VEGETATION TYPES IN THAC TIEN - DEO GIO NATURAL FOREST OF XIN MAN DISTRICT, HA GIANG PROVINCE

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SUMMARY

This article presents the results of the preliminary research on vegetation types of Thac Tien - Deo Gio natural forest, Xin Man district, Ha Giang province. The results of this research showed that the vegetation in the study area can be classified and characterized by nine major formations and three subformations, including: (1) Tropical evergreen seasonal submontane forests, (2) Tropical bamboo forests on the low mountains, (3) Evergreen broad-leaved woodlands regenerated after logging, (4) Evergreen broad-leaved woodlands regenerated after shifting cultivation and forest fires, (5) Evergreen broad-leaved shrublands with immature dicotyledonous trees, (6) Low bamboo thickets, (7) Short-grass communities with shrubs and without woody trees, (8) Mainly tall perennial flowering forbs, and ferns, and (9) Fern thickets. Of these, the formation of the tropical evergreen seasonal sub-montane forest is divided into two sub-formations: (i) Broad-leaved submontane forest lightly disturbed by human activities, (ii) Broad-leaved submontane forest heavily disturbed by human activities; mainly tall perennial flowering forbs, and ferns with one subformation: (iii) Forb communities of *Musa acuminata*.

Keywords: Forest, Thac Tien - Deo Gio, vegetation, Xin Man district.

1. INTRODUCTION

The Thac Tien - Deo Gio natural forest belongs to the territory of three communes of Na Chi, Nam Dan and Quang Nguyen of Xin Man district, Ha Giang province, with a total area of about 4,000 ha. The center of the area is the Deo Gio peak, about 23 km from Coc Pai town of Xin Man district to the south and about 40 km from Yen Binh town of Quang Binh district to the north.

The Thac Tien - Deo Gio natural forest is mainly characterized by the closed evergreen broad-leaved sub-montane forest ecosystem, which holds many genetic resources of endangered species of flora and fauna, and at the same time it has an extremely important position for watershed protection, environmental protection and climate regulation for the region, protection of genetic resources and biodiversity of the flora and fauna in the region of Eastern North Vietnam.

In addition, the Thac Tien - Deo Gio forest area is also a famous place of national ranking, belonging to the scenic and tourism chain of Xin Man district such as: Nam Dan ancient stone yards, Thac Tien - Deo Gio tourism area, Thien Thuy cave...

However, biodiverse resources in the region are seriously threatened by pressure from local communities which impacts at different levels. Therefore, it is very important to conduct research and evaluate the status of biodiversity for the management and conservation of biodiversity and sustainable use of natural resources in the region.

This paper introduces the results of the study on vegetation types in the Thac Tien - Deo Gio natural forest, Xin Man district, Ha Giang province.

2. RESEARCH METHODOLOGY

2.1. Research object

The vegetation in the Thac Tien - Deo Gio natural forest belongs to Na Chi, Nam Dan and Quang Nguyen communes of Xin Man district, Ha Giang province.

2.2. Methodology

Methods of data collecting

*** Desk study**: Collecting secondary data relating to the study area including maps of forest status, scientific reports, papers and data of natural and social-economic conditions. Data collected were reviewed to get an

understanding of the survey area.

*** Field surveys**

- *Survey of transect line*: Based on maps to set up a total of 10 transect lines crossing different ecosystems including forest types, forest status, terrains. On each transect line, all vascular plant species were listed and noted. Information on habitat, species name, abundance, living types seen on transect lines were recorded. Photos of plant species and/or their habitats were also taken. For species that cannot be recognized in the field, their plant samples were collected for preparing specimen and species identification.

- *Survey of standard plot*: On transect lines, typical representative standard plots were chosen for each forest status, each habitat, and each vegetation type at different altitudes. The Survey of standard plots in the study area was conducted according to Richards (1996), Thin (1997). A total of five standard plots with dimension of 40 x 25 m were set up. For each plot, the geographical position (coordinates), elevation above sea level, slope, direction of exposuration and inclination were determined. Woody trees, regenerated trees, shrubs, herbs, and vines were surveyed in each standard plot. For woody trees, diameters at the breast height about 1.3 meter above the ground (DBH), under branch height (ubH), full length height (flH), crown diameter (cD) of all tree species of DBH more than 6 cm were measured. Regenerated trees, shrubs, herbs, and vines were surveyed in five sample plots with dimension of 5 x 5 m, established in each standard plot. Of which, four plots were located at four corners of the standard plot and the rest one was placed in the center of the standard plot. Fieldwork was conducted in April and May 2015 and again in November 2017.

Methods of data analysis

- *Identification of the plant specimens:* Scientific names of plant species were identified by morphological comparison based on the major literatures such as "An Illustrated Flora of Vietnam" (Ho, P.H., 1999-2003), "Flora of Hong Kong" (Volume 1-3, 2007-2009), "Yunnan Ferns of China" (2007), "Vietnam Forest Trees" (JICA, Hanoi, 2009), "Flora of China" and "Flora of China Illustrations" (Volume 1-25, 1994-2010). Besides which, some plant specimens were also compared with type specimens from various botanical museums or herbaria.

- *Classification and description of the vegetations:* The vegetation in the study area were classified according to UNESCO (1973). Vegetation descriptions were conducted according to "Tropical rain forest" (Richards, P.W., 1996), and "Tropical forest ecosystems in Vietnam" (Trung, T.V., 1999). Descriptions of vegetations were based on field observations along landscape transects, and detailed descriptions of structure and species composition were studied through the establishment of standard plots, selected at different elevations in typical representative plant communities. For each distinct stratum, vegetation structure, projective coverage and species composition was described. Other important information on vegetation structure and species composition of studied plant communities were obtained from field observations.

3. RESULTS AND DISCUSSION

3.1. Formation: Tropical evergreen seasonal submontane forest

+ Subformation 1. Broad-leaved submontane forest lightly disturbed by human activities

Broad-leaved submontane forest lightly disturbed by human activities is a rather common subformation in this study area. This subformation mainly distributed at the tops and slopes of the mountains at Nam Chanh and Ngam Lam villages of Nam Dan commune, and Nam La village of Quang Nguyen commune, and a part of the forest at Na Lan and Nam Khuong villages of Na Chi commune. The forest structure of such subformations are characterized by 4 different strata.

Table 1. Locations of study plots of Broad-leaved submontane forest lightly disturbed by human activities

Study plots	Place	Coordinates (VN2000)	Altitude (m, a.s.l)	Slope
No.2	Na Chi commune	395285; 2496568	1079	35^o
No.4	Nam Dan commune	397504; 2497078	1368	10^o
No.5	Quang Nguyen commune	398265; 2498050	1550	30^o

Forest structure description

- **Stratum A2:** The average height of woody trees in this stratum of subformation of broad-leaved submontane forest lightly disturbed by human activities is usually at 15 - 25 m, and their average DBH is 30 - 40 cm, with the average coverage of 65 - 75%. Some plant species mainly seen in this stratum are *Fagraea auriculata, Cryptocarya* spp., *Aphanamixis* sp., *Aglaia* spp., *Cinnamomum* spp., *Garcinia* sp., *Lithocarpus* spp., *Castanopsis cerebrina*, *Exbucklandia tonkinensis*. Association of *Fagraea auriculata, Phoebe yunnanensis, Cinnamomum* spp., *Aglaia spectabilis,* and *Eberhardtia aurata* were also recorded in some areas. .

- **Stratum A3:** Average height of this stratum in this subformation is usually at 6 - 15 m, and average DBH of woody trees is 10 - 20 cm. The crown of this stratum is discontinuous with the coverage of 20 - 35%. The species most seen in this stratum belong to families Proteaceae, Araliaceae, Leguminosae, Lauraceae, Apocynaceae, Sterculiaceae, Magnoliaceae, Fagaceae, Ebenaceae, Theaceae, etc. such as *Eberhardtia aurata, Schefflera* sp., *Archidendron* spp., *Magnolia* sp., *Phoebe yunnanensis, Cinnamomum* spp., *Quercus* sp., *Actinodaphne* sp., *Litsea balansae*, *Polyalthia* sp., *Helicia cochinchinensis, Wrightia laevis, and Syzygium* spp. Some young trees of plant species at stratum A2 are also seen in this stratum: *Cinnamomum* spp., *Garcinia* sp., *Lithocarpus* spp., *Aglaia* spp....

- **Stratum B:** Average height of this stratum is about at 2-6 m, with coverage of 10-15%. The species most seen in this stratum are: *Glochidion* spp., *Ardisia* sp., *Breynia* sp., *Sageretia* spp., *Maesa* sp, *Callicarpa macrophylla, Psychotria rubra...*

- **Stratum C:** Average height of this stratum is about at 2 - 6 m, with an average coverage of 25 - 50%. Some herbaceous species of this stratum are: *Begonia* spp., *Ageratum conyzoides*, *Strobilanthes* sp., *Beccarinda tonkinensis*, *Dichroa febrifuga, Persicaria chinensis, Persicaria orientalis*, *Pouzolzia* spp., *Acroceras munroanum*, *Aeschynanthus* spp., *Polygala karensium*, *Adiantum* sp., *Pteris* sp., *Alpinia* sp., *Leea rubra*, *Costus tonkinensis*, *Curculigo latifolia*, *Ophiopogon* spp., *Polygonum* spp.

- **Non-stratum vegetation:** Epiphytic and hemi-epiphytic species found in this subformation are rather diverse, and mainly belong to ferns and orchids, e.g. *Asplenium nidus, Aglaomorpha coronans*, *Pyrrosia adnascens, Dendrobium* sp., *Drynaria bonii.* Climber species in this sub-formation are not many , and some species seen here are from families Annonaceae, Apocynaceae, Erythropalaceae, Caesalpiniaceae, Convolvulaceae, Cucurbitaceae, Fabaceae, Mimosaceae, Rubiaceae, Vitaceae, Dioscoreaceae, Smilacaceae, such as *Gynostemma pubescens*, *Pothos* spp., *Bauhinia* spp., *Caesalpinia* spp., *Dioscorea* spp., *Piper* spp., *Smilax* spp., *Desmos cochinchinensis, Desmos* sp., *Uvaria boniana, Uncaria* spp., *Cissus triloba, Tetrastigma* sp.

Figure 1. Broad-leaved submontane forest lightly disturbed by human activities
(Nam La village, Quang Nguyen commune)

+ Subformation 2. Broad-leaved submontane forest heavily disturbed by human activities

Subformation of broad-leaved submontane forest heavily disturbed by human activities distributed in various areas from Deo Gio peak to Thac Tien stream at Ngam Lam village of Nam Dan commune, and almost forest at Na Lan and Nam Khuong villages of Na Chi commune, and a part of the forest at Khau Lau village of Na Chi commune and Nam Cuong village of Quang Nguyen commune. The forest structure of such subformation is characterized by 4 major strata.

Forest structure description

- **Stratum A2:** Average height of woody trees in this stratum of subformation of broad-leaved submontane forest heavily disturbed by human activities is usually at 15 - 20 m, and their average DBH is about 20 - 35 cm, with average coverage of 50 - 65%. Some plant species mainly seen in this stratum are: *Archidendron balansae, Cryptocarya* spp., *Amesiodendron chinense*, *Aglaia* sp., *Elaeocarpus* spp., *Cinnamomum* spp., *Garcinia* sp., *Lithocarpus* spp., *Phoebe yunnanensis, Eberhardtia aurata, Helicia cochinchinensis, Wrightia laevis, Syzygium* spp., *Castanopsis cerebrina, Litsea balansae, Schefflera* sp....

- **Stratum A3:** Average height of woody trees in this stratum of this subformation is at 6 - 12 m, their average DBH is about 10 - 20 cm, and average coverage is about 15 - 25%. The species most seen in this stratum belong to families Elaeocarpaceae, Lauraceae, Apocynaceae, Sterculiaceae, Fagaceae, Theaceae, Euphorbiaceae, Araliaceae, etc. such as *Elaeocarpus* spp., *Bridelia balansae, Hydnocarpus anthelminthica, Croton poilanei*, *Actinodaphne* sp., *Microdesmis caseariifolia, Litsea balansae, Pterospermum* sp., *Archidendron balansae*, *Schefflera* sp., *Cinnamomum* spp., *Quercus* sp.... Some young trees of plant species at stratum A2 are also seen in this stratum such as *Archidendron balansae, Aglaia* sp., *Elaeocarpus* spp., *Cinnamomum* spp., *Garcinia* sp., *Eberhardtia aurata, Helicia cochinchinensis, Wrightia laevis, Syzygium* spp....

- **Stratum B:** Average height of this stratum is about at 2 - 6 m, with coverage of 10 - 20%. The species most seen in this stratum are: *Saurauia tristyla, Ardisia* sp., *Breynia* sp., *Glochidion* spp., *Maesa* sp, *Sageretia* spp., *Callicarpa macrophylla*, *Clerodendrum cyrtophyllum*, *Psychotria rubra, Viburnum* spp., *Blastus cochinchinensis*....

- **Stratum C:** Average height of this stratum is about at 1.5 - 2 m, with coverage of 30 - 60%. Some herbaceous species of this stratum are: *Begonia* spp., *Ageratum conyzoides*, *Strobilanthes* sp., *Achyranthes* spp., *Beccarinda tonkinensis*, *Dichroa febrifuga*, *Pouzolzia* spp., and *Centosteca latifolia, Adiantum* sp., *Pteris* sp. *Alpinia* sp., *Leea rubra*, *Costus tonkinensis*, *Ophiopogon*

spp., *Polygonum* spp....

- **Non-stratum vegetation:** Epiphytic and hemi-epiphytic species found in this subformation are rather diverse, and mainly belong to ferns and orchids, e.g. *Asplenium nidus, Aglaomorpha coronans, Pyrrosia adnascens, Dendrobium* sp., v.v. Some climber species seen in this subformation from families Annonaceae, Apocynaceae, Caesalpiniaceae, Convolvulaceae, Cucurbitaceae, Fabaceae, Mimosaceae, Rubiaceae, Vitaceae, Dioscoreaceae, Smilacaceae, such as *Gynostemma pubescens, Jasminum* spp., *Uncaria* spp., , *Pothos* spp., *Bauhinia* spp., *Caesalpinia* spp., *Dioscorea* spp., *Rubus cochinchinensis, Smilax* spp....

3.2. Formation: Tropical bamboo forest on the low mountains

This formation is quite common in most of the communes in the region, most concentrated in Ngam Lam village of Nam Dan commune, Nam Cuong village of Quang Nguyen commune, and Khau Lau village of Na Chi commune. They gathered in large areas to tens of hectares. Plant species composition in the ecological dominant layer of this forest type is mainly pure bamboo. In adition, there are several fast-growing light-demanding tree species in this layer such as *Sapium discolor, Vernicia montana, Alangium chinense*, etc. Bamboo forest of *Indosasa* sp. occupies the largest area of this forest type.

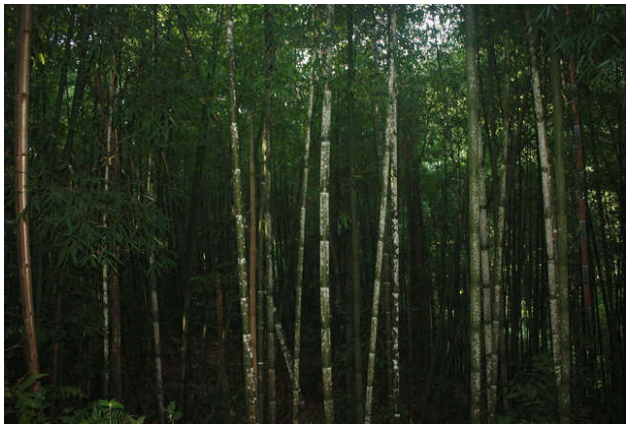

Figure 2. Tropical bamboo forest on the low mountains
(Ngam Lam village, Nam Dan commune)

3.3. Formation: Evergreen broad-leaved woodland regenerated after logging

This formation includes many patches of poorly degraded secondary forests left after selective logging for a long time, mainly concentrated in Khau Lau village of Na Chi commune, around the top and sides of Deo Gio mountain, a part of the forest area of Ngam Lam village of Nam Dan commune bordering Che La and Quang Nguyen communes. The forest structure of this type is quite simple. Three different strata were seen here: one tree stratum, a shrubs stratum, and a herb stratum. .

Forest structure description

- **Stratum A2:** This stratum mainly consists of some light demand species of families: Juglandaceae, Guttiferae, Elaeocarpaceae, Euphorbiaceae, Alangiaceae, Rubiaceae, Moraceae, Leguminosae, etc. The most common tree species are *Bridelia balansae, Mallotus paniculatus, Sapium discolor, Ormosia pinnata, Castanopsis indica, Engelhardtia roxburghiana, Litsea balansae, Elaeocarpus sylvestris, Cratoxylum cochinchinense, Alangium chinense, Mallotus barbatus, Archidendron* spp.…

- **Stratum B:** The commonly seen species are *Alchornea rugosa, Breynia fruticosa, Glochidion hirsutum, Mallotus apelta, Helicteres angustifolia, Helicteres hirsuta, Helicteres lanceolaia, Sida rhombifolia, Urena lobata, Psychotria rubra, Ziziphus oenoplia...*

- **Stratum C:** The most seen plant species in this stratum belong to families Poaceae,

Asterceae, Pteridaceae, Thelypteridaceae, Acanthaceae, Zingiberaceae, e.g. *Alpinia* spp., *Strobilanthes* spp., *Pteris* spp., *Echinochloa* spp., *Chrysopogon aciculatus, Centosteca latifolia*...

- **Non-stratum vegetation:** Includes many species from families Schizaeaceae, Convolvulaceae, Dioscoreaceae, Smilacaceae, Rubiaceae, Annonaceae, Fabaceae, e.g. *Lygodium* spp., *Merremia hederacea, Merremia* spp., *Dioscorea* spp., *Smilax* spp., *Uncaria* spp., *Desmos chinensis, Desmos* spp.…

3.4. Formation: Evergreen broad-leaved woodland regenerated after shifting cultivation and forest fires

This forest type is distributed in low mountain areas, near residential areas with relatively low cover of about 35 - 45%, concentrated in the mountain slopes at Nam La and Nam Cuong villages of Quang Nguyen commune, a part of the restoration forest of Khau Lau village of Na Chi commune and Nam Chanh and Ngam Lam villages of Nam Dan commune. In general, the forest has only one stratum of relative even-aged woody trees.

Table 2. Locations of study plots of Evergreen broad-leaved woodland regenerated after shifting cultivation and forest fires

Study plots	Place	Coordinates (VN2000)	Altitude (m, a.s.l)	Slope
No.1	Nam Dan commune	397037; 2497829	1294	10^o
No.3	Na Chi commune	397634; 2496357	1093	15^o

Forest structure description

- **Stratum A2:** The species composition of this stratum consists of light demand regenerating trees. Average height of these trees is about at 6 - 10 m, e.g. *Persea odoratissima*, *Croton poilanei, Macaranga denticulata, Adinandra* sp., *Bridelia balansae, Mallotus paniculatus, Elaeocarpus sylvestris, Ormosia pinnata, Engelhardtia roxburghiana, Cratoxylum cochinchinense, Alangium chinense, Aprosa* spp., *Mallotus barbatus, Antidesma montanum, Choerospondias axillaris, Archidendron* spp...

- **Stratum B:** In this stratum, the main species are *Alchornea rugosa, Breynia fruticosa, Glochidion hirsutum, Mallotus apelta, Helicteres angustifolia, Helicteres hirsuta, Urena lobata, Psychotria rubra, Zanthoxylum avicenniae, Wikstroemia indica...*

- **Stratum C:** This stratum mainly consists of plant species which belong to families Poaceae, Asterceae, Pteridaceae, Thelypteridaceae, Begoniaceae, e.g. *Begonia* spp., *Pteris* spp., *Christella parasitica*, *Saccharum spontaneum, Imperata cylindrica, Digitaria* sp., *Centosteca latifolia*…

- **Non-stratum vegetation**: Mainly consists of plant species *Lygodium* spp., *Merremia hederacea, Rubus* spp., *Uncaria* spp., *Dioscorea* spp., *Smilax* spp., *Streptocaulon juventas*...

3.5. Formation: Evergreen broad-leaved shrubland with immature dicotyledonous trees

This shrubsland with scattered immature dicotyledonous trees was quite commonly recorded in the communes at the study area, concentrating on the slopes and bases of the mountains, near residential areas. It is the result of the process of a long-term continuous disturbed vegetation caused by negative human activities, such as excessive logging, continuous firewood exploitation, shifting cultivation.

Regenerating trees: Trees are regenerating in small numbers. They are a common small and light demanding tree species on bare land, like *Bridelia monoica, Mallotus barbatus, Mallotus paniculatus, Sapium discolor, Phyllanthus emblica, Toxicodendron succedanea...*

The common shrubs are species *Melastoma* spp., *Psychotria rubra, Helicteres angustifolia, Helicteres hirsuta, Sida rhombifolia, Mallotus apelta, Canthium spp...*

Herbs are mainly *Christella parasitica*, *Chrysopogon aciculatus, Centosteca latifolia, Saccharum spontaneum, Imperata cylindrica, Digitaria* sp, *Cynodon dactylon...*

Some climber species found in this forest type are *Lygodium conforme, Lygodium flexuosum, Lygodium scandens, Merremia hederacea, Streptocaulon juventas...*

Figure 3. Evergreen broad-leaved shrubland with immature dicotyledonous trees
(Ngam Lam village, Nam Dan commune)

3.6. Formation: Low bamboo thickets

This type of scattered vegetation exists in the villages of Nam Dan, Na Chi and Quang Nguyen communes. They are often concentrated in small patches with areas from a few thousand square meters to a few hectares, even tens of hectares, in wet places. The main plant species in this forest type are low bamboo species. Their height not exceeding 5m. In addition, there are several fast-growing light-demanding scattered tree species such as *Styrax tonkinensis, Sapium discolor, Litsea cubeba, Vernicia montana, Alangium chinense...*

3.7. Formation: Short-grass communities with shrubs and without woody trees

Grasslands in this area are also the result of negative human activities, like shifting cultivation, forest fires, and grazing which have happened repeatedly year-by-year. This sub-type of scattered vegetation exists in the villages of Na Chi and Quang Nguyen communes. This land is mainly covered by herb and grass species from the families Poaceae, Cyperaceae, Asteraceae, Fabaceae... such as *Centosteca latifolia, Dactyloctenium aegyptyum, Imperata cylindrica, Thysanolaena maxima, Cynodon dactylon, Desmodium* spp*., Echinochloa* spp....

3.8. Formation: Mainly tall perennial flowering forbs, and ferns

+ Subformation 3. Forb communities of *Musa acuminata*

Figure 4. Forb communities of *Musa acuminata*
(Khau Lau village, Na Chi commune)

This subtype of scattered vegetation exists in the villages of Nam Dan, Na Chi and Quang Nguyen communes. They are often concentrated into small patches with areas from a few thousand square meters to a few hectares, in wet places, or valleys. The main plant species in this sub-forest type are bananas *Musa acuminata* and some herbaceous plants, shrubs and vines belonging to the families Poaceae, Cyperaceae, Asteraceae, Acanthaceae...

3.9. Formation: Fern thickets

This formation is also quite common in the study area, mostly concentrated in Ngam Lam village of Nam Dan commune, around the Thac Tien – Deo Gio area, and Khau Lau village of Na Chi commune, around the Deo Gio peak. They are often seen at the roadside slate roofs for *Dicranopteris linearis* populations, and at the bases or slopes of the Deo Gio mountain, in the wet places for *Cyathea gigantea* populations, in small patches of about a few hectares.

Figure 5. Fern thicket of *Dicranopteris linearis*
(Khau Lau village, Na Chi commune)

4. CONCLUSION

The vegetation in the Thac Tien - Deo Gio natural forest is preliminarily classified and characterized by nine major formations and three subformations.

The Broad-leaved submontane forest lightly disturbed by human activities is a rather common subformation in the study area, mainly distributed at the tops and sides of the mountains at Nam Chanh and Ngam Lam villages of Nam Dan commune, and Nam La village of Quang Nguyen commune, and a part of the forest at Na Lan and Nam Khuong villages of Na Chi commune. The forest structure of this subformation is characterized by 4 different strata.

The Broad-leaved submontane forest heavily disturbed by human activities distributed in various areas from Deo Gio peak to Thac Tien stream at Ngam Lam village of Nam Dan commune, and almost forest at Na Lan and Nam Khuong villages of Na Chi commune, and a part of the forest at Khau Lau village of Na Chi commune and Nam Cuong village of Quang Nguyen commune. The forest structure of this subformation is characterized by 4 major strata.

The Tropical bamboo forest on the low mountains is quite a common formation in most of the communes in the region, most concentrated in Ngam Lam village of Nam Dan commune, Nam Cuong village of Quang Nguyen commune and Khau Lau village of Na Chi commune. Plant species compositions in the ecological dominant layer of this formation is mainly pure bamboo.

The Evergreen broad-leaved woodland regenerated after logging is mainly concentrated in Khau Lau village of Na Chi commune, around the top and sides of Deo Gio mountain, a part of the forest area of Ngam Lam village of Nam Dan commune bordering Che La and Quang Nguyen communes. The forest structure of this subformation is characterized by a one tree stratum.

The Evergreen broad-leaved woodland regenerated after shifting cultivation and forest fires distributed in low mountain areas, concentrated in the mountain slopes at Nam La

and Nam Cuong villages of Quang Nguyen commune, a part of the restoration forest of Khau Lau village of Na Chi commune, Nam Chanh and Ngam Lam villages of Nam Dan commune. The forest structure of this subformation has only one stratum of relative even-aged woody trees.

The Evergreen broad-leaved shrubland with immature dicotyledonous trees is quite commonly recorded in the communes at the study area, concentrating on the slopes and bases of the mountains, near residential areas.

The Low scattered bamboo thickets exist in the villages of Nam Dan, Na Chi and Quang Nguyen communes. They are often concentrated into small patches with areas from a few thousand square meters to a few hectares, even tens of hectares, in wet places.

The Short-grass communities with shrubs and without woody trees are scattered in the villages of Na Chi, Quang Nguyen communes.

The Forb communities of *Musa acuminata* are scattered in the villages of Nam Dan, Na Chi and Quang Nguyen communes.

The Fern thickets is quite common in the study area, mostly concentrated in Ngam Lam village of Nam Dan commune, around the Thac Tien – Deo Gio area, and Khau Lau village of Na Chi commune, around the Deo Gio peak.

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CÁC KIỂU THẢM THỰC VẬT TẠI KHU RỪNG TỰ NHIÊN THÁC TIÊN - ĐÈO GIÓ, HUYỆN XÍN MẦN, TỈNH HÀ GIANG

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[2]Trung tâm Con người và Thiên nhiên

TÓM TẮT

Bài báo giới thiệu kết quả nghiên cứu thảm thực vật ở khu rừng tự nhiên Thác Tiên - Đèo Gió, huyện Xín Mần, tỉnh Hà Giang. Nghiên cứu chỉ ra rằng thảm thực vật ở khu vực nghiên cứu được phân loại và mô tả thành 9 quần hệ và 3 phân quần hệ, bao gồm: (1) quần hệ Rừng kín thường xanh mưa mùa nhiệt đới núi thấp, (2) quần hệ Rừng tre nhiệt đới núi thấp, (3) quần hệ Rừng thưa lá rộng thường xanh tái sinh sau khai thác, (4) quần hệ Rừng thưa lá rộng thường xanh tái sinh sau canh tác nương rẫy và lửa rừng, (5) quần hệ Trảng cây bụi chủ yếu thường xanh mưa mùa nhiệt đới núi thấp, (6) quần hệ Bụi tre thấp, (7) quần hệ Trảng cỏ dạng lúa thấp có cây bụi, không có cây gỗ, (8) quần hệ Trảng cỏ cao không dạng lúa chủ yếu sống lâu năm, (9) quần hệ Trảng dương xỉ. Trong đó, quần hệ rừng kín thường xanh mưa mùa nhiệt đới núi thấp có 2 phân quần hệ: (i) Rừng kín lá rộng thường xanh núi thấp bị tác động nhẹ đến vừa, (ii) Rừng kín lá rộng thường xanh núi thấp bị tác động mạnh; quần hệ Trảng cỏ cao không dạng lúa chủ yếu sống lâu năm có 1 phân quần hệ: (iii) Trảng chuối.

Từ khoá: Huyện Xín Mần, rừng tự nhiên, Thác Tiên - Đèo Gió, thảm thực vật.

Received : 02/01/2019

Revised : 12/4/2019

Accepted : 19/4/2019