NEW CHIRONOMIDAE FROM FLORIDA (DIPTERA)¹

WILLIAM M. BECK, JR., AND ELISABETH C. BECK
Florida State Board of Health, Jacksonville

In the course of rearing chironomids for a study of these midges in Florida, three new species have been found and are herein described. Descriptions are also included of the larva and pupa of three species previously known only from the adult stage.

Disposition of types is indicated in parenthesis after data: United States National Museum (USNM), Washington, D.C., and Florida State Collection of Arthropoda (FSCA), Division of Plant Industry, Florida Department of Agriculture, Gainesville; all other types, as well as specimens from which larvae and pupae of known species are described, are in the collection of the Florida State Board of Health (FSBH). All figures of new species are made from the holotypes.

The following abbreviations are used: LR for leg ratio (length of fore basitarsus divided by length of fore tibia); AR for antennal ratio (length of last segment of male antenna divided by combined length of remaining flagellar segments; WL for wing length, measured from humeral crossvein to apex.

Chironomus (Cryptochironomus) parafulvus, new species

MALE HOLOTYPE: Reared from larva collected 19 Mar. 1963, Waddell's Mill Creek, Jackson County, Fla. (USNM). This is a small, calcareous stream. The adult emerged 23 Mar. 1963.

WL 1.8 mm; AR 2.75; LR 1.8. Frontal tubercules small, about as long as basal diameter. Thorax and scutellum yellowish-brown; vittae, sternum and postnotum ochraceous; antennae and forelegs beyond femora brown; mid and hind legs pale brown; wings and wing veins brown tinged. Genitalia (Fig. 1A) similar to fulvus, except style is shorter and stouter, its inner margin straighter.

FEMALE: Unknown.

PARATYPES: None.

DIAGNOSIS: This species is very close to Chironomus fulvus Johannsen, but is much smaller (fulvus: WL 3.0 mm; AR 3.0; LR 1.5).

LARVA: (Fig. 1B, 1C, 1D) AR 23:14:12:3, sensory pit at .75 from base. Labial plate similar to fulvus, outer tooth with three square-tipped blades; paralabials to lateral margins of head and folded back to form a triangular projection toward medio-apical margin of head; anal papillae with seven long, pale yellow bristles; claws of posterior prolegs and supra-anal bristles also pale yellow.

PUPA: Skin 5.3 mm long, light brown; cephalic tubercules simple, about two times as long as basal width. Thorax densely nodulate. Abdominal segments 1-5 densely spiculate; segment 6 with anterior spiculate area and clear reticulate area on apical one-third medially; segment 7 like 6 except that apical three-fourths is reticulate medially; segment 8 has antero-lat-

¹This investigation was supported in part by Public Health Service Grant A1 04098-03 from the Institute of Allergy and Infectious Diseases.
Figure 1
eral and apicolateral spicular patches. All intersegmental areas are spiculate. Segment 1 with two circular anterior lateral patches of pale spines on each side, and a narrow, subapical row of wide spines; segment 2 with apical row of pale recurved spines interrupted medially, and with a broad preapical band which has longer spines medially. Segments 3-7 with double apical spine row; spines are longer and sharper on each segment progressively toward posterior end of pupa; segment 8 with a single apical spine row. The swim fin is spiculate, and each lobe has 45-50 lateral filaments; lobe has mucronate tip. There is a pair of median posterior conical projections about two and one-half times as long as the basal width, with blunt tips.

In Roback (1957) the larva will key to “nr. fulvus,” but AR is different; the pupa will not key, though it most closely resembles argus Roback, except in the size of frontal tubercules. The male genitalia of argus and parafulvus are very different.

Chironomus (Cryptochironomus) hirtalatus, new species

Fig. 5

**Male Holotype:** Reared from larva collected in a small stream draining a subdivision, Duval County, Fla., 2 Feb. 1963 (USNM). This stream, acid in nature, has been converted into a constantly flowing canal for general drainage.

WL 1.6 mm; AR 2.0; LR 1.8. Mesonotum light yellowish-green with darker yellow vittae, abdomen pale green; sternum, postnotum, and pedicle ochraceous; antennae, forelegs from base of tibia, and all apical tarsal segments brown; macrotrichia present in apex of cell R, and a few at apex of M; squama fringed; prealar bristles 4, Dorsolaterals about 12 in single row. Two approximately equal spines on tibial combs. Genitalia (Fig. 6A) similar to directus (Dendy and Sublette) except the dististyle is gently curved and stem of superior appendage is sinuous.

**Allotype:** Duval County, Fla., 12 Mar. 1964 (FSBH). Coloration as in male; last antennal segment brown. WL 1.4 mm.

**Paratypes:** 1 male (No. 3) Duval County, Fla., 11 Jan. 1963 (FSBH), 1 male (No. 32) Duval County, Fla., 12 Jan. 1964 (FSCA).

**Diagnosis:** The presence of macrotrichia on the wing will distinguish this species from all described nearctic C. (Cryptochironomus) except chaetoala (Sublette). C. hirtalatus differs from chaetoala in being paler, slightly

---

**PLATE I**

Figure 1. Chironomus (Cryptochironomus) parafulvus, new species. A. Male genitalia, B. larval antenna; C. mandible, D. labial plate. Figure 2. Polypedilum (Polypedilum) parascalaenum Beck. A. larval antenna, B. mandible, C. labial plate. Figure 3. Polypedilum (Polypedilum) trigonus Townes. A. larval antenna, B. mandible, C. labial plate, D. lateral comb of 8th pupal segment. Figure 4. Chironomus (Cryptochironomus) directus (Dendy and Sublette). A. larval antenna, B. mandible, C. labial plate. Figure 5. Chironomus (Cryptochironomus) hirtalatus, new species. A. male genitalia, B. larval antenna, C. mandible, D. labial plate. Figure 6. Trichocladius robachi, new species. A. male genitalia, B. larval antenna, C. mandible, D. labial plate.
smaller, and in having a greater leg ratio (chaetaula LR 1.52); the male genitalia differs chiefly in the slender, more sinuous superior appendage.

**Larva:** (Fig. 5B, 5C, 5D). AR 25:5:2:4:1, blade to middle of segment 4, sensory pit about .3 from base, segments 2 and 3 slightly darker. Mandible with dark apical and two dark pointed lateral teeth, a third smaller lateral tooth is paler; pale accessory tooth; preapical comb of two curved filaments. Mandibular brush with two fringed branches. Labial plate with 15 teeth, median wider and slightly longer than first laterals, pentultimate projecting. Paralabials about one and one-half times as long as wide, striae recurving, anterior margin undulate; premandibles with two broad blades.

**Pupa:** Skin 4.4 mm long. Thorax densely nodulate near base of respiratory organ; a pair of curved, brown, horn-like processes posterior to base of respiratory organs. Segment 1 appears to have a pair of densely spiculate lobes with larger spines apically; segment 2 has usual apical row of recurved dark spines. Segments 3-6 with apical triangular spiculate area medially. Segment 6 has, in addition, approximately 12 larger, anteriorly directed spines on apical margin. Segment 7 finely spiculate on anterior edge and medially, Segment 8 with anterior band. Segments 5-7 with four lateral filaments, segment 8 with five, no comb. Swim fin with 85 lateral filaments plus one on disc near outer margin about .5 from base.

Neither larva nor pupa will key beyond the first two couplets in Roback (1957).

*Trichoeciadus robacci*, new species

Fig. 6

**Male Holotype:** Reared from larvae collected in Peter's Creek, Clay County, Fla., 23 May 1963 (USNM). Peter's Creek is a sand bottom stream, quite acid, and weed-choked.

**WL 0.95; AR 1.3; LR 0.59.** Dorso laterals dark, erect, set in light sockets, about twelve. Head, thorax, and abdomen with basic opaque yellow-brown color, but occiput, pedicel, antennae, palpi, thoracic vittae, sternum, large areas of pleurae, scutellum, postnotum and coxae are black; legs and abdominal tergites blackish brown. The thoracic vittae are shiny black and may reflect blue-black. Wings brownish, humeral crossein blackened, other veins pale brown. Costa not produced beyond Rs; fCu directly under r-m. Fore-tibia with 1 spur, middle tibia with 2 short spurs, hind tibia with 1 spur and a comb; pulvilli distinct and broad, claws pointed; 4th tarsal segment on middle leg is distinctly shorter than 5th segment. Genitalia (Fig. 6A) dark; anal point hairy at base; lobe of basi-style broad, with small thumb-like projection at apex; dististyle with a dark spine at apex and a subapical flap-like projection.

**Allotype:** Paratype (No. 6) Clay County, Fla., 23 May 1963 (FSBH). Coloration as in male. Rs ends beyond apex of Cu; apex M slightly below wing tip; Cu almost straight except for indistinct bend just at apex; a row of dark setae along R. Antennae consists of pedicel and 5 flagellar segments, last segment as long as preceding two and one-half segments.

**Paratypes:** 1 male, Clay County, Fla., 18 Feb. 1963 (FSCA); 1 male (No. 139) Clay County, Fla., 7 Mar. 1963 (FSBH); 1 female (No. 55) Clay County, Fla., 23 May 1963 (FSBH).
Beck: New Chironomidae from Florida (Diptera) 205

Diagnosis: This species can be separated from described Nearctic species of Trichocladius as follows: senex (Johannsen) and helis Roback lack an anal point; distinctus Malloch has pale halteres and legs; in estatus Roback, septis Roback, striitus Malloch, and incertipennis Johannsen the costa is produced; in nitidellus Malloch the AR is 2, legs are tawny yellow, fCu is appreciably beyond r-m.

Larva: (Fig 6B, 6C, 6D). AR 40:14:4:4:3. Labial plate with 14 dark teeth, median longest. Labrum with a pair of bifid bristles; anal papillae two times as long as wide, with three pale bristles.

Pupa: Skin 2.65 mm long; respiratory organ 0.13 mm long, strongly spined, rounded apically. Abdominal segments 2-8 with several apical rows of heavy spines, the row narrow on segment 2, smaller on 7, and minute on 8; anteriorly directed spines on intersegmental membrane 3-4, 4-5, 5-6. Segments 2-6 with two anterior and one posterior lateral bristles on each side; segment 7 with four lateral filaments, segment 8 with five. Genital sac only about one-half as long as fins; fins with 18-20 lateral filaments and 3 long apical bristles.

Roback (1957) described the larva as Trichocladius sp. 3.

Chironomus (Cryptochironomus) directus (Dendy and Sublette)

Fig. 4


Larva: (Fig. 4A, 4B, 4C). AR 25:4:3:3:2, blade to middle of segment 4, sensory pit .33 from base of segment 1. (In one specimen segments 2 and 3 appear to be dark brown.) Mandible with dark apical and two dark pointed lateral teeth, and a pale accessory tooth; preapical comb of two curved filaments; brush with two or three branches, apparently not fringed. Premandible dark with two broad blades. Labial plate of 15 dark teeth, median tooth about two times as wide and definitely longer than first laterals; pentultimate projecting very slightly. Maxillary palps two times as long as basal width. Paralabials short, almost two times as long as wide, the anterior margin coarsely serrate, the striae recurved. Anal papillae with eight dark grey bristles.

Pupa: Skin 3.8 mm. Cephalic tubercles much wider than high, with pale apical bristle. Segment 2 with usual row of recurved spines; segment 3 spicate apically in middle of segment; segments 4-6 with median patch of spicules, somewhat interrupted at center, the spicules larger at apex of each successive segment. Segment 7 with small median patch of very fine spicules; segment 8 has spicules in small lateral patches on each side of midline, near anterior margin; no spur or comb on segment 8. Segments 5-7 with four lateral filaments; segment 8 with five, two close together near apical margin of each segment. Genital sac slightly shorter than swim fin. Fins with 65 lateral filaments and one filament about 2/3 from base, close to outer margin.

Diagnosis: Larva will key to abortiva in Roback (1981), from which it appears to differ only in minor characters; the pupa will not key beyond the second couplet.
Polypedilum trigonus Townes

Fig. 3


Larva: (Fig. 3A, 3B, 3C). AR 20:6:4:4:1.5, blade beyond apex of antenna. Labial plate blackish-brown; medians as long as second laterals, first laterals short, fifth laterals longer than fourth or sixth. There are 16 teeth, but outermost is very tiny. Paralabials 2.5 times as long as wide. Premandibles pale with three broad blades. Mandible with four dark teeth, subapical longest, a dark shoulder, and pale accessory tooth, pointed apically; inner margin of mandible with three spines; anal papillae short, pale, with eight apical bristles. Posterior margin of head capsule narrowly brown ventrally.

Pupa: Skin 4.1 mm long; segments 2-8 with sub-basal band, this band interrupted medially on 7 and 8 to form lateral patches. Segment 2 with usual apical row of recurved spines; 2 and 3 with scattered spinules medially. Segments 4-6 with a fenestrated pattern of spinules which is broader apically. Segments 5 and 6 with three lateral filaments, segments 7-8 with four. Lateral margins of segment 8 brown, comb (Fig. 3D) consisting of one long apical spur and 10-14 small spines; swim fin with 28 lateral filaments.

Diagnosis: In Roback (1957) larva will not key beyond couplet 9. Pupa keys to "Polypedilum fallax group sp." but does not fit the description.

Polypedilum parascalænum Beck

Fig. 2

Polypedilum (Polypedilum) parascalænum Beck, 1962. Fla. Ent. 45: 91; type locality, Woodruff Dam, Jackson County, Florida.

This species differs from scalænum (Schrank) in being slightly smaller (WL 1.3 mm as compared to 1.6 mm in scalænum.), the presence of a dark spot in the base and at apex of cell M, the more rounded inferior appendage of the male genitalia, and the absence of teeth at the base of the anal point. Wing markings are much more distinct in females; wing spots in base and apex of cell M may be very faint in some males, but the smaller size and differences of genitalia will serve to separate them.

Larva: (Fig. 2A, 2B, 2C) AR 15:8:1:2, blade far beyond apex of antennal segments, sensory pit near basal one-third of first segment. Labial plate brown, 16 teeth, outermost very tiny; medians and second laterals longest, first laterals short. Paralabials 2.5 times as long as wide. Mandibles with four dark teeth, subapical longest, a dark shoulder, a long pale pointed accessory tooth; inner margin with two spines. Posterior margin of head narrowly black, gula darkened. Anal papillae short, pale, with eight long pale bristles.

Pupa: Skin 2.8 mm long. Anterior spine band and fenestrated pattern on segments 2-6, spiculate area somewhat reduced on segment 6. Segment 2 with usual apical row of recurved spines. Segments 7 and 8 with a few fine spinules in lateral patches. Fine spinules between segments 3-4 and 4-5. Three lateral filaments on segments 5 and 6; four on 7 and 8. Comb
of segment 8 with one long and two shorter light brown spines at apex and two or three smaller spines anteriorly. Swim fins with 16-19 lateral filaments.

**DIAGNOSIS:** The larva and pupa appear to be identical (except in length of pupal cast and number of lateral filaments of swim fin of pupa, which may vary in any case) to larva and pupa described by Roback (1957) under *Polypedilum (Tripodura) scalaenum* (Schrank), with a note that this larva differed from usual *P. scalaenum* larva in having four-segmented larval antenna. He says that this “may be . . . . a subspecies not yet recognized in the adult stage.” In Roback (1953) the figures for *P. scalaenum* from the Savannah River show five-segmented larval antennae, with blade not reaching apex of antenna, and sensory pit about .7 from base, and also the mandible does not appear to have spines on the inner margin.

**Summary**

The following three new species are described as adult, larva, and pupa: *Chironomus (Cryptochironomus) parafulvus*, *Chironomus (Cryptochironomus) hirtalatus*, and *Trichocladius robacki*. The larva and pupa of three species previously known only from the adult stage are described: *Chironomus (Cryptochironomus) directus* (Dendy and Sublette), *Polypedilum (Polypedilum) trigonus* Townes, and *Polypedilum (Polypedilum) parascalaenum* Beck.

**Literature Cited**
