

TAXONOMIC STUDY ON FIFTEEN SPECIES OF ORCHIDACEAE FOUND IN PINLAUNG TOWNSHIP, SOUTHERN SHAN STATE

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Abstract

The present paper deals with taxonomic study on fifteen species of Orchidaceae found in Pinlaung Township, Southern Shan State of Myanmar. This area lies between 19° 40'-20° 30' N latitude and 96° 22'-96° 55' E longitude. The elevation of Pinlaung Township is 1465 m above sea level. The orchid species of this study area were investigated during 2017-2018. All the specimens were collected, and identified by referring to Hooker, Backer & Brink, Pedersen *et al.*, Xinqi *et al.*. In this paper, 15 species belonging to 11 genera were presented. Among them, 11 species were epiphyte and 4 species were terrestrial. Two pollinia were found in 6 species and four pollinia in 9 species. The morphological characters of the individual species were presented with relevant photographs. An artificial key to the species was constructed. The valuable information of orchid species found in Pinlaung Township of Southern Shan State will provide to further researchers.

Keywords: Taxonomy, Orchidaceae, Pollinia, Pinlaung Township

Introduction

Taxonomy is one of the branch of botany which is an advanced subject that deals not merely with the identification and naming of plant but also with their classification and evolution. Plant taxonomic study has among its objective the learning of the kinds of plants on the earth and their names, of their distinctions and their affinities, their distribution and habitat characteristics, and the correlation of these facts of knowledge with pertinent scientific data contributed by research activities of related fields of botanical endeavor (Lawrence 1964).

Orchidaceae is the largest family of flowering plants and a cosmopolitan in distribution and consists of about 800 genera and 18,000 to 20,000 species (Heywood *et al.* 2007). Members of the Orchidaceae family are distributed in worldwide and consists of 700 to 800 genera and about 20,000 species (Simpson 2006). Xinqi *et al.* (2009) reported that Orchidaceae consists of about 800 genera and 25,000 species and worldwide in distribution. Kress *et al.* (2003) mentioned that there are 128 genera and 738 species in Myanmar.

The Shan State is the largest one among the seven States of Myanmar. Pinlaung Township is located in Southern Shan State of Myanmar. It lies between 19° 40'-20° 30' N latitude and 96° 22'-96° 55' E longitude. The elevation of Pinlaung Township is 1465 m above sea level. The total area is 3349.98 square kilometer. It is bounded by Naungshwe Township in the east, Pynmana Township in the west, Pekhone Township in the south and Kalaw Township in the north.

The aim and objectives of this research are to identify and classify the natural orchid species of Pinlaung Township, to record the taxonomical characters of Orchidaceae, and to contribute the information of orchid species in the study area for further researchers.

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Family	No.	Scientific Name	Myanmar Name
Orchidaceae	7	<i>Hemipilia cordifolia</i> Lindl.	Unknown
	8	<i>Holcoglossum kimballianum</i> (Rchb.f.) Garay	Yosetgale
	9	<i>Otochilus albus</i> Lindl.	Unknown
	10	<i>Peristylus prainii</i> (Hook. f.) Krzl.	Mya thein dan; Tamasok
	11	<i>Pholidota articulata</i> Lindl.	Unknown
	12	<i>Pholidota convallariae</i> (E.C. Parish & Rchb. f.) Hook. f.	Unknown
	13	<i>Pholidota imbricata</i> Lindl.	Padi sint; Sin mi thitkwa
	14	<i>Sunipia scariosa</i> Lindl.	Unknown
	15	<i>Vanda coerulea</i> Griff. ex Lindl.	Moe lon hmaing

Outstanding Characters

1. *Bulbophyllum odoratissimum* (Sm.) Lindl., Gen. Sp. Orchid. Pl. 55: 1830. (Figure 2. A)

Stelis odoratissima Sm., Cycl. 34: Stelis n. 12. 1814.

Myanmar name : Unknown

Flowering period : April to June

Sympodial epiphytes; pseudobulbs subcylindric, one-jointed. Leaves simple, 1 leaf per pseudobulb; blades oblong. Inflorescences subumbellate racemes, erect, many-flowered. Flowers white, about 1.0 cm in diameter, fragrant. Dorsal sepals ovate-lanceolate; lateral sepals lanceolate. Lateral petals ovate; labellum ligulate. Pollinia 4.

2. *Cleisostoma crochetii* (Guill.) Garay, Bot. Mus. Leaflet. 23: 170. 1972.

(Figure 2. B)

Sarcanthus crochetii Guill., Bull. Mus. Natl. Hist. Nat., ser. 2, 28: 238. 1956.

Myanmar Name : Unknown

Flowering period : July to August

Monopodial epiphytes. Leaves simple, alternate; blades oblong. Inflorescences racemes, many-flowered. Flowers whitish purple, about 1.2 cm in diameter. Dorsal sepals oblong; lateral sepals falcately-ovate. Lateral petals elliptic to ligulate; labellum 3-lobed. Pollinia 4.

3. *Dendrobium cariniferum* Rchb. f., Gard. Chron. 1869: 611. 1869. (Figure 2. C)

Myanmar name : Mahar dewi; Payaung setku

Flowering period : February to April

Sympodial epiphytes; pseudobulbs cylindrical, many-jointed. Leaves simple, alternate; blades oblong. Inflorescences racemes, 1- to 2-flowered. Flowers white, about 3.5 cm in diameter, fragrant. Dorsal sepals ovate-lanceolate; lateral sepals obliquely ovate-triangular. Lateral petals oblong-elliptic; labellum 3-lobed. Pollinia 4.

4. *Dendrobium crystallinum* Rchb. f., Gard. Chron. 572. 1868.

(Figure 2. D)

Myanmar Name : Pan setku thitkwa

Flowering Period : February to May

Sympodial epiphytes; pseudobulbs cylindrical, many-jointed. Leaves simple, alternate; blades oblong-lanceolate. Inflorescences racemes, 1- to 2-flowered. Flowers white, about 5.0 cm in diameter. Dorsal and lateral sepals oblong-lanceolate. Lateral petals oblong; labellum suborbicular. Pollinia 4.

5. *Habenaria chlorina* Parish & Rchb. f., Trans. Linn. Soc. London 30: 140. 1874. (Figure 2. E)

Myanmar name : Unknown

Flowering period : July to September

Sympodial terrestrials. Leaves simple, alternate; blades oblong-lanceolate. Inflorescences terminal spike, many-flowered. Flowers yellow, about 0.9 cm in diameter. Dorsal sepals ovate; lateral sepals ovate-lanceolate. Lateral petals falcately linear-lanceolate; labellum linear-lanceolate, distinctly 3 partites. Pollinia 2.

6. *Habenaria commelinifolia* (Roxb.) Wall. ex Lindl., Gen. Sp. Orchid. Pl. 325. 1835.

(Figure 2. F)

Orchis commelinifolia Roxb., Hort. Bengal. 63. 1832.

Myanmar name : Unknown

Flowering period : September to December

Sympodial terrestrials. Leaves simple, alternate; blades oblong-lanceolate. Inflorescences terminal spike, 4- to 8-flowered. Flowers white, about 2.5 cm in diameter. Dorsal sepals broadly obovate; lateral sepals ovate. Lateral petals obliquely oblong; labellum suborbicular, distinctly 3-lobed. Pollinia 2.

7. *Hemipilia cordifolia* Lindl., Gen. Sp. Orchid. Pl. 296. 1835.

(Figure 3. A)

Myanmar name : Unknown

Flowering period : June to July

Sympodial terrestrial. Leaves simple, solitary; blades cordate. Inflorescences terminal racemes, many-flowered. Flowers pinkish purple, about 1.0 cm in diameter. Dorsal sepals ovate-lanceolate; lateral sepals falcately oblong-ovate. Lateral petals ovate; labellum obovate-oblong, obscurely 3-lobed. Pollinia 2.

8. *Holcoglossum kimballianum* (Rchb. f.) Garay, Bot. Mus. Leaflet. 23(4): 182. 1972.

(Figure 3. B)

Vanda kimballiana Rchb. f., Gard. Chron, ser. 3 5: 232. 1889.

Myanmar name : Yosetgale

Flowering period : October to December

Monopodial epiphyte. Leaves simple, alternate; blades terete. Inflorescences axillary racemes, many-flowered. Flowers pinkish white, about 4.5 cm in diameter. Dorsal sepals elliptic; lateral sepals obliquely ovate-falcate. Lateral petals elliptic; labellum 3-lobed. Pollinia 2.

9. *Otochilus albus* Lindl., Gen. Sp. Orchid. Pl. 35. 1830. (Figure 3. C)

Myanmar name : Unknown

Flowering period : May to July

Sympodial epiphytes; pseudobulbs tetragonal, many-jointed. Leaves simple, 2 leaves per pseudobulb; blades oblong. Inflorescences terminal racemes, pendulous, many-flowered. Flowers white, about 1.2 cm in diameter. Dorsal sepals oblong; lateral sepals oblong-lanceolate. Lateral petals narrowly oblong-lanceolate; labellum 3-lobed. Pollinia 4.

10. *Peristylus prainii* (Hook. f.) Kraenzl., Orchid. Gen. Sp. 1: 514. 1898.

(Figure 3. D)

Habenaria prainii Hook. f., Fl. Brit. India 6: 159. 1890.

Myanmar name : Mya thein dan; Tamasok

Flowering period : May to July

Sympodial terrestrial. Leaves simple, alternate; blades ovate-oblong. Inflorescences terminal spike, many-flowered. Flowers creamy white, about 0.3 cm in diameter. Dorsal sepals obovate; lateral sepals linear-oblong. Lateral petals broadly ovate; labellum narrowly obovate, slightly 3-lobed. Pollinia 2.

11. *Pholidota articulata* Lindl., Gen. Sp. Orchid. Pl. 38. 1830.

(Figure 3. E)

Myanmar name : Unknown

Flowering period : March to May

Sympodial epiphyte; pseudobulbs oblong, many-jointed. Leaves simple, mostly 2 leaves per pseudobulb; blades elliptic-lanceolate. Inflorescences terminal racemes, many-flowered. Flowers yellowish white, about 1.2 cm in diameter. Dorsal sepals oblong; lateral sepals ovate, oblique. Lateral petals oblong-lanceolate; labellum cymbiform. Pollinia 4.

12. *Pholidota convallariae* (E.C. Parish & Rchb. f.) Hook. f., Hooker's Icon. Pl. 19: ad pl. 1880. 1889. (Figure 3. F)

Coelogyne convallariae E.C. Parish & Rchb. f., Flora 55: 277. 1872.

Myanmar name : Unknown

Flowering period : April to May

Sympodial epiphyte; pseudobulbs narrowly ovoid, one-jointed. Leaves simple, mostly 2 leaves per pseudobulb; blades narrowly elliptic. Inflorescences basal racemes, many-flowered. Flowers creamy white; about 0.6 cm in diameter. Dorsal sepals ovate; lateral sepals obliquely ovate. Lateral petals ovate-elliptic; labellum shallowly saccate. Pollinia 4.

13. *Pholidota imbricata* Hook., Exot. Fl. 2:, ad pl. 138. 1825.

(Figure 4. A)

Myanmar name : Padi sint; Sin mi thitkwa

Flowering period : June to August

Sympodial epiphyte; pseudobulbs suboblong, one-jointed. Leaves simple, 1 leaf per pseudobulb; blades oblanceolate. Inflorescences basal racemes, pendulous, many-flowered. Flowers creamy white, about 0.4 cm in diameter. Dorsal sepals broadly ovate; lateral sepals ovate to cymbiform. Lateral petals linear; labellum ovate to panduriform. Pollinia 4.

14. *Sunipia scariosa* Lindl., Gen. Sp. Orchid. Pl. 179. 1833. (Figure 4. B)

Myanmar name : Unknown

Flowering period : December to May

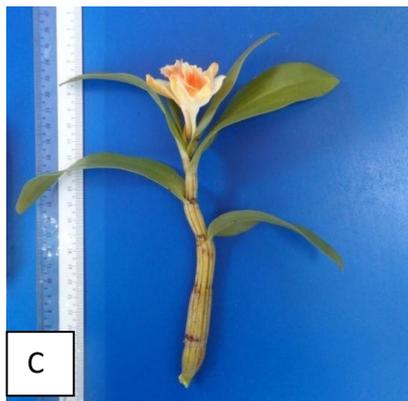
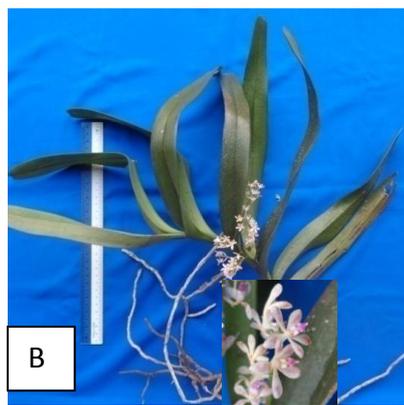
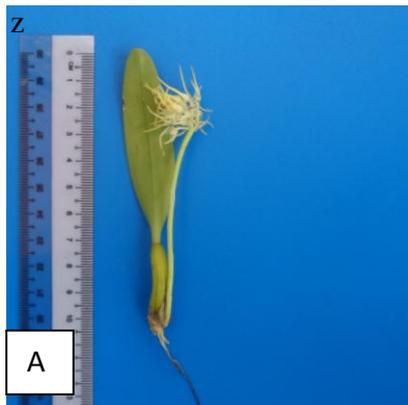
Sympodial epiphyte; pseudobulbs ovoid, one-jointed. Leaves simple, 1 leaf per pseudobulb; blades oblong. Inflorescences basal spike, pendulous, many-flowered. Flowers yellowish-green, about 0.8 cm in diameter. Dorsal sepals ovate; lateral sepals falcately lanceolate. Lateral petals suborbicular; labellum linguiform. Pollinia 4.

15. *Vanda coerulea* Griff. ex Lindl., Edwards's Bot. Reg. 33:, sub pl. 30. 1847. (Figure 4. C)

Myanmar name : Moe lon hmaing

Flowering period : July to December

Monopodial epiphyte. Leaves simple, alternate; blades oblong. Inflorescences axillary racemes, many-flowered. Flowers bluish purple, about 8.0 cm in diameter. Dorsal sepals suborbicular; lateral sepals obovate. Lateral petals broadly obovate; labellum linear-oblong, distinctly 3-lobed. Pollinia 2.



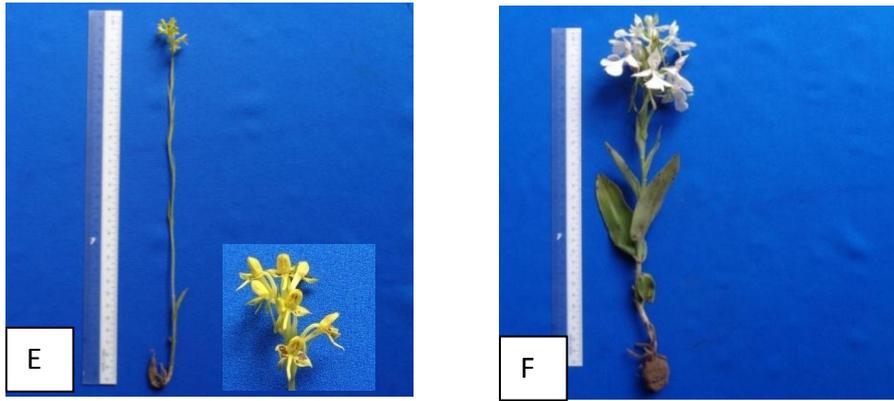


Figure 2 A. *Bulbophyllum odoratissimum* (Sm.) Lindl.
 B. *Cleisostoma crochetii* (Guill.) Garay
 C. *Dendrobium cariniferum* Rchb. f.
 D. *Dendrobium crystallinum* Rchb. f.
 E. *Habenaria chlorina* Parish & Rchb. f.
 F. *Habenaria commelinifolia* (Roxb.) Wall.

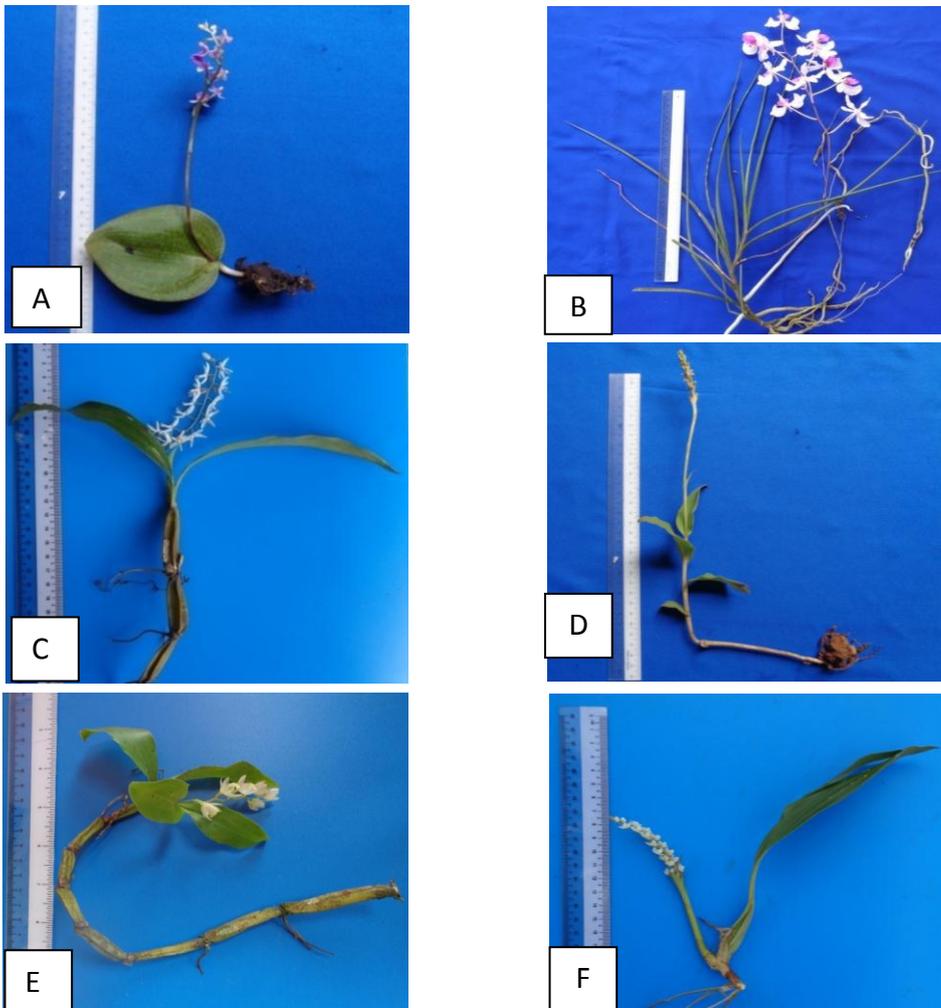


Figure 3 A. *Hemipilia cordifolia* Lindl.
 B. *Holcoglossum kimballianum* (Rchb.f.) Garay
 C. *Otochilus albus* Lindl.
 D. *Peristylus prainii* (Hook. f.) Krzl.
 E. *Pholidota articulata* Lindl.
 F. *Pholidota convallariae* (E.C. Parish & Rchb. f.) Hook. f.

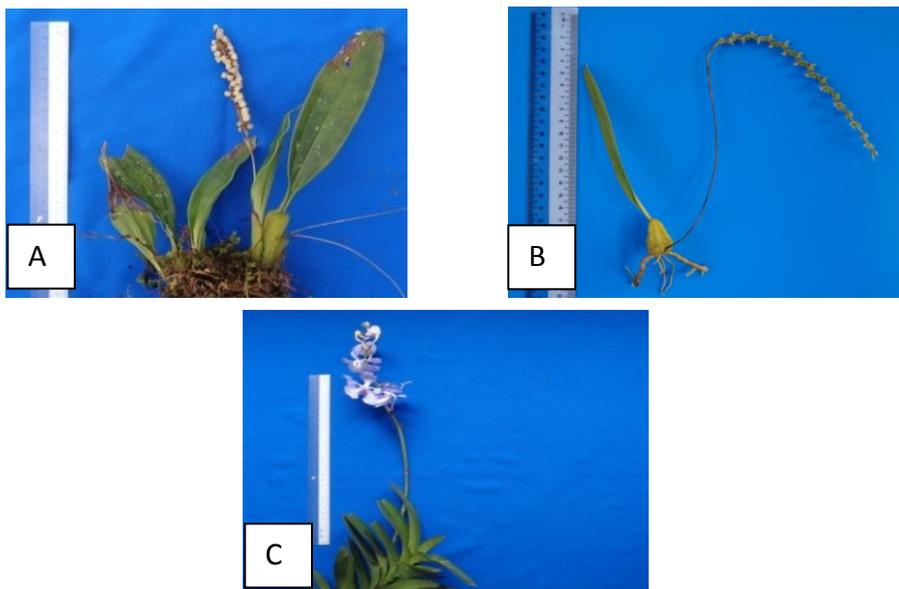


Figure 4 A. *Pholidota imbricata* Lindl. B. *Sunipia scariosa* Lindl.
 C. *Vanda coerulea* Griff. ex Lindl.

An Artificial Key to the Studied Species

- 1. Terrestrials----- 2
- 1. Epiphytes----- 5
 - 2. Flowers white or creamy white----- 3
 - 2. Flowers yellow or pinkish purple ----- 4
- 3. Flowers about 2.5 cm in diameter; labellum suborbicular ----- 6. *Habenaria commelinifolia*
- 3. Flowers about 0.3 cm in diameter; labellum narrowly obovate ----- 10. *Peristylus prainii*
- 4. Leafblades oblong-lanceolate; inflorescence spike ----- 5. *Habenaria chlorina*
- 4. Leafblades cordate; inflorescence racemes----- 7. *Hemipilia cordifolia*
- 5. Monopodial epiphytes ----- 6
- 5. Sympodial epiphytes ----- 8
 - 6. Flowers less than 3.0 cm in diameter; pollinia 4 ----- 2. *Cleisostoma crochetii*
 - 6. Flowers more than 4.0 cm in diameter; pollinia 2 ----- 7
- 7. Leafblade terete; lateral petals elliptic ----- 8. *Holcoglossum kimballianum*
- 7. Leafblade oblong; lateral petals broadly obovate ----- 15. *Vanda coerulea*
- 8. Pseudobulbs one-jointed ----- 9
- 8. Pseudobulbs many-jointed ----- 12
- 9. Leaves mostly 2 leaves per pseudobulb----- 12. *Pholidota convallariae*
- 9. Leaves one leaf per pseudobulb ----- 10

10. Inflorescences erect; flowers fragrant-----
----- 1. *Bulbophyllum odoratissimum*
10. Inflorescences pendulous; flowers not fragrant----- 11
11. Flowers creamy white; lateral petals linear -----
----- 13. *Pholidota imbricata*
11. Flowers yellowish-green; lateral petals suborbicular -----
----- 14. *Sunipia scariosa*
12. Inflorescences with many-flowered ----- 13
12. Inflorescences with 1- to 2-flowered-----14
13. Pseudobulbs tetragonal; lateral sepals oblong-lanceolate-----
----- 9. *Otochilus albus*
13. Pseudobulbs oblong; lateral sepals ovate-----
----- 11. *Pholidota articulata*
14. Flowers fragrant; lateral sepals obliquely ovate-triangular -----
----- 3. *Dendrobium cariniferum*
14. Flowers not fragrant; lateral sepals oblong-lanceolate-----
-----4. *Dendrobium crystallinum*

Discussion and Conclusion

The present paper deals with taxonomic study on fifteen species of Orchidaceae found in Pinlaung Township, Southern Shan State of Myanmar. Altogether 15 species belonging to 11 genera of Orchidaceae were presented. Among them, the number of pollinia 2 and 4 were found in 6 species and 9 species respectively.

Xinqi *et al.* (2009) had been classified the Orchidaceae into 5 subfamilies. In this paper, 2 subfamilies were found such as Orchidoideae and Epidendroideae.

The Orchidoideae is a very large subfamily of highly successful terrestrial orchids which included *Habenaria chlorina* Parish & Rchb. f., *H. commelinifolia* (Roxb.) Wall. ex Lindl., *Hemipilia cordifolia* Lindl., and *Peristylus prainii* (Hook. f.) Krzl.

The subfamily Epidendroideae are the major orchid group, with more than half of all orchid species which included *Bulbophyllum odoratissimum* (Sm.) Lindl., *Cleisostoma crochetii* (Guill.) Garay, *Dendrobium cariniferum* Rchb. f., *D. crystallinum* Rchb. f., *Holcoglossum kimballianum* (Rchb.f.) Garay, *Otochilus albus* Lindl., *Pholidota articulata* Lindl., *P. convallariae* (E.C. Parish & Rchb. f.) Hook. f., *P. imbricata* Lindl., *Sunipia scariosa* Lindl., and *Vanda coerulea* Griff. ex Lindl.

Among the 15 studied species, *Habenaria commelinifolia* (Roxb.) Wall. ex Lindl., *Peristylus prainii* (Hook. f.) Krzl., *Cleisostoma crochetii* (Guill.) Garay, *Dendrobium cariniferum* Rchb. f., and *Otochilus albus* Lindl. were abundantly found in the study area.

Orchids are one of the largest and most diverse groups of angiosperms. They can be easily distinguished from other flowering plants. The distinctive characters of this family are terrestrial or epiphytic herbs having trimerous, often resupinate flowers with labellum and the presence of pollinia.

Orchid species are famous for their beauty. There are natural orchid species and hybrid species in Myanmar. Some species of orchids have both economic value and medicinal value.

One third of a total area of Pinlaung Township is covered by forest vegetation. Therefore, the species of orchid growing naturally are found in this area. It is necessary in Myanmar to keep the valuable orchid species.

It is hoped that this paper will contribute valuable information about some orchid species found in Pinlaung Township.

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