

## Two Natural Hybrids of the *Acoptolabrus* Species (Coleoptera, Carabidae) from South Korea

Yûki IMURA

Shinohara-chô 1249-8, Kôhoku-ku, Yokohama, 222 Japan

**Abstract** Two natural hybrids between *Carabus (Acoptolabrus) changeonleei* and *C. (A.) constricticollis chiricola* are recorded from the Chiri-san Mountains in Kyöngsangnam-do, South Korea. Interspecific hybrid in the subgenus *Acoptolabrus* is reported for the first time.

Early in the summer of 1989, I made a short collecting trip to the Chiri-san Mountains in Kyöngsangnam-do, South Korea, where I had opportunities to collect two strange specimens of carabid beetles belonging to the subgenus *Acoptolabrus* of the genus *Carabus* (s. lat.), with characters intermediate between *C. (A.) changeonleei* ISHIKAWA et KIM and *C. (A.) constricticollis chiricola* KWON et LEE. They are considered to be natural hybrids of the above two species, and their morphological features will be described in the following lines.

The measurement of body parts in ordinary individuals of *C. (A.) changeonleei* and *C. (A.) constricticollis chiricola* was made by using 10 females randomly picked up from the specimens collected at the same collecting site as that of the two hybrids under consideration, with arithmetic mean abbreviated as M.

I am grateful to Dr. Shun-Ichi UÉNO of the National Science Museum (Nat. Hist.), Tokyo, for critically reading the manuscript of this paper.

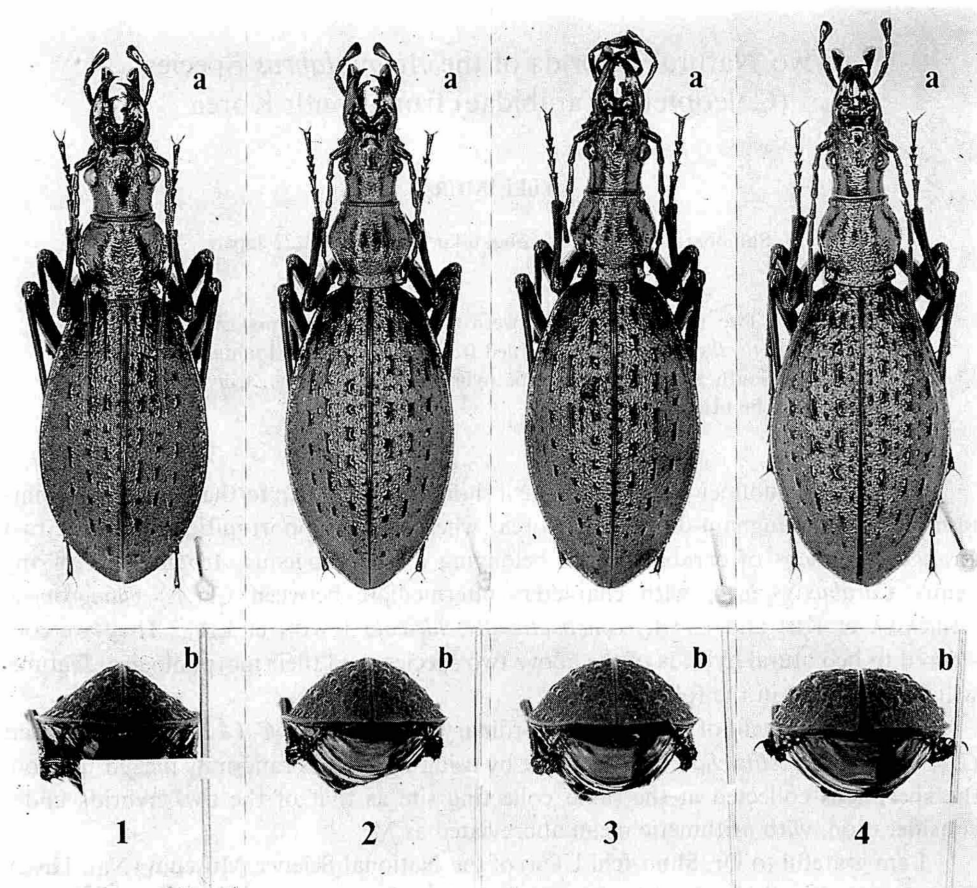
### Natural Hybrid between *Carabus (Acoptolabrus) changeonleei* and *C. (A.) constricticollis chiricola*

#### *Specimen 1* (Figs. 2, 6)

Length: 28.7 mm (from apical margin of clypeus to apices of elytra).

Head and pronotum dark reddish coppery, with the lateral margins of the latter a little greenish; elytra metallic green, though not so bluish as in *changeonleei* and not so yellowish as in *constricticollis chiricola*; venter almost as in the two parental species, though the metallic lustre is slightly duller than in ordinary individuals belonging to the same subgenus.

Head 1.37 times as long as wide (1.17–1.25, M 1.22 in *changeonleei*; 1.40–1.48, M 1.45 in *constricticollis chiricola*), with the exposed part of the neck behind eyes slenderer than in *changeonleei* and a little wider than in *constricticollis chiricola*; dorsal surface of head transversely rugulose and rather distinctly punctate; anterior tooth of



Figs. 1-4. *Carabus (Acoptolabus)* spp. and their natural hybrids from the Chirisan Mountains, South Korea. — 1, *Carabus (Acoptolabus) changeonleei* (♀); 2, natural hybrid between *C. (A.) changeonleei* and *C. (A.) constricticollis chiricola* (Specimen 1, ♀); 3, ditto (Specimen 2, ♀); 4, *C. (A.) constricticollis chiricola* (♀). a, Dorsal view; b, posterior view.

the right mandibular retinaculum as shown in Fig. 6 a, showing almost intermediate state between the two parental species; mentum as shown in Fig. 6 b, with the median tooth much shorter, robuster, and less strongly produced ventrad than in *changeonleei*, with the apex gently rounded.

Pronotum almost as wide as long (ca. 1.13 times as wide as long in *changeonleei*; ca. 1.09 times as long as wide in *constricticollis chiricola*), widest a little before the middle, with the outline almost intermediate between those of the two parental species; right margin monosetose (one central seta), left margin bisetose (two central setae), and no seta being recognised near hind angles on both sides; median longitudinal line almost the same in condition as that of *constricticollis chiricola*, and narrower and shallower than in *changeonleei*; discal surface sinuously wrinkled and transversely

striate, though more distinctly so than in *changeonleei* and a little more weakly so than in *constricticollis chiricola*.

Elytra intermediate in shape and in sculptural condition between those of the two parental species, with the widest part being a little more forwards than in *constricticollis chiricola*, and the sutural part being not so sharply ridged as in *changeonleei*, but more strongly convex above than in *constricticollis chiricola* (cf. Fig. 2 b).

*Collecting data*: ♀, SE slope of the Peak Ch'önwangbong (at an elevation of 1,500 m alt.) on the Chiri-san Mountains, Kyöngsangnam-do, South Korea, 7-VI-1989, Y. IMURA leg.

*Specimen 2* (Figs. 3, 7)

Length: 30.4 mm (from apical margin of clypeus to apices of elytra).

Colour as in Specimen 1.

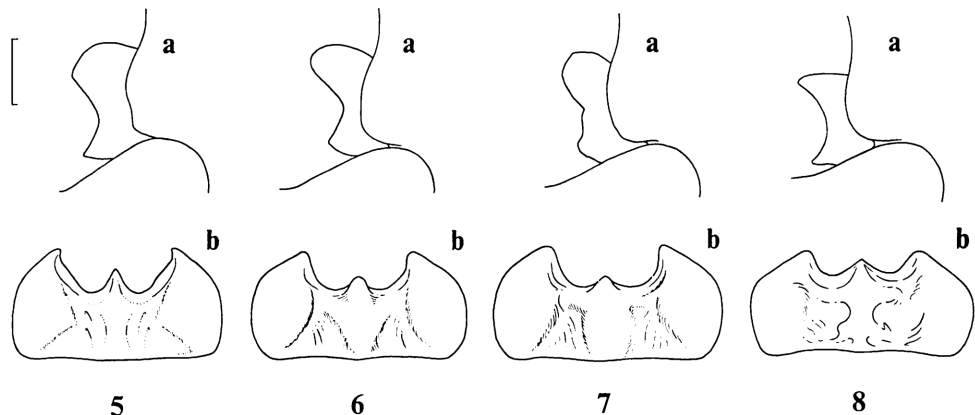
Head 1.36 times as long as wide, with the dorsal surface distinctly wrinkled but not obviously punctate; retinaculum of the right mandible as shown in Fig. 7 a, being a little different in shape from that of Specimen 1; median tooth of mentum a little shorter and a little more sharply pointed than in Specimen 1 (cf. Fig. 7 b).

Pronotum 1.02 times as long as wide, with the outline and the sculptural condition almost the same as those of Specimen 1; marginal setae of pronotum as in Specimen 1.

Elytra also the same in shape and sculptural condition as in Specimen 1.

*Collecting data*: ♀, same as for Specimen 1.

There are many reports of natural hybrids between two different species or even between two different subgenera belonging to the genus *Carabus* (s. lat.). Concerning



Figs. 5-8. Retinaculum of the right mandible (a, dorsal view) and mentum (ventral view) of *Carabus* (*Acoptolabrus*) spp. and their natural hybrids from the Chiri-san Mountains, South Korea. — 5, *Carabus* (*Acoptolabrus*) *changeonleei* (♀); 6, natural hybrid between *C. (A.) changeonleei* and *C. (A.) constricticollis chiricola* (Specimen 1, ♀); 7, ditto (Specimen 2, ♀); 8, *C. (A.) constricticollis chiricola* (♀). Scale: 0.5 mm for a, 1 mm for b.

the group of *Damaster* – *Coptolabrus* – *Acoptolabrus* of East Asia, two natural hybrids between the subgenera *Damaster* and *Acoptolabrus* (IMURA, 1989, pp. 67–71) and a natural hybrid between *C. (Coptolabrus) smaragdinus* and *C. (C.) jankowskii* (CASALE *et al.*, 1989, pp. 157–162) have hitherto been reported. However, interspecific hybrid in the subgenus *Acoptolabrus* has not been known until now.

*Carabus (Acoptolabrus) changeonleei* and *C. (A.) constricticollis chiricola* occur almost sympatrically in the high altitudinal area of the Chiri-san Mountains, though the population density of the two species is extremely low in comparison with the other species distributed on the same mountain range. Although I have made consecutive survey of carabid beetles on the Chiri-san Mountains from 1987 to '90 and in '94, I had only two opportunities to collect such hybrids, and the reproductive isolation between the two species is usually considered complete. A natural hybridization may, therefore, occur only in case when their isolation mechanism is broken down accidentally for some reason, as has been suggested by me in the subgenera *Damaster* and *Acoptolabrus* of Hokkaido.

#### 要 約

井村有希：朝鮮半島南部におけるクビナガオサムシの自然雑種。——韓国慶尚南道の智異山から、チリサンクビナガオサムシとホソクビナガオサムシ智異山亜種との自然交雑によって生じたと思われる雑種2例を報告した。クビナガオサムシ亜属内における異種間の自然雑種が報告されるのは今回が初めてである。

#### References

- CASALE, A, S. DACATRA & L. FALLETTI, 1989. A natural hybrid of *Coptolabrus* species from South Korea (Coleoptera, Carabidae, Carabini). *Boll. Mus. reg. Sci. nat. Torino*, 7: 157–162.
- IMURA, Y., 1989. Natural hybrids of the *Damaster* species (Coleoptera, Carabidae) in Hokkaido, northern Japan. *Jpn. J. Ent.*, 57: 67–71.
- & H. KEZUKA, 1992. Geographical and individual variation of carabid beetles in the species of the subtribe Carabina (3). Carabid beetles of the southern part of the Korean Peninsula. In INOMATA, T. (ed.), *Illustrations of Selected Insects in the World*, (B), (3): 33–52, 6 pls., 24 figs. Mushi-sha, Tokyo.