A new species of the genus *Orius* Wolff (Heteroptera: Anthocoridae) found on Okinawa Island, Japan

Tomohide Yasunaga

Biological Laboratory, Hokkaido University of Education, Sapporo 002-8075, Japan

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Abstract

A new species of flower or minute pirate bug, *Orius takaii*, is described from Okinawa Island, the Ryukyus, Japan. This is the first Japanese representative of the nominotypical subgenus of *Orius*. The anthocorid was confirmed to be associated with a leguminous vine, *Pueraria montana*, and can be reared with a bulb mite, *Rhizoglyphus robini* Claparede.

Key words: Heteroptera, Anthocoridae, *Orius*, new species, Japan

INTRODUCTION

The flower bug genus *Orius* Wolff is well known as it contains many effective predators of agricultural pests, such as thrips, aphids, mites and other tiny arthropods (Nagai, 1993; Yasunaga and Kashio, 1993, etc.). There are more than 60 species of the genus known in the world, and 7 species have been reported from Japan (Yasunaga, 1993, 1997a–c). However, during our recent surveys on Okinawa Island of the Ryukyus, an additional species was discovered. Upon examination, I found that it not only represents a new species but is the first Japanese member belonging to the nominotypical subgenus of *Orius*.

All measurements in the text are given in millimeters. Terminology mainly follows Yasunaga (1997a). Type material is all deposited in Yasunaga's collection of Biological Laboratory, Hokkaido University of Education, Sapporo.

DESCRIPTION

Orius (Orius) takaii, new species (Figs. 1–5)

Male. Body oval; dorsal surface shining, with simple, silky pubescence. Head shiny dark chestnut brown, with sparse, silky pubescence; compound eyes with very short setae; ocelli rather large; tylus yellowish brown. Antennae yellowish brown, densely furnished with suberect or erect setae, except segment I sparsely

setose; segment II thickened, thicker than I; segments III and IV reddish brown; lengths of segments I–IV: 0.09–0.10, 0.24–0.27, 0.18–0.20, 0.19–0.20. Rostrum brown, not exceeding apex of procoxae; segment I and basal part of II darker. Pronotum fuscous, very shiny, highly polished, with sparsely distributed, silky, suberect pubescence and weak punctures, bearing 4 distinct corner setae; collar area somewhat shagreened, narrow; callus wide, highly polished, with a transverse row of minute punctures along posterior margin; scutellum shiny fuscous, weakly rugose, sparsely pubescent; pleura dark brown, somewhat shagreened; ostiolar peritreme with a narrow median suture. Hemelytra shiny pale brown, uniformly clothed with simple, pale, suberect setae; apex of cuneus with several long setae; membrane pale smoky brown, shagreened. Coxae brown to dark brown, with narrowly pale apices; legs yellowish brown; protibial spines dark, distinct; lengths of metafemur, tibia and tarsus: 0.38–0.48, 0.53–0.58, 0.17–0.19. Abdomen shiny dark chestnut brown. Paramere slender in general shape; cone narrow, with pointed apex, lacking denticule; flagellum broad basally, tapered toward apex.

Female. Almost similar to male in coloration and structure. Antennae generally short; segment II about as thick as I; lengths of segments I–IV: 0.08–0.11, 0.19–0.22, 0.15–0.19, 0.18–0.19. Lengths of metafemur, tibia and

Fig. 1. Female adult of *Orius takaii*, n. sp.

tarsus: 0.38–0.53, 0.56–0.61, 0.18–0.21. Copulatory tube bulbous, widened apically.

Dimensions. ♂/♀: Body length 1.50–1.74/1.62–1.92; head width incl. compound eyes 0.35–0.37/0.33–0.36; vertex width 0.16–0.17/0.16–0.18; width between ocelli 0.10–0.11/0.12–0.13; rostral length 0.48–0.52/0.48–0.51; mesal pronotal length 0.27–0.28/0.28–0.32; basal pronotal width 0.68–0.71/0.67–0.76; embolium length 0.59–0.61/0.56–0.70; marginal length of cuneus 0.32–0.34/0.30–0.37; width across hemelytra 0.72–0.77/0.74–0.87.

Type material. Holotype ♂, F₁ progeny of a female originally collected at Ryukyu Univ. Campus, Nishihara T., Okinawa Is., Ryukyus, Japan on 3. iv. 1999 by M. Takai. Paratypes: 9♂ 7♀, same data as for holotype; 41♀, Ryukyu Univ. Campus, Nishihara T., ex *Pueraria montana*, 3. iv. 1999, M. Takai; 7♀, same locality and plant, 27. vi. 1999, T. Yasunaga.

Etymology. Named for my colleague Mr. Mikio Takai who discovered this species.

Distribution. Japan (Okinawa Is.).

Biology. This anthocorid was confirmed to be strictly associated with *Pueraria montana* (Lour.) Merr. (Leguminosae), and appears to have two or more generations per year.

DISCUSSION

This new species is readily distinguished from other members of the subgenus *Orius* by the highly polished, almost impunctate and sparsely pubescent pronotum with a narrow collar area and widened callus, smooth and slender cone of the male paramere that lacks denticule, and bulbous, tumid female copulatory tube.

During our investigations on Okinawa Island in April and June, 1999, we could not find any male adults in the field. The males are considered to disappear promptly after copulation. Fortunately, my colleague Mr. Takai succeeded in obtaining eggs from the individuals collected in April, and the progenitors including males developed successfully into adults after about 3 weeks. These male adults enabled me to determine the definitive systematic position of this unique bug.

Mr. Takai used a bulb mite, *Rhizoglyphus robini* Claparede (Acaridae) to rear this anthocorid which is, therefore, considered to be a candidate for biological control of mites as well as other tiny arthropods. However, the natural prey of *O. takaii* remains unknown, and further investigation is needed to clarify the detailed biology.

Figs. 2–5. *Orius takaii*, n. sp. 2, dorsal view of female head and pronotum; 3, left lateral view of female ostiolar peritreme; 4, dorsal view of male genital segment with paramere; 5, dorsal view of female copulatory tube. Scales: 0.1 mm for 3–5 and 0.2 mm for 2. CA, callus; CN, cone; CS, corner seta; EV, evaporative area; FL, flagellum; ISM, intersegmental membrane; MS, median suture; PRM, paramere; TC, copulatory tube.

In the key to Japanese *Orius* species presented by Yasunaga (1997c: 389, Key I), the present new species keys out to *O. (Xylorius) miyamotoi* Yasunaga, known only from northwestern Kyushu. Accordingly, the key (2nd couplet) is revised as follows:

- 2a. Hemelytra entirely blackish, very shiny
 O. (Trichorius) atratus Yasunaga
 — Hemelytra almost entirely pale brown...2b
 2b. Pronotum wide, not strongly polished,
 densely pubescent, with wide collar area,
 narrow callus and angulate anterolateral
 corner
 O. (Xylorius) miyamotoi Yasunaga
 — Pronotum trapezoidal, highly polished,
 very shiny, almost impunctate and sparsely
 pubescent, with narrow collar area, wide

callus and not developed anterolateral
 corner *O. (O.) takaii*, n. sp.

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