

TAXONOMIC STUDY ON TWELVE SPECIES OF FAMILY FABACEAE FROM NAT YAY GAN MOUNTAIN AREA IN NGAPHE TOWNSHIP

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Abstract

The present research work deals with the taxonomic study on some species of family Fabaceae from Nat Yay Gan mountain area in Ngaphe Township which is located in Middle part of Myanmar. This area lies between 20°10'N Latitude and 94°30'E Longitude. The flowering plants from the floristic area were collected, preserved and identified from 2017 to 2018. Altogether 12 species which are belonging to 8 genera were included. The characteristics of the family, the morphological characters of the genera and species were presented with the colour photographs. The names of the genera were arranged in alphabetically. All the plants were recorded and described.

Keywords: Taxonomy Field.

Introduction

The present research work deals with the floristic study on flowering plants (Angiosperms) growing in Nat Yay Gan mountain area in Ngaphe Township. The present research work deals with the taxonomic study on some species of family Fabaceae from Nat Yay Gan mountain area in Ngaphe Township which is located in Middle part of Myanmar. Altogether 12 species which are belonging to 8 genera were included.

The floristic study of Nat Yay Gan mountain area is located between Ngaphe township and Rakhaine Yoma. It has an area of 132 .8 square kilometer. It has 15 villages. Nat Yay Gan Mountain has near the Gokkyi village. Nat Yay Gan Mountain is apart 7 miles from Gokkyi village. It lies between 19° 52' N latitude and 94° 24' E longitude. The elevation of Nat Yay Gan Mountain is 1744 meter high.

The aims and objectives of the present work were to classify and identify the plants of Angiospermae on Nat Yay Gan mountain area in Ngaphe Township, to record the taxonomical characters of the information of floristic natural plant resources and to understand the information of wild species and its vegetation from the study area.

Materials and Methods

The flowering plants specimens were collected from Nat Yay Gan mountain area in Ngaphe Township from the year during 2017 to 2018. Field notes were made on the natural habit and plant location by using the GPS (Global Positioning System). The inflorescence and fruit portions were recorded in the form of the photographic records. The fresh specimens were used for the characterization of the plants.

The plants collected specimens of flowering plants have to contain flowers, fruits and seeds. Keys are constructed mainly on the basis of these characters. Identification of an unknown specimen is carried out by utilizing the floras or manuals and checklist of the particular region. The taxonomic identification of collection plants were carried out by referring to Hooker (1879), Hutchinson (1959), Backer (1963-1968) and Dassanayake (1980- 2001). Myanmar names were referred to Hundley and Chit Ko Ko (1987) and Kress *et al.* (2003). The families of the arrangements were followed by the classification system of APG IV (2016).

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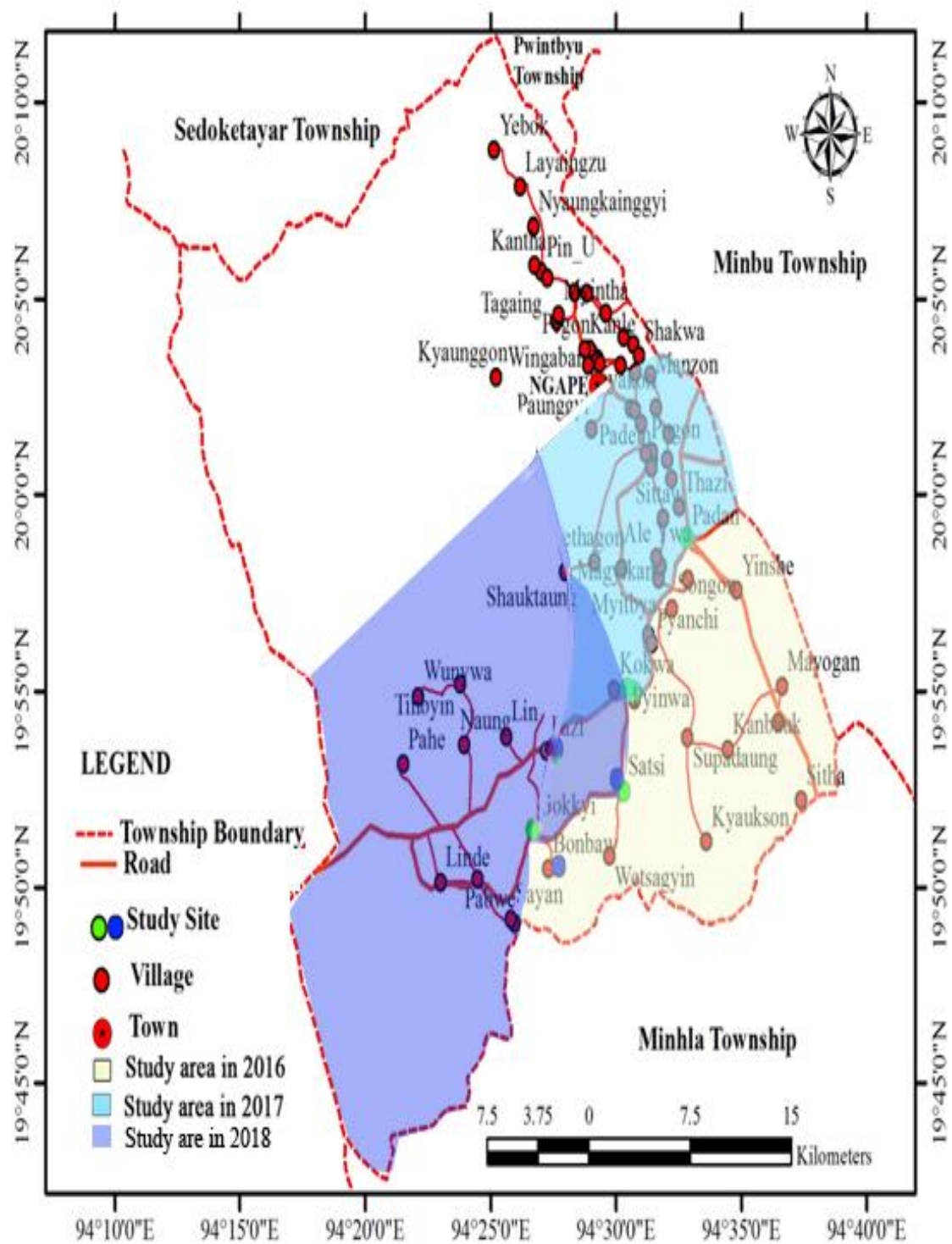


Figure 1 Location Map of Study Area in Ngape Township

Results

Altogether 12 species which are belonging to 8 genera were included.

***Bauhinia vahlii* Wight & Arn., Prod. 297. 1834. (Figure 1(A))**

Phanera vahlii Benth., Pl. Jungh. 263. 1852.

Myanmar name : Swe daw; Bwe gyin

English name : Unknown

Flowering period : February to April

Perennial, trees, up to about 5.0 m high; stems and branches terete, pubescences dense grey or ferruginous; internodes 1.5-2.0 cm long. Leaves simple alternate; stipules linear, caducous; petioles 3.0-4.5 cm long, densely pilose; blades suborbicular, 13.0-15.0 cm by 12.5-13.0 cm, rounded to cordate at the base, entire along the margin, rounded to acute at the apex, green above, pale green beneath, glabrous on both surfaces. Inflorescences terminal, racemes, dense, corymbose; peduncles terete, 10.0-12.5 cm long, densely, ferruginous tomentose. Flowers bisexual, hypogynous, zygomorphic, pentamerous, 5.0-6.0 cm in diameter, creamy-white; bracts triangular, very small, early caducous; bracteoles linear, persistent, inserted below the middle of pedicel; pedicels 4.0-5.0 mm long. Calyx 5-lobed, linear-lanceolate, splitting spathaceous into five petals, pilose on both surfaces. Petals broadly obovate, subequal, creamy-white, bright yellow tanged in the medium petal; claws 1.0 cm long, densely pilose on both surfaces. Stamens 10, free, fertile 3; exserted; filaments 3.0-4.5 cm long, pale green; anthers oblong, ditheous, dorsifixed, dehiscing by longitudinal slit, black or grey. Carpel 1; ovary superior, oblongoid, about 5.0-8.0 mm in diameter, unilocular with many ovules per locule on the marginal placenta; styles simple, slightly oblique; stigmas peltate. Pods 4.0-5.0 cm long, pods linear, glabrous. Seeds flattened, yellowish-brown, endospermic.

Distribution: This species had recorded in the checklist of Myanmar (Kress *et al.* 2003). In the study area this species distributed as a wild plant.

Specimen examined: Nat Yay Gan, Nagphe Township, Nat Yay Gan forest, N 19° 52' 33" and E 94° 24' 59", 303 m; 18 June, 2016; Thida Cho; collection no. 128.

***Bauhinia variegata* L., Sp. Pl. 1: 375.1753. (Figure 1(B))**

Myanmar name : Swe daw

English name : Orchid tree

Flowering period : January to March

Perennial, tree, up to 15.0 m high; stems and branches terete, glabrescent, Leaves simple, alternate; stipules about 0.2 cm long, caducous; petioles 2.0-3.0 cm long, glabrous; blades orbicular or broadly ovate, 4.0-7.0 cm by 3.4-7.0 cm, cordate at the base, entire along the margin, rounded at the apex, glabrous above, pubescent beneath. Inflorescences axillary, racemose, fewflowered; peduncles 1.0-2.0 cm long, pubescent. Flowers bisexual, zygomorphic, pentamerous, hypogynous, pinkish-white, or violet, 5.0-8.0 cm in diameter, showy, fragrant; bracts triangular, about 0.2 cm long, early caducous; bracteoles 0.7-0.8 cm long, pubescent. Calyx splitting spathaceous; tube 2.0-2.5 cm long, glabrous. Petals 5, free, slightly unequal,

obovate-oblong, 4.0-6.0 cm long, pale purple, the medium one larger and deep red in colour in the centre, with prominent veins, clawed. Fertile stamens 5, free, exserted; filaments unequal; the longer 3, 3.5-4.0 cm long, pink, the shorter 2, 2.0-3.0 cm long, white, turning pinkish-white; anthers dithecal, basifixed, oblong; staminodes 5. Carpel 1; ovary superior, linear, 1.0-1.5 cm long, unilocular, many ovules in the locule on the marginal placentae; style 0.7-0.8 cm long, pink, glabrous; stigma simple. Pods strap-shaped, dehiscent, 12.0-22.0 cm long, beaked. Seeds orbicular, flattened, brown.

Distribution: Kress *et al.* (2003) mentioned that this species was distributed in Shan State of Myanmar. It was found in the forest area of the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Khonzu village, N 19° 54' and E 94° 29', 768 m; 2 March, 2018; Thida Cho; collection no. 181.

Butea monosperma (Lam.) Taub., In Pflanzenfam. 3(3) 365. 1894. (Figure 1(C))

Erythrina monosperma Lam., Encyc. 2: 391. 1784.

Myanmar name : Pauk
English names : Flame of the forest; Parrot tree
Flowering period : February to April

Perennial, deciduous large trees, up to 3.0 m high; stems and branches terete, pubescent. Leaves pinnately trifoliolate-compound, alternate; stipules linear-lanceolate, caducous; petioles 7.0-24.0 cm long; leaflets broadly obovate in terminal one and obliquely ovate in lateral ones, 9.0-19.0 cm by 7.0-15.0 cm, rounded or subcuneate at the base, entire along the margin, obtuse or emarginated at the apex, glabrous above and densely silky- pubescent beneath. Inflorescences axillary or terminal, fasciculate-racemose; peduncles 5.0-35.0 cm long, with many tubercles, tomentose. Flowers bisexual, zygomorphic, hypogynous, pentamerous, 2- to 5-nate on each tubercle, rather large, orange, 4.0-5.0 cm in diameter; bracteoles subulate, brown velvety, fugacious. Calyx campanulate, 5-lobed; tube about 1.0 cm long, tomentose; lobes short, the 2 upper ones completely united. Corolla papilionaceous, much exserted, standard ovate, 3.5-5.0 cm by 2.5-5.0 cm by 2.5-5.0 cm, recurved, clawed, basally inflexed, bilabiate, tomentose, scarlet-orange; wings oblong, 4.5-5.0 cm by 1.5-2.0 cm; keels falcate, 4.5-5.0 cm by 1.5-2.0 cm, beaked. Stamens 10, diadelphous; free filaments 6.0-8.0 cm long; anthers uniform, dithecal, basifixed, longitudinally dehiscent. Ovary linear-oblong, 8.0-10.0 mm long, long-stipitate, densely tomentose, superior, unilocular, with 2 to 5 ovules on the marginal placentae; style filiform, curved, glabrous; stigma small, capitate. Pods flat, oblong, strap-shaped, indehiscent, 10.0-15.0 cm by 4.0-5.0 cm, stipitate, light brown. Seeds suborbicular, flat, pale brown, endospermic.

Distribution: This species had recorded in the checklist of Myanmar (Kress *et al.* 2003). In the study area this species distributed as a wild plant.

Specimen examined: Nat Yay Gan, Nagphe Township, Pyinwa village area, N 19° 53' 47" and E 94° 30' 21", 216 m; 19 June, 2016; Thida Cho; collection no. 157.

Dalbergia cultrata Grah. ex Benth., in Miquel, Pl. Jungh. 254. 1852. (Figure 1(D))

Myanmar names : Yin daik; Zaungi
English name : Unknown
Flowering period : February to March

Perennial tree, up to 10.0 m high; stems and branches slender, finely appressed pubescent. Leaves unipinnately compound, imparipinnate, alternate; stipules linear, about 2.0 mm long, caducous; petioles slender, 2.5-5.0 cm long, glabrous; rachae 10-15 cm long; leaflets 7- to 10-paired per rachis, alternate, obovate-oblong, 2.0-4.0 cm by 1.0-2.0 cm, cuneate at the base, entire along the margin, round or emarginate at the apex, glabrous on both surfaces. Inflorescences terminal or axillary panicles with slender ascending branches, many-flowered; primary peduncles 4.0-5.0 cm long, glabrous; secondary peduncles 2.0-3.0 cm long pubescent. Flowers bisexual, zygomorphic, hypogynous, pentamerous, white, about 5 mm in diameter; pedicels about 2.0 mm long, slender, pubescent; bracts and bracteoles linear, minute. Calyx campanulate, 5-toothed; teeth triangular, about 1.0 mm long. Corolla papilionaceous; standard broadly obovate, about 4.0 mm long, rounded at the apex, clawed; wings elliptic, about 3.0 mm long; keels obtuse, about 3.0 mm long. Stamens 10, monadelphous; staminal tube about 4.0 mm long; anthers ditheous, basifixed, dehiscent by apical pore. Carpel 1; ovary superior, oblong, about 2.0 mm long, unilocular with few ovules in the locule on the marginal placentae; styles curved, about 1.0 mm long; stigmas simple. Pods oblong to strap-shaped, 6.0-9.5 cm by 0.9-1.3 cm, lathery, 1-2 seeded, both end obtuse. Seeds reniform, compressed.

Distribution: Widely distributed in Myanmar (Kress *et al.* 2003). It was found in the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Maylat village, N 19° 52' and E 94° 29', 417 m; 2 March, 2017; Thida Cho; collection no. 199.

Dalbergia oliveri Gamble ex Prain, J. Asiat. Soc. Bengal 2, Nat. (Figure 1(E))

Hist.66:451. 1897.

Myanmar names	:	Tabauk; Tamalan
English name	:	Burmese rose wood
Flowering period	:	March to April

Perennial, deciduous trees, up to 15.0 m high; stems and branches terete; brown silky pubescent; bark dark gray, thick. Leaves unipinnately compound, imparipinnate, alternate; stipules linear, 3.0-5.0 mm long, caducous; petioles slender, 4.5-6.0 cm long, brown silky pubescent; rachae 10.5-22.0 cm long; leaflets 7 to 13 paired per rachis, alternate; elliptic-oblong, 2.5-4.0 cm by 0.9-1.5 cm, rounded at the base, entire along the margin, acute at the apex, young leaves pale pink with silky hairs; mature leaves dark green, glabrous. Inflorescences terminal or axillary panicles, many-flowered; primary peduncles 10.0-15.5 cm long; secondary peduncles 5.0-6.0 cm long. Flowers bisexual, zygomorphic, hypogynous, pentamerous, pale purple, 0.8-1.0 cm in diameter; pedicels 4.0-5.0 mm long, glabrous; bracts and bracteoles caducous. Calyx campanulate, 5-toothed; tube cup-shaped, about 3 mm long; teeth linear, unequal, about 2 mm long, brownish purple. Corolla papilionaceous; standard broadly ovate, 7.0-9.0 mm long, rounded at the apex, purple with white center; clawed; wings oblong, 5.0-6.0 mm long; keel obtuse, 4.0-5.0 mm long, white. Stamens 10, diadelphous, (9)+1; staminal tube about 5.0 mm long; anthers ditheous, dorsifixed, dehiscent by apical pore. Carpel 1; ovary superior, oblongoid, about 2.0 mm long, unilocular with few-ovules in the locule on the marginal placentae; styles short, about 2 mm long; stigmas simple. Pods oblongoid, flat, pointed at both ends, pale brown, 2-3 seeded. Seeds reniform.

Distribution: According to Kress *et al.* (2003) stated that this species was distributed in Bago and Mandalay Regions. It occurs as a wild plant in the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Satsi village, N 19° 52' and E 94° 29', 411 m; 12 April, 2018; Thida Cho; collection no. 144.

Dalbergia rimosa Roxb., Fl. Ind., (ed. 1832), 3:233. 1832. (Figure 1(F))

Myanmar name : Unknown
 English name : Unknown
 Flowering period : June to August

Perennial small trees, 4.0-6.0 m high; stems and branches slender, glabrous. Leaves unipinnately compound, imparipinnate, alternate; stipules subulate, about 3 mm long; petioles terete, 2.5-5.0 cm long, pubescent; rachis 15.0-20.0 cm long, pubescent; leaflets 5 to 9 paired per rachis, alternate, ovate-oblong, 3.0-5.0 cm by 2.0-2.5 cm, rounded at the base, entire along the margin, acute at the apex, firm papery, bright green and glabrous above, grey and adpressed hairy beneath. Inflorescences terminal and axillary panicles with corymbose branches; many-flowered; primary peduncles 15.0-20.0 cm long; secondary peduncles 5.0-6.5 cm long. Flowers bisexual, zygomorphic, hypogynous, pentamerous, greenish-white, about 3.0 mm long; pedicels subsessile; bracts and bracteoles lanceolate, about 1.0 mm long, persistent. Calyx campanulate, 5-toothed; teeth unequal, obtuse, about 2.0 mm long. Corolla papilionaceous; standard obovate, emarginate at the apex, about 2.0 mm long, short clawed; wings elliptic, about 2.0 mm long; keels falcate, about 2.0 mm long. Stamens 10, monadelphous; staminal tubes about 4.0 mm long; anthers dithecal, basifixed, dehiscent by apical pore. Carpel 1; ovary superior, oblong, about 2.0 mm long, unilocular with few ovules in the locule on the marginal placentae; styles short; stigmas simple. Pods oblong, 5.0-7.0 cm by 2.0-3.0 cm, leathery, 1-2 seeded, glabrous. Seeds reniform, compressed, brown shiny.

Distribution: Kress *et al.* (2003) stated that it was found in Kachin State and Sagaing Region of Myanmar. It was commonly found in study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Maylat village, N 19° 52' and E 94° 29', 417 m; 21 July, 2018; Thida Cho; collection no. 198.

Erythrina stricta Roxb., Fl. Ind. 3: 251-252.1832. (Figure 2(A))

Myanmar name : Ka thit
 English name : Unknown
 Flowering period : March to April

Perennial, deciduous trees, 7 to 12- m high; stems and branches with short whitish prickles; barks pale creamy, soft. Leaves pinnately trifoliate compound, alternate; stipules lanceolate, caducous; petioles 12.0-15.0 cm long, glabrous, pulvinate, glabrous; stipules 2.0-3.0 mm long; leaflets rhomboid, unequal, terminal larger than lateral ones, 7.0-19.0 cm by 7.0-20.0 cm, rounded or truncate at the base, entire along the margin, mucronate at the apex, lateral veins 5-to 8-paired, glabrous on both surfaces; petioles terminal 2.0-2.5 cm long; lateral ones about 5.0 mm long. Inflorescences terminal racemes, many-flowered; peduncles about 15.0 cm long, glabrous. Flowers bisexual, zygomorphic, pentamerous, hypogynous, red, 2.0-3.0 cm in

diameter; pedicels 4.0-5.0 mm long; bracts and bracteoles caducous. Calyx spathaceous, truncate at the apex, 1.3-1.6 cm long, membranous, dark purple without, glabrous. Corolla papilionaceous; standards elliptic-lanceolate, 3.5-4.0 cm long, glabrous; wings obovate, 2.5-3.0 cm long; keels broadly ovate, 2.5-3.5 cm long, white, membranous, glabrous. Stamens 10, diadelphous, (9)+1; filaments stout, 1.5-1.8 cm long, red; anthers ditheous, basifixed, dehiscent longitudinally. Carpel 1; ovary superior, oblong, unilocular with many ovules in the locule on the marginal placentae, stipitate, hairy; styles curved, about 5.0 mm long, glabrous; stigma simple. Pods linear-oblong, 8.5-10.0 cm long, flat, 1-to 3-seeded, glabrous. Seeds reniform, pale brown.

Distribution: Widely distributed in Myanmar (Kress *et al.* 2003). It was widely distributed in the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Lintel village, N 19° 51' and E 94° 22', 1109 m; 12 April, 2018; Thida Cho; collection no. 129.

***Indigofera tinctoria* L., Sp.Pl. 2: 751. 1753. (Figure 2(B))**

Myanmar name : Me nai; Me nat
English name : Indigo; Indian indigo
Flowering period : January to May

Perennial, suffrutescent, erect shrubs, up to 2.0 m high; stems and branches angular-ribbed, appressed pubescent. Leaves unipinnate-compound, imparipinnate, alternate; stipules subulate, 0.2-0.3 cm long, pubescent; petioles 1.0 cm long; rachae 5.0-15.0 cm long, pubescent; leaflets 5-10, opposite, elliptic to obovate, 1.0-2.5 cm by 0.8 -1.0cm, cuneate at the base, entire along the margin, rounded at the apex, glabrous above, appressed-pubescent beneath. Inflorescences axillary, spicateracemose, many-flowered; peduncles 6.0-10.0 cm long, pubescent. Flowers bisexual, zygomorphic, cyclic, pentamerous, hypogynous, pink, 0.3-0.8 cm in diameter; bracts linear, 0.1 cm long, pubescent, caducous. Calyx broadly campanulate, 5-lobed; tube 0.1-0.2 cm long, pubescent; lobes deltoid, about 0.2 cm long, pubescent. Corolla papilionaceous, exserted; standard orbicular-obovate, about 0.8 cm by 0.5 cm, inner side greenish yellow with radiating purple streaks, pubescent without; wings oblong, about 0.5 cm by 0.3 cm, pinkish, pubescent; keels about 0.5 cm long, with an obliquely backward pointing spur on both sides, creamy-white, pubescent without. Stamens 10, diadelphous; free filaments about 0.4 cm long, glabrous; anthers uniform, gland tipped. Carpel 1; ovary superior, linear-oblongoid, 0.5 cm long, unilocular, 6-10 ovules in the locule on the marginal placentae; style 0.2 cm long, curved, glabrous; stigma capitate. Pods linear-oblongoid, 3.0-4.0 cm by 0.5-1.0 cm, 8- to 12- seeded, appressed -pubescent to glabrous. Seeds cylindric, glabrous.

Distribution: This species was widespread in the Old World tropics (Rudd as cited in Dassanayake 1991). Kress *et al.* (2003) recorded that this species was found in Myanmar. This species is found in the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Maylat village, N 19° 52' and E 94° 29', 417 m; 13 April, 2018; Thida Cho; collection no. 192.

***Millettia brandisiana* Kurz, J. Asiat. Soc., Bengal, Pt.2, Nat. Hist. 42(2): 69.1873. (Figure 2(C))**

Myanmar name : Thit pagan
English name : Unknown
Flowering period : February to March

Perennial, deciduous trees, 5.0-10.0 m high; stems and branches terete, glabrous; barks dark grey, rough. Leaves unipinnately compound, imparipinnate, alternate; stipules lanceolate, caducous; petioles 3.5-4.0 cm long; rachae cylindrical, 15.0-25.0 cm long; leaflets 7- to 12-paired, opposite, ovate, 2.0-4.0 cm by 1.5-2.0 cm, obtuse at the base, entire along the margin, acute at the apex, glabrous above and pubescent beneath. Inflorescences axillary paniculate racemes, many-flowered; peduncles 4.0-5.0 cm long, glabrous. Flowers bisexual, zygomorphic, pentamerous, hypogynous, pinkish-purple, about 1.0 cm in diameter; pedicels 3.0-4.0 mm long, reddish, pilose. Calyx campanulate, 5-toothed; tube about 5.0 mm long, reddishpurple; teeth linear, minute. Corolla papilionaceous; standards orbicular, 7.0-8.0 mm long, clawed; wing oblong, about 3.0 mm long; keels curved, 5.0-6.0 mm long, beaked. Stamens 10, monadelphous; free filaments about 3.0 mm long; anthers dithecal, dorsifixed, dehiscing longitudinally. Carpel 1; ovary superior, unilocular with many ovules in each locule on the marginal placentae, hairy; styles curved, about 3.0 mm long; stigma simple. Pods ovate-oblongoid, flat, 5.5-7.5 cm long, smooth, woody, 1-to 3-seeded.

Distribution: According to Kress *et al.* (2003), this species was widely distributed in Myanmar. It was commonly found in the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Zynbun village, N 19° 54' and E 94° 29', 349 m; 2 March, 2018; Thida Cho; collection no. 212.

Millettia cinerea Benth. in Miq., Pl. Jungh. 2:249.1852. (Figure 2(D))

Myanmar name	:	Win U
English name	:	Unknown
Flowering period	:	March to May

Perennial, woody climbers; stems and branches terete, covered with grey pubescent. Leaves unipinnate compound, imparipinnate, alternate; stipules linear, 0.3-0.4 cm long, pubescent; petioles 5.0-7.0 cm long, pubescent; pulvinous at the base; petiolules 0.5-1.0 cm long, pubescent; leaflets 5 to 7, obovate-oblong, 7.0-20.0 cm by 7.0-10.0 cm, oblique and rounded at the base, entire along the margin, obtuse at the apex, pubescent on both surfaces. Inflorescences axillary, paniculate racemes, many-flowered; peduncles 4.0-8.0 cm long, pubescent. Flowers bisexual, zygomorphic, cyclic, pentamerous, hypogynous, pale yellow, 0.1-1.5 cm in diameter; bracts ovate, 1.0-0.2 cm long, pubescent. Calyx tubular, 5-lobed; tube 0.2-0.3 cm long, glabrous; lobes slightly dentate, about 0.1 cm long, pinkish-red, glabrous. Corolla papilionaceous; standard orbicular, 1.0-1.5 cm long, clawed; wings oblong, 0.7-1.0 cm long, clawed; keel obtuse, 0.5-0.6 cm long, clawed, pubescent. Stamens 10, diadelphous; included; free filaments linear, 0.5-0.7 cm long; anthers dithecal, dorsifixed, oblong, about 0.1 cm long, yellow, dehiscing longitudinally. Carpel 1; ovary superior, oblong, 0.3-0.5 cm long, unilocular, 4-5 ovules in the locule on marginal placentae; style terminal, 0.3-0.4 cm long, slightly curved; stigma capitate. Pods, flattened, turgid 14.0-20.0 cm long, 3- to 5- seeded, glabrous. Seeds globoid, yellowish brown, glabrous.

Distribution : This species was distributed in Mandalay Region (Kress *et al.* 2003). This species is found of the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Khonzu village, N 19° 54' and E 94° 29', 768 m; 13 April, 2018; Thida Cho; collection no. 180.

***Mucuna pruriens* (L.) DC., Prod.2: 405.1825. (Figure 2(E))**

Myanmar name	:	Khweleya
English name	:	Purple flowered velvet bean
Flowering period	:	October to December

Annual, twining herbs; stems terete, densely pubescent, glabrous at maturity. Leaves pinnately trifoliate compound, alternate; stipules linear, about 4.0 mm long; stipules setaceous, 2.0-3.0 mm long, persistent; petioles 4.5-8.0 cm long, pubescent; leaflets obovate, 8.0-12.0 cm by 3.0-5.0 cm, rounded and oblique at the base, entire along the margin, obtuse at the apex, pubescent on both surfaces; petiolules about 4.0 mm long. Inflorescences axillary, pendulous racemes, many flowered, 2 or 3 flowered at each node; peduncles 13.0-15.0 cm long, tuberculate. Flowers bisexual, zygomorphic, pentamerous, hypogynous, dark violet, about 8.0 mm in diameter; pedicels 2.0-4.0 mm long, tomentose. Calyx campanulate, 4-lobed; lobes 4.0-5.0 mm long; lobes acute, about 3.0 mm long. Corolla papilionaceous; standard broadly ovate, 1.3-1.5 cm long, clawed; wings oblong, 1.0-1.2 cm long; keels beaked, 0.9-1.1 cm long. Stamens 10, diadelphous, (9)+1; staminal tube 7.0-8.0 mm long; free filaments about 4.0 mm long; anthers dithecal, basifixed, dehiscent longitudinally. Carpel 1; ovary superior, oblong, about 4.0 mm long, unilocular with many ovules in the locule on the marginal placentae; styles 1.0-1.5 cm long; stigmas capitate. Pods linear-oblong, swollen around the seeds, 4.0-6.0 cm long, slightly compressed, covered with densely orange-brown pubescent, 2- to 8 seeded, dehiscent.

Distribution : According to Kress *et al.* (2003), this species was distributed in Chin, Kayah, Shan States and Bago, Mandalay, Sagaing and Yangon

Regions of Myanmar.

Specimens examined: Nat Yay Gan, Nagphe Township, Sonteat village, N 19° 51' and E 94° 22', 1001 m; 18 December, 2017; Thida Cho; collection no.134.

***Xylia xylocarpa* (Roxb.) Taub., Bot. Centralbl. 67: 395. 1891. (Figure 1(F))**

Mimosa xylocarpa Roxb., Pl. Corom. 1 : 68. t. 100. 1798.

Myanmar name	:	Pyinkado
English name	:	Burmese iron wood
Flowering period	:	March to April

Perennial, deciduous large tree, up to 25.0 m high; stems and branches terete, bark grey to red, glabrous. Leaves bipinnately compound, paripinnate, alternate; stipules filiform, 3.0-5.0 mm long; petioles terete, 3.0-5.0 cm long, gland at the junction of the pinnae; rachis 25.0-30.0 cm long; pinnae 1-paired; leaflets 8-10 paired per pinnae, opposite, ovate to broadly elliptic, 3.5-10.0 cm by 2.5-6.0 cm, rounded to cuneate at the base, entire along the margin, acuminate at the apex, glabrous above and velutinous below. Inflorescences axillary pedunculate globose head, many-flowered; peduncles 4.0-6.0 cm long, tomentose. Flowers bisexual, actinomorphic, pentamerous, hypogynous, pale yellow, about 4.0 mm in diameter; sessile; bracts spatulate, about 2.0 mm long. Calyx tubular, 5-toothed; tube about 3.0 mm long; teeth triangular, about 2.0 mm long. Petals 5, free, slightly connate at the base, linear, about 4.0 mm long, glabrous. Stamens 10, free, exserted; filament 0.5-1.0 cm long; anthers dithecal, versatile, oblong,

dehiscing longitudinally. Carpel 1; ovary superior, ovoid, unilocular with many ovules in the locule on the marginal placentae; styles terminal, filiform; stigmas simple, minute. Pods oblong-obovate, compressed, 12.0-15.0 cm by 3.0-6.0 cm, woody, pale brown. Seeds ellipsoid, flat, shining.

Distribution: Widely distributed in Myanmar (Kress *et al.* 2003). It occurs as a wild plant in the study area.

Specimens examined: Nat Yay Gan, Nagphe Township, Khonzu village, N 19° 54' and E 94° 29', 768 m; 3 March, 2018; Thida Cho; collection no. 187.

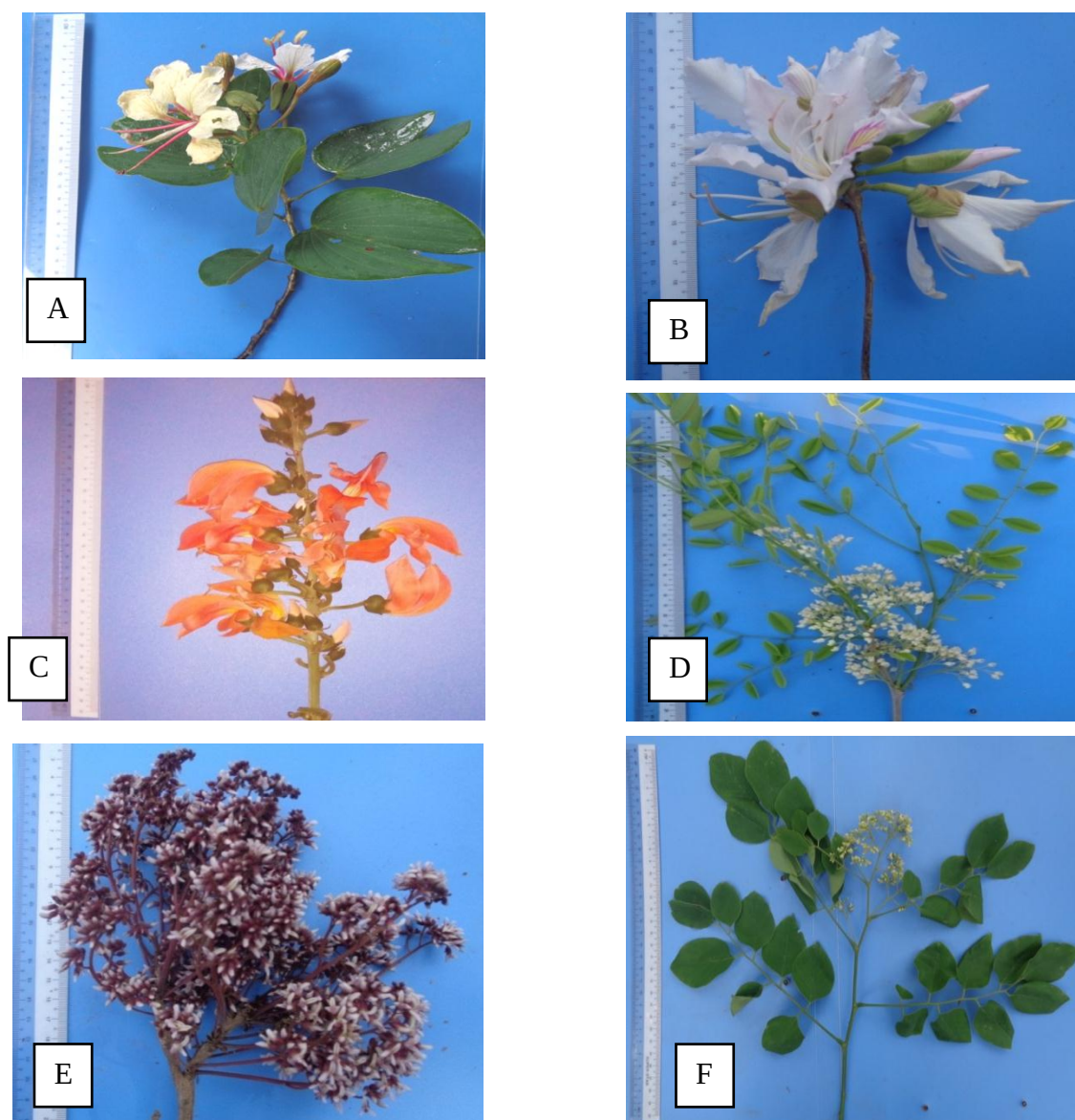


Figure 1 (A) *Bauhinia vahlii* Wight & Arn.,
(C) *Butea monosperma* (Lam.)
(E) *Dalbergia oliveri* Gamble ex Prain
(B) *Bauhinia variegata* L.,
(D) *Dalbergia cultrata* Grah. ex Benth.,
(F) *Dalbergia rimosa* Roxb., Fl. Ind.,

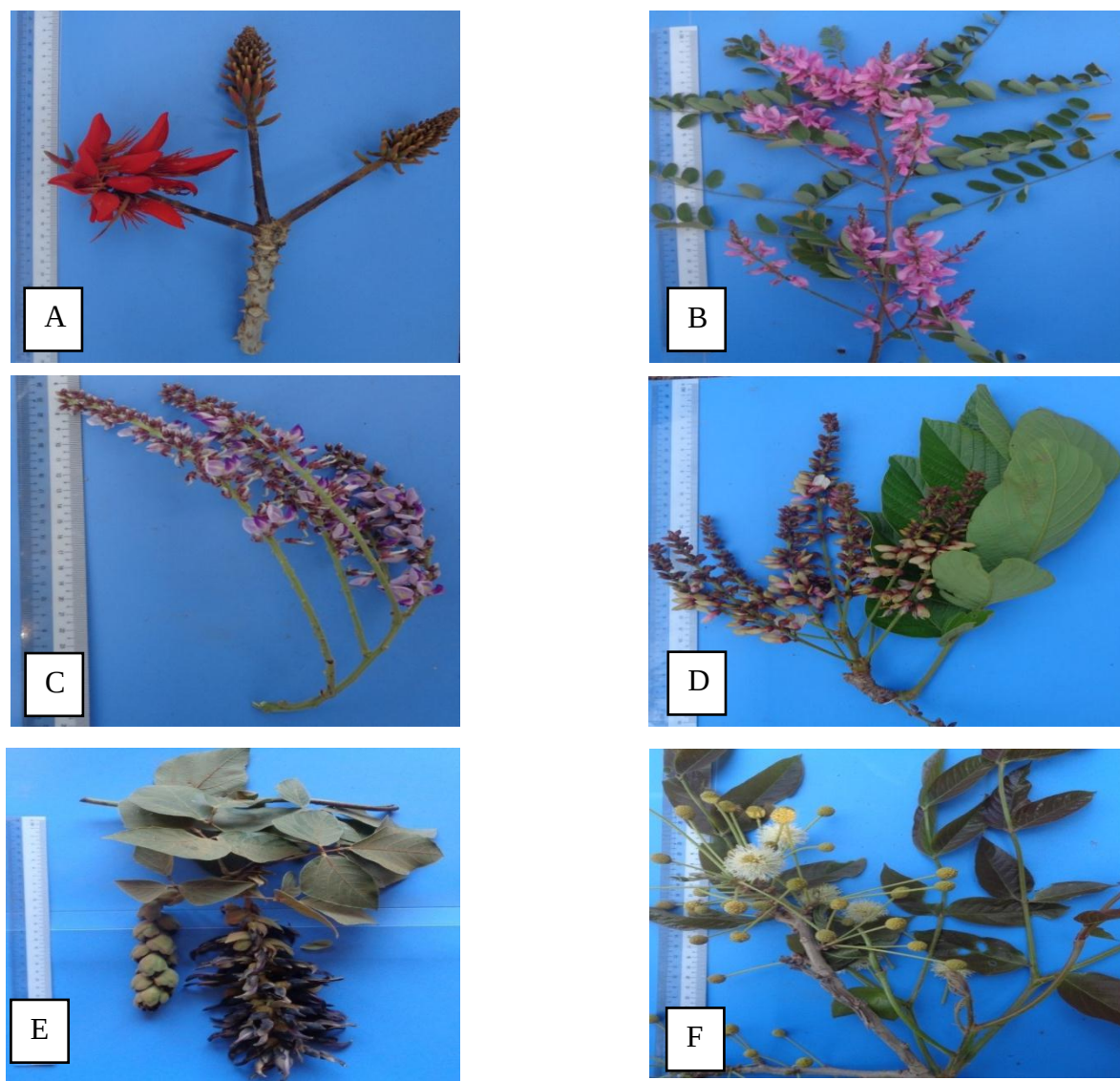


Figure 2 (A) *Erythrina stricta* Roxb., (B) *Indigofera tinctoria* L.,
(C) *Millettia brandisiana* Kurz, (D) *Millettia cinerea* Benth.
(E) *Mucuna pruriens* (L.) DC., (F) *Xylia xylocarpa* (Roxb.) Taub.,

Discussion and Conclusion

The present research work deals with the floristic study on flowering plants (Angiosperms) growing in Nat Yay Gan mountain area in Nagphe Township. The species of family Fabaceae were widely distributed in temperate, tropical and subtropical of the world. About 727 to 732 genera and 19,000 to 19,700 species were recorded in the world (Heywood 2007). Simpson (2006) stated that about 643 genera and 18,000 species were worldwide in distribution. Qi-ming and De-lin (2009) recorded that about 56 genera, 2800 species were distributed in tropical and subtropical regions, especially in south America, a few species extend into temperate area; about 17 genera and 66 species in China; 9 genera and 17 species in Hong Kong. However, Kress *et al.* (2003) recorded that 84 genera and 510 species of Fabaceae were mentioned in Myanmar.

Zinbyun village is situated 19° 53' N latitude and 94° 25' E longitude. It lies 349 m above sea level. The trees found in this area was *Millettia brandisiana* Kurz.

Maylat village is located 19° 52' N latitude and 94° 29' E longitude, 417 m above sea level. The trees found in this area were *Dalbergia cultrate* Grah. ex Benth., *Dalbergia rimosa* Roxb., The shrubs were *Indigofera tinctoria* L., *Dalbergia volubilis* were also found in this area.

Lintel village is situated 19° 51' N latitude and 94° 22' E longitude. It lies 1109 m above sea level. The trees found in this area were *Erythrina stricta* Roxb.,

In the study area, the species *Dalbergia oliveri* Gamble, was less commonly found throughout the study area. Ng and Wee (1994) mentioned that these plants were recorded as globally threatened and endangered species in the Red Data Book of Singapore. The species *Dalbergia oliveri* Gamble ex Prain was mentioned as vulnerable species and endangered species by IUCN (Appendix IV). These plants were sparsely found in the study area.

Therefore, these threatened and endangered species are needed to conserve. It is hoped that the resulting of the floristic information and knowledge of natural plant resources are beneficial to the further studies and this research intends not only to provide the information of natural vegetation but also to partially fulfill the compilation the Flora of Nat Yay Gan mountain area in Nagphe Township in Myanmar.

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