INITIAL DATA ON THE COMPOSITION OF ANTS (Hymenoptera: Formicidae) IN THUONG TIEN NATURE RESERVE, HOA BINH PROVINCE

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SUMMARY

Thuong Tien Nature reserve has high level of biodiversity. However, insect is one of the least study groups compared to other groups of animals in the reserve. In this study ant specimens were collected by using line-transect and point methods in Thuong Tien Nature reserve. Consequently, the researchers has initially identified 34 species of ants in 04 subfamilies (Dolichoderinae, Formicinae, Myrmicinae, and Ponerinae), and 23 genus. Of the 34 species, there are 10 ones that has been only determined for genus. According to the research results, Crematogaster and Leptothorax are the genus that have the largest number of species of 03 each. Technomyrmex, Plagiolepis, Aphaenogaster, Monomorium, Pheidole, Tetramorium, and Leptogenys have 2 species each. The rest ones have 01 species each. The subfamily of Myrmicinae predominates in the number of both genus and species (12 genus and 20 species). The subfamilies of Ponerinae and Formicinae have 04 genus and 05 species for each. The subfamily of Dolichoderinae has 03 genus and 04 species. In the residential habitats, agricultural plants have the highest species rate and Margalef index (d). Bamboo and regenerative forest habitats have lower species rate and Margalef index (d). The lowest species rate and Margalef index (d) are of the habitat of evergreen forest of high trees.

Keywords: Formicidae, habitat, Nature reserve, Thuong Tien.

I. INTRODUCTION

Thuong Tien Nature reserve was founded in 1986 in Thuong Tien ward, Kim Boi district, Hoa Binh province. The topography of the Nature reserve is characterised by medium - high mountains. The reserve has been considered as high level of biodiversity. According to previous studies (Author, 2012), 648 species of 397 genera, 144 families, and 04 phyla of higher vascular plants have been recorded. The researchers also acknowledged 59 species of 21 families and 8 primates of mammals, 128 species of 13 primates, 37 bird families, 18 reptiles of 7 families, and 35 frog species of 7 families and 2 primates.

Different species of ants (Hymenoptera: Formicidae) play an important role in the ecosystems, such as organic decomposition and soil enrichment. They are utilized as the biological treatments in pests control to protect plants. Some ants can be used as a kind of food and medicine for human. In addition, ants are relatively sensitive to the changes of environmental conditions. Therefore, they are also used to evaluate the activities of conservation, control environmental impact controlling, ecosystems management, and forest ecosystems recovery assess (Bui Tuan Viet, 2003). The research results initially provide information on different species of ants and distribution characteristics in the research area.

II. RESEARCH METHODOLOGY

In July and August 2016, the authors collected samples in 04 types of habitats (residential habitats, agricultural plants habitats, regenerative forest habitats, evergreen forest of high trees, and bamboo habitats) in 04 line-transects and 19 points. Ant samples were taken as follows:

- For line-transect surveys, the authors used forceps, straws, brush tool, screw driver, and trowel… The samples were collected from ants' underground nests, rotten vegetation cover, land surface, and the trees.

- For point surveys, the author used hole snares by putting sharpened tin covers which contained soapy water so that the rims were at the same level with the soil. The samples were collected in the hole snares after every two

days. In addition, the researchers counted the number of individual of each species in the snares, then identified the ants' names based on guide books (1, 2, 5). The author used the rate of appearance in habitats and Margalef (d) index to evaluate ants' distribution.

III. RESULT AND DISCUSSION

3. 1. Species composition

According to the research results, there are 34 species of 04 subfamilies (Dolichoderinae, Formicinae, Myrmicinae, and Ponerinae), and 23 breeds in the study area.

Table 1. Species composition and habitats in the study area

No	Species	SC1	SC 2	SC 3	SC 4
I	**Dolichoderinae**				
1	*Dolichoderus sp.*		x	x	x
2	*Ochetellusglaber*	x			x
3	*Technomyrmexalbipes*	x	x		x
4	*Technomyrmex sp.*	x		x	x
II	**Formicinae**				
5	*Anoplolepisgracilipes*	x	x		x
6	*Camponotusfiedae*	x	x		x
7	*Plagiolepisalluaudi*			x	x
8	*Plagiolepisflavescens*	x	x	x	x
9	*Polyrhachishalidayi*	x	x	x	x
III	**Myrmicinae**				
10	*Aphaenogastertipuna*	x	x	x	x
11	*Aphaenogaster sp.*	x	x	x	
12	*Cardiocondyla sp.*	x			
13	*Crematogasternawai*	x			x
14	*Crematogasterosakensis*	x	x	x	
15	*Crematogastersuehiro*		x	x	x
16	*Leptothoraxarimensis*	x	x	x	x
17	*Leptothoraxkubira*		x		x
18	*Leptothorax sp.*	x	x		x
19	*Messor sp.*	x	x	x	
20	*Monomoriumhiten*	x		x	x
21	*Monomoriumtriviale*				x
22	*Myrmecina sp.*	x		x	
23	*Oligomyrmex borealis*	x	x	x	x
24	*Pheidolefervida*		x		
25	*Pheidolemegacephala*		x	x	
26	*Solenopsis sp.*	x	x		
27	*Tetramoriumkraepelini*	x			x
28	*Tetramoriumsimillium*	x			x
29	*Vollenhoviasakishimana*	x	x	x	x
IV	**Ponerinae**				
30	*Amplyopone sp.*	x	x	x	
31	*Cryptoponesauteri*	x	x	x	x
32	*Leptogenysconfucii*	x	x		x
33	*Leptogenys sp.*	x			x
34	*Odontoponeratransversa*	x	x		x

Note : *SC1: Residential and agricultural plants habitat*
SC2: Secondary forest habitat
SC3: High trees forest habitat
SC4: Bamboo forest habitat
X: Presence

In 23 genuses, Crematogaster and Leptothorax contribute the largest number of species (03 each) accounting for 8.82% the total number of genus. Technomyrmex, Plagiolepis, Aphaenogaster, Monomorium, Pheidole, Tetramorium, and Leptogenys have 02 species each accouting for 5.88%. The rest ones have 01 species each making 2.94%. In terms of subfamily, the research results show that Myrmicinae subfamily predominates in the number of both genus and species (20 species and 12 genus). The subfamilies of Ponerinae and Formicinae have the lower number of genus and species (5 species, 4 genus). Dolichoderinae has the lowest number of species and genus (4 species, 3 genus). In the total number of 34 species of ants, only 10 species are identified with the genus level. Therefore, to identify the species, further studies are needed.

3.2. Distribution of ants in the research area

The study results reveal that the distribution of ants in different types of habitats is different (table 2).

Table 2. The rate (%) and Margalef index (d) of ants by habitats

No	Habitat	% species	d
1	Residential and agricultural plants habitats	79,41	4,91
2	Secondary forest habitat	67,65	4,02
3	High trees forest habitat	52,94	2,98
4	Bamboo forest habitat	73,53	4,59

Results presented in the table 2 show that the residential and agricultural habitats have the highest values of the species rate and Margalef index (d) of 79.41% and 4.91 respectively. Bamboo forest habitat is in the second range, the secondary forest habitat is in the third range, and the high trees habitat is in the fourth range. The reasons for these differences are as follows:

The soil is the living environment of many kinds of insect in general and ants in particular. The residential and agricultural plants habitats have more impacts on soil than the high trees forest habitat leading to the difference of soil structure as well as living community. Therefore, the species compositions of ants are different (Bui Thanh Van et al, 2011).

Most of the ants are insectivorous. Consequently, their existence in different habitats depends on food sources in these habitats. In the residential and agricultural plant habitats, it may have spineless animals that may not be present in the high trees forest habitat (and vice versa). These spineless animals can be a food source for other species of ants. Therefore, some ants species can be seen in the residential and agricultural plants habitats but in the high trees forest habitat and conversely.

IV. CONCLUSIONS

A total of 34 species of ants in 4 subfamilies (Dolichoderinae, Formicinae, Myrmicinae, and Ponerinae), and 23 genus were identified during this study. Of the 34 species, there are 10 ones that are only identified to genus level. Crematogaster and Leptothorax are the genus that have the highest number of species of 03. Technomyrmex, Plagiolepis, Aphaenogaster, Monomorium, Pheidole, Tetramorium, and Leptogenys have 02 species each and others have 01 species each. The subfamily of Myrmicinae predominates in the number of genuses as well as species (12 genus and 20 species). Myrmicinae subfamily predominates in the number of both genus and species (20 species and 12 genus). The subfamilies of Ponerinae and Formicinae have the lower number of genus and species (05 species and

04 genus). Dolichoderinae has the lowest number of species and genus (04 species and 03 genus). The residential and agricultural habitats have the highest species rate and Margalef index (d) of 79.41% and 4.91 respectively. This is following by Bamboo forest habitat, the secondary forest habitat and the high trees habitat.

REFERENCES

1. Bùi Thanh Vân, Cao Bích Ngọc, Nguyễn Thị Như Quỳnh, Nguyễn Văn Quảng (2011). *Dẫn liệu về đa dạng sinh học Kiến (Hymenoptera: Formicidae) tại VQG Ba Vì, Hà Nội*. Hội nghị Côn trùng Quốc gia: 391-397.

2. Bùi Tuấn Việt (2003). *Kết quả bước đầu nghiên cứu đa dạng kiến (Hymenoptera, Formicidae) ở khu vực phía Bắc Việt Nam. Những vấn đề nghiên cứu cơ bản trong khoa học sự sống*. Nhà xuất bản Khoa học và Kỹ thuật, Hà Nội: 279 - 281.

3. Phòng Lâm nghiệp tỉnh Hồ Nam (1992). *Côn trùng rừng Hồ Nam*. Nhà xuất bản Khoa học Kỹ thuật Hồ Nam: 1301-1317.

4. Yoshiaki Hashimoto (2003). *Identification guide to the Ant genera of Borneo*. Bornean Biodiversity and Ecosystems Conservation Programme in Sabah, Malaysia: 81-154.

5. Zhao Meijun (2004). *Hình vẽ, sinh thái 600 loài côn trùng Trung Quốc*. Nhà xuất bản Khoa học Thượng Hải, Trung Quốc: 151-152.

DẪN LIỆU BAN ĐẦU VỀ THÀNH PHẦN KIẾN (Hymenoptera: Formicidae) Ở KHU BẢO TỒN THIÊN NHIÊN THƯỢNG TIẾN, HÒA BÌNH

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TÓM TẮT

Bằng phương pháp điều tra thu thập mẫu trên tuyến và các điểm điều tra tại Khu bảo tồn thiên nhiên Thượng Tiến đã thu được kết quả như sau: Bước đầu xác định được 34 loài kiến thuộc 4 phân họ (Dolichoderinae, Formicinae, Myrmicinae và Ponerinae), 23 giống. Trong tổng số 34 loài kiến có 10 loài mới chỉ xác định đến giống. Giống có số loài nhiều nhất là Crematogaster và Leptothorax có 3 loài, các giống Technomyrmex, Plagiolepis, Aphaenogaster, Monomorium, Pheidole, Tetramorium, Leptogenys có 2 loài và các giống còn lại có 1 loài. Phân họ Myrmicinae chiếm ưu thế về cả số lượng giống và loài (20 loài, 12 giống), tiếp theo là phân họ Ponerinae và phân họ Formicinae (5 loài, 4 giống), cuối cùng là phân họ Dolichoderinae (4 loài, 3 giống). Tại khu vực sinh cảnh dân cư, cây nông nghiệp có tỷ lệ các loài và chỉ số phong phú Margalef (d) lớn nhất, tiếp theo là sinh cảnh rừng tre nứa, sinh cảnh rừng tái sinh và thấp nhất là sinh cảnh cây gỗ rừng kín thường xanh.

Từ khóa: Khu bảo tồn thiên nhiên, Kiến, sinh cảnh, Thượng Tiến.

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