BIOLOGICAL CONDITION GRADIENT FOR TIERED AQUATIC LIFE USE IN NEW JERSEY

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EXECUTIVE SUMMARY

The objective of the Clean Water Act is to "restore and maintain physical, chemical and biological integrity of the Nation's waters." To meet this goal, we need a uniform interpretation of biological condition and operational definitions that are independent of different assessment methodologies. These definitions must be specific, well-defined, and allow for waters of different natural quality and different desired uses. The USEPA has outlined a tiered system of aquatic life use designation, along a gradient (the Biological Condition Gradient, or BCG) that describes how ecological attributes change in response to increasing levels of human disturbance. The Biological Condition Gradient is a conceptual model that describes changes in aquatic communities. It is consistent with ecological theory and has been verified by aquatic biologists throughout the US.

Specifically, the BCG describes how ten biological attributes of natural aquatic systems change in response to increasing pollution and disturbance. The ten attributes are in principle measurable, although several are not commonly measured in monitoring programs. The attributes are:

1. Historically documented, sensitive, long-lived or regionally endemic taxa
2. Sensitive and rare taxa
3. Sensitive but ubiquitous taxa
4. Taxa of intermediate tolerance
5. Tolerant taxa
6. Non-native taxa
7. Organism condition
8. Ecosystem functions
9. Spatial and temporal extent of detrimental effects
10. Ecosystem connectance

The gradient represented by the BCG has been divided into 6 tiers or levels of condition that biologists thought could be readily discerned in most areas of North America:

1. Natural or native condition
2. Minimal changes in structure of the biotic community and minimal changes in ecosystem function
3. Evident changes in structure of the biotic community and minimal changes in ecosystem function
4. Moderate changes in structure of the biotic community with minimal changes in ecosystem function
5. Major changes in structure of the biotic community and moderate changes in ecosystem function
6. Severe changes in structure of the biotic community and major loss of ecosystem function

This report summarizes the findings of a panel of aquatic biologists in New Jersey who applied and calibrated the general BCG model to New Jersey streams. Data from New Jersey's AMNET monitoring program were examined to determine if the data were

adequate to apply to the BCG. The panel was able to assign taxa in the AMNET database to the first five attributes listed above, and the panel assigned a set of test sites to Tiers 2 to 6 based on the AMNET sample data.

In reviewing the attributes listed above, the panel concluded that the second attribute, sensitive and rare taxa given by EPA's existing case example (Davies 2003) did not meet a definition of "rare" in New Jersey, and the definitions were changed accordingly. The panel redefined attributes 2 and 3 to read as:

2 Highly sensitive taxa
3 Sensitive and common taxa

The BCG was calibrated for both New Jersey's high and low gradient streams, and the panel assigned 39 high gradient samples and 15 low gradient samples to tiers in the BCG. The panel members could not identify Tier 1 (pristine, natural condition) sites in either the high or low gradient streams. For the low gradient BCG, the panel concluded that Tiers 3 and 4 could not be distinguished and were considered the same tier. Because of time restrictions, the group agreed that the low gradient BCG description should be considered preliminary and subject to further development and revision.

The panel also reached consensus on a set of operational rules for assigning sites to tiers. These rules are intended to allow consistent decision-making and can be used in computerized decision models. The rules capture the consensus professional judgment of the panel. The rules will be tested and revised in the future.

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1.0 INTRODUCTION

The U.S. EPA has supported efforts to develop uniform assessments of aquatic resource condition and to set more uniform aquatic life protection and restoration goals (Davies and Jackson, submitted). These efforts have led to a conceptual model that describes ecological changes, from pristine to completely degraded, that take place in flowing waters with increased anthropogenic degradation (Davies and Jackson, submitted). This model, called the Biological Condition Gradient (BCG), promotes more consistent application of the Clean Water Act by identifying tiers or condition classes that can be operationally defined in a consistent manner (Figure 1-1).

Tiered aquatic life uses (TALU) and the biological condition gradient (BCG) require us to look at ecological information more critically in making assessments. Biological condition tiers are narrative statements on presence, absence, abundance, and relative abundance of several groups of taxa, as well as statements on system connectivity and ecosystem attributes (production, material cycling). The statements are consensus best professional judgments based on years of experience of many biologists in a region, and reflect accumulated biological knowledge.

A central aspect of developing tiered aquatic life uses is to describe the biological condition gradient from unimpaired, relatively pristine waterbodies to severely impaired. The BCG has been described in a general sense for North America, but requires specific local expertise to apply it to conditions within a state. This report describes the application of the BCG to streams of New Jersey, and the development of operationally defined tiers for setting restoration goals and aquatic life protection criteria.

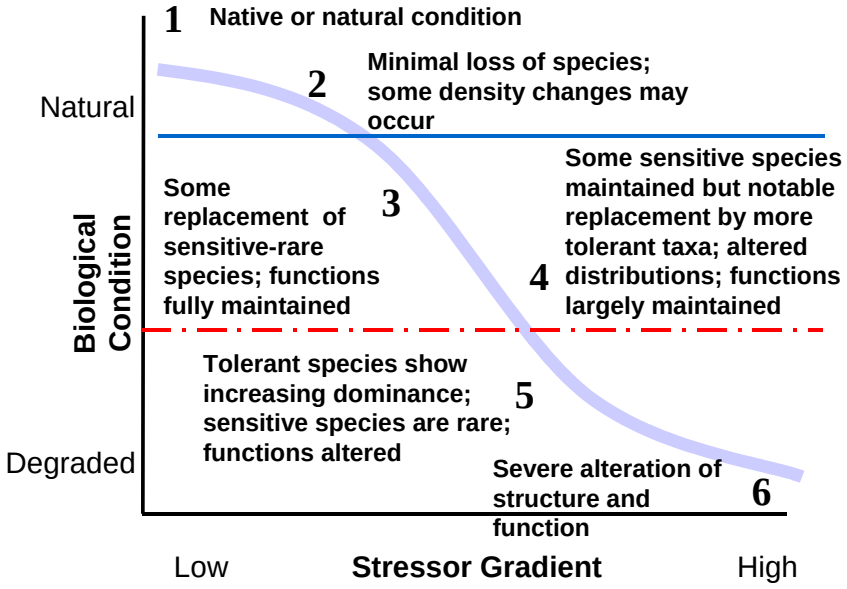

Figure 1-1. Schematic of biological condition gradient, showing six defined tiers.

1.1 The Biological Condition Gradient

Aquatic biologists have long recognized that stream communities change in response to pollution, and have developed indexes to reflect and standardize these changes. Communities are altered on a relatively predictable gradient from pristine to slightly impaired to severely impaired. Indexes that reflect the gradient have included the Saprobien index (Cairns and Pratt, 1993), the index of biotic integrity (IBI; Karr et al., 1986), similarly constructed indexes for macroinvertebrates (Barbour et al. 1999), simple diversity and richness indexes that follow the general loss of native taxa with impairment (e.g., Cairns et al., 1993), and more complex RIVPACS-type indexes that compare observed taxa to model-predicted expected taxa (Clarke et al., 1996).

1.1.1 Biological Attributes

The BCG systematizes the cumulative knowledge of how aquatic communities change with anthropogenic disturbance by first identifying critical attributes of the community, and then by describing how each attribute changes in response to human disturbance.

Through a series of of national workshops, sponsored by U.S. EPA, a technical workgroup of State, Tribal, academic, and federal biologists described the BCG using the following 12 attributes (Davies, 2003; USEPA 2005; Davies and Jackson, submitted):

I. Historically documented, sensitive, long-lived or regionally endemic taxa: refers to taxa known to have been supported in a waterbody or region prior to enactment of the Clean Water Act, according to historical records compiled by state or federal agencies or published scientific literature. Sensitive or regionally endemic taxa have restricted, geographically isolated distribution patterns (occurring only in a locale as opposed to a region), often due to unique life history requirements. They may be long-lived, late maturing, low fecundity, limited mobility, or require a mutualist relation with other species. May be among listed endangered/threatened or special concern species. Predictability of occurrence is often low, therefore, requiring documented observation. Recorded occurrence may be highly dependent on sample methods, site selection and level of effort.

II. Sensitive – Rare Taxa: taxa that naturally occur in low numbers relative to total population density but may make up large relative proportion of richness. They may be ubiquitous in occurrence or may be restricted to certain micro-habitats, but because of low density, recorded occurrence is dependent on sample effort. Often stenothermic (having a narrow range of thermal tolerance) or cold-water obligates; they are commonly k-strategists (populations maintained at a fairly constant level; slower development; longer life-span). They may have specialized food resource needs or feeding strategies and are generally intolerant to significant alteration of the physical or chemical environment; is often the first taxa observed to be lost from a community.

III. Sensitive – Ubiquitous Taxa: taxa that are ordinarily common and abundant in natural communities when conventional sample methods are used. They often have a broader range of thermal tolerance than Sensititve- Rare taxa. These are taxa that comprise a substantial portion of natural communities, and that often exhibit negative response (loss of population, richness) at mild pollution loads or habitat alteration.

IV. Taxa of Intermediate Tolerance: taxa that comprise a substantial portion of natural communities; may be r-strategists (early colonizers with rapid turn-over times; "boom/bust population characteristics). They may be eurythermal (having a broad thermal tolerance range). May have generalist or facultative feeding strategies enabling utilization of relatively more diversified food types. Readily collected with conventional sample methods. May increase in number in waters with moderately increased organic resources and reduced competition but are intolerant of excessive pollution loads or habitat alteration.

V. Tolerant Taxa: Taxa that comprise a low proportion of natural communities. These taxa often are tolerant of a broader range of environmental conditions and are thus resistant to a variety of pollution or habitat induced stress. They may increase in number (sometimes greatly) in the absence of competition. Commonly r-strategists (early colonizers with rapid turn-over times; "boom/bust" population characteristics), able to capitalize when stress conditions occur. These are the last survivors in severely disturbed systems.

VI. Non-native or intentionally introduced species: with respect to a particular ecosystem, any species that is not found in that ecosystem. Species introduced or spread from one region of the U.S. to another outside their normal range are non-native or non-indigenous, as are species introduced from other continents.

VII. Organism condition (especially of long-lived organisms): general indicators of organism health, such as deformities, anomalies, lesions, tumors, or excess parasitism are all external indicators of condition.

VIII. Ecosystem Function: function includes trophic levels, production, respiration, total biomass and biomass in functional levels, P/R ratios, etc.

IX. Spatial and temporal extent of detrimental effects: the spatial extent of damage or degradation from a particular source.

X. Ecosystem connectance: natural connections and relation among ecosystem units, such as extent fragmentation, connections of riparian areas with the stream and floodplain, etc.

1.1.2 Tiers of the Condition Gradient

At the national workshops, biologists agreed that in most stream ecosystems it was possible to discriminate 6 tiers in the condition gradient, ranging from undisturbed natural condition to severely degraded and almost devoid of natural life (Davies 2003). The tiers are described in terms of changes in the structure and function of native aquatic communities:

1. Natural or native condition: Native structural, functional and taxonomic integrity is preserved; ecosystem function is preserved within the range of natural variability.

2. Minimal changes in structure of the biotic community and minimal changes in ecosystem function: Virtually all native taxa are maintained with some changes in biomass and/or abundance; ecosystem functions are fully maintained within the range of natural variability.

3. Evident changes in structure of the biotic community and minimal changes in ecosystem function: Evident changes in structure due to loss of some rare native taxa; shifts in relative abundance of taxa but sensitive-ubiquitous taxa are common and abundant; ecosystem functions are fully maintained through redundant attributes of the system.

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4. Moderate changes in structure of the biotic community with minimal changes in ecosystem function: Moderate changes in structure due to replacement of some sensitive-ubiquitous taxa by more tolerant taxa, but reproducing populations of some sensitive taxa are maintained; overall balanced distribution of all expected major groups; ecosystem functions largely maintained through redundant attributes.

5. Major changes in structure of the biotic community and moderate changes in ecosystem function: Sensitive taxa are markedly diminished; conspicuously unbalanced distribution of major groups from that expected; organism condition shows signs of physiological stress; ecosystem function shows reduced complexity and redundancy; increased build-up or export of unused materials.

6. Severe changes in structure of the biotic community and major loss of ecosystem function: Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered.

1.2 Development of Attributes and Gradient for New Jersey

The approach used was to convene three workshops of aquatic biologists familiar with New Jersey streams to develop both the ecological attributes and rules for assigning sites to tiers in the gradient. Biologists were from NJDEP, USGS, USEPA, Delaware River Basin Commission, and Delaware & Raritan Greenway (DRG). Their expertise included aquatic ecology, benthic macroinvertebrate sampling and monitoring, water quality, threatened and endangered species, and fisheries biology. Although the BCG is intended to be developed and applied for as many taxonomic groups as possible (e.g., benthic macroinvertebrates, periphyton, fish, herpetofauna, vascular plants, etc.), this draft development of the gradient includes systematic application of benthic macroinvertebrates only, collected by the methods used in New Jersey's ambient monitoring program. We also include limited information on rare dragonflies. Integration of fish and other taxonomic groups into the descriptions of the BCG must await future iterations of the process.

After reviewing EPA's conceptual model of the biological condition gradient, and a case study developed by Maine DEP (Davies 2003), the group reviewed the list of taxa identified in the New Jersey ambient monitoring program (AMNET) to assign taxa to attribute groups I – VI. Appendix A includes the taxa list and assigned attribute groups. The group then considered data from selected monitoring sites, and assigned the sites to

tiers in the BCG based on the taxa present at the site. Owing to apparent ambiguities and contradictions from the first iteration, the workgroup reiterated the process and reconsidered the taxa assignments, using the draft definitions from Maine and then reconsidered the assessments, to reach consensus on a consistent procedure.

At the second and third workshops, the group resolved some ambiguous site assignments remaining from the first workshop, and identified semi-quantitative rules to operationalize the process of assigning sites to tiers (Appendix C). The workgroup then used the operational rules to assign new sites to the tiers.

2. METHODS

2.1 Developing and Calibrating a Biological Condition Gradient for New Jersey

A biological condition gradient requires strong scientific knowledge on the response of aquatic biological assemblages to stressors, as well as the biota inhabiting a region. In addition to the scientific knowledge base it also requires a legal foundation that permits the determination of scientifically defensible management goals (policies, designated uses, standards, criteria) in keeping with the goals of the Clean Water Act. Finally, developing a quantitative methodology for assessing waterbodies in relation to the BCG requires a scientifically sound biological monitoring program.

The calibration process includes:

- Development of the regional conceptual model of the BCG
- Assessment and modification (if necessary) of the state's biological monitoring program to support quantitative calibration of a regional BCG
- Calibration of a regional quantitative BCG model for operational assessment.

The development process is iterative, and may require several passes through the process to converge on a coherent, locally calibrated BCG that is scientifically defensible.

2.1.1 Develop a Conceptual Model of a Regional BCG

The first technical component of calibrating a regional BCG is to adjust the generalized conceptual model (Davies and Jackson submitted; U.S. EPA 2005; described in Chapter 1) to regional conditions. This includes three components that, together, construct a coherent ecological description of response to stressors in keeping with ecological theory and empirical observation:

- Describe the native aquatic assemblages under natural, undisturbed conditions. Developing the BCG requires careful descriptions of the natural aquatic assemblages that will be used to assess condition of waterbodies. The description of natural conditions requires biological knowledge of the region, a natural classification of the assemblages, and, if available, historical descriptions of the habitats and assemblages.
- Identify regional stressors. A description of regionally dominant stressors will help define expectations for biological responses that are likely to occur. This step considers sources of physical and chemical stressors and causes of land use disturbance.
- Describe the Biological Condition Gradient. The conceptual model of the BCG may require some example data from sites to empirically ground-truth conclusions, but it is not intended to be a quantitative calibration of the conceptual model to existing data.

2.2 Assessment of Monitoring Program

Consistent, high quality biological monitoring information is key to developing a quantitative assessment system within a BCG framework. Only relatively mature biological monitoring programs will have all of the elements listed below.

- Biological Assemblages. Development of a quantitative BCG framework requires a knowledge base that includes one or more biological assemblages (e.g., benthic macroinvertebrates, fish, periphyton, phytoplankton). New Jersey DEP's AMNET Program samples benthic macroinvertebrates throughout the state, and the fish community, mussels, and odonata at a subset of selected AMNET sites.

- Consistent Methodology. Consistent and demonstrated methodology is critical for scientifically defensible assessment and criteria development, whether using the BCG framework or not. Methodological consistency includes sampling methods that obtain representative samples of relevant biota in the assessment unit; choice and use of sampling equipment, index period, definition of sampling site (e.g., stream reach), and allocation of sampling and subsampling effort to obtain representative estimates of composition and structure. NJ DEP collects data from its AMNET sites with two methods dependent on the gradient of the stream. High gradient samples are collected with a Surber sampler from riffles. In low gradient systems NJ DEP uses a kick net and samples multiple habitats. Samples are collected during the Spring, are subsampled to 100 organisms, and are identified to genus or species.

- Geographic Coverage. The monitoring program should have sufficient coverage to provide quantitative support and description of the qualitative description of natural biological communities. This would include major geographic regions, waterbody types, and an environmental gradient of anthropogenic stress.

  From the AMNET dataset, there were 1,257 total samples from 762 site locations that met the criteria for this exercise. The sites had to be:

  – identified as uplands (high gradient) or coastal plain (low gradient);
  – identified as not in the Pinelands area; and
  – identified as above head of tide (non-tidal).

- Data base. Data received from New Jersey's Ambient Biological Monitoring Network (AMNET) were transferred from Excel spreadsheets into a more flexible and easily queried database structure (EDAS). This allowed us to create a master taxa list and helped to provide quality control of the station and taxa lists. The data were thoroughly checked for errors, such as unmatched or conflicting data, older taxonomic names or synonyms, and unlikely outliers. Information in addition to benthic macroinvertebrate data included land use / land cover estimates, physical habitat assessments, and water chemistry.

New Jersey's AMNET monitoring program and its sizable database were deemed sufficient by the panel to both qualitatively and quantitatively calibrate the national BCG model to New Jersey.

2.3 Calibration

2.3.1 Data Consistency

Although the AMNET protocol calls for subsampling of all sample collections to a constant target number of organisms (100), there were several sites in the dataset that had been sampled using NJ DEP's ecoregional protocol, which requires a complete count of all organisms. In several of these, the total count was over 1,000 organisms.

Total taxa richness and taxa counts within orders or attribute groups are associated with sampling effort and the total count (e.g., Hurlbert 1971). Following the first New Jersey workshop, it became apparent that elevated taxa richness due to a high organism count could bias the assessments, resulting in a higher tier assignment. Accordingly, we standardized the total count by randomly subsampling all sites with counts greater than 120.

In subsampling, all organisms in the original sample were equally likely to be reselected. Each organism count was assigned a random number. If the number was less than (100/total count), the "organism" was selected, i.e., a "hit" was recorded for the particular taxon. The resulting subsample was rarely exactly 100, but ranged from 82 to 114 among samples that were re-subsampled.

2.3.2 Preliminary Disturbance Gradient

A preliminary disturbance gradient was identified to ensure that a variety of representative sites were selected for this exercise. The gradient was intended only to help select a workable subset of representative sites from the 762 AMNET sites, it was not intended to serve as "objective truth" for model calibration. Land use – land cover data were used to set up the gradient (LULC) (New Jersey data 1995/7), with focus on the percent imperviousness and landscape development intensity, habitat assessment scores, and water chemistry. Water chemistry was dropped due to quality control issues.

The LULC and habitat parameters were scored from low impact (1) to high impact (4) and then added together to obtain a final score. The distribution was divided into 5 approximately equal parts. This resulted in approximately 19% of the sites in each bin as about 6% of the sites did not have values to calculate either component score (Table 2-1).

2.3.3 Taxa List and Site Gradient

The first task in the workshop was to assign New Jersey taxa to the first 6 attribute groups (See Section 1.1.1). Participants discussed each taxon on the New Jersey list (1,209 entries), and developed a consensus assignment (Appendix A). A small number of

taxa were left unassigned because participants felt there was insufficient information on the taxa, or they were too rare in New Jersey. Throughout, participants referred to the example developed for Maine (Davies 2003). Dragonflies (Odonata) were assigned to attribute groups by Allen Barlow of the Conserve Wildlife Foundation of New Jersey, separate from the workshop.

Table 2-1. Distribution of AMNET sites across the human disturbance gradient.

Gradient Bin	***Percent of total sites***
0 (no component scores)	5.5
1 (low impact)	17.6
2	18.6
3	20.0
4	19.5
5 (high impact)	18.7

Following the taxa assignments to the attribute groups, participants examined data from selected sites throughout New Jersey. Sites were selected on the preliminary disturbance gradient based on intensity of land use in the watershed. Watersheds were not actual catchments for sampling sites, but accounting units delineated by NJDEP for defined stream segments. Most delineated watersheds were somewhat larger than the strict catchment for a sampling site.

Prior to the workshop, 2 sets of 20 sites were selected for each of the high gradient (above fall line) and low gradient (primarily below the fall line) site classes, such that each set of 20 spanned the range of the disturbance gradient as defined by land use (total of 80 sites). Taxa, abundances, and attribute groups were displayed on-screen for each site, and a pivot table was used to display the sum of each attribute group. This allowed participants to view the totals for each attribute, and was especially useful when the group changed some of the attribute assignments. Participants made three adjustments to the process:

- New Jersey streams should be classified according to gradient (high and low), and not according to physiographic region or ecoregion (upland and Coastal Plain). Participants observed, and agreed, that low gradient streams have a characteristic fauna, and can occur anywhere in the state, not just in the Coastal Plain.
- Participants felt that it was necessary to begin the process with identified reference sites or least disturbed sites to establish a baseline for comparison.
- After examining an initial set of sites, the group revisited the attribute definitions for Attribute Groups II and III, which were ambiguous. Maine's actual assignment of taxa to the groups was used as guidance (Davies 2003). See Results below for changes to the definitions.

2.3.4 Development of Quantitative Rules

Tier descriptions in the conceptual model tend to be rather general (e.g., "reduced richness"). To allow for consistent assignments of sites to tiers, it is necessary to operationalize, or codify, the general tier descriptions into a set of rules that anyone can follow and obtain the same tier assignments as the group of experts.

Operational rules codify the tier descriptions ("as naturally occur", "reduced", "greatly reduced", etc.) to quantitative or semi-quantitative rules for each attribute ("Attribute 2 taxa > 50% of any other attribute, ± 10%"). These rules preserve the collective professional judgment of the expert group and set the stage for the development of models that reliably assign sites to tiers without having to reconvene the same group. In essence, the rules and the models capture the group's collective decision criteria (Appendix D).

Rule development took place during the second and third workshops to describe the detailed BCG and assign sites to tiers. It required discussion and documentation of tier assignment decisions and the reasoning behind the decisions. During this discussion, facilitators recorded:

- each participant's tier decision ("vote") for the site;
- the critical or most important information for the decision – for example, the number of taxa of a certain attribute, the abundance of an attribute, the presence of indicator taxa, etc.; and
- any confounding or conflicting information and how this was resolved for the eventual decision.

Rule development was iterative. Following the initial development phase, the draft rules were tested by the panel to ensure that new data and new sites are assessed in the same way. This occurred during the third workshop, during which a set of new test sites were assessed. The test sites had not been used in the initial rule development and also spanned the range of anthropogenic stress. Any remaining ambiguities and inconsistencies from the first iterations were also resolved. Rules can be used directly for assessments, for calibrating one of the previous assessment methods (IBI, discriminant model), or as the basis of an expert system.

3. RESULTS

3.1 Attributes

As a result of ambiguities and discrepancies in rating the first set of sites, the group revisited attribute definitions and taxon assignments to Attribute Groups II and III. Accordingly, the definitions of Attributes II and III were changed as follows:

II. Highly Sensitive Taxa (formerly Sensitive-Rare Taxa) – Taxa that naturally occur in low to moderate numbers relative to total assemblage but may make up large relative proportion of richness. May be ubiquitous in occurrence or may be restricted to certain micro-habitats. Often stenotopic (having a narrow range of environmental tolerances) or cold-water obligates; commonly k-strategists (populations maintained at a fairly constant level; slower development; longer life-span). May have specialized food resource needs or feeding strategies. Generally intolerant to significant alteration of the physical or chemical environment; are often the first taxa observed to be lost from a community.

III. Sensitive and Common Taxa (formerly Sensitive-Ubiquitous Taxa) – Ordinarily common and abundant in natural communities when conventional sample methods are used. Often having a slightly broader range of tolerance than Highly Sensitive Taxa. These are taxa that comprise a substantial portion of natural communities, and that often exhibit negative response (loss of population, richness) at mild pollution loads or habitat alteration.

The entire taxa list of 1209 taxa from 1727 samples from 762 AMNET stations was included. Sites identified as tidal (below head of tide) or in the Pinelands were excluded from the list. Breakdown of taxa by attribute group is shown in Table 3-1. The New Jersey taxa list and final attribute assignments are given in Appendix A.

Table 3-1. Breakdown of taxa in macroinvertebrate taxa list by attribute group.

Ecological Attribute	Number of taxa
1	2
2	132
3	146
4	266
5	319
6	2
x	342

*Rare and endemic taxa are poorly represented in the database. Endemic taxa will be added from sites developed by NJ Natural Heritage.

In addition, the group incorporated a list of New Jersey Odonata taxa provided by the NJDEP Endangered and Nongame Species Program (ENSP). Several of the species will be listed as Endangered, Threatened, or Special Concern in the near future according to the ENSP. Odonate taxa are listed in Appendix B.

3.2 Tier Descriptions

The panel of aquatic biologists in New Jersey described tiers of the BCG for benthic macroinvertebrate assemblages of both high and low gradient streams of the state. The panel determined that 5 tiers are applicable to New Jersey high gradient streams, and that 4 tiers describe the state's low gradient streams. For both high and low gradient streams, the panel thought that Tier 1 sites may not exist.

Table 3-2 shows the attribute matrix for high gradient streams. Attributes VII to X are not measured for the invertebrate assemblage at this time, and are not included in the matrix. The group was able to distinguish 5 separate tiers (Tiers 2-6) for high-gradient streams of New Jersey. The first tier described in the Maine model (Davies and Jackson submitted) was not initially useful because it was not clear to the group whether Tier 1 (pristine) sites occur in New Jersey based upon benthic macroinvertebrate data alone. Other data sets (i.e. finfish communities and/or rare and endangered species) may be more useful in determining whether a site is in Tier 1. The group also determined that several indicator taxa are useful in discriminating tiers, in particular the tolerant hydropsychid caddisflies as indicators of moderate organic enrichment for Tiers 3 and 4; abundance of tubificid worms as an indicator of extreme enrichment and hypoxia for Tier 6; and complete absence of mayflies as an indicator of toxicity, also for Tier 6.

Table 3-3 describes the attributes for low gradient streams. In contrast to high gradient streams, the workgroup could distinguish only 4 separate tiers (Tier 2, 3-4 combined, Tier 5, and Tier 6). This was because many taxa considered tolerant occur in moderate numbers in the best known sites of the Coastal Plain. For example, the Hydropsychidae are prominent and abundant in least disturbed, low-gradient Coastal Plain streams. The abundance of several tolerant taxa in low gradient streams is a consequence of low water velocity and absence of cobble habitat (e.g., Wallace et al., 1977), and not a consequence of poor water quality. Because of the relatively high abundances of intermediate-tolerant and tolerant taxa in unimpaired sites, the workgroup concluded that it was not feasible to distinguish Tier 3 from Tier 4, and combined them into a single tier.

In general, the panel was able to achieve consensus on the tier assignments for the sites reviewed. In some cases there was discussion and some disagreement on which of two adjacent tiers a site should be assigned to. These sites were apparently intermediate, with characteristics of both of the adjacent tiers. Since ecological response to stressors is relatively continuous, intermediate sites are to be expected.

Table 3-2. NJ high gradient streams – summary attribute matrix

Biological Condition Gradient Tiers for New Jersey High Gradient Streams						
Ecological Attributes	**1 Natural Condition**	**2 Minimal Loss**	**3 Some Replacement; Function Maintained**	**4 Notable Replacement Function Largely Maintained**	**5 Tolerants Dominant, Loss of Function**	**6 Severe Alter Structure and Function**
I *Historically documented, sensitive, long-lived or regionally endemic taxa*	As predicted for natural occurrence except for global extinctions	As predicted for natural occurrence except for global extinctions	Some may be absent due to global extinction or local extirpation	Some may be absent due to global, regional or local extirpation	Usually absent	Absent
II *Highly sensitive taxa*	As predicted for natural occurrence, with at most minor changes from natural densities	Virtually all are maintained and well represented (both taxa and abundance)	May be markedly diminished (in either taxa or abundance), with replacement by functionally equivalent *Sensitive and common* taxa	Significantly diminished (taxa and abundance)	Usually absent	Absent
III *Sensitive & common taxa*	As predicted for natural occurrence, with at most minor changes from natural densities	Present and may be increasingly abundant.	Common and abundant; relative abundance greater than *Highly Sensitive* taxa. Similar to good taxa (sensitive & common taxa).	Present with reproducing populations maintained; some replacement by functionally equivalent *taxa of intermediate tolerance*.	Frequently absent or significantly diminished (if present incidental)	Absent

Table 3-2. NJ high gradient streams – summary attribute matrix (cont'd)

Biological Condition Gradient Tiers for New Jersey High Gradient Streams						
Ecological Attributes	**1 Natural Condition**	**2 Minimal Loss**	**3 Some Replacement; Function Maintained**	**4 Notable Replacement Function Largely Maintained**	**5 Tolerants Dominant, Loss of Function**	**6 Severe Alter Structure and Function**
IV *Taxa of intermediate tolerance*	As predicted for natural occurrence, with at most minor changes from natural densities	As naturally present at low abundances	Often evident increases in abundance	Common and often abundant; relative abundance greater than *Sensitive and common* taxa	Often exhibit excessive dominance	Richness of all taxa is low
V *Tolerant taxa*	As naturally occur, with at most minor changes from natural densities. If present, at very low abundance.	As naturally present at low abundances. May have several taxa at low abundances.	May be increases in abundance of functionally diverse tolerant taxa	May be common but do not exhibit significant dominance	Often occur in high densities and may be dominant	Usually comprise the majority of the assemblage; often either very low or very high densities.
VI *Non-native or intentionally introduced taxa*	Non-native taxa, if present, do not displace native taxa or alter native structural or functional integrity	Non-native taxa may be present, but occurrence has a non-detrimental effect on native taxa	Sensitive or intentionally introduced non-native taxa may dominate some assemblages (e.g. fish or macrophytes)	Some replacement of sensitive non-native taxa with functionally diverse assemblage of non-native taxa of intermediate tolerance	Some assemblages (e.g., fish or macrophytes) are dominated by tolerant non-native taxa	Often dominant; may be the only representative of some assemblages (e.g., plants, fish, bivalves)
VII *Organism Condition*	Not currently measured					
VIII *Ecosystem Functions*	Not currently measured					

Table 3-2. NJ high gradient streams – summary attribute matrix (cont'd)

Biological Condition Gradient Tiers for New Jersey High Gradient Streams						
Ecological Attributes	**1 Natural Condition**	**2 Minimal Loss**	**3 Some Replacement; Function Maintained**	**4 Notable Replacement Function Largely Maintained**	**5 Tolerants Dominant, Loss of Function**	**6 Severe Alter Structure and Function**
IX *Spatial and temporal extent of detrimental effects*	Not currently measured					
X *Ecosystem connectance*	Not currently measured					
XI *Potential Supplemental Attributes; Indicator taxa*	No apparent response of indicator taxa	No apparent response of indicator taxa	Initial response of indicator taxa, (e.g, increase of suspension feeders with enrichment)	Some response of indicator taxa, (e.g. increase of Caenids with silt, etc.)	Response of indicator taxa (e.g., loss of mayflies with toxic stress)	

Table 3-3. NJ low gradient streams – summary attribute matrix

Biological Condition Gradient Tiers for New Jersey Low Gradient Streams					
Ecological Attributes	**1** **Natural Condition**	**2** **Minimal Loss**	**Tiers 3 & 4 combined**	**5** **Tolerants Dominant, Loss of Function**	**6** **Severe Alter Structure and Function**
I *Historically documented, sensitive, long-lived or regionally endemic taxa*	As predicted for natural occurrence except for global extinctions	As predicted for natural occurrence except for global extinctions	Some may be absent due to global extinction or local extirpation	Usually absent	Absent
II *Highly sensitive taxa*	As predicted for natural occurrence, with at most minor changes from natural densities	Virtually all are maintained and well represented (both taxa and abundance), but may not be dominant (sum of taxa of groups II and III are comparable to groups IV and V, individually)	Significantly diminished (taxa and abundance), may be absent	Usually absent	Absent
III *Sensitive & common taxa*	As predicted for natural occurrence, with at most minor changes from natural densities	Present and well represented; evenness and dominance may be comparable to *intermediate tolerance and tolerant taxa* (sum of taxa of groups II and III are comparable to groups IV and V, individually)	Loss of evenness of II and III taxa, increase of IV and V taxa. Sum of II and III taxa is less than IV or V separately	Frequently absent or significantly diminished (if present incidental)	Absent

Table 3-3. NJ low gradient streams – summary attribute matrix (cont'd)

Biological Condition Gradient Tiers for New Jersey Low Gradient Streams					
Ecological Attributes	**1 Natural Condition**	**2 Minimal Loss**	**Tiers 3 & 4 combined**	**5 Tolerants Dominant, Loss of Function**	**6 Severe Alter Structure and Function**
IV *Taxa of intermediate tolerance*	As predicted for natural occurrence, with at most minor changes from natural densities	Present and well represented; evenness and dominance may be comparable to *sensitive & common and tolerant taxa* (sum of taxa of groups II and III, are comparable to groups IV and V, individually)	Common and often abundant; sum of taxa (?abundance?) greater than II and III taxa combined	Often exhibit excessive dominance	Richness of all taxa is low
V *Tolerant taxa*	As naturally occur, with at most minor changes from natural densities	Present and well represented; evenness and dominance may be comparable to *intermediate and intermediate tolerance taxa* (sum of taxa of groups II and III are comparable to groups IV and V, individually)	Common and often abundant; sum of taxa (?abundance?) greater than II and III taxa combined	Often occur in high densities and may be dominant	Usually comprise the majority of the assemblage; often low densities

Table 3-3. NJ low gradient streams – summary attribute matrix (cont'd)

Biological Condition Gradient Tiers for New Jersey Low Gradient Streams					
Ecological Attributes	**1 Natural Condition**	**2 Minimal Loss**	**Tiers 3 & 4 combined**	**5 Tolerants Dominant, Loss of Function**	**6 Severe Alter Structure and Function**
VI *Non-native or intentionally introduced taxa*	Non-native taxa, if present, do not displace native taxa or alter native structural or functional integrity	Non-native taxa may be present, but occurrence has a non-detrimental effect on native taxa		Some assemblages (e.g., fish or macrophytes) are dominated by tolerant non-native taxa	Often dominant; may be the only representative of some assemblages (e.g., plants, fish, bivalves)
VII *Organism*	Not currently measured				
VIII *Ecosystem Functions*	Not currently measured				
IX *Spatial and temporal extent of detrimental effects*	Not currently measured				
X *Ecosystem connectance*	Not currently measured				
XI *Potential Supplemental Attributes Indicator taxa (not specifically addressed for low gradient)*	No apparent response of indicator taxa	No apparent response of indicator taxa		Response of indicator taxa (e.g., loss of mayflies with toxic stress)	

3.3 Tiers Assigned to Samples

Of the 80 pre-selected sites, 35 were examined by the workgroup and assigned to a tier in the first workshop, 20 high gradient and 15 low gradient sites. In the second workshop, the original high gradient sites were confirmed, and an additional 18 high gradient sites were assessed. Three of the original 20 sites were reclassified one tier lower.

The data for the samples examined are included in Appendices D and E along with a brief discussion of the reasons given for assigning a sample to a tier.

3.4 Operational Rule Development

After describing the BCG for high gradient streams of New Jersey, the panel developed decision rules for assigning sites to tiers (Table 3-4) in the second workshop.

The operational rules codify the tier descriptions ("as naturally occur"; "reduced"; "greatly reduced"; etc.) to quantitative or semi-quantitative rules for each attribute ("Attribute 1 Taxa > 50% of any other attribute, ± 10%"). These rules preserve the collective professional judgment of the group and set the stage for development of models to reliably assign sites to tiers without having to reconvene the same group.

Biologists in the workgroup generally preferred to use taxa richness of the attributes as their first and most important criterion for determining the tier assignment for a site. Thus, the number of highly sensitive taxa was deemed most important for distinguishing between Tier 2 and Tier 3 sites (Table 3-4). Tier 2 should have several highly sensitive taxa (attribute 2), but their richness may be reduced in Tier 3. For example, a preliminary rule for Tier 2 was that highly sensitive taxa richness (attribute 2 taxa richness) should be at least 50% of the richness of any other attribute group (3 through 5). Similarly, the difference between Tiers 3 and 4 was viewed primarily as changes in the sum of richness of highly sensitive and sensitive-common taxa, such that in Tier 3 sites, the sum of taxa richness of the two sensitive groups should be at least 50% of the sum of richness of the two more tolerant groups (Table 3-4).

Although taxa richness was generally the first criterion for the higher tiers (Tiers 2 and 3), relative abundance could override richness in extreme cases: Tier 3 was required to have more than 25% relative abundance of the two sensitive groups combined, and severely reduced abundance (< 50 organisms in the total sample, after QA determined that the sample was properly collected and processed) can downgrade a site to Tier 6, in combination with signals of potential toxicity.

Tier 5 was discriminated from Tier 4 by significant reduction of sensitive taxa (Attributes 2 and 3) so that they are merely incidental if present, and do not indicate a functional part of the community. Approximately 10% relative abundance was deemed to be sufficient to be a functional part of the community. Tier 6 was discriminated from Tier 5 by increasing loss of all taxa, and dominance by tolerant taxa (Attribute 5). As noted above,

Tier 6 could also be indicated by extreme low numbers combined with signals of toxicity (complete absence of mayflies, presence of *Cricotopus*), without other Attribute 5 taxa.

Based on the description of the BCG in low-gradient sites (Table 3-3), and the assessment of 15 low-gradient sites (Appendix E), we also developed a preliminary set of operational rules for low gradient sites (Table 3-5). Because the workgroup was not able to test and modify the low-gradient rules, they should be viewed as very preliminary.

Table 3-4. Decision rules for New Jersey High Gradient Streams

Attributes	**Tiers**					
	1	**2**	**3**	**4**	**5**	**6**
All Taxa						Low richness (<10 taxa) Low abundance (<50 individuals)
I *Sensitive, regionally endemic taxa*		(No rules determined for Attribute 1)				
II *Highly sensitive taxa*		Taxa >= 50% of any other Attribute (± 10)%	*Taxa >=2* (± 2 taxa)	May be absent	May be absent	May be absent
III *Sensitive & common taxa*		Taxa (2 + 3) >= Taxa (4 + 5) (± 2 taxa)	Taxa (2 + 3) > 50% of Taxa (4 + 5) (± 10%)	Taxa (2 + 3) ≥ 3 (± 2 taxa) Abund (2+3) >10%	May be absent; abund (2 + 3) <10% (or less than 3 taxa) (± 5%)	May be absent
IV *Taxa of intermediate tolerance*					Taxa (4) ~= Taxa (5) Abund (4) >= Abund (5)	
V *Tolerant taxa*		<20% of total abundance (± 5%) (if tiers 2 and 3 ambiguous)	<50% of total abundance (± 10%)		Relative abundance of Attributes 4, 5	Taxa (5) > Taxa (4) (± 2 taxa) Abund (5) > Abund (4)
XI *Indicator taxa*		Tolerant Hydropsych. <= 10% abundance (± 5%)	Tolerant Hydropsych. <= 50% abundance (± 10)%		Hydropsych. may dominate Tubificidae not dominant	Mayflies absent Tubificidae dominate Attrib 5
Combinatorial rules (above indic. By RxC)		(II,2) and (III,2) and (IV,2) and (V.a,2)	(not (II,2) or not (III,2)) and (II,3) and (III,3) and ((V,3) or (V.a,3))	(Not (II,3) or Not (III,3)) and (III,4)	Not (III,4)	

Table 3-5. Preliminary decision rules for New Jersey Low Gradient Streams

Attributes	**Low Gradient Tiers**				
	1	**2**	**3 & 4**	**5**	**6**
All Taxa					Low richness (<10) Low abundance (<50)
I ***Sensitive, regionally endemic taxa***		(No rules determined for Attribute 1)			
II *Highly sensitive taxa*		Taxa > 0	May be absent	Absent	Absent
III *Sensitive & common taxa*		Taxa (2 + 3) >= Taxa (4) Taxa (2 + 3) >= Taxa (5) Abund (2 + 3) >= Abund (4) Abund (2 + 3) >= Abund (5)	Taxa (2 + 3) >= 20% of Taxa (4) Taxa (2 + 3) >= 20% of Taxa (5) Abund (2 + 3) >= 10%	May be absent	May be absent
IV *Taxa of intermediate tolerance*		Total richness high (all taxa)		Taxa (4) >= 50% of Taxa (5) Abund (4) >= Abund (5)	
V *Tolerant taxa*				Taxa (4 + 5) >= 10	Taxa (5) > Taxa (4) Abund (5) > Abund (4)
V.a. *Indicator taxa*				Hydropsych. may dominate Tubificidae not dominant	Mayflies absent Tubificidae dominate Attribute 5

4.0 DISCUSSION

Several issues arose during the New Jersey workshops that apply to implementation of the BCG for New Jersey. Many of these issues that may require attention at the national level, including recommendations for improving some definitions used in describing the BCG.

4.1 Data Requirements

In developing the BCG, and in assigning sites to tiers, data collection must be compatible. Consistency in assigning sites to tiers depends on consistency in the data. It is not necessary for methods to be identical, but it must be possible to account for any differences in methods. Two specific methodological issues were identified in the New Jersey workshop:

- Sampling effort – Taxa richness or the number of species in a sample is highly dependent on sampling effort. Both the extent or area of the sample, as well as the size of subsamples (if subsamples are taken) affect taxa richness. The New Jersey AMNET program uses a standard subsample of 100 organisms, but several ecoregion reference sites (not part of AMNET) had been processed without subsampling (up to 1200 individuals). These samples had many more taxa than AMNET samples of similar overall condition.

  Fortunately, unequal subsampling can be readily corrected by electronic re-subsampling to a constant target (random re-selection of individuals in database or spreadsheet program).

- Index Period – The taxa collected can be influenced by seasonal changes caused by emergence, recruitment and seasonal high or low flows. In the New Jersey data, samples taken in early spring (late February – April) were often dominated by large recruitment events of blackfly larvae (*Simulium, Prosimulium*). Similarly, many stoneflies emerge in summer, so that samples taken in late summer often have fewer stoneflies than at other times. Sampling either before or after the best index period could cause a site to be incorrectly downgraded to a lower tier because many blackfly genera are intermediate tolerance, and most stonefly genera are either highly sensitive or sensitive and common.

  A solution for the existing New Jersey database was to exclude blackfly larvae from samples taken in early spring.

4.2 Recommendations for Changes to National BCG Description

As indicated previously, the workgroup deemed that the original definitions of the first two attribute groups were ambiguous. The perceived problem was the definitions of "rare" and "ubiquitous" in the attributes. After trying to assign sites to tiers, the workgroup found that rarity did not describe the most sensitive taxa. The most sensitive

taxa are often, but not always, found in low abundances, but they are not rare. The characteristic that most distinguishes Attribute 2 taxa was high sensitivity to enrichment or habitat degradation. Hence, attribute 2 was redefined as "highly sensitive taxa" and attribute 3 as "sensitive – common taxa".

The workgroup also identified a need for including indicator taxa in the tier considerations. For example, the Hydropsychidae are considered indicators of mild to strong nutrient and organic enrichment, and the Tubificidae are considered indicators of extreme organic enrichment and low DO. Participants felt that the Tubificidae are indicators of more degraded conditions than other attribute 5 taxa (e.g., most Chironomidae, Lumbricidae, Lumbriculidae). Mayflies are sensitive to toxic substances (including intermediate tolerance mayflies), and the midge *Cricotopus* is known to be tolerant to toxicity. Thus, complete absence of mayflies and/or presence of *Cricotopus* may indicate toxicity.

4.3 New Jersey Considerations

Several issues and caveats were identified that are specific to New Jersey but that were not explicitly incorporated into the decision-making process because the information on these topics was not considered complete enough. The issues concerned special stream habitats or stream types that occur at low frequency, and incomplete descriptions of some of the attributes.

Limestone Streams

Limestone streams are potentially a special case because they are dominated by tolerant fauna (e.g., amphipods) also found in low gradient streams and in enriched high gradient streams. In general, streams influenced by limestone are limited to headwater areas in limestone valleys, but the limestone influence is rapidly diluted as non-limestone tributaries add to flow. In general, limestone streams score to a lower tier than other high-gradient streams. NJ DEP decided to asses limestone streams on the same scale as all others, and to consider limestone influence after assigning a site to a tier.

Attribute Categories and Assemblages

At this point, attribute categories II through VI have been described for benthic invertebrates. Category I dragonflies were identified, but as of yet no other historically endemic or rare species. Fish taxa have not yet been assigned to attribute categories. Fish are expected to include several representatives of both Attribute I (historically documented endemic) and Attribute VI (introduced taxa).

Attribute I includes long-lived taxa, including the mussels. The most common mussels (e.g., *Elliptio, Anodonta*) are also considered to be of intermediate tolerance and not sensitive. The workgroup discussed the idea that both presence and recruitment of tolerant but long-lived taxa indicates environmental stability (no extreme scouring flows;

no toxic events). It was thought that evidence of recruitment by these taxa may indicate a Tier 3 site or better.

Functional feeding groups, such as scrapers, filterers, etc., were not completely incorporated into the descriptions of the attribute groups. Functional feeding groups are part of Attribute VIII, ecosystem function. The workgroup did consider that abundance of hydropsychid caddisflies and tubificid worms are important to help distinguish Tiers 2 through 6.

4.4 Recommendations

4.4.1 New Jersey Sampling Program

Index Period – We recommend that New Jersey DEP redefine the sampling index period so that excessive recruitment and emergence of certain species are avoided. With both early spring and mid-to-late summer sampling, site assessments may be biased due to massive Simuliid recruitment events in early spring, and by stonefly emergence in summer. There is not necessarily any single best season, but a long index period may lead to bias among the seasons sampled. As noted, simuliid recruitment takes place in early spring, and stoneflies emerge in summer. Fall may be the most stable biologically, but streams are also most likely to be dry in the fall.

Subsampling – The current NJDEP sampling methods are good, and sample a sufficient area of substrate to ensure that small-scale spatial variability is covered. The subsample of 100 organisms is minimal but adequate. Subsampling to 200 organisms would improve precision of taxa richness estimates. Whether to increase subsampling should be balanced by sorting costs: if many samples have excessive detritus, then the increase may not be cost-effective.

Total abundance – We recommend that NJDEP require its laboratories and contractors to record the number of grid cells sorted, to obtain an estimate of total abundance of organisms in the sample. Since samples represent a constant effort from a fixed area of stream bottom, recording the number of grid cells sorted will yield comparable estimates of total abundance.

4.4.2 Implementation of BCG and Tiered Life Uses

The Biological Condition Gradient described here will require review and at least some refinement before it can be implemented to support New Jerseys' existing use classification. Minimum additional requirements before implementation include:

- Complete review and verification of both attributes and tiers for the low-gradient streams. The workgroup did not spend as much time on these, and the descriptions and ratings were less thorough than for the high-gradient streams.

- Peer review of overall condition gradient and tier descriptions.

- Completion of Attribute I taxa and description in the tiers. Attribute I taxa are regionally endemic, long-lived and sensitive taxa, many of which may also be listed as threatened or endangered. They are sampled on different scales than benthic macroinvertebrates: observations are typically made on presence/absence in a watershed, not at a site. Attribute I thus can contribute to watershed assessments, but not to reach or site assessments.

Through its Endangered and Nongame Species Program, the NJDEP is sampling freshwater mussels, Odonates, and fishes at existing AMNET sites. The project is intended to enhance the suite of data collected at benthic invertebrate monitoring locations and improve DEP's knowledge of water quality indicators. More than 100 sites have been sampled for Odonata and mussels.

Many states use a single assemblage (e.g., macroinvertebrates) for stream assessment, and legitimate assessments can be made from a single assemblage. The Biological Condition Gradient described here would be greatly enhanced with the addition of fish to the attribute and tier descriptions. Incorporation of the fish community will increase its credibility and acceptance. Nevertheless, either benthic macroinvertebrates, fish or periphyton can be used as a stand-alone indicator assemblage.

Finally, implementation will be made more consistent with automated methods to assign sites to tiers. At the simplest level, an IBI score range or metric or a RIVPACs-based observed/expected score range (e.g., Barbour et al., 1999) can be divided into classes corresponding to tiers developed here. The IBI and RIVPACs models characterize a gradient, but they do not necessarily reflect the professional consensus that goes into the tier descriptions. An alternative is to develop a scoring model that replicates the professional consensus in the tier descriptions, either by statistical inference (e.g., Davies et al., 1993) or by direct replication of the rules.

5.0 LITERATURE CITED

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APPENDIX A

NEW JERSEY INVERTEBRATE TAXA LIST AND ATTRIBUTE ASSIGNMENTS (ON CD)

Count of Samples	Pct of Samples	Total Individuals	BCG Category	FinalID	Phylum	Class	Order	Family (Tribe)	Genus	Species
5	0.29	7	5	Mooreobdella melanostoma	Annelida	Hirudinea	Arhynchobdellida	Erpobdellidae	Mooreobdella	melanostoma
2	0.12	2	5	Mooreobdella tetragon	Annelida	Hirudinea	Arhynchobdellida	Erpobdellidae	Mooreobdella	tetragon
1	0.06	1	5	Haemopis marmorata	Annelida	Hirudinea	Arhynchobdellida	Hirudinidae	Haemopis	marmorata
4	0.23	6	5	Erpobdellidae	Annelida	Hirudinea	Pharyngodellida	Erpobdellidae		
2	0.12	3	5	Dina anoculata	Annelida	Hirudinea	Pharyngodellida	Erpobdellidae	Dina	anoculata
3	0.17	4	5	Erpobdella	Annelida	Hirudinea	Pharyngodellida	Erpobdellidae	Erpobdella	
28	1.62	52	5	Erpobdella punctata puncta	Annelida	Hirudinea	Pharyngodellida	Erpobdellidae	Erpobdella	punctata punctata
17	0.98	23	5	Mooreobdella	Annelida	Hirudinea	Pharyngodellida	Erpobdellidae	Mooreobdella	
41	2.37	77	5	Mooreobdella fervida	Annelida	Hirudinea	Pharyngodellida	Erpobdellidae	Mooreobdella	fervida
4	0.23	7	5	Mooreobdella microstoma	Annelida	Hirudinea	Pharyngodellida	Erpobdellidae	Mooreobdella	microstoma
1	0.06	1	5	Glossiphoniidae	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae		
3	0.17	3	5	Actinobdella	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Actinobdella	
1	0.06	1	5	Alboglossiphonia	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Alboglossiphonia	
6	0.35	9	5	Alboglossiphonia heteroclit	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Alboglossiphonia	heteroclita
3	0.17	7	5	Batracobdella	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Batracobdella	
1	0.06	2	5	Batracobdella paludosa	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Batracobdella	paludosa
2	0.12	2	5	Batracobdella picta	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Batracobdella	picta
30	1.74	42	5	Desserobdella phalera	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Desserobdella	phalera
21	1.22	38	5	Gloiobdella elongata	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Gloiobdella	elongata
13	0.75	18	5	Helobdella	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Helobdella	
2	0.12	2	5	Helobdella fusca	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Helobdella	fusca
60	3.47	195	5	Helobdella stagnalis	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Helobdella	stagnalis
17	0.98	22	5	Helobdella triserialis	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Helobdella	triserialis
1	0.06	1	5	Oligobdella	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Oligobdella	
1	0.06	1	5	Oligobdella biannulata	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Oligobdella	biannulata
6	0.35	6	5	Placobdella	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	
3	0.17	11	5	Placobdella hollensis	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	hollensis
2	0.12	2	5	Placobdella multilineata	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	multilineata
5	0.29	5	5	Placobdella ornata	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	ornata
4	0.23	5	5	Placobdella papillifera	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	papillifera
2	0.12	2	5	Placobdella parasitica	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	parasitica
2	0.12	2	5	Placobdella translucens	Annelida	Hirudinea	Rhynchobdellida	Glossiphoniidae	Placobdella	translucens
1	0.06	1	5	Piscicolidae	Annelida	Hirudinea	Rhynchobdellida	Piscicolidae		
2	0.12	4	5	Myzobdella	Annelida	Hirudinea	Rhynchobdellida	Piscicolidae	Myzobdella	
1	0.06	2	5	Piscicola	Annelida	Hirudinea	Rhynchobdellida	Piscicolidae	Piscicola	
1	0.06	4	5	Aeolosoma	Annelida	Oligochaeta	Aeolosomatida	Aeolosomatidae	Aeolosoma	
1	0.06	3	x	Haplotaxidae	Annelida	Oligochaeta	Haplotaxida	Haplotaxidae		
2	0.12	4	x	Haplotaxis	Annelida	Oligochaeta	Haplotaxida	Haplotaxidae	Haplotaxis	
8	0.46	25	x	Haplotaxis gordioides	Annelida	Oligochaeta	Haplotaxida	Haplotaxidae	Haplotaxis	gordioides
275	15.92	604	5	Lumbricidae	Annelida	Oligochaeta	Haplotaxida	Lumbricidae		
1	0.06	1	5	Megascolecidae	Annelida	Oligochaeta	Haplotaxida	Megascolecidae		
12	0.69	58	4	Lumbriculidae	Annelida	Oligochaeta	Lumbriculida	Lumbriculidae		

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81	4.69	252	4	Eclipidrilus	Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	Eclipidrilus	
84	4.86	500	4	Lumbriculus	Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	Lumbriculus	
747	43.25	5210	4	Lumbriculus variegatus	Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	Lumbriculus	variegatus
107	6.2	408	4	Enchytraeidae	Annelida	Oligochaeta	Tubificida	Enchytraeidae		
17	0.98	56	4	Lumbricillus	Annelida	Oligochaeta	Tubificida	Enchytraeidae	Lumbricillus	
30	1.74	98	4	Naididae	Annelida	Oligochaeta	Haplotaxida	Naididae		
2	0.12	14	4	Arcteonais	Annelida	Oligochaeta	Tubificida	Naididae	Arcteonais	
4	0.23	31	4	Arcteonais lomondi	Annelida	Oligochaeta	Tubificida	Naididae	Arcteonais	lomondi
32	1.85	110	4	Chaetogaster	Annelida	Oligochaeta	Tubificida	Naididae	Chaetogaster	
1	0.06	1	4	Chaetogaster diaphanus	Annelida	Oligochaeta	Tubificida	Naididae	Chaetogaster	diaphanus
8	0.46	69	4	Chaetogaster diastrophus	Annelida	Oligochaeta	Tubificida	Naididae	Chaetogaster	diastrophus
1	0.06	1	4	Chaetogaster limnaei	Annelida	Oligochaeta	Tubificida	Naididae	Chaetogaster	limnaei
60	3.47	204	4	Dero	Annelida	Oligochaeta	Tubificida	Naididae	Dero	
15	0.87	678	4	Dero flabelliger	Annelida	Oligochaeta	Tubificida	Naididae	Dero	flabelliger
1	0.06	1	4	Dero furcata	Annelida	Oligochaeta	Tubificida	Naididae	Dero	furcata
100	5.79	1536	4	Dero nivea	Annelida	Oligochaeta	Tubificida	Naididae	Dero	nivea
1	0.06	8	4	Dero obtusa	Annelida	Oligochaeta	Tubificida	Naididae	Dero	obtusa
120	6.95	472	4	Nais	Annelida	Oligochaeta	Tubificida	Naididae	Nais	
4	0.23	2525	4	Nais behningi	Annelida	Oligochaeta	Tubificida	Naididae	Nais	behningi
51	2.95	7152	4	Nais bretscheri	Annelida	Oligochaeta	Tubificida	Naididae	Nais	bretscheri
286	16.56	8421	4	Nais communis	Annelida	Oligochaeta	Tubificida	Naididae	Nais	communis
41	2.37	1832	4	Nais elinguis	Annelida	Oligochaeta	Tubificida	Naididae	Nais	elinguis
21	1.22	181	4	Nais pseudobtusa	Annelida	Oligochaeta	Tubificida	Naididae	Nais	pseudobtusa
22	1.27	770	4	Nais simplex	Annelida	Oligochaeta	Tubificida	Naididae	Nais	simplex
2	0.12	4	4	Nais variabilis	Annelida	Oligochaeta	Tubificida	Naididae	Nais	variabilis
61	3.53	483	4	Ophidonais serpentina	Annelida	Oligochaeta	Tubificida	Naididae	Ophidonais	serpentina
7	0.41	13	4	Pristina	Annelida	Oligochaeta	Tubificida	Naididae	Pristina	
11	0.64	29	4	Pristina foreli	Annelida	Oligochaeta	Tubificida	Naididae	Pristina	foreli
6	0.35	38	4	Pristina longiseta leidyi	Annelida	Oligochaeta	Tubificida	Naididae	Pristina	longiseta leidyi
2	0.12	3	4	Pristina osborni	Annelida	Oligochaeta	Tubificida	Naididae	Pristina	osborni
8	0.46	26	4	Slavina	Annelida	Oligochaeta	Tubificida	Naididae	Slavina	
245	14.19	1760	4	Slavina appendiculata	Annelida	Oligochaeta	Tubificida	Naididae	Slavina	appendiculata
12	0.69	75	4	Specaria josinae	Annelida	Oligochaeta	Tubificida	Naididae	Specaria	josinae
62	3.59	490	4	Stylaria	Annelida	Oligochaeta	Tubificida	Naididae	Stylaria	
140	8.11	1281	4	Stylaria lacustris	Annelida	Oligochaeta	Tubificida	Naididae	Stylaria	lacustris
3	0.17	11	4	Vejdovskyella	Annelida	Oligochaeta	Tubificida	Naididae	Vejdovskyella	
28	1.62	63	4	Vejdovskyella comata	Annelida	Oligochaeta	Tubificida	Naididae	Vejdovskyella	comata
183	10.6	2090	5	Tubificidae	Annelida	Oligochaeta	Tubificida	Tubificidae		
136	7.87	811	5	Aulodrilus	Annelida	Oligochaeta	Tubificida	Tubificidae	Aulodrilus	
275	15.92	3604	5	Aulodrilus pluriseta	Annelida	Oligochaeta	Tubificida	Tubificidae	Aulodrilus	pluriseta
21	1.22	72	5	Branchiura sowerbyi	Annelida	Oligochaeta	Tubificida	Tubificidae	Branchiura	sowerbyi
476	27.56	6251	5	Limnodrilus	Annelida	Oligochaeta	Tubificida	Tubificidae	Limnodrilus	

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380	22	4683	5	Limnodrilus claparedianus	Annelida	Oligochaeta	Tubificida	Tubificidae	Limnodrilus	claparedianus
139	8.05	1349	5	Limnodrilus hoffmeisteri	Annelida	Oligochaeta	Tubificida	Tubificidae	Limnodrilus	hoffmeisteri
180	10.42	1508	5	Limnodrilus udekemianus	Annelida	Oligochaeta	Tubificida	Tubificidae	Limnodrilus	udekemianus
2	0.12	8	5	Monopylephorus helobius	Annelida	Oligochaeta	Tubificida	Tubificidae	Monopylephorus	helobius
5	0.29	19	5	Peloscolex ferox	Annelida	Oligochaeta	Tubificida	Tubificidae	Peloscolex	ferox
37	2.14	107	5	Quistradrilus multisetosus	Annelida	Oligochaeta	Tubificida	Tubificidae	Quistradrilus	multisetosus
9	0.52	17	5	Rhyacodrilus	Annelida	Oligochaeta	Tubificida	Tubificidae	Rhyacodrilus	
4	0.23	11	5	Spirosperma	Annelida	Oligochaeta	Tubificida	Tubificidae	Spirosperma	
1	0.06	1	5	Spirosperma beetoni	Annelida	Oligochaeta	Tubificida	Tubificidae	Spirosperma	beetoni
6	0.35	19	5	Spirosperma nikolskyi	Annelida	Oligochaeta	Tubificida	Tubificidae	Spirosperma	nikolskyi
5	0.29	19	5	Telmatodrilus	Annelida	Oligochaeta	Tubificida	Tubificidae	Telmatodrilus	
16	0.93	109	5	Tubifex	Annelida	Oligochaeta	Tubificida	Tubificidae	Tubifex	
198	11.46	2099	5	Tubifex tubifex	Annelida	Oligochaeta	Tubificida	Tubificidae	Tubifex	tubifex
3	0.17	34	x	Manayunkia	Annelida	Polychaeta	Canalipalpata	Sabellidae	Manayunkia	
12	0.69	121	x	Manayunkia speciosa	Annelida	Polychaeta	Canalipalpata	Sabellidae	Manayunkia	speciosa
1	0.06	2	x	Hydrozetes	Arthropoda	Acarina	Sarcoptiformes	Hydrozetidae	Hydrozetes	
6	0.35	6	x	Arrenurus	Arthropoda	Acarina	Trombidiformes	Arrenuridae	Arrenurus	
3	0.17	6	x	Hydrodroma despiciens	Arthropoda	Acarina	Trombidiformes	Hydrodromidae	Hydrodroma	despiciens
11	0.64	21	x	Hygrobates	Arthropoda	Acarina	Trombidiformes	Hygrobatidae	Hygrobates	
1	0.06	1	x	Geayia ovata	Arthropoda	Acarina	Trombidiformes	Krendowskiidae	Geayia	ovata
14	0.81	35	x	Lebertia	Arthropoda	Acarina	Trombidiformes	Lebertiidae	Lebertia	
2	0.12	2	x	Limnesia	Arthropoda	Acarina	Trombidiformes	Limnesiidae	Limnesia	
1	0.06	1	x	Hydrochoreutes ungulatus	Arthropoda	Acarina	Trombidiformes	Pionidae	Hydrochoreutes	ungulatus
1	0.06	1	x	Piona	Arthropoda	Acarina	Trombidiformes	Pionidae	Piona	
16	0.93	29	x	Sperchon	Arthropoda	Acarina	Trombidiformes	Sperchonidae	Sperchon	
8	0.46	10	x	Sperchonopsis verrucosa	Arthropoda	Acarina	Trombidiformes	Sperchonidae	Sperchonopsis	verrucosa
1	0.06	1	x	Neumania	Arthropoda	Acarina	Trombidiformes	Unionicolidae	Neumania	
2	0.12	6	x	Chilopoda	Arthropoda	Chilopoda				
3	0.17	3	x	Geophilus	Arthropoda	Chilopoda	Geophilomorpha	Geophilidae	Geophilus	
2	0.12	2	x	Lithobius	Arthropoda	Chilopoda	Lithobiomorpha	Lithobiidae	Lithobius	
36	2.08	218	4	Crangonyx	Arthropoda	Crustacea	Amphipoda	Gammaridae	Crangonyx	
112	6.49	2015	4	Crangonyx pseudogracilis	Arthropoda	Crustacea	Amphipoda	Gammaridae	Crangonyx	pseudogracilis
31	1.8	126	4	Crangonyx richmondensis	Arthropoda	Crustacea	Amphipoda	Gammaridae	Crangonyx	richmondensis
33	1.91	377	4	Crangonyx serratus	Arthropoda	Crustacea	Amphipoda	Gammaridae	Crangonyx	serratus
98	5.67	1564	4	Gammarus	Arthropoda	Crustacea	Amphipoda	Gammaridae	Gammarus	
714	41.34	18223	4	Gammarus fasciatus	Arthropoda	Crustacea	Amphipoda	Gammaridae	Gammarus	fasciatus
3	0.17	7	4	Stygobromus	Arthropoda	Crustacea	Amphipoda	Gammaridae	Stygobromus	
3	0.17	7	2	Synurella	Arthropoda	Crustacea	Amphipoda	Gammaridae	Synurella	
53	3.07	358	4	Synurella chamberlaini	Arthropoda	Crustacea	Amphipoda	Gammaridae	Synurella	chamberlaini
6	0.35	19	4	Hyalella	Arthropoda	Crustacea	Amphipoda	Talitridae	Hyalella	
125	7.24	1394	4	Hyalella azteca	Arthropoda	Crustacea	Amphipoda	Talitridae	Hyalella	azteca
9	0.52	55	x	Eurycercus	Arthropoda	Crustacea	Cladocera	Chydoridae	Eurycercus	

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15	0.87	53	x	Eurycercus lamellatus	Arthropoda	Crustacea	Cladocera	Chydoridae	Eurycercus	lamellatus
1	0.06	3	x	Daphnia	Arthropoda	Crustacea	Cladocera	Daphnidae	Daphnia	
2	0.12	2	x	Simocephalus	Arthropoda	Crustacea	Cladocera	Daphnidae	Simocephalus	
33	1.91	167	x	Simocephalus exspinosus	Arthropoda	Crustacea	Cladocera	Daphnidae	Simocephalus	exspinosus
3	0.17	20	x	Simocephalus vetulus	Arthropoda	Crustacea	Cladocera	Daphnidae	Simocephalus	vetulus
1	0.06	5	x	Acantholeberis	Arthropoda	Crustacea	Cladocera	Macrothricidae	Acantholeberis	
3	0.17	9	x	Acantholeberis curvirostris	Arthropoda	Crustacea	Cladocera	Macrothricidae	Acantholeberis	curvirostris
2	0.12	21	x	Ilyocryptus acutifrons	Arthropoda	Crustacea	Cladocera	Macrothricidae	Ilyocryptus	acutifrons
1	0.06	1	x	Ilyocryptus sordidus	Arthropoda	Crustacea	Cladocera	Macrothricidae	Ilyocryptus	sordidus
1	0.06	2	x	Ofryoxus gracilis	Arthropoda	Crustacea	Cladocera	Macrothricidae	Ofryoxus	gracilis
3	0.17	5	x	Latona setifera	Arthropoda	Crustacea	Cladocera	Sididae	Latona	setifera
2	0.12	3	x	Sida	Arthropoda	Crustacea	Cladocera	Sididae	Sida	
3	0.17	5	x	Attheyella illinoisensis	Arthropoda	Crustacea	Copepoda	Canthocamptidae	Attheyella	illinoisensis
3	0.17	12	x	Cyclops	Arthropoda	Crustacea	Copepoda	Cyclopidae	Cyclops	
2	0.12	7	x	Cyclops vernalis	Arthropoda	Crustacea	Copepoda	Cyclopidae	Cyclops	vernalis
1	0.06	35	x	Cyclops viridis	Arthropoda	Crustacea	Copepoda	Cyclopidae	Cyclops	viridis
4	0.23	7	x	Macrocyclops	Arthropoda	Crustacea	Copepoda	Cyclopidae	Macrocyclops	
9	0.52	28	x	Macrocyclops albidus	Arthropoda	Crustacea	Copepoda	Cyclopidae	Macrocyclops	albidus
1	0.06	1	x	Macrocyclops fuscus	Arthropoda	Crustacea	Copepoda	Cyclopidae	Macrocyclops	fuscus
1	0.06	6	x	Orthocyclops modestus	Arthropoda	Crustacea	Copepoda	Cyclopidae	Orthocyclops	modestus
14	0.81	20	x	Cambarus	Arthropoda	Crustacea	Decapoda	Astacidae	Cambarus	
23	1.33	26	x	Cambarus bartonii	Arthropoda	Crustacea	Decapoda	Astacidae	Cambarus	bartonii
1	0.06	1	x	Procambarus	Arthropoda	Crustacea	Decapoda	Astacidae	Procambarus	
12	0.69	20	x	Procambarus acutus	Arthropoda	Crustacea	Decapoda	Astacidae	Procambarus	acutus
10	0.58	17	x	Procambarus acutus acutus	Arthropoda	Crustacea	Decapoda	Astacidae	Procambarus	acutus acutus
1	0.06	1	x	Cambaridae	Arthropoda	Crustacea	Decapoda	Cambaridae		
64	3.71	82	x	Orconectes	Arthropoda	Crustacea	Decapoda	Cambaridae	Orconectes	
2	0.12	7	x	Orconectes propinquus	Arthropoda	Crustacea	Decapoda	Cambaridae	Orconectes	propinquus
10	0.58	15	x	Orconectes limosus	Arthropoda	Crustacea	Decapoda	Cambaridae	Orconectes	limosus
7	0.41	60	x	Palaemonetes	Arthropoda	Crustacea	Decapoda	Palaemonidae	Palaemonetes	
37	2.14	138	x	Palaemonetes paludosus	Arthropoda	Crustacea	Decapoda	Palaemonidae	Palaemonetes	paludosus
218	12.62	5522	5	Asellus communis	Arthropoda	Crustacea	Isopoda	Asellidae	Asellus	communis
1	0.06	1	5	Asellus forbesi	Arthropoda	Crustacea	Isopoda	Asellidae	Asellus	forbesi
2	0.12	12	5	Asellus obtusus	Arthropoda	Crustacea	Isopoda	Asellidae	Asellus	obtusus
450	26.06	3209	4	Caecidotea	Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea	
4	0.23	41	4	Caecidotea nodula	Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea	nodula
80	4.63	1240	4	Caecidotea racovitzai	Arthropoda	Crustacea	Isopoda	Asellidae	Caecidotea	racovitzai
17	0.98	21	5	Cylisticus	Arthropoda	Crustacea	Isopoda	Asellidae	Cylisticus	
8	0.46	57	5	Lirceus	Arthropoda	Crustacea	Isopoda	Asellidae	Lirceus	
5	0.29	100	5	Lirceus brachyurus	Arthropoda	Crustacea	Isopoda	Asellidae	Lirceus	brachyurus
4	0.23	29	5	Lirceus fontinalis	Arthropoda	Crustacea	Isopoda	Asellidae	Lirceus	fontinalis
6	0.35	49	5	Lirceus lineatus	Arthropoda	Crustacea	Isopoda	Asellidae	Lirceus	lineatus

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4	0.23	17	x	Oniscus	Arthropoda	Crustacea	Isopoda	Oniscidae	Oniscus	
13	0.75	22	x	Oniscus asellus	Arthropoda	Crustacea	Isopoda	Oniscidae	Oniscus	asellus
22	1.27	34	x	Porcellionides	Arthropoda	Crustacea	Isopoda	Oniscidae	Porcellionides	
11	0.64	38	x	Cypridae	Arthropoda	Crustacea	Ostracoda	Cypridae		
3	0.17	4	x	Candona	Arthropoda	Crustacea	Ostracoda	Cypridae	Candona	
1	0.06	1	x	Cypricercus	Arthropoda	Crustacea	Ostracoda	Cypridae	Cypricercus	
4	0.23	9	x	Eucypris	Arthropoda	Crustacea	Ostracoda	Cypridae	Eucypris	
1	0.06	2	x	Eucypris virens	Arthropoda	Crustacea	Ostracoda	Cypridae	Eucypris	virens
17	0.98	58	x	Diplopoda	Arthropoda	Diplopoda				
6	0.35	6	x	Parajulus	Arthropoda	Diplopoda	Julida	Parajulidae	Parajulus	
9	0.52	13	x	Cambala annulata	Arthropoda	Diplopoda	Spirostreptida	Cambalidae	Cambala	annulata
3	0.17	4	x	Entomobryidae	Arthropoda	Hexapoda	Collembola	Entomobryidae		
1	0.06	1	x	Cyphoderus	Arthropoda	Hexapoda	Collembola	Entomobryidae	Cyphoderus	
5	0.29	7	x	Entomobrya	Arthropoda	Hexapoda	Collembola	Entomobryidae	Entomobrya	
8	0.46	12	x	Tomocerus	Arthropoda	Hexapoda	Collembola	Entomobryidae	Tomocerus	
1	0.06	1	x	Neanura	Arthropoda	Hexapoda	Collembola	Hypogastruridae	Neanura	
2	0.12	4	x	Tafallia	Arthropoda	Hexapoda	Collembola	Hypogastruridae	Tafallia	
2	0.12	2	x	Isotomidae	Arthropoda	Hexapoda	Collembola	Isotomidae		
4	0.23	5	x	Archisotoma	Arthropoda	Hexapoda	Collembola	Isotomidae	Archisotoma	
2	0.12	2	x	Folsomia	Arthropoda	Hexapoda	Collembola	Isotomidae	Folsomia	
2	0.12	5	x	Isotoma	Arthropoda	Hexapoda	Collembola	Isotomidae	Isotoma	
3	0.17	3	x	Isotomurus	Arthropoda	Hexapoda	Collembola	Isotomidae	Isotomurus	
5	0.29	8	x	Isotomurus palustris	Arthropoda	Hexapoda	Collembola	Isotomidae	Isotomurus	palustris
2	0.12	4	x	Onychiurus	Arthropoda	Hexapoda	Collembola	Onychiuridae	Onychiurus	
2	0.12	4	x	Anurida	Arthropoda	Hexapoda	Collembola	Poduridae	Anurida	
4	0.23	5	x	Podura aquatica	Arthropoda	Hexapoda	Collembola	Poduridae	Podura	aquatica
1	0.06	1	x	Chlaenius	Arthropoda	Insecta	Coleoptera	Carabidae	Chlaenius	
2	0.12	2	x	Chrysomelidae	Arthropoda	Insecta	Coleoptera	Chrysomelidae		
9	0.52	9	x	Donacia	Arthropoda	Insecta	Coleoptera	Chrysomelidae	Donacia	
7	0.41	7	x	Galerucella	Arthropoda	Insecta	Coleoptera	Chrysomelidae	Galerucella	
9	0.52	9	x	Curculionidae	Arthropoda	Insecta	Coleoptera	Curculionidae		
3	0.17	4	x	Hyperodes	Arthropoda	Insecta	Coleoptera	Curculionidae	Hyperodes	
2	0.12	2	x	Onychylis	Arthropoda	Insecta	Coleoptera	Curculionidae	Onychylis	
4	0.23	5	x	Stenopelmus	Arthropoda	Insecta	Coleoptera	Curculionidae	Stenopelmus	
1	0.06	1	x	Stenopelmus rufinasus	Arthropoda	Insecta	Coleoptera	Curculionidae	Stenopelmus	rufinasus
6	0.35	8	x	Helichus	Arthropoda	Insecta	Coleoptera	Dryopidae	Helichus	
4	0.23	4	x	Helichus basalis	Arthropoda	Insecta	Coleoptera	Dryopidae	Helichus	basalis
2	0.12	2	x	Helichus fastigiatus	Arthropoda	Insecta	Coleoptera	Dryopidae	Helichus	fastigiatus
3	0.17	3	x	Helichus lithophilus	Arthropoda	Insecta	Coleoptera	Dryopidae	Helichus	lithophilus
7	0.41	9	x	Dytiscidae	Arthropoda	Insecta	Coleoptera	Dytiscidae		
1	0.06	1	4	Acilius	Arthropoda	Insecta	Coleoptera	Dytiscidae	Acilius	
1	0.06	1	4	Agabetes	Arthropoda	Insecta	Coleoptera	Dytiscidae	Agabetes	

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50	2.9	94	4	Agabus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Agabus	
1	0.06	1	4	Copelatus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Copelatus	
1	0.06	1	4	Cybister	Arthropoda	Insecta	Coleoptera	Dytiscidae	Cybister	
1	0.06	2	4	Deronectes	Arthropoda	Insecta	Coleoptera	Dytiscidae	Deronectes	
3	0.17	4	4	Derovatellus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Derovatellus	
1	0.06	1	4	Eretes	Arthropoda	Insecta	Coleoptera	Dytiscidae	Eretes	
138	7.99	258	4	Hydroporus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Hydroporus	
29	1.68	59	4	Hydroporus niger	Arthropoda	Insecta	Coleoptera	Dytiscidae	Hydroporus	niger
2	0.12	7	4	Hydrovatus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Hydrovatus	
2	0.12	3	4	Ilybius	Arthropoda	Insecta	Coleoptera	Dytiscidae	Ilybius	
7	0.41	14	4	Laccophilus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Laccophilus	
1	0.06	1	4	Thermonectus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Thermonectus	
7	0.41	10	4	Uvarus	Arthropoda	Insecta	Coleoptera	Dytiscidae	Uvarus	
2	0.12	5	x	Elmidae	Arthropoda	Insecta	Coleoptera	Elmidae		
40	2.32	84	4	Ancyronyx	Arthropoda	Insecta	Coleoptera	Elmidae	Ancyronyx	
142	8.22	258	4	Ancyronyx variegatus	Arthropoda	Insecta	Coleoptera	Elmidae	Ancyronyx	variegatus
194	11.23	650	5	Dubiraphia	Arthropoda	Insecta	Coleoptera	Elmidae	Dubiraphia	
10	0.58	23	5	Dubiraphia bivittata	Arthropoda	Insecta	Coleoptera	Elmidae	Dubiraphia	bivittata
96	5.56	435	5	Dubiraphia quadrinotata	Arthropoda	Insecta	Coleoptera	Elmidae	Dubiraphia	quadrinotata
14	0.81	28	4	Macronychus	Arthropoda	Insecta	Coleoptera	Elmidae	Macronychus	
143	8.28	315	4	Macronychus glabratus	Arthropoda	Insecta	Coleoptera	Elmidae	Macronychus	glabratus
2	0.12	2	x	Microcylloepus	Arthropoda	Insecta	Coleoptera	Elmidae	Microcylloepus	
1	0.06	1	x	Microcylloepus pusillus	Arthropoda	Insecta	Coleoptera	Elmidae	Microcylloepus	pusillus
8	0.46	16	x	Microcylloepus pusillus pus	Arthropoda	Insecta	Coleoptera	Elmidae	Microcylloepus	pusillus pusillus
145	8.4	445	4	Optioservus	Arthropoda	Insecta	Coleoptera	Elmidae	Optioservus	
105	6.08	781	4	Optioservus ovalis	Arthropoda	Insecta	Coleoptera	Elmidae	Optioservus	ovalis
88	5.1	1310	4	Optioservus trivittatus	Arthropoda	Insecta	Coleoptera	Elmidae	Optioservus	trivittatus
14	0.81	70	4	Oulimnius	Arthropoda	Insecta	Coleoptera	Elmidae	Oulimnius	
164	9.5	1067	4	Oulimnius latiusculus	Arthropoda	Insecta	Coleoptera	Elmidae	Oulimnius	latiusculus
28	1.62	129	3	Promoresia	Arthropoda	Insecta	Coleoptera	Elmidae	Promoresia	
7	0.41	19	3	Promoresia elegans	Arthropoda	Insecta	Coleoptera	Elmidae	Promoresia	elegans
118	6.83	522	3	Promoresia tardella	Arthropoda	Insecta	Coleoptera	Elmidae	Promoresia	tardella
446	25.83	1980	4	Stenelmis	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	
8	0.46	30	4	Stenelmis concinna	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	concinna
7	0.41	238	4	Stenelmis crenata	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	crenata
2	0.12	2	4	Stenelmis decorata	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	decorata
26	1.51	344	4	Stenelmis humerosa	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	humerosa
1	0.06	2	4	Stenelmis lateralis	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	lateralis
279	16.16	3938	4	Stenelmis markeli	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	markeli
1	0.06	1	4	Stenelmis mera	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	mera
12	0.69	529	4	Stenelmis mirabilis	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	mirabilis
2	0.12	9	4	Stenelmis sandersoni	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	sandersoni

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4	0.23	39	4	Stenelmis vittipennis	Arthropoda	Insecta	Coleoptera	Elmidae	Stenelmis	vittipennis
95	5.5	175	x	Dineutus	Arthropoda	Insecta	Coleoptera	Gyrinidae	Dineutus	
21	1.22	42	x	Gyrinus	Arthropoda	Insecta	Coleoptera	Gyrinidae	Gyrinus	
17	0.98	47	x	Haliplus	Arthropoda	Insecta	Coleoptera	Haliplidae	Haliplus	
103	5.96	244	x	Peltodytes	Arthropoda	Insecta	Coleoptera	Haliplidae	Peltodytes	
4	0.23	12	x	Cyphon	Arthropoda	Insecta	Coleoptera	Helodidae	Cyphon	
1	0.06	5	x	Scirtes	Arthropoda	Insecta	Coleoptera	Helodidae	Scirtes	
5	0.29	5	x	Hydrophilidae	Arthropoda	Insecta	Coleoptera	Hydrophilidae		
1	0.06	1	x	Anacaena	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Anacaena	
66	3.82	145	5	Berosus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Berosus	
1	0.06	1	x	Cercyon	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Cercyon	
1	0.06	1	x	Chaetarthria	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Chaetarthria	
8	0.46	9	x	Enochrus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Enochrus	
7	0.41	12	x	Helochares	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Helochares	
3	0.17	6	x	Helocombus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Helocombus	
2	0.12	3	x	Helocombus bifidus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Helocombus	bifidus
12	0.69	15	x	Helophorus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Helophorus	
3	0.17	4	x	Hydrobius	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Hydrobius	
11	0.64	16	x	Hydrochus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Hydrochus	
1	0.06	1	x	Hydrophilus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Hydrophilus	
1	0.06	1	x	Laccobius	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Laccobius	
7	0.41	11	x	Paracymus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Paracymus	
7	0.41	8	x	Sperchopsis	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Sperchopsis	
11	0.64	11	x	Tropisternus	Arthropoda	Insecta	Coleoptera	Hydrophilidae	Tropisternus	
7	0.41	8	x	Photurus	Arthropoda	Insecta	Coleoptera	Lampyridae	Photurus	
1	0.06	1	x	Noteridae	Arthropoda	Insecta	Coleoptera	Noteridae		
1	0.06	1	x	Hydrocanthus	Arthropoda	Insecta	Coleoptera	Noteridae	Hydrocanthus	
74	4.28	131	4	Ectopria nervosa	Arthropoda	Insecta	Coleoptera	Psephenidae	Ectopria	nervosa
14	0.81	69	4	Psephenus	Arthropoda	Insecta	Coleoptera	Psephenidae	Psephenus	
335	19.4	2673	4	Psephenus herricki	Arthropoda	Insecta	Coleoptera	Psephenidae	Psephenus	herricki
2	0.12	4	2	Anchytarsus	Arthropoda	Insecta	Coleoptera	Ptilodactylidae	Anchytarsus	
28	1.62	152	2	Anchytarsus bicolor	Arthropoda	Insecta	Coleoptera	Ptilodactylidae	Anchytarsus	bicolor
2	0.12	2	x	Salpingidae	Arthropoda	Insecta	Coleoptera	Salpingidae		
1	0.06	1	x	Elodes	Arthropoda	Insecta	Coleoptera	Scirtidae	Elodes	
8	0.46	135	x	Sphaeriidae	Arthropoda	Insecta	Coleoptera	Sphaeriidae		
2	0.12	2	x	Staphylinidae	Arthropoda	Insecta	Coleoptera	Staphylinidae		
4	0.23	6	x	Bledius	Arthropoda	Insecta	Coleoptera	Staphylinidae	Bledius	
1	0.06	1	x	Stenus	Arthropoda	Insecta	Coleoptera	Staphylinidae	Stenus	
6	0.35	31	3	Atherix	Arthropoda	Insecta	Diptera	Athericidae	Atherix	
45	2.61	90	3	Atherix variegata	Arthropoda	Insecta	Diptera	Athericidae	Atherix	variegata
7	0.41	17	2	Blepharicera	Arthropoda	Insecta	Diptera	Blephariceridae	Blepharicera	
11	0.64	19	x	Ceratopogonidae	Arthropoda	Insecta	Diptera	Ceratopogonidae		

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2	0.12	2	x	Alluaudomyia	Arthropoda	Insecta	Diptera	Ceratopogonidae	Alluaudomyia	
4	0.23	4	x	Alluaudomyia needhami	Arthropoda	Insecta	Diptera	Ceratopogonidae	Alluaudomyia	needhami
6	0.35	7	x	Atrichopogon	Arthropoda	Insecta	Diptera	Ceratopogonidae	Atrichopogon	
39	2.26	67	4	Bezzia	Arthropoda	Insecta	Diptera	Ceratopogonidae	Bezzia	
27	1.56	142	4	Bezzia glabra	Arthropoda	Insecta	Diptera	Ceratopogonidae	Bezzia	glabra
75	4.34	303	4	Bezzia opaca	Arthropoda	Insecta	Diptera	Ceratopogonidae	Bezzia	opaca
9	0.52	9	4	Bezzia varicolor	Arthropoda	Insecta	Diptera	Ceratopogonidae	Bezzia	varicolor
11	0.64	12	x	Culicoides	Arthropoda	Insecta	Diptera	Ceratopogonidae	Culicoides	
2	0.12	2	x	Dasyhelea	Arthropoda	Insecta	Diptera	Ceratopogonidae	Dasyhelea	
4	0.23	6	4	Palpomyia	Arthropoda	Insecta	Diptera	Ceratopogonidae	Palpomyia	
24	1.39	77	4	Palpomyia lineata	Arthropoda	Insecta	Diptera	Ceratopogonidae	Palpomyia	lineata
81	4.69	167	4	Palpomyia tibialis	Arthropoda	Insecta	Diptera	Ceratopogonidae	Palpomyia	tibialis
59	3.42	105	4	Probezzia	Arthropoda	Insecta	Diptera	Ceratopogonidae	Probezzia	
8	0.46	14	x	Stilobezzia	Arthropoda	Insecta	Diptera	Ceratopogonidae	Stilobezzia	
9	0.52	16	x	Stilobezzia antennalis	Arthropoda	Insecta	Diptera	Ceratopogonidae	Stilobezzia	antennalis
1	0.06	42	x	Culicoides sanguisuga	Arthropoda	Insecta	Diptera	Ceratopogonidae (Culicoidini)	Culicoides	sanguisuga
135	7.82	343	x	Chironomidae	Arthropoda	Insecta	Diptera	Chironomidae		
176	10.19	744	5	Ablabesmyia	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	
5	0.29	21	5	Ablabesmyia annulata	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	annulata
3	0.17	6	5	Ablabesmyia aspera	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	aspera
4	0.23	6	5	Ablabesmyia janta	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	janta
115	6.66	382	5	Ablabesmyia mallochi	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	mallochi
3	0.17	5	5	Ablabesmyia monilis	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	monilis
2	0.12	2	5	Ablabesmyia peleensis	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	peleensis
1	0.06	1	5	Ablabesmyia simpsoni	Arthropoda	Insecta	Diptera	Chironomidae	Ablabesmyia	simpsoni
2	0.12	2	x	Acalcarella	Arthropoda	Insecta	Diptera	Chironomidae	Acalcarella	
40	2.32	124	3	Apsectrotanypus	Arthropoda	Insecta	Diptera	Chironomidae	Apsectrotanypus	
79	4.57	577	3	Apsectrotanypus trifasciper	Arthropoda	Insecta	Diptera	Chironomidae	Apsectrotanypus	trifascipennis
4	0.23	27	x	Chironomini	Arthropoda	Insecta	Diptera	Chironomidae	Chironomini	
91	5.27	486	5	Chironomus	Arthropoda	Insecta	Diptera	Chironomidae	Chironomus	
63	3.65	515	5	Chironomus decorus	Arthropoda	Insecta	Diptera	Chironomidae	Chironomus	decorus
115	6.66	1521	5	Chironomus riparius	Arthropoda	Insecta	Diptera	Chironomidae	Chironomus	riparius
29	1.68	172	5	Chironomus tentans	Arthropoda	Insecta	Diptera	Chironomidae	Chironomus	tentans
6	0.35	11	5	Cladopelma	Arthropoda	Insecta	Diptera	Chironomidae	Cladopelma	
4	0.23	5	5	Cladopelma amachaerus	Arthropoda	Insecta	Diptera	Chironomidae	Cladopelma	amachaerus
68	3.94	166	5	Clinotanypus	Arthropoda	Insecta	Diptera	Chironomidae	Clinotanypus	
84	4.86	185	5	Clinotanypus pinguis	Arthropoda	Insecta	Diptera	Chironomidae	Clinotanypus	pinguis
2	0.12	3	x	Coelotanypus	Arthropoda	Insecta	Diptera	Chironomidae	Coelotanypus	
1	0.06	1	x	Coelotanypus tricolor	Arthropoda	Insecta	Diptera	Chironomidae	Coelotanypus	tricolor
440	25.48	1580	5	Conchapelopia	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	
21	1.22	242	5	Conchapelopia aleta	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	aleta
82	4.75	1893	5	Conchapelopia americana	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	americana

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36	2.08	612	5	Conchapelopia cornuticaud	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	cornuticaudata
1	0.06	17	5	Conchapelopia currani	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	currani
23	1.33	318	5	Conchapelopia fasciata	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	fasciata
79	4.57	623	5	Conchapelopia flavifrons	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	flavifrons
41	2.37	235	5	Conchapelopia pallens	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	pallens
9	0.52	58	5	Conchapelopia rurika	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	rurika
8	0.46	39	5	Conchapelopia telema	Arthropoda	Insecta	Diptera	Chironomidae	Conchapelopia	telema
179	10.36	358	5	Cryptochironomus	Arthropoda	Insecta	Diptera	Chironomidae	Cryptochironomus	
10	0.58	22	5	Cryptochironomus argus	Arthropoda	Insecta	Diptera	Chironomidae	Cryptochironomus	argus
11	0.64	26	5	Cryptotendipes	Arthropoda	Insecta	Diptera	Chironomidae	Cryptotendipes	
9	0.52	26	5	Cryptotendipes pseudotener	Arthropoda	Insecta	Diptera	Chironomidae	Cryptotendipes	pseudotener
2	0.12	3	5	Demicryptochironomus	Arthropoda	Insecta	Diptera	Chironomidae	Demicryptochironomus	
9	0.52	17	5	Demicryptochironomus vul	Arthropoda	Insecta	Diptera	Chironomidae	Demicryptochironomus	vulneratus
9	0.52	36	2	Diamesa	Arthropoda	Insecta	Diptera	Chironomidae	Diamesa	
141	8.16	1085	2	Diamesa nivoriunda	Arthropoda	Insecta	Diptera	Chironomidae	Diamesa	nivoriunda
1	0.06	1	2	Diamesinae	Arthropoda	Insecta	Diptera	Chironomidae	Diamesinae	
79	4.57	307	5	Dicrotendipes	Arthropoda	Insecta	Diptera	Chironomidae	Dicrotendipes	
125	7.24	1261	5	Dicrotendipes fumidus	Arthropoda	Insecta	Diptera	Chironomidae	Dicrotendipes	fumidus
61	3.53	203	5	Dicrotendipes modestus	Arthropoda	Insecta	Diptera	Chironomidae	Dicrotendipes	modestus
80	4.63	303	5	Dicrotendipes neomodestus	Arthropoda	Insecta	Diptera	Chironomidae	Dicrotendipes	neomodestus
36	2.08	154	5	Dicrotendipes nervosus	Arthropoda	Insecta	Diptera	Chironomidae	Dicrotendipes	nervosus
4	0.23	8	X	Djalmabatista	Arthropoda	Insecta	Diptera	Chironomidae	Djalmabatista	
7	0.41	59	5	Einfeldia	Arthropoda	Insecta	Diptera	Chironomidae	Einfeldia	
4	0.23	10	5	Einfeldia natchitocheae	Arthropoda	Insecta	Diptera	Chironomidae	Einfeldia	natchitocheae
22	1.27	57	5	Endochironomus	Arthropoda	Insecta	Diptera	Chironomidae	Endochironomus	
21	1.22	147	5	Endochironomus nigricans	Arthropoda	Insecta	Diptera	Chironomidae	Endochironomus	nigricans
4	0.23	7	5	Endochironomus subtenden	Arthropoda	Insecta	Diptera	Chironomidae	Endochironomus	subtendens
39	2.26	332	5	Glyptotendipes	Arthropoda	Insecta	Diptera	Chironomidae	Glyptotendipes	
77	4.46	2601	5	Glyptotendipes lobiferus	Arthropoda	Insecta	Diptera	Chironomidae	Glyptotendipes	lobiferus
1	0.06	1	5	Glyptotendipes senilis	Arthropoda	Insecta	Diptera	Chironomidae	Glyptotendipes	senilis
25	1.45	48	5	Harnischia	Arthropoda	Insecta	Diptera	Chironomidae	Harnischia	
2	0.12	4	5	Harnischia amachaerus	Arthropoda	Insecta	Diptera	Chironomidae	Harnischia	amachaerus
6	0.35	8	5	Harnischia curtilamellata	Arthropoda	Insecta	Diptera	Chironomidae	Harnischia	curtilamellata
1	0.06	8	x	Hyporhygma	Arthropoda	Insecta	Diptera	Chironomidae	Hyporhygma	
5	0.29	18	5	Kiefferulus	Arthropoda	Insecta	Diptera	Chironomidae	Kiefferulus	
1	0.06	3	5	Kiefferulus tendipediformis	Arthropoda	Insecta	Diptera	Chironomidae	Kiefferulus	tendipediformis
8	0.46	12	4	Labrundinia	Arthropoda	Insecta	Diptera	Chironomidae	Labrundinia	
17	0.98	21	4	Labrundinia pilosella	Arthropoda	Insecta	Diptera	Chironomidae	Labrundinia	pilosella
1	0.06	2	x	Lauterborniella	Arthropoda	Insecta	Diptera	Chironomidae	Lauterborniella	
1	0.06	1	x	Lauterborniella agrayloides	Arthropoda	Insecta	Diptera	Chironomidae	Lauterborniella	agrayloides
5	0.29	12	x	Lauterborniella varipennis	Arthropoda	Insecta	Diptera	Chironomidae	Lauterborniella	varipennis
5	0.29	24	5	Macropelopia	Arthropoda	Insecta	Diptera	Chironomidae	Macropelopia	

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20	1.16	95	5	Macropelopia decedens	Arthropoda	Insecta	Diptera	Chironomidae	Macropelopia	decedens
75	4.34	607	5	Microtendipes	Arthropoda	Insecta	Diptera	Chironomidae	Microtendipes	
14	0.81	34	5	Microtendipes caducus	Arthropoda	Insecta	Diptera	Chironomidae	Microtendipes	caducus
82	4.75	662	5	Microtendipes pedellus	Arthropoda	Insecta	Diptera	Chironomidae	Microtendipes	pedellus
153	8.86	1218	5	Microtendipes tarsalis	Arthropoda	Insecta	Diptera	Chironomidae	Microtendipes	tarsalis
2	0.12	2	2	Monodiamesa	Arthropoda	Insecta	Diptera	Chironomidae	Monodiamesa	
58	3.36	107	5	Natarsia	Arthropoda	Insecta	Diptera	Chironomidae	Natarsia	
1	0.06	1	5	Natarsia fastuosa	Arthropoda	Insecta	Diptera	Chironomidae	Natarsia	fastuosa
2	0.12	2	x	Nilotanypus	Arthropoda	Insecta	Diptera	Chironomidae	Nilotanypus	
6	0.35	7	x	Nilotanypus fimbriatus	Arthropoda	Insecta	Diptera	Chironomidae	Nilotanypus	fimbriatus
4	0.23	4	x	Nilothauma	Arthropoda	Insecta	Diptera	Chironomidae	Nilothauma	
6	0.35	10	x	Nilothauma babiyi	Arthropoda	Insecta	Diptera	Chironomidae	Nilothauma	babiyi
1	0.06	1	x	Odontomesa	Arthropoda	Insecta	Diptera	Chironomidae	Odontomesa	
3	0.17	26	2	Pagastia	Arthropoda	Insecta	Diptera	Chironomidae	Pagastia	
7	0.41	37	2	Pagastia orthogonia	Arthropoda	Insecta	Diptera	Chironomidae	Pagastia	orthogonia
14	0.81	129	2	Pagastiella ostansa	Arthropoda	Insecta	Diptera	Chironomidae	Pagastiella	ostansa
12	0.69	26	5	Parachironomus	Arthropoda	Insecta	Diptera	Chironomidae	Parachironomus	
18	1.04	32	5	Parachironomus abortivus	Arthropoda	Insecta	Diptera	Chironomidae	Parachironomus	abortivus
1	0.06	3	5	Parachironomus frequens	Arthropoda	Insecta	Diptera	Chironomidae	Parachironomus	frequens
5	0.29	12	x	Paralauterborniella	Arthropoda	Insecta	Diptera	Chironomidae	Paralauterborniella	
9	0.52	13	x	Paralauterborniella nigrohal	Arthropoda	Insecta	Diptera	Chironomidae	Paralauterborniella	nigrohalterale
27	1.56	113	5	Paratendipes	Arthropoda	Insecta	Diptera	Chironomidae	Paratendipes	
81	4.69	644	5	Paratendipes albimanus	Arthropoda	Insecta	Diptera	Chironomidae	Paratendipes	albimanus
20	1.16	38	5	Pentaneura	Arthropoda	Insecta	Diptera	Chironomidae	Pentaneura	
6	0.35	8	5	Pentaneura carnea	Arthropoda	Insecta	Diptera	Chironomidae	Pentaneura	carnea
123	7.12	491	5	Phaenopsectra	Arthropoda	Insecta	Diptera	Chironomidae	Phaenopsectra	
156	9.03	459	5	Phaenopsectra flavipes	Arthropoda	Insecta	Diptera	Chironomidae	Phaenopsectra	flavipes
93	5.39	488	5	Phaenopsectra obediens	Arthropoda	Insecta	Diptera	Chironomidae	Phaenopsectra	obediens
221	12.8	1174	5	Polypedilum	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	
260	15.06	2272	5	Polypedilum convictum	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	convictum
98	5.67	331	5	Polypedilum fallax	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	fallax
125	7.24	1075	5	Polypedilum halterale	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	halterale
325	18.82	1459	5	Polypedilum illinoense	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	illinoense
5	0.29	9	5	Polypedilum ontario	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	ontario
3	0.17	3	5	Polypedilum ophioides	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	ophioides
140	8.11	806	5	Polypedilum tritum	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	tritum
231	13.38	880	5	Polypedilum scalaenum	Arthropoda	Insecta	Diptera	Chironomidae	Polypedilum	scalaenum
7	0.41	8	2	Potthastia	Arthropoda	Insecta	Diptera	Chironomidae	Potthastia	
26	1.51	49	2	Potthastia longimana	Arthropoda	Insecta	Diptera	Chironomidae	Potthastia	longimana
209	12.1	713	5	Procladius	Arthropoda	Insecta	Diptera	Chironomidae	Procladius	
64	3.71	166	5	Procladius bellus	Arthropoda	Insecta	Diptera	Chironomidae	Procladius	bellus
79	4.57	319	5	Procladius culiciformis	Arthropoda	Insecta	Diptera	Chironomidae	Procladius	culiciformis

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34	1.97	107	5	Procladius riparius	Arthropoda	Insecta	Diptera	Chironomidae	Procladius	riparius
9	0.52	83	2	Prodiamesa	Arthropoda	Insecta	Diptera	Chironomidae	Prodiamesa	
34	1.97	189	2	Prodiamesa olivacea	Arthropoda	Insecta	Diptera	Chironomidae	Prodiamesa	olivacea
2	0.12	16	x	Protanypus	Arthropoda	Insecta	Diptera	Chironomidae	Protanypus	
4	0.23	8	x	Psectrotanypus	Arthropoda	Insecta	Diptera	Chironomidae	Psectrotanypus	
4	0.23	13	x	Psectrotanypus dyari	Arthropoda	Insecta	Diptera	Chironomidae	Psectrotanypus	dyari
14	0.81	31	5	Pseudochironomus	Arthropoda	Insecta	Diptera	Chironomidae	Pseudochironomus	
16	0.93	111	5	Pseudochironomus fulviven	Arthropoda	Insecta	Diptera	Chironomidae	Pseudochironomus	fulviventris
9	0.52	18	5	Pseudochironomus prasinat	Arthropoda	Insecta	Diptera	Chironomidae	Pseudochironomus	prasinatus
4	0.23	19	5	Pseudochironomus richards	Arthropoda	Insecta	Diptera	Chironomidae	Pseudochironomus	richardsoni
36	2.08	100	2	Pseudodiamesa pertinax	Arthropoda	Insecta	Diptera	Chironomidae	Pseudodiamesa	pertinax
1	0.06	3	x	Psilodiamesa	Arthropoda	Insecta	Diptera	Chironomidae	Psilodiamesa	
2	0.12	3	4	Rheopelopia	Arthropoda	Insecta	Diptera	Chironomidae	Rheopelopia	
6	0.35	25	4	Rheopelopia perda	Arthropoda	Insecta	Diptera	Chironomidae	Rheopelopia	perda
1	0.06	1	x	Robackia	Arthropoda	Insecta	Diptera	Chironomidae	Robackia	
1	0.06	24	x	Robackia demeijerei	Arthropoda	Insecta	Diptera	Chironomidae	Robackia	demeijerei
3	0.17	6	x	Saetheria	Arthropoda	Insecta	Diptera	Chironomidae	Saetheria	
10	0.58	24	x	Saetheria tylus	Arthropoda	Insecta	Diptera	Chironomidae	Saetheria	tylus
1	0.06	1	5	Stelechomyia	Arthropoda	Insecta	Diptera	Chironomidae	Stelechomyia	
142	8.22	257	5	Stenochironomus	Arthropoda	Insecta	Diptera	Chironomidae	Stenochironomus	
57	3.3	392	5	Stictochironomus	Arthropoda	Insecta	Diptera	Chironomidae	Stictochironomus	
4	0.23	4	5	Stictochironomus devinctus	Arthropoda	Insecta	Diptera	Chironomidae	Stictochironomus	devinctus
27	1.56	181	2	Sympotthastia	Arthropoda	Insecta	Diptera	Chironomidae	Sympotthastia	
11	0.64	23	x	Tanypodinae	Arthropoda	Insecta	Diptera	Chironomidae	Tanypodinae	
7	0.41	31	5	Tanypus	Arthropoda	Insecta	Diptera	Chironomidae	Tanypus	
2	0.12	3	5	Tanypus punctipennis	Arthropoda	Insecta	Diptera	Chironomidae	Tanypus	punctipennis
4	0.23	4	5	Tanypus stellatus	Arthropoda	Insecta	Diptera	Chironomidae	Tanypus	stellatus
3	0.17	5	x	Tanytarsini	Arthropoda	Insecta	Diptera	Chironomidae	Tanytarsini	
3	0.17	8	5	Telopelopia	Arthropoda	Insecta	Diptera	Chironomidae	Telopelopia	
54	3.13	118	5	Telopelopia okoboji	Arthropoda	Insecta	Diptera	Chironomidae	Telopelopia	okoboji
96	5.56	446	2	Thienemannimyia	Arthropoda	Insecta	Diptera	Chironomidae	Thienemannimyia	
5	0.29	6	2	Thienemannimyia norena	Arthropoda	Insecta	Diptera	Chironomidae	Thienemannimyia	norena
2	0.12	11	3	Thienemannimyia senata	Arthropoda	Insecta	Diptera	Chironomidae	Thienemannimyia	senata
311	18.01	2658	5	Tribelos	Arthropoda	Insecta	Diptera	Chironomidae	Tribelos	
304	17.6	5598	5	Tribelos jucundus	Arthropoda	Insecta	Diptera	Chironomidae	Tribelos	jucundus
1	0.06	1	x	Trissopelopia	Arthropoda	Insecta	Diptera	Chironomidae	Trissopelopia	
4	0.23	30	2	Xenochironomus	Arthropoda	Insecta	Diptera	Chironomidae	Xenochironomus	
11	0.64	15	5	Xenochironomus xenolabis	Arthropoda	Insecta	Diptera	Chironomidae	Xenochironomus	xenolabis
1	0.06	1	x	Xenopelopia falcigera	Arthropoda	Insecta	Diptera	Chironomidae	Xenopelopia	falcigera
31	1.8	67	5	Orthocladiinae	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)		
1	0.06	1	x	Acamptocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Acamptocladius	
3	0.17	10	x	Acricotopus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Acricotopus	

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48	2.78	78	4	Brillia	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Brillia	
124	7.18	303	4	Brillia flavifrons	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Brillia	flavifrons
11	0.64	36	4	Brillia par	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Brillia	par
5	0.29	6	x	Bryophaenocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Bryophaenocladius	
5	0.29	15	5	Cardiocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cardiocladius	
84	4.86	357	5	Cardiocladius obscurus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cardiocladius	obscurus
16	0.93	42	5	Corynoneura	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Corynoneura	
52	3.01	169	5	Corynoneura taris	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Corynoneura	taris
285	16.5	1714	5	Cricotopus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	
4	0.23	178	5	Cricotopus albiforceps	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	albiforceps
2	0.12	2	5	Cricotopus algarum	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	algarum
275	15.92	2044	5	Cricotopus bicinctus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	bicinctus
8	0.46	303	5	Cricotopus curtus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	curtus
7	0.41	17	5	Cricotopus cylindraceus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	cylindraceus
61	3.53	411	5	Cricotopus festivellus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	festivellus
18	1.04	53	5	Cricotopus flavocinctus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	flavocinctus
105	6.08	1780	5	Cricotopus fugax	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	fugax
6	0.35	20	5	Cricotopus fuscatus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	fuscatus
5	0.29	19	5	Cricotopus fuscus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	fuscus
22	1.27	91	5	Cricotopus infuscatus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	infuscatus
9	0.52	21	5	Cricotopus intersectus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	intersectus
42	2.43	286	5	Cricotopus junus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	junus
1	0.06	1	5	Cricotopus laetus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	laetus
16	0.93	193	5	Cricotopus laricomalis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	laricomalis
32	1.85	693	5	Cricotopus pirifer	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	pirifer
1	0.06	4	5	Cricotopus reversus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	reversus
126	7.3	503	5	Cricotopus slossonae	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	slossonae
13	0.75	45	5	Cricotopus sylvestris	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	sylvestris
53	3.07	210	5	Cricotopus tibialis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	tibialis
27	1.56	329	5	Cricotopus tremulus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	tremulus
41	2.37	253	5	Cricotopus triannulatus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	triannulatus
1	0.06	1	5	Cricotopus tricinctus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	tricinctus
109	6.31	776	5	Cricotopus trifascia	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	trifascia
15	0.87	36	5	Cricotopus trifasciatus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	trifasciatus
30	1.74	183	5	Cricotopus vierriensis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Cricotopus	vierriensis
34	1.97	330	5	Diplocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Diplocladius	
160	9.26	2316	5	Diplocladius cultriger	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Diplocladius	cultriger
3	0.17	5	x	Doithrix	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Doithrix	
37	2.14	166	5	Eukiefferiella	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	
2	0.12	37	5	Eukiefferiella brevicalcar	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	brevicalcar
33	1.91	169	5	Eukiefferiella claripennis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	claripennis
92	5.33	392	5	Eukiefferiella devonica	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	devonica

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17	0.98	224	5	Eukiefferiella gracei	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	gracei
19	1.1	56	5	Eukiefferiella pseudomonta	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	pseudomontana
1	0.06	1	5	Eukiefferiella rectangularis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	rectangularis
1	0.06	1	5	Eukiefferiella similis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Eukiefferiella	similis
1	0.06	23	x	Halocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Halocladius	
76	4.4	282	4	Heterotrissocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Heterotrissocladius	
100	5.79	513	4	Heterotrissocladius marcidu	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Heterotrissocladius	marcidus
59	3.42	300	5	Hydrobaenus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Hydrobaenus	
90	5.21	960	5	Hydrobaenus johannseni	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Hydrobaenus	johannseni
4	0.23	7	x	Krenosmittia	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Krenosmittia	
5	0.29	5	x	Lopescladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Lopescladius	
1	0.06	1	x	Metriocnemus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Metriocnemus	
1	0.06	1	x	Metriocnemus knabi	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Metriocnemus	knabi
49	2.84	141	5	Nanocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Nanocladius	
1	0.06	1	5	Nanocladius crassicornus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Nanocladius	crassicornus
25	1.45	208	5	Nanocladius distinctus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Nanocladius	distinctus
4	0.23	13	5	Nanocladius minimus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Nanocladius	minimus
38	2.2	130	5	Nanocladius rectinervis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Nanocladius	rectinervis
17	0.98	35	5	Orthocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Orthocladius	
84	4.86	391	5	Orthocladius annectens	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Orthocladius	annectens
167	9.67	1434	5	Orthocladius dorenus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Orthocladius	dorenus
41	2.37	65	5	Orthocladius lignicola	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Orthocladius	lignicola
131	7.59	1199	5	Orthocladius obumbratus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Orthocladius	obumbratus
49	2.84	598	5	Orthocladius rivulorum	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Orthocladius	rivulorum
36	2.08	320	5	Orthocladius thienemanni	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Orthocladius	thienemanni
10	0.58	25	3	Parachaetocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Parachaetocladius	
63	3.65	304	3	Parachaetocladius hudsoni	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Parachaetocladius	hudsoni
3	0.17	10	x	Paracricotopus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Paracricotopus	
26	1.51	161	5	Parakiefferiella	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Parakiefferiella	
70	4.05	224	5	Parakiefferiella coronata	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Parakiefferiella	coronata
46	2.66	124	3	Parametriocnemus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Parametriocnemus	
84	4.86	480	3	Parametriocnemus lundbecl	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Parametriocnemus	lundbecki
231	13.38	1300	3	Parametriocnemus stylatus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Parametriocnemus	stylatus
73	4.23	195	5	Paraphaenocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Paraphaenocladius	
109	6.31	622	5	Psectrocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	
2	0.12	11	5	Psectrocladius barbimanus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	barbimanus
5	0.29	11	5	Psectrocladius nigrus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	nigrus
10	0.58	443	5	Psectrocladius octomaculat	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	octomaculatus
27	1.56	288	5	Psectrocladius elatus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	elatus
4	0.23	7	5	Psectrocladius flavus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	flavus
3	0.17	5	5	Psectrocladius pilosus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	pilosus
41	2.37	658	5	Psectrocladius psilopterus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	psilopterus

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7	0.41	12	5	Psectrocladius simulans	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	simulans
1	0.06	1	5	Psectrocladius sordidellus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	sordidellus
1	0.06	1	5	Psectrocladius vernalis	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Psectrocladius	vernalis
14	0.81	33	2	Pseudorthocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Pseudorthocladius	
70	4.05	346	4	Rheocricotopus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Rheocricotopus	
97	5.62	478	4	Rheocricotopus robacki	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Rheocricotopus	robacki
52	3.01	171	4	Rheocricotopus tuberculatu	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Rheocricotopus	tuberculatus
3	0.17	3	4	Rheosmittia	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Rheosmittia	
5	0.29	27	4	Smittia	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Smittia	
33	1.91	218	4	Symbiocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Symbiocladius	
11	0.64	12	x	Symposiocladius	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Symposiocladius	
20	1.16	70	5	Synorthocladius semivirens	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Synorthocladius	semivirens
45	2.61	79	5	Thienemanniella	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Thienemanniella	
73	4.23	252	5	Thienemanniella xena	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Thienemanniella	xena
12	0.69	83	5	Tvetenia	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Tvetenia	
276	15.98	3409	5	Tvetenia bavarica	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Tvetenia	bavarica
182	10.54	1878	5	Tvetenia vitracies	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Tvetenia	vitracies
59	3.42	215	4	Unniella	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Unniella	
46	2.66	301	4	Unniella multivirga	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Unniella	multivirga
9	0.52	11	4	Xylotopus	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Xylotopus	
11	0.64	26	4	Xylotopus par	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Xylotopus	par
2	0.12	2	4	Zalutschia	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Zalutschia	
6	0.35	49	4	Zalutschia zalutschicola	Arthropoda	Insecta	Diptera	Chironomidae (Orthocladiinae)	Zalutschia	zalutschicola
78	4.52	318	5	Cladotanytarsus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Cladotanytarsus	
6	0.35	46	5	Cladotanytarsus atridorsum	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Cladotanytarsus	atridorsum
12	0.69	44	5	Cladotanytarsus dispersopil	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Cladotanytarsus	dispersopilosus
1	0.06	2	5	Cladotanytarsus mancus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Cladotanytarsus	mancus
1	0.06	1	2	Constempellina	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Constempellina	
2	0.12	66	2	Constempellina brevicosta	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Constempellina	brevicosta
276	15.98	1337	5	Micropsectra	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Micropsectra	
73	4.23	402	5	Micropsectra deflecta	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Micropsectra	deflecta
3	0.17	4	5	Micropsectra dives	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Micropsectra	dives
22	1.27	269	5	Micropsectra junci	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Micropsectra	junci
12	0.69	29	5	Micropsectra nigripila	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Micropsectra	nigripila
101	5.85	1556	5	Micropsectra polita	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Micropsectra	polita
47	2.72	211	5	Paratanytarsus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Paratanytarsus	
200	11.58	1080	4	Rheotanytarsus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Rheotanytarsus	
306	17.72	3856	4	Rheotanytarsus exiguus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Rheotanytarsus	exiguus
129	7.47	1374	4	Rheotanytarsus pellucidus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Rheotanytarsus	pellucidus
5	0.29	16	3	Stempellina	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Stempellina	
2	0.12	5	3	Stempellina bausei	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Stempellina	bausei
14	0.81	35	3	Stempellinella	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Stempellinella	

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2	0.12	8	3	Sublettea	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Sublettea	
16	0.93	44	3	Sublettea coffmani	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Sublettea	coffmani
216	12.51	1146	5	Tanytarsus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Tanytarsus	
18	1.04	145	5	Tanytarsus confusus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Tanytarsus	confusus
141	8.16	618	5	Tanytarsus dissimilis	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Tanytarsus	dissimilis
65	3.76	234	5	Tanytarsus glabrescens	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Tanytarsus	glabrescens
244	14.13	2210	5	Tanytarsus guerlus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Tanytarsus	guerlus
24	1.39	75	5	Tanytarsus varelus	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Tanytarsus	varelus
54	3.13	376	4	Zavrelia	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Zavrelia	
2	0.12	24	4	Zavrelia pentatoma	Arthropoda	Insecta	Diptera	Chironomidae (Tanytarsini)	Zavrelia	pentatoma
2	0.12	2	x	Culicidae	Arthropoda	Insecta	Diptera	Culicidae		
2	0.12	2	x	Aedes	Arthropoda	Insecta	Diptera	Culicidae	Aedes	
1	0.06	4	x	Aedes fitchii	Arthropoda	Insecta	Diptera	Culicidae	Aedes	fitchii
13	0.75	20	x	Anopheles	Arthropoda	Insecta	Diptera	Culicidae	Anopheles	
3	0.17	11	x	Anopheles punctipennis	Arthropoda	Insecta	Diptera	Culicidae	Anopheles	punctipennis
7	0.41	15	x	Chaoborus	Arthropoda	Insecta	Diptera	Culicidae	Chaoborus	
2	0.12	3	x	Culex	Arthropoda	Insecta	Diptera	Culicidae	Culex	
2	0.12	2	x	Dixa	Arthropoda	Insecta	Diptera	Dixidae	Dixa	
4	0.23	6	x	Dolichopodidae	Arthropoda	Insecta	Diptera	Dolichopodidae		
6	0.35	6	x	Argyra	Arthropoda	Insecta	Diptera	Dolichopodidae	Argyra	
2	0.12	3	x	Dolichopus	Arthropoda	Insecta	Diptera	Dolichopodidae	Dolichopus	
6	0.35	6	x	Hydrophorus	Arthropoda	Insecta	Diptera	Dolichopodidae	Hydrophorus	
6	0.35	7	4	Empididae	Arthropoda	Insecta	Diptera	Empididae		
10	0.58	22	4	Chelifera	Arthropoda	Insecta	Diptera	Empididae	Chelifera	
34	1.97	76	4	Chelifera precatoria	Arthropoda	Insecta	Diptera	Empididae	Chelifera	precatoria
12	0.69	20	4	Clinocera	Arthropoda	Insecta	Diptera	Empididae	Clinocera	
62	3.59	246	4	Clinocera stagnalis	Arthropoda	Insecta	Diptera	Empididae	Clinocera	stagnalis
80	4.63	130	4	Hemerodromia	Arthropoda	Insecta	Diptera	Empididae	Hemerodromia	
249	14.42	847	4	Hemerodromia rogatoris	Arthropoda	Insecta	Diptera	Empididae	Hemerodromia	rogatoris
1	0.06	2	x	Brachydeutera	Arthropoda	Insecta	Diptera	Ephydridae	Brachydeutera	
1	0.06	1	x	Brachydeutera argentata	Arthropoda	Insecta	Diptera	Ephydridae	Brachydeutera	argentata
3	0.17	4	x	Ephydra	Arthropoda	Insecta	Diptera	Ephydridae	Ephydra	
10	0.58	11	x	Hydrellia	Arthropoda	Insecta	Diptera	Ephydridae	Hydrellia	
5	0.29	6	x	Psilopa	Arthropoda	Insecta	Diptera	Ephydridae	Psilopa	
1	0.06	1	x	Scatella	Arthropoda	Insecta	Diptera	Ephydridae	Scatella	
8	0.46	8	x	Lispe	Arthropoda	Insecta	Diptera	Muscidae	Lispe	
13	0.75	42	x	Lispoides	Arthropoda	Insecta	Diptera	Muscidae	Lispoides	
2	0.12	2	x	Lispoides aequifrons	Arthropoda	Insecta	Diptera	Muscidae	Lispoides	aequifrons
10	0.58	116	x	Diplonevra	Arthropoda	Insecta	Diptera	Phoridae	Diplonevra	
4	0.23	4	x	Psychodidae	Arthropoda	Insecta	Diptera	Psychodidae		
29	1.68	39	x	Maruina	Arthropoda	Insecta	Diptera	Psychodidae	Maruina	
6	0.35	8	x	Pericoma	Arthropoda	Insecta	Diptera	Psychodidae	Pericoma	

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13	0.75	27	x	Psychoda	Arthropoda	Insecta	Diptera	Psychodidae	Psychoda	
13	0.75	16	x	Telmatoscopus	Arthropoda	Insecta	Diptera	Psychodidae	Telmatoscopus	
2	0.12	3	x	Telmatoscopus albipunctatu	Arthropoda	Insecta	Diptera	Psychodidae	Telmatoscopus	albipunctatus
1	0.06	1	x	Ptychopteridae	Arthropoda	Insecta	Diptera	Ptychopteridae		
9	0.52	21	x	Bittacomorpha	Arthropoda	Insecta	Diptera	Ptychopteridae	Bittacomorpha	
11	0.64	107	x	Bittacomorpha clavipes	Arthropoda	Insecta	Diptera	Ptychopteridae	Bittacomorpha	clavipes
3	0.17	7	x	Ptychoptera	Arthropoda	Insecta	Diptera	Ptychopteridae	Ptychoptera	
2	0.12	8	x	Ptychoptera quadrifasciata	Arthropoda	Insecta	Diptera	Ptychopteridae	Ptychoptera	quadrifasciata
3	0.17	3	x	Dictya	Arthropoda	Insecta	Diptera	Sciomyzidae	Dictya	
16	0.93	58	x	Simuliidae	Arthropoda	Insecta	Diptera	Simuliidae		
3	0.17	13	3	Cnephia	Arthropoda	Insecta	Diptera	Simuliidae	Cnephia	
37	2.14	372	3	Cnephia dacotensis	Arthropoda	Insecta	Diptera	Simuliidae	Cnephia	dacotensis
203	11.75	6714	3	Cnephia mutata	Arthropoda	Insecta	Diptera	Simuliidae	Cnephia	mutata
2	0.12	10	2	Greniera abdita	Arthropoda	Insecta	Diptera	Simuliidae	Greniera	abdita
28	1.62	223	3	Prosimulium	Arthropoda	Insecta	Diptera	Simuliidae	Prosimulium	
118	6.83	16663	3	Prosimulium hirtipes	Arthropoda	Insecta	Diptera	Simuliidae	Prosimulium	hirtipes
84	4.86	4717	3	Prosimulium magnum	Arthropoda	Insecta	Diptera	Simuliidae	Prosimulium	magnum
117	6.77	894	4	Simulium	Arthropoda	Insecta	Diptera	Simuliidae	Simulium	
22	1.27	3574	4	Simulium aureum	Arthropoda	Insecta	Diptera	Simuliidae	Simulium	aureum
3	0.17	3	4	Simulium gouldingi	Arthropoda	Insecta	Diptera	Simuliidae	Simulium	gouldingi
81	4.69	1558	4	Simulium jenningsi	Arthropoda	Insecta	Diptera	Simuliidae	Simulium	jenningsi
202	11.7	3484	5	Simulium tuberosum	Arthropoda	Insecta	Diptera	Simuliidae	Simulium	tuberosum
191	11.06	3414	5	Simulium venustum	Arthropoda	Insecta	Diptera	Simuliidae	Simulium	venustum
254	14.71	2174	5	Simulium vittatum	Arthropoda	Insecta	Diptera	Simuliidae	Simulium	vittatum
4	0.23	5	x	Nemotelus	Arthropoda	Insecta	Diptera	Stratiomyidae	Nemotelus	
2	0.12	2	x	Odontomyia	Arthropoda	Insecta	Diptera	Stratiomyidae	Odontomyia	
2	0.12	3	x	Stratiomys	Arthropoda	Insecta	Diptera	Stratiomyidae	Stratiomys	
1	0.06	2	x	Stratiomys discalis	Arthropoda	Insecta	Diptera	Stratiomyidae	Stratiomys	discalis
2	0.12	2	x	Syritta pipiens	Arthropoda	Insecta	Diptera	Syrphidae	Syritta	pipiens
30	1.74	51	5	Tabanidae	Arthropoda	Insecta	Diptera	Tabanidae		
11	0.64	15	5	Chrysops	Arthropoda	Insecta	Diptera	Tabanidae	Chrysops	
160	9.26	375	5	Tabanus	Arthropoda	Insecta	Diptera	Tabanidae	Tabanus	
14	0.81	26	x	Tipulidae	Arthropoda	Insecta	Diptera	Tipulidae		
275	15.92	1536	5	Antocha	Arthropoda	Insecta	Diptera	Tipulidae	Antocha	
2	0.12	2	x	Dactylolabis	Arthropoda	Insecta	Diptera	Tipulidae	Dactylolabis	
191	11.06	838	4	Dicranota	Arthropoda	Insecta	Diptera	Tipulidae	Dicranota	
7	0.41	8	x	Elliptera	Arthropoda	Insecta	Diptera	Tipulidae	Elliptera	
1	0.06	1	x	Erioptera	Arthropoda	Insecta	Diptera	Tipulidae	Erioptera	
18	1.04	34	x	Erioptera cana	Arthropoda	Insecta	Diptera	Tipulidae	Erioptera	cana
1	0.06	2	x	Erioptera chlorophylla	Arthropoda	Insecta	Diptera	Tipulidae	Erioptera	chlorophylla
1	0.06	1	x	Gonomyia	Arthropoda	Insecta	Diptera	Tipulidae	Gonomyia	
7	0.41	8	x	Helius	Arthropoda	Insecta	Diptera	Tipulidae	Helius	

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8	0.46	21	x	Hesperoconopa	Arthropoda	Insecta	Diptera	Tipulidae	Hesperoconopa	
55	3.18	161	3	Hexatoma	Arthropoda	Insecta	Diptera	Tipulidae	Hexatoma	
50	2.9	107	3	Hexatoma fultonensis	Arthropoda	Insecta	Diptera	Tipulidae	Hexatoma	fultonensis
1	0.06	1	3	Hexatoma megacera	Arthropoda	Insecta	Diptera	Tipulidae	Hexatoma	megacera
111	6.43	342	3	Hexatoma spinosa	Arthropoda	Insecta	Diptera	Tipulidae	Hexatoma	spinosa
7	0.41	12	x	Holorusia	Arthropoda	Insecta	Diptera	Tipulidae	Holorusia	
23	1.33	34	4	Limnophila	Arthropoda	Insecta	Diptera	Tipulidae	Limnophila	
18	1.04	23	4	Limonia	Arthropoda	Insecta	Diptera	Tipulidae	Limonia	
2	0.12	2	4	Limonia rostrata	Arthropoda	Insecta	Diptera	Tipulidae	Limonia	rostrata
11	0.64	12	x	Molophilus	Arthropoda	Insecta	Diptera	Tipulidae	Molophilus	
10	0.58	40	x	Ormosia	Arthropoda	Insecta	Diptera	Tipulidae	Ormosia	
12	0.69	16	x	Pedicia	Arthropoda	Insecta	Diptera	Tipulidae	Pedicia	
1	0.06	2	x	Phalacrocera	Arthropoda	Insecta	Diptera	Tipulidae	Phalacrocera	
20	1.16	26	4	Pilaria	Arthropoda	Insecta	Diptera	Tipulidae	Pilaria	
54	3.13	127	4	Pilaria tenuipes	Arthropoda	Insecta	Diptera	Tipulidae	Pilaria	tenuipes
36	2.08	59	4	Pseudolimnophila	Arthropoda	Insecta	Diptera	Tipulidae	Pseudolimnophila	
145	8.4	483	3	Tipula	Arthropoda	Insecta	Diptera	Tipulidae	Tipula	
85	4.92	211	3	Tipula abdominalis	Arthropoda	Insecta	Diptera	Tipulidae	Tipula	abdominalis
106	6.14	177	3	Tipula ignobilis	Arthropoda	Insecta	Diptera	Tipulidae	Tipula	ignobilis
2	0.12	3	x	Habrophlebia	Arthropoda	Insecta	Ephemeroptera		Habrophlebia	
4	0.23	5	x	Habrophlebia vibrans	Arthropoda	Insecta	Ephemeroptera		Habrophlebia	vibrans
8	0.46	9	3	Baetidae	Arthropoda	Insecta	Ephemeroptera	Baetidae		
2	0.12	3	2	Acentrella	Arthropoda	Insecta	Ephemeroptera	Baetidae	Acentrella	
69	4	692	2	Acentrella turbida	Arthropoda	Insecta	Ephemeroptera	Baetidae	Acentrella	turbida
8	0.46	20	2	Acerpenna	Arthropoda	Insecta	Ephemeroptera	Baetidae	Acerpenna	
10	0.58	62	2	Acerpenna pygmaea	Arthropoda	Insecta	Ephemeroptera	Baetidae	Acerpenna	pygmaea
122	7.06	457	3	Baetis	Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetis	
5	0.29	21	3	Baetis brunneicolor	Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetis	brunneicolor
9	0.52	85	3	Baetis flavistriga	Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetis	flavistriga
3	0.17	15	3	Baetis hageni	Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetis	hageni
31	1.8	165	3	Baetis intercalaris	Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetis	intercalaris
71	4.11	553	3	Baetis tricaudatus	Arthropoda	Insecta	Ephemeroptera	Baetidae	Baetis	tricaudatus
14	0.81	78	4	Callibaetis	Arthropoda	Insecta	Ephemeroptera	Baetidae	Callibaetis	
89	5.15	253	2	Centroptilum	Arthropoda	Insecta	Ephemeroptera	Baetidae	Centroptilum	
271	15.69	2532	3	Cloeon	Arthropoda	Insecta	Ephemeroptera	Baetidae	Cloeon	
7	0.41	65	2	Heterocloeon	Arthropoda	Insecta	Ephemeroptera	Baetidae	Heterocloeon	
5	0.29	16	x	Paracloeodes	Arthropoda	Insecta	Ephemeroptera	Baetidae	Paracloeodes	
65	3.76	394	3	Plauditus cingulatus	Arthropoda	Insecta	Ephemeroptera	Baetidae	Plauditus	cingulatus
8	0.46	29	3	Plauditus dubius	Arthropoda	Insecta	Ephemeroptera	Baetidae	Plauditus	dubius
49	2.84	809	3	Plauditus punctiventris	Arthropoda	Insecta	Ephemeroptera	Baetidae	Plauditus	punctiventris
1	0.06	1	x	Procloeon	Arthropoda	Insecta	Ephemeroptera	Baetidae	Procloeon	
48	2.78	142	2	Pseudocloeon	Arthropoda	Insecta	Ephemeroptera	Baetidae	Pseudocloeon	

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3	0.17	5	2	Pseudocloeon parvulum	Arthropoda	Insecta	Ephemeroptera	Baetidae	Pseudocloeon	parvulum
30	1.74	211	2	Pseudocloeon propinquum	Arthropoda	Insecta	Ephemeroptera	Baetidae	Pseudocloeon	propinquum
12	0.69	25	2	Baetisca	Arthropoda	Insecta	Ephemeroptera	Baetiscidae	Baetisca	
11	0.64	82	2	Baetisca obesa	Arthropoda	Insecta	Ephemeroptera	Baetiscidae	Baetisca	obesa
230	13.32	1175	4	Caenis	Arthropoda	Insecta	Ephemeroptera	Caenidae	Caenis	
1	0.06	2	x	Attenella attenuata	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Attenella	attenuata
6	0.35	9	3	Dannella	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Dannella	
2	0.12	6	3	Dannella lita	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Dannella	lita
6	0.35	10	3	Dannella simplex	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Dannella	simplex
23	1.33	146	2	Drunella	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Drunella	
29	1.68	256	2	Drunella cornutella	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Drunella	cornutella
4	0.23	54	2	Drunella lata	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Drunella	lata
14	0.81	156	2	Drunella walkeri	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Drunella	walkeri
82	4.75	1305	3	Ephemerella	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	
9	0.52	116	3	Ephemerella aurivillii	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	aurivillii
78	4.52	1630	3	Ephemerella dorothea	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	dorothea
23	1.33	2916	3	Ephemerella invaria	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	invaria
5	0.29	35	3	Ephemerella needhami	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	needhami
83	4.81	2798	3	Ephemerella rotunda	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	rotunda
6	0.35	12	3	Ephemerella septentrionalis	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	septentrionalis
25	1.45	303	3	Ephemerella subvaria	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Ephemerella	subvaria
87	5.04	484	3	Eurylophella	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Eurylophella	
5	0.29	19	3	Eurylophella bicolor	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Eurylophella	bicolor
296	17.14	2560	3	Eurylophella temporalis	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Eurylophella	temporalis
61	3.53	442	3	Serratella	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Serratella	
36	2.08	389	3	Serratella deficiens	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Serratella	deficiens
11	0.64	186	3	Serratella serrata	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Serratella	serrata
7	0.41	61	3	Serratella serratoides	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Serratella	serratoides
1	0.06	96	3	Serratella spiculosa	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Serratella	spiculosa
1	0.06	1	x	Timpanoga	Arthropoda	Insecta	Ephemeroptera	Ephemerellidae	Timpanoga	
2	0.12	2	x	Ephemera	Arthropoda	Insecta	Ephemeroptera	Ephemeridae	Ephemera	
2	0.12	2	x	Hexagenia	Arthropoda	Insecta	Ephemeroptera	Ephemeridae	Hexagenia	
2	0.12	3	x	Heptageniidae	Arthropoda	Insecta	Ephemeroptera	Heptageniidae		
6	0.35	86	2	Cinygmula	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Cinygmula	
92	5.33	863	2	Epeorus	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Epeorus	
47	2.72	238	2	Heptagenia	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	
1	0.06	4	2	Heptagenia lucidipennis	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Heptagenia	lucidipennis
14	0.81	31	4	Stenacron	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenacron	
114	6.6	599	4	Stenacron interpunctatum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenacron	interpunctatum
1	0.06	10	4	Stenacron minnetonka	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenacron	minnetonka
6	0.35	14	4	Stenacron pallidum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenacron	pallidum
201	11.64	1013	3	Stenonema	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	

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5	0.29	35	3	Stenonema ithaca	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	ithaca
8	0.46	43	3	Stenonema luteum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	luteum
14	0.81	59	3	Stenonema mexicanum inte	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	mexicanum integrum
187	10.83	1658	3	Stenonema modestum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	modestum
42	2.43	609	3	Stenonema nepotellum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	nepotellum
7	0.41	32	3	Stenonema pudicum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	pudicum
3	0.17	7	3	Stenonema pulchellum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	pulchellum
225	13.03	1751	3	Stenonema smithae	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	smithae
6	0.35	146	3	Stenonema terminatum	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	terminatum
22	1.27	86	3	Stenonema vicarium	Arthropoda	Insecta	Ephemeroptera	Heptageniidae	Stenonema	vicarium
5	0.29	33	x	Leptophlebiidae	Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae		
6	0.35	12	2	Choroterpes	Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	Choroterpes	
216	12.51	1869	3	Leptophlebia	Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	Leptophlebia	
169	9.79	1409	2	Paraleptophlebia	Arthropoda	Insecta	Ephemeroptera	Leptophlebiidae	Paraleptophlebia	
79	4.57	218	2	Siphloplecton	Arthropoda	Insecta	Ephemeroptera	Metretopodidae	Siphloplecton	
56	3.24	388	3	Isonychia	Arthropoda	Insecta	Ephemeroptera	Oligoneuriidae	Isonychia	
55	3.18	806	3	Isonychia arida	Arthropoda	Insecta	Ephemeroptera	Oligoneuriidae	Isonychia	arida
7	0.41	26	3	Isonychia bicolor	Arthropoda	Insecta	Ephemeroptera	Oligoneuriidae	Isonychia	bicolor
35	2.03	620	3	Isonychia sayi	Arthropoda	Insecta	Ephemeroptera	Oligoneuriidae	Isonychia	sayi
5	0.29	19	2	Ephoron	Arthropoda	Insecta	Ephemeroptera	Polymitarcyidae	Ephoron	
17	0.98	155	2	Potamanthus	Arthropoda	Insecta	Ephemeroptera	Potamanthidae	Potamanthus	
45	2.61	255	2	Ameletus	Arthropoda	Insecta	Ephemeroptera	Siphlonuridae	Ameletus	
6	0.35	101	2	Parameletus	Arthropoda	Insecta	Ephemeroptera	Siphlonuridae	Parameletus	
12	0.69	26	2	Siphlonurus	Arthropoda	Insecta	Ephemeroptera	Siphlonuridae	Siphlonurus	
41	2.37	242	4	Tricorythodes	Arthropoda	Insecta	Ephemeroptera	Tricorythidae	Tricorythodes	
5	0.29	6	x	Belostoma	Arthropoda	Insecta	Hemiptera	Belostomatidae	Belostoma	
2	0.12	2	x	Lethocerus americanus	Arthropoda	Insecta	Hemiptera	Belostomatidae	Lethocerus	americanus
178	10.31	682	4	Corixidae	Arthropoda	Insecta	Hemiptera	Corixidae		
4	0.23	10	4	Callicorixa	Arthropoda	Insecta	Hemiptera	Corixidae	Callicorixa	
12	0.69	130	4	Hesperocorixa	Arthropoda	Insecta	Hemiptera	Corixidae	Hesperocorixa	
21	1.22	152	4	Palmacorixa	Arthropoda	Insecta	Hemiptera	Corixidae	Palmacorixa	
2	0.12	5	4	Ramphocorixa	Arthropoda	Insecta	Hemiptera	Corixidae	Ramphocorixa	
57	3.3	397	4	Sigara	Arthropoda	Insecta	Hemiptera	Corixidae	Sigara	
34	1.97	421	4	Trichocorixa	Arthropoda	Insecta	Hemiptera	Corixidae	Trichocorixa	
4	0.23	27	4	Trichocorixa verticalis	Arthropoda	Insecta	Hemiptera	Corixidae	Trichocorixa	verticalis
1	0.06	1	x	Gerridae	Arthropoda	Insecta	Hemiptera	Gerridae		
12	0.69	15	x	Gerris	Arthropoda	Insecta	Hemiptera	Gerridae	Gerris	
4	0.23	5	x	Gerris marginatus	Arthropoda	Insecta	Hemiptera	Gerridae	Gerris	marginatus
4	0.23	5	x	Metrobates	Arthropoda	Insecta	Hemiptera	Gerridae	Metrobates	
2	0.12	2	x	Metrobates hesperius	Arthropoda	Insecta	Hemiptera	Gerridae	Metrobates	hesperius
16	0.93	24	x	Rheumatobates	Arthropoda	Insecta	Hemiptera	Gerridae	Rheumatobates	
13	0.75	27	x	Trepobates	Arthropoda	Insecta	Hemiptera	Gerridae	Trepobates	

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13	0.75	25	x	Trepobates pictus	Arthropoda	Insecta	Hemiptera	Gerridae	Trepobates	pictus
1	0.06	1	x	Hebrus	Arthropoda	Insecta	Hemiptera	Hebridae	Hebrus	
4	0.23	4	x	Mesovelia	Arthropoda	Insecta	Hemiptera	Mesoveliidae	Mesovelia	
5	0.29	6	x	Mesovelia mulsanti	Arthropoda	Insecta	Hemiptera	Mesoveliidae	Mesovelia	mulsanti
8	0.46	17	x	Pelocoris	Arthropoda	Insecta	Hemiptera	Naucoridae	Pelocoris	
2	0.12	2	x	Nepa	Arthropoda	Insecta	Hemiptera	Nepidae	Nepa	
1	0.06	2	x	Nepa apiculata	Arthropoda	Insecta	Hemiptera	Nepidae	Nepa	apiculata
6	0.35	6	x	Ranatra	Arthropoda	Insecta	Hemiptera	Nepidae	Ranatra	
2	0.12	13	x	Notonectidae	Arthropoda	Insecta	Hemiptera	Notonectidae		
2	0.12	2	2	Neoplea	Arthropoda	Insecta	Hemiptera	Notonectidae	Neoplea	
27	1.56	39	x	Notonecta	Arthropoda	Insecta	Hemiptera	Notonectidae	Notonecta	
3	0.17	3	x	Notonecta irrorata	Arthropoda	Insecta	Hemiptera	Notonectidae	Notonecta	irrorata
1	0.06	1	x	Notonecta uhleri	Arthropoda	Insecta	Hemiptera	Notonectidae	Notonecta	uhleri
1	0.06	2	x	Notonecta undulata	Arthropoda	Insecta	Hemiptera	Notonectidae	Notonecta	undulata
3	0.17	4	2	Neoplea striola	Arthropoda	Insecta	Hemiptera	Pleidae	Neoplea	striola
21	1.22	35	3	Microvelia	Arthropoda	Insecta	Hemiptera	Veliidae	Microvelia	
65	3.76	124	3	Microvelia pulchella	Arthropoda	Insecta	Hemiptera	Veliidae	Microvelia	pulchella
23	1.33	53	3	Rhagovelia	Arthropoda	Insecta	Hemiptera	Veliidae	Rhagovelia	
58	3.36	144	3	Rhagovelia obesa	Arthropoda	Insecta	Hemiptera	Veliidae	Rhagovelia	obesa
1	0.06	1	x	Hydrometra	Arthropoda	Insecta	Heteroptera	Hydrometridae	Hydrometra	
1	0.06	2	x	Hydrometra martini	Arthropoda	Insecta	Heteroptera	Hydrometridae	Hydrometra	martini
4	0.23	8	x	Nepticula	Arthropoda	Insecta	Lepidoptera	Nepticulidae	Nepticula	
1	0.06	1	x	Simyra	Arthropoda	Insecta	Lepidoptera	Noctuidae	Simyra	
5	0.29	5	x	Pyralidae	Arthropoda	Insecta	Lepidoptera	Pyralidae		
13	0.75	14	x	Acentria	Arthropoda	Insecta	Lepidoptera	Pyralidae	Acentria	
1	0.06	1	x	Elophila	Arthropoda	Insecta	Lepidoptera	Pyralidae	Elophila	
17	0.98	67	x	Nymphuliella	Arthropoda	Insecta	Lepidoptera	Pyralidae	Nymphuliella	
67	3.88	145	5	Paraponyx	Arthropoda	Insecta	Lepidoptera	Pyralidae	Paraponyx	
28	1.62	72	5	Petrophila	Arthropoda	Insecta	Lepidoptera	Pyralidae	Petrophila	
12	0.69	21	x	Synclita	Arthropoda	Insecta	Lepidoptera	Pyralidae	Synclita	
10	0.58	15	4	Chauliodes	Arthropoda	Insecta	Megaloptera	Corydalidae	Chauliodes	
10	0.58	12	4	Chauliodes pectinicornis	Arthropoda	Insecta	Megaloptera	Corydalidae	Chauliodes	pectinicornis
1	0.06	1	4	Chauliodes rastricornis	Arthropoda	Insecta	Megaloptera	Corydalidae	Chauliodes	rastricornis
3	0.17	5	3	Corydalus	Arthropoda	Insecta	Megaloptera	Corydalidae	Corydalus	
51	2.95	123	3	Corydalus cornutus	Arthropoda	Insecta	Megaloptera	Corydalidae	Corydalus	cornutus
58	3.36	102	3	Nigronia	Arthropoda	Insecta	Megaloptera	Corydalidae	Nigronia	
273	15.81	917	3	Nigronia serricornis	Arthropoda	Insecta	Megaloptera	Corydalidae	Nigronia	serricornis
1	0.06	0	4	Sialidae	Arthropoda	Insecta	Megaloptera	Sialidae		
281	16.27	646	4	Sialis	Arthropoda	Insecta	Megaloptera	Sialidae	Sialis	
2	0.12	7	4	Sialis aequalis	Arthropoda	Insecta	Megaloptera	Sialidae	Sialis	aequalis
52	3.01	215	4	Sialis hasta	Arthropoda	Insecta	Megaloptera	Sialidae	Sialis	hasta
77	4.46	268	4	Sialis iola	Arthropoda	Insecta	Megaloptera	Sialidae	Sialis	iola

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1	0.06	1	4	Sialis joppa	Arthropoda	Insecta	Megaloptera	Sialidae	Sialis	joppa
22	1.27	93	4	Sialis mohri	Arthropoda	Insecta	Megaloptera	Sialidae	Sialis	mohri
4	0.23	5	4	Sialis velata	Arthropoda	Insecta	Megaloptera	Sialidae	Sialis	velata
6	0.35	6	5	Climacia areolaris	Arthropoda	Insecta	Neuroptera	Sisyridae	Climacia	areolaris
3	0.17	4	x	Aeshnidae	Arthropoda	Insecta	Odonata	Aeshnidae		
6	0.35	8	3	Aeshna	Arthropoda	Insecta	Odonata	Aeshnidae	Aeshna	
1	0.06	6	3	Aeshna interrupta[1]	Arthropoda	Insecta	Odonata	Aeshnidae	Aeshna	interrupta
4	0.23	5	4	Anax	Arthropoda	Insecta	Odonata	Aeshnidae	Anax	
1	0.06	1	5	Anax junius	Arthropoda	Insecta	Odonata	Aeshnidae	Anax	junius
6	0.35	7	5	Basiaeschna	Arthropoda	Insecta	Odonata	Aeshnidae	Basiaeschna	
2	0.12	3	5	Basiaeschna janata	Arthropoda	Insecta	Odonata	Aeshnidae	Basiaeschna	janata
62	3.59	100	3	Boyeria	Arthropoda	Insecta	Odonata	Aeshnidae	Boyeria	
148	8.57	230	4	Boyeria vinosa	Arthropoda	Insecta	Odonata	Aeshnidae	Boyeria	vinosa
1	0.06	1	3	Gomphaeschna	Arthropoda	Insecta	Odonata	Aeshnidae	Gomphaeschna	
1	0.06	1	4	Gomphaeschna furcillata	Arthropoda	Insecta	Odonata	Aeshnidae	Gomphaeschna	furcillata
1	0.06	2	x	Calopterygidae	Arthropoda	Insecta	Odonata	Calopterygidae		
277	16.04	800	3	Calopteryx	Arthropoda	Insecta	Odonata	Calopterygidae	Calopteryx	
17	0.98	38	4	Hetaerina	Arthropoda	Insecta	Odonata	Calopterygidae	Hetaerina	
7	0.41	14	4	Hetaerina americana	Arthropoda	Insecta	Odonata	Calopterygidae	Hetaerina	americana
7	0.41	25	x	Coenagrionidae	Arthropoda	Insecta	Odonata	Coenagrionidae		
3	0.17	9	x	Amphiagrion	Arthropoda	Insecta	Odonata	Coenagrionidae	Amphiagrion	
141	8.16	275	4	Argia	Arthropoda	Insecta	Odonata	Coenagrionidae	Argia	
54	3.13	183	3	Argia bipunctulata	Arthropoda	Insecta	Odonata	Coenagrionidae	Argia	bipunctulata
3	0.17	15	5	Argia moesta	Arthropoda	Insecta	Odonata	Coenagrionidae	Argia	moesta
23	1.33	55	5	Argia violacea	Arthropoda	Insecta	Odonata	Coenagrionidae	Argia	violacea
9	0.52	49	5	Chromagrion	Arthropoda	Insecta	Odonata	Coenagrionidae	Chromagrion	
1	0.06	1	5	Chromagrion conditum	Arthropoda	Insecta	Odonata	Coenagrionidae	Chromagrion	conditum
83	4.81	204	4	Enallagma	Arthropoda	Insecta	Odonata	Coenagrionidae	Enallagma	
272	15.75	1156	5	Ischnura	Arthropoda	Insecta	Odonata	Coenagrionidae	Ischnura	
4	0.23	23	5	Ischnura verticalis	Arthropoda	Insecta	Odonata	Coenagrionidae	Ischnura	verticalis
63	3.65	86	2	Cordulegaster	Arthropoda	Insecta	Odonata	Cordulegastridae	Cordulegaster	
1	0.06	1	3	Cordulegaster diastatops	Arthropoda	Insecta	Odonata	Cordulegastridae	Cordulegaster	diastatops
12	0.69	16	4	Cordulegaster maculata	Arthropoda	Insecta	Odonata	Cordulegastridae	Cordulegaster	maculata
3	0.17	4	5	Dorocordulia	Arthropoda	Insecta	Odonata	Corduliidae	Dorocordulia	
3	0.17	11	5	Epicordulia	Arthropoda	Insecta	Odonata	Corduliidae	Epicordulia	
5	0.29	6	4	Helocordulia	Arthropoda	Insecta	Odonata	Corduliidae	Helocordulia	
1	0.06	1	4	Helocordulia uhleri	Arthropoda	Insecta	Odonata	Corduliidae	Helocordulia	uhleri
3	0.17	3	2	Neurocordulia	Arthropoda	Insecta	Odonata	Corduliidae	Neurocordulia	
1	0.06	1	2	Neurocordulia obsoleta	Arthropoda	Insecta	Odonata	Corduliidae	Neurocordulia	obsoleta
48	2.78	94	2	Somatochlora	Arthropoda	Insecta	Odonata	Corduliidae	Somatochlora	
1	0.06	1	1	Somatochlora forcipata[2]	Arthropoda	Insecta	Odonata	Corduliidae	Somatochlora	forcipata
1	0.06	1	3	Somatochlora provocans	Arthropoda	Insecta	Odonata	Corduliidae	Somatochlora	provocans

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1	0.06	1	4	Somatochlora tenebrosa	Arthropoda	Insecta	Odonata	Corduliidae	Somatochlora	tenebrosa
28	1.62	41	4	Tetragoneuria	Arthropoda	Insecta	Odonata	Corduliidae	Tetragoneuria	
3	0.17	3	x	Gomphidae	Arthropoda	Insecta	Odonata	Gomphidae		
2	0.12	3	4	Arigomphus	Arthropoda	Insecta	Odonata	Gomphidae	Arigomphus	
58	3.36	84	4	Dromogomphus	Arthropoda	Insecta	Odonata	Gomphidae	Dromogomphus	
17	0.98	30	4	Dromogomphus spinosus	Arthropoda	Insecta	Odonata	Gomphidae	Dromogomphus	spinosus
52	3.01	74	2	Gomphus	Arthropoda	Insecta	Odonata	Gomphidae	Gomphus	
1	0.06	1	4	Gomphus exilis	Arthropoda	Insecta	Odonata	Gomphidae	Gomphus	exilis
3	0.17	4	3	Gomphus spicatus	Arthropoda	Insecta	Odonata	Gomphidae	Gomphus	spicatus
3	0.17	3	4	Hagenius	Arthropoda	Insecta	Odonata	Gomphidae	Hagenius	
10	0.58	20	4	Hagenius brevistylus	Arthropoda	Insecta	Odonata	Gomphidae	Hagenius	brevistylus
66	3.82	131	2	Lanthus	Arthropoda	Insecta	Odonata	Gomphidae	Lanthus	
1	0.06	5	4	Lanthus albistylus[3]	Arthropoda	Insecta	Odonata	Gomphidae	Lanthus	albistylus
8	0.46	11	x	Lanthus parvulus[4]	Arthropoda	Insecta	Odonata	Gomphidae	Lanthus	parvulus
13	0.75	21	x	Octogomphus[5]	Arthropoda	Insecta	Odonata	Gomphidae	Octogomphus	
17	0.98	29	1	Ophiogomphus	Arthropoda	Insecta	Odonata	Gomphidae	Ophiogomphus	
13	0.75	18	3	Progomphus	Arthropoda	Insecta	Odonata	Gomphidae	Progomphus	
1	0.06	1	3	Progomphus obscurus	Arthropoda	Insecta	Odonata	Gomphidae	Progomphus	obscurus
12	0.69	22	3	Lestes	Arthropoda	Insecta	Odonata	Lestidae	Lestes	
1	0.06	1	4	Lestes vigilax	Arthropoda	Insecta	Odonata	Lestidae	Lestes	vigilax
14	0.81	20	x	Libellulidae	Arthropoda	Insecta	Odonata	Libellulidae		
10	0.58	13	5	Erythemis	Arthropoda	Insecta	Odonata	Libellulidae	Erythemis	
1	0.06	1	5	Erythemis simplicicollis	Arthropoda	Insecta	Odonata	Libellulidae	Erythemis	simplicicollis
3	0.17	3	5	Erythrodiplax	Arthropoda	Insecta	Odonata	Libellulidae	Erythrodiplax	
9	0.52	14	4	Libellula	Arthropoda	Insecta	Odonata	Libellulidae	Libellula	
11	0.64	14	5	Pachydiplax	Arthropoda	Insecta	Odonata	Libellulidae	Pachydiplax	
5	0.29	7	5	Pachydiplax longipennis	Arthropoda	Insecta	Odonata	Libellulidae	Pachydiplax	longipennis
7	0.41	17	5	Perithemis	Arthropoda	Insecta	Odonata	Libellulidae	Perithemis	
7	0.41	7	5	Plathemis	Arthropoda	Insecta	Odonata	Libellulidae	Plathemis	
1	0.06	3	5	Plathemis lydia	Arthropoda	Insecta	Odonata	Libellulidae	Plathemis	lydia
16	0.93	28	4	Sympetrum	Arthropoda	Insecta	Odonata	Libellulidae	Sympetrum	
1	0.06	1	5	Tramea carolina	Arthropoda	Insecta	Odonata	Libellulidae	Tramea	carolina
1	0.06	2	x	Macromiidae	Arthropoda	Insecta	Odonata	Macromiidae		
2	0.12	2	4	Didymops	Arthropoda	Insecta	Odonata	Macromiidae	Didymops	
1	0.06	1	4	Didymops transversa	Arthropoda	Insecta	Odonata	Macromiidae	Didymops	transversa
17	0.98	19	3	Macromia	Arthropoda	Insecta	Odonata	Macromiidae	Macromia	
11	0.64	15	3	Macromia illinoiensis	Arthropoda	Insecta	Odonata	Macromiidae	Macromia	illinoiensis
2	0.12	2	2	Capniidae	Arthropoda	Insecta	Plecoptera	Capniidae		
77	4.46	1349	2	Allocapnia	Arthropoda	Insecta	Plecoptera	Capniidae	Allocapnia	
9	0.52	50	2	Paracapnia	Arthropoda	Insecta	Plecoptera	Capniidae	Paracapnia	
1	0.06	5	2	Paracapnia angulata	Arthropoda	Insecta	Plecoptera	Capniidae	Paracapnia	angulata
33	1.91	372	2	Paracapnia opis	Arthropoda	Insecta	Plecoptera	Capniidae	Paracapnia	opis

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1	0.06	1	2	Chloroperlidae	Arthropoda	Insecta	Plecoptera	Chloroperlidae		
3	0.17	4	2	Alloperla	Arthropoda	Insecta	Plecoptera	Chloroperlidae	Alloperla	
1	0.06	6	2	Haploperla	Arthropoda	Insecta	Plecoptera	Chloroperlidae	Haploperla	
46	2.66	176	2	Haploperla brevis	Arthropoda	Insecta	Plecoptera	Chloroperlidae	Haploperla	brevis
104	6.02	588	2	Leuctra	Arthropoda	Insecta	Plecoptera	Leuctridae	Leuctra	
75	4.34	4012	2	Leuctra tenuis	Arthropoda	Insecta	Plecoptera	Leuctridae	Leuctra	tenuis
78	4.52	582	2	Leuctra truncata	Arthropoda	Insecta	Plecoptera	Leuctridae	Leuctra	truncata
2	0.12	5	2	Paraleuctra	Arthropoda	Insecta	Plecoptera	Leuctridae	Paraleuctra	
4	0.23	815	2	Paraleuctra sara	Arthropoda	Insecta	Plecoptera	Leuctridae	Paraleuctra	sara
5	0.29	26	3	Amphinemura	Arthropoda	Insecta	Plecoptera	Nemouridae	Amphinemura	
79	4.57	991	3	Amphinemura delosa	Arthropoda	Insecta	Plecoptera	Nemouridae	Amphinemura	delosa
4	0.23	12	2	Brachyptera	Arthropoda	Insecta	Plecoptera	Nemouridae	Brachyptera	
28	1.62	173	2	Nemoura	Arthropoda	Insecta	Plecoptera	Nemouridae	Nemoura	
35	2.03	824	2	Nemoura trispinosa	Arthropoda	Insecta	Plecoptera	Nemouridae	Nemoura	trispinosa
2	0.12	4	2	Ostrocerca	Arthropoda	Insecta	Plecoptera	Nemouridae	Ostrocerca	
14	0.81	667	2	Ostrocerca truncata	Arthropoda	Insecta	Plecoptera	Nemouridae	Ostrocerca	truncata
3	0.17	97	2	Prostoia similis	Arthropoda	Insecta	Plecoptera	Nemouridae	Prostoia	similis
1	0.06	6	2	Shipsa rotunda	Arthropoda	Insecta	Plecoptera	Nemouridae	Shipsa	rotunda
49	2.84	513	2	Peltoperla	Arthropoda	Insecta	Plecoptera	Peltoperlidae	Peltoperla	
17	0.98	74	2	Tallaperla	Arthropoda	Insecta	Plecoptera	Peltoperlidae	Tallaperla	
2	0.12	4	x	Perlidae	Arthropoda	Insecta	Plecoptera	Perlidae		
34	1.97	73	3	Acroneuria	Arthropoda	Insecta	Plecoptera	Perlidae	Acroneuria	
146	8.45	551	3	Acroneuria abnormis	Arthropoda	Insecta	Plecoptera	Perlidae	Acroneuria	abnormis
21	1.22	58	3	Acroneuria carolinensis	Arthropoda	Insecta	Plecoptera	Perlidae	Acroneuria	carolinensis
23	1.33	92	3	Acroneuria lycorias	Arthropoda	Insecta	Plecoptera	Perlidae	Acroneuria	lycorias
13	0.75	44	2	Agnetina	Arthropoda	Insecta	Plecoptera	Perlidae	Agnetina	
24	1.39	82	2	Agnetina capitata	Arthropoda	Insecta	Plecoptera	Perlidae	Agnetina	capitata
4	0.23	40	2	Eccoptura xanthenes	Arthropoda	Insecta	Plecoptera	Perlidae	Eccoptura	xanthenes
2	0.12	3	2	Neoperla clymene	Arthropoda	Insecta	Plecoptera	Perlidae	Neoperla	clymene
5	0.29	7	2	Paragnetina	Arthropoda	Insecta	Plecoptera	Perlidae	Paragnetina	
7	0.41	13	2	Paragnetina immarginata	Arthropoda	Insecta	Plecoptera	Perlidae	Paragnetina	immarginata
71	4.11	175	2	Paragnetina media	Arthropoda	Insecta	Plecoptera	Perlidae	Paragnetina	media
18	1.04	58	3	Perlesta	Arthropoda	Insecta	Plecoptera	Perlidae	Perlesta	
44	2.55	198	3	Perlesta placida	Arthropoda	Insecta	Plecoptera	Perlidae	Perlesta	placida
7	0.41	9	2	Perlinella	Arthropoda	Insecta	Plecoptera	Perlidae	Perlinella	
4	0.23	7	2	Perlinella drymo	Arthropoda	Insecta	Plecoptera	Perlidae	Perlinella	drymo
1	0.06	1	2	Perlodidae	Arthropoda	Insecta	Plecoptera	Perlodidae		
1	0.06	1	2	Cultus	Arthropoda	Insecta	Plecoptera	Perlodidae	Cultus	
2	0.12	8	2	Isogenoides	Arthropoda	Insecta	Plecoptera	Perlodidae	Isogenoides	
2	0.12	6	2	Isogenus	Arthropoda	Insecta	Plecoptera	Perlodidae	Isogenus	
61	3.53	135	2	Isoperla	Arthropoda	Insecta	Plecoptera	Perlodidae	Isoperla	
2	0.12	25	2	Isoperla holochlora	Arthropoda	Insecta	Plecoptera	Perlodidae	Isoperla	holochlora

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4	0.23	32	2	Isoperla marlynia	Arthropoda	Insecta	Plecoptera	Perlodidae	Isoperla	marlynia
2	0.12	4	2	Isoperla similis	Arthropoda	Insecta	Plecoptera	Perlodidae	Isoperla	similis
82	4.75	388	2	Isoperla transmarina	Arthropoda	Insecta	Plecoptera	Perlodidae	Isoperla	transmarina
41	2.37	93	2	Pteronarcys	Arthropoda	Insecta	Plecoptera	Pteronarcidae	Pteronarcys	
33	1.91	302	2	Oemopteryx glacialis	Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Oemopteryx	glacialis
6	0.35	176	2	Strophopteryx fasciata	Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Strophopteryx	fasciata
15	0.87	158	3	Taenionema	Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taenionema	
109	6.31	931	3	Taeniopteryx	Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx	
123	7.12	1814	3	Taeniopteryx burksi	Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx	burksi
33	1.91	160	3	Taeniopteryx nivalis	Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx	nivalis
5	0.29	9	3	Taeniopteryx parvula	Arthropoda	Insecta	Plecoptera	Taeniopterygidae	Taeniopteryx	parvula
1	0.06	0	x	Brachycentridae	Arthropoda	Insecta	Trichoptera	Brachycentridae		
54	3.13	323	2	Brachycentrus	Arthropoda	Insecta	Trichoptera	Brachycentridae	Brachycentrus	
5	0.29	43	2	Brachycentrus americanus	Arthropoda	Insecta	Trichoptera	Brachycentridae	Brachycentrus	americanus
4	0.23	4	2	Brachycentrus lateralis	Arthropoda	Insecta	Trichoptera	Brachycentridae	Brachycentrus	lateralis
121	7.01	2476	2	Brachycentrus numerosus	Arthropoda	Insecta	Trichoptera	Brachycentridae	Brachycentrus	numerosus
32	1.85	190	3	Micrasema	Arthropoda	Insecta	Trichoptera	Brachycentridae	Micrasema	
19	1.1	201	3	Micrasema rusticum	Arthropoda	Insecta	Trichoptera	Brachycentridae	Micrasema	rusticum
60	3.47	464	3	Micrasema wataga	Arthropoda	Insecta	Trichoptera	Brachycentridae	Micrasema	wataga
22	1.27	49	2	Heteroplectron	Arthropoda	Insecta	Trichoptera	Calamoceratidae	Heteroplectron	
51	2.95	372	2	Heteroplectron americanum	Arthropoda	Insecta	Trichoptera	Calamoceratidae	Heteroplectron	americanum
25	1.45	119	2	Agapetus	Arthropoda	Insecta	Trichoptera	Glossosomatidae	Agapetus	
147	8.51	1183	2	Glossosoma	Arthropoda	Insecta	Trichoptera	Glossosomatidae	Glossosoma	
46	2.66	1381	2	Protoptila	Arthropoda	Insecta	Trichoptera	Glossosomatidae	Protoptila	
9	0.52	51	3	Helicopsyche	Arthropoda	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	
92	5.33	1696	3	Helicopsyche borealis	Arthropoda	Insecta	Trichoptera	Helicopsychidae	Helicopsyche	borealis
6	0.35	72	4	Ceratopsyche	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Ceratopsyche	
6	0.35	18	4	Ceratopsyche alhedra	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Ceratopsyche	alhedra
37	2.14	123	4	Ceratopsyche bronta	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Ceratopsyche	bronta
121	7.01	3277	4	Ceratopsyche morosa	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Ceratopsyche	morosa
167	9.67	1142	4	Ceratopsyche morosa bifida	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Ceratopsyche	morosa bifida
68	3.94	549	4	Ceratopsyche slossonae	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Ceratopsyche	slossonae
260	15.06	3561	4	Ceratopsyche sparna	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Ceratopsyche	sparna
956	55.36	16540	4	Cheumatopsyche	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Cheumatopsyche	
22	1.27	113	2	Diplectrona	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Diplectrona	
154	8.92	3441	2	Diplectrona modesta	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Diplectrona	modesta
123	7.12	1390	4	Hydropsyche	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	
642	37.17	13530	5	Hydropsyche betteni	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	betteni
112	6.49	1660	3	Hydropsyche decalda	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	decalda
31	1.8	240	3	Hydropsyche demora	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	demora
2	0.12	34	2	Hydropsyche leonardi	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	leonardi
2	0.12	39	3	Hydropsyche valanis	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	valanis

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10	0.58	32	3	Hydropsyche venularis	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Hydropsyche	venularis
20	1.16	46	4	Macrostemum	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Macrostemum	
27	1.56	220	4	Macrostemum carolina	Arthropoda	Insecta	Trichoptera	Hydropsychidae	Macrostemum	carolina
2	0.12	2	x	Hydroptilidae	Arthropoda	Insecta	Trichoptera	Hydroptilidae		
21	1.22	107	4	Agraylea	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Agraylea	
178	10.31	1062	4	Hydroptila	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Hydroptila	
1	0.06	1	4	Leucotrichia	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Leucotrichia	
26	1.51	56	4	Leucotrichia pictipes	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Leucotrichia	pictipes
1	0.06	3	x	Neotrichia	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Neotrichia	
6	0.35	12	x	Ochrotrichia	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Ochrotrichia	
6	0.35	12	x	Orthotrichia	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Orthotrichia	
117	6.77	680	3	Oxyethira	Arthropoda	Insecta	Trichoptera	Hydroptilidae	Oxyethira	
1	0.06	12	2	Lepidostomatidae	Arthropoda	Insecta	Trichoptera	Lepidostomatidae		
257	14.88	2309	2	Lepidostoma	Arthropoda	Insecta	Trichoptera	Lepidostomatidae	Lepidostoma	
9	0.52	71	2	Theliopsyche	Arthropoda	Insecta	Trichoptera	Lepidostomatidae	Theliopsyche	
6	0.35	9	x	Leptoceridae	Arthropoda	Insecta	Trichoptera	Leptoceridae		
55	3.18	128	3	Ceraclea	Arthropoda	Insecta	Trichoptera	Leptoceridae	Ceraclea	
1	0.06	1	x	Leptocerus	Arthropoda	Insecta	Trichoptera	Leptoceridae	Leptocerus	
1	0.06	1	x	Leptocerus americanus	Arthropoda	Insecta	Trichoptera	Leptoceridae	Leptocerus	americanus
151	8.74	468	3	Mystacides	Arthropoda	Insecta	Trichoptera	Leptoceridae	Mystacides	
8	0.46	8	x	Nectopsyche	Arthropoda	Insecta	Trichoptera	Leptoceridae	Nectopsyche	
302	17.49	854	4	Oecetis	Arthropoda	Insecta	Trichoptera	Leptoceridae	Oecetis	
5	0.29	9	4	Oecetis georgia	Arthropoda	Insecta	Trichoptera	Leptoceridae	Oecetis	georgia
2	0.12	2	4	Oecetis inconspicua	Arthropoda	Insecta	Trichoptera	Leptoceridae	Oecetis	inconspicua
46	2.66	136	4	Triaenodes	Arthropoda	Insecta	Trichoptera	Leptoceridae	Triaenodes	
1	0.06	1	4	Triaenodes abus	Arthropoda	Insecta	Trichoptera	Leptoceridae	Triaenodes	abus
1	0.06	1	4	Triaenodes marginatus	Arthropoda	Insecta	Trichoptera	Leptoceridae	Triaenodes	marginatus
11	0.64	16	x	Limnephilidae	Arthropoda	Insecta	Trichoptera	Limnephilidae		
92	5.33	859	3	Apatania	Arthropoda	Insecta	Trichoptera	Limnephilidae	Apatania	
3	0.17	7	x	Frenesia	Arthropoda	Insecta	Trichoptera	Limnephilidae	Frenesia	
75	4.34	590	2	Goera	Arthropoda	Insecta	Trichoptera	Limnephilidae	Goera	
2	0.12	7	x	Hesperophylax	Arthropoda	Insecta	Trichoptera	Limnephilidae	Hesperophylax	
51	2.95	355	3	Hydatophylax	Arthropoda	Insecta	Trichoptera	Limnephilidae	Hydatophylax	
32	1.85	96	x	Ironoquia	Arthropoda	Insecta	Trichoptera	Limnephilidae	Ironoquia	
1	0.06	3	x	Lenarchus	Arthropoda	Insecta	Trichoptera	Limnephilidae	Lenarchus	
72	4.17	211	3	Limnephilus	Arthropoda	Insecta	Trichoptera	Limnephilidae	Limnephilus	
166	9.61	1315	3	Neophylax	Arthropoda	Insecta	Trichoptera	Limnephilidae	Neophylax	
61	3.53	167	3	Platycentropus	Arthropoda	Insecta	Trichoptera	Limnephilidae	Platycentropus	
10	0.58	18	3	Pseudostenophylax	Arthropoda	Insecta	Trichoptera	Limnephilidae	Pseudostenophylax	
347	20.09	1643	3	Pycnopsyche	Arthropoda	Insecta	Trichoptera	Limnephilidae	Pycnopsyche	
166	9.61	567	3	Molanna	Arthropoda	Insecta	Trichoptera	Molannidae	Molanna	
29	1.68	68	2	Psilotreta	Arthropoda	Insecta	Trichoptera	Odontoceridae	Psilotreta	

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93	5.39	931	2	Psilotreta frontalis	Arthropoda	Insecta	Trichoptera	Odontoceridae	Psilotreta	frontalis
58	3.36	309	4	Chimarra	Arthropoda	Insecta	Trichoptera	Philopotamidae	Chimarra	
263	15.23	3020	4	Chimarra aterrima	Arthropoda	Insecta	Trichoptera	Philopotamidae	Chimarra	aterrima
51	2.95	287	4	Chimarra obscura	Arthropoda	Insecta	Trichoptera	Philopotamidae	Chimarra	obscura
3	0.17	14	4	Chimarra socia	Arthropoda	Insecta	Trichoptera	Philopotamidae	Chimarra	socia
86	4.98	740	2	Dolophilodes	Arthropoda	Insecta	Trichoptera	Philopotamidae	Dolophilodes	
26	1.51	97	2	Wormaldia	Arthropoda	Insecta	Trichoptera	Philopotamidae	Wormaldia	
7	0.41	10	3	Phryganeidae	Arthropoda	Insecta	Trichoptera	Phryganeidae		
16	0.93	27	3	Agrypnia	Arthropoda	Insecta	Trichoptera	Phryganeidae	Agrypnia	
7	0.41	34	3	Banksiola	Arthropoda	Insecta	Trichoptera	Phryganeidae	Banksiola	
15	0.87	34	3	Oligostomis	Arthropoda	Insecta	Trichoptera	Phryganeidae	Oligostomis	
3	0.17	3	3	Phryganea	Arthropoda	Insecta	Trichoptera	Phryganeidae	Phryganea	
181	10.48	356	3	Ptilostomis	Arthropoda	Insecta	Trichoptera	Phryganeidae	Ptilostomis	
2	0.12	7	4	Polycentropodidae	Arthropoda	Insecta	Trichoptera	Polycentropodidae		
63	3.65	209	4	Neureclipsis	Arthropoda	Insecta	Trichoptera	Polycentropodidae	Neureclipsis	
32	1.85	44	4	Nyctiophylax	Arthropoda	Insecta	Trichoptera	Polycentropodidae	Nyctiophylax	
73	4.23	216	4	Phylocentropus	Arthropoda	Insecta	Trichoptera	Polycentropodidae	Phylocentropus	
290	16.79	948	4	Polycentropus	Arthropoda	Insecta	Trichoptera	Polycentropodidae	Polycentropus	
20	1.16	45	3	Lype	Arthropoda	Insecta	Trichoptera	Psychomyiidae	Lype	
75	4.34	157	3	Lype diversa	Arthropoda	Insecta	Trichoptera	Psychomyiidae	Lype	diversa
52	3.01	122	3	Psychomyia nomada	Arthropoda	Insecta	Trichoptera	Psychomyiidae	Psychomyia	nomada
1	0.06	1	x	Tinodes	Arthropoda	Insecta	Trichoptera	Psychomyiidae	Tinodes	
49	2.84	131	2	Rhyacophila	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	
1	0.06	4	2	Rhyacophila amicus	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	amicus
3	0.17	4	2	Rhyacophila fenestra	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	fenestra
109	6.31	387	2	Rhyacophila fuscula	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	fuscula
4	0.23	16	2	Rhyacophila glaberrima	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	glaberrima
1	0.06	1	2	Rhyacophila invaria	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	invaria
6	0.35	23	2	Rhyacophila manistee	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	manistee
1	0.06	2	2	Rhyacophila melita	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	melita
2	0.12	4	2	Rhyacophila nigrita	Arthropoda	Insecta	Trichoptera	Rhyacophilidae	Rhyacophila	nigrita
64	3.71	541	3	Agarodes	Arthropoda	Insecta	Trichoptera	Sericostomatidae	Agarodes	
4	0.23	91	x	Cordylophora lacustris	Cnidaria	Hydrozoa	Hydroida	Clavidae	Cordylophora	lacustris
50	2.9	221	x	Hydra	Cnidaria	Hydrozoa	Hydroida	Hydridae	Hydra	
1	0.06	800	x	Paludicella	Ectoprocta	Gymnolaemata	Ctenostomata	Paludicellidae	Paludicella	
42	2.43	1751	x	Paludicella articulata	Ectoprocta	Gymnolaemata	Ctenostomata	Paludicellidae	Paludicella	articulata
1	0.06	2000	x	Fredericella	Ectoprocta	Phylactolaemata	Plumatellida	Fredericellidae	Fredericella	
57	3.3	666	x	Fredericella sultana	Ectoprocta	Phylactolaemata	Plumatellida	Fredericellidae	Fredericella	sultana
1	0.06	10	x	Pectinatella magnifica	Ectoprocta	Phylactolaemata	Plumatellida	Pectinatellidae	Pectinatella	magnifica
2	0.12	40	x	Hyalinella punctata	Ectoprocta	Phylactolaemata	Plumatellida	Plumatellidae	Hyalinella	punctata
1	0.06	160	x	Plumatella fruticosa	Ectoprocta	Phylactolaemata	Plumatellida	Plumatellidae	Plumatella	fruticosa
83	4.81	2176	x	Plumatella repens	Ectoprocta	Phylactolaemata	Plumatellida	Plumatellidae	Plumatella	repens

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3	0.17	7	x	Urnatella gracilis	Entoprocta		Urnatellida	Urnatellidae	Urnatella	gracilis
1	0.06	1	x	Unionidae	Mollusca	Bivalvia	Unionoida	Unionidae		
1	0.06	1	3	Anodonta	Mollusca	Bivalvia	Unionoida	Unionidae	Anodonta	
4	0.23	5	3	Anodonta cataracta	Mollusca	Bivalvia	Unionoida	Unionidae	Anodonta	cataracta
1	0.06	1	3	Anodonta implicata	Mollusca	Bivalvia	Unionoida	Unionidae	Anodonta	implicata
2	0.12	2	3	Elliptio complanata	Mollusca	Bivalvia	Unionoida	Unionidae	Elliptio	complanata
31	1.8	278	6	Corbicula	Mollusca	Bivalvia	Veneroida	Corbiculidae	Corbicula	
75	4.34	635	6	Corbicula manilensis	Mollusca	Bivalvia	Veneroida	Corbiculidae	Corbicula	manilensis
28	1.62	340	4	Musculium	Mollusca	Bivalvia	Veneroida	Pisidiidae	Musculium	
4	0.23	10	4	Musculium partumeium	Mollusca	Bivalvia	Veneroida	Pisidiidae	Musculium	partumeium
108	6.25	1609	4	Musculium securis	Mollusca	Bivalvia	Veneroida	Pisidiidae	Musculium	securis
42	2.43	290	4	Musculium transversum	Mollusca	Bivalvia	Veneroida	Pisidiidae	Musculium	transversum
275	15.92	1870	4	Pisidium	Mollusca	Bivalvia	Veneroida	Pisidiidae	Pisidium	
423	24.49	7496	4	Pisidium casertanum	Mollusca	Bivalvia	Veneroida	Pisidiidae	Pisidium	casertanum
8	0.46	82	4	Pisidium compressum	Mollusca	Bivalvia	Veneroida	Pisidiidae	Pisidium	compressum
45	2.61	213	4	Pisidium dubium	Mollusca	Bivalvia	Veneroida	Pisidiidae	Pisidium	dubium
1	0.06	1	4	Pisidium fallax	Mollusca	Bivalvia	Veneroida	Pisidiidae	Pisidium	fallax
13	0.75	130	4	Pisidium variabile	Mollusca	Bivalvia	Veneroida	Pisidiidae	Pisidium	variabile
7	0.41	52	4	Pisidium walkeri	Mollusca	Bivalvia	Veneroida	Pisidiidae	Pisidium	walkeri
201	11.64	2258	4	Sphaerium	Mollusca	Bivalvia	Veneroida	Pisidiidae	Sphaerium	
15	0.87	187	4	Sphaerium fabale	Mollusca	Bivalvia	Veneroida	Pisidiidae	Sphaerium	fabale
3	0.17	24	4	Sphaerium occidentale	Mollusca	Bivalvia	Veneroida	Pisidiidae	Sphaerium	occidentale
3	0.17	22	4	Sphaerium rhomboideum	Mollusca	Bivalvia	Veneroida	Pisidiidae	Sphaerium	rhomboideum
37	2.14	241	4	Sphaerium simile	Mollusca	Bivalvia	Veneroida	Pisidiidae	Sphaerium	simile
9	0.52	64	4	Sphaerium striatinum	Mollusca	Bivalvia	Veneroida	Pisidiidae	Sphaerium	striatinum
1	0.06	1	4	Ancylidae	Mollusca	Gastropoda	Basommatophora	Ancylidae		
21	1.22	37	4	Ferrissia	Mollusca	Gastropoda	Basommatophora	Ancylidae	Ferrissia	
21	1.22	73	4	Ferrissia parallela	Mollusca	Gastropoda	Basommatophora	Ancylidae	Ferrissia	parallela
183	10.6	751	4	Ferrissia rivularis	Mollusca	Gastropoda	Basommatophora	Ancylidae	Ferrissia	rivularis
1	0.06	2	4	Laevapex	Mollusca	Gastropoda	Basommatophora	Ancylidae	Laevapex	
15	0.87	19	4	Laevapex fuscus	Mollusca	Gastropoda	Basommatophora	Ancylidae	Laevapex	fuscus
2	0.12	2	4	Lymnaeidae	Mollusca	Gastropoda	Basommatophora	Lymnaeidae		
1	0.06	6	4	Fossaria	Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Fossaria	
39	2.26	64	4	Pseudosuccinea columella	Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Pseudosuccinea	columella
9	0.52	16	4	Stagnicola	Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Stagnicola	
1	0.06	1	4	Stagnicola caperata	Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Stagnicola	caperata
102	5.91	215	4	Stagnicola catascopium	Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Stagnicola	catascopium
1	0.06	1	x	Succinea	Mollusca	Gastropoda	Basommatophora	Lymnaeidae	Succinea	
3	0.17	5	5	Physidae	Mollusca	Gastropoda	Basommatophora	Physidae		
1	0.06	1	5	Aplexa elongata	Mollusca	Gastropoda	Basommatophora	Physidae	Aplexa	elongata
175	10.13	582	5	Physella	Mollusca	Gastropoda	Basommatophora	Physidae	Physella	
117	6.77	560	5	Physella gyrina	Mollusca	Gastropoda	Basommatophora	Physidae	Physella	gyrina

Count of Samples	Pct of Samples	Total Individuals	BCG Category	FinalID	Phylum	Class	Order	Family (Tribe)	Genus	Species
57	3.3	180	5	Physella heterostropha	Mollusca	Gastropoda	Basommatophora	Physidae	Physella	heterostropha
210	12.16	1343	5	Physella integra	Mollusca	Gastropoda	Basommatophora	Physidae	Physella	integra
1	0.06	2	5	Physella vinosa	Mollusca	Gastropoda	Basommatophora	Physidae	Physella	vinosa
12	0.69	25	x	Planorbidae	Mollusca	Gastropoda	Basommatophora	Planorbidae		
3	0.17	5	x	Discus cronkhitei	Mollusca	Gastropoda	Basommatophora	Planorbidae	Discus	cronkhitei
57	3.3	188	5	Gyraulus	Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus	
26	1.51	83	5	Gyraulus circumstriatus	Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus	circumstriatus
35	2.03	90	5	Gyraulus deflectus	Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus	deflectus
2	0.12	3	5	Gyraulus parvus	Mollusca	Gastropoda	Basommatophora	Planorbidae	Gyraulus	parvus
14	0.81	46	5	Helisoma	Mollusca	Gastropoda	Basommatophora	Planorbidae	Helisoma	
87	5.04	278	5	Helisoma anceps	Mollusca	Gastropoda	Basommatophora	Planorbidae	Helisoma	anceps
3	0.17	4	5	Helisoma anceps anceps	Mollusca	Gastropoda	Basommatophora	Planorbidae	Helisoma	anceps anceps
16	0.93	28	5	Menetus	Mollusca	Gastropoda	Basommatophora	Planorbidae	Menetus	
182	10.54	556	5	Menetus dilatatus	Mollusca	Gastropoda	Basommatophora	Planorbidae	Menetus	dilatatus
11	0.64	49	5	Planorbella	Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbella	
26	1.51	70	5	Planorbella trivolvis	Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbella	trivolvis
3	0.17	10	5	Planorbella trivolvis trivolv	Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbella	trivolvis trivolvis
1	0.06	1	5	Planorbula	Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbula	
1	0.06	2	5	Planorbula armigera	Mollusca	Gastropoda	Basommatophora	Planorbidae	Planorbula	armigera
1	0.06	3	x	Promenetus	Mollusca	Gastropoda	Basommatophora	Planorbidae	Promenetus	
2	0.12	4	x	Promenetus exacuous	Mollusca	Gastropoda	Basommatophora	Planorbidae	Promenetus	exacuous
46	2.66	306	5	Amnicola	Mollusca	Gastropoda	Mesogastropoda	Bithyniidae	Amnicola	
12	0.69	41	4	Hydrobiidae	Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae		
5	0.29	31	5	Amnicola limosus limosus	Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Amnicola	limosus limosus
1	0.06	60	4	Gillia	Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Gillia	
172	9.96	1568	4	Gillia altilis	Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Gillia	altilis
3	0.17	8	4	Hydrobia	Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Hydrobia	
11	0.64	172	4	Lyogyrus granum	Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Lyogyrus	granum
13	0.75	81	4	Somatogyrus	Mollusca	Gastropoda	Mesogastropoda	Hydrobiidae	Somatogyrus	
4	0.23	48	4	Elimia	Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Elimia	
30	1.74	119	4	Elimia virginica	Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Elimia	virginica
18	1.04	123	4	Pleurocera acuta	Mollusca	Gastropoda	Mesogastropoda	Pleuroceridae	Pleurocera	acuta
9	0.52	27	4	Valvata	Mollusca	Gastropoda	Mesogastropoda	Valvatidae	Valvata	
5	0.29	5	4	Valvata bicarinata	Mollusca	Gastropoda	Mesogastropoda	Valvatidae	Valvata	bicarinata
2	0.12	6	4	Valvata tricarinata	Mollusca	Gastropoda	Mesogastropoda	Valvatidae	Valvata	tricarinata
1	0.06	1	x	Viviparidae	Mollusca	Gastropoda	Mesogastropoda	Viviparidae		
9	0.52	43	5	Campeloma	Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Campeloma	
51	2.95	173	5	Campeloma decisum	Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Campeloma	decisum
4	0.23	6	4	Viviparus	Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Viviparus	
1	0.06	1	4	Viviparus georgianus	Mollusca	Gastropoda	Mesogastropoda	Viviparidae	Viviparus	georgianus
1	0.06	1	x	Cionella	Mollusca	Gastropoda	Stylommatophora	Cionellidae	Cionella	
5	0.29	15	x	Cionella lubrica	Mollusca	Gastropoda	Stylommatophora	Cionellidae	Cionella	lubrica

Count of Samples	Pct of Samples	Total Individuals	BCG Category	FinalID	Phylum	Class	Order	Family (Tribe)	Genus	Species
3	0.17	5	x	Helicodiscus parallelus	Mollusca	Gastropoda	Stylommatophora	Helicodiscidae	Helicodiscus	parallelus
3	0.17	3	x	Zonitoides	Mollusca	Gastropoda	Stylommatophora	Zonitidae	Zonitoides	
3	0.17	4	x	Zonitoides arboreus	Mollusca	Gastropoda	Stylommatophora	Zonitidae	Zonitoides	arboreus
276	15.98	630	x	Nemata	Nemata					
45	2.61	138	4	Prostoma	Nemertea	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma	
388	22.47	1381	4	Prostoma graecense	Nemertea	Enopla	Hoplonemertea	Tetrastemmatidae	Prostoma	graecense
1	0.06	1	x	Geocentrophora baltica	Platyhelminthes	Turbellaria	Lecithoepitheliata	Prorhynchidae	Geocentrophora	baltica
12	0.69	85	5	Hydrolimax	Platyhelminthes	Turbellaria	Proseriata	Plagiostomidae	Hydrolimax	
128	7.41	425	5	Hydrolimax grisea	Platyhelminthes	Turbellaria	Proseriata	Plagiostomidae	Hydrolimax	grisea
2	0.12	11	x	Procotyla	Platyhelminthes	Turbellaria	Tricladida	Dendrocoelidae	Procotyla	
13	0.75	17	x	Procotyla fluviatilis	Platyhelminthes	Turbellaria	Tricladida	Dendrocoelidae	Procotyla	fluviatilis
3	0.17	6	x	Planariidae	Platyhelminthes	Turbellaria	Tricladida	Planariidae		
91	5.27	288	5	Cura foremanii	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Cura	foremanii
16	0.93	79	5	Dugesia	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Dugesia	
557	32.25	4798	5	Dugesia tigrina	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Dugesia	tigrina
7	0.41	13	x	Hymanella	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Hymanella	
12	0.69	29	x	Hymanella retenuova	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Hymanella	retenuova
2	0.12	2	x	Phagocata	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Phagocata	
2	0.12	3	x	Phagocata gracilis	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Phagocata	gracilis
4	0.23	7	x	Phagocata morgani morgan	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Phagocata	morgani morgani
2	0.12	5	x	Phagocata velata	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Phagocata	velata
5	0.29	20	x	Phagocata woodworthi	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Phagocata	woodworthi
1	0.06	1	x	Planaria	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Planaria	
1	0.06	1	x	Planaria dactyligera	Platyhelminthes	Turbellaria	Tricladida	Planariidae	Planaria	dactyligera
4	0.23	114	x	Anheteromeyenia argyrosp	Porifera	Demospongiae	Haplosclerida	Spongillidae	Anheteromeyenia	argyrosperma
1	0.06	40	x	Ephydatia fluviatilis	Porifera	Demospongiae	Haplosclerida	Spongillidae	Ephydatia	fluviatilis
17	0.98	383	x	Eunapius fragilis	Porifera	Demospongiae	Haplosclerida	Spongillidae	Eunapius	fragilis
1	0.06	100	x	Eunapius ingloviformis	Porifera	Demospongiae	Haplosclerida	Spongillidae	Eunapius	ingloviformis
5	0.29	559	x	Heteromeyenia	Porifera	Demospongiae	Haplosclerida	Spongillidae	Heteromeyenia	
1	0.06	2	x	Heteromeyenia tubisperma	Porifera	Demospongiae	Haplosclerida	Spongillidae	Heteromeyenia	tubisperma
1	0.06	30	x	Spongilla	Porifera	Demospongiae	Haplosclerida	Spongillidae	Spongilla	
5	0.29	193	x	Spongilla lacustris	Porifera	Demospongiae	Haplosclerida	Spongillidae	Spongilla	lacustris
1	0.06	20	x	Trochospongilla	Porifera	Demospongiae	Haplosclerida	Spongillidae	Trochospongilla	

(1) Aeshna interrupta. This is a northern species known to inhabit bogs and vegetated ponds, rarely slow moving outlet channels draining these habitats. It has been documented a couple times in Sussex County. It is not usually associated with running waters. The samples should be examined again and ID verified

(2) Somatochlora forcipata. This is not a species normally found in streams but inhabits bogs. The sample should be verified.

(3) Lanthus albistylus - reclassified to Stylogomphus.

(4) Lanthusparvulus. This species has never been reported from New Jersey. Related species Lanthus vernalis is a well-documented forest stream species. It is likely the ID is incorrect.

(5) Octogomphus. This is a monotypic genus [Octogomphus specularis] otherwise known as the Grappletail. It is a pacific northwest endemic. The ID may be incorrect.

APPENDIX B

HISTORICALLY DOCUMENTED, SENSITIVE, LONG LIVED OR REGIONALLY ENDEMIC TAXA (ATTRIBUTE 1) (ON CD)

Table B-1 Odonates

Table B-2 Freshwater mussels

Table B-1. Threatened and special concern dragonflies and damselflies (Odonata) in New Jersey.

Family	Family Common Name	Name	Category	BCG Attribute
Calopterygidae	Broad-Winged Damsels	Calopteryx amata	S1 Threatened	1
Lestidae	Spreadwings	Lestes unguiculatus	S1	1
Coenagrionidae	Pond Damsels	Enallagma laterale	S1, S2 Special Concern	1
Coenagrionidae	Pond Damsels	Enallagma pictum	S3 Special Concern	1
Coenagrionidae	Pond Damsels	Enallagma recurvatum	S3 Special Concern	1
Petaluridae	Petaltails	Tachopteryx thoreyi	S1 Endangered	1
Aeshnidae	Darners	Aeshna mutata	S1, S2 Special Concern	1
Aeshnidae	Darners	Aeshna subarctica	S?, Special Concern	
Gomphidae	Clubtails	Gomphus (Gomphurus) fraternus	S?, Special Concern	
Gomphidae	Clubtails	Gomphus (Gomphurus) rogersi	S1, S2, Special Concern	1
Gomphidae	Clubtails	Gomphus (Gomphurus) septima	S1, Special Concern	1
Gomphidae	Clubtails	Gomphus (Gomphurus) vastus	S1, S2, Special Cocern	1
Gomphidae	Clubtails	Gomphus (Gomphus) descriptus	S1, Threatened	1
Gomphidae	Clubtails	Gomphus (Gomphus) quadricolor	S2, Special Concern	1
Gomphidae	Clubtails	Gomphus (Hylogomphus) apomyiu	S1, Threatened	1
Gomphidae	Clubtails	Gomphus (Hylogomphus) viridifro	S1, Special Concern	1
Gomphidae	Clubtails	Lanthus vernalis	S2, S3	
Gomphidae	Clubtails	Ophiogomphus anomalus	Historical, Special Concern	1
Gomphidae	Clubtails	Ophiogomphus aspersus	S1, S2, Threatened	1
Gomphidae	Clubtails	Ophiogomphus carolus	S1	
Gomphidae	Clubtails	Ophiogomphus mainensis	Special Concern	1
Gomphidae	Clubtails	Stylurus scudderi	S1, Special Concern	1
Gomphidae	Clubtails	Stylurus spiniceps	S2	
Cordulegasteridae	Spiketails	Cordulegaster erronea	Special Concern	1
Cordulegasteridae	Spiketails	Cordulegaster obliqua	Special Concern	1
Macromiidae	Cruisers	Macromia alleghaniensis	Special Concern	1
Corduliidae	Emeralds	Epitheca spinosa	Threatened	1
Corduliidae	Emeralds	Somatochlora elongata	Special Concern	1
Corduliidae	Emeralds	Somatochlora forcipata	Special Concern	1
Corduliidae	Emeralds	Somatochlora georgiana	Special Concern	1
Corduliidae	Emeralds	Somatochlora kennedy	Threatened	1
Corduliidae	Emeralds	Somatochlora walshii	Special Concern	1
Corduliidae	Emeralds	Somatochlora williamsoni	Special Concern	1
Libellulidae	Skimmers	Leucorrhinia glacialis	Special Concern	1
Libellulidae	Skimmers	Leucorrhinia hudsonica	Special Concern	1
Libellulidae	Skimmers	Libellula auripennis	Special Concern	1
Libellulidae	Skimmers	Libellula axilena	S2, S3	
Libellulidae	Skimmers	Sympetrum ambiguum	S2	

Table B-2. New Jersey's native freshwater mussel species.

		Attribute Group
Dwarf Wedgemussel (FE, E)	*Alasmidonta heterodon*	1
Triangle Floater (T)	*Alasmidonta undulata*	1
Brook Floater (E)	*Alasmidonta varicosa*	1
Alewife Floater	*Anodonta implicata*	3
Eastern Elliptio	*Elliptio complanata*	3
Yellow Lampmussel (T)	*Lampsilis cariosa*	1
Eastern Lampmussel (T)	*Lampsilis radiata*	1
Green Floater (E)	*Lasmigona subviridis*	1
Tidewater Mucket (T)	*Leptodea ochracea*	1
Eastern Pondmussel (T)	*Ligumia nasuta*	1
Eastern Floater	*Pyganodon cataracta*	3
Creeper (SC)	*Strophitus undulatus*	1

APPENDIX C

BIOLOGICAL CONDITION GRADIENT SCENARIO FOR A HIGH GRADIENT STREAM

(ALSO ON CD)

NEW JERSEY BCG

Biological Condition Gradient Example Scenario*:*
A high gradient stream catchment in New Jersey, United States

Example Scenario: The following table describes a hypothetical series of sampling observations across a gradient (in space or time) of increasing inputs of sediments and nutrients, and altered temperature regime (caused, for example by agricultural activities, grazing land; timber harvesting, or urban development, etc). The hypothetical example is based on a mid-sized, moderate to high-gradient stream. Example taxa are those commonly encountered across such a gradient in New Jersey, and are presented only as examples of the individual taxa that could be expected in the given environmental condition. There is no implied expectation that they must occur or that they would necessarily occur together

Resource Condition "Tiers"	**Biological Condition Characteristics (Effects)**
1 **Natural or native condition** *Native structural, functional and taxonomic integrity is preserved; ecosystem function is preserved within the range of natural variability*	**I *Historically documented, sensitive, long-lived,or regionally endemic* taxa** Long-lived native species, or long-term, occur in the watershed in naturally occurring densities. The following taxa are representative of this category: Odonata: *Neurocordulia obsoleta, Somatochlora forcipata, Ophiogomphus*. Unionidae: *Elliptio, Anodonta*
	II *Highly sensitive taxa* The proportion of total richness represented by rare, specialist and vulnerable taxa is high. Diptera: *Diamesa*; Ephemeroptera: *Paraleptophlebia*; Plecoptera: *Leuctra*; Trichoptera: *Brachycentrus, Glossosoma, Diplectrona, Lepidostoma, Rhyacophila*

1 **Natural or native condition (cont'd)**	**III *Sensitive- and common taxa*** Densities of Sensitive-ubiquitous taxa are as naturally occur. Diptera: *Parametriocnemus, Cnephia*; Ephemeroptera: *Cloeon, Eurylophella, Stenonema, Leptophlebia*; Megaloptera: *Nigronia*; Trichoptera: *Pycnopsyche* **IV *Taxa of intermediate tolerance*** Densities of intermediate tolerance taxa are as naturally occur; generally low abundance. **V *Tolerant taxa*** Occurrence and densities of Tolerant taxa are as naturally occur; generally absent or very low abundance. Tubificidae absent **VI *Non native or intentionally introduced taxa*** Non native taxa such as Brown trout, Rainbow trout, are absent or, if they occur, their presence does not displace native biota or alter native structure and function; The following taxa are representative of this category: Bivalvia: *Corbicula, Dreissena*. **VII *Physiological condition of long-lived organisms*** Anomalies are absent or rare; any that occur are consistent with naturally occurring incidence and characteristics
	VIII *Ecosystem Function* Rates and characteristics of life history (e.g., reproduction; immigration; mortality etc.), and materials exchange processes (e.g., production; respiration; nutrient exchange; decomposition etc.) are comparable to that of "natural" systems. The system is predominantly heterotrophic, sustained by leaf litter inputs from intact riparian areas, with low algal biomass; P/R<1 (Photosynthesis:Respiration ratio) **IX Spatial and temporal extent of detrimental effects** Not applicable- disturbance is limited to natural events such as storms, droughts, fire; earth-flows. A natural flow regime is maintained. **X *Ecosystem connectance*** Reach is highly connected with groundwater, its floodplain, and riparian zone, and other reaches in the basin, at least annually. Allows for access to habitats and maintenance of seasonal cycles that are necessary for life history requirements, colonization sources and refugia for extreme events.

2 **Minimal changes in structure of the biotic community and minimal changes in ecosystem function** *Virtually all native taxa are maintained with some changes in biomass and/or abundance; ecosystem functions are fully maintained within the range of natural variability*	**I *Historically documented, sensitive, long-lived, regionally endemic* taxa** Some regionally endemic, long-lived species may be extirpated from watershed prior to 1972, but at least some regional endemics are present in the long-lived taxa reproducing in watershed (*Elliptio, Anodonta*) as shown by presence of small individuals (recent recruits). **II *Highly sensitive taxa*** Richness of rare and/or specialist invertebrate taxa is high though densities may be low (e.g., for New Jersey- Diptera: *Diamesa*; Ephemeroptera: *Paraleptophlebia*; Plecoptera: *Leuctra*; Trichoptera: *Brachycentrus, Glossosoma, Diplectrona, Lepidostoma, Rhyacophila*. Fish assemblage is predominantly native except for reproducing populations of introduced trout (e.g., Rainbow trout). **III *Sensitive- and common taxa*** Sensitive-common taxa may be dominant in richness and density. Surficial scraper-grazers and collector-gathers are favored due to slightly increased periphyton biomass on hard substrates which results in higher relative abundance of these groups Diptera: *Parametriocnemus, Cnephia*; Ephemeroptera: *Cloeon, Eurylophella, Stenonema, Leptophlebia*; Megaloptera: *Nigronia*; Trichoptera: *Pycnopsyche*. **IV *Taxa of intermediate tolerance*** Increased biomass of diatom species that respond positively to increased nutrients and temperatures, but sensitive diatom species are maintained. Diatom richness is increased; filamentous forms are rare or as naturally occur May be slight increases in densities of macroinvertebrate taxa but remain subdominant, such as Oligochaeta: *Lumbriculus*; Crustacea: *Gammarus, Caecidotea*; Coleoptera: *Stenelmis, Psephenus*; Diptera: *Rheotanytarsus*; Trichoptera: *Cheumatopsyche, Oecetis*; Bivalvia: *Pisidium*; Nemertea: *Prostoma*. Hydropsychidae mostly absent. **V *Tolerant taxa*** May be slight increases in occurrence of tolerant taxa. The following taxa are representative of this category Oligochaeta: *Limnodrilus*, Tubificidae, Diptera (Chironomidae): *Conchapelopia, Polypedilum, Tribelos*; Trichoptera: *Hydropsyche*; Turbellaria: *Dugesia*. Tubificidae generally absent.

2 **Minimal changes in structure of the biotic community and minimal changes in ecosystem function** **(cont'd)**	**VI *Non-native or intentionally introduced* taxa** Any intentionally introduced fish species are reproducing, but not regularly stocked (e.g., Rainbow Trout-Oncorhynchus mykiss) and occupy non-detrimental niche space;
	VII Physiological condition of long-lived organisms
	Any anomalies on fish are consistent with naturally occurring incidences and characteristics such as: rare occurrence of gill or anchor parasites, blackspot etc. Spawning areas of native fishes are evident during spawning season **VIII *Ecosystem Function*** Rates and characteristics of life history (e.g., reproduction; immigration; mortality etc.), and materials exchange processes (e.g., production; respiration; nutrient exchange; decomposition etc.) are unimpaired and not significantly different from the range of natural variability. The system is predominantly heterotrophic, sustained by leaf litter inputs from intact riparian areas; P/R/ is<1 **IX Spatial and temporal extent of detrimental effects** Extent is limited to small pockets or brief periods **X *Ecosystem connectance*** Unimpaired access to habitats, and maintenance of seasonal cycles, that are necessary to fulfill life history requirements, and to provide colonization sources and refugia for extreme events.

3 **Evident changes in structure of the biotic community and minimal changes in ecosystem function** *Moderate changes in structure due to replacement of some Sensitive-ubiquitous taxa by more tolerant taxa, but reproducing populations of some Sensitive taxa are maintained; overall balanced distribution of all expected major groups; ecosywtem functions largely maintained through redundant attributes*	**I *Historically documented, sensitive, long-lived, or regionally endemic* taxa** **II *Highly sensitive taxa*** Some replacement of taxa having narrow or specialized environmental requirements, with functionally equivalent Sensitive-common taxa; coldwater obligate taxa are disadvantaged. **III *Sensitive- and common taxa*** Sensitive-common or generalist taxa are common and abundant; taxa with broader temperature-tolerance range are favored. Overall mayfly taxonomic richness is reduced relative to the Tier 2 condition, with the preponderance of richness represented by Sensitive-common taxa; densities of remaining taxa are high and are sufficient to indicate healthy, reproducing populations; **IV *Opportunist or facultative* taxa of intermediate tolerance** Filter-feeding blackflies (*Simulium*) and net-spinning caddisflies (e.g., *Hydropsyche; Cheumatopsyche, Polycentropus; Neureclipsis*), show increased densities in response to nutrient enrichment, but relative abundance of all expected major groups is well-distributed. Increased temperature and increased available nutrients result in increased algal productivity causing an increase in the thickness of the diatom mat. This results in a "slimy" covering on hard substrates. **V *Tolerant taxa*** Richness of Diptera: Chironomidae is increased; relative abundance of Diptera and non-insects is somewhat increased but overall relative abundance is well-distributed among taxa from Groups III , IV and V, with the majority of taxa represented from Groups III and IV. **VI *Non-native or intentionally introduced* taxa** Brown trout or rainbow trout have largely replaced native brook trout; **VII Physiological condition of long-lived organisms** Incidence of anomalies such as gill parasites, anchor parasites, blackspot, etc., is low; serious anomalies such as tumors or deformities are essentially absent Environmental quality is sufficient to fully support reproduction of most long-lived species

3 **Evident changes in structure of the biotic community and minimal changes in ecosystem function** **(cont'd)**	**VIII *Ecosystem Function*** Increased temperature and algal metabolism causes small diurnal sags in dissolved oxygen, compensated by adequate aeration from turbulence over riffle areas; Algal biomass somewhat exceeds what can be utilized by resident grazers, resulting in evidence of die-back and slight downstream export of sloughed material.
	Patchy loss of high food quality riparian vegetation (e.g., oak; maple, beech) and elevated temperature, results in decreased growth and survival of some specialized shredder taxa (Pteronarcidae; Taeniopterygidae) with replacement by shredders capable of utilizing lower quality organic matter (Lepidostomatidae; Limnephilidae; Tipulidae) **IX Spatial and temporal extent of detrimental effects** Filamentous green algae occur in small patches within reaches; Low dissolved oxygen levels occur only during the high temperature and low flow summer periods. Interstitial spaces, within the substrate of pools, are filled with fine sediment resulting in localized losses of interstitial habitats but riffle areas continue to provide adequate water flow and oxygen through interstitial habitats. **X *Ecosystem connectance*** Some downcutting has resulted in a patchy decrease in connectance of the stream from it's floodplain except at unusually high flows. Thinning and patchy loss of riparian vegetation has altered the microclimate of the surrounding landscape causing a decrease in survival and reproductive success of adult mayflies and stoneflies.

4 **Moderate changes in structure of the biotic community and minimal changes in ecosystem function** *Moderate changes in structure due to replacement of some Sensitive-ubiquitous taxa by more tolerant taxa, but reproducing populations of some Sensitive taxa are maintained; overall balanced distribution of all expected major groups; ecosystem functions largely maintained through redundant attributes*	**I Historically documented, *sensitive, long-lived, regionally endemic* taxa** May be absent. **II *Highly sensitive taxa*** Decreased richness and abundance. **III *Sensitive- and common taxa*** Densities of sensitive and common (e.g.,*Stenonema*; *Heptagenia; Baetis; Ephemerella; Pseudocloeon*) are sufficient to indicate that reproducing populations are present but relative abundance is reduced due to increased densities of Opportunist invertebrate taxa (Group IV); Predatory stoneflies are reduced (e.g., Acroneuria). Group III taxa reduced, but remain functional part of assemblage. **IV *Opportunist or facultative* taxa of intermediate tolerance** Many substrate surfaces are covered by bryophytes and macro-algae responding to increased nutrients, resulting in displacement of litho-phytic (stone-dwelling) micro-algae in favor of epiphytic (plant-dwelling) and filamentous forms (e.g., Cladophora). Increased loads of suspended particles favor collector-filterer invertebrates resulting in notably increased densities and relative abundance of filter-feeding caddisflies and chironomids **V *Tolerant taxa*** There is an increase in the relative abundance of tolerant generalists and/or in numbers of non-insect scrapers and gatherers they may be co-dominant with Group IV taxa. Overall relative abundance is well-distributed among taxa from Groups III , IV and V, with the majority of the total abundance represented from Group IV. **VI *Non-native or intentionally introduced* taxa** Stocked fish may be abundant. **VII Physiological condition of long-lived organisms** Incidence of anomalies such as blackspot and gill and anchor parasites is slightly higher than expected Occurrence of tumors, lesions and deformities is rare.

4 **Moderate changes in structure of the biotic community and minimal changes in ecosystem function** **(cont'd)**	**VIII *Ecosystem Function*** Increased available nutrients increase algal productivity causing increased diatom, macro-algae and macrophyte biomass, and consequently lowering evening dissolved oxygen levels and increasing daytime oxygen levels. Invertebrate biomass is high but production has shifted to result in greater biomass of intermediate tolerance organisms than sensitive organisms. For example, filter-feeders utilizing suspended material shift from mayflies and sensitive musels and caddisflies (e.g., Isonychia; Elliptio; Brachycentrus) to facultative types (e.g., Hydropsychidae; Rheotanytarsus; Sphaeriidae: Musculium; Pisidium) ; grazers of diatoms shift from sensitive mayflies and caddisflies (e.g., Heptagenia; Leucrocuta; Glossosomatidae;) to facultative scrapers and collector gatherer organisms (e.g.,Baetis; Callibaetis; Physidae; Leptoceridae). The suspended organic matter load somewhat exceeds what can be utilized by resident filterers resulting in increased levels of exported material. Sloughing of excess macro-algae and macrophyte biomass results in increased downstream export of course particulate organic matter. The system is becoming more autotrophic due to algal photosynthesis. The P/R ratio shows a slight increase. **IX Spatial and temporal extent of detrimental effects** Increased macrophyte and algal biomass extends downsteam beyond the confluence with the next tributary; filamentous algae first appears in the stream as temperatures warm in late spring; pools and depositional areas are silt-filled; the interstitial spaces in the substrate of runs is becoming obstructed by sand and silt Early morning low dissolved oxygen levels occur occasionally during late spring and fall as well as during the mid summer **X *Ecosystem connectance*** Filling of interstitial spaces obstructs access to hyporheic zone for early instar stonefly nymphs, eliminating nursery areas and refugia for storm-events and low flows. Adult stoneflies from upstream reaches continue to oviposit but reproductive success is limited; stonefly nymphs continue to colonize by drift, with limited success.
	Poorly managed culverts on some tributaries impede fish passage and access to some spawning areas.

5 **Major changes in structure of the biotic community and moderate changes in ecosystem function** *Sensitive taxa are markedly diminished; conspicuously unbalanced distribution of major groups from that expected; organism condition shows signs of physiological stress; system function shows reduced complexity and redundancy; increased build-up or export of unused materials.*	**I *Historically documented, sensitive, long-lived, or regionally endemic* taxa** Generally absent. **II *Highly sensitive taxa*** Generally absent. **III *Sensitive- and common taxa*** Either absent or present in very low numbers, (< 10%) indicating impaired recruitment and/or reproduction **IV *Opportunist or facultative* taxa of intermediate tolerance** Filter-feeding invertebrates such as Hydropsychid caddisflies (e.g., Cheumatopsyche) and filter-feeding midges (e.g., Rheotanytarsus; Microtendipes) occur in very high numbers. Richness of intermediate tolerant taxa may be high. **V *Tolerant taxa*** May be co-dominant with Group IV taxa. Frequent occurrence of tolerant collector-gatherers. Relative abundance of non-insects often equal to or higher than relative abundance of insects Deposit-feeders such as Oligochaeta are increased; but Tubificidae are not dominant. Numbers of tolerant predators are increased (Hirudinea; *Thienemannimyia*; *Cryptochironomus*) Native fish species represented by tolerant taxa **VI *Non-native or intentionally introduced* taxa**
	VII Physiological condition of long-lived organisms Biomass of young of year age classes is low; overall fish biomass is reduced; Sex ratio of remaining fish does not equal 1 Occurrence of parasitic infestations and disease is common Incidence of serious anomalies such as tumors and anatomical deformities is higher than expected **VIII *Ecosystem Function*** High algal photosynthetic activity results in daytime dissolved oxygen supersaturation accompanied by nighttime dissolved oxygen levels less than 4 ppm. Extremely high algal biomass significantly alters the habitat structure of the substrate; The P/R ratio is significantly > 1; the system is predominantly autotrophic

5 **Major changes in structure of the biotic community and moderate changes in ecosystem function** **(cont'd)**	Loss of coarse particulate shredders and alteration of bacterial decomposer community contributes to build-up and/or export of unused organic matter; Mechanisms for nutrient spiraling are significantly simplified and less efficient resulting in increased export of nutrients from the system **IX Spatial and temporal extent of detrimental effects** Substrate has become armored by increased sediment loading, altered flow regime and altered channel morphology resulting in compaction of interstitial space habitat, leaving only patches of well-scoured gravel substrate in high-gradient riffle areas; Armoring is resistant to spring scouring events, preventing annual spring sediment flushing and re-sorting of substrate; Near complete canopy removal results in all day insolation of stream and surrounding land surface causing abnormally elevated temperature regime in early spring and late fall. This causes unnaturally elevated seasonal temperature cues and results in failures of life history requirements. **X *Ecosystem connectance*** Lateral connectance to floodplain areas is eliminated except at peak flows, due to altered channel morphology caused by human intervention (bank riprapping, dikes) and altered flow regime. Lack of riparian vegetation eliminates habitat for adult flying aquatic insects, reducing survival and reproduction of resident organisms and reducing successful recruitment of immigrating organisms (i.e., flight dispersal of ovipositing females).
6 **Severe changes in structure of the biotic community and major loss of ecosystem function** *Extreme changes in structure; wholesale changes in taxonomic composition; extreme alterations from normal densities and distributions; organism condition is often poor; ecosystem functions are severely altered*	**I *Historically documented, sensitive, long-lived, regionally endemic* taxa** Poor water quality, compaction of substrate, elevated temperature regime and absence of fish hosts for reproductive functions preclude the survival of any mussel fauna **II *Highly sensitive taxa*** These taxa are absent due to poor water quality, elevated temperature regime, alteration of habitat, loss of riparian zone, etc. One or two stoneflies tolerant to toxic or acidic condition may be present. **III *Sensitive- and common taxa*** Anomalous conditions: complete absence of mayflies, very low abundance of all organisms, and few stoneflies and/or caddisflies together tolerant taxa (Group V) indicates possible toxic conditions. Absent due to above listed factors, though an occasional transient individual, usually in poor condition, may be collected.

6 **Severe changes in structure of the biotic community and major loss of ecosystem function** **(cont'd)**	**IV Taxa of intermediate tolerance** Filter-feeding insects and other macroinvertebrate representatives of this group are severely reduced in density and richness, or are absent. **V *Tolerant taxa*** Low dissolved oxygen or toxic conditions preclude survival of most insect taxa except those with special adaptations to the conditions (e.g., Chironomus) The macroinvertebrate assemblage is dominated by tolerant non-insects (Planariidae; Oligochaeta: Tubificidae; Hirudinea; Sphaeriidae; etc) Low richness, but one or 2 tolerant groups may be abundant (Tubificidae). **VI *Non-native or intentionally introduced* taxa** Native species are essentially absent Only very tolerant invasive alien fish taxa are collected Number of individuals collected is abnormally low **VII Physiological condition of long-lived organisms** Fish biomass is very low ; individuals that are collected appear to be transients and are in poor condition Incidence of parasitic infestations and disease is high; anatomical deformities and/or tumors are common Minimal evidence of recruitment or reproduction except some extremely tolerant groups may have high production; young of year age classes are absent **VIII *Ecosystem Function*** Water quality has degraded to such an extent that algal photosynthesis is negligible Decomposition of organic matter creates P/R markedly <1; the system is predominantly heterotrophic as a result of high bacterial respiration and minimal photosynthesis Reproductive success is very low Recruitment of emigrating organisms into upstream and downstream habitats is impaired due to low fecundity and high mortality rates of resident biota. **IX Spatial and temporal extent of detrimental effects** The reach and all tributaries are affected by widespread alteration of within stream conditions as a result of severely altered land-use and poor water quality.

6 **Severe changes in structure of the biotic community and major loss of ecosystem function** **(cont'd)**	**X** ***Ecosystem connectance*** *Catchment*-wide land-use disturbance and alteration of stream morphology has affected all tributaries eliminating sources of recruitment and destroying spawning habitat; Physical and chemical requirements to fulfill *life history functions* (e.g., seasonal temperature cues for mating behavior and egg development; intact nursery habitats; optimal levels of dissolved gases, etc.) are severely disrupted resulting in very low reproductive success and high mortality rates.

APPENDIX D

TIER ASSIGNMENTS FOR SELECTED HIGH GRADIENT STREAMS (ON CD)

Biological Condition Gradient (BCG) Attributes

1 = Historically documented, sensitive, or regionally endemic taxa

2 = Highly sensitive taxa

3 = Sensitive and common taxa

4 = Taxa of intermediate tolerance

5 = Tolerant taxa

6 = Non native or intentially introduced taxa

x = Taxa not assigned an attribute

AN0009, Van Campens Bk, 11-16-1992

BCG_SampID	special_2	**Assigned Tier**	**Area (km²)**	--
StationID	AN0009	**2**	**Pct Urban**	--
Station Name	Van Campens Bk		**Pct Agr**	--
WMA	--		**Pct Forest**	--
Gradient	High		**Pct Wetlands**	--
CollDate	11/16/1992		**Total Habitat Score**	--

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	1	Haplotaxida	Lumbricidae
4	Lumbriculus variegatus	3	Lumbriculida	Lumbriculidae
x	Cambarus bartonii	1	Decapoda	Astacidae
3	Parachaetocladius hudsoni	1	Diptera	Chironomidae (Orthocladiinae)
3	Tipula ignobilis	1	Diptera	Tipulidae
3	Nigronia serricornis	1	Megaloptera	Corydalidae
2	Haploperla brevis	5	Plecoptera	Chloroperlidae
2	Leuctra truncata	8	Plecoptera	Leuctridae
2	Paraleuctra	2	Plecoptera	Leuctridae
2	Peltoperla	38	Plecoptera	Peltoperlidae
3	Acroneuria carolinensis	8	Plecoptera	Perlidae
3	Perlesta placida	9	Plecoptera	Perlidae
3	Taeniopteryx nivalis	1	Plecoptera	Taeniopterygidae
3	Micrasema	5	Trichoptera	Brachycentridae
2	Diplectrona modesta	30	Trichoptera	Hydropsychidae
2	Wormaldia	2	Trichoptera	Philopotamidae
2	Rhyacophila nigrita	3	Trichoptera	Rhyacophilidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	7	88
3	7	26
4	1	3
5	1	1
6	0	0
x	1	1
Total	*17*	*119*

This high gradient site was assigned to tier 2. This sample is dominated by attribute II taxa and has few attribute IV and V. Overall taxa richness is low, but this may be natural in a high gradient, extremely oligotrophic headwater stream. This site is in a watershed considered by the group to be one of the best in the state.

AN0318, Spruce Run, 02-14-1995

TALU_SampID	HB10	Assigned Tier		Area (km²)	14.62
StationID	AN0318	2		Pct Urban	14.97
Station Name	Spruce Run			Pct Agr	19.80
WMA	8			Pct Forest	48.93
Gradient	High			Pct Wetlands	15.50
CollDate	02-14-1995			Total Habitat Score	Not Scored

TALU Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
4	Nais	1	0	Tubificida	Naididae
4	Optioservus	8	0	Coleoptera	Elmidae
3	Promoresia tardella	1	0	Coleoptera	Elmidae
4	Stenelmis markeli	1	0	Coleoptera	Elmidae
4	Psephenus herricki	6	1	Coleoptera	Psephenidae
3	Atherix variegata	3	1	Diptera	Athericidae
2	Diamesa nivoriunda	3	0	Diptera	Chironomidae
5	Conchapelopia	6	3	Diptera	Chironomidae
3	Parametriocnemus stylatus	4	0	Diptera	Chironomidae (Orthocladiinae)
5	Diplocladius cultriger	8	0	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella gracei	2	0	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	95	11	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus exiguus	14	1	Diptera	Chironomidae (Tanytarsini)
4	Clinocera stagnalis	6	0	Diptera	Empididae
3	Prosimulium hirtipes	190	22	Diptera	Simuliidae
3	Prosimulium magnum	149	13	Diptera	Simuliidae
3	Cnephia mutata	2	0	Diptera	Simuliidae
3	Tipula abdominalis	1	0	Diptera	Tipulidae
3	Plauditus cingulatus	9	1	Ephemeroptera	Baetidae
3	Baetis tricaudatus	2	0	Ephemeroptera	Baetidae
3	Cloeon	16	3	Ephemeroptera	Baetidae
2	Drunella	21	4	Ephemeroptera	Ephemerellidae
3	Ephemerella rotunda	36	4	Ephemeroptera	Ephemerellidae
3	Ephemerella subvaria	2	0	Ephemeroptera	Ephemerellidae
3	Serratella	2	0	Ephemeroptera	Ephemerellidae
2	Epeorus	15	3	Ephemeroptera	Heptageniidae
3	Stenonema modestum	27	3	Ephemeroptera	Heptageniidae
2	Nemoura trispinosa	84	6	Plecoptera	Nemouridae
3	Acroneuria abnormis	6	2	Plecoptera	Perlidae
2	Paragnetina media	4	0	Plecoptera	Perlidae
2	Strophopteryx fasciata	94	12	Plecoptera	Taeniopterygidae
3	Taeniopteryx nivalis	1	0	Plecoptera	Taeniopterygidae
2	Glossosoma	12	1	Trichoptera	Glossosomatidae
4	Ceratopsyche morosa	5	0	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa bifida	1	0	Trichoptera	Hydropsychidae
4	Ceratopsyche sparna	17	4	Trichoptera	Hydropsychidae
4	Cheumatopsyche	73	6	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	18	0	Trichoptera	Hydropsychidae
3	Apatania	6	1	Trichoptera	Limnephilidae
4	Chimarra aterrima	17	1	Trichoptera	Philopotamidae

2	Dolophilodes	1	1	Trichoptera	Philopotamidae
2	Rhyacophila fuscula	8	2	Trichoptera	Rhyacophilidae
4	Ferrissia rivularis	5	0	Basommatophora	Ancylidae

TALU Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	9	242	7	29
3	17	457	9	50
4	12	154	5	13
5	5	129	2	14
6	0	0	0	0
x	0	0	0	0
Total	*43*	*982*	*23*	*106*

This sample was assigned to Tier 2 with little to no discussion after subsampling to 100 organisms.

AN0007, Flat Bk, 07-13-1993

TALU_SampID	HB06	**Assigned Tier**		**Area (km²)**	144.35
StationID	AN0007	**3**		**Pct Urban**	3.07
Station Name	Flat Bk			**Pct Agr**	4.76
WMA	1			**Pct Forest**	80.52
Gradient	High			**Pct Wetlands**	10.14
CollDate	07-13-1993			**Total Habitat Score**	Not Scored

TALU Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
4	Oulimnius latiusculus	1	0	Coleoptera	Elmidae
4	Optioservus ovalis	2	0	Coleoptera	Elmidae
4	Optioservus trivittatus	22	6	Coleoptera	Elmidae
3	Promoresia tardella	13	2	Coleoptera	Elmidae
4	Stenelmis concinna	2	0	Coleoptera	Elmidae
4	Psephenus herricki	3	0	Coleoptera	Psephenidae
3	Atherix variegata	2	0	Diptera	Athericidae
5	Microtendipes tarsalis	2	0	Diptera	Chironomidae
5	Polypedilum convictum	2	0	Diptera	Chironomidae
5	Polypedilum halterale	4	0	Diptera	Chironomidae
2	Sympotthastia	1	0	Diptera	Chironomidae
5	Orthocladius lignicola	1	1	Diptera	Chironomidae (Orthocladiinae)
5	Cardiocladius obscurus	2	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus tremulus	10	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus trifascia	6	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus vierriensis	3	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus bicinctus	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella pseudomontana	3	1	Diptera	Chironomidae (Orthocladiinae)
x	Paracricotopus	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia vitracies	10	2	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus pellucidus	1	0	Diptera	Chironomidae (Tanytarsini)
5	Micropsectra	2	0	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus exiguus	6	2	Diptera	Chironomidae (Tanytarsini)
4	Simulium jenningsi	4	1	Diptera	Simuliidae
5	Antocha	8	2	Diptera	Tipulidae
3	Plauditus cingulatus	5	0	Ephemeroptera	Baetidae
3	Plauditus dubius	2	0	Ephemeroptera	Baetidae
3	Baetis flavistriga	4	0	Ephemeroptera	Baetidae
3	Baetis tricaudatus	4	0	Ephemeroptera	Baetidae
3	Cloeon	14	1	Ephemeroptera	Baetidae
4	Caenis	4	1	Ephemeroptera	Caenidae
2	Drunella lata	2	1	Ephemeroptera	Ephemerellidae
3	Serratella serrata	43	7	Ephemeroptera	Ephemerellidae

4	Stenacron pallidum	1	0	Ephemeroptera	Heptageniidae
2	Epeorus	11	2	Ephemeroptera	Heptageniidae
2	Heptagenia	1	1	Ephemeroptera	Heptageniidae
3	Stenonema smithae	4	0	Ephemeroptera	Heptageniidae
3	Stenonema modestum	2	0	Ephemeroptera	Heptageniidae
3	Isonychia sayi	58	8	Ephemeroptera	Oligoneuriidae
3	Nigronia serricornis	1	1	Megaloptera	Corydalidae
5	Climacia areolaris	1	1	Neuroptera	Sisyridae
x	Octogomphus	1	0	Odonata	Gomphidae
2	Peltoperla	2	0	Plecoptera	Peltoperlidae
3	Acroneuria abnormis	4	0	Plecoptera	Perlidae
2	Paragnetina media	2	0	Plecoptera	Perlidae
2	Pteronarcys	1	1	Plecoptera	Pteronarcidae
2	Brachycentrus numerosus	4	1	Trichoptera	Brachycentridae
3	Micrasema wataga	28	3	Trichoptera	Brachycentridae
2	Glossosoma	19	2	Trichoptera	Glossosomatidae
2	Protoptila	3	2	Trichoptera	Glossosomatidae
4	Ceratopsyche sparna	41	6	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa bifida	7	2	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa	337	48	Trichoptera	Hydropsychidae
4	Cheumatopsyche	16	2	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	5	1	Trichoptera	Hydropsychidae
4	Hydroptila	3	0	Trichoptera	Hydroptilidae
2	Lepidostoma	1	0	Trichoptera	Lepidostomatidae
3	Apatania	1	1	Trichoptera	Limnephilidae
3	Neophylax	3	1	Trichoptera	Limnephilidae
4	Chimarra aterrima	7	2	Trichoptera	Philopotamidae
4	Neureclipsis	2	0	Trichoptera	Polycentropodidae
3	Psychomyia nomada	2	0	Trichoptera	Psychomyiidae
2	Rhyacophila fuscula	3	0	Trichoptera	Rhyacophilidae
x	Hymanella retenuova	2	1	Tricladida	Planariidae

Summary

TALU Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	12	50	7	10
3	17	190	8	24
4	17	459	9	70
5	15	60	7	9
6	0	0	0	0
x	3	4	1	1
Total	*64*	*763*	*32*	*114*

This high gradient site was assigned to tier 2 during the first workshop. This site is in a watershed that the group considers one of the best in the state. There are low numbers of stoneflies, but this is probably due to the time of sampling (July, after stonefly emergence). There are a large number of Ceratopsyche which could be indicative of organic enrichment. But overall this site is diverse across the attributes.

When reexamined during the 2nd workshop this sample was randomly subsampled to 100 organisms to be consistent with the other samples (right-hand columns in summary table). The group then felt that this sample was a tier 3. It was acknowledged that while this watershed is in good condition this particular site is not of the same quality (heavy foot traffic during trout season, heavy recreational use).

AN0214, Indian Grave Bk, 02-05-1992

TALU_SampID	HA07	**Assigned Tier**		**Area (km²)**	7.17
StationID	AN0214	**3**		**Pct Urban**	35.36
Station Name	Indian Grave Bk			**Pct Agr**	10.52
WMA	6			**Pct Forest**	50.40
Gradient	High			**Pct Wetlands**	3.31
CollDate	02-05-1992			**Total Habitat Score**	Not Scored

TALU Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
4	Lumbriculus variegatus	9	0	Lumbriculida	Lumbriculidae
4	Nais communis	10	0	Tubificida	Naididae
4	Nais pseudobtusa	5	0	Tubificida	Naididae
4	Ophidonais serpentina	2	1	Tubificida	Naididae
4	Oulimnius latiusculus	2	0	Coleoptera	Elmidae
5	Dubiraphia quadrinotata	1	0	Coleoptera	Elmidae
4	Macronychus glabratus	2	0	Coleoptera	Elmidae
4	Optioservus ovalis	8	0	Coleoptera	Elmidae
4	Optioservus trivittatus	3	0	Coleoptera	Elmidae
3	Promoresia tardella	38	4	Coleoptera	Elmidae
4	Stenelmis markeli	1	0	Coleoptera	Elmidae
4	Psephenus herricki	6	0	Coleoptera	Psephenidae
3	Atherix variegata	1	0	Diptera	Athericidae
4	Bezzia opaca	2	0	Diptera	Ceratopogonidae
2	Pseudodiamesa pertinax	2	0	Diptera	Chironomidae
4	Rheopelopia perda	15	1	Diptera	Chironomidae
5	Hydrobaenus johannseni	3	0	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius dorenus	9	1	Diptera	Chironomidae (Orthocladiinae)
3	Parametriocnemus stylatus	23	1	Diptera	Chironomidae (Orthocladiinae)
5	Diplocladius cultriger	2	0	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella devonica	14	3	Diptera	Chironomidae (Orthocladiinae)
5	Nanocladius	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius rivulorum	6	0	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	1	0	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus exiguus	16	2	Diptera	Chironomidae (Tanytarsini)
4	Clinocera stagnalis	2	1	Diptera	Empididae
4	Hemerodromia rogatoris	1	0	Diptera	Empididae
3	Prosimulium hirtipes	383	30	Diptera	Simuliidae
4	Dicranota	1	0	Diptera	Tipulidae
2	Acentrella turbida	2	1	Ephemeroptera	Baetidae
3	Baetis tricaudatus	2	0	Ephemeroptera	Baetidae
4	Caenis	1	1	Ephemeroptera	Caenidae
3	Ephemerella rotunda	221	20	Ephemeroptera	Ephemerellidae
3	Eurylophella temporalis	4	0	Ephemeroptera	Ephemerellidae
2	Heptagenia	1	0	Ephemeroptera	Heptageniidae
3	Stenonema	11	0	Ephemeroptera	Heptageniidae
2	Paraleptophlebia	2	0	Ephemeroptera	Leptophlebiidae
3	Isonychia	1	0	Ephemeroptera	Oligoneuriidae
3	Nigronia serricornis	1	0	Megaloptera	Corydalidae
x	Octogomphus	2	1	Odonata	Gomphidae
2	Allocapnia	1	0	Plecoptera	Capniidae
2	Ostrocerca truncata	170	19	Plecoptera	Nemouridae

2	Peltoperla	2	0	Plecoptera	Peltoperlidae
3	Acroneuria abnormis	20	1	Plecoptera	Perlidae
2	Isoperla transmarina	3	0	Plecoptera	Perlodidae
2	Oemopteryx glacialis	10	0	Plecoptera	Taeniopterygidae
3	Taeniopteryx burksi	2	0	Plecoptera	Taeniopterygidae
3	Micrasema wataga	4	0	Trichoptera	Brachycentridae
2	Glossosoma	14	1	Trichoptera	Glossosomatidae
4	Ceratopsyche morosa bifida	3	1	Trichoptera	Hydropsychidae
4	Ceratopsyche sparna	102	7	Trichoptera	Hydropsychidae
4	Cheumatopsyche	22	5	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	2	0	Trichoptera	Hydropsychidae
2	Lepidostoma	1	0	Trichoptera	Lepidostomatidae
3	Apatania	2	1	Trichoptera	Limnephilidae
3	Neophylax	3	0	Trichoptera	Limnephilidae
4	Chimarra aterrima	20	3	Trichoptera	Philopotamidae
2	Dolophilodes	1	0	Trichoptera	Philopotamidae
3	Psychomyia nomada	1	0	Trichoptera	Psychomyiidae
2	Rhyacophila	3	0	Trichoptera	Rhyacophilidae
2	Rhyacophila fuscula	6	2	Trichoptera	Rhyacophilidae
x	Nemata	1	0		
4	Prostoma graecense	2	0	Hoplonemertea	Tetrastemmatidae

Summary

TALU Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	14	218	4	23
3	16	717	6	57
4	22	235	9	22
5	9	39	2	4
6	0	0	0	0
x	2	3	1	1
Total	*63*	*1212*	*22*	*107*

This high gradient site was assigned to tier 2/3 during the 1st workshop. It was dominated by Simuliidae because sampling was performed in late winter

During the 2nd workshop this site was reclassified as tier 3. This sample was subsampled to 100 organsisms to be more consistent with other samples (right-hand columns in Summary table). The site had more than 10% Hydropsychidae, but less than 20%.

AN0019, Dry Bk, 10-13-1992

BCG_SampID	HA04	**Assigned Tier**	**Area (km²)**	6.14
StationID	AN0019	**3**	**Pct Urban**	8.68
Station Name	Dry Bk		**Pct Agr**	19.77
WMA	1		**Pct Forest**	60.98
Gradient	High		**Pct Wetlands**	8.71
CollDate	10-13-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	2	Haplotaxida	Lumbricidae
4	Slavina appendiculata	1	Tubificida	Naididae
4	Macronychus glabratus	1	Coleoptera	Elmidae
5	Procladius riparius	1	Diptera	Chironomidae
4	Simulium jenningsi	1	Diptera	Simuliidae
3	Stenonema modestum	1	Ephemeroptera	Heptageniidae
3	Nigronia serricornis	5	Megaloptera	Corydalidae
4	Sialis	2	Megaloptera	Sialidae
4	Boyeria vinosa	1	Odonata	Aeshnidae
4	Dromogomphus	1	Odonata	Gomphidae
2	Paracapnia opis	1	Plecoptera	Capniidae
2	Glossosoma	1	Trichoptera	Glossosomatidae
4	Cheumatopsyche	17	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	32	Trichoptera	Hydropsychidae
3	Mystacides	1	Trichoptera	Leptoceridae
3	Neophylax	26	Trichoptera	Limnephilidae
2	Psilotreta frontalis	3	Trichoptera	Odontoceridae
4	Chimarra aterrima	3	Trichoptera	Philopotamidae
4	Polycentropus	1	Trichoptera	Polycentropodidae
4	Ferrissia parallela	1	Basommatophora	Ancylidae
5	Helisoma anceps	6	Basommatophora	Planorbidae
x	Nemata	2		

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	3	5
3	6	35
4	8	27
5	4	41
6	0	0
x	1	2
Total	*22*	*110*

This high gradient site was assigned to tier 3. Attribute II taxa are being replaced by attribute III taxa and there are increased numbers of attribute IV and V taxa (attribute V taxa are dominant, primarily Hydropsyche).

AN0294, Lake Lookout Bk (trib to Wawayanda Ck), 04-25-1994

TALU_SampID	HA09	**Assigned Tier**		**Area (km²)**	11.12
StationID	AN0294	**3**		**Pct Urban**	0.23
Station Name	Lake Lookout Bk(trib to Wawayanda Ck)			**Pct Agr**	0.00
WMA	2			**Pct Forest**	78.02
Gradient	High			**Pct Wetlands**	20.49
CollDate	04-25-1994			**Total Habitat Score**	Not Scored

TALU Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
5	Lumbricidae	4	0	Haplotaxida	Lumbricidae
4	Lumbriculus variegatus	1	1	Lumbriculida	Lumbriculidae
4	Nais	1	0	Tubificida	Naididae
4	Slavina appendiculata	1	0	Tubificida	Naididae
4	Gammarus fasciatus	27	2	Amphipoda	Gammaridae
4	Oulimnius latiusculus	1	0	Coleoptera	Elmidae
3	Promoresia tardella	1	0	Coleoptera	Elmidae
2	Diamesa nivoriunda	2	0	Diptera	Chironomidae
5	Conchapelopia	1	0	Diptera	Chironomidae
5	Endochironomus nigricans	1	0	Diptera	Chironomidae
3	Parametriocnemus stylatus	2	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus bicinctus	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus festivellus	13	3	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella devonica	3	0	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella claripennis	38	3	Diptera	Chironomidae (Orthocladiinae)
5	Nanocladius distinctus	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius rivulorum	1	0	Diptera	Chironomidae (Orthocladiinae)
3	Parametriocnemus lundbecki	4	1	Diptera	Chironomidae (Orthocladiinae)
4	Rheocricotopus	4	0	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra polita	1	0	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus exiguus	1	0	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	1	0	Diptera	Chironomidae (Tanytarsini)
4	Zavrelia	1	0	Diptera	Chironomidae (Tanytarsini)
4	Chelifera precatoria	5	1	Diptera	Empididae
3	Prosimulium hirtipes	280	22	Diptera	Simuliidae
3	Prosimulium magnum	122	10	Diptera	Simuliidae
4	Simulium aureum	10	1	Diptera	Simuliidae
5	Simulium venustum	313	27	Diptera	Simuliidae
3	Cnephia mutata	89	8	Diptera	Simuliidae
5	Antocha	1	0	Diptera	Tipulidae
3	Plauditus cingulatus	8	2	Ephemeroptera	Baetidae
2	Drunella cornutella	1	0	Ephemeroptera	Ephemerellidae
3	Amphinemura delosa	59	5	Plecoptera	Nemouridae
2	Nemoura trispinosa	4	1	Plecoptera	Nemouridae
3	Acroneuria abnormis	3	0	Plecoptera	Perlidae
2	Paragnetina media	1	0	Plecoptera	Perlidae
2	Isoperla transmarina	1	0	Plecoptera	Perlodidae
3	Micrasema	15	2	Trichoptera	Brachycentridae
4	Cheumatopsyche	1	0	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	4	0	Trichoptera	Hydropsychidae
3	Oxyethira	1	1	Trichoptera	Hydroptilidae
2	Lepidostoma	1	0	Trichoptera	Lepidostomatidae

3	Neophylax	48	6	Trichoptera	Limnephilidae
3	Pycnopsyche	1	0	Trichoptera	Limnephilidae
4	Pisidium	3	0	Veneroida	Pisidiidae
x	Nemata	1	0		
4	Prostoma graecense	1	0	Hoplonemertea	Tetrastemmatidae
5	Cura foremanii	2	0	Tricladida	Planariidae

Summary

TALU Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	6	10	1	1
3	13	633	9	57
4	13	57	4	5
5	15	385	3	33
6	0	0	0	0
x	1	1	0	0
Total	*48*	*1086*	*17*	*96*

This high gradient site was assigned to tier 3 during the 1st workshop. This is an early Spring sample with high numbers of Simuliidae. Once these are removed from the sample the attribute 5 taxa are no longer subdominant.

During the 2nd workshop this sample was re-examined as a 100 organism subsampled and stayed as a tier 3.

AN0328, Assiscong Ck, 05-05-1994

BCG_SampID	HA11	**Assigned Tier**	**Area (km²)**	7.68
StationID	AN0328	**3**	**Pct Urban**	44.09
Station Name	Assiscong Ck		**Pct Agr**	26.19
WMA	8		**Pct Forest**	22.01
Gradient	High		**Pct Wetlands**	7.64
CollDate	05-05-1994		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Psephenus herricki	1	Coleoptera	Psephenidae
2	Diamesa nivoriunda	2	Diptera	Chironomidae
5	Dicrotendipes neomodestus	1	Diptera	Chironomidae
5	Orthocladius dorenus	6	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius obumbratus	1	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius rivulorum	2	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	1	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus	1	Diptera	Chironomidae (Tanytarsini)
2	Acentrella turbida	2	Ephemeroptera	Baetidae
2	Drunella cornutella	12	Ephemeroptera	Ephemerellidae
3	Ephemerella dorothea	21	Ephemeroptera	Ephemerellidae
3	Ephemerella rotunda	3	Ephemeroptera	Ephemerellidae
3	Eurylophella temporalis	12	Ephemeroptera	Ephemerellidae
2	Epeorus	2	Ephemeroptera	Heptageniidae
2	Ameletus	3	Ephemeroptera	Siphlonuridae
3	Amphinemura delosa	25	Plecoptera	Nemouridae
2	Isoperla transmarina	6	Plecoptera	Perlodidae
4	Ceratopsyche slossonae	1	Trichoptera	Hydropsychidae
4	Cheumatopsyche	1	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	1	Trichoptera	Hydropsychidae
3	Pycnopsyche	4	Trichoptera	Limnephilidae
4	Polycentropus	1	Trichoptera	Polycentropodidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	6	27
3	5	65
4	4	4
5	7	13
6	0	0
x	0	0
Total	*22*	*109*

This high gradient site was assigned to tier 3. Balance of diversity is close to what would be expected for a tier 2 samples. But the number of taxa in attribute II and III and total number of taxa was deemed to be low (NB: actually as high as taxa numbers in subsampled Tier 2 sites – see Van Campens Brook and Spruce Run after subsampling).

AN0078, Harihokake Ck, 07-10-1997

BCG_SampID	HB11	**Assigned Tier**	**Area (km²)**	2.58
StationID	AN0078	**3**	**Pct Urban**	15.29
Station Name	Harihokake Ck		**Pct Agr**	16.96
WMA	11		**Pct Forest**	66.21
Gradient	High		**Pct Wetlands**	1.47
CollDate	07-10-1997		**Total Habitat Score**	171.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	9	Lumbriculida	Lumbriculidae
x	Cambarus	1	Decapoda	Astacidae
2	Diamesa nivoriunda	2	Diptera	Chironomidae
5	Polypedilum halterale	10	Diptera	Chironomidae
5	Tvetenia bavarica	2	Diptera	Chironomidae (Orthocladiinae)
3	Hexatoma spinosa	1	Diptera	Tipulidae
5	Antocha	1	Diptera	Tipulidae
4	Dicranota	3	Diptera	Tipulidae
3	Baetis tricaudatus	2	Ephemeroptera	Baetidae
3	Cloeon	3	Ephemeroptera	Baetidae
4	Caenis	2	Ephemeroptera	Caenidae
2	Drunella cornutella	3	Ephemeroptera	Ephemerellidae
2	Epeorus	1	Ephemeroptera	Heptageniidae
2	Heptagenia	1	Ephemeroptera	Heptageniidae
3	Isonychia	2	Ephemeroptera	Oligoneuriidae
2	Leuctra truncata	2	Plecoptera	Leuctridae
3	Acroneuria abnormis	3	Plecoptera	Perlidae
3	Perlesta placida	4	Plecoptera	Perlidae
2	Glossosoma	9	Trichoptera	Glossosomatidae
4	Ceratopsyche sparna	18	Trichoptera	Hydropsychidae
4	Cheumatopsyche	1	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	1	Trichoptera	Hydropsychidae
3	Neophylax	3	Trichoptera	Limnephilidae
4	Chimarra aterrima	1	Trichoptera	Philopotamidae
2	Dolophilodes	22	Trichoptera	Philopotamidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	7	40
3	7	18
4	6	34
5	4	14
6	0	0
x	1	1
Total	*25*	*107*

This high gradient site was assigned to tier 3. This site was not assigned to tier 2 based upon perceived organic enrichment (high numbers of Ceratopsyche, Polypedilum, and Lumbriculus), otherwise there is high diversity of taxa attributes II and III. The site had 18% hydropsychidae and 14% attribute V taxa.

AN0071, UNT to Musconetcong River, 08-12-1997

TALU_SampID	HA13	**Assigned Tier**	**Area (km²)**	8.81
StationID	AN0071	**3**	**Pct Urban**	13.01
Station Name	UNT to Musconetcong River		**Pct Agr**	31.44
WMA	1		**Pct Forest**	50.92
Gradient	High		**Pct Wetlands**	4.41
CollDate	08-12-1997		**Total Habitat Score**	159.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	8	Lumbriculida	Lumbriculidae
4	Gammarus fasciatus	11	Amphipoda	Gammaridae
4	Oulimnius latiusculus	2	Coleoptera	Elmidae
5	Conchapelopia	1	Diptera	Chironomidae
5	Polypedilum convictum	5	Diptera	Chironomidae
5	Polypedilum halterale	5	Diptera	Chironomidae
4	Brillia flavifrons	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus bicinctus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus vierriensis	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	7	Diptera	Chironomidae (Orthocladiinae)
5	Tanytarsus glabrescens	4	Diptera	Chironomidae (Tanytarsini)
4	Hemerodromia rogatoris	1	Diptera	Empididae
5	Antocha	1	Diptera	Tipulidae
3	Baetis tricaudatus	3	Ephemeroptera	Baetidae
2	Centroptilum	1	Ephemeroptera	Baetidae
3	Cloeon	7	Ephemeroptera	Baetidae
3	Stenonema	2	Ephemeroptera	Heptageniidae
3	Isonychia	2	Ephemeroptera	Oligoneuriidae
2	Leuctra truncata	3	Plecoptera	Leuctridae
2	Tallaperla	3	Plecoptera	Peltoperlidae
2	Glossosoma	2	Trichoptera	Glossosomatidae
4	Ceratopsyche sparna	17	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa	5	Trichoptera	Hydropsychidae
5	Physella integra	2	Basommatophora	Physidae
x	Nemata	6		

BCG Attribute	Taxa	Individuals
1	0	0
2	4	9
3	4	14
4	7	45
5	9	27
6	0	0
x	1	6
Total	*25*	*101*

The group was split between Tiers 3 and 4, but consensus settled on Tier 3 limestone stream.

AN0239, Russia Bk, 07-16-1998

TALU_SampID	HA15	**Assigned Tier**	**Area (km²)**	29.97
StationID	AN0239	**3**	**Pct Urban**	17.57
Station Name	Russia Bk		**Pct Agr**	0.34
WMA	6		**Pct Forest**	68.85
Gradient	High		**Pct Wetlands**	11.27
CollDate	07-16-1998		**Total Habitat Score**	168.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Limnodrilus	2	Tubificida	Tubificidae
4	Gammarus fasciatus	13	Amphipoda	Gammaridae
4	Ancyronyx variegatus	1	Coleoptera	Elmidae
5	Dubiraphia	1	Coleoptera	Elmidae
4	Macronychus glabratus	4	Coleoptera	Elmidae
3	Promoresia elegans	5	Coleoptera	Elmidae
5	Conchapelopia	1	Diptera	Chironomidae
5	Polypedilum convictum	1	Diptera	Chironomidae
5	Polypedilum halterale	1	Diptera	Chironomidae
5	Orthocladius lignicola	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	2	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus exiguus	3	Diptera	Chironomidae (Tanytarsini)
4	Clinocera stagnalis	1	Diptera	Empididae
5	Simulium vittatum	1	Diptera	Simuliidae
5	Antocha	1	Diptera	Tipulidae
3	Baetis flavistriga	2	Ephemeroptera	Baetidae
3	Cloeon	1	Ephemeroptera	Baetidae
3	Serratella	3	Ephemeroptera	Ephemerellidae
3	Serratella deficiens	1	Ephemeroptera	Ephemerellidae
3	Stenonema	1	Ephemeroptera	Heptageniidae
3	Isonychia arida	4	Ephemeroptera	Oligoneuriidae
4	Hetaerina americana	7	Odonata	Calopterygidae
2	Leuctra truncata	1	Plecoptera	Leuctridae
3	Acroneuria abnormis	1	Plecoptera	Perlidae
2	Paragnetina media	3	Plecoptera	Perlidae
3	Micrasema wataga	1	Trichoptera	Brachycentridae
4	Ceratopsyche morosa bifida	2	Trichoptera	Hydropsychidae
4	Ceratopsyche sparna	26	Trichoptera	Hydropsychidae
4	Cheumatopsyche	1	Trichoptera	Hydropsychidae
4	Oecetis	1	Trichoptera	Leptoceridae
4	Chimarra aterrima	13	Trichoptera	Philopotamidae
2	Rhyacophila fuscula	2	Trichoptera	Rhyacophilidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	3	6
3	9	19
4	11	72
5	9	11
6	0	0
x	0	0
Total	*32*	*108*

This site also has characteristics of both Tiers 4 and 3. Attribute V taxa were not dominant. Discussion centered on the importance of loss of sensitive taxa and abundance vs. gain of non-sensitive taxa and abundance. Loss of sensitives was deemed more important than gain of non-sensitives and taxa more important than abundance. Final consensus was Tier 3.

AN0359, Trout Bk, 06-10-1999

TALU_SampID	HA18	**Assigned Tier**	**Area (km²)**	2.84
StationID	AN0359	**3**	**Pct Urban**	26.78
Station Name	Trout Bk		**Pct Agr**	27.60
WMA	8		**Pct Forest**	28.27
Gradient	High		**Pct Wetlands**	17.16
CollDate	06-10-1999		**Total Habitat Score**	181.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	1	Haplotaxida	Lumbricidae
4	Lumbriculus variegatus	4	Lumbriculida	Lumbriculidae
4	Nais communis	6	Tubificida	Naididae
4	Gammarus fasciatus	41	Amphipoda	Gammaridae
4	Ectopria nervosa	1	Coleoptera	Psephenidae
2	Diamesa nivoriunda	3	Diptera	Chironomidae
2	Pseudodiamesa pertinax	2	Diptera	Chironomidae
4	Brillia	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	2	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	1	Diptera	Chironomidae (Tanytarsini)
5	Simulium tuberosum	4	Diptera	Simuliidae
5	Simulium venustum	2	Diptera	Simuliidae
5	Antocha	1	Diptera	Tipulidae
4	Dicranota	2	Diptera	Tipulidae
3	Plauditus cingulatus	10	Ephemeroptera	Baetidae
3	Baetis	3	Ephemeroptera	Baetidae
3	Dannella	3	Ephemeroptera	Ephemerellidae
3	Nigronia serricornis	1	Megaloptera	Corydalidae
2	Leuctra	1	Plecoptera	Leuctridae
3	Amphinemura delosa	2	Plecoptera	Nemouridae
3	Acroneuria	1	Plecoptera	Perlidae
2	Glossosoma	1	Trichoptera	Glossosomatidae
4	Ceratopsyche sparna	1	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa bifida	1	Trichoptera	Hydropsychidae
4	Cheumatopsyche	2	Trichoptera	Hydropsychidae
2	Diplectrona	1	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	1	Trichoptera	Hydropsychidae
2	Lepidostoma	1	Trichoptera	Lepidostomatidae
2	Dolophilodes	11	Trichoptera	Philopotamidae
2	Rhyacophila fuscula	2	Trichoptera	Rhyacophilidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	8	22
3	6	20
4	9	59
5	7	12
6	0	0
x	0	0
Total	*30*	*113*

This limestone stream was placed in Tier 3, although there was discussion to assign to Tier 2. This site did not meet the abundance thresholds for Tier 2. Small watershed. Since is after May 1 missed the mayfly emergence (Jon). This site

was deemed to have more than “minor” changes which is why it was designated as Tier 3 instead of 2. A limestone stream with an abundance of Gammarus.

AN0359, Trout Bk, 06-28-1994

TALU_SampID	HB09	**Assigned Tier**	**Area (km²)**	2.84
StationID	AN0359	**3**	**Pct Urban**	26.78
Station Name	Trout Bk		**Pct Agr**	27.60
WMA	8		**Pct Forest**	28.27
Gradient	High		**Pct Wetlands**	17.16
CollDate	06-28-1994		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	4	Haplotaxida	Lumbricidae
4	Lumbriculus variegatus	9	Lumbriculida	Lumbriculidae
4	Gammarus fasciatus	39	Amphipoda	Gammaridae
x	Cambarus bartonii	1	Decapoda	Astacidae
4	Stenelmis markeli	1	Coleoptera	Elmidae
5	Conchapelopia telema	2	Diptera	Chironomidae
5	Cryptochironomus	1	Diptera	Chironomidae
5	Polypedilum convictum	1	Diptera	Chironomidae
5	Polypedilum halterale	1	Diptera	Chironomidae
5	Cricotopus bicinctus	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	6	Diptera	Chironomidae (Orthocladiinae)
5	Simulium tuberosum	2	Diptera	Simuliidae
x	Pedicia	1	Diptera	Tipulidae
3	Tipula abdominalis	1	Diptera	Tipulidae
3	Baetis tricaudatus	1	Ephemeroptera	Baetidae
3	Dannella lita	1	Ephemeroptera	Ephemerellidae
3	Calopteryx	1	Odonata	Calopterygidae
2	Leuctra truncata	1	Plecoptera	Leuctridae
2	Glossosoma	5	Trichoptera	Glossosomatidae
4	Ceratopsyche sparna	3	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	1	Trichoptera	Hydropsychidae
3	Neophylax	2	Trichoptera	Limnephilidae
2	Dolophilodes	29	Trichoptera	Philopotamidae
2	Rhyacophila	1	Trichoptera	Rhyacophilidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	4	36
3	5	6
4	4	52
5	9	19
6	0	0
x	2	2
Total	*24*	*115*

Tier 3. Attribute II taxa mostly from only 1 taxon (Dolophilodes).

AN0360, Lamington River, 05-13-1999

TALU_SampID	HA19	Assigned Tier	Area (km²)	84.18
StationID	AN0360	3	Pct Urban	32.43
Station Name	Lamington River		Pct Agr	12.26
WMA	8		Pct Forest	39.04
Gradient	High		Pct Wetlands	14.62
CollDate	05-13-1999		Total Habitat Score	183.00
BCG Attribute	**FinalID**	**Individuals**	**Order**	**Family (Tribe)**
4	Nais communis	15	Tubificida	Naididae
4	Optioservus	4	Coleoptera	Elmidae
4	Stenelmis	1	Coleoptera	Elmidae
4	Psephenus herricki	1	Coleoptera	Psephenidae
2	Diamesa nivoriunda	4	Diptera	Chironomidae
5	Polypedilum fallax	1	Diptera	Chironomidae
5	Cricotopus	19	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus trifascia	3	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella devonica	1	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius obumbratus	8	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	2	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia vitracies	1	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	1	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus	1	Diptera	Chironomidae (Tanytarsini)
5	Antocha	5	Diptera	Tipulidae
3	Plauditus cingulatus	3	Ephemeroptera	Baetidae
2	Acentrella turbida	6	Ephemeroptera	Baetidae
2	Drunella	10	Ephemeroptera	Ephemerellidae
3	Ephemerella dorothea	3	Ephemeroptera	Ephemerellidae
3	Ephemerella rotunda	6	Ephemeroptera	Ephemerellidae
3	Eurylophella	1	Ephemeroptera	Ephemerellidae
4	Chauliodes	1	Megaloptera	Corydalidae
2	Allocapnia	1	Plecoptera	Capniidae
3	Acroneuria abnormis	1	Plecoptera	Perlidae
2	Paragnetina	1	Plecoptera	Perlidae
2	Agapetus	1	Trichoptera	Glossosomatidae
4	Cheumatopsyche	2	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	1	Trichoptera	Hydropsychidae
4	Hydroptila	1	Trichoptera	Hydroptilidae
2	Lepidostoma	1	Trichoptera	Lepidostomatidae
3	Pycnopsyche	1	Trichoptera	Limnephilidae
2	Dolophilodes	1	Trichoptera	Philopotamidae
4	Polycentropus	3	Trichoptera	Polycentropodidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	8	25
3	6	15
4	9	29
5	10	42
6	0	0
x	0	0
Total	*33*	*111*

Tier 3. This site had abundant and diverse taxa in the highly sensitive category (Attribute II), but also in the tolerant category (Attribute V). Consensus was Tier 3. Possibly a good site going bad (increase in Attribute IV and V taxa). Enrichment could potentially be increasing the taxa richness.

AN0348, Burnett Bk, 06-19-1990

TALU_SampID	HB01	Assigned Tier		Area (km²)	17.18
StationID	AN0348	3		Pct Urban	45.88
Station Name	Burnett Bk			Pct Agr	7.32
WMA	8			Pct Forest	41.15
Gradient	High			Pct Wetlands	5.02
CollDate	06-19-1990			Total Habitat Score	Not Scored

BCG Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
4	Lumbriculus variegatus	4	3	Lumbriculida	Lumbriculidae
4	Nais bretscheri	1	0	Tubificida	Naididae
x	Folsomia	1	1	Collembola	Isotomidae
4	Oulimnius latiusculus	8	5	Coleoptera	Elmidae
4	Stenelmis markeli	1	1	Coleoptera	Elmidae
4	Psephenus herricki	34	22	Coleoptera	Psephenidae
5	Microtendipes tarsalis	1	1	Diptera	Chironomidae
2	Pseudodiamesa pertinax	3	1	Diptera	Chironomidae
2	Diamesa nivoriunda	8	6	Diptera	Chironomidae
5	Conchapelopia	1	1	Diptera	Chironomidae
5	Conchapelopia americana	1	1	Diptera	Chironomidae
5	Microtendipes pedellus	2	1	Diptera	Chironomidae
5	Polypedilum convictum	1	0	Diptera	Chironomidae
5	Polypedilum halterale	5	3	Diptera	Chironomidae
x	Lopescladius	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Synorthocladius semivirens	2	0	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella devonica	2	2	Diptera	Chironomidae (Orthocladiinae)
5	Thienemanniella xena	2	0	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	12	8	Diptera	Chironomidae (Orthocladiinae)
3	Sublettea coffmani	1	1	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	4	3	Diptera	Chironomidae (Tanytarsini)
5	Simulium tuberosum	14	8	Diptera	Simuliidae
x	Pedicia	2	1	Diptera	Tipulidae
3	Plauditus punctiventris	1	1	Ephemeroptera	Baetidae
3	Baetis flavistriga	6	4	Ephemeroptera	Baetidae
3	Dannella lita	5	4	Ephemeroptera	Ephemerellidae
2	Drunella cornutella	13	6	Ephemeroptera	Ephemerellidae
3	Ephemerella invaria	2	1	Ephemeroptera	Ephemerellidae
3	Ephemerella dorothea	1	1	Ephemeroptera	Ephemerellidae
2	Paraleptophlebia	2	1	Ephemeroptera	Leptophlebiidae
3	Nigronia serricornis	1	0	Megaloptera	Corydalidae
2	Leuctra truncata	2	0	Plecoptera	Leuctridae
3	Amphinemura delosa	1	1	Plecoptera	Nemouridae
3	Acroneuria abnormis	1	1	Plecoptera	Perlidae
3	Perlesta placida	1	1	Plecoptera	Perlidae
2	Protoptila	22	10	Trichoptera	Glossosomatidae
4	Ceratopsyche morosa	2	0	Trichoptera	Hydropsychidae
4	Ceratopsyche slossonae	1	1	Trichoptera	Hydropsychidae
4	Ceratopsyche sparna	1	0	Trichoptera	Hydropsychidae
4	Hydroptila	1	0	Trichoptera	Hydroptilidae
3	Apatania	2	1	Trichoptera	Limnephilidae
3	Neophylax	5	3	Trichoptera	Limnephilidae

3	Pycnopsyche	1	1	Trichoptera	Limnephilidae
2	Dolophilodes	2	1	Trichoptera	Philopotamidae
2	Rhyacophila fuscula	5	1	Trichoptera	Rhyacophilidae

Summary

BCG Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	8	57	7	26
3	13	28	12	20
4	9	53	5	32
5	12	47	9	28
6	0	0	0	0
x	3	4	2	2
Total	*45*	*189*	*35*	*108*

Consensus Tier 3. Many Tier 2 characteristics (richness of attributes II and III), but also high abundance of Attribute V. Group was more concerned with Attribute V taxa being more abundant than Attribute IV taxa.

AN0088, Lockatong Ck, 07-15-1997

TALU_SampID	HB13	**Assigned Tier**	**Area (km²)**	39.34
StationID	AN0088	**3**	**Pct Urban**	12.86
Station Name	Lockatong Ck		**Pct Agr**	59.91
WMA	11		**Pct Forest**	13.77
Gradient	High		**Pct Wetlands**	13.23
CollDate	07-15-1997		**Total Habitat Score**	148.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Mooreobdella microstoma	1	Pharyngodellida	Erpobdellidae
x	Sperchonopsis verrucosa	1	Trombidiformes	Sperchonidae
x	Diplopoda	1		
4	Optioservus trivittatus	6	Coleoptera	Elmidae
4	Stenelmis markeli	10	Coleoptera	Elmidae
4	Ectopria nervosa	1	Coleoptera	Psephenidae
4	Psephenus herricki	8	Coleoptera	Psephenidae
3	Atherix variegata	1	Diptera	Athericidae
4	Rheotanytarsus exiguus	2	Diptera	Chironomidae (Tanytarsini)
5	Antocha	1	Diptera	Tipulidae
3	Baetis tricaudatus	1	Ephemeroptera	Baetidae
2	Centroptilum	1	Ephemeroptera	Baetidae
3	Cloeon	3	Ephemeroptera	Baetidae
3	Stenonema smithae	4	Ephemeroptera	Heptageniidae
3	Isonychia	3	Ephemeroptera	Oligoneuriidae
3	Rhagovelia obesa	3	Hemiptera	Veliidae
3	Helicopsyche borealis	3	Trichoptera	Helicopsychidae
4	Cheumatopsyche	29	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	6	Trichoptera	Hydropsychidae
2	Lepidostoma	4	Trichoptera	Lepidostomatidae
4	Oecetis	4	Trichoptera	Leptoceridae
4	Chimarra obscura	16	Trichoptera	Philopotamidae
4	Sphaerium simile	1	Veneroida	Pisidiidae
5	Dugesia tigrina	3	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	2	5
3	7	18
4	9	77
5	4	11
6	0	0
x	2	2
Total	*24*	*113*

Tier 3. A weak Tier 3 because there were few sensitive taxa. Loss of few more taxa from Attributes II or III would result in Tier 4. Enough Attribute IV taxa to flag the site.

AN0025, Paulins Kill, 11-09-1992

BCG_SampID	HA05	**Assigned Tier**	**Area (km²)**	327.60
StationID	AN0025	**4**	**Pct Urban**	14.65
Station Name	Paulins Kill		**Pct Agr**	20.11
WMA	1		**Pct Forest**	49.06
Gradient	High		**Pct Wetlands**	12.14
CollDate	11-09-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Erpobdella punctata punctata	1	Pharyngodellida	Erpobdellidae
4	Gammarus fasciatus	20	Amphipoda	Gammaridae
x	Orconectes limosus	1	Decapoda	Cambaridae
4	Caecidotea racovitzai	2	Isopoda	Asellidae
4	Optioservus	4	Coleoptera	Elmidae
3	Promoresia tardella	2	Coleoptera	Elmidae
4	Psephenus herricki	10	Coleoptera	Psephenidae
4	Simulium	1	Diptera	Simuliidae
3	Ephemerella subvaria	2	Ephemeroptera	Ephemerellidae
3	Stenonema nepotellum	6	Ephemeroptera	Heptageniidae
4	Argia	1	Odonata	Coenagrionidae
3	Acroneuria abnormis	7	Plecoptera	Perlidae
3	Taeniopteryx burksi	1	Plecoptera	Taeniopterygidae
2	Brachycentrus numerosus	5	Trichoptera	Brachycentridae
3	Micrasema rusticum	1	Trichoptera	Brachycentridae
2	Glossosoma	1	Trichoptera	Glossosomatidae
3	Helicopsyche borealis	9	Trichoptera	Helicopsychidae
4	Macrostemum carolina	1	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa bifida	1	Trichoptera	Hydropsychidae
4	Ceratopsyche sparna	1	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa	9	Trichoptera	Hydropsychidae
4	Cheumatopsyche	4	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	1	Trichoptera	Hydropsychidae
3	Apatania	4	Trichoptera	Limnephilidae
3	Limnephilus	2	Trichoptera	Limnephilidae
3	Neophylax	1	Trichoptera	Limnephilidae
4	Musculium transversum	4	Veneroida	Pisidiidae
4	Sphaerium striatinum	34	Veneroida	Pisidiidae
4	Gillia altilis	6	Mesogastropoda	Hydrobiidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	2	6
3	10	35
4	14	98
5	2	2
6	0	0
x	1	1
Total	*29*	*142*

This high gradient site was assigned to Tier 3 during the 1st workshop. This sample is dominated by attribute IV taxa and has few attribute II taxa. Diversity of sensitive-common taxa is still maintained.

During the 2nd workshop this site was reclassified as Tier 4. The group felt that this site was not held to the same standard as other sites during the 1st workshop due to it being a limestone stream. More than 70% of organisms are intermediate or tolerant.

AN0279, Saddle R, 07-17-1990

BCG_SampID	HA01	**Assigned Tier**	**Area (km²)**	15.72
StationID	AN0279	**4**	**Pct Urban**	91.86
Station Name	Saddle R		**Pct Agr**	2.50
WMA	4		**Pct Forest**	5.44
Gradient	High		**Pct Wetlands**	0.14
CollDate	07-17-1990		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	3	Lumbriculida	Lumbriculidae
4	Caecidotea	1	Isopoda	Asellidae
4	Stenelmis markeli	5	Coleoptera	Elmidae
4	Psephenus herricki	16	Coleoptera	Psephenidae
5	Conchapelopia cornuticaudata	1	Diptera	Chironomidae
5	Cricotopus bicinctus	1	Diptera	Chironomidae (Orthocladiinae)
5	Simulium vittatum	2	Diptera	Simuliidae
5	Antocha	10	Diptera	Tipulidae
3	Cloeon	9	Ephemeroptera	Baetidae
3	Stenonema smithae	1	Ephemeroptera	Heptageniidae
3	Nigronia	1	Megaloptera	Corydalidae
2	Glossosoma	2	Trichoptera	Glossosomatidae
4	Ceratopsyche bronta	2	Trichoptera	Hydropsychidae
4	Ceratopsyche sparna	17	Trichoptera	Hydropsychidae
4	Cheumatopsyche	10	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	13	Trichoptera	Hydropsychidae
4	Hydroptila	2	Trichoptera	Hydroptilidae
4	Chimarra aterrima	6	Trichoptera	Philopotamidae
5	Dugesia tigrina	10	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	1	2
3	3	11
4	9	62
5	6	37
6	0	0
x	0	0
Total	*19*	*112*

Attribute II taxa nearly absent and attribute III taxa are diminished but still present. Attribute IV taxa are dominant and attribute V taxa are subdominant. In this high-gradient site, highly sensitive organisms were nearly absent and sensitive-common taxa were diminished but still present. Intermediate tolerant taxa were dominant, and tolerant taxa were subdominant. This sample was re-examined during the 2nd workshop and remained as a Tier 4. Even though the catchment for this site is > 90% urban this is mostly in the headwaters across state lines and forest dominates the immediate area of the sampling location.

AN0311, Drakes Bk, 06-16-1994

BCG_SampID	HA10	**Assigned Tier**	**Area (km²)**	16.68
StationID	AN0311	**4**	**Pct Urban**	38.17
Station Name	Drakes Bk		**Pct Agr**	0.71
WMA	8		**Pct Forest**	45.55
Gradient	High		**Pct Wetlands**	14.46
CollDate	06-16-1994		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Gammarus fasciatus	42	Amphipoda	Gammaridae
4	Oulimnius latiusculus	1	Coleoptera	Elmidae
4	Stenelmis	2	Coleoptera	Elmidae
2	Diamesa nivoriunda	2	Diptera	Chironomidae
2	Pseudodiamesa pertinax	5	Diptera	Chironomidae
5	Microtendipes pedellus	1	Diptera	Chironomidae
3	Parametriocnemus stylatus	2	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella devonica	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	2	Diptera	Chironomidae (Orthocladiinae)
5	Simulium tuberosum	1	Diptera	Simuliidae
3	Nigronia serricornis	5	Megaloptera	Corydalidae
2	Isoperla transmarina	3	Plecoptera	Perlodidae
4	Cheumatopsyche	1	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	48	Trichoptera	Hydropsychidae
4	Chimarra aterrima	5	Trichoptera	Philopotamidae
4	Elimia virginica	1	Mesogastropoda	Pleuroceridae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	3	10
3	2	7
4	6	52
5	5	53
6	0	0
x	0	0
Total	*16*	*122*

This high gradient site was assigned to Tier 4. This was due to the low number of taxa overall. Except for two of the 16 taxa, all taxa had less than 5 individuals. The remaining two taxa accounted for 74% of the entire sample. Dominated by intermediate and tolerant (2 taxa > 80%). This sample was re-examined during the 2nd workshop and remained as Tier 4.

AN0036, UNT to Pequest River, 09-15-1992

BCG_SampID	HB02	**Assigned Tier**	**Area (km²)**	43.69
StationID	AN0036	**4**	**Pct Urban**	18.73
Station Name	UNT to Pequest River		**Pct Agr**	8.14
WMA	1		**Pct Forest**	58.10
Gradient	High		**Pct Wetlands**	9.76
CollDate	09-15-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	1	Haplotaxida	Lumbricidae
5	Limnodrilus claparedianus	1	Tubificida	Tubificidae
4	Gammarus fasciatus	39	Amphipoda	Gammaridae
4	Caecidotea	1	Isopoda	Asellidae
4	Stenelmis markeli	8	Coleoptera	Elmidae
4	Ectopria nervosa	1	Coleoptera	Psephenidae
4	Psephenus herricki	2	Coleoptera	Psephenidae
5	Phaenopsectra obediens	1	Diptera	Chironomidae
5	Microtendipes tarsalis	1	Diptera	Chironomidae
5	Polypedilum illinoense	1	Diptera	Chironomidae
5	Cricotopus bicinctus	1	Diptera	Chironomidae (Orthocladiinae)
5	Tanytarsus guerlus	1	Diptera	Chironomidae (Tanytarsini)
3	Helicopsyche borealis	16	Trichoptera	Helicopsychidae
2	Goera	4	Trichoptera	Limnephilidae
3	Neophylax	1	Trichoptera	Limnephilidae
4	Sphaerium fabale	1	Veneroida	Pisidiidae
4	Gillia altilis	22	Mesogastropoda	Hydrobiidae
5	Physella gyrina	1	Basommatophora	Physidae
5	Hydrolimax grisea	1	Proseriata	Plagiostomidae
5	Cura foremanii	3	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	1	4
3	2	17
4	7	74
5	10	12
6	0	0
x	0	0
Total	*20*	*107*

This high gradient site was assigned to Tier 4. Attribute II and III taxa are reduced but still an important component in numbers while attribute IV taxa are dominant and attribute V taxa are subdominant. This site was viewed as the minimum for attaining the goals of the Clean Water Act. This site was re-examined during the 2nd workshop and no change was deemed necessary.

AN0254, Crooked Bk, 07-20-1998

TALU_SampID	HA16	**Assigned Tier**	**Area (km²)**	18.78
StationID	AN0254	**4**	**Pct Urban**	41.03
Station Name	Crooked Bk		**Pct Agr**	1.13
WMA	6		**Pct Forest**	44.65
Gradient	High		**Pct Wetlands**	10.68
CollDate	07-20-1998		**Total Habitat Score**	155.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Gammarus fasciatus	36	Amphipoda	Gammaridae
4	Stenelmis markeli	29	Coleoptera	Elmidae
4	Psephenus herricki	1	Coleoptera	Psephenidae
5	Polypedilum illinoense	2	Diptera	Chironomidae
5	Cardiocladius obscurus	2	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus trifascia	2	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus slossonae	1	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella devonica	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia vitracies	4	Diptera	Chironomidae (Orthocladiinae)
5	Cladotanytarsus	1	Diptera	Chironomidae (Tanytarsini)
4	Hemerodromia rogatoris	3	Diptera	Empididae
4	Simulium	1	Diptera	Simuliidae
5	Antocha	3	Diptera	Tipulidae
3	Baetis tricaudatus	2	Ephemeroptera	Baetidae
3	Cloeon	2	Ephemeroptera	Baetidae
4	Hetaerina americana	1	Odonata	Calopterygidae
2	Glossosoma	14	Trichoptera	Glossosomatidae
4	Ceratopsyche morosa bifida	7	Trichoptera	Hydropsychidae
4	Cheumatopsyche	13	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	10	Trichoptera	Hydropsychidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	1	14
3	2	4
4	8	91
5	9	26
6	0	0
x	0	0
Total	*20*	*135*

Tier 4. This site had high abundance of *Glossossoma* (Attribute II taxon); greater than 10% of the sample, but no other attribute II taxa. Sensitive individuals approximately 14% of community.

AN0041, Pequest River, 09-16-1992

TALU_SampID	HB04	**Assigned Tier**	**Area (km²)**	232.73
StationID	AN0041	**4**	**Pct Urban**	12.48
Station Name	Pequest River		**Pct Agr**	25.82
WMA	1		**Pct Forest**	44.95
Gradient	High		**Pct Wetlands**	14.57
CollDate	09-16-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Gammarus fasciatus	27	Amphipoda	Gammaridae
4	Caecidotea racovitzai	1	Isopoda	Asellidae
4	Optioservus	4	Coleoptera	Elmidae
4	Stenelmis markeli	4	Coleoptera	Elmidae
5	Phaenopsectra obediens	2	Diptera	Chironomidae
5	Chironomus riparius	1	Diptera	Chironomidae
5	Polypedilum halterale	1	Diptera	Chironomidae
5	Cricotopus bicinctus	3	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus junus	1	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus exiguus	13	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	1	Diptera	Chironomidae (Tanytarsini)
5	Simulium tuberosum	1	Diptera	Simuliidae
5	Simulium vittatum	1	Diptera	Simuliidae
5	Antocha	4	Diptera	Tipulidae
3	Stenonema smithae	7	Ephemeroptera	Heptageniidae
1	Ophiogomphus	1	Odonata	Gomphidae
2	Paragnetina media	1	Plecoptera	Perlidae
2	Brachycentrus numerosus	3	Trichoptera	Brachycentridae
2	Glossosoma	1	Trichoptera	Glossosomatidae
4	Cheumatopsyche	28	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	15	Trichoptera	Hydropsychidae
3	Ceraclea	1	Trichoptera	Leptoceridae
4	Ferrissia parallela	1	Basommatophora	Ancylidae

Summary

BCG Attribute	Taxa	Individuals
1	1	1
2	3	5
3	2	8
4	7	78
5	10	30
6	0	0
x	0	0
Total	*23*	*122*

Tier 4. This site was thought to have characteristics of both Tiers 3 and 5. Sensitive taxa were still a functioning part of the community (> 10%) and an endemic was present (Ophiogomphus).

AN0105, Jacobs Ck, 07-13-1992

TALU_SampID	HB05	**Assigned Tier**	**Area (km²)**	12.80
StationID	AN0105	**4**	**Pct Urban**	18.54
Station Name	Jacobs Ck		**Pct Agr**	48.52
WMA	11		**Pct Forest**	31.14
Gradient	High		**Pct Wetlands**	1.52
CollDate	07-13-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	1	Lumbriculida	Lumbriculidae
4	Gammarus fasciatus	7	Amphipoda	Gammaridae
4	Hyalella azteca	6	Amphipoda	Talitridae
4	Stenelmis markeli	2	Coleoptera	Elmidae
x	Dineutus	2	Coleoptera	Gyrinidae
5	Berosus	1	Coleoptera	Hydrophilidae
4	Psephenus herricki	31	Coleoptera	Psephenidae
5	Conchapelopia americana	1	Diptera	Chironomidae
5	Phaenopsectra flavipes	3	Diptera	Chironomidae
5	Polypedilum illinoense	1	Diptera	Chironomidae
5	Stenochironomus	1	Diptera	Chironomidae
4	Rheotanytarsus exiguus	1	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus	1	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	2	Diptera	Chironomidae (Tanytarsini)
4	Zavrelia	1	Diptera	Chironomidae (Tanytarsini)
3	Stenonema vicarium	5	Ephemeroptera	Heptageniidae
4	Tricorythodes	1	Ephemeroptera	Tricorythidae
5	Ischnura	1	Odonata	Coenagrionidae
2	Agnetina capitata	6	Plecoptera	Perlidae
3	Helicopsyche borealis	1	Trichoptera	Helicopsychidae
4	Ceratopsyche slossonae	1	Trichoptera	Hydropsychidae
4	Cheumatopsyche	9	Trichoptera	Hydropsychidae
4	Hydroptila	2	Trichoptera	Hydroptilidae
2	Lepidostoma	1	Trichoptera	Lepidostomatidae
3	Mystacides	15	Trichoptera	Leptoceridae
4	Polycentropus	5	Trichoptera	Polycentropodidae
4	Pisidium casertanum	1	Veneroida	Pisidiidae
5	Dugesia tigrina	6	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	2	7
3	3	21
4	13	68
5	9	17
6	0	0
x	1	2
Total	*28*	*115*

Tier 4. A clear example of a Tier 4.

AN0353, Mine Bk, 12-02-1993

TALU_SampID	HB07	**Assigned Tier**	**Area (km²)**	18.50
StationID	AN0353	**4**	**Pct Urban**	43.86
Station Name	Mine Bk		**Pct Agr**	10.27
WMA	8		**Pct Forest**	43.26
Gradient	High		**Pct Wetlands**	2.17
CollDate	12-02-1993		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Crangonyx pseudogracilis	1	Amphipoda	Gammaridae
4	Gammarus fasciatus	4	Amphipoda	Gammaridae
4	Caecidotea	2	Isopoda	Asellidae
5	Dubiraphia quadrinotata	1	Coleoptera	Elmidae
4	Macronychus glabratus	2	Coleoptera	Elmidae
4	Optioservus ovalis	4	Coleoptera	Elmidae
4	Stenelmis markeli	6	Coleoptera	Elmidae
4	Psephenus herricki	8	Coleoptera	Psephenidae
5	Orthocladius dorenus	1	Diptera	Chironomidae (Orthocladiinae)
4	Brillia flavifrons	1	Diptera	Chironomidae (Orthocladiinae)
5	Simulium vittatum	2	Diptera	Simuliidae
5	Antocha	3	Diptera	Tipulidae
3	Ephemerella rotunda	3	Ephemeroptera	Ephemerellidae
3	Stenonema smithae	4	Ephemeroptera	Heptageniidae
3	Isonychia sayi	3	Ephemeroptera	Oligoneuriidae
3	Corydalus cornutus	4	Megaloptera	Corydalidae
3	Argia bipunctulata	1	Odonata	Coenagrionidae
2	Glossosoma	1	Trichoptera	Glossosomatidae
4	Ceratopsyche sparna	2	Trichoptera	Hydropsychidae
4	Ceratopsyche morosa	1	Trichoptera	Hydropsychidae
4	Cheumatopsyche	9	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	8	Trichoptera	Hydropsychidae
4	Chimarra obscura	14	Trichoptera	Philopotamidae
4	Pisidium casertanum	1	Veneroida	Pisidiidae
5	Dugesia tigrina	20	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	1	1
3	5	15
4	13	55
5	6	35
6	0	0
x	0	0
Total	*25*	*106*

Tier 4. Almost no discussion.

AN0081, Nishisakawick Ck, 07-22-1997

TALU_SampID	HB12	**Assigned Tier**	**Area (km²)**	25.17
StationID	AN0081	**4**	**Pct Urban**	17.43
Station Name	Nishisakawick Ck		**Pct Agr**	57.42
WMA	11		**Pct Forest**	18.57
Gradient	High		**Pct Wetlands**	6.23
CollDate	07-22-1997		**Total Habitat Score**	165.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Dubiraphia quadrinotata	2	Coleoptera	Elmidae
5	Ablabesmyia	1	Diptera	Chironomidae
5	Dicrotendipes fumidus	2	Diptera	Chironomidae
5	Polypedilum halterale	2	Diptera	Chironomidae
5	Eukiefferiella pseudomontana	3	Diptera	Chironomidae (Orthocladiinae)
2	Pseudorthocladius	2	Diptera	Chironomidae (Orthocladiinae)
5	Cladotanytarsus	3	Diptera	Chironomidae (Tanytarsini)
5	Micropsectra polita	2	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus exiguus	4	Diptera	Chironomidae (Tanytarsini)
4	Hemerodromia rogatoris	2	Diptera	Empididae
3	Tipula ignobilis	4	Diptera	Tipulidae
3	Plauditus cingulatus	2	Ephemeroptera	Baetidae
3	Cloeon	7	Ephemeroptera	Baetidae
4	Caenis	2	Ephemeroptera	Caenidae
4	Stenacron interpunctatum	2	Ephemeroptera	Heptageniidae
3	Stenonema modestum	3	Ephemeroptera	Heptageniidae
3	Isonychia bicolor	2	Ephemeroptera	Oligoneuriidae
4	Sigara	3	Hemiptera	Corixidae
4	Ceratopsyche slossonae	6	Trichoptera	Hydropsychidae
4	Ceratopsyche sparna	11	Trichoptera	Hydropsychidae
4	Cheumatopsyche	8	Trichoptera	Hydropsychidae
3	Mystacides	2	Trichoptera	Leptoceridae
4	Chimarra aterrima	2	Trichoptera	Philopotamidae
5	Physella gyrina	2	Basommatophora	Physidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	1	2
3	6	20
4	9	40
5	8	17
6	0	0
x	0	0
Total	*24*	*79*

Tier 4. Even though < 100 organisms.

AN0259, Pequannock River, 08-06-1998

TALU_SampID	HB14	**Assigned Tier**	**Area (km²)**	49.38
StationID	AN0259	**4**	**Pct Urban**	4.66
Station Name	Pequannock River		**Pct Agr**	0.13
WMA	3		**Pct Forest**	74.97
Gradient	High		**Pct Wetlands**	16.44
CollDate	08-06-1998		**Total Habitat Score**	180.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Slavina appendiculata	1	Tubificida	Naididae
x	Hygrobates	1	Trombidiformes	Hygrobatidae
5	Dubiraphia quadrinotata	2	Coleoptera	Elmidae
4	Macronychus glabratus	1	Coleoptera	Elmidae
3	Promoresia tardella	1	Coleoptera	Elmidae
5	Phaenopsectra obediens	20	Diptera	Chironomidae
5	Ablabesmyia mallochi	1	Diptera	Chironomidae
5	Polypedilum illinoense	1	Diptera	Chironomidae
5	Cardiocladius obscurus	2	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus bicinctus	5	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus trifascia	11	Diptera	Chironomidae (Orthocladiinae)
5	Thienemanniella xena	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia vitracies	2	Diptera	Chironomidae (Orthocladiinae)
5	Cladotanytarsus	2	Diptera	Chironomidae (Tanytarsini)
5	Micropsectra	1	Diptera	Chironomidae (Tanytarsini)
5	Micropsectra deflecta	5	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus exiguus	4	Diptera	Chironomidae (Tanytarsini)
3	Stempellina bausei	4	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	7	Diptera	Chironomidae (Tanytarsini)
3	Plauditus cingulatus	1	Ephemeroptera	Baetidae
3	Plauditus punctiventris	1	Ephemeroptera	Baetidae
3	Baetis	1	Ephemeroptera	Baetidae
2	Centroptilum	1	Ephemeroptera	Baetidae
2	Heterocloeon	3	Ephemeroptera	Baetidae
4	Caenis	1	Ephemeroptera	Caenidae
3	Serratella	2	Ephemeroptera	Ephemerellidae
3	Stenonema smithae	1	Ephemeroptera	Heptageniidae
3	Stenonema modestum	2	Ephemeroptera	Heptageniidae
3	Isonychia sayi	1	Ephemeroptera	Oligoneuriidae
4	Boyeria vinosa	1	Odonata	Aeshnidae
3	Calopteryx	1	Odonata	Calopterygidae
2	Tallaperla	1	Plecoptera	Peltoperlidae
2	Paragnetina media	1	Plecoptera	Perlidae
4	Ceratopsyche sparna	1	Trichoptera	Hydropsychidae
4	Cheumatopsyche	1	Trichoptera	Hydropsychidae
4	Hydroptila	4	Trichoptera	Hydroptilidae
3	Mystacides	1	Trichoptera	Leptoceridae
4	Pisidium	1	Veneroida	Pisidiidae
4	Laevapex fuscus	1	Basommatophora	Ancylidae
4	Ferrissia rivularis	1	Basommatophora	Ancylidae
4	Stagnicola catascopium	1	Basommatophora	Lymnaeidae
4	Prostoma graecense	1	Hoplonemertea	Tetrastemmatidae

BCG Attribute	Taxa	Individuals
1	0	0
2	4	6
3	11	16
4	13	19
5	13	60
6	0	0
x	1	1
Total	*42*	*102*

This sample was assigned to tier 4 though believed close to a tier 3.

AN0285, Hohokus Bk, 07-16-1990

BCG_SampID	HA02	**Assigned Tier**	**Area (km²)**	24.93
StationID	AN0285	**5**	**Pct Urban**	75.18
Station Name	Hohokus Bk		**Pct Agr**	0.34
WMA	4		**Pct Forest**	15.11
Gradient	High		**Pct Wetlands**	7.72
CollDate	07-16-1990		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	1	Haplotaxida	Lumbricidae
4	Slavina appendiculata	4	Tubificida	Naididae
4	Gammarus fasciatus	3	Amphipoda	Gammaridae
4	Stenelmis markeli	23	Coleoptera	Elmidae
5	Dicrotendipes modestus	2	Diptera	Chironomidae
5	Polypedilum convictum	1	Diptera	Chironomidae
5	Polypedilum illinoense	1	Diptera	Chironomidae
5	Xenochironomus xenolabis	1	Diptera	Chironomidae
5	Cardiocladius obscurus	2	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus triannulatus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus junus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus fugax	4	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus bicinctus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus infuscatus	1	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra junci	2	Diptera	Chironomidae (Tanytarsini)
5	Micropsectra	2	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus exiguus	12	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus	1	Diptera	Chironomidae (Tanytarsini)
4	Hemerodromia	1	Diptera	Empididae
4	Limonia rostrata	1	Diptera	Tipulidae
3	Stenonema smithae	4	Ephemeroptera	Heptageniidae
3	Stenonema modestum	2	Ephemeroptera	Heptageniidae
3	Argia bipunctulata	1	Odonata	Coenagrionidae
4	Ceratopsyche bronta	1	Trichoptera	Hydropsychidae
4	Cheumatopsyche	5	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	33	Trichoptera	Hydropsychidae
x	Plumatella repens	1	Plumatellida	Plumatellidae
5	Dugesia tigrina	4	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	3	7
4	8	50
5	16	58
6	0	0
x	1	1
Total	*28*	*116*

This high gradient site was assigned to Tier 5. There were no attribute II taxa, and the sample is dominated by filter feeders and detritivores. Attribute III taxa are almost gone from the sample. Only 2 taxa and 5% of the individuals were sensitive, indicating changed ecosystem function.

AN0018, Culvers Ck, 10-13-1992

BCG_SampID	HA03	**Assigned Tier**	**Area (km²)**	19.06
StationID	AN0018	**5**	**Pct Urban**	13.98
Station Name	Culvers Ck		**Pct Agr**	1.59
WMA	1		**Pct Forest**	48.40
Gradient	High		**Pct Wetlands**	18.16
CollDate	10-13-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Crangonyx pseudogracilis	8	Amphipoda	Gammaridae
3	Stenonema smithae	3	Ephemeroptera	Heptageniidae
3	Nigronia serricornis	2	Megaloptera	Corydalidae
4	Argia	1	Odonata	Coenagrionidae
4	Cheumatopsyche	45	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	43	Trichoptera	Hydropsychidae
x	Paludicella articulate*	50	Ctenostomata	Paludicellidae

* Bryozoans not sampled with current methods (past 1996).

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	2	5
4	3	54
5	1	43
6	0	0
x	1	50
Total	*7*	*152*

This high gradient site was assigned to Tier 5 during the 1st workshop. This sample had a high percentage of forest land use which would in many cases result in better taxonomic composition but the site is known to be immediately downstream of an impoundment that adversely affects the stream biota.

This sampled was re-examined during the 2nd workshop but stayed a Tier 5. This site was not deemed a Tier 6 because of the presence of Ephemeroptera, in spite of very low taxa richness overall.

AN0070, Hances Brook, 08-05-1992

BCG_SampID	HA06	**Assigned Tier**	**Area (km²)**	10.94
StationID	AN0070	**5**	**Pct Urban**	18.43
Station Name	Hances Brook		**Pct Agr**	36.02
WMA	1		**Pct Forest**	38.54
Gradient	High		**Pct Wetlands**	6.82
CollDate	08-05-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Dina anoculata	2	Pharyngodellida	Erpobdellidae
4	Lumbriculus variegatus	1	Lumbriculida	Lumbriculidae
4	Nais communis	1	Tubificida	Naididae
4	Gammarus fasciatus	1	Amphipoda	Gammaridae
4	Caecidotea	4	Isopoda	Asellidae
4	Ectopria nervosa	2	Coleoptera	Psephenidae
5	Conchapelopia currani	17	Diptera	Chironomidae
5	Dicrotendipes fumidus	1	Diptera	Chironomidae
5	Natarsia	1	Diptera	Chironomidae
5	Polypedilum convictum	33	Diptera	Chironomidae
5	Polypedilum illinoense	7	Diptera	Chironomidae
5	Eukiefferiella claripennis	3	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra polita	6	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus exiguus	7	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus	3	Diptera	Chironomidae (Tanytarsini)
5	Simulium vittatum	18	Diptera	Simuliidae
3	Tipula ignobilis	1	Diptera	Tipulidae
4	Tricorythodes	1	Ephemeroptera	Tricorythidae
4	Sialis	1	Megaloptera	Sialidae
4	Ceratopsyche morosa	1	Trichoptera	Hydropsychidae
4	Cheumatopsyche	6	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	8	Trichoptera	Hydropsychidae
2	Lepidostoma	2	Trichoptera	Lepidostomatidae
5	Physella gyrina	2	Basommatophora	Physidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	1	2
3	1	1
4	10	25
5	12	101
6	0	0
x	0	0
Total	*24*	*129*

This high gradient site was assigned to Tier 5. Attribute II and III taxa were deemed insignificant (2 taxa totaling 3 individuals) with attribute V taxa dominant.

AN0210, Dorotockeys Run, 07-06-1993

BCG_SampID	HA08	**Assigned Tier**	**Area (km²)**	10.73
StationID	AN0210	**5**	**Pct Urban**	75.77
Station Name	Dorotockeys Run		**Pct Agr**	1.69
WMA	5		**Pct Forest**	11.21
Gradient	High		**Pct Wetlands**	11.20
CollDate	07-06-1993		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Limnodrilus claparedianus	1	Tubificida	Tubificidae
4	Gammarus fasciatus	32	Amphipoda	Gammaridae
4	Caecidotea	3	Isopoda	Asellidae
4	Stenelmis markeli	6	Coleoptera	Elmidae
5	Phaenopsectra obediens	1	Diptera	Chironomidae
5	Conchapelopia flavifrons	1	Diptera	Chironomidae
5	Dicrotendipes fumidus	1	Diptera	Chironomidae
5	Polypedilum convictum	2	Diptera	Chironomidae
5	Stictochironomus	40	Diptera	Chironomidae
5	Orthocladius dorenus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus bicinctus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus tremulus	2	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus trifascia	1	Diptera	Chironomidae (Orthocladiinae)
5	Tanytarsus	1	Diptera	Chironomidae (Tanytarsini)
4	Cheumatopsyche	1	Trichoptera	Hydropsychidae
4	Musculium transversum	3	Veneroida	Pisidiidae
5	Dugesia tigrina	15	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	0	0
4	5	45
5	12	67
6	0	0
x	0	0
Total	*17*	*112*

This high gradient site was assigned to Tier 5 during the 1st workshop. This site lacked diversity across taxa attribute categories but was not assigned to Tier 6 due to the number of taxa present. When this site was re-examined during the 2nd workshop it remained as a Tier 5 (only 1 EPT individual).

AN0337, Neshanic River, 04-27-1994

BCG_SampID	HA12	**Assigned Tier**	**Area (km²)**	138.20
StationID	AN0337	**5**	**Pct Urban**	22.73
Station Name	Neshanic River		**Pct Agr**	49.50
WMA	8		**Pct Forest**	19.05
Gradient	High		**Pct Wetlands**	8.46
CollDate	04-27-1994		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	1	Lumbriculida	Lumbriculidae
4	Gammarus fasciatus	3	Amphipoda	Gammaridae
4	Caecidotea	1	Isopoda	Asellidae
4	Stenelmis	2	Coleoptera	Elmidae
4	Psephenus herricki	1	Coleoptera	Psephenidae
2	Diamesa nivoriunda	8	Diptera	Chironomidae
5	Ablabesmyia	1	Diptera	Chironomidae
5	Dicrotendipes	2	Diptera	Chironomidae
5	Polypedilum illinoense	4	Diptera	Chironomidae
5	Cricotopus	3	Diptera	Chironomidae (Orthocladiinae)
4	Rheocricotopus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cladotanytarsus	1	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	2	Diptera	Chironomidae (Tanytarsini)
4	Zavrelia	1	Diptera	Chironomidae (Tanytarsini)
3	Prosimulium	2	Diptera	Simuliidae
5	Simulium venustum	2	Diptera	Simuliidae
4	Sialis	1	Megaloptera	Sialidae
3	Amphinemura delosa	1	Plecoptera	Nemouridae
2	Isoperla transmarina	1	Plecoptera	Perlodidae
4	Pisidium	3	Veneroida	Pisidiidae
4	Gillia altilis	8	Mesogastropoda	Hydrobiidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	2	9
3	2	3
4	10	22
5	7	15
6	0	0
x	0	0
Total	*21*	*49*

This high gradient site was assigned to Tier 5. There was extremely low density, and complete absence of mayflies but 2 attribute II taxa including 1 stonefly and a chironomid. Absence of mayflies and presence of Cricotopus may indicate toxicity. This site was re-evaluated during the 2nd workshop and was deemed a problematic site because of the potential influence of construction (rebuilding of bridges) during the time period of this sample. This site was resampled in 1999.

AN0337, Neshanic River, 04-06-1999

BCG_SampID	HA12_2	Assigned Tier	Area (km²)	--
	AN0337	5	Pct Urban	--
Station Name	Neshanic River		Pct Agr	--
WMA	--		Pct Forest	--
Gradient	High		Pct Wetlands	--
CollDate	04/06/1999		Total Habitat Score	--

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	1	Haplotaxida	Lumbricidae
5	Limnodrilus claparedianus	5	Tubificida	Tubificidae
4	Crangonyx pseudogracilis	1	Amphipoda	Gammaridae
4	Gammarus fasciatus	9	Amphipoda	Gammaridae
x	Microcylloepus	1	Coleoptera	Elmidae
4	Optioservus trivittatus	1	Coleoptera	Elmidae
4	Stenelmis	3	Coleoptera	Elmidae
x	Peltodytes	6	Coleoptera	Haliplidae
5	Dicrotendipes	1	Diptera	Chironomidae
5	Hydrobaenus johannseni	11	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius dorenus	2	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus	17	Diptera	Chironomidae (Orthocladiinae)
4	Heterotrissocladius	2	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius obumbratus	15	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	3	Diptera	Chironomidae (Tanytarsini)
5	Paratanytarsus	1	Diptera	Chironomidae (Tanytarsini)
3	Stempellinella	2	Diptera	Chironomidae (Tanytarsini)
4	Clinocera	3	Diptera	Empididae
3	Baetis	2	Ephemeroptera	Baetidae
4	Caenis	7	Ephemeroptera	Caenidae
2	Ameletus	2	Ephemeroptera	Siphlonuridae
4	Corixidae	1	Hemiptera	Corixidae
4	Pisidium	2	Veneroida	Pisidiidae
4	Stagnicola catascopium	1	Basommatophora	Lymnaeidae
5	Physella	2	Basommatophora	Physidae
5	Gyraulus deflectus	3	Basommatophora	Planorbidae
5	Helisoma anceps anceps	2	Basommatophora	Planorbidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	1	2
3	2	4
4	10	30
5	12	63
6	0	0
x	2	7
Total	*27*	*106*

This high gradient site (resampling of Neshanic River in 1999) was assigned to Tier 5. Functional feeding group balance was an issue, as well as, the absence of mayflies (potential toxic effects). This site was re-examined during the 2nd worshop and was thought to not be a representative sample for this site, possible drought effects, but still a Tier 5 based on the sample composition.

AN0427, UNT to Raritan River, 10-05-1993

BCG_SampID	HB08	**Assigned Tier**	**Area (km²)**	8.38
StationID	AN0427	**5**	**Pct Urban**	39.98
Station Name	UNT to Raritan River		**Pct Agr**	11.38
WMA	9		**Pct Forest**	17.18
Gradient	High		**Pct Wetlands**	31.19
CollDate	10-05-1993		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Erpobdella punctata punctata	1	Pharyngodellida	Erpobdellidae
4	Lumbriculus variegatus	2	Lumbriculida	Lumbriculidae
5	Limnodrilus claparedianus	4	Tubificida	Tubificidae
4	Gammarus fasciatus	17	Amphipoda	Gammaridae
4	Caecidotea racovitzai	58	Isopoda	Asellidae
4	Stenelmis	1	Coleoptera	Elmidae
4	Stenacron interpunctatum	1	Ephemeroptera	Heptageniidae
4	Cheumatopsyche	5	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	31	Trichoptera	Hydropsychidae
6	Corbicula manilensis	6	Veneroida	Corbiculidae
4	Gillia altilis	1	Mesogastropoda	Hydrobiidae
5	Physella gyrina	1	Basommatophora	Physidae
4	Pseudosuccinea columella	1	Basommatophora	Lymnaeidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	0	0
4	8	86
5	4	37
6	1	6
x	0	0
Total	*12*	*123*

This high gradient site was assigned to Tier 5. Attribute II and III taxa were absent but attribute IV taxa were dominance. Tolerant taxa are subdominant to intermediate. This sample was re-examined during the 2nd workshop and was confirmed as Tier 5.

AN0231A, Passaic River, 06-12-1990

TALU_SampID	special_4	Assigned Tier		Area (km²)	--
StationID	AN0231A	5		Pct Urban	--
Station Name	Passaic River			Pct Agr	--
WMA	--			Pct Forest	--
Gradient	High			Pct Wetlands	--
CollDate	06-12-1990			Total Habitat Score	--

TALU Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
4	Chaetogaster diastrophus	8	2	Tubificida	Naididae
4	Dero obtusa	8	3	Tubificida	Naididae
4	Nais bretscheri	24	3	Tubificida	Naididae
4	Nais communis	56	12	Tubificida	Naididae
4	Nais elinguis	40	10	Tubificida	Naididae
4	Nais simplex	1	0	Tubificida	Naididae
4	Ophidonais serpentina	40	14	Tubificida	Naididae
4	Slavina appendiculata	56	19	Tubificida	Naididae
5	Limnodrilus claparedianus	48	10	Tubificida	Tubificidae
5	Limnodrilus hoffmeisteri	8	2	Tubificida	Tubificidae
5	Limnodrilus udekemianus	8	0	Tubificida	Tubificidae
4	Stenelmis	1	0	Coleoptera	Elmidae
5	Chironomus riparius	8	3	Diptera	Chironomidae
5	Conchapelopia flavifrons	1	0	Diptera	Chironomidae
5	Dicrotendipes neomodestus	7	0	Diptera	Chironomidae
5	Natarsia	1	0	Diptera	Chironomidae
5	Polypedilum scalaenum	14	6	Diptera	Chironomidae
5	Polypedilum convictum	8	1	Diptera	Chironomidae
5	Cricotopus bicinctus	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus junus	3	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus slossonae	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus sylvestris	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella claripennis	1	1	Diptera	Chironomidae (Orthocladiinae)
5	Nanocladius distinctus	7	1	Diptera	Chironomidae (Orthocladiinae)
5	Parakiefferiella coronata	1	0	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus exiguus	14	4	Diptera	Chironomidae (Tanytarsini)
4	Argia	2	0	Odonata	Coenagrionidae
4	Cheumatopsyche	5	0	Trichoptera	Hydropsychidae
x	Hydra	2	1	Hydroida	Hydridae
x	Plumatella repens	9	4	Plumatellida	Plumatellidae
4	Ferrissia parallela	14	1	Basommatophora	Ancylidae
4	Prostoma graecense	5	1	Hoplonemertea	Tetrastemmatidae

Summary

TALU Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0

4	14	274	10	69
5	17	132	8	26
6	0	0	0	0
x	2	11	2	5
Total	*33*	*417*	*20*	*100*

This high gradient site was assigned to Tier 5. The sample is composed almost entirely of attribute IV and V taxa, although richness was high.

AN0238, Whippany River, 07-16-1998

TALU_SampID	HA14	**Assigned Tier**	**Area (km²)**	179.02
StationID	AN0238	**5**	**Pct Urban**	60.01
Station Name	Whippany River		**Pct Agr**	1.33
WMA	6		**Pct Forest**	22.87
Gradient	High		**Pct Wetlands**	13.45
CollDate	07-16-1998		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Ophidonais serpentina	1	Tubificida	Naididae
5	Limnodrilus	14	Tubificida	Tubificidae
5	Quistradrilus multisetosus	1	Tubificida	Tubificidae
4	Crangonyx pseudogracilis	2	Amphipoda	Gammaridae
4	Gammarus fasciatus	38	Amphipoda	Gammaridae
4	Caecidotea racovitzai	3	Isopoda	Asellidae
4	Stenelmis	3	Coleoptera	Elmidae
5	Conchapelopia	2	Diptera	Chironomidae
5	Cryptochironomus	5	Diptera	Chironomidae
5	Polypedilum scalaenum	6	Diptera	Chironomidae
5	Polypedilum illinoense	1	Diptera	Chironomidae
5	Cricotopus bicinctus	3	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	1	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus exiguus	2	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus dissimilis	2	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	1	Diptera	Chironomidae (Tanytarsini)
4	Hemerodromia rogatoris	3	Diptera	Empididae
5	Simulium vittatum	1	Diptera	Simuliidae
4	Ceratopsyche morosa bifida	2	Trichoptera	Hydropsychidae
4	Cheumatopsyche	5	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	2	Trichoptera	Hydropsychidae
6	Corbicula manilensis	2	Veneroida	Corbiculidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	0	0
4	9	59
5	12	39
6	1	2
x	0	0
Total	*22*	*100*

Tier 5. Attribute III taxa gone.

AN0304, Papakating Ck, 06-16-1998

TALU_SampID	HA17	Assigned Tier	Area (km²)	41.15
StationID	AN0304	5	Pct Urban	8.21
Station Name	Papakating Ck		Pct Agr	39.72
WMA	2		Pct Forest	38.99
Gradient	High		Pct Wetlands	12.63
CollDate	06-16-1998		Total Habitat Score	122.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Mooreobdella	2	Pharyngodellida	Erpobdellidae
5	Lumbricidae	1	Haplotaxida	Lumbricidae
4	Enchytraeidae	6	Tubificida	Enchytraeidae
5	Aulodrilus pluriseta	4	Tubificida	Tubificidae
5	Limnodrilus	32	Tubificida	Tubificidae
5	Tubifex tubifex	5	Tubificida	Tubificidae
4	Gammarus fasciatus	38	Amphipoda	Gammaridae
4	Hyalella azteca	1	Amphipoda	Talitridae
4	Caecidotea	1	Isopoda	Asellidae
5	Dubiraphia quadrinotata	2	Coleoptera	Elmidae
5	Chironomus riparius	1	Diptera	Chironomidae
5	Polypedilum convictum	2	Diptera	Chironomidae
5	Stictochironomus	1	Diptera	Chironomidae
5	Cricotopus sylvestris	1	Diptera	Chironomidae (Orthocladiinae)
x	Dictya	1	Diptera	Sciomyzidae
3	Baetis	1	Ephemeroptera	Baetidae
3	Cloeon	2	Ephemeroptera	Baetidae
4	Sigara	1	Hemiptera	Corixidae
4	Ceratopsyche sparna	1	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	1	Trichoptera	Hydropsychidae
5	Physella integra	3	Basommatophora	Physidae
5	Gyraulus circumstriatus	1	Basommatophora	Planorbidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	2	3
4	6	48
5	13	56
6	0	0
x	1	1
Total	*22*	*108*

Tier 5, in spite of presence of Baetis and Cloeon. These were apparently “hangers-on” with little or no functional presence (< 10%).

AN0414, Millstone River, 07-08-1999

TALU_SampID	HA20	**Assigned Tier**	**Area (km²)**	733.94
StationID	AN0414	**5**	**Pct Urban**	33.99
Station Name	Millstone River		**Pct Agr**	28.76
WMA	10		**Pct Forest**	19.40
Gradient	High		**Pct Wetlands**	16.80
CollDate	07-08-1999		**Total Habitat Score**	160.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Gammarus fasciatus	65	Amphipoda	Gammaridae
5	Dubiraphia	2	Coleoptera	Elmidae
4	Optioservus	1	Coleoptera	Elmidae
4	Stenelmis	1	Coleoptera	Elmidae
5	Phaenopsectra	1	Diptera	Chironomidae
5	Polypedilum illinoense	1	Diptera	Chironomidae
3	Cloeon	3	Ephemeroptera	Baetidae
3	Stenonema	1	Ephemeroptera	Heptageniidae
4	Corixidae	4	Hemiptera	Corixidae
5	Ischnura	5	Odonata	Coenagrionidae
4	Ceratopsyche morosa	1	Trichoptera	Hydropsychidae
4	Oecetis	2	Trichoptera	Leptoceridae
6	Corbicula	1	Veneroida	Corbiculidae
5	Amnicola limosus limosus	6	Mesogastropoda	Hydrobiidae
4	Elimia virginica	5	Mesogastropoda	Pleuroceridae
5	Physella	3	Basommatophora	Physidae
5	Gyraulus	2	Basommatophora	Planorbidae
5	Helisoma anceps	1	Basommatophora	Planorbidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	2	4
4	7	79
5	8	21
6	1	1
x	0	0
Total	*18*	*105*

Tier 5. A borderline site to the coastal plain. Hydrographically still a high gradient stream.

AN0038, Trout Bk, 09-15-1992

TALU_SampID	HB03	**Assigned Tier**		**Area (km²)**	14.43
StationID	AN0038	**5**		**Pct Urban**	9.37
Station Name	Trout Bk			**Pct Agr**	23.81
WMA	1			**Pct Forest**	55.37
Gradient	High			**Pct Wetlands**	8.68
CollDate	09-15-1992			**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
5	Dina anoculata	1	1	Pharyngodellida	Erpobdellidae
5	Batracobdella paludosa	2	0	Rhynchobdellida	Glossiphoniidae
5	Lumbricidae	1	0	Haplotaxida	Lumbricidae
5	Aulodrilus pluriseta	34	2	Tubificida	Tubificidae
5	Limnodrilus claparedianus	4	0	Tubificida	Tubificidae
5	Tubifex tubifex	1	0	Tubificida	Tubificidae
4	Gammarus fasciatus	1020	64	Amphipoda	Gammaridae
4	Caecidotea racovitzai	149	10	Isopoda	Asellidae
x	Diplopoda	18	1		
4	Optioservus ovalis	68	4	Coleoptera	Elmidae
4	Stenelmis markeli	2	0	Coleoptera	Elmidae
3	Parametriocnemus stylatus	4	0	Diptera	Chironomidae (Orthocladiinae)
5	Nanocladius distinctus	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Thienemanniella	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia bavarica	24	1	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus exiguus	1	0	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus	22	1	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus guerlus	2	0	Diptera	Chironomidae (Tanytarsini)
5	Tabanus	10	1	Diptera	Tabanidae
3	Hexatoma spinosa	6	0	Diptera	Tipulidae
5	Antocha	1	0	Diptera	Tipulidae
4	Dicranota	1	0	Diptera	Tipulidae
3	Plauditus punctiventris	1	0	Ephemeroptera	Baetidae
2	Centroptilum	1	0	Ephemeroptera	Baetidae
2	Brachycentrus numerosus	1	0	Trichoptera	Brachycentridae
4	Cheumatopsyche	111	6	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	23	2	Trichoptera	Hydropsychidae
2	Lepidostoma	4	0	Trichoptera	Lepidostomatidae
3	Limnephilus	1	0	Trichoptera	Limnephilidae
3	Neophylax	1	0	Trichoptera	Limnephilidae
3	Pycnopsyche	6	1	Trichoptera	Limnephilidae
3	Oligostomis	4	1	Trichoptera	Phryganeidae
3	Lype diversa	5	0	Trichoptera	Psychomyiidae
4	Pisidium walkeri	9	1	Veneroida	Pisidiidae
4	Sphaerium simile	20	2	Veneroida	Pisidiidae
4	Sphaerium rhomboideum	14	2	Veneroida	Pisidiidae
4	Stagnicola catascopium	1	0	Basommatophora	Lymnaeidae
5	Dugesia tigrina	132	6	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	3	6	0	0

3	8	28	2	2
4	11	1396	7	89
5	15	259	7	14
6	0	0	0	0
x	1	18	1	1
Total	*38*	*1707*	*17*	*106*

Tier 5. An ecoregion sample. Subsampled to 100 organisms.

AN0201, South Br Rahway River, 02-19-1992

BCG_SampID	special_3	**Assigned Tier**	**Area (km²)**	--
StationID	AN0201	**6**	**Pct Urban**	--
Station Name	South Br Rahway River		**Pct Agr**	--
WMA	--		**Pct Forest**	--
Gradient	High		**Pct Wetlands**	--
CollDate	02/19/1992		**Total Habitat Score**	--

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Limnodrilus claparedianus	28	Tubificida	Tubificidae
5	Limnodrilus udekemianus	14	Tubificida	Tubificidae
4	Crangonyx pseudogracilis	2	Amphipoda	Gammaridae
x	Orconectes	1	Decapoda	Cambaridae
5	Conchapelopia pallens	1	Diptera	Chironomidae
5	Glyptotendipes lobiferus	2	Diptera	Chironomidae
5	Cricotopus slossonae	2	Diptera	Chironomidae (Orthocladiinae)
5	Dugesia tigrina	2	Tricladida	Planariidae

Summary

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	0	0
4	1	2
5	6	49
6	0	0
x	1	1
Total	*8*	*52*

This high gradient site was assigned to Tier 6. This sample did not meet the target number of organisms in the subsampling process (100) and is thus considered depauperate. The sample is dominated by attribute V taxa. This site is considered as possibly toxic. This sample was re-evaluated during the 2nd workshop and was confirmed as Tier 6.

APPENDIX E

TIER ASSIGNMENTS FOR SELECTED LOW GRADIENT STREAMS (ON CD)

Biological Condition (BCG) Attributes

1 = Historically documented, sensitive, or regionally endemic taxa

2 = Highly sensitive taxa

3 = Sensitive and common taxa

4 = Taxa of intermediate tolerance

5 = Tolerant taxa

6 = Non native or intentially introduced taxa

7 = Taxa not assigned an attribute

AN0552, Oyster Ck, 12-13-1994

BCG_SampID	LA08	**Assigned Tier**	**Area (km²)**	20.18
StationID	AN0552	**2**	**Pct Urban**	1.81
Station Name	Oyster Ck		**Pct Agr**	0.72
WMA	13		**Pct Forest**	78.51
Gradient	Low		**Pct Wetlands**	18.19
CollDate	12-13-1994		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Lumbricidae	1	Haplotaxida	Lumbricidae
4	Stylaria lacustris	1	Tubificida	Naididae
4	Stenelmis	1	Coleoptera	Elmidae
5	Polypedilum illinoense	2	Diptera	Chironomidae
5	Tribelos jucundus	2	Diptera	Chironomidae
4	Rheocricotopus tuberculatus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus triannulatus	27	Diptera	Chironomidae (Orthocladiinae)
5	Psectrocladius elatus	1	Diptera	Chironomidae (Orthocladiinae)
5	Tvetenia vitracies	2	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	1	Diptera	Chironomidae (Tanytarsini)
5	Simulium venustum	2	Diptera	Simuliidae
3	Hexatoma spinosa	2	Diptera	Tipulidae
3	Eurylophella temporalis	4	Ephemeroptera	Ephemerellidae
3	Stenonema smithae	6	Ephemeroptera	Heptageniidae
3	Nigronia serricornis	2	Megaloptera	Corydalidae
2	Isoperla transmarina	2	Plecoptera	Perlodidae
3	Taeniopteryx nivalis	14	Plecoptera	Taeniopterygidae
2	Brachycentrus numerosus	9	Trichoptera	Brachycentridae
3	Micrasema rusticum	25	Trichoptera	Brachycentridae
3	Hydropsyche decalda	2	Trichoptera	Hydropsychidae
x	Ochrotrichia	1	Trichoptera	Hydroptilidae
2	Lepidostoma	3	Trichoptera	Lepidostomatidae
4	Oecetis	1	Trichoptera	Leptoceridae
3	Pycnopsyche	1	Trichoptera	Limnephilidae
3	Molanna	2	Trichoptera	Molannidae
4	Chimarra aterrima	1	Trichoptera	Philopotamidae
4	Ferrissia rivularis	1	Basommatophora	Ancylidae

BCG Attribute	Taxa	Individuals
1	0	0
2	3	14
3	9	58
4	6	6
5	8	38
6	0	0
x	1	1
Total	*27*	*117*

This low gradient site was assigned to tier 2. There were almost the same number of attribute 2 and 3 taxa as attribute 4 and 5 taxa but there were more individuals of attribute taxa 2 and 3. This site represented the highest expectation for low gradient streams.

AN0651, McNeals Br, 01-04-1996

TALU_SampID	LA11	Assigned Tier		Area (km²)	18.83
StationID	AN0651	2		Pct Urban	7.79
Station Name	McNeals Br			Pct Agr	0.38
WMA	15			Pct Forest	73.40
Gradient	Low			Pct Wetlands	18.40
CollDate	01/04/1996			Total Habitat Score	Not Scored

BCG Attribute	FinalID	Individuals	Ind_100	Order	Family (Tribe)
4	Lumbriculus variegatus	1	0	Lumbriculida	Lumbriculidae
5	Limnodrilus claparedianus	1	0	Tubificida	Tubificidae
5	Limnodrilus hoffmeisteri	3	0	Tubificida	Tubificidae
5	Tubifex tubifex	1	0	Tubificida	Tubificidae
4	Synurella chamberlaini	5	0	Amphipoda	Gammaridae
5	Asellus communis	39	13	Isopoda	Asellidae
4	Stenelmis	1	1	Coleoptera	Elmidae
4	Bezzia glabra	1	0	Diptera	Ceratopogonidae
4	Palpomyia tibialis	1	0	Diptera	Ceratopogonidae
3	Apsectrotanypus trifascipennis	1	1	Diptera	Chironomidae
5	Ablabesmyia mallochi	1	0	Diptera	Chironomidae
5	Conchapelopia	11	4	Diptera	Chironomidae
5	Microtendipes pedellus	34	10	Diptera	Chironomidae
2	Pagastiella ostansa	5	1	Diptera	Chironomidae
5	Polypedilum illinoense	5	0	Diptera	Chironomidae
5	Procladius bellus	2	1	Diptera	Chironomidae
5	Stenochironomus	2	2	Diptera	Chironomidae
5	Tribelos jucundus	4	0	Diptera	Chironomidae
4	Heterotrissocladius marcidus	51	7	Diptera	Chironomidae (Orthocladiinae)
4	Brillia flavifrons	1	0	Diptera	Chironomidae (Orthocladiinae)
5	Orthocladius annectens	5	0	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	2	0	Diptera	Chironomidae (Tanytarsini)
3	Cnephia mutata	20	7	Diptera	Simuliidae
5	Tabanus	2	1	Diptera	Tabanidae
4	Pilaria tenuipes	1	0	Diptera	Tipulidae
3	Eurylophella temporalis	20	6	Ephemeroptera	Ephemerellidae
3	Leptophlebia	19	5	Ephemeroptera	Leptophlebiidae
2	Siphloplecton	1	0	Ephemeroptera	Metretopodidae
3	Nigronia serricornis	1	0	Megaloptera	Corydalidae
4	Sialis hasta	8	1	Megaloptera	Sialidae
5	Basiaeschna janata	1	0	Odonata	Aeshnidae
3	Argia bipunctulata	4	1	Odonata	Coenagrionidae
4	Enallagma	1	1	Odonata	Coenagrionidae
4	Cordulegaster maculata	1	0	Odonata	Cordulegastridae
2	Nemoura	3	0	Plecoptera	Nemouridae
3	Taeniopteryx nivalis	1	0	Plecoptera	Taeniopterygidae
2	Heteroplectron americanum	20	6	Trichoptera	Calamoceratidae
3	Oxyethira	3	1	Trichoptera	Hydroptilidae
2	Lepidostoma	1	0	Trichoptera	Lepidostomatidae

3	Mystacides	2	0	Trichoptera	Leptoceridae
3	Platycentropus	2	1	Trichoptera	Limnephilidae
3	Pycnopsyche	16	6	Trichoptera	Limnephilidae
3	Molanna	11	3	Trichoptera	Molannidae
2	Psilotreta frontalis	1	0	Trichoptera	Odontoceridae
3	Banksiola	3	1	Trichoptera	Phryganeidae
3	Ptilostomis	1	1	Trichoptera	Phryganeidae
4	Polycentropus	2	1	Trichoptera	Polycentropodidae
4	Ferrissia parallela	5	0	Basommatophora	Ancylidae

BCG Attribute	Taxa	Individuals	Taxa 100	Individuals 100
1	0	0	0	0
2	6	31	2	7
3	14	104	11	33
4	13	79	5	11
5	15	113	6	31
6	0	0	0	0
x	0	0	0	0
Total	*48*	*327*	*24*	*82*

This low gradient site was assigned to tier 2. This site is considered to be one of the better low gradient sites in the state. There was a good diversity of taxa.

AN0579, Batsto River, 02-16-1995

BCG_SampID	LB11	**Assigned Tier**	**Area (km²)**	26.37
StationID	AN0579	**2**	**Pct Urban**	5.58
Station Name	Batsto River		**Pct Agr**	22.19
WMA	14		**Pct Forest**	42.74
Gradient	Low		**Pct Wetlands**	27.86
CollDate	02-16-1995		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Erpobdella punctata punctata	1	Pharyngodellida	Erpobdellidae
4	Lumbriculus	8	Lumbriculida	Lumbriculidae
4	Nais	1	Tubificida	Naididae
5	Tubifex	1	Tubificida	Tubificidae
4	Caecidotea	38	Isopoda	Asellidae
x	Podura aquatica	1	Collembola	Poduridae
5	Chironomus	1	Diptera	Chironomidae
5	Conchapelopia	8	Diptera	Chironomidae
5	Polypedilum illinoense	4	Diptera	Chironomidae
5	Procladius	1	Diptera	Chironomidae
5	Cricotopus	1	Diptera	Chironomidae (Orthocladiinae)
5	Thienemanniella	1	Diptera	Chironomidae (Orthocladiinae)
3	Cnephia mutata	8	Diptera	Simuliidae
5	Tabanus	1	Diptera	Tabanidae
4	Pilaria	1	Diptera	Tipulidae
4	Caenis	1	Ephemeroptera	Caenidae
3	Eurylophella	9	Ephemeroptera	Ephemerellidae
3	Stenonema	1	Ephemeroptera	Heptageniidae
3	Leptophlebia	26	Ephemeroptera	Leptophlebiidae
5	Paraponyx	1	Lepidoptera	Pyralidae
3	Nigronia	1	Megaloptera	Corydalidae
4	Sialis	2	Megaloptera	Sialidae
2	Isoperla transmarina	5	Plecoptera	Perlodidae
3	Taeniopteryx	1	Plecoptera	Taeniopterygidae
4	Hydropsyche	1	Trichoptera	Hydropsychidae
4	Hydroptila	1	Trichoptera	Hydroptilidae
3	Pycnopsyche	11	Trichoptera	Limnephilidae
3	Ptilostomis	1	Trichoptera	Phryganeidae
4	Phylocentropus	1	Trichoptera	Polycentropodidae
4	Pisidium	11	Veneroida	Pisidiidae
4	Ferrissia	1	Basommatophora	Ancylidae

BCG Attribute	Taxa	Individuals
1	0	0
2	1	5
3	8	58
4	11	66
5	10	20
6	0	0
x	1	1
Total	*31*	*150*

This low gradient site was assigned to tier 2. This site has part of its drainage basin the Pinelands. While attribute 4 and 5 taxa are dominant, attribute 2 and 3 taxa are well represented.

AN0652, Mill Ck,06-01-1995

BCG_SampID	LB12	**Assigned Tier**	**Area (km²)**	8.89
StationID	AN0652	**2 or 3/4**	**Pct Urban**	3.84
Station Name	Mill Ck		**Pct Agr**	2.28
WMA	15		**Pct Forest**	71.96
Gradient	Low		**Pct Wetlands**	21.52
CollDate	06-01-1995		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus	7	Lumbriculida	Lumbriculidae
4	Nais	1	Tubificida	Naididae
4	Stylaria	1	Tubificida	Naididae
5	Tubifex	9	Tubificida	Tubificidae
4	Stenelmis	8	Coleoptera	Elmidae
4	Bezzia	2	Diptera	Ceratopogonidae
5	Ablabesmyia	3	Diptera	Chironomidae
5	Conchapelopia	11	Diptera	Chironomidae
5	Dicrotendipes	1	Diptera	Chironomidae
5	Glyptotendipes	1	Diptera	Chironomidae
5	Phaenopsectra	1	Diptera	Chironomidae
5	Polypedilum illinoense	7	Diptera	Chironomidae
5	Procladius	6	Diptera	Chironomidae
5	Cricotopus	4	Diptera	Chironomidae (Orthocladiinae)
5	Micropsectra	14	Diptera	Chironomidae (Tanytarsini)
x	Anopheles	2	Diptera	Culicidae
3	Cnephia	1	Diptera	Simuliidae
3	Prosimulium	1	Diptera	Simuliidae
4	Simulium	2	Diptera	Simuliidae
3	Tipula	1	Diptera	Tipulidae
3	Nigronia	3	Megaloptera	Corydalidae
3	Boyeria	1	Odonata	Aeshnidae
4	Enallagma	3	Odonata	Coenagrionidae
4	Argia	1	Odonata	Coenagrionidae
4	Dromogomphus	1	Odonata	Gomphidae
3	Progomphus	1	Odonata	Gomphidae
3	Macromia	2	Odonata	Macromiidae
2	Leuctra tenuis	10	Plecoptera	Leuctridae
4	Hydroptila	18	Trichoptera	Hydroptilidae
3	Oxyethira	2	Trichoptera	Hydroptilidae
2	Lepidostoma	2	Trichoptera	Lepidostomatidae
3	Molanna	1	Trichoptera	Molannidae
4	Neureclipsis	2	Trichoptera	Polycentropodidae
x	Zonitoides arboreus	1	Stylommatophora	Zonitidae

BCG Attribute	Taxa	Individuals
1	0	0
2	2	12
3	9	13
4	11	46
5	10	57
6	0	0
x	2	3
Total	*34*	*131*

This low gradient site was assigned to tier 2 or 3/4. The group was unable to come to a consensus on the assignment of a tier to this site. Attribute 4 and 5 taxa are dominant but there are still a number of attribute 2 and 3 taxa. Overall taxa richness high diversity ad abundance.

AN0537, Wrangel Bk, 11-09-1999

BCG_SampID	LA15	**Assigned Tier**	**Area (km²)**	40.31
StationID	AN0537	**3/4**	**Pct Urban**	27.48
Station Name	Wrangel Bk		**Pct Agr**	0.70
WMA	13		**Pct Forest**	53.46
Gradient	Low		**Pct Wetlands**	17.05
CollDate	11-09-1999		**Total Habitat Score**	154.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Mooreobdella fervida	2	Pharyngodellida	Erpobdellidae
4	Lumbriculus variegatus	14	Lumbriculida	Lumbriculidae
5	Limnodrilus	17	Tubificida	Tubificidae
4	Caecidotea	21	Isopoda	Asellidae
4	Hydroporus	2	Coleoptera	Dytiscidae
4	Oulimnius latiusculus	1	Coleoptera	Elmidae
4	Stenelmis	3	Coleoptera	Elmidae
5	Ablabesmyia	1	Diptera	Chironomidae
5	Chironomus	2	Diptera	Chironomidae
5	Conchapelopia	1	Diptera	Chironomidae
5	Polypedilum scalaenum	7	Diptera	Chironomidae
5	Tribelos	9	Diptera	Chironomidae
5	Tvetenia vitracies	1	Diptera	Chironomidae (Orthocladiinae)
4	Simulium	3	Diptera	Simuliidae
3	Stenonema	4	Ephemeroptera	Heptageniidae
3	Taeniopteryx burksi	5	Plecoptera	Taeniopterygidae
4	Hydropsyche	1	Trichoptera	Hydropsychidae
2	Lepidostoma	1	Trichoptera	Lepidostomatidae
3	Agarodes	1	Trichoptera	Sericostomatidae
4	Pisidium	5	Veneroida	Pisidiidae

BCG Attribute	Taxa	Individuals
1	0	0
2	1	1
3	3	10
4	8	50
5	8	40
6	0	0
x	0	0
Total	*20*	*101*

This low gradient site was assigned to tier 3/4. This site had good diversity of taxa.

AN0517, Toms River, 07-10-1991

TALU_SampID	LA15	**Assigned Tier**	**Area (km²)**	40.31
StationID	AN0537	**3/4**	**Pct Urban**	27.48
Station Name	Wrangel Bk		**Pct Agr**	0.70
WMA	13		**Pct Forest**	53.46
Gradient	Low		**Pct Wetlands**	17.05
CollDate	11/09/1999		**Total Habitat Score**	154.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Mooreobdella fervida	2	Pharyngodellida	Erpobdellidae
4	Lumbriculus variegatus	14	Lumbriculida	Lumbriculidae
5	Limnodrilus	17	Tubificida	Tubificidae
4	Caecidotea	21	Isopoda	Asellidae
4	Hydroporus	2	Coleoptera	Dytiscidae
4	Oulimnius latiusculus	1	Coleoptera	Elmidae
4	Stenelmis	3	Coleoptera	Elmidae
5	Ablabesmyia	1	Diptera	Chironomidae
5	Chironomus	2	Diptera	Chironomidae
5	Conchapelopia	1	Diptera	Chironomidae
5	Polypedilum scalaenum	7	Diptera	Chironomidae
5	Tribelos	9	Diptera	Chironomidae
5	Tvetenia vitracies	1	Diptera	Chironomidae (Orthocladiinae)
4	Simulium	3	Diptera	Simuliidae
3	Stenonema	4	Ephemeroptera	Heptageniidae
3	Taeniopteryx burksi	5	Plecoptera	Taeniopterygidae
4	Hydropsyche	1	Trichoptera	Hydropsychidae
2	Lepidostoma	1	Trichoptera	Lepidostomatidae
3	Agarodes	1	Trichoptera	Sericostomatidae
4	Pisidium	5	Veneroida	Pisidiidae

BCG Attribute	Taxa	Individuals
1	0	0
2	1	1
3	3	10
4	8	50
5	8	40
6	0	0
x	0	0
Total	*20*	*101*

This low gradient site was assigned to tier 3/4. This sample is dominated by attribute 4 and 5 taxa but attributes 2 and 3 are also well represented.

AN0156, South Br Rancocas Ck, 03-15-2001

BCG_SampID	LB05_2	**Assigned Tier**	**Area (km²)**	--
StationID	AN0156	**3/4**	**Pct Urban**	--
Station Name	South Br Rancocas Ck		**Pct Agr**	--
WMA	--		**Pct Forest**	--
Gradient	Low		**Pct Wetlands**	--
CollDate	03-15-2001		**Total Habitat Score**	--

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Probezzia	1	Diptera	Ceratopogonidae
5	Cryptochironomus	3	Diptera	Chironomidae
5	Procladius	2	Diptera	Chironomidae
5	Tribelos	16	Diptera	Chironomidae
5	Tvetenia bavarica	1	Diptera	Chironomidae (Orthocladiinae)
x	Chaoborus	1	Diptera	Culicidae
3	Cnephia mutata	4	Diptera	Simuliidae
3	Stenonema	1	Ephemeroptera	Heptageniidae
3	Leptophlebia	5	Ephemeroptera	Leptophlebiidae
3	Hydropsyche decalda	1	Trichoptera	Hydropsychidae
3	Pycnopsyche	1	Trichoptera	Limnephilidae
3	Molanna	6	Trichoptera	Molannidae
4	Chimarra aterrima	6	Trichoptera	Philopotamidae
4	Polycentropus	1	Trichoptera	Polycentropodidae

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	6	18
4	3	8
5	4	22
6	0	0
x	1	1
Total	*14*	*49*

This low gradient site was assigned to tier 3. This sample showed a diversity of taxa not present in the 1993 sample at the same site. It is known that there were improvements to a sewage treatment plant upstream of this site between the two samples.

AN0572, Albertson Bk, 03-23-1995

BCG_SampID	LB09	**Assigned Tier**	**Area (km²)**	50.54
StationID	AN0572	**3/4**	**Pct Urban**	22.75
Station Name	Albertson Bk		**Pct Agr**	23.98
WMA	14		**Pct Forest**	40.67
Gradient	Low		**Pct Wetlands**	10.66
CollDate	03-23-1995		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus	4	Lumbriculida	Lumbriculidae
4	Nais communis	1	Tubificida	Naididae
5	Aulodrilus	5	Tubificida	Tubificidae
5	Limnodrilus	2	Tubificida	Tubificidae
x	Palaemonetes paludosus	1	Decapoda	Palaemonidae
4	Oulimnius latiusculus	4	Coleoptera	Elmidae
3	Promoresia	3	Coleoptera	Elmidae
4	Stenelmis	3	Coleoptera	Elmidae
4	Probezzia	1	Diptera	Ceratopogonidae
5	Ablabesmyia	2	Diptera	Chironomidae
5	Clinotanypus	1	Diptera	Chironomidae
5	Harnischia	1	Diptera	Chironomidae
5	Polypedilum illinoense	1	Diptera	Chironomidae
5	Tribelos	2	Diptera	Chironomidae
5	Cricotopus	1	Diptera	Chironomidae (Orthocladiinae)
5	Eukiefferiella devonica	1	Diptera	Chironomidae (Orthocladiinae)
5	Parakiefferiella	3	Diptera	Chironomidae (Orthocladiinae)
4	Unniella	5	Diptera	Chironomidae (Orthocladiinae)
5	Paratanytarsus	1	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus	1	Diptera	Chironomidae (Tanytarsini)
4	Dicranota	1	Diptera	Tipulidae
3	Leptophlebia	4	Ephemeroptera	Leptophlebiidae
4	Sialis	2	Megaloptera	Sialidae
2	Cordulegaster	1	Odonata	Cordulegastridae
2	Brachycentrus	11	Trichoptera	Brachycentridae
3	Hydropsyche decalda	1	Trichoptera	Hydropsychidae
2	Lepidostoma	11	Trichoptera	Lepidostomatidae
4	Oecetis	2	Trichoptera	Leptoceridae
3	Molanna	4	Trichoptera	Molannidae
4	Polycentropus	3	Trichoptera	Polycentropodidae
4	Pisidium	9	Veneroida	Pisidiidae
5	Dugesia tigrina	2	Tricladida	Planariidae

BCG Attribute	Taxa	Individuals
1	0	0
2	3	23
3	4	12
4	12	36
5	12	22
6	0	0
x	1	1
Total	*32*	*94*

This low gradient site was assigned to tier 3/4. The site is located on the borders of the Pinelands. Attribute 4 and 5 taxa are dominant but attribute 2 and 3 taxa are still represented.

AN0640, Babcock Ck, 05-11-2000

BCG_SampID	LB16	**Assigned Tier**	**Area (km²)**	44.08
StationID	AN0640	**3/4**	**Pct Urban**	16.56
Station Name	Babcock Ck		**Pct Agr**	7.68
WMA	15		**Pct Forest**	50.18
Gradient	Low		**Pct Wetlands**	25.31
CollDate	05-11-2000		**Total Habitat Score**	184.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	1	Lumbriculida	Lumbriculidae
5	Limnodrilus	1	Tubificida	Tubificidae
4	Caecidotea	6	Isopoda	Asellidae
4	Oulimnius	17	Coleoptera	Elmidae
4	Stenelmis	1	Coleoptera	Elmidae
x	Chironomidae	3	Diptera	Chironomidae
5	Conchapelopia	3	Diptera	Chironomidae
4	Rheocricotopus tuberculatus	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus	5	Diptera	Chironomidae (Orthocladiinae)
5	Psectrocladius	3	Diptera	Chironomidae (Orthocladiinae)
5	Thienemanniella	3	Diptera	Chironomidae (Orthocladiinae)
5	Cladotanytarsus	1	Diptera	Chironomidae (Tanytarsini)
5	Micropsectra	1	Diptera	Chironomidae (Tanytarsini)
4	Rheotanytarsus	1	Diptera	Chironomidae (Tanytarsini)
x	Simuliidae	1	Diptera	Simuliidae
5	Simulium tuberosum	2	Diptera	Simuliidae
5	Simulium venustum	2	Diptera	Simuliidae
3	Hexatoma	2	Diptera	Tipulidae
3	Tipula	1	Diptera	Tipulidae
3	Stenonema	5	Ephemeroptera	Heptageniidae
2	Leuctra	48	Plecoptera	Leuctridae
4	Hydropsyche	1	Trichoptera	Hydropsychidae
2	Lepidostoma	1	Trichoptera	Lepidostomatidae
4	Oecetis	2	Trichoptera	Leptoceridae

BCG Attribute	Taxa	Individuals
1	0	0
2	2	49
3	3	8
4	8	30
5	8	21
6	0	0
x		
Total	*21*	*112*

This low gradient site was assigned to tier 3/4. This sample is dominated by attribute 4 and 5 taxa. More weight was placed on the number of taxa than the relative abundance. While there was a high number of attribute 2 individuals these were mostly from one genus (Leuctra) that is known to be tolerant of low pH.

AN0691, Salem R, 08-02-2000

BCG_SampID	LA18	**Assigned Tier**	**Area (km²)**	37.52
StationID	AN0691	**5**	**Pct Urban**	7.33
Station Name	Salem R		**Pct Agr**	72.21
WMA	17		**Pct Forest**	11.94
Gradient	Low		**Pct Wetlands**	7.17
CollDate	08-02-2000		**Total Habitat Score**	147.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	1	Lumbriculida	Lumbriculidae
4	Naididae	1	Haplotaxida	Naididae
5	Tubificidae	13	Tubificida	Tubificidae
5	Berosus	1	Coleoptera	Hydrophilidae
x	Chironomidae	2	Diptera	Chironomidae
5	Conchapelopia	3	Diptera	Chironomidae
5	Microtendipes	1	Diptera	Chironomidae
5	Polypedilum scalaenum	1	Diptera	Chironomidae
5	Polypedilum convictum	10	Diptera	Chironomidae
4	Rheotanytarsus	6	Diptera	Chironomidae (Tanytarsini)
5	Tanytarsus	1	Diptera	Chironomidae (Tanytarsini)
4	Corixidae	25	Hemiptera	Corixidae
4	Cheumatopsyche	44	Trichoptera	Hydropsychidae
x	Planariidae	1	Tricladida	Planariidae

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	0	0
4	5	77
5	7	30
6	0	0
x	2	3
Total	*14*	*110*

This low gradient site was assigned to tier 5. This sample consisted almost entirely of attribute 4 and 5 taxa.

AN0178, North Br Pennsauken Ck, 03-18-1992

BCG_SampID	LB03	**Assigned Tier**	**Area (km²)**	4.64
StationID	AN0178	**5**	**Pct Urban**	31.43
Station Name	North Br Pennsauken Ck		**Pct Agr**	25.21
WMA	18		**Pct Forest**	15.91
Gradient	Low		**Pct Wetlands**	27.00
CollDate	03-18-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Aulodrilus pluriseta	1	Tubificida	Tubificidae
5	Branchiura sowerbyi	1	Tubificida	Tubificidae
5	Limnodrilus claparedianus	11	Tubificida	Tubificidae
5	Limnodrilus hoffmeisteri	12	Tubificida	Tubificidae
5	Tubifex tubifex	6	Tubificida	Tubificidae
5	Asellus communis	5	Isopoda	Asellidae
5	Polypedilum	1	Diptera	Chironomidae
5	Polypedilum scalaenum	1	Diptera	Chironomidae
5	Orthocladius obumbratus	3	Diptera	Chironomidae (Orthocladiinae)
3	Cnephia mutata	9	Diptera	Simuliidae
3	Tipula ignobilis	1	Diptera	Tipulidae
4	Cheumatopsyche	1	Trichoptera	Hydropsychidae
5	Hydropsyche betteni	2	Trichoptera	Hydropsychidae
4	Pisidium casertanum	1	Veneroida	Pisidiidae
5	Physella integra	1	Basommatophora	Physidae
x	Nemata	1		
4	Prostoma graecense	1	Hoplonemertea	Tetrastemmatidae
5	Dugesia tigrina	1	Tricladida	Planariidae

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	2	10
4	3	3
5	12	45
6	0	0
x	1	1
Total	*18*	*59*

This low gradient site was assigned to tier 5. The sample is missing dragonflies (Odonata) which may be an indicator of water quality in low gradient streams. Attribute 5 taxa are dominant.

AN0156, South Br Rancocas Ck, 03-02-1993

BCG_SampID	LB05	**Assigned Tier**	**Area (km²)**	117.27
StationID	AN0156	**5**	**Pct Urban**	11.04
Station Name	South Br Rancocas Ck		**Pct Agr**	9.39
WMA	19		**Pct Forest**	47.42
Gradient	Low		**Pct Wetlands**	30.55
CollDate	03-02-1993		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	2	Lumbriculida	Lumbriculidae
5	Limnodrilus claparedianus	13	Tubificida	Tubificidae
5	Limnodrilus hoffmeisteri	1	Tubificida	Tubificidae
5	Limnodrilus udekemianus	1	Tubificida	Tubificidae
5	Asellus communis	13	Isopoda	Asellidae
5	Clinotanypus pinguis	1	Diptera	Chironomidae
5	Procladius riparius	1	Diptera	Chironomidae
5	Tribelos jucundus	80	Diptera	Chironomidae
5	Cricotopus tibialis	1	Diptera	Chironomidae (Orthocladiinae)
5	Tabanus	1	Diptera	Tabanidae
4	Pilaria tenuipes	2	Diptera	Tipulidae
4	Corixidae	1	Hemiptera	Corixidae
4	Sialis iola	1	Megaloptera	Sialidae
x	Libellula	1	Odonata	Libellulidae
4	Phylocentropus	3	Trichoptera	Polycentropodidae

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	0	0
4	5	9
5	9	112
6	0	0
x	1	1
Total	*15*	*122*

This low gradient site was assigned to tier 5. This site is just outside of the Pinelands. This sample is composed almost entirely of attribute 4 and 5 taxa and is dominated by attribute 5 taxa

AN0751, Maurice River, 11-28-2000

BCG_SampID	LB18	Assigned Tier	Area (km²)	25.10
StationID	AN0751	5	Pct Urban	57.13
Station Name	Maurice River		Pct Agr	10.17
WMA	17		Pct Forest	22.14
Gradient	Low		Pct Wetlands	9.80
CollDate	11-28-2000		Total Habitat Score	158.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Eclipidrilus	3	Lumbriculida	Lumbriculidae
5	Aulodrilus	9	Tubificida	Tubificidae
5	Limnodrilus	4	Tubificida	Tubificidae
4	Gammarus	22	Amphipoda	Gammaridae
4	Bezzia	1	Diptera	Ceratopogonidae
5	Clinotanypus	1	Diptera	Chironomidae
5	Microtendipes	3	Diptera	Chironomidae
5	Polypedilum	2	Diptera	Chironomidae
5	Procladius	5	Diptera	Chironomidae
5	Tribelos	9	Diptera	Chironomidae
x	Ptychoptera	4	Diptera	Ptychopteridae
3	Eurylophella	1	Ephemeroptera	Ephemerellidae
x	Notonectidae	1	Hemiptera	Notonectidae
x	Synclita	1	Lepidoptera	Pyralidae
4	Sialis	1	Megaloptera	Sialidae
5	Ischnura	2	Odonata	Coenagrionidae
4	Didymops	1	Odonata	Macromiidae
4	Oecetis	1	Trichoptera	Leptoceridae
4	Polycentropus	3	Trichoptera	Polycentropodidae
4	Pisidium	15	Veneroida	Pisidiidae
5	Physella	2	Basommatophora	Physidae
5	Amnicola	7	Mesogastropoda	Bithyniidae
5	Campeloma	1	Mesogastropoda	Viviparidae
4	Prostoma	1	Hoplonemertea	Tetrastemmatidae

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	1	1
4	9	48
5	11	45
6	0	0
x	3	6
Total	*24*	*100*

This low gradient site was assigned to tier 5. Attribute 4 and 5 taxa are dominant.

AN0170, Sharps Run, 04-12-2001

BCG_SampID	LB20	**Assigned Tier**	**Area (km²)**	11.15
StationID	AN0170	**5**	**Pct Urban**	19.89
Station Name	Sharps Run		**Pct Agr**	46.49
WMA	19		**Pct Forest**	4.10
Gradient	Low		**Pct Wetlands**	29.45
CollDate	04-12-2001		**Total Habitat Score**	170.00

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
4	Lumbriculus variegatus	3	Lumbriculida	Lumbriculidae
4	Nais	1	Tubificida	Naididae
5	Tubificidae	10	Tubificida	Tubificidae
5	Quistradrilus multisetosus	3	Tubificida	Tubificidae
4	Gammarus	20	Amphipoda	Gammaridae
x	Cambaridae	1	Decapoda	Cambaridae
4	Caecidotea	5	Isopoda	Asellidae
5	Dubiraphia	3	Coleoptera	Elmidae
4	Stenelmis	5	Coleoptera	Elmidae
5	Polypedilum	10	Diptera	Chironomidae
5	Tribelos	1	Diptera	Chironomidae
5	Orthocladiinae	1	Diptera	Chironomidae (Orthocladiinae)
5	Cricotopus	11	Diptera	Chironomidae (Orthocladiinae)
5	Hydrobaenus	1	Diptera	Chironomidae (Orthocladiinae)
4	Rheotanytarsus	7	Diptera	Chironomidae (Tanytarsini)
4	Chelifera	1	Diptera	Empididae
5	Simulium venustum	6	Diptera	Simuliidae
3	Stenonema	1	Ephemeroptera	Heptageniidae
4	Cheumatopsyche	8	Trichoptera	Hydropsychidae
x	Ironoquia	1	Trichoptera	Limnephilidae
6	Corbicula	1	Veneroida	Corbiculidae
4	Pisidium	1	Veneroida	Pisidiidae
4	Sphaerium	6	Veneroida	Pisidiidae
5	Dugesia tigrina	1	Tricladida	Planariidae

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	1	1
4	10	57
5	10	47
6	1	1
x	2	2
Total	*23*	*107*

This low gradient site was assigned to tier 5. An attribute 6 taxon is present but there is also an attribute 3 taxon. As well as, a diversity of attribute 4 and 5 taxa.

AN0117, Pond Run, 03-04-1992

BCG_SampID	LB02	**Assigned Tier**	**Area (km²)**	9.19
StationID	AN0117	**6**	**Pct Urban**	65.51
Station Name	Pond Run		**Pct Agr**	13.15
WMA	11		**Pct Forest**	8.44
Gradient	Low		**Pct Wetlands**	12.14
CollDate	03-04-1992		**Total Habitat Score**	Not Scored

BCG Attribute	FinalID	Individuals	Order	Family (Tribe)
5	Limnodrilus claparedianus	9	Tubificida	Tubificidae
5	Limnodrilus hoffmeisteri	26	Tubificida	Tubificidae
5	Limnodrilus udekemianus	52	Tubificida	Tubificidae
5	Tubifex tubifex	28	Tubificida	Tubificidae
5	Chironomus riparius	5	Diptera	Chironomidae
5	Conchapelopia flavifrons	3	Diptera	Chironomidae
5	Orthocladius dorenus	1	Diptera	Chironomidae (Orthocladiinae)
6	Corbicula manilensis	2	Veneroida	Corbiculidae
4	Pisidium casertanum	8	Veneroida	Pisidiidae

BCG Attribute	Taxa	Individuals
1	0	0
2	0	0
3	0	0
4	1	8
5	7	124
6	1	2
x	0	0
Total	*8*	*132*

This low gradient site was assigned to tier 6. This sample is dominated by Tubificidae, an indicator of poor water quality. There is also the presence of attribute 6 taxa.