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ON THE LARVAE OF PYROCHROIDAE OCCURRING
IN JAPAN (Coleoptera : Cucujoidea)¹⁾

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The Pyrochroidae, a small family of the superfamily Cucujoidea, are widely distributed over the world, especially in the north temperate region, containing more than 100 species. So far as I am aware 17 species have been known to occur in Japan. The larvae of this family have been not so fully investigated. On this occasion 9 Japanese species belonging to 3 genera will be described in the following pages.

Before going further I wish to express my sincere thanks to Prof. C. Watanabe of the Entomological Institute, Hokkaido University, for his constant kind guidance. Many thanks are also due to the following gentlemen for their kindness in offering valuable material: Mr. A. Haga, Mr. K. Mizusawa, Mr. H. Takenaka, Mr. H. Takizawa and Mr. Y. Watanabe.

Family Pyrochroidae

The larvae of this family are characterized by the following features:

Body strongly depressed, parallel-sided, firmly sclerotized. Head-capsule considerably broader than prothorax; frontal suture lyre-shaped; clypeus and frons confluent; ocelli with 4-5 spots on each side. Antennae elongate, 3-jointed. Mandibles with grinding surface of the left one produced at extremity. Maxillae with a dentate uncus at inner-distal angle of mala. Labium with an elongate ligula; submentum and gula united. Prothorax conspicuously narrowed backwardly; presternum forming a large, triangular plate, but not reaching to post-sternellum. Legs moderately developed; coxal cavities far separated each other. Eighth abdominal segment 2 to 3 times as long as the 7th. Ninth abdominal segment entirely, heavily sclerotized, bearing large, projecting urogomphi; venter of segment with a transverse row of small spines. Spiracles annular or oval.

Genus *Dendroides* Latreille

Dendroides lesnei Blair, 1914

Reference: Hayashi, 1959, Illustrated insect larvae of Japan, Tokyo, No. 920: 490.

Head-capsule about 3 mm. in breadth. Maxillary mala with external tooth

1) Hayashi, N : Contributions to the knowledge of the larvae of Cucujoidea VI.

of uncus (Fig. 1) considerably elongated. Ninth abdominal segment (Figs. 10 & 19) rather strongly granulated dorsally; fossae moderately separated each other, not concealed by median lobe in ventral view; median lobe transversely trapezoidal, not strongly projecting backwardly in dorsal view, connecting with lateral lobes by swellings in ventral view; lateral lobes roundly produced outwardly; urogomphi broadly separated each other, curved inwardly, almost as long as or shorter than distance between them at apex, and about twice as long as dorso-median length of segment. Body-length about 24 mm.

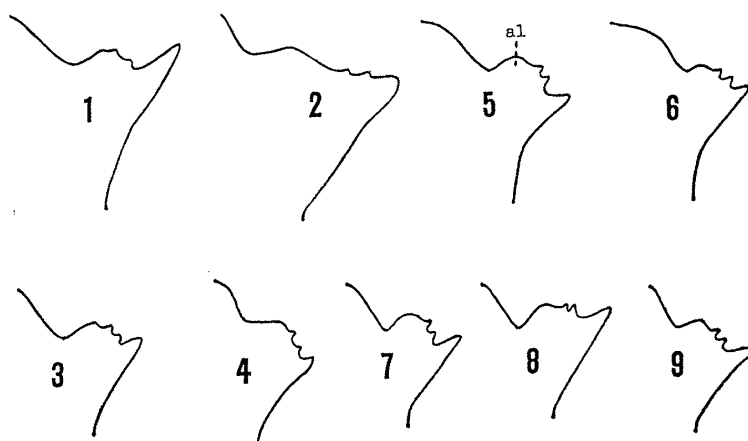
Specimens examined: 1 ex. near Oze, Okunikko, 15. VII. 1949, N. Hayashi leg.; 1 ex. near Oze, Okunikko, 2-3. VI. 1956, N. Hayashi leg.; 1 ex. Yumoto, Nikko, Tochigi-ken, 29. VII. 1956, N. Hayashi leg.; 1 ex. Yumoto, Nikko, Tochigiken, 11-13. VI. 1967, N. Hayashi leg.

Genus *Pseudodendroides* Blair

Pseudodendroides niponensis (Lewis, 1887)

Reference: Hayashi, 1963, Ins. Mats., 26 (2): 112-114.

Head-capsule about 3.4 mm. in breadth. Maxillary mala with uncus (Fig. 2) stout, broadly produced outwardly. Ninth abdominal segment (Figs. 11 & 20) strongly granulated dorsally, extremely attenuated antero-laterally; fossae contiguous each other, not concealed by median lobe in ventral view; median lobe small, dully pointed; lateral sides of segment strikingly convergent towards bases of urogomphi, forming a strong undulation behind lateral lobe; urogomphi markedly closed each other, almost as long as or a little shorter than distance



Figs. 1-9: Uncus of maxillary mala of: 1. *Dendroides lesnei*, 2. *Pseudodendroides niponensis*, 3. *Pseudopyrochroa atripennis*, 4. *Pseudopyrochroa peculiaris*, 5. *Pseudopyrochroa vestiflua* (al: anterior angle), 6. *Pseudopyrochroa flavilabris*, 7. *Pseudopyrochroa laticollis*, 8. *Pseudopyrochroa* sp. and 9. *Pseudopyrochroa japonica*.

between them at apex, and slightly shorter than dorso-median length of segment. Body-length about 27 mm.

Specimens examined: 4 exs. Daibosatsu-toge, Yamanashi-ken, 22. V. 1961, N. Hayashi leg.; 1 ex. Daibosatsu-toge, Yamanashi-ken, 16. V. 1964, N. Hayashi leg.

Genus *Pseudopyrochroa* Pic

Pseudopyrochroa atripennis (Lewis, 1887)

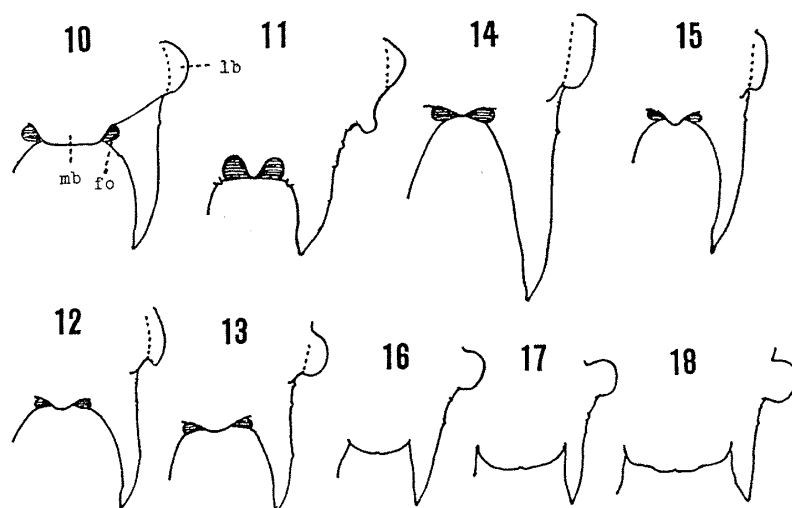
Head-capsule about 2.5 mm. in breadth. Maxillary mala with external tooth of uncus (Fig. 3) moderately developed. Ninth abdominal segment (Figs. 12 & 21) with fossae moderately separated each other, not concealed by median lobe in ventral view; median lobe small, triangular, but not pointed apically; lateral lobes longitudinally produced outwardly, distinctly projecting backwardly; urogomphi moderately separated each other, curved inwardly, nearly as long as or a little longer than distance between them at apex, and about twice as long as dorso-median length of segment, with apical distance between urogomphi subequal to half basal width of segment. Body-length about 23 mm.

Specimens examined: 4 exs. Kirizumi, Gumma-ken, XI. 1953, N. Hayashi leg.; 8 exs. Amagisan, Shizuoka-ken, 20. VI. 1963, N. Hayashi leg.; 1 ex. Ishizuchisan, Ehime-ken, 24-25. VII. 1963, M. Yasukawa leg.; 30 exs. Hikosan, Fukuoka-ken, 18. IX. & 2. X. 1967, A. Haga leg.; 30 exs. Daisen, Tottori-ken, 23. X. 1967, A. Haga leg.; 10 exs. Marunuma to Yumoto, Okunikko, 11-13. VI. 1967, N. Hayashi leg.; 1 ex. near Masutomi-onsen, Yamanashi-ken, 24. V. 1968, H. Takenaka leg.; 2 exs. near Masutomi-onsen, Yamanashi-ken, 9. VI. 1968, N. Hayashi leg.

Pseudopyrochroa peculiaris (Lewis, 1887)

Head-capsule about 2.6 mm. in breadth. Maxillary mala with teeth of uncus (Fig. 4) rather separated each other, the external one being not strongly developed. Ninth abdominal segment (Figs. 13 & 22) with fossae not concealed by median lobe in ventral view, moderately separated each other; median lobe broadened basally, not pointed apically; lateral lobes roundly produced outwardly; urogomphi broadly separated each other, curved inwardly, nearly as long as or a little shorter than distance between urogomphi at apex, and about 1.5 times as long as dorso-median length of segment, with apical distance between urogomphi longer than half basal width of segment. Body-length about 23 mm.

Specimens examined: 2 exs. Sôunkyo, Hokkaido, 25. VII. 1952, N. Hayashi leg.; 1 ex. Maruyama, Sapporo, Hokkaido, 11. IV. 1969, H. Takizawa leg.; 1 ex. Oirase, Aomori-ken, 25. VII. 1959, N. Hayashi leg.; 1 ex. Kirizumi, Gumma-ken, 26-27. V. 1962, N. Hayashi leg.; 1 ex. Amagisan, Shizuoka-ken, 20. VI. 1963, N. Hayashi leg.; 2 exs. near Hatanagisan, Shizuoka-ken, V. 1969, N. Hayashi leg.; 1 ex. Tanzawa, Kanagawa-ken, 13. VIII. 1963, N. Hayashi leg.; 4 exs. Tanzawa, Kanagawa-ken, 13-17. VII. 1967, N. Hayashi leg.; 8 exs. Daibosatsu-toge, Yamanashi-ken, 13-14. VI. 1966, N. Hayashi leg.; 3 exs. near Masutomi-onsen, Yamanashi-ken, 9. VI. 1968, N. Hayashi leg.



Figs. 10-18: Ninth abdominal segment (ventral aspect) of: 10. *Dendroides lesnei* (fo: fossa. lb: lateral lobe. md: median lobe), 11. *Pseudodendroides niponensis*, 12. *Pseudopyrochroa atripennis*, 13. *Pseudopyrochroa peculiaris*, 14. *Pseudopyrochroa vestiflua*, 15. *Pseudopyrochroa flavilabris*, 16. *Pseudopyrochroa laticollis*, 17. *Pseudopyrochroa* sp. and 18. *Pseudopyrochroa japonica*.

***Pseudopyrochroa vestiflua* (Lewis, 1887)**

References: Kôno & Nishio, 1943, Trans. Nat. Hist. Soc. Formosa, 33 (242-243): 566-567, fig. A; Hayashi & Kurosa, 1959, Illustrated insect larvae of Japan, Tokyo, Nos. 918 & 920: 489-490.

Head-capsule about 3.6 mm. in breadth. Maxillary mala with apical angle of uncus (Fig. 5: al) not small, with external tooth of uncus moderately developed. Ninth abdominal segment (Figs. 14 & 23) scarcely narrower than head-capsule (0.9 times); space between urogomphi small, roundly retracted at base; fossae rather contiguous each other, not concealed by median lobe in ventral view; median lobe small, triangular; lateral lobes rather weakly, longitudinally produced outwardly; urogomphi strongly thickened basally, well closed each other, nearly straight or slightly curved inwardly, frequently expanded apically, and 2.5 to 3 times as long as dorso-median length of segment. Body-length about 2.6 mm.

Specimens examined: 6 exs. Sôunkyo, Hokkaido, 25. VII. 1952, N. Hayashi leg.; 1 ex. Meakan-dake, Hokkaido, 1. VIII. 1952, N. Hayashi leg.; 1 ex. Jiyozan-kei, Hokkaido, 24. VII. 1962, K. Mizusawa leg.; 2 exs. Orofuresan, Hokkaido, 22. VII. 1962, K. Mizusawa leg.; 1 ex. Rausu-dake, Hokkaido, 31. VII. 1962, K. Mizusawa leg.; 15 exs. Maruyama, Sapporo, Hokkaido, 11. IV. 1969, H. Takizawa leg.; 4 exs. Takaosan, Tokyo-toka, 19. IV. 1953, N. Hayashi leg.; 3 exs. Tanzawa, Kanagawa-ken, 13. VIII. 1963, N. Hayashi leg.; 10 exs. Daibosatsu-toge, Yamanashi-ken, 22. V. 1961, N. Hayashi leg.; 4 exs. Daibosatsu-toge, Yamanashi-ken, 13. VI. 1966, N. Hayashi leg.; 1 ex. near Masutomi-onsen, Yamanashi-ken, 9. VI.

1968, N. Hayashi leg. ; 1 ex. near Shirouma-dake, Nagano-ken, 1-3. VIII. 1953, N. Hayashi leg. ; 11 exs. near Hakusan, Ishikawa-ken, 10. VIII. 1966, N. Hayashi leg. ; 8 exs. Nakabusa, Nagano-ken, VIII. 1961 ; 14 exs. Karuizawa, Nagano-ken, 26. V. 1969, N. Hayashi leg. ; 3 exs. Hikosan, Fukuoka-ken, 23. X. 1961, N. Hayashi leg. ; 1 ex. Hikosan, Fukuoka-ken, 2. X. 1967, A. Haga leg.

***Pseudopyrochroa flavilabris* Blair, 1914**

Head-capsule about 2.1 mm. in breadth. Maxillary mala with apical angle of uncus (Fig. 6) small, with external tooth of uncus not strongly developed. Ninth abdominal segment (Figs. 15 & 24) with margin between urogomphi roundly retracted; fossae rather contiguous each other, not concealed by median lobe in ventral view; median lobe small, triangular; lateral lobes weakly, longitudinally produced outwardly; urogomphi comparatively closed each other, curved inwardly, much longer than distance between urogomphi at apex, and about 2.5 times as long as dorso-median length of segment. Body-length about 17 mm.

Specimens examined: 1 ex. Marunuma to Yumoto, Okunikko, 11-13. VI. 1967, N. Hayashi leg.

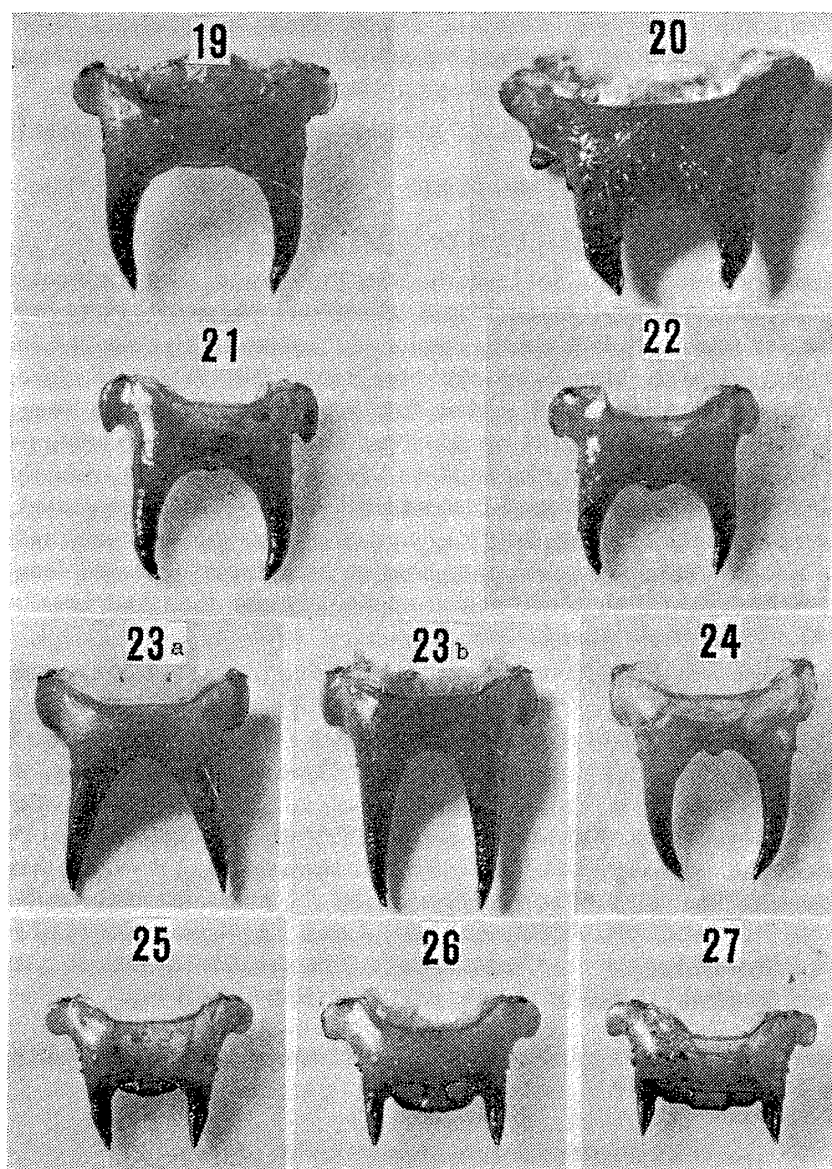
***Pseudopyrochroa laticollis* (Lewis, 1887)**

Head-capsule about 2.5 mm. in breadth. Maxillary mala with external tooth of uncus (Fig. 7) well developed. Ninth abdominal segment (Figs. 16 & 25) with fossae rather contiguous each other, completely concealed by median lobe in ventral view; median lobe broadly arched, moderately developed backwardly in dorsal view, much less than half as long as dorso-median length of segment; lateral lobes strongly, roundly produced outwardly; urogomphi comparatively closed each other, projecting directly or convergently, longer than half distance between urogomphi at apex, and not shorter than dorso-median length of segment, with apical distance between urogomphi a little shorter than half basal width of segment. Body-length about 18 mm.

Specimens examined: 2 exs. Ōyama, Kanagawa-ken, 23. IV. 1960 N. Hayashi leg. ; 2 exs. near Ōyama, Kanagawa-ken, 28. IV. 1969, N. Hayashi leg. ; 1 ex. Ōyama, Kanagawa-ken, 30. IV. 1967, N. Hayashi leg. ; 1 ex. Takamatsu-yama, Kanagawa-ken, III. 1968, N. Hayashi leg. ; 1 ex. Tanzawa, Kanagawa-ken, 6. IV. 1966, N. Hayashi leg. ; 8 exs. near Takaosan, Tokyo-toka, 14. IV. 1968, N. Hayashi leg. ; 2 exs. near Takaosan, Tokyo-toka, IV. 1952, N. Hayashi leg. ; 1 ex. Takaosan. Tokyo-toka, 1. VI. 1969, N. Hayashi leg. ; 2 exs. Hikosan, Fukuoka-ken, 24. X. 1961, N. Hayashi leg.

***Pseudopyrochroa* sp.**

Head-capsule about 2.5 mm. in breadth. Maxillary mala with external tooth of uncus (Fig. 8) stout, well developed. Ninth abdominal segment (Figs. 17 & 26) with fossae moderately separated each other, completely concealed by median lobe in ventral view; median lobe broadly arched, strikingly developed behind in dorsal view, nearly half as long as dorso-median length of segment; lateral lobes strongly, roundly produced outwardly; urogomphi comparatively



Figs. 19-27: Ninth abdominal segment (dorsal aspect) of:
 19. *Dendroides lesnei*, 20. *Pseudodendroides niponensis*, 21. *Pseudopyrochroa atripennis*, 22. *Pseudopyrochroa peculiaris*, 23. *Pseudopyrochroa vestiflua*, 24. *Pseudopyrochroa flavilabris*, 25. *Pseudopyrochroa laticollis*, 26. *Pseudopyrochroa* sp. and 27. *Pseudopyrochroa japonica*.

far separated each other, projecting directly, about as long as half distance between urogomphi at apex, also not shorter than dorso-median length of segment, with apical distance between urogomphi more or less longer than half basal width of segment. Body-length about 18 mm.

Specimens examined: 1 ex. Sukayu, Aomori-ken 22. VII. 1959, N. Hayashi leg.

***Pseudopyrochroa japonica* (Heyden, 1879)**

Reference: Ôsawa, 1947, *Ins. Ecology*, 2 (4): 7-10.

Head-capsule about 2.5 mm. in breadth. Maxillary mala with external tooth of uncus (Fig. 9) well developed. Ninth abdominal segment (Figs. 18 & 27) with fossae far separated each other, completely concealed by median lobe in ventral aspect; median lobe extremely broadened, relatively well developed backwardly, nearly as long as or shorter than half of dorso-median length of segment, the median part of hind margin (region between fossae) being weakly produced backwardly, slightly biundulated; lateral lobes strongly, roundly produced outwardly, weakly developed backwardly; urogomphi far separated each other, projecting directly, frequently expanded apically, shorter than half distance between urogomphi at apex, and about as long as dorso-median length of segment, with apical distance between urogomphi longer than half basal width of segment. Body-length about 18 mm.

Specimens examined: 5 exs. near Takaosan, Tokyo-toka, IV. 1952, N. Hayashi leg.; 7 exs. near Takaosan, Tokyo-toka, 14. IV. 1968, N. Hayashi leg.; 1 ex. Tanzawa, Kanagawa-ken, 13. VIII. 1963, N. Hayashi leg.; 1 ex. Tanzawa, Kanagawa-ken, 15. VI. 1969, N. Hayashi leg.; 2 exs. Ôyama, Kanagawa-ken, 30. IV. 1967, N. Hayashi leg.; 2 exs. Yabitsu-toge, Kanagawa-ken, 29. III. 1968, N. Hayashi leg.; 5 exs. Near Ôyama, Kanagawa-ken, 28. IV. 1969, N. Hayashi leg.; 3 exs. Daibosatsu-toge, Yamanashi-ken, 20. V. 1961, N. Hayashi leg.; 1 ex. Daibosatsu-toge, Yamanashi-ken, 16. V. 1964, N. Hayashi leg.; 2 exs. near Shirouma-dake, Nagano-ken, 1-3. VIII. 1953, N. Hayashi leg.; 4 exs. Karuizawa, Nagano-ken, 26. V. 1969, N. Hayashi leg.; 1 ex. Gozaisyo-dake, Mie-ken, 31. III. 1961, N. Hayashi leg.; 1 ex. Satamisaki, Kagoshima-ken, 6. V. 1964, N. Hayashi leg.

The larvae of the species mentioned in this paper are distinguished by the following key:

Key to the species based on the larvae

- | | | |
|---|--|----|
| 1 | Ninth abdominal segment with fossae not concealed by median lobe in ventral aspect. | 2. |
| - | Ninth abdominal segment with fossae concealed by median lobe in ventral aspect. | 7. |
| 2 | Ninth abdominal segment with median lobe pointed or arched, not connecting with lateral lobes by swellings in ventral aspect. | 3. |
| - | Ninth abdominal segment with median lobe broadly trapezoidal, connecting with lateral lobes by swellings in ventral aspect. | |

- *Dendroides lesnei* Blair
- 3 Ninth abdominal segment not strongly converging towards urogomphi, without a conspicuous undulation behind lateral lobe; urogomphus longer than dorso-median length of segment. 4.
- Ninth abdominal segment strongly converging towards urogomphi, with a conspicuous undulation behind lateral lobe; urogomphus shorter than dorso-median length of segment.
- *Pseudodendroides niponensis* (Lewis)
- 4 Ninth abdominal segment with lateral lobes not strongly produced backwardly. 5.
- Ninth abdominal segment with lateral lobes strongly produced backwardly. *Pseudopyrochroa atripennis* (Lewis)
- 5 Ninth abdominal segment with lateral lobes weakly, longitudinally produced outwardly; urogomphus 2 to 3 times as long as dorso-median length of segment. 6.
- Ninth abdominal segment with lateral lobes strongly, roundly produced outwardly; urogomphus about 1.5 times as long as dorso-median length of segment. *Pseudopyrochroa peculiaris* (Lewis)
- 6 Maxillary mala with apical angle of uncus not small. Urogomphi strikingly thickened basally, nearly straight or slightly curved inwardly, with space between them extremely small at base. Body longer, more than 20 mm. in length. *Pseudopyrochroa vestiflua* (Lewis)
- Maxillary mala with apical angle of uncus small. Urogomphi not strikingly thickened basally, moderately curved inwardly, with space between them not extremely small at base. Body smaller, less than 20 mm. in length *Pseudopyrochroa flavilabris* Blair
- 7 Urogomphi about as long as or shorter than half distance between them at apex. 8.
- Urogomphi much longer than half distance between them at apex. *Pseudopyrochroa laticollis* (Lewis)
- 8 Ninth abdominal segment with region between fossae not conspicuously developed backwardly; urogomphi parallel, as long as half distance between them at apex. *Pseudopyrochroa* sp.
- Ninth abdominal segment with region between fossae conspicuously developed backwardly; urogomphi parallel or diverging behind, shorter than half distance between them at apex.
- *Pseudopyrochroa japonica* (Heyden)

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