

青海湖及其附属水系的摇蚊科幼虫

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——1964—1981年间,我们先后在青海湖及其主要入湖河流(布哈河,黑马河,哈尔盖河,甘子河,沙柳河,泉吉河,倒淌河,伊尔得马河等),以及其子湖洱海(淡水)、尕海(咸水,含盐量为33‰)和湖周沼泽小水体中,共采集到底栖动物标本408号。经鉴定,计有摇蚊科幼虫27种,隶属于4亚科19属。其中4种为我国新记录,5种为国内首次描述。笔者(1982)前已报道了该地区的7种,现将全部调查结果作一记述。

关于青海湖地区的摇蚊科幼虫,除笔者外,中国科学院兰州地质研究所(1979)曾记载过有7个属:*Procladius*, *Psilotanypus*, *Psectrocladius*, *Cricotopus*, *Heptagia*, *Cryptochironomus*, *Tendipes*。皆未定种。笔者在鉴定标本中,未曾发现有*Psilotanypus*和*Heptagia*二属的幼虫,它们是否确实分布于青海湖中,还值得进一步考察。

一、种类组成和分布概况

1. 粗腹摇蚊亚科

共得3属3种即:刺铗粗腹摇蚊(*Pelopia punctipennis* Meigen),花翅前突摇蚊(*Procladius choreus* (Meigen)),项圈五脉摇蚊(*Pentaneura monilis* (Linne))。

2. 寡角摇蚊亚科

共采得3属3种即:深色原寡角摇蚊(*Prodiamesa bathyphila* Kieffer),别致同寡角摇蚊(*Syndiamesa pertinax* (Garrett)),雪寡角摇蚊(*Diamesa nivoriunda* Fitch)。

3. 直突摇蚊亚科

共得5属8种即:林间环足摇蚊(*Cricotopus sylvestris* (Fabricius)),流放环足摇蚊(*Cricotopus exilis* Johannsen),双线环足摇蚊(*Cricotopus bicinctus* (Meigen)),崎岖刚毛突摇蚊(*Trichocladius inaequalis* Kieffer),老年刚毛突摇蚊(*Trichocladius senex* Johannsen),巴比刀突摇蚊(*Psectrocladius barbimanus* Edwards),暗褐心突摇蚊(*Cardiocladius fuscus* Kieffer),鳞甲伞摇蚊(*Corynoneura scutellata* Winnertz)。

4. 摇蚊亚科

共得8属13种即:异拟长跗摇蚊(*Paratanytarsus dissimilis* Johannsen),短小流水长

跗摇蚊 (*Rheotanytarsus exiguus* Johannsen), 灰红劳氏长跗摇蚊 (*Tanytarsus (Lauterbornia) coracina* Kieffer), 黄带齿斑摇蚊 (*Stictotendipes flavingula* Walker), 指突隐摇蚊 (*Cryptochironomus digitatus* Malloch), 侧叶雕翅摇蚊 (*Glyptotendipes lobiferus* Say), 等齿多足摇蚊 (*Polypedilum fallax* Johannsen), 喜盐摇蚊 (*Tendipes salinarius* Kieffer), 暗黑摇蚊 (*Tendipes lugubris* Zetterstedt), 溪流摇蚊 (*Tendipes riparius* Meigen), 冷摇蚊 (*Tendipes hyperboreus* Staeger), 羽摇蚊 (*Tendipes plumosus* Linne), 伸展摇蚊 (*Tendipes tentans* Fabricius)。

上述摇蚊幼虫分布在青海湖中的有 14 种, 分布在各入湖河流中的有 21 种, 分布在洱海的有 15 种, 在湖周沼泽小水体中的有 20 种, 而在尕海则仅见 1 种(表 1)。

表 1 青海湖及其附属水系摇蚊科幼虫的分布*

Table 1 Distribution of Tendipedidae midge larvae in Qinghai Lake and it's river system.

种 类 Species	青海湖 Qinghai Lake	河 流 Rivers	洱 海 Er-hai	尕 海 Ga-hai	小水体 Pool
刺铁粗腹摇蚊 (<i>Pelopia punctipennis</i>)			++		+
花翅前突摇蚊 (<i>Procladius choreus</i>)	+	+	+		+
项圈五脉摇蚊 (<i>Pentaneura monilis</i>)			++		++
深色原寡角摇蚊 (<i>Prodiamesa bathyphila</i>)		+			
别致同寡角摇蚊 (<i>Syndiamesa pertinax</i>)		+			
雪寡角摇蚊 (<i>Diamesa nivoriunda</i>)		+			
林间环足摇蚊 (<i>Cricotopus sylvestris</i>)	++	+	++		++
流放环足摇蚊 (<i>Cricotopus exilis</i>)		+			+
双线环足摇蚊 (<i>Cricotopus bicinctus</i>)		+			+
崎岖刚毛突摇蚊 (<i>Trichocladius inaequalis</i>)	+	++	+		+
老年刚毛突摇蚊 (<i>Trichocladius senex</i>)	+	+			+
巴比刀突摇蚊 (<i>Psectrocladius barbimanus</i>)	+	+		+	+
暗褐心突摇蚊 (<i>Cardiocladius fuscus</i>)		+			+
鳞甲伞摇蚊 (<i>Corynoneura scutellata</i>)		+			
异拟长跗摇蚊 (<i>Paratanytarsus dissimilis</i>)	+	+++	++		++
短小流水长跗摇蚊 (<i>Rheotanytarsus esiguus</i>)	+	+	+		++
灰红劳氏长跗摇蚊 (<i>Tanytarsus coracina</i>)	+	+			
黄带齿斑摇蚊 (<i>Stictotendipes flavingula</i>)	+	+	+		+
指突隐摇蚊 (<i>Cryptochironomus digitatus</i>)	+	+	++		+
侧叶雕翅摇蚊 (<i>Glyptotendipes lobiferus</i>)			++		++
等齿多足摇蚊 (<i>Polypedilum fallax</i>)		+			+
喜盐摇蚊 (<i>Tendipes salinarius</i>)	+++				
暗黑摇蚊 (<i>Tendipes lugubris</i>)	+	+	+		+
溪流摇蚊 (<i>Tendipes riparius</i>)		++	+		+
冷摇蚊 (<i>Tendipes hyperboreus</i>)	+		+		+
羽摇蚊 (<i>Tendipes plumosus</i>)			++		
伸展摇蚊 (<i>Tendipes tentans</i>)	+	+	+		+

* + 表示有 (Present) ++ 表示多 (Abundant) +++ 表示很多 (Predominant)

深色原寡角摇蚊, 别致同寡角摇蚊, 雪寡角摇蚊和鳞甲伞摇蚊等 4 种幼虫仅分布河流中。喜盐摇蚊幼虫仅见于青海湖, 主要分布在水深 3—25 米的敞水区底部, 是湖中常见种类。而羽摇蚊幼虫则仅见于洱海。巴比刀突摇蚊幼虫是一种能适应淡水和高盐度天然咸水的种类, 在含盐量达 33‰ 的尕海中仅见此一种幼虫, 在青海湖附近水域中分布也较普

遍。我们在青海省的托素湖(湖水含盐量 26.5‰)也曾采到此虫(叶沧江、王基琳, 1982)。

就分布水域的多少而言,上述 27 种摇蚊幼虫中,较常见的种类有花翅前突摇蚊,林间环足摇蚊,崎岖刚毛突摇蚊,巴比刀突摇蚊,异拟长跗摇蚊,短小流水长跗摇蚊,黄带齿斑摇蚊,指突隐摇蚊,暗黑摇蚊和溪流摇蚊。

二、种类记述

1. 鳞甲伞摇蚊 (*Corynoneura scutellata* Winnertz) (图 1)

Corynoneura scutellata Winnertz, Johannsen, 1937a:40—42.

小型种类,体长 3 毫米,淡黄绿色。身体两端细,头长卵圆形,头鞘有许多细小的鳞甲状突起,同侧两眼点纵向排列,且互相靠近。幼虫(图 1:1)成熟时第 2、3 胸节愈合。触角(图 1:2)细长,4 节,全长约为头长的 1.7 倍,各节长度比为 29:10:10:1。第 1 节淡白色,约与头等长,环器位于中部;第 2、3 节淡褐色,长度约相等,但第 2 节略弯曲;第 4 节很小。大颚(图 1:3)具 6 个褐色齿。颏(图 1:4)13 个齿,中齿比第 1 侧齿矮。前原足爪小,排列成花冠状。后原足细长,各原足基部下方便有 1 个两分叉的褐色矩(图 1:5),其侧边分枝的长度约为主矩的一半长,矩的基部有短鬃。肛鳃 2 对,细长。肛前乳突上各具 4 根长毛和 2 根前侧毛。

这种幼虫分布欧美,通常生活在不大流动的水沟和池塘中,也能生活在咸水里(Johannsen, 1937a)。我们的标本于 1973 年 9 月采于倒淌河和伊尔得马河的水生植物上,幼虫居住在由松散碎片作成的巢内。本属、本种在我国为首次记录。

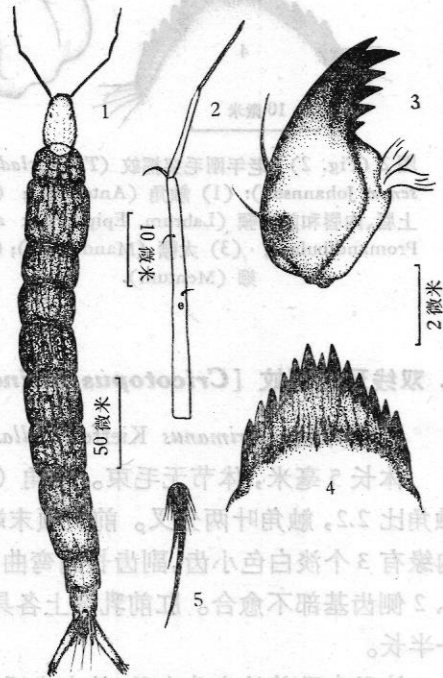


图 1 (Fig. 1) 鳞甲伞摇蚊 (*Corynoneura scutellata* Winnertz): (1) 幼虫背面观 (Back view of larvae); (2) 触角 (Antennae); (3) 大颚 (Mandibulae); (4) 颏 (Mentum); (5) 矩 (Spur).

2. 老年刚毛突摇蚊 (*Trichocladius senex* Johannsen) (图 2)

Spaniotoma (Trichocladius) senex Johannsen 1937a:63.

体长 8 毫米。触角(图 2:1)短,约为大颚的一半长,触角比 2.5,触角叶伸到第 4 节,环器位于基节近基部的 1/5 处。上唇(图 2:2, L)腹刚毛掌状,内唇栉(图 2:2, epc)为 3 个盾鳞,前大颚(图 2:2, pm)具一单独尖角。大颚(图 2:3)具 4 个褐色齿,副齿分叉,无腹毛束。颏(图 2:4)中齿宽,侧齿 6 对,下角有柔软长毛。肛前乳突略硬化,各具 6 根长毛和 2 根短的前侧毛。肛鳃短,末端圆钝。

该种首先在美洲发现,生活在水生植物间(Johannsen, 1937a)。我们于 1973 年 9 月采于青海湖,布哈河,黑马河及湖周沼泽小水体中。在青海省的克鲁克湖也曾采到此虫。我

国为首次记录。

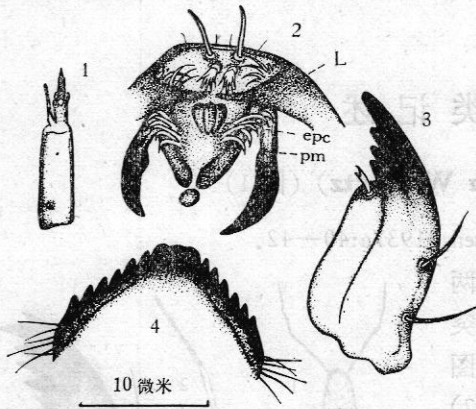


图2 (Fig. 2) 老年刚毛突摇蚊 (*Trichocladius senex* Johannsen): (1) 触角 (Antennae); (2) 上唇、内唇和前大颚 (Labrum, Epipharynx and Promandibulae); (3) 大颚 (Mandibulae); (4) 颏 (Mentum).

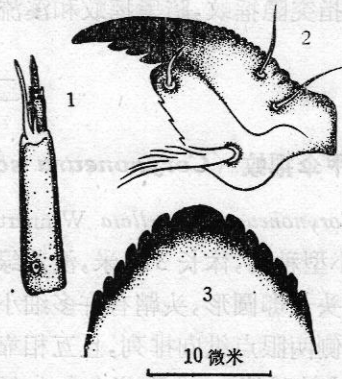


图3 (Fig. 3) 双线环足摇蚊 [*Cricotopus bicinctus* (Meigen)]: (1) 触角 (Antennae); (2) 大颚 (Mandibulae); (3) 颏 (Mentum).

3. 双线环足摇蚊 [*Cricotopus bicinctus* (Meigen)] (图3)

同物异名: *arimanus* Kieffer; *fallas* Kieffer; *stenosandandum* Kieffer; *dizonias* Meigen.

体长5毫米,体节无毛束。触角(图3:1)约为头长的1/5,基节长约为宽的4.5倍,触角比2.2,触角叶两分叉。前大颚末端不分叉。大颚(图3:2)突起面边缘有皱褶,腹面内缘有3个淡白色小齿,副齿长而弯曲。颏(图3:3)具13个齿,中齿宽,侧齿顶端钝,第1、2侧齿基部不愈合。肛前乳突上各具6根长毛和2根前侧毛。肛鳃指状,约为后原足一半长。

该种在欧美为广分布种,幼虫生活在流水的石块下或稻田中。我们于1975年7月采于布哈河。成虫在湖北省武昌东湖已有报道(王士达等,1977),幼虫形态在我国为首次描述。

4. 流放环足摇蚊 (*Cricotopus exilis* Johannsen) (图4)

Cricotopus exilis, Johannsen, 1937a:51.

Teichcladius exilis Johannsen, Thienemann, 1944:650.

体长4毫米,黄绿色,胸部有浅褐色斑,体节无毛束,但在腹节的后侧缘有单独细毛。触角(图4:1)粗短,基节长约为宽的3倍,触角比1.6。上唇(图4:2. L)腹刚毛两分叉,内唇栉(图4:2. epc)为3个盾鳞,前大颚(图4:2. pm)不分叉。大颚(图4:3)突起面上有皱褶,腹面内缘无小齿,副齿稍弯曲。颏(图4:4)具13个齿,齿端圆,中齿稍宽,侧齿大小基本一致。肛前乳突各具5根长毛和2根前侧毛。肛鳃指状,末端钝。

标本于1973年9月采于倒淌河,伊尔得马河,甘子河,泉吉河和布哈河的浅水底部石块上。在青海省的湟水河也曾采到此虫。幼虫形态在我国为首次描述。

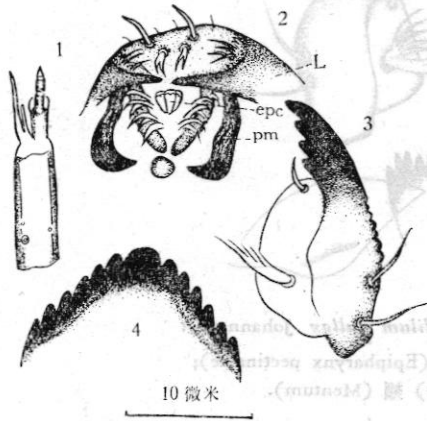


图4 (Fig. 4) 流放环足摇蚊 (*Cricotopus exilis* Johannsen): (1) 触角 (Antennae); (2) 上唇、内唇和前大颚 (Labrum, Epipharynx and Pro-mandibulae); (3) 大颚 (Mandibulae); (4) 颏 (Mentum).

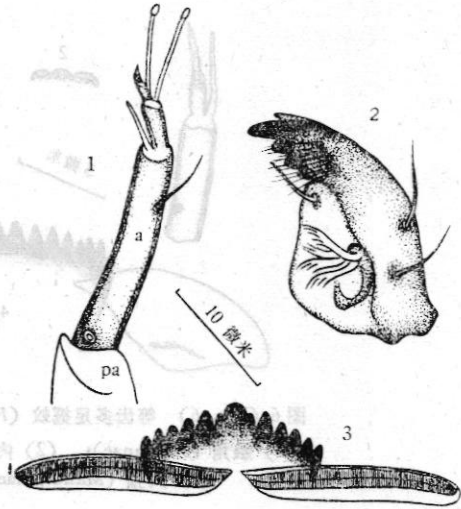


图5 (Fig. 5) 灰红劳氏长附摇蚊 [*Tanytarsus (Lauterbornia) coracina* Kieffer]: (1) 触角 (Antennae); (2) 大颚 (Mandibulae); (3) 颏 (Mentum).

5. 灰红劳氏长附摇蚊 [*Tanytarsus (Lauterbornia) coracina* Kieffer] (图5)

Tanytarsus (Lauterbornia) coracina Kieffer. Thienemann, 1929:100; Johannsen, 1937a: 7, 9.

Lauterbornia coracina, Thienemann, 1954: 114, 115, 493.

体长10毫米,灰红色。触角(图5:1. a) 5节,触角比2.5。第1节略弯曲,在远端的1/3处有一侧生刚毛,环器位于基部。第1节长约为第2节的4.5倍,劳氏器柄长约为3—5节长度之和的2.6倍。劳氏器小。触角托高与宽大致相等,前端内侧有小矩。大颚(图5:2)具1侧齿和4个主齿,副齿细长,端前栉长,腹毛束粗壮。颏(图5:3)具11个齿,中齿色稍淡,三分叶;亚颏宽约为高的5倍,内角互相靠近。肛前乳突短,各具7根长毛。肛鳃2对,背面的一对比腹面的一对稍长。

该种分布在欧洲,生活在湖泊和冷溪流中 (Johannsen, 1937b; Черновский, 1949)。我们于1965年2月采于青海湖,在青海省的湟水河中也曾采到。幼虫形态在国内为首次描述。

6. 等齿多足摇蚊 (*Polypedilum fallax* Johannsen) (图6)

Chironomus fallax Johannsen; 1905, 210; Malloch, 1915: 435.

Chironomus (Polypedilum) fallax Johannsen; 1937b: 22, 30—31.

Polypedilum fallax Johannsen. Thienemann, 1954: 502.

体长10毫米,红色。同侧两眼点分离。触角(图6:1) 5节,触角比1.3。环器位于基节近基部的1/5处。内唇栉(图6:2)由3块互相紧靠的骨片组成,每一骨片的前端各具3个小齿。大颚(图6:3)具1侧齿和3个主齿,副齿尖细而弯曲,腹毛束为混合型毛束。颏(图6:4)具16个齿,大小几乎相似。肛前乳突各具8根长毛。肛鳃末端尖。

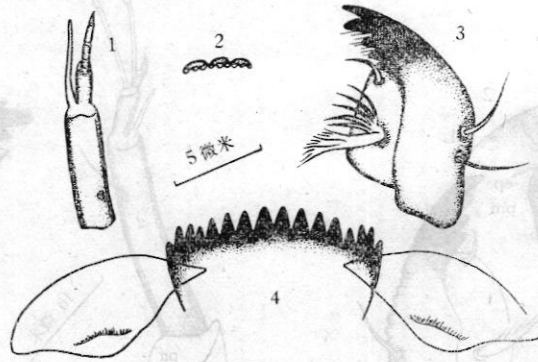


图6 (Fig. 6) 等齿多足摇蚊 (*Polypedilum fallax* Johannsen):
 (1) 触角 (Antennae); (2) 内唇栉 (Epipharynx pectinatae);
 (3) 大颚 (Mandibulae); (4) 颏 (Mentum).

标本于1973年9月采于黑马河和二郎尖小湖。我们在青海省的湟水河也曾采到此虫。幼虫形态在国内为首次描述。

7. 暗黑摇蚊 (*Tendipes lugubris* Zetterstedt) (图7)

Chironomus lugubris Zetterstedt, Bryce, 1960:41; Bryce, 1972:195.

体长12毫米,红色。头卵圆形,腹面后缘暗褐色。触角(图7:1)5节,触角比1.8,环器位于基节中部。内唇栉梳状,具15个小齿。大颚(图7:2)具1个侧齿和4个主齿。颏(图7:3)13个齿,中齿三分叶。幼虫后腹部(图7:4)的第10体节上无侧鳃,第11体节的腹侧有2对短鳃,其长度约与着生体节的直径相等。肛鳃指状。

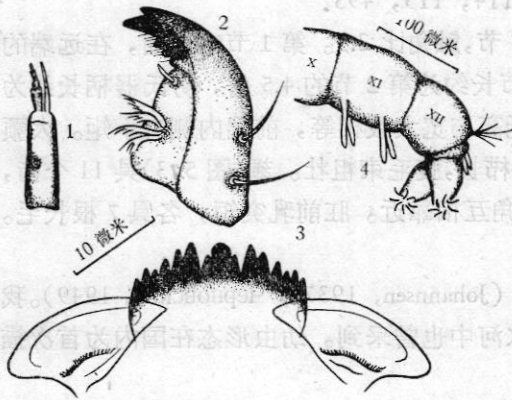


图7 (Fig. 7) 暗黑摇蚊 (*Tendipes lugubris* Zetterstedt): (1) 触角 (Antennae); (2) 大颚 (Mandibulae); (3) 颏 (Mentum); (4) 幼虫后腹部 (Postabdomen of larvae).

8. 溪流摇蚊 (*Tendipes riparius* Meigen) (图8)

Chironomus riparius Meigen, 1804:13; Bryce, 1960:44.

Chironomus (Chironomus) militaris Johannsen, 1937b:46.

Tendipes (Tendipes) riparius, Townes, 1945:127.

体长10毫米,红色。头部腹面后缘稍暗褐色。触角(图8:1)5节,触角比1.6,环器位于基节近基部的1/3处。内唇栉有13—15个梳状齿。大颚(图8:2)具1个侧齿和4个主齿,主齿皆褐色。颏(图8:3)前缘为13个齿,中齿三分叶,第1、2侧齿的基部愈合。幼

虫后腹部(图 8:4) 的第 10 体节上无侧鳃,第 11 体节上有 2 对长的腹鳃,鳃的长度约为其着生体节的宽度的 2 倍。肛鳃指状。

标本于 1973 年 9 月采于黑马河、沙柳河和哈尔盖河。我国为首次记录。

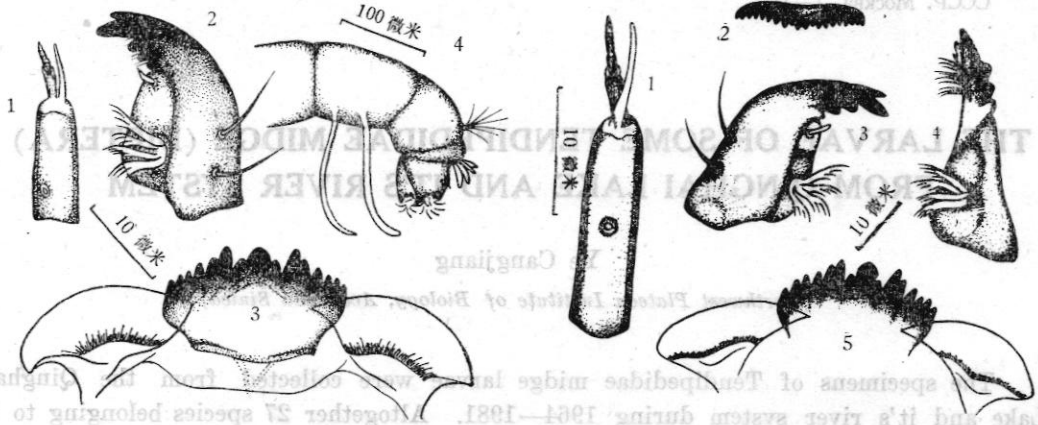


图 8 (Fig. 8) 溪流摇蚊 (*Tendipes riparius* Meigen): (1) 触角 (Antennae); (2) 大颚 (Mandibulae); (3) 颏 (Mentum); (4) 幼虫后腹部 (Postabdomen of larvae).

图 9 (Fig. 9) 冷摇蚊 (*Tendipes hyperboreus* Staeger): (1) 触角 (Antennae); (2) 内唇栉 (Epipharynx pectinatae); (3, 4) 大颚 (Mandibulae); (5) 颏 (Mentum).

9. 冷摇蚊 (*Tendipes hyperboreus* Staeger) (图 9)

Chironomus hyperboreus Staeger, Johannsen, 1937b: 48—49.

体长 22 毫米,红色。幼虫的基本形态与羽摇蚊 (*Tendipes plumosus*) 的幼虫很相似。但本种幼虫的环器位于触角基节的中部(图 9:1),内唇栉(图 9:2)有 18—20 个梳状齿,大颚(图 9:3、4)最底下的一个缘齿为淡白色,颏(图 9:5)为 13 个齿。蛹与羽摇蚊的不同点是它在第 8 腹节上的矩系由 8 根刺愈合的。

本种系高纬度地区的种类,一个世代的生活周期需要 2 年 (Johannsen, 1937b)。我们的标本于 1966 年 5 月采于青海湖和洱海。本种在我国系首次记录。

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THE LARVAE OF SOME TENDIPEIDAE MIDGE (DIPTERA) FROM QINGHAI LAKE AND IT'S RIVER SYSTEM

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The specimens of Tendipedidae midge larvae were collected from the Qinghai Lake and it's river system during 1964—1981. Altogether 27 species belonging to 9 genera, 4 subfamilies were identified, including 3 genera 3 species of Pelopiinae, 3 genera 3 species of Diamesinae, 5 genera 8 species of Hydrobaeninae and 8 genera 13 species of Tendipedidae.

Among them 4 species, namely, *Corynoneura scutellata*, *Trichocladius senex*, *Tendipes riparius* and *Tendipes hyperboreus* are new records for China. In addition, the larvae of 5 species are described for the first time in China. The distribution of midge larvae from Qinghai Lake and it's river system is discussed.

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