

Selected Insects in Pine Forests Infested by the Pine Gall Midge in Korea¹⁾

Tadashi MIURA*, Kôji YANO**, Yasuo MAETA*
and Buom Young LEE***

韓国におけるマツバノタマバエ被害林内の昆虫相
三浦 正・矢野宏二・前田泰生・李 範英

This paper deals with the insect fauna in pine forests in Korea where cooperative studies on the pine gall midge, *Thecodiplosis japonensis* UCHIDA et INOUE (Diptera : Cecidomyiidae) and its biological control were carried out 1983 and 1984 by Korean and Japanese entomologists (MIURA et al., 1985). This cooperative work largely continued ecological and biological studies on the same insect and its parasitoids which were begun in 1960 by Korean entomologists throughout the country.

The two main study areas of Taecheon, Chungchongnam-do and Hongchon, Kangweon-do were selected because of their degree of infestation by the gall midge and other factors. Since it has now been realized that the ecosystem of a given area should be investigated thoroughly for its better management, the insect fauna of the study sites was investigated by the combined team, although it would have been better if this had been done at the very beginning of the original studies. Through this investigation, it was hoped to learn the role of natural enemies of the pine gall midge in the ecosystem. Mainly because of time and seasonal limitations for the survey and limited time for identification, only a preliminary list of selected insect groups of insect fauna given on the following pages. Weevils and spiders of the survey being treated in separated papers, and ants have been reported by OGATA et al. (1985).

We wish to express our sincere gratitude to Director Yeun-Pyo KIM and entomologists of Forest Research Institute, and for the personnel of the Kangweon-do Forest Experiment Station for their help in various ways. We are also indebted to Dr. S. TSUKAGUCHI of the University of Osaka Prefecture, Dr. O. TADAUCHI of Kyushu University and Dr. M. ITO of Wakkanai City for their kind identification of Neuroptera and Apoidea. Our appreciation also goes to Prof. Y. H. SHIN of Kyung Hee University who kindly checked the list of Lepidoptera in this paper.

1) Supported by a grant (1983-'84) from the Japan Society for the Promotion of Science, Tokyo (Principal investigators : T. MIURA and J. H. Ko).

* Laboratory of Insect Management, Faculty of Agriculture, Shimane University, Matsue, Shimane 690, Japan.

** Laboratory of Applied Entomology, Faculty of Agriculture, Yamaguchi University, Yamaguchi, Yamaguchi 753, Japan.

*** Division of Forest Entomology, Forest Research Institute, Seoul, Korea.

Materials and Methods

1. Study sites and dates surveyed

The surveys of insect fauna were made at sites where other surveys of the pine gall midge were carried out (MIURA et al., 1985). Occasional collections were also made at several other sites. As stated, study sites were selected based on the degree and history of infestation by the pine gall midge. The pine stands of these study sites are presumed to be natural and consist of red pine (*Pinus densiflora* SIEB. et ZUCC.). Locations and dates are described below. Abbreviations used for methods (PS, P, HS, H) are described in the next section. Only the first word of the locality name described is used in the text. In related papers on these cooperative studies, the following study sites were described where the present collections were also made: Sites I-1, 2 and Sites D-1, 2 in LEE et al. (1985), and Sites A and B in JEON et al. (1985). These sites are identified in parentheses in the following lists. Abbreviations used for the collectors are: TM (T. MIURA), YM (Y. MAETA), KY (K. YANO).

Taechon area

Taechon, Poryong-gun, Chungchongnam-do (Sites D-2 and A)

May 13, 1983, T. MIURA (HS); July 7, 1983, T. MIURA (HS); November 3, 1983, K.

YANO (P); June 14, 1984, T. MIURA (PS, HS); June 14, 1984, K. YANO (P, H); September 6, 1984, Y. MAETA (PS, HS); November 3, 1984, Y. MAETA (PS, HS).

Kwanchang-ri, Jupo-myon, Poryong-gun, Chungchongnam-do

November 3, 1983, K. YANO (P)

Hwasong, Chongyang-gun, Chungchongnam-do (Site D-1)

June 14, 1984, T. MIURA (PS, HS); June 14, 1984, K. YANO (H); September 6, 1984, Y. MAETA (PS, HS); November 3, 1984, Y. MAETA (PS, HS).

Pibong, Chongyang-gun, Chungchongnam-do (Site I-2)

June 14, 1984, T. MIURA (PS, HS); June 14, 1984, K. YANO (HS, H); September 6, 1984, Y. MAETA (PS, HS); November 2, 1984, Y. MAETA (PS, HS).

Kwangsi, Yesan-gun, Chungchongnam-do (Site I-1)

June 14, 1984, T. MIURA (PS, HS); June 14, 1984, K. YANO (HS, H); September 6, 1984, Y. MAETA (PS, HS); November 2, 1984, Y. MAETA (PS, HS).

Hongchon area

Hongchon, Hongchon-gun, Kangweon-do

Two stands of pine forests were selected and are indicated as Hongchon-S and Hongchon-M in the text. Stand S was severely infested by the pine gall midge and stand M was moderately so.

May 12, 1983, T. MIURA (HS); June 19-20, 1983, T. MIURA (PS, HS); July 10, 1983, T. MIURA (PS, HS); June 18-20, 1984, K. YANO (HS, H); September 4, 1984, Y. MAETA (PS, HS); November 1, 1984, Y. MAETA (PS, HS).

Duchon-myon, Hongchon-gun Kangweon-do

- November 8, 1983, K. YANO (P, H).
Himang-ri, Hongchon-myon, Hongchon-gun, Kangweon-do (Site B)
November 8, 1983, K. YANO (P)
Sinnam-ri, Nam-myon, Inje-gun, Kangweon-do
November 8, 1983, K. YANO (P)
Gungok, Migum, Namyangju-gun, Kyonggi-do
November 7, 1983, K. YANO (P)

2. Survey methods

Specimens examined here were collected by the following four methods :

A. Regular sweeping of pine trees (PS)

Fifty sweepings using an insect net (diameter : 42 cm) were made in pine trees. This collecting was done from the ground, so the canopy of pine stands was generally not covered when the trees were tall.

B. Occasional collecting of pine trees (P)

Occasional collecting in pine trees was made generally using an insect net.

C. Regular sweeping of herbs and shrubs in pine stands (HS)

Fifty sweepings using an insect net (diameter : 42 cm) were made in the herbs and shrubs in the study sites. This collecting covers all vegetation except pine trees.

D. Occasional collecting of herbs and shrubs in pine stands (H)

Occasional collecting in herbs and shrubs in pine stands was made generally by using an insect net. Flying insects above and between these plants were also collected except for those close to pine branches.

Collections made by these methods, especially regular sweepings (PS) in bad weather conditions, included many damaged specimens as well as immature stages which were difficult to identify.

Among the study sites listed in section 1, vegetation of the following four sites was investigated in June and July 1983 : Taechon-I, Taechon-II, Hongchon-S and Hongchon-M. Four quadrats (100 m² each) were established in each site, and all pine trees and other trees of lower strata were counted and the coverage of pine trees was measured. This vegetation survey was made to determine the relationship between vegetation and insect fauna, including the pine gall midge. The results of this vegetation survey, however, are not presented here because of the still incomplete identification of some insect specimens thereby making substantial discussion infeasible.

Results

1. Insects found on pine trees

Insects found on pine trees, collected by either regular sweeping (PS) or occasional collecting (P), are enumerated here.

THYSANURA

Machilidae

Pedetontus nipponicus SILVESTRI, 4 exx., Hongchon-M, 4. ix. 1984, YM (PS).

ODONATA

Lestidae

Sympetma paedisca BRAUER, 1 ex., Duchon-myon, 8. xi. 1983, KY (P)

Libellulidae

Sympetrum flaveolum flaveolum LINNAEUS, 2 exx., Duchon-myon, 8. xi. 1983, KY (P).

Sympetrum risi risi BARTENEFF, 1 ex., Taechon, 3. xi. 1983, KY (P).

Sympetrum eroticum eroticum SELYS, 2 exx., Duchon-myon, 8. xi. 1983, KY (P).

ORTHOPTERA

Trigonidiidae

Paratrigonidium bifasciatum SHIRAKI, 1 ex., Hongchon-M, 4. ix. 1984, YM (PS); 2 exx., Hongchon-S, 4. ix. 1984, YM (PS); 3 exx., Taechon, 6. ix. 1984, YM (PS); 1 ex., Pibong, 6. ix. 1984, YM (PS); 6 exx., Hwasong, 6. ix. 1984, YM (PS).

Tettigoniidae

Phaneroptera falcata PODA, 1 ex., Taechon, 3. xi. 1983, KY(S); 1 ex., 1 nymph, Hongchon-M, 4. ix. 1984, YM (PS).

PSOCOPTERA

Psocidae

Metylophorus nebulosus STEPHENS, 1 ex., Taechon, 14. vi. 1984, KY (P).

HEMIPTERA

Cercopidae

Tilophora flavipes UHLER, 4 exx., Taechon, 3. xi. 1983, KY (P); 1 ex., Hongchon-M, 10. vii. 1983, TM (PS); 1 ex., Hwasong, 3. xi. 1984, YM (PS); 1 ex., Hongchon-S, 4. ix. 1984, YM (PS); 1 ex., Kwangsi, 6. ix. 1984, YM (PS); 4 exx., Pibong, 6. ix. 1984, YM (PS).

Euclovia okadai MATSUMURA, 1 ex., Sinnam-ri, 8. xi. 1983, KY (P).

Deltocephalidae

Futasujinus candidus MATSUMURA, 1 ex., Kwangsi, 14. vi. 1984, TM (PS).

Delphacidae

Sogatella furcifera HORVÁTH, 1 ex., Hongchon-S, 4. ix. 1984, YM (PS).

Tropiduchidae

Ommatissus lofuensis MUIR, 1 ex., 1 nymph, Hongchon-M, 4. ix. 1984, YM (PS).

Psyllidae

Anomoneura mori SCHWARZ, 5 exx., Hongchon-M, 19. vi. 1984, TM (PS).

Psylla sp. (nr. *hexastigma* HORVÁTH), 3 exx., Gumgok, 7. xi. 1983, KY (P).

Aphididae

Cinara piniformosana TAKAHASHI, 35 nymphs, Taechon, 14. vi. 1984, TM (PS). 122 nymphs, Hwasong, 14. vi. 1984, TM (PS); 130 nymphs, Pibong, 14. vi. 1984, TM (PS).

Reduviidae

Sphedanolestes impressicollis SCOTT, 1 ex., Pibong, 14. vi. 1984, TM (PS); 1 nymph, Kwangsi, 6. ix. 1984, TM (PS).

Himacerus apterus FABRICIUS, ex., Taechon, 6. ix. 1984, YM (PS).

Tingidae

Stephanitis pyrioides SCOTT, 2 exx., Pibong, 14. vi. 1984, TM (PS).

Plataspidae

Coptosoma biguttulum MOTSCHULSKY, 1 ex., Hongchon-M, 10. vii. 1983, TM (PS).

Miridae

Lygus sp., 5 exx., Sinnam-ri, 8. xi. 1983, KY (P).

NEUROPTERA

Hemerobiidae

Eumicromus numerosus (NAVAS), 2 exx., Taechon, 3. xi. 1983, KY (P); 1 ex., Hwasong, 3. xi. 1984, YM (PS); 1 ex., Hongchon-M, 4. ix. 1984, YM (PS).

Hemerobius harmandinus NAVAS, 1 ex., Taechon, 14. vi. 1984, TM (PS); 1 ex., Pibong, 14. vi. 1984, TM (PS); 3 exx., Taechon, 14. vi. 1984, KY (P); 2 exx., Hongchon-M, 19. vi. 1984, TM (PS); 3 exx., Taechon, 14. vi. 1984, KY (P); 2 exx., Hongchon-M, 19. vi. 1984, TM (PS); 1 ex., Pibong, 6. ix. 1984, YM (PS).

Symphorobius tessellatus NAKAHARA, 1 ex., Hwasong, 6. ix. 1984, YM (PS).

Chrysopidae

Chrysoperla carnea (STEPHENS), 1 ex., Taechon, 3. xi. 1983, KY (P).

Chrysoperla furcifera (OKAMOTO), 1 ex., Taechon, 3. xi. 1983, KY (P).

LEPIDOPTERA

Tortricidae

Archips breviplicanus WALSINGHAM, 1 ex., Taechon, 6. ix. 1984, YM (PS).

Pyralidae

Udea ferrugalis HÜBNER, 1 ex., Taechon, 3. xi. 1983, KY (P).

DIPTERA

Cecidomyiidae

Thecodiplosis japonensis UCHIDA et INOUE, 5 exx., Hongchon-M, 19. vi. 1984, TM (PS); 3 exx., Hwasong, 14. vi. 1984, TM (PS)..

Asilidae

Cophinopoda chinensis FABRICIUS, 1 ex., Hongchon-S, 10. vii. 1983, TM (PS).

Syrphidae

Sphaerophoria macrogaster (THOMSON), 1 ex., Pibong, 14. vi. 1984, TM (PS); 1 ex., Taechon, 14. vi. 1984, KY (P).

Episyrphus balteatus (de GEER), 1 ex., Taechon, 3. xi. 1983, KY (P); 1 ex., Hongchon-M, 4. ix. 1984, YM (PS).

Sciomyzidae

Sepedon aenescens WIEDEMANN, 3 exx., Sinnam-ri, 8. xi. 1983, KY (P).

Calliphoridae

Calliphora lata COQUILLET, 1 ex., Himang-ri, 8. xi. 1983, KY (P).

COLEOPTERA

Harpalidae

Lebidia acroguttata MORAWITZ, 1 ex., Hongchon-S, 19. vi. 1984, TM (PS).

Buprestidae

Agrilus spp., 1 ex., Hwasong, 14. vi. 1984, TM (PS); 1 ex., Kwangsi, 14. vi. 1984, TM

(PS) ; 1 ex., Hongchon-S, 19. vi. 1984, TM (PS).

Coccinellidae

Harmonia axyridis PALLAS, 1 ex., Taechon, 14. vi. 1984, TM(PS) ; 1 ex., Kwangsi, 14. vi. 1984, TM (PS) ; 2 exx., Taechon, 14. vi. 1984, KY (P) ; 1 ex., Taechon, 3. xi. 1984, TM (PS).

Calvia quatuordecimguttata LINNAEUS, 1 ex., Hongchon-S, 19. vi. 1984, TM (PS) ; 1 ex., Taechon, 3. xi. 1984, TM (PS).

Calvia sp. (nr. *quatuordecimguttata* LINNAEUS), 1 ex., Hwasong, 14. vi. 1984, TM (PS) ; 1 ex., Pibong, 14. vi. 1984, TM (PS).

Menochilus sp. (nr. *sexmaculatus* FABRICIUS), 1 ex., Taechon, 3. xi. 1984, TM (PS).

Chilocorus kuwanae SILVESTRI, 1 ex., Taechon, 3. xi. 1984, TM (PS).

Synharmonia hirayamai YUASA, 1 ex., Hongchon-S, 4. ix. 1984, YM (PS).

Amatis halonis LEWIS, 1 ex., Kwangsi, 6. ix. 1984, YM (PS).

Scymnus spp., 4 exx., Taechon, 14. vi. 1984, TM (PS) ; 2 exx., Kwangsi, 14. vi. 1984, TM (PS) ; 2 exx., Hongchon-S, 19. vi. 1984, TM (PS) ; 1 ex., Hongchon-M, 10. vii. 1983, TM (PS) ; 1 ex., Hongchon-S, 4. ix. 1984, YM (PS).

Scarabaeidae

Rhomborrhina japonica HOPE, 1 ex., Hongchon-S, 10. vii. 1983, TM (PS).

Anomala testaceipes MOTSCHULSKY, 2 exx., Hongchon-S, 10. vii. 1983, TM (PS).

Trichius succinctus PALLAS, 3 exx., Hongchon-S, 10. vii. 1983, TM (PS).

Chrysomelidae

Colasposoma dauricum MANNERHEIM, 1 ex., Taechon, 14. vi. 1984, TM (PS).

Agelastica coerulea BALY, 1 ex., Kwangsi, 14. vi. 1984, TM (PS).

A total of 46 species belonging to 30 families of 9 orders are listed here except for ants, parasitic Hymenoptera and unidentified species. Twenty-two species among those listed were found on pine trees only, and others were collected in the herbs and shrubs in the pine stands.

Of the species enumerated above, several are considered predaceous insects. The number of such species is shown in parentheses : Odonata—Lestidae (1), Libellulidae (3) ; Hemiptera—Reduviidae (2) ; Neuroptera—Hemerobiidae (3), Chrysopidae (2) ; Diptera—Syrphidae (2) ; Coleoptera—Harpalidae (1), Coccinellidae (6).

2. Insects found in the herbs and shrubs in pine stands

Insects collected by both regular sweeping (HS) and occasional collecting (H) in herbs and shrubs in pine stands are enumerated here.

ODONATA

Agrionidae

Cercion hieroglyphicum BRAUER, 1 ex., Taechon, 7. vii. 1983, TM (HS).

Lestidae

Sympetma paedisca BRAUER, 1 ex., Hongchon-S, 4. ix. 1984, YM (HS).

Libellulidae

Sympetrum infuscatum SELYS, 2 exx., Taechon, 14. vi. 1984, KY (H) ; 1 ex., Hwasong, 14. vi. 1984, KY (H).

DICTYOPTERA

Blatellidae

Blatella nipponica Asahina, 4 exx., Taechon, 7. vii. 1983, TM (HS).

ORTHOPTERA

Gryllidae

Velarifictorus parvus CHOPARD, 1 ex., Pibong, 6. ix. 1984, YM (HS).

Trigonidiidae

Paratrigonidium bifasciatum SHIRAKI, 1 ex., Kwangsi, 14. vi. 1984, KY (H); 1 ex., Hongchon-M, 19. vi. 1984, KY (HS); 1 ex., Pibong, 14. vi. 1984, KY (HS); 3 exx., Kwangsi, 14. vi. 1984, KY (HS); 2 exx., Taechon, 6. ix. 1984, YM (HS); 1 ex., Kwangsi, 6. ix. 1984, YM (HS); 1 ex., Kwangsi, 6. ix. 1984, YM (HS); 1 ex., Taechon, 6. ix. 1984, YM (HS); 2 exx., Pibong, 6. ix. 1984, YM (HS); 2 exx., Pibong, 6. ix. 1984, YM (HS); 2 exx., Hwasong, 6. ix. 1984, YM (HS); 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Phaneroptera falcata PODA, 1 ex., Hongchon-S, 4. ix. 1984, YM (HS).

Tettigoniidae

Conocephalus gladius REDTENBACHER, 1 ex., Kwangsi, 6. ix. 1984, YM (HS); 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Locustidae

Atractomorpha bedeli BOLIVAR, 1 ex., Pibong, 6. ix. 1984, YM (HS).

DERMAPTERA

Psalididae

Anechura japonica BORMANS, 3 exx., Hongchon-S, 20. vi. 1984, KY (HS); 1 ex., Hongchon-M, 19. vi. 1984, KY (HS).

PSOCOPTERA

Psocidae

Metylophorus nebulosus STEPHENS, 1 ex., Pibong, 14. vi. 1984, TM (HS); 1 ex., Kwangsi, 14. vi. 1984, TM (HS); 1 ex., Hwasong, 14. vi. 1984, TM (HS); 3 exx., Pibong, 14. vi. 1984, KY (HS).

HEMIPTERA

Cicadidae

Leptopsalta admirabilis KATO, 1 ex., Hongchon-S, 19. vi. 1984, KY (HS).

Membracidae

Machaerotypus sibiricus LETHIERRY, 1 ex., Hongchon-M, 19. vi. 1984, KY (HS).

Cercopidae

Tilophora flavipes UHLER, 1 ex., Hongchon-S, 10. vii. 1983, TM (HS); 3 exx., Taechon, 7. vii. 1983, TM (HS); 3 exx., Hongchon-M, 10. vii. 1983, TM (HS); 2 exx., Taechon, 3. xi. 1984, YM (HS); 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Euclovia okadai MTASUMURA, 1 ex., Taechon, 14. vi. 1984, TM (HS); 1 ex., Hongchon-S, 20. vi. 1984, KY (HS); 2 exx., Hwasong, 3. xi. 1984, YM (HS); 3 exx., Hongchon-S, 4. ix. 1984, YM (HS); 8 exx., Pibong, 6. ix. 1984, YM (HS); 2 exx., Pibong, 6. ix. 1984, YM (HS); 7 exx., Hwasong, 6. ix. 1984, YM (HS).

Petaphora maritima MATSUMURA, 1 ex., Taechon, 7. vii. 1983, TM (HS).

Yezophora flavomaculata MATSUMURA, 1 ex., Hongchon-S, 19. vi. 1984, KY (HS); 1 ex., Hongchon-M, 20. vi. 1984, KY (HS).

Tettigellidae

Kolla atramentaria MOTSCHULSKY, 1 ex., Taechon, 13. v. 1983, TM (HS).

- Mileewa margheritae* DISTANT, 1 ex., Hongchon-M, 20. vi. 1984, KY (HS).
Tettigela viridis LINNAEUS, 3 exx., Hwasong, 3. xi. 1984, YM (HS).
Bothrogonia japonica ISHIHARA, 1 ex., Hongchon-S, 4 ix. 1984, YM (HS); 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Cicadellidae

- Naratettix zonatus* MATSUMURA, 5 exx., Hongchon-S, 10. vii. 1983, TM (HS).
Arboridia suzukii MATSUMURA, 1 ex., Taechon, 7. vii. 1983, TM (HS).
Erythroneura limbata MATSUMURA, 2 exx., Taechon, 6. ix. 1984, YM (HS).

Drabescidae

- Drabescus* spp., 1 ex., Hongchon-S, 10. vii. 1983, TM (HS); 1 ex., Hongchon-M, 10. vii. 1983, TM (HS); 1 ex., Hongchon-S, 19. vi. 1984, KY (HS).

Xestocephalidae

- Xestocephalus* sp. (nr. *iguchii* MATSUMURA), 1 ex., Taechon, 7. vii. 1983, TM (HS).

Aphrodidae

- Parabolocratius* sp. (nr. *lineatus* HORVÁTH), 1 ex., Hwasong, 14. vi. 1984, TM (HS).

Deltocephalidae

- Futasujinus candidus* MATSUMURA, 1 ex., Hongchon-S, 10. vii. 1983, TM (HS); 5 exx., 1 nymph, Taechon, 14. vi. 1984, TM (HS); 1 ex., Hwasong, 14. vi. 1984, TM (HS); 2 exx., Taechon, 7. vii. 1983, TM (HS).
Yanocephalus yanoi MATSUMURA, 1 ex., Taechon, 14. vi. 1984, TM (HS); 7 exx., Hwasong, 14. vi. 1984, TM (HS); 2 exx., Pibong, 6. ix. 1984, YM (HS); 3 exx., Pibong, 6. ix. 1984, YM (HS); 1 ex., Hwasong, 6. ix. 1984, YM (HS).
Yanocephalus sp. (nr. *yanoi* MATSUMURA), 1 ex., Pibong, 14. vi. 1984, TM (HS).
Handianus limbifer MATSUMURA, 1 ex., Taechon, 7. vii. 1983, TM (HS).
Erotettix cyane BOHEMAN, 1 ex., Taechon, 7. vii. 1983, TM (HS).
Inemadara oryzae MATSUMURA, 1 ex., Taechon, 7. vii. 1983, TM (HS); 8 exx., Taechon, 13. v. 1983, TM (HS).
Balclutha viridis (MATSUMURA), 3 exx., Taechon, 7. vii. 1983, TM (HS); 2 exx., Taechon, 13. v. 1983, TM (HS); 1 ex., Pibong, 6. ix. 1984, YM (HS).
Phlogotettix cyclops MULSANT et REY, 1 ex., Taechon, 7. vii. 1983, TM (HS); 1 ex., Hongchon-S, 4. ix. 1984, YM (HS).
Deltocephalus sp., 4 exx., Hongchon-S, 12. v. 1983, TM (HS).

Fulgoridae

- Trypetimorpha japonica* ISHIHARA, 1 ex., Kwangsi, 6. ix. 1984, YM (HS); 2 exx., Hwasong, 6. ix. 1984, YM (HS); 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Delphacidae

- Sogatella furcifera* HORVÁTH, 1 ex., Taechon, 7. vii. 1983, TM (HS); 1 ex., Hongchon-S, 4. ix. 1984, YM (HS); 1 ex., Taechon, 6. ix. 1984, YM (HS); 1 ex., Taechon, 6. ix. 1984, YM (HS).
Sogatella sp., 1 ex., Hwasong, 14. vi. 1984, TM (HS).
Sogatella longifurcifera (ESAKI et ISHIHARA), 1 ex., Pibong, 6. ix. 1984, YM (HS).
Delphacodes striatella FALLÉN, 1 ex., Kwangsi, 6. ix. 1984, YM (HS); 2 exx., 6. ix. 1984, YM (HS); 2 exx., Pibong, 6. ix. 1984, YM (HS); 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Cixiidae

- Oliarus quadricinctus* MATSUMURA, 1 ex., Hongchon-S, 10. vii. 1983, TM (HS); 1 ex.,

Taechon, 7. vii. 1983, TM (HS).

Tropiduchidae

Ommatissus lofuensis MUIR, 2 exx., Hongchon-M, 4. ix. 1984, YM (HS) ; 4 exx., Hongchon-S, 4. ix. 1984, YM (HS) ; 25 exx., 1 nymph, Hongchon-M, 4. ix. 1984, YM (HS) ; 19 exx., Hongchon-S, 4. ix. 1984, YM (HS) ; 2 exx., Pibong, 6. ix. 1984, YM (HS).

Ricaniidae

Ricania taeniata STÅL, 14 exx., Hwasong, 6. ix. 1984, YM (HS) ; 2 exx., Hwasong, 6. ix. 1984, YM (HS).

Aphididae

Ceratovacuna lanigera ZEHNTNER, 1 ex., Hongchon-M 19. vi. 1984, KY (HS).

Anthocoridae

Anthocoris sp. (nr. *chibi* HIURA), 1 ex., Taechon, 14. vi. 1984, TM (HS).

Orius sauteri POPPIUS, 1 ex., Hongchon-M, 10. vii. 1983, TM (HS).

Miridae

Adelphocoris sp., 1 ex., Hongchon-S, 19. vi. 1984, KY (HS).

Lygus sp., 1 ex., Hongchon-M, 19. vi. 1984, KY (HS).

Nabidae

Nabis stenoferus HSIAO, 1 ex., Taechon, 7. vii. 1983, TM (HS).

Reduviidae

Sphedanolestes impressicollis STÅL, 1 ex., Hongchon-M, 10. vii. 1983, TM (HS) ; 1 ex., Hwasong, 14. vi. 1984, KY (HS) ; 1 ex., Kwangsi, 14. vi. 1984, KY (HS) ; 1 ex., Kwangsi, 6. ix. 1984, YM (HS) ; 2 nymphs, Kwangsi, 6. ix. 1984, YM (HS) ; 1 nymph, Hwasong, 6. ix. 1984, YM (HS).

Tingidae

Galeatus spinifrons FALLÉN, 1 ex., Pibong, 14. vi. 1984, TM (HS) ; 1 ex., Hwasong, 14. vi. 1984, TM (HS) ; 1 ex., Taechon, 13. v. 1983, TM (HS).

Stephanitis pyrioides SCOTT, 12 exx., Pibong, 14. vi. 1984, TM (HS) ; 1 ex., Taechon, 7. vii. 1983, TM (HS) ; 4 exx., Taechon, 14. vi. 1984, TM (HS) ; 22 exx., Hwasong, 14. vi. 1984, TM (HS) ; 2 exx., Kwangsi, 14. vi. 1984, TM (HS) ; 16 exx., Pibong, 14. vi. 1984, KY (HS) ; 1 ex., Kwangsi, 14. vi. 1984, KY (HS) ; 2 exx., Hongchon-S, 4. ix. 1984, YM (HS) ; 1 ex., Pibong, 6. ix. 1984, YM (HS) ; 1 ex., Hwasong, 6. ix. 1984, YM (HS) ; 2 exx., Hwasong, 6. ix. 1984, YM (HS).

Agramma nexilis DRAKE, 1 ex., Taechon, 14. vi. 1984, TM (HS).

Uhlerites latius TAKEYA, 1 ex., Hongchon-M, 4. ix. 1984, YM (HS).

Lygaeidae

Gastrodes japonicus STÅL, 1 ex., Taechon, 7. vii. 1983, TM (HS).

Nysius plebejus DISTANT, 9 exx., Taechon, 13. v. 1983, TM (HS).

Berytidae

Yemma exilis HORVÁTH, 7 exx., Taechon, 7. vii. 1983, TM (HS) ; 4 exx., Taechon, 13. v. 1983, TM (HS) ; 1 ex., Hongchon-M, 10. vii. 1983, TM (HS) ; 1 ex., Taechon, 3. xi. 1984, YM (HS).

Coreidae

Homoeocerus dilatulus HORVÁTH, 1 ex., Pibong, 14. vi. 1984, TM (HS) ; 2 exx., 14. vi. 1984, TM (HS) ; 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Homocercus unipunctatus THUNBERG, 1 ex., Kwangsi, 6. ix. 1984, YM (HS).

Plataspidae

Coptosoma biguttulum MOTSCHULSKY, 2 exx., Kwangsi, 14. vi. 1984, TM (HS) ; 2 exx., Hongchon-S, 10. vii. 1983, TM (HS) ; 13 exx., Hongchon-M, 10. vii. 1983, TM (HS) ; 4 exx., Hongchon-S, 19. vi. 1984, TM (HS) ; 1 ex., Hongchon-M, 19. vi. 1984, TM (HS) ; 3 exx., Hongchon-M, 20. vi. 1984, TM (HS) ; 7 exx., Hongchon-S, 19. vi. 1984, KY (HS) ; 12 exx., Hongchon-S, 20. vi. 1984, KY (HS) ; 2 exx., Hongchon-M, 19. vi. 1984, KY (HS).

NEUROPTERA

Hemerobiidae

Eumicromus numerosus (NAVAS), 1 ex., Taechon, 3. xi. 1984, YM (HS) ; 1 ex., Taechon, 6. ix. 1984, YM (HS) ; 1 ex., Kwangsi, 6. ix. 1984, YM (HS) ; 1 ex., Pibong, 6. ix. 1984, YM (HS).
Pseudomicromus anglatus (STEPHENS), 1 ex., Hwasong, 14. vi. 1984, TM (HS) ; 1 ex., Hwasong, 14. vi. 1984, KY (H) ; 1 ex., Taechon, 3. xi. 1984, YM (HS).
Sympherobius tessellatus NAKAHARA, 1 ex., Hwasong, 14. vi. 1984, TM (HS).

Chrysopidae

Chrysopa septempunctata WESMAEL, 1 ex., Taechon, 6. ix. 1984, YM (HS).
Chrysoperla carnea (STEPHENS), 2 exx., Taechon, 3. xi. 1984, YM (HS).
Chrysoperla furcifera (OKAMOTO), 1 ex., Taechon, 7. vii. 1983, TM (HS).

Myrmeleontidae

Glenuroides japonicus (MACLACHLAN), 1 ex., Pibong, 14. vi. 1984, KY (H).

LEPIDOPTERA

Sesiidae

Zenodoxus sp., 1 ex., Hongchon-S, 20. vi. 1984, KY (HS).

Tortricidae

Epiblema expressana (CHRISTOPH), 1 ex., Hongchon-M, 18. vi. 1984, KY (H).
Olethreutes captiosana (FALKOVITSCH), 1 ex., Hongchon-S, 19. vi. 1984, KY (H).
Olethreutes aurofasciana (HAWORTH), 1 ex., Hongchon-M, 20. vi. 1984, KY (H).
Eucosma metzueriana (TREITSCHKE), 1 ex., Hongchon-M, 18. vi. 1984, KY (H).
Ancylis kenneli KUZNETZOV, 1 ex., Hongchon-M, 20. vi. 1984, KY (H).

Thyrididae

Rhodoneura vittula GUENÉE, 1 ex., Hwasong, 14. vi. 1984, KY (H).

Pyralidae

Pleuroptya quadrimacularis (KOLLAR), 1 ex., Hongchon-M, 20. vi. 1984, KY (H).
Notarcha derogata (FABRICIUS), 1 ex., Hongchon-S, 19. vi. 1984, KY (H).
Uresipita gracilis (BUTLER), 2 exx., Hongchon-S, 19. vi. 1984, KY (H) ; 1 ex., Hongchon-M, 20. vi. 1984, KY (H).
Ostrinia zealis bipatrialis MUTUURA et MUNROE, 1 ex., Hongchon-S, 19. vi. 1984, KY (H).
Nacoleia maculalis SOUTH, 1 ex., Hongchon-S, 19. vi. 1984, KY (H).
Pileocera sodalis (LEECH), 1 ex., Hwasong, 14. vi. 1984, KY (H).
Anania verbascalis egentalis (CHRISTOPH), 1 ex., Hongchon-S, 19. vi. 1984, KY (H) ; 1 ex., Hongchon-M, 19. vi. 1984, KY (H) ; 1 ex., Hwasong, 14. vi. 1984, KY (H).
Crambus sp., 1 ex., Taechon, 6. ix. 1984, YM (HS).

Pterophoridae

Oidaematophorus lienigianus (ZELLER), 1 ex., Hongchon-S, 19. vi. 1984, KY (H) ; 2 exx.,

Hongchon-M, 19. vi. 1984, KY (H).

Oidaematophorus ishiyamanus (MATSUMURA), 2 exx., Hongchon-S, 19. vi. 1984, KY (H).

Zygaenidae

Rhagades pruni (DEN. et SCHIFF.), 1 ex., Hongchon-S, 20. vi. 1984, KY (H).

Drepanidae

Agnidra scabiosa (BUTLER), 1 ex., Kwangsi, 14. vi. 1984, KY (H) ; 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Geometridae

Angerona prunaria (LINNAEUS), 1 ex., Hongchon-M, 18. vi. 1984, KY (H).

Zethenia rufescentaria MOTSCHULSKY, 1 ex., Hongchon-M, 19. vi. 1984, KY (H).

Idea impexa (BUTLER), 1 ex., Kwangsi, 14. vi. 1984, KY (H).

Scopula sp., 2 exx., Hwasong, 14. vi. 1984, KY(H) ; 1 ex., Hongchon-M, 19. vi. 1984, KY (H) ; 2 exx., Hongchon-M, 20. vi. 1984, KY (H).

Scopula sp., 1 ex., Hongchon-M, 18. vi. 1984, KY (H).

Scopula sp., 1 ex., Hongchon-S, 19. vi. 1984, KY (H) ; 1 ex., Pibong, 14. vi. 1984, KY (H).

Hemithea aestivaria (HÜBNER), 1 ex., Pibong, 14. vi. 1984, KY (H).

Asthena nymphaeata (Staudinger), 2 exx., Hongchon-S, 19. vi. 1984, KY (H) ; 1 ex., Hongchon-M, 19. vi. 1984, KY (H).

Lymantriidae

Arctornis album (BREMER), 1 ex., Hongchon-M, 18. vi. 1984, KY (H) ; 1 ex., Hongchon-M, 19. vi. 1984, KY (H) ; 1 ex., Hongchon-S, 19. vi. 1984, KY (H) ; 1 ex., Hongchon-M, 20. vi. 1984, KY (H).

Arctornis sp., 1 ex., Hongchon-S, 19. vi. 1984, KY (HS).

Euproctis similis (FUESELY), 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Euproctis sp., 2 exx., Kwangsi, 14. vi. 1984, KY (H).

Arctiidae

Stigmatophora flava (BREMER et GREY), 1 ex., Pibong, 14. vi. 1984, KY (H).

Eilema nankingica (DANIEL), 1 ex., Kwangsi, 14. vi. 1984, KY (H).

Noctuidae

Chrysothrum amatum (BREMER et GREY), 1 ex., Hongchon-S, 18. vi. 1984, KY (H).

Mocis annetta (BUTLER), 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Edessena hamada (FELDER et ROGENHOFER), 1 ex., Hongchon-S, 19. vi. 1984, KY (H) ; 1 ex., Hongchon-S, 20. vi. 1984, KY (H).

Zanclognatha lunalis (SCOPOLI), 1 ex., Hongchon-S, 19. vi. 1984, KY (H) ; 1 ex., Hongchon-M, 19. vi. 1984, KY (H).

Rivula curvifera WALKER, 1 ex., Hongchon-M, 19. vi. 1984, KY (H).

Rhynchina cramboides (BUTLER), 1 ex., Kwangsi, 14. vi. 1984, KY (H).

Hesperiidae

Lobocla bifasciata (BREMER et GREY), 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Pieridae

Artogeia melete MÉNÉTRIÈS, 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Artogeia rapae mandschurica (SPEYER), 2 exx., Hwasong, 14. vi. 1984, KY (H) ; 1 ex., Kwangsi, 14. vi. 1984, KY (H) ; 1 ex., Taechon, 14. vi. 1984, KY (H).

Nymphalidae

- Neptis alwina* (BREMER et GREY), 1 ex., Pibong, 14. vi. 1984, KY (H).
Neptis sappho intermedia W. B. PRYER, 1 ex., Pibong, 14. vi. 1984, KY (H).
Neptis pryeri BUTLER, 1 ex., Hongchon-M, 20. vi. 1984, KY (H).
Speyeria aglaja fortuna (JANSON), 1 ex., Hongchon-S, 19. vi. 1984, KY (H).
Fabriciana adippe vorax (BUTLER), 1 ex., Hongchon-S, 19. vi. 1984, KY (H).
Brenthis ino amurensis (STAUDINGER), 1 ex., Hongchon-S, 19. vi. 1984, KY (H); 2 exx.,
 Hongchon-S, 20. vi. 1984, KY (H); 4 exx., Hongchon-M, 18. vi. 1984, KY (H); 1
 ex., Hongchon-M, 19. vi. 1984, KY (H).
Mellicta athalia ambigua (MÉNÉTRIÈS), 3 exx., Hongchon-M, 19. vi. 1984, KY (H); 1 ex.,
 Hongchon-M, 20. vi. 1984, KY (H).

Satyridae

- Coenonympha oedippus amurensis* RÜHL, 1 ex., Kwangsi, 14. vi. 1984, KY (H); 1 ex.,
 Pibong, 14. vi. 1984, KY (H).
Ypthima motschulskyi BREMER et GREY, 1 ex., Kwangsi, 14. vi. 1984, KY (H).
Mycalesis gotama gotama MOORE, 3 exx., Hwasong, 14. vi. 1984, KY (H).
Pararge achine chosensis MATSUMURA, 1 ex., Hongchon-M, 18. vi. 1984, KY (H); 1 ex.,
 Hongchon-M, 20. vi. 1984, KY (H); 1 ex., Hongchon-S, 19. vi. 1984, KY (H); 1
 ex., Hongchon-S, 20. vi. 1984, KY (H).

DIPTERA

Cecidomyiidae

- Thecodiplosis japonensis* UCHIDA et INOUE, 6 exx., Pibong, 14. vi. 1984, TM (HS); 44 exx.,
 Hongchon-S, 10. vii. 1983, TM (HS); 21 exx., Hongchon-M, 10. vii. 1983, TM (HS); 2
 exx., Hongchon-M, 20. vi. 1984, KY (HS); 4 exx., Pibong, 14. vi. 1984, KY (HS).

Stratiomyidae

- Ptecticus tenebrifer* WALKER, 4 exx., Hongchon-S, 19. vi. 1984, KY (H).

Solvidae

- Solva maculata* MEIGEN, 1 ex., Hongchon-S, 19. vi. 1984, KY (HS).

Tabanidae

- Tabanus* spp., 1 ex., Hwasong, 6. ix. 1984, YM (HS); 1 ex., Hongchon-S, 19. vi. 1984, TM
 (HS).

Asilidae

- Neoitamus angusticornis* LOEW, 1 ex., Hongchon-M, 20. vi. 1984, KY (HS); 1 ex., Pibong,
 14. vi. 1984, KY (H).

Dolichopodidae

- Psilopus nebulosus* MATSUMURA, 2 exx., Taechon, 14. vi. 1984, TM (HS).

Syrphidae

- Sphaerophoria macrogaster* (THOMSON), 1 ex., Taechon, 14. vi. 1984, TM (HS); 12 exx.,
 Hwasong, 14. vi. 1984, TM (HS); 2 exx., Taechon, 13. v. 1983, TM (HS); 3 exx., Hwasong,
 14. vi. 1984, KY (H).
Episyrphus balteatus (de GEER), 1 ex., Hwasong, 14. vi. 1984, TM (HS).

Pipunculidae

- Verrallia aucta* FALLÉN, 1 ex., Hongchon-M, 19. vi. 1984, KY (HS); 1 ex., Hongchon-S,
 20. vi. 1984, KY (HS).
Pipunculus spp., 5 exx., Hongchon-S, 19. vi. 1984, KY (HS); 1 ex., Hongchon-S, 19. vi.

1984, KY (H) ; 1 ex., Hongchon-M, 20. vi. 1984, KY (HS) ; 2 exx., Hongchon-M, 20. vii. 1983, TM (HS).

Tomosvaryella sylvatica (MEIGEN), 1 ex., Pibong, 6. ix. 1984, TM (HS).

Tomosvaryella sp., 1 ex., Hongchon-M, 10. vii. 1983, TM (HS).

Sciomyzidae

Sepedon aenescens WIEDEMANN, 1 ex., Duchon-myon, 8. xi. 1983, KY (H).

COLEOPTERA

Cantharidae

Podabrus macilentus KIESENWETTER, 11 exx., Taechon, 13. v. 1983, TM (HS).

Elateridae

Melanotus annosus CANDEZE, 1 ex., Taechon, 14. vi. 1984, TM (HS).

Quasimus ellipticus CANDEZE, 11 exx., Hwasong, 14. vi. 1984, TM (HS).

Spheniscosmus sp., 1 ex., Taechon, 14. vi. 1984, KY (H).

Buprestidae

Trachys spp., 1 ex., Pibong, 14. vi. 1984, TM (HS) ; 1 ex., Hongchon-S, 19. vi. 1984, TM (HS) ; 1 ex., Hongchon-M, 20. vi. 1984, KY (HS) ; 1 ex., Hongchon-S, 4 ix. 1984, YM (HS).

Agrilus spp., 2 exx., Pibong, 14. vi. 1984, TM (HS) ; 2 exx., Taechon, 7. vii. 1983, TM (HS) ; 1 ex., Taechon, 7. vii. 1983, TM (HS) ; 2 exx., Hongchon-S, 12. v. 1983, TM (HS) ; 1 ex., Hongchon-M, 10. vii. 1983, TM (HS).

Dermestidae

Anthrenus verbasci LINNAEUS, 1 ex., Kwangsi, 6. ix. 1984, YM (HS).

Coccinellidae

Harmonia axyridis PALLAS, 2 exx., Kwangsi, 14. vi. 1984, TM (HS) ; 1 ex., Hongchon-S, 12. v. 1983, TM (HS) ; 3 exx., Taechon, 13. v. 1983, TM (HS) ; 1 ex., Taechon, 13. v. 1983, TM (HS) ; 1 ex., Hongchon-M, 10. vii. 1983, TM (HS) ; 1 ex., Hwasong, 14. vi. 1984, KY (H) ; 1 ex., Kwangsi, 14. vi. 1984, KY (HS).

Propylea quatuordecimpunctata LINNAEUS, 1 ex., Taechon, 7. vii. 1983, TM (HS) ; 2 exx., Taechon, 7. vii. 1983, TM (HS) ; 1 ex., Hongchon-S, 12. v. 1983, TM (HS) ; 4 exx., Taechon, 13. v. 1983, TM (HS).

Scymnus spp., 1 ex., Hwasong, 14. vi. 1984, TM (HS) ; 1 ex., Taechon, 7. vii. 1983, TM (HS) ; 5 exx., Taechon, 13. v. 1983, TM (HS) ; 1 ex., Hongchon-M, 10. vii. 1983, TM (HS) ; 1 ex., Kwangsi, 6. ix. 1984, YM (HS) ; 2 exx., Pibong, 6. ix. 1984, YM (HS) ; 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Coccinella septempunctata LINNAEUS, 1 ex., Taechon, 13. v. 1983, TM (HS).

Protocaria scalaris TIMBERLAKE, 1 ex., Hongchon-M, 10. vii. 1983, TM (HS).

Illeis koebelei TIMBERLAKE, 1 ex., Taechon, 6. ix. 1984, YM (HS).

Lagriidae

Lagria nigricollis HOPE, 1 ex., Hongchon-M, 10. vii. 1983, TM (HS).

Scarabaeidae

Maladera orientalis MOTSCHULSKY, 1 ex., Kwangsi, 14. vi. 1984, TM (HS) ; 1 ex., Taechon, 13. v. 1983, TM (HS).

Adoretus tenuimaculatus WATERHOUSE, 3 exx., Hongchon-S, 12. v. 1983, TM (HS) ; 1 ex., Hongchon-S, 4. ix. 1984, YM (HS) ; 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Lachnosterna kiotonensis BRENSKE, 2 exx., Taechon, 13. v. 1983, TM (HS).

Anomala sp., 1 ex., Hongchon-M, 18. vi. 1984, KY (H).

Chrysomelidae

Agelastica coerulea BALY, 2 exx., Kwangsi, 14. vi. 1984, TM (HS).

Colposcelis signata MOTSCHULSKY, 2 exx., Kwangsi, 14. vi. 1984, TM (HS) ; 3 exx., Hongchon-S, 10. vii. 1983, TM (HS) ; 2 exx., Taechon, 14. vi. 1984, TM (HS) ; 1 ex., Hwasong, 14. vi. 1984, TM (HS) ; 1 ex., Taechon, 7. vii. 1983, TM (HS) ; 1 ex., Hongchon-M, 10. vii. 1983, TM (HS) ; 2 exx., Hongchon-S, 19. vi. 1984, TM (HS) ; 8 exx., Hongchon-M, 20. vi. 1984, TM (HS) ; 5 exx., Hongchon-S, 19. vi. 1984, KY (HS) ; 11 exx., Hongchon-S, 20. vi. 1984, KY (HS) ; 2 exx., Hongchon-M, 19. vi. 1984, KY (HS) ; 2 exx., Hongchon-M, 19. vi. 1984, KY (HS) ; 3 exx., Kwangsi, 14. vi. 1984, KY (HS) ; 3 exx., Hongchon-M, 4. ix. 1984, YM (HS) ; 40 exx., Hongchon-S, 4. ix. 1984, YM (HS) ; 7 exx., Hongchon-M, 4. ix. 1984, YM (HS) ; 38 exx., Hongchon-S, 4. ix. 1984, YM (HS) ; 1 ex., Kwangsi, 6. ix. 1984, YM (HS).

Euliroetis sp., 1 ex., Kwangsi, 14. vi. 1984, TM (HS).

Pachybrachys sp. (nr. *eruditus* BALY), 1 ex., Kwangsi, 14. vi. 1984, TM (HS).

Dactylispa excisa (KRAATZ), 1 ex., Hongchon-S, 10. vii. 1983, TM (HS).

Cryptocephalus amicus BALY, 3 exx., Hongchon-M, 10. vii. 1983, TM (HS).

Cryptocephalus discretus BALY, 3 exx., Hongchon-S, 20. vi. 1984, KY (HS) ; 1 ex., Hongchon M, 19. vi. 1984, KY (HS).

Cryptocephalus sp., 1 ex., Hongchon-S, 10. vii. 1983, TM(HS) ; 1 ex., Hongchon-M, 20. vi. 1984, KY (HS).

Colaspoma dauricum MANERHEIM, 1 ex., Taechon, 14. vi. 1984, TM(HS).

Basilepta fulvipes (MOTSCHULSKY), 2 exx., Taechon, 14. vi. 1984, TM (HS) ; 1 ex., Hwasong, 14. vi. 1984, TM (HS).

Basilepta hirayamai (CHUJO), 1 ex., Hongchon-M, 4. ix. 1984, YM (HS) ; 21 exx., Hongchon M, 4. ix. 1984, YM (HS) ; 1 ex., Hongchon-S, 4. ix. 1984, YM (HS).

Zeugophora bicolor (KRAATZ), 2 exx., Taechon, 14. vi. 1984, TM (HS).

Phyllotreta rectilineata CHEN, 1 ex., Taechon, 14. vi. 1984, TM (HS).

Phyllotreta striolata (FABRICIUS), 5 exx., Hwasong, 14. vi. 1984, TM (HS).

Chrysomela populi LINNAEUS, 5 exx., Taechon, 13. v. 1983, TM (HS).

Gonioctena sp., 2 exx., Taechon, 13. v. 1983, TM (HS) ; 1 ex., Hongchon-S, 19. vi. 1984, KY (HS).

Luperus sp., 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Hemipyxis plagioideroides MOTSCHULSKY, 1 ex., Hongchon-M, 20. vi. 1984, KY (HS).

Luperomorpha collaric BALY, 1 ex., Hongchon-M, 19. vi. 1984, KY (HS).

Aphthona perminuta BALY, 1 ex., Pibong, 14. vi. 1984, KY (HS).

Lema diversa BALY, 1 ex., Pibong, 6. ix. 1984, YM (HS).

Pyrhalta maculicollis BALY, 1 ex., Pibong, 6. ix. 1984, KY (HS).

HYMENOPTERA

Mutillidae

Squamulotilla ardescens SMITH, 1 ex., Taechon, 14. vi. 1984, KY (H).

Vespidae

Vespula vulgaris LINNAEUS, 43 exx., Duchon-myon, 8. xi. 1983, KY (H).

Halictidae

Lasioglossum (Lasioglossum) sp., 1 ex., Hwasong, 6. ix. 1984, YM (HS).

Anthophoridae

Triepeolus ventralis (MEADE-WALDO), 1 ex., Pibong, 6. ix. 1984, YM (HS); 1 ex., Taechon, 6. ix. 1984, YM (HS).

Apidae

Bombus (Diversobombus) ussurensis RADOSZKOWSKI, 1 ex., Hongchon-S, 19. vi. 1984, KY (H).

Bombus (Thoracobombus) opulentus SMITH, 1 ex., 14. vi. 1984, KY (H).

Thyreus spp., 1 ex., Taechon, 6. ix. 1984, YM (HS); 1 ex., Pibong, 6. ix. 1984, YM (HS).

A total of 157 species belonging to 74 families of 11 orders were collected except for ants, parasitic Hymenoptera and unidentified species. Twenty-four species among them were also found on pine trees, and others were collected only in the herbs and shrubs in pine stands. This figure may indicate the close relationship between faunae on pine trees and those in the herbs and shrubs, although their food habits are not considered here.

Among the species enumerated above, several are considered predaceous insects. The number of such species concerned is shown in parentheses: Odonata—Agrionidae (1), Lestidae (1), Libellulidae (1); Dictyoptera—Blatellidae (1); Orthoptera—Tettigoniidae (1); Dermaptera—Psalididae (1); Hemiptera—Anthocoridae (2), Nabidae (1), Reduviidae (1); Neuroptera—Hemerobiidae (3), Chrysopidae (3), Myrmeleontidae (1); Diptera—Asilidae (1), Syrphidae (2), Pipunculidae (4); Coleoptera—Cantharidae (1), Coccinellidae (6); Hymenoptera—Mutillidae (1), Vespidae (1).

Because of the material remaining to be identified, it has not been possible to discuss here the difference in faunae between the Hongchon and Taechon areas, or between the Hongchon-S and Hongchon-M stands, or their relationship to the vegetation. Only the following comment can be made at this time. Six species of Coccinellidae excluding an unidentified species were collected on pine trees, and 6 species have also been collected in the herbs and shrubs. Only one species, *H. axyridis*, is common to both habitats. This would seem to indicate that each species is rather specific in selecting habitats so far as the coccinellids are concerned.

References

1. JEON, M.-J., LEE, B.-Y., KO, Je-Ho, MIURA, T. and HIRASHIMA, Y. : *Esakia* **23** : 131-143, 1985.
2. LEE, B.-Y., MIURA, T. and HIRASHIMA, Y. : *Ibid.*, **23** : 119-130, 1985.
3. MIURA, T., KO, Je-Ho and HIRASHIMA, Y. : *Ibid.*, **23** : 111-114, 1985.
4. OGATA, K., HIRASHIMA, Y., MIURA, T., MAETA, Y., YANO, K. and KO, Je-Ho : *Ibid.*, **23** : 159-163, 1985.