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## The Trichoptera of Montana with Distributional and Ecological Notes<sup>1</sup>

### Abstract

The known Montana Trichoptera is comprised of 14 families, 69 genera, and 222 species. Seventy-eight species are reported from Montana for the first time. One hundred sixty-seven species (77 percent of total) are known to occur on both sides of the continental divide, 22 species (10 percent) occur on the east side only, and 29 species (13 percent) occur only west of the divide.

### Introduction

Montana is a large state with a wide variety of ecological conditions. Elevation ranges from 549 m to 3902 m, and rainfall varies from less than 28 cm to more than 254 cm per year. A variety of vegetative types, ranging from cold desert through prairie grasslands, intermountain parkland, and mountain forest to tundra, occur within the state. Because of this diversity in conditions, along with the state's location astraddle the continental divide, state species lists may provide relevant information to zoogeographers about faunal relationships to both the east and the west.

Listed are 222 species of caddisflies taken to date in Montana. Most of these have been collected by the author and are in the Montana State University collection. Newell's first paper (1970) listed 100 species of caddisflies from the state, and his 1971 paper added 18 species to the list. Newell and Potter (1973) discuss the distribution and emergence of 110 species predominantly from the western part of the state. A few of the species listed have not been collected by either the author or by Newell, but have been cited as occurring in the state by Ross (1938, 1944), Nimmo (1971, 1977), or Blickle (1979).

Several papers have recently appeared dealing with Trichoptera distribution in the northwest and Rocky Mountain area. Harris, Lago, and Carlson (1980) have listed 102 species from North Dakota; Anderson (1976) lists 282 species from Oregon; Newell and Minshall (1977) list 84 species from southeastern Idaho; Nimmo and Scudder (1978) list 248 species from British Columbia; and Nimmo (1971, 1974, 1977) has published on the members of several families of trichopterans which occur in Alberta. Blickle (1979) gives the North American distribution for micro-caddisflies (Hydroptilidae).

The species names in the following list are followed by notes concerning ecological preferences and distribution within the state and in nearby areas as cited by the authors above.

### Montana Trichoptera

Columns after species names are (1) Montana distribution: E—east of continental divide, W—

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west of divide; (2) Altitudinal distribution: A—alpine, I—intermountain, P—prairie; (3) Water temperature preference: C—cold, V—variable, W—warm; (4) Habitar affinity: L—lake, P—pond, R—river, S—stream; (5) Relative abundance: A—abundant, C—common, R—rare; (6) Northwest distribution: A—Alberta, B—British Columbia, I—Idaho, N—North Dakota, O—Oregon. \*After species denotes new Montana record.

Hydroptilidae

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1.	2.	3.	4.	5.	6.
1.	2.	3.	4.	5.	6.

Hydroptilidae

<i>Agraylea multipunctata</i> Curtis	EW	IP	W	L	C	BNO
<i>salteseae</i> Ross	EW	IP	W	LR	C	O
<i>Hydroptila ajax</i> Ross						O
<i>allosi</i> Blickle	W	I	W	P	R	
<i>arctia</i> Ross*	EW	I	W	R	C	B
<i>argosa</i> Ross*	E	IP	W	R	C	O
<i>consimilis</i> Morton	E	P	W	R	R	BO
<i>hamata</i> Morton	E	I	W	R	R	O
<i>rono</i> Ross	E	I			R	O
<i>waubesiana</i> Betten*	E	P	W	RL	R	N
<i>xera</i> Ross*	E	I	W	RL	R	BO
<i>Ithytrichia clavata</i> Morton*	E	P	W	R	R	B
<i>Leucotrichia pictipes</i> (Banks)	EW	I	W	R	C	O
<i>Mayatrichia ayama</i> Mosely*	E	P	W	S	R	
<i>Neotrichia ersitis</i> Denning						
<i>halia</i> Denning						
<i>Ochrotrichia alsea</i> Denning & Blickle	W	I	V	R	R	O
<i>oregona</i> (Ross)						IO
<i>potomus</i> Denning*	E	P	W	R	R	
<i>stylata</i> Ross	E	I	W	R	R	ION
<i>Orthotrichia cristata</i> Morton						B
<i>Oxyethira aeola</i> Ross						BO
<i>coercens</i> Morton						
<i>dualis</i> Morton						O
<i>Zumatrichia notosa</i> (Ross)	E	I	W	R	R	

Helicopsychidae

<i>Helicopsyche borealis</i> (Hagen)	EW	I	W	S	A	ION
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Hydropsychidae

<i>Arctopsyche grandis</i> (Banks)	EW	IP	C	RS	A	BIO
<i>Cheumatopsyche campyla</i> Ross	EW	IP	VW	RS	A	BION
<i>emonis</i> Ross*	E	P	W	R	C	IO
<i>gracilis</i> (Banks)	EW	I	V	R	R	BN
<i>lasia</i> Ross	E	P	W	RS	C	N
<i>logani</i> Gordon & Smith*	E	I	W	R	R	
<i>oxa</i> Ross*	E	P	W	S	R	
<i>pasella</i> Ross*	E	I	W	L	R	NO
<i>pettiti</i> (Ross)	EW	IP	W	PSR	C	BION
<i>smithi</i> Gordon*	E	IP	W	LR	C	N
<i>speciosa</i> (Banks)*	E	I	V	R	R	N
<i>Hydropsyche bidens</i> Ross*	E	P	W	R	R	N
<i>cockerelli</i> Banks	EW	I	W	R	R	IO
<i>jewetti</i> Denning	EW	I	V	R	C	
<i>occidentalis</i> Banks	EW	IP	VW	RSL	A	BO
<i>oslari</i> Banks*	EW	I	VW	RS	A	BIO
<i>placoda</i> Ross	E	P	W	R	R	
<i>separata</i> Banks	E	P	W	R	C	
<i>simulans</i> Ross*	E	P	W	RP	R	N
<i>tana</i> Ross	EW	I	V	R	R	
<i>Parapsyche almota</i> Ross	W	AI	C	RS	R	BIO
<i>elsis</i> Milne	EW	I	V	RS	C	BIO
<i>Potamyia flava</i> (Hagen)	EW	I	V	R	R	N
<i>Symphytopsyche bifida</i> (Banks)	EW	P	W	R	C	BIN
<i>bronta</i> (Ross)	E	P	W	R	C	N
<i>slossonae</i> (Banks)*	EW	I	V	S	R	N

Rhyacophilidae

<i>Rhyacophila acropedes</i> Banks	EW	I	CV	SR	C	ABIO
<i>alberta</i> Banks	W	A	C	S	R	ABI
<i>alexanderi</i> Denning	W				R	
<i>angelita</i> Banks	EW	AI	C	S	C	ABIO
<i>bifida</i> Banks	EW	I	C	SR	A	ABIO
<i>coloradensis</i> Banks	EW	I	C	SR	A	ABI
<i>ebria</i> Denning	W	A	C	S	R	B
<i>gemona</i> Ross	W				R	
<i>glaciera</i> Denning	EW	A	C	S	R	A
<i>hyalinata</i> Banks						BIO
<i>kernada</i> Ross*	E	I	C	S	R	B
<i>narvae</i> Navas	EW	AI	C	S	C	AIO
<i>newelli</i> Denning	W				R	B
<i>oreta</i> Ross*	E	A	C	S	R	O
<i>pellisa</i> Ross	EW	I	C	S	C	ABIO
<i>robusta</i> Schmid*	E	A	C	S	R	AB
<i>tucula</i> Ross	W	A	C	S	R	ABO
<i>unimaculata</i> Denning	W				S	R
<i>vaccua</i> Milne	W	I	V	S	C	ABIO
<i>vagrata</i> Milne	EW	A	C	S	R	ABIO
<i>valuma</i> Milne	W	A	C	S	R	BO
<i>vao</i> Milne	EW	I	V	S	R	ABIO
<i>vemna</i> Milne	W				R	ABO
<i>verrula</i> Milne	EW	I	V	S	C	ABIO
<i>vobara</i> Milne	W	A	C	S	R	AB
<i>vocala</i> Milne	EW	I	V	SR	C	ABIO
<i>vuzana</i> Milne	W	I	C	R	R	BO
<i>wallowa</i> Denning	EW	A	C	S	C	O

Glossosomatidae

<i>Agapetus montanus</i> Denning	EW	I	V	SR	R	I
<i>Anagapetus debilis</i> Ross	EW	AI	C	S	C	ABIO
<i>Culoptila cantha</i> (Ross)	E	P	W	RL	C	
<i>Glossosoma alascense</i> Banks	EW	I	V	SR	C	ABIO
<i>excitum</i> Ross	E	I	V	C	R	BO
<i>idabo</i> Ross	EW	I	V	S	R	BI
<i>intermedium</i> (Klapalek)*	E	A	C	S	R	AI
<i>montana</i> Ross	EW	I	V	SR	C	AO
<i>parvulum</i> Banks*	E	I	V	R	R	
<i>penitum</i> Banks	W	I	V	S	C	BO
<i>traviatum</i> Banks	EW	I	V	S	C	IO
<i>velona</i> Ross	EW	I	V	R	A	ABIO
<i>verdona</i> Ross	EW	AI	C	SR	C	ABIO
<i>Protoptila coloma</i> Ross*	E	I	V	SR	C	I
<i>erotica</i> Ross*	E	IP	W	SR	R	
<i>tenebrosa</i> (Walker)					R	A

Phryganeidae

<i>Agrypnia colorata</i> Hagen*	E	P	W	LP	C	BN
<i>glacialis</i> Hagen*	E	A	C	P	R	BN
<i>improba</i> (Hagen)*	EW	A	C	L	R	BON
<i>straminea</i> Hagen	EW	IP	V	PR	R	N
<i>Banksiola crotchii</i> Banks*	W	I	V	R	R	BON
<i>Phryganea cinerea</i> Walker	EW	IP	W	LR	C	BON
<i>Ptilostomis semifasciata</i> (Say)*	E	P	W	S	R	BN

Polycentropodidae

<i>Neureclipsis bimaculata</i> (Linneaus)*	EW	P	W	R	R	BN
<i>crepuscularis</i> (Walker)*	W	I	V	R	R	
<i>Nyctiophylax affinis</i> (Banks)*	W	I	V	L	R	B
<i>moestus</i> Banks*	E	P	W	L	R	B
<i>Polycentropus cinereus</i> Hagen	EW	IP	W	L	C	BION
<i>denningi</i> Smith*	W	I	V	R	R	O
<i>flavus</i> (Banks)	W				R	BN
<i>halidus</i> Milne*	W	I	C	S	R	BO
<i>variegatus</i> Banks*	W	I	V	S	R	BO
<i>Psychomyiidae flavida</i> Hagen	EW	I	VW	RS	A	ION

Molannidae

<i>Molanna flavicornis</i> Banks	EW	P	W	L	C	BN
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Leptoceridae						
<i>Ceraclea annulicornis</i> (Stephens)	EW	I	V	R	C	IO
<i>cancellatus</i> (Betten)*	W	I	W	L	R	BN
<i>cophus</i> (Ross)*	E	I	W	R	R	BI
<i>tarsipunctatus</i> (Vorhies)*	EW	IP	CVW	RS	C	IO
<i>transversus</i> (Hagen)*	W	I	W	L	R	IO
<i>resurgens</i> (Walker)*	W	I	V	R	R	BON
<i>Mystacides alafimbriata</i> Griffin	EW	A	C	S	R	BIO
<i>longicornis</i> (Linnaeus)	EW	I	V	L	R	N
<i>sepulchralis</i> (Walker)	W	I	W	L	R	BN
<i>Nectopsyche albida</i> (Walker)*	E	P	W	S	R	BIO
<i>candida</i> (Hagen)*	E	P	W	S	R	N
<i>diarina</i> (Ross)*	E	IP	W	SR	C	IN
<i>labontenesis</i> *	E	P	W	S	R	
<i>Oecetis avara</i> (Banks)	EW	IP	VW	SL	C	BON
<i>disjuncta</i> (Banks)*	EW	IP	W	SL	C	
<i>immobilis</i> (Hagen)	EW	IP	W	SL	C	BN
<i>inconspicua</i> (Walker)	EW	IP	W	SL	C	BON
<i>ochracea</i> (Curtis)	EW	P	W	L	A	BN
<i>Triaenodes grisea</i> (Banks)	EW	P	W	L	C	BON
<i>frontalis</i> Banks	EW	P	W	L	C	I
<i>tardus</i> Milne	W	I	V	L	R	BON
Philopotamidae						
<i>Chimarra utahensis</i> Ross*	W	I	W	P	R	O
<i>Dolophilodes aequalis</i> (Banks)	EW	I	V	S	A	ABIO
<i>dorca</i> (Ross)*	W	I	V	S	C	BO
<i>novusamericanus</i> (Ling)	W	I	V	S	C	ABO
<i>pallidipes</i> (Banks)	EW	AI	C	S	C	BO
<i>Wormaldia gabriella</i> (Banks)	EW	I	C	S	C	ABIO
<i>occidea</i> (Ross)	W	A	C	S	R	BO
Brachycentridae						
<i>Amiocentrus aspilus</i> (Ross)	EW	IP	VW	SR	A	BIO
<i>Brachycentrus americanus</i> (Banks)	EW	I	V	SR	A	BION
<i>occidentalis</i> Banks	EW	IP	V	SR	A	BO
<i>Micrasema bacro</i> Ross	W				R	BO
Lepidostomatidae						
<i>Lepidostoma aporna</i> Denning*	E	I	W	R	R	
<i>cadadense</i> (Milne)	EW	I	V	S	R	B
<i>knoultoni</i> Ross	EW	I	V	R	C	O
<i>pluviale</i> (Milne)*	E	IP	VW	SR	A	BIO
<i>podager</i> (McLachlan)	EW	I	V	S	R	IO
<i>quercina</i> Ross*	E	I	C	S	R	BO
<i>rayneri</i> Ross*	E	P	W	S	R	BO
<i>roafi</i> (Milne)	W	I	V	S	R	BO
<i>spicata</i> Denning	W	I	V	S	R	
<i>strophis</i> Ross	EW	I	W	S	R	BIO
<i>unicolor</i> (Banks)*	EW	I	V	S	C	BION
<i>veleda</i> Denning	EW	IP	CW	SRL	C	O
Goeridae						
<i>Goeracea genota</i> (Ross)	W	AI	C	S	C	BO
<i>Goereilla baumanni</i> Denning	W	AI	C	S	R	
Limnephilidae						
<i>Amphicosmoecus canax</i> (Ross)	EW	I	C	S	R	ABIO
<i>Anabolia bimaculata</i> (Walker)*	EW	I	V	S	R	ABN
<i>Apatania chasica</i> Denning	EW	I	C	SR	C	I
<i>comosa</i> Denning	EW	IP	V	SR	C	I
<i>shoshone</i> (Banks)	E	A	C	S	C	AB
<i>zonella</i> (Zetterstedt)						AB
<i>Asynarchus aldinus</i> (Ross)*	W	A	C	L	R	ABON
<i>Chyranda centralis</i> (Banks)	EW	AI	C	S	C	ABIO
<i>Clistoronia magnifica</i> (Banks)	W	A	C	S	R	ABO
<i>Cryptochia furcata</i> Denning	W	A	C	S	R	B
<i>Dicosmoecus atripes</i> (Hagen)*	EW	A	C	S	R	ABO
<i>jucundus</i> Banks*	EW	I	C	SP	C	ABO
<i>gilvipes</i> (Hagen)*	E	I	C	S	R	BO
<i>schmidi</i> Wiggins	EW	A	C	S	R	B

<i>Ecclisomyia conspersa</i> Banks	EW	AI	C	SR	A	ABO
<i>maculosa</i> Banks	W	A	C	L	C	ABO
<i>simulata</i> Banks	W	AI	C	S	R	I
<i>Glyphopsyche irrorata</i> (Fabricius)	EW	I	V	S	R	ABO
<i>Hesperophylax consimilis</i> (Banks) *	EW	AI	V	SL	C	AIO
<i>incisus</i> (Banks) *	E	AI	V	RL	R	ABIO
<i>occidentalis</i> (Banks) *	E	IP	V	S	C	AB
<i>Homophylax acutus</i> Denning	W	A	C	S	R	A
<i>flavipenni</i> Banks	E	A	C	S	R	B
<i>Imania bifosa</i> Ross	E	A	C	L	R	AB
<i>cascadus</i> (Ross)	W	A	C	S	R	ABO
<i>tripunctata</i> (Banks)						AB
<i>Lenarchus brevipennis</i> (Banks)	E	A	C	S	R	ABIO
<i>Limnephilus alberta</i> Denning*	W	A	C	S	R	AB
<i>canadensis</i> Banks*	E	I	V	S	R	ABON
<i>cockerelli</i> Banks*	E	A	C	S	R	
<i>externus</i> Hagen	EW	IP	VW	L	C	AON
<i>fagus</i> Ross*	E	I	C	R	R	BO
<i>frijole</i> Ross*	E	P	W	R	R	IO
<i>harrimani</i> Banks	E	A	C	S	R	BO
<i>hyalinatus</i> Hagen*	EW	P	W	SP	C	ABON
<i>loloensis</i> Smith	W	A	C	S	R	
<i>neoculatus</i> Denning*	E	I	V	S	R	
<i>ornatus</i> Banks	W	I	V	R	R	N
<i>picturatus</i> McLachlen*	E	A	C	L	R	AB
<i>productus</i> Banks*	E	I	C	S	R	O
<i>secludens</i> Banks*	E	P	W	R	R	ABON
<i>spinatus</i> Banks*	E	P	V	SL	C	ABIO
<i>taloga</i> Ross*	E	P	W	S	R	
<i>Neophylax occidentalis</i> Banks*	EW	A	C	S	R	BIO
<i>rickeri</i> Milne	EW	I	C	S	R	AO
<i>splendens</i> Denning	EW	A	C	L	R	IO
<i>Neotremma alicia</i> Banks	EW	A	C	S	R	AIO
<i>Oligophlebodes minuta</i> (Banks) *	E	AI	C	S	R	IO
<i>mostbento</i> Schmid*	E	A	C	S	R	
<i>ruthae</i> Ross	EW	AI	C	S	R	AIO
<i>sierra</i> Ross*	W	I	C	R	R	
<i>sigma</i> Milne*	W	I	C	R	R	
<i>zelti</i> Nimmo*	EW	A	C	S	R	A
<i>Onocosmoecus unicolor</i> (Banks)	EW	I	C	RS	C	BIO
<i>Psychoglypha alascensis</i> (Banks)	W	I	C		R	ABO
<i>priata</i> (Milne)	EW	A	C	S	R	AO
<i>subborealis</i> (Banks)	EW	AI	C	SR	C	BIO
<i>Pycnopsyche guttifer</i> (Walker)						AN
<i>Rossiana montana</i> Denning	W	I	C	S	R	B

## Discussion

Two hundred and four of the 222 species listed have been collected by the author during the past five years. Collections were made by sweeping vegetation along streams, ponds, and lakes; by picking individual insects from bridges and other objects near the water; and from light-trap collections made at various locations throughout the state. Most collections by the author were made east of the continental divide because Newell and co-workers (1970, 1971, 1973) did most of their collecting west of the divide. In this regard, members of the family Hydroptilidae, the micro-caddisflies, were not assiduously collected in the west so that the data presented here are certainly prejudiced in regard to the distribution of this group.

Of the 18 Montana species not collected by the author, some were collected by Newell *et al.* (1970, 1971, 1973), some reported by Blickle (1979, 1980), some by Ross (1938, 1944), and some by Nimmo (1971, 1974, 1977).

Because of the large area of the state and limited amount of collecting time available, there are several geographic regions which probably are not adequately covered.

The southwestern, southeastern, and northeastern regions are such places. Recent findings of rare larvae in some of these areas indicate that more work is needed. Our most recent work in alpine areas has yielded a number of new records for the state, especially within the family Limnephilidae.

Altitudinal distribution as noted in the table is quite straightforward. Higher, colder water in the state is dominated by limnephilids and the "mountain caddisflies," Rhyacophilidae and Glossosomatidae. Waters which we have designated "variable" include most of our intermountain rivers and streams which support trout. Warm waters refer to prairie streams at lower elevations and also to thermally influenced waters.

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