

Two new species of *Cyclogastrella* Bukowskij from Kazakhstan and North America (Hymenoptera, Chalcidoidea, Pteromalidae)

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Abstract.—Two new species of *Cyclogastrella* Bukowskij are described: *C. arida* Dzhankmen et Grissell, swept mainly from *Tamarix sp.* (Tamaricaceae) near Tauchik, Kazakhstan, and *C. plana* Dzhankmen et Grissell, reared from the pupa of *Archips argyrospila* (Walker) (Lepidoptera: Tortricidae) and *Anacamptodes pergracilis* Hulst (Lepidoptera: Geometridae) in Louisiana and Florida, United States. A key to the Holarctic species of *Cyclogastrella* is given.

The genus *Cyclogastrella* Bukowskij (1938) is known from five species from the following zoogeographical regions: Holarctic: *C. simplex* (Walker, 1834); Palearctic: *C. flavius* (Walker, 1839) and *C. clypealis* Bouček (1965); Australian: *C. shorti* Bouček (1988); and Oriental: *C. leucaniae* Liao (in Liao et al. 1987). Published records (Peck et al., 1964; Graham, 1969; Dzhankmen, 1978, 1984, 1990; Bouček and Rasplus, 1991; Bouček and Heydon, 1997) as well as the findings of our current research indicate that species of this genus are parasites in pupae of small Lepidoptera: Tortricidae, Gelechiidae, Noctuidae, Geometridae (new host), and Choreutidae. The common species *C. simplex* has gregarious larvae (Scott 1922), and it is likely that other species do as well. In this paper we describe two new species of *Cyclogastrella* and give a key to Holarctic species that replaces Graham (1969).

Species of *Cyclogastrella* may be recognized by the following set of characters: gena without depression; head without occipital carina; torulus at or below eye margin; clypeal margin without sharp teeth (rounded or angulate lobes may be present); antenna with 2 to 3 anelli; marginal vein not broadened, 1-1.5 times as long as postmarginal vein; postmarginal vein 1-1.2 times as long as stigmal vein; female metasoma round.

The following morphological abbreviations are used: POL = postocellar length (distance between lateral ocelli); OOL = ocellular length (distance between lateral ocellus and eye).

Cyclogastrella arida Dzhankmen et Grissell, new species (Figs. 1- 3)

Female holotype. Body length 2 mm. Body black, metasoma with weak green tinge. Antenna reddish testaceous, clava hardly infumate. Coxae coloured as body; legs reddish testaceous with femora darker. Wings hyaline or nearly so, venation testaceous, stigma tending to darker. Head in dorsal view 2.1 times as broad as long. Temples converging moderately. Occiput without transverse ridge. POL 1.3 times as long as OOL. Face protuberant at level of antennal insertion. Eyes relatively small, their major diameter 1.9 times as long as malar distance. Antennal formula 11263 (Fig. 1); scape only just reaching lower edge of median ocellus; flagellum slender, nearly cylindrical, hardly stouter proximally than pedicel; first funicle segment a little longer than broad, following segments quadrate. Clypeus reticulate with traces of striation, its apical margin broadly emarginate. Both mandibles with 4 teeth. Mesosoma 1.3 times as long as broad. Pronotal collar with front edge angled and with a smooth shiny strip along hind margin. Mesoscutum moderately convex, reticulate with distinctly raised interstices. Notauli incomplete. Scutellum slightly longer than broad, moderately convex, more finely reticulate than mesoscutum, without frenal groove. Propodeum medially slightly shorter than scutellum, its median area hardly broader than long, uniformly reticulate; median carina indicated at most in base of sclerite only; plicae more distinct in their posterior 1/2; nucha convex, length about 1/3 as long as median area, weakly reticulate. Legs slender, profemur 4 times as long as wide. Forewing: costal cell widened, its lower surface with one complete row of hairs and a few scattered hairs in distal 1/3; basal cell and basal vein bare; speculum open below, on upper surface extending to base of stigmal vein; disc beyond speculum rather sparsely pilose; fringe absent around margin of entire wing; marginal vein nearly as long as postmarginal and distinctly longer than stigmal; stigma tending to be subcircular (Fig. 2); pilosity of wing pale and inconspicuous. Metasoma circular, obtuse apically, slightly shorter than mesosoma; basal tergite occupying 1/3 total length, its hind margin weakly curved and hardly emarginate medially.

Male. Length 1.7-2.0 mm. Differs from female as follows. Head and mesosoma black green with metallic tinge. Funicle slender (Fig. 3), setae semierect, about 0.5 times as long as funicle width. Median carina of propodeum faint. Metasoma oblong, shorter and narrower than mesosoma, immaculate.

Variation. The color of the forewing venation varies from yellow to brown. The pronotal collar is faintly margined over its middle 1/3 in some specimens.

Type material. Holotype female, southwestern Kazakhstan, Mangyshlak Peninsula, near Tauchik, 24-V-1988, coll. Klarissa Dzhanokmen, on *Tamarix* spp. (Tamaricaceae) (in Institute of Zoology, Almaty, Kazakhstan); paratypes, same depository as holotype except as noted, all same collector: 1 female, same data as holotype; 1 male, 27-V-2000; 3 males, 28-V-2000; 1 male, 29-V-2000; 4 males, 30-V-2000; 1 male, 31-V-2000; 1 male, 3-VI-2000; 1 female, 1 male, 4-VI-2000; 3 males, 5-VI-2000, southern Kazakhstan, near town Karatau, on *Tamarix* sp. (1 female, 1 male in collection National Museum of Natural History, Washington, DC); 1 male, 19-V-2002, near lake Bijlikol, 20 km to the east of town Karatau, swept from herbage; 1 female, 21-V-2002, 2 males 29-V-2002, in the environs of town Karatau, on *Tamarix* sp.; 2 females, southeastern Kazakhstan, 50 km to the northeast of town Balchash, 11-VI-1978, on herbage; 1 female, 52 km to northeast of town Balchash, 11-VI-1978, on *Haloxylon aphyllum* (Minkw.) Iljin (Chenopodiaceae).

Hosts. Unknown.

Discussion. *Cyclogastrella arida* differs from other known Holarctic and Palearctic species of this genus in its very straight postmarginal vein (Fig. 2), large subcircular stigma, and protuberant face at the level of antennal incertion. This species resembles *C. flavius* in its slender flagellum (Figs. 1, 3), but differs mainly in having the following combination of characters: flagellum with two anelli (Figs. 1, 3), basal vein bare, and forewing without fringe.

***Cyclogastrella plana* Dzhanokmen et Grissell, new species**

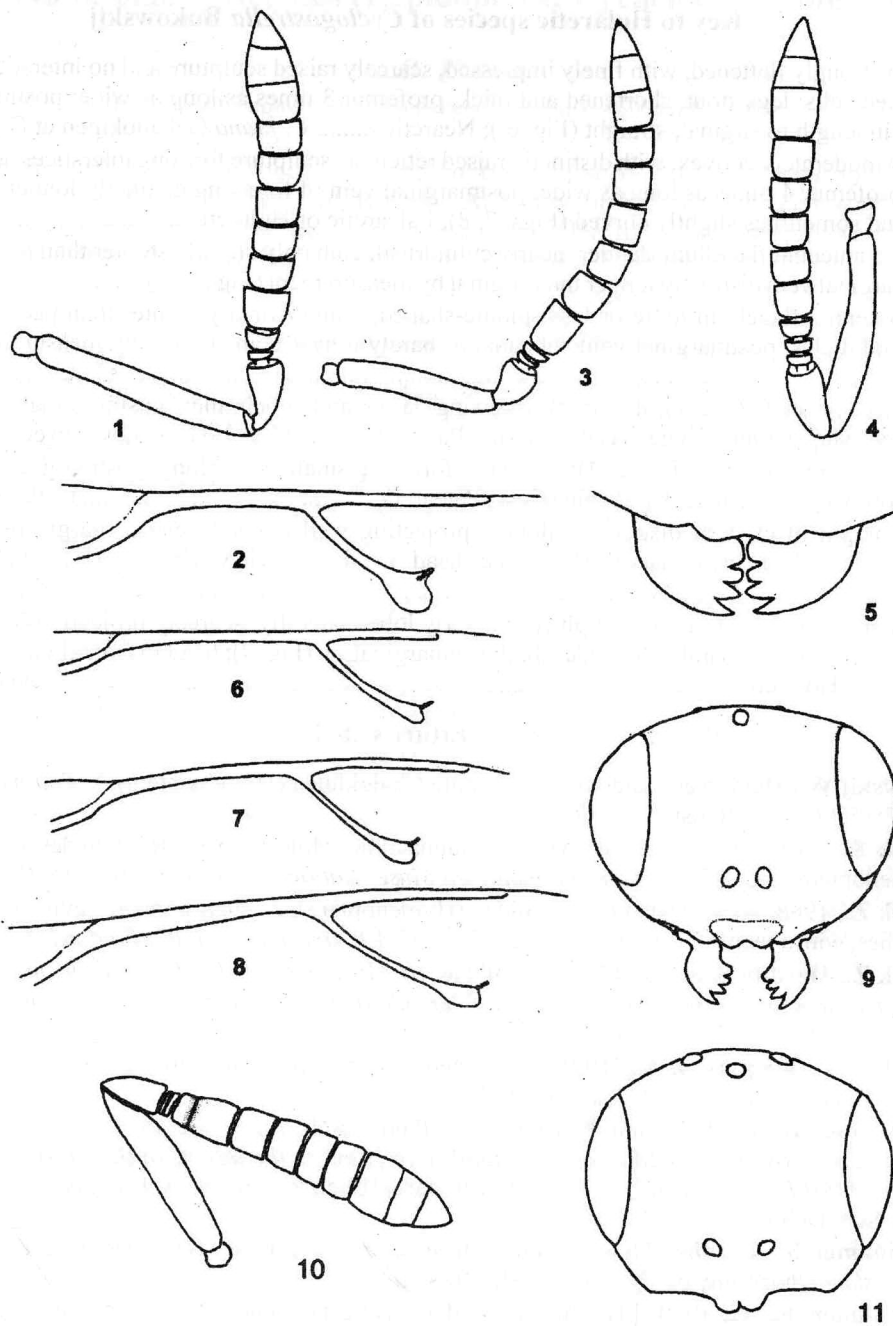
(Figs. 4-6)

Female holotype. Body length 2.1 mm. Head and dorsum of mesosoma bronze black with metallic tinge especially on mesoscutum and scutellum. Propodeum and mesopleuron black with no metallic tinge. Metasoma brown. Antennal scape and pedicel more or less testaceous, flagellum brownish, clava lightening gradually distad. Fore coxae black, mid and hind coxae brownish, legs whitish testaceous except brownish fifth tarsomere. Wings hyaline with pale pilosity, venation testaceous. Head nearly twice as broad as long; its reticulation fine, shiny and slightly raised, especially on frons and vertex. Temples converging rather strongly, curved. POL 1.5 times length of OOL. Eyes large, their major diameter 2.5 times as long as malar distance. Face protuberant at level of antennal insertion. Toruli placed about level with ventral edge of eyes. Antennal formula 11353 (Fig. 4); scape not reaching lower edge of median ocellus; pedicel nearly twice as long as first funicle segment; flagellum slender, nearly cylindrical; all anelli distinctly transverse; first funicle segment a little longer than broad, following segments subquadrate; clava 3 times as long as broad, pointed apically. Clypeus reticulate with only traces of striation, its apical margin shallowly emarginate. Both mandibles with 4 teeth (Fig. 5). Mesosoma essentially flat, nearly in same plane as propodeum. Pronotum narrower than mesoscutum, its collar not margined. Mesoscutum with fine, shiny reticulation scarcely raised above general surface and with distinct piliferous punctures. Notauli incomplete but sometimes traceable as far as hind margin as obscure depression. Scutellum slightly broader than long, strongly flattened, shiny, its sculpture fine, nearly engraved and not raised above surface; frenal line superficial. Propodeum medially about half as long as scutellum, panels of median area uniformly reticulate and dull, nucha weakly developed and less sculptured than rest of median area, median carina absent, plicae traceable throughout. Legs short and stout, profemur about 3 times as long as broad. Forewing: lower surface of costal cell with complete row of hairs and few scattered ones in distal 1/3, basal cell bare, basal vein with 1 to 3 hairs, speculum open below, on upper surface of wing extending below marginal vein for about 1/3 length of latter, wing beyond speculum moderately thickly pilose, wing without marginal fringe, marginal vein 1.7 times as long as stigmal, postmarginal vein straight and subequal to stigmal (Fig. 6). Metasoma short ovate or subcircular, obtuse apically, as long as or slightly longer than mesosoma, hind margin of basal tergite hardly emarginate medially.

Male. Length 1.5 to 2.0 mm. Structurally differs little from female except as follows: hind margin of forewing with setal fringe; flagellum pale, covered with numerous silver setae and multiporous plate sensilla that obscure individual segments.

Variation. Females range in length from 1.8 to 2.1 mm. All specimens are uniform in color and sculpture.

Type material. Holotype female, USA, Louisiana, Iberville Parish, 27-V-1987, coll. D. Brann, ex pupa *Archips argyrosipila* Walker (Tortricidae) (in National Museum Natural History, Washington, DC). Paratypes (all in Washington, DC, unless noted otherwise): 19 females, 1 male, same data as holotype (1 female paratype in Institute of Zoology, Almaty); 12 females, 1 male, Florida, Collier County, Big Cypress Nat'l. Preserve, J. Ghent, 3-X-1980, ex pupa *Anacamptodes pergracilis* Hulst (Geometridae); 2 females, 12 males, same except "Collier and Monroe" Counties, em. 5-XII-1980, W. A. Carothers, ex pupa *A. pergracilis* (1 female, 1 male paratypes in The Natural History Museum, London).



Figs. 1-11. *Cyclogastrella arida* (1-3): 1- antenna, female; 2- forewing venation, female; 3 - antenna, male.

Cyclogastrella plana, female (4-6): 4 - antenna; 5 - mandibles and anterior margin of clypeus; 6 - forewing venation.

Cyclogastrella flavius, female (7): forewing venation.

Cyclogastrella simplex, female (8-10): 8 - forewing venation; 9 - head, frontal view; 10 - antenna.

Cyclogastrella clypealis, female (11): head, frontal view.

Hosts. This species was reared from the pupa of *Archips argyrospila* (the fruit-tree leafroller) and of *Anacamptodes pergracilis* (the cypress looper). In each host it appears that all specimens emerged from the same pupa, which indicates that this parasitoid is gregarious.

Discussion. This species can be distinguished from other Holarctic species by its strongly flattened scutellum with finely impressed, non-raised sculpture and the stout, shortened and thickened legs with the profemur about 3 times as long as wide. In other species the scutellum is convex with distinctly raised, reticulate sculpture and with the profemur about 4 times as long as wide.

Key to Holarctic species of *Cyclogastrella* Bukowskij

1. Scutellum strongly flattened, with finely impressed, scarcely raised sculpture and no interstices that form deep-walled cells; legs stout, shortened and thick, profemur 3 times as long as wide; postmarginal vein subequal in length to stigmal, straight (Fig. 6); Nearctic *C. plana* Dzhanokmen et Grissell, sp. n.
- Scutellum moderately convex, with distinctly raised reticulate sculpture forming interstices and cells; legs slender, profemur 4 times as long as wide; postmarginal vein of forewing distinctly longer than stigmal (Fig. 2) and sometimes slightly curved (Figs. 7, 8); Palearctic or Holarctic 2
2. Both sexes, antennal flagellum slender, nearly cylindrical, club only slightly stouter than pedicel (Figs. 1, 3); postmarginal vein distinctly longer than stigmal by measurement (Figs. 2, 7) 3
- Female, antennal flagellum more or less spindle-shaped, club distinctly stouter than pedicel (Fig. 10); females and males, postmarginal vein subequal or barely longer than stigmal by measurement (Fig. 8) 4
3. Antenna with two anelli (Fig. 1); stigma of forewing large and subcircular, postmarginal vein straight (Fig. 2), forewing without fringe, basal vein bare; Palearctic *C. arida* Dzhanokmen et Grissell, sp. n.
- Antenna with three anelli (as in Fig. 4); stigma of forewing small and oblong, postmarginal vein curved (Fig. 7), forewing with fringe, basal vein pilose; Palearctic *C. flavius* (Walker)
4. Anterior margin of clypeus distinctly bilobed, projecting well beyond ventral margin of head, lobes separated by slitlike invagination (Fig. 11); head in frontal view circular (Fig. 11); Palearctic *C. clypealis* Bouček
- Anterior margin of clypeus at most slightly angularly lobed laterally, scarcely projecting beyond ventral margin of head, lobes separated by wide, shallow emargination (Fig. 9); head in frontal view transversely oval (Fig. 9); Holarctic *C. simplex* (Walker)

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