

Leaf Beetles (Coleoptera ; Chrysomelidae) in the Campus and Agricultural Research Stations of Chiang Mai University, Thailand

Shinya UMEMURA*, Jiraporn TAYUTIVUTUKUL** and Hiroshi NAKAMURA***

*Graduate School of Agriculture, Shinshu University

**Department of Entomology, Faculty of Agriculture, Chiang Mai University, Chiang Mai, 50200, Thailand

***Education and Research Center of Alpine Field Science, Faculty of Agriculture, Shinshu University

Summary. Qualitative surveys of leaf beetles were conducted at 5 survey sites (Chiang Mai University, Mae Hia Station, Chang Kien Station, Nong Hoi Station, Suburb of Chiang Mai City) in Chiang Mai, Thailand using sweeping and beating methods from October 19th to October 30th, 2003. A total of 24 species of 8 subfamilies was collected from five survey sites ; 11 species, 3 species, 2 species, 11 species, 4 species from Chiang Mai University, Mae Hia Station, Chang Kien Station, Nong Hoi Station, Suburb of Chiang Mai City, respectively. In these species, *Lema coomani*, *Aulacophora indica*, *Aulacophora lewisii*, *Monolepta pallidula*, *Chaetocnema (Chaetocnema) concinnicollis*, *Altica cyanea* and *Aspidomorpha furcata* are also distributed in Japan. Based on these data, inventory of leaf beetle was made.

Key word : leaf beetles ; inventory ; Chiang Mai University ; Thailand

Introduction

At present, the conservation of biodiversity is one of the most important ecological problems throughout the world. In relation to this problem, the qualitative surveys or making inventory of insects have become to be an important study, for they are regarded as the basic studies to reveal and conserve biodiversity⁹⁾. In case the ecological information of an insect group is well known like butterflies, it is possible to estimate the impact of environmental change against the insect group by tracing the inventories of the group for several years⁶⁾. There were some reports on the changes of butterfly or leaf beetle fauna and the relationships between fauna and environment¹⁾²⁾.

Recently, a lot of surveys to make the inventory of insects have been conducted in tropical region, especially in South East Asia. The project, "Network construction for the establishment of insect inventory in Tropic Asia" was established in 2001 and inventories of ants, bees, insects living in the

forest canopy have been made as part of this project⁵⁾⁸⁾⁹⁾.

Leaf beetles belong to family Chrysomelidae, order Coleoptera in Insecta. Fifty thousand species of leaf beetles distribute throughout the world. Larvae and adults of this beetle eat specific plants and mobility of leaf beetle adults is small⁷⁾. So inventories of leaf beetle can be useful information to evaluate the change of the environment. But there are few studies which investigate leaf beetle fauna in South East Asia because identification of these beetles is very difficult⁸⁾.

In this study, we conducted a survey of leaf beetle fauna in Chiang Mai, Thailand as a preparatory work to establish the collaboration project on biodiversity in tropical region between AFC (Education and Research Center of Alpine Field Science), Faculty of Agriculture, Shinshu University and Department of Entomology, Faculty of Agriculture, Chiang Mai University.

Materials and Methods

1. Study sites and survey period

Survey was conducted in following 5 survey sites shown in Fig. 1.

Received December 8, 2005.

Accepted October 27, 2005.

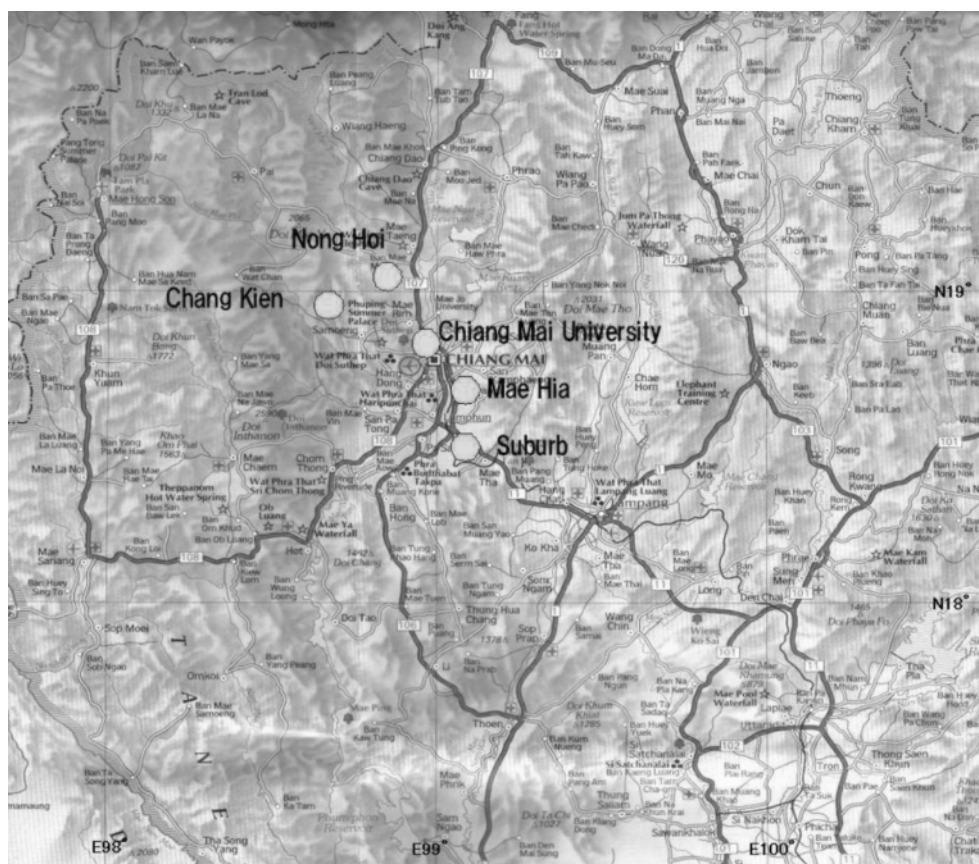


Fig. 1. Location of five survey sites

Chiang Mai University: Chiang Mai University is located at the altitude of 320m. There is Multiple Cropping Center in the campus and survey of leaf beetles was conducted on October 19th, 24th, 28th, 29th, 30th at Multiple Cropping Center in the campus of Chiang Mai University. Researches of irrigation agriculture and cropping system are carried out and broccoli, Chinese cabbage and gourds are cultivated in Multiple Cropping Center.

Mae Hia Agricultural Research Station (Mae Hia Station): Mae Hia Station is located at the 6km south of Chiang Mai University, altitude of 330m. Longans are planted in the station and there are corn fields and grass fields around the station. Survey was conducted on October 19th in this site.

Chang Kien Highland Agricultural Research Station (Chang Kien Station): Chiang Kien Station is located in the Suthep-Pui National Park, 40km west of Chiang Mai University. This station contains two farm sites (Site A and Site B) and survey was conducted in Site B at the altitude

of 1150m on October 20th. Coffee trees are planted in this station.

Nong Hoi Highland Agricultural Research Station (Nong Hoi Station): Nong Hoi Station is located at the 25km northwest of Chiang Mai University, altitude of 1050m. Coffee, gourds and cabbage are planted in the station. In this site, survey was conducted on October 21st and 29th.

Suburb of Chiang Mai City: Survey was also conducted at soybean field in the suburb of Chiang Mai City on October 31st.

2. Survey method

Leaf beetles were collected by sweeping and beating methods in each site. Collected leaf beetles were taken to Japan and identified according to "The Leaf Beetles (Chrysomelidae) of Thailand and Indochina"³⁾ and "Leaf Beetles (Chrysomelidae) of Japan"⁴⁾.

Results and Discussion

1. Number of species

A total of 24 species of 8 subfamily (4 spp. of Criocerinae, 1 spp. of Clytrinae, 2 spp. of Eumolpinae, 1 spp. of Chrysomelinae, 6 spp. of Galerucinae, 5 spp. of Alticinae, 3 spp. of Hispinae and 2 spp. of Cassidinae) was collected throughout the survey. 11 species, 3 species, 2 species, 11

species and 4 species were collected from Chiang Mai University, Mae Hia Station, Chang Kien Station, Nong Hoi Station and Suburb of Chiang Mai City, respectively.

In the species collected through this survey, *Lema coomani* (Fig. 2A), *Aulacophora indica* (Fig.

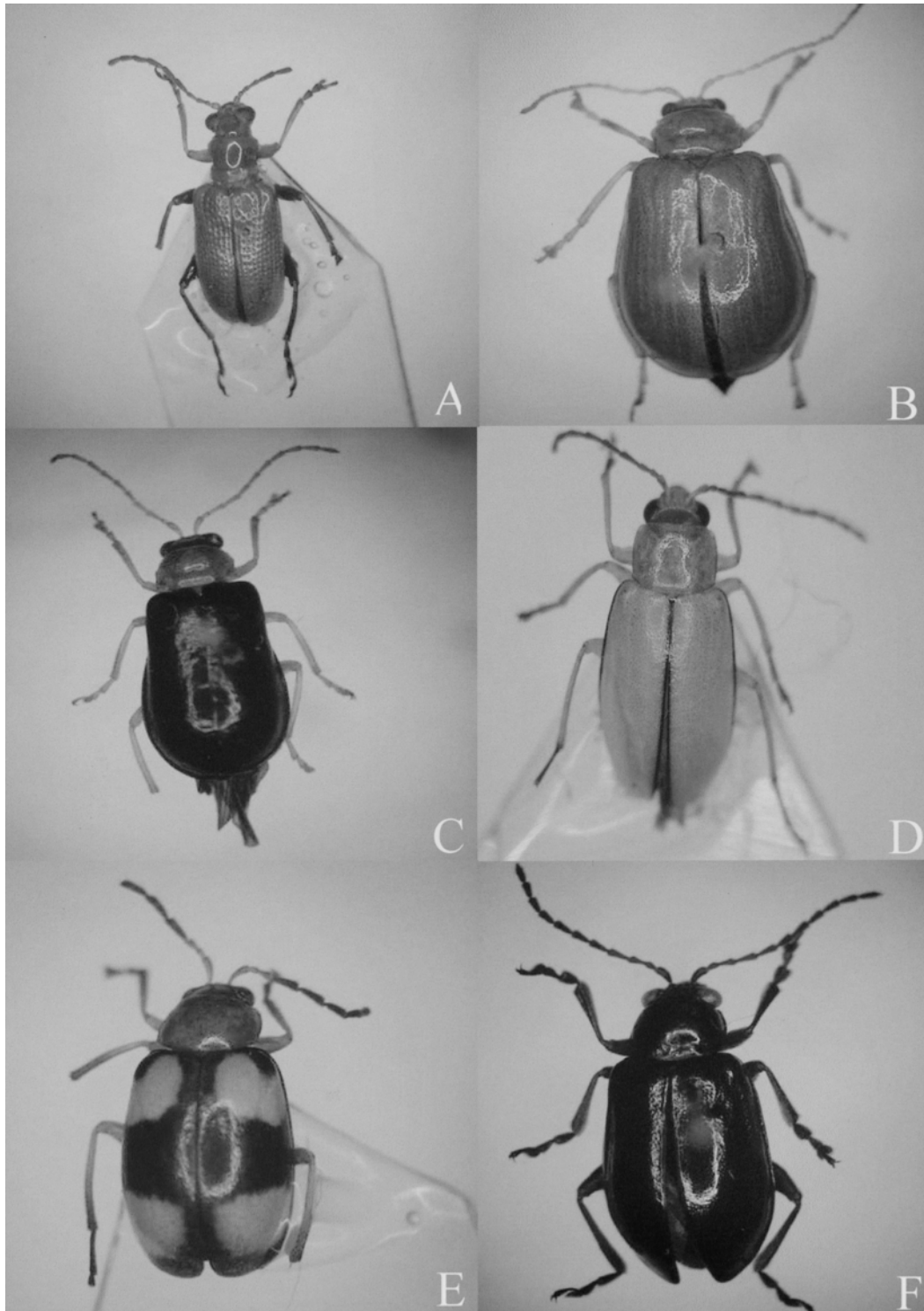


Fig. 2. Leaf beetles collected in this study. A : *Lema coomani*, B : *Aulacophora indica*, C : *Aulacophora lewisii*, D : *Monolepta pallidula*, E : *Monolepta signata*, F : *Altica* sp. I

2B), *Aulacophora lewisii* (Fig. 2C), *Monolepta pallidula* (Fig. 2D), *Chaetocnema (Chaetocnema) concinnicollis*, *Altica cyanea* and *Aspidomorpha furcata* also distribute in Japan. In these 7 species, *L. coomani* and *A. lewisii* are regarded as subtropical species because these species are only distributed in Okinawa region in Japan. *A. indica*, *A. lewisii* and *M. pallidula* were famous pest insects of gourds or mulberries in Japan. It was observed that *A. lewisii* fed leaves of gourds so this beetle was also assumed to be a pest of gourds in Thailand.

2. Species composition

In the species collected through this survey, *Monolepta signata* (Fig. 2E) was commonly collected at Chiang Mai University, Chang Kien Station and Nong Hoi Station while *Altica* sp. (Fig. 2F) was commonly collected at Chiang Mai University, Mae Hia Station and Nong Hoi Station. *Lema delauneyi* and *Lema coomani* were commonly collected at Chiang Mai University and Suburb of Chiang Mai City.

Species composition of leaf beetle collected in this study was characterized by high proportion of herb eating species. Nine species of total 24 species are herb eating species and 4 species eat the leaf of wood. *Cleorina aeneomicans* was the only species which eats both herb and the leaf of wood. Agricultural pest insects like *Monolepta signata* (pest of legume and cotton), *Hispellinus callicanthus* (pest of rice and sugar cane) were also collected in this study. Eight agricultural pest species were contained in total of 24 species. *M. signata* was found on brassicaceous vegetables like Chinese cabbage, so it is suggested that this species may injure brassicaceous vegetables.

It is important to make inventory of insects for the conservation of biodiversity in tropical rain forests. Inventory of leaf beetles in this study carried out at Chiang Mai, Thailand, is shown in the followings.

Inventory

Criocerinae

1. *Lema delauneyi* Pic
Chiang Mai University 2 ex. 28. X. 2003, 3 ex. 30. X. 2003 ; Suburb in Chiang Mai City 1 ex. 31. X. 2003.
2. *Lema coomani* Pic
Chiang Mai University 1 ex. 19. X. 2003, 1 ex. 24. X. 2003, 2 ex. 30. X. 2003 ; Suburb in Chiang Mai City 2 ex. 31. X. 2003.
3. *Lema coromandeliana* (Fabricius)
Suburb in Chiang Mai City 1 ex. 31. X. 2003.
4. *Lema* sp.
Chiang Mai University 2 ex. 28. X. 2003.

Clytrinae

5. *Diapromorpha pallens* (Fabricius)
Chang Kien Station 1 ex. 20. X. 2003 ;
Chiang Mai University 2 ex. 30. X. 2003.

Eumolpinae

6. *Cleorina aeneomicans* (Baly)
Nong Hoi Station 2 ex. 21. X. 2003.
7. *Platycorynus* sp.
Suburb in Chiang Mai City 1 ex. 31. X. 2003.

Chrysomelinae

8. *Lygaria westermanni* Stal
Nong Hoi Station 2 ex. 29. X. 2003.

Galerucinae

9. *Apophyllia sericea* (Fabricius)
Nong Hoi Station 2 ex. 21. X. 2003.
10. *Aulacophora indica* (Gmelin)
Nong Hoi Station 1 ex. 21. X. 2003.
11. *Aulacophora lewisii* Baly
Chiang Mai University 3 ex. 19. X. 2003, 13 ex. 24. X. 2003, 5 ex. 30. X. 2003.
12. *Monolepta rugipennis* (Laboissiere)
Knon Hoi Station 1 ex. 29. X. 2003.
13. *Monolepta signata* (Olivier)
Chiang Mai University 2 ex. 19. X. 2003, 7 ex. 24. X. 2003, 4 ex. 30. X. 2003 ; Chang Kien Station 1 ex. 20. X. 2003 ; Nong Hoi Station 1 ex. 29. X. 2003.
14. *Monolepta pallidula* (Baly)
Nong Hoi Station 1 ex. 29. X. 2003.

Alticinae

15. *Chaetocnema (Chaetocnema) concinnicollis* Baly
Nong Hoi Station 1 ex. 21. X. 2003.
16. *Podontia quatuordecimpunctata* (Linnaeus)

- Nong Hoi Station 1 ex. 29. X. 2003.
17. *Altica cyanea* (Weber)
Nong Hoi Station 1 ex. 21. X. 2003.
18. *Altica* sp. I
Chiang Mai University 3 ex. 24. X. 2003, 6 ex. 28. X. 2003, 4 ex. 29. X. 2003, 14 ex. 30. X. 2003; Mae Hia Station 2 ex. 19. X. 2003; Nong Hoi Station 1 ex. 29. X. 2003.
19. *Altica* sp. II
Chiang Mai University 1 ex. 24. X. 2003.
- Hispidinae
20. *Hispellinus callicanthus* (Bates)
Mae Hia Station 1 ex. 19. X. 2003.
21. *Rhadinosa fleutiauxi* (Baly)
Mae Hia Station 1 ex. 19. X. 2003.
22. *Dactylispa perraudierei* (Baly)
Chiang Mai University 1 ex. 28. X. 2003.
- Cassidinae
23. *Aspidomorpha furcata* (Thunberg)
Chiang Mai University 1 ex. 29. X. 2003.
24. *Cassida circumdata* (Herbst)
Chiang Mai University 1 ex. 19. X. 2003, 1 ex. 29. X. 2003, 2 ex. 30. X. 2003.

Acknowledgements

We would like to express our gratitude to Dr. Katsuaki Ohta for his advice for daily life in Thailand and his help in the field survey. And we also would like to thank Mr. Danai, Mr. Natdairai

Likitakarn and Miss Orapin Saritrium for their help in field survey.

References

- 1) Hondo, M. and Morimoto, N.: Change of the butterfly fauna in Ina City, Nagano, Japan, New Entomol., 47(3, 4), 56-61, 1998.
- 2) Inaizumi, M.: Changes of habitat environment and leaf beetle (Coleoptera, Chrysomelidae) fauna in Mine campus of Utsunomiya University, Technical Bulletin of Faculty of Agriculture, Utsunomiya University, 17(3), 28-66, 2000.
- 3) Kimoto, S.: The leaf beetles (Chrysomelidae) of Thailand and Indochina, Tokai University Press, 2003.
- 4) Kimoto, S. and Takizawa, H.: Leaf beetles (Chrysomelidae) of Japan, Tokai University Press, 1994.
- 5) Kojima, H.: Insect inventory of the Peninsular Malaysia, The Nature & Insects, 38(12), 23-28, 2003.
- 6) Nakamura, H.: Methods of the analysis of the biotic community and the environmental assessment, Journal of the Faculty of Agriculture, Shinshu University, 36(1), 1-10, 2000.
- 7) Ohno, M.: Leaf beetles as bio-indicator, Natural Science & Museum, 47(3), 112-115, 1980.
- 8) Tadauchi, O.: Inventory and database production of bees, The Nature & Insects, 38(12), 19-22, 2003.
- 9) Yada, O.: Network construction and insect inventory in Tropic Asia, The Nature & Insects, 38(12), 6-9, 2003.

タイ国チェンマイ大学構内および附属リサーチステーションのハムシ類

梅村信哉*・Jiraporn TAYUTIVUTUKUL**・中村寛志***

*信州大学大学院農学研究科

**チェンマイ大学農学部昆虫学科

***信州大学農学部附属アルプス圏フィールド科学教育研究センター

要 約

2003年10月19日から2003年10月30日にかけて、タイ国チェンマイにおける6つの調査地(チェンマイ大学, Mae Hia Station, Chang Kien Station, Nong Hoi Station, チェンマイ市郊外)においてスウィーピングとビーティングを用いてハムシ類の定性的調査を行った。調査全体を通じて8亜科24種(チェンマイ大学:11種, Mae Hia Station:3種, Chang Kien Station:2種, Nong Hoi Station:11種, チェンマイ市郊外:

4種) のハムシ類を確認した。このうち、ヒメアカクビボソハムシ *Lema coomani*, ウリハムシ *Aulacophora indica*, ヒメクロウリハムシ *Aulacophora lewisii*, キイロクワハムシ *Monolepta pallidula*, ヒメドウガネトビハムシ *Chaetocnema (Chaetocnema) concinnicollis*, カミナリハムシ *Altica cyanea*, ジンガサハムシ *Aspidomorpha furcata* の7種は日本にも分布する種であった。これらのデータをもとにハムシ類の目録を作成した。

キーワード：ハムシ類, 目録, チェンマイ大学, タイ