



The genus *Cryptotendipes* Beck et Beck in Florida, with the description of a new species (Diptera: Chironomidae: Chironominae)

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Abstract

Species of the genus *Cryptotendipes* Beck et Beck in Florida are reviewed. Previous Florida records of *C. casuarius* (Townes) are shown to be misidentifications of *C. emorsus* (Townes). One species new for the state, *C. pseudotener* (Gotghebuer), is recorded and a new species, *C. rutteri* Epler, is described from pharate pupae and associated larval exuviae. Thus, a total of three species are known from the state. Keys are provided for adult males, pupae and larvae of these three species.

Key words: Diptera, Chironomidae, *Cryptotendipes*, Florida, taxonomy, new species

Introduction

The genus *Cryptotendipes* was originally attributed to Lenz (1941), but Spies & Reiss (1996) noted that Lenz's use was a *nomen nudum* because he did not designate a type species. They pointed out that the genus should be attributed to Beck & Beck (1969). Sæther (1997, 2010), Yan *et al.* (2005) and Zorina (2006) incorrectly attributed the genus to Lenz. Through a lapsus, the first printing of Epler *et al.* (2013) attributed the genus to Lenz, but this was corrected to Beck & Beck in subsequent printings.

Sæther (1977) reviewed the genus from the Holarctic, describing one new Nearctic species and offering keys for adult males. Yan *et al.* (2005) reviewed the genus from China, described two new Chinese species and offered a world-wide key for males. Zorina (2001; 2003; 2006) described three new species from the Russian Far East; Zorina (2006) offered keys for the male *Cryptotendipes* of the Russian Far East. Sæther (2010) updated his 1997 review, described a new Nearctic species and offered keys for known pupae and larvae.

Methods

Morphological terms and abbreviations used follow Sæther (1980), Epler (1988), Langton (1994) and Cranston (2013). Measurement methods follow Epler (1987, 1988) and consist of the range followed by the mean (if four or more specimens are included) and, in parentheses, the number of specimens utilized if different from the number (n) cited at the beginning of the description. Unless otherwise stated, measurements are in μm .

Other abbreviations used:

BAC	collection of Broughton A. Caldwell, Braselton, GA
EMUS	USU Insect Collection, Utah State University, Logan, Utah (includes American Entomological Institute Collection)
FAMU	Florida A & M University, Tallahassee, FL
FSCA	Florida State Collection of Arthropods (Chironomidae collection housed at Florida A&M University, Tallahassee, Florida)
JHE	J.H. Epler collection, Crawfordville, Florida

MJB	collection of Michael J. Bolton, Ohio EPA, Groveport, OH
PLH	collection of Patrick L. Hudson, Great Lakes Science Center, Ann Arbor, MI
Pex	pupal exuviae
Lex	larval exuviae

Systematics

Cryptotendipes casuarius (Townes)

Harnischia (*Harnischia*) *casuaria* Townes, 1945: 162. Original description.

Cryptotendipes casuarius (Townes), Sæther 1977: 97, figs. 34B–D; Yan *et al.* 2005: 2, figs 1A–C; Zorina 2006: 343, figs. 1–2. *nec Cryptotendipes casuarius* (Townes), Beck & Beck 1969: 295, figs. I-9, II-5, IV-9 (misidentification of *C. emorsus*).

Townes (1945) described the species from New York and Ontario, Canada, material. Epler (1995) listed the species from Florida based on the records of Beck & Beck (1969) but noted that their *C. casuarius* was probably *C. emorsus* (Townes). Caldwell *et al.* (1997) listed it from Florida and North Carolina. Epler (2001) reported it from North Carolina based on the listing from Caldwell *et al.* (1997) and reiterated the doubtful identity of Florida *C. casuarius*. The material Sæther (2010) examined for his descriptions of the pupa and larva was from South Dakota and Manitoba, Canada.

Sæther (1977) keyed the adults of this species and illustrated the hypopygium (Sæther 1977: figs. 34B, C, D); Yan *et al.* (2005) keyed the species and illustrated the male wing and genitalia (but see below); Zorina (2006) keyed the species and illustrated the male genitalia; Sæther (2010) keyed, described and illustrated the pupa and larva.

The single specimen from China described as *C. casuarius* by Yan *et al.* (2006) does not appear to be *C. casuarius*. The gonostyli of the specimen are not sharply incised as in *C. casuarius*, and the dorsum of tergite IX bears what appears to be a narrow medial ridge, unlike that of *C. casuarius*, which has a broader, casque-like ridge. Note that the ridge in *C. casuarius* can be difficult to interpret in slide mounted material depending on how the specimen is mounted and how much pressure has been applied by the cover slip.

Until one has seen both *C. casuarius* and *C. emorsus*, identification of material can be confusing; both species can appear similar in a dorsal view. Lateral views can also be confusing, for T IX of *C. emorsus* has a distinct dorsal swelling, but that of *C. casuarius* is much more exaggerated (Figs. 1, 4). As noted below, both species bear microtrichia on the superior volsella, but those of *C. emorsus* are confined mostly to the base of the appendage (Figs. 2, 3, 5, 6, 7).

I examined the holotype, from the American Entomological Institute, now housed at Utah State University in Logan, Utah (EMUS). It consists of an uncleared male, mounted whole in Canada balsam, with a pupal exuviae, all under the same cover slip. Abdominal tergites VIII and IX are broken off the adult abdomen and are mounted laterally, with the dorsal portion of TIX broken from its base and directed posteriad. This appears to be the specimen illustrated in Fig. 186B in Townes (1945). There are some differences between my measurements of the holotype and those of Townes (1945): his AR was 2.35, mine 2.60; his wing length 1.8 mm, mine 1.50 mm; his LR₁ was 1.6, mine 1.31.

The holotype pupal exuviae has counts out of the range of some of the counts given by Sæther (2010). For the caudal spines of the abdominal tergites: T V—Sæther 27–37, 34 (holotype 20), TVI—Sæther 38–41, 40 (holotype 45), TVII—Sæther 50–85, 68 (holotype 0); for anal lobe setae: Sæther 26–29, 27 (holotype 21).

I have examined most of the material identified as *C. casuarius* in Beck & Beck (1969) and determined that it represents *C. emorsus*. Thus, *C. casuarius* is not known from Florida.

Material examined. MICHIGAN: Chippewa [Co.], St. Mary's River, 45.9945, -83.8989, June 16, [20]13, coll. P. Hudson, 1 male [PLH]. Wayne [Co.], Lake Erie, 804, June 6, [20]14, coll. P. Hudson, 1 male [PLH]. Wayne [County], Lake Erie, LE Metro Park, June 5, [20]15, coll. P. Hudson, 1 male [PLH]. NEW YORK: from Townes 1945: 160: "reared from Chautauqua Lake, N.Y., July 29, 1937, H.K. Townes"; **holotype** slide reads ("/" indicates line change): "Harnischia/(Harnischia)/ casuarius/reared Tow. '45/Chautauqua Lake/VII.29.37 N.Y./Type 69", 1 male/Pex. [EMUS]

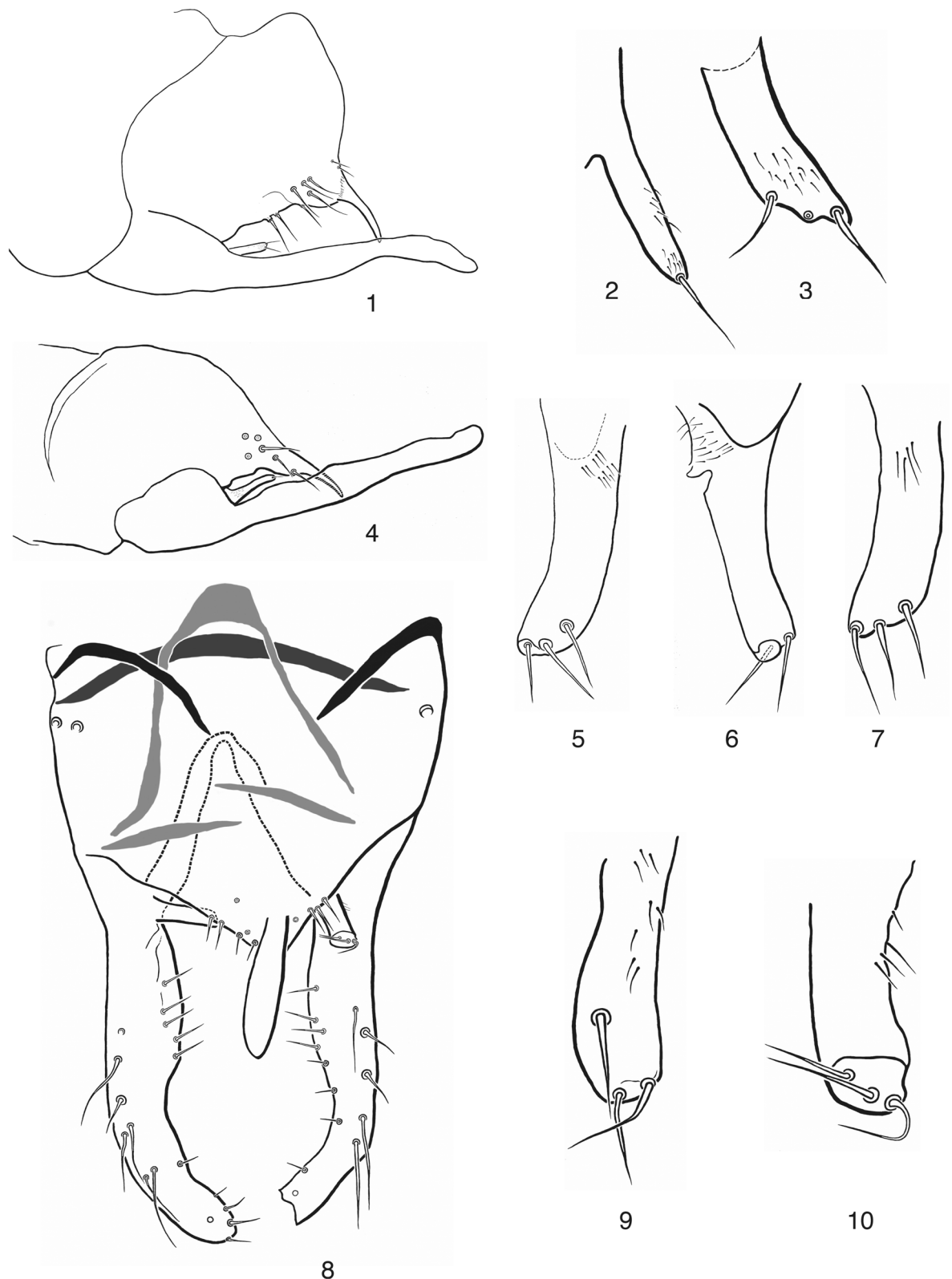


PLATE 1. *Cryptotendipes* adult structures. Fig. 1. *C. casuarius* (Townes) male genitalia, lateral, Michigan specimen. Fig. 2. *C. casuarius* male genitalia, left superior volsella, holotype. Fig. 3. *C. casuarius* male genitalia, right superior volsella, holotype. Fig. 4. *C. emorsus* (Townes) male genitalia, lateral (Florida specimen). Fig. 5. *C. emorsus* male genitalia, left superior volsella, holotype. Fig. 6. *C. emorsus* male genitalia, right superior volsella, holotype. Fig. 7. *C. emorsus* male genitalia, left superior volsella, North Carolina specimen. Fig. 8. *C. rutteri* Epler *sp. n.*, male genitalia, holotype. Fig. 9. *C. rutteri*, male genitalia, left superior volsella, holotype. Fig. 10. *C. rutteri*, male genitalia, right superior volsella, holotype.

Cryptotendipes emorsus (Townes)

Harnischia (*Harnischia*) *emorsa* Townes, 1945: 161. Original description.

Cryptotendipes emorsus (Townes), Sæther 1977: 97, fig. 34A; Yan *et al.* 2005: 2, figs 1A–C; Zorina 2006: 343, Figs. 1–2, Sæther 2010: 8, figs. 4A–E.

Townes (1945) described the species from Iowa, New Jersey, New York, Ohio and Washington, D.C., material. Sæther (1977) keyed the adult of this species and illustrated the hypopygium (Sæther 1977: fig. 34A); Sæther (2010) keyed, described and illustrated the female, pupa and larva based on material from Manitoba, Canada. Caldwell *et al.* (1997) listed it from Florida, North Carolina and South Carolina. The species has a Holarctic distribution; Makarchenko *et al.* (2005) list it from Moneron Island (a small island off the southwest coast of Sakhalin Island, Russia, north of Hokkaido, Japan), and Zorina (2006) included it in her key for *Cryptotendipes* of the Russian Far East.

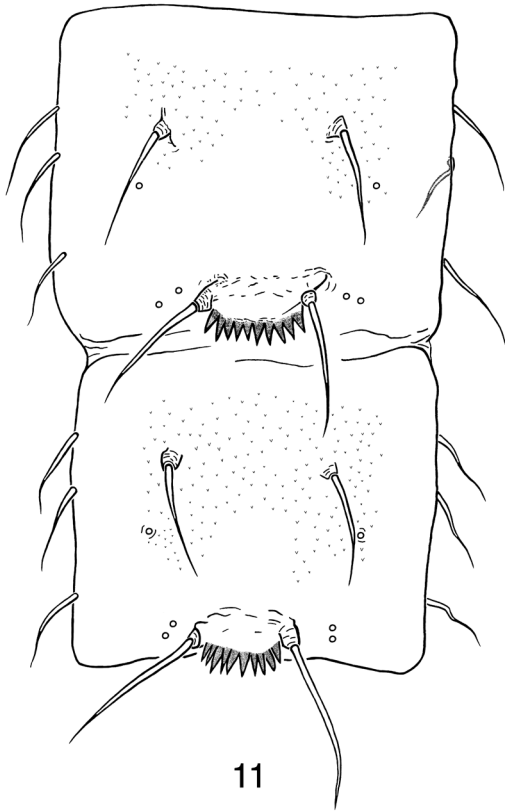
Sæther (1977) stated in his key that the superior volsella of *C. emorsus* was “without microtrichia”; Yan *et al.* (2005) made a similar statement in their key. However, examination of numerous specimens, including the holotype’s hypopygium, indicates that the appendage does bear microtrichia near the base (Figs. 5, 6, 7). This condition was also noted in Zorina’s (2006) key to Far Eastern Russian *Cryptotendipes* species.

Most pupae bear a row, interrupted medially, of clear, thin spines anteriorly on S I and II; Sæther (2010) noted them only on S I.

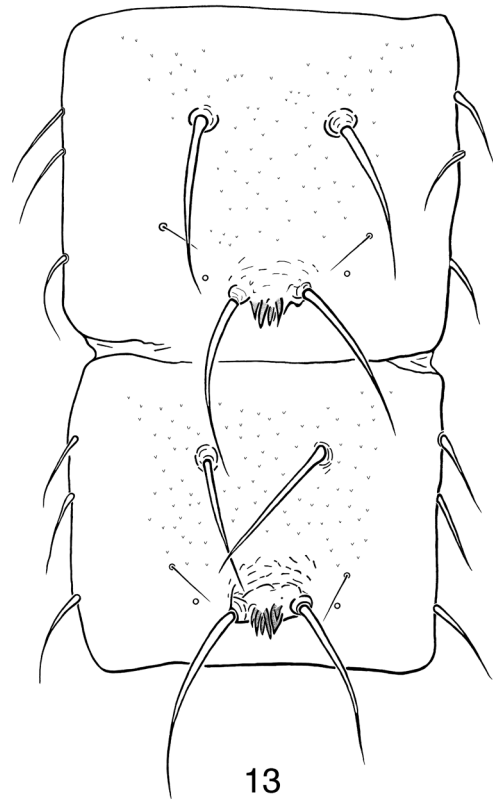
Sæther (2010: 9) gave postmentum lengths of 120–130, mean 125 µm for *C. emorsus* larvae. In a sample of ten larvae from Florida, postmentum lengths ran from 118–143, mean 127 µm.

This is the most common species of *Cryptotendipes* in Florida.

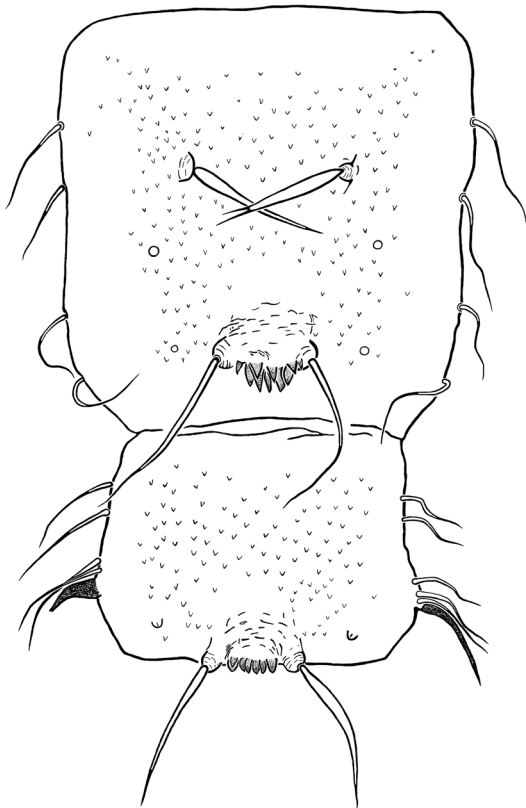
Material examined: ALABAMA: Elmore Co., Channahatchee Creek 1.7 miles NE of Kent, 31-v-1988 [APC-5], leg. W.E. Garrett, 1 male [JHE]. Macon Co., Euphatee Creek 1.2 miles NNE of Franklin at Hwy 49 [APC-27], 10–28-iii-1989, leg. W.E. Garrett, 1 male [JHE]. FLORIDA: Alachua Co., Santa Fe River @ Worthington Springs [SFR 030], i-xii-1999, 2 pharate male pupae [JHE]; same locality, 12-vi-2006, 1 pharate male pupa [JHE]. Duval Co., [Beck’s notes state “small creek E Meadowbrook Rd], 29 Jan 1962, 1 partial male abdomen/Pex/Lex [Pex/Lex on separate slide from partial male abdomen; determined as *casuarius* by Beck] [FAMU]. Flagler Co., Rayonier Ditch, [26-v-1964], 1 male [determined as *casuarius* by Beck] [FAMU]; same locality and collector, 15-iii-1967, 2 males/Pex/Lex [JHE]. Hamilton Co., Hunter Creek, 21-iii-2000, 1 pharate male pupa [JHE]; Camp Branch, 30-x-2007, 1 pharate male pupa, 1 pharate female pupae [JHE]. Lafayette Co., Allen Mill Run, 29-iv-1999, leg. J.H. Epler, 3 males/Pex/Lex, 1 female/Pex/Lex [JHE]. Madison Co., Withlacoochee River above Madison Blue Spring, 15-xi-2017, 1 male pupa, 2 larvae, leg. Sheri A. Huelster, Megan A. Goetz, Brad H. Morris, Stephanie J. Healey, Brandon M. Wanner [JHE]. Okaloosa Co., Blackwater R. FAMU Biol. Sta 4½ mi NW of Holt, 5-v-1976, (light), W.L. & J.G. Peters, 1 male [FAMU]. Santa Rosa Co., Blackwater R., March 12, 1971, W.M. Beck, 1 female pupa [FAMU]; Blackwater River, 14-iii-1971, leg. Beck, 3 Males/Pex/Lex [JHE]. Santa Rosa Co., Blackwater Basin, Riley’s Creek; 18 October 1974; W.M. Beck, Jr. 1 male/Pex/Lex, 1 female/Pex/Lex [FAMU]; Ates Creek at FAMU Bio. Sta. hse (drift net), 24–25-xii-1978, A.R. Sponis, B.T. Kidd, 1 male pupa [FAMU]. Suwannee Co., Suwannee River @ Ellaville [SUW 100], 10-ix-1990, 1 pharate male pupa/Lex [JHE]. Wakulla Co., Wakulla River at Mysterious Waters boat dock, 11-x-2015, leg. J.H. Epler, 1 female/Pex/Lex [JHE]. GEORGIA: Bibb Co., Lake Tobesofkee, Sta. LT-4, 2% rt. bank 7 feet deep, 8-30-74, [M.] Gaddis & [G.] Petersen, 1 female pupa [BAC]. Crisp Co., pond near hospital, 2nd, 3rd Ave., Cordele, 5-xii-1990, leg. B.A. Caldwell, 1 male [BAC]. Macon Co., Beaver Creek, Winchester Rd, 10-ix-1991, leg. B.A. Caldwell, 1 female Pex [BAC]. Murray [Co.], Carter’s Res. Apr. 17 [19]80, coll. P. Hudson, 1 male [PLH]. Tift Co., Tifton, 8th St. near I-75 and Agrirama, 25-ii-1999, leg. B.A. Caldwell, 2 males [BAC]. MICHIGAN: Washtenaw [Co.], Silver Lake, June 2 [20]14, coll. P. Hudson, 1 male [PLH]. Wayne [Co.], Belle Isle northern end, May 11 [20]15, coll. P. Hudson, 1 male [PLH]. NEW YORK: Ithaca, June 6, 1935, H.K. Townes, Type 68, **holotype** male genitalia on slide [EMUS]. NORTH CAROLINA: Lake Norman, May 1971, 1 male pupa [FAMU]. SOUTH CAROLINA: Barnwell [Co.], Sav[annah] River Plant, S-Area Bay, E-trap, 24-iv-79, coll. P. Hudson, 1 male [PLH]. Clemson, Lake Hartwell Holiday Inn, 6/22-28/79, P. Hudson, 1 male [PLH].



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PLATE 2. *C. rutteri* pupal structures, holotype. Fig 11. Abdominal tergites V–VI. Fig. 12. Abdominal tergites, VII–VIII. Fig. 13. Abdominal sternites, V–VI. Fig. 14. Abdominal sternites VII–VIII.

***Cryptotendipes pseudotener* (Goetghebuer)**

Cryptochironomus pseudotener Goetghebuer, 1922: 38. Original description.

Harnischia (Harnischia) pseudotener (Goetghebuer): Townes 1945: 162, redescription using Nearctic material; Roback 1957: 102, description of larva and pupa, figures.

Cryptotendipes pseudotener (Goetghebuer): Sæther 1977: 98, fig. 34F, Sæther 2010: 14, fig 7.

Townes (1945) listed material of this species, originally described from Belgium, from Michigan, New York, Pennsylvania and Washington, D.C. Roback (1957) described the larva and pupa, with figures of larval and pupal structures. Sæther (1977) keyed the adult male of this Holarctic species and illustrated the hypopygium (Sæther 1977: fig. 34F); Sæther (2010) keyed, described and illustrated the pupa and larva. Caldwell *et al.* (1997) listed *C. pseudotener* from Alabama and South Carolina. The material Sæther (2010) used in his descriptions of the pupa and larva was from Nebraska, South Dakota and Manitoba, Canada. The Florida specimens listed below are the first records for this species from the state.

Caldwell collected pupal exuviae of *C. emorsus* and *C. pseudotener* together from a site in Georgia (data in this paper).

Sæther's (2010) figure 7A of the pupal abdominal tergites does not indicate that any of the posterior spine groups are divided; Roback's (1957) figures 326 and 327 of T IV show two posterior spine groups. The majority of material I examined had at least one tergite with two posterior spine groups. In Florida material one specimen had two groups of spines on T II and T III; another had two groups on T II and T IV. In Georgia material, one pupa had two groups only on T II, another had two groups on TII-TIII, another had two groups on T II-T IV and another had two groups on T II—T V. All three Ohio specimens examined had two groups on T II—T VI.

Sæther (2010: 16) gave postmentum lengths of 108–110 µm, based on three larvae, for *C. pseudotener*. Four specimens that I measured from Ohio (3) and Florida (1) ran from 125 to 130 µm, with a mean of 129 µm.

In order to find possible characters to separate larvae of the three Florida *Cryptotendipes* species, I examined the dorsum of the the head, in particular the frontoclypeus and associated labral sclerites. Figure 25 shows the anterior portion of the frontoclypeus and associated labral sclerites of *C. pseudotener*. These structures were similar on the heads of *C. emorsus* and *C. rutteri*, and were of no use in species separation.

Material examined: FLORIDA: Gadsden Co., Turkey Creek on 65B; coll. 13-v-79; pres. 16-v-79; A[nnelle]. R. S[o]ponis[.], C[on]stance[.]. L. R[ussell] [.] C[hristie] [.] A. S[arling] [.] 1 male/Pex/Lex [FAMU]. Leon Co., Natural Bridge nr. Woodville; coll. 21-ix-1978; pres. 23-x-1978; C. Russell; 1 pharate male pupa [FAMU]. GEORGIA: Macon Co., Beaver Creek, Winchester Rd, 10-ix-1991, leg. B.A. Caldwell, 1 male Pex [BAC]. Stephens Co., Eastanollee Creek @ Ga. Hwy. 17, ECA, 18-viii-81, 1 female Pex [BAC]. Thomas Co., Horse Creek @ Co. Rd. 161, HC6, bottom grab, 7/31/80, 1 Male pupa [BAC]. Putnam Co., Little River arm of Lake Sinclair, LS-1 HDI-2, 16-iv-1990, leg. H. Howard, 1 pharate male pupa [BAC]. MICHIGAN: Monroe [Co.], Saline River, Wilson Park, Ap. 29, [20]12, 1 male, coll. P. Hudson; same locality and collector, May 16, 2014, 3 males; same locality and collector, May 14 [20]15, 1 male [PLH]. OHIO: Champaign Co., E. Br. Cedar Run at boardwalk, D7, Cedar Bog State Mem., 4/vi/89, Em. 11/vi, M.J. Bolton, 1 female/Pex/Lex [MJB]; E. Br. Cedar Run, Cedar Bog, D5, 14/v/89, Em. 23/v, M.J. Bolton, 1 male/Pex/Lex [MJB].

***Cryptotendipes rutteri* Epler, sp. n.**

Diagnosis: The adult male is distinguished from other *Cryptotendipes* by the smooth medial margin of the gonostylus and smaller anal point. The adult female, known only from a single pharate specimen, is indistinguishable from similar species. The pupa is distinguished by the very large dorsal and ventral setae (D1, D5, V1, V4) of the abdomen, the posteromedial groupings of large, broad spines on the tergites and sternites, the round mound of posterior hooklets/spines on S VIII, and the approximately 30 anal lobe taeniae that are much wider and darker on the posterior portion of the lobe than those located anteriorly. The larva might be separable by its larger size (postmentum length 160–168 µm), large penultimate tooth on the mentum and more heavily darkened postmentum.

Description: Adult male (n=3). Pharate males; many measurements/counts not possible.

General dimensions. Thorax: 810–825 (2); abdomen 2.43 mm (1); total 3.24 mm (1).



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PLATE 3. *Cryptotendipes* pupal and larval structures. Fig. 15. *C. pseudotener* (Goetghebuer), anal lobe, Florida specimen. Fig. 16. *C. rutteri*, anal lobe, Florida paratype. Fig. 17. *C. emorsus*, larval head capsule, Florida specimen. Fig. 18. *C. pseudotener*, larval head capsule, Florida specimen. Fig 19. *C. rutteri*, larval head capsule, Florida paratype.

Head. No counts or measurements possible

Thorax. Setae: anteprenotals 0? (1); acrostichals 4–6 (2); dorsocentrals 5–8; scutellars 5–8, uniserial; prealars 3 (2); supraalar 1 (2).

Wing. Not measurable

Legs. Not measurable.

Hypopygium (Fig. 8). Phallapodeme length 83 (1). Gonostylus with basal 2/3 moderately inflated, narrowing smoothly to rounded apex; length 150–160 (2). Superior volsella (Figs. 9, 10) digitiform, mostly bare, with some microtrichia basally; apex with apparent sunken or less sclerotized area, from which 3 large setae arise; length 30–

40; width 8–10. Anal point 53–55 long, bare, spatulate, with 4–7 (2) lateral basal setae.

Adult female (n=1). Pharate; most measurements/counts not possible.

General dimensions. Not measurable

Head. No counts or measurements possible

Thorax. Setae: anteprenotals 0?; acrostichals 4?; dorsocentrals 5; scutellars 6, uniserial; prealars 2; supraalar ?.

Wing. Not measurable

Legs. Not measurable.

Genitalia. Genitalic lobes, etc., insufficiently developed for description. S VIII with about 20 setae; T IX with about 22 setae; T X with 2 setae. Cercus 75 long.

As far as they are developed, the female genitalia resemble those of *C. emorsus*.

Pupa (n=6). *Coloration.* Exuviae light yellow brown, with posterior groupings of spines/hooklets darker.

General dimensions. Cephalothorax 0.97–1.12 (2) mm; abdomen 2.80–3.04, 2.92 (4) mm; total length 3.75–4.04 (3) mm.

Cephalothorax—With moderate dorsal pebbling, extending laterally to near base of wing sheath. Cephalic tubercles conical, 63–78, 72 (4) long, 28–45, 37 (4) wide at base; frontal setae 18–45 (3) long. Thoracic horn pedicel 1.05–1.52, 1.27 mm long. Anteprenotal seta 38 (1); precorneal setae not measurable. With typical 4 dorsocentral setae: Dc1 33–53, 47 (4); Dc2 not measurable; Dc3 50–70 (2); Dc4 30–35 (2). Dc1–Dc2 15–40, 27 (4); Dc2–Dc3 98–108, 103 (4); Dc3–Dc4 10–18 (3).

Abdomen (Figs. 11–14). Tergites I–II without shagreen; T III with anterolateral patches of fine, weak spinules; T IV–V with weak anterior band of fine minute spinules; T VI–VIII with fine, scattered minute spinules over most of surface; anal lobe without fine spinules dorsally and ventrally. Each side of SI with 2 circular groups of about 10–15 clear spines; one near base of pedes spurii B, the other just medial to that. S I–II without shagreen; S III–V with anterolateral patches of fine, weak spinules; S VI with weak anterior band of fine minute spinules; S VII–VIII with fine, scattered minute spinules over most of surface. T II with posterior row of 5–15, 10 recurved hooklets. Lengths of dorsal setae D1, D5 and ventral setae V1 and V4 on abdominal segments II–VIII given in Table 1; length of seta D3 on T I 110–125, 116 (4). Posterior spines/recurved hooklets on abdominal segments II–VIII given in Table 2; posterior group of spines on V III arranged in circle. T II–V with 3 pairs lateral setae arising from tubercles; T VI with 3–4 pairs of lateral taeniate setae; TVII–VIII with 4 pairs lateral taeniate setae (5 on one side of T VIII in holotype). Caudolateral margin of T VIII with single (sometimes apically bifid) sinuate finely pointed spur. Anal lobe with uniserial fringe of 23–32, 29 taeniae, becoming longer, wider and darker posteriorly; dorsum of anal lobe with central circular group of spines (Fig. 16); venter of anal lobe with medial transverse band of spines and low pebbling of the integument.

Fourth instar larva (n=3 exuviae). *Coloration.* Head capsule light yellow-brown, with mentum and postmentum brown, becoming darker posteriorly, genae lighter; postoccipital margin dark brown/black (Fig. 19).

General dimensions. *Head.* Postmentum length 160–168. Antenna (Fig. 24) with 5 antennomeres, lengths (1–5): 42–47; 10–11 (2); 3–4 (2); 6–7; 4–5. Antennomere 1 16–20 wide, with ring organ 10 µm from base (1). Labral seta S I 20–32 long; S II 40–44 long. Premandible 78–80 (2) long. Mandible (Fig. 23) 125–130 long; seta subdentalis 28–32 (2) long, extending to middle of or anterior margin of antepenultimate inner tooth. Mentum (Fig. 22) with trifid median tooth, 4th pair of lateral teeth smaller than teeth on either side, outermost tooth (6th lateral tooth) reduced to a lateral notch on the much larger penultimate tooth, which is larger than the preceding teeth; mentum 113–133 wide; median tooth 27–28 wide; 3 median teeth (or median tooth with two notches) 43–48 wide. Ventromental plates with minutely crenulate anterior margin; 88–93 wide, 30–43 long; ventromental plate width/length 2.16–3.00; with 20–22 strial ridges.

Body. Procercus 10–12 long, 12–18 wide (2); posterior parapod claws simple.

Type material. Holotype: pharate male pupa with associated larval exuviae; U.S.A.: FLORIDA: Palm Beach Co., Lake Okeechobee nr Winnie's Cove, 4-iii-1991, leg. J.H. Epler, D. Strom, L.M. Epler [FAMU]. **Paratypes:** 1 pharate male pupa with associated larval exuviae, 1 pharate female pupa with associated larval exuviae, same data as holotype [JHE]. GEORGIA: Crisp Co., drainage from Miller Pond, Milepond Rd., 13-v-1993, leg. B.A. Caldwell, 1 male pupa [BAC] (an unassociated larva also on slide). NORTH CAROLINA: Stokes Co., Belews Cr. Sta. 14, 24 April 1972, D. Lenat, 1 pharate male pupa [FAMU]; Belews Cr. Sta. 1904' shore, 24 Oct. 1972, D. Lenat, 1 pharate male pupa [FAMU]. The holotype is deposited in the William L. Peters Museum Collection of Aquatic Insects at Florida A & M University, Tallahassee, Florida (part of the FSCA), as are several paratypes.

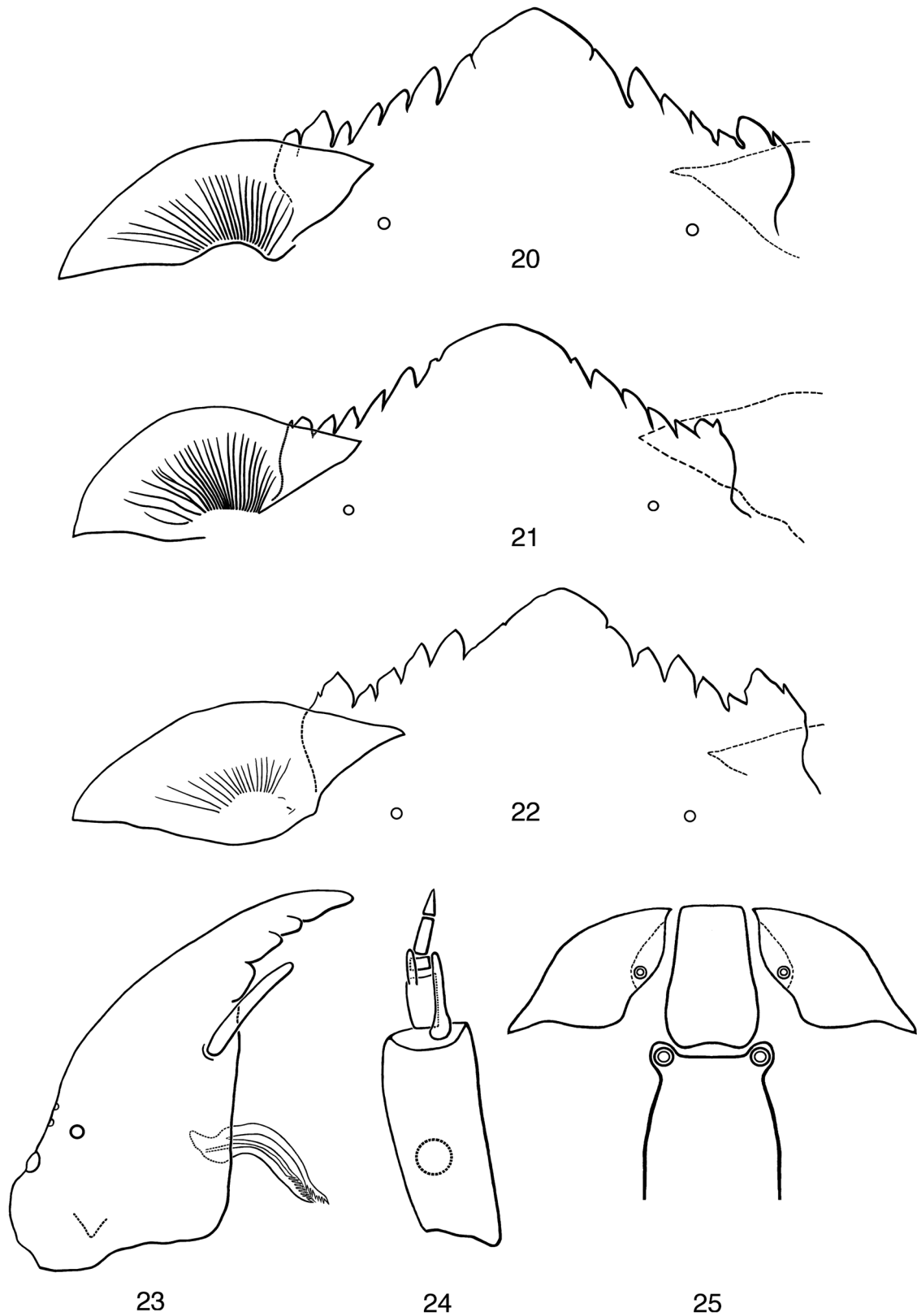


PLATE 4. *Cryptotendipes* larval structures. Fig. 20. *C. emorsus*, mentum and ventromental plate, Florida specimen. Fig. 21. *C. pseudotener*, mentum and ventromental plate, Ohio specimen. Fig. 22. *C. rutteri*, mentum and ventromental plate, Florida paratype. Fig. 23. *C. rutteri*, mandible, Florida paratype. Fig. 24. *C. rutteri*, antenna, Florida paratype. Fig. 25. *C. pseudotener*, anterior portion of frontoclypeus and labral sclerites, Ohio specimen.

TABLE 1. Lengths, in μm , of dorsal setae D1, D5 and ventral setae V1 and V4 on abdominal segments II–VIII (n=6) of *Cryptotendipes rutteri* sp. n

	II	III	IV	V	VI	VII	VIII
D1	65–145, 107	130–150, 143	130–150, 143	123–150, 140	118–150, 133	105–143, 127	-
D5	68–135, 99	88–145, 113	70–145, 112	88–145, 116	133–193, 166	140–190, 164	93–158, 122 (5)
V1	115–160, 142	168–205, 182	143–200, 177	178–203, 188 (5)	155–185, 169	85–140, 108 (5)	-
V4	118–210, 202 (5)	180–233, 209	193–228, 206	175–223, 199	178–210, 197	80–145, 129 (5)	-

TABLE 2. Numbers of posterior spines/recurved hooklets on abdominal segments II–VIII (n=6) of *Cryptotendipes rutteri* sp. n.

	II	III	IV	V	VI	VII	VIII
Posterior spines/ hooklets on tergites	one group 12; two groups 1+2—6+6	one group 10– 13; two groups 6+6—8+8	one group 11– 15; two groups 6+6—6+7	one group 10– 17,14(4); two groups 6+8— 8+8	10–20, 14	10–15, 12	8–16, 11
Posterior spines/ hooklets on sternites	one group 0–6, 3(4); two groups 7+8	0–8, 4	0–9, 4	one group 0– 10, 5(5); two groups 6+6	3–9, 7	5–21, 11	0–35, 26

Distribution. Known from three pharate pupal specimens with associated larval exuviae (two males, one female) from Lake Okeechobee in south Florida, a single male pupa from southern Georgia and two pharate male pupae from Belews Creek in northern North Carolina.

Etymology. I am pleased to name this species for Robert P. Rutter, biologist (now retired) with the Florida Department of Environmental Protection. Bob and I go way back to the 1970’s, when we were biologists working for the same consulting firm, but at different nuclear power plants in Pennsylvania (no, we don’t glow at night). Bob’s knowledge of macroinvertebrates and his professionally curated macroinvertebrate collection have been an almost unlimited source of valuable information and specimens.

Comments. The apex of the right gonostylus is broken off on the holotype specimen.

In Sæther’s 1997 key for male *Cryptotendipes*, the male of *C. rutteri* will key to couplet 9, *C. pseudotener*, from which it can be separated by the shorter anal point.

The pupa of *C. rutteri* is a typical *Cryptotendipes* following the diagnosis in Pinder & Reiss (1986): the thoracic horn has a long pedicel; pedes spurii B anteriorly on T I; vortices absent on sternites and male genital sac with thorn-like apices directed ventrally. This pupa bears the largest dorsal and ventral abdominal setae (D1, D5, V1, V4) of any described *Cryptotendipes* species.

Florida pupae bear only 3 lateral taeniate setae on T VI; material from North Carolina and Georgia possess the usual 4 lateral taeniate setae. D1 setae may be bi- or trifold on some tergites on Florida material.

Sæther’s (2010: 18) key to larvae is flawed. There is a typographical error after couplet 3, where couplet 4 is misnumbered as couplet 2; this error then persists through the remainder of the key. His couplet 2 (which is the same as couplet 6 in Yan *et al.* 2005) separates taxa based on the length of the seta subdentalis. He keyed two species as having the seta subdentalis as “short, at most reaching apex of first inner tooth”. However, Figure 6D shows the seta subdentalis of *C. darbyi* (Sublette) is this length, but the species is keyed as if the seta subdentalis is “long, extending beyond all inner teeth”. With the exception of his Fig. 6, Sæther (2010) does not give any measurements or illustrations of the seta subdentalis of any other *Cryptotendipes* species. Note that the seta subdentalis of *C. rutteri* extends to the middle of or the anterior margin of the antepenultimate inner tooth.

The extent of darkening on the larval head capsule may help separate *C. emorsus* larvae from those of *C. rutteri*; the darkening is more extensive on *C. emorsus*, extending more on the genae (Figs. 17, 18, 19). This must be tested with a larger sample of both species.

Key to the adult males, pupae and fourth instar larvae of Florida *Cryptotendipes*

1	Adult males	2
1'	Pupae or larvae	4
2(1)	Inner margin of gonostylus sharply incised after proximal ½ (Townes 1945: Fig. 185; Sæther 1977: fig. 34A)	
 <i>C. emorsus</i> (Townes) (<i>C. casuarius</i> (Townes), not known from Florida, will key here but is separated by the high, casque-like ridge on T IX. See Townes 1945: Figs. 186A, 186B; Sæther 1977: Figs. 34B, 34C, 34D; and Fig. 1 in the present paper.)	
2'	Inner margin of gonostylus more smoothly curved.	3
3(2')	Anal point longer, extending past mid-point of gonostylus; inner margin of gonostylus more smoothly curved (Sæther 1977: Fig. 34F; Pinder 1978: Fig. 150D)	<i>C. pseudotener</i> (Goetghebuer)
3'	Anal point shorter, barely extending to mid-length of gonostylus; gonostylus more swollen basally (Fig. 8)	<i>C. rutteri</i> Epler, sp. n.
4(1')	Pupae	5
4'	Larvae	7
5(4)	Anal lobe with apical taeniae subequal to basal taeniae (Fig. 15)	<i>C. pseudotener</i> (Goetghebuer)
5'	Anal lobe taeniae becoming obviously larger and darker posteriorly (Fig. 16)	6
6(5')	S VIII with circular mound of posterior hooklets (Fig. 16)	<i>C. rutteri</i> Epler, sp. n.
6'	S VIII without circular mound of posterior hooklets (Sæther 2010: Fig. 4B)	<i>C. emorsus</i> (Townes)
7(4')	Penultimate lateral tooth of mentum scarcely larger than antepenultimate tooth (Fig. 21)	<i>C. pseudotener</i> (Goetghebuer)
7'	Penultimate lateral tooth of mentum much larger than antepenultimate tooth (Figs. 20, 22).	8
8(7')	Fourth instar larvae only: postmentum length 118–130, mean 125 µm	<i>C. emorsus</i> (Townes)
8'	Fourth instar larvae only: postmentum length 160–168 µm	<i>C. rutteri</i> Epler, sp. n.

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