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ANTS COLLECTED IN PINE FORESTS INFESTED BY THE PINE NEEDLE GALL MIDGE IN KOREA (HYMENOPTERA, FORMICIDAE) [1)2)3)]

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Abstract

Twenty-two species of ants are collected from red and black pine forests infested by the pine needle gall midge, *Thecodiplosis japonensis,* in Korea. Some of these ants are expected to be predators of the latter.

During the years 1983-1984, the Japan-Korea cooperative survey was made on the natural enemies of the pine needle gall midge, *Thecodiplosis japonensis,* in Korea. This paper reports on the ant fauna of the Korean pine forests as a result of the survey.

A total of 22 ant species was determined from the present collection, some of

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which are expected to be predators of the pine needle gall midge. All the material was collected on trees and ground in the midge-infested pine forests.

List of collecting sites

1. Gang Weon Do
   Hongch'bn, Hongch'ŏn-gun, June 29, 30, 1983 (Y. Hirashima) ; June 19, 20, 1984 (K. Yano) ; September 1, 4, 1984 (Y. Maeta).
2. Seoul
   Forest Experiment Station. July 4, 1983 (Y. Hirashima).
3. Ch'ungch'ŏng Nam Do
   Kwangchang-ri, Poryong-gun, November 3, 1984 (K. Yano).
   Namgok-ri, Poryong-gun, June 14, 1984 (K. Yano).
   Sajom-ri, Cheongnyong-gun, June 14, 1984 (K. Yano).
   Bibong, Cheongnyong-gun, September 6, 1984 (Y. Maeta).
   Whasong, Cheongnyong-gun, September 6, 1984 (Y. Maeta).
   Shindai-ri, Yesan-gun, June 14, 1984 (K. Yano).
   Kwangshi, Yesan-gun, September 6, 1984 (Y. Maeta).
   Daichon, September 6, 1984 (Y. Maeta).

List of the species

Subfam. Ponerinae

1. *Ectomomyrmex javanus* Mayr (ツシマハリ7リ)
   Hongch'ŏn, 30. vi. 1983, 1 worker (Y. Hirashima) ; Whasong, 6. ix. 1984, 1 winged female (Y. Maeta).

This is the largest ponerine ant in Korea. Synonymic list of the species was given by Yasumatsu (1962). There are still some confusion about the taxonomic status of the the species. Collingwood (1976) treated the name *E. javanus* as the junior synonym of *Pachycondyla astuta* (F. Smith), without any discussion about the relationship between the genera *Ectomomyrmex* and *Pachycondyla*. Paik (1984) listed *E. astutas* in his check list of Korean ants. These changes are concerned not only with the species level but also with the generic level, because *E. javanus* is the type-species of the genus. Brown (1973) suggested that most of the genera of the tribe Ponerini may be synonymous with the genus *Pachycondyla*, but any formal taxonomic changes have not been made. In any case, to avoid unnecessary confusion, it should be better to reserve the name "*E. javanus*", until the whole tribe is completely revised.

Subfam. Myrmicinae

2. *Myrmica rugiondis* Nylander (シ7 3シケアリ)
   Hongch'ŏn, 20. vi. 1984, 1 worker (K. Yano), 4. ix. 1984, 6 workers (Y. Maeta).

The species is one of the most common *Myrmica* ant in the Palaearctic Region, ranging from Europe to Japan. Collingwood (1976) recorded *M. yoshiokai* Weber from North Korea, but Elmes and Clarke (1981) thought that it is synoymous with *M. ruginodis*. At least, the samples collected this time from Korea agree with Japanese *ruginodis*.

3. *Myrmica* sp. 1 (nr. *sulcinodis* Nylander)

Hongch'ŏn, 29. vi. 1983, 2 workers (Y. Hirashima), 20. vi. 1984, 2 workers (K. Yano), 1. ix. 1984, 1 worker (Y. Maeta), 4. ix. 1984, 4 workers (Y. Maeta).

The species is characteristic in having sharply curved antenna1 scape at its base where lamellate outgrowth is weakly developed, and strongly ridged lateral portion of clypeus in front of antenna1 insertion.

4. *Myrmica* sp. 2 (nr. *schenki* Emery)

Hongch'ŏn, 30. vi. 1983, 9 workers (Y. Hirashima).

The species is similar to *schenki* Emery from Europe in having small but distinct tooth-like projection at the bent of antenna1 scape, and sharrow metanotal groove. But it differs by the shape of antenna1 carinae which are not so widely diverging as in *schenki*, and by the dorsal profile of petiolar node which is not truncate.

5. *Pheidole fervida* F. Smith (アズマオオズアカアリ)

Seoul, 4. vii. 1983, 43 workers, 14 soldiers (Y. Hirashima) ; Kwangshi, 6. ix. 1984, 1 worker (Y. Maeta).

6. *Tetramorium caespitum* (Linnaeus) (トビイロシワアリ)

Hongch'bn, 29. vi. 1983, 3 workers, 1 male, (Y. Hirashima) ; Seoul, 4. vii. 1983, 8 workers (Y. Hirashima) ; Kwangshi, 6. ix. 1984, 6 workers (Y. Maeta); Daichon, 6. ix. 1984, 2 workers (Y. Maeta).

7. *Leptothorax* sp. (nr. *spinosior* Forel)

Hongch'ŏn, 29. vi. 1983, 1 worker (Y. Hirashima).

The species is characteristic in having 12-segmented antenna of which the scape is reaching to posterior corner of head, weakly rounded dorsum of trunk without distinct metanotal groove, and long and acute propodeal spine which is gently curved downward.

8. *Pristomyrmex pungens* Mayr (アミメアリ)

Hongch'ŏn, 29. vi. 1983, 20 workers (Y. Hirashima), 19. vi. 1984, 27 workers (K. Yano), 4. ix. 1984, 7 workers (Y. Maeta); Seoul, 4. vii. 1983, 4 workers (Y. Hirashima) ; Bibong, 6. ix. 1984, 1 worker (Y. Maeta); Whasong, 6. ix. 1984, 4 workers (Y. Maeta); Shindai-ri, 14. vi. 1984, 1 worker (K. Yano) ; Kwangshi, 6. ix. 1984, 8 workers (Y. Maeta); Daichon, 6. ix. 1984, 45 workers (Y. Maeta).

9. *Crematogaster sordidula osakensis* Fore1 (キイロシリアゲアリ)
Seoul, 4. vii. 1983, 1 worker (Y. Hirashima) ; Bibong, 6. ix. 1984, 4 workers (Y. Maeta); Kwangshi, 6. ix. 1984, 3 workers (Y. Maeta).

10. *Crematogaster matsumurai* Forel (ハリブトシリアゲアリ)
Hongch'ŏn, 19. vi. 1984, 3 workers (K. Yano), 20. vi. 1984, 1 worker (K. Yano), 4. ix. 1984, 16 workers (Y. Maeta); Seoul, 4. vii. 1983, 4 workers (Y. Hirashima) ; Whasong, 6. ix. 1984, 11 workers (Y. Maeta); Kwangshi, 6. ix. 1984, 1 worker (Y. Maeta).

11. *Crematogas ter vagula* Wheeler
Daichon, 6. ix. 1984, 1 worker (Y. Maeta).
This is the first record of this species from Korea. This species is characteristic in having dorsally sculptured but laterally smooth pronotum, short but acute propodeal spine, and small ventral tooth of the petiole.

Subfam. Formicinae

12. *Paratrechina flavipes* (F. Smith) (アメイロアリ)
Hongch'ŏn, 29. vi. 1983, 63 workers (Y. Hirashima), 19. vi. 1984, 45 workers (K. Yano), 20. vi. 1984, 63 workers (K. Yano), 1. ix. 1984, 26 workers (Y. Maeta), 4. ix. 1984, 53 workers (Y. Maeta); Seoul, 4. vii. 1983, 18 workers (Y. Hirashima) ; Bibong, 6. ix. 1984, 1 worker (Y. Maeta); Whasong, 6. ix. 1984, 5 workers (Y. Maeta); Shindai-ri, 14. vi, 1984, 6 workers (K. Yano) ; Kwangshi, 6. ix. 1984, 46 workers (Y. Maeta); Daichon, 6. ix. 1984, 10 workers (Y. Maeta).

13. *Paratrechina sakurae* (Ito) (サクラアリ)
Seoul, 4. vii. 1983, 1 worker (Y. Hirashima).

14. *Lasius niger* (Linnaeus) (トビイロケアリ)
Hongch'ŏn, 19. vi. 1984, 71 workers (K. Yano), 20. vi. 1984, 16 workers (K. Yano) ; Seoul, 4. vii. 1983, 85 workers (Y. Hirashima).

15. *Lasius* sp. (nr. niger)
Hongch'ŏn, 19. vi. 1984, 1 worker (K. Yano), 20. vi. 1984, 4 workers (K. Yano).
Probably these are materials from unmatured colonies of *L. niger*.

16. *Plagiolepis manczshurica* Ruzsky
Shindai-ri, 14. vi. 1984, 5 workers (K. Yano) ; Kwangshi, 6. ix. 1984, 4 workers (Y. Maeta); Daichon, 6. ix. 1984, 2 workers (Y. Maeta).

17. *Plagiolepis flavescens* Collingwood
Hongch'bn, 20. vi. 1984, 8 workers (K. Yano), 1. ix. 1984, 3 workers (Y. Maeta).

18. *Formica japonica* Motschulsky (クロヤマアリ)

Hongch'ŏn, 29. vi. 1983. 6 workers, 1 male (Y. Hirashima), 30. vi. 1983, 7 workers (Y. Hirashima), 19. vi. 1984, 2 workers (K. Yano) ; Seoul, 4. vii. 1983, 9 workers (Y. Hirashima) ; Namgok-ri, 14. vi. 1984, 6 workers (K. Yano) ; Sajom-ri, 14. vi. 1984, 2 workers (K. Yano) ; Whasong, 6. ix. 1984, 1 worker (Y. Maeta); Shindai-ri, 14. vi. 1984, 5 workers (K. Yano) ; Daichon, 6. ix. 1984, 4 workers (Y. Maeta).

19. *Formica yessensis* Fore1 (エゾアカヤマアリ)

Hongch'ŏn, 30. vi. 1983, 19 workers (Y. Hirashima).

20. *Camponotus japonicus* Mayr (3 ロオオアリ)

Hongch'ŏn, 29. vi. 1983, 18 workers (Y. Hirashima), 30. vi. 1983, 25 workers (Y. Hirashima) ; Seoul, 4. vii. 1983, 9 workers (Y. Hirashima) ; Kwangchang-ri, 3. xi. 1984, 6 workers (K. Yano) ; Namgok-ri, 14. vi. 1984, 9 workers (K. Yano) ; Bibong, 6. ix. 1984, 6 workers (Y. Maeta); Whasong, 6. ix. 1984, 1 worker, (Y. Maeta); Shindai-ri, 14. vi. 1984, 1 worker (K. Yano) ; Kwangshi, 6. ix. 1984, 3 workers (Y. Maeta); Daichon, 6. ix. 1984, 3 workers (Y. Maeta).

21. *Camponotus* sp. (nr. *nipponensis* Santschi)

Hongch'bn, 20. vi. 1984, 1 worker (K. Yano).

The species is similar to C. *nipponensis* Santschi from Japan, in having many standing hairs (more than 40) on the dorsum of the trunk.

22. *Polyrhachis lamellidens* F. Smith (トゲアリ)

Kwangchang-ri, 3. xi. 1984, 2 winged females (K. Yano).

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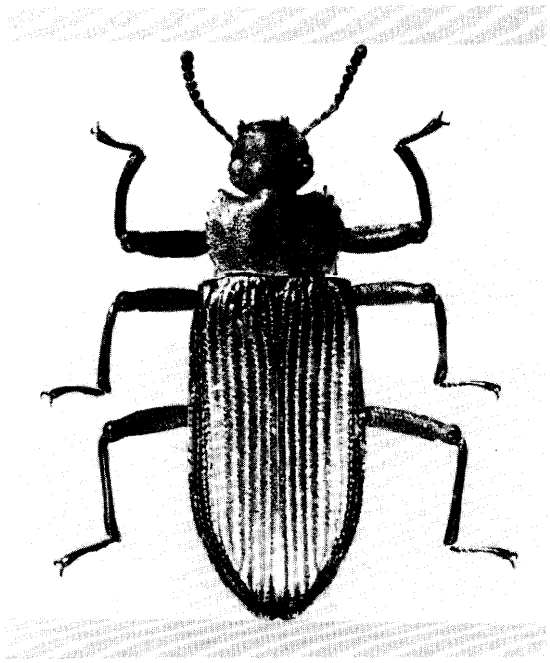

Catapiestus rugipennis M. T. Chûjô, 1984.

This is a replacement of Fig. A, *Catapiestus rugipennis* sp. nov., in M. T. Chûjô's paper, Tenebrionidae of the Nansei Islands IX (Coleoptera), *Esakia, (22)* : *1-4*, 1984.