CRITFC

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Methods Supporting the Development of Food Web Metrics from Benthic Macroinvertebrate Data

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YAKAMA NEZ PERCE WARM SPRINGS UMATILLA

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Abstract

This document describes the field, laboratory, and analytical methods employed to generate food web metrics from ongoing benthic macroinvertebrate (BMI) data collected as part of a spring Chinook Salmon habitat monitoring program. BMIs are collected in numerous fish-habitat monitoring programs throughout the Pacific Northwest and elsewhere. These data are typically used to generate indices of biotic integrity for describing water quality or sensitivity of BMI assemblages to environmental stressors such as water temperature and sediment load. However, with recent advances in food web theory and computational methods, the same BMI data can be used to describe the quality of food resources for stream-dwelling fish. Along these lines, we present methods for two independent approaches: (1) metrics based on a topological food web perspective, requiring the compilation of resource-consumer pairings from literature review and laboratory observations; and (2) metrics based on availability of prey items to the drift, which extends an existing model requiring compilation of various life history and ecological traits of individual BMI taxa. Finally, we present preliminary conclusions and a strategy for next steps in the analysis involving validation of the models with empirical observations of invertebrate and fish abundance/diets.

Introduction

Food webs for rearing juvenile fish in tributaries have been described as a potential bottleneck for fish populations in the Columbia River basin (Independent Scientific Advisory Board 2011). Benthic macroinvertebrate (BMI) communities represent an important component of aquatic food webs, and are highly sensitive to environmental variability including streamflow and water temperature, which are expected to adjust based on climate change scenarios. Many regional fish habitat programs, including Columbia River Inter-Tribal Fish Commission (CRITFC) and its member tribes[1]), collect BMIs as part of ongoing habitat monitoring (Table 1), yet analyses are typically limited to evaluating standard water quality metrics such as indices of biotic integrity (IBIs) and other derived indicators. However, BMI data can also be leveraged to provide information about the salmonid food base using descriptive metrics of food webs (Cohen et al. 2003); and availability to food for salmonids based on life history characteristics, propensity to enter the water column, palatability to salmonids, and other characteristics (Rader 1997). By establishing statistical relationships between BMIs and the streamflow and temperature regimes expected to adjust with climate change, we aim to characterize streamflow- and temperature-mediated threats to salmonid food webs in the present and future climate change scenarios. We anticipate that a vulnerability assessment of salmonid food webs will be useful for advancing tribal climate adaptation strategies (Halofsky et al. 2015).

This document describes the field, laboratory, and analytical methods employed to generate food web metrics from ongoing BMI data collected in the upper Grande Ronde River, Catherine Creek, and Minam River of Northeast Oregon as part of a spring Chinook Salmon habitat monitoring program led by CRITFC (McCullough 2009) at annual fish habitat monitoring sites selected as part of the Columbia Habitat Monitoring Program (CHaMP 2016).

[1] CRITFC serves the Nez Perce Tribe, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakama Nation.

Table 1. Type of macroinvertebrate samples collected in common fish-habitat programs of the Pacific Northwest.

Program	Abbreviation	Targeted riffle	Reach-wide	Multi-habitat	Drift
USFS-BLM Aquatic and Riparian Effectiveness Monitoring Program	AREMP[1]	X			
California Department of Fish and Game	CDFG[1]	X			
EPA Environmental Monitoring Assessment Program	EMAP[1]	X	X		
National Aquatic Resource Surveys	NARS[2]		X		
USFS-BLM Biological Opinion Effectiveness Monitoring Program	PIBO[1]	X			
Upper Columbia Monitoring Strategy	UC[1]	X			
Columbia Habitat Monitoring Program	CHaMP[3]				X
BPA Action Effectiveness Monitoring	AEM[2]	X		X	
BLM AIM-National Aquatic Monitoring Framework	AIM-NAMF[2]	X	X		
USGS National Water-Quality Assessment	NAWQA[2]	X			
Status and Trends Monitoring for Watershed Health and Salmon Recovery	WA[2]		X		
Oregon Department of Environmental Quality	ODEQ[2]	X			

[1] Reviewed in (Roper et al. 2010)

[2] Pers. comm. (various sources)

[3] CHaMP 2016

Methods

Field and laboratory procedures

Using a standard regional protocol for targeted riffle samples (Hayslip 2007), a total of 361 benthic macroinvertebrate samples were obtained between 2011 and 2016 at CHaMP sites, using either a D-framed kick net or a Hess sampler. Eight approx. 1 ft^2 samples of substrate were disturbed to dislodge benthic organisms from the substrate and combined to create one composite sample totaling ~8 ft^2 (~0.742 m^2) per site. Samples were preserved in 80% ethanol and delivered to the labs for subsampling and taxonomic analysis. Composite samples were rinsed of excess ethanol and distributed evenly in a subsampling device for a quantitative random selection of individuals (Caton 1991). Stream debris was subsampled until a target count of 500 individuals (+/- 10%) was obtained. Specimens obtained in the subsampling process were then identified to the lowest practical taxonomic resolution, consistent with

PNAMP PNW-STE level II (Wisseman et al. 2016). Ten percent of the samples identified were re-identified by a second taxonomist to ensure the accuracy and precision of specimen identification and enumeration (Stribling et al. 2003; Stribling et al. 2008). Whole body length measurements to the nearest 0.1 mm were made on each individual and recorded to obtain biomass estimates using published length-weight regressions (Eckblad et al. 1971; Dumont et al. 1975; Rogers et al. 1977; Smock 1980; Meyer 1989; Theiling 1990; Burgherr and Meyer 1997; Benke et al. 1999; Miserendino 2001). If a particular taxon did not have an associated length-weight regression formula, a closely related taxon's formula was used. If no closely related taxon was available a minimum of 10 organisms, or the maximum obtained, were dried at 105°C and weighed to the nearest 0.0001 g to obtain the taxon's mean gravimetric dry mass. The mean dry mass value was then applied to the individual taxon.

Throughout the period of collection and sample processing, species concepts and taxonomic resolution changed for certain taxa. To ensure consistency throughout the project period, data were evaluated for taxonomic nomenclature changes and reduced to genus or higher-level identifications for data analysis. This resulted in 295 distinct operational taxonomic units being identified for the project period (Appendix 1). Although taxonomists initially identified all taxa to the taxonomic levels prescribed by the PNAMP STE Level II (Wisseman et al. 2016), the ability to effectively create a resource-consumer matrix was limited to the literature information on dietary habits. Due to the condition of specimens in the gut of predators, gut content analysis data are often left at family or higher. A family level resource-consumer pair matrix was initially tested to match the majority of data from diet habits to the consumer and was found to contain too little food web information and overgeneralized the feeding habits of individual taxa from within a family. A compromise was made to reduce the taxonomic data to genus in an attempt to capture some within family feeding differences, while not over generalizing the resources (taxa) consumed. Data were also manipulated to reduce the number of non-unique and non-target taxa. Non-target taxa occur when specimens of a particular taxon are too immature or damaged to identify to the taxonomic targets. The reduction of non-target taxa places non-unique coarser level identifications into the closest related target parent taxon, if in the case that a coarse level taxon has two closely related parent taxa the non-target taxa were equally divided into the two possible parent taxa. For example, if data for a given sample was reported to have 5 *Calineuria*, 4 *Doroneuria*, and 10 non-unique Perlidae the final data would appear as 10 *Calineuria* and 9 *Doroneuria*.

Food web metrics

In order to calculate the suite of food web metrics desired (Table 2), we utilized two published R packages with some modification: CHEDDAR (Hudson et al. 2013; Hudson et al. 2014) and FOODWEB (Perdomo et al. 2015). Each community (sample) requires the total estimated number of individuals, their associated biomass and a table of food web linkages. Food web linkages are defined here as matrix of taxa (consumers) and the resources they consume (periphyton, other taxa, bacteria, etc.) (e.g., Table 3). Density and estimated biomass were derived from the data collected in the subsampling process. Linkages were determined using a tiered systematic approach. First, taxa were assigned a functional feeding group based on available literature (Merritt et al. 2008; Fore and Wisseman 2012). Non-predator functional feeding groups (e.g. shredder and scraper) were assigned similar resources (e.g. shredder=CPOM and scraper=Periphyton). Non-predator resource assignments were evaluated by external reviewers and improvements made resulting in 12 non-predator resource assignments (dead fish, detritus, diatoms, fish, FPOM, fungi, CPOM, macrophytes, microbes, periphyton, and vascular plants). Predator assignments were evaluated using two approaches: first a literature search for predator-prey relationships of each taxon; if no available literature was found, taxa were assigned prey based on literature citing a similar taxon or gut content analysis. Due to the resolution of taxonomy in prey items for invertebrate predators, family level identifications were the predominant resolution of prey. The coarse resolution of the prey items resulted in all members of a particular 'known' prey item's family becoming available as prey to the predator. For example, *Skwala* was shown to consume Chironomidae and Simuliidae (Fuller and Stewart 1977), and therefore all members of Chironomidae and Simuliidae in a given sample were designated as available resources for the *Skwala* in a given sample. Feeding assignments for all taxa and literature resources are found in Appendix 2.

Table 2. Food web metrics generated by FOODWEB and CHEDDAR packages in R software. To designate no corresponding metric for that given R package, a "NA" for "not available" is used.

FOODWEB Metric	CHEDDAR Metric	Description
Species richness	Taxa richness	Number of taxa in the community
Total links	Number of links	Number of feeding connections among nodes, including cannibalism
Connectance	Connectance	Proportion of links (L) relative to nodes (S) ($C = L/S^2$)
Link density	Link density	The average number of feeding links per taxa (L/S)
Fraction top	Percent top level	Proportion of top level consumers in taxa list
Fraction basal	Percent basal	Proportion of basal prey items in taxa list
Fraction herbivorous	Percent intermediate	Proportion of herbivores in taxa list
Fraction omnivorous	NA	Proportion of omnivores in taxa list
Fraction cannibal	NA	Proportion of cannibals in taxa list
Fraction intermediate	NA	Proportion of intermediate-level consumers in taxa list
Prey:predator	NA	Predator to prey ratio
Total trophic positions	NA	Calculated trophic positions based on feeding associations
NA	Percent isolated	Proportion of taxa list without any linkages within community
NA	Slope (mass~n)	Slope of relationship between log biomass and log abundance for taxa in a community

Table 3. Simplified example of a community resource-consumer pair matrix used to derive food web metrics.

Consumer	Resources Consumed			
Skwala	Glyptotendipes	Chironomus	Baetis	Drunella
Amiocentrus	FPOM	Diatoms		
Arctopsyche	FPOM	Glyptotendipes	Chironomus	
Baetis	Periphyton			
Chironomus	Periphyton	Diatoms		
Drunella	Periphyton	Baetis	Chironomus	
Rhyacophila	Drunella	Baetis	Chironomus	Glyptotendipes
Glyptotendipes	Diatoms	FPOM	Microbes	Periphyton

Propensity to drift

A total of 137 taxa were found in the project that were not contained in the original Rader (1997) manuscript designating life history and ecology traits related to propensity to drift. Taxa missing drift attributes were evaluated for the 11 traits described, using the same criteria as Rader (1997). Again, as in the development of the food web community metric development, a systematic approach was used to assign traits to each taxon. First, primary literature was consulted for attribute affinities. Secondly, if no literature was available, the most closely related taxon's values were used as a surrogate. Finally, if no literature or closely related taxa were available then empirical measurements were made, most commonly for 'drag index' and 'size' traits. Attributes were assigned and improved through a peer review process (Robert Wisseman, pers. comm.). Literature sources for the drift attributes are found in Appendix 2 and a complete listing of the Rader score assignments is referenced in Appendix 3.

Rader's (1997) manuscript suggested the use of an "aquatic species composition" (ASC) score incorporating the expected or actual abundance of taxa for each site, weighted to account for each taxon's potential contribution to the salmonid prey base:

$$ASC_{TotAdj} = \sum_{i=1}^{n} (St_i \cdot A_i)$$

where *n* is the number of taxa in availability guilds, *St* is the subtotal score (sum of the subcategory scores for each taxon), and *A* is the abundance adjusted score of the i^{th} taxon from Appendix 3.

Due to the abundance adjustment of the Rader scores, the original ASC is a richness based calculation at the sample level. In order to better explore the relationship between drift availability metrics and benthic taxonomic composition, three additional ASC metrics were synthesized; two which incorporate site specific taxon abundances (ASC_{Raw} and ASC_{Rel}) and one additional richness based metric (ASC_{SubTot}):

$$ASC_{Raw} = \sum_{i=1}^{n} (St_i \cdot C_i)$$

$$ASC_{Rel} = \sum_{i=1}^{n} (St_i \cdot PRA_i)$$

$$ASC_{SubTot} = \sum_{i=1}^{n} (St_i)$$

Where St_i is equal to the subtotal of the 11 Rader traits of the i^{th} taxon, C_i is the count in a given sample of the i^{th} taxon, PRA_i is the percent relative abundance of the i^{th} taxon in a given sample.

A hierarchical cluster analysis was completed on the trait scores assigned to these data to create guilds of drift availability. Three guild associations were classified using a Ward cluster analysis with a Euclidean distance measure (Ward 1963), and correspond to high drift availability, medium drift availability and low drift availability (Figure 1). The dendogram was cut off at 3 guilds to avoid over classifying the drift propensity of any given taxon. The 93 low drift available taxa correspond to the taxa primarily occurring in depositional or hyporheic habitats that do not score several of the Rader (1997) metrics due to habitat associations. The low drift availability taxa are excluded from the ASC values as recommended by Rader (1997).

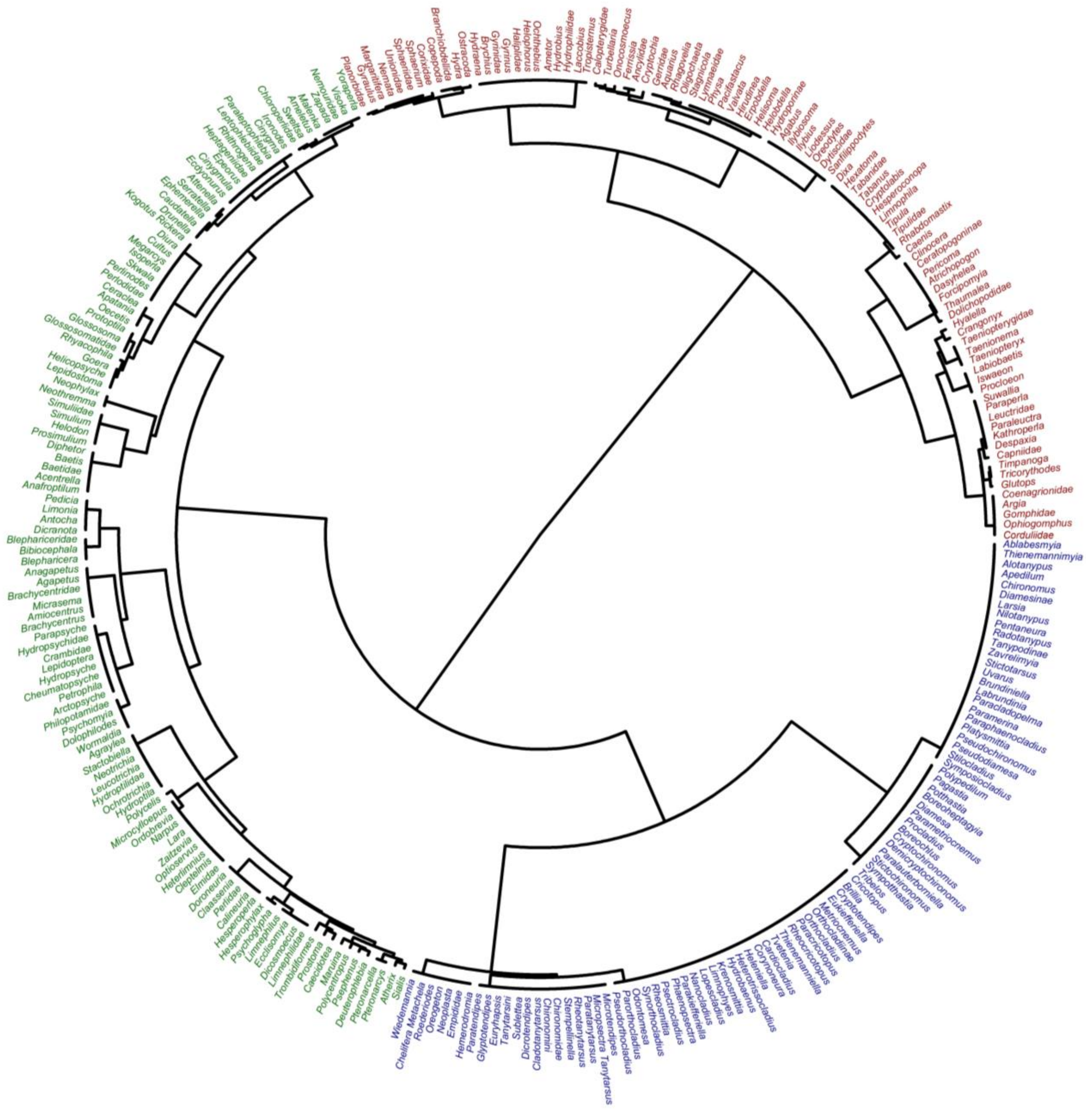

Figure 1. Hierarchical Ward cluster analysis detailing taxa memberships in three drift availability guilds. Taxa names in green, blue, and red correspond to high, medium, and low drift availability guilds, respectively.

Discussion

The methods described in this paper allow for invertebrate food web metrics, prey availability, and traditional community characteristics to be calculated using standard benthic invertebrate sample data. The results of these methods add a layer of analysis to the growing body of information relating the community composition of stream benthos to what is found in the drift and in fish diet studies. Moving beyond traditional benthic community metrics will allow researchers to associate habitat characteristics to food web characteristics and estimate drift-feeding fish prey availability of a given stream reach without the additional costs of drift or diet sampling and analysis. The methods described in this paper are not novel, but have now been adapted for use in stream reaches of the Upper Columbia River basin, and could be considered as part of any standard benthic analysis. The geographic scope is limited to the Upper Grande Ronde and Minam River basins, undoubtedly as these tools become more widespread in use additional taxa will need to be added, traits evaluated, and feeding associations documented. Additionally, as more work is done on invertebrate food resources further refinement in taxonomic resolution of both consumers and resources may become evident and would greatly improve the accuracy of these tools.

For the Rader (1997) approach, next steps for validation of these methods involve comparing empirical observations of benthic and drift frequencies according to propensity to drift ranking. For both the Rader (1997) and topological food web (Cohen et al. 2003) approaches, further validation will additionally involve determining if food web metrics explain a significant portion of variation in salmonid abundance, growth, or survival. These validation approaches are currently underway and will be documented in an upcoming report.

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Appendices

Appendix 1: Taxonomic hierarchy of data used in food web analyses

Phylum	Class	Order	Family	Taxon
Annelida	Clitellata	Arhynchobdellida	Erpobdellidae	Erpobdella
Annelida	Clitellata	Rhynchobdellida	Glossiphoniidae	Helobdella
Annelida	Clitellata			Hirudinea
Annelida	Clitellata			Oligochaeta
Annelida	Clitellata	Branchiobdellida		Branchiobdellida
Arthropoda	Arachnida	Trombidiformes		Trombidiformes
Arthropoda	Malacostraca	Amphipoda	Crangonyctidae	Crangonyx
Arthropoda	Malacostraca	Amphipoda	Hyalellidae	Hyalella
Arthropoda	Malacostraca	Decapoda	Astacidae	Pacifastacus
Arthropoda	Malacostraca	Isopoda	Asellidae	Caecidotea
Arthropoda	Maxillopoda			Copepoda
Arthropoda	Ostracoda			Ostracoda
Arthropoda	Insecta	Coleoptera	Dytiscidae	Stictotarsus
Arthropoda	Insecta	Coleoptera	Dytiscidae	Uvarus
Arthropoda	Insecta	Coleoptera	Dytiscidae	Agabus
Arthropoda	Insecta	Coleoptera	Dytiscidae	Hydroporinae
Arthropoda	Insecta	Coleoptera	Dytiscidae	Ilybiosoma
Arthropoda	Insecta	Coleoptera	Dytiscidae	Ilybius
Arthropoda	Insecta	Coleoptera	Dytiscidae	Liodessus
Arthropoda	Insecta	Coleoptera	Dytiscidae	Oreodytes
Arthropoda	Insecta	Coleoptera	Dytiscidae	Dytiscidae
Arthropoda	Insecta	Coleoptera	Dytiscidae	Sanfilippodytes
Arthropoda	Insecta	Coleoptera	Elmidae	Cleptelmis

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Coleoptera	Elmidae	Elmidae
Arthropoda	Insecta	Coleoptera	Elmidae	Heterlimnius
Arthropoda	Insecta	Coleoptera	Elmidae	Optioservus
Arthropoda	Insecta	Coleoptera	Elmidae	Zaitzevia
Arthropoda	Insecta	Coleoptera	Elmidae	Lara
Arthropoda	Insecta	Coleoptera	Elmidae	Narpus
Arthropoda	Insecta	Coleoptera	Elmidae	Ordobrevia
Arthropoda	Insecta	Coleoptera	Elmidae	Microcylloepus
Arthropoda	Insecta	Coleoptera	Gyrinidae	Gyrinidae
Arthropoda	Insecta	Coleoptera	Gyrinidae	Gyrinus
Arthropoda	Insecta	Coleoptera	Haliplidae	Brychius
Arthropoda	Insecta	Coleoptera	Haliplidae	Haliplidae
Arthropoda	Insecta	Coleoptera	Helophoridae	Helophorus
Arthropoda	Insecta	Coleoptera	Hydraenidae	Hydraena
Arthropoda	Insecta	Coleoptera	Hydraenidae	Ochthebius
Arthropoda	Insecta	Coleoptera	Hydrophilidae	Ametor
Arthropoda	Insecta	Coleoptera	Hydrophilidae	Hydrobius
Arthropoda	Insecta	Coleoptera	Hydrophilidae	Hydrophilidae
Arthropoda	Insecta	Coleoptera	Hydrophilidae	Laccobius
Arthropoda	Insecta	Coleoptera	Hydrophilidae	Tropisternus
Arthropoda	Insecta	Coleoptera	Psephenidae	Psephenus
Arthropoda	Insecta	Diptera	Athericidae	Atherix
Arthropoda	Insecta	Diptera	Blephariceridae	Bibiocephala
Arthropoda	Insecta	Diptera	Blephariceridae	Blepharicera
Arthropoda	Insecta	Diptera	Blephariceridae	Blephariceridae

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Diptera	Ceratopogonidae	Ceratopogoninae
Arthropoda	Insecta	Diptera	Ceratopogonidae	Atrichopogon
Arthropoda	Insecta	Diptera	Ceratopogonidae	Dasyhelea
Arthropoda	Insecta	Diptera	Ceratopogonidae	Forcipomyia
Arthropoda	Insecta	Diptera	Chironomidae	Thienemannimyia
Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia
Arthropoda	Insecta	Diptera	Chironomidae	Alotanypus
Arthropoda	Insecta	Diptera	Chironomidae	Apedilum
Arthropoda	Insecta	Diptera	Chironomidae	Chironomus
Arthropoda	Insecta	Diptera	Chironomidae	Diamesinae
Arthropoda	Insecta	Diptera	Chironomidae	Larsia
Arthropoda	Insecta	Diptera	Chironomidae	Nilotanypus
Arthropoda	Insecta	Diptera	Chironomidae	Pentaneura
Arthropoda	Insecta	Diptera	Chironomidae	Radotanypus
Arthropoda	Insecta	Diptera	Chironomidae	Tanypodinae
Arthropoda	Insecta	Diptera	Chironomidae	Zavrelimyia
Arthropoda	Insecta	Diptera	Chironomidae	Brundiniella
Arthropoda	Insecta	Diptera	Chironomidae	Labrundinia
Arthropoda	Insecta	Diptera	Chironomidae	Paracladopelma
Arthropoda	Insecta	Diptera	Chironomidae	Paramerina
Arthropoda	Insecta	Diptera	Chironomidae	Paraphaenocladius
Arthropoda	Insecta	Diptera	Chironomidae	Platysmittia
Arthropoda	Insecta	Diptera	Chironomidae	Pseudochironomus
Arthropoda	Insecta	Diptera	Chironomidae	Pseudodiamesa
Arthropoda	Insecta	Diptera	Chironomidae	Stilocladius

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Diptera	Chironomidae	Symposiocladius
Arthropoda	Insecta	Diptera	Chironomidae	Pagastia
Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum
Arthropoda	Insecta	Diptera	Chironomidae	Potthastia
Arthropoda	Insecta	Diptera	Chironomidae	Boreoheptagyia
Arthropoda	Insecta	Diptera	Chironomidae	Diamesa
Arthropoda	Insecta	Diptera	Chironomidae	Parametriocnemus
Arthropoda	Insecta	Diptera	Chironomidae	Procladius
Arthropoda	Insecta	Diptera	Chironomidae	Boreochlus
Arthropoda	Insecta	Diptera	Chironomidae	Cryptochironomus
Arthropoda	Insecta	Diptera	Chironomidae	Demicryptochironomus
Arthropoda	Insecta	Diptera	Chironomidae	Paralauterborniella
Arthropoda	Insecta	Diptera	Chironomidae	Stictochironomus
Arthropoda	Insecta	Diptera	Chironomidae	Sympotthastia
Arthropoda	Insecta	Diptera	Chironomidae	Tribelos
Arthropoda	Insecta	Diptera	Chironomidae	Brillia
Arthropoda	Insecta	Diptera	Chironomidae	Cricotopus
Arthropoda	Insecta	Diptera	Chironomidae	Cryptotendipes
Arthropoda	Insecta	Diptera	Chironomidae	Eukiefferiella
Arthropoda	Insecta	Diptera	Chironomidae	Metriocnemus
Arthropoda	Insecta	Diptera	Chironomidae	Orthocladiinae
Arthropoda	Insecta	Diptera	Chironomidae	Orthocladius
Arthropoda	Insecta	Diptera	Chironomidae	Paracricotopus
Arthropoda	Insecta	Diptera	Chironomidae	Rheocricotopus
Arthropoda	Insecta	Diptera	Chironomidae	Thienemanniella

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Diptera	Chironomidae	Tvetenia
Arthropoda	Insecta	Diptera	Chironomidae	Cardiocladius
Arthropoda	Insecta	Diptera	Chironomidae	Corynoneura
Arthropoda	Insecta	Diptera	Chironomidae	Heleniella
Arthropoda	Insecta	Diptera	Chironomidae	Heterotrissocladius
Arthropoda	Insecta	Diptera	Chironomidae	Hydrobaenus
Arthropoda	Insecta	Diptera	Chironomidae	Krenosmittia
Arthropoda	Insecta	Diptera	Chironomidae	Limnophyes
Arthropoda	Insecta	Diptera	Chironomidae	Lopescladius
Arthropoda	Insecta	Diptera	Chironomidae	Nanocladius
Arthropoda	Insecta	Diptera	Chironomidae	Parakiefferiella
Arthropoda	Insecta	Diptera	Chironomidae	Phaenopsectra
Arthropoda	Insecta	Diptera	Chironomidae	Psectrocladius
Arthropoda	Insecta	Diptera	Chironomidae	Rheosmittia
Arthropoda	Insecta	Diptera	Chironomidae	Synorthocladius
Arthropoda	Insecta	Diptera	Chironomidae	Odontomesa
Arthropoda	Insecta	Diptera	Chironomidae	Parorthocladius
Arthropoda	Insecta	Diptera	Chironomidae	Pseudorthocladius
Arthropoda	Insecta	Diptera	Chironomidae	Micropsectra_Tanytarsus
Arthropoda	Insecta	Diptera	Chironomidae	Microtendipes
Arthropoda	Insecta	Diptera	Chironomidae	Paratanytarsus
Arthropoda	Insecta	Diptera	Chironomidae	Rheotanytarsus
Arthropoda	Insecta	Diptera	Chironomidae	Stempellinella
Arthropoda	Insecta	Diptera	Chironomidae	Chironomidae
Arthropoda	Insecta	Diptera	Chironomidae	Chironomini

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Diptera	Chironomidae	Cladotanytarsus
Arthropoda	Insecta	Diptera	Chironomidae	Dicrotendipes
Arthropoda	Insecta	Diptera	Chironomidae	Sublettea
Arthropoda	Insecta	Diptera	Chironomidae	Tanytarsini
Arthropoda	Insecta	Diptera	Chironomidae	Euryhapsis
Arthropoda	Insecta	Diptera	Chironomidae	Glyptotendipes
Arthropoda	Insecta	Diptera	Chironomidae	Paratendipes
Arthropoda	Insecta	Diptera	Deuterophlebiidae	Deuterophlebia
Arthropoda	Insecta	Diptera	Dixidae	Dixa
Arthropoda	Insecta	Diptera	Dolichopodidae	Dolichopodidae
Arthropoda	Insecta	Diptera	Empididae	Empididae
Arthropoda	Insecta	Diptera	Empididae	Hemerodromia
Arthropoda	Insecta	Diptera	Empididae	Neoplasta
Arthropoda	Insecta	Diptera	Empididae	Oreogeton
Arthropoda	Insecta	Diptera	Empididae	Roederiodes
Arthropoda	Insecta	Diptera	Empididae	Chelifera_Metachela
Arthropoda	Insecta	Diptera	Empididae	Wiedemannia
Arthropoda	Insecta	Diptera	Empididae	Clinocera
Arthropoda	Insecta	Diptera	Pelecorhynchidae	Glutops
Arthropoda	Insecta	Diptera	Psychodidae	Maruina
Arthropoda	Insecta	Diptera	Psychodidae	Pericoma
Arthropoda	Insecta	Diptera	Simuliidae	Helodon
Arthropoda	Insecta	Diptera	Simuliidae	Prosimulium
Arthropoda	Insecta	Diptera	Simuliidae	Simulium
Arthropoda	Insecta	Diptera	Simuliidae	Simuliidae

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Diptera	Tabanidae	Tabanidae
Arthropoda	Insecta	Diptera	Tabanidae	Tabanus
Arthropoda	Insecta	Diptera	Thaumaleidae	Thaumalea
Arthropoda	Insecta	Diptera	Tipulidae	Antocha
Arthropoda	Insecta	Diptera	Tipulidae	Dicranota
Arthropoda	Insecta	Diptera	Tipulidae	Limonia
Arthropoda	Insecta	Diptera	Tipulidae	Pedicia
Arthropoda	Insecta	Diptera	Tipulidae	Hexatoma
Arthropoda	Insecta	Diptera	Tipulidae	Cryptolabis
Arthropoda	Insecta	Diptera	Tipulidae	Hesperoconopa
Arthropoda	Insecta	Diptera	Tipulidae	Limnophila
Arthropoda	Insecta	Diptera	Tipulidae	Tipula
Arthropoda	Insecta	Diptera	Tipulidae	Tipulidae
Arthropoda	Insecta	Diptera	Tipulidae	Rhabdomastix
Arthropoda	Insecta	Ephemeroptera	Ameletidae	Ameletus
Arthropoda	Insecta	Ephemeroptera	Baetidae	Acentrella
Arthropoda	Insecta	Ephemeroptera	Baetidae	Anafroptilum
Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetidae
Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetis
Arthropoda	Insecta	Ephemeroptera	Baetidae	Diphetor
Arthropoda	Insecta	Ephemeroptera	Baetidae	Iswaeon
Arthropoda	Insecta	Ephemeroptera	Baetidae	Labiobaetis
Arthropoda	Insecta	Ephemeroptera	Baetidae	Procloeon
Arthropoda	Insecta	Ephemeroptera	Caenidae	Caenis
Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Caudatella

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Drunella
Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella
Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Attenella
Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Serratella
Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Timpanoga
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Cinygmula
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Ecdyonurus
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Epeorus
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Heptageniidae
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Rhithrogena
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Cinygma
Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Ironodes
Arthropoda	Insecta	Ephemeroptera	Leptohyphidae	Tricorythodes
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	Leptophlebiidae
Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	Paraleptophlebia
Arthropoda	Insecta	Hemiptera	Corixidae	Corixidae
Arthropoda	Insecta	Hemiptera	Gerridae	Aquarius
Arthropoda	Insecta	Hemiptera	Gerridae	Gerridae
Arthropoda	Insecta	Hemiptera	Veliidae	Rhagovelia
Arthropoda	Insecta	Lepidoptera	Crambidae	Petrophila
Arthropoda	Insecta	Lepidoptera	Crambidae	Crambidae
Arthropoda	Insecta	Lepidoptera		Lepidoptera
Arthropoda	Insecta	Megaloptera	Sialidae	Sialis
Arthropoda	Insecta	Odonata	Calopterygidae	Calopterygidae
Arthropoda	Insecta	Odonata	Coenagrionidae	Argia

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Odonata	Coenagrionidae	Coenagrionidae
Arthropoda	Insecta	Odonata	Corduliidae	Corduliidae
Arthropoda	Insecta	Odonata	Gomphidae	Gomphidae
Arthropoda	Insecta	Odonata	Gomphidae	Ophiogomphus
Arthropoda	Insecta	Plecoptera	Capniidae	Capniidae
Arthropoda	Insecta	Plecoptera	Chloroperlidae	Sweltsa
Arthropoda	Insecta	Plecoptera	Chloroperlidae	Chloroperlidae
Arthropoda	Insecta	Plecoptera	Chloroperlidae	Paraperla
Arthropoda	Insecta	Plecoptera	Chloroperlidae	Suwallia
Arthropoda	Insecta	Plecoptera	Chloroperlidae	Kathroperla
Arthropoda	Insecta	Plecoptera	Leuctridae	Leuctridae
Arthropoda	Insecta	Plecoptera	Leuctridae	Paraleuctra
Arthropoda	Insecta	Plecoptera	Leuctridae	Despaxia
Arthropoda	Insecta	Plecoptera	Nemouridae	Zapada
Arthropoda	Insecta	Plecoptera	Nemouridae	Malenka
Arthropoda	Insecta	Plecoptera	Nemouridae	Nemouridae
Arthropoda	Insecta	Plecoptera	Nemouridae	Visoka
Arthropoda	Insecta	Plecoptera	Peltoperlidae	Yoraperla
Arthropoda	Insecta	Plecoptera	Perlidae	Calineuria
Arthropoda	Insecta	Plecoptera	Perlidae	Hesperoperla
Arthropoda	Insecta	Plecoptera	Perlidae	Perlidae
Arthropoda	Insecta	Plecoptera	Perlidae	Claassenia
Arthropoda	Insecta	Plecoptera	Perlidae	Doroneuria
Arthropoda	Insecta	Plecoptera	Perlodidae	Perlinodes
Arthropoda	Insecta	Plecoptera	Perlodidae	Perlodidae

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Plecoptera	Perlodidae	Skwala
Arthropoda	Insecta	Plecoptera	Perlodidae	Isoperla
Arthropoda	Insecta	Plecoptera	Perlodidae	Megarcys
Arthropoda	Insecta	Plecoptera	Perlodidae	Cultus
Arthropoda	Insecta	Plecoptera	Perlodidae	Diura
Arthropoda	Insecta	Plecoptera	Perlodidae	Kogotus_Rickera
Arthropoda	Insecta	Plecoptera	Pteronarcyidae	Pteronarcella
Arthropoda	Insecta	Plecoptera	Pteronarcyidae	Pteronarcys
Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taenionema
Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taeniopterygidae
Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx
Arthropoda	Insecta	Trichoptera	Apataniidae	Apatania
Arthropoda	Insecta	Trichoptera	Brachycentridae	Amiocentrus
Arthropoda	Insecta	Trichoptera	Brachycentridae	Brachycentrus
Arthropoda	Insecta	Trichoptera	Brachycentridae	Micrasema
Arthropoda	Insecta	Trichoptera	Brachycentridae	Brachycentridae
Arthropoda	Insecta	Trichoptera	Glossosomatidae	Agapetus
Arthropoda	Insecta	Trichoptera	Glossosomatidae	Anagapetus
Arthropoda	Insecta	Trichoptera	Glossosomatidae	Glossosoma
Arthropoda	Insecta	Trichoptera	Glossosomatidae	Glossosomatidae
Arthropoda	Insecta	Trichoptera	Glossosomatidae	Protoptila
Arthropoda	Insecta	Trichoptera	Goeridae	Goera
Arthropoda	Insecta	Trichoptera	Helicopsychidae	Helicopsyche
Arthropoda	Insecta	Trichoptera	Hydropsychidae	Arctopsyche
Arthropoda	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche
Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsychidae
Arthropoda	Insecta	Trichoptera	Hydropsychidae	Parapsyche
Arthropoda	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia
Arthropoda	Insecta	Trichoptera	Hydroptilidae	Hydroptila
Arthropoda	Insecta	Trichoptera	Hydroptilidae	Hydroptilidae
Arthropoda	Insecta	Trichoptera	Hydroptilidae	Leucotrichia
Arthropoda	Insecta	Trichoptera	Hydroptilidae	Neotrichia
Arthropoda	Insecta	Trichoptera	Hydroptilidae	Stactobiella
Arthropoda	Insecta	Trichoptera	Hydroptilidae	Agraylea
Arthropoda	Insecta	Trichoptera	Lepidostomatidae	Lepidostoma
Arthropoda	Insecta	Trichoptera	Leptoceridae	Oecetis
Arthropoda	Insecta	Trichoptera	Leptoceridae	Ceraclea
Arthropoda	Insecta	Trichoptera	Limnephilidae	Dicosmoecus
Arthropoda	Insecta	Trichoptera	Limnephilidae	Limnephilidae
Arthropoda	Insecta	Trichoptera	Limnephilidae	Ecclisomyia
Arthropoda	Insecta	Trichoptera	Limnephilidae	Limnephilus
Arthropoda	Insecta	Trichoptera	Limnephilidae	Hesperophylax
Arthropoda	Insecta	Trichoptera	Limnephilidae	Psychoglypha
Arthropoda	Insecta	Trichoptera	Limnephilidae	Onocosmoecus
Arthropoda	Insecta	Trichoptera	Limnephilidae	Cryptochia
Arthropoda	Insecta	Trichoptera	Philopotamidae	Dolophilodes
Arthropoda	Insecta	Trichoptera	Philopotamidae	Wormaldia
Arthropoda	Insecta	Trichoptera	Philopotamidae	Philopotamidae
Arthropoda	Insecta	Trichoptera	Polycentropodidae	Polycentropus

Phylum	Class	Order	Family	Taxon
Arthropoda	Insecta	Trichoptera	Psychomyiidae	Psychomyia
Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila
Arthropoda	Insecta	Trichoptera	Uenoidae	Neophylax
Arthropoda	Insecta	Trichoptera	Uenoidae	Neothremma
Cnidaria	Hydrozoa	Hydroida	Hydridae	Hydra
Mollusca	Bivalvia	Veneroida	Sphaeriidae	Sphaeriidae
Mollusca	Bivalvia	Veneroida	Sphaeriidae	Sphaerium
Mollusca	Bivalvia	Unionoida	Margaritiferidae	Margaritifera
Mollusca	Bivalvia	Unionoida	Unionidae	Unionidae
Mollusca	Gastropoda	Basommatophora	Ancylidae	Ancylidae
Mollusca	Gastropoda	Basommatophora	Ancylidae	Ferrissia
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Lymnaeidae
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Stagnicola
Mollusca	Gastropoda	Basommatophora	Physidae	Physa
Mollusca	Gastropoda	Basommatophora	Planorbidae	Helisoma
Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus
Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbidae
Mollusca	Gastropoda	Heterostropha	Valvatidae	Valvata
Nemata				Nemata
Nemertea	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma
Platyhelminthes	Turbellaria	Tricladida	Planariidae	Polycelis
Platyhelminthes	Turbellaria			Turbellaria

Appendix 2: Consumer assignments with sources and sources for drift propensity scoring for each taxa

Taxon	Consumer	Sources (food web)	Sources (drift)
Ablabesmyia	Predator, FPOM, Periphyton	(Roback 1969)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Acentrella	Diatoms, FPOM, Periphyton	(Merritt et al. 2008)	(Rader 1997)
Agabus	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Agapetus	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Agraylea	Vascular, Plants	(Shapas and Hilsenhoff 1976)	(Rader 1997)
Alotanypus	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Ameletus	Periphyton, FPOM	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Ametor	Predator	(Merritt et al. 2008)	(Larimore 1974)
Amiocentrus	Diuatoms, FPOM	(Merritt et al. 2008; Wiggins 2009)	(Rader 1997)
Anafroptilum	FPOM, Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Anagapetus	Periphyton	(Merritt et al. 2008; Wiggins 2009)	(Rader 1997)
Ancylidae	Periphyton	(Pennak 1989; Thorp and Rogers 2015)	(Rader 1997)
Antocha	Predator	(Merritt et al. 2008)	(Rader 1997)
Apatania	Periphyton	(Merritt et al. 2008; Wiggins 2009)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Apedilum	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Aquarius	Predator	(Merritt et al. 2008)	(Larimore 1974)
Arctopsyche	Predator, FPOM	(Hauer and Stanford 1981; Hauer and Stanford 1982; Merritt et al. 2008)	(Rader 1997)
Argia	Predator	(Merritt et al. 2008)	(Rader 1997)
Atherix	Predator	(Merritt et al. 2008)	(Rader 1997)
Atrichopogon	Predator	(Merritt et al. 2008)	(Rader 1997)
Attenella	Periphyton	(Hawkins 1990; Merritt et al. 2008)	(Rader 1997)
Baetidae	Periphyton	(Cowan and Peckarsky 1990; Merritt et al. 2008)	(Rader 1997)
Baetis	Periphyton	(Cowan and Peckarsky 1990; Merritt et al. 2008)	(Rader 1997)
Bibiocephala	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Blepharicera	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Blephariceridae	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Boreochlus	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Boreoheptagyia	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Brachycentridae	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Koslucher and Minshall 1973; Merritt et al. 2008; Wiggins 2009)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Brachycentrus	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Koslucher and Minshall 1973; Merritt et al. 2008; Wiggins 2009)	(Rader 1997)
Branchiobdellida	Predator,Detritus	(Pennak 1989; Thorp and Rogers 2015)	(Thorp and Rogers 2015)
Brillia	Detritus	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Brundiniella	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Brychius	Macrophytes	(Strand and Spangler 1994; Merritt et al. 2008)	(Larimore 1974)
Caecidotea	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Pennak 1989; Thorp and Rogers 2015)	(Grzybkowska et al. 2004)
Caenis	Detritus, FPOM, Fungi, CPOM, Microbes, Periphyton	(Provonsha 1990; Merritt et al. 2008)	(Rader 1997)
Calineuria	Predator	(Sheldon 1969; Merritt et al. 2008)	(Rader 1997)
Calopterygidae	Predator	(Merritt et al. 2008)	(Rader 1997)
Capniidae	Detritus	(Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Cardiocladius	Predator	(Merritt et al. 2008)	(Rader 1997)
Caudatella	Periphyton	(Hawkins 1990; Merritt et al. 2008)	(Rader 1997)
Ceraclea	Predator, Detritus, Periphyton	(Merritt et al. 2008; Wiggins 2009)	(Rader 1997)
Ceratopogoninae	Predator	(Merritt et al. 2008)	(Rader 1997)
Chelifera_Metachela	Predator	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Cheumatopsyche	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008; Wiggins 2009)	(Rader 1997)
Chironomidae	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Rader 1997)
Chironomini	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Chironomus	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Chloroperlidae	Predator	(Fuller and Stewart 1977; Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Cinygma	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Cinygmula	Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Claassenia	Predator	(Fuller and Stewart 1977; Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Cladotanytarsus	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Cleptelmis	FPOM, Periphyton	(Merritt et al. 2008)	(Rader 1997)
Clinocera	Predator	(Merritt et al. 2008)	(Rader 1997)
Coenagrionidae	Predator	(Smock and Roeding 1986; Merritt et al. 2008)	(Rader 1997)
Copepoda	Predator, Periphyton	(Pennak 1989; Thorp and Rogers 2015)	(Rader 1997)
Corduliidae	Predator	(Smock and Roeding 1986; Merritt et al. 2008)	(Turcotte and Harper 1982)
Corixidae	Predator, Macrophytes	(Merritt et al. 2008)	(Larimore 1974; Hemsworth and Brooker 1981)

Taxon	Consumer	Sources (food web)	Sources (drift)
Corynoneura	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Crambidae	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Crangonyx	FPOM	(Pennak 1989; Thorp and Rogers 2015)	(Larimore 1974)
Cricotopus	Periphyton, Macroalgae	(Merritt et al. 2008)	(Rader 1997)
Cryptochia	Detritus	(Wisseman and Anderson 1987; Merritt et al. 2008)	(Betts and Wisseman 1995)
Cryptochironomus	Predator	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Cryptolabis	Predator, Periphyton	(Merritt et al. 2008)	(Rader 1997)
Cryptotendipes	Detritus, FPOM, Fungi, CPOM, Microbes	(Merritt et al. 2008)	(Rader 1997)
Cultus	Predator	(Fuller and Stewart 1977; Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Dasyhelea	Predator	(Merritt et al. 2008)	(Rader 1997)
Demicryptochironomus	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Despaxia	Detritus	(Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Deuterophlebia	Periphyton	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Diamesa	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Diamesinae	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Dicosmoecus	Dead Fish, Periphyton, Vascular Plants	(Merritt et al. 2008)	(Rader 1997)
Dicranota	Predator	(Elliott 1983)	(Rader 1997)
Dicrotendipes	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Diphetor	Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Diura	Predator	(Fuller and Stewart 1977; Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Dixa	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Dolichopodidae	Predator	(Merritt et al. 2008)	(Rader 1997)
Dolophilodes	Diatoms, FPOM, CPOM, Microbes	(Shapas and Hilsenhoff 1976)	(Rader 1997)
Doroneuria	Predator	(Stewart and Stark 2002)	(Rader 1997)
Drunella	Predator, Periphyton	(Gilpin and Brusven 1970; Hawkins 1990; Merritt et al. 2008)	(Rader 1997)
Dytiscidae	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Ecclisomyia	Dead fish, Detritus, Periphyton	(Minakawa et al. 2002; Merritt et al. 2008; Wiggins 2009)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Ecdyonurus	Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Elmidae	Periphyton	(Smock and Roeding 1986; Merritt et al. 2008)	(Rader 1997)
Empididae	Predator	(Merritt et al. 2008)	(Rader 1997)
Epeorus	Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Ephemerella	Periphyton	(Hawkins 1990; Merritt et al. 2008)	(Rader 1997)
Erpobdella	Predator	(Pennak 1989; Thorp and Rogers 2015)	(Hemsworth and Brooker 1981; Turcotte and Harper 1982)
Eukiefferiella	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Euryhapsis	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Ferrissia	Periphyton	(Thorp and Rogers 2015)	(Rader 1997)
Forcipomyia	Predator	(Merritt et al. 2008)	(Rader 1997)
Gerridae	Predator	(Merritt et al. 2008)	
Glossosoma	Periphyton	(Shapas and Hilsenhoff 1976; Wiggins 2009)	(Rader 1997)
Glossosomatidae	Periphyton	(Shapas and Hilsenhoff 1976; Merritt et al. 2008; Wiggins 2009)	(Rader 1997)
Glutops	Predator	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Glyptotendipes	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Monakov 1972; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Goera	Periphyton	(Merritt et al. 2008)	(Rader 1997; Wiggins 2009; Blinn and Ruiter 2013)
Gomphidae	Predator	(Merritt et al. 2008)	(Rader 1997)
Gyraulus	Periphyton	(Thorp and Rogers 2015)	(Rader 1997)
Gyrinidae	Predator	(Merritt et al. 2008)	(Larimore 1974)
Gyrinus	Predator	(Merritt et al. 2008)	(Larimore 1974)
Haliplidae	Macrophytes	(Merritt et al. 2008)	(Larimore 1974)
Heleniella	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Helicopsyche	Periphyton	(Shapas and Hilsenhoff 1976)	(Rader 1997)
Helisoma	Periphyton	(Pennak 1989)	(Rader 1997)
Helobdella	Predator	(Thorp and Rogers 2015)	(Larimore 1974; Turcotte and Harper 1982)
Helodon	FPOM	(Merritt et al. 2008)	(Rader 1997)
Helophorus	Predator, Detritus, Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Larimore 1974)
Hemerodromia	Predator	(Merritt et al. 2008)	(Rader 1997)
Heptageniidae	Periphyton	(Shapas and Hilsenhoff 1976)	(Rader 1997)
Hesperoconopa	Predator	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Hesperoperla	Predator	(Merritt et al. 2008)	(Rader 1997)
Hesperophylax	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Heterlimnius	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Heterotrissocladius	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Hexatoma	Predator	(Merritt et al. 2008)	(Rader 1997)
Hirudinea	Predator	(Pennak 1989; Thorp and Rogers 2015)	(Hemsworth and Brooker 1981; Turcotte and Harper 1982)
Hyalella	FPOM	(Pennak 1989; Thorp and Rogers 2015)	(Rader 1997)
Hydra	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Thorp and Rogers 2015)	(Pennak 1989)
Hydraena	Periphyton	(Merritt et al. 2008)	(Perkins 1980)
Hydrobaenus	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Smock and Roeding 1986; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Hydrobius	Predator	(Merritt et al. 2008)	(Wye et al. 1979)
Hydrophilidae	Predator	(Merritt et al. 2008)	(Wye et al. 1979)
Hydroporinae	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Hydropsyche	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Hydropsychidae	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008; Wiggins 2009)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Hydroptila	Vascular Plants	(Merritt et al. 2008)	(Rader 1997)
Hydroptilidae	Vascular Plants	(Merritt et al. 2008)	(Rader 1997)
Ilybiosoma	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Ilybius	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Ironodes	Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Isoperla	Predator	(Shapas and Hilsenhoff 1976; Fuller and Stewart 1977; Merritt et al. 2008)	(Rader 1997)
Iswaeon	Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Kathroperla	Predator	(Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Kogotus_Rickera	Predator	(Merritt et al. 2008)	(Rader 1997)
Krenosmittia	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Labiobaetis	Detritus, Periphyton	(Gilpin and Brusven 1970; Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Labrundinia	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Laccobius	Predator	(Merritt et al. 2008)	(Perkins 1980)
Lara	Detritus	(Steedman and Anderson 1985; Merritt et al. 2008)	(Rader 1997)
Larsia	Predator	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Lepidoptera	Vascular Plants	(Merritt et al. 2008)	(Rader 1997)
Lepidostoma	Dead, fish, Detritus	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Leptophlebiidae	Diatoms, FPOM, Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Leucotrichia	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Leuctridae	Detritus	(Merritt et al. 2008)	(Rader 1997)
Limnephilidae	Diatoms, FPOM, CPOM, Microbes, Vascular, Plants	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Limnephilus	Detritus, Macrophytes	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Limnophila	Predator	(Merritt et al. 2008)	(Rader 1997)
Limnophyes	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Limonia	Macrophytes	(Merritt et al. 2008)	(Rader 1997)
Liodessus	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Lopescladius	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Lymnaeidae	Periphyton	(Pennak 1989; Thorp and Rogers 2015)	(Rader 1997)
Malenka	Detritus	(Merritt et al. 2008)	(Rader 1997)
Margaritifera	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Thorp and Rogers 2015)	(Thorp and Rogers 2015)
Maruina	Periphyton	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Megarcys	Predator	(Richardson and Gaufin 1971; Merritt et al. 2008)	(Rader 1997)
Metriocnemus	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Micrasema	Macrophytes	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Microcylloepus	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Micropsectra_Tanytarsus	Diatoms, FPOM, CPOM, Microbes	(Walshe 1951; Merritt et al. 2008)	(Rader 1997)
Microtendipes	Periphyton	(Walshe 1951; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Nanocladius	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Narpus	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Nemata	Predator	(Pennak 1989; Thorp and Rogers 2015)	(Rader 1997; Thorp and Rogers 2015)
Nemouridae	Detritus	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Neophylax	Periphyton	(Shapas and Hilsenhoff 1976; Merritt et al. 2008; Wiggins 2009)	(Rader 1997)
Neoplasta	Predator	(Merritt et al. 2008)	(Rader 1997)
Neothremma	Diatoms, Periphyton	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997; Blinn and Ruiter 2013)
Neotrichia	Periphyton	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Nilotanypus	Predator	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Ochrotrichia	Vascular, Plants	(Merritt et al. 2008)	(Rader 1997; Blinn and Ruiter 2013)
Ochthebius	Periphyton	(Merritt et al. 2008)	(Perkins 1980)
Odontomesa	Periphyton	(Smock and Roeding 1986; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Oecetis	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Shapas and Hilsenhoff 1976; Smock and Roeding 1986)	(Rader 1997)
Oligochaeta	FPOM	(Monakov 1972)	(Rader 1997)
Onocosmoecus	Diatoms, Fish, FPOM, CPOM, Microbes, Periphyton	(Wisseman and Anderson 1987)	(Rader 1997)
Ophiogomphus	Predator	(Merritt et al. 2008)	(Rader 1997)
Optioservus	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Ordobrevia	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Oreodytes	Predator	(Larson et al. 2000)	(Larimore 1974; Larson et al. 2000)
Oreogeton	Predator	(Merritt et al. 2008)	(Rader 1997)
Orthocladiinae	Periphyton	(Smock and Roeding 1986; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Orthocladius	Fungi	(Monakov 1972; Smock and Roeding 1986; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Ostracoda	Fungi	(Monakov 1972; Thorp and Rogers 2015)	(Rader 1997)
Pacifastacus	Predator	(Thorp and Rogers 2015)	(Thorp and Rogers 2015)
Pagastia	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Paracladopelma	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Monakov 1972; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Paracricotopus	Fungi, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Parakiefferiella	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Paralauterborniella	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Paraleptophlebia	Fungi	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Paraleuctra	Detritus	(Merritt et al. 2008)	(Rader 1997)
Paramerina	Predator, Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Parametriocnemus	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Paraperla	Predator, FPOM	(Merritt et al. 2008)	(Rader 1997)
Paraphaenocladius	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Parapsyche	Predator	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Paratanytarsus	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Paratendipes	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Parorthocladius	Fungi	(Monakov 1972; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Pedicia	Predator	(Merritt et al. 2008)	(Rader 1997)
Pentaneura	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Monakov 1972)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Pericoma	Fungi	(Merritt et al. 2008)	(Rader and McArthur 1995)
Perlidae	Predator	(Shapas and Hilsenhoff 1976; Fuller and Stewart 1977)	(Rader 1997)
Perlinodes	Predator	(Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Perlodidae	Predator	(Merritt et al. 2008)	(Rader 1997)
Petrophila	Periphyton	(Merritt et al. 2008)	(Rader 1997; Merritt et al. 2008)

Taxon	Consumer	Sources (food web)	Sources (drift)
Phaenopsectra	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Philopotamidae	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Rader 1997)
Physa	Periphyton, FPOM, Diatoms,CPOM	(Pennak 1989)	(Rader 1997)
Planorbidae	Periphyton	(Monakov 1972; Thorp and Rogers 2015)	(Rader 1997)
Platysmittia	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Polycelis	Dead fish, Fungi	(Pennak 1989; Thorp and Rogers 2015)	(Rader 1997)
Polycentropus	Predator	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Polypedilum	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Potthastia	Fungi	(Monakov 1972)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Procladius	Predator	(Monakov 1972; Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Procloeon	Fungi	(Merritt et al. 2008)	(Waringer 1992; Rader 1997)
Prosimulium	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Prostoma	Predator	(Pennak 1989; Thorp and Rogers 2015)	(Pennak 1989; Thorp and Rogers 2015)
Protoptila	Periphyton	(Shapas and Hilsenhoff 1976; Merritt et al. 2008)	(Rader 1997)
Psectrocladius	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Psephenus	Periphyton	(Merritt et al. 2008)	(Rader 1997)
Pseudochironomus	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Pseudodiamesa	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Gray and Ward 1979)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Pseudorthocladius	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Psychoglypha	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Rader 1997)
Psychomyia	Periphyton	(Merritt et al. 2008)	(Larimore 1974; Turcotte and Harper 1982)
Pteronarcella	Detritus	(Richardson and Gaufin 1971; Stewart and Stark 2002)	(Rader 1997)
Pteronarcys	Detritus	(Richardson and Gaufin 1971; Stewart and Stark 2002)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Radotanypus	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Rhabdomastix	Predator	(Merritt et al. 2008)	(Rader 1997)
Rhagovelia	Predator	(Merritt et al. 2008)	(Larimore 1974)
Rheocricotopus	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Rheosmittia	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Rheotanytarsus	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Rhithrogena	Periphyton	(Gilpin and Brusven 1970; Merritt et al. 2008)	(Rader 1997)
Rhyacophila	Predator	(Merritt et al. 2008)	(Rader 1997)
Roederiodes	Predator	(Merritt et al. 2008)	(Rader 1997)
Sanfilippodytes	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Serratella	Detritus,Diatoms, Fungi	(López-Rodríguez et al. 2008)	(Rader 1997)
Sialis	Predator	(Smock and Roeding 1986)	(Rader 1997)
Simuliidae	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Rader 1997)
Simulium	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Skwala	Predator	(Richardson and Gaufin 1971; Fuller and Stewart 1977)	(Rader 1997)
Sphaeriidae	Fungi	(Monakov 1972)	(Rader 1997)
Sphaerium	Diatoms, FPOM, CPOM, Microbes	(Monakov 1972)	(Rader 1997)
Stactobiella	Detritus	(Merritt et al. 2008)	(Rader 1997)
Stagnicola	Periphyton	(Walshe 1951)	(Rader 1997)
Stempellina	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Stempellinella	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Stictochironomus	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Stictotarsus	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Stilocladius	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Sublettea	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Suwallia	Predator	(Stewart and Stark 2002; Merritt et al. 2008)	(Rader 1997)
Sweltsa	Predator	(Stewart and Stark 2002)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Symposiocladius	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Sympotthastia	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Synorthocladius	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Tabanidae	Predator	(Merritt et al. 2008)	(Rader 1997)
Tabanus	Predator	(Merritt et al. 2008)	(Rader 1997)
Taenionema	Detritus, Fungi, Macrophytes, Periphyton	(Richardson and Gaufin 1971; Stewart and Stark 2002)	(Rader 1997)
Taeniopterygidae	Detritus, Fungi, Macrophytes, Periphyton	(Richardson and Gaufin 1971; Stewart and Stark 2002)	(Rader 1997)
Taeniopteryx	Detritus	(Richardson and Gaufin 1971; Stewart and Stark 2002)	(Rader 1997)
Tanypodinae	Predator, Diatoms	(Roback 1969; Smock and Roeding 1986)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Tanytarsini	Fungi	(Smock and Roeding 1986)	(Rader 1997)
Thaumalea	Fungi, Periphyton	(Merritt et al. 2008)	(Rader 1997; Merritt et al. 2008)
Thienemanniella	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Thienemannimyia	Predator	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Timpanoga	FPOM, Diatoms	(Gilpin and Brusven 1970)	(Rader 1997)
Tipula	Predator, Detritus, CPOM, FPOM	(Smock and Roeding 1986)	(Rader 1997)
Tipulidae	Predator	(Merritt et al. 2008)	(Rader 1997)
Tribelos	Periphyton	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Tricorythodes	Fungi	(Shapas and Hilsenhoff 1976)	(Larimore 1974; Hall et al. 1980)
Trombidiformes	Predator	(Di Sabatino et al. 2000)	(Di Sabatino et al. 2000)
Tropisternus	Predator	(Merritt et al. 2008)	(Rader 1997; Merritt et al. 2008)
Turbellaria	Predator, Dead, fish, periphyton	(Pennak 1989)	(Rader 1997)
Tvetenia	Fungi	(Merritt et al. 2008)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)
Unionidae	Diatoms, FPOM, CPOM, Microbes, Periphyton	(Pennak 1989; Thorp and Rogers 2015)	(Thorp and Rogers 2015)
Uvarus	Predator	(Larson et al. 2000)	(Larson et al. 2000)
Valvata	Periphyton	(Thorp and Rogers 2015)	(Rader 1997)
Visoka	Detritus	(Merritt et al. 2008)	(Rader 1997)
Wiedemannia	Predator	(Merritt et al. 2008)	(Rader 1997)

Taxon	Consumer	Sources (food web)	Sources (drift)
Wormaldia	Diatoms, FPOM, CPOM, Microbes	(Merritt et al. 2008)	(Rader 1997)
Yoraperla	Detritus	(Stewart and Stark 2002)	(Danehy et al. 2011)
Zaitzevia	Fungi	(Merritt et al. 2008)	(Rader 1997)
Zapada	Detritus	(Stewart and Stark 2002)	(Rader 1997)
Zavrelimyia	Predator, Diatoms	(Roback 1969)	(Steine 1972; Ferrington 1984; Waringer 1992; Rader 1997)

Appendix 3: Table of traits, scores, total adjusted scores of 295 individual taxa found during the project period

List is in order of the taxonomic hierarchy presented in Appendix 1. Group 1 associated taxa are low drift available taxa and are excluded from the ASC calculations. Group 2 taxa are highly available in the drift. Group 3 taxa are only moderately available in the drift.

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Erpobdella	0	1	0	0	0	0	0	0	0	1	9	R	11	5.5	257	1
Helobdella	0	1	0	0	0	0	0	0	0	1	9	R	11	5.5	257	1
Hirudinea	0	1	0	0	0	0	0	0	0	1	9	R	11	5.5	257	1
Oligochaeta	0	1	0	0	0	0	0	0	0	0	9	A	10	10	266	1
Branchiobdellida	0	0	0	0	0	0	0	0	0	0	1	C	1	1	293	1
Trombidiformes	9	9	6	9	3	1	0	0	0	1	1	A	39	39	162	2
Crangonyx	9	1	0	0	0	0	0	0	0	3	9	C	22	22	228	1
Hyalella	9	9	0	0	0	0	0	0	0	3	9	C	30	30	196	1
Pacifastacus	0	1	0	0	0	0	0	0	0	1	9	C	11	11	257	1
Caecidotea	0	9	0	9	3	1	0	0	0	1	3	R	26	13	214	2
Copepoda	0	0	0	0	0	0	0	0	0	0	1	C	1	1	293	1
Ostracoda	0	1	0	0	0	0	0	0	0	1	1	C	3	3	292	1

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Stictotarsus	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Uvarus	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Agabus	0	1	0	0	0	0	0	3	0	3	9	C	16	16	237	1
Hydroporinae	0	1	0	0	0	0	0	3	0	3	9	C	16	16	237	1
Ilybiosoma	0	1	0	0	0	0	0	3	0	3	9	C	16	16	237	1
Ilybius	0	1	0	0	0	0	0	3	0	3	9	C	16	16	237	1
Liodessus	0	1	0	0	0	0	0	3	0	3	9	C	16	16	237	1
Oreodytes	0	1	0	0	0	0	0	3	0	3	9	C	16	16	237	1
Dytiscidae	0	1	0	0	0	0	0	3	0	3	9	R	16	8	237	1
Sanfilippodytes	0	1	0	0	0	0	0	3	0	3	9	R	16	8	237	1
Cleptelmis	0	9	6	3	1	3	3	3	0	1	3	A	32	32	187	2
Elmidae	0	9	6	3	1	3	3	3	0	1	3	A	32	32	187	2
Heterlimnius	0	9	6	3	1	3	3	3	0	1	3	A	32	32	187	2
Optioservus	0	9	6	3	1	3	3	3	0	1	3	A	32	32	187	2
Zaitzevia	0	9	6	3	1	3	3	3	0	1	3	A	32	32	187	2
Lara	0	9	6	3	1	3	3	3	0	1	3	C	32	32	187	2

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Narpus	0	9	6	3	1	3	3	3	0	1	3	C	32	32	187	2
Ordobrevia	0	9	6	3	1	3	3	3	0	1	3	C	32	32	187	2
Microcylloepus	0	9	6	3	1	3	3	3	0	1	3	R	32	16	187	2
Gyrinidae	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Gyrinus	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Brychius	0	1	0	0	0	0	0	3	0	3	3	C	10	10	266	1
Haliplidae	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Helophorus	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Hydraena	0	1	0	0	0	0	0	3	0	3	3	C	10	10	266	1
Ochthebius	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Ametor	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Hydrobius	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Hydrophilidae	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Laccobius	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Tropisternus	0	1	0	0	0	0	0	3	0	3	3	R	10	5	266	1
Psephenus	0	9	1	1	1	6	3	3	1	1	3	A	29	29	197	2

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Atherix	0	9	6	3	6	6	3	0	6	1	9	A	49	73.5	27	2
Bibiocephala	0	9	1	1	1	6	6	0	6	3	9	C	42	50.4	102	2
Blepharicera	0	9	1	1	1	6	6	0	6	3	9	R	42	21	102	2
Blephariceridae	0	9	1	1	1	6	6	0	6	3	9	R	42	21	102	2
Ceratopogoninae	0	1	0	0	0	0	6	6	6	1	3	C	23	23	221	1
Atrichopogon	0	1	0	0	0	0	6	6	6	1	3	R	23	11.5	221	1
Dasyhelea	0	1	0	0	0	0	6	6	6	1	3	R	23	11.5	221	1
Forcipomyia	0	1	0	0	0	0	6	6	6	1	3	R	23	11.5	221	1
Thienemannimyia	0	9	0	3	1	6	6	6	6	1	9	A	47	70.5	33	3
Ablabesmyia	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Alotanypus	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Apedilum	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Chironomus	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Diamesinae	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Larsia	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Nilotanypus	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Pentaneura	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Radotanypus	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Tanypodinae	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Zavrelimyia	0	9	0	3	1	6	6	6	6	1	9	C	47	56.4	33	3
Brundiniella	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Labrundinia	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Paracladopelma	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Paramerina	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Paraphaenocladius	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Platysmittia	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Pseudochironomus	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Pseudodiamesa	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Stilocladius	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Symposiocladius	0	9	0	3	1	6	6	6	6	1	9	R	47	23.5	33	3
Pagastia	0	9	0	1	1	6	6	6	6	1	9	A	45	67.5	60	3
Polypedilum	0	9	0	1	1	6	6	6	6	1	9	A	45	67.5	60	3

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Potthastia	0	9	0	1	1	6	6	6	6	1	9	A	45	67.5	60	3
Boreoheptagyia	0	9	0	1	1	6	6	6	6	1	9	C	45	54	60	3
Diamesa	0	9	0	1	1	6	6	6	6	1	9	C	45	54	60	3
Parametriocnemus	0	9	0	1	1	6	6	6	6	1	9	C	45	54	60	3
Procladius	0	9	0	1	1	6	6	6	6	1	9	C	45	54	60	3
Boreochlus	0	9	0	1	1	6	6	6	6	1	9	R	45	22.5	60	3
Cryptochironomus	0	9	0	1	1	6	6	6	6	1	9	R	45	22.5	60	3
Demicryptochironomus	0	9	0	1	1	6	6	6	6	1	9	R	45	22.5	60	3
Paralauterborniella	0	9	0	1	1	6	6	6	6	1	9	R	45	22.5	60	3
Stictochironomus	0	9	0	1	1	6	6	6	6	1	9	R	45	22.5	60	3
Sympotthastia	0	9	0	1	1	6	6	6	6	1	9	R	45	22.5	60	3
Tribelos	0	9	0	1	1	6	6	6	6	1	9	R	45	22.5	60	3
Brillia	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Cricotopus	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Cryptotendipes	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Eukiefferiella	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Metriocnemus	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Orthocladiinae	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Orthocladius	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Paracricotopus	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Rheocricotopus	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Thienemanniella	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Tvetenia	0	9	1	1	1	6	6	6	6	1	3	A	40	40	126	3
Cardiocladius	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Corynoneura	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Heleniella	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Heterotrissocladius	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Hydrobaenus	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Krenosmittia	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Limnophyes	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Lopescladius	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Nanocladius	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Parakiefferiella	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Phaenopsectra	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Psectrocladius	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Rheosmittia	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Synorthocladius	0	9	1	1	1	6	6	6	6	1	3	C	40	48	126	3
Odontomesa	0	9	1	1	1	6	6	6	6	1	3	R	40	20	126	3
Parorthocladius	0	9	1	1	1	6	6	6	6	1	3	R	40	20	126	3
Pseudorthocladius	0	9	1	1	1	6	6	6	6	1	3	R	40	20	126	3
Micropsectra_Tanytarsus	0	9	0	1	1	6	6	6	6	1	3	A	39	39	162	3
Microtendipes	0	9	0	1	1	6	6	6	6	1	3	A	39	39	162	3
Paratanytarsus	0	9	0	1	1	6	6	6	6	1	3	A	39	39	162	3
Rheotanytarsus	0	9	0	1	1	6	6	6	6	1	3	A	39	39	162	3
Stempellinella	0	9	0	1	1	6	6	6	6	1	3	A	39	39	162	3
Chironomidae	0	9	0	1	1	6	6	6	6	1	3	C	39	46.8	162	3

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Chironomini	0	9	0	1	1	6	6	6	6	1	3	C	39	46.8	162	3
Cladotanytarsus	0	9	0	1	1	6	6	6	6	1	3	C	39	46.8	162	3
Dicrotendipes	0	9	0	1	1	6	6	6	6	1	3	C	39	46.8	162	3
Sublettea	0	9	0	1	1	6	6	6	6	1	3	C	39	46.8	162	3
Tanytarsini	0	9	0	1	1	6	6	6	6	1	3	C	39	46.8	162	3
Euryhapsis	0	9	0	1	1	6	6	6	6	1	3	R	39	19.5	162	3
Glyptotendipes	0	9	0	1	1	6	6	6	6	1	3	R	39	19.5	162	3
Paratendipes	0	9	0	1	1	6	6	6	6	1	3	R	39	19.5	162	3
Deuterophlebia	0	9	1	3	1	6	6	3	6	3	3	R	41	20.5	110	2
Dixa	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Dolichopodidae	0	1	0	0	0	0	6	6	6	1	1	R	21	10.5	230	1
Empididae	0	9	0	3	1	6	6	6	6	1	3	C	41	49.2	110	3
Hemerodromia	0	9	0	3	1	6	6	6	6	1	3	C	41	49.2	110	3
Neoplasta	0	9	0	3	1	6	6	6	6	1	3	C	41	49.2	110	3
Oreogeton	0	9	0	3	1	6	6	6	6	1	3	C	41	49.2	110	3
Roederiodes	0	9	0	3	1	6	6	6	6	1	3	C	41	49.2	110	3

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Chelifera_Metachela	0	9	0	3	1	6	6	6	6	1	3	R	41	20.5	110	3
Wiedemannia	0	9	0	3	1	6	6	6	6	1	3	R	41	20.5	110	3
Clinocera	0	1	0	0	0	0	6	6	6	1	3	C	23	23	221	1
Glutops	0	1	0	0	0	0	6	6	6	1	9	C	29	29	197	1
Maruina	1	9	1	1	1	0	6	6	6	1	3	R	35	17.5	184	2
Pericoma	0	1	0	0	0	0	6	6	6	1	3	C	23	23	221	1
Helodon	9	9	6	1	1	3	6	6	6	3	3	A	53	79.5	6	2
Prosimulium	9	9	6	1	1	3	6	6	6	3	3	A	53	79.5	6	2
Simulium	9	9	6	1	1	3	6	6	6	3	3	A	53	79.5	6	2
Simuliidae	9	9	6	1	1	3	6	6	6	3	3	C	53	63.6	6	2
Tabanidae	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Tabanus	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Thaumalea	0	1	0	0	0	0	6	6	6	1	3	R	23	11.5	221	1
Antocha	0	9	0	3	6	6	3	0	6	1	9	A	43	43	89	2
Dicranota	0	9	0	3	6	6	3	0	6	1	9	C	43	51.6	89	2

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Limonia	0	9	0	3	6	6	3	0	6	1	9	R	43	21.5	89	2
Pedicia	0	9	0	3	6	6	3	0	6	1	9	R	43	21.5	89	2
Hexatoma	0	1	0	0	0	0	3	0	6	1	3	A	14	14	246	1
Cryptolabis	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Hesperoconopa	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Limnophila	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Tipula	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Tipulidae	0	1	0	0	0	0	3	0	6	1	3	C	14	14	246	1
Rhabdomastix	0	1	0	0	0	0	3	0	6	1	3	R	14	7	246	1
Ameletus	3	9	6	3	3	3	3	6	6	1	9	A	52	78	22	2
Acentrella	9	9	6	9	1	1	6	3	6	3	9	A	62	93	1	2
Anafroptilum	9	9	6	9	1	1	6	3	6	3	9	A	62	93	1	2
Baetidae	9	9	6	9	1	1	6	3	6	3	9	A	62	93	1	2
Baetis	9	9	6	9	1	1	6	3	6	3	9	A	62	93	1	2
Diphetor	9	9	6	9	1	1	6	3	6	3	9	A	62	93	1	2
Iswaeon	9	1	0	0	0	0	6	6	6	3	9	C	40	48	126	1

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Labiobaetis	9	1	0	0	0	0	6	6	6	3	9	R	40	20	126	1
Procloeon	9	1	0	0	0	0	6	6	6	3	9	R	40	20	126	1
Caenis	1	1	0	0	0	0	3	3	6	1	3	R	18	9	234	1
Caudatella	1	9	6	3	3	3	6	6	6	1	9	A	53	79.5	6	2
Drunella	1	9	6	3	3	3	6	6	6	1	9	A	53	79.5	6	2
Ephemerella	1	9	6	3	3	3	6	6	6	1	9	A	53	79.5	6	2
Attenella	1	9	6	3	1	3	6	6	6	1	9	A	51	76.5	23	2
Serratella	1	9	6	3	1	3	6	6	6	1	9	A	51	76.5	23	2
Timpanoga	1	1	0	0	0	0	6	6	6	0	9	C	29	29	197	1
Cinygmula	3	9	6	3	1	3	6	6	6	1	9	A	53	79.5	6	2
Ecdyonurus	3	9	6	3	1	3	6	6	6	1	9	A	53	79.5	6	2
Epeorus	3	9	6	3	1	3	6	6	6	1	9	A	53	79.5	6	2
Heptageniidae	3	9	6	3	1	3	6	6	6	1	9	A	53	79.5	6	2
Rhithrogena	3	9	6	3	1	3	6	6	6	1	9	A	53	79.5	6	2
Cinygma	3	9	6	3	1	3	6	6	6	1	9	C	53	63.6	6	2
Ironodes	3	9	6	3	1	3	6	6	6	1	9	C	53	63.6	6	2

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Tricorythodes	1	1	0	0	0	0	6	6	6	0	9	A	29	29	197	1
Leptophlebiidae	3	9	6	3	1	3	6	6	6	1	9	A	53	79.5	6	2
Paraleptophlebia	3	9	6	3	1	3	6	6	6	1	9	A	53	79.5	6	2
Corixidae	0	1	0	0	0	0	0	0	1	3	3	R	8	4	282	1
Aquarius	0	0	0	0	0	0	0	0	0	0	9	R	9	4.5	279	1
Gerridae	0	0	0	0	0	0	0	0	0	0	9	R	9	4.5	279	1
Rhagovelia	0	0	0	0	0	0	0	0	0	0	9	R	9	4.5	279	1
Petrophila	3	9	1	1	6	3	6	3	1	1	9	A	43	43	89	2
Crambidae	3	9	1	1	6	3	6	3	1	1	9	C	43	51.6	89	2
Lepidoptera	3	9	1	1	6	3	6	3	1	1	9	C	43	51.6	89	2
Sialis	0	9	6	3	6	3	3	0	6	1	3	C	40	48	126	2
Calopterygidae	1	1	0	0	0	0	3	0	0	3	9	R	17	8.5	236	1
Argia	3	1	0	0	0	0	3	6	6	1	9	C	29	29	197	1
Coenagrionidae	3	1	0	0	0	0	3	6	6	1	9	C	29	29	197	1
Corduliidae	3	1	0	0	0	0	3	6	6	1	9	R	29	14.5	197	1
Gomphidae	3	1	0	0	0	0	3	6	6	1	9	C	29	29	197	1

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Ophiogomphus	3	1	0	0	0	0	3	6	6	1	9	C	29	29	197	1
Capniidae	1	0	0	0	0	0	0	6	6	0	9	C	22	22	228	1
Sweltsa	1	9	6	3	3	3	3	6	6	1	9	A	50	75	25	2
Chloroperlidae	1	9	6	3	3	3	3	6	6	1	9	C	50	60	25	2
Paraperla	1	0	0	0	0	0	3	6	6	0	9	C	25	25	215	1
Suwallia	1	0	0	0	0	0	3	6	6	0	9	C	25	25	215	1
Kathroperla	1	0	0	0	0	0	3	6	6	0	9	R	25	12.5	215	1
Leuctridae	1	0	0	0	0	0	3	6	6	0	9	C	25	25	215	1
Paraleuctra	1	0	0	0	0	0	3	6	6	0	9	C	25	25	215	1
Despaxia	1	0	0	0	0	0	3	6	6	0	9	R	25	12.5	215	1
Zapada	1	9	6	3	1	3	3	6	6	1	9	A	48	72	28	2
Malenka	1	9	6	3	1	3	3	6	6	1	9	C	48	57.6	28	2
Nemouridae	1	9	6	3	1	3	3	6	6	1	9	C	48	57.6	28	2
Visoka	1	9	6	3	1	3	3	6	6	1	9	C	48	57.6	28	2
Yoraperla	1	9	6	3	1	3	3	6	6	1	9	C	48	57.6	28	2
Calineuria	3	9	6	3	6	1	3	6	1	1	3	A	42	42	102	2

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Hesperoperla	3	9	6	3	6	1	3	6	1	1	3	A	42	42	102	2
Perlidae	3	9	6	3	6	1	3	6	1	1	3	A	42	42	102	2
Claassenia	3	9	6	3	6	1	3	6	1	1	3	C	42	50.4	102	2
Doroneuria	3	9	6	3	6	1	3	6	1	1	3	C	42	50.4	102	2
Perlinodes	1	9	6	3	3	3	3	6	1	1	9	A	45	67.5	60	2
Perlodidae	1	9	6	3	3	3	3	6	1	1	9	A	45	67.5	60	2
Skwala	1	9	6	3	3	3	3	6	1	1	9	A	45	67.5	60	2
Isoperla	1	9	6	3	3	3	3	6	1	1	9	C	45	54	60	2
Megarcys	1	9	6	3	3	3	3	6	1	1	9	C	45	54	60	2
Cultus	1	9	6	3	3	3	3	6	1	1	9	R	45	22.5	60	2
Diura	1	9	6	3	3	3	3	6	1	1	9	R	45	22.5	60	2
Kogotus_Rickera	1	9	6	3	3	3	3	6	1	1	9	R	45	22.5	60	2
Pteronarcella	1	9	6	3	6	3	3	3	1	1	3	C	39	46.8	162	2
Pteronarcys	1	9	6	3	6	3	3	3	1	1	3	C	39	46.8	162	2
Taenionema	3	0	0	0	0	0	3	0	6	0	9	R	21	10.5	230	1
Taeniopterygidae	3	0	0	0	0	0	3	0	6	0	9	R	21	10.5	230	1

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Taeniopteryx	3	0	0	0	0	0	3	0	6	0	9	R	21	10.5	230	1
Apatania	0	9	6	3	6	0	6	6	1	1	9	C	47	56.4	33	2
Amiocentrus	0	9	1	1	3	6	6	6	1	3	9	A	45	67.5	60	2
Brachycentrus	0	9	1	1	3	6	6	6	1	3	9	A	45	67.5	60	2
Micrasema	0	9	1	1	3	6	6	6	1	3	9	A	45	67.5	60	2
Brachycentridae	0	9	1	1	3	6	6	6	1	3	9	C	45	54	60	2
Agapetus	0	9	1	1	3	6	6	6	1	3	9	C	45	54	60	2
Anagapetus	0	9	1	1	3	6	6	6	1	3	9	C	45	54	60	2
Glossosoma	0	9	6	3	1	0	6	3	1	3	9	A	41	41	110	2
Glossosomatidae	0	9	6	3	1	0	6	3	1	3	9	C	41	49.2	110	2
Protoptila	0	9	6	3	1	0	6	3	1	3	9	C	41	49.2	110	2
Goera	0	9	6	3	3	0	6	3	1	1	9	R	41	20.5	110	2
Helicopsyche	0	9	6	3	3	0	6	3	1	1	9	A	41	41	110	2
Arctopsyche	3	9	1	1	6	3	6	3	1	1	9	A	43	43	89	2
Cheumatopsyche	3	9	1	1	6	3	6	3	1	1	9	A	43	43	89	2
Hydropsyche	3	9	1	1	6	3	6	3	1	1	9	A	43	43	89	2

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Hydropsychidae	3	9	1	1	6	3	6	3	1	1	9	C	43	51.6	89	2
Parapsyche	3	9	1	1	6	3	6	3	1	1	9	C	43	51.6	89	2
Ochrotrichia	0	9	1	0	1	0	6	3	1	3	3	A	27	27	207	2
Hydroptila	0	9	1	0	1	0	6	3	1	3	3	C	27	27	207	2
Hydroptilidae	0	9	1	0	1	0	6	3	1	3	3	C	27	27	207	2
Leucotrichia	0	9	1	0	1	0	6	3	1	3	3	C	27	27	207	2
Neotrichia	0	9	1	0	1	0	6	3	1	3	3	C	27	27	207	2
Stactobiella	0	9	1	0	1	0	6	3	1	3	3	C	27	27	207	2
Agraylea	0	9	1	0	1	0	6	3	1	3	3	R	27	13.5	207	2
Lepidostoma	0	9	6	3	3	0	6	3	1	1	9	A	41	41	110	2
Oecetis	0	9	6	3	6	0	6	6	1	1	9	C	47	56.4	33	2
Ceraclea	0	9	6	3	6	0	6	6	1	1	9	R	47	23.5	33	2
Dicosmoecus	0	9	6	3	6	0	6	3	1	1	3	C	38	45.6	179	2
Limnephilidae	0	9	6	3	6	0	6	3	1	1	3	C	38	45.6	179	2
Ecclisomyia	0	9	6	3	6	0	6	3	1	1	3	R	38	19	179	2
Limnephilus	0	9	6	3	6	0	6	3	1	1	3	R	38	19	179	2

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Hesperophylax	0	9	6	3	6	0	6	0	1	1	3	C	35	42	184	2
Psychoglypha	0	9	6	3	6	0	6	0	1	1	3	C	35	42	184	2
Onocosmoecus	0	1	0	0	0	0	6	0	1	1	9	C	18	18	234	1
Cryptochia	0	1	0	0	0	0	6	3	1	1	3	C	15	15	245	1
Dolophilodes	3	9	1	1	3	3	6	3	1	1	9	C	40	48	126	2
Wormaldia	3	9	1	1	3	3	6	3	1	1	9	C	40	48	126	2
Philopotamidae	3	9	1	1	3	3	6	3	1	1	9	R	40	20	126	2
Polycentropus	3	9	1	1	6	3	6	3	1	1	3	C	37	44.4	183	2
Psychomyia	3	9	1	1	3	3	6	3	1	1	9	C	40	48	126	2
Rhyacophila	0	9	6	3	3	3	6	3	1	1	9	A	44	66	88	2
Neophylax	0	9	6	3	3	0	6	3	1	1	9	C	41	49.2	110	2
Neothremma	0	9	6	3	3	0	6	3	1	1	9	C	41	49.2	110	2
Hydra	0	0	0	0	0	0	0	0	0	0	1	R	1	0.5	293	1
Sphaeriidae	0	1	0	0	0	0	0	0	0	0	3	R	4	2	287	1
Sphaerium	0	1	0	0	0	0	0	0	0	0	3	R	4	2	287	1
Margaritifera	0	1	0	0	0	0	0	0	0	0	3	R	4	2	287	1

Taxon	Active Drift	Habitat	Flow Exposure	Mobility	Drag Index	Drift Distance	Emergence Behavior	Oviposit Behavior	Diel Activity	Benthic Exposure	Size Scores	Abundance	Total	Tot Adj	Rank	Group
Unionidae	0	1	0	0	0	0	0	0	0	0	3	R	4	2	287	1
Ancylidae	0	1	0	0	0	0	0	0	0	1	6	C	8	8	282	1
Ferrissia	0	1	0	0	0	0	0	0	0	1	6	C	8	8	282	1
Lymnaeidae	0	1	0	0	0	0	0	0	0	1	9	C	11	11	257	1
Stagnicola	0	1	0	0	0	0	0	0	0	1	9	C	11	11	257	1
Physa	0	1	0	0	0	0	0	0	0	1	9	C	11	11	257	1
Helisoma	0	1	0	0	0	0	0	0	0	1	9	R	11	5.5	257	1
Gyraulus	0	1	0	0	0	0	0	0	0	1	3	C	5	5	285	1
Planorbidae	0	1	0	0	0	0	0	0	0	1	3	C	5	5	285	1
Valvata	0	1	0	0	0	0	0	0	0	1	9	C	11	11	257	1
Nemata	0	1	0	0	0	0	0	0	0	0	3	C	4	4	287	1
Prostoma	0	9	6	9	6	1	0	0	0	3	9	C	43	51.6	89	2
Polycelis	0	9	6	3	1	6	0	0	0	1	3	C	29	29	197	2
Turbellaria	0	1	0	0	0	0	0	0	0	3	9	C	13	13	256	1