1-1-1979

Hydroptilidae (Trichoptera) of America north of Mexico, Station Bulletin, no.509

Blickle, R. L.

New Hampshire Agricultural Experiment Station

STATION BULLETIN 509

January, 1979

Hydroptilidae (Trichoptera) of America North of Mexico

by

R. L. Blickle

NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION
UNIVERSITY OF NEW HAMPSHIRE
DURHAM, NEW HAMPSHIRE

Acknowledgements

The western species were made available for study by Dr. D. G. Denning, Moraga, California. The illustrations were made by Miss Wendy Lull, a graduate student in the Zoology Department, University of New Hampshire. The keys have been adapted from those of previous workers. The illustrations have been redrawn from published figures of the type description, if possible, or from other appropriate sources. The works of Betten (1934) and Ross (1944) were invaluable in the present study.

Abstract

Insects of the family Hydroptilidae (Trichoptera) are dealt with in the following manner. Brief discussions of the family and genera; tables for determining the 15 genera; a key for determining each species (males), including 180 species in all; an increase of 102 species since Ross (1944). This encheiridion also includes a check list of the species as to provinces (Canada) and states (U.S.A.) to date; the original reference for each species; illustrations of the male genitalia of each species described up to and including August 1977; selected literature references.

KEY WORDS: Trichoptera, Hydroptilidae, North America.

TABLE OF CONTENTS

HYDROPTILIDAE (TRICHOPTERA)

OF AMERICA NORTH OF MEXICO

by

R. L. Blickle[1/]

HYDROPTILIDAE

These small Trichoptera, usually less than 6 mm in length, are known as microcaddis flies. The larvae are aquatic but do not construct cases until the last instar, being "free living" in their earlier stages. In the imago the antennae are generally stout and shorter than the body length. Ocelli may be present or absent, most genera have ocelli. Maxillary palpi five segmented in both sexes. Legs moderately long, hairy; spurs may be present on the tibiae either apically, preapically or both. The spurs are usually larger than spines, are movable and may be covered with sharp points. The spur formula, as in the genus Hydroptila for example, would be 0-2-4. This indicates the number of spurs on the fore, middle, and hind legs respectively. Since there are never more than two spurs together and the apical ones are indicated first, thus in the genus Hydroptila there would be 0 on the foreleg, 2 apical ones on the mesotibia and 2 apical plus 2 preapical spurs on the metatibia. Both sexes have the same spur count. Wings generally acute at apex with reduced venation, although the venation may be difficult to see due to the numerous hairs on the wings. Hair fringes of the wing may be several times the width of the wing itself, especially the hind wings.

The spur formula and the presence or absence of ocelli enables one to separate some genera from others using only these criteria. The following table gives the spur formula and the presence or absence of ocelli for each genera. As can be noted the genus Neotrichia may be immediately separated by the spur formula. In the group with 0-2-4 spurs the Hydroptila are separated by lack of ocelli. In the next group of 0-3-4 spurs the Orthotrichia also are separated by lack of ocelli. In the next group of 1-3-4 the genus Dibusa is the only one without ocelli. Thus by observation of the spurs and ocelli, one fourth of the genera may be determined.

The small size of the Neotrichia and the possession of "scent caps" on the dorsal part of the head of male Hydroptila also give clues that are helpful in determination of species of these genera.

Taxonomic determination to species is based on the male genitalia primarily. There is a general resemblance among those species in each genus and one can recognize the proper genus quite readily with experience. The female specimens in most instances will have to be run through a genera key to place them properly, although here again with practice they may be easily recognized as to the correct genus.

[1/] Professor of Entomology, Department of Entomology, University of New Hampshire.

Genera grouped as to spurs and ocelli

Genus	Spur Formula	Ocelli
Neotrichia	0-2-3	+
Hydroptila	0-2-4	0
Mayatrichia	0-2-4	+
Rioptila	0-2-4	+
Agraylea	0-3-4	+
Ithytrichia	0-3-4	+
Ochrotrichia	0-3-4	+
Orthotrichia	0-3-4	0
Oxyethira	0-3-4	+
Dibusa	1-3-4	0
Leucotrichia	1-3-4	+
Metrichia	1-3-4	+
Palegapetus	1-3-4	+
Stactobiella	1-3-4	+
Zumatrichia	1-3-4	+

Flint discusses the suprageneric classification and points out that it is not completely satisfactory. The following have been proposed by various workers: Nielsen (1948) two subfamilies, Hydroptilinae (Agraylea, Hydroptila, Oxyethira), Orthotrichinae (Orthotrichia, Ithyrichia); Botosaneanu (1956), Stactobinae (Stactobia etc.), however, Stactobiella Mart. probably should be in the Hydroptilinae (sensu Nielsen) as the genus based on the larvae are not related to Stactobia (see Flint 1970, p. 2); Ross (1956) placed the genera Paleagapetus and Ptilocolepus in the Ptilocolepinae and all the others in the Hydroptilinae. The latter two genera were originally classed as rhyacophilids. The Palearctic Ptilocolepus was placed in the Hydroptilidae after the larva had been described by Thienemann (1904), however, Martynov (1934) put it in Ptilocolepinae (Rhyacophilidae). There seems to be no question that the latter two genera belong in the Hydrotilidae. Flint (1970), proposed Leucotrichinae for 9 neotropical genera, two of which also occur in the U.S.A., namely Leucotrichia and Zumatrichia. Wiggins (1977), considers the genera Neotrichia and Mayatrichia to be a subfamily unit after studying the larvae but did not create a subfamily to contain them.

Table for determination of Hydrotilidae genera

1.	Foretibia without apical spur.	-2
	Foretibia with apical spur.	-10
2.	Spur formula: 0-2-3; ocelli present.	Neotrichia
	Spur formula: 0-2-4 or 0-3-4; ocelli present or absent.	-3
3.	Spur formula: 0-2-4.	-4
	Spur formula: 0-3-4.	-6
4.	Ocelli present.	-5
	Ocelli absent.	-Hydroptilia
5.	Metascutellum pentangular.	-Rioptila
	Metascutellum triangular.	-Mayatrichia
6.	Ocelli absent; metascutellum rectangular.	-Orthotrichia
	Ocelli present; metascutellum not rectangular.	-7
7.	Mesoscutellum with fracture line from lateral angle to lateral angle.	Ochrotrichia
	No fracture line across mesoscutellum.	-8
8.	Mesoscutellum diamond shape; wide area posterior to postero-dorsal edge.	-Agraylea
	Mesoscutellum with anterior edge evenly curved; postero-dorsal edge close to or touching posterior margin on meson.	-9
9.	Postero-dorsal edge of mesoscutellum touching posterior edge on meson; metascutellum extends to lateral margin of segment.	-Oxyethira
	Postero-dorsal edge of mesoscutellum separated from posterior edge; metascutellum connected to lateral margin by straplike piece.	-Ithytrichia

10.	Ocelli absent.	-Dibusa
	Ocelli present.	-11
11.	Mesonotum convex; scutellum with a large oval wart.	Paleagapetus
	Mesonotum flat, scutellum without a large oval wart.	-12
12.	Metascutellum as wide as scutum, short, rectangular.	-Stactobiella
	Metascutellum narrower than scutum; pentangular or triangular.	-13
13.	Metascutellum pentangular.	Leucotrichinae*
	Metascutellum triangular.	Metrichia

*Leucotrichia and Zumatrichia are treated under the species section.

Eleven genera are treated in this section, they are as follows: Agraylea Curtis comprised of 3 species which may be considered to be distributed in northern U.S.A. and southern Canada. One species A. multipunctata is a holarctic one. The other two occur in more restricted areas i.e. A. costello in n.e. U.S.A. and southeastern Canada and A. saltesea in northwestern U.S.A. Dibusa Ross is comprised of one (1) species from southeastern and southern U.S.A. Ithytrichia has two species, I. clavata being very widespread and I. mazon known only from Ill. and Ky. Leucotrichia Mosley is for the most part Neotropical, but three (3) species occur in U.S.A. Two, L. limpia and L. sarita are found in Arizona and Texas, the third L. pictipes (Banks) is known from 17 states, nine western and eight eastern. The distribution follows the Rocky Mountain and Pacific coast areas on one hand and the northcentral and northeastern areas on the other. Another Leucotrichinae, the genus Zumatrichia Mosley, has one species in the U.S.A. occuring in Arizona and Montana. Mayatrichia Mosley contains a very widely spread species, M. ayama. This species described from Mexico has been taken from Florida to Quebec to Montana. The other three are known only from southwestern or western states. Metrichia Ross is considered here to be a valid genus. Although the larvae are quite similar to those of Ochrotrichia the larval habits have differences and the adults are morphologically distinct. Three species occur in southwestern U.S.A. and the genus is also known from as far south as Chile. Orthotrichia Eaton has been studied by Kingsolver and Ross (1961). Here again we have two widespread species namely, O. aegerfasciella (Chambers), an eastern species that has been known as O. americana Banks and most of the records are under that name, and O. cristata that has been taken from British Columbia to Quebec and Florida. The others, O. baldufi and O. instabilis extend from Maine to Florida; with O. curta and O. dentata known from Florida. Paleagapetus Ulmer a genus with two western species P. guppyi and

P. nearcticus and one eastern one P. celsus. Rioptila Blickle and Denning contains one species R. arizonica from Arizona and Utah. Stactobiella Martynov in North America embraces the following four species: S. brustia, n.w. U.S.A. and Arizona, S. delira known from California and Oregon to north central U.S.A. and New Hampshire, S. palmata, southern Canada, northern U.S.A., and the North Central states, and S. martynovi, Tennessee (Smoky Mts.).

In the last genus the term "bracteole" is used in the table for determination. Ross (1948) gives the following: ...."a structure associated with the area dorsad of the base of each clasper... In some cases this appears as a small structure at the base of each clasper in others the structure is larger and more conspicuous than the clasper and probably usurps its function. For this I propose the term bracteole." S. delira is an example of one with a small structure and S. palmata of the large, conspicuous one.

Key to Species of Genera Agraylea, Dibusa, Ithytrichia, Leucotrichia, Metrichia, Orthotrichia, Paleagapetus, Rioptila, Stactobiella, Zumatrichia.

Agraylea Curtis 1834

1. Process on 7th sternite short, conical	fig. 1	saltesea Ross 1938
- Process on 7th sternite long	fig. 2,3	-2
2. 7th sternite process with tooth at basal 1/5th; claspers (ventral view) not as wide as long	fig. 2,2a	multipunctata Curtis 1834
- 7th sternite process not toothed; claspers as wide as long	fig. 3,3a	costello Ross 1941

Dibusa Ross 1939	fig. 4a,4b	angata Ross 1939

Ithytrichia Eaton 1873

1. Claspers (ventral aspect) narrowed from base to apex	fig. 5c,5ae	clavata Morton 1905
- Claspers (ventral aspect) with apex wide, truncate	fig. 6c	mazon Ross 1944

Leucotrichinae

1. Antennae of male, basal segment enlarged. Ocelli male 2, female 3		Zumatrichia
- Antennae of male, basal segment terete. Ocelli 2 or 3		Leucotrichia

Zumatrichia Mosley 1937

9th segment with long lateral styles	fig. 7a	notosa (Ross) 1944

Leucotrichia Mosely 1934

1. 3 ocelli	fig. 8a	*limpia* Ross 1944
- 2 ocelli		-2
2. Head without special lobes; antennae simple	fig. 9a	*sarita* Ross 1944
- Head with setate lobes. Some antennal segments flattened. 7th sternite with brush of setae	fig. 10a	*pictipes* (Banks) 1911

Mayatrichia Mosely 1934

1. Aedeagus tip blunt		-2
- Aedeagus tip pointed		-3
2. Aedeagus tip 3 pronged	fig. 11a	*ayama* Mosely 1934
- Aedeagus tip not pronged	fig. 14a,14c	*moselyi* B. & D. 1977
3. Mesal lobe of claspers nearly truncate; apical setae long stout	fig. 12a	*ponta* Ross 1944
- Mesal lobe of claspers oblique; apical setae short slender, not arising in same plane	fig. 13a	*acuna* Ross 1944

Metrichia Ross 1938

1. Lateral aspect: clasper 2 x as long as wide; cerci elongate	fig. 16a	*arizonensis* Flint 1972
- Lateral aspect: clasper 4.5 x as long as wide; cerci ovate		-2
2. Tips of both aedeagal rods pointed	fig. 15a	*nigritta* (Banks) 1907
- Tip of one rod truncate	fig. 17a,17b	*volada* B.& D. 1977

Orthotrichia Eaton 1873

1. Subgenital plate with long slender lateral arms	fig. 18c	*aegerfasciella* (Chambers) 1873
- Lateral arms subgenital plate short, rounded; no internal process		-2

2. Shaft of subgenital plate with tooth-like projections		-3
- Shaft of subgenital plate with no ventral tooth-like projections, slender rod arising from 10th segment projects posteriorly	fig. 19c	<u>cristata</u> Morton 1905
3. Apex of 10th tergite entirely membranous; no sclerotized rod arising from 10th segment	fig. 20c	<u>curta</u> K. & R. 1961
- Apex of 10th tergite with dark sclerotized area		-4
4. Subgenital plate truncate, posterior margin truncate; ventral process large	fig. 21c	<u>dentata</u> K. & R. 1961
- Subgenital plate T-shaped, emarginate; ventral process usually small		-5
5. Subgenital plate cleft; ventral process very small	fig. 22c	<u>instabilis</u> Denning 1948
- Subgenital plate not cleft; ventral process variable	fig. 23c	<u>baldufi</u> K. & R. 1961

<u>Paleagapetus</u> Ulmer 1912

1. Lateral process of 9th segment ending in 3 pronged structure		-2
- Lateral process of 9th segment not 3 pronged	fig. 24a,24c	<u>celsus</u> Ross 1938
2. Lateral view: 10th tergite upcurved at tip	fig. 25a,25c	<u>guppyi</u> Schmid 1951
- Lateral view: 10th tergite not upcurved at tip	fig. 26a	<u>nearcticus</u> Banks 1936

<u>Rioptila</u> Blickle and Denning 1977	fig. 27a, 27b, 27 ant.	<u>arizonica</u> B. & D. 1977

<u>Stactobiella</u> Martynov 1925

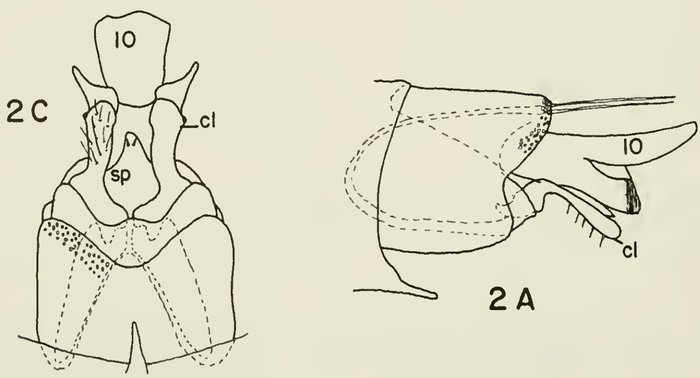
1. Claspers apparently fused, forming a ventral plate	fig. 28a,28c	<u>brustia</u> (Ross) 1938
- Claspers not fused, either elongate or ovate		-2

2. A bracteole arising above each clasper		-3
- Bracteole a small process, associated with clump of setae	fig. 29c	<u>delira</u> (Ross) 1938
3. Bracteole apex divided into 3 fingers	fig. 31c	<u>palmata</u> (Ross) 1938
- Bracteole divided at basal 1/3rd, a seta near acute apex. Aedeagus truncate	fig. 30c	<u>martynovi</u> B. & D. 1977

Genus Hydroptila Dalman 1819

At present the largest genus in the family Hydroptilidae comprised of sixty species. This genus may be recognized readily as possessing a spur formula of 0-2-4 and in lacking ocelli. In addition the males have "scent caps" or eversible glands on the dorsal area of the head. Although these "scent caps" are probably diagnostic, very little work has been done on them. Mosely (1919, 1923, 1924) has studied a few species. Most of the studies have been on the male genitalia, in fact the genitalia are the basis for determining Trichoptera. In the Hydroptila, two groups may be separated by the shape of the 7th sternite process (figs. 32 & 33); one has a short pointed process and the other a long and blunt one. The male claspers, tenth tergite and the aedeagus are quite distinct for each species.

Species that are quite similar such as Hydroptila arctia Ross - H. consimilis Morton have some overlap in their distribution but the first is more western and the latter one more eastern in distribution. Two other similar species Hydroptila hamata Morton and H. modica Mosely have distributions that overlap but here the former is more eastern than the latter, these two are more difficult to separate. The three H. icona Mosely, H. ajax Ross and H. pecos Ross are quite alike. H. icona occurs in Mexico and south central U.S.A., H. pecos as a species also occurs in south-central U.S.A. and more northward into Colorado and Wyoming. H. ajax is more eastern and northward in its occurrence but does extend into areas where the others occur. The 10th tergites of the three are distinctive - H. ajax - is divided into lateral and mesal sclerotized "fingers," with membranous strips between them. H. icona has an emarginate 10th tergite, H. pecos is entire. The relative length of the claspers are: H. ajax - longest, H. icona - intermediate, H. pecos - shortest. However, care should be taken in determining these animals.



Text Figure 1. Hydroptila ♂ genitalia. H. broweri, 2A lateral, 2C ventral; 10 = tenth tergite, sp = subgenital plate; cl = clasper.

Hydroptila Dalman 1819

1.	Seventh sternite with a long median process.	fig. 32		-2
-	Seventh sternite with a short median process.	fig. 33		-17
2.	10th tergite with apex divided into a pair of stout heavily sclerotized arms that are curved sharply mesad at their apex.	fig. 34	xella Ross 1941	
-	10th tergite not divided as above			-3
3.	8th sternite with an apicomesal sclerotized projection; median process of 7th sternite usually narrowed at apex.	fig. 35	virgata Ross 1938	
-	8th sternite without apicomesal process; 7th sternite process not narrowed.			-4
4.	Claspers short and beak like; 10th tergite longer than claspers.			-5
-	Claspers slender, long; 10th tergite shorter than claspers.			-15
5.	Apical part of aedeagus divided into three (3) processes.			-6
-	Apical part of aedeagus divided into two (2) processes.			-8
6.	Apex of aedeagus with three long filamentous processes. Claspers long, slender closely appressed on meson; 10th tergite deeply cleft on meson.	fig. 36	callia Denning 1947	
-	Apex of aedeagus with two long and one short filaments.			-7

7.	Aedeagus, apical part, one filament straight and one bent at rt. angles; apex of short process bent.	fig. 37	<u>modica</u> Mosely 1937
-	Aedeagus, apical part, one filament straight, one curved gradually, the short process straight.	fig. 38	<u>fiskei</u> Blickle 1963
8.	Apex of aedeagus beak-shaped; inner tubular structure extrudes through a bulbous area before the apex.	fig. 39	<u>wyomia</u> Denning 1947
-	Apex of aedeagus not beak-shaped.		-9
9.	One rod of aedeagus bent sharply at a rt. angle at apex, other process straight.	fig. 40	<u>hamata</u> Morton 1905
-	Rods not bent sharply, the bend is gradual and curving.		-10
10.	Aedeagus with apical 1/4 of stout process pointed, hinged or flaplike in respect to base of process.	fig. 41	<u>tortosa</u> Ross 1938
-	Aedeagus without pointed hinge or flap at apex.		-11
11.	Processes of apical part of aedeagus straight or nearly so; clasper short, slightly beaked at tip; 10th tergite, lateral aspect, concave with rounded end.	fig. 42	<u>amoena</u> Ross 1938
-	Processes of aedeagus, apical part, curled or entwined about each other.		-12
12.	Lateral aspect: clasper slender; aedeagus: entwined process around central rod long; 10th tergite concave.	fig. 43	<u>ampoda</u> Ross 1941
-	Lateral aspect: clasper narrow at apex, broad at base, apex bladelike.		-13

13.	Aedeagus: one apical rod entwined around straight process, base of apical part imbricated. 10th tergite sides parallel, tip slightly emarginate, concave in lateral profile. Clasper apex black tipped, base of dorsal projection with one large seta.	fig. 44	lennoxi Blickle 1968
-	Aedeagus: rods entwined about each other. Claspers dorsal-basal projection with several setae, apex more bladelike.		-14
14.	Dorsally: 10th tergite flared laterally beyond middle, apical lobes rounded, excised deeply.	fig. 45	metoeca Blickle & Morse 1954
-	Dorsally: 10th tergite widest before middle, lateral lobes more angular excised shallowly.	fig. 46	remita Blickle & Morse 1954
15.	Apex of aedeagus with knob beyond lateral spur at tip.	fig. 47	spatulata Morton 1905
-	Apex of aedeagus without knob beyond lateral spur. Beneath 10th tergite a pair of long processes which curve around the tip and over the back of the tergite.		-16
16.	10th tergite unexpanded at apex; lateral projection of 9th segment 1/2 the length of 10th tergite.	fig. 48	vala Ross 1938
-	10th tergite with apex divided into a pair of laterally directed sharp points, lateral process of 9th segment as long as 10th tergite.	fig. 49	armata Ross 1938

17.	10th tergite bearing sclerotized hooks, curved rods, or radiating rods.			-18
-	10th tergite membranous, or membranous with sclerotized strips.			-25
18.	10th tergite apex with four radiating rods; claspers long slender and emarginate in dorsal aspect at apical 1/3.	fig. 50	nicoli Ross 1941	
-	10th tergite with rods hooked or curved			-19
19.	10th tergite with a pair of long, closely appressed processes, apices pointed laterad, truncate and sclerotized. Claspers long slender hooked at apex.	fig. 51	waubesiana Betten 1934	
-	10th tergite with curved rods at apex, or sharply angled downward, beak-like.			-20
20.	10th: rods sharply angled down at apex, above the angle a posterior directed spine. Claspers long curved mesally, a spine at apex.	fig. 52	maculata Banks 1904	
-	10th tergite rods curved at apex.			-21
21.	10th tergite divided into a pair of lateral, slender filaments that curve under the apico-dorsal projections of the claspers. Claspers long knobbed at apex.	fig. 53	delineata Morton 1905	
-	10th tergite with dorsally or ventrally curved rods. Claspers not knobbed.			-22

22. 10th tergite with long lateral sclerotized areas separated by a membranous fold; long membranous rods arise at base and curve dorsally around the tip; a large sharp lateral spur just before the dorsal bend of rods. fig. 54 waskesia Ross 1944

- Not as above. -23

23. 10th tergite with dorsally curved rods, pointed and bulbous immediately before apex. Claspers short. fig. 55 eramosa Harper 1973

- 10th tergite rods curved ventrally. -24

24. 10th tergite divided into a pair of large rods that curl around long sinuate rods arising from base of tergite. Claspers small, truncate, short. Heavy spines along apical margin of 8th segment. fig. 56 grandiosa Ross 1938

- 10th tergite divided into rods that curl around straight rods; claspers large, curving mesally at apex. fig. 57 gunda Milne 1936

25. Claspers short; either c-shaped, broad at base and curving down at apex, small blunt ovate, or beak-like. -26

- Claspers elongate; 10th tergite usually elongate. -29

26. Short stout spines on apex of 8th sternite or apico-lateral area of segment. -27

- No short stout spines present on apical part of 8th segment. -28

27.	Short stout spines on apex of 8th sternite. Claspers, lateral aspect, broad base and narrow apex.	fig. 58	<u>spinata</u> Blickle & Morse 1954
-	Short stout spines on apico-lateral margin of 8th segment. Claspers short, ovate.	fig. 59	<u>dentata</u> Ross 1938
28.	Claspers, lateral aspect; c-shaped. 10th tergite, dorsal aspect; broad, sharp, emarginate	fig. 60	<u>jackmanni</u> Blickle 1963
-	Claspers not c-shaped; short beak-like at apex. 10th tergite with short finger-like projections at lateral corners.	fig. 61	<u>rono</u> Ross 1941
29.	Aedeagus with a long pointed, lateral process near apex.		-30
-	Aedeagus without this process.		-31
30.	Claspers slender	fig. 62	<u>arctia</u> Ross 1938
-	Claspers broad, slightly expanded on apical third.	fig. 63	<u>consimilis</u> Morton 1905
31.	Very long heavy spines on apico-lateral margin of 8th tergite.		-32
-	No long spines present.		-33
32.	Aedeagus straight. 10th tergite with 2 long arms projecting dorso-posteriorly, apex of arms expanded, oval.	fig. 64	<u>lonchera</u> Blickle & Morse 1954
-	Aedeagus sharply bent at apex; 10th tergite small.	fig. 65	<u>molsonae</u> Blickle 1961
33.	Claspers, ventral aspect, with apex curved or hooked ectally so that the tips are approximately at rt. angles to main part of claspers.		-34
-	Claspers: ovate, triangular, straight or nearly so, tips not at rt. angles.		-40

34. Claspers with apex hooked. (tip bent > 90°).			-35
- Claspers with apex curved. (tip not bent > 90°).			-38
35. 10th tergite with sides parallel for basal 2/3, apices diverging and tapered; a forked sclerotized band dorso-basad and ending apico-ventrad. Claspers slightly longer than 10th tergite, expanded at apical 1/5 into an ectal tooth-like projection.	fig. 66	<u>acadia</u> Ross 1941	
- 10th tergite without forked sclerotized band, as above. Claspers at extreme apex acutely reflexed.			-36
36. Aedeagus straight, apical portion divided 1/4 its length to apex. 10th with lateral tips "twisted" beak-shaped, central lobe ovate.	fig. 67	<u>xoncla</u> Ross 1941	
- Aedeagus with apical part sickle-shaped, or bent at an acute angle. Claspers converging towards tip, and approximate mesally. Tips curve ectally.			-37
37. Aedeagus; apex sharply bent at rt. angles, spiral stout.	fig. 68	<u>protera</u> Ross 1938	
- Aedeagus; apical part sickle-shaped.	fig. 69	<u>berneri</u> Ross 1938	
38. 10th tergite diverging at apex, laterally apices acutely hooked. Claspers very long, diverging apically.	fig. 70	<u>wakulla</u> Denning 1947	
- 10th tergite apices rounded or blunt. Claspers sinuate.			-39

39. Aedeagus with extreme apex forked. 10th tergite lateral arms blunt at apex. Claspers with a gradual 45° curve at apex.	fig. 71	_xera_ Ross 1938
- Aedeagus not forked, apex acinate. 10th tergite with lateral arms rounded at apex. Claspers strongly curved, 90° at apex.	fig. 72	_salmo_ Ross 1941
40. Claspers with dark sclerotized elevation on lateral margin midway between base and apex.	fig. 73	_albicornis_ Hagen 1861
- Claspers without such elevation.		-41
41. Claspers gradually widening from base to apex, apices oblong, ovate, converging. Lateral arms of 10th tergite tapering to acute points.	fig. 74	_melia_ Ross 1938
- Claspers not oblong, ovate nor widening from base to apex.		-42
42. Claspers regularily triangular, ventral aspect, base widest; aedeagus: tubular central process exposed at tip; subgenital plate triangular. 10th tergite broad, weakly trilobed in ventral view.	fig. 75.	_decia_ Etneir & Way 1973
- Clasper triangular, or straight; 10th tergite with 3 lobes or rounded at apex.		-43
43. Clasper triangular; 10th tergite 3 lobed, broad; central lobe broad flat, lateral ones ear-shaped. Aedeagus with a transparent alate structure.	fig. 76	_lloganae_ Blickle 1961
- Clasper straight, or nearly so.		-44

44.	10th tergite with 3 apical arms, membranous mesal arm projecting dorsad, lateral arms sclerotized expanded apically, apices diverging. Aedeagus stout, tapering to apex, no spiral process.	fig. 78	valhalla Denning 1947
-	10th tergite hood shaped, rounded or emarginate, sclerotized mesally and laterally, or may be membranous laterally and mesally.		-45
45.	Apical angle of clasper with sclerotized point or clasper with 5 lateral projections tipped with spines.		-46
-	Outer apical angle or clasper without sclerotized point or 5 spinose lateral projections.		-53
46.	Claspers with 5 heavy spines arising from projections, as viewed ventrally.	fig. 77	lenora Blickle & Denning 1977
-	Clasper with sclerotized point; no spine tipped projections on outer 2/5ths.		-47
47.	Apical part of aedeagus divided into 2 rods, basal part very long. Spiral process present.	fig. 79	denza Ross 1948
-	Apical part of aedeagus not divided into 2 rods in addition to spiral process.		-48
48.	Aedeagus lacking a spiral process, aedeagus very long at least 1/2 the body length. 10th tergite long.	fig. 80	broweri Blickle 1963
-	Aedeagus with spiral process.		-49

49.	Spiral process small, not extending towards aedeagus tip.	fig. 81	*scolops* Ross 1938
-	Spiral process stout, extending towards aedeagus tip.		-50
50.	10th tergite with mesal sclerotized strap; membranous laterally	fig. 82	*perdita* Morton 1905
-	10th tergite sclerotized laterally.		-51
51.	Claspers 4x as long from lateral projection to tip as width of clasper at this point.	fig. 83	*ajax* Ross 1938
-	Claspers less than 4x as long.		-52
52.	Apex of 10th tergite rounded.	fig. 84	*pecos* Ross 1941
	Apex of 10th tergite emarginate.	fig. 85	*icona* Mosely 1937
53.	10th tergite with apex of lateral arms pointed, thorn-like mesal lobe membranous.	fig. 86	*tusculum* Ross 1947
-	10th tergite without acutely pointed lateral arms.		-54
54.	Claspers diverging at apex.		-55
-	Claspers converging at apex.	fig. 87	*latosa* Ross 1947
55.	Aedeagus straight.		-56
-	Aedeagus with apical part curved or apex bent at angle.		-57
56.	Aedeagus with apical part blade like. Subgenital plate triangular.	fig. 88	*quinola* Ross 1941
-	Aedeagus with apical part not blade like. Subgenital plate forked at apex.	fig. 89	*novicola* Blickle & Morse 1954

57. Apex of aedeagus gradually curved from near base to apex.			-58
- Apex of aedeagus bent into a right angled process.			-59
58. 10th tergite with lateral arms upcurved; a dorsal projecting process on surface of mesal lobe. Aedeagus sickle-shaped.	fig. 90	argosa Ross 1938	
- 10th tergite lateral arms straight with membranous folds between; below 10th tergite a pair of very slender filaments. Aedeagus with membranous area appressed to curved apical part.	fig. 91	strepha Ross 1938	
59. Aedeagus with imbricated portion below spiral process.	fig. 92	angusta Ross 1938	
- Aedeagus without imbricated portion below spiral process	fig. 93	pullatus Denning 1947	

Neotrichia Morton 1905

The members of this genus are the smallest of the Hydroptilidae, they may be 2 mm. or less in length. They are easily recognized by the presence of ocelli and a spur formula of 0-2-3.

Species of this genus are more numerous in the tropical and subtropical regions, however, 14 species are considered to occur in America north of Mexico. They appear to be quite local in their occurence, although they may be very numerous as shown by light trap collections of N. halia Denning from Maine, 8,393 specimens being taken from July 5 to August 8, 1959 from 4 towns in the northern part of the state. The most widespread species is N. okapa Ross recorded from 10 states and one province, being recorded from Maine to California and Quebec to Florida. Others as N. halia occurs across northern U.S.A. from Maine to Wyoming and N. vibrans Ross with an eastern U.S.A. distribution from Wisconsin to Maine to Florida.

Most species are distinct and readily separated, however, those similar to N. okapa are more difficult to separate. Care in preparing these insects must be exercised since they can be overcleared quite easily.

1. Claspers prominent, elongate, 2x or more as long as wide		
- Claspers short, hook shape, square, or curved.		
2. Claspers fused to form a long ventral plate; apex narrow, upturned, covered with long setae.	fig. 94	minutisimell bers) 1873
- Claspers not forming setae covered plate.		
3. 9th segment with outer lateral process divided to form long dorsal and ventral fingers.	fig. 95	kitae Ross 19
- 9th segment with outer lateral process simple.		
4. Claspers with dorsal hook that reaches 2/3 of its distance to apex. Aedeagus; wide tubular base, long narrow neck; spiral process encircling tube slightly over one revolution; apex cylindrical, incised at tip.	fig. 96	osmena Ross 19
- Claspers without dorsal hook		
5. Aedeagus apex membranous; spiral process encircling structure 1/2 turn, projecting towards apex; apical part ends in 2 sclerotized hooks, side by side; an arrow shaped hook connected to internal duct.	fig. 97	erstis Denni
- Aedeagus apex sclerotized.		
6. Aedeagus with a pair of sclerotized hooks at apex.		
- Aedeagus without a pair of sclerotized hooks at apex.		

7.	Aedeagus apical part 1/2 length of base; hooks at tip long, slender, similar in appearance. Claspers nearly 3 x as long as wide.	fig. 98	collata Morton 1905
-	Aedeagus apical part short, 1/4 length of base; hooks at tip dissimilar, one acuminate, one hook like with broad base. At times the hooks are appressed together, at others separate.	fig. 99	halia Denning 1947
8.	Aedeagus: apical part with 2 stout black spurs near middle; base very wide; spiral stout.	fig. 100	caxima Mosely 1937
-	Aedeagus: apical part without 2 stout black spurs.		-9
9.	From sides of 10th tergite a pair of lateral extensions; below these a pair of sclerotized, posteriorly pointed bodies. Claspers, lateral view, thick at base, tapering to apex, toothed at apical 1/3.	fig. 101	okapa Ross 1939
-	From sides of 10th tergite a pair of heavily sclerotized long points; below these heavily sclerotized triangular bodies. Claspers, lateral view, base thick tapering to a flat, somewhat upturned apical portion.	fig. 102	sonora Ross 1944
10.	Aedeagus: two similarily shaped hooks at middle of apical part; spiral process stout. Claspers, quadrate, apical margin steplike.	fig. 103	falca Ross 1938
-	Aedeagus hooks dissimilar, or none present.		-11

11.	Aedeagus with dissimilar sclerotized hooks; tip acuminate, membranous; spiral stout.	fig. 104	riegeli Ross 1941
-	Aedeagus without hooks.		-12
12.	Aedeagus: apex irregularily expanded, membranous; very long, slender spiral process. Claspers, lateral view, curved ventrad, apex hook-shape, acuminate.	fig. 105	elerobi Blickle 1961
-	Aedeagus: apex flattened membranous, or flattened elliptic with long apical setae. A comb of setae or an apical projection on 8th sternite.		-13
13.	Aedeagus: apex flattened, elliptic, pair of apical setae. 8th sternite with apico-mesal lobe.	fig. 106	vibrans Ross 1938
-	Aedeagus: apex flattened, truncate; no apical setae. 8th sternite with apico-mesal comb of large setae.	fig. 107	edalis Ross 1941

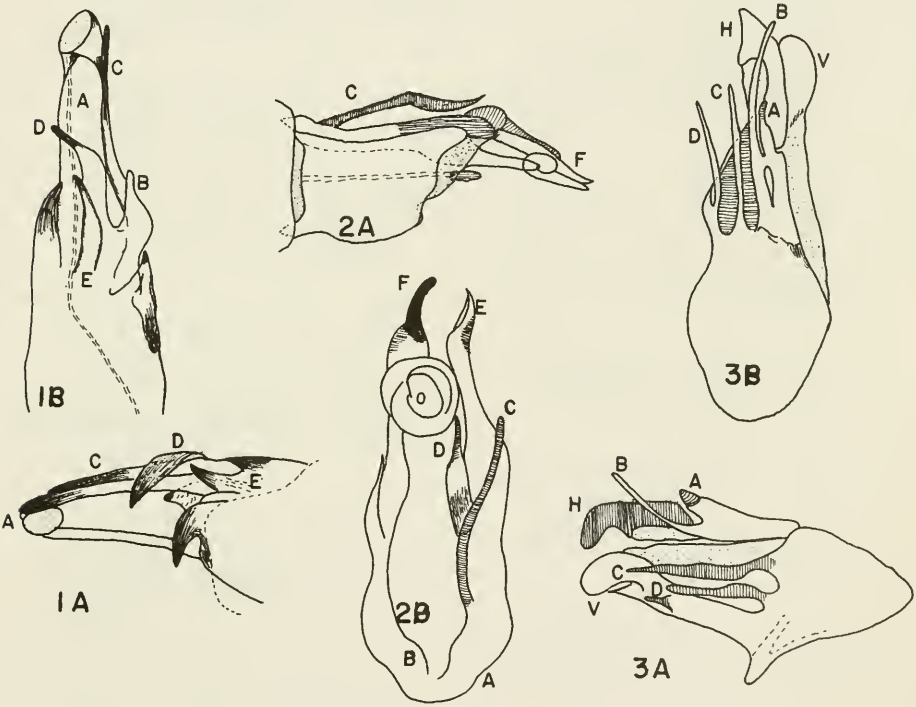
Ochrotrichia Mosely 1934

The genus occurs in the Nearctic and Neotropical regions from Ontario and Maine west to the Pacific coastal states and south to Peru, S.A. and in the West Indies. Although some species are found in eastern U.S.A., the greater number occur in the western and southwestern states.

The adults are from 2 to 4 mm in length, from front of head to wing tip. They have 3 ocelli and a spur formula of 0-3-4. The males usually have a simple tubular aedeagus, a spinose complicated 10th tergite and large claspers which are arranged on either side of the 10th tergite. The shape and structure of the 10th tergite and claspers are distinctive for each species and determinations are based on these structures.

Only a few species are known to have a wide distribution, namely: O. tarsalis from Ontario and Maine south to Florida and to Central America; O. stylata in the west from Washington and Montana south to Central America; O. spinosa from Minnesota and Wisconsin south to Kentucky; O. logana in Washington, Oregon, Idaho, Wyoming and Utah with O. lometa more southern in California, Utah, Colorado, Arizona and New Mexico. It is quite possible that further study will increase the known distribution of some species, an example is O. wojcickyi known originally from Maine and New Hampshire but now known also from Ohio.

The genus has been treated recently by Flint (1972 for those in Neotropical areas of Mexico and Central America; by Denning and Blickle (1972) mainly for species of America north of Mexico. In the first paper the genus Metrichia Ross is placed as a subgenus of Ochrotrichia. The former paper included keys to species, a check list and descriptions of new species. There is a total of 45 species, descriptions of 21 new species and a discussion of the species occurring in the area. The second paper is a review of known species and description of 15 new entities. Thus 36 species are added to the large genus, 28 in Ochrotrichia. The recently described ones are included in the present key and list of North American species. In this genus the claspers and 10th tergite are usually asymmetrical.



Text Figure II. Ochrotrichia ♂ genitalia. Lettering used for majority of species, Ochr. alsea, 1A lateral, 1B dorsal. Lettering used for shawnee group, Ochr. shawnee, 2A lateral, 2B dorsal. Lettering used for confusa group, Ochr. riesi, 3A lateral, 3B dorsal. Smaller letters designations given to the various processes A, B, C, D, E, F and H.

Ochrotrichia Mosely 1934

1.	10th tergite with hooked or straight sclerotized processes.			-3
-	10th tergite without hooked or straight sclerotized processes.			-2
2.	10th tergite short triangular, apex acuminate; claspers long, narrow (2.3 x as long as 10th tergite); 2 brushes of black pegs at apex.	fig. 108	xena Ross 1938	
-	10th tergite rounded at apex; claspers no more than 1.6x longer than 10th tergite	fig. 109	unio Ross 1938	
3.	Dorsal view: 10th tergite divided into 2 processes.			-4
-	Dorsal view: 10th tergite divided into more than 2 processes.			-5
4.	10th tergite with 2 long convoluted processes of equal length extending posteriorly.	fig. 110	provosti Blickle 1961	
-	10th tergite processes unequal; left process narrows apically with tip strongly twisted. (Puerto Rican species)	fig. 111	gurneyi Flint 1964	
5.	10th tergite; sclerite F coiled near apex, forming a spring-like structure.			-6
-	10th tergite; without a coiled spring-like structure at apex.			-9

6.	10th tergite; process C slender, extends to apex of D; D short, stout; E with a row of small denticles on outer apical surface; F without a shoulder beyond spiral; 2 heavily pigmented spines at base of tergite.	fig. 112	denningi Blickle & Morse 1957
-	10th tergite: C not extending to tip of D; E without denticles at apex.		-7
7.	10th tergite: C not angled at base; apex of D slender; apex of F narrowed beyond shoulder near spiral.	fig. 113	shawnee Ross 1938
-	10th tergite: process C angled at base; apex of D stout.		-8
8.	10th tergite: A very broad; apex of D reaches to spiral; F with a deeply excised shoulder beyond spiral.	fig. 114	contorta Ross 1938
-	10th tergite: A narrow; apex of D removed from spiral by at least the width of the spiral; shoulder of F not deeply excised.	fig. 115	anisca Ross 1941
9.	10th tergite: a long conspicuous spine curving mesad at the middle of the tergite; basad a small spine directed in the opposite direction.		-10
-	10th tergite: no long conspicuous spine curving mesad and no small spine curving laterad in opposite direction.		-11

10. Basad at apex of D on B is a small dentate projection; D curves mesad at an angle less than 90° to its base. fig. 116 — potomus Denning 1947

- No dentate process on B basad of apex of D, D curves mesad at a 90° angle. fig. 117 — tarsalis Hagen 1861

11. Claspers, side view, less than 2x as long as wide. -12

- Claspers, side view, more than 2x as long as wide; measuring the longest axis in relation to the width at mid point. -16

12. Claspers with an apical circular incision. 10th tergite apex tapering to a sharp point. fig. 118 — weddleae Ross 1947

- Claspers rounded apically. -13

13. 10th tergite with rods B and C projecting dorsad. Clasper apex with a dense brush of stout setae on mesal surface, a row of peg-like spines extends from mid-ventral margin basad on mesal surface. fig. 119 — arizonica Denning & Blickle 1972

- 10th tergite with one or no rods projecting dorsad. -14

14. Clasper with basal 1/2 square shaped, lower margin tapering to a rounded apico-dorsal apex, apex with a brush of long stout setae; mesal surface covered with numerous long setae; a row of heavy spines extends basad from mid-ventral margin. fig. 120 — trapoiza Ross 1947

- Clasper not tapering dorsad. -15

15.	Clasper: apex rounded and covered mesally with a heavy brush of stout setae; row of long spines on mesal surface extending above ventral margin of clasper; 10th tergite: A long, hooked-shaped ventral projection	fig. 121	spinulata Denning & Blickle 1972
-	Clasper: 1.8 to 1.9 x as long as wide; a short spine on mesal surface. 10th tergite: A broad with a small lateral hook at apex. C with apical part down curved.	fig. 122	zioni Denning & Blickle 1972
16.	Claspers in side view approximately 6 x as long as wide; claspers parallel sided.	fig. 123	susanae Flint 1976
-	Claspers less than 6 x as long as wide, not parallel sided.		-17
17.	Claspers (side view): ventral mesal area bearing large spines or large processes tipped with stout spines.		-18
-	Clasper ventral mesal area with a single projection bearing at most stout denticles, or a single stout spine; or there may be no projection or spur.		-20
18.	Apical narrow portion of claspers bearing a dense patch of hairs on mesal surface at apex; a strong spine on mesal surface of broad basal part.	fig. 124	quadrispina Denning & Blickle 1972
-	Clasper with no patch of hairs at apex nor strong spine on mesal surface of basal part.		-19

19. 10th tergite hook large, extends beyond rod B. Rods C & D slender.	fig. 125	riesi Ross 1944
- 10th tergite hook small, rod B extends furthest posteriorly. Rods C & D thick at base, tapering to apex.	fig. 126	confusa Morton 1905
20. Clasper: no projection or spine on ventromesal surface.		-38
- Clasper: projection or spine present on ventromesal surface.		-21
21. Clasper: apex attenuated and bearing a very long stout spine which arises on the mesal surface. A row of short stout spines on dorsal margin of clasper.	fig. 127	ildria Denning & Blickle 1972
- Clasper without long, stout spine arising from mesal surface.		-22
22. Claspers tapering to apex and bearing a small spine or lobe on ventral margin beyond its mid point.		-23
- Claspers not as above.		-30
23. Claspers without dark teeth on ventral lobe, with 9 or 10 peg-like spines on dorsal mesal margin above lobe.	fig. 128	rothi Denning & Blickle 1972
- Claspers with teeth on ventral lobe, no peg-like spines on dorsal mesal margin. Apical rod of 10th tergite with circular membranous area.		-24

24.	Basal spine twisted beneath 10th tergite; two long black tipped spines directed posterior-dorsad from base of 10th tergite.	fig. 129	okanoganensis Flint 1965	
-	No basal twisted spine beneath 10th tergite; no more than one spine of 10th tergite directed posterior-dorsad.			-25
25.	One spine directed posterior-dorsad.	fig. 130	argentea Flint & Blickle 1972	
-	No spines directed posterior-dorsad.			-26
26.	10th tergite rod E shorter than D.			-27
-	10th tergite rod E longer than D. B short, heavy, bent acutely at tip.	fig. 131	logana Ross 1941	
27.	10th tergite: rod E short directed dorsad; rod B directed slightly dorsad at tip.	fig. 133	honeyi Blickle & Denning 1977	
-	10th tergite: rod E not directed dorsad; B not bent acutely at tip, nor directed dorsad.			-28
28.	Spine beneath 10th tergite base short, straight, acuminate; rod B longer than E; D decidedly longer than E.	fig. 132	lometa Ross 1941	
-	Spine beneath 10th tergite stout at its base, curved or bent at apex.			-29
29.	Spine beneath base of 10th tergite stout basally, tapering to a sharp hooked apex; rods B, D, and E approximately of equal length.	fig. 134	wojcickyi Blickle 1963	
-	Spine beneath base of 10th tergite stout basally, curved sharply ventrad, apex acute, C very long, almost equals A.	fig. 135	alsea Denning & Blickle 1972	

30\. Clasper (lateral view); large stout spine at mid point of ventral margin 4/5 of the clasper height at this point; small spine at apex of clasper about 1/4 the height of clasper apex. — fig. 136 — oregona Ross 1938

\- Spine on ventral margin 1/3 or less clasper height at this point. — -31

31\. Clasper: apex bird-head shaped; apical spine equal to 1/3 or more of clasper height. — -32

\- Clasper: apex not bird-head shape; apical spine not more than 1/4 clasper height. — -34

32\. Apical spine of clasper equal to 4/5th height of apical part of clasper. Clasper apex rounded "duck head" shaped; spine at mid ventral margin 1/6th the height of clasper at this point. — fig. 137 — dactylophora Flint 1965

\- Apical spine of clasper no more than 1/3rd height of claspers apical part; spine at mid ventral margin 1/3rd. height of clasper. — -33

33\. Rod C long directed dorsad; rod B slender straight; a setose protuberance on mesal part of left clasper. — fig. 139 — salaris Blickle & Denning 1977

\- Rod C short; rod B short stout; no setose protuberance on left clasper. — fig. 138 — lucia Denning & Blickle 1972

34. Left clasper with middle of ventral portion angulate; bearing a spine well separated from the others; clasper tapers to apical spine; spine at ventral margin 1/3 clasper height. fig. 140 — spinosa Ross 1938

- Left clasper sinuate at middle, spine at mid-ventral margin no longer than 1/5 clasper height. — 35

35. Clasper apex with a row of 4 to 6 black peg-like spines on mesal surface. fig. 141 — eliaga Ross 1941

- Clasper apex with one or two spines. — 36

36. Clasper with spine at extreme apex, and a large spine at mid-ventral margin, above the mid-ventral spine there are two or three large teeth on mesal surface. fig. 142 — nacora Denning & Blickle 1972

- Clasper without apical spine, mid-ventral spine present, denticles on mesal surface. — 37

37. Clasper, decidedly sigmoid in shape. 10th tergite with a long rod projecting posterior-dorsad above rest of tergite. fig. 143 — phenosa Ross 1947

- Clasper slightly sigmoid in shape. 10th tergite without long dorsally projecting rods; with a short rod curving dorsad and ending in an acute point. fig. 144 — arva Ross 1941

38. Clasper: tapering to an acute apex. — 39

- Clasper: with a rounded apex. — 41

39. Claspers: a row of short spines on dorsal margin and a distinct hump basad of the row. fig. 145 — buccata Denning & Blickle 1972

- Claspers: a row of short spines on dorsal margin; no hump basad of the row. — 40

40. 10th tergite with only 4 rods; 3 rods approximately equal length; two rods curved sharply dorsad. Clasper with a row of 5 or 6 short spines on mesal surface. fig. 148 — mono Ross 1941

- 10th tergite with more than 4 rods, no rods curved sharply dorsad. Claspers with many peg-like spines on mesal surface. fig. 146 — hadria Denning & Blickle 1972

41. Clasper apex with short, apical spine; mesal surface with few spines. fig. 147 — alexanderi Denning & Blickle 1972

- Clasper apex without apical spine; mesal surface with many spines. — 42

42. Clasper: mid-mesal surface with a brush of dark spines, a linear row of long spines extending from brush to apex. fig. 149 — capitana Ross 1944

- Clasper: no brush of spines on mesal surface. — 43

43. Clasper: length 5 x width. fig. 150 — vertreesi Denning & Blickle 1972

- Clasper: length 3 x width. — 44

44. 10th tergite: two apical processes entwined, a large stout rod extends from base to mid-point of tergite. — 45

- 10th tergite: apical processes not entwined, no large rod extending from base to mid-point. fig. 151 — felipe Ross 1944

45. Rt. clasper with a projection on mesal basal area.	fig. 152	tenuata Blickle & Denning 1977
- No mesal basal projection on rt. clasper.	fig. 153	stylata Ross 1938

Oxyethira Eaton 1873

As with most Hydroptilidae the distribution of the species in the genus Oxyethira reflects, for the most part, the areas wherein workers have been active. However, there does seem to be a general pattern in that the species are more numerous east of the Mississippi River and in the more northern regions of the area under consideration. The numbers of species recorded from the northern areas studied are: NH-14, ME-14, MN-13, WI-10, IL-8, NY-7, PQ-6; in the south FL-11 and GA-6. This is not to say that any locality has been covered completely, but some areas more extensively so than others. In addition one species, Oxy. araya has been taken in the Yukon, Canada and two, Oxy. obtatus and Oxy. sida, in Newfoundland. Some species, such as Oxy. pallida, are quite widespread throughout the area, and others as Oxy. aeola, Oxy. forcipita, Oxy. michiganensis and Oxy. serrata occur across northern U.S.A. and southern Canada. Oxy. dualis has been recorded from CA to NH and OR to NM but seems to be restricted in breeding habitats.

Four very similar species that may be difficult to separate from each other occur from Florida northward to Canada to California as follows: Oxy. aeola Ross 1938, Oxy. abacatica Denning 1947, Oxy. anabola Blickle 1966 and Oxy. barnstoni Harper 1976. The first occurs from Oregon to British Columbia to Minnesota, the 2nd in southeastern U.S.A., the 3rd from New Jersey to Canada and west to Minnesota, the last one is known from Quebec. In the areas where the species distribution overlaps they can be confused with each other, however, when compared carefully as to genitalic characters and structures of the other parts of the abdomen, differences between them are apparent. They are separated in the species key, see completes 17 through 19, differences not in the key are: 8th segment dorsally; aeola - deeply irregularily emarginate, lateral lobes with mesal shoulder; anabola - evenly emarginate, no mesal shoulder; lateral; aeola - lateral lobes sinuate on lower margin; anabola - lower margin straight. In barnstoni the 8th tergum is more weakly incised on the posterior margin, the 10th segment is stouter and regularily rounded (lateral view) more so than in the other species.

Oxyethira Eaton 1873

1.	8th tergite produced into a process on the apico-lateral margin.		-2
-	8th tergite not produced in a process on apico-lateral margin.		-14
2.	8th tergite with apico-lateral margins produced into long, serrate processes. Claspers elongate; emarginate apico-dorsally. fig. 154	<u>serrata</u> Ross 1938	
-	8th tergite without serrate processes on apico-lateral margins.		-3
3.	8th tergite produced into long sclerotized rods apico-laterally; rods converging, approximate at apex. Aedeagus: basal part wide, narrowing to a single rod like apical part, curved at extreme apex. fig. 155	<u>aculea</u> Ross 1941	
-	8th tergite rods not approximate at apex.		-4
4.	8th tergite rods bifurcate at apex; each fork tipped with spines. Aedeagus; central part stout for its entire length, with a hook-like process at the apex; spiral process long, encircles central part with a 3/4 turn. fig. 156	<u>araya</u> Ross 1941	
-	8th tergite rods not bifurcate at apex.		-5

5.	Aedeagus divided into two processes apically; one a ribbon like process arising near the middle and tapering to an acute apex. Ribbonlike part encircles the central part for at least one revolution.		-6
-	Aedeagus without a ribbon-like encircling structure as above.		-7
6.	8th tergite apex with dorso-lateral processes curved dorsally and mesally at tip. Below aedeagus (ventral aspect) a large triangular plate. No ventral process on seventh sternite.	fig. 157	<u>ulmeri</u> Mosley 1937
-	8th tergite divided into lateral lobes, the lower margins of each produced into long, smooth, tapering processes. Left one curved dorsad, right one ventrad. Ventral process on 7th sternite.	fig. 158	<u>arizona</u> Ross 1948
7.	8th segment with a lateral process, bearing long seta or emarginate on apex.		-8
-	8th segment without such a lateral process.		-9
8.	8th segment with a long process on apico-lateral margin, this produced into a narrow apex and bearing a very long seta; seta directed dorsad and longer than process.	fig. 159	<u>michiganensis</u> Mosley 1934
-	8th segment, ventral portion scoop shaped; dorsal part a heavily sclerotized hump; from hump sclerotized lateral arms, base of each being within 8th tergite, progressing posteriorly and curving dorsad, apex excised to form a pair of sharp points.	fig. 160	<u>glasa</u> Ross 1941

9.	8th segment with apico-lateral part tapering to a long, slender, quadrate process, bearing a set of three flat leaflets. Aedeagus: with apex divided into three sclerotized projections, one short and two long.	fig. 161	setosa Denning 1947
-	Aedeagus with apex not so divided		-10
10.	8th segment produced into an apico-lateral triangular lobe, heavily setose, deeply incised dorsally; dorsad and mesad to this lobe appears a long attenuated process directed slightly ventrad. Aedeagus; with two cylindrical apical lobes, one with three setae at apex, the other with one seta.	fig. 162	obtatus Denning 1947
-	8th segment with an apico-lateral dark spine, or a ventro-lateral heavily sclerotized process.		-11
11.	8th segment with a heavy spine or spines at apico-lateral margin.		-12
-	8th segment with a ventral lateral sclerotized process on margin.		-13
12.	8th segment with a single heavy spine on apico-lateral margin.	fig. 163	rivicola Blickle & Morse 1954
-	8th segment with four spines on apico-lateral margin. Clasper projecting and upturned at apex.	fig. 164	coercens Morton 1905

13.	8th segment with a ventro-lateral process that is heavily sclerotized and attenuated apically on dorsal margin, ventral margin serrate.	fig. 165	florida Denning 1947
-	8th segment produced into apico-ventral ear like lobes, ninth segment with a very long internal ventral projection which is narrow and pointed.	fig. 166	zeronia Ross 1941
14.	Ventral margin of 9th segment produced and bifurcate.		-15
-	Ventral margin of 9th is not produced and bifurcate.		-16
15.	9th segment bifurcated apex deeply excised; sides parallel. Aedeagus spatulate.	fig. 167	azteca Mosely 1937
-	Aedeagus apex divided into a slender subacute process and shorter robust process.	fig. 168	janella Denning 1948
16.	Rods of 9th segment pronounced, 8th segment excised dorsally.		-17
-	Rods of 9th segment not pronounced and 8th segment not excised dorsally.		-20
17.	Rods of 9th segment extend beyond subgenital plate, apices of rods directed ventrad.		-18
-	Rods of 9th segment do not extend beyond subgenital plate, apices of rods either upcurved or straight.		-19
18.	Aedeagus lobed (4) apically; 8th tergite strongly incised.	fig. 169	anabola Blickle 1966
-	Aedeagus not lobed; 8th tergite feebly incised.	fig. 172	barnstoni Harper 1976

19. Rods of 9th segment straight, reaches to subgenital plate. 8th segment lateral lobes wide, triangular shaped at apex. fig. 170 — _aeola_ Ross 1938

\- Rods of 9th segment curve slightly ventrad and then dorsally at apical part, apex acute. fig. 171 — _abacatica_ Denning 1947

20. Aedeagus. A single tube with enlarged tip; tip contains eversible teeth. fig. 173 — _dualis_ Morton 1905

\- Aedeagus; with apical portion divided into two or more parts. -21

21. Aedeagus with apical portion of 3 parts, two long and one short (spiral process). 9th segment with dorsal apico-lateral projections. fig. 174 — _pallida_ Banks 1904

\- Aedeagus with apical portion of 2 parts. -22

22. Aedeagus with long acute main apical portion and a long, stout tooth approximately 1/2 as long as main part, arising at junction of apical portion and base. fig. 175 — _verna_ Ross 1938

\- Aedeagus without a long, stout tooth as above. -23

23. Aedeagus with a long slender apical portion, expanded at tip. Spiral process small closely appressed to central part. fig. 176 — _forcipita_ Mosely 1934

\- Aedeagus apical part stouter, spiral process not appressed to central portion. -24

24\. Aedeagus-apical main portion blunt at apex, a v-shaped membranous apex extends back 1/3 of its length from apex; a second division as long as main portion, with an acute apex, does not encircle main portion. 9th segment with dorsal apico-lateral projections. fig. 177 maya Denning

\- Aedeagus with apical main part stout and a spiral process encircling it for at least one complete turn. -25

25\. Two rows of broad stout spines on apical part of 9th sternite; claspers fused; in side view appears as a long sinuate sclerotized, rod that projects posteriorly. fig. 178 rossi Blickle & Morse 1957

\- No rows of broad stout spines on 9th sternite, and clasper not fused to form a sinuate rod. -26

26\. Spiral process encircles aedeagus 1 1/2 times. -27

\- Spiral process encircles aedeagus 2 1/2 times. Tip is expanded and membranous, no processes on tip. Claspers short, pointed upcurved. fig. 179 allagashensis Blickle 1963

27\. Aedeagus with apex cylindrical, semi-membranous and a sharp, triangular sclerotized process placed transversely across the apex near the tip. Claspers fused to form an ovate plate, deeply incised on meson. fig. 180 lumosa Ross 1948

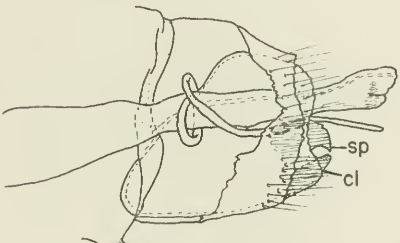
\- Aedeagus with two sclerotized projections at tip. -28

28. Apex of aedeagus bulbous, two apical projections, the larger one short stout. Plate formed by claspers narrow. 9th sternite truncate on each apical margin. — fig. 181 — grisea Betten 1934

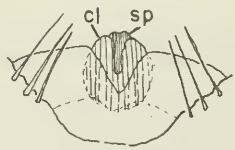
\- Apex of aedeagus not bulbous but expanded. — -29

29. Apex of aedeagous slightly enlarged; two projections, one round, serrate, plate like, second long acute. Plate formed by claspers wide. 9th sternite tapers to lateral acute, apical angle. — fig. 182 — novasota Ross 1944

\- Apex of aedeagus with two projections finger like. — fig. 183 — sida Blickle and Morse 1954



1A



1C

Text Figure III. Oxyethira ♂ genitalia. Oxy. lumosa, 1A lateral, 1C ventral; sp = subgenital plate, cl = clasper.

LITERATURE

Betten, C. 1934. The Caddisflies or Trichoptera of New York State. N.Y. State Mus. Bull. 292, 576 pp.

Denning, D. G. and R. L. Blickle. 1972. A review of the genus Ochrotrichia (Trichoptera, Hydroptilidae). Ann. Ent. Soc. Amer. 65: 141-151.

Flint, O. S. 1964. The Caddisflies (Trichoptera) of Puerto Rico. Univ. Puerto Rico, Agr. Exp. Sta. Tech. paper 40, 80 pp.

__________. 1970. Studies on Neotropical caddisflies, X: Leucotrichia and related genera of North and Central America. (Trichoptera, Hydroptilidae). Smithson. Contr. Zool. no. 60, 64 pp.

__________. 1972. Studies on Neotropical caddisflies, XII: The genus Ochrotrichia from Mexico and Central America (Trichoptera, Hydroptilidae). Smithson. Contr. Zool. no. 118, 28 pp.

Kingsolver, J. M. and H. H. Ross. 1961. New species of Nearctic Orthotrichia (Hydroptilidae, Trichoptera). Ill. State Acad. Sci. Trans. 54(1,2): 28-33.

Martynov, A. B. 1934. Trichoptera annulipalpia I. Analytical tables of USSR 13: 1-343 Leningrad.

Mosely, M. E. 1934. New exotic Hydroptilidae. Roy. Ent. Soc. Lond. Trans. 82(1): 137-163.

__________. 1937. Mexican Hydroptilidae. Roy. Ent. Soc. Lond. Trans. 86(10): 151-190.

__________. 1939. The Brazilian Hydroptilidae. Nov. Zool. 41: 217-239.

Ross, H. H. 1944. The Caddisflies or Trichoptera of Illinois. Ill. Nat. Hist. Surv. Bul. 23: 1-326.

__________. 1948. Notes and descriptions of Nearctic Hydroptilidae (Trichoptera). Wash. Acad. Sci. Jour. 38(6): 201-206.

__________. 1956. Evolution and Classification of Mountain Caddisflies. Univ. Ill. Press, Urbana, Ill.

SCENT ORGANS

Mosely, M. E. 1919. Scent organs of the genus Hydroptila. Trans. Ent. Soc. Lond. (1919) pp. 393-397.

__________. 1923. Scent organs of New Zealand Trichoptera. Trans. Ent. Soc. Lond. (1922) pp. 54-56.

____________. 1924. Scent organs of the genus Hydroptila (Trichoptera). Trans. Ent. Soc. Lond. pp. 291-294.

HYDROPTILIDAE RECORDS

Anderson, N. H. 1976. The distribution and biology of Oregon Trichoptera. Ore. Agri. Exp. Sta. Tech. Bull. 134, 152 pp. (Hydroptilidae pp. 41-47).

Blickle, R. L. 1962. Hydroptilidae (Trichoptera) of Florida. Fla. Ent. 45: 153-155.

____________. 1964. Hydroptilidae (Trichoptera) of Maine. Ent. News LXXV.: 159-162.

____________ and D. G. Denning. 1977. New species and a new genus of Hydroptilidae (Trichoptera). Kans. Ent. Soc. Jour. 50: 287-300.

Denning, D. G. and R. L. Blickle. 1971. A new Trichoptera from the Hawaiian Islands. Pan. Pac. Ent. 47: 164.

Etnier, D. A. 1965. An annotated list of the Trichoptera of Minnesota, with description of a new species. Ent. News 76: 141-152. (Hydroptilidae pp. 146-148).

____________. 1968. Range extensions of Trichoptera into Minnesota, with descriptions of two new species. Ent. News 79: 188-192. (Hydroptilidae p. 191).

____________. 1973. Extension of known ranges of northern Trichoptera into the southern Appalachians. Georgia Ent. Soc. Jour. 8: 272-274.

Fischer, F. C. J. 1960-1973. Trichopterum Catalogus vol. 1-15. Nederland ent. veren. Amsterdam. (Hydroptilidae vol. 2).

Longridge, J. L. and W. L. Hilsenhoff. 1973. Annotated list of Trichoptera (Caddisflies) in Wisconsin. Wisc. Acad. Sci. Arts and Letters LXI.: 173-183. (Hydroptilidae p. 177).

Morse, W. J. and R. L. Blickle. 1953. A check list of Trichoptera (Caddisflies) of New Hampshire. Ent. News LXIV.: 68-102. (Hydroptilidae pp. 72-73).

________________________. 1957. Additions and corrections to the New Hampshire list of Trichoptera. Ent. News LXVIII.: 127-131. (Hydroptilidae pp. 128-130).

Resh, V. H. 1975. A distributional study of the caddisflies of Kentucky. Transactions of the Kentucky Acad. of Sci. Vol. 36, Nos. 1-2, pp. 6-16.

Robert, A. 1958. Les Trichopteres de la region du lac Monroe Parc du Mont Tremblant, Que. Ann. Soc. Ent. Que. 1958: 57-60.

Ross, H. H. and G. J. Spencer. A preliminary list of the Trichoptera of British Columbia. Ent. Soc. B.C. Proc. 48: 43-51. (Hydroptilidae pp. 46-47).

Roy, D. and P. P. Harper. 1975. Nouvelle mentions de trichopteres de Quebec et description of Limnephilus nimmoi sp. nov. Can. Zoo. Jour. 53: 1082-1088. (Hydroptilidae pp. 1082-1083).

Unzicker, J. D., L. Aggus and L. O. Warren. 1970. A preliminary list of the Arkansas Trichoptera. J. Ga. Entom. Soc. 5: 167-174.

LARVAL LITERATURE

Hickin, N. E. 1967. Caddis larvae: Larvae of British Trichoptera. London.

Lepneva, S. G. 1964. Trichoptera Vol. II., no. 1. Larvae and pupae of Annulipalpi. Fauna SSR. n.s. no. 88. (Translated 1970, Israel Prog. Sci.).

_____________. 1966. Trichoptera Vol. II., no. 2. Larvae and pupae of Integripalpi. Fauna SSR. n.s. no. 95. (Translated 1971, Israel Prog. Sci.).

Nielsen, A. 1948. Postembryic development and biology of the Hydroptilidae. K. Danske Vidensk. Selskab. Skov. 5: 1-200.

Ross, H. H. 1959. Trichoptera, In Ward and Whipple, Fresh Water Biology, T. W. Edmonson ed. Wiley, N.Y.C. pp. 1024-1049.

Wiggins, G. B. 1977. Larvae of North American Caddisfly Genera. Univ. Toronto Press, Ont. Canada. 400 pp.

CHECK LIST

The two-letter abbreviations used by the postal services are used for states and provinces. A change in this system has been to place a period after the abbreviations of the Canadian provinces. This was deemed necessary because the same letters are used for Nebraska (NB) and New Brunswick (NB.). Also, a period is placed after the last locality listed for each species. In the cases where only one state or province is used the locality is spelled out.

Synonyms listed are those since 1944.

Abbreviations used:

<u>Provinces</u>

AB. Alberta
BC. British Columbia
MN. Manitoba
NB. New Brunswick
NS. Nova Scotia
NF. Newfoundland
ON. Ontario
PQ. Province of Quebec
SK. Saskatchewan
YK. Yukon

<u>States</u>

AL Alabama
AK Alaska
AZ Arizona
AR Arkansas
CA California
CO Colorado
CT Connecticut
DE Delaware
DC District of Columbia
FL Florida
GA Georgia
HI Hawaii
ID Idaho
IL Illinois
IN Indiana
IA Iowa
KS Kansas
KY Kentucky
LA Louisiana

<u>States</u> (Cont.)

ME Maine
MD Maryland
MA Massachusetts
MI Michigan
MN Minnesota
MS Mississippi
MO Missouri
MT Montana
NB Nebraska
NV Nevada
NH New Hampshire
NJ New Jersey
NM New Mexico
NY New York
NC North Carolina
ND North Dakota
OH Ohio
OK Oklahoma
OR Oregon
PA Pennsylvania
RI Rhode Island
SC South Carolina
SD South Dakota
TN Tennessee
TX Texas
UT Utah
VT Vermont
VA Virginia
WA Washington
WV West Virginia
WI Wisconsin
WY Wyoming

CHECK LIST

Genus - Species	Original Publication	Province/State
Agraylea Curtis 1834		
1941 costello Ross	Can. Ent. 73	ME,PQ.,ON.,WI.
1834 multipunctata Curtis	Lond. Edinb. phil. mag. jour. Sci.	Holarctic. NB. to BC., OR to IL, VA.
1938 saltesea Ross	Ill. natr. hist. surv. Bul. 21	CA,MT,OR.
Alisotrichia Flint 1964		
sp. (larva).	Smith. contr. Zool. 60 (1970)	Utah
Dibusa Ross 1939		
1939 angata Ross	Wash. ent. soc. Proc. 41	AR,KY,NC,OK,TN.
Hydroptila Dalman 1819		
1941 acadia Ross	Amer. ent. soc. Trans. 67	Nova Scotia
1938 ajax Ross	Ill. natr. hist. surv. Bul. 21	IL,ID,IN,KY,MN,MT, NY,OK,OR,WI,TX, WA.
1861 albicornis Hagen	Smith. inst. misc. Coll.	AR,IL,IN,ME,MN,MO, NY,OH,OK,ON.,WI.
1941 ampoda Ross	Can. Ent. 73	ME,MN,NB.,NH,PQ.
1938 amoena Ross	Ill. natr. hist. surv. Bul. 21	AR,IL,KY,MN,OK, PQ.,WI.
1938 angusta Ross	Ill. natr. hist. surv. Bul. 21	IL,IN,KY,MO,NM,OH, OK,TX.
1938 arctia Ross (syn. acoma Denning 1947)	Ill. natr. hist. surv. Bul. 21	AZ,BC.,CA,HI,ID, UT.
1938 argosa Ross	Ill. natr. hist. surv. Bul. 21	CA,ID,MT,NV,OR,UT, WA.
1938 armata Ross	Ill. natr. hist. surv. Bul. 21	AR,IL,IN,KY,MI,MN, NH,OK,WI.
1941 berneri Ross	Amer. ent. soc. Trans. 67	FL,PQ.,WI.
1963 broweri Blickle	Brook. ent. soc. Bul. 58	Maine
1947 callia Denning	Brook. ent. soc. Bul. 42	CO,MI,MN,NH,NC, PQ.,WI,WY.
1905 consimilis Morton	N.Y. state mus. Bul. 86	AB.,AR,AZ,BC.,ID, IL,KY,ME,MI,MN, NH,NM,NY,OK,OR, TN,TX,UT,VA,WA, WI.

Genus - Species	Original Publication	Province/State
1973 decia Etnier & Way	Kans. ent. soc. Jour. 46	Tennessee
1905 delineata Morton	N.Y. state mus. Bul. 86	IN,KY,MN,NH,NY, NS.,TN.
1938 dentata Ross	Ill. natr. hist. surv. Bul. 21	ME,NH,VA.
1948 denza Ross	Wash. acad. sci. Jour. 38	Mexico
1973 eramosa Harper	Can. J. Zool. 51	Ontario
1963 fiskei Blickle	Brook. ent. soc. Bul. 58	ME,NH.
1938 grandiosa Ross	Ill. natr. hist. surv. Bul. 21	AR,IL,IN,KY,MN,MO, OK,WI.
1936 gunda Milne (syn. dodgei Denning 1947)	N.A. Trichop. studies pt. 3	GA,NH,VA.
1905 hamata Morton	N.Y. state mus. Bul. 86	AZ,AR,CA,CO,ID,IL, IN,KY,ME,MI,MN, MO,NH,NM,NY,NC, OK,ON.,OR,PA,TX, UT,VA,WA,WY.
1937 icona Mosely	Roy. ent. soc. Lond. Trans. 86	AZ,CA,NM,OK,TX.
1963 jackmanni Blickle	Brook. ent. soc. Bul. 58	ME,MN,WI.
1947 latosa Ross	Amer. ent. soc. Trans. 73	Georgia
1969 lennoxi Blickle	Ent. news 70	New Hampshire
1961 lloganae Blickle	Brook. ent. soc. Bul. 55	Florida
1954 lonchera Blickle & Morse	Brook. ent. soc. Bul. 49	New Hampshire
1977 lenora Blickle & Denning	Kans. ent. soc. Jour. 50	Oregon
1904 maculata (Banks)	Ent. news 15	DC,FL,ME,NH,VA.
1938 melia Ross	Ill. natr. hist. surv. Bul. 21	Oklahoma
1954 metoeca Blickle & Morse	Brook. ent. soc. Bul. 49	DE,ME,MN,NF.,NH, NJ.
1937 modica Mosely	Roy. ent. soc. Lond. Trans. 86	AZ,OR.
1961 molsonae Blickle	Brook. ent. soc. Bul. 55	Florida
1941 nicoli Ross	Amer. ent. soc. Trans. 67	Nova Scotia
1954 novicola Blickle & Morse	Brook. ent. soc. Bul. 49	ME,MN,NH.

Genus - Species	Original Publication	Province/State
1941 pecos Ross	Amer. ent. soc. Trans. 67	AZ,CO,NM,WY.
1905 perdita Morton	N.Y. state mus. Bul. 86	AR,IL,KY,MI,MN,NH, NY,ON.,PA,WI.
1938 protera Ross	Ill. natr. hist. surv. Bul. 21	Oklahoma
1947 pullatus Denning	Brook. ent. soc. Bul. 42	Wyoming
1947 quinola Ross	Amer. ent. soc. Trans. 73	FL,ME,MN,NH,ON., PQ.
1954 remita Blickle & Morse	Brook. ent. soc. Bul. 49	FL,ME,NH,NJ.
1941 rono Ross	Amer. ent. soc. Trans. 67	AZ,CA,CO,MT,NV,OR.
1941 salmo Ross	Amer. ent. soc. Trans. 67	ME,MN,NH,WI.
1938 scolops Ross	Ill. natr. hist. surv. Bul. 21	IL,MN,WI.
1905 spatulata Morton	N.Y. state mus. Bul. 86	IL,IN,KY,MI,MN,NH, NY,PQ.,TN,WI.
1954 spinata Blickle & Morse	Brook. ent. soc. Bul. 49	ME,NH.
1941 strepha Ross	Amer. ent. soc. Trans. 67	ME,MN,NH,PA,WI.
1938 tortosa Ross	Ill. natr. hist. surv. Bul. 21	ME,MN,NH,VA.
1947 tusculum Ross	Amer. ent. soc. Trans. 73	Tennessee
1938 vala Ross	Ill, natr. hist. surv. Bul. 21	IL,KY,OK.
1947 valhalla Denning	Psyche 54	ME,MI,MN,NH,WI.
1938 virgata Ross	Ill. natr. hist. surv. Bul. 21	AR,DE,IL,KY,MN,NH, OK,WI.
1947 wakulla Denning	Can. Ent. 79	Florida
1944 waskesia Ross	Ill. natr. hist. surv. Bul. 23	MN,PQ.,SK.,TN.
1934 waubesiana Betten	N.Y. state mus. Bul. 292	AR,FL,IL,IN,KY,LA, MI,MN,NJ,OH,ON., SK.,WI.
1947 wyomia Denning	Brook. ent. soc. Bul. 42	ME,MI,NH,WI,WY.
1941 xella Ross	Amer. ent. soc. Trans. 67	IL,NH,TN.
1938 xera Ross	Ill. natr. hist. surv. Bul. 21	BC.,CA,ID,ME,MT, NH,OR,WY.
1941 xoncla Ross	Can. Ent. 73	DE,ME,NH,NS.,PQ.

Genus - Species	Original Publication	Province/State
Ithytrichia Eaton 1873		
1905 clavata Morton	N.Y. state mus. Bul. 86	BC.,CA,IL,ME,NH, OK,PA,PQ.
1944 mazon Ross	Ill. natr. hist. surv. Bul. 23	IL,KY.
Leucotrichia Mosely 1934		
1944 limpia Ross	Ill. natr. hist. surv. Bul. 23	AZ,TX.
1911 pictipes (Banks)	Amer. ent. soc. Trans. 37	AZ,CA,CO,CT,ID,IL, MI,MN,MT,NV,NM, NY,OR,UT,VA,WI, WY,WV.
1944 sarita Ross	Ill. natr. hist. surv. Bul. 23	AZ,TX.
Mayatrichia Mosely 1934		
1944 acuna Ross	Ill. natr. hist. surv. Bul. 23	TX,UT.
1937 ayama Mosely	Roy. ent. soc. Lond. Trans. 86	AB. to PQ., to FL and Mexico,MT, NB,UT.
1977 moselyi Blickle & Denning	Kans. ent. soc. Jour. 50	Utah
1944 ponta Ross	Ill. natr. hist. surv. Bul. 23	Oklahoma
Metrichia Ross 1938		
1972 arizonensis Flint	Smith. contr. Zool. 118	Arizona
1907 nigritta (Banks)	N.Y. ent. soc. Jour. 15	AZ,OK,TX.
1977 volada Blickle & Denning	Kans. ent. soc. Jour. 50	Arizona
Neotrichia Morton 1905		
1937 caxima (Mosely)	Roy. ent. soc. Lond. Trans. 86	Texas
1905 collata Morton	N.Y. state mus. Bul. 86	IL,KY,ME,NY.
1941 edalis Ross	Amer. ent. soc. Trans. 67	IL,MO,OK.
1961 elerobi Blickle	Brook. ent. soc. Bul. 55	Florida
1947 erstis Denning	Brook. ent. soc. Bul. 42	SK.,MT.
1938 falca Ross	Ill. natr. hist. surv. Bul. 21	IL,WI.
1947 halia Denning (syn. numii Ross 1948)	Brook. ent. soc. Bul. 42	AZ,CA,CO,ME,MT,NY, WI,WY.

Genus - Species	Original Publication	Province/State
1941 kitae Ross	Amer. ent. soc. Trans. 67	Missouri
1873 minutisimella (Chambers)	Can. Ent. 5	AR,FL,IL,IN,KY,MO, OK.
1939 okapa Ross	Ann. ent. soc. Amer. 32	CA,FL,IL,KY,ME,NH, OH,OK,OR,PA,PQ., WI.
1944 osmena Ross (syn. panneus Denning 1947)	Ill. natr. hist. surv. Bul. 43	UT,WY.
1941 riegeli Ross	Amer. ent. soc. Trans. 67	IL,KY.
1944 sonora Ross	Ill. natr. hist. surv. Bul. 23	Texas
1938 vibrans Ross	Ill. natr. hist. surv. Bul. 21	AR,FL,ME,NH,WI.
Ochrotrichia Mosely 1934		
1972 alexanderi Denning & Blickle	Ann. ent. soc. Amer. 65	California
1972 alsea Denning & Blickle	Ann. ent. soc. Amer. 65	Oregon
1941 anisca (Ross)	Amer. ent. soc. Trans. 67	AR,IL,KY,OK.
1972 argentea Flint & Blickle	Ann. ent. soc. Amer. 65	AZ,NM
1972 arizonica Denning & Blickle	Ann. ent. soc. Amer. 65	AZ,CA,UT.
1941 arva (Ross)	Amer. ent. soc. Trans. 67	Tennessee
1972 buccata Denning & Blickle	Ann. ent. soc. Amer. 65	CA,ID.
1944 capitana Ross	Ill. natr. hist. surv. Bul. 23	Texas
1905 confusa (Morton)	N.Y. state mus. Bul.86	KY,NY,TN.
1941 contorta (Ross)	Amer. ent. soc. Trans. 67	AR,MO.
1965 dactylophora Flint	Proc. ent. soc. Wash. 67	AZ,NM.
1957 denningi Blickle & Morse	Brook. ent. soc. Bul. 52	ME,NH,WV.
1941 eligia (Ross)	Amer. ent. soc. Trans. 67	IL,TN.
1944 felipe Ross	Ill. natr. hist. surv. Bul. 23	Texas
1972 hadria Denning & Blickle	Ann. ent. soc. Amer. 65	California

Genus - Species	Original Publication	Province/State
1977 honeyi Blickle & Denning	Kans. ent. soc. Jour. 50	California
1972 ildria Denning & Blickle	Ann. ent. soc. Amer. 65	AZ,UT.
1941 logana (Ross)	Amer. ent. soc. Trans. 67	AZ,CA,CO,ID,OR,UT, WY.
1941 lometa (Ross)	Amer. ent. soc. Trans. 67	AZ,CA,CO,NV,NM,UT.
1972 lucia Denning & Blickle	Ann. ent. soc. Amer. 65	CA,OR.
1941 mono (Ross)	Amer. ent. soc. Trans. 67	California
1972 nacora Denning & Blickle	Ann. ent. soc. Amer. 65	CA,OR.
1965 okanaganesis Flint	Proc. ent. soc. Wash. 67	OR,WA.
1938 oregona (Ross)	Ill. natr. hist. surv. Bul. 21	CO,ID,MT,OR,WA.
1947 phenosa Ross	Amer. ent. soc. Trans. 73	CA,OR.
1947 potomus Denning	Brook. ent. soc. Bul. 42	MT,OK,UT,WY.
1961 provosti Blickle	Brook. ent. soc. Bul. 55	Florida
1972 quadrispina Denning & Blickle	Ann. ent. soc. Amer. 65	AZ,UT.
1944 riesi Ross	Ill. natr. hist. surv. Bul. 23	Illinois
1972 rothi Denning & Blickle	Ann. ent. soc. Amer. 65	Arizona
1977 salaris Blickle & Denning	Kans. ent. soc. Jour. 50	CA,OR.
1938 shawnee (Ross)	Ill. natr. hist. surv. Bul. 21	IL,KY,NY.
1938 spinosa (Ross)	Ill. natr. hist. surv. Bul. 21	IL,KY,MN,OK,WI.
1972 spinulata Denning & Blickle	Ann. ent. soc. Amer. 65	AZ,NM.
1938 stylata (Ross)	Ill. natr. hist. surv. Bul. 21	AZ,CA,CO,ID,MT,OK, OR,SD,WA,WY,Central America.
1976 susanae Flint	Ann. ent. soc. Amer. 69	Colorado
1977 tenuata Blickle & Denning	Kans. ent. soc. Jour. 50	CA,OR.

Genus - Species	Original Publication	Province/State
1861 tarsalis (Hagen)	Smith, misc. Coll.	AR,FL,IL,IN,NY,MN, MO,OK,ON.,WI,TX, VA.
1947 trapoiza Ross	Amer. ent. soc. Trans. 73	CA,CO,UT,WA.
1941 unio (Ross)	Amer. ent. soc. Trans. 67	IL,KY.
1972 vertreesi Denning & Blickle	Ann. ent. soc. Amer. 65	CA,OR.
1944 weddleae Ross	Ill. natr. hist. surv. Bul. 23	AR,OK.
1963 wojcickyi Blickle	Brook. ent. soc. Bul. 58	ME,MN,NH,OH.
1938 xena (Ross)	Ill. natr. hist. surv. Bul. 21	IL,KY.
1972 zioni Denning & Blickle	Ann. ent. soc. Amer. 65	Utah
Orthotrichia Eaton 1873		
1873 aegerfasciella (Chambers) (syn. americana Banks 1904)	Can. ent. 5	AR,CT,FL,IL,IN,KY, LA,ME,MD,MN,NH, NY,NJ,TX,VA,WI.
1961 baldufi Kingsolver & Ross	Ill. state acad. Sci.	FL,ME,MN,NH,WI.
1905 cristata Morton	N.Y. state mus. Bul. 86	BC.,DE,FL,IL,IN, KY,ME,MI,MT,NH, OK,PQ.,TN,TX,WI.
1961 curta Kingsolver & Ross	Ill. state acad. Sci.	Florida
1961 dentata Kingsolver & Ross	Ill. state acad. Sci.	Florida
1948 instabilis Denning	Ann. ent. soc. Amer. 41	FL,NH.
Oxyethira Eaton 1873		
1947 abacatica Denning	Can. ent. 79	FL,GA.
1941 aculea Ross	Amer. ent. soc. Trans. 67	AZ,NM,OK,TX.
1938 aeola Ross	Ill. natr. hist. surv. Bul. 21	AB.,BC.,MN,MT,OR, SK.,WA.
1963 allagashensis Blickle	Brook. ent. soc. Bul. 58	ME,NJ.
1966 anabola Blickle	Ent. news 67	ME,MN,NH,NJ,ON., PQ.

Genus - Species	Original Publication	Province/State
1941 araya Ross	Can. ent. 73	ME,MN,NB.,NS.,WI, YT.
1948 arizona Ross	Wash. acad. sci. Jour. 38	Arizona
1937 azteca (Mosely)	Roy. ent. soc. Lond. Trans. 86	S.W.U.S.A.
1976 barnstoni Harper	Ann. ent. soc. Que. 21	Quebec
1905 coercens Morton	N.Y. state mus. Bul. 86	IL,IN,ME,MN,MT,NH, NY,OK,PQ.,WI.
1905 dualis Morton	N.Y. state mus. Bul. 86	AR,CA,IL,MO,MT,NH, NM,NY,OR,TX,VA.
1947 florida Denning	Can. ent. 79	Florida
1934 forcipata Mosely	Roy. ent. soc. Lond. Trans. 82	IL,ME,MI,MN,NH,NY, ON.,PQ.,VA,WI.
1941 glasa (Ross)	Amer. ent. soc. Trans. 67	FL,GA,LA,OK.
1934 grisea Betten	N.Y. state mus. Bul. 292	IL,IN,ME,NH,NJ,NY.
1948 janella Denning (syn. neglecta Flint 1964)	Ann. ent. soc. Amer. 41	FL,LA,Central America,Antilles
1948 lumosa Ross	Wash. acad. soc. Jour. 38	Florida
1947 maya Denning	Can. ent. 79	FL,GA,HI.
1934 michiganensis Mosely (syn. sodalis Ross & Spencer 1948)	Roy. ent. soc. Lond. Trans. 82	BC.,GA,ME,MN,NH, NY,WI.
1944 novasota Ross	Ill. natr. hist. surv. Bul. 23	FL,TX.
1947 obtatus Denning	Psyche 54	DE,ME,MN,NF.,NH, PQ.,WI.
1904 pallida (Banks) (syn. cibola Denning 1947)	Wash. ent. soc. Proc. 6	AL,AZ,DC,FL,GA,IL, KY,MD,ME,MN,NB, NH,NY,OK,VA,WI, WY.
1954 rivicola Blickle & Morse	Brook. ent. soc. Bul. 49	ME,MN,NH,TN,WI.
1957 rossi Blickle & Morse (syn. berneri Etnier 1965)	Brook. ent. soc. Bul. 52	ME,MN,NH,WI.
1938 serrata Ross	Ill. natr. hist. surv. Bul. 21	AB.,BC.,ID,IL,ME, MI,MN,NH,NY,PQ., WI,WY.
1947 setosa Denning	Can. ent. 79	FL,GA.

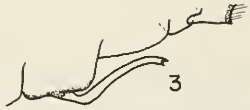
Genus - Species	Original Publication	Province/State
1954 sida Blickle & Morse	Brook. ent. soc. Bul. 49	ME,MN,NF.,NH,PQ., WI.
1957 ulmeri Mosely	Roy. ent. soc. Lond. Trans. 86	Texas
1938 verna Ross	Ill. natr. hist. surv. Bul. 21	FL,IL,LA,NB.,NH.
1941 zeronia Ross (syn. walteri Denning 1947)	Can. ent. 73	FL,GA,IL,LA,ME,MI, MN,NH,NS.,NJ,TN, WI.
Paleagapetus Ulmer 1912		
1938 celsus Ross	Ill. natr. hist. surv. Bul. 21	NH,NC,OK,PA,PQ., TN.
1951 guppyi Schmid	Inst. roy. sci. natr. Belgique Bul. 27	BC.,OR.
1936 nearcticus Banks	Arb. morph. tax. ent. Berlin: Dahlem 3	CA,OR,WA.
Rioptila Blickle & Denning 1977		
1977 arizonensis Blickle & Denning	Kan. ent. soc. Jour. 50	AZ,UT.
Stactobiella Martynov 1924		
1938 brustia (Ross)	Ill. natr. hist. surv. Bul. 21	AZ,OR,UT,WY.
1938 delira (Ross)	Ill. natr. hist. surv. Bul. 21	CA,ID,IL,KY,NH,OK, OR,TN,WI,WY.
1977 martynovi Blickle & Denning	Kans. ent. soc. Jour. 50	Tennessee
1938 palmata (Ross)	Ill. natr. hist. surv. Bul. 21	AB.,IL,KY,ME,NH, OK,OR,SD,TN,WI.
Zumatrichia Mosely 1934		
1944 notosa (Ross)	Ill. natr. hist. surv. Bul. 23	AZ,MT.

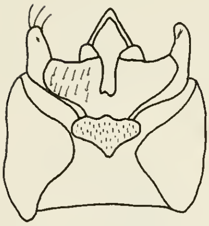
Plate I

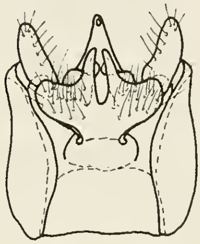
Agraylea saltesea	fig. 1 process on 7th sternite, 1a ventral.
Agraylea multipunctata	fig. 2 process on 7th sternite, 2a ventral.
Agraylea costello	fig. 3 process on 7th sternite, 3a ventral.
Dibusa angata	fig. 4a lateral, 4b dorsal.
Ithytrichia clavata	fig. 5c ventral, 5ae aedeagus.
Ithytrichia mazon	fig. 6c ventral.
Zumatrichia notosa	fig. 7a lateral.
Leucotrichia limpia	fig. 8a lateral.
Leucotrichia sarita	fig. 9a lateral.
Leucotrichia pictipes	fig. 10a lateral.
Mayatrichia ayama	fig. 11a lateral, 11ae aedeagus.

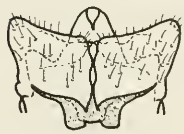

1

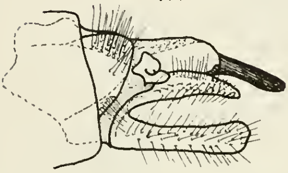

2

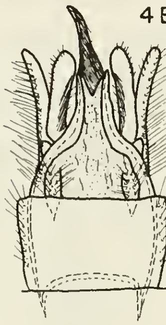

3

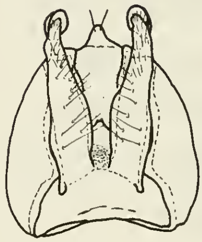

1A


2A

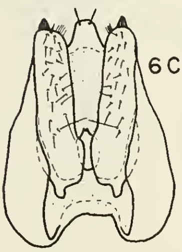

3A

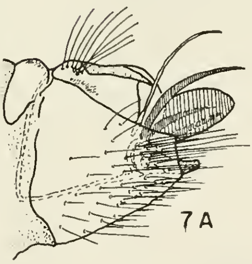

4A

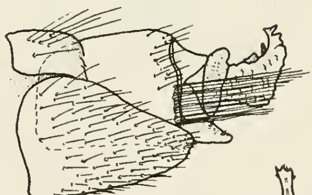

4B

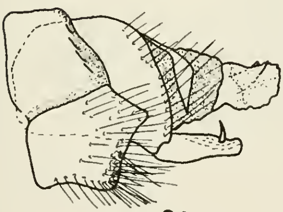

5C

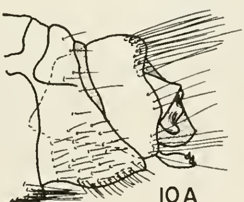

5ae

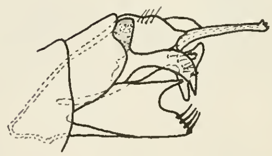

6C


7A


8A


9A


10A

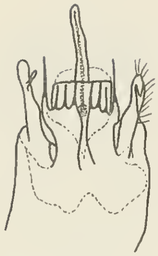

11A

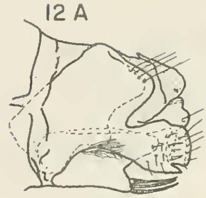

11ae

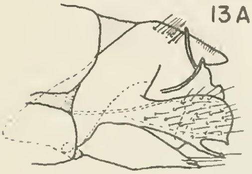
Plate II

<u>Mayatrichia ponta</u>	fig. 12a lateral, 12ae aedeagus.
<u>Mayatrichia acuna</u>	fig. 13a lateral.
<u>Mayatrichia moselyi</u>	fig. 14a lateral, 14c ventral.
<u>Metrichia nigritta</u>	fig. 15a lateral.
<u>Metrichia arizonensis</u>	fig. 16a lateral.
<u>Metrichia volada</u>	fig. 17a lateral, 17b dorsal.
<u>Orthotrichia aegerfasciella</u>	fig. 18c ventral.
<u>Orthotrichia cristata</u>	fig. 19c ventral.
<u>Orthotrichia curta</u>	fig. 20c ventral.
<u>Orthotrichia dentata</u>	fig. 21c ventral.
<u>Orthotrichia instabilis</u>	fig. 22c ventral.
<u>Orthotrichia baldufi</u>	fig. 23c ventral.

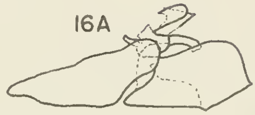

14 A

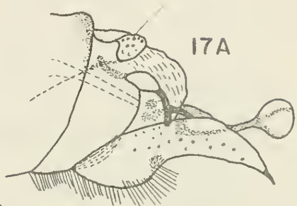

14 C


12 A


13 A

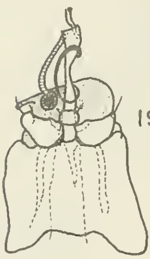

12 ae

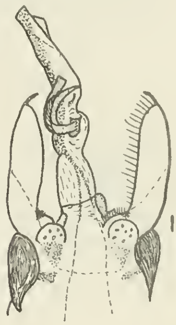

16A

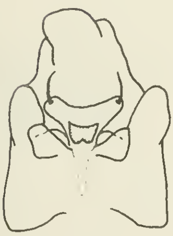

17A


15 A

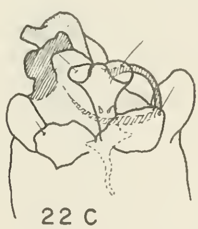

18 C


19 C


17 B


20 C


21 C


22 C

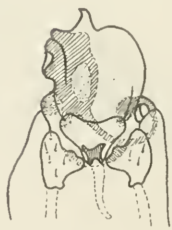
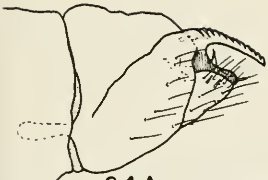
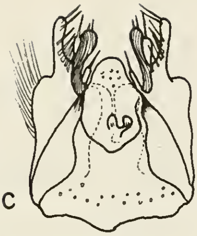

23 C

Plate III

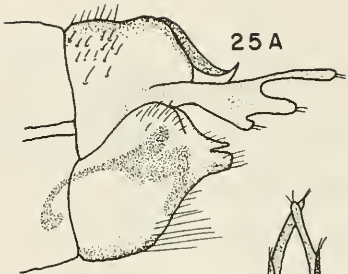
Paleagapetus celsus	fig. 24a lateral, 24c ventral.
Paleagapetus guppyi	fig. 25a lateral, 25c ventral.
Paleagapetus nearcticus	fig. 26a lateral.
Rioptila arizonensis	fig. 27a lateral, 27b dorsal, 27ant antenna.
Stactobiella brustia	fig. 28a lateral, 28c ventral.
Stactobiella delira	fig. 29c ventral.
Stactobiella palmata	fig. 31c ventral.
Stactobiella martynovi	fig. 30c ventral.



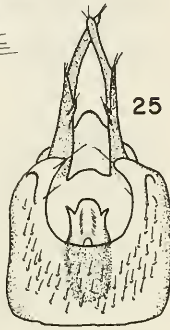
24 A



24 C



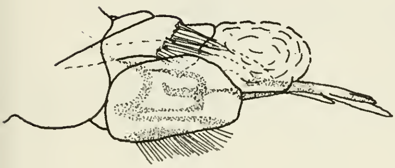
25 A

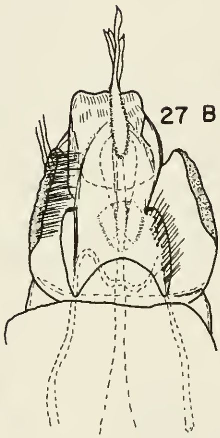


25 C

26 A

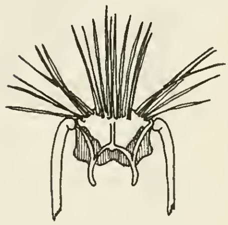
27 A



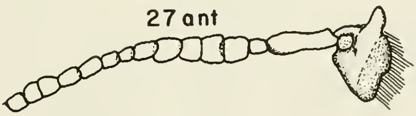


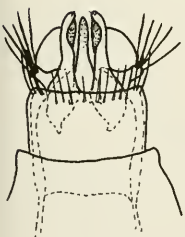
27 B

28 C

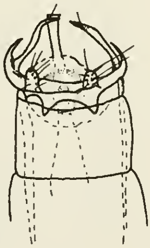


27 ant



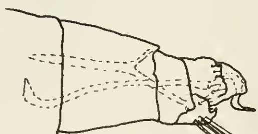


29 C



30 C

31 C



28 A

Plate IV

7th sternite process	long	fig. 32
7th sternite process	short	fig. 33
<u>Hydroptila xella</u>		fig. 34a lateral, 34ae aedeagus.
<u>Hydroptila virgata</u>		fig. 35a lateral, 35ae aedeagus, 35st 7 sternite.
<u>Hydroptila callia</u>		fig. 36a lateral, 36ae aedeagus.
<u>Hydroptila modica</u>		fig. 37a lateral, 37ae aedeagus.
<u>Hydroptila fiskei</u>		fig. 38a lateral, 38ae aedeagus.
<u>Hydroptila wyomia</u>		fig. 39a lateral, 39ae aedeagus.
<u>Hydroptila hamata</u>		fig. 40ae aedeagus.
<u>Hydroptila tortosa</u>		fig. 41a lateral, 41ae aedeagus.
<u>Hydroptila amoena</u>		fig. 42a lateral, 42ae aedeagus.
<u>Hydroptila ampoda</u>		fig. 43a lateral, 43ae aedeagus.

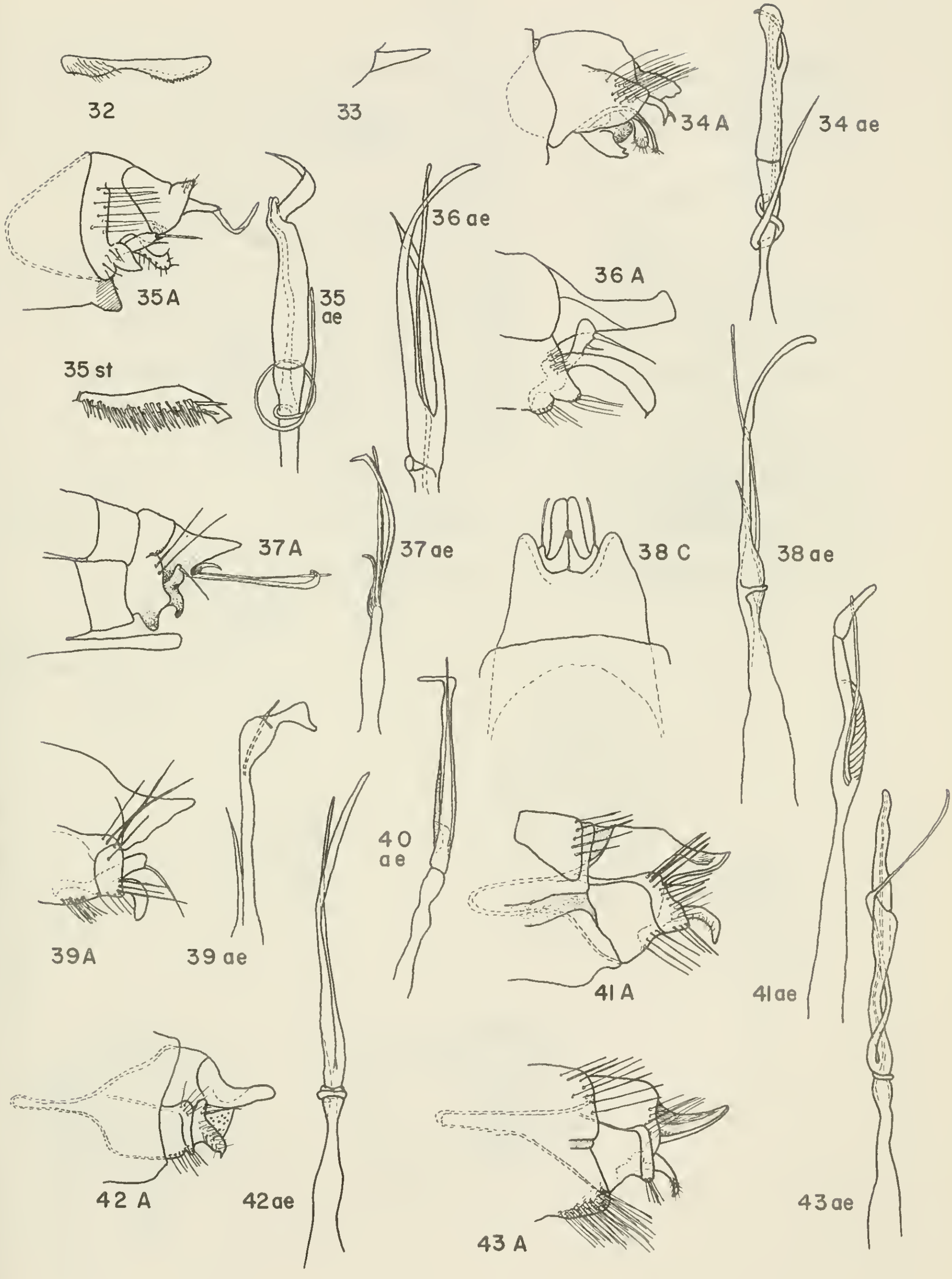

32
33
34 A
34 ae
35 A
35 ae
35 st
36 ae
36 A
37 A
37 ae
38 C
38 ae
39 A
39 ae
40 ae
41 A
41 ae
42 A
42 ae
43 A
43 ae

Plate V

Hydroptila lennoxi	fig. 44a lateral, 44ae aedeagus.
Hydroptila metoeca	fig. 45a lateral, 45b dorsal, 45ae aedeagus.
Hydroptila remita	fig. 46a lateral, 46b dorsal, 46ae aedeagus.
Hydroptila spatulata	fig. 47a lateral, 47ae aedeagus.
Hydroptila vala	fig. 48a lateral, 48ae aedeagus.
Hydroptila armata	fig. 49a lateral, 49ae aedeagus.
Hydroptila nicoli	fig. 50b dorsal.
Hydroptila waubesiana	fig. 51b dorsal.
Hydroptila maculata	fig. 52a lateral.
Hydroptila delineata	fig. 53b dorsal.

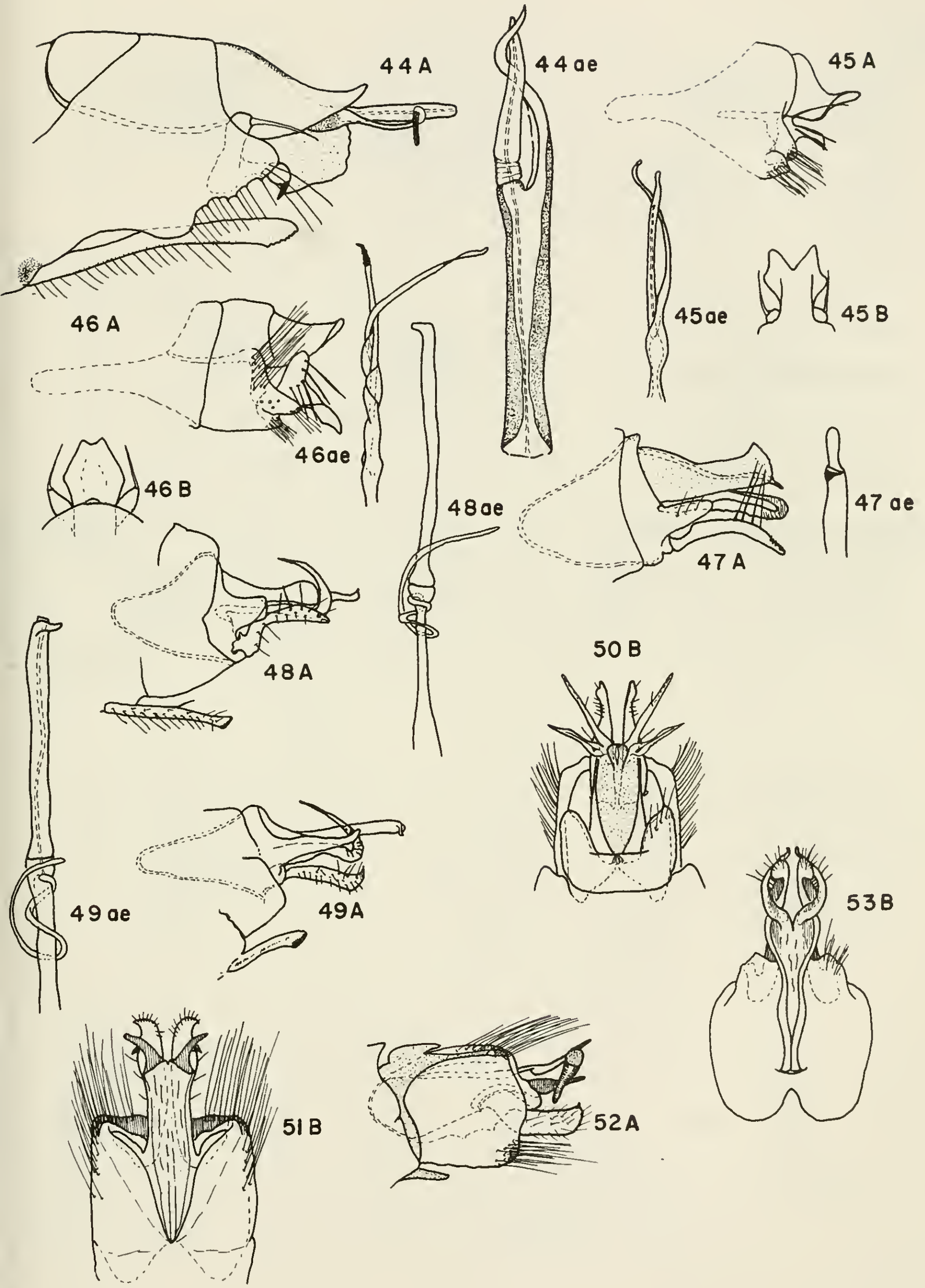
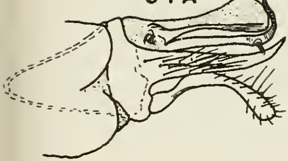
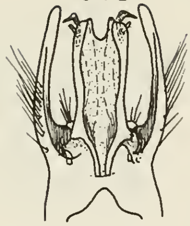
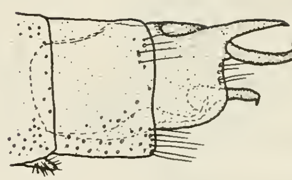

44 A
44 ae
45 A
45 ae
45 B
46 A
46 ae
46 B
47 ae
47 A
48 ae
48 A
49 ae
49 A
50 B
53 B
51 B
52 A

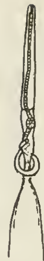
Plate VI

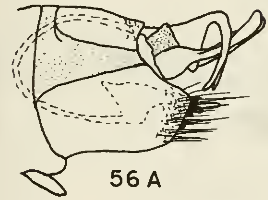
Hydroptila waskesia	fig. 54a lateral, 54b dorsal.
Hydroptila eramosa	fig. 55a lateral, 55ae aedeagus.
Hydroptila grandiosa	fig. 56a lateral.
Hydroptila gunda	fig. 57a lateral.
Hydroptila spinata	fig. 58a lateral.
Hydroptila dentata	fig. 59a lateral.
Hydroptila jackmanni	fig. 60a lateral.
Hydroptila rono	fig. 61a lateral, 61c ventral.
Hydroptila arctia	fig. 62a lateral, 62ae aedeagus.
Hydroptila consimilis	fig. 63c ventral, 63ae aedeagus.
Hydroptila lonchera	fig. 64b dorsal, 64ae aedeagus.
Hydroptila molsonae	fig. 65a lateral, 65c ventral.

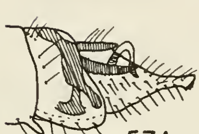

54 A

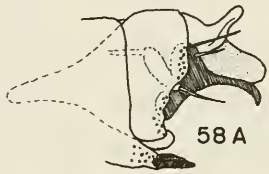

54 B

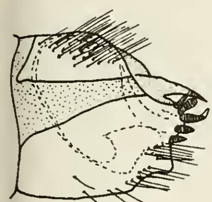

55 A

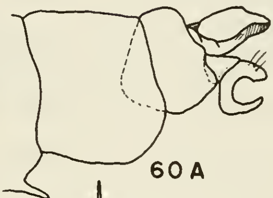

55 ae

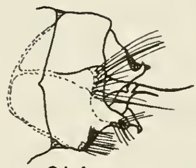

56 A

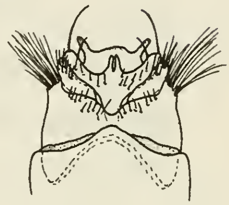

57A

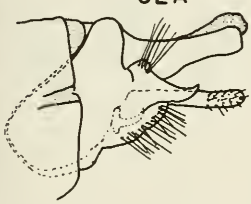

58 A


59A

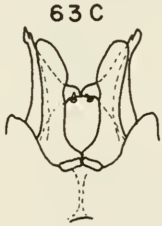

60 A


61 A

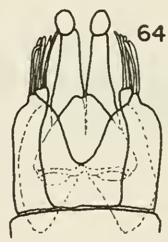

61 C

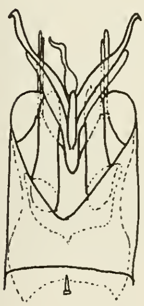

62 A

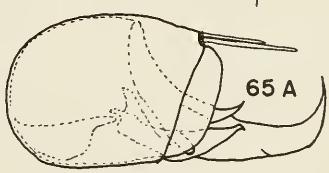

62 ae


63 C


63 ae


64 B


65 C


65 A


64 ae

Plate VII

Hydroptila acadia	fig. 66a lateral, 66b dorsal, 66ae aedeagus.
Hydroptila xoncla	fig. 67b dorsal, 67ae aedeagus.
Hydroptila protera	fig. 68a lateral, 68ae aedeagus.
Hydroptila berneri	fig. 69a lateral, 69ae aedeagus.
Hydroptila wakulla	fig. 70c ventral.
Hydroptila xera	fig. 71a lateral, 71ae aedeagus.
Hydroptila salmo	fig. 72b dorsal, 72a aedeagus.
Hydroptila albicornis	fig. 73a lateral, 73ae aedeagus.
Hydroptila melia	fig. 74a lateral, 74c ventral.
Hydroptila decia	fig. 75c ventral, 75ae aedeagus.
Hydroptila lloganae	fig. 76b dorsal, 76ae aedeagus.
Hydroptila lenora	fig. 77c ventral, 77b dorsal.

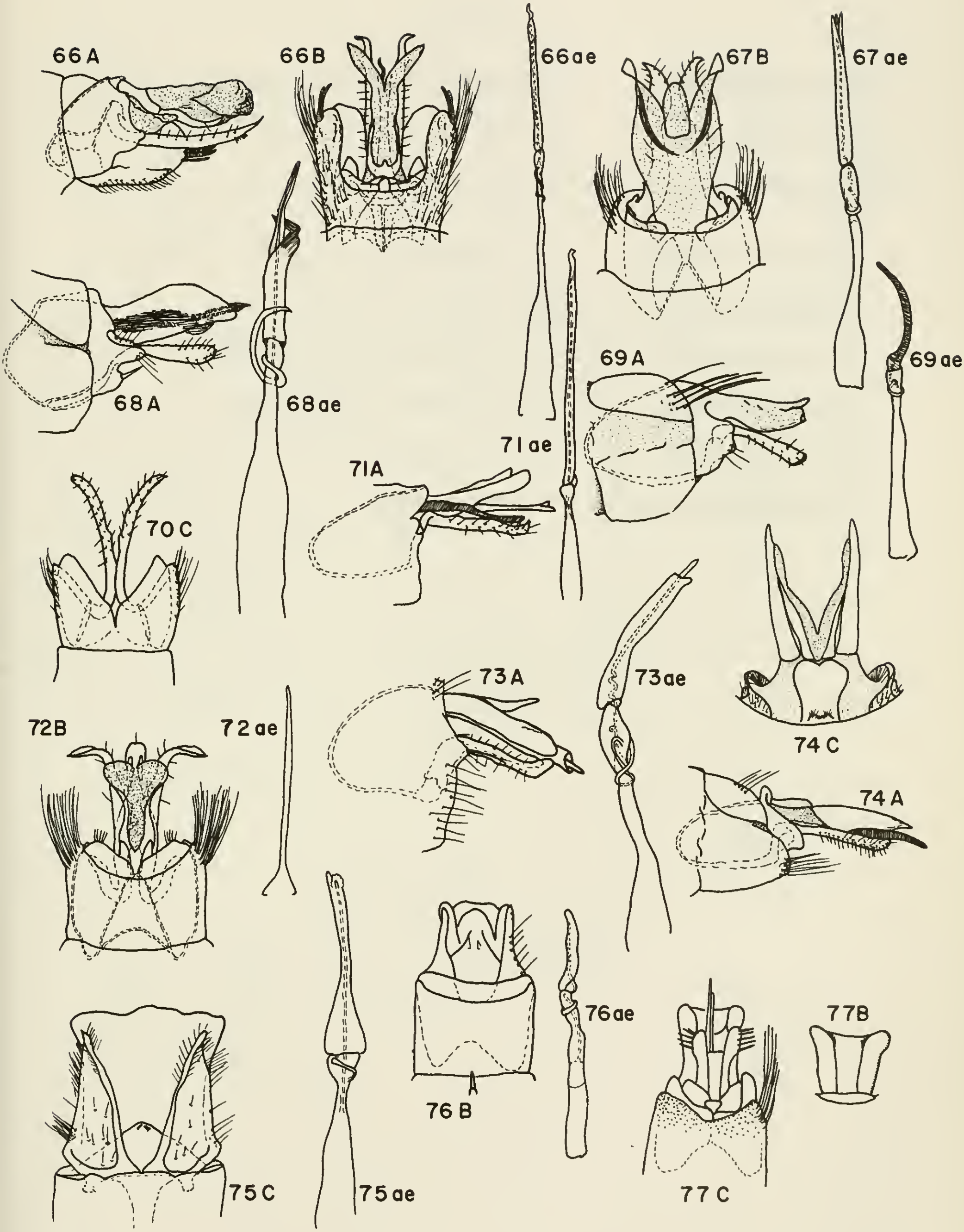

66A
66B
66ae
67B
67ae
68A
68ae
69A
69ae
70C
71A
71ae
72B
72ae
73A
73ae
74C
74A
75C
75ae
76B
76ae
77B
77C

Plate VIII

Hydroptila _valhalla_	fig. 78a lateral, 78b dorsal, 78ae aedeagus.
Hydroptila _denza_	fig. 79c ventral, 79ae aedeagus.
Hydroptila _broweri_	fig. 80a lateral, 80c ventral, 80ae aedeagus.
Hydroptila _scolops_	fig. 81ae aedeagus.
Hydroptila _perdita_	fig. 82b dorsal, 82ae aedeagus.
Hydroptila _ajax_	fig. 83a lateral, 83ae aedeagus.
Hydroptila _pecos_	fig. 84a lateral, 84b dorsal.
Hydroptila _icona_	fig. 85c ventral.
Hydroptila _tusculum_	fig. 86a lateral.

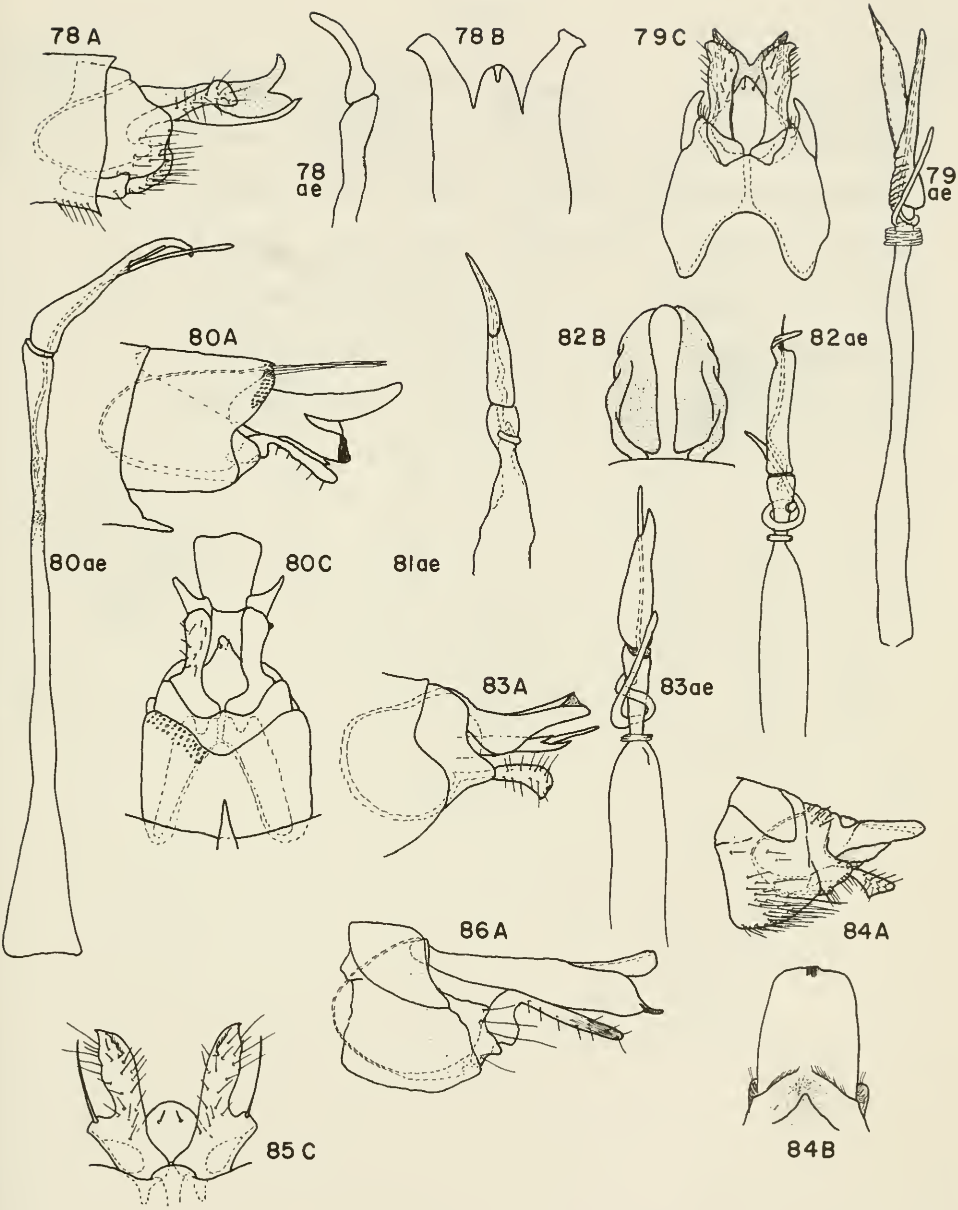

78 A
78 ae
78 B
79 C
79 ae
80A
82 B
82 ae
80ae
80C
81ae
83A
83ae
86A
84A
85 C
84B

Plate IX

Hydroptila latosa	fig. 87c ventral, 87ae aedeagus.
Hydroptila quinola	fig. 88c ventral, 88ae aedeagus.
Hydroptila novicola	fig. 89c ventral. 89ae aedeagus.
Hydroptila argosa	fig. 90a lateral, 90ae aedeagus.
Hydroptila strepha	fig. 91a lateral, 91ae aedeagus.
Hydroptila angusta	fig. 92a lateral, 92ae aedeagus.
Hydroptila pullatus	fig. 93c ventral, 93ae aedeagus.

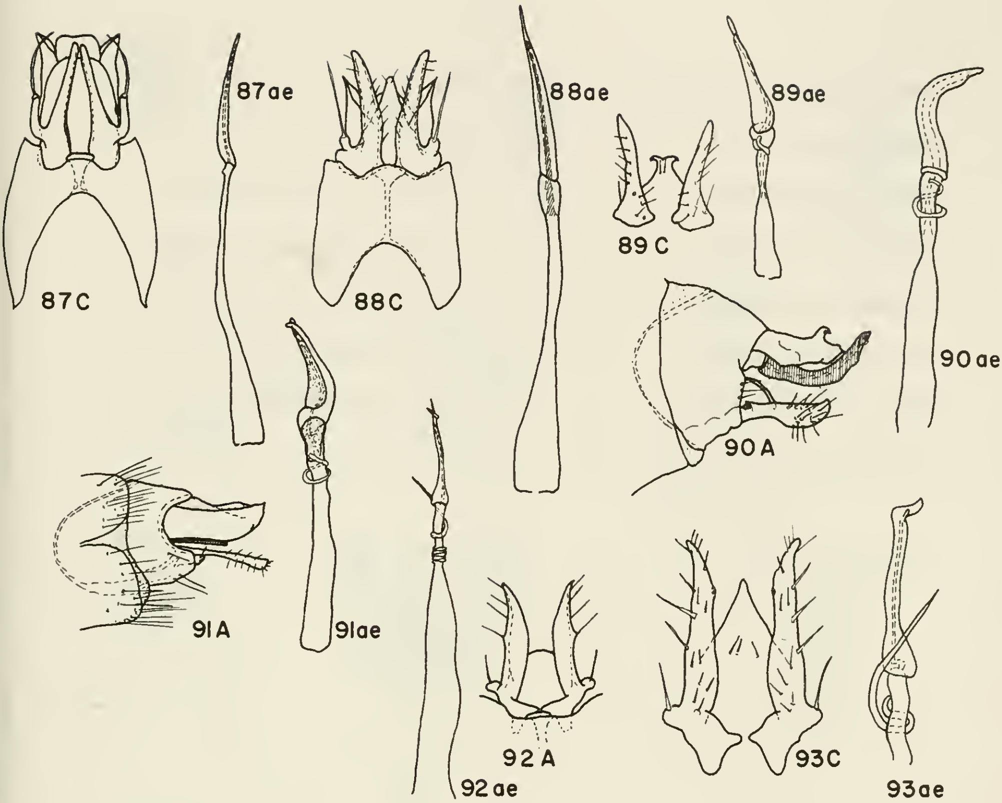
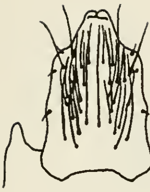

87C
87ae
88C
88ae
89C
89ae
90A
90ae
91A
91ae
92A
92ae
93C
93ae

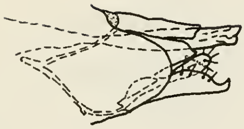
Plate X

Neotrichia minutisimella	fig. 94a lateral, 94c ventral.
Neotrichia kitae	fig. 95a lateral.
Neotrichia osmena	fig. 96b dorsal, 96c ventral.
Neotrichia ersitis	fig. 97a lateral, 97ae aedeagus.
Neotrichia collata	fig. 98c ventral, 98ae aedeagus.
Neotrichia halia	fig. 99ae aedeagus.
Neotrichia caxima	fig. 100ae aedeagus.
Neotrichia okapa	fig. 101a lateral.



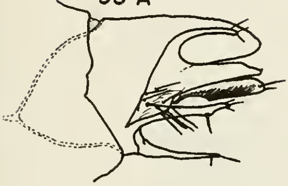
94 C

94 A



100 ae

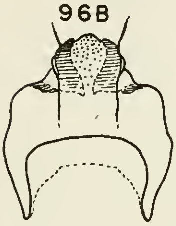
95 A

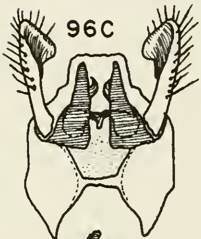


97 A

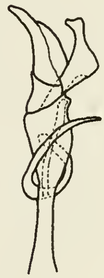
97ae

96B

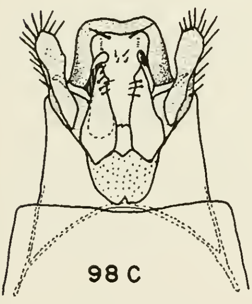




96C



99 ae



98 C

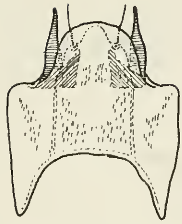
98 ae

101 A

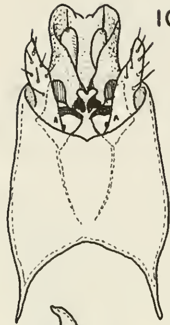
Plate XI

Neotrichia sonora	fig. 102b dorsal.
Neotrichia falca	fig. 103c ventral, 103ae aedeagus.
Neotrichia riegeli	fig. 104c ventral, 104ae aedeagus.
Neotrichia elerobi	fig. 105a lateral.
Neotrichia vibrans	fig. 106c ventral, 106ae aedeagus.
Neotrichia edalis	fig. 107c ventral, 107ae aedeagus.

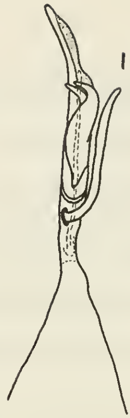
102 B



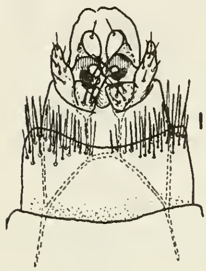
103 C



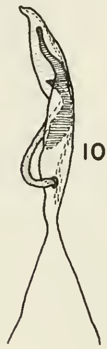
103 ae



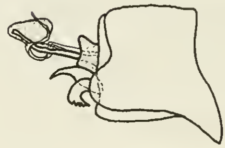
104 C



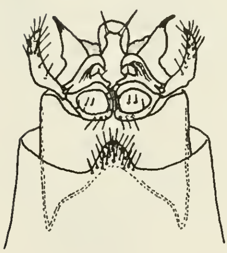
104 ae



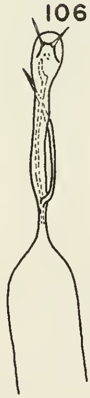
105 A



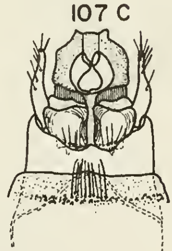
106 C



106 ae



107 C



107 ae

Plate XII

Ochrotrichia xena	fig. 108a left lateral, 108b dorsal.
Ochrotrichia unio	fig. 109a left lateral, 109b dorsal.
Ochrotrichia provosti	fig. 110b dorsal.
Ochrotrichia gurneyi	fig. 111b dorsal.
Ochrotrichia denningi	fig. 112b dorsal.
Ochrotrichia shawnee	fig. 113a left lateral, 113b dorsal.
Ochrotrichia contorta	fig. 114b dorsal.
Ochrotrichia anisca	fig. 115b dorsal.
Ochrotrichia potomus	fig. 116b dorsal.
Ochrotrichia tarsalis	fig. 117b dorsal.
Ochrotrichia weddleae	fig. 118a left lateral, 118b dorsal.
Ochrotirchia arizonica	fig. 119a Rt. lateral, 119b dorsal.

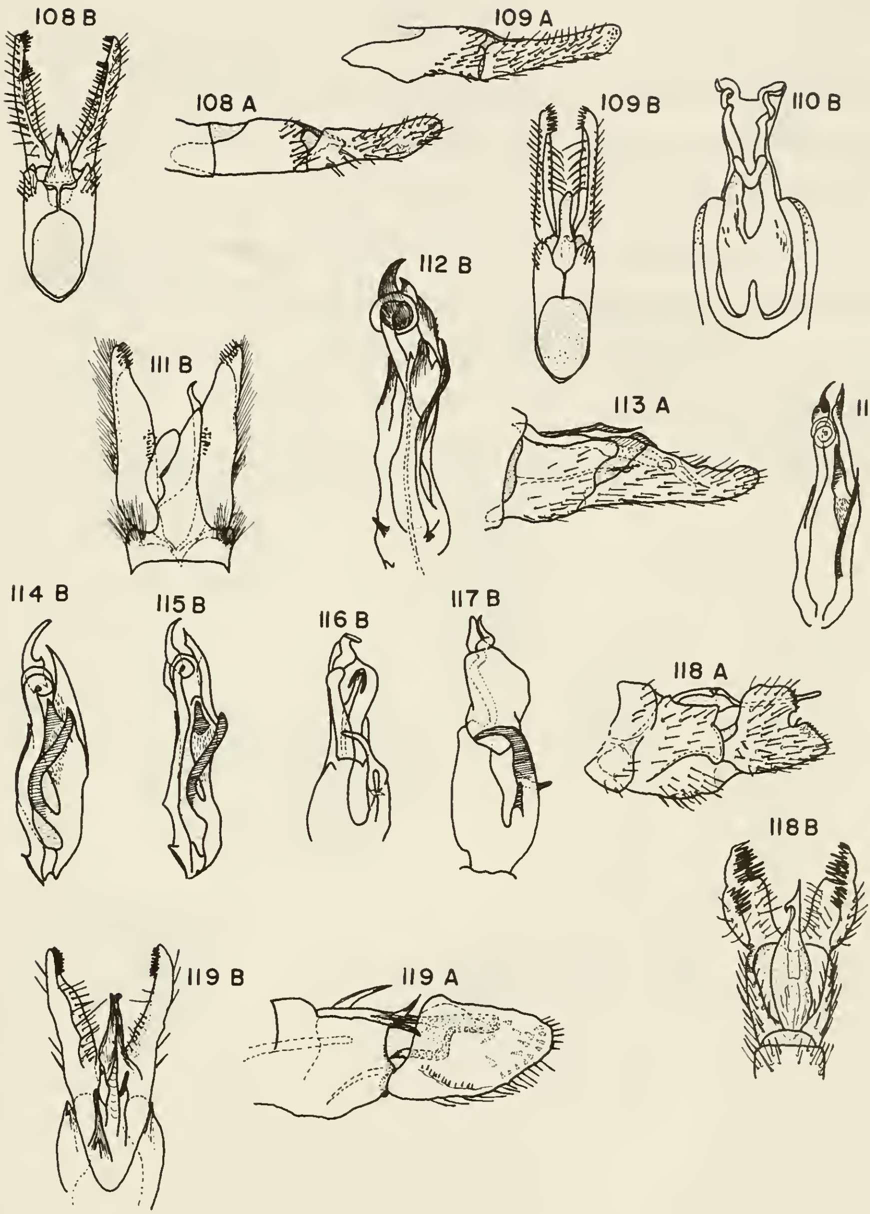

108 B
109 A
108 A
109 B
110 B
112 B
111 B
113 A
113 B
114 B
115 B
116 B
117 B
118 A
118 B
119 B
119 A

Plate XIII

Ochrotrichia trapoiza	fig. 120a left lateral.
Ochrotrichia spinulata	fig. 121a left lateral, 121b dorsal.
Ochrotrichia zioni	fig. 122a left lateral, 122b dorsal.
Ochrotrichia susanae	fig. 123a Rt. lateral, 123b dorsal.
Ochrotrichia quadrispina	fig. 124a Rt. lateral, 124b dorsal.
Ochrotrichia riesi	fig. 125a left lateral, 125b dorsal.
Ochrotrichia confusa	fig. 126a left lateral.
Ochrotrichia ildria	fig. 127a Rt. lateral, 127b dorsal.

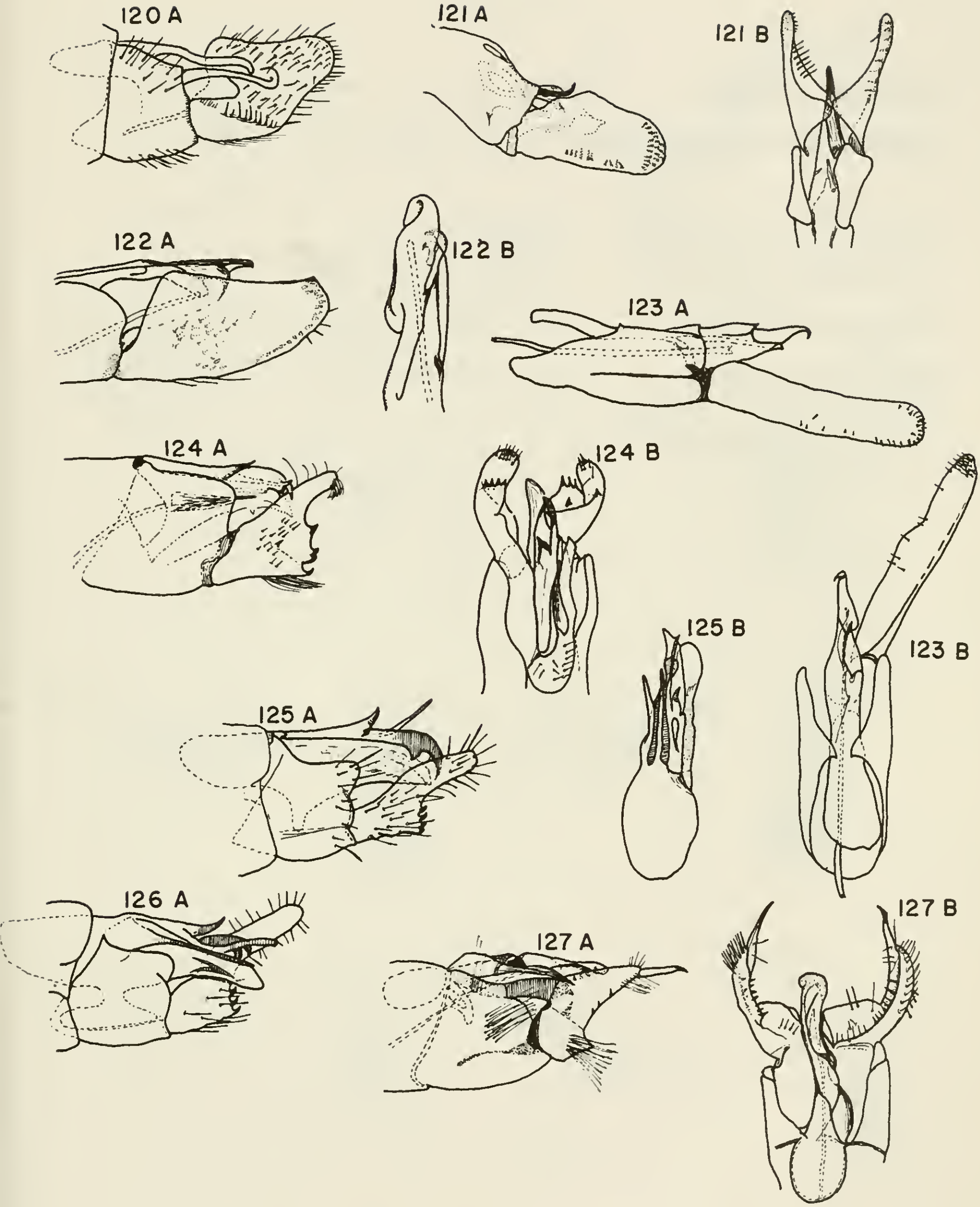

120 A
121 A
121 B
122 A
122 B
123 A
124 A
124 B
125 B
123 B
125 A
126 A
127 A
127 B

Plate XIV

Ochrotrichia rothi	fig. 128a Rt. lateral, 128b dorsal.
Ochrotrichia okanaganensis	fig. 129a left lateral, 129b 10th tergite.
Ochrotrichia argentea	fig. 130a left lateral, 130b dorsal.
Ochrotrichia logana	fig. 131a left lateral, 131b dorsal.
Ochrotrichia honeyi	fig. 133a Rt. lateral, 133b dorsal.
Ochrotrichia lometa	fig. 132a left lateral, 132b dorsal.
Ochrotrichia wojcickyi	fig. 134a Rt. lateral, 134b dorsal.

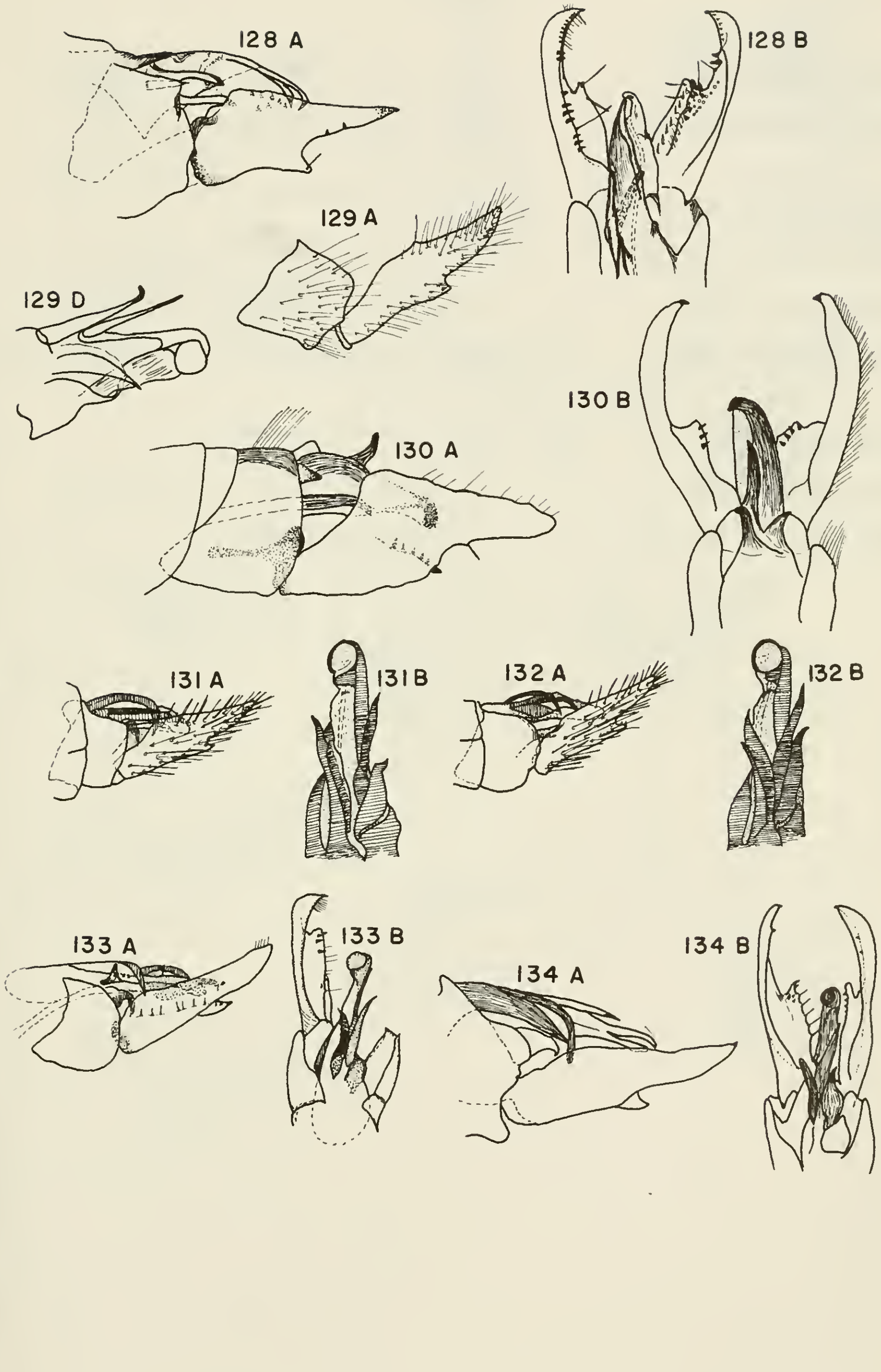

128 A
128 B
129 A
129 D
130 B
130 A
131 A
131 B
132 A
132 B
133 A
133 B
134 B
134 A

Plate XV

Ochrotrichia alsea	fig. 135a Rt. lateral, 135b dorsal.
Ochrotrichia oregona	fig. 136a left lateral, 136d 10th tergite lateral.
Ochrotrichia dactylophora	fig. 137a left lateral, 137b dorsal.
Ochrotrichia salaris	fig. 139a Rt. lateral, 139b dorsal.
Ochrotrichia lucia	fig. 138a Rt. lateral, 138b dorsal.
Ochrotrichia spinosa	fig. 140a left lateral, 140d 10th tergite lateral.
Ochrotrichia eliaga	fig. 141a left lateral.
Ochrotrichia nacora	fig. 142a Rt. lateral, 142b dorsal.
Ochrotrichia phenosa	fig. 143a left lateral.

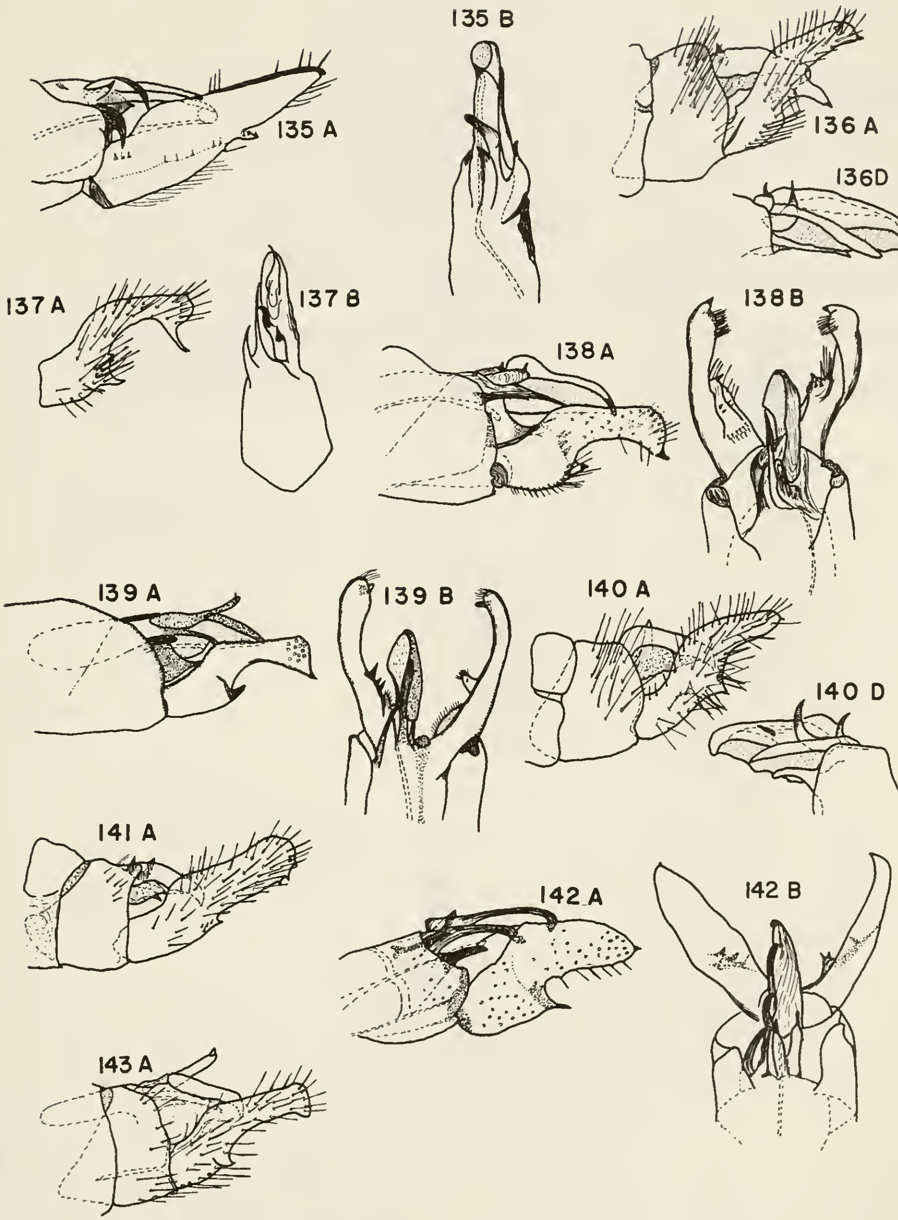

135 B
135 A
136 A
136D
137 A
137 B
138 B
138 A
139 A
139 B
140 A
140 D
141 A
142 A
142 B
143 A

Plate XVI

<u>Ochrotrichia arva</u>	fig. 144a left lateral, 144b claspers ventral.
<u>Ochrotrichia buccata</u>	fig. 145a Rt. lateral, 145b dorsal.
<u>Ochrotrichia hadria</u>	fig. 146a left lateral, 146b dorsal.
<u>Ochrotrichia alexanderi</u>	fig. 147a Rt. lateral, 147b dorsal.
<u>Ochrotrichia mono</u>	fig. 148a left lateral, 148b dorsal.
<u>Ochrotrichia capitana</u>	fig. 149a left lateral, 149b dorsal.

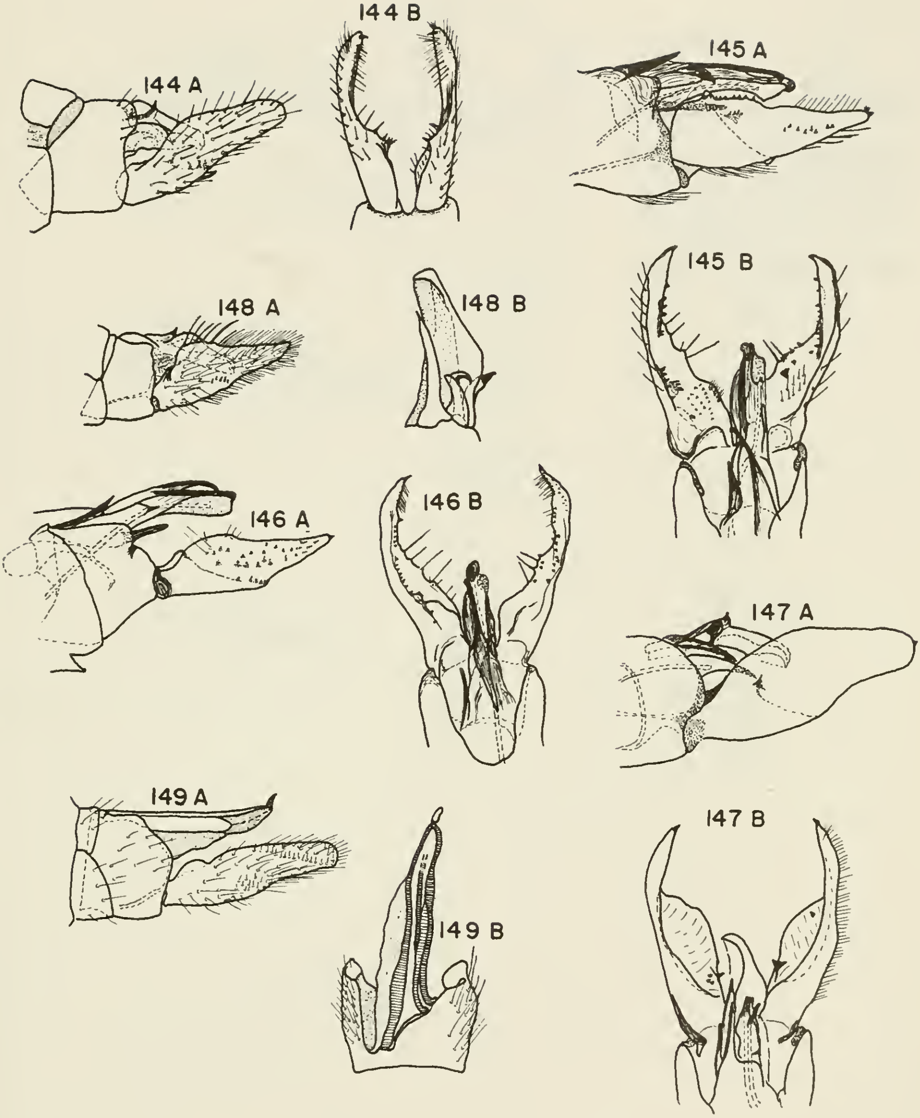
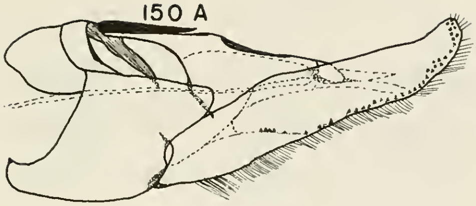

144 B
145 A
144 A
145 B
148 A
148 B
146 B
146 A
147 A
149 A
147 B
149 B

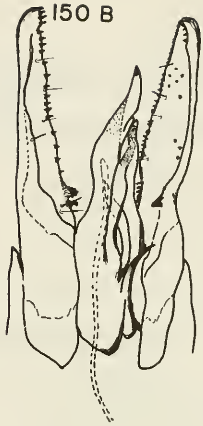
Plate XVII

Ochrotrichia _vertreesi_	fig. 150a left lateral, 150b dorsal.
Ochrotrichia _felipe_	fig. 151a left lateral, 151b dorsal.
Ochrotrichia _tenuata_	fig. 152a Rt. lateral, 152b dorsal.
Ochrotrichia _stylata_	fig. 153b dorsal.

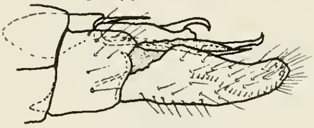
150 A



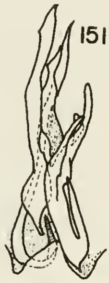
150 B



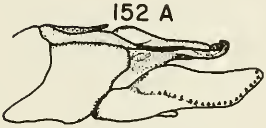
151 A



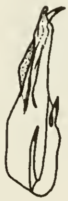
151 B



152 A



152 B



153 B

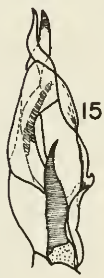


Plate XVIII

Oxyethira serrata	fig. 154a lateral, 154ae aedeagus.
Oxyethira aculea	fig. 155a lateral, 155ae aedeagus.
Oxyethira araya	fig. 156a lateral, 156ae aedeagus.
Oxyethira ulmeri	fig. 157a lateral.
Oxyethira arizona	fig. 158a lateral, 158ae aedeagus.
Oxyethira michiganensis	fig. 159a lateral.
Oxyethira glasa	fig. 160a lateral.
Oxyethira setosa	fig. 161a lateral, 161ae aedeagus.

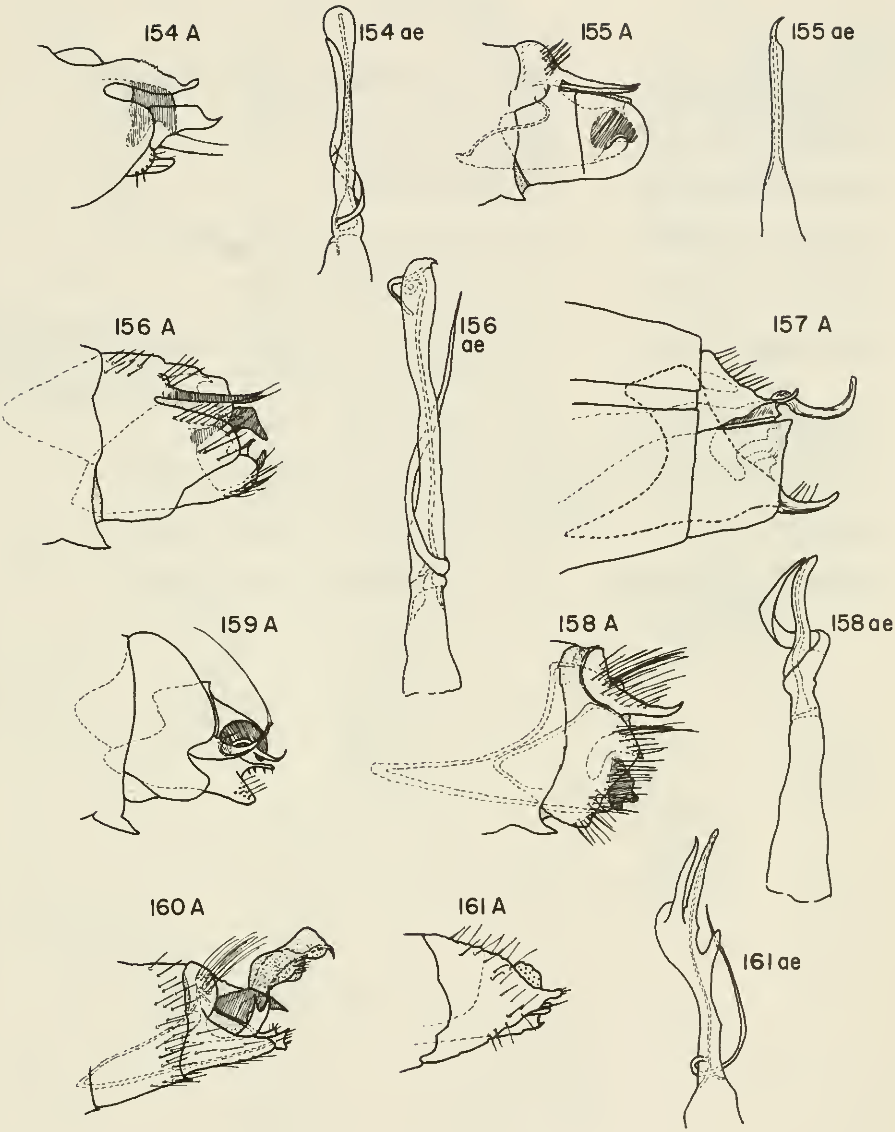

154 A
154 ae
155 A
155 ae
156 A
156
ae
157 A
159 A
158 A
158 ae
160 A
161 A
161 ae

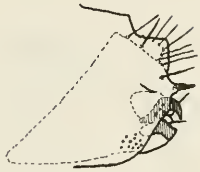
Plate XIX

Oxyethira obtatus	fig. 162a lateral, 162ae aedeagus.
Oxyethira rivicola	fig. 163a lateral.
Oxyethira coercens	fig. 164a lateral.
Oxyethira florida	fig. 165a lateral, 165ae aedeagus.
Oxyethira zeronia	fig. 166a lateral.
Oxyethira azteca	fig. 167a lateral, 167ae aedeagus, plus internal structures.
Oxyethira janella	fig. 168a lateral.
Oxyethira anabola	fig. 169a lateral, 169ae aedeagus.
Oxyethira aeola	fig. 170a lateral, 170ae aedeagus.
Oxyethira abacatica	fig. 171a lateral, 171ae aedeagus.

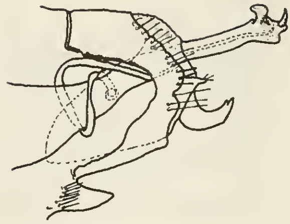
162 A

162 ae

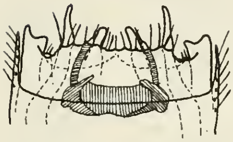
163 A

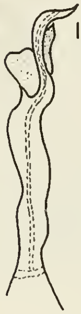


164 A



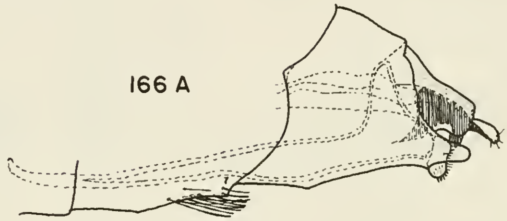
165 B



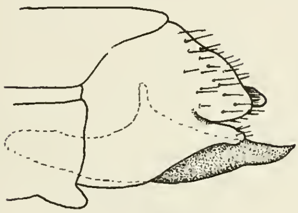


165 ae

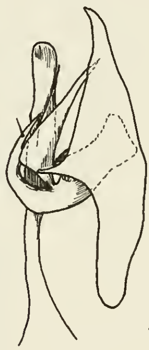
166 A



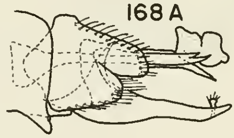
167 A



167 ae

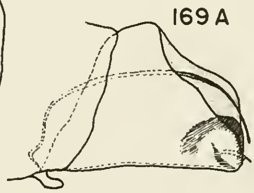


168 A

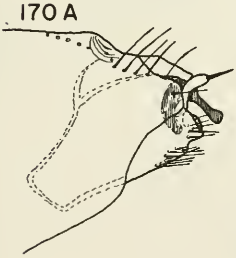


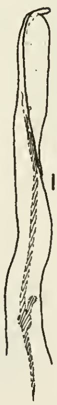
169 ae

169 A



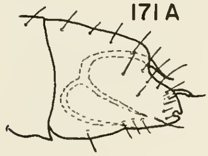
170 A

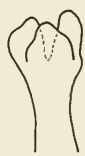




170 ae

171 A





171 ae

Plate XX

Oxyethira barnstoni	fig. 172a lateral, 172ae aedeagus.
Oxyethira dualis	fig. 173a lateral, 173ae aedeagus.
Oxyethira pallida	fig. 174ae aedeagus.
Oxyethira verna	fig. 175a lateral, 175ae aedeagus.
Oxyethira forcipata	fig. 176a lateral, 176ae aedeagus.
Oxyethira maya	fig. 177a lateral, 177ae aedeagus.
Oxyethira rossi	fig. 178a lateral.
Oxyethira allagashensis	fig. 179a lateral, 179ae aedeagus.

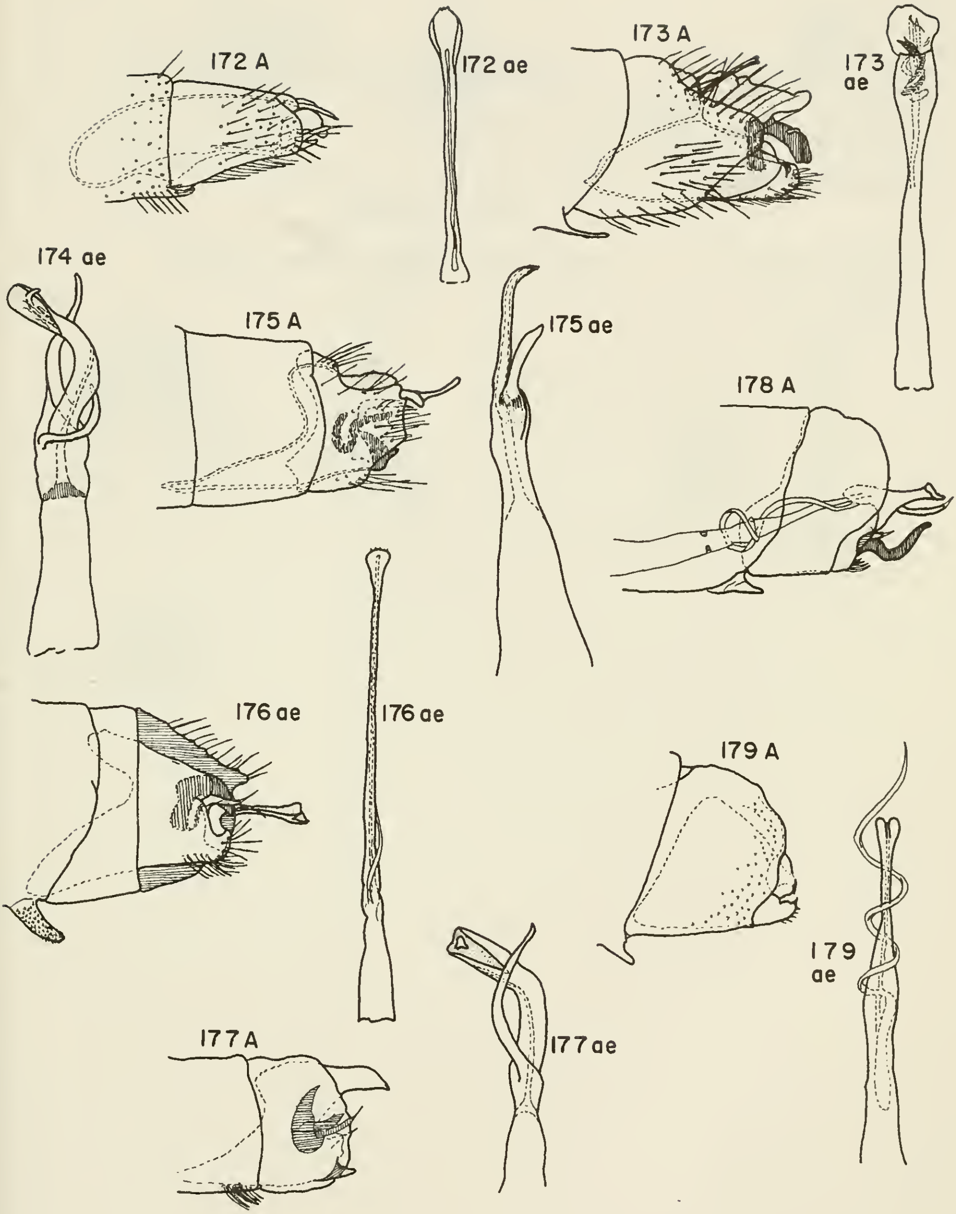
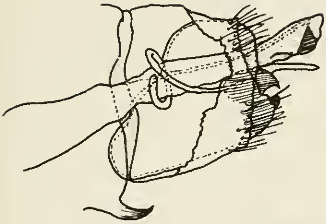

172 A
172 ae
173 A
173 ae
174 ae
175 A
175 ae
178 A
176 ae
176 ae
179 A
179 ae
177 A
177 ae

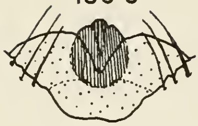
Plate XXI

Oxyethira lumosa	fig. 180a lateral, 180c ventral.
Oxyethira grisea	fig. 181c ventral, 181ae aedeagus.
Oxyethira novasota	fig. 182b dorsal, 182c ventral, 182ae aedeagus.
Oxyethira sida	fig. 183a lateral, 183ae aedeagus.

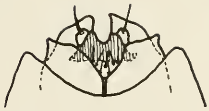
180 A



180 C

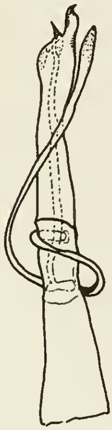


181 C

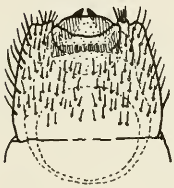


181 ae

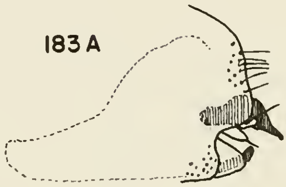
182 ae



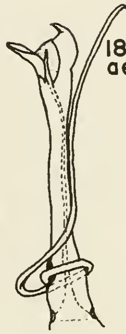
182 B



183 A



183 ae



182 C