

## Taxonomic Characterization of Wild Orchids in Pyin Oo Lwin Township, Mandalay Region

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### Abstract

The study area is Pyin Oo Lwin Township in Mandalay Region which is located between 22° 02' 6.04" N latitude and 96° 27' 24.59" E longitude. Pyin Oo Lwin township is mostly covering with various types of forests and distributing with many wild orchid. Orchids are the most interesting plants in the country for their beautiful and durable flowers. Some orchids were collected in all seasons during March 2016 to May 2018. Among them, 15 species belonging to 13 genera of family Orchidaceae were recorded, identified, classified and described in accordance with taxonomic characters. Nine species are epiphytes and others are terrestrial. Among them, according to Myanmar Red data list, *Phaphiopedilum bellatulum*, *P. spicerianum* and *P. wardii* were recorded as Endangered species. Moreover, *Geodorum recurvum* was also presented as least concern species. Then, preferential photographic figures concerning with the species were also presented. This research can contribute the valuable information of orchid species from Pyin Oo Lwin Township for future scientific natural researchers.

Key words : Orchids, Taxonomic characters, Pyin Oo Lwin area, identified, classified.

### Introduction

Myanmar has been famous for rich diversity of wild orchids since the ancient time. Orchidaceae is a very large family of the flowering plants. It is a vast and highly specialized family in Monocot. Orchids are one of the most striking elegant and beautiful flowers to be found in nature of Myanmar. The shape, size, color, and fragrance of orchid's flowers have symbolized all that is exotic and mysterious. These reputation has been appealing to elevate public awareness of orchids.

Pyin Oo Lwin area is famous for its rich biodiversity and abundant valuable natural resources. Pyin Oo Lwin Township is quite significant and famous for richness of flora, however, the orchid populaion is at risk of extinction due to their habitat destruction and over collection of native orchids for selling. Recently, nomenclature of many orchid species have been transferred into other genus and other species. It is sure that the more interesting wild orchids in study area have been recorded to evaluate the wild orchids for natural conservation. Although Pyin Oo Lwin Township is accepted the ideal place for wild orchids.

The aim of this research is to characterize taxonomically some species of Orchids in Pyin Oo Lwin Township and objectives of this research are to identify and classify the Orchid species, to describe the taxonomic characters, to distribute orchids conservation knowledge to local people, and to contribute the valuable information of some orchid species from the study area.

### Materials and Methods

The field work has been carried out during the period from 2016 to 2018. The specimens were collected from different localities and different habitats. All the specimens were photographed to record their actual habit and nature of inflorescences. The terrestrial plants were obtained from the ground level. The subterranean rhizomes and tubers were dug by tools. The detailed description and classification of the collected specimens were made by using the fresh specimens.

Identification of orchids specimens was carried out by referring to the literature as Flora of British India, Flora of Ceylon, Flora of China, Flora of Indochina, Flora of Hong

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Kong, Flora of Java and Orchids of Peru. Myanmar names were referred from Hundley, Chit Ko Ko, Nyan Htun and Kress *et al.* Local names were received from local inhabitants and some reliable sources and records as well.

## RESULTS

**1. *Paphiopedilum bellatulum*** (Reichb.f.) Stein in Stein's Orchideenbuch, 456.1892 (Fig. 1. A)

Local name : Khun-mya-san; Kya-gamon, Ngo-oo-thit khwa

Flowering periods : February to July.

Sympodial terrestrials with thick and spreading roots. Stem leafy, dwarf erect. Leaves elliptic-oblong, coriaceous, green with white spots, tips acute and sometimes emarginate. Inflorescences terminal racemes, erect, solitary, 1 to 2-flowered. Floral bracts ovate-lanceolate, carinate, coriaceous. Flowers white with brownish purple spots. Dorsal sepals suborbicular, very concave, white with brownish purple spots above. Labellum calceolate, sparsely trilobes, lateral petals large, ovate, incurved; spur absent. Anthers 2, reniform, pollen not forming pollinia. Ovary narrowly oblongoid.

Specimens Examined : Near the Anesakhan; Yee Yee Win.

**2. *Paphiopedilum spicerianum*** (Reichb, f) Pfitz.in Engl.Jahrb.19.41.1899. (Fig. 1. B)

Local name : Mge minthamee

Flowering peirod : August to October.

Sympodial terrestrials with densely hairy roots. Stems leafy, long, erect. Leaves linear-oblong, coriaceous, the tips subemarginate. Inflorescences terminal racemes, erect, single flowered. Floral bracts broadly ovate, grooved. Flowers whitish-green with purple. Dorsal sepals ovate, concave, carinate, green, lateral sepal white with red stripes. Petals linear-oblong, elongated, pendulous, slightly undulate, whitish-green with purplish stripes along the center. Labellum calceolate, the lateral lobes oblong, not incurved, slightly united with the midlobe to form a pouch; spur absent. Anthers 2. Ovary oblongoid.

Specimen Examine : Near the Peik chin myaung cave; Yee Yee Win.

**3. *Paphiopedilum wardii*** Summerh 23.146.1825. (Fig. 1. C)

Local name : Thit khya net

Flowering peirod : December to March.

Sympodial terrestrials with densely hairy roots. Stems leafy, long, erect. Leaves linear-oblong, coriaceous, with bluish blotches on upper surface. Inflorescences terminal, racemes, erect, single flowered. Floral bracts broadly ovate, grooved. Flowers yellowish green with purple spots. Dorsal sepals ovate, concave, white with greenish stripes. Petals linear-oblong, elongated, pendulous, entire, yellowish-green with densely dark purple spots. Labellum calceolate, the lateral lobes oblong, incurved, slightly united with the midlobe to form a pouch, the claw short; spur absent. Anthers 2. Ovary oblongoid with stigmatic surfaces V-shaped,

Specimen Examine : Near the Sin kaung kay village; Yee Yee Win

**4. *Goodyera procera*** (Ker. Gawl.) Hook., Exot. F1.1(3);T.39.1823. (Fig. 1. D)

Local Name : Mey thit khwa

Flowering period : June to December

Sympodial terrestrials with long roots; rhizomes tuberous, cylindrical, creeping. Stems tall, erect. Leaves oblanceolate, membranous. Inflorescences terminal racemes, erect. Flowers greenish white, fragrant. Dorsal sepal ovate-oblong, the lateral sepals oblong-elliptic. Petals obliquely spatulate. Labellum broadly ovate, the margins infolded, hypochite concave

saccate, inside papillose; ephichile deltoid, recurved, with 2- small calli; rostellum bifid. Anthercaps ovoid; pollina 2. Ovary fusiform.

Specimen Examined : Near the Wet wun village; Yee Yee Win

**5. *Arundina graminifolia*** (D.Don) Hochreutiner, Bull. New York Bot . Gard. 6: 270. 1910. (Fig. 1. E)

Local name : Wa thit khwa

Flowering period : August to March.

Sympodial terrestrials with fibrous roots. Stems leafy, culm-like, invested by the leaf sheaths. Leaves linear, grass-like, coriaceous, the tips acutely acuminate. Inflorescences terminal, simple racemes, erect, 3-to5-flowered. Floral bracts broadly ovate, coriaceous. Flowers pinkish-purple and centrifugally shaded with bright red. Dorsal sepal lanceolate, the lateral ones straight and pointed forwards behind the labellum. Petals broadly lanceolate, reflexed. Labellum infundibuliform, the lateral lobes united with the midlobes and rolled around the column, basally pinkish with rosy purple dots and bright red towards the apex; spur absent. Anthercaps sub-ovoid; pollinia 8. Ovary linear-oblongoid.

Specimen Examined: Near the Pein Naè Gone village; Yee Yee Win.

**6. *Pholidotus articulata*** Lindl., Gen. & Sp. Orch. 38.1830. (Fig. 1. F)

Local Name : Kwyet mee pan

Flowering periods : May to June.

Sympodial epiphytes with roots clinging. Pseudobulbs one-jointed, erect, ovoid to subtetragonal. Leaves linear-lanceolate or oblong-lanceolate, 2-leaves per pseudobulb, pliated, subcoriaceous. Inflorescences basal racemes, pendulous on each pseudobulb, 60-70-flowered. Floral bracts cymbiform. sub-coriaceous.. Flowers creamy white with light pink tint. Dorsal sepal broadly ovate; lateral sepals ovate to cymbiform, 5-ridged. Petals linear, tips sub-acute, creamy white or pinkish white; lip ovate to panduriform from a saccate, 5- veined. Anthercaps sub-globose; pollinia 4. Ovary oblongoid, 6-ridges.

Specimen Examine: Near the Anesakhan village; Yee Yee Win.

**7. *Bulbophyllum comosum*** Collett in Hemsley, J. Linn. Soc. 28.130, Pl.19, 1890. (Fig. 1. G)

Local Name : Thazin awar; Shan tha zin

Flowering period : January to March.

Sympodial epiphytes with clinging roots. Stems pseudobulbs one-jointed, erect, ovoid. Leaves linear-lanceolate, two leaves per pseudobulb, coriaceous, tips bifid. Inflorescences basal spikes, drooping, many flowered. Floral bracts ovate, membranous, tips acute. Flowers creamy white, fragrant. Dorsal sepal ovate, 3-nerved, the tips acuminate; lateral sepals subulate, the tips acuminate, villous with flaccid hairs. Petals small linear-obtuse, tips acute, 1-nerved, central yellow with greenish white. Labellum shortly stipitate, lanceolate, recurved, not distinctly 3-lobed, tips obtuse; spur short. Anthercap ovoid; pollinia 4. Ovary oblongoid.

Specimen Examine : Near the Pwe kauk waterfall; Yee Yee Win.

**8. *Cymbidium elegans*** Lindl., Gen. Sp. Orchd. Pl. 163. 1833. (Fig. 1. H)

Local Name : Pan thet shae pya oon

Flowering period : October to December.

Sympodial epiphytes with fibrous and clinging roots. Pseudobulbs 3-4 jointed, ovoid, bilaterally flattened. Leaves narrowly linear-elliptic, 7-veined, coriaceous. Inflorescences axillary racemes, pendulous, 50 to up flowered. Floral bracts ovate-lanceolate, membranous, tips acuminate. Flowers pale straw yellow, slightly scented. Dorsal sepal narrowly obovate,

concave, tips obtuse, coriaceous, the lateral sepals narrowly obovate, the tips obtuse, coriaceous. Petals ligulate, concave, coriaceous, the tips obtuse. Labellum elongated, 3-lobed, the lateral lobe oblong-lanceolate, slightly papillose; midlobe ligulate, the tips mucronate, orange yellow centre, with reddish brown streaks. Anthercaps triangular; pollinia 2. Ovary oblongoid.

Specimen Examine: Near the Sin kaung lay village; Yee Yee Win.

**9. *Eria acervata* Lindl.** Journ. Hort. Soc. 57, 1851. (Fig. 1. D)

Local name : Nat tha mee pan

Flowering period : February to April

Sympodial epiphytes with short clinging roots. Stems with flattened pseudobulbs, erect, 2-4 jointed. Leaves oblanceolate, coriaceous, persistent, obtuse at the tip. Inflorescence axillary racemes, 5- to 12-flowered. Floral bracts lanceolate, membranous, the tips acute. Flowers pale greenish white, fragrant. Dorsal sepal ovate or lanceolate, the tips acuminate; lateral sepal ovate-lanceolate, the tips acuminate. Petals linear-oblong, the tip acuminate. Labellum 3-lobed, mid-lobe ovate, the tips orbicular; spur absent. Anthercaps ovoid; pollinia 8. Ovary oblongoid.

Specimen Examined: Near the Shwe myint thar village; Yee Yee Win.

**10. *Geodorum recurvum* (Roxb.) Alston** in Trimen. Fl. Ceylon 6: 276. 1931. (Fig. 2. A)

Local Name : Saung oo may thit khwa

Flowering periods : April to May.

Sympodial terrestrials with fibrous roots. Leaves elliptic-lanceolate, the tips acute, plicate. Inflorescences lateral racemes, erect, flowering part drooping, 8- to 15-flowered. Floral bracts lanceolate, membranous, the tips acuminate. Flowers white with violet and yellow streak. Dorsal sepal linear-lanceolate, the tips acute; lateral sepals linear-lanceolate, the tips acute. Petals ovate-oblong, the tips obtuse. Labellum cymbiform, shallowly 3 lobed, lateral lobes entire, the tips truncate, with violet streak and striations, midlobes 2 basal thickening, margins slightly undulate, tips obtuse, with yellow blotch; spur present. Anthercaps sub-globose; pollinia 2. Ovary oblongoid.

Specimen Examine: Near the Pwe kauk waterfall; Yee Yee Win.

**11. *Acampe rigida* (Buch.-Ham. ex J.E.Smith) Hunt,** Kew Bull. 24 : 98, 1970. (Fig. 2. B)

Local name : Mee ma long pan

Flowering period : August to October

Monopodial epiphytes with long dropping and clinging roots. Leaves lorate-oblong, thickly coriaceous, the tips 2-lobed. Inflorescences panicle, axillary, erect, 8- to 12- flowered. Floral bracts small, triangular, fleshy, the tips acute. Flowers, brown stripes on yellowish brown, fleshy, fragrant. Dorsal and lateral sepals oblong-obovate, barred red on the inside spotted, the tips obtuse. Petals small, oblong-obovate, reddish brown stripes on yellowish brown, fleshy. Labellum saccate, lateral lobes short, triangular, erect, mid lobe ovate-orbicular, the tips obtuse; spur saccate. Anthercaps bilobed; pollinia 2. Ovary oblongoid.

Specimen Examined : Near the Sin kaung lay village; Yee Yee Win.

**12. *Aerides crassifolium* Par. & Reichb. f.** in Trans. Linn. Soc. xxx. 145; Reichb. f. in Gard. Chron. i. 633, and ii. 492. 1877. (Fig. 2. C)

Local Name : Sar ka lay khan

Flowering period : April to May.

Monopodial robust epiphyte with thick roots. Stems leafy, long, often branched. Leaves linear or lorate, coriaceous. Inflorescences simple racemes, axillary or terminal, 10-to-20-

flowered. Floral bracts ovate, membranous. Flower violet, fragrant. Dorsal sepals ovate, violet, the tips obtuse, the lateral sepal ovate, the tip obtuse. Petals broad-oval, pale violet, tips obtuse, coriaceous; lip triangular, cordate, dark mauve-violet, sidelobes of the lip half as long as the clawed, midlobe ovate-cordate side replicate erose; spur present. Anthercaps ovoid; pollinia 2. Ovary deltoid.

Specimen Examined: Near the Nyaung paw village; Yee Yee Win.

**13. *Luisia teretifolia*** Gaudich. in Freyc. Voy.Bot.426.t.37.1820. (Fig. 2. D)

Local name : Sa ka lay ywet lon; sin mee thit khwa

Flowering period : February to April

Monopodial epiphytes with long, drooping and clinging roots. Stems leafy, erect, cylindrical, rigid, stout. Leaves cylindrical, coriaceous, the tips obtuse. Inflorescences axillary, simple racemes, more or less erect, 3- to 4- flowered. Floral bracts ovate-lanceolate, membranous, deciduous, the tips acute. Flowers yellow with violet specklets. Dorsal sepals ovate, keeled, the tips acute; the lateral sepals ovate, keeled, the tips acute. Petals linear-oblong, the tips obtuse. Labellum large, distinctly 3-lobed, the lateral and mid-lobes ovate, erect, fleshy, the tips obtuse, yellow with violet specklets; spur absent. Anthercaps subglobose; pollinia 2. Ovary oblongoid.

Specimen Examined: Near the Dattawgyaing waterfall; Yee Yee Win.

**14. *Ornithochilus difformis*** (Wall. ex Lindl.) Schltr. Fed. Repert.

Beih.4:277.1919.(Fig. 2. E)

Local Name : Pya lay thit khwa

Flowering periods : July to August.

Monopodial epiphytes with drooping and clinging roots. Stems very short, leafy, erect. Leaves elliptic-oblong, the tips acute, flat, subcoriaceous. Inflorescences axillary racemes, more or less drooping, many flowered. Flowers yellow with thick reddish brown stripe. Dorsal sepal oblong, yellow with thick reddish brown stripes, the lateral sepals obliquely obovate, tips subacute, yellow with thick reddish brown stripes. Petals linear, yellow with red streaks; lip distinctly 3-lobed, basally yellow with reddish brown middle and yellow tips, margins fimbriate, tips subobtuse; spur present. Anthercaps subglobose; pollinia 2. Ovary oblongoid.

Specimen Examined: Near the Peik chin myaung cave; Yee Yee Win.

**15. *Rhynchostylis retusa*** Blume, Bijdr. 286. Pl. 49. 1825. (Fig. 2. F)

Local name : Kyaung-myee-nantha

Flowering period : April to July

Monopodial epiphytes with long drooping and clinging roots. Stems cylindrical, erect. Leaves oblong, coriaceous, rigid. Inflorescences axillary racemes, more or less drooping. Flowers white with violet pink, fleshy. Dorsal sepals ovate-oblong, white with pinkish violet-spots, the lateral lobes obscure, the mid lobes elongate, cuneiform, purple, retuse at the tip; spur laterally compressed. Anthercaps obovoid; pollinia 2. Ovary narrowly oblongoid.

Specimen Examined : Near the Anesakhan; Yee Yee Win.



**A. *Phaphiopedilum bellatulum***  
(Reichb.f.) Stein



**B. *Phaphiopedilum spicerianum***  
(Reichb.f.) Pfitz.



**C. *Phaphiopedilum wardii***  
Summerh



**D. *Goodyera procera***  
(Ker-Gawl) Hook.



**E. *Arundina graminifolia***  
(D. Don) Hoch.



**F. *Pholidotus articulata*** Lindl.



**G. *Bulbophyllum comosum***  
Collett



**H. *Cymbidium elegans*** Lindl.



**I. *Eria acervata*** Lindl.

**Figure 1**



**A. *Geodorum recurvum* (Roxb)  
Alston**



**B. *Acampe rigida* (Buch. -Ham. Ex J.E.  
Smith) Hunt**



**C. *Aerides crassifolia* Par.**



**D. *Luisia teretifolia* Gaudich.**



**E. *Ornithochilus difformis*  
(Wall ex Lindl) Schltr**



**F. *Rhycostylis retusa* Blume**

**Figure 2**

### Discussion and Conclusion

In the present study, 15 identified species belonging to 13 genera of 3 subfamilies of family Orchidaceae have been presented. The members of subfamilies Cyripedioideae, Neottioideae, and Epidendroideae are recorded.

The subfamily Cyripedioideae includes only one genus *Paphiopedilum*. Three species of *Paphiopedilum* are recorded from the study area. *P. bellatulum* has large lateral petals, *P. spicerianum* possess distinctly wavy lateral petals and *P. wardii* has entire and pendulous lateral petals with densely dark purple spots. Very interesting orchids of *Paphiopedilum* are sensitive to low elevation of the study area.

In subfamily Neottioideae, three genera of *Goodyera*, *Arundina* and *Pholidotus* were recorded. *Goodyera procera* as a type of terrestrial and long inflorescence are amongst the leaves apex. In *Arundina graminifolia* thrives well in the open sunny areas of the mountain regions of study area. Each plant has grass or bamboo-like leaves. Hence, the local name is the bamboo orchid. *Pholidotus articulata* the one-jointed pseudobulb in each year. The inflorescences emerge from the base of leaves and pendulous.

The subfamily Epidendroideae, 9 species are recorded in study area *Bulbophyllum* spp. are supremely successful epiphytes, invariably found in the large colonies. The popular orchids, *Bulbophyllum* spp. is initiated as well known species in this subfamily. The genus *Eria* is closely allied to the *Dendrobium* sharing many similarities in vegetative structure and also in the form of the flower. Genus *Cymbidium*, the racemose inflorescences grows from the base of pseudobulb.

*Geodorum recurvum*, its inflorescences are distinctive and found growing under the shade of the trees. This species was recorded as least concern species according to the Myanmar Red data list. The distinctive characters of *Luisia teretifolia* is epiphyte with terete leaves and very short inflorescences. The flowers of *Rhynchostylis retusa* are small and are closely arranged into drooping spike inflorescences which open simultaneously. *Aerides crassifolia* is a rare species and the colour of flowers changed throughout the bloom. *Ornithochilus difformis* prefers large trees and forest near lake and stream. It has succulent stem.

Orchids are differentiated into terrestrial and epiphytes in the study. According to these 9 species of epiphytic plants and 6 species of terrestrial habit are observed and described. All terrestrial orchids possess sympodial growth habit. The presented orchids are other sympodial or monopodial, calculated as a 5 monopodial species and 4 sympodials are described.

Today, most of the people are interested in the wild orchids because their attractive colour and flower shape, and some of these are useful for medicines and various purposes. Overs collection of wild orchids for various purposes, the habitat of native orchids was damaged seriously. Myanmar wild orchids are very famous among the neighboring countries. So, Myanmar living jewels are gradually disappeared by human activities and timber production. Among them, according to Myanmar Red data list, *Paphiopedilum* spp. were recorded as Endangered species. And then, *Geodorum recurvum* was also presented as least concern species. Therefore, all nationalities must maintain the living jewels for natural resources of Myanmar.

It can be concluded that some of the valuable orchids are still widely thrived in the study area and it is needed to conserve the orchids resources from extinctions of rare species.

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