striate, sparsely pubescent outside, glabrous inside, up to 6.5 cm long, 1.7 cm wide, margin entire, reddish except the white basal half. ***Bracteoles*** tubular, striate, 3.5–4 cm long, glabrous, reddish white, unilaterally fissured for 1.3–1.8 cm long, apex 2–toothed, acute. ***Flower*** enclosed by sterile bracts, scarlet red. ***Calyx*** 5.5–5.7 cm long, tubular, apex trilobed, glabrous, unilaterally fissured for 0.9–1.5 cm long, reddish except the white basal half. Labellum and filament joined for 1–2.5 cm long above the insertion of the petals, forming a corolla tube 5–6 cm long, scarlet red. ***Corolla lobes*** shorter than labellum, cucullate. ***Dorsal corolla lobe*** hooded over the anther, slightly concave, 1–2.5 cm long, 0.3–0.5 cm wide, narrowly lanceolate, rufous red. ***Lateral corolla lobe*** narrowly lanceolate, 1–2.3 cm long, 0.25–0.4 cm wide, apex rounded and marginally reflexed, reddish. ***Labellum*** trilobed, 5.5–5.7 cm long, 0.8–1.3 cm wide; *lateral lobes* distinct, covering the stamen, involute; *central lobe* obovate to obcordate, basal half dark red–maroon with yellow coloration in the margin and middle, bilobed, lobules 0.7–0.8 cm long, apex crispate, scarlet red, recurved. ***Filament*** 1.7–2 cm long. ***Anther*** oblong, strongly angled (55º to 65º), 0.8–1.0 cm long, 0.2–0.4 cm wide, dehiscing for its entire length, basifixed, with short hairs around the opening, reddish. ***Stigma*** triangular, ciliate around the mouth, 0.2 cm long, 0.1 cm wide, deep red-maroon. ***Style*** white, up to 7 cm long, 1/3rd covered by floral tube. ***Epigynous gland*** covering the base of the style, up to 0.6 cm long, trifid, broadly ensiform, apex shortly pointed, apex densely pubescent, dirty white. ***Ovary*** 0.3–0.6 cm long, 0.3–0.4 cm wide, trilocular, puberulent. ***Fruit*** not seen.

Distribution**:** La Union, San Isidro, Davao Oriental. So far, only observed and documented from southern Philippines on Mount Hamiguitan Range Wildlife Sanctuary.

Ecology**:** *Etlingera hamiguitanensis* grows as a terrestrial herb on slopes, in shady localities with closed canopy in the buffer zone of Mount Hamiguitan Range Wildlife Sanctuary at elevations of approximately 400–600 m above sea level. The locality was known for its unique flora because of its ultramafic soil and the species was found in an area which are dominated by different fern species and is near the stream with humid environment.

Etymology**:** This new species was named after Mount Hamiguitan Range Wildlife Sanctuary, where the collection was made.

Conservation status**:** There are no adequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status. Following the Red List criteria of the IUCN (2012), I consider *Etlingera hamiguitanensis* as Data Deficient (DD).

Notes**:** By its fusiform inflorescence, ribbon like red flowers and expanded central lobe of the labellum, *E. hamiguitanensis* resembles *E. philippinensis* (Ridl.) R.M.Sm. but it can be recognized by having an obovate labellum which is shorter, central lobe of the labellum which is bilobed and crispate, shape of the leaf and by having a finely pubescent abaxial leaf surface. *E. hamiguitanensis* can also be easily recognized because of its medium size habit (2–3 m tall) compared to *E.*

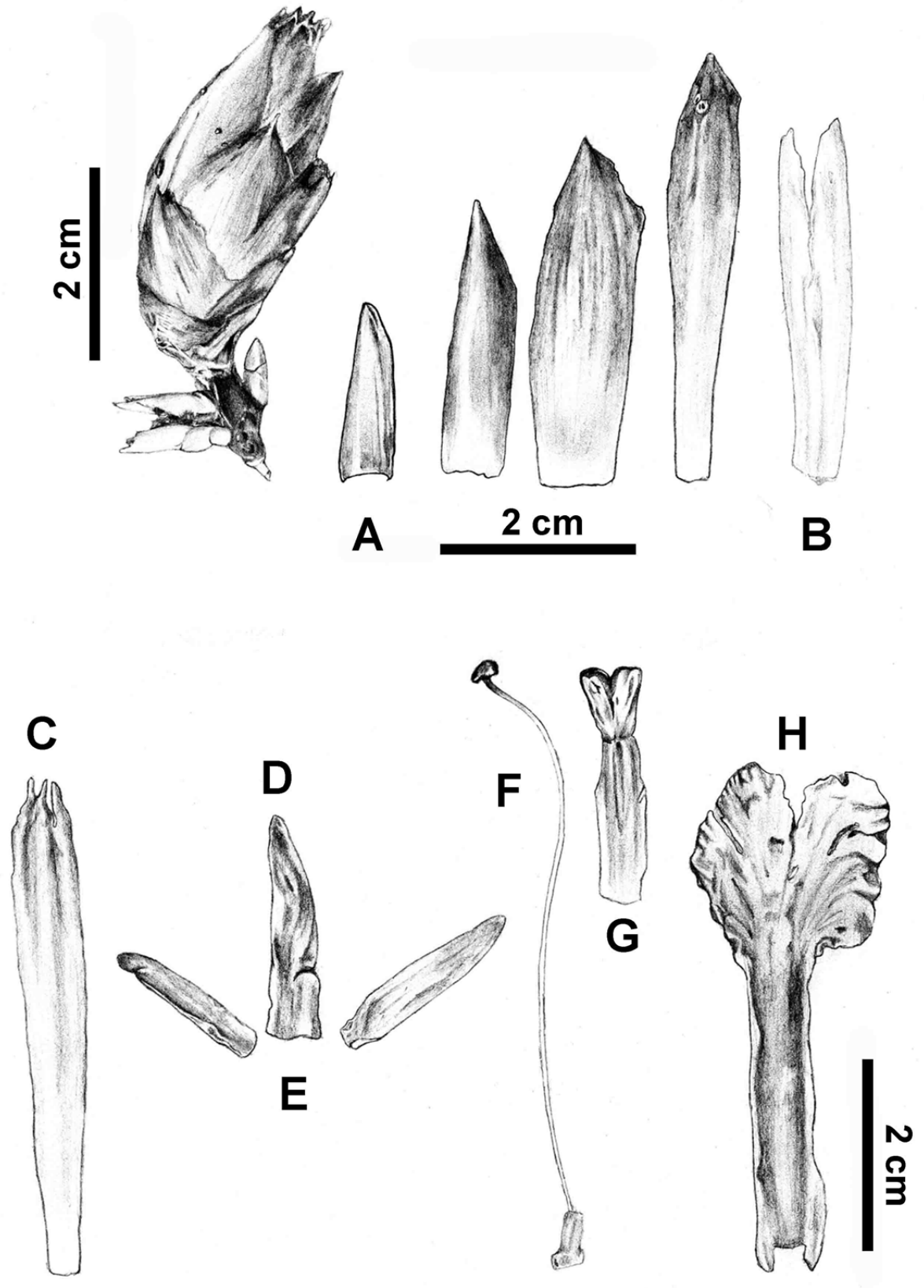

Fig. 1. ***Etlingera hamiguitanensis***. **A**. Sterile bracts, Fertile bracts. **B**. Bracteole. **C**. Calyx. **D**. Dorsal corolla lobe. **E**. Lateral corolla lobes. **F**. Stigma, Style, Epigynous gland. **G**. Anther, Filament. **H**. Labellum. Drawn by: Clarrene Anne Barrios.

Fig. 2. ***Etlingera hamiguitanensis.*** **A**. Flower. **B**. Leaf sheath, Ligule. **C**. Leaf. Photo by Mark Arcebal K. Naive & Krystal Mae Acero.

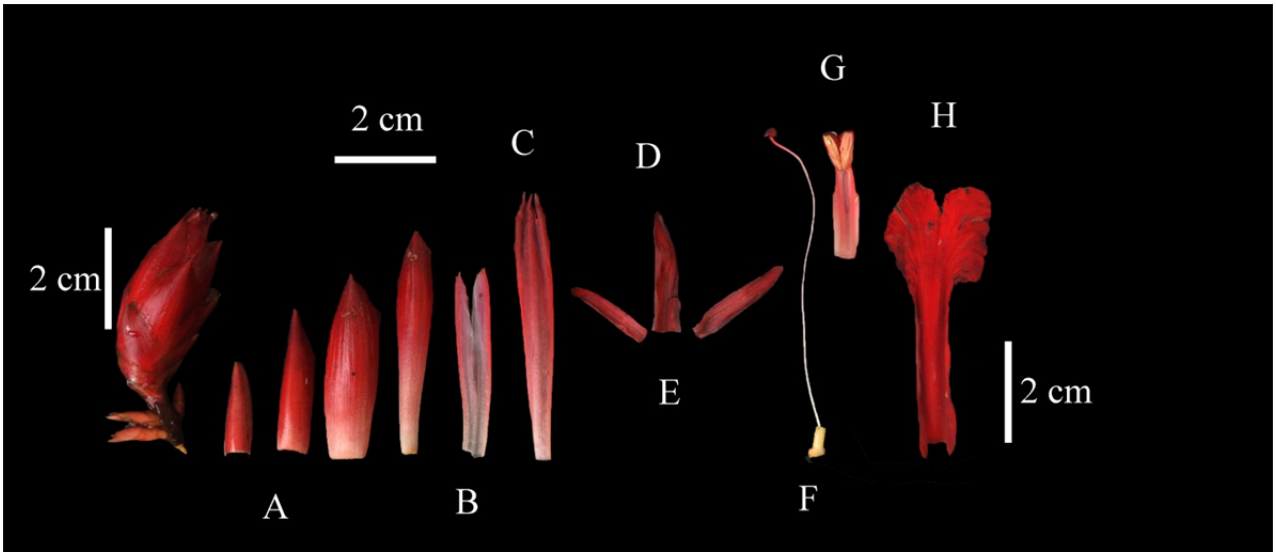

Fig. 3. Dissected flower of ***Etlingera hamiguitanensis.*** **A**. Sterile bracts, Fertile bracts. **B**. Bracteole. **C**. Calyx. **D**. Dorsal corolla lobe. **E**. Lateral corolla lobes. **F**. Stigma, Style, Epigynous gland. **G**. Anther, Filament. **H**. Labellum. Photo by Krystal Mae Acero

philippinensis large size habit (6–7 m tall). It is also allied to *Etlingera penicillata* (K.Schum) A.D. Poulsen, but differs significantly in having a pubescent leaf abaxially, a much smaller leaf (30–46 × 5–9 cm vs. 67–74 × 12–14), reddish, ovate to obovate sterile bracts (vs. spathulate, cream), hyaline, reddish, notch ligule (vs. entire, green ligule), inflorescence with one to four flowers (vs. inflorescence with single flower) and a longer labellum (5.5–5.7 cm long vs. 3.6–4.2 cm long).

ACKNOWLEDGEMENTS

The author would like to thank Dr. Victor B. Amoroso, Director of CEBREM and the GP holder, for allowing me to collect and Sir Ruel Colong of DENR. My acknowledgment is also given to Mrs. Cindy Grace Abas, Tatay Pidoy and Tatay Adon for accompanying the author during the collection of the specimens. I would also like to acknowledge Jim Cootes for his guidance throughout this description, Timothy Chapman for providing the data for the diagnosis, Grace Shiela Mae Abaquita of CMUH, Vuong Truong for editing figure 3, Krystal Mae Acero for providing me figure 3, Patrick Sodusta and Clarrene Anne Barrios for doung the botanical drawing. Lastly, anonymous reviewers are thanked for their valuable suggestions.

LITERATURE CITED

Elmer, A.D.E. 1919. Zingiberaceae of the Sorsogon peninsula. Leafl. Philipp. Bot. **8**: 2963-2988.

Burtt, B.L. and R.M. Smith. 1986. *Etlingera*: The inclusive name for *Achasma*, *Geanthus* and *Nicolaia* (Zingiberaceae). Notes Roy. Bot. Gard. Edinburgh. 43: 235-241.

Funakoshi, H. and S. Fujiyama. 2004. Four endemic genera of Zingiberaceae in the Philippines and their phylogenetic placement in gingers. http://agris.fao.org/agris-search/search.do?recordID=PH2005000273 (Acessed 1 March 2017).

Lamb A., J. Gobilik, M. Ardiyani, A.D. Poulsen. 2013. A guide to gingers of Borneo. Natural History Publications (Borneo), Kota Kinabalu. 98-104pp.

Larsen, K., H. Ibrahim, S.H. Khaw and L.G. Saw. 1999. Gingers of Peninsular Malaysia and Singapore. Natural History Publications (Borneo), Kota Kinabalu, Sabah. Malaysia. 1-121.

Leong-Škorničková, J. and M.F. Newman. 2015. Gingers of Cambodia, Laos and Vietnam. Singapore: Singapore Botanic Gardens, National Parks Board, in association with Royal Botanic Garden Edinburgh and Pha Tad Ke Botanical Garden. 1-226.

Merill, E. 1924. An enumeration of Philippines flowering plants. Bureau of Printing, Manila. **4**: 228-247.

Naive, M.A.K. 2017. Zingiberaceae of Kalatungan Mountain Range, Bukidnon, Philippines. Bioscience Discovery **8**: 311–319.

Pelser, P.B., J.F. Barcelona and D.L. Nickrent (eds.). 2011 onwards. Co's Digital Flora of the Philippines. http://www.philippineplants.org (Accessed 24 October 2015).

Poulsen, A.D. 2003. One new name and new combinations of Malesian Zingiberaceae. Blumea **48(3)**: 523-527.

Poulsen A.D. 2006. A Pocket Guide: Gingers of Sarawak. Natural History Publications (Borneo), Kota Kinabalu. 1-263.

Poulsen, A.D. 2012. *Etlingera* of Sulawesi. Kota Kinabalu: Natural History Publications (Borneo). 1-278.