

THE STUDY ON WILD ORCHIDS AT YEE-AYE RESERVED FOREST OF KALAW TOWNSHIP IN SOUTHERN SHAN STATE (Part – 2)

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Abstract

The present work is concerned with the study on wild orchids of natural habitat in Yee Aye Reserved Forest in Kalaw Township. The Yee Aye Reserved Forest is situated in Kalaw Township of Taunggyi District and also the southern west part and 5.5 miles distance from Kalaw city. In this recent study 6 genera and 11 species were recorded from study area. The Yee Aye Hill wetland located in the centre of Yee Aye Reserved Forest. Most of the wild orchids were collected around the area of this Hill wetland. Epiphytic genera namely *Bulbophyllum*, *Coelogene*, *Dendrobium*, *panisea*, *Luisia* and *Vanda* were collected. Photographs have been taken to record habits of orchids in nature. The collected specimens were classified, identified and described with colour photographs of their natural habitats and inflorescence. The morphological characters have been emphasized and artificial keys from the tribe to the species have been constructed and GPS location system.

Keywords: Wild Orchids, Yee Aye Reserved Forest, Hill wetland, Epiphyte, Lithophyte, artificial keys.

Introduction

The family Orchidaceae are largest family among Angiospermae, Manocotyledonae. Some botanist estimated about 35000 orchids among flowering plants. Orchidaceae grow well throughout the world. They can thrive in tropical, subtropical and temperate regions except in ice capped regions and deserts. The most wild orchids have distributed various regions of Myanmar that is tropical, subtropical and temperate regions, especially they have grown in temperate regions. Now The study area is Kalaw Township in Taunggyi district of Southern Shan State. Kalaw Township is located on the east by Shwe Nyaung Township, on the west by Thazi Township, on the south by Pin Laung Township, on the north by Pindaya Township, and it lies between North latitude 20°25'-21°0' and East latitude 96°20'-97°10'. There are various types of forest in this township that is hill evergreen forest, lower deciduous forest, Indine forest and mixed deciduous forest. Six reserved forest are controlled by Forest Department. Among them the invest gold area is Yee Aye reserved forest in the recent study. Which forest is Hill evergreen forest type (The hill evergreen forest is found in the north at altitudes of over 1,000 meters above sea level. In other regions they are found area of high altitudes. This type of forest is less dense than the tropical evergreen forest because it has less large trees. This type of forest too is quite cool because it is found at high altitudes. The hill evergreen forest is very important to the preservation of water sources. Trees are mainly shrubs mixed with some pines. Smaller plants in the forest include ground orchids and other tropical plants such as wild roses, violets and lilaes. In addition there are small plants that grown on the larger trees such as moss and orchids. Hill evergreen forest, where the wild orchids have grown on the various plants which are (Thit-ya) *Shoreaob longifolia* Klall., (Thit-el) *Castanea sativa* Mliler (Pyin-ma) *Lagerstromia speciera* Pers (Pyin-Ka-doe), *Pyliadolabri formis* Benth and *Dipterocarpus obtusifolius* Teysm. ex. Miq (In-pin). Yee Aye reserved forest situated in Northern East of Pin Laung Township and North by Shwe Nyaung Township and Southern West part between Kalaw and Tharzi Township 5.5 miles far from Kalaw city. The area of these forest is about 1952 acres and altitude of 1465 meters and lies between

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North latitude 20°36' and East longitude 96°31'. Genus *Bulbophyllum*, *Coelogene*, *panisea*, *Dendrobium*, *Luisia* and *Vanda* have been found in this area.

In this recent study, (2) Subfamilies belong to (3) Tribes (4) Subtribes (6) genera and (11) species have been collected from this study area including epiphyte and lithophytes. The classification and taxonomic description of collected specimens are provided with coloured photographic and artificial keys of Tribe, Subtribe, genera and species are also constructed.

Methodology

The specimens were collected from Kalaw Township of Taunggyi District. All these specimens were colourful photographed to record their actual habitat and the nature of inflorescence in 2018-2019. The collected specimens were classified according to Dressler's classification R. Dressler's (1927) and identified by Seidenfaden (1992) Grant: B (1966), Nantiya Vaddhanaputi (2006), Hooker, J.D. (1954), Seidenfaden and Smitch (1965), Dassanayake, N.D. (1981), Flora of China Vol. 25 (2013) and Flora of Thailand Vol. XI & XII. Part I & II (2014) methods. Herbarium specimen well prepared and submitted to Botany Department, University of Yangon.

Results

In this paper (2) subfamily, (3) tribes, (4) subtribes (6) genera and (11) species have been collected from study area. According to Seidenfaden and Wood (1992).

Key to the Subfamily

1. Pollinia soft, waxy, without stalk or with caudiculae only rarely with stipe. Anther erect and earlier ontogeny ----- (I) **Epidendroideae**
1. Pollinia cartilaginous or bony, usually with stipe. Anther incumbent already from earliest stages in ontogeny often strongly deflexed at maturity. ----- (II) **Vandoideae**

Key to Tribe of Subfamily Epidandroideae

1. Pseudobulb with single internode. Inflorescence terminal. Column long with wings with caudicle, pollinia 2. ----- **Coelogyneae**
1. Pseudobulb slender with many internode. Inflorescence lateral, column stout without wings and caudicle, pollinia 8 ----- **Epidendreae**

Key to the Subtribe of Tribe Epidendreae

1. Pseudobulb several shapes. Inflorescence terminal or lateral ----- **Dendrobiinae**
1. Pseudobulb usually ovoid. Inflorescence arising from the base of the pseudobulb ----- **Bulbophyllinae**

I. Subfamily Epidendoideae

Subfamily	Tribe	Subtribe	Genus	Species	Myanmar name
Epidendroideae	Coelogyneae	Coelogyneinae	<i>Coelogyne</i>	<i>lentiginosa</i>	အိတ်တိုင်
	Epidendreae	Dendrobiinae	Dendrobium	<i>thysiflorum</i>	သစ်တိုင်
				<i>primulium</i>	ဝါးတိုင်
				<i>sutepense</i>	None
				<i>trigonopus</i>	အိတ်တိုင်
		Bulbophyllinae	<i>Bulbophyllum</i>	<i>lobbii</i>	ဝါးတိုင်
				<i>refractum</i>	ဝါးတိုင်
				<i>kanbuerance</i>	ဝါးတိုင်
			<i>panisea</i>	<i>uniflora</i>	None

In this recent study only one genus *Coelogyne* was collected under Subtribe Coelogyneinae.

1. *Coelogyne* Lindl.

Sympodial epiphyte with creeping rhizome. Pseudobulb oblong ovate. Leaves two alternate. Inflorescence from the base of the pseudobulb. Sometime terminal, with persistent peduncular bracts. Flower medium. Sepals and petals free. Lip trilobe. Column long and slender with large wings around the stigmatic surface. Anther two cells. Pollinia 4. In this recent study only species collected from study area.

1.1 *Coelogyne lentiginosa* (Lindl.) Kuntze



Habit



Inflorescence



Flower

1.1 *Coelogyne lentiginosa* (Lindl.) Kuntze

Pleione lentiginosa (Lindl.) Kuntze (1891)

Epiphyte. Rhizome with dense scale sheaths. Pseudobulbs linear oblong, 4 angled, about 6.00-8.00 cm long and 2.00 cm width, glabrous. Leaves elliptic lanceolate acute, 20-30.00 cm long and 3.5-4.00 cm width, shortly grooved at the base, petaloid, glabrous. Inflorescences with 6-8 flowers, erect, arising from the new pseudobulbs with persistent lanceolate floral bracts. Flower yellow with white lip, about 4-5.00 cm across, pedicel pale green, lanceolate floral bracts. Dorsal sepal and lateral sepals subsimilar, oblong acute with veins. Petals linear lanceolate about 2.00 cm long and 0.7 cm width lip trilobed, thin membranous margin, side lobes oblong obtuse, reddish brown margin, midlobe shortly clawed nearly semicircular, white with orange blotches, three keels

on lip starting away from the base ending in middle of mesochile column green, about 0.6 cm long and 0.2 cm wide with wings, rosetellum orange. Pollinia 4, suborbicular.

Myanmar Name - Ngwe Hinn Phyu Myo Kwe (အိန္ဒြေဖျိယွေကျွန်း)

Occurrence - Myanmar, Yee-Aye reserved forest, Wet-Phyu-Yee reserved forest N 20° 34' 22", E 96° 30' 36"

Distribution - Myanmar, Thailand (Flora of Thailand Vol.12, 5) (**Seidenfaden**, 1992) Tenasserim, Moulemein (Grant, B., 1964)

Ecology - Epiphyte, Lithophyte, Hill evergreen forest, deciduous forest, Lowland forest, alt 1280 m. Flowering period December- January

Key to the species of Genus *Dendrobium*

1. Pseudobulb fusiform, flower golden yellow. Sepals with distinct keels on the back. Sidelobes of lip green with red stripe. ----- **3. *D. trigonopus***
1. Pseudobulb slender, flower white. Sepals not with keel ----- 2
 2. Inflorescence pendulous with many flowers. Sepals and petals white, rounded. Lip golden yellow. ----- **1. *D. thrysiflorum***
 2. Inflorescence short with 1-2 flowers on white sheath covered. Sepals and petals pale purple with veins, oblong acute. Lip pale sulphur yellow. ----- **2. *D. primulinum***

2.1. *Dendrobium thrysiflorum* Rchb.f.



Habit



Inflorescence



Flower



2.1. *Dendrobium thrysiflorum* Rchb.f. In III. Hort. Xxii. t. 207: Garterfl. t. 1022: FL.Mag. N. S. t. 449: Veitch. Mahar.

Epiphyte, evergreen. Stem erect, clavate with four ridges narrowly at the base, about 20-30.00 cm long, yellow. Leaves oblong ovate acute, subterminal, glabrous about 6-8.00 cm long 2.5-3.00 cm wide. Inflorescence lateral, pendulous with many flowers in upper portion of pseudobulbs, peduncle white. Flower large, white, about 5.00 cm across with white pedicel, bract revolute with strong recurved, fragrant. Dorsal sepal ovate obtuse, about 1.5 cm long and 1.2 cm wide, lateral sepals obliquely oblong ovate acute, white, thin texture. Lateral sepals broader than the sepals, ovate, slightly undulate in margin with ciliate on upper surface, white and thin texture. Lip large, golden yellow the whole of lip, funnel shaped, retuse and at epichile, pubescent on abaxil, no ciliated at the base of both sides, about 2.00 cm long and 1.5 cm wide. Column curved, yellow, about 1.2 cm long 0.3 cm wide. Operculum pale yellow. Pollinia 4.

- Myanmar Name - Ta-Khing-Lone-Shwe, Tagun Lone Ngwe (တခင်လှိုင်စွေ, တဂွန်လှိုင်ဌေး)
- Occurrence - Myanmar, Kalaw Township, Yee- Aye reserved forest.
N 20° 34' 12.6", E 96° 31' 8.12"
- Distribution - NE India, Laos, Myanmar, Thailand, Vietnam (**Flora of China**, 2014) (**Holttum**, 1964)
- Ecology - Epiphyte, Hill evergreen forest. 1412 meter. Flowering period March-April

2.2. *Dendrobium primulinum* Lindl.



Habit



Inflorescence



Flower parts



Pollinia

2.2 *Dendrobium primulinum* Lindl.

D. nobile var. *pallidiylora* Hook.k

Epiphyte. Stem stout pendulous and not too long abaxil 15-30.00 cm long 1.00 cm width, covered with white sheath. Leaf broadly oblong acute, obliquely emarginated, glabrous. Flower solitary on two flowers on the leafless stem and pale purple with pale sulphur yellow lip about 3-5.00 cm across. Pedicel white or pink. Sepals and petals subequal oblong obtuse, 1.5-1.8 cm long and 0.6 cm width, pale purple. Pollinia 4 in masses, waxy with viscidium, without stripe.

- Myanmar Name - Thin-Kyu-Kyu
- Occurrence - Myanmar, Yee- Aye reserved forest, N 20° 36' 40", E 96° 31' 87"
- Distribution - Himalaya, Burma, Thailand and China (**Seidenfaden**, 1992), Tropical Himalaya, Nepal (Grant. B., 1966) Assam, eastern Himalaya, Nepal, Andaman island, Myanmar, Thailand, Laos, China, Vietnam (Flora of Thailand, 2011)
- Ecology - Epiphyte, Hill evergreen forest, mixed deciduous forest, alt 960 m. Flowering period April – May.

2.3. *Dendrobium trigonopus* Rchb.f. in Gard. Chron. 1887



Habit



Inflorescence



Flower parts



Pollini

2.4. *Dendrobium trigonopus* Rchb.f. in Gard. Chron. 1887

D velutinum Rolye.

Stem short, cluster, fusiform, yellow when mature about 10-12.00 cm long, 1.00 cm width. Sheath hispidulous in young. Leaves 1-3 subterminal, oblong, ligulate, acute, thickly leathery, black hair on the midvein. Inflorescence 1 or 2 and with 2 to 3 flowers on leafy pseudobulb, peduncle short, about 1-2.00 cm with ovate triangular floral bracts. Flower golden yellow, about 3.00 cm across, thick and waxy with trigonous ovary. Dorsal sepal and lateral subequal, ligulate, lanceolate with strongly keeled, about 2.00 cm long and 0.6 cm width, both margin slightly incurved ascending on upper portion, lateral sepals adnate to the column foot, mentum obtuse. Petals ovate oblong acute with veins, broader than the sepals. Lip trilobed, erect, yellow with pale green patch in the centre, lateral lobed quadrate or semiorbicular with reddish brown stripes, midlobe orbicular, disk with papillose. Column short, anther cap shape. Pollinia 4 in masses, oblong obtuse.

Myanmar Name - None

Occurrence - Myanmar, Yee- Aye reserved forest, Mee-Nel taung mountain forest (Hopone Township) N 20° 36' 40", E 96° 31' 87",

Distribution - Myanmar, Thailand, China (**Seidenfaden**, 1992), China, Laos, Myanmar, N-Thailand, Vietnam (Flora of China-Vol. 25) and China, Thailand, Vietnam, Myanmar (Dassanayake, 1981)

Ecology - Epiphyte, Hill evergreen forest, mountain forest alt 1416 m. Flowering period March- April.

Subtribe *Bulbophyllinae* Schle.

Epiphyte. Pseudobulb single or internode, widely separated or rhizome, sometimes reduced in size. Leaves duplicate, articulate, sometimes reduced to scale. Inflorescence lateral, simple or spiral distinct, one to many flowers. Flower small to large, resupinate. Lip often hinged at base. Column with a prominent foot. Anther terminal, incumbent, 2 celled. Pollinia 2 to 4, naked, with viscidium or viscidia or stripe. Stigma entire.

Only two genus *Bulbophyllum* and *Sunipia* of Subtribe *Bulbophyllinae* was found in study area.

Key to the genus of Subtribe *Bulbophyllinae*

1. Lip hinged to the column foot, in most cases very mobile ----- *Bulbophyllum*
1. Lip not hinged to the column foot, not completely mobile ----- *panisea*

3. *Bulbophyllum* Thou.

Rhizome usually long and creeping, only attached with roots to the substratum, bearing pseudobulbs, each of a joint, at its top carrying a single leaf, only rarely two. Pseudobulb close or distinct, vary in size. Inflorescence one to many flower arising at the base of the pseudobulb. Flowers single or closed head flower much varying in size from small to quite large. Sepals equal or lateral sepals much larger than the dorsal, joined to the column foot to form mentum, free, spreading or their edges more or less joined or connate; petals always smaller than the sepals. Lip almost nearly mobile, usually fleshy, tongue-shaped, straight or curved, papillose or warty. Column short with conspicuous wings, column foot curved forward. Pollinia 4.

Key to the species of Genus *Bulbophyllum*

1. Flower solitary and expended, sepals and petals pale yellow with brown stripe of sepals and petals ----- **1. *B. lobbii***
1. Flower greenish yellow with brown stripe. Two lateral sepals oblong acute, join straightly, greenish yellow sepals with brown stripe, not papillose and twisted. Lip pale yellow with purple papillose on epichile. ----- **2. *B. refractum***

3.1. *Bulbophyllum lobbii* Rchb.f.



Habit



Inflorescence



Flower

3.1. *Bulbophyllum lobbii* Lindl.in Bot.Reg.1847, sub.t.29.

B.henshallii, Lindl.in Gard.Chron1852,422.

Bulbophyllum siamense Rchb.f.I.c.1867,572.

Epiphyte, pseudobulb ovoid in young oblong with depress in mature, well spaced equal apart on stout rhizome. Leaf simple, oblong ovate notch at the tip, leaf texture fleshy with petiole, about 15-20.00 cm long and 5-7.00 cm wide. Flower solitary, broadly expended, pale yellow, about 5-6.00 cm across with yellow petiole about 3.00 cm long and 0.2 cm wide. Dorsal sepal erect oblong acute, yellow with 10 reddish brown stripe, about 2.00 cm long and 0.8 cm wide, lateral sepals obliquely ovate acute, about 1.5 cm long and 1.00 cm wide. Lateral petals oblong acute, smaller than the sepals, colour like as petals. Lip tongue-shaped, projection toward and curved down ward an epichile, brightly yellow patch on the mesochile and pale reddish brown stripe on epichile, join to the column foot. Column stout with two distinct yellow horns. Operculum white. Pollinia 4 in pairs.

Note : This species was revealed as synonym in A Checklist of the trees, shrub, herbs, and climbers of Myanmar. (Kress *et.al.*, 2003)

Myanmar Name - Thazin Kywe (တဇာနည်, နီ)

Occurrence - Myanmar, Kalaw Township, Yee- Aye reserved forest.
N 20° 35' 125", E 96° 32' 20.5"

Distribution - Assam, Myanmar, Thailand, Malaya, Indonesia, Phillipines (Seidenfaden, 1992) Myanmar (U Nyan Tun, 2014), Thailand (Nantiya Vaddhanaphutt, 2005)

Ecology - Epiphyte, Hill evergreen forest 1420 m. Flowering period March

3.2. *Bulbophyllum refractum* (Lindley) HG. Reichenbach



Habit



Inflorescence



Flower



Petals

3.2. *Bulbophyllum refractum* (Lindley) HG. Reichenbach, Ann. Bot. Syst. 6:259, 1861

Bulbophyllum wallichii Lindl. Gen. Sp. Orchid Pl. 59.1830

Epiphyte. Pseudobulb crowded on the rhizome, globose ovoid about 2.00 cm long and 2.3 cm wide, wrinkled. Leaves sessile, deciduous, oblong acute, 6-8.00 cm long and 1-2.00 cm wide. Inflorescence erect and nodding in flower portion, rising from the base of the leafless pseudobulb with many flowers floral bract and yellowish green. Flower greenish yellow about 3.00 cm long and 1.00 cm wide, black yellow, lanceolate acute. Sepals 3, dorsal sepal oblong acute, hooked, greenish yellow with purple line and ciliate at the edges. Lateral Sepal narrowly oblong acute, base adnate to the column foot, their lower edges connate to each other, greenish yellow with fine purple line. Petals 3, lateral petals obliquely ovate triangular pale yellow with irregular fimbriate purple, smaller than the sepals. Lip fleshy, subligulate, obtuse at open, pale yellow with purple spot, margin and epichile with brownish purple, papillose, attached to the end of column foot, versatile. Column cylindrical, white. Anther cap purple.

Note : *Bulbophyllum refractum* was revealed as synonym in Floral of China, 2013. and A Checklist of the trees, shrub, herbs, and climbers of Myanmar. (Kress *et al*, 2003)

Myanmar Name - Thazin Panka (တနီယုမ)

Occurrence - Myanmar, Kalaw Township, Yee- Aye reserved forest.
N 20° 35", E 96° 33',

Distribution - NE and NW India, Myanmar, Nepal, Thailand, Vietnam, (Floral of China 2016), Thailand (Nantiya, 2006)

Ecology - Epiphyte, Hill evergreen forest, 1425 m alt. Flowering period March -April.

4. *Panisea*

Epiphyte, rhizome creeping. Pseudobulbs well spaced on creeping rhizome. Pseudobulb with two leaves. Scape arising laterally from the base of pseudobulb with usually few to many flowers. Flowers small to medium, floral bracts small to large. Sepals similar. Petals smaller than the sepals. Lip unlobed. Column short, rostellum 2 lobed, reflexed, anther terminal. Pollinia 4 in pairs, waxy, subglobose with divided stripe.

4.1. *Panisea uniflora* (Lindl.) Lindl.

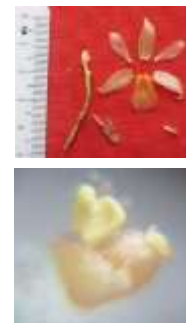
Habit



Inflorescence



Flowers



Pollinia

4.1. *Panisea uniflora* (Lindl.) Lindl.

Epiphyte or Lithophyte. Rhizome creeping. Pseudobulbs apart on rhizome, cylindric to obpyriform, ((2.00-3.5 cm long and 1.00-1.5 cm wide) with terminal pair leaf. Leaves subsessile, blade narrowly oblong acute, about 8-10.00 cm long and 0.8 cm wide. Scape from the base of pseudobulb with 1-2 flowers, 15.00 cm long and 0.2 cm wide and pale brown scale like sheath. Flowers green yellow with orange lip, 1.5 cm across, pedicle, 1.00 cm long and 0.1 cm wide, floral bract ovate acute. Dorsal sepal oblong acute 1.2 cm long and 0.5 cm wide, delicate texture, like transparency, recurved, lateral sepals similar petals oblong ovate, obtuse with mid veins, a little shorter than the sepals. Lip orange broadly obovate 1.5 cm long and 1.00 cm wide, thickened in hypochile with three distinct keels and margin undulate, broadly expended in epichile, slightly notch on the top. Column greenish yellow, stout with wings, about 0.8 cm long and 0.2 cm wide. Rostellum capitate, yellow, anther cap protruding forward. Pollinia 4 in pairs with stipe.

Myanmar Name - None

Occurrence - Myanmar, Kalaw and Pin-daya township, Yee-Aye reserve forest N 20° 36' 12', E 96° 32'

Distribution - Myanmar

Ecology - Epiphyte or Lithophyte. On the tree trunk, Alt. 1211 alt. deciduous forest and Hill evergreen forest. Flowering period – April - May

II. Subfamily Vandoideae

Subfamily	Tribe	Subtribe	Genus	Species	Myanmar Name
Vandoideae	Vandaeae	Sarcanthinae	<i>Vanda</i>	<i>liacina</i>	ရိတ်ရိတ်တော;
			<i>Luisia</i>	<i>teres</i>	none

Tribe Vandaeae Lindel

Habit monopodial, stem short or elongated. Leaves ditheciuous, rarely spiral, duplicate, laterally flattened. Inflorescence lateral, simple or branched one to many flowers. Flower small to large with spurred. Colum with prominent foot. Anther terminal. Pollinia two or four with definite stipe and visidium. Stigma entire.

Vandaeae is the only major group of orchids in which all members are monopodial. There is no pseudobulbs. In this recent study only Subtribe Sarcanthinae under Tribe Vandaeae has occurred in this study area.

Subtribe Sarcanthinae

Habit monopodial, stem short or elongated. Leaves distichous, rarely spiral, laterally flattened. Inflorescence lateral, simple or branched, one to many flowers. Flower small to rather large, may be jointed, saccate, or deeply spurred. Column with prominent foot, Anther terminal. Pollinia two or four with definite stipe and viscidium. Stigma entire. In this study only one genus *Lucia* was collected under the subtribe Sarcanthinae.

Key to the genera of Subtribe Sarcanthinae

1. Leaves strap-shape. Scape long. Sepal and petals narrowly at the base and sometime tessellate. Column foot present. Rostellum projection.----- ***Vanda***
1. Leaves long slender terete. Scape very short. Sepals and Petals always not tessellate. Rostellum not projection.----- ***Luisia***

5. *Vanda* R. Broum

All epiphytes, leaves distichous, thick and lathery, more or less strap shaped. Inflorescence lateral erect or pendulous. Sepals and petals wide-spreading and resemble each other. The lip is saccate or spur and fleshy, entire, or 3-lobed continuous at the base of the column. Column short, thick, pollinia masses, bilobed.

5.1. *Vanda lilacina* Teijsm. & Binnend.



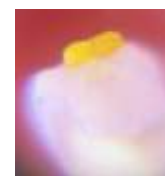
Habit



Flowers



Flowers parts



Pollinia

5.1. *Vanda lilacina* Teijsm. & Binnend.

V. laotica Guill. Bull. Soc. bot. Fr. 77:335, 1930

Sarcochilus caligaris auct. Non Ridl.; Guillaumin 1959.

Stem 2.3 cm long and 1.5 cm in diameter. Leaf blade fleshy apex unequal lobe, 8-10.00 cm long. Inflorescence erect with 8-10 flowers, peduncle 8-10.00 cm long and 0.2 cm in diameter, floral bract 2-3, ovate triangular, acute, pale brown. Flower pale purple widely open, about 25.00 cm across with pale purple pedicel about 1.5 cm long. Lateral sepals obovate acute, white about 1.20 cm long and 0.8-1.0 cm wide. Lateral petals ovate acute, spatulate excurved at apex; white. Lip trilobes, midlobe of lip squarish, frontage slightly expended with white tinged, and notch at apex, convex in middle with 4 callus, central callus long from the base to the apex, side-lobes triangular acute with purple sport-spur short, laterally compressed, straight, light green. Column short pale purple spot each side, about 0.5 cm long and 0.2 cm in diameter. Pollinia 2, subglobose, anther cap pale purple.

Myanmar Name - None

Occurrence - Myanmar, Kalaw and Pin-daya township, Yee-Aye reserve forest N 20° 34' 56.9", E 96° 3.5' 45"

Distribution - Myanmar, Thailand, China (Seidenfaden, 1992)

Ecology - Epiphyte. On the tree trunk, Alt. 1211 m alt. deciduous forest and Hill evergreen forest. Flowering period – April

6. *Luisia* Gaud

Epiphyte. Stem long. Leaves terete. Pseudobulb absent. The root vermiform. Flower spicate on a short, dense scape very short and thickened. Sepals and petal free, equal or petals larger than the sepals. Lip fleshy, fixed immovably to the base of column, distinctly divided by groove into a basal hypochile and epichile, basal part more or less hollow, sometime in the distinct side lobes, apical part usually longer, often wrinkled grooved longitudinally. Column short, foot absent. Pollinia 2, with short broad stipe.

6.1. *Luisia teres* (Thunberg) Blume, Rumphia 4:50, 1849



Habit



Inflorescence



Flowers

6.1 *Luisia teres* var. *botanensis* (Fukuyama) T.P. Lin

Luisia teres (Thunberg) Blume, Rumphia 4:50, 1849

Epidendrum teres Thunberg in Murray

Epiphyte. Stem pendulous or erect with internodes 3-3.5 cm leaves terete, obtuse. Inflorescence 2-3 flowers on upper portion. Floral bract ovate, acute. Flower medium size, fleshy, greenish yellow, brownish yellow pale stripe on the back. Dorsal sepal ovate oblong acute, lateral sepals slightly longer than the dorsal sepal, carinate on the back, about 0.8-1.00 cm long. Petals falcate elliptic, obtuse, fleshy greenish yellow, tinged, pale purple on the back. Lip broadly spreading not distinct boundary epichile and hypochile, more broadly undulate on epichile, hypochile slightly concave, subquadrate lobes at the base, longitudinal ridges at the apex on the back of epichile, furcately bilobed. Column short and stout, rostellum distinct. Pollinia 2, waxy, globose.

Note : *Luisia teres* regard as new record in Myanmar. (2019)

Myanmar Name - None

Ecology - Epiphyte. Alt. 1411 m alt. Hill evergreen forest. Flowering period –May-June

Occurrence - Myanmar, Kalaw and Pin-daya township, Yee-Aye reserve forest N 20° 34' 56.3", E 96° 3.5' 57"

Distribution - Myanmar 2019, China and Hongkong (Flora of China vol. 25, 2013)

Discussions and Conclusions

This paper based on some collected wild orchids specimens. The present list is (2) subfamily, (3) tribe, (4) subtribe, (6) genera and (11) species. The subfamily Epidendroideae includes (2) tribe, (3), subtribe, (4) genera and (9) species. Genus *Coelogyne*, *Dendrobium*, *Bulbophyllum* and *Panisea* have been collected from study area. In recent study one species of genus *Coelogyne* was collected in this study area that is *Coelogyne lentiginosa*, which midlobe shortly clawed nearly semicircular, white with orange blotches, three keels on lip. Three species of genus *Dendrobium* are *D. thrysiflorum* Rchb.f., *D. Primulium* Lindl., *D. trigonopus* Rchb.f. and *Dendrobium thrysiflorum* Rchb.f. contains pendulous inflorescence with many flowers and golden yellow lip with pubescent. *D. sutepense* Rolfe ex. and *D. Primulium* Lindl. have orbicular papillose lip and fragrant. *D. trigonopus* Rchb.f. has trilobe yellow lip with pale green patch in the centre and trigonous ovary. Three species of genus *Bulbophyllum* are *B. lobbii* Rchb.f., *B. refractum* (Lindley) HG. Reichenbach, *B. kanburiense* Seidenf. and *B. lobbii* Rchb.f. which distinct character is oblong ovate large leaves, large solitary pale flower with brown stripes. *B. refractum* (Lindley) HG. Reichenbach. has greenish yellow flower with faint brown stripe, two lateral sepals join straightly and lip with purple papillose on epichile. *B. kanburiense* Seidenf. contains lanceolate acute two lateral pinkish purple sepals join twisted and dense papillase at the base. *Panisea uniflora* Lindl. has cylindric to obpyriform pseudobulb and lip orange broadly, thickened in hypochile with three distinct keels and margin undulate, broadly expended in epichile, slightly notch on the top. In subfamily Vandoideae, (1) tribe, (1) subtribe and only two genus was collected from study area. Two genus of subtribe Sarcarthinae under tripe Vandaeae is genus *Vanda* and *Luisia*. Genus *Luisia* is *Luisia teres* L. has lip broadly spreading not distinct boundary on epichile and hypochile slightly concave, subquadrate lobes at the base, longitudinal ridges at the apex on the back of epichile, fulcately bilobed. In this paper, all collected species are epiphyte and lithophytes.

In recent study some species *Dendrobium thysiflorum* R.chb.f, *Bulbophyllum siamense* R.chb.f, *Bulbophyllum lobbii* and *B. refractum* were only found in Chin, Mon, Thaninthayi, Kachin and Rakhing by (Kress *et al*, 2003) and also found in this study area. Among them *D. thysiflorum* regard as a native in Myanmar (Holttum, 1964). *Luisia teres* L. collected as a new record in Myanmar. Botanical collection are still needed to cover the whole floristic diversity of Myanmar, because botanical exploration have sharply decreased in Myanmar 1950. (Kress *et al*, 2003) Compared with neighboring countries with intensive orchids studies, Myanmar orchids flora have lagged behind being well documented and studied. So the orchidologist will have to find out continuously to get update current wild orchids information and report to government for protection of our living jewels.

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