

A REVIEW OF *COELOPOETA* (ELACHISTIDAE), WITH DESCRIPTIONS OF TWO NEW SPECIES

LAURI KAILA

Zoological Museum, P.O. Box 17, FIN-00014 University of Helsinki, Finland

ABSTRACT. The genus *Coelopoeta* Walsingham, 1906 (Lepidoptera, Elachistidae), is reviewed. Three species are recognized, two of which are described as new: *C. phaceliae* Kaila, new species (California, USA) and *C. maiadella* Kaila, new species (Yukon, Canada). The genus former was considered monotypic and included only *C. glutinosi* (Walsingham) (California). *Coelopoeta* apparently is restricted to western North America. Diagnoses and descriptions are given for all three species.

Additional key words: diagnosis, taxonomy, systematics.

Walsingham (1908) described the genus *Coelopoeta* for one species, *glutinosi* Walsingham, which occurs in California. He placed the genus in Hyponomeutidae. He also recognized the association of *Coelopoeta* with *Elachista*. Barnes and Busck (1920) and Braun (1948) placed *Coelopoeta* in the Elachistidae, the latter author according to characters of the adult mouth parts, antennae, and wing venation. She recognized, however, differences in genitalia, especially those of the male, between *Coelopoeta* and other members of the Elachistidae. Hodges (1978) doubted the monophyly of Elachistidae sensu Braun (1948), and suggested that *Coelopoeta* might be derived from the Oecophorini. He placed the genus in its own subfamily, Coelopoetinae, and kept it within the Elachistidae. Minet (1989) attempted to redefine the Elachistidae on the basis of the structure of pupal abdominal segments, the spinose gnathos in the male genitalia, the absence of dorsal spines in the adult abdomen, and several homoplastic characters. He excluded *Coelopoeta* from Elachistinae and even from his broadened concept of Elachistidae because of the different shape of the gnathos and the presence of dorsal abdominal spines in the genus. However, he indicated that the correct position of *Coelopoeta* was not unequivocally resolved. Hence, the relationships of this genus to other members of Gelechioidea remain obscure. In this paper I follow Braun (1948), Hodges (1978), and Hodges et al. (1983), and provisionally assign *Coelopoeta* to the Elachistidae until a generally accepted systematic position for the genus is found.

In addition to the type species of *Coelopoeta*, I describe in this paper two new species and present diagnoses and descriptions for all three species. The three species show only relatively small morphological differences.

The following institutions provided material for this study: Zoological Museum (ZMH), University of Helsinki, Finland; Essig Museum of Entomology (UCB), University of California, Berkeley; and United

States National Museum of Natural History (NMNH), Smithsonian Institution, Washington, D.C.

SYSTEMATICS

Coelopoeta glutinosi Walsingham (= *baldella* Barnes & Busck) is the largest and most broad-winged of the species. It is whitish or pale ocherous in color, only occasionally darker brownish. The dusting on the forewing of *C. glutinosi* is formed by the dark tips of scales (Figs. 1–4). *Coelopoeta phaceliae*, new species, is darker, bright yellowish brown, and has narrower forewings than *C. glutinosi*. The forewing scales are almost entirely brown (Fig. 5–8). *Coelopoeta maiadella*, new species, is grey, with a bright whitish spot on the forewing (Fig. 9). The male genitalia of *C. glutinosi* and *C. phaceliae* are most easily separated by the size of the vinculum: longer and broader in *C. glutinosi*, in which the vinculum is broadest near the tip (Fig. 12). The vinculum is narrow and gradually tapered towards the tip in *C. phaceliae* and *C. maiadella* (Figs. 12, 14). The cucullus of the valva is more distended in *C. glutinosi* than in that of *C. phaceliae* and *C. maiadella*. This character is seen most easily in ventral view (Figs. 10, 12, 14). *Coelopoeta maiadella* is separated from the other species by its longer and more slender aedeagus and more tapered juxta (Figs. 14, 15); the cucullus is not distended in *C. maiadella*. The female genitalia appear to be similar in *C. glutinosi* and *C. phaceliae* [the differences in Figs. 16 and 17 are artifacts of preparation]. The female of *C. maiadella* is unknown.

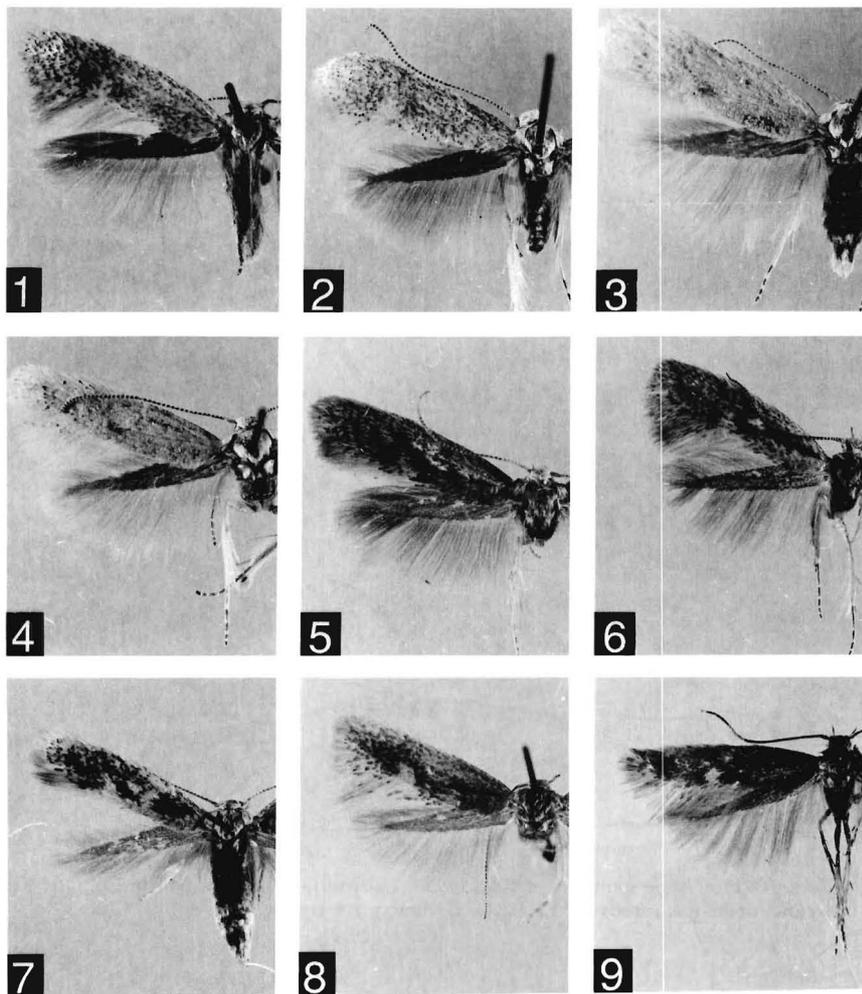
***Coelopoeta glutinosi* Walsingham, 1908**

(Figs. 1–4, 10–11, 16)

Coelopoeta glutinosi Walsingham 1908:218

Coelopoeta baldella Barnes & Busck 1920:248; synonymized by Braun 1948:8.

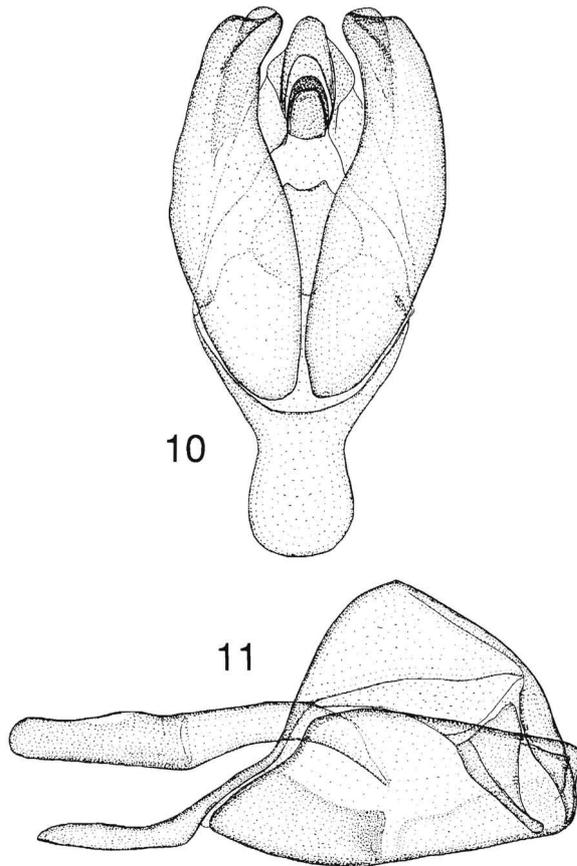
Adult. Labial palpi relatively short, almost straight, white, occasionally with some grayish scales. Head and neck tufts white, mottled ocherous in darker specimens. Antenna white, flagellum annulated with dark gray above. Abdomen white, dorsally with gray transverse fascia at base of each segment, with chitinized spines dorsally, appearing as bare, brown, transverse fasciae. Legs white, fore- and midlegs with gray dusting, tarsal segments with dark gray scales above. Forewing: Costa from base to one-third dark gray; ground color creamy white or pale ocherous, more or less densely dusted with gray or brownish tips of scales, dusting denser in apical half; an irregular darker patch in middle of wing at fold, the patch bound outwardly with an irregular whitish area. Cilia same color as forewing. Forewing length 5.0–6.5 mm. Hind-



FIGS. 1-9. Adults of *Coelopoeta* species. 1, *C. glutinosi*, male, California, Monterey Co.; 2, *C. glutinosi*, male, California, Ventura Co.; 3, *C. glutinosi*, female, California, Monterey Co.; 4, *C. glutinosi*, female, California, Marin Co.; 5, *C. phaceliae*, holotype, male, California, Modoc Co.; 6, *C. phaceliae*, paratype, male, California, Plumas Co.; 7, *C. phaceliae*, paratype, female, California, San Mateo Co.; 8, *C. phaceliae*, paratype, female, California, Plumas Co.; 9, *C. maiadella*, holotype, male, Canada, Yukon Territory.

wing gray. Underside of wings unicolorous grayish brown, except margins and cilia of forewing whitish.

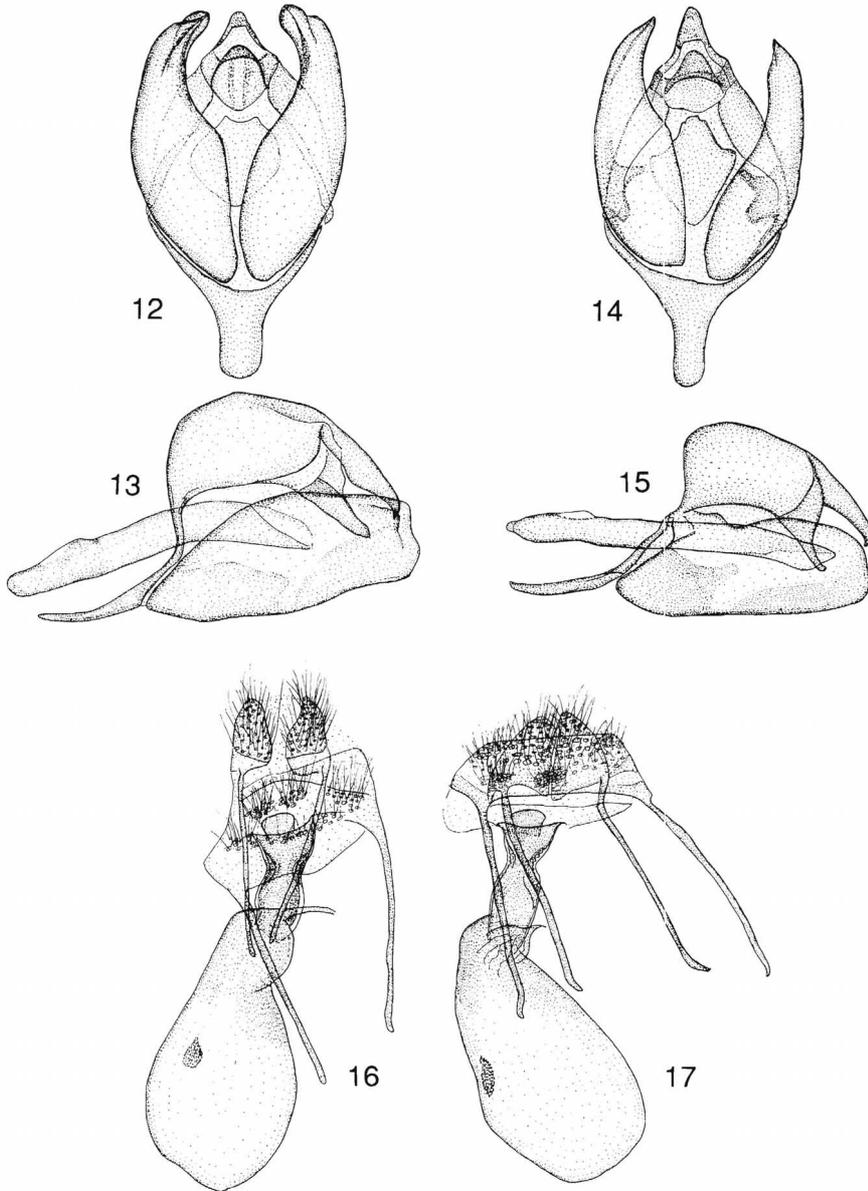
Male genitalia (Figs. 10-11). Uncus elongate, strongly sclerotized, apically tapering, ventrally concave, tip curved. Gnathos strongly sclerotized, tapering towards upturned, concave tip. Valva broad, apically



FIGS. 10-11. Male genitalia of *Coelopoeta glutinosi*, California, Marin Co.; **10**, Ventral view, aedeagus removed; **11**, Lateral view, juxta removed.

bent inward, inner margin gently concave; sacculus lobe apically straight-angled, with a few setae; cucullus prominently distended. Juxta shield-shaped, distally broad, laterally slightly produced. Vinculum strongly sclerotized, medially sharply and broadly produced, forming a broad spoon-shaped plate. Aedeagus with slightly produced caecum, smoothly bent in middle, apex oblique; the length equal to the length of the valva; cornuti absent.

Female genitalia (Fig. 16). As in *C. phaceliae* (see below). In Fig. 16, the length and density of setae on the papillae anales and posterior margin of the eighth segment have been reduced in order to clarify the illustration. The difference in size of the appendix bursae in Figs. 16 and 17 does not represent true interspecific differences; the appendix



FIGS. 12-16. Genitalia of *Coelopoeta* species. 12, Male genitalia of *C. phaceliae*, California, San Mateo Co., ventral view, aedeagus removed; 13, Same as 12, lateral view, juxta removed; 14, Male genitalia of *C. maiadella*, Canada, Yukon Territory, ventral view, aedeagus removed; 15, Same as 14, lateral view, juxta removed; 16, Female genitalia of *C. glutinosi*, California, San Bernardino Co., Kaila prep. #912; 17, Female genitalia of *C. phaceliae*, California, San Mateo Co., Kaila prep. #910.

bursae of *C. phaceliae* collapsed in mounting. The size and shape of the signum vary in both species, and therefore it cannot be used in separating the species.

Material studied. California, Camp Baldy, San Bern. Mts., 24.VI.1930 (6 specimens), 16.VII.1923 (7 specimens); San Bernardino Co., 24.VIII.1931 (2 specimens); Los Angeles Co., San Francisquito Canyon, 6.VII.1937 (2 specimens), E. C. Johnson; San Benito Co., Pinnacles, 11.VI.1936 (1 specimen), E. C. Johnson; Piute Mtns., Kern Co., 10.VI.1936 (1 specimen), E. C. Johnson; Los Angeles Co., Wrightwood, 14.VI.1948 (20 specimens), larvae as leaf miners on *Eriodictyon trichocalyx*, C. M. Dammers (all in NMNH); Monterey Co., Horse Bridge, 1.5 air mi SW Arroyo Seco G. Sta., 1300', 3-7.V.1975 (3 specimens), J. Powell 75E8, reared from *Eriodictyon californicum*; Ventura Co., Hungry Valley, 5 mi S Gorman, 4.V.1959 (2 specimens), J. Powell 69E3, reared from *Eriodictyon crassifolium*, emerged 1.VI.1959; Marin Co., Mt. Tamalpais, 15.VI.1960 (3 specimens), J. Powell 60E5, reared from *Eriodictyon californicum*, emerged 6-13.VII.1960 (ZMH). Holotype of *Coelopoeta baldella*, female, labeled: June 24-30; Camp Baldy, San Bern. Mts., Calif.; *Coelopoeta baldella* Type. Busck; L. Kaila prep no. 1183 (NMNH).

Remarks. Walsingham (1908) did not designate a holotype from the thirteen syntypes of *C. glutinosi*. Braun (1948) studied the syntypes deposited in the NMNH, as well as the type series of *C. baldella*, and found them conspecific. I have not seen types of *C. glutinosi*, but the original description is unambiguous, as Walsingham emphasizes the white ground color of the species. I have studied the holotype of *C. baldella*. Its appearance falls well within the range of variation of the specimens of *C. glutinosi*, and therefore I confirm Braun's conclusion regarding the synonymy of these two taxa.

Biology. The species feeds on *Eriodictyon* species (Hydrophyllaceae), making a gall-like mine on the leaf. The biology was described in detail by Braun (1948).

Coelopoeta phaceliae Kaila, new species

(Figs. 5-8, 12-13, 17)

Male. Labial palpi relatively short, color varying from creamy white to brownish or grayish, darkest below. Head and neck tufts varying from creamy white to light brown, occasionally mottled with gray scales. Antenna light gray with greenish sheen, flagellum annulated with dark gray. Tegulae and thorax mottled light brown, tegulae with whitish scales, mostly at tip. Abdomen gray, with chitinized spines dorsally, appearing as bare, brown, transverse fasciae. Legs gray with creamy tint, tibia and tarsal segment with scattered dark scales above. Forewing: Costa from base to one-third dark gray; ground color ochereous, densely mottled, mostly with brown scales, making the color bright yellowish brown; a weak, irregular darker brown patch in middle of wing at fold, bound outwardly by a light ochereous area. Cilia concolorous with forewing. Forewing length 4.5-6.0 mm. Hindwing gray. Underside of wings dark chocolate brown, cilia yellowish brown.

Female. As described for male, except forewing narrower, with lighter ground color and more contrasting and irregular dark brown dusting.

Male genitalia (Figs. 12-13). Uncus strongly sclerotized, apically tapered, ventrally concave, tip curved. Gnathos strongly sclerotized, tapered towards upturned tip. Valva broad, apically bent inwardly, inner margin strongly concave; sacculus lobe apically slightly produced, almost straight-angled, with a few setae; cucullus slightly distended. Juxta shield-shaped, apically broad, laterally slightly produced. Vinculum more or less strongly sclerotized, medially sharply produced forming a spoon-shaped plate. The size of the plate varies to some extent, often smaller than in Figs 12-13. Aedeagus with slightly produced caecum; bent in the middle, apex oblique; the length equal to the length of valva; cornuti absent.

Female genitalia (Fig. 17). Papillae anales with long setae (in Fig. 17 the length and density of setae have been reduced for clarity of the illustration); apophyses long, tip bent, length of posteriores equal to anteriores; a pair of papillae posterior to ostium with

very long hairy setae; posterior margin of eighth segment with similar setae; ostium dorsally lined with a sclerotized plate; ventral margin almost straight; antrum sclerotized, funnel-shaped; a narrow membranous zone between antrum and bottle-shaped sclerotized colliculum; in anterior part of colliculum some minute chitinized plates. Base of ductus seminalis with longitudinal lines of minute teeth, in corpus bursae one dentate signum, varying in form and size.

Types. Holotype, male: CAL: Modoc Co., Fandango Pass, 6100', 12-13.VI.1970, J. Powell 70F95, emerged 7.VII.1970, reared from *Phacelia hastata*, R. E. Dietz & P. A. Opler (UCB); "Holotype *Coelopoeta phaceliae* Kaila" [red]. Genitalia preserved in glycerol tube on specimen pin.

Paratypes (23). California, Modoc Co., Fandango Pass, 6100', larva 12-13.VI.1970, J. Powell 70F95, emerged 30.VI.1970, reared from *Phacelia hastata*, 2 ♂, R. E. Dietz & P. A. Opler (UCB); San Mateo Co., San Bruno Mts., J. Powell 62D3, emerged 7.V.1962, reared from *Phacelia californica*, 2 ♂, J. A. Powell (UCB, NMNH), J. De Benedictis 81137-A, emerged 10.VI.1981, reared from *Phacelia californica*, 1 ♂ (L. Kaila, genitalia figured), 3 ♀, J. De Benedictis (♂ and 2 ♀ in UCB, 1 ♀ in ZMH); Siskiyou Co., Ash Crk. Rgr. Sta., 9 mi E McCloud, 3500', 7-9.VI.1974, J. Powell 74F17, emerged 5.VII.1974, reared from *Phacelia mutabilis*, J. A. Powell, 2 ♀ (UCB, ZMH); Plumas Co., Humbug Cr., 5100', 3 mi NW Portola, 7.VII.1982, J. Powell 82G7, emerged 23.VII.1982, reared from *Phacelia hastata* × *mutabilis*, J. A. Powell, 1 ♂ (ZMH), 1 ♀ (UCB); Plumas Co., 1 mi S Meadow Valley, 22.V.1982, J. Powell 82G2, 82G3, 82E98, reared from *Phacelia procera*, 3 ♂, 8 ♀, J. A. Powell (2 ♂, 8 ♀ in UCB, 1 ♂ in ZMH).

Biology. The species has been reared from *Phacelia californica*, *P. procera*, *P. hastata*, and *P. mutabilis* (Hydrophyllaceae).

Coelopoeta maiadella Kaila, new species

(Figs. 9, 14-15)

Male. Labial palpi porrect, slightly curved, gray; head and neck tufts gray; antenna gray, annulated with dark gray; tegulae and thorax gray, abdomen gray, with chitinized spines dorsally, appearing as bare, brown, transverse fasciae. Legs gray, tarsal segments with light gray distal rings. Forewing: Ground color mottled gray, with scattered white and dark gray scales; an elongate, indistinctly limited dark patch beyond the middle in the fold; beyond patch a white spot extending from tornus to the fold. Cilia line absent, cilia gray. Forewing length 5 mm. Hindwing and underside of wings gray.

Female. Unknown.

Male genitalia (Figs. 14-15). Uncus elongate, strongly sclerotized, apically tapered, tip curved. Gnathos strongly sclerotized, tapered towards slightly upturned tip. Valva broad, apically slightly bent inward, inner margin concave, sacculus lobe apically strongly produced, cucullus without dilation. Juxta shield-shaped, apex narrow, medially slightly produced. Vinculum strongly sclerotized, medially sharply produced, forming a narrow, blunt-tipped plate. Caecum of aedeagus slightly produced, with a small node; aedeagus almost straight, apex oblique, distal opening very long; length 1.3 times the length of valva; cornuti absent.

Types. Holotype, male: Canada, Yukon T., 60°45'N, 134°40'W, 20 km SE Whitehorse, light-trap, 16.VII.1985, K. Mikkola; deposited in ZMH.

Biology. Unknown.

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