

## A New Species of *Copidosoma* Ratzeburg (Hymenoptera: Encyrtidae) from Eagle Nests in Kazakhstan

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*Abstract.*—A new species of polyembryonic encyrtid of the genus *Copidosoma* is described from north-central Kazakhstan. *Copidosoma naurzumense*, n. sp., was reared from tineid moth larvae collected from regurgitated pellets collected near eagle nests in the Naurzum nature reserve. This is the third species of the genus *Copidosoma* reported from Kazakhstan. This species is similar to *C. longiventre* Myartseva from Turkmenistan, from which it differs by having dark tegulae and front coxae, shorter antennal segments and clava, and smaller body size. The natural history and ecology of the parasitoid and its host are discussed.

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*Резюме.* Описан новый вид энциртид рода *Copidosoma* из Казахстана (Наурзумский государственный природный заповедник). *Copidosoma naurzumense*, sp. n. выведен из гусениц молей семейства *Tineidae* (Lepidoptera), найденных в погадках, собранных около гнезд орлов. Это третий представитель рода *Copidosoma*, обнаруженный в Казахстане. *C. naurzumense* sp. n. сходен с *C. longiventre* Myartseva из Туркменистана, от которого он отличается темными тегулами и передними тазиками, более короткими члениками и булавой усиков, а также меньшими размерами тела. Приведены краткие сведения по биологии и экологии паразитоида и хозяина.

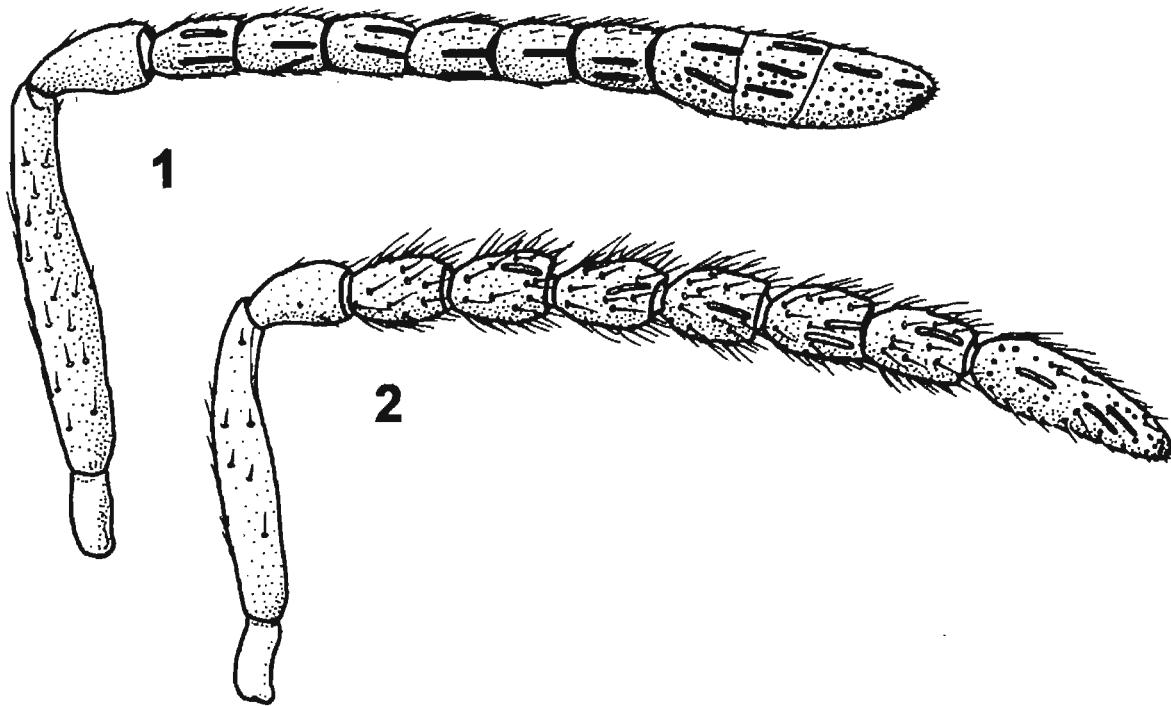
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Parasitic wasps of the encyrtid genus *Copidosoma* are polyembryonic parasitoids of lepidopteran caterpillars. The genus has a worldwide distribution and, according to Noyes et al. (1997), includes about 150 described species. However, Trjapitzin (1989) suggests that there are 184 described species of *Copidosoma* in the world, 133 of which occur in the Palearctic. The fauna of the family Encyrtidae of Central Asia was revised most recently by Myartseva (1984), and includes 31 species of *Copidosoma* (4 of them as *Litomastix*), with only two species, *C. filicorne* (Dalman) and *C. boucheanum* Ratzeburg, found in Kazakhstan.

The new species described below was reared by T. Katzner from caterpillars of clothes moths (Lepidoptera: Tineidae) collected from regurgitated pellets from eagles in the *Naurzumskiy Zapovednik* (Naurzum National Nature Reserve) in the Naurzumskiy region of the Kostanay Oblast' of north-central Kazakhstan (51° N, 64° E).

### *Copidosoma naurzumense* Sharkov, Katzner and Bragina

*Female.*—Body length 1.2–1.6 mm (holotype—1.44 mm). *Head:* Width approximately twice its length and equal to its height (35:18:35). Frontoververtex width at



Figs. 1-2. *Copidosoma naurzumense* Sharkov, Katzner and Bragina, n. sp. 1—female antenna; 2—male antenna.

the level of anterior ocellus approximately  $\frac{1}{2}$  head width (18:35). Distance between posterior margin of eye and occipital margin approximately  $\frac{1}{9}$  eye length from above (1.5:13.5). Ocelli in obtuse triangle with the angle at the anterior ocellus of  $103^\circ$ . POL:OOL:LÖL:OCL = 11:1.3:5.5:1. Maximum diameter of eye 1.2 times its minimum diameter (17:14). Distance between antennal toruli twice the distance between antennal torulus and mouth margin and approximately  $\frac{1}{3}$  the distance between antennal torulus and eye margin (4:2:13). Antenna as in Fig. 1. Mouth width slightly greater than malar space (16:15). *Mesosoma*: length 1.4 times its width (49:35). Scutum transverse, its length about  $\frac{2}{3}$  its width (22:35). Scutellum of equal length and width (22:22). Mid tibial spur length equal to length of first tarsomere (9:9) and approximately  $\frac{1}{4}$  length of middle tibia (9:35). Fore wing length 2.3 times its width (93:41) (Fig. 3). *Metasoma*: Longer than head and mesosoma combined. In dry specimens its length varies depending on degree of extension of sclerites, and

ranges from 1.1 to 2.0 times combined length of head and mesosoma (85:60 in the holotype). Ovipositor not exerted, with gonostyli fused to second valvifers, their length about  $\frac{1}{3}$  length of mid tibia. *Color*: Head and body generally dark, almost black. Face very dark brown, almost black, frons and vertex black, with very slight dark blue-green shine. Antenna dark brown, with slightly lighter apex of the pedicel. Scutum black, with dark blue-green shine, which is slightly more strongly expressed than on vertex; scutellum with slight dark purple reflection. All coxae dark brown. Front femur and tibia dark brown, with very light brown apex of femur and base of tibia, tibia very slightly lighter towards the apex; tarsus brown. Middle femur dark brown, with light brown apex; tibia light brown, with white translucent base, and gradually becoming brownish yellowish white toward apex; spur and tarsus almost white, with last tarsomere brownish. Hind femur dark brown, with light apex, tibia with whitish translucent base, dark brown in middle,

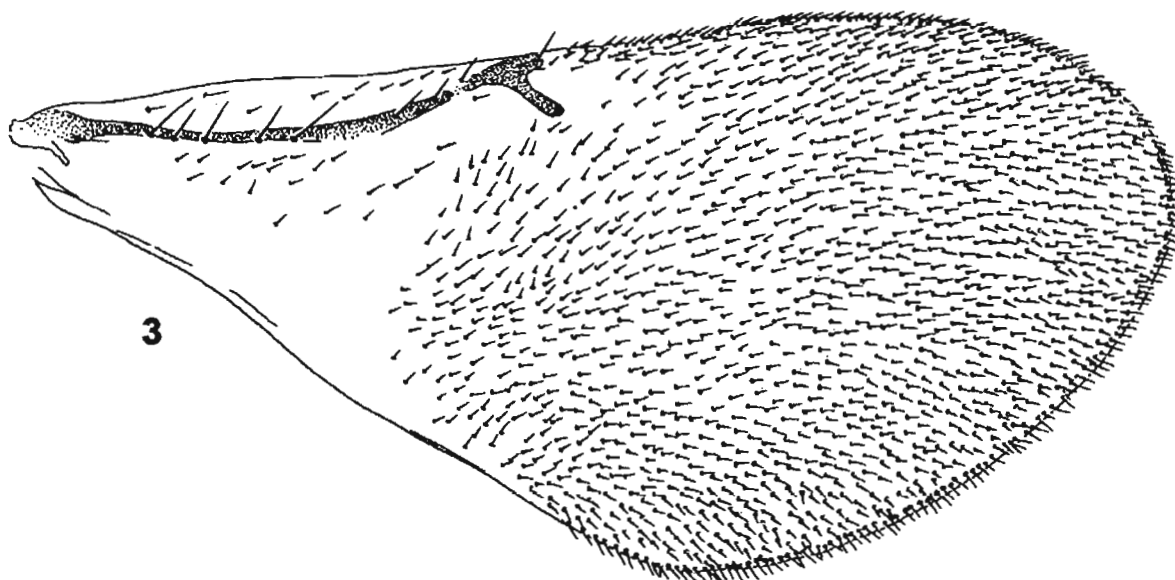


Fig. 3. *Copidosoma naurzumense* Sharkov, Katzner and Bragina, n. sp. female forewing.

and gradually becoming brownish yellow in apical  $\frac{1}{3}$ ; tarsus yellowish white, with last tarsomere brownish. Metasoma black, with very slight metallic reflection. *Sculpture*: Head and body reticulate, with cells rounded on frons, vertex, and dorsal side of mesosoma, and elongate on gena, mesopleuron and metasoma. Cell diameter on dorsal side of head and mesosoma about  $\frac{1}{2}$  diameter of posterior ocellus.

*Male*.—Body length 1.2–1.4 mm. General appearance as in female, except head slightly wider (width 2.1 times length and 1.1 times height), ocelli in more obtuse triangle (angle at anterior ocellus  $115^\circ$ ), mid tibial spur slightly shorter than first tarsomere, and metasoma equal in length or shorter than head and mesosoma combined. Length of aedeagus, when exerted,  $\frac{1}{3}$  to  $\frac{1}{2}$  length of mid tibia. Digiti with two teeth. Antenna as in Fig. 2. Color and sculpture as in female, although sculpture patterns somewhat more pronounced.

*Types*.—Holotype female:  $51^\circ 33.3' N$   $064^\circ 07.9' E$  KAZAKHSTAN, Kostanay region, Naurzumskiy zapovednik, near Kar-amendy (formerly Dokuchaevka), eagle pellet from nest #10, 6.v.1998, emerged 17.vii.1998, T. Katzner. Paratypes: 2 females, same data; 10 males, same data ex-

cept, 16.vii.1998; 30 males, same data except, eagle pellet from nest #21, 26.v.1999; 8 females, same data except, eagle pellet from nest #13, 26.V.1999; 3 females, 4 males, same data except, eagle pellet from nest #12, 19.vi.1999; 41 females, 43 males, same locality, summer 1998 (deposited at the OSU Insect Collection, Columbus, OH).

*Diagnosis*.—From *C. filicorne*, which also occurs in Kazakhstan, differs in having the metasoma longer than the head and mesosoma combined, and dark brown front coxa. The second species occurring in Kazakhstan, *C. bouchenum*, has white tegulae, the clava shorter than three preceding funicular segments, and the body length of 3.0–3.2 mm. In Myartseva's (1984) key runs to *C. longiventre* Myartseva from Turkmenistan, from which it differs by having dark tegulae and front coxae, shorter funicular segments and clava, and a smaller body size. In *C. longiventre* funicular segments are more than twice longer than wide, clava is equal in length to four preceding funicular segments combined, and the body length is 2.4 mm. In Trjapitzin's (1989) key *C. naurzumense* runs to *C. clavatum* Myartseva from Turkmenistan, from which, according to

Myartseva's (1984) key, it differs in having the metasoma longer than the head and mesosoma combined. In Kazmi and Hayat's (1998) key to Indian *Copidosoma*, runs to *C. koehleri*, an introduced South American species, which is a parasitoid of the potato tuber moth.

*Natural history and ecology.*—The climate in the region of the Naurzumskiy Zapovednik is harsh continental. Minimum winter temperatures are  $-45^{\circ}\text{C}$ , and summer maximums reach  $41^{\circ}\text{C}$ , with average yearly temperature being  $2.4^{\circ}\text{C}$ . Precipitation is highly variable, but averages 233 mm per year.

Parasitized and unparasitized host larvae were found in summers 1997–2000 in regurgitated pellets collected from nests and roosts of several species of eagles *Aquila* and *Haliaeetus*. Although hosts and parasitoids were collected from pellets during each month of the summer and late spring, host larvae were most frequently observed during the colder and wetter months of April and May. Host larvae were found in pellets composed of mammal fur, bird feathers, or mixtures of both. Of more than 9500 pellets evaluated, less than 500 contained the host larvae, with the number of larvae per pellet being generally less than ten, but occasionally more than 100. Current estimates of the parasitism rate are that it is less than 40%. Sterile defender (precocious) larvae occur in this species, as they do in several other polyembryonic encyrtids (Cruz 1981, 1986).

Similar numbers of tineid moths and hymenopterans were found in pellets of raptors in North America (Philips and Dindal 1979). Pellets represent a large concentration of potential food that can support diverse invertebrate communities.

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