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Rediscovery of the Curious Crabronid, *Ectemnius nitobei* (Matsumura), with a Description of the Female (Hymen., Sphecidae)

With 19 Text-figures

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(*Communicated by* Y. OKADA)

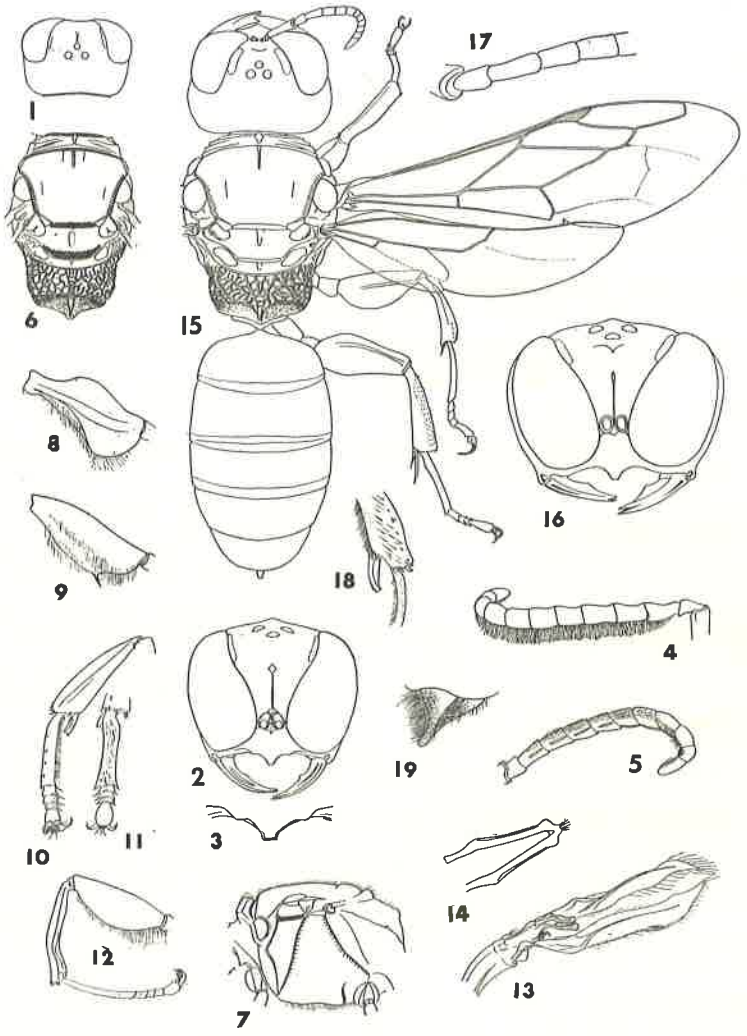
In 1912, Dr. S. Matsumura described a curious Crabronid (♀) having a ferruginous band on each abdominal segment under the name, *Crabro* (*Ceratocolus*) *nitobei*. Through the courtesy of Dr. C. Watanabe, I had a chance of studying the type specimen of this species preserved at the Entomological Institute, Hokkaido University. It was not a female, but a male specimen and showed a ferruginous colouration, instead of the bright yellow, characteristic of the common species of this wasp-group. The state of the specimen, however, prevented me from determining whether the colour was originally so or was the effect of potassium cyanide. As for the taxonomic position, it was undoubtedly a species of *Ectemnius*, but the tasselled antennae and the deformed and spined front femora were very strange compared to any of the known subgenera.

This species seemed very rare and no record of capture other than the type had ever been reported. The exact data of the sole specimen were not described except that it was collected by I. Nitobe in Aomori, the northernmost prefecture of Japan proper. Later, I asked my colleagues in Aomori Pref. to collect this curious Crabronid and I myself went there and searched for it in several seemingly possible places. All our attempts, however, were in vain. In 1953, during the time when I was collecting insects at the foot of Mt. Haku, I happened to capture several male specimens of an apparently *Pison*-like Crabronid. The characteristic ferruginous colouration together with the strange structure of the antennae and the legs, however, enabled me, without hesitation, to identify the specimens at once with *Ectemnius nitobei*. This showed that the curious colour of the type specimen above mentioned was not effected by the vapour of the poison. Since then, during the succeeding four years I was able to collect nine specimens, and my colleagues, five more. But all these were confined to the male sex only. At last, however, in 1956 a female specimen was captured

on the flower of *Aralia cordata*. It had a coloration similar to the male and it was ascertained that the species must be assigned to the subgenus *Metacrabro*, despite the peculiarities presented by the male. In spite of our special search around the mount as well as in various mountains in Central Japan, this species could not be discovered in any locality other than the first place. Even there, one is rather fortunate to capture a specimen without spending hours in waiting by a tuft of flowering Umbelliferae. Judging from the facts above described this species seems to be particularly rare and may represent one of the relics of the past or more probably, one of the comparatively recent mutants.

Because of the incompleteness of the original description, the characteristics of the male specimens will first be redescribed:

♂. Length 11–17 mm, mostly 14–15 mm, fore wing 9.5–12.0 mm. Head seen from above: Figure 1; OOD : POD : OCD=3 : 2 : 6, vertex from between postocelli towards occiput slightly elevated, other parts around postocelli somewhat depressed but not distinctly so in outlines. Frontal impressions comparatively distinct, located along inner and upper orbits of eyes and remarkably long (nearly twice as long as OOD), stretching over upper (horizontal) and lower (vertical) front. Head seen in front: Figure 2, clypeus: Figure 3, mandibles (Fig. 2) bifid at apex, with a broad triangular protuberance (not the common tooth) on inner margin toward middle. Antennae 12-jointed, scape as long as 5 following joints united, flagellum beneath fringed thoughout with erect hairs (Fig. 4); seen from above, relative length between joints 3, 4 and 5≒10 : 9 : 8.5, 3rd joint slightly less than twice as long as wide at apex (10 : 6), joints 3–6 slightly constricted at base and feebly carinated beneath, the carinae metallic golden in colour and glittering, joints 7–11 more strongly carinated on posterior margin, the carinae bright ferruginous and smooth (Fig. 5 seen from beneath). Thorax complex: Figure 6. Pronotum with anterior margin carinate and interrupted in middle by a deep groove, antero-lateral corners strongly reflected with apex triangularly pointed, posterior margin also keeled, across middle on outer half of the segment runs another ridge which is acuter at sides and triangularly produced. Prosternum provided with a short tooth just in front of procoxa (Fig. 7). Mesonotum medio-anteriorly with a fine longitudinal crenate furrow which is distinctly outlined on both sides by carinae, slightly apart from the furrow and on both sides a short longitudinal carina definable, parapsidal furrows represented here by a short smooth carina respectively. Scutellum with a shallow groove in middle; postscutellum anteriorly vertical with upper margin distinctly carinated, posteriorly ininclined to be gradually rounded. Propodeum with dorsal surface nearly half as long as posterior inclination which is flattened and marginated by carinae. Mesopleuron: Figure, 7, the carina in front of mesocoxa strongly produced. On abdomen, posterior margin of each segment (tergite as well as sternite) membranous, semitransparent, amber-coloured; apical tergite with medianly broad shallow depression. Mat markings on 2nd sternite completely absent. Front femur seen from above: Figure 8, seen from behind: Figure 9, provided with an acute spine on outer margin before middle; front tibia (Fig. 10, seen from inside) rather normal, very sparsely and weakly spinose on outer face, at apex with three short stout spines on latero-posterior corner and one in middle



Figs. 1-19. *Ectemnius* (*Metacrabro*) *nitobei* (Matsumura, 1912). 1-14 ♂, 15-19 ♀. 1, head seen from above; 2, ditto seen in front; 3, clypeus; 4, antenna seen in front; 5, ditto seen from beneath; 6, thorax-complex; 7, mesopleuron; 8, front femur seen from above; 9, ditto seen from behind; 10, front tibia and tarsus seen from inside; 11, ditto seen in front; 12, mid leg; 13 male genitalia; 14, the last ventral plate of abdomen; 15, ♀, general view; 16, head seen in front; 17, antennal joints 2-5; 18, front tarsal spur; 19, pygidial area.

of anterior face; front trasus: Figures 10 and 11, its metatarsus dilated and markedly long, 1.7 times as long as the following joints combined. Mid leg: Figure 12, tibia slightly excavated on inner margin beyond middle and similarly spined at apex as in front tibia but with no spur. Hind femur acutely keeled

beneath, tibia sparsely but strongly spinose on outer face, metatarsus nearly twice as long as remaining joints taken together. Wingvenation as in Figure 15; genitalia and last ventral plate of abdomen: Figures. 13 and 14.

Clypeus and lower front except fine medial line which is enlarged at the top densely covered with appressed silvery hairs; temples, mesopleurons, thorax beneath, all coxae beneath, under and outer sides of front femora, mid femora beneath (apically shorter), hind femora beneath in front (basally shorter) covered with long hoary white pubescence. Hairs on vertex, occiput (somewhat longer) and dorsal surface of thorax short and fuscous; those on first abdominal tergite anteriorly long and whitish, posteriorly shorter and brownish; front metatarsi with inner and anterior margins covered with dense, short, appressed, ferruginous piles. Vortex finely, closely but not strongly punctured; upper front somewhat coarsely subreticulate-punctate. Mesonotum anteriorly transversely, posteriorly longitudinally, closely rugose-punctate, not distinctly striate. Scutellum and postscutellum longitudinally, closely rugose-striate, on anterior portion rugose-punctate. Mesopleuron fairly closely, coarsely but not deeply punctured, upper portion punctate-rugose. Metapleuron longitudinally and closely striate. Sculpture on propodeum: Figure 6, posterior inclination closely striate, the striae mainly converging posteriorly but partly irregularly reticulate, sides of the segment longitudinally closely striate. First abdominal tergite rather closely and coarsely punctured, punctures on 2nd somewhat finer and closer but still fairly deep, on 3rd much finer and weaker, on 4th and 5th turning into delicate hair-pits and paractically impunctate, on 6th again somewhat strong and somewhat sparse, on 7th stronger and sparsely scattered.

Black, general appearance half-mat, although under microscope, intervals between punctures or striae smooth and shining, only propodeum completely mat. Scapes of antennae orange yellow, flagella dark brown, beneath ferruginous yellow. Legs ferruginous brown; all coxae, greater parts of outer and inner faces of front tibiae, inner margin and terminal joints of front tarsi, mid and hind femora beneath and mid and hind tarsi wholly dark brown; front femora and metatarsi and mid femora partly yellowish but not sharply maculated. Abdominal tergites and sternites 1–4 apically ferruginous brown and covered with membranous, semitransparent, amber-coloured cuticle, segment 5 apically only membranous, without ground brownish colouration. Short piles on abdomen agree in colour with ground cuticle on which they locate; generally, however, apically and laterally brownish, giving the surface more testaceous appearance. Wings fairly strongly brownish, with purplish irridescence in certain light.

Specimens examined: 3 ♂♂, Rokumanzan (about 1100 m high), Mt. Haku, 28–31. VII. 1953; 5 ♂♂, 1–2. VIII. 1953; 1 ♂, 16. VIII. 1956; 1 ♂ 16. VIII. 1957: the same place, leg. K. Tsuneki.

Description of the female: Length 19.0 mm, forewing 14.8 mm. General feature resembles *Ectemnius konowii* Kohl, rather stout and robust (Fig. 15). Head seen from above with temples roundly swollen out laterally, with OOD : POD : OCD≒2 : 1 : 5, surface elevation and depression around ocelli as in ♂, frontal impressions also similar. Head seen in front: Figure 16. Mandibles bidentate at apex, provided with a weak triangular protuberance on inner margin toward

middle as in ♂. Scapes of antennae slightly shorter than 5 following joints united (ratio 9 : 10) relative lengths and widths (within parentheses) between joints 3, 4 and 5 (Fig. 17)=12 (6) : 10 (7) : 9 (7.3). Pronotum similar in general structure to ♂, but less strongly formed, especially so the triangular teeth at the latero-anterior corners. On abdomen end tergite with pygidial area (Fig. 19) which is basally triangular and flattened, apically elongate and gutterwise excavated and the whole area enclosed by strong carinae. Legs normal, but all femora much thicker than in *E. konowii*; in spinosity to similar to ♂, but very much stronger; front tarsal spur (antennal comb) somewhat characteristic in form (Fig. 18). In forewing 1st part of cubital nervure (Rs+M) relatively longer than in ♂ as compared with 2nd part.

Pilosity similar to ♂, but generally shorter, especially so on abdomen, area pygidialis enclosed on both sides by a tuft of long blackish bristles. Colouration also similar to ♂ in general, but the ferruginous bands on abdomen definable only on basal three segments and coxae and femora of all legs much darker. Punctuation and sculpture similar in pattern to ♂; generally, however, finer and closer. On mesonotum longitudinal rugose striae on middle and posterior portions well-defined, but transverse ones are confined only to the anterior and lateral portions. Sculpture on propodeum as in ♂ (Fig. 15), on pygidial area finely rugose-reticulate, the side of the area coarsely punctured.

Allotype: ♀, Rokumanzan, Mt. Haku, 16. VIII. 1956, K. Tsuneki leg.

Remarks. In the structure of the front legs of the male, this species is not unlike *Ectemnius singularis* (Smith) of North America, but the characters of the antennae are quite otherwise and utterly unique among allied species. Moreover, in the form of the mandibles (especially in the female), this species lies somewhat afar from the typical species of *Ectemnius*. Furthermore, in colour this species represents an exceptional status among so many species of Crabronids. All these facts seem to suggest that it may merit a new subgenus. However, judging from the wingvenation and general structure and sculpture of the body in the female which is believed to retain more stable characters as compared with the male, it seems better to allocate *nitobei* still within the group *Metacrabro*, by enlarging somewhat the criterion of the subgenus.

REFERENCES

Matumura, S. 1912 Thous. Ins. Jap., Suppl. IV, p. 173, Pl. LIII, fig. 5, ♀, N. 930.

Leclercq, J. 1954 Monographie systématique, phylogénétique et zoogéographique des Hyménoptères Crabroniens. Liège. p. 291.