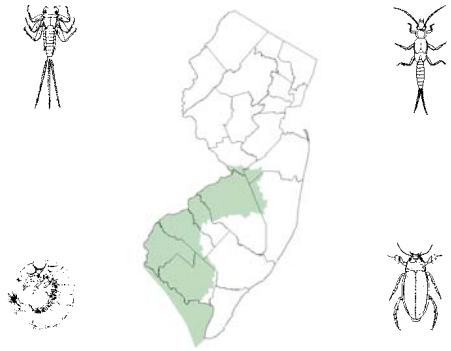
State of New Jersey
James E. McGreevey, Governor

AMBIENT BIOMONITORING NETWORK

Watershed Management Areas 17, 18, 19, and 20

Lower Delaware Region

2000 - 2001 Benthic Macroinvertebrate Data



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November 2003

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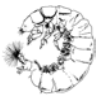

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EXECUTIVE SUMMARY

Biological monitoring of freshwater systems in New Jersey provides an effective means of gauging long-term trends in surface water quality throughout the State. The Ambient Biomonitoring Network (AMNET) is one of the Department of Environmental Protection's major ongoing monitoring programs. This statewide network of over 800 stations employs sampling and taxonomic analysis of in-stream macroinvertebrate communities to assess the ecological condition at each station. These bioassessments utilize several community "biometrics", such as pollution tolerances of individual taxa; the product of this multi-metric analysis assigns one of three biological "impairment" levels rating a given site as non-impaired, moderately impaired or severely impaired. The results are considered reflective of the water or habitat quality at each site. This information is used by the Department, primarily in assessing progress toward the goals of the Clean Water Act via the Integrated 305 (b)/303 (d) Water Quality Monitoring and Assessment Report. AMNET data are also very useful for designation of Category 1 waters based on exceptional ecological significance. Results are reported separately for New Jersey's five major drainage basins or "Water Regions" (Upper and Lower Delaware, Northeast, Raritan and Atlantic), each encompassing several sub-basins ("Water Management Areas"). The Water Regions, with an average of 165 AMNET sites each, are sampled in consecutive years on a five-year rotational basis.

This report presents the results for the biological monitoring conducted in the Lower Delaware Water Region from July 2000 to June 2001, and it marks the completion of two full rounds of statewide sampling for the AMNET program. Of 197 AMNET sites currently in the Lower Delaware Water Region, 31 (15.7%) were found non-impaired, 139 (70.6%) moderately impaired, and 27 (13.7%) severely impaired. Overall, there were considerably fewer non-impaired sites in the Lower Delaware Region than in the other four New Jersey Water Regions, previously sampled in the current AMNET round. A trend to lower ratings for water and habitat quality (26.9% of sites severely impaired) was observed in the middle portion of the region (lower Delaware River tributaries), where land use is largely urban/industrial; this area constitutes WMA # 18. Higher average scores were observed in the adjacent sub-basins north and south (Rancocas Creek system with 22.5% of sites nonimpaired, and the Delaware Bay tributaries with 25.7% of sites nonimpaired), where forest and wetlands occupy more of the drainage area; these areas constitute WMA's 19 and 17, respectively. A higher proportion of moderately impaired sites (84.0%) was observed in the northernmost sub-basins (Assiscunk Creek to Crosswicks Creek), where land use is largely agricultural; this area constitutes WMA # 20.

Results from the current (2000/01) sampling are compared to those from the same sites sampled in the earlier round(s). The first AMNET round was completed prior to the establishment of the present Water Region boundaries by NJDEP. The creation of Water Regions in 1997 moved a number of AMNET sites, in the upper tidal Delaware drainage, to the original lower Delaware study area. Of 109 total sites in the original (lower tidal) portion, the number of non-impaired sites was somewhat higher

in the current sampling (18.3%) than in the earlier (1996) sampling (15.5%). The upper tidal portion had been sampled twice previously in conjuction with the upper Delaware study area. Of 72 total sites in the upper tidal portion, intermediate (1997) and current samplings yielded substantially fewer severely impaired sites (13.9, 16.7% respectively) than did the first (1992/93) sampling (34.7%); however, the later rounds yielded considerably more moderately impaired sites (69.4, 75.0% respectively) than did the first round (51.4%).

INTRODUCTION

Historical Perspective

Since the early 1970s the New Jersey Department of Environmental Protection (NJDEP) has conducted biological monitoring of the state's water bodies. These biomonitoring studies, currently conducted by the Bureau of Freshwater and Biological Monitoring (BFBM), have included both long-term ambient monitoring and short-term intensive surveys. The information gathered contributes significantly to State water quality management and pollution mitigation efforts. The United States Environmental Protection Agency (USEPA) has recognized that a thorough program of monitoring aquatic biota can be a cost-efficient means of gauging the quality of water and watershed areas [1, 2]. Because flora and fauna of various trophic levels can integrate the effects of water quality or habitat changes over time, they become very effective pollution indicators. For lotic (running water) systems, analysis of benthic macroinvertebrate communities provides the principal means of achieving this, particularly since macroinvertebrates are more stationary than fish, and less transient than periphyton (benthic algae and other attached microorganisms).

New Jersey's initial ambient stream biomonitoring program, in the mid 1970s, included only a limited number (31) of "fixed stations," many of which proved later to be either inaccessible or in degraded condition. The present Ambient Biomonitoring Network (AMNET) program was developed to provide NJDEP with the greater resolution of baseline data necessary to support sound policy decisions in water quality/watershed management, and to direct regulatory, or "permit", activities. The data are most beneficial in the generation of the Integrated Water Quality Monitoring and Assessment (305b and 303d) Report [3]. AMNET data are also very useful for designation of Category 1 waters based on exceptional ecological significance. Initiated in 1992, the AMNET program samples over 800 stream sites statewide, with an average of 165 sites in each of five major drainage basins (upper and lower Delaware, Northeast, Raritan and Atlantic) once every five years. This ambitious project has been facilitated by the use of Rapid Bioassessment Protocol (RBP) methods, devised by the USEPA, which provide an expedient tool for site ranking, screening and trend monitoring [2,4]. The present report, on the Lower Delaware Region, marks the completion of the second full round of AMNET sampling. The first AMNET round was completed in 1996.

Rationale for Biological Monitoring

Biological monitoring, as referenced in this report, pertains to the collection and analysis of stream macroinvertebrate communities as indicators of water or habitat quality. Macroinvertebrates are larger-than-microscopic, primarily benthic (bottom-dwelling) fauna, which are generally ubiquitous in freshwater and estuarine environments, and play an integral role in the aquatic food web. Insects (largely immature forms) are especially characteristic of freshwaters; other major groups include worms, mollusks (snails, clams) and crustaceans (scuds, shrimp, crayfish, etc.). They are more readily collected and quantified than either fish or periphyton communities. Species comprising the in-stream community occupy various

niches, based on functional adaptation or feeding mode (e.g. predators, filter or detritus feeders, scavengers); their presence and relative abundance is governed by environmental conditions (which may determine available food supply), and by pollution tolerance levels of the respective species. The overall community thus is holistically reflective of conditions in its environment. Assessments of ambient water / habitat quality can then be made based upon standardized procedures, which can show perturbations measured as changes or differences in community structure [2, 5].

STUDY DESIGN

Data Quality Objectives

The major goal of AMNET is to provide a long-term, cost-efficient means of gauging the quality of surface waters and watershed areas throughout the State. This is accomplished through biological sampling and analysis from a network of stream sites that adequately represents New Jersey's major drainage basins and NJDEP's Watershed Management Areas (WMA). Administratively, a total of twenty-one WMAs have been delineated within New Jersey's five basins. Each basin constitutes a "Water Region"; a major sub-basin forms each WMA. Within each WMA are several smaller sub-basins, delineated by the United States Geological Survey (USGS) as "hydrologic units," scale 11 (HUC11). The study area of the present report includes WMA #'s 17, 18, 19, and 20 (see Maps 1 – 13). The standard sampling interval of five years, reflects a realistic temporal lag between cessation of an environmental perturbation and recovery of the impacted biological community. The 305b Water Quality Inventory report [3], which re-examines changes in New Jersey's stream systems on a two-year cycle, has indicated that five years is an optimum period for long-term biomonitoring. An ample network of stations is required for the creation of a long-term database, which in turn, is necessary for trend analysis and operation of water quality predictive models.

The AMNET program is also designed to monitor a complete basin's complement of stations within a fiscal year (July 1 through June 30), giving our modelers and planners a snapshot of ambient biological impacts during that particular year. Monitoring will be rotated to a different basin each new fiscal year.

The statewide spatial distribution of stations is adequate to provide biological impact data on a long-term, basin-wide or statewide scale. It is likely not sufficient, however, to assess the biological impact(s) of any one point source of pollution, as this would be better served by a site-specific or intensive survey of the stream segment in question.

Biological monitoring complements chemical monitoring, toxicity testing, and other standard environmental measurements. Each of these tools provides the analyst with specific information available only through its respective methodology.

Site Selection

To ensure enough flow for sampling, sites on "first-order" streams are situated at least three miles downstream of headwaters (first order streams are those with no tributaries). Since most streams at this level have very little (or only intermittent) flow, most of our sites are situated on second-order streams (with only first-order streams as tributaries) and higher (with a greater hierarchy of tributaries). All sites are located in reasonably accessible and primarily wadable segments, proceeding downstream to the head-of-tide. Sites are numbered in approximate upstream to downstream order, from the mainstem of each major sub-basin to each adjacent tributary, and then to the next adjacent sub-basin. This is in an approximate north to south order within the Delaware Water Region(s). The mainstem Delaware River

is not inlcuded, since this is under the jurisdiction of the Delaware River Basin Commission (DRBC).

To maximize data correlation, AMNET, wherever possible, incorporates existing stations of the Ambient Surface Water Chemical Monitoring Network, which is administered jointly by NJDEP and the USGS [6]. Furthermore, so as to gauge the effects of major tributaries and larger lakes, many AMNET sites are located near their confluence or outlet. Also considered when selecting sites is the proximity of known sources of contamination (e.g. point-source discharges, agricultural operations), either upstream or downstream; significant natural features such as wetlands, parks or wildlife management areas, are similarly considered.

Exact AMNET site locations are determined via the Global Positioning System (GPS) using Trimble Pathfinder units and the appropriate correction sources utilized by NJDEP. All positions are logged into the DEP's Geographical Information System (GIS) (see Maps 1 – 13, Appendix A).

A total of 119 sites had been established for the first round of AMNET sampling in the lower Delaware study area (1990-1996) [7]. This area (shown in Figure 1) included only the sub-basins draining to the tidal Delaware River and Delaware Bay from Newton Creek in Camden County to Fishing Creek in lower Cape May. With the establishment of Water Regions by the NJDEP, the newly created Upper and Lower Delaware Regions were divided by the "head-of-tide" at Trenton Falls; the upper tidal sub-basins from Cooper River (Camden County) to Crosswicks Creek, nearer Trenton, became part of the Lower Delaware Water Region. The present study area (Figure 2) includes a total of 199 sampling sites, AN0119 – 191 and AN0653-764 (see Table 2), although two of these were not sampled (see below). This region encompasses all sub-basins draining to the tidal Delaware River (i.e. from Trenton Falls downstream) and Delaware Bay drainage down to the Maurice River and its tributaries (primarily in Cumberland County). Of the 119 Lower Delaware sites sampled in the first AMNET round, 109 were included in the current round.

The Rancocas Creek drainage (WMA# 19), Crosswicks/Doctors/Assiscunk Creek drainages(s) (WMA# 20), and a few smaller drainages down to the Cooper River (part of WMA # 18), all sub-basins that drain to the upper tidal portion of the Delaware River, had been included in the original upper Delaware AMNET study area [8]. Portions of this area were sampled during several different periods, from 1990 to 1998, for the first and second upper Delaware AMNET surveys and for special studies within the northern Burlington County area [9]. They were sampled again in 2000/01 for the present study, bringing 87 AMNET sites (AN0119-191) to the lower Delaware Water Region. WMA# 16 (Cape May County), which contains seven of the original lower Delaware AMNET sites (AN0765-771), has since been transferred to the Atlantic Water Region. Site AN0726A (Little Ease Run) in the current data set replaced site AN0726, which had been mislocated on an intermittent tributary. This brought the total number of AMNET sites in the present study of the lower Delaware Water Region to 199. Two of these sites, however, were not sampled, one (AN0716) due to a very low flow condition, and one (AN0655) being on private property.

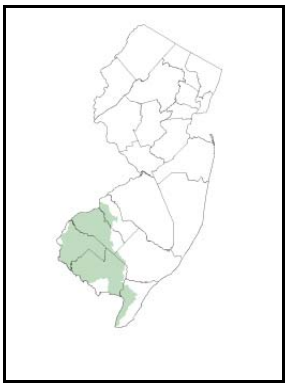

Figure 1

Map of 1996 study area

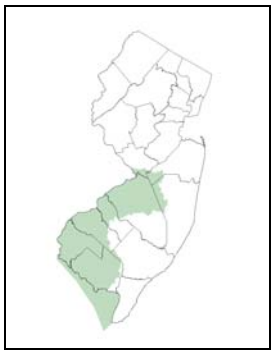

Figure 2

Map of 2001 study area

FIELD & LABORATORY METHODS

Benthic macroinvertebrate sampling and analysis was performed in accordance with the NJDEP Field Procedures Manual [10], Rapid Bioassessment Protocol (RBP) guidelines of the USEPA [4] and Standard Operating Procedures (SOP) of the NJDEP Aquatic Biomonitoring Laboratory [11]. As detailed in the SOP, a thorough quality assurance program, with emphasis on macroinvertebrate taxonomy, is practiced.

Field Collection

Because the low gradient of the coastal regions precludes streams from having dominant cobble/riffle areas (the preferred sampling habitat) we modified the RBP field methods for New Jersey streams by specifying the collection of multi-habitat samples [4]. This type of sampling includes both riffle and run areas, when present, and various types of stable substrate (e.g. fine sediment, gravel/rocks, woody debris, stream and bank vegetation), plus coarse particulate matter or leaf litter (CPOM). This would minimize habitat or substrate variation between stations, and include all likely functional groups of macroinvertebrates. Samples are collected in semi-quantitative fashion either with a kick net, or Petite Ponar dredge. During the field investigation, qualitative observations of habitat, surrounding land use, potential pollution sources, and the presence of other aquatic biota are recorded, although these observations are not used to calculate the final bioassessment rating. At each site, the entire sample is sieved (using standard #30 mesh), put into wide-mouth jars, and preserved with 5 to 10% formalin (to 20% in cases of excessive organic loading).

Sample Sorting & Identification

In the laboratory, subsamples of 100 individuals are collected by first evenly distributing the composited sample in a light-colored pan marked with grids of equal sizes. All organisms are then removed from each randomly selected grid until a total of at least 100 organisms is obtained. The individuals from the subsample are identified to the lowest possible taxonomic level, using 7 to 30X stereozoom and 40 to 400X compound magnification. A comprehensive collection of taxonomic keys and other references, including functional (or niche) descriptions and pollution tolerance classifications for most species, is maintained in the laboratory. An indexed list of these is given in the Laboratory SOP [11]. Consultation with other scientists in the field, particularly from agencies involved in similiar programs (eg. New York Department of Environmental Conservation, USGS, USEPA), provides added assistance and confirmation, when needed.

Data Analysis

Biological impairment may be caused by several major factors such as organic enrichment, habitat degradation, or toxicological effects. It may be manifested in several aspects of the benthic macroinvertebrate community; these include absence of pollution-sensitive taxa, especially the EPT group, i.e. Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies); excessive dominance of pollution-tolerant taxa such as Chironomidae (midges) and Oligochaeta (worms); low overall taxa numbers, or other perceptible differences in community structure relative to a reference condition.

The data analysis is an important part of the RBP protocol, developed under USEPA auspices as an expedient and cost-effective monitoring tool. It recognizes the use of community metrics and the pollution indicator concept. "Biometrics" measure different components of community structure, including

population and functional parameters, each with a different range of sensitivity to pollution stresses [2, 5]. The use of a variety of biometrics assures a more robust or valid assessment; therefore, an anomaly in any one metric is less likely to invalidate the study findings. The results are integrated through common scoring criteria, derived from an established comparable database, to determine a final numerical rating and consequent biological condition category (see Table 1, p. 21 immediately following MAPS section). This provides the analyst with an easily communicated evaluation of relative impairment, referred to in this report as the "bioassessment rating." For RBP II protocols, results are based on 100 organism sub-samples, and scoring criteria are validated for family level taxonomy, giving three final rating categories (non-impaired, moderately impaired, and severely impaired).

The biometrics employed are modified from RBP II methods [2], having been statistically validated for New Jersey based upon data from 200 New Jersey stream sites. The final numerical rating is referred to as the "New Jersey impairment score" (NJIS) [12]. The scoring criteria and rating categories are presented in Table 1. The metrics from which the NJIS is derived are explained below:

1. **Total Taxa or Taxa Richness** (# families) — an index of community diversity; the number usually increases with increasing water or habitat quality.
2. **Percent Contribution of the Dominant Family** (to the total # families) — dominance by relatively few species/families would indicate environmental stress.
3. **# EPT Families** — the number of families represented within the orders Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies), which are generally pollution-sensitive.
4. **Percent EPT** (of the total # individuals) — would increase with increasing water quality.
5. **Hilsenhoff (Family) Biotic Index** — tolerance values of 0 - 10 assigned to individual families increase as water quality decreases; these values are used in the formula for calculating the Biotic Index which summarizes the overall pollution tolerance of the entire benthic macroinvertebrate community with a single value.

Comparison with 1996 Results

In evaluating the 2001 Lower Delaware Region data against that for 1996, a significant improvement or decline is considered to have occurred if the difference in NJIS scores has changed the bioassessment rating. A complete list of site-by-site comparisons is presented in Table 2, where a (+) indicates a significant improvement, a (–) indicates a significant decline, and a (/) indicates no change in rating; a slash may have a (+) or a (-) indicating that the score improved or declined, but the bioassessment rating did not.

Morphological Abnormalities

Occasionally, morphological abnormalities have been found in individual macroinvertebrates recovered in our AMNET collections. These deformities have been most readily detected in the Chironomidae (midges), where they occur primarily in the head appendages (antennae) and mouth parts (mentum and mandibles). While the incidence has been most frequent in the chironomids (especially those species categorized as detritivores, herbivores or periphyton feeders), abnormalities have also been observed in

individuals of other taxonomic groups. Although this is not a factor in the NJIS data analysis, such features are noted, as they may signify possible contaminants or stressful conditions in the respective drainages.

In the course of identification, chironomid larvae are examined for abnormalities; abnormalities in the other taxanomic groups are noted when observed. These results are summarized by sample site in Table 3. For Chironomidae, the data are displayed as (# of chironomids with abnormalities / # of chironomids examined). For all other taxa, just the number of individuals with abnormalities is presented. Deformities found in greater than five percent (>5%) of chironomids examined are considered to be significant (personal communication — R. Bode, New York Department of Environmental Conservation; J. Kurtz, NJDEP). Abnormalities are considered to be "chronic" at a particular station if that site yields >5% abnormalities in both the earlier and later sampling periods (see Table 3). Photographic examples of abnormalities in midge larvae and amphipods (scuds), are presented in Appendix B. AMNET sites found with significant and chronic abnormalities in chironomids are also indicated in Maps 2-13.

SUPPLEMENTAL ANALYSIS / EVALUATION

Habitat Assessment

The physical attributes of habitat play an integral role in the health of the macroinvertebrate community. Where stations are physically comparable, detected impacts can be attributed to water quality factors; however, habitat degradation alone can account for biological impairment in a stream [2]. Parameters evaluated included in-stream substrate, channel morphology, bank structural features, and riparian vegetation. The area evaluated included the sample site and its immediate surroundings (usually within a 100 – 200 foot radius).

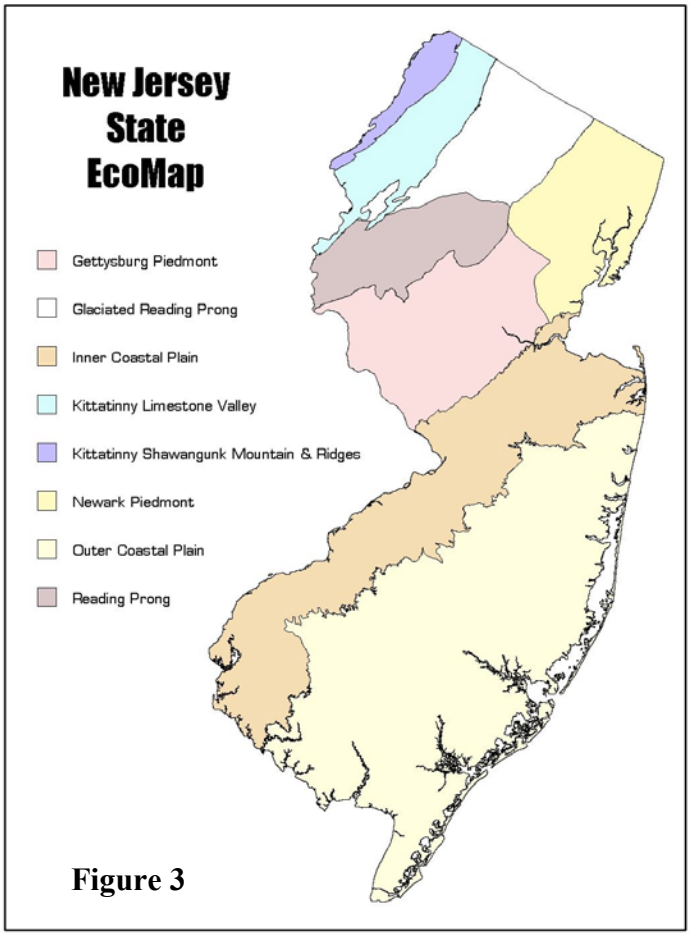

Figure 3

The qualitative habitat assessment involves four condition categories, rating each parameter as optimal, suboptimal, marginal or poor, based on recently revised USEPA criteria [4]. Habitat assessments may be temporarily downgraded by adverse weather conditions, such as excessive rainfall or prolonged drought. It should also be noted that habitat assessments are performed independently of the macroinvertebrate community analysis; thus, they do not factor into the final impairment score, but are used primarily as supplementary information. For each parameter, the range of conditions and the numerical rating scale are presented for high and low gradient streams, respectively, in Table 4. Comparisons of these final scores against the respective NJIS scores and relative trends are shown in Appendix C.

All streams in the northern portion of New Jersey, i.e. the Piedmont, Valley / Ridge and Highlands regions,

are considered to be “high gradient” streams, having substrates of rock and cobble of various sizes, and with relatively swift flow. Those in the Coastal Plain region of southern New Jersey are considered as “low gradient” streams, having slower flow and more homogeneous substrates, primarily of sand or gravel and finer sediments. These major physiographic subregions (or "ecoregions") are illustrated in the New Jersey State EcoMap, shown in Figure 3 [13]. The transition from high gradient to low gradient is marked by the “Fall Line”, a geologic / topographic feature, which bisects New Jersey in a southwest – northeasterly direction from the Delaware River at Trenton through the lower Raritan River near New Brunswick; this divides the Piedmont and Coastal Plain ecoregions. The trajectory of the Fall Line is superficially traced by the lower Assunpink Creek, at the southwest juncture and its alignment with Lawrence Brook to the northeast in the Raritan River drainage. The Lower Delaware Water Region is situated south of the Fall Line, encompassing largely low gradient terrain; it lies primarily in the Inner Coastal Plain Ecoregion, with a portion in the Outer Coastal Plain.

Sediment Toxicity Testing

To supplement the results of the benthic macroinvertebrate sampling, the BFBM from 1996 to 2001 performed acute sediment toxicity tests on several AMNET sites that exhibited “severely impaired” biological conditions in the earlier survey of the present Lower Delaware Water Region. The methods conformed to standardized USEPA protocols as reflected in our laboratory Standard Operating Procedures [11]. The amphipod, *Hyalella azteca*, was used as the test organism in the 10-day tests that measured effects on both survival and growth. Results from the test sites were compared to the responses observed in reference sediment from non-impaired AMNET sites that were similar in morphology or habitat features. The AMNET sites tested have been in WMA's 17, 18 and 19 (Maps 5-13). The test sites, and corresponding reference sites are as follows:

WMA	Test Site	Reference Site	Test site Map #	Ref site Map #
19	AN0153 Burrs Mill Brook	AN0154 Burrs Mill Brook	5	5
19	AN0184 S. Branch Pennsauken Ck.	AN0682 S. Branch Raccoon Ck	6	9
18	AN0692 Nichomus Run	AN0682 S. Branch Raccoon Ck	10	9
18	AN0694 Major Run	AN0682 S. Branch Raccoon Ck	10	9
17	AN0711 Parsonage Run	AN0709 Cohansey River	11	11
19	AN0150 Budds Run	AN0154 Burrs Mill Brook	4	5
19	AN0151 N. Branch Rancocas Ck.	AN0154 Burrs Mill Brook	4	5
19	AN0166 Barton Run	AN0154 Burrs Mill Brook	5	5
19	AN0168 Haynes Creek	AN0154 Burrs Mill Brook	5	5
19	AN0180 N. Branch Pennsauken Ck.	AN0154 Burrs Mill Brook	6	5
19	AN0184 S. Branch Pennsauken Ck.	AN0154 Burrs Mill Brook	6	5
19	AN0143 N. Branch Rancocas Ck.	AN0145 Mt. Misery Brook	4	4

RESULTS AND DISCUSSION

The bioassessment ratings for each of the monitoring stations are best estimates of the in-stream biological impairment based upon the data obtained in the current AMNET survey. Detailed taxonomic and statistical data, bioassessment ratings, habitat assessment scores and observations for each AMNET site are given in Table 2 and Appendix D.

Figure 4 depicts the overall results for the current study in the Lower Delaware Water Region. Of the 197 monitoring stations sampled during this study period, 31 or **15.7%** were rated as "**non-impaired**", 139 or **70.6%** were rated as "**moderately impaired**", and 27 or **13.7%** were rated as "**severely impaired**" (see Table 2).

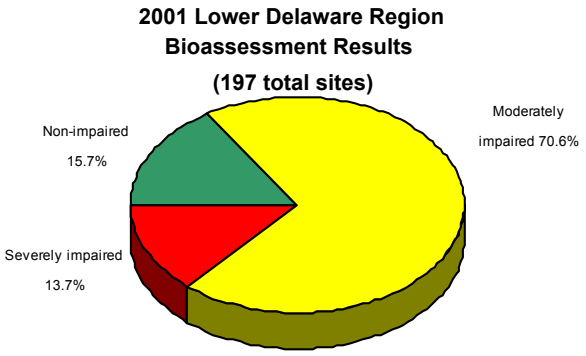

Figure 4

Figure 5 (a, b) compares the results obtained from the 109 AMNET sites included in the original lower Delaware study area (1995/96 study period) [7], which were sampled again during the current (2000/01) study period (see "Site Selection" p.3, Table 2). This includes the majority of sites listed in Table 2 from AN0653 to AN0764. This area presently encompasses WMA#17 and the southwestern portion (approximately two-thirds) of WMA#18. While the results for 2000/01 were similar to those for 1995/96, for the current sampling period the number of non impaired sites was somewhat higher, and the numbers of moderately and severely impaired sites were slightly lower.

Lower Delaware Region
Lower Tidal Portion
WMA # 17 and 18 (part)
(109 total sites)

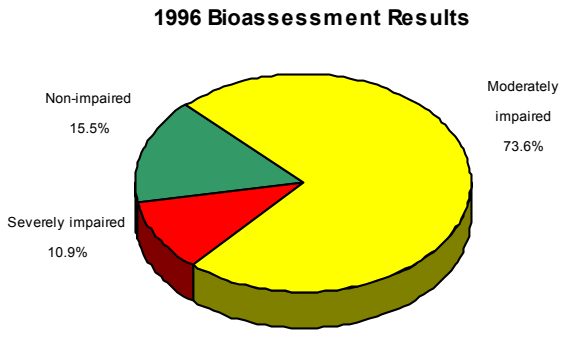

Figure 5 a

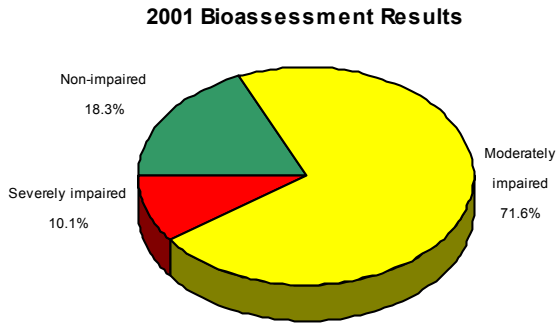

Figure 5 b

Figure 6 (a, b, c) compares the results obtained from the upper tidal portion of the Lower Delaware Water Region originally sampled as part of the upper Delaware study area; this includes the 72 AMNET sites sampled initially in 1992/93, which were sampled again in 1997/98 during the time that the present Water

Region boundaries were established [8], and in 2000/01 (see "Site Selection" p.3, Table 2). It includes most of those sites listed in Table 2 from AN0119 to AN0191. This area presently encompasses WMA#20, 19 and the northeastern portion (approximately one-third) of WMA#18. Land use in this area is predominantly agricultural or urban/industrial. Considerably fewer severely impaired sites were found during the current and intermediate study periods than during the original (1992/93) study period, while the number of moderately impaired sites was considerably higher. The number of nonimpaired sites was lowest during the intermediate (1997/98) study period.

Lower Delaware Region
Upper Tidal Portion
WMA # 18 (part), 19 and 20
(72 total sites)

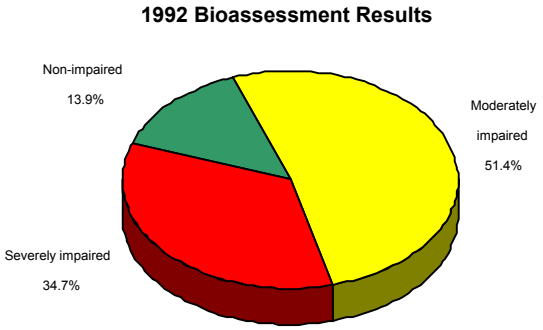

Figure 6 a

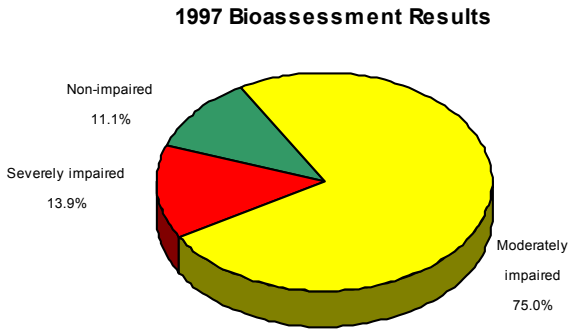

Figure 6 b

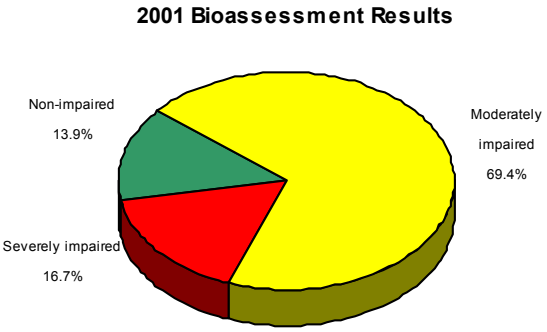

Figure 6 c

Figure 7 displays the percentage of change in rating among the 181 AMNET sites in the present Lower Delaware Water Region that were sampled during the original (1992/93 or 1995/96) study period [5], and sampled again during the current (2000/01) study period (see "Site Selection" p.3, Table 2). The green indicates sites that have undergone a positive change, yellow indicates no change, and red indicates a negative change. Positive change includes both severe to moderate, and moderate to nonimpairment; negative change includes both nonimpairment to moderate and moderate to severe impairment. (see Table 2).

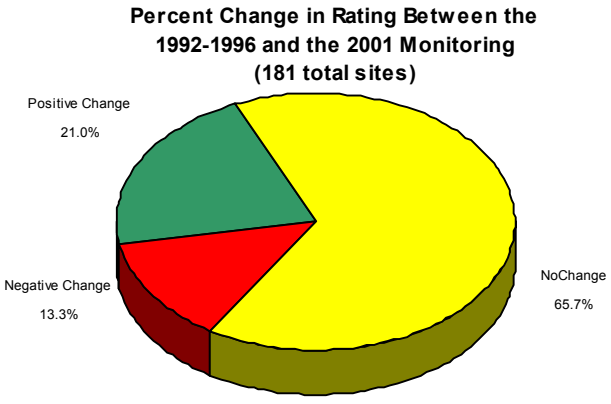

Figure 7

The current AMNET survey revealed considerably fewer nonimpaired sites in the Lower Delaware Water Region than in the other major New Jersey watersheds (15.7% as compared to about 35% or greater in the Atlantic and other Water Regions)[8,14]. The Lower Delaware watershed lies primarily in the Inner Coastal Plain physiographic subregion (or "ecoregion"), which encompasses the highly urban/industrial and agricultural corridor in southwestern New Jersey adjacent to the tidal Delaware River. Levels of benthic community impairment (or lack of it) have been statistically related to different physiographic land types, corresponding land uses and other anthropogenic factors, on a statewide scale, using data generated from the AMNET program [15]. The table below presents the proportion of nonimpaired, moderately impaired and severely impaired AMNET sites, based on the current data, in each of the Lower Delaware Water Management Areas.

WMA's	Sub-basins	Nonimpaired	Moderately impaired	Severely impaired	Total sites
20	upper tidal Delaware River tributaries	2 (6.4%)	26 (84.0%)	3 (9.6%)	31
19	Rancocas Creek system	9 (22.5%)	27 (67.5%)	4 (10.0%)	40
18	lower tidal Delaware River tributaries	1 (1.9%)	37 (71.2%)	14 (26.9%)	52
17	Delaware Bay tributaries	19 (25.7%)	49 (66.2%)	6 (8.1%)	74
	Totals:	31 (15.7%)	139 (70.6%)	27 (13.7%)	197

Significantly, 90% (28 of 31) of the nonimpaired AMNET sites in the Lower Delaware Water Region are situated in the sub-basins of several Delaware Bay tributaries (WMA#17) and the Rancocas Creek (WMA#19). These drainages border on, or have upper stream reaches in, Pinelands and less developed areas. The other sub-basins, which exhibited a higher percentage of impaired sites, are situated in areas which are predominately agricultural (WMA#20) or urban/industrial (WMA#18). Figure 8 illustrates the proportions of nonimpaired, moderately and severely impaired AMNET sites in each WMA of the Lower Delaware Water Region.

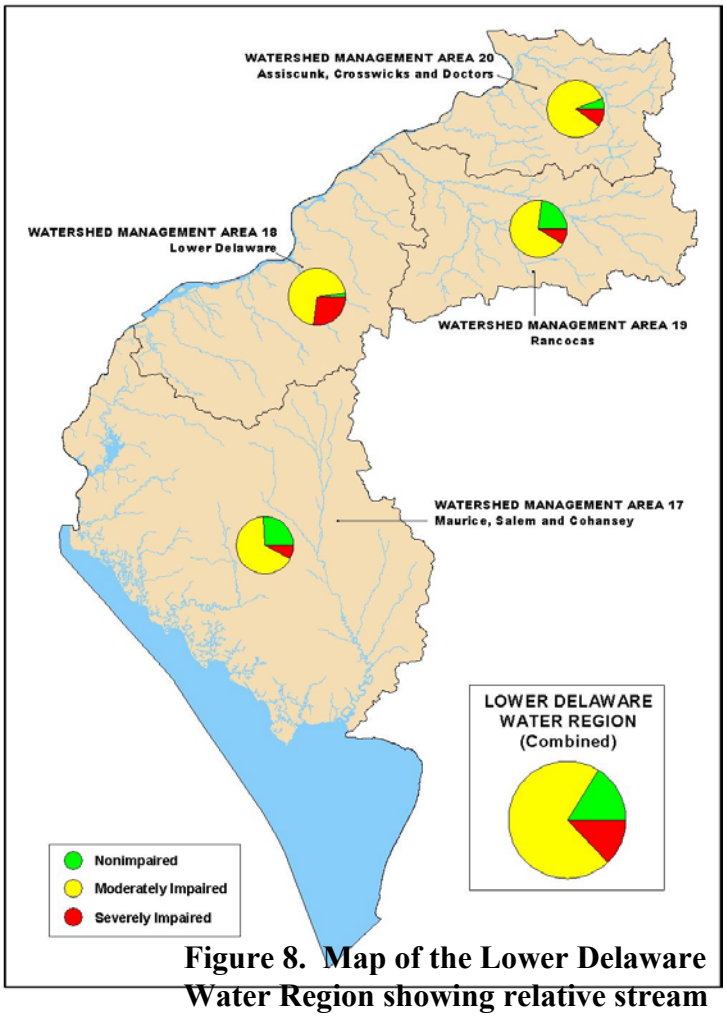

Figure 8. Map of the Lower Delaware Water Region showing relative stream impairment levels in each Watershed Management Area.

Macroinvertebrate Abnormalities

A listing of all AMNET sites in the Lower Delaware Water Region exhibiting macroinvertebrate abnormalities is presented in Table 3. Also listed in Table 3 are numbers of "significant" and "chronic" abnormalities in the Chironomidae only. Detailed pictorial examples of actual deformities are shown in Appendix B. Those sites having "significant"

abnormalities (greater than 5%) during the current sampling period are shown in Maps 2-13. From the current sampling of 197 sites, 47 (23.9%) contained organisms with abnormalities. Of these, ten (20.8%) were found to have significant levels; four of these (AN0162, 0667, 0680, 0688) exhibited chronic abnormalities (Table 3). Notably, five of the ten sites with "significant" abnormalities, including three of the four with "chronic" abnormalities, are located in Water Management Area #18, which encompasses several tributaries to the lower Delaware River. These sites included #'s AN0182 (South Branch Pennsauken Creek), AN0667 (Woodbury Creek-chronic), AN0675 (Still Run), AN0680 (Raccoon Creek – chronic) and AN0688 (Oldmans Creek – chronic). Abnormalities found at site # AN0162 (Southwest Branch Rancocas Creek) were designated as chronic based on 1997/98 and 2000/01 sampling results; the other sites with chronic abnormalities (in WMA# 18) were sampled in 1995/96 and 2000/01 (see Table 3, Appendix D). The occurrence of chronic abnormalities at a given site signifies possible presence of chronic environmental stressor(s) (eg. from toxicants) in the vicinity, therefore indicating that these areas should be more intensely investigated.

Habitat Assessment vs. Biological Condition

Habitat assessment scores and corresponding NJIS scores (from Appendix D) are each plotted to show general trends along a spatial gradient (Appendix C). In this scenario, closely parallel trend lines would suggest a direct relationship or positive correlation between the two parameters. Conversely, in cases of biological impairment, declining NJIS scores, relative to habitat scores (i.e. divergent lines), would indicate that water quality or other physiochemical factors may be involved. In some situations, a non-impaired biological community may be found where habitat appears to be less than optimal. Sampling stations are arranged (as they are numbered) in approximate upstream-to-downstream order within each WMA (#'s 17 to 20) and, for the entire Lower Delaware Water Region, in a north to south sequence, in the following composite order: 20, 19, 18, and 17 (Appendix C).

In the Lower Delaware Water region habitat assessment scores, are generally favorable, with the trend line rising from "suboptimal" to borderline "optimal" levels; however, a clustering of lower scores to the "marginal" range is seen toward the middle portion of the region. The trend for NJIS scores is also positive, but within the "moderately impaired" range throughout, and with a cluster of lower scores to the severely impaired range again in the middle portion of the region (Appendix C – "Habitat vs NJIS Combined"). Closely parallel lines suggest that stream biotic integrity is largely associated with habitat quality, although other water quality factors may have significant influence, especially in the middle portion of the region. The overall trend for NJIS scores was likely weighted (lowered) by the clustering of moderately to severely impaired sites in the middle area, from the lower stations of WMA #19 through those in the upper half of WMA #18.

Among the Watershed management Areas, highest scores for both NJIS and habitat are seen in WMA # 17 (Delaware bay tributaries). Lowest scores are seen in WMA # 18 (lower tidal Delaware River tributaries), particularly in the northeastern portion (Appendix C). An improvement is seen, however, toward the southwestern portion of WMA #18, as the habitat score trend rises to optimum levels, while the NJIS trend rises somewhat to moderately impaired. In WMA # 19 (Rancocas Creek watershed), higher scores are seen in the upper (eastern) portions, with the majority of habitat scores at optimal and NJIS scores at borderline nonimpaired levels; both trends show a general decrease toward the lower (western) portion of the watershed (as indicated by the downward sloping trend lines for WMA # 19, Appendix C). In WMA # 20 (upper tidal Delaware River tributaries), habitat scores are seen at suboptimal levels throughout; the NJIS trend, in the lower moderately impaired range throughout, rises only slightly toward the western portion of the watershed (Appendix C).

Sediment Toxicity Test Results

Among the twelve test sites, acute toxicity (as measured by mortality) was demonstrated only in site AN0143 (Rancocas Creek North Branch). Based on statistical comparisons, the survival responses observed of all the other sites was not significantly different from responses observed in the reference station. Two tests, AN0153 (Burrs Mill Brook, tributary to Rancocas Creek South Branch) and AN0711 (Parsonage Run, tributary to Cohansey River) exhibited chronic toxicity, as measured by the growth of test organisms. Site AN0143 had no surviving organisms; therefore, the growth test for chronic toxicity could not be performed. Sediment chemistry tests performed on samples from this site revealed concentrations of heavy metals, especially lead, at higher than normal environmental levels [16]. Growth responses (average dry weights) at all other sites, were not significantly different from those of the control, thus indicating no chronic effects in this regard over the ten-day test period. For the sites that indicated no acute toxicity or no adverse growth response, the severe impairment levels observed are likely due to other causes, such as habitat alteration or various physiochemical factors. This also does not preclude the presence of toxic substances at low (but chronically toxic) levels undetectable by the present methodology, or the possibility that toxicants may have been introduced into the stream episodically rather than continuously. Therefore, these study results indicate the need for supplemental monitoring at these sites for target analytes such as nitrogen and phosphorus, pesticides, or other suspected toxic compounds. Results are summarized in the table below.

			Results	
WMA	**Test Site**	**Reference Site**	**Survival**	**Growth**
19	AN0153 Burrs Mill Brook	AN0154 Burrs Mill Brook	NMAT	SigDiff
19	AN0184 S. Branch Pennsauken Ck.	AN0682 S. Branch Raccoon Ck	NMAT	NMAT
18	AN0692 Nichomus Run	AN0682 S. Branch Raccoon Ck	NMAT	NMAT
18	AN0694 Major Run	AN0682 S. Branch Raccoon Ck	NMAT	NMAT
17	AN0711 Parsonage Run	AN0709 Cohansey River	NMAT	SigDiff
19	AN0150 Budds Run	AN0154 Burrs Mill Brook	NMAT	NMAT
19	AN0151 N. Branch Rancocas Ck.	AN0154 Burrs Mill Brook	NMAT	NMAT
19	AN0166 Barton Run	AN0154 Burrs Mill Brook	NMAT	NMAT
19	AN0168 Haynes Creek	AN0154 Burrs Mill Brook	NMAT	NMAT
19	AN0180 N. Branch Pennsauken Ck.	AN0154 Burrs Mill Brook	NMAT	NMAT
19	AN0184 S. Branch Pennsauken Ck.	AN0154 Burrs Mill Brook	NMAT	NMAT
19	AN0143 N. Branch Rancocas Ck.	AN0145 Mt. Misery Brook	SigDiff	----

NMAT = No Measurable Acute Toxicity
SigDiff = Significant Difference

Causes and Conditions of Impairment

Biological impairment, as determined through RBP analysis, is manifested by alterations or differences in macroinvertebrate community structure, compared to a reference or "ideal" condition. In an impaired situation, species of pollution-tolerant groups (such as worms and midges) tend to dominate over pollution-intolerant forms (e.g. mayflies, stoneflies, etc.), with an overall depression in species diversity. Such discrepancies are typically due to degraded instream environmental conditions, which may be caused by various human activities or land uses and, in some cases, by natural features or events. Environmental factors that may adversely affect stream biology, including both chemical and physical parameters, are listed below:

1. Degraded habitat (see Table 4)
    a. lack of stable and varied substrate
    b. lack of bank vegetation/canopy (= poor bank stability, lack of shade)
    c. excessive sedimentation (= poor substrate and water clarity)
    d. lack of streamflow (= low water level, low dissolved oxygen, possible sedimentation, undesirable vegetation)
2. Eutrophication (= excessive nutrients promoting undesirable vegetation or algal blooms, and increased turbidity)
3. Domestic (organic) waste (promotes hypoxia, turbidity, eutrophication)
4. Physiochemical water quality factors which, alone or in combination, can have adverse effects
    a. higher than normal temperature
    b. excessive turbidity
    c. lack of dissolved oxygen
    d. presence of toxicants (in various chemical forms)

Inter-related human activities or practices, land uses, and natural features or events contributing to degraded stream quality:

1. Deforestation/development/construction (largely via runoff from non-point sources)
2. Urbanization/industrialization (largely via runoff from non-point sources)
3. Agricultural operations (largely via runoff from non-point sources)
4. Municipal or industrial wastewater discharge (from point source)
5. Artificial channelization or habitat alteration
6. Upstream impoundment, lake or pond
7. Drought conditions

As reflected in the present study results, human land uses and practices, superimposed on the undisturbed physical terrain, play a major role in controlling the degree of pollution or degradation in a stream system [15].

The following section discusses the AMNET results within each Water Management Area of the Lower Delaware Water Region.

Evaluation by WMA

Watershed Management Area #17 includes a total of 74 AMNET sites in the Maurice, Salem, and Cohansey River watersheds (see Maps 10-13). Figure 9 shows the current site rating summaries: 25.7% (nineteen sites) nonimpaired, 66.2% (49 sites) moderately impaired and 8.1% (six sites) severely impaired. Figure 10 depicts the results obtained from 73 of the same sites sampled during the earlier (1996) survey [7]. Comparing the current results to the earlier results, a significant improvement is seen at thirteen sites and a significant decline, at ten sites (see Table 2). The number of non-impaired sites is slightly higher than the earlier data, and the number of moderately impaired sites is slightly decreased. The number of severely impaired sites remains the same. The trend for NJIS scores is upward from moderately impaired to borderline nonimpaired levels and, for habitat scores, upward from high suboptimal to optimal levels (Appendix C). Abnormalities were found in significant numbers at two sites (both on Maurice River tributaries, Cumberland County), while fifteen additional sites exhibited lower numbers of abnormalities in chironomid larvae and other invertebrate families (see Maps 10-13, Table 3). The table below presents a synopsis AMNET data for WMA #17; AMNET site locations and bioassessment ratings within WMA # 17 are shown in Figure 11.

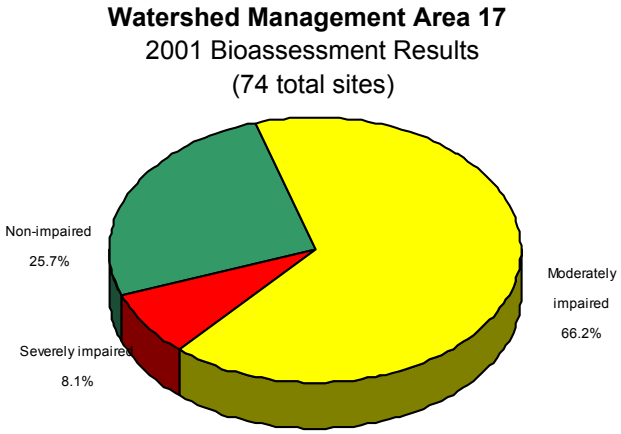

Figure 9

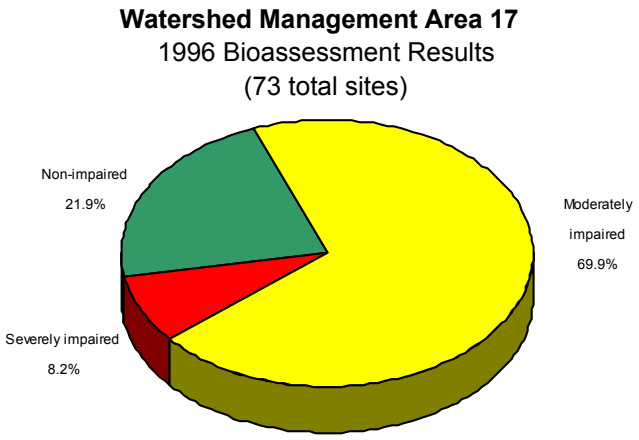

Figure 10

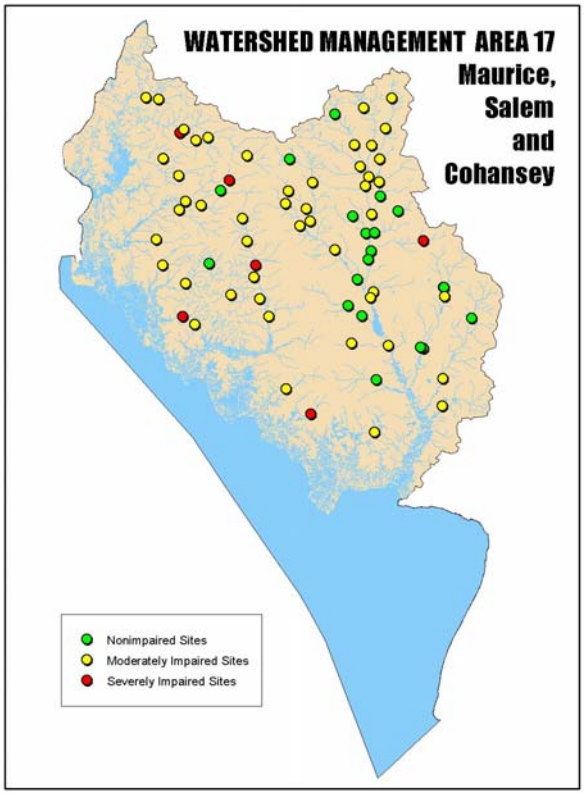

Figure 11

WMA # 17 Combined Results Table

NJIS Rating	1995/96		2000/2001			Habitat Assessment	2000/2001	
Non-Impaired	16	21.9%	19	25.7%		Optimal	38	51.4%
Moderate	51	69.9%	49	66.2%		Suboptimal	34	45.9%
Severe	6	8.2%	6	8.1%		Marginal	2	2.7%
						Poor	---	------
Total sites	73		74				74	

Watershed Management Area #18 includes a total of 52 AMNET sites in the Pennsauken creek, Cooper River, Big Timber, Mantua, and Raccoon creeks watersheds (see Maps 6-9). Figure 12 shows the current site rating summaries: 1.9% (one site) nonimpaired, 71.2% (37 sites) moderately impaired and 26.9% (14 sites) severely impaired. The northern portion of WMA #18 was initially sampled as part of the first (1993) upper Delaware AMNET survey [8], while the southern portion was included in the original (1996) lower Delaware survey [7]. Figure 13 depicts the results obtained from 52 of the same sites sampled during the earlier (1993, 1996) surveys. Comparing the current (2001) results to the earlier (1993/96) results, a significant improvement is apparent at eleven sites while eight sites exhibited a decline in impairment rating (see Table 2). The percentage of moderately impaired sites shows an increase, and the number of severely impaired sites, a decrease (Figures 8 & 9). The majority (61.5%) of habitat scores are in the sub-optimal range. As compared to the other WMA's, there is a somewhat greater drop in NJIS scores relative to that of habitat scores (Appendix C); this indicates that physiochemical conditions, as well as habitat degradation, are contributing to biological impairment. Abnormalities were found in significant numbers at five sites (one each on Raccoon Creek, Oldmans Creek, Still Run, Woodbury Creek and Pennsauken Creek South Branch, all lower Delaware River tributaries), while nine additional sites exhibited lower numbers of abnormalities in chironomid larvae and other invertebrate families (see Maps 6-9, Table 3). The table below presents a synopsis of AMNET data for WMA #18; AMNET site locations and bioassessment ratings within WMA # 18 are shown in Figure 14.

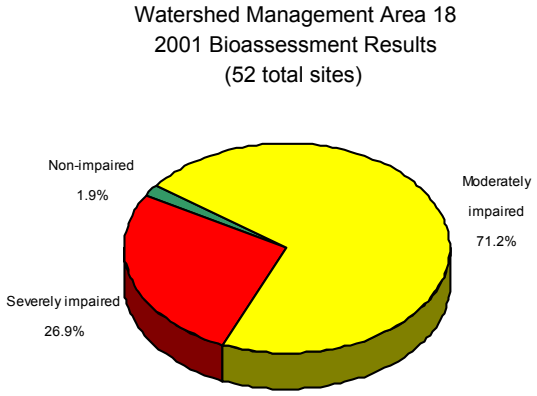

Figure 12

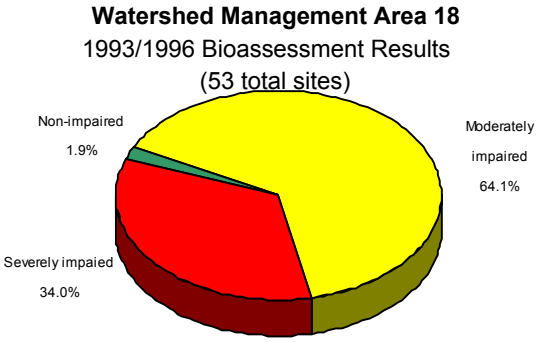

Figure 13

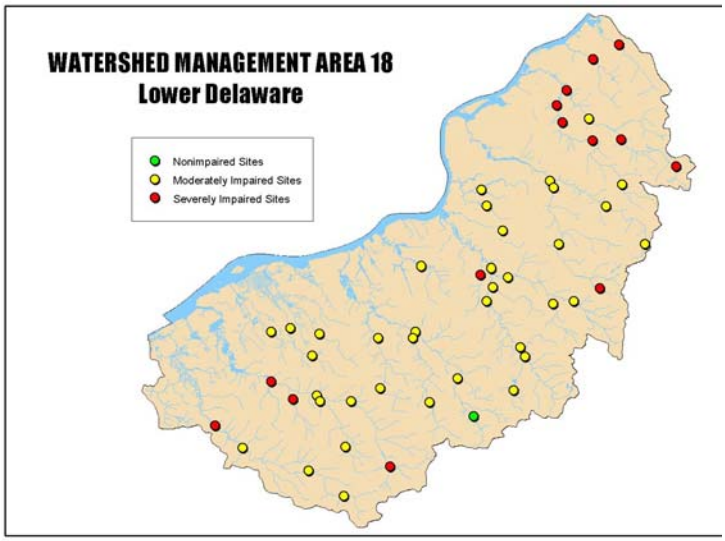

Figure 14

WMA # 18 Combined Results Table

NJIS Rating	1993/96		2000/2001			Habitat Assessment	2000/2001	
Non-Impaired	1	1.9%	1	1.9%		Optimal	9	17.3%
Moderate	34	64.1%	37	71.2%		Suboptimal	32	61.5%
Severe	18	34.0%	14	26.9%		Marginal	11	21.2%
						Poor	---	------
Total sites	53		52				52	

Watershed Management Area #19 includes a total of 40 AMNET sites in the Rancocas Creek watershed (see Maps 4 and 5). Figure 15 shows the current site rating summaries: 22.5% (nine sites) nonimpaired, 67.5% (27 sites) moderately impaired and 10.0% (four sites) severely impaired. WMA # 19 was initially sampled as part of the first (1993) upper Delaware AMNET survey [8]. Figure 16 depicts the results obtained from 33 of the same sites sampled during the earlier survey. Comparing the current to the earlier results, a significant improvement is seen at eight sites, and a significant decline, at four sites (see Table 2). The number of moderately impaired sites is increased over that of the earlier sampling, and the number of severely impaired sites is reduced (see Table 2); the number of non-impaired sites remains the same. The majority of sites (57.5%) received a sub-optimal habitat score with 40.0% receiving an optimal score and only one site (2.5%), a marginal score. The trend for both NJIS and habitat scores declines somewhat from higher levels at upstream sites to moderately impaired / suboptimal levels at downstream sites (Appendix C). Abnormalities were found in significant numbers at two sites (one on Rancocas Creek Southwest Branch and one on Parkers Creek tributary to mainstem), while eight additional sites exhibited lower numbers of abnormalities in chironomid larvae and other invertebrate families (see Maps 4-5, Table 3). The table below presents a synopsis of AMNET data for WMA #19; AMNET site locations and bioassessment ratings within WMA # 19 are shown in Figure 17.

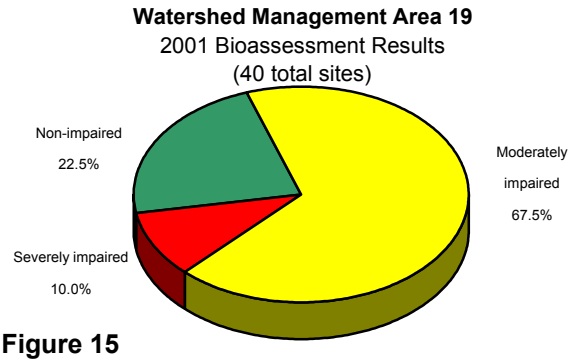

Figure 15

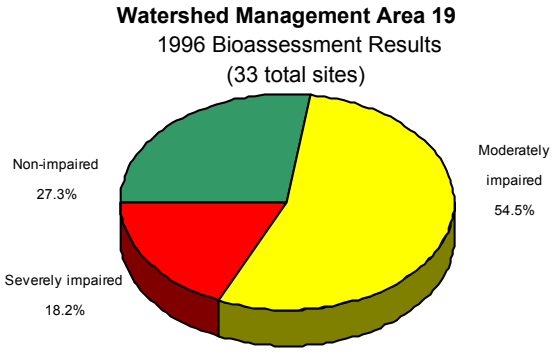

Figure 16

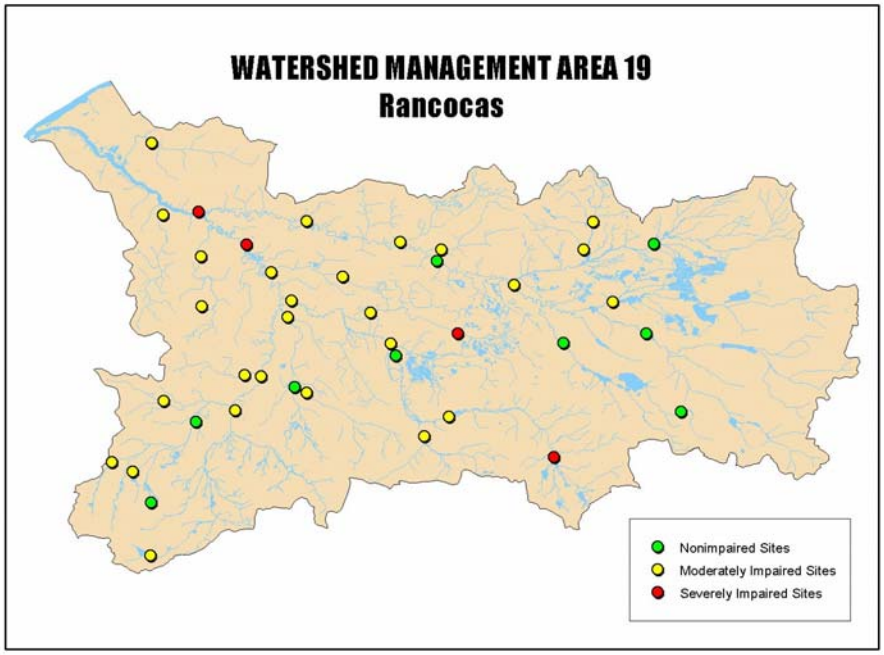

Figure 17

WMA # 19 Combined Results Table

NJIS Rating	1995/96		2000/2001			Habitat Assessment	2000/2001	
Non-Impaired	9	27.3%	9	22.5%		Optimal	16	40.0%
Moderate	18	54.5%	27	67.5%		Suboptimal	23	57.5%
Severe	6	18.2%	4	10.0%		Marginal	1	2.5%
						Poor	---	------
Total sites	33		40				40	

Watershed Management Area #20 includes a total of 31 AMNET sites in Assiscunk, Crosswicks, and Doctors Creek watersheds (see Maps 2 and 3). Figure 18 shows the current site rating summaries: 6.4% (two sites) nonimpaired, 83.9% (26 sites) moderately impaired, and 9.7% (three sites) severely impaired. WMA # 20 was initially sampled as part of the first upper Delaware AMNET survey [8]. Figure 19 depicts the results of 24 of the same sites sampled during the earlier survey. Comparing the current results to the earlier results, a significant improvement is seen at six of the sites, with a decline seen at two sites (see Table 2); the ratings of the other sites remained the same. The trend for both NJIS and habitat scores is relatively constant, at suboptimal and moderately impaired levels, respectively (Appendix C). Abnormalities were found to be significant at two sites (one each on Back Creek and South Run, tributaries to upper and lower Crosswicks Creek, resp.), while five additional sites exhibited lower numbers of abnormalities in chironomid larvae and other invertebrate families (see Maps 2-3, Table 3). The table below presents a synopsis of AMNET data for WMA #20; AMNET site locations and bioassessment ratings within WMA # 20 are shown in Figure 20.

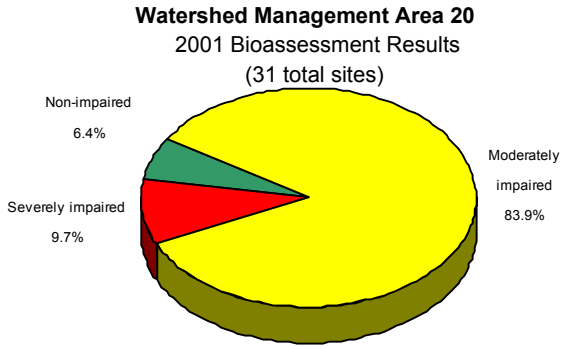

Figure 18

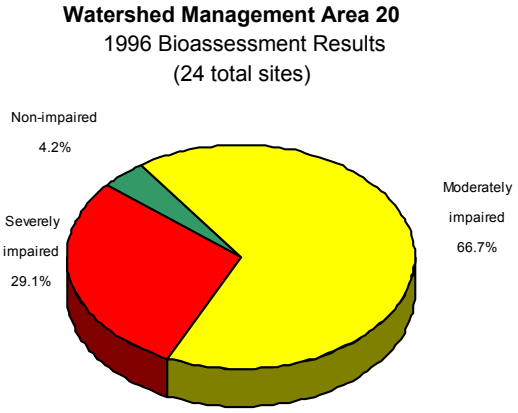

Figure 19

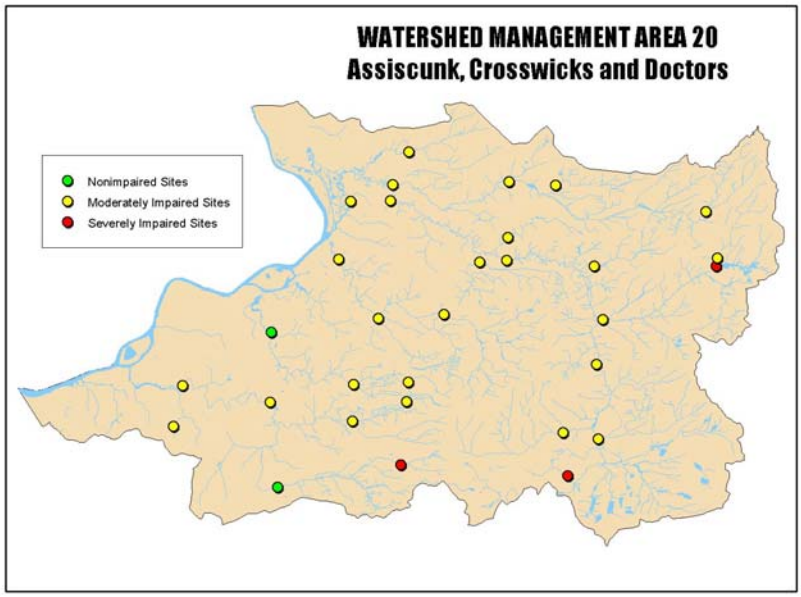

Figure 20

WMA # 20 Combined Results Table

NJIS Rating	1995/96		2000/2001			Habitat Assessment	2000/2001	
Non-Impaired	1	4.2%	2	6.4%		Optimal	1	3.2%
Moderate	16	66.7%	26	83.9%		Suboptimal	27	87.1%
Severe	7	29.1%	3	9.7%		Marginal	3	9.7%
						Poor	---	------
Total sites	24		31				31	

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MAPS

2001 Lower Delaware Region AMNET Study
WMA's 17, 18, 19 & 20

AMNET site locations and their respective biological ratings, for each major sub-basin, are shown in maps 1-13. Also identified are sites that exhibited significant and chronic macroinvertebrate abnormalities.

TABLE 1

BIOLOGICAL CRITERIA FOR SCREENING WATER QUALITY IN NEW JERSEY FRESHWATER STREAMS*

Scoring Criteria for Rapid Bioassessments[1]

Biometrics	6	3	0
Taxa Richness (total Families)	>10	10-5	4-0
E+P+T Index[2] (EPT)	>5	5-3	2-0
Percent Dominance[3] (%CDF)	<40	40-60	>60
Percent EPT[4] (%EPT)	>35	35-10	<10
Modified Family Biotic Index[5] (FBI)	<5	5-7	>7

NOTE: The previous AMNET reports (1994-1996) contained incorrect number ranges for Modified Family Biotic Index. Using the incorrect numbers could lower the biological assessment on 9% of the sites evaluated. The numbers now presented in this table are correct and scores from previous reports were calculated using these ranges. No incorrect biological assessments exist in the previous reports.

Biological Assessment	Total Score
Non-impaired	24-30
Moderately Impaired	9-21
Severely Impaired	0-6

Attributes

Non-impaired: benthic community comparable to other undisturbed streams within the region; community characterized by a maximum taxa richness, balanced taxa groups, and good representation of intolerant individuals.

Moderately Impaired: macroinvertebrate richness reduced, in particular EPT taxa; reduced community balance and numbers of intolerant taxa.

Severely Impaired: benthic community dramatically different from those in less impaired situations; macroinvertebrates dominated by a few taxa, but with many individuals; only tolerant individuals present.

*
1 From Kurtenbach, 1991, based on RBP II protocols.
2 Follows RBP Protocol II; using 100 organism subsample, family level taxonomy
3 Ephemeroptera, Plecoptra, Trichoptera
4 % contribution of the dominant family
5 Including the hydropsychid family
Also known as the Hilsenhoff Biotic Index

Table 2

Comparative Scores / Ratings (see notes)

Watershed Management Areas 18 (part), 19 and 20

Station	NJ Impairment Score			Change in Rating	Habitat Score	WMA	Station	NJ Impairment Score			Change in Rating	Habitat Score	WMA
	92 / 93	97 / 98	00 / 01					92 / 93	97 / 98	00 / 01			
119	6	9	18	+	156	20	153	3	21	6	/+	164	19
119A		3	3	-	117	20	154	30	21	15	—	171	19
120	0	15	12	+	120	20	155	15	12	24	+	159	19
121	9	21	21	/+	150	20	156	6	18	18	+	158	19
122	15	6	6	—	115	20	157	12	15	18	/+	177	19
123	9	18	9	/	148	20	157A		18	3	-	173	19
124	21	18	21	/	147	20	158	30	27	30	/	178	19
125	6	24	15	+	118	20	159	15	6	18	/+	158	19
125B	15	18	21	/+	125	20	160	18	12	21	/+	132	19
126		9	21	-	125	20	161	18	18	18	/	185	19
126A		6	9	-	125	20	162	6	12	12	+	107	19
126B		6	12	-	138	20	163	18	21	18	/	134	19
127	9	15	15	/+	131	20	164	30	24	27	/-	181	19
128	18	15	15	/-	145	20	165	12	18	12	/	159	19
129	18	18	15	/-	123	20	166	3	21	24	+	133	19
130	27	27	21	—	137	20	167	12	9	18	/+	135	19
131	9	9	9	/	166	20	168	24	18	21	—	148	19
131A		15	18	-	155	20	169	15	18	21	/+	143	19
132	15	12	15	/	145	20	170	9	15	18	/+	170	19
133	18	15	12	/-	129	20	171	12	12	9	/-	158	19
134	9	15	15	/+	138	20	171A		9	9	-	120	19
135	6	15	12	+	101	20	172	6	15	9	+	129	19
136	9	3	12	/+	125	20	173	9	18	15	/+	121	19
137	3	24	27	+	122	20	174	9	12	9	/	128	19
138	6	12	15	+	106	20	175	6	9	9	+	111	19
139	21	18	18	/-	120	20	176	3	6	3	/	62	19
140	6	15	6	/	109	20	176R		12	3	-	172	19
141	18		21	/+	152	20	176S		21	3	-	116	19
141O		21	24	-	139	20	177	9	9	6	—	79	18
142	9	3	9	/	158	20	178	9	9	6	—	127	18
142C		21	15	-	132	20	179	9	15	3	—	88	18
143	24	12	27	/+	159	19	180	12	9	9	/-	93	18
144	21	12	9	/-	163	19	181	3	9	0	/-	82	18
145	30	30	30	/	181	19	182	6	3	12	+	111	18
146	15	21	24	+	173	19	183	6	9	6	/	81	18
147	9	24	24	+	182	19	184	0	18	6	/+	84	18
148	27	27	18	—	166	19	185	3	12	0	/-	86	18
149	27	21	24	/-	168	19	186	6	9	9	+	139	18
149A		3	21	-	148	19	187	0	9	9	+	116	18
149B		15	12	-	148	19	188	0	15	9	+	100	18
150	9	6	21	/+	135	19	189	6	3	6	/	120	18
151	15	3	15	/	126	19	190	0	6	18	+	102	18
151A		18	18	-	142	19	191	6	9	12	+	104	18
152	27	21	21	—	173	19							

NOTES:

Comparison of NJ impairment score results between earliest and latest sampling dates:

+ indicates positive change in rating
— indicates negative change in rating
/ indicates no change in rating
/+ or /- indicates change in score, but not in rating (see Table 1)

NJ Impairment Score	Value
Non-Impaired	24 - 30
Moderately Impaired	9 - 21
Severely Impaired	0 - 6

Habitat Score	Value
Optimal	160 - 200
Sub-optimal	110 - 159
Marginal	60 - 109
Poor	<60

Table 2 (cont)

Comparative Scores / Ratings (see notes)

Watershed Management Areas 17 and 18 (part)

Station	NJ Impairment Score		Change in Rating	Habitat Score	WMA	Station	NJ Impairment Score		Change in Rating	Habitat Score	WMA	Station	NJ Impairment Score		Change in Rating	Habitat Score	WMA
	95 / 96	00 / 01					95 / 96	00 / 01					95 / 96	00 / 01			
653	3	9	+	117	18	692	6	15	+	138	17	730	18	18	/	169	17
654	3	12	+	115	18	693	12	12	/	135	17	731	15	15	/	174	17
655	6		-		18	694	6	0	/-	94	17	732	24	21	—	162	17
656	15	15	/	153	18	695	15	15	/	119	17	733	21	21	/	166	17
657	12	9	/-	129	18	696	15	18	/+	126	17	734	12	24	+	154	17
658	15	21	/+	160	18	697	12	12	/	155	17	735	30	30	/	158	17
659	15	9	/-	135	18	698	15	15	/	148	17	736	24	30	/+	169	17
660	6	9	+	137	18	699	15	6	—	124	17	737	18	27	+	174	17
661	18	9	/-	112	18	700	21	27	+	174	17	738	6	6	/	143	17
662	15	15	/	142	18	701	18	15	/-	145	17	739	21	27	+	161	17
663	12	12	/	151	18	702	12	9	/-	122	17	740	27	30	/+	179	17
664	9	9	/	117	18	703	12	15	/+	151	17	741	15	24	+	110	17
665	6	6	/	123	18	704	12	9	/-	147	17	742	9	15	/+	161	17
666	9	12	/+	118	18	705	12	24	+	131	17	743	9	18	/+	135	17
667	12	9	/-	118	18	706	21	18	/-	177	17	744	9	21	/+	166	17
668	15	24	+	176	18	707	15	18	/+	150	17	745	12	21	/+	164	17
669	9	18	/+	174	18	708	12	3	—	171	17	746	12	9	/-	153	17
670	18	21	/+	181	18	709	27	15	—	166	17	747	6	12	+	175	17
671	12	18	/+	135	18	710	15	12	/-	131	17	748	9	18	/+	162	17
672	12	18	/+	139	18	711	3	3	/	158	17	749	18	30	+	174	17
673	3	12	+	128	18	712	12	21	/+	176	17	750	9	9	/	149	17
674	15	12	/-	116	18	713	12	12	/	117	17	751	18	18	/	158	17
675	15	9	/-	123	18	714	18	9	/-	154	17	752	30	30	/	171	17
676	9	12	/+	142	18	715	15	12	/-	129	17	753	30	30	/	166	17
677	12	21	/+	157	18	716	-	-	-		17	754	18	15	/-	169	17
678	15	15	/	157	18	717	12	15	/+	97	17	755	12	12	/	137	17
679	9	6	—	167	18	718	12	9	/-	146	17	756	18	24	+	178	17
680	21	21	/	150	18	719	12	6	—	176	17	757	12	18	/+	177	17
681	21	18	/-	159	18	720		12	-	150	17	758	21	27	+	154	17
682	27	12	—	146	18	721	24	15	—	155	17	759	18	18	/	175	17
683	15	12	/-	161	18	722	24	18	—	166	17	760	30	30	/	175	17
684	21	6	—	149	18	723	27	21	—	166	17	761	27	30	/+	165	17
685	9	3	—	124	18	724	12	21	/+	163	17	762	30	24	/-	173	17
686	18	12	/-	174	18	725	18	24	+	173	17	763	30	15	—	174	17
687	18	21	/+	186	18	726	9		-		17	764	27	18	—	185	17
688	18	12	/-	145	18	726A		9	-	151	17						
689	12	6	—	160	18	727	21	21	/	162	17						
690	9	12	/+	163	17	728	21	18	/-	154	17						
691	6	15	+	147	17	729	24	30	/+	172	17						

NOTES:

Comparison of NJ impairment score with earlier study results:

+ indicates positive change in rating
— indicates negative change in rating
/ indicates no change in rating
/+ or /- indicates change in score, but not in rating (see Table 1)

NJ Impairment Score	Value
Non-Impaired	24 - 30
Moderately Impaired	9 - 21
Severely Impaired	0 - 6

Habitat Score	Value
Optimal	160 - 200
Sub-optimal	110 - 159
Marginal	60 - 109
Poor	<60

Table 3

Macroinvertebrate Abnormalities (see notes)

Watershed Management Areas 17, 18, 19, and 20

Station	92/93	97/98	2000 / 01	WMA		Station	95/96	2000 / 01	WMA		Station	95/96	2000 / 01	WMA
119	4/6 *			20		656		1/47	18		722	2/25		17
119A			1/3 *	20		660		1/32	18		724		1/18 *	17
123			1/61	20		662		1/22	18		725		+1	17
125	1/24			20		663	1/25	2/43	18		729		3/38*	17
126		1/17 *	+2	20		664	1/33		18		733	1/25		17
127	3/40 *	1/23		20		665	2/20 *		18		741	2/29 *		17
131	1/6 *			20		666	2/10 *		18		745	1/53		17
131A			+1, 1/17*	20		667	2/18 *	3/58 *	18		747		1/42	17
132			1/88	20		670	1/8 *		18		748		1/36	17
133			1/59	20		671		1/23	18		750		1/29	17
141O			1/40	20		672	2/34 *		18		756		1/30	17
142C		1/17 *		20		675		1/15 *	18					
146			1/48	19		676	1/14 *	1/65	18					
147			2/62	19		678	1/28	1/27	18					
152			2/55	19		680	1/10 *	3/14 *	18					
153		1/27		19		684		3/96	18					
154			1/56	19		685	1/25		18					
156			1/22	19		687		1/78	18					
157		1/26	+1	19		688	2/30 *	1/9 *	18					
160	12/23*	1/13 *		19		691	1/11 *		17					
161		7/37 *		19		693		1/47	17					
162		6/35 *	1/16 *	19		695		1/59	17					
163		3/13 *		19		696	2/24 *		17					
165			1/27	19		697		1/43	17					
169		3/34 *		19		698		+1	17					
173		1/29	+1	19		699	2/20 *	1/105	17					
174	1/3 *	3/25 *		19		700	2/3 *	1/23	17					
176R			1/12	19		703	1/22		17					
177		1/31		18		704	1/17 *		17					
179		2/27 *		18		707		1/48	17					
182	1/21		2/24 *	18		709		+1	17					
183		4/8 *		18		712	1/14 *	+1, 1/33	17					
184		1/33		18		718	2/26 *		17					
185		2/16 *		18		720		1/52	17					
186	1/33			18										

NOTES:

chironomids with deformities / # chironomids examined

+ — indicates the number of non-chironomids having abnormalities

* — indicates significant levels (> 5%), although not statistically evaluated

abnormalities considered chronic if they appear in both the 1995 / 1996 and the 2000 / 01 columns

Table 4 — **HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS**

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yrs.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORES	VALUE
OPTIMAL	160 C 200
SUB-OPTIMAL	110 C 159
MARGINAL	60 C 109
POOR	< 60

Table 4 (cont.) — HABITAT ASSESSMENT FOR *LOW* GRADIENT STREAMS

Habitat Parameter	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate/Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% <20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yrs.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.	The bends in the stream increase the stream length 2 to 3 times longer than if it was in a straight line.	The bends in the stream increase the stream length 2 to 1 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___ (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE ___ (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORES	VALUE
OPTIMAL	160 C 200
SUB-OPTIMAL	110 C 159
MARGINAL	60 C 109
POOR	< 60

Appendix A — Station Numbers and Locations for the 2001 Lower Delaware Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0119	Jumping Bk	40 02'46.163"N 74 32'22.678"W	20
AN0119A	South Run	40 01'38.586"N 74 33'35.890"W	20
AN0120	North Run	40 02'58.566"N 74 33'45.724"W	20
AN0121	Crosswicks Ck	40 05'03.177"N 74 32'27.148"W	20
AN0122	Lahaway Ck	40 08'02.478"N 74 27'41.945"W	20
AN0123	Ivanhoe Bk	40 08'17.621"N 74 27'37.970"W	20
AN0124	Lahaway Ck	40 06'25.582"N 74 32'11.319"W	20
AN0125	Crosswicks Ck	40 08'12.885"N 74 36'00.967"W	20
AN0125B	Miry Run	40 08'01.721"N 74 32'32.374"W	20
AN0126	Crosswicks Ck	40 10'02.009"N 74 40'38.249"W	20
AN0126A	UNT to Crosswicks Ck	40 08'09.974"N 74 37'05.598"W	20
AN0126B	Pleasant Run	40 08'54.262"N 74 35'57.293"W	20
AN0127	Doctors Ck	40 09'42.180"N 74 28'05.896"W	20
AN0128	Negro Run	40 10'31.491"N 74 34'03.730"W	20
AN0129	Doctors Ck	40 10'37.270"N 74 35'55.389"W	20
AN0130	Doctors Ck	40 10'31.642"N 74 40'32.327"W	20
AN0131	Crosswicks Ck	40 10'01.332"N 74 42'13.797"W	20
AN0131A	Back Ck	40 11'31.773"N 74 39'55.258"W	20
AN0132	Blacks Ck	40 06'34.757"N 74 38'29.999"W	20
AN0133	Bacons Run	40 06'26.828"N 74 41'06.139"W	20
AN0134	Blacks Ck	40 08'14.734"N 74 42'40.984"W	20
AN0135	Crafts Ck	40 04'30.104"N 74 39'55.313"W	20
AN0136	Crafts Ck	40 04'25.986"N 74 42'04.764"W	20
AN0137	Crafts Ck	40 06'01.643"N 74 45'21.566"W	20
AN0138	Assiscunk Ck	40 03'54.842"N 74 39'59.464"W	20
AN0139	Annaricken Bk	40 03'19.036"N 74 42'08.442"W	20
AN0140	North Br Barkers Bk	40 01'58.261"N 74 40'12.383"W	20
AN0141	Assiscunk Ck	40 03'52.971"N 74 45'24.601"W	20
AN0141O	Barkers Bk	40 01'17.105"N 74 45'06.771"W	20
AN0142	Assiscunk Ck	40 04'23.283"N 74 48'52.267"W	20
AN0142C	UNT to Assiscunk Ck	40 03'07.899"N 74 49'14.030"W	20
AN0143	North Br Rancocas Ck	39 58'46.829"N 74 31'30.920"W	19
AN0144	Pole Bridge Br	39 56'48.978"N 74 33'20.155"W	19
AN0145	Mt Misery Bk	39 55'44.693"N 74 31'51.593"W	19
AN0146	McDonalds Br	39 53'06.213"N 74 30'19.579"W	19
AN0147	Bisphams Mill Ck	39 55'26.003"N 74 35'30.127"W	19
AN0148	Greenwood Br	39 57'22.829"N 74 37'39.577"W	19
AN0149	North Br Rancocas Ck	39 58'12.345"N 74 41'03.227"W	19
AN0149A	Ong Run	39 58'35.529"N 74 34'35.949"W	19
AN0149B	Jacks Run	39 59'31.506"N 74 34'11.172"W	19
AN0150	Budds Run	39 58'34.906"N 74 40'51.343"W	19
AN0151	North Br Rancocas Ck	39 59'31.706"N 74 46'46.513"W	19
AN0151A	Indian Run	39 58'50.239"N 74 42'40.168"W	19
AN0152	Friendship Ck	39 52'15.726"N 74 41'34.923"W	19
AN0153	Burrs Mill Bk	39 51'33.878"N 74 35'53.218"W	19
AN0154	Burrs Mill Bk	39 52'54.599"N 74 40'30.108"W	19
AN0155	Friendship Ck	39 54'59.540"N 74 42'51.537"W	19
AN0156	South Br Rancocas Ck	39 55'23.615"N 74 43'03.539"W	19
AN0157	Jade Run	39 56'26.473"N 74 43'57.203"W	19
AN0157A	Jade Run	39 55'44.289"N 74 40'07.533"W	19

Appendix A — Station Numbers and Locations for the 2001 Lower Delaware Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0158	Little Ck	39 53'54.326"N 74 47'17.302"W	19
AN0159	Bear Swamp River	39 53'43.556"N 74 46'44.796"W	19
AN0160	Little Ck	39 56'16.831"N 74 47'36.279"W	19
AN0161	South Br Rancocas Ck	39 56'50.311"N 74 47'25.881"W	19
AN0162	Southwest Br Rancocas Ck	39 53'24.916"N 74 53'01.013"W	19
AN0163	UNT to Barton Run	39 51'20.592"N 74 55'17.336"W	19
AN0164	Black Run	39 49'58.943"N 74 53'34.378"W	19
AN0165	UNT to Black Run	39 51'00.889"N 74 54'22.261"W	19
AN0166	Barton Run	39 52'43.625"N 74 51'36.092"W	19
AN0167	Kettle Run	39 48'11.286"N 74 53'34.354"W	19
AN0168	Haynes Ck	39 53'06.698"N 74 49'53.909"W	19
AN0169	Southwest Br Rancocas Ck (Haynes Ck)	39 54'16.533"N 74 48'45.243"W	19
AN0170	Sharps Run	39 54'19.053"N 74 49'28.169"W	19
AN0171	Bobbys Run	39 57'47.847"N 74 48'19.039"W	19
AN0171A	Bobbys Run	39 57'39.138"N 74 45'11.489"W	19
AN0172	UNT to Masons Ck	39 56'37.792"N 74 51'22.814"W	19
AN0173	Masons Ck	39 58'19.308"N 74 51'25.370"W	19
AN0174	Parkers Ck	39 59'43.572"N 74 53'05.411"W	19
AN0175	Mill Ck	40 02'09.498"N 74 53'36.917"W	19
AN0176	Swedes Run	40 00'54.105"N 74 57'22.428"W	18
AN0176R	Rancocas Ck	39 59'50.266"N 74 51'33.780"W	19
AN0176S	S Br Rancocas Ck	39 58'44.401"N 74 49'26.880"W	19
AN0177	Pompeston Ck	40 00'12.372"N 74 58'58.234"W	18
AN0178	North Br Pennsauken Ck	39 55'13.326"N 74 53'53.281"W	18
AN0179	North Br Pennsauken Ck	39 56'27.821"N 74 57'14.034"W	18
AN0180	North Br Pennsauken Ck	39 57'25.230"N 74 59'12.011"W	18
AN0181	North Br Pennsauken Ck	39 58'45.330"N 75 00'32.280"W	18
AN0182	South Br Pennsauken Ck	39 54'21.421"N 74 57'08.828"W	18
AN0183	South Br Pennsauken Ck	39 56'25.012"N 74 58'58.010"W	18
AN0184	South Br Pennsauken Ck	39 57'14.813"N 75 00'48.046"W	18
AN0185	South Br Pennsauken Ck	39 58'02.987"N 75 01'09.657"W	18
AN0186	North Br Cooper River	39 51'34.652"N 74 55'45.714"W	18
AN0187	North Br Cooper River	39 53'19.886"N 74 58'07.036"W	18
AN0188	North Br Cooper River	39 54'31.444"N 75 01'30.744"W	18
AN0189	South Br Cooper River	39 49'32.996"N 74 58'28.895"W	18
AN0190	South Br Cooper River	39 51'33.946"N 75 00'57.424"W	18
AN0191	South Br Cooper River	39 54'11.706"N 75 01'18.832"W	18
AN0653	Newton Ck	39 54'04.763"N 75 05'41.101"W	18
AN0654	S Br Newton Ck	39 53'19.774"N 75 05'21.663"W	18
AN0656	UNT to S Br Big Timber Ck (Turners Run)	39 44'45.157"N 75 03'39.409"W	18
AN0657	UNT to S Br Big Timber Ck (Turners Run)	39 46'46.131"N 75 03'14.878"W	18
AN0658	S Br Big Timber Ck	39 46'19.012"N 75 02'57.830"W	18
AN0659	S Br Big Timber Ck	39 48'53.486"N 75 05'19.228"W	18
AN0660	Pines Run	39 49'33.478"N 75 04'56.935"W	18
AN0661	N Br Big Timber Ck	39 48'55.002"N 75 00'02.249"W	18
AN0662	Mason Run	39 48'48.482"N 75 01'18.528"W	18
AN0663	N Br Big Timber Ck	39 50'01.375"N 75 04'02.627"W	18
AN0664	Big Timber Ck	39 50'26.065"N 75 05'01.890"W	18
AN0665	Almonesson Ck	39 50'08.698"N 75 05'41.882"W	18
AN0666	Little Timber Ck	39 52'11.051"N 75 04'22.119"W	18

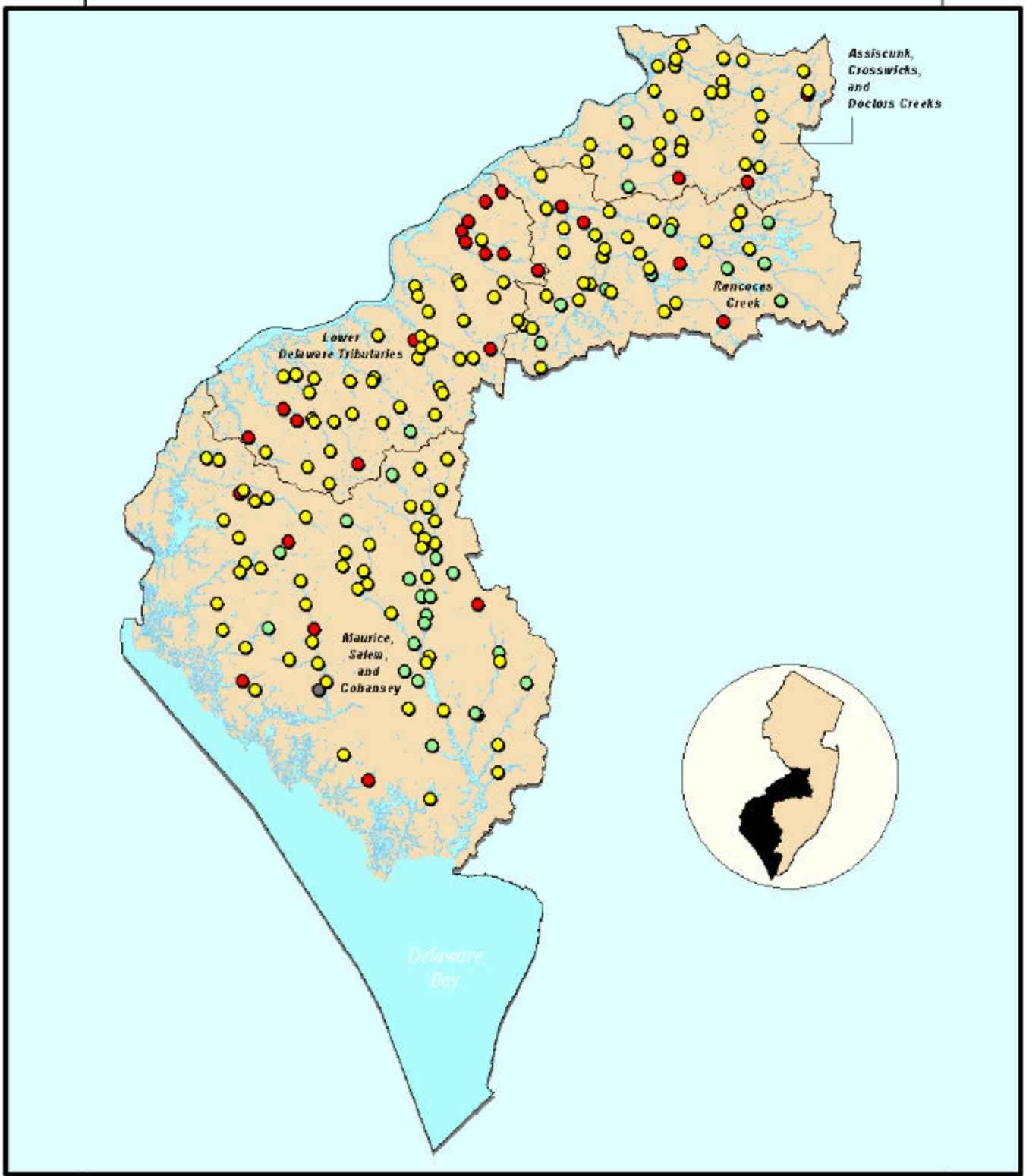
Appendix A — Station Numbers and Locations for the 2001 Lower Delaware Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0667	Woodbury Ck	39 50'30.231"N 75 09'16.735"W	18
AN0668	Mantua Ck	39 43'31.722"N 75 06'03.677"W	18
AN0669	Mantua Ck	39 45'17.341"N 75 07'02.938"W	18
AN0670	Chestnut Br	39 44'10.257"N 75 08'43.097"W	18
AN0671	Chestnut Br	39 47'08.915"N 75 09'45.517"W	18
AN0672	Mantua Ck	39 47'27.111"N 75 09'36.613"W	18
AN0673	Edwards Run	39 44'48.431"N 75 11'41.839"W	18
AN0674	Edwards Run	39 47'08.832"N 75 11'52.514"W	18
AN0675	Still Run	39 47'18.673"N 75 15'25.173"W	18
AN0676	Rattling Run	39 46'17.508"N 75 15'50.625"W	18
AN0677	Pargy Ck	39 47'34.051"N 75 17'10.520"W	18
AN0678	Little Timber Ck	39 47'24.249"N 75 18'20.655"W	18
AN0679	Raccoon Ck	39 41'09.056"N 75 11'04.705"W	18
AN0680	Raccoon Ck	39 44'10.891"N 75 13'27.255"W	18
AN0681	S Br Raccoon Ck	39 42'03.036"N 75 13'47.211"W	18
AN0682	S Br Raccoon Ck	39 44'10.281"N 75 15'20.758"W	18
AN0683	Raccoon Ck	39 44'25.473"N 75 15'31.891"W	18
AN0684	UNT to Raccoon Ck	39 44'15.104"N 75 16'57.830"W	18
AN0685	Raccoon Ck	39 45'04.192"N 75 18'18.679"W	18
AN0686	Oldmans Ck	39 39'44.321"N 75 13'50.954"W	18
AN0687	Oldmans Ck	39 40'55.942"N 75 16'00.001"W	18
AN0688	Oldmans Ck	39 41'57.556"N 75 19'59.611"W	18
AN0689	Oldmans Ck	39 42'58.621"N 75 21'39.879"W	18
AN0690	Salem River	39 37'17.691"N 75 16'05.539"W	17
AN0691	Salem River	39 38'36.970"N 75 19'49.436"W	17
AN0692	Nichomus Run	39 38'22.288"N 75 20'57.239"W	17
AN0693	Salem River	39 39'09.934"N 75 22'04.999"W	17
AN0694	Major Run	39 38'55.254"N 75 22'27.384"W	17
AN0695	Two Penny Run	39 41'22.582"N 75 24'31.243"W	17
AN0696	Game Ck	39 41'28.523"N 75 25'42.367"W	17
AN0697	UNT to Culliers Run	39 37'02.307"N 75 24'00.320"W	17
AN0698	Swedes Run	39 35'46.459"N 75 22'33.313"W	17
AN0699	Alloway Ck	39 35'28.222"N 75 17'45.750"W	17
AN0700	Cool Run	39 34'43.454"N 75 18'34.004"W	17
AN0701	UNT to Alloway Ck (Cedar Bk)	39 33'35.287"N 75 20'22.774"W	17
AN0702	Alloway Ck	39 33'52.420"N 75 21'51.068"W	17
AN0703	Deep Run	39 33'14.776"N 75 22'25.745"W	17
AN0704	Lower Alloway Ck	39 31'02.347"N 75 24'36.731"W	17
AN0705	Sarah Run	39 29'18.497"N 75 19'36.555"W	17
AN0706	Stow Ck	39 27'50.474"N 75 21'47.562"W	17
AN0707	Canton Drain	39 29'09.489"N 75 23'59.499"W	17
AN0708	Raccoon Ditch	39 25'25.583"N 75 22'00.152"W	17
AN0709	Cohansey River	39 32'41.071"N 75 16'29.504"W	17
AN0710	Cohansey River	39 31'00.326"N 75 16'00.616"W	17
AN0711	Parsonage Run	39 29'14.359"N 75 15'12.788"W	17
AN0712	Cohansey River	39 28'21.373"N 75 15'19.422"W	17
AN0713	Barrett Run	39 27'02.298"N 75 17'31.458"W	17
AN0714	Barrett Run	39 26'45.589"N 75 14'46.492"W	17
AN0715	Indian Fields Br	39 25'27.238"N 75 13'54.907"W	17
AN0717	Pine Mount Ck	39 24'48.922"N 75 20'51.606"W	17

Appendix A — Station Numbers and Locations for the 2001 Lower Delaware Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0718	Cedar Ck	39 20'09.771"N 75 12'12.896"W	17
AN0719	Pages Run	39 18'18.665"N 75 09'52.182"W	17
AN0720	Dividing Ck	39 17'01.950"N 75 03'54.070"W	17
AN0721	Scotland Run	39 41'34.769"N 75 02'27.728"W	17
AN0722	Scotland Run	39 39'21.281"N 75 03'03.325"W	17
AN0723	Scotland Run	39 37'05.352"N 75 03'34.622"W	17
AN0724	Indian Br	39 35'26.762"N 75 03'34.962"W	17
AN0725	Scotland Run	39 34'22.861"N 75 03'29.703"W	17
AN0726A	Little Ease Run	39 40'52.249"N 75 05'08.148"W	17
AN0727	Little Ease Run	39 38'05.696"N 75 04'19.601"W	17
AN0728	Little Ease Run	39 35'49.106"N 75 04'33.406"W	17
AN0729	Still Run	39 40'22.961"N 75 07'47.935"W	17
AN0730	Still Run	39 38'08.942"N 75 05'57.383"W	17
AN0731	Reed Br	39 36'31.882"N 75 05'22.540"W	17
AN0732	Still Run	39 35'07.531"N 75 04'53.919"W	17
AN0733	Maurice River (Scotland Run)	39 33'01.387"N 75 04'15.807"W	17
AN0734	Burnt Mill Br	39 33'17.326"N 75 01'48.317"W	17
AN0735	Burnt Mill Br	39 31'40.134"N 75 03'59.079"W	17
AN0736	Green Br	39 32'52.954"N 75 06'02.984"W	17
AN0737	Green Br	39 31'37.882"N 75 04'50.377"W	17
AN0738	Blackwater Br	39 31'07.971"N 74 59'22.620"W	17
AN0739	Blackwater Br	39 30'20.396"N 75 04'19.945"W	17
AN0740	Maurice River	39 29'43.983"N 75 04'34.936"W	17
AN0741	Muddy Run	39 37'03.444"N 75 12'06.338"W	17
AN0742	Muddy Run	39 35'19.990"N 75 09'52.727"W	17
AN0743	Palatine Br	39 34'43.367"N 75 12'10.741"W	17
AN0744	Palatine Br	39 33'25.272"N 75 10'27.573"W	17
AN0745	Muddy Run	39 32'29.765"N 75 10'06.017"W	17
AN0746	Indian Run	39 33'46.323"N 75 12'26.238"W	17
AN0747	Indian Run	39 32'08.304"N 75 11'02.136"W	17
AN0748	Muddy Run	39 30'24.436"N 75 07'44.565"W	17
AN0749	Muddy Run	39 28'13.951"N 75 05'34.555"W	17
AN0750	Parvin Br	39 27'18.762"N 75 04'05.959"W	17
AN0751	Maurice River	39 26'53.107"N 75 04'19.603"W	17
AN0752	Lebanon Br (Mill Ck)	39 26'17.098"N 75 06'27.116"W	17
AN0753	Mill Ck	39 25'33.606"N 75 05'08.305"W	17
AN0754	White Marsh Run	39 23'33.261"N 75 06'05.438"W	17
AN0755	White Marsh Run	39 23'23.724"N 75 02'38.518"W	17
AN0756	Buckshutem Ck	39 20'51.706"N 75 03'45.334"W	17
AN0757	Cedar Br	39 27'40.268"N 74 57'29.124"W	17
AN0758	Panther Br (Manantico Ck)	39 27'40.241"N 74 57'25.993"W	17
AN0759	Manantico Ck	39 27'01.827"N 74 57'21.940"W	17
AN0760	Manantico Ck	39 23'10.936"N 74 59'21.539"W	17
AN0761	Berryman Br	39 23'15.681"N 74 59'36.541"W	17
AN0762	Manumuskin River	39 25'26.773"N 74 54'47.805"W	17
AN0763	Manumuskin River	39 20'57.887"N 74 57'29.302"W	17
AN0764	Muskee Ck (Middle Br)	39 18'56.755"N 74 57'30.353"W	17

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 1 - LOWER DELAWARE WATER REGION



BIOASSESSMENT RATING

- Non-Impaired
- Moderately Impaired
- Severely Impaired
- Not Sampled

Watershed Management Area Boundary

N

5 0 5 10 15 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Bell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 2 - CROSSWICKS AND DOCTORS CREEKS
Watershed Management Area 20 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

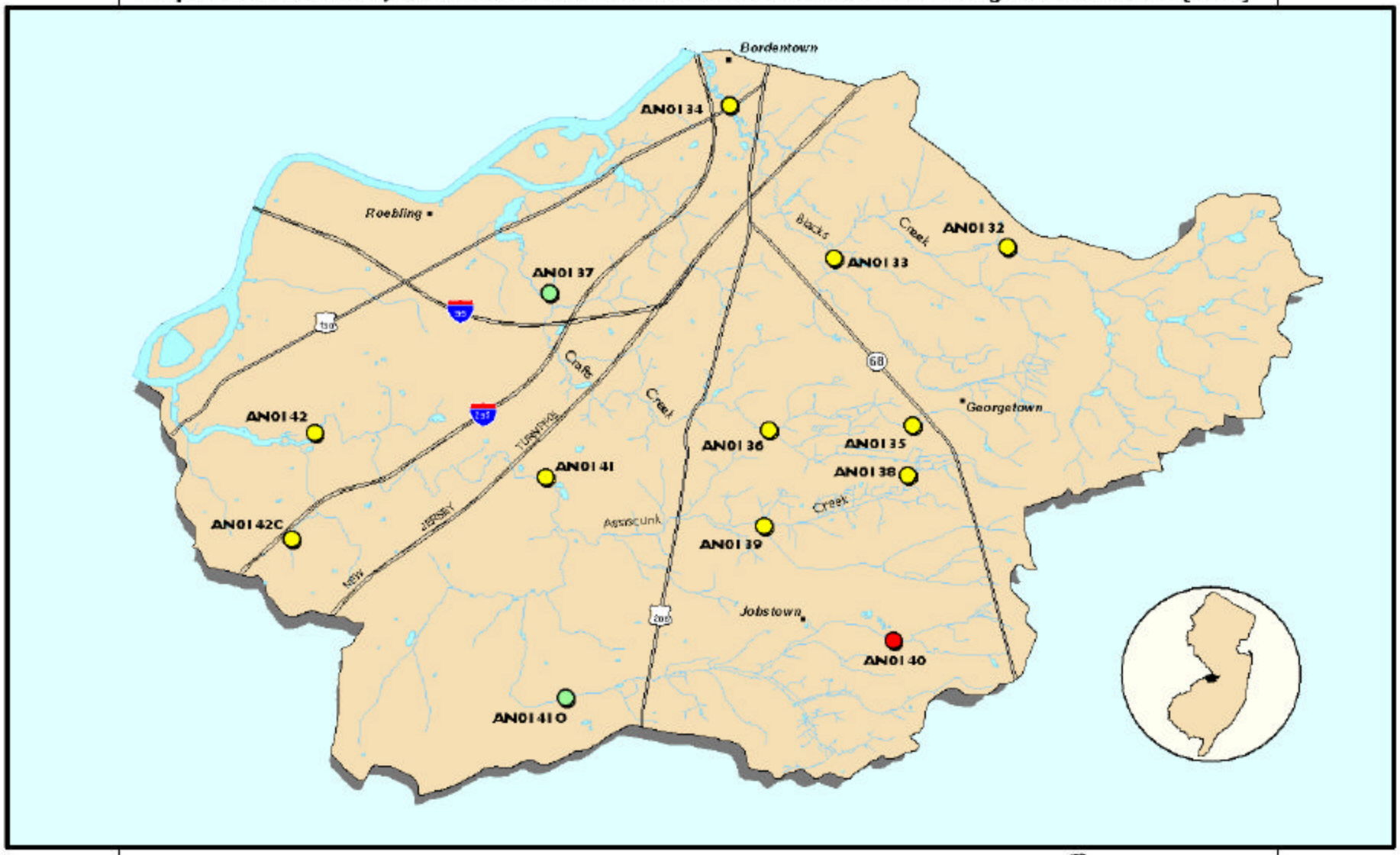
N

1 0 1 2 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 3 - ASSISCUNK, CRAFTS AND BLACKS CREEKS - Watershed Management Area 20 (Part)



2000 - 2001 Lower Delaware Water Region AMNET Study
Map 4 - RANCOCAS AND NORTH BRANCH RANCOCAS CREEKS - Watershed Management Area 19 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N

2 0 2 4 6 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Bell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 5 - SOUTH BRANCH RANCOCAS CREEK
Watershed Management Area 19 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N

1 0 1 2 3 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, July 2001

2001 Lower Delaware Water Region AMNET Study
Map 6 - COOPER RIVER, PENNSAUKEN AND POMPESTON CREEKS
Watershed Management Area 18 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N

0 1 2 3 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 7 - NEWTON, BIG TIMBER AND WOODBURY CREEKS
Watershed Management Area 18 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

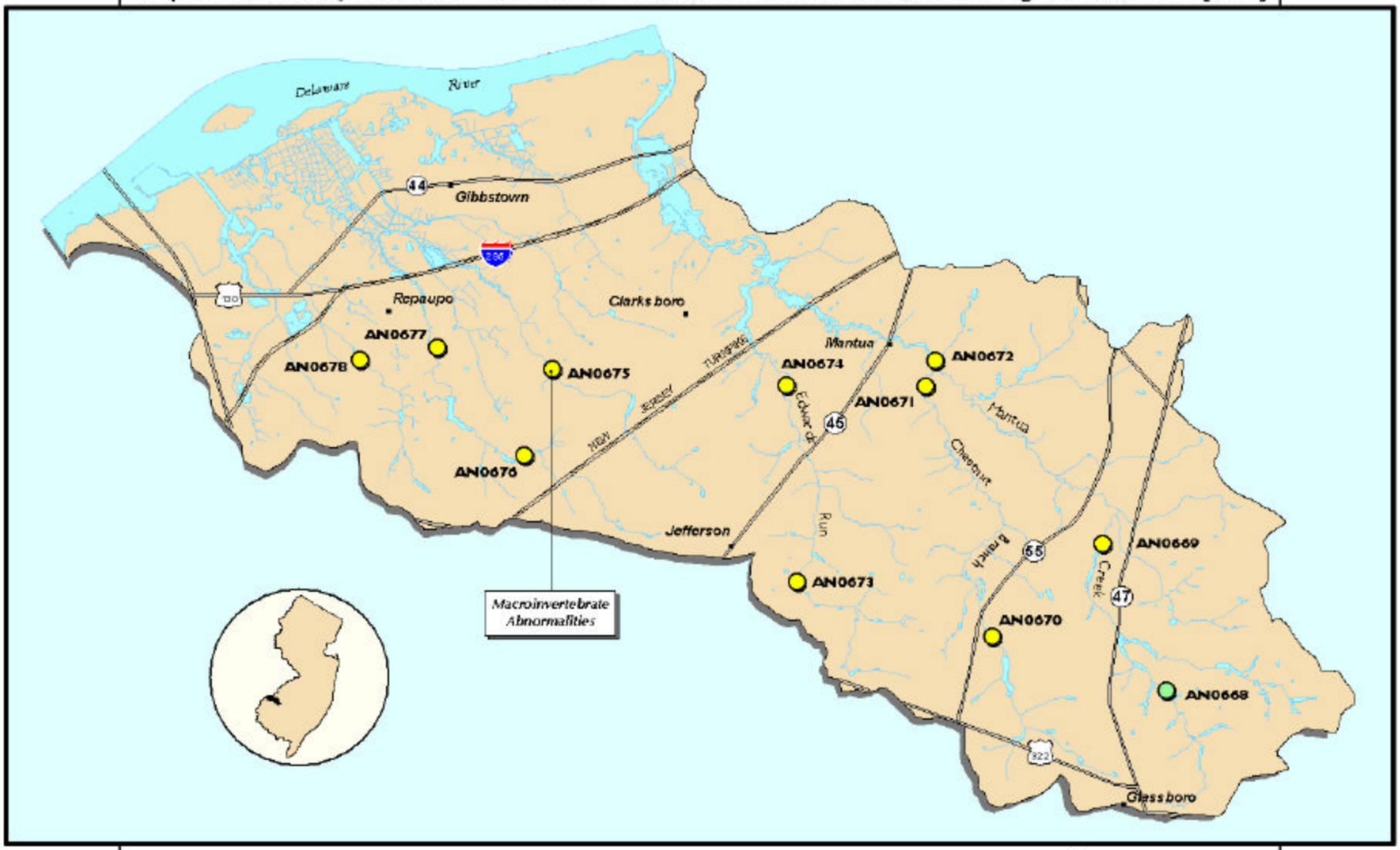
N

1 0 1 2 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 8 - MANTUA, REPAUPO AND LITTLE TIMBER CREEKS - Watershed Management Area 18 (Part)



Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

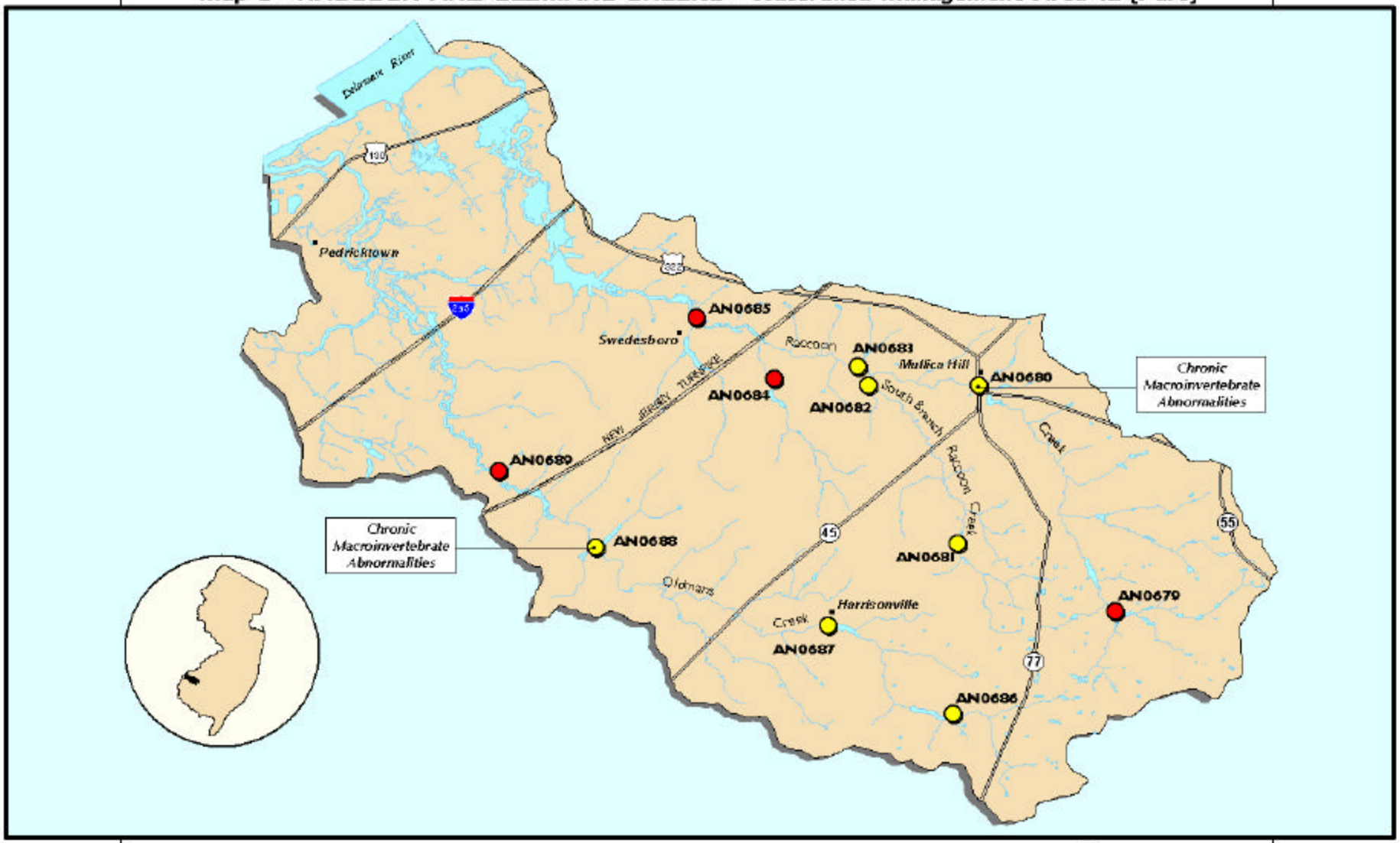
N

1 0 1 2 3 Miles

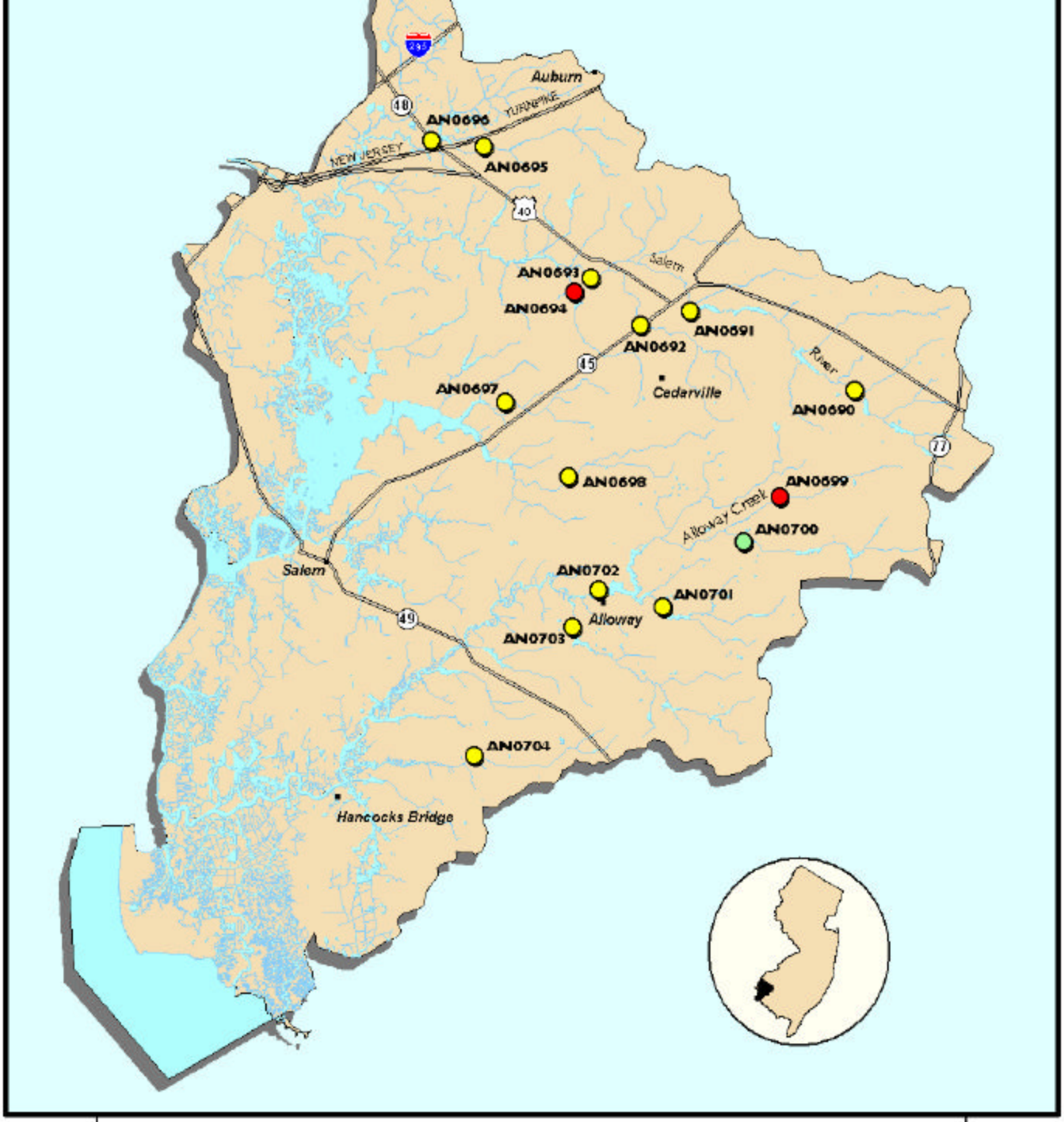
New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Bell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 9 - RACCOON AND OLDMANS CREEKS - Watershed Management Area 18 [Part]



2000 - 2001 Lower Delaware Water Region AMNET Study
Map 10 - SALEM RIVER AND ALLOWAY CREEK
Watershed Management Area 17 (Part)



Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N

1 0 1 2 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map11 - STOW CREEK AND COHANSEY RIVER
Watershed Management Area 17 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N

1 0 1 2 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, July 2001

2000 - 20001 Lower Delaware Water Region AMNET Study
Map 12 - UPPER MAURICE RIVER
Watershed Management Area 17 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N

1 0 1 2 3 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, July 2001

2000 - 2001 Lower Delaware Water Region AMNET Study
Map 12 - LOWER MAURICE RIVER
Watershed Management Area 17 (Part)

Bioassessment Rating

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N

1 0 1 2 3 Miles

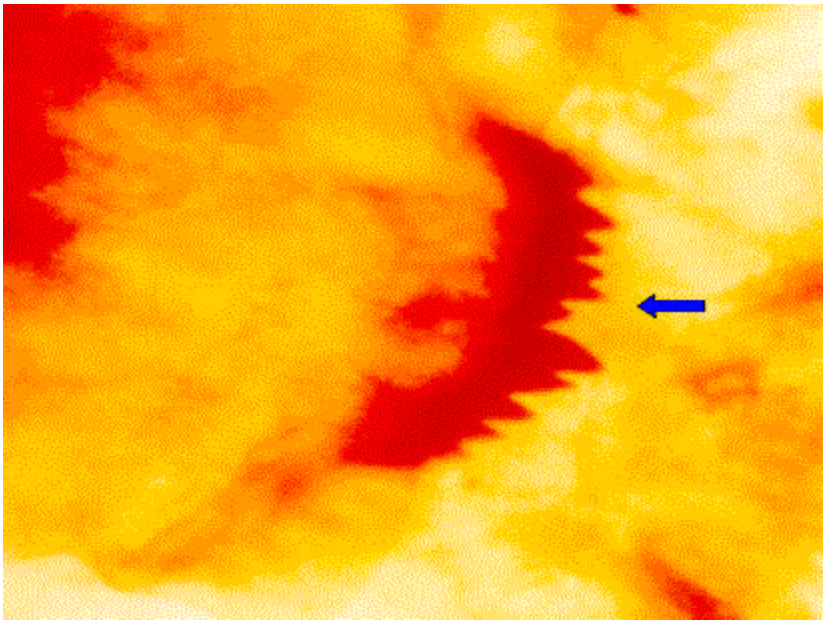
New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Bell, July 2001

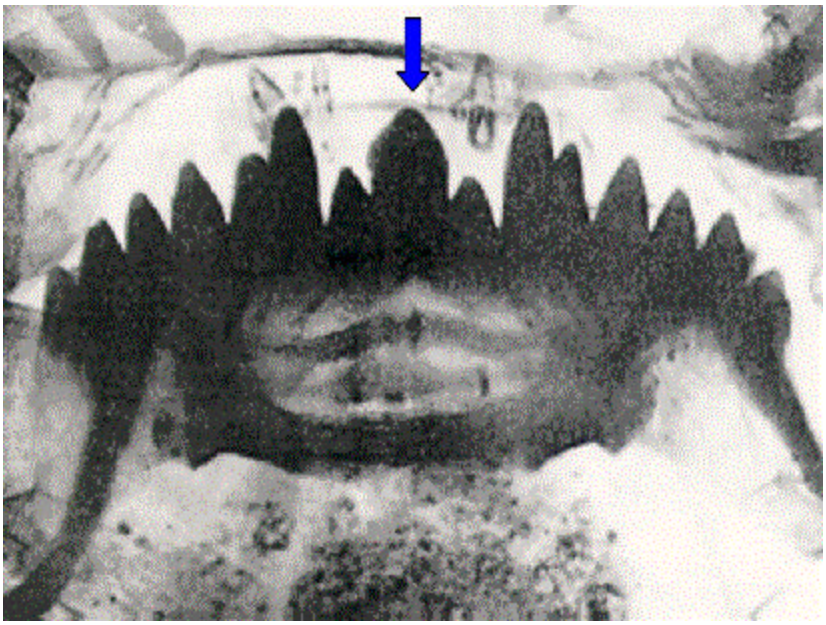
APPENDIX B

Pictures of Morphological Abnormalities in Larval Chironomidae and Amphipoda Recovered in the 2001 Lower Delaware Region AMNET Study

Chironomus riparius — Note the abnormal teeth in the top picture and the normal teeth in the bottom picture.



ABNORMAL*

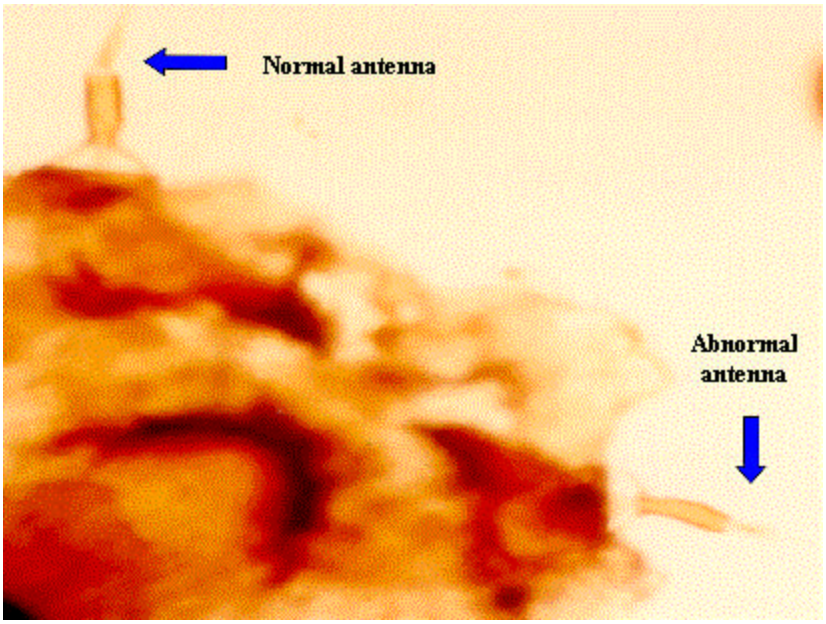


NORMAL**

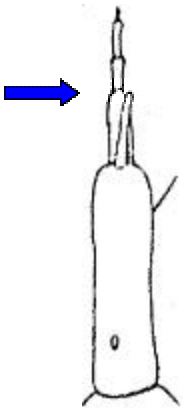
* Photograph taken by J. Kurtz, NJDEP.

** From: *A Key to Some Larvae of Chironomidae (Diptera) From the Mackenzie & Porcupine River Watersheds*, D.R. Oliver, D. McClymont, & M.E. Roussel, 1978, Fisheries & Marine Service Technical Report # 791.

Dicrotendipes nervosus — Note that the antenna on the right is abnormal. The antennae on the left and in the bottom picture are normal.



Antenna*

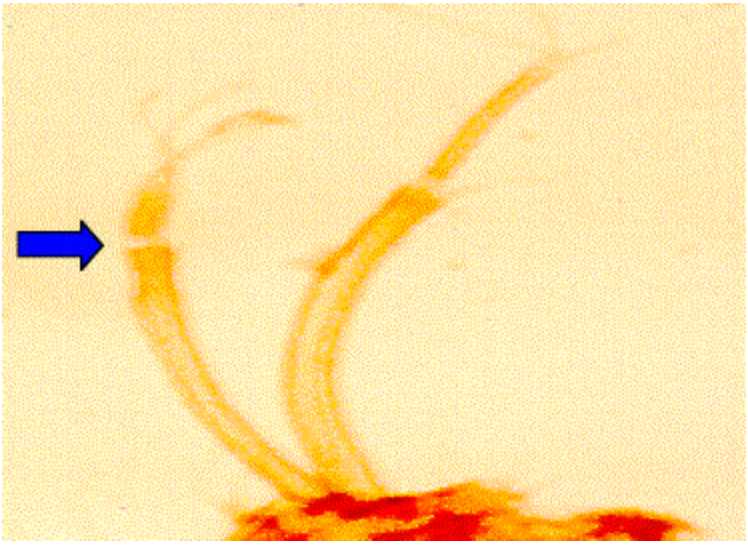


NORMAL antenna**

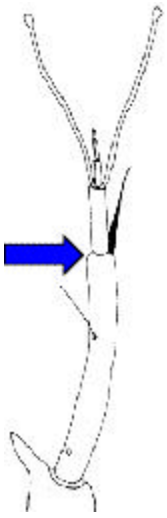
* Photograph taken by J. Kurtz, NJDEP.

** From: *An Introduction to the Aquatic Insects of North America*, second edition, R.W. Merritt & K.W. Cummins, 1988, Kendall/Hunt Publ. Co.

Micropsectra deflecta— In the top picture note the left antenna is abnormal as compared to the normal antenna in the bottom picture.



ABNORMAL*

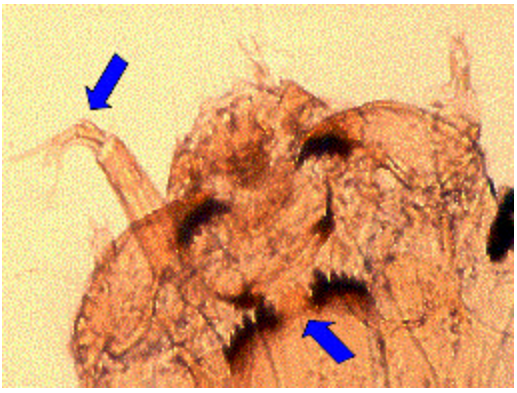


NORMAL**

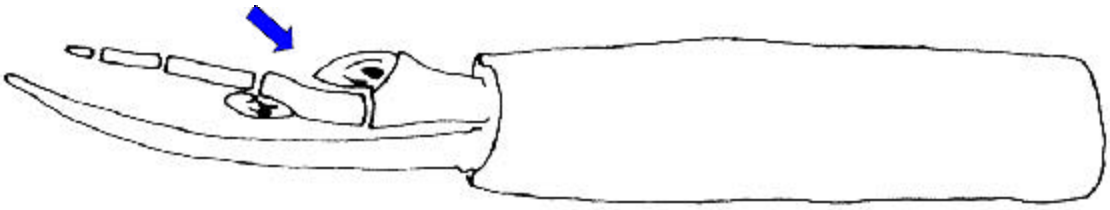
* Photograph taken by J. Kurtz, NJDEP.

** From: *An Introduction to the Aquatic Insects of North America*, second edition, R.W. Merritt & K.W. Cummins, 1988, Kendall/Hunt Publ. Co.

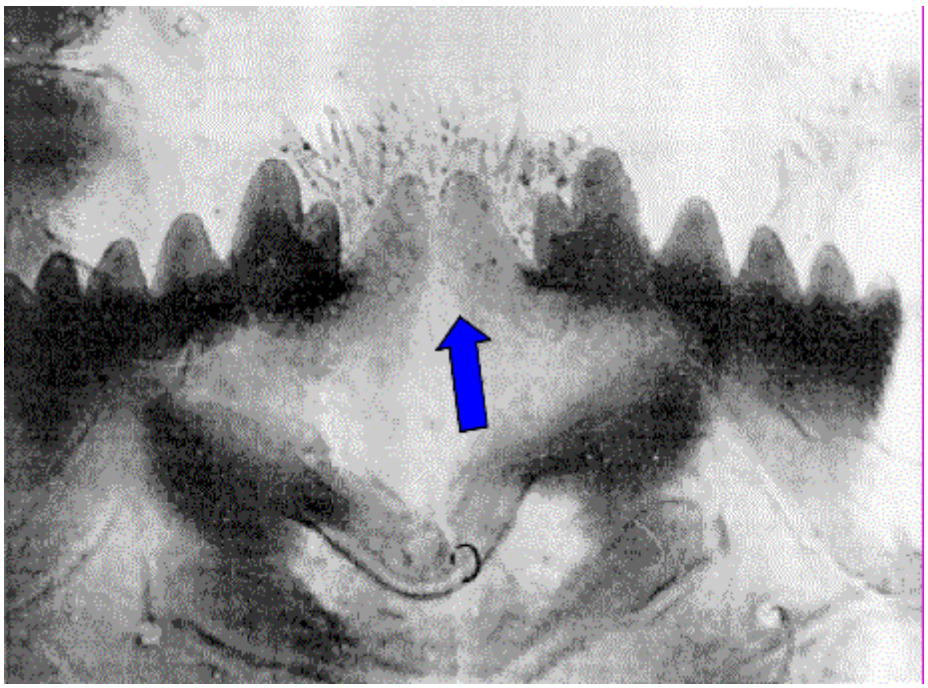
Microtendipes sp. — Note the abnormal teeth and antenna in the top picture compared to the bottom pictures, which depict normal antenna and teeth. The normal pictures on the bottom are magnified to show detail.



ABNORMAL*



NORMAL antenna**



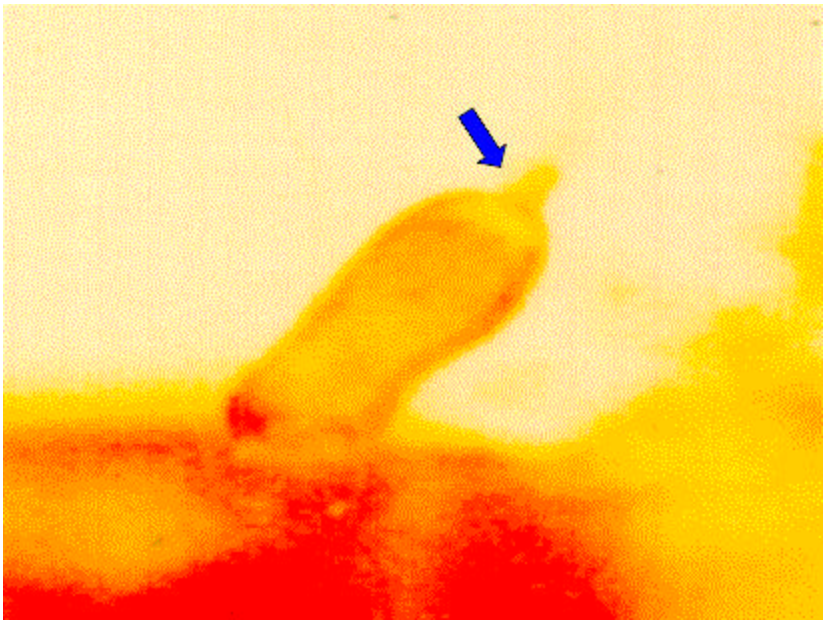
NORMAL teeth***

* Photograph taken by J. Kurtz, NJDEP.

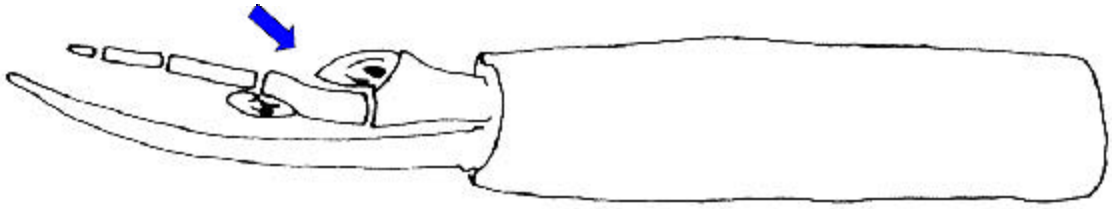
** From: *An Introduction to the Aquatic Insects of North America*, second edition, R.W. Merritt & K.W. Cummins, 1988, Kendall/Hunt Publ. Co.

*** From: *A Key to Some Larvae of Chironomidae (Diptera) From the Mackenzie & Porcupine River Watersheds*, D.R. Oliver, D. McClymont, & M.E. Roussel, 1978, Fisheries & Marine Service Technical Report # 791.

Microtendipes caducus — Note the abnormal antenna in the top picture and compare to the lower picture, which depicts a normal antenna.



ABNORMAL antenna *

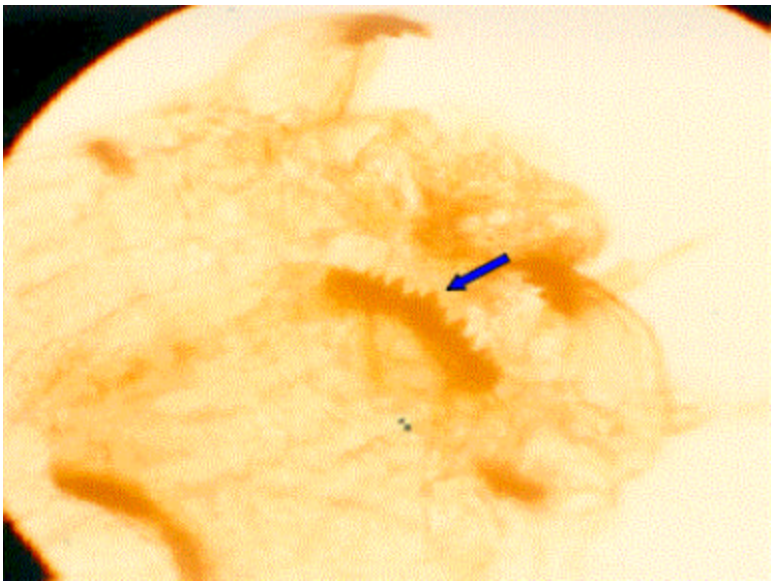


NORMAL antenna**

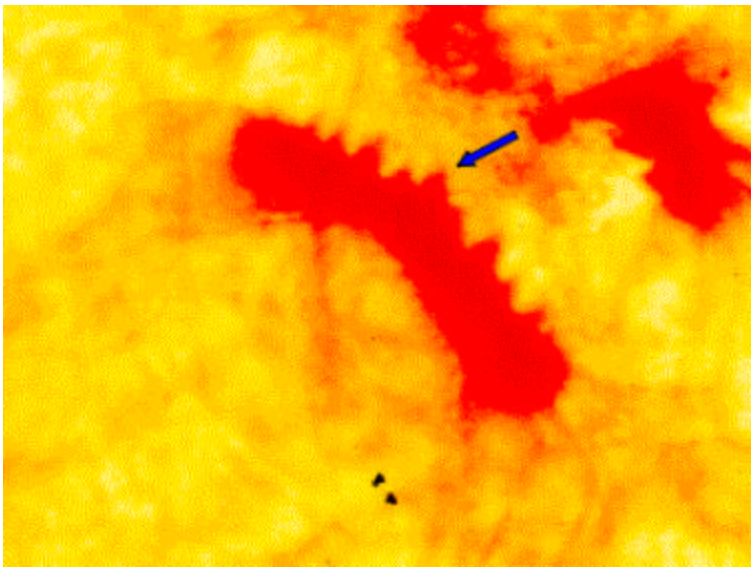
* Photograph taken by J. Kurtz, NJDEP.

** From: *An Introduction to the Aquatic Insects of North America*, second edition, R.W. Merritt & K.W. Cummins, 1988, Kendall/Hunt Publ. Co.

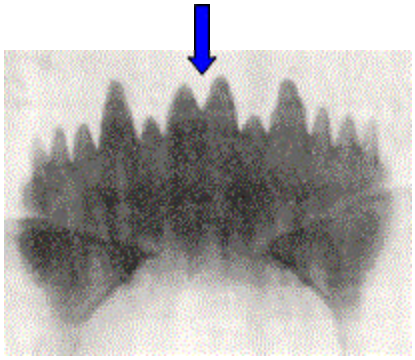
Polypedilum convictum — The first two pictures show abnormal teeth as compared to the normal teeth depicted in the picture below. The second picture is a higher magnification of the first one.



ABNORMAL*



ABNORMAL*

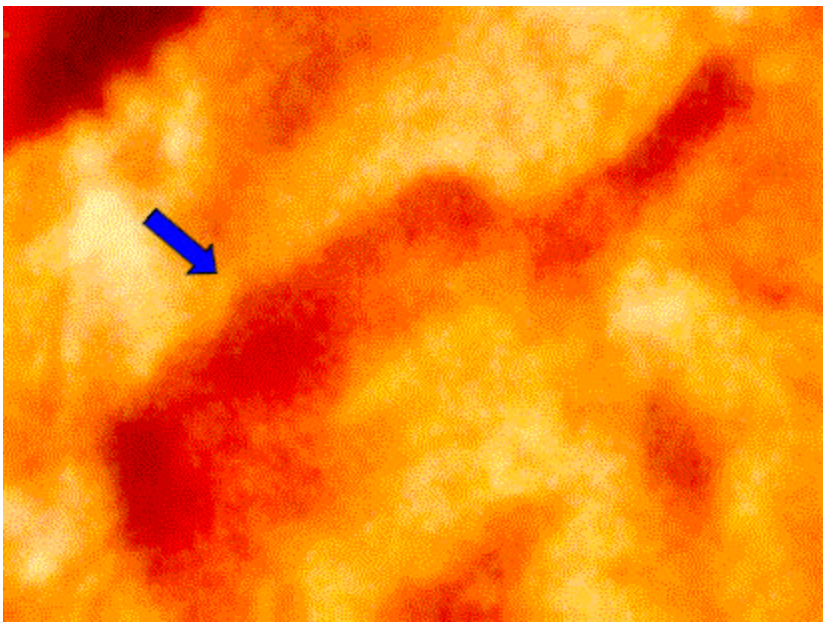


NORMAL**

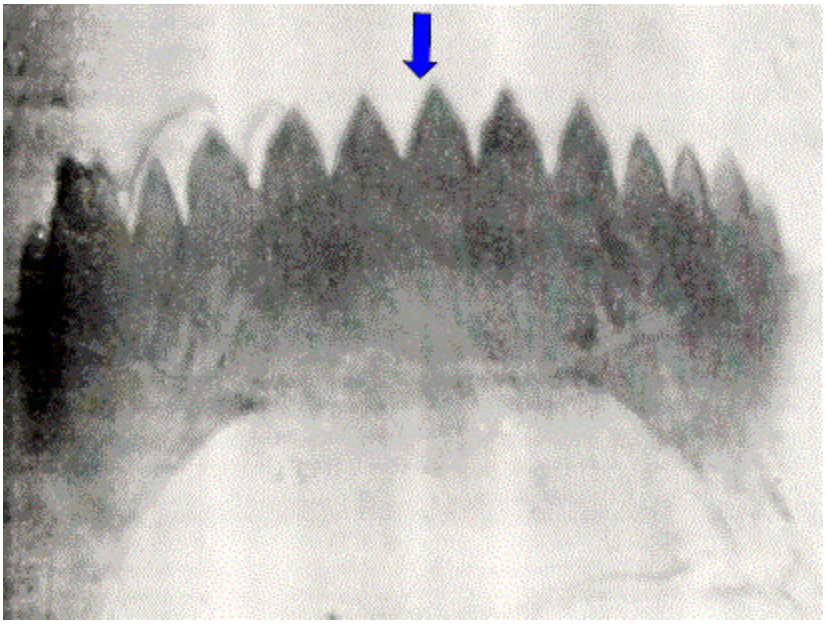
* Photograph taken by J. Kurtz, NJDEP.

** From *A Key to Some Larvae of Chironomidae (Diptera) From the Mackenzie & Porcupine River Watersheds*, D.R. Oliver, D. McClymont, & M.E. Roussel, 1978, Fisheries & Marine Service Technical Report # 791.

Polypedilum fallax — Note that in the top picture the teeth are absent or abnormal. Compare with the lower picture that shows a normal tooth pattern.



ABNORMAL*



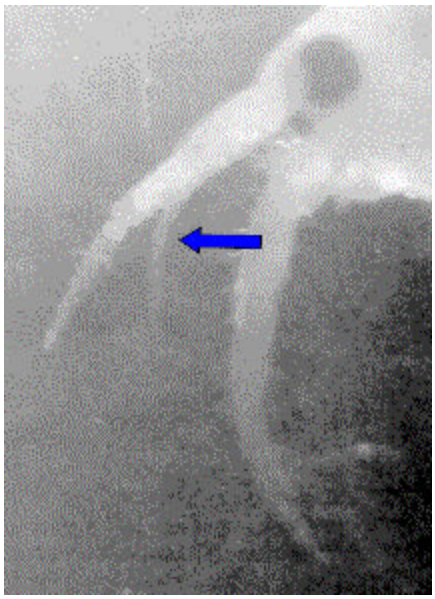
NORMAL**

* Photograph taken by J. Kurtz, NJDEP.

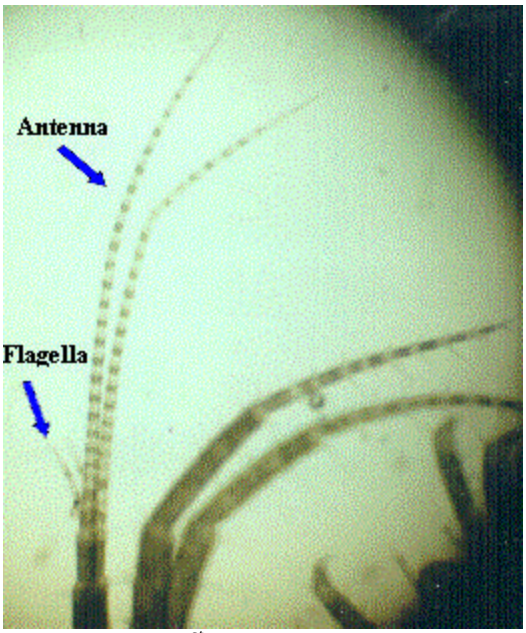
** From: *A Key to Some Larvae of Chironomidae (Diptera) From the Mackenzie & Porcupine River Watersheds,* D.R. Oliver, D. McClymont, & M.E. Roussel, 1978, Fisheries & Marine Service Technical Report # 791.

Gammarus fasciatus — Note in the first three pictures that the left 1st antenna and flagella are deformed and reduced. The right 1st antenna is broken. The fourth picture shows normal flagella and antennae.

Close-up of flagella on abnormal 1st antenna



Close-up of last segment on abnormal 1st antenna with normal setae.



Normal 1st antennae and flagella

Photographs taken by J. Kurtz, NJDEP.

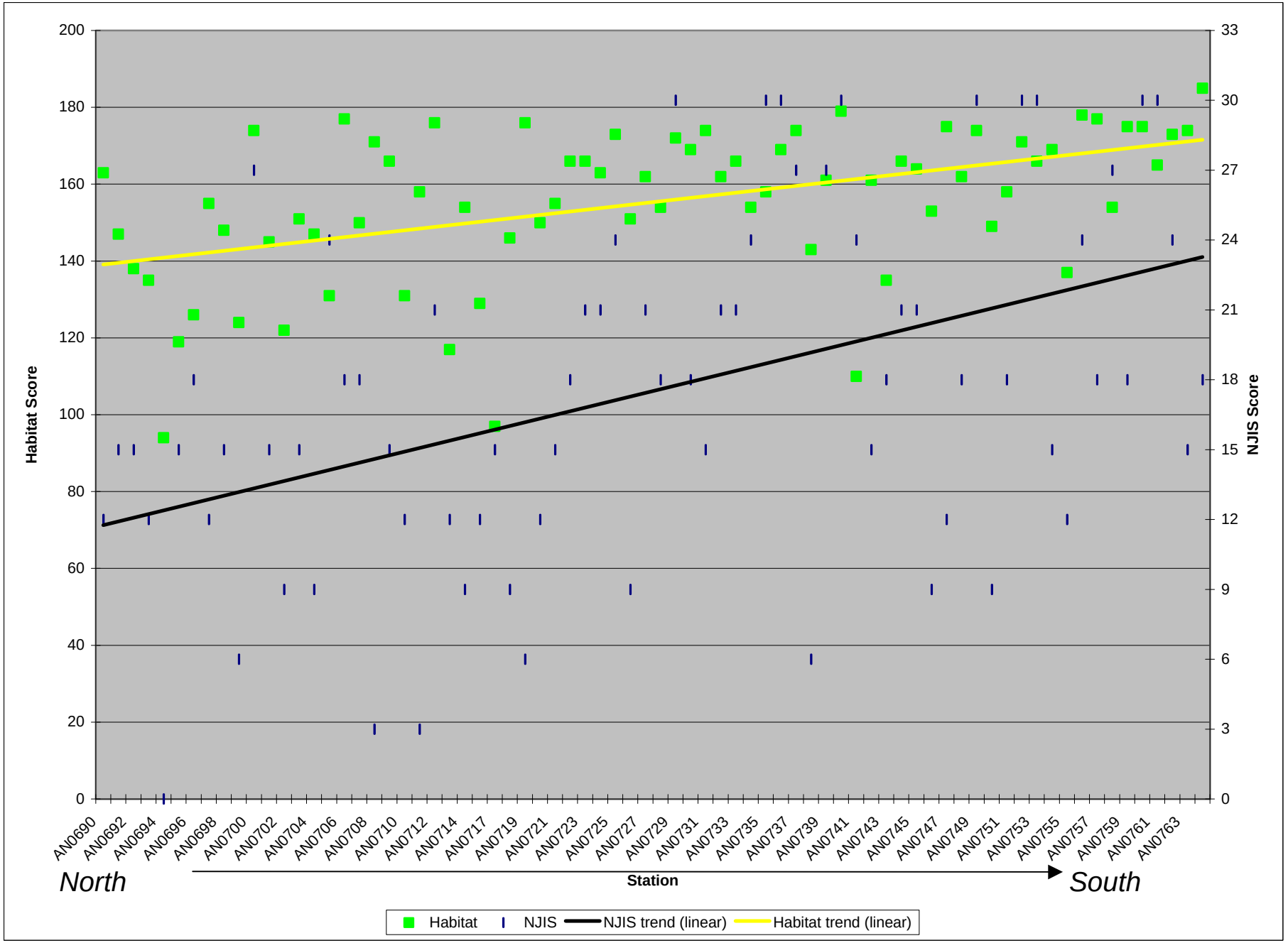
APPENDIX C

Graphical Comparison of Habitat Assessment Scores and New Jersey Impairment Scores from the 2001 Lower Delaware Region AMNET Study

Comparative Scores of HABITAT vs. NJIS

WMA 17

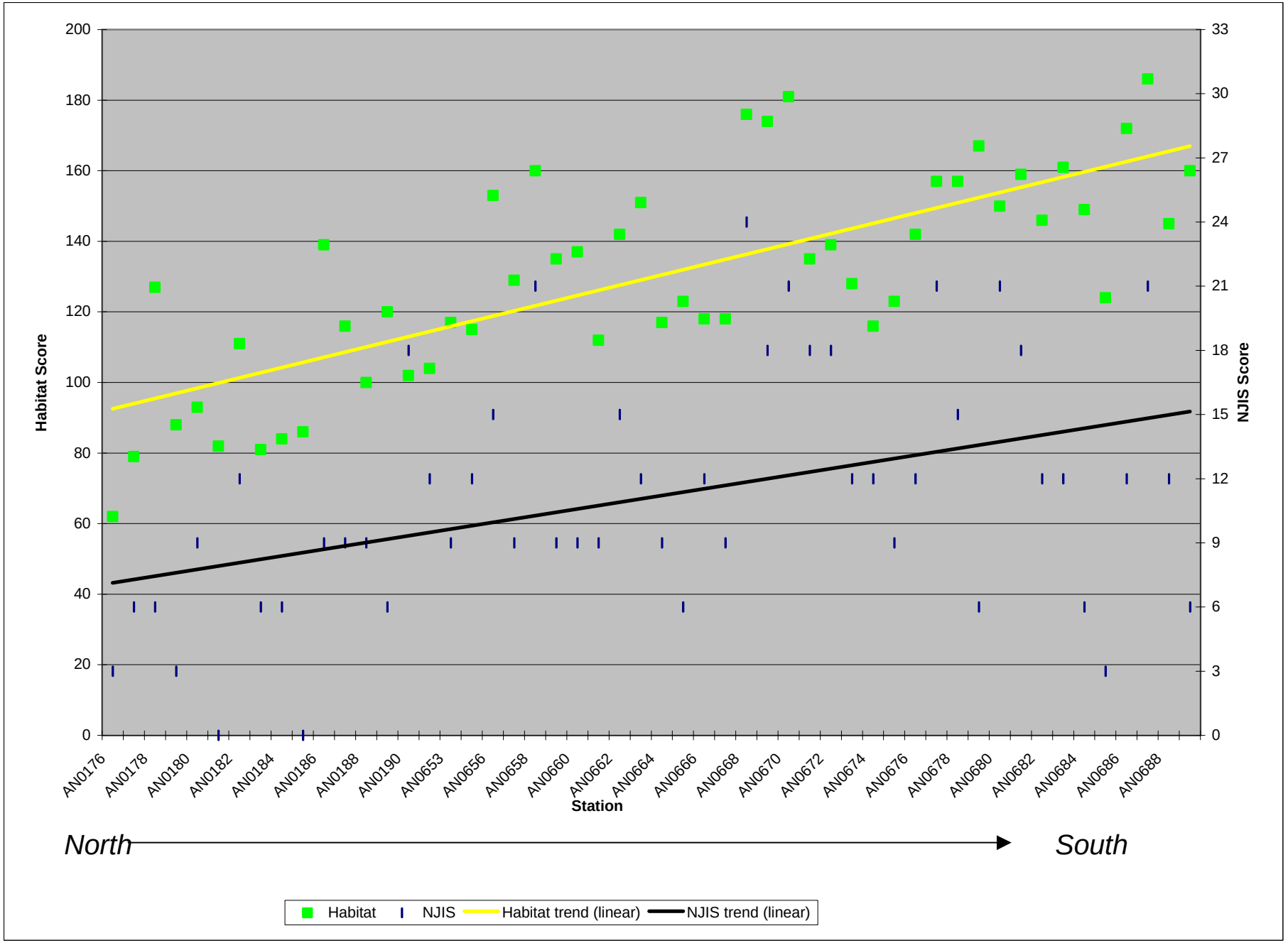
2001



Comparative Scores of HABITAT vs. NJIS

WMA 18

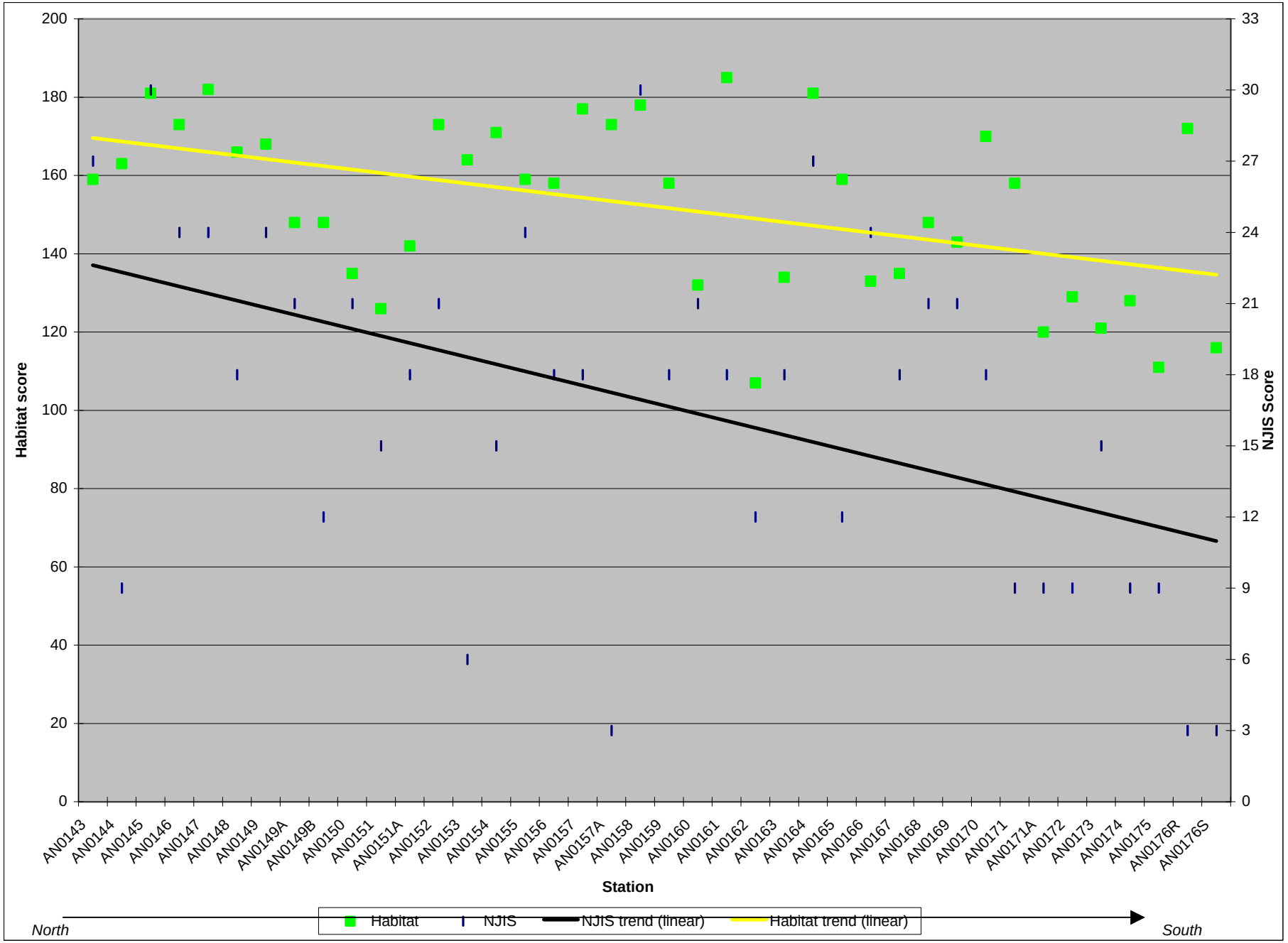
2001



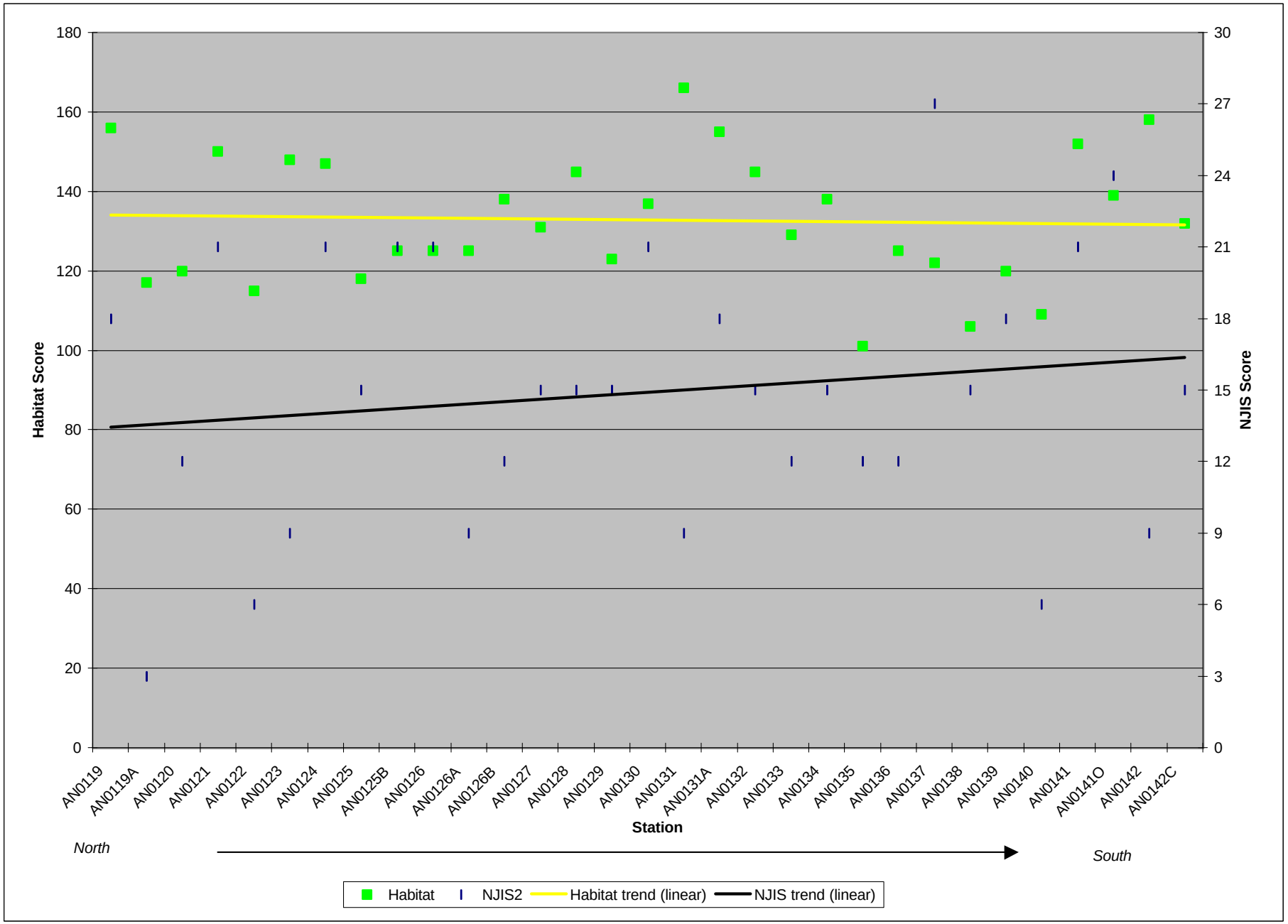
Comparative Scores of HABITAT vs. NJIS

WMA 19

2001



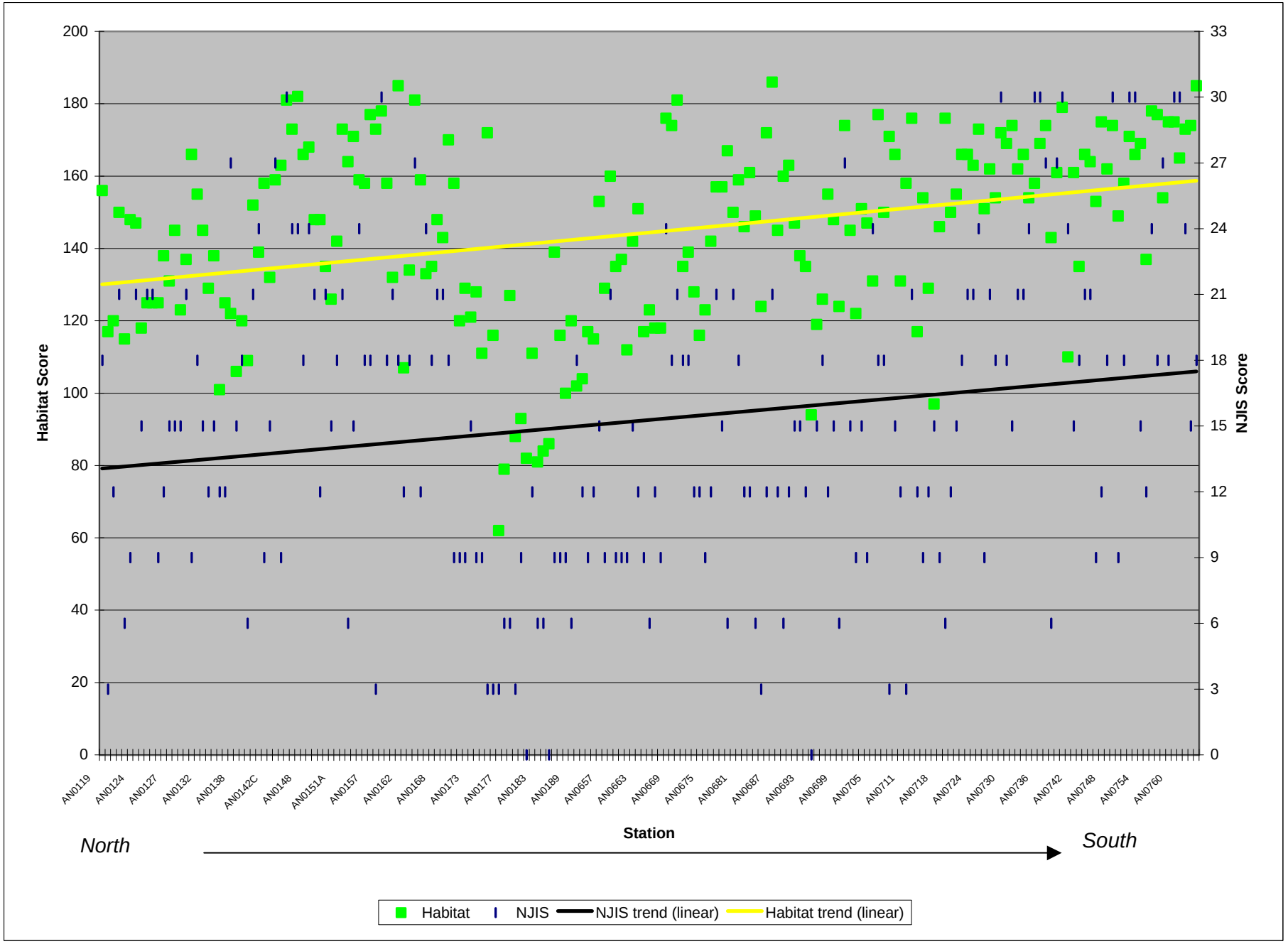
Comparative Scores of
HABITAT vs. NJIS
WMA 20
2001



Comparative Scores of HABITAT vs. NJIS

COMBINED

Lower Delaware Watershed Region 2001



APPENDIX D

Taxonomic and Statistical Data, NJIS Scores*, Habitat Assessment Scores and Observations from the 2001 Lower Delaware Region AMNET Study

(Site numbers, locations and USGS topographic quadrangle, top of page.)

Notes/Definitions:

* Statistical data includes those biometric results that are applied to the NJIS rating. Appendix D also includes certain biometrics that have been given as optional for the RBP analysis [2] but are not employed for the NJIS rating [12]; these include ratios of certain functional types or pollution sensitive to pollution tolerant groups; for these (1-3 below), higher values generally indicate better water quality.

1. *Scraper/Filtering Collector Ratio* — dominance of filtering collectors indicates organic enrichment; however, if toxicants are present in the system, their adsorption on macrophytes and fine particulate organics can affect the abundance of filtering collectors.
2. *Shredder/Total Ratio* — considering their diet of coarse particulate organic matter (CPOM), a lack of shredders may indicate the presence of toxicants, particularly from terrestrial sources (e.g. pesticides), as these are readily adsorbed to the CPOM.
3. *EPT/Chironomid Ratio* — even distribution among the major groups, with strong representation in the pollution-sensitive taxa (Ephemeroptera, Plecoptera, Trichoptera), reflects a good biotic condition; dominance of chironomids reflects environmental stress.

Included in the NJIS score are:

1. Taxa Richness – number of families represented in sample.
2. Family Biotic Index – assigns a pollution tolerance level to each family on a scale of zero to ten, zero being least tolerant.
3. Dominant Family – expressed as a percent of total families.
4. Number of EPT families – E + P + T.
5. Percent EPT - % of total families.

See METHODS, Table 1.

Other notes:

1. UNT – un-named tributary
2. Blood Red Chironomidae – primarily members of the tribe Chironomini (subfamily Chironominae), which posses a hemoglobin-like pigment that retains oxygen, thus increasing their tolerance to organic pollution.
3. Habitat observations supplement the habitat assessment scores in Table 2 and Appendix C; Open Canopy = overhead vegetation; water quality measurements taken in field include temperature (°C), pH, dissolved oxygen, conductivity.

APPENDIX D (cont.)

Taxonomic List of Macroinvertebrate Families Found at New Jersey AMNET Sites*

- Phylum PLATYHELMINTHES
  - Class TURBELLARIA (flatworms)
    - Order TRICLADIDA
      - Family Dendrocoelidae
      - Family Planariidae
    - Order MACROSTOMIDA
      - Family Macrostomidae
    - Order NEORHABDOCOELA
      - Family Typhloplanidae
    - Order ALLOEOCOELA
      - Family Plagiostomidae
      - Family Prorhynchidae
- Phylum NEMERTEA (proboscis worms)
  - Class ENOPLA
    - Order HOPLONEMERTINI
      - Family Tetrastemmatidae
- Phylum NEMATODA (roundworms)
- Phylum ANNELIDA
  - Class OLIGOCHAETA (aquatic earthworms)
    - Order HAPLOTAXIDA
      - Family Aeolosomatidae
      - Family Enchytraeidae
      - Family Haplotaxidae
      - Family Lumbricidae
      - Family Naididae
      - Family Tubificidae
    - Order LUMBRICULIDA
      - Family Lumbriculidae
  - Class BRANCHIOBDELLIDA
    - Family Branchiobdellidae
  - Class POLYCHAETA
    - Family Sabellidae
  - Class HIRUDINEA (leeches)
    - Order RHYNCHOBELLIDA
      - Family Glossiphoniidae
      - Family Piscicolidae
    - Order ARHYNCHOBDELLIDA
      - Family Erpobdellidae
    - Order GNATHOBDELLIDA
      - Family Hirudinidae
- Phylum ARTHROPODA
  - Class CRUSTACEA
    - Order ISOPODA (aquatic sow bugs)
      - Family Asellidae
      - Family Oniscidae
      - Family Porcellionidae
    - Order AMPHIPODA (scuds, sideswimmers)
      - Family Gammaridae
      - Family Talitridae
    - Order DECAPODA (crayfish, shrimp)
      - Family Astacidae
      - Family Cambaridae
      - Family Palaemonidae
  - Class ARACHNOIDEA
    - Order HYDRACARINA (water mites)
      - Family Arrenuridae
      - Family Axonopsidae
      - Family Hydryphantidae
      - Family Hygrobatidae
      - Family Lebertiidae
      - Family Limnesiidae
      - Family Pionidae
      - Family Sperchonidae
      - Family Unionicolidae
  - Class CHILOPODA (centipedes)
  - Class DIPLOPODA (millipedes)
  - Class INSECTA
    - Order COLLEMBOLA (springtails)
      - Family Entomobryidae
      - Family Hypogastruridae
      - Family Isotomidae
      - Family Onychiuridae
      - Family Poduridae
    - Order PLECOPTERA (stoneflies)
      - Family Capniidae
      - Family Chloroperlidae
      - Family Leuctridae
      - Family Nemouridae
      - Family Peltoperlidae
      - Family Perlidae
      - Family Perlodidae
      - Family Pteronarcyidae
      - Family Taeniopterygidae
    - Order EPHEMEROPTERA (mayflies)
      - Family Baetidae
      - Family Baetiscidae
      - Family Caenidae
      - Family Ephemerellidae
      - Family Ephemeridae
      - Family Heptageniidae
      - Family Leptophlebiidae
      - Family Metretopodidae
      - Family Oligoneuriidae
      - Family Polymitarcyidae
      - Family Potamanthidae
      - Family Siphlonuridae
      - Family Tricorythidae

* Includes only those taxa that are employed in calculation of the NJIS rating; major taxa are listed in the order presented in Pennak (1978) [17].

- Order ODONATA
  - Suborder ANISOPTERA (dragonflies)
    - Family Aeshnidae
    - Cordulegastridae
    - Corduliidae
    - Gomphidae
    - Libellulidae
    - Macromiidae
  - Suborder ZYGOPTERA (damselflies)
    - Family Calopterygidae
    - Coenagrionidae
    - Lestidae
- Order HEMIPTERA (true bugs)
  - Family Belostomatidae
  - Corixidae
  - Gerridae
  - Mesoveliidae
  - Nepidae
  - Notonectidae
  - Pleidae
  - Veliidae
- Order MEGALOPTERA
  - Family Corydalidae (dobsonflies, fishflies)
  - Sialidae (alderflies)
- Order NEUROPTERA
  - Family Sisyridae (spongilla flies)
- Order TRICHOPTERA (caddisflies)
  - Family Brachycentridae
  - Calamoceratidae
  - Glossosomatidae
  - Helicopsychidae
  - Hydropsychidae
  - Hydroptilidae
  - Lepidostomatidae
  - Leptoceridae
  - Limnephilidae
  - Molannidae
  - Odontoceridae
  - Philopotamidae
  - Phryganeidae
  - Polycentropodidae
  - Psychomyiidae
  - Rhyacophilidae
  - Sericostomatidae
- Order LEPIDOPTERA (aquatic caterpillars)
  - Family Nepticulidae
  - Pyralidae
- Order COLEOPTERA (beetles)
  - Family Chrysomelidae
  - Curculionidae
  - Dryopidae
  - Dytiscidae
  - Elmidae
  - Gyrinidae
  - Haliplidae
  - Hydrophilidae
  - Lampyridae
  - Noteridae
  - Psephenidae
  - Ptilodactylidae
  - Scirtidae
- Order DIPTERA (flies, midges)
  - Family Athericidae
  - Blephariceridae
  - Ceratopogonidae
  - Chaoboridae
  - Chironomidae
  - Culicidae
  - Dixidae
  - Dolichopodidae
  - Empididae
  - Ephydridae
  - Muscidae
  - Phoridae
  - Psychodidae
  - Ptychopteridae
  - Sciomyzidae
  - Simuliidae
  - Stratiomyidae
  - Syrphidae
  - Tabanidae
  - Tanyderidae
  - Tipulidae
- Phylum MOLLUSCA
  - Class GASTROPODA (snails)
    - Order BASOMMATOPHORA
      - Family Ancylidae
      - Lymnaeidae
      - Physidae
      - Planorbidae
    - Order MESOGASTROPODA
      - Family Hydrobiidae
      - Pleuroceridae
      - Valvatidae
      - Viviparidae
  - Class PELECYPODA (clams, mussels)
    - Order EULAMELLIBRANCHIA
      - Family Unionidae
    - Order HETERODONTA
      - Family Corbiculidae
      - Sphaerii

Station: AN0119
Jumping Bk, Bunting Bridge Rd., North Hanover Twp., Burlington County
New Egypt USGS Quadrangle
Date Sampled: 1/11/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	15
Chironomidae	6	7
Hydropsychidae	4	5
Hydrobiidae	8	4
Planariidae	4	4
Sphaeriidae	8	4
Aeshnidae	3	3
Tubificidae	10	2
Tetrastemmatidae	7	2
Phryganeidae	4	1
Lumbriculidae	8	1
Gammaridae	4	1
Empididae	6	1
Planorbidae	6	1
Naididae	7	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 53
% Contribution of Dominant Family: 28.30 % (Elmidae)
Family Biotic Index: 5.43
Scraper/Filterer Collector Ratio: 2.22
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 11.32
EPT/C: 0.75
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 156
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 30/2-3
Substrate: Gravel/sand, snags....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Open....Other: agriculture-cropland, rural; storm sewers
water color cedar brown; Water temp. 1.6C / pH 6.4SU / DO 13.0mg/L / Cond. 72umhos

Station: AN0119A
South Run, Browns Mills-Cookstown Rd., New Hanover Twp., Burlington County
New Egypt USGS Quadrangle
Date Sampled: 2/13/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	3
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 2
Total Number of Individuals: 4
% Contribution of Dominant Family: 75.00 % (Chironomidae)
Family Biotic Index: 5.75
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 117
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Low Diversity - - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 25/2-3
Substrate: Cobble, gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Poor Canopy: Partly Open....Other: site in Fort Dix, forested; iron precipitate, metalic odor, water creamy grey-green color
large aluminum pipe standing in stream, unnatural cobbles in places; Water temp. 8.2C / pH 6.6SU / DO 10.7mg/L / Cond. 231umhos

Station: AN0120
North Run, Main St., North Hanover Twp., Burlington County
New Egypt USGS Quadrangle
Date Sampled: 1/11/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	55
Sphaeriidae	8	7
Tubificidae	10	6
Hydrobiidae	8	5
Aeshnidae	3	5
Hydropsychidae	4	5
Coenagrionidae	9	5
Planorbidae	6	3
Physidae	7	2
Tetrastemmatidae	7	2
BloodRed Chironomidae	8	1
Empididae	6	1
Lumbriculidae	8	1
Naididae	7	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 55.00 % (Chironomidae)
Family Biotic Index: 6.47
Scraper/Filterer Collector Ratio: 0.77
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 5.00
EPT/C: 0.09
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 120
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 16/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Poor
Canopy: Partly Open....Other: suburban; flowing storm sewers; pipes discharging from residences; station downstream of impoundment; iron precipitate; fish
bricks and concrete stabilizing bank; foundation of house in stream; Water temp. 2.6C / pH 6.8SU / DO 13.6mg/L / Cond. 252umhos

Station: AN0121
Crosswicks Ck, Rt. 537, Plumsted Twp., Monmouth/Ocean County
New Egypt USGS Quadrangle
Date Sampled: 1/11/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	24
Gammaridae	4	23
Sphaeriidae	8	22
Simuliidae	6	8
Elmidae	4	6
Taeniopterygidae	2	6
Hydropsychidae	4	4
Planorbidae	6	4
BloodRed Chironomidae	8	4
Coenagrionidae	9	2
Hydrobiidae	8	1
Asellidae	8	1
Lumbriculidae	8	1
Plagiostomidae	4	1
Tetrastemmatidae	7	1
Heptageniidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 110
% Contribution of Dominant Family: 21.82 % (Chironomidae)
Family Biotic Index: 5.77
Scraper/Filterer Collector Ratio: 0.21
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 10.00
EPT/C: 0.39
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 150
Deficiency(s) noted:
-

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 71/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: no data/Fair
Canopy: Mostly Open....Other: forested; storm sewers
lots of sedimentation; Water temp. 0.7C / pH 6.7SU / DO 12.6mg/L / Cond. 150umhos

Station: AN0122
Lahaway Ck., Rt. 537, Upper Freehold Twp., Monmouth County
Roosevelt USGS Quadrangle
Date Sampled: 1/9/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	48
Tetrastemmatidae	7	20
Chironomidae	6	10
Naididae	7	6
Planariidae	4	4
Hydrobiidae	8	3
Asellidae	8	2
Planorbidae	6	2
Hydropsychidae	4	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 97
% Contribution of Dominant Family: 49.48 % (Sphaeriidae)
Family Biotic Index: 7.28
Scraper/Filterer Collector Ratio: 0.10
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.03
EPT/C: 0.10
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 115
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 15/1-2
Substrate: Cobble, gravel/sand, silt....StreamBank Vegetation/Stability: trees, shrubs/Poor
Canopy: Partly Open....Other: rural, downstream of Great Adventure; station downstream of Prospertown Lake
foam on surface, unnatural cobble, lake frozen; Water temp. 4.1C / pH 7.3SU / DO 11.6mg/L / Cond. 85umhos

Station: AN0123
Ivanhoe Bk, Millers Mill Rd., Upper Freehold Twp., Monmouth County
Roosevelt USGS Quadrangle
Date Sampled: 1/9/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	58
Tubificidae	10	25
Sphaeriidae	8	3
Sialidae	4	3
Elmidae	4	2
Coenagrionidae	9	2
Stratiomyidae	10	2
BloodRed Chironomidae	8	2
Ptychopteridae	8	1
Astacidae	7.2	1
Dytiscidae	5	1
Taeniopterygidae	2	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 102
% Contribution of Dominant Family: 56.86 % (Chironomidae)
Family Biotic Index: 7.09
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.98
EPT/C: 0.02
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 148
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 8-10/2-2.5
Substrate: Mud, silt....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Partly Open....Other: rural, forested; Water temp. 1.0C / pH 6.8SU / DO 11.3mg/L / Cond. 300umhos

Station: AN0124
Lahaway Ck, New Egypt-Allentown Rd., Upper Freehold Twp., Monmouth County
New Egypt USGS Quadrangle
Date Sampled: 1/9/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Taeniopterygidae	2	61
Heptageniidae	4	9
Hydropsychidae	4	6
Sphaeriidae	8	5
Elmidae	4	5
Chironomidae	6	4
Tubificidae	10	3
Simuliidae	6	3
Dryopidae	5	2
Gammaridae	4	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 61.00 % (Taeniopterygidae)
Family Biotic Index: 3.36
Scraper/Filterer Collector Ratio: 1.14
Shredder/Total Ratio: 0.63
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 76.00
EPT/C: 15.20
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 147
Deficiency(s) noted: Taeniopterygidae Family Overwhelmingly Dominant -
-

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 15-18/2-2.5
Substrate: Gravel/sand, silt, snags....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: agriculture-cropland, forested; Water temp. 1.8C / pH 7.1SU / DO 11.4mg/L / Cond. 192umhos

Station: AN0125
Crosswicks Ck, Extonville Rd., Chesterfield Twp., Burlington/Mercer County
Allentown USGS Quadrangle
Date Sampled: 1/17/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	41
Sphaeriidae	8	23
Tubificidae	10	15
Hydrobiidae	8	8
Taeniopterygidae	2	7
Plagiostomidae	4	5
Macromiidae	3	2
Calopterygidae	5	1
Elmidae	4	1
Planariidae	4	1
Gammaridae	4	1
Planorbidae	6	1
Phryganeidae	4	1
Lymnaeidae	6	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 109
% Contribution of Dominant Family: 37.61 % (Chironomidae)
Family Biotic Index: 6.65
Scraper/Filterer Collector Ratio: 0.17
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 7.34
EPT/C: 0.19
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 118
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 25/3
Substrate: Mud....StreamBank Vegetation/Stability: Trees, grass/Poor
Canopy: Partly Open....Other: agriculture-livestock (horses, chickens, roosters, and ducks); rural, ducks in stream
Water temp. 2.5C / pH 6.6SU / DO 12.0mg/L / Cond. 186umhos;

Station: AN0125B
Miry Run, Holmes Mill Rd., Upper Freehold Twp., Monmouth County
Allentown USGS Quadrangle
Date Sampled: 2/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	57
Taeniopterygidae	2	13
Calopterygidae	5	5
Elmidae	4	5
Phryganeidae	4	3
Tubificidae	10	3
Dytiscidae	5	2
Corydalidae	0	2
BloodRed Chironomidae	8	2
Hydropsychidae	4	1
Corixidae	9	1
Ephemerellidae	1	1
Gomphidae	1	1
Coenagrionidae	9	1
Psychomyiidae	2	1
Sphaeriidae	8	1
Polycentropodidae	6	1
Psychodidae	10	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 102
% Contribution of Dominant Family: 55.88 % (Chironomidae)
Family Biotic Index: 5.24
Scraper/Filterer Collector Ratio: 3.00
Shredder/Total Ratio: 0.22
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 19.61
EPT/C: 0.34
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 125
Deficiency(s) noted:
-

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 12/1-2
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Partly Open....Other: agriculture-livestock, rural; station downstream of impoundment
iron precipitate; water color cloudy grey-green; Water temp. 7.2C / pH 6.9SU / DO 12.6mg/L / Cond. 205umhos

Station: AN0126
Crosswicks Ck, Main St., Chesterfield Twp., Burlington County
Trenton East USGS Quadrangle
Date Sampled: 1/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Taeniopterygidae	2	46
Chironomidae	6	28
Gammaridae	4	9
Tubificidae	10	5
Hydropsychidae	4	3
Elmidae	4	3
Hydrobiidae	8	2
Planariidae	4	2
Coenagrionidae	9	1
BloodRed Chironomidae	8	1
Enchytraeidae	10	1
Plagiostomidae	4	1
Tipulidae	3	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 104
% Contribution of Dominant Family: 44.23 % (Taeniopterygidae)
Family Biotic Index: 4.19
Scraper/Filterer Collector Ratio: 1.25
Shredder/Total Ratio: 0.47
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 47.12
EPT/C: 1.69
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 125
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 46/3
Substrate: Mud, snags, clay....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Partly Open....Other: suburban; storm sewers
Water temp. 0.6C / pH 7.3SU / DO 13.3mg/L / Cond. 262umhos;

Station: AN0126A
Unt To Crosswicks Ck, Iron Bridge Rd., Chesterfield Twp., Burlington County
Allentown USGS Quadrangle
Date Sampled: 2/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	15
Tubificidae	10	7
Simuliidae	6	3
Tipulidae	3	3
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 5
Total Number of Individuals: 29
% Contribution of Dominant Family: 51.72 % (Chironomidae)
Family Biotic Index: 6.69
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 125
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 8/1-<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Poor
Canopy: Partly Open....Other: agriculture-livestock, rural; storm sewers and iron precipitate
Water temp. 6.7C / pH 6.9SU / DO 13.0mg/L / Cond. 140umhos;

Station: AN0126B
Pleasant Run, Extonville Rd., Hamilton Twp., Mercer County
Allentown USGS Quadrangle
Date Sampled: 2/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	7
Tubificidae	10	6
BloodRed Chironomidae	8	5
Phryganeidae	4	3
Elmidae	4	2
Lumbriculidae	8	2
Simuliidae	6	2
Planariidae	4	1
Coenagrionidae	9	1
Sphaeriidae	8	1
Notonectidae	9	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 31
% Contribution of Dominant Family: 22.58 % (Chironomidae)
Family Biotic Index: 7.10
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.26
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 9.68
EPT/C: 0.25
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 138
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: agriculture-cropland and livestock; iron precipitate and debris
Water temp. 6.3C / pH 6.7SU / DO 13.4mg/L / Cond. 218umhos;

Station: AN0127
Doctors Ck, Rt. 526 (Red Valley Rd.), Upper Freehold Twp., Monmouth County
Roosevelt USGS Quadrangle
Date Sampled: 1/9/01

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	21
Chironomidae	6	18
Sphaeriidae	8	18
Coenagrionidae	9	14
Planorbidae	6	6
Physidae	7	5
Elmidae	4	4
Tipulidae	3	4
Valvatidae	4	3
Planariidae	4	2
Gammaridae	4	2
Tetrastemmatidae	7	2
Corduliidae	5	2
Tubificidae	10	2
Caenidae	7	1
Hydroptilidae	4	1
Ceratopogonidae	6	1
Lymnaeidae	6	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 108
% Contribution of Dominant Family: 19.44 % (BloodRed Chironomidae)
Family Biotic Index: 6.91
Scraper/Filterer Collector Ratio: 0.56
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 1.85
EPT/C: 0.05
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 131
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 12/2-3
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Mostly Open....Other: agriculture-cropland and livestock, rural; station downstream from Red Valley Lake
stream appears flooded; Water temp. 1.1C / pH 6.8SU / DO 10.7mg/L / Cond. 185umhos

Station: AN0128
Negro Run, Red Valley Rd., Allentown Boro, Monmouth County
Allentown USGS Quadrangle
Date Sampled: 1/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	26
Plagiostomidae	4	23
Tubificidae	10	20
Chironomidae	6	9
BloodRed Chironomidae	8	7
Coenagrionidae	9	4
Hydrobiidae	8	3
Planorbidae	6	3
Sphaeriidae	8	2
Corbiculidae	8	1
Elmidae	4	1
Glossiphoniidae	8	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 26.00 % (Naididae)
Family Biotic Index: 6.98
Scraper/Filterer Collector Ratio: 0.58
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 145
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 13/2->3
Substrate: Mud....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Open....Other: agriculture-cropland, rural; site appeared flooded, limited access becaues of snow
Water temp. 3.0C / pH 7.0SU / DO 10.6mg/L / Cond 316umhos;

Station: AN0129
Doctors Ck, Breza Rd., Allentown Boro, Monmouth County
Allentown USGS Quadrangle
Date Sampled: 1/9/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	24
BloodRed Chironomidae	8	15
Chironomidae	6	14
Hydrobiidae	8	12
Plagiostomidae	4	9
Gammaridae	4	6
Hydropsychidae	4	5
Sphaeriidae	8	5
Naididae	7	4
Tetrastemmatidae	7	4
Physidae	7	3
Elmidae	4	2
Taeniopterygidae	2	2
Asellidae	8	1
Corixidae	9	1
Coenagrionidae	9	1
Phryganeidae	4	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 110
% Contribution of Dominant Family: 21.82 % (Tubificidae)
Family Biotic Index: 7.13
Scraper/Filterer Collector Ratio: 3.10
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 7.27
EPT/C: 0.28
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 123
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 20-25/2-2.5
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: agriculture-cropland, apartment complex and sewage treatment plant; discharges from Allentown Sewage Treatment Plant storm sewers; Water temp. 1.4C / pH 7.0SU / DO 11.6mg/L / Cond 220umhos

Station: AN0130
Doctors Ck., Rt. 130, Hamilton Twp., Mercer County
Trenton East USGS Quadrangle
Date Sampled: 1/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	36
Taeniopterygidae	2	30
Sphaeriidae	8	12
Elmidae	4	9
Hydrobiidae	8	7
Planorbidae	6	3
Hydropsychidae	4	1
Leptoceridae	4	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 100
% Contribution of Dominant Family: 36.00 % (Chironomidae)
Family Biotic Index: 4.97
Scraper/Filterer Collector Ratio: 0.41
Shredder/Total Ratio: 0.30
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 32.00
EPT/C: 0.89
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 137
Deficiency(s) noted:
-

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 29/2-3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs/Poor
Canopy: Mostly Closed....Other: suburban; Water temp. 0.7C / pH 7.3SU / DO 13.5mg/L / Cond. 311umhos

Station: AN0131
Crosswicks Ck., Point Breeze, Bordentown Twp., Burlington County
Trenton East USGS Quadrangle
Date Sampled: 5/23/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	40
Gammaridae	4	29
Naididae	7	14
Corbiculidae	8	9
Tubificidae	10	7
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 100
% Contribution of Dominant Family: 40.00 % (Chironomidae)
Family Biotic Index: 6.04
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 75/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Open....Other: suburban, forested; Water temp. 16.2C / pH 7.6SU / DO 7.5mg/L / Cond. 226umhos

Station: AN0131A
Back Ck, Yardville-Hamilton Square Rd., Hamilton Twp., Mercer County
Trenton East USGS Quadrangle
Date Sampled: 2/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	34
Chironomidae	6	15
Asellidae	8	10
Tubificidae	10	10
Elmidae	4	9
Capniidae	1	8
Ephemerellidae	1	6
Plagiostomidae	4	4
Sphaeriidae	8	4
BloodRed Chironomidae	8	2
Lumbriculidae	8	2
Sialidae	4	2
Ancylidae	6	1
Talitridae	8	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 109
% Contribution of Dominant Family: 31.19 % (Gammaridae)
Family Biotic Index: 5.18
Scraper/Filterer Collector Ratio: 2.50
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 12.84
EPT/C: 0.82
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 155
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 17/2-2.5
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Partly Open....Other: suburban; storm sewers
fish and tadpoles; Water temp. 6.1C / pH 7.4SU / DO 12.6mg/L / Cond. 516umhos

Station: AN0132
Blacks Ck, Chesterfield-Georgetown Rd., Chesterfield Twp., Burlington County
Columbus USGS Quadrangle
Date Sampled: 1/16/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	33
Chironomidae	6	25
Tubificidae	10	17
Taeniopterygidae	2	7
Elmidae	4	6
Hydropsychidae	4	5
Calopterygidae	5	2
BloodRed Chironomidae	8	2
Sphaeriidae	8	2
Planariidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 33.00 % (Simuliidae)
Family Biotic Index: 6.22
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 12.00
EPT/C: 0.44
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 145
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 39/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees/Fair
Canopy: Partly Open....Other: rural, forested; storm sewers present
Water temp. 2.7C / pH 7.5SU / DO 13.5mg/L / Cond. 153umhos;

Station: AN0133
Bacons Run, White Pine Rd., Chesterfield Twp., Burlington County
Columbus USGS Quadrangle
Date Sampled: 1/16/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	59
Tubificidae	10	20
Gammaridae	4	10
Asellidae	8	6
Tipulidae	3	5
Calopterygidae	5	1
Hydropsychidae	4	1
Psychomyiidae	2	1
Sialidae	4	1
Elmidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 106
% Contribution of Dominant Family: 55.66 % (Chironomidae)
Family Biotic Index: 6.43
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 1.89
EPT/C: 0.03
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 129
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 13/<1
Substrate: Gravel/sand, clay....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: agriculture-cropland, forested; Water temp. 2.4C / pH 7.3SU / DO 12.8mg/L / Cond. 195umhos

Station: AN0134
Blacks Ck, Rt. 130, Bordentown, Burlington County
Trenton East USGS Quadrangle
Date Sampled: 1/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Corbiculidae	8	29
Chironomidae	6	16
Tubificidae	10	16
Gammaridae	4	15
BloodRed Chironomidae	8	10
Gomphidae	1	3
Lumbriculidae	8	3
Tetrastemmatidae	7	2
Taeniopterygidae	2	2
Aeshnidae	3	1
Elmidae	4	1
Plagiostomidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 99
% Contribution of Dominant Family: 29.29 % (Corbiculidae)
Family Biotic Index: 6.91
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.27
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.02
EPT/C: 0.08
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 138
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 30/2-3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Mostly Closed....Other: suburban; storm sewers, fish
large blocks of cement stabilizing left bank; Water temp. 0.9C / pH 7.4SU / DO 13.3mg/L /
Cond. 442

Station: AN0135
Crafts Ck, Gaunts Bridge Rd., Mansfield Twp., Burlington County
Columbus USGS Quadrangle
Date Sampled: 1/16/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	45
Sphaeriidae	8	29
Physidae	7	12
Tubificidae	10	4
Viviparidae	6	2
BloodRed Chironomidae	8	2
Limnephilidae	4	2
Asellidae	8	1
Hydropsychidae	4	1
Corixidae	9	1
Gammaridae	4	1
Dytiscidae	5	1
Erpobdellidae	8	1
Sialidae	4	1
Lymnaeidae	7	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 104
% Contribution of Dominant Family: 43.27 % (Chironomidae)
Family Biotic Index: 6.84
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.88
EPT/C: 0.06
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 101
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 4/1
Substrate: Mud....StreamBank Vegetation/Stability: Trees, vines/Poor
Canopy: Open....Other: agriculture-livestock; drainage ditch
Water temp. 3.2C / pH 6.9SU / DO 11.4mg/L / Cond. 272umhos;

Station: AN0136
Crafts Ck, Island Rd., Mansfield Twp., Burlington County
Columbus USGS Quadrangle
Date Sampled: 1/16/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	8
Chironomidae	6	8
Gammaridae	4	7
Tubificidae	10	4
Sialidae	4	4
Tipulidae	3	2
Sphaeriidae	8	2
Elmidae	4	1
Coenagrionidae	9	1
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 38
% Contribution of Dominant Family: 21.05 % (Asellidae & Chironomidae)
Family Biotic Index: 6.21
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 125
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 12/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Partly Open....Other: rural, forested; Water temp. 3.0C / pH 6.6SU / DO 11.7mg/L / Cond. 212umhos

Station: AN0137
Crafts Ck, Old York Rd., Florence Twp., Burlington County
Bristol USGS Quadrangle
Date Sampled: 1/17/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Capniidae	1	39
Gammaridae	4	19
Chironomidae	6	15
Taeniopterygidae	2	6
Elmidae	4	4
Ephemerellidae	1	4
Hydrobiidae	8	2
Coenagrionidae	9	2
Corbiculidae	8	2
BloodRed Chironomidae	8	2
Heptageniidae	4	2
Calopterygidae	5	1
Hydropsychidae	4	1
Ancylidae	6	1
Gomphidae	1	1
Palaemonidae	6	1
Physidae	7	1
Tetrastemmatidae	7	1
Simuliidae	6	1
Corduliidae	5	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 107
% Contribution of Dominant Family: 36.45 % (Capniidae)
Family Biotic Index: 3.44
Scraper/Filterer Collector Ratio: 2.00
Shredder/Total Ratio: 0.42
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 48.60
EPT/C: 3.06
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 122
Deficiency(s) noted:
-

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 15/3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Poor
Canopy: Mostly Open....Other: agriculture-livestock (horses), rural; fish
Water temp. 1.5C / pH 7.0SU / DO 13.2mg/L / Cond. 316umhos;

Station: AN0138
Assiscunk Ck, Columbus-Georgetown Rd., Mansfield Twp., Burlington County
Columbus USGS Quadrangle
Date Sampled: 1/16/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	58
Chironomidae	6	15
Tipulidae	3	10
Asellidae	8	6
Simuliidae	6	3
Sialidae	4	3
Tubificidae	10	3
Dytiscidae	5	1
Lumbriculidae	8	1
Naididae	7	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 102
% Contribution of Dominant Family: 56.86 % (Gammaridae)
Family Biotic Index: 4.75
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.74
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.98
EPT/C: 0.07
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 106
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6/<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Mostly Open....Other: agriculture-cropland and livestock; Water temp.3.0C / pH 6.8SU / DO 12.9mg/L / Cond. 202umhos

Station: AN0139
Annaricken Bk, Island Rd., Springfield Twp., Burlington County
Columbus USGS Quadrangle
Date Sampled: 1/16/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	56
Hydropsychidae	4	11
Tipulidae	3	10
Tubificidae	10	9
Elmidae	4	6
Ephemerellidae	1	3
Sphaeriidae	8	2
Tabanidae	6	2
Simuliidae	6	1
Planariidae	4	1
Lumbricidae	10	1
Naididae	7	1
Leptoceridae	4	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 105
% Contribution of Dominant Family: 53.33 % (Chironomidae)
Family Biotic Index: 5.62
Scraper/Filterer Collector Ratio: 0.64
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 15.24
EPT/C: 0.29
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 120
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Poor
Canopy: Mostly Open....Other: agriculture-cropland, forested; Water temp. 4.2C / pH 6.5SU / DO 12.4mg/L / Cond. 229umhos

Station: AN0140
North Br Barkers Bk, Georgetown-Juliustown Rd., Springfield Twp., Burlington County
Columbus USGS Quadrangle
Date Sampled: 1/17/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	40
Chironomidae	6	13
Physidae	7	12
Gammaridae	4	10
Tubificidae	10	10
Asellidae	8	6
Simuliidae	6	5
Phryganeidae	4	2
Baetidae	4	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 40.00 % (Sphaeriidae)
Family Biotic Index: 7.16
Scraper/Filterer Collector Ratio: 0.31
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 3.00
EPT/C: 0.23
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 109
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 3-5/1-2
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Grass/Fair
Canopy: Open....Other: agriculture-cropland, rural; tadpoles, macrophytes
Water temp. 1.3C / pH 6.6SU / DO 10.6mg/L / Cond. 243umhos;

Station: AN0141
Assiscunk Ck, Jacksonville Rd., Springfield Twp., Burlington County
Bristol USGS Quadrangle
Date Sampled: 1/17/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Corbiculidae	8	23
Chironomidae	6	20
Elmidae	4	19
Tubificidae	10	11
Calopterygidae	5	5
Coenagrionidae	9	3
Sphaeriidae	8	3
Sialidae	4	3
Hydropsychidae	4	2
Planorbidae	6	2
BloodRed Chironomidae	8	2
Taeniopterygidae	2	2
Asellidae	8	1
Ephemerellidae	1	1
Plagiostomidae	4	1
Polycentropodidae	6	1
Leptoceridae	4	1
Physidae	7	1
Tetrastemmatidae	7	1
Limnephilidae	4	1
Tabanidae	6	1
Tipulidae	3	1
Valvatidae	4	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 106
% Contribution of Dominant Family: 21.70 % (Corbiculidae)
Family Biotic Index: 6.34
Scraper/Filterer Collector Ratio: 0.25
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 7.55
EPT/C: 0.36
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 152
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 25/3
Substrate: Gravel/sand, clay....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Partly Open....Other: rural; storm sewers
macrophytes; Water temp. 2.2C / pH 6.4SU / DO 10.3mg/L / Cond. 225umhos

Station: AN0141O
Bakers Bk, Jacksonville-Smithville Rd., Springfield Twp., Burlington County
Bristol USGS Quadrangle
Date Sampled: 2/20/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	25
Ephemerellidae	1	22
Elmidae	4	15
BloodRed Chironomidae	8	9
Talitridae	8	6
Asellidae	8	5
Polycentropodidae	6	4
Leptophlebiidae	2	3
Corixidae	9	2
Gammaridae	4	2
Aeshnidae	3	1
Simuliidae	6	1
Naididae	7	1
Gomphidae	1	1
Leptoceridae	4	1
Sialidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Chironomidae)
Family Biotic Index: 4.83
Scraper/Filterer Collector Ratio: 3.00
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 30.00
EPT/C: 0.88
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 139
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 18/2-1
Substrate: Gravel/sand, mud, clay....StreamBank Vegetation/Stability: Weeds, trees/Poor Canopy: Mostly Open....Other: agriculture-livestock, rural; recently flooded macrophytes and fish; Water temp. 4.4C / pH 6.9SU / DO 13.6mg/L / Cond. 163umhos

Station: AN0142
Assiscunk Ck, Neck Rd., Burlington Twp., Burlington County
Bristol USGS Quadrangle
Date Sampled: 5/23/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Corixidae	9	29
Gammaridae	4	27
Tubificidae	10	17
BloodRed Chironomidae	8	15
Chironomidae	6	7
Coenagrionidae	9	1
Baetidae	4	1
Asellidae	8	1
Elmidae	4	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Corixidae)
Family Biotic Index: 7.33
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 0.05
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 78/3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Grass, shrubs, trees/Fair
Canopy: Mostly Open....Other: rural; storm sewers
sampled at low tide; many juvenile fish in sample; Water temp.15.3C / pH 7.9SU / DO 7.1mg/L / Cond. 212umhos

Station: AN0142C
Unt To Assiscunk Ck, Oxmead Rd., Burlington Twp., Burlington County
Bristol USGS Quadrangle
Date Sampled: 2/20/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	33
Sphaeriidae	8	17
Tubificidae	10	11
Chironomidae	6	10
Lumbriculidae	8	7
Plagiostomidae	4	4
Hydropsychidae	4	2
Ephemerellidae	1	2
Gammaridae	4	2
Planorbidae	6	2
Physidae	7	2
BloodRed Chironomidae	8	2
Corixidae	9	1
Gyrinidae	3	1
Dytiscidae	5	1
Sialidae	4	1
Tabanidae	6	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 33.00 % (Elmidae)
Family Biotic Index: 6.00
Scraper/Filterer Collector Ratio: 1.95
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 4.00
EPT/C: 0.33
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 132
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 14/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: suburban; storm sewers
salamanders; Water temp. 2.8C / pH 7.0SU / DO 14.2mg/L / Cond. 261 umhos

Station: AN0143
North Br Rancocas Ck, Outlet Of Hanover Lake, Pemberton Twp., Burlington County
Browns Mills USGS Quadrangle
Date Sampled: 2/13/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	24
Chironomidae	6	23
Philopotamidae	3	8
Leptoceridae	4	6
Naididae	7	3
Coenagrionidae	9	2
Molannidae	6	2
Polycentropodidae	6	2
Elmidae	4	2
Macromiidae	3	1
Pyralidae	5	1
Sialidae	4	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 76
% Contribution of Dominant Family: 31.58 % (Hydropsychidae)
Family Biotic Index: 4.88
Scraper/Filterer Collector Ratio: 0.77
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 55.26
EPT/C: 1.83
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 159
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 33/3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Open....Other: rural, forested; bicycles on bottom; water color cedar brown
metal debris and fish found in sample; Water temp. 4.6C / pH 4.8SU / DO 11.8mg/L / Cond. 26umhos

Station: AN0144
Pole Bridge Br, Split Rock Rd., Pemberton Twp., Burlington County
Browns Mills USGS Quadrangle
Date Sampled: 2/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	80
Hydropsychidae	4	3
Chironomidae	6	3
Asellidae	8	2
Enchytraeidae	10	2
Empididae	6	2
Lumbricidae	10	1
Lumbriculidae	8	1
Polycentropodidae	6	1
BloodRed Chironomidae	8	1
Elmidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 98
% Contribution of Dominant Family: 81.63 % (Simuliidae)
Family Biotic Index: 6.16
Scraper/Filterer Collector Ratio: 0.01
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 4.08
EPT/C: 1.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 163
Deficiency(s) noted: Simuliidae Family Overwhelmingly Dominant -
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 23/3
Substrate: Gravel/sand, snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: rural, forested; oily sheen on surface
water cedar brown; Water temp. 3.4C / pH 4.5SU / DO 10.1mg/L / Cond. 58umhos

Station: AN0145
Mt. Misery Bk, Rt. 70, Pemberton Twp., Burlington County
Browns Mills USGS Quadrangle
Date Sampled: 2/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Brachycentridae	1	15
Leuctridae	0	12
Limnephilidae	4	11
Heptageniidae	4	8
Taeniopterygidae	2	7
Chironomidae	6	7
Philopotamidae	3	6
Empididae	6	6
Tipulidae	3	5
Hydropsychidae	4	5
Leptophlebiidae	2	5
Sericostomatidae	3	3
Polycentropodidae	6	3
Perlidae	1	2
Psychomyiidae	2	2
Leptoceridae	4	2
Simuliidae	6	2
Ceratopogonidae	6	1
Corixidae	9	1
Hydroptilidae	4	1
Corydalidae	0	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 106
% Contribution of Dominant Family: 14.15 % (Brachycentridae)
Family Biotic Index: 3.06
Scraper/Filterer Collector Ratio: 0.29
Shredder/Total Ratio: 0.31
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 14
% EPT: 77.36
EPT/C: 11.71
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 181
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: forested; storm sewers
water cedar brown; Water temp. 2.4C / pH 4.3SU / DO 12.1mg/L / Cond. 55umhos

Station: AN0146
McDonalds Br, Lebanon State Forest, Woodland Twp., Burlington County
Browns Mills USGS Quadrangle
Date Sampled: 12/13/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	45
Leptophlebiidae	2	25
Asellidae	8	8
Leuctridae	0	8
Limnephilidae	4	6
Ceratopogonidae	6	3
Naididae	7	3
Corixidae	9	1
Gammaridae	4	1
Coenagrionidae	9	1
Lumbriculidae	8	1
Hydroptilidae	4	1
Polycentropodidae	6	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 105
% Contribution of Dominant Family: 42.86 % (Chironomidae)
Family Biotic Index: 4.73
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 39.05
EPT/C: 0.91
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 173
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 4/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Cedar trees/Good
Canopy: Closed....Other: forested; fish and tadpoles present
Water temp. 5.7C / pH 4.5SU / DO 6.1mg/L / Cond. 43umhos;

Station: AN0147
Bisphams Mill Ck, Turkey Buzzard Bridge Rd., Pemberton Twp., Burlington County
Browns Mills USGS Quadrangle
Date Sampled: 2/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	50
Capniidae	1	20
Asellidae	8	7
Naididae	7	2
Lumbriculidae	8	2
Leptophlebiidae	2	2
Sphaeriidae	8	2
Elmidae	4	2
BloodRed Chironomidae	8	2
Calopterygidae	5	1
Ceratopogonidae	6	1
Ancylidae	6	1
Dytiscidae	5	1
Hydropsychidae	4	1
Corydalidae	0	1
Leptoceridae	4	1
Limnephilidae	4	1
Sialidae	4	1
Metretopodidae	2	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 50.00 % (Chironomidae)
Family Biotic Index: 4.96
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.30
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 26.00
EPT/C: 0.50
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 182
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/4
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: forested; water cedar brown
Water temp. 3.9C / pH 4.6SU / DO 8.3mg/L / Cond. 47umhos;

Station: AN0148
Greenwood Br, New Lisbon Rd., Pemberton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 2/7/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	62
Leptophlebiidae	2	17
Asellidae	8	3
Sialidae	4	3
Ceratopogonidae	6	2
Leptoceridae	4	2
Polycentropodidae	6	2
Limnephilidae	4	2
Capniidae	1	1
Philopotamidae	3	1
Ancylidae	6	1
Hydroptilidae	4	1
Lumbricidae	10	1
Metretopodidae	2	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 62.00 % (Chironomidae)
Family Biotic Index: 5.10
Scraper/Filterer Collector Ratio: 0.67
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 28.00
EPT/C: 0.45
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant -
-

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 25/3-3.5
Substrate: no data....StreamBank Vegetation/Stability: Trees, shrubs, grass/Good
Canopy: Mostly Open....Other: rural; flooded
water cedar brown; Water temp. 3.7C / pH 4.8SU / DO 13.2mg/L / Cond. 62umhos

Station: AN0149
North Br Rancocas Ck, Main St., Pemberton, Burlington County
Pemberton USGS Quadrangle
Date Sampled: 1/11/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	21
Elmidae	4	19
Asellidae	8	10
Hydropsychidae	4	5
Coenagrionidae	9	4
Philopotamidae	3	4
Lumbricidae	10	4
Polycentropodidae	6	4
Limnephilidae	4	3
Sphaeriidae	8	3
Aeshnidae	3	2
Gomphidae	1	2
Naididae	7	2
Taeniopterygidae	2	2
Calopterygidae	5	1
Ephemerellidae	1	1
Corydalidae	0	1
Ceratopogonidae	6	1
Tetrastemmatidae	7	1
Pyralidae	5	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 92
% Contribution of Dominant Family: 22.83 % (Chironomidae)
Family Biotic Index: 5.48
Scraper/Filterer Collector Ratio: 1.31
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 21.74
EPT/C: 0.95
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 168
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 60/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Partly Open....Other: suburban; station downstream of impoundment
Water temp. 1.8C / pH 5.5SU / DO 13.6mg/L / Cond. 50umhos;

Station: AN0149A
Ong Run, West Lakeshore Dr., Pemberton Twp., Burlington County
Browns Mills USGS Quadrangle
Date Sampled: 2/13/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	31
Tipulidae	3	12
Asellidae	8	6
Leptoceridae	4	3
Limnephilidae	4	3
Ephemerellidae	1	2
Leptophlebiidae	2	2
Empididae	6	1
Hydropsychidae	4	1
Leuctridae	0	1
Sphaeriidae	8	1
Polycentropodidae	6	1
BloodRed Chironomidae	8	1
Ceratopogonidae	6	1
Tetrastemmatidae	7	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 68
% Contribution of Dominant Family: 45.59 % (Chironomidae)
Family Biotic Index: 5.10
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.18
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 20.59
EPT/C: 0.44
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 148
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 14/1
Substrate: Cobble, gravel/sand, silt....StreamBank Vegetation/Stability: Weeds, trees/Fair
Canopy: Mostly Closed....Other: suburban, forested; storm sewers, pumping station, cobbles on banks near bridge
site recently flooded (flattened weeds and broken reeds); Water temp. 4.8C / pH 6.4SU / DO 12.5mg/L / Cond. 114umhos

Station: AN0149B
Jacks Run, Range Rd., New Hanover Twp., Burlington County
Browns Mills USGS Quadrangle
Date Sampled: 2/13/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	41
Chironomidae	6	25
BloodRed Chironomidae	8	12
Naididae	7	5
Libellulidae	9	4
Sphaeriidae	8	2
Tabanidae	6	2
Phryganeidae	4	1
Baetidae	4	1
Hydrophilidae	5	1
Corixidae	9	1
Elmidae	4	1
Ephemerellidae	1	1
Hydrobiidae	8	1
Coenagrionidae	9	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 41.00 % (Tubificidae)
Family Biotic Index: 8.03
Scraper/Filterer Collector Ratio: 2.00
Shredder/Total Ratio: 0.39
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 4.00
EPT/C: 0.11
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 148
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 32/2-3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Grass, shrubs, trees/Poor
Canopy: Open....Other: forested; marshy, pond-like area
macrophytes; Water temp. 7.4C / pH 5.9SU / DO 11.1mg/L / Cond. 53umhos

Station: AN0150
Budds Run, Hanover St., Pemberton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 2/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	34
Chironomidae	6	19
Taeniopterygidae	2	15
Asellidae	8	12
Hydropsychidae	4	7
Elmidae	4	6
Gammaridae	4	4
Tubificidae	10	2
Tipulidae	3	1
Ephemerellidae	1	1
Ancylidae	6	1
Naididae	7	1
Leptoceridae	4	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 105
% Contribution of Dominant Family: 32.38 % (Simuliidae)
Family Biotic Index: 5.33
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.18
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 22.86
EPT/C: 1.26
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 135
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 14/1
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees/Good
Canopy: Partly Open....Other: suburban; storm sewers
fish; trash; undercut banks; Water temp. 2.6C / pH 6.6SU / DO 11.8mg/L / Cond. 158umhos

Station: AN0151
N Br Rancocas Ck, Iron Works Park, Mt. Holly Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 5/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	23
Gammaridae	4	22
Chironomidae	6	17
Sphaeriidae	8	11
BloodRed Chironomidae	8	8
Naididae	7	4
Asellidae	8	4
Ceratopogonidae	6	2
Corixidae	9	2
Plagiostomidae	4	2
Coenagrionidae	9	2
Tetrastemmatidae	7	2
Hydrobiidae	8	1
Elmidae	4	1
Haliplidae	5	1
Empididae	6	1
Perlidae	1	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 104
% Contribution of Dominant Family: 22.12 % (Tubificidae)
Family Biotic Index: 6.98
Scraper/Filterer Collector Ratio: 0.18
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.96
EPT/C: 0.04
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 126
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 100/>4
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Open....Other: suburban, forested, Iron Works Park near baseball fields; storm sewers present
sampled banks from boat; upstream of dam; Water temp. 20.2C / pH 6.9SU / DO 8.3mg/L / Cond. 86umhos

Station: AN0151A
Indian Run, Birmingham Rd., Pemberton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 2/7/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	28
Tubificidae	10	26
Gammaridae	4	18
Naididae	7	4
Ephemerellidae	1	3
Tipulidae	3	3
Asellidae	8	2
Sphaeriidae	8	2
BloodRed Chironomidae	8	1
Dytiscidae	5	1
Lumbricidae	10	1
Veliidae	9	1
Leptoceridae	4	1
Tetrastemmatidae	7	1
Phryganeidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 94
% Contribution of Dominant Family: 29.79 % (Chironomidae)
Family Biotic Index: 6.63
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 5.32
EPT/C: 0.17
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 142
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 15/2-2.5
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees, shrubs/Poor
Canopy: Partly Open....Other: rural; Water temp. 4.8C / pH 6.3SU / DO 12.7mg/L / Cond. 190umhos

Station: AN0152
Friendship Ck, Friendship Rd., Tabernacle Twp., Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 3/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	45
Simuliidae	6	14
Hydropsychidae	4	6
Heptageniidae	4	6
Tipulidae	3	6
Sphaeriidae	8	5
Brachycentridae	1	3
Caenidae	7	2
Ephemerellidae	1	2
BloodRed Chironomidae	8	2
Tubificidae	10	2
Asellidae	8	1
Lumbriculidae	8	1
Gomphidae	1	1
Perlodidae	2	1
Naididae	7	1
Leptoceridae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 45.00 % (Chironomidae)
Family Biotic Index: 5.51
Scraper/Filterer Collector Ratio: 0.21
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 21.00
EPT/C: 0.45
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 173
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 19/1-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Mostly Open....Other: forested; storm sewers
macrophytes; Water temp. 6.3C / pH 4.8SU / DO 10.8mg/L / Cond. 105umhos

Station: AN0153
Burrs Mill Bk, Sooy Place/Hedgerhouse Rd., Woodland Twp., Burlington County
Chatsworth USGS Quadrangle
Date Sampled: 3/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	62
BloodRed Chironomidae	8	15
Tubificidae	10	15
Simuliidae	6	4
Dytiscidae	5	2
Corixidae	9	1
Libellulidae	9	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 100
% Contribution of Dominant Family: 62.00 % (Chironomidae)
Family Biotic Index: 6.94
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 164
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant -
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 22/3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Mostly Closed....Other: rural, forested; filamentous algae; water cedar brown creasote on bulk heads next to road; Water temp. 5.5C / pH 4.2SU / DO 10.1mg/L / Cond. 83umhos

Station: AN0154
Burrs Mill Bk, Sooy Place Rd., Pemberton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 3/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	53
Tubificidae	10	19
Leptophlebiidae	2	8
Hydroptilidae	4	8
Lumbriculidae	8	5
Asellidae	8	3
Molannidae	6	3
Simuliidae	6	3
Heptageniidae	4	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 104
% Contribution of Dominant Family: 50.96 % (Chironomidae)
Family Biotic Index: 6.38
Scraper/Filterer Collector Ratio: 4.00
Shredder/Total Ratio: 0.52
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 19.23
EPT/C: 0.38
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 171
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 26/1->3
Substrate: Cobble, gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Mostly Closed....Other: forested; water cedar brown; station downstream of impoundment-old cranberry bog
right bank stabilized with cobbles; macrophytes present; Water temp. 7.2C / pH 4.5SU / DO 11.1mg/L / Cond. 69umhos

Station: AN0155
Friendship Ck, Retreat Rd., Southampton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 3/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	34
Chironomidae	6	31
Asellidae	8	5
Leptophlebiidae	2	5
Lumbriculidae	8	4
BloodRed Chironomidae	8	4
Metretopodidae	2	4
Heptageniidae	4	4
Hydropsychidae	4	2
Leptoceridae	4	2
Tipulidae	3	2
Molannidae	6	2
Sialidae	4	2
Limnephilidae	4	1
Elmidae	4	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 104
% Contribution of Dominant Family: 32.69 % (Simuliidae)
Family Biotic Index: 5.63
Scraper/Filterer Collector Ratio: 0.19
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 19.23
EPT/C: 0.57
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 159
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 18/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Partly Open....Other: rural, forested; water color cedar brown; new bridge with some type of protective coating
cobbles on right bank; Water temp. 7.8C / pH 5.0SU / DO 10.6mg/L / Cond. 88umhos

Station: AN0156
South Br Rancocas Ck, Ridge Rd., Southampton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 3/15/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	28
Enchytraeidae	10	22
Chironomidae	6	17
Philopotamidae	3	6
Molannidae	6	6
Leptophlebiidae	2	5
Simuliidae	6	4
BloodRed Chironomidae	8	3
Naididae	7	2
Culicidae	8	1
Lumbriculidae	8	1
Polycentropodidae	6	1
Ceratopogonidae	6	1
Limnephilidae	4	1
Elmidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 28.00 % (Asellidae)
Family Biotic Index: 7.18
Scraper/Filterer Collector Ratio: 0.64
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 19.00
EPT/C: 0.95
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted:
- Significant Organic Pollution -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 34/3
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: rural; slightly flooded
water cedar brown; Water temp. 7.3C / pH 4.9SU / DO 10.7mg/L / Cond. 98umhos

Station: AN0157
Jade Run, A Farm Road Off Rt. 206 Past Jade Run, Southampton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 3/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	38
Gammaridae	4	33
Asellidae	8	9
Hydropsychidae	4	4
Talitridae	8	3
Simuliidae	6	2
Leptophlebiidae	2	2
Tubificidae	10	2
Calopterygidae	5	1
Elmidae	4	1
Planariidae	4	1
Ephemerellidae	1	1
Plagiostomidae	4	1
Haliplidae	5	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (Chironomidae)
Family Biotic Index: 5.35
Scraper/Filterer Collector Ratio: 6.67
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 8.00
EPT/C: 0.21
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 177
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1-2.5
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Mostly Open....Other: agriculture-cropland; wood ducks
Water temp. 4.2C / pH 6.6SU / DO 11.1mg/L / Cond. 191umhos;

Station: AN0157A
Jade Run, Stockton Bridge Rd., Pemberton Twp., Burlington County
Pemberton USGS Quadrangle
Date Sampled: 2/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	66
Chironomidae	6	11
Planariidae	4	2
Aeshnidae	3	1
Libellulidae	9	1
Naididae	7	1
Polycentropodidae	6	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 84
% Contribution of Dominant Family: 78.57 % (Asellidae)
Family Biotic Index: 7.55
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.19
EPT/C: 0.09
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 173
Deficiency(s) noted: Asellidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 14/4
Substrate: Snags....StreamBank Vegetation/Stability: Trees, weeds/Good
Canopy: Closed....Other: rural, forested; water cedar brown
Water temp. 3.8C / pH 4.8SU / DO 8.9mg/L / Cond. 58umhos;

Station: AN0158
Little Ck, Rt. 70, Medford Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 3/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Leptophlebiidae	2	38
Simuliidae	6	28
Chironomidae	6	11
Enchytraeidae	10	5
Ephemerellidae	1	4
Heptageniidae	4	3
Elmidae	4	2
Hydropsychidae	4	2
Limnephilidae	4	2
Taeniopterygidae	2	2
Tipulidae	3	1
Polycentropodidae	6	1
Metretopodidae	2	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (Leptophlebiidae)
Family Biotic Index: 4.15
Scraper/Filterer Collector Ratio: 0.29
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 53.00
EPT/C: 4.82
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 178
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass, shrubs/Fair
Canopy: Partly Open....Other: suburban; water cedar brown
Water Temp. 3.1C / pH 4.7SU / DO 9.3mg/L / Cond. 85umhos;

Station: AN0159
Bear Swamp River, Rt. 70, Medford Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 3/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	48
Leptophlebiidae	2	18
Asellidae	8	15
Phryganeidae	4	6
Sialidae	4	5
Simuliidae	6	4
Enchytraeidae	10	4
Corixidae	9	2
Lumbriculidae	8	2
Dytiscidae	5	1
Gyrinidae	3	1
Lepidostomatidae	1	1
Nemouridae	2	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 108
% Contribution of Dominant Family: 44.44 % (Chironomidae)
Family Biotic Index: 5.53
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 24.07
EPT/C: 0.54
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/2.5-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Mostly Closed....Other: agriculture-cropland; ditch empties into stream
water cedar brown; Water temp. 3.4C / pH 4.4SU / DO 9.3mg/L / Cond. 124umhos

Station: AN0160
Little Ck, Eayrestown Rd., Lumberton Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 3/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	26
Sphaeriidae	8	21
Simuliidae	6	12
Hydrobiidae	8	10
Hydropsychidae	4	7
Tubificidae	10	7
Lumbriculidae	8	5
Leptophlebiidae	2	4
Gammaridae	4	3
Asellidae	8	2
Planariidae	4	1
Elmidae	4	1
Empididae	6	1
Plagiostomidae	4	1
BloodRed Chironomidae	8	1
Tetrastemmatidae	7	1
Limnephilidae	4	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 105
% Contribution of Dominant Family: 24.76 % (Chironomidae)
Family Biotic Index: 6.56
Scraper/Filterer Collector Ratio: 0.17
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 12.38
EPT/C: 0.48
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 132
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Partly Open....Other: rural, golf course on left bank; water cedar brown
Water temp. 4.0C / pH 6.4SU / DO 11.3mg/L / Cond. 172umhos;

Station: AN0161
South Branch Rancocas Ck, Mt. Holly-Eayrestown Rd (Bridge D4-50), Lumberton Twp., Burlington County
Mt Holly USGS Quadrangle
Date Sampled: 04/12/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	57
Heptageniidae	4	13
Enchytraeidae	10	7
Tubificidae	10	4
Hydrobiidae	8	3
Asellidae	8	2
Calopterygidae	5	2
Gammaridae	4	2
Leptophlebiidae	2	2
Sphaeriidae	8	2
Taeniopterygidae	2	2
Hydropsychidae	4	1
Dytiscidae	5	1
BloodRed Chironomidae	8	1
Limnephilidae	4	1
Elmidae	4	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 102
% Contribution of Dominant Family: 55.88 % (Chironomidae)
Family Biotic Index: 6.02
Scraper/Filterer Collector Ratio: 0.28
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 18.63
EPT/C: 0.33
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 185
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 45/3->5
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Partly Open....Other: rural; Water temp 11.9C / pH 7.2SU / DO 10.0mg/L / Cond 101umhos

Station: AN0162
Southwest Branch Rancocas Ck, Elwood Rd., Evesham Twp., Burlington County
Moorestown USGS Quadrangle
Date Sampled: 04/05/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	40
Calopterygidae	5	15
Asellidae	8	13
Chironomidae	6	11
Sphaeriidae	8	6
Dytiscidae	5	5
BloodRed Chironomidae	8	5
Hydropsychidae	4	3
Coenagrionidae	9	3
Dolichopodidae	4	2
Physidae	7	2
Lumbricidae	10	1
Lymnaeidae	6	1
Haliplidae	5	1
Glossiphoniidae	8	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 110
% Contribution of Dominant Family: 36.36 % (Tubificidae)
Family Biotic Index: 7.75
Scraper/Filterer Collector Ratio: 0.44
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.73
EPT/C: 0.19
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 107
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 12/1-2
Substrate: Cobbles, gravel/sand....StreamBank Vegetation/Stability: Weeds, trees/Poor
Canopy: Mostly Closed....Other: suburban; site upstream of sewer treatment plant; water has sewage odor
slabs of concrete stabilizing banks; water appears cloudy; Water temp 12.1C / pH 7.5SU / DO 11.5mg/L / Cond 362umhos

Station: AN0163
Unt To Barton Run, Braddock Mill Rd. & Rt. 73, Voorhees Twp., Burlington/Camden County
Clementon USGS Quadrangle
Date Sampled: 4/5/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	38
Hydropsychidae	4	18
Sphaeriidae	8	9
Coenagrionidae	9	8
Calopterygidae	5	5
Elmidae	4	4
Hydrobiidae	8	3
Tubificidae	10	3
BloodRed Chironomidae	8	2
Gomphidae	1	2
Lumbriculidae	8	2
Leptoceridae	4	2
Aeshnidae	3	1
Lumbricidae	10	1
Physidae	7	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (Chironomidae)
Family Biotic Index: 6.08
Scraper/Filterer Collector Ratio: 0.30
Shredder/Total Ratio: 0.40
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 20.00
EPT/C: 0.50
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 134
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 5.5/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Poor
Canopy: Open....Other: agriculture-livestock (horses), suburban; station downstream of Kresson Lake
macrophytes, fish, filamentous algae; Water temp. 11.6C / pH 6.5SU / DO 10.7mg/L / Cond. 110umhos

Station: AN0164
Black Run, Kettle Run Rd., Evesham Twp., Burlington County
Clementon USGS Quadrangle
Date Sampled: 4/5/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	44
Chironomidae	6	16
Hydropsychidae	4	12
Leuctridae	0	10
Philopotamidae	3	9
Tipulidae	3	2
Ptilodactylidae	1	1
Ephemerellidae	1	1
Calamoceratidae	0	1
Perlodidae	2	1
Leptophlebiidae	2	1
Limnephilidae	4	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 44.00 % (Simuliidae)
Family Biotic Index: 4.55
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.31
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 36.00
EPT/C: 2.25
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 181
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 3/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: forested; macrophytes
Water temp. 9.9C / pH 5.1SU / DO 9.8mg/L / Cond. 38umhos;

Station: AN0165
Unt To Black Run, Braddock Mill Rd., Evesham Twp., Burlington County
Clementon USGS Quadrangle
Date Sampled: 4/5/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	41
Nemouridae	2	29
Chironomidae	6	14
Asellidae	8	8
Lumbriculidae	8	4
Gammaridae	4	1
Naididae	7	1
BloodRed Chironomidae	8	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 100
% Contribution of Dominant Family: 41.00 % (Simuliidae)
Family Biotic Index: 5.13
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.30
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 29.00
EPT/C: 1.93
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 159
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 6/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Fair
Canopy: Closed....Other: agriculture-cropland (corn), rural; ducks drainage ditch running into stream; Water temp. 7.0C / pH 3.9SU / DO 8.8mg/L / Cond. 67umhos

Station: AN0166
Barton Run, Tuckerton Rd. & Christopher Mill Rd., Medford Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 4/5/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydrobiidae	8	29
Elmidae	4	15
Chironomidae	6	12
Gammaridae	4	10
Sphaeriidae	8	4
BloodRed Chironomidae	8	4
Corbiculidae	8	3
Plagiostomidae	4	3
Heptageniidae	4	3
Leptoceridae	4	3
Caenidae	7	2
Palaemonidae	6	2
Tetrastemmatidae	7	2
Coenagrionidae	9	1
Asellidae	8	1
Calopterygidae	5	1
Hydropsychidae	4	1
Diplopoda	5	1
Planariidae	4	1
Ancylidae	6	1
Dytiscidae	5	1
Leptophlebiidae	2	1
Polycentropodidae	6	1
Physidae	7	1
Simuliidae	6	1
Naididae	7	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 27
Total Number of Individuals: 106
% Contribution of Dominant Family: 27.36 % (Hydrobiidae)
Family Biotic Index: 6.15
Scraper/Filterer Collector Ratio: 2.33
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 10.38
EPT/C: 0.69
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 133
Deficiency(s) noted:
-

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 26/2-3
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, lots of bare spots/Poor
Canopy: Mostly Closed....Other: suburban, forested; tree fallen across stream
Water temp. 11.0C / pH 6.6SU / DO 9.7mg/L / Cond. 134umhos;

Station: AN0167
Kettle Run, Hopewell Rd., Evesham Twp., Burlington County
Clementon USGS Quadrangle
Date Sampled: 4/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	31
Chironomidae	6	19
Simuliidae	6	16
Coenagrionidae	9	9
Hydrobiidae	8	7
Hydropsychidae	4	7
Planariidae	4	3
Asellidae	8	2
Gomphidae	1	2
Ephemerellidae	1	2
Lumbriculidae	8	2
Talitridae	8	1
Leptoceridae	4	1
Planorbidae	6	1
Naididae	7	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 105
% Contribution of Dominant Family: 29.52 % (Sphaeriidae)
Family Biotic Index: 6.70
Scraper/Filterer Collector Ratio: 0.17
Shredder/Total Ratio: 0.18
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 9.52
EPT/C: 0.53
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 135
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Phragmites, grasses/Fair
Canopy: Open....Other: suburban; storm sewers; macrophytes
station downstream of Marlton Lake; Water temp. 10.9C / pH 7.6SU / DO 10.6mg/L / Cond. 116umhos

Station: AN0168
Haynes Ck, Himmelein Rd., Medford Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 4/5/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Plagiostomidae	4	32
Sphaeriidae	8	29
Haliplidae	5	7
Ephemerellidae	1	5
Talitridae	8	4
Hydropsychidae	4	3
Tubificidae	10	3
Naididae	7	3
Hydrobiidae	8	2
Corbiculidae	8	2
Planorbidae	6	2
Coenagrionidae	9	2
Leptoceridae	4	2
Asellidae	8	1
Empididae	6	1
Tetrastemmatidae	7	1
Chironomidae	6	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 32.00 % (Plagiostomidae)
Family Biotic Index: 5.92
Scraper/Filterer Collector Ratio: 0.26
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 10.00
EPT/C: 10.00
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 148
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 22/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Fair
Canopy: Mostly Closed....Other: suburban; station downstream of lake
water color cedar brown; Water temp. 10.7C / pH 6.4SU / DO 10.8mg/L / Cond. 80umhos

Station: AN0169
South West Branch Rancocas Ck, Route 70, Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 04/12/01

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	31
Chironomidae	6	14
Simuliidae	6	13
Gammaridae	4	8
Heptageniidae	4	7
Elmidae	4	6
Baetidae	4	5
Naididae	7	4
Hydropsychidae	4	3
Empididae	6	3
Corbiculidae	8	2
Tubificidae	10	2
Hydrobiidae	8	1
Chilopoda	6	1
Ephemerellidae	1	1
Leptoceridae	4	1
Haliplidae	5	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 104
% Contribution of Dominant Family: 29.81 % (BloodRed Chironomidae)
Family Biotic Index: 6.13
Scraper/Filterer Collector Ratio: 0.44
Shredder/Total Ratio: 0.31
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 16.35
EPT/C: 0.38
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 143
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 56/2-3
Substrate: Sand....StreamBank Vegetation/Stability: Trees, grass/Fair
Canopy: Mostly Open....Other: Land Use: suburban; Water color: ceday brown
Water temp 12.1C / pH 7.5SU / Cond 142umhos / DO 12.0mg/L;

Station: AN0170
Sharps Run, Route 541, Medford Twp, Burlington County
Mt Holly USGS Quadrangle
Date Sampled: 04/12/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	21
Gammaridae	4	20
Tubificidae	10	13
BloodRed Chironomidae	8	10
Hydropsychidae	4	8
Elmidae	4	8
Sphaeriidae	8	7
Simuliidae	6	6
Asellidae	8	5
Lumbriculidae	8	3
Cambaridae	5	1
Empididae	6	1
Corbiculidae	8	1
Planariidae	4	1
Limnephilidae	4	1
Naididae	7	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 108
% Contribution of Dominant Family: 19.44 % (Chironomidae)
Family Biotic Index: 6.24
Scraper/Filterer Collector Ratio: 0.41
Shredder/Total Ratio: 0.48
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 9.26
EPT/C: 0.32
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 170
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 31/2
Substrate: Cobbles, gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Partly Open....Other: suburban; macrophytes and ducks present; small dam
Water temp10.8C / pH 7.5SU / DO 15.5mg/L / Cond 213umhos;

Station: AN0171
Bobbys Run, Newbolds Corner Rd (Landing St), Lumberton Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 04/12/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	28
Tubificidae	10	10
Asellidae	8	6
BloodRed Chironomidae	8	3
Psychomyiidae	2	2
Tetrastemmatidae	7	2
Plagiostomidae	4	1
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 53
% Contribution of Dominant Family: 52.83 % (Gammaridae)
Family Biotic Index: 5.87
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.60
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 3.77
EPT/C: 0.67
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 45/3
Substrate: Sand, silt....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: suburban; storm sewers present
Water temp 11.8C / pH 7.3 / DO 11.4mg/L / Cond 216umhos;

Station: AN0171A
Bobbys Run, Smithville Rd., Mt. Holly, Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 04/17/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	27
Sphaeriidae	8	27
Asellidae	8	25
Tubificidae	10	14
Chironomidae	6	7

Statistical Analysis

Number of Taxa: 5
Total Number of Individuals: 100
% Contribution of Dominant Family: 27.00 % (Gammaridae & Sphaeriidae)
Family Biotic Index: 7.06
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.27
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 120
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/<1-5
Substrate: Gravel, sand, silt....StreamBank Vegetation/Stability: Grass/Good
Canopy: Open....Other: rural; macrophytes present, but covered in a precipitate
Water temp 12.2C / pH 7.6SU / DO N/A / Cond 299umhos ;

Station: AN0172
Unt To Masons Ck, Ark Rd Nr. Fenimore Rd., Mt. Laurel, Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 4/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	25
Sphaeriidae	8	24
Tubificidae	10	18
Lumbriculidae	8	16
Asellidae	8	7
Simuliidae	6	3
BloodRed Chironomidae	8	3
Limnephilidae	4	2
Dytiscidae	5	1
Lumbricidae	10	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Chironomidae)
Family Biotic Index: 7.71
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.00
EPT/C: 0.07
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 129
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 4/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Closed....Other: agriculture-cropland (sod), rural; leaf litter
drainage ditch empties into stream; Water temp. 12.9C / pH 5.7SU / DO 8.2mg/L / Cond. 71umhos

Station: AN0173
Masons Ck, Rt. 38, Hainesport Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 04/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	25
Sphaeriidae	8	19
Hydrobiidae	8	13
Chironomidae	6	11
Physidae	7	8
Plagiostomidae	4	6
Tubificidae	10	6
Elmidae	4	5
Planorbidae	6	3
Lymnaeidae	6	3
Asellidae	8	2
BloodRed Chironomidae	8	2
Polycentropodidae	6	2
Naididae	7	2
Coenagrionidae	9	1
Palaemonidae	6	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 109
% Contribution of Dominant Family: 22.94 % (Gammaridae)
Family Biotic Index: 6.34
Scraper/Filterer Collector Ratio: 1.62
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.83
EPT/C: 0.15
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 121
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 24/1-2
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs, weeds/Fair
Canopy: Partly Open....Other: suburban, forested; storm sewers
fish; high flow; Water temp. 14.9C / pH 7.1SU / DO 9.9mg/L / Cond. 161umhos

Station: AN0174
Parkers Ck, Creek Rd, Mt. Laurel Twp., Burlington County
Moorestown USGS Quadrangle
Date Sampled: 04/26/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	40
BloodRed Chironomidae	8	22
Chironomidae	6	19
Sphaeriidae	8	8
Gammaridae	4	7
Asellidae	8	1
Corbiculidae	8	1
Naididae	7	1
Ancylidae	6	1
Psychodidae	10	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 101
% Contribution of Dominant Family: 39.60 % (Tubificidae)
Family Biotic Index: 8.13
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 128
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 30/2-3
Substrate: Mud....StreamBank Vegetation/Stability: Arrow arum/Poor
Canopy: Open....Other: suburban, forested; Water temp 12.9C / pH 8.3SU / DO 5.4mg/L / Cond 320umhos

Station: AN0175
Mill Ck, Levitt Pkwy., Willingboro Twp., Burlington County
Beverly USGS Quadrangle
Date Sampled: 1/17/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	47
Tubificidae	10	44
Chironomidae	6	5
Asellidae	8	4
Corbiculidae	8	1
Corixidae	9	1
BloodRed Chironomidae	8	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 104
% Contribution of Dominant Family: 45.19 % (Gammaridae)
Family Biotic Index: 6.95
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.45
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 111
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 15/<1-2
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Grass, trees/Poor
Canopy: Mostly Open....Other: suburban; storm sewers
Water temp. 3.8C / pH 6.7SU / DO 11.0mg/L / Cond. 400umhos;

Station: AN0176
Swedes Run, Rt. 130, Delran Twp., Burlington County
Beverly USGS Quadrangle
Date Sampled: 4/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	94
Sphaeriidae	8	7
Gammaridae	4	3
Chironomidae	6	3
Corixidae	9	1
Elmidae	4	1
Hydropsychidae	4	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 110
% Contribution of Dominant Family: 85.45 % (Tubificidae)
Family Biotic Index: 9.48
Scraper/Filterer Collector Ratio: 0.09
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.91
EPT/C: 0.33
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 62
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 22/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, weeds/Poor
Canopy: Partly Open....Other: suburban; storm sewers
debris on banks, right bank reinforced with cement; Water temp. 13.4C / pH 7.6SU / DO 8.8mg/L / Cond. 216umhos

Station: AN0176R
Rancocas Ck, Just Upstream Of Turnpike, Mt. Laurel Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 04/19/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	80
BloodRed Chironomidae	8	6
Chironomidae	6	6
Corixidae	9	3
Ceratopogonidae	6	1
Lumbriculidae	8	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 98
% Contribution of Dominant Family: 81.63 % (Tubificidae)
Family Biotic Index: 9.52
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 172
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 200/6
Substrate: Mud....StreamBank Vegetation/Stability: Grass, reeds/Good
Canopy: Open....Other: suburban; fish are present
Water temp 11.3C / pH 7.6SU / DO 14.3mg/L / Cond 147umhos;

Station: AN0176S
South Branch Rancocas Ck, Route 38, Hainesport Twp., Burlington County
Mt. Holly USGS Quadrangle
Date Sampled: 04/19/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	74
Chironomidae	6	16
BloodRed Chironomidae	8	10
Plagiostomidae	4	3
Sphaeriidae	8	2
Ceratopogonidae	6	1
Asellidae	8	1
Corbiculidae	8	1
Gomphidae	1	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 109
% Contribution of Dominant Family: 67.89 % (Tubificidae)
Family Biotic Index: 8.87
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 116
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 85/2.3
Substrate: Mud, silt....StreamBank Vegetation/Stability: Trees, shrubs/Poor
Canopy: Open....Other: suburban; storm sewers present, debris on banks, cobbles on banks near bridge
Water temp 10.8C / pH 7.3SU / DO 10.5mg/L / Cond 137umhos ;

Station: AN0177
Pompeston Ck, Rt. 130, Cinnaminson Twp., Burlington County
Beverly USGS Quadrangle
Date Sampled: 4/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	39
Naididae	7	18
Chironomidae	6	15
BloodRed Chironomidae	8	11
Lumbriculidae	8	5
Hydropsychidae	4	4
Enchytraeidae	10	1
Erpobdellidae	8	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 95
% Contribution of Dominant Family: 41.05 % (Tubificidae)
Family Biotic Index: 8.17
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.27
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 4.21
EPT/C: 0.15
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 79
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 21/1-2
Substrate: Cobbles, gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Poor
Canopy: Mostly Closed....Other: suburban; fish; storm sewers; lots of debris; left bank extremely eroded
Water temp. 14.7C / pH 7.6SU / DO 8.0mg/L / Cond. 197umhos;

Station: AN0178
North Br Pennsauken Ck, Church Rd., Mt. Laurel Twp., Burlington County
Moorestown USGS Quadrangle
Date Sampled: 3/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	56
Gammaridae	4	42
Chironomidae	6	3
Asellidae	8	2
Elmidae	4	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 105
% Contribution of Dominant Family: 53.33 % (Tubificidae)
Family Biotic Index: 7.37
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.40
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 127
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 13/1
Substrate: Cobble, gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Poor
Canopy: Partly Open....Other: suburban; iron precipitate
water color green; Water temp. 5.4C / pH 7.6SU / DO 11.2mg/L / Cond. 380umhos

Station: AN0179
North Br Pennsauken Ck, Fellowship Rd. Near 295, Mt. Laurel Twp., Burlington County
Moorestown USGS Quadrangle
Date Sampled: 3/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	40
BloodRed Chironomidae	8	7
Tipulidae	3	2
Hydrobiidae	8	1
Libellulidae	9	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 52
% Contribution of Dominant Family: 76.92 % (Tubificidae)
Family Biotic Index: 9.37
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 88
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 3/1
Substrate: Mud....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Open....Other: suburban; iron precipitate; water color grey/brown
black muck on banks and bottom; Water temp. 6.5C / pH 6.8SU / DO 2.9mg/L / Cond. 771umhos

Station: AN0180
North Br Pennsauken Ck, Rt. 537, Maple Shade Twp., Burlington County
Moorestown USGS Quadrangle
Date Sampled: 3/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	42
Tubificidae	10	41
Lumbriculidae	8	5
Chironomidae	6	4
Elmidae	4	1
Hydropsychidae	4	1
Corbiculidae	8	1
Planariidae	4	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 96
% Contribution of Dominant Family: 43.75 % (Gammaridae)
Family Biotic Index: 6.90
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.04
EPT/C: 0.25
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 93
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 43/1-2
Substrate: Gravel/sand, mud, snags....StreamBank Vegetation/Stability: Trees, shrubs/Poor
Canopy: Open....Other: suburban; storm sewers; debris; unnatural cobbles under bridge ducks and fish present; Water temp. 5.5C / pH 7.4SU / DO 12.7mg/L / Cond. 845umhos

Station: AN0181
North Br Pennsauken Ck, Fork Landing Rd., Maple Shade Twp., Burlington County
Camden USGS Quadrangle
Date Sampled: 3/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	60
Sphaeriidae	8	26
Chironomidae	6	3
Corixidae	9	1

Statistical Analysis

Number of Taxa: 4
Total Number of Individuals: 90
% Contribution of Dominant Family: 66.67 % (Tubificidae)
Family Biotic Index: 9.28
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 0
Biological Condition: Severely Impaired
Habitat Analysis: 82
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant - Low Diversity - - Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 74/2-3
Substrate: Mud....StreamBank Vegetation/Stability: Trees, weeds/Poor
Canopy: Open....Other: suburban; litter on banks
geese and fish present; Water temp. 4.2C / pH 8.0SU / DO 12.7mg/L / Cond. 715umhos

Station: AN0182
South Br Pennsauken Ck, Greentree Rd., Cherry Hill Twp., Camden/Burlington County
Moorestown USGS Quadrangle
Date Sampled: 3/8/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	31
Sphaeriidae	8	18
BloodRed Chironomidae	8	18
Tubificidae	10	16
Naididae	7	4
Chironomidae	6	4
Calopterygidae	5	2
Hydropsychidae	4	2
Dytiscidae	5	2
Glossiphoniidae	8	1
Lymnaeidae	6	1
Psychodidae	10	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 31.00 % (Asellidae)
Family Biotic Index: 8.00
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.49
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.00
EPT/C: 0.09
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 111
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): NA/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Poor
Canopy: Mostly Open....Other: suburban; oily sheen on surface; water color light grey; storm sewers; banks very eroded especially near bridge
macrophytes, filamentous algae, iron precipitate, and debris present; Water temp. 6.2C / pH 7.3SU / DO 8.3mg/L / Cond. 986umhos

Station: AN0183
South Br Pennsauken, Rt. 41, Maple Shade Twp., Burlington County
Moorestown USGS Quadrangle
Date Sampled: 3/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	70
Chironomidae	6	11
Naididae	7	9
Planariidae	4	3
BloodRed Chironomidae	8	3
Sphaeriidae	8	2
Elmidae	4	1
Coenagrionidae	9	1
Lumbriculidae	8	1
Gammaridae	4	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 103
% Contribution of Dominant Family: 67.96 % (Tubificidae)
Family Biotic Index: 8.86
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 81
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 35/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Mostly Closed....Other: suburban; storm sewers
fish; Water temp. 5.1C / pH 7.4SU / DO 12.6mg/L / Cond. 782umhos

Station: AN0184
South Br Pennsauken Ck, Rt. 537, Maple Shade Twp., Burlington/Camden County
Camden USGS Quadrangle
Date Sampled: 3/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	50
BloodRed Chironomidae	8	16
Gammaridae	4	15
Chironomidae	6	11
Lumbriculidae	8	4
Corbiculidae	8	2
Elmidae	4	1
Asellidae	8	1
Hydropsychidae	4	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 102
% Contribution of Dominant Family: 49.02 % (Tubificidae)
Family Biotic Index: 8.10
Scraper/Filterer Collector Ratio: 0.25
Shredder/Total Ratio: 0.42
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.98
EPT/C: 0.04
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 84
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Weeds, shrubs/Poor
Canopy: Open....Other: suburban; storm sewers
fish; Water temp. 4.1C / pH 7.7SU / DO 14.0mg/L / Cond. 831umhos

Station: AN0185
South Br Pennsauken Ck, Park Ave., Pennsauken Twp., Burlington/Camden County
Camden USGS Quadrangle
Date Sampled: 3/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	105
Corbiculidae	8	1
Sphaeriidae	8	1
Chironomidae	6	1

Statistical Analysis

Number of Taxa: 4
Total Number of Individuals: 108
% Contribution of Dominant Family: 97.22 % (Tubificidae)
Family Biotic Index: 9.93
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 0
Biological Condition: Severely Impaired
Habitat Analysis: 86
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant - Low Diversity - - Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 43/2-3
Substrate: Mud....StreamBank Vegetation/Stability: Weeds, Phragmites, trees/Poor
Canopy: Open....Other: suburban; construction nearby
metal works and leaf compost center off left bank; Water temp. 4.7C / pH 7.7SU / DO 12.2mg/L / Cond. 800umhos

Station: AN0186
North Br Cooper River, Kresson Rd., Voorhees Twp., Camden County
Clementon USGS Quadrangle
Date Sampled: 4/5/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	42
Chironomidae	6	29
Sphaeriidae	8	28
Physidae	7	3
Planorbidae	6	2
Gammaridae	4	1
BloodRed Chironomidae	8	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 107
% Contribution of Dominant Family: 39.25 % (Tubificidae)
Family Biotic Index: 8.10
Scraper/Filterer Collector Ratio: 0.18
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.93
EPT/C: 0.03
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 139
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Fair
Canopy: Mostly Closed....Other: suburban; storm sewers
undercut banks; Water temp. 6.8C / pH 6.8SU / DO 9.9mg/L / Cond. 116umhos

Station: AN0187
North Branch Cooper River, Springdale Rd., Cherry Hill Twp., Camden County
Moorestown USGS Quadrangle
Date Sampled: 04/10/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	12
Tubificidae	10	10
Lumbriculidae	8	3
Calopterygidae	5	2
Asellidae	8	1
Lymnaeidae	6	1
Planorbidae	6	1
Physidae	7	1
Sphaeriidae	8	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 33
% Contribution of Dominant Family: 36.36 % (Chironomidae)
Family Biotic Index: 7.55
Scraper/Filterer Collector Ratio: 3.00
Shredder/Total Ratio: 0.36
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 116
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 16/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Poor
Canopy: Mostly Open....Other: agriculture- cropland (Springdale Farms), suburban; storm sewers; bare spots on banks
unnatural cobbles near storm sewer discharges; Water temp 12.9C / pH 7.5SU / DO 8.9mg/L / Cond 192umhos

Station: AN0188
North Br Cooper River, River Dr. Penny Packer Park, Cherry Hill Twp., Camden County
Camden USGS Quadrangle
Date Sampled: 4/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	33
Chironomidae	6	18
Calopterygidae	5	6
BloodRed Chironomidae	8	3
Hydropsychidae	4	2
Lumbricidae	10	2
Lumbriculidae	8	2
Aeshnidae	3	1
Enchytraeidae	10	1
Gammaridae	4	1
Limnephilidae	4	1
Physidae	7	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 72
% Contribution of Dominant Family: 45.83 % (Tubificidae)
Family Biotic Index: 7.94
Scraper/Filterer Collector Ratio: 0.33
Shredder/Total Ratio: 0.32
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 4.17
EPT/C: 0.14
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 100
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 26/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, weeds, trees/Poor
Canopy: Open....Other: suburban; storm sewers; water color brown
recently flooded (flattened grass); Water temp. 7.5C / pH 7.8SU / DO 10.9mg/L / Cond. 309umhos

Station: AN0189
South Br Cooper River, Gibbsboro Rd., Gibbsboro Boro, Camden County
Clementon USGS Quadrangle
Date Sampled: 4/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	58
Lumbriculidae	8	36
Simuliidae	6	3
Chironomidae	6	3
Sphaeriidae	8	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 102
% Contribution of Dominant Family: 56.86 % (Tubificidae)
Family Biotic Index: 8.98
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.98
EPT/C: 0.33
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 120
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Closed....Other: suburban, forested; fish; storm sewers directly over stream station downstream of lake; debris on banks and in stream; Water temp. 8.9C / pH 7.1SU / DO 9.3mg/L / Cond. 330umhos

Station: AN0190
South Br Cooper River, Evesham Rd., Magnolia Boro, Camden County
Runnemede USGS Quadrangle
Date Sampled: 4/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	33
Hydropsychidae	4	24
Naididae	7	20
Chironomidae	6	12
Elmidae	4	5
Asellidae	8	3
Lumbriculidae	8	1
Gammaridae	4	1
Empididae	6	1
Plagiostomidae	4	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 102
% Contribution of Dominant Family: 32.35 % (Tubificidae)
Family Biotic Index: 6.98
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 23.53
EPT/C: 2.00
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 102
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 15/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Mostly Closed....Other: suburban; storm sewers, debris in stream
unnatural cobbles across stream; Water temp. 8.1C / pH 7.7SU / DO 10.8mg/L / Cond. 238umhos

Station: AN0191
South Br Cooper River, Rt. 41, Cherry Hill Twp., Camden County
Camden USGS Quadrangle
Date Sampled: 4/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	37
Tubificidae	10	23
Sphaeriidae	8	13
Chironomidae	6	10
Gammaridae	4	8
Glossiphoniidae	8	4
Ancylidae	6	2
Coenagrionidae	9	2
Naididae	7	2
Hydropsychidae	4	1
Corixidae	9	1
Leptoceridae	4	1
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 105
% Contribution of Dominant Family: 35.24 % (BloodRed Chironomidae)
Family Biotic Index: 7.81
Scraper/Filterer Collector Ratio: 0.14
Shredder/Total Ratio: 0.36
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 1.90
EPT/C: 0.04
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 104
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 30/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Poor
Canopy: Open....Other: suburban; station downstream of impoundment
ducks and geese; rusting metal bulkheads near bridge; Water temp. 7.7C / pH 7.8SU / DO 11.1mg/L / Cond. 276umhos

Station: AN0653
Newton Creek, Rt. 168, Haddon Twp., Camden County
Camden USGS Quadrangle
Date Sampled: 7/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	55
Tubificidae	10	21
Gammaridae	4	10
Planariidae	4	4
Hydrobiidae	8	4
Sphaeriidae	8	4
Chironomidae	6	3
Glossiphoniidae	8	3
Ancylidae	6	1
Naididae	7	1
Hydroptilidae	4	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 108
% Contribution of Dominant Family: 50.93 % (BloodRed Chironomidae)
Family Biotic Index: 7.74
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.51
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.93
EPT/C: 0.02
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 117
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 50/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, weeds/Fair
Canopy: Open....Other: urban; storm sewers present; station downstream of Newton Lake ; slabs of concrete on left bank; some aquatic plants and fish present
Water temp. 25.5C / pH 7.7SU / DO 10.1mg/L / Cond. 188umhos;

Station: AN0654
S. Br. Newton Creek, Rt. 168, Mt. Ephraim Boro, Camden County
Camden USGS Quadrangle
Date Sampled: 7/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	15
BloodRed Chironomidae	8	14
Naididae	7	12
Physidae	7	12
Planariidae	4	10
Chironomidae	6	8
Caenidae	7	7
Glossiphoniidae	8	5
Coenagrionidae	9	4
Palaemonidae	6	3
Asellidae	8	2
Corixidae	9	2
Gammaridae	4	2
Sphaeriidae	8	2
Planorbidae	6	1
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 15.00 % (Tubificidae)
Family Biotic Index: 7.30
Scraper/Filterer Collector Ratio: 6.50
Shredder/Total Ratio: 0.19
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 7.00
EPT/C: 0.32
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 115
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 100 / 1-2
Substrate: Mud, snags....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Open....Other: urban; storm sewers present; downstream of Audubon Lake; stagnent odor, trash in stream
Water temp. 24.4C / pH 7.2SU / DO 4.7mg/L / Cond. 245umhos;

Station: AN0655
Unt To Stone Bridge Br, Waddell Farm, Gloucester Twp, Camden County
Runnemede USGS Quadrangle
Date Sampled: 07/01/00

Family	Family Tolerance Value (FTV)	Number of Individuals

THIS SITE WAS NOT SAMPLED

Site is on private property and will be dropped from the AMNET program

Station: AN0656
Unt To S Br Big Timber Ck (Turners Run), Ganttown Rd., Washington Twp., Gloucester County
Pitman East USGS Quadrangle
Date Sampled: 7/18/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	37
Chironomidae	6	33
BloodRed Chironomidae	8	10
Tubificidae	10	7
Physidae	7	4
Veliidae	9	4
Simuliidae	6	4
Hydropsychidae	4	2
Planariidae	4	2
Hydrobiidae	8	2
Calopterygidae	5	1
Corydalidae	0	1
Sphaeriidae	8	1
Polycentropodidae	6	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 110
% Contribution of Dominant Family: 33.64 % (Gammaridae)
Family Biotic Index: 5.84
Scraper/Filterer Collector Ratio: 0.75
Shredder/Total Ratio: 0.43
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.73
EPT/C: 0.07
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 153
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/<1
Substrate: Gravel/sand, snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: suburban, forested; storm sewers and fish present station downstream of Bells Lake; Water temp. 18.6C / pH 6.6SU / DO 7.1mg/L / Cond. 155umhos

Station: AN0657
Unt To S Br Big Timber Ck (Turners Run), Grenloch Terrace (Last Bridge), Washington Twp., Gloucester County
Runnemede USGS Quadrangle
Date Sampled: 7/18/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	74
Sphaeriidae	8	14
Chironomidae	6	5
Tubificidae	10	2
Asellidae	8	1
Haliplidae	5	1
Physidae	7	1
BloodRed Chironomidae	8	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 100
% Contribution of Dominant Family: 74.00 % (Gammaridae)
Family Biotic Index: 4.93
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.77
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 129
Deficiency(s) noted: Gammaridae Family Overwhelmingly Dominant - - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/2
Substrate: Mud, silt....StreamBank Vegetation/Stability: Grass, weeds, trees/Fair
Canopy: Open....Other: suburban; station downstream of Grenloch Lake
frogs, fish, algae, and macrophytes present; Water temp. 23.0C / pH 6.6SU / DO 7.4mg/L / Cond. 145umhos

Station: AN0658
S Br Big Timber Ck, Turnersville-Sicklerville Rd., Washington Twp., Gloucester/Camden County
Runnemede USGS Quadrangle
Date Sampled: 7/18/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	41
Heptageniidae	4	14
Elmidae	4	13
Chironomidae	6	11
Tubificidae	10	5
Leptoceridae	4	4
Calopterygidae	5	2
Hydropsychidae	4	2
Physidae	7	2
Baetidae	4	1
Corydalidae	0	1
Sphaeriidae	8	1
BloodRed Chironomidae	8	1
Tetrastemmatidae	7	1
Simuliidae	6	1
Valvatidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 101
% Contribution of Dominant Family: 40.59 % (Gammaridae)
Family Biotic Index: 4.68
Scraper/Filterer Collector Ratio: 1.13
Shredder/Total Ratio: 0.42
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 20.79
EPT/C: 1.75
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 160
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Gravel/sand, snags, root mats....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: suburban, construction supply upstream of bridge; storm sewers present
fish and macrophytes present; Water temp. 21.9C / pH 6.8SU / DO 7.8mg/L / Cond. 112umhos

Station: AN0659
S Br Big Timber Ck, Almonesson Rd., Gloucester Twp., Gloucester County
Runnemede USGS Quadrangle
Date Sampled: 7/18/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	34
Gammaridae	4	26
Chironomidae	6	15
BloodRed Chironomidae	8	8
Hydrobiidae	8	7
Sphaeriidae	8	7
Naididae	7	6
Planariidae	4	1
Physidae	7	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 106
% Contribution of Dominant Family: 32.08 % (Tubificidae)
Family Biotic Index: 7.24
Scraper/Filterer Collector Ratio: 1.14
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 135
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 30/2
Substrate: Mud....StreamBank Vegetation/Stability: Grasses/Good
Canopy: Open....Other: suburban, wetlands; storm sewers present
frogs, fish and macrophytes present; Water temp. 23.7C / pH 6.7SU / DO 5.1mg/L / Cond. 154umhos

Station: AN0660
Pines Run, Lower Landing Road, Gloucester Twp., Camden County
Runnemede USGS Quadrangle
Date Sampled: 7/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	35
Gammaridae	4	25
BloodRed Chironomidae	8	14
Hydrobiidae	8	8
Chironomidae	6	6
Lumbriculidae	8	5
Naididae	7	4
Sphaeriidae	8	3

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 100
% Contribution of Dominant Family: 35.00 % (Tubificidae)
Family Biotic Index: 7.54
Scraper/Filterer Collector Ratio: 0.89
Shredder/Total Ratio: 0.39
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 137
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6 / <1
Substrate: Gravel,sand,mud....StreamBank Vegetation/Stability: Weeds, shrubs, trees/Fair
Canopy: Mostly Open....Other: suburban; storm sewers present; fish and clams observed
Water temp. 26.6C / pH 6.6SU / DO 5.1mg/L / Cond. 144 umhos;

Station: AN0661
N Br Big Timber Ck, W. Park Ave., Lindenwold Boro, Camden County
Runnemede USGS Quadrangle
Date Sampled: 7/25/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydrobiidae	8	45
Chironomidae	6	22
Planorbidae	6	14
Asellidae	8	5
Elmidae	4	4
Physidae	7	4
Calopterygidae	5	2
Sphaeriidae	8	2
Gammaridae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 45.00 % (Hydrobiidae)
Family Biotic Index: 6.94
Scraper/Filterer Collector Ratio: 33.50
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 112
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees, weeds/Poor
Canopy: Closed....Other: suburban; storm sewers present; debris in water; sewage odor; macrophytes present
next to pumping station; Water temp. 22.3C / pH 7.1SU / DO 6.8mg/L / Cond. 140umhos

Station: AN0662
Mason Run, Chews Landing Rd., Lindenwold Boro, Camden County
Runnemede USGS Quadrangle
Date Sampled: 7/25/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	30
Hydrobiidae	8	16
Sphaeriidae	8	15
BloodRed Chironomidae	8	13
Tubificidae	10	9
Chironomidae	6	7
Coenagrionidae	9	3
Elmidae	4	2
Planorbidae	6	2
Planariidae	4	1
Lumbriculidae	8	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 30.00 % (Gammaridae)
Family Biotic Index: 6.67
Scraper/Filterer Collector Ratio: 1.20
Shredder/Total Ratio: 0.43
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 142
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 12/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Closed....Other: suburban, forested; storm sewers present
ducks and fish present; Water temp. 18.5C / pH 7.3SU / DO 7.0mg/L / Cond. 164umhos

Station: AN0663
N. Br. Big Timber Creek, Rt. 168, Gloucester Twp., Camden County
Runnemede USGS Quadrangle
Date Sampled: 7/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	35
Chironomidae	6	23
BloodRed Chironomidae	8	20
Tubificidae	10	16
Naididae	7	3
Corbiculidae	8	1
Hydrobiidae	8	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 99
% Contribution of Dominant Family: 35.35 % (Gammaridae)
Family Biotic Index: 6.41
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.20
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 151
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Fast....Width/Depth (ft): 25 /
Substrate: Mud....StreamBank Vegetation/Stability: Trees/Fair
Canopy: Mostly Open....Other: suburban; storm sewers present; water color brown; fish observed
Water temp. 23.8C / pH 6.8SU / DO 5.7mg/L / Cond. 164umhos;

Station: AN0664
Big Timber Ck, Clements Bridge Rd (Rt. 41), Runnemede Boro, Camden/Gloucester County
Runnemede USGS Quadrangle
Date Sampled: 7/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	29
Naididae	7	17
BloodRed Chironomidae	8	15
Lumbriculidae	10	8
Gammaridae	4	7
Viviparidae	6	6
Chironomidae	6	3
Glossiphoniidae	8	3
Planorbidae	6	2
Elmidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 91
% Contribution of Dominant Family: 31.87 % (Sphaeriidae)
Family Biotic Index: 7.40
Scraper/Filterer Collector Ratio: 0.25
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 117
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 50/2
Substrate: Mud....StreamBank Vegetation/Stability: Reeds, shrubs, trees/Poor
Canopy: Open....Other: suburban; storm sewers present; boats docked along right bank aquatic plants along left bank; ducks present; Water temp. 25.8C / pH 6.8SU / DO 5.5mg/L / Cond. 179umhos

Station: AN0665
Almonesson Ck, Clements Bridge Rd. (Rt. 544), Depford Twp., Gloucester County
Runnemede USGS Quadrangle
Date Sampled: 7/18/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Corbiculidae	8	44
Tubificidae	10	21
Sphaeriidae	8	18
BloodRed Chironomidae	8	10
Hydrobiidae	8	4
Corixidae	9	2
Dolichopodidae	4	2
Naididae	7	2
Chironomidae	6	2
Gammaridae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 106
% Contribution of Dominant Family: 41.51 % (Corbiculidae)
Family Biotic Index: 8.25
Scraper/Filterer Collector Ratio: 0.06
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 123
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 30/3
Substrate: Mud....StreamBank Vegetation/Stability: Weeds, grass, trees/Fair
Canopy: Open....Other: suburban; storm sewers
film on stream surface; Water temp. 27.2C / pH 6.8SU / DO 5.9mg/L / Cond. 198umhos

Station: AN0666
Little Timber Creek, Devon Road, Bellmawr Boro, Camden County
Runnemede USGS Quadrangle
Date Sampled: 7/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	30
Chironomidae	6	16
Lumbriculidae	8	14
BloodRed Chironomidae	8	6
Naididae	7	6
Glossiphoniidae	8	5
Dytiscidae	5	5
Planorbidae	6	3
Aeshnidae	3	2
Physidae	7	2
Asellidae	8	1
Diplopoda	5	1
Enchytraeidae	10	1
Gammaridae	4	1
Hydrophilidae	5	1
Tipulidae	3	1
Lumbricidae	10	1
Veliidae	9	1
Notonectidae	9	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 99
% Contribution of Dominant Family: 30.30 % (Tubificidae)
Family Biotic Index: 7.80
Scraper/Filterer Collector Ratio: 0.29
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 118
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8 / <1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, weeds and shrubs/Stable
Canopy: Mostly Closed....Other: suburban; storm sewers present; iron precipitate, oily sheen on surface, and frogs observed
right bank stabilized with concrete structures; Water temp. 20.0C / pH 6.8SU / DO 9.4mg/L / Cond. 321umhos

Station: AN0667
Woodbury Ck, Woodbury Ck Park (Downstream Of Rt. 45), Woodbury Twp., Gloucester County
Woodbury USGS Quadrangle
Date Sampled: 7/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	32
Tubificidae	10	23
Chironomidae	6	22
Naididae	7	19
Gammaridae	4	4

Statistical Analysis

Number of Taxa: 5
Total Number of Individuals: 100
% Contribution of Dominant Family: 32.00 % (BloodRed Chironomidae)
Family Biotic Index: 7.67
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.32
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 118
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 40/3
Substrate: Mud, silt....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Open....Other: suburban; fish present
Water temp. 24.1C / pH 7.9SU / DO 9.1mg/L / Cond. 225umhos;

Station: AN0668
Mantua Ck, Greentree Rd., Washington Twp., Gloucester County
Pitman East USGS Quadrangle
Date Sampled: 7/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	56
Chironomidae	6	12
Limnephilidae	4	9
Baetidae	4	5
Gammaridae	4	5
Physidae	7	4
Planariidae	4	3
Simuliidae	6	3
Corydalidae	0	2
Aeshnidae	3	1
Lepidostomatidae	1	1
Heptageniidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 103
% Contribution of Dominant Family: 54.37 % (Hydropsychidae)
Family Biotic Index: 4.35
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 69.90
EPT/C: 6.00
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 176
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/<1
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, grass, shrubs/Good
Canopy: Mostly Closed....Other: suburban, forested; filamentous algae present
Water temp. 19.0C / pH 7.0SU / DO 7.4mg/L / Cond. 140umhos;

Station: AN0669
Mantua Ck, Lambs Rd., Mantua Twp., Gloucester County
Runnemede USGS Quadrangle
Date Sampled: 7/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	26
Gammaridae	4	17
Planariidae	4	13
BloodRed Chironomidae	8	12
Naididae	7	8
Sphaeriidae	8	5
Corbiculidae	8	4
Tubificidae	10	4
Physidae	7	4
Planorbidae	6	2
Chironomidae	6	2
Enchytraeidae	10	1
Psychomyiidae	2	1
Valvatidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 26.00 % (Hydropsychidae)
Family Biotic Index: 5.56
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 27.00
EPT/C: 1.93
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 174
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 8/
Substrate: Gravel/sand, cobble....StreamBank Vegetation/Stability: Trees, grass, shrub/Good
Canopy: Partly Open....Other: suburban, forested; station downstream of dam filamentous algae, fish, and turtles present; Water temp. 23.2C / pH 7.3SU / DO 7.9mg/L / Cond. 148umhos

Station: AN0670
Chestnut Br. , Lambs Rd., Pitman Boro, Gloucester County
Pitman West USGS Quadrangle
Date Sampled: 7/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Planariidae	4	24
Hydropsychidae	4	17
Leptoceridae	4	9
Chironomidae	6	9
Calopterygidae	5	8
Sphaeriidae	8	8
Naididae	7	7
Baetidae	4	5
BloodRed Chironomidae	8	4
Coenagrionidae	9	3
Planorbidae	6	3
Tetrastemmatidae	7	3
Empididae	6	2
Lumbriculidae	8	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 104
% Contribution of Dominant Family: 23.08 % (Planariidae)
Family Biotic Index: 5.34
Scraper/Filterer Collector Ratio: 0.09
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 29.81
EPT/C: 2.38
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 181
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 7 ' / < 1.0 - 2.5 '
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Partly Open....Other: suburban, forested; pool filter hose exposed-open end facing stream
Water temp. 23.1C / pH 7.4SU / DO 7.1mg/L / Cond. 190umhos;

Station: AN0671
Chestnut Br, Mantua Blvd., Mantua Twp, Gloucester County
Woodbury USGS Quadrangle
Date Sampled: 7/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	34
Chironomidae	6	26
Elmidae	4	11
Sphaeriidae	8	10
Baetidae	4	6
Tubificidae	10	6
Simuliidae	6	3
Planorbidae	6	2
BloodRed Chironomidae	8	2
Tetrastemmatidae	7	2
Hydropsychidae	4	1
Corixidae	9	1
Heptageniidae	4	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 106
% Contribution of Dominant Family: 32.08 % (Gammaridae)
Family Biotic Index: 5.48
Scraper/Filterer Collector Ratio: 0.08
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 8.49
EPT/C: 0.32
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 135
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Gravel/sand, mud, silt....StreamBank Vegetation/Stability: Grass, shrubs, trees/Fair
Canopy: Mostly Open....Other: suburban; fish and macrophytes present; pipe discharging water from residential property
riprap near bridge on banks; Water temp. 22.1C / pH 7.5SU / DO 8.3mg/L / Cond. 213umhos

Station: AN0672
Mantua Ck, Mantua Ave., Mantua Twp. , Gloucester County
Woodbury USGS Quadrangle
Date Sampled: 7/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	32
Gammaridae	4	30
BloodRed Chironomidae	8	9
Tubificidae	10	8
Naididae	7	5
Caenidae	7	4
Corbiculidae	8	4
Baetidae	4	2
Planariidae	4	1
Elmidae	4	1
Hydroptilidae	4	1
Sphaeriidae	8	1
Lymnaeidae	6	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 32.00 % (Chironomidae)
Family Biotic Index: 5.97
Scraper/Filterer Collector Ratio: 0.08
Shredder/Total Ratio: 0.40
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 8.00
EPT/C: 0.20
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 139
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 25/2-3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Vines, shrubs, trees/Good
Canopy: Open....Other: suburban; oily and brown sheens on water surface aquatic plants, marcophytes, and fish present; Water temp. 22.7C / pH 7.3SU / DO 8.4mg/L / Cond. 196 umhos

Station: AN0673
Edwards Run, Pitman-Jefferson Rd., Harrison Twp., Gloucester County
Pitman West USGS Quadrangle
Date Sampled: 7/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	28
Tubificidae	10	20
BloodRed Chironomidae	8	17
Sphaeriidae	8	10
Planariidae	4	7
Simuliidae	6	6
Hydropsychidae	4	3
Lumbriculidae	8	2
Gyrinidae	3	1
Calopterygidae	5	1
Hydrobiidae	8	1
Muscidae	6	1
Physidae	7	1
Veliidae	9	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 28.00 % (Chironomidae)
Family Biotic Index: 7.18
Scraper/Filterer Collector Ratio: 0.06
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 3.00
EPT/C: 0.07
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 128
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3-6/<1-2
Substrate: Gravel/Sand, silt....StreamBank Vegetation/Stability: Trees, shrubs, weeds/Fair
Canopy: Closed....Other: agriculture-cropland and livestock (cows), rural, forested; storm sewers and fish present
Water temp. 20.8C / pH 7.2SU / DO 8.2mg/L / Cond. 184umhos;

Station: AN0674
Edwards Run, Jessups Mill Rd., Mantua Twp., Gloucester County
Woodbury USGS Quadrangle
Date Sampled: 7/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	51
Gammaridae	4	23
Tubificidae	10	8
Corydalidae	0	4
Sialidae	4	4
Simuliidae	6	4
Gyrinidae	3	3
Baetidae	4	2
Elmidae	4	2
Empididae	6	2
Coenagrionidae	9	2
Asellidae	8	1
Aeshnidae	3	1
Planorbidae	6	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 109
% Contribution of Dominant Family: 46.79 % (Chironomidae)
Family Biotic Index: 5.48
Scraper/Filterer Collector Ratio: 0.07
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.83
EPT/C: 0.04
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 116
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6/<1
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs, weeds/Fair
Canopy: Partly Open....Other: rural, forested; large gray pool under bridge
Water temp. 20.7C / pH 7.0SU / DO 5.7mg/L / Cond. 242umhos;

Station: AN0675
Still Run, Quaker Rd., East Greenwich Twp., Gloucester County
Bridgeport USGS Quadrangle
Date Sampled: 7/25/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	41
Gammaridae	4	15
Chironomidae	6	10
Physidae	7	9
Tubificidae	10	7
Lumbriculidae	8	6
Coenagrionidae	9	2
Corixidae	9	2
BloodRed Chironomidae	8	2
Elmidae	4	2
Glossiphoniidae	8	1
Planariidae	4	1
Planorbidae	6	1
Psychodidae	10	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 41.00 % (Sphaeriidae)
Family Biotic Index: 7.17
Scraper/Filterer Collector Ratio: 0.29
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 123
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 8/2.5-3
Substrate: Mud....StreamBank Vegetation/Stability: Shrubs, weeds, trees/Fair
Canopy: Mostly Open....Other: agriculture-cropland and livestock (horses), rural; storm sewers present
cloudy sheen on surface; Water temp. 20.5C / pH 7.2SU / DO 7.0mg/L / Cond. 184umhos

Station: AN0676
Rattling Run, Tomlin Rd., East Greenwich Twp., Gloucester County
Bridgeport USGS Quadrangle
Date Sampled: 7/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	48
Hydrobiidae	8	10
Sphaeriidae	8	9
BloodRed Chironomidae	8	8
Physidae	7	7
Tubificidae	10	5
Coenagrionidae	9	3
Planorbidae	6	3
Viviparidae	6	2
Naididae	7	1
Corbiculidae	8	1
Lumbriculidae	8	1
Sialidae	4	1
Unionidae	8	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 48.00 % (Chironomidae)
Family Biotic Index: 6.95
Scraper/Filterer Collector Ratio: 2.00
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 142
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 6/1
Substrate: Gravel/sand, mud, silt....StreamBank Vegetation/Stability: Shrubs, vines, trees/Fair
Canopy: Mostly Closed....Other: agriculture-cropland, rural; storm sewers present filamentous algae, macrophytes, salamanders, and fish present; Water temp. 21.2C / pH 7.2SU / DO 6.8mg/L / Cond. 239umhos

Station: AN0677
Pargy Ck, Swedesboro Ave., East Greenwich Twp., Gloucester County
Bridgeport USGS Quadrangle
Date Sampled: 8/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	26
Gammaridae	4	18
Tubificidae	10	10
Sphaeriidae	8	9
Leptoceridae	4	7
BloodRed Chironomidae	8	7
Planariidae	4	6
Tetrastemmatidae	7	4
Lumbriculidae	8	2
Coenagrionidae	9	2
Hydroptilidae	4	2
Physidae	7	2
Caenidae	7	1
Corixidae	9	1
Glossiphoniidae	8	1
Pyralidae	5	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 26.00 % (Chironomidae)
Family Biotic Index: 6.27
Scraper/Filterer Collector Ratio: 0.14
Shredder/Total Ratio: 0.26
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 10.00
EPT/C: 0.30
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 157
Deficiency(s) noted:
-

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 30/1-2
Substrate: Mud....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Partly Open....Other: agriculture-livestock (cows), rural; Water temp. 24.0C / pH 7.1SU / DO 6.4mg/L / Cond. 206umhos

Station: AN0678
Little Timber Ck, Paulsboro Rd., Logan Twp., Gloucester County
Bridgeport USGS Quadrangle
Date Sampled: 8/22/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	23
Chironomidae	6	20
Valvatidae	4	15
Palaemonidae	6	11
Planorbidae	6	7
Viviparidae	6	5
BloodRed Chironomidae	8	4
Physidae	7	4
Sphaeriidae	8	4
Gomphidae	1	2
Tubificidae	10	2
Sialidae	4	2
Calopterygidae	5	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Gammaridae)
Family Biotic Index: 5.37
Scraper/Filterer Collector Ratio: 7.75
Shredder/Total Ratio: 0.27
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 157
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 12/3
Substrate: Mud....StreamBank Vegetation/Stability: Trees, grass, vines, shrubs/Fair
Canopy: Mostly Closed....Other: agriculture-cropland, rural; fish and turtles present
Water temp. 16.3C / pH 7.5SU / DO 8.0mg/L / Cond. 260umhos;

Station: AN0679
Racoon Ck, Ellis Mill Rd (Below Gilman Lake), Elk Twp., Gloucester County
Pitman West USGS Quadrangle
Date Sampled: 08/22/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	47
Physidae	7	15
Coenagrionidae	9	13
Hydropsychidae	4	5
Hydrobiidae	8	5
Viviparidae	6	4
Leptoceridae	4	4
Naididae	7	4
Corduliidae	5	2
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 47.00 % (Sphaeriidae)
Family Biotic Index: 7.44
Scraper/Filterer Collector Ratio: 0.46
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 9.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 167
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/<1-1.5
Substrate: Gravel, sand....StreamBank Vegetation/Stability: Trees, grass and shrubs/Fair
Canopy: Mostly closed....Other: agricultural- cropland, livestock; rural; storm sewers present; outlet to lake
debris trapped at impoundment; Water temp. 21.9C / pH 7.4SU / Cond. 143umhos / DO 8.5mg/L

Station: AN0680
Racoon Ck, N Main Street (Rt. 45), Harrison Twp., Gloucester County
Pitman West USGS Quadrangle
Date Sampled: 08/22/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	40
Chironomidae	6	12
Baetidae	4	8
Planariidae	4	8
Heptageniidae	4	6
Hydrobiidae	8	5
Sphaeriidae	8	5
Elmidae	4	4
Lumbriculidae	8	3
Physidae	7	2
Planorbidae	6	2
Gammaridae	4	1
Lumbricidae	10	1
Naididae	7	1
Tetrastemmatidae	7	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 40.00 % (Hydropsychidae)
Family Biotic Index: 5.04
Scraper/Filterer Collector Ratio: 0.42
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 54.00
EPT/C: 4.50
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 150
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 33/<1-1.0
Substrate: Gravel, sand, silt....StreamBank Vegetation/Stability: Grass, trees, and shrubs/Good
Canopy: Partly open....Other: suburban; storm sewers flowing (gray discharge); slight sewage odor in air and water; fish present
Water temp. 18.5C / pH 7.0SU / DO 7.4mg/L / Cond. 197umhos;

Station: AN0681
S Br Raccoon Ck, Swedesboro-Franklinville Rd. (Rt. 538), South Harrison Twp., Gloucester County
Pitman West USGS Quadrangle
Date Sampled: 8/22/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	23
Elmidae	4	19
BloodRed Chironomidae	8	9
Gammaridae	4	8
Corydalidae	0	8
Hydropsychidae	4	6
Calopterygidae	5	4
Tubificidae	10	4
Tetrastemmatidae	7	3
Asellidae	8	2
Gomphidae	1	1
Baetidae	4	1
Viviparidae	6	1
Ephydridae	6	1
Hydrobiidae	8	1
Planorbidae	6	1
Mesoveliidae	9	1
Leptoceridae	4	1
Sphaeriidae	8	1
Veliidae	9	1
Sialidae	4	1
Naididae	7	1
Heptageniidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 24
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Chironomidae)
Family Biotic Index: 5.21
Scraper/Filterer Collector Ratio: 1.07
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 9.00
EPT/C: 0.28
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 159
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Vines, trees, shrubs/Good
Canopy: Closed....Other: rural; fish present
Water temp. 16.4C / pH 7.4SU / DO 8.1mg/L / Cond. 215umhos;

Station: AN0682
S Br Raccoon Ck, High St., Harrison Twp, Gloucester County
Woodstown USGS Quadrangle
Date Sampled: 8/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	29
Planorbidae	6	15
Tetrastemmatidae	7	12
Chironomidae	6	11
Sphaeriidae	8	9
Tabanidae	6	6
Physidae	7	5
BloodRed Chironomidae	8	3
Calopterygidae	5	2
Piscicolidae	7	2
Baetidae	4	1
Lumbriculidae	8	1
Corydalidae	0	1
Veliidae	9	1
Sialidae	4	1
Naididae	7	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 101
% Contribution of Dominant Family: 28.71 % (Tubificidae)
Family Biotic Index: 7.49
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.99
EPT/C: 0.07
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 146
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 15/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Partly Open....Other: agriculture-livestock (goat farm), rural, forested; Water temp. 20.3C / pH 7.0SU / DO 6.6mg/L / Cond. 192umhos

Station: AN0683
Raccoon Ck, Tomlin Station Rd., Harrison Twp., Gloucester County
Woodstown USGS Quadrangle
Date Sampled: 8/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	47
Tubificidae	10	18
Planariidae	4	10
BloodRed Chironomidae	8	7
Elmidae	4	5
Tetrastemmatidae	7	5
Sphaeriidae	8	4
Naididae	7	2
Tipulidae	3	2
Aeshnidae	3	1
Hydropsychidae	4	1
Curculionidae	7	1
Hydrobiidae	8	1
Lumbricidae	10	1
Physidae	7	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 107
% Contribution of Dominant Family: 43.93 % (Chironomidae)
Family Biotic Index: 6.63
Scraper/Filterer Collector Ratio: 2.80
Shredder/Total Ratio: 0.47
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.93
EPT/C: 0.02
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 161
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 20/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Stable
Canopy: Partly Open....Other: agriculture-livestock, rural; storm sewers present; heavy siltation near bridge
macrophytes present; Water temp. 19.9C / pH 7.2SU / DO 7.5mg/L / Cond. 202umhos

Station: AN0684
Unt To Raccoon Ck, Russel Mill Rd., Woolwich Twp., Gloucester County
Woodstown USGS Quadrangle
Date Sampled: 8/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	40
Corbiculidae	8	33
Planariidae	4	13
Sphaeriidae	8	6
Naididae	7	2
Gammaridae	4	2
Chironomidae	6	1
Erpobdellidae	8	1
Elmidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 40.00 % (BloodRed Chironomidae)
Family Biotic Index: 7.34
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.42
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 149
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 10/<1-2
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Partly Open....Other: agriculture-livestock (downstream of horse farm), rural, forested; Water temp. 21.1C / pH 7.0SU / DO 7.2mg/L / Cond. 113umhos

Station: AN0685
Raccoon Ck, Kings Hwy., Swedesboro Boro, Gloucester County
Woodstown USGS Quadrangle
Date Sampled: 8/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	75
BloodRed Chironomidae	8	9
Chironomidae	6	3
Naididae	7	2
Lumbriculidae	8	2
Gammaridae	4	1
Oniscidae	7	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 94
% Contribution of Dominant Family: 79.79 % (Tubificidae)
Family Biotic Index: 9.46
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 124
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 68.5/2-3.5
Substrate: Mud....StreamBank Vegetation/Stability: Trees, grass/Poor
Canopy: Open....Other: suburban; storm sewers, downstream from a sewage treatment plant
Water temp. 21.2C / pH 7.1SU / DO 6.9mg/L / Cond. 203umhos;

Station: AN0686
Oldmans Ck, Swedesboro Rd., South Harrison Twp., Gloucester/Salem County
Pitman West USGS Quadrangle
Date Sampled: 08/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Sphaeriidae	8	18
Tubificidae	10	16
Sialidae	4	5
Talitridae	8	4
Physidae	7	4
Corixidae	9	3
Asellidae	8	2
Planorbidae	6	2
Culicidae	8	1
Calopterygidae	5	1
Libellulidae	9	1
Molannidae	6	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 88
% Contribution of Dominant Family: 32.95 % (Chironomidae)
Family Biotic Index: 7.36
Scraper/Filterer Collector Ratio: 0.37
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.14
EPT/C: 0.03
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 174
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 18/2
Substrate: Gravel/sand,mud....StreamBank Vegetation/Stability: Trees,shrubs/Good
Canopy: Closed....Other: suburban,forested; outlet to Wilson Lake
Water temp.20.4C/pH 7.4 SU/DO 8.1mg/L / Cond.207umhos;

Station: AN0687
Oldmans Ck, Harrisonville Lake Rd., South Harrison Twp., Gloucester/Salem County
Woodstown USGS Quadrangle
Date Sampled: 8/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	20
BloodRed Chironomidae	8	17
Hydropsychidae	4	15
Talitridae	8	15
Planariidae	4	14
Asellidae	8	4
Philopotamidae	3	3
Hydrobiidae	8	2
Chironomidae	6	2
Lumbriculidae	8	2
Leptoceridae	4	2
Naididae	7	2
Enchytraeidae	10	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 20.00 % (Sphaeriidae)
Family Biotic Index: 6.59
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 20.00
EPT/C: 1.05
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 186
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 20/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: agricutlure-livestock and cropland, rural, forested; station downstream of Harrisonville Lake
filamentous algae and fish present; Water temp. 23.6C / pH 7.5SU / DO 8.4mg/L / Cond. 203umhos

Station: AN0688
Oldmans Ck, Kings Hwy., Woolwich Twp., Gloucester/Salem County
Woodstown USGS Quadrangle
Date Sampled: 08/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	16
Gerridae	8	13
Hydrobiidae	8	11
Corixidae	9	10
Coenagrionidae	9	10
Tubificidae	10	8
Chironomidae	6	6
Planariidae	4	3
BloodRed Chironomidae	8	3
Sphaeriidae	8	3
Tetrastemmatidae	7	3
Lumbricidae	10	2
Planorbidae	6	2
Naididae	7	1
Gomphidae	1	1
Isotomidae	10	1
Leptophlebiidae	2	1
Libellulidae	9	1
Mesoveliidae	9	1
Leptoceridae	4	1
Palaemonidae	6	1
Poduridae	10	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 100
% Contribution of Dominant Family: 16.00 % (Elmidae)
Family Biotic Index: 7.29
Scraper/Filterer Collector Ratio: 4.67
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.00
EPT/C: 0.22
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 145
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 20/4
Substrate: Mud,silt....StreamBank Vegetation/Stability: Trees,shrubs/Fair
Canopy: Mostly Closed....Other: rural, forested; storm water pipe; pond upstream
turtles observed; Water temp. 21.8C / pH 7.2 SU / DO 7.3mg/L / Cond. 221umhos

Station: AN0689
Oldmans Ck., Pointers-Auburn Rd. (Rt. 551), Woolwich Twp., Gloucester County
Woodstown USGS Quadrangle
Date Sampled: 8/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	42
Tubificidae	10	37
Chironomidae	6	14
Sphaeriidae	8	3
Gammaridae	4	2
Hydrobiidae	8	2
Corixidae	9	1
Naididae	7	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 103
% Contribution of Dominant Family: 40.78 % (BloodRed Chironomidae)
Family Biotic Index: 8.35
Scraper/Filterer Collector Ratio: 0.04
Shredder/Total Ratio: 0.41
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 160
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 89/2->4
Substrate: Mud....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: rural, forested, some recent housing development nearby; water color brown
Water temp. 20.6C / pH 7.2SU / DO 6.7mg/L / Cond. 207umhos;

Station: AN0690
Salem River, Rt. 581 (Commissioners Rd), Upper Pittsgrove Twp., Salem County
Alloway USGS Quadrangle
Date Sampled: 8/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	34
Chironomidae	6	24
Tubificidae	10	22
Elmidae	4	10
Planorbidae	6	3
Tetrastemmatidae	7	3
Glossiphoniidae	8	1
Gomphidae	1	1
Gammaridae	4	1
Calopterygidae	5	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 101
% Contribution of Dominant Family: 33.66 % (BloodRed Chironomidae)
Family Biotic Index: 7.32
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.34
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 163
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 22/1
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: agriculture-cropland, forested, storm sewers present
fish and fishy odor observed; Water temp. 26.5C / pH 8.2SU / DO 4.7mg/L / Cond.
215 umhos

Station: AN0691
Salem River, Mill St (Outlet Of Memorial Lake), Pilesgrove Twp., Salem County
Woodstown USGS Quadrangle
Date Sampled: 8/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	44
Corixidae	9	25
Chironomidae	6	23
Tubificidae	10	13
Hydrophilidae	5	1
Lumbriculidae	8	1
Naididae	7	1
Planariidae	4	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 110
% Contribution of Dominant Family: 40.00 % (Hydropsychidae)
Family Biotic Index: 6.37
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 40.00
EPT/C: 1.83
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 147
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 12/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, weeds/Good
Canopy: Open upstream, mostly closed downstream....Other: rural, forested; snapping turtles and fish present; station downstream from Memorial Lake
gates of dam open since Hurricane Floyd, lake dry and overgrown with weeds; Water temp. 28.7C / pH 8.0SU / DO 8.1mg/L / Cond. 252umhos

Station: AN0692
Nichomus Run, Rt. 45, Pilesgrove Twp., Salem County
Woodstown USGS Quadrangle
Date Sampled: 8/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	26
Lumbriculidae	8	18
BloodRed Chironomidae	8	17
Elmidae	4	13
Sphaeriidae	8	13
Corixidae	9	6
Gammaridae	4	5
Tubificidae	10	5
Aeshnidae	3	3
Planorbidae	6	1
Physidae	7	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 109
% Contribution of Dominant Family: 23.85 % (Chironomidae)
Family Biotic Index: 6.81
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.16
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 138
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 17/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, grass/Fair
Canopy: Partly Open....Other: agriculture-cropland and livestock (dairy farm upstream); fish present
Water temp. 23.9C / pH 7.5SU / DO 4.2mg/L / Cond. 424umhos;

Station: AN0693
Salem River, Kings Hwy., Pilesgrove Twp., Salem County
Woodstown USGS Quadrangle
Date Sampled: 8/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	43
Gammaridae	4	24
Sphaeriidae	8	9
BloodRed Chironomidae	8	7
Elmidae	4	5
Tubificidae	10	4
Culicidae	8	2
Asellidae	8	2
Hydropsychidae	4	2
Ancylidae	6	2
Caenidae	7	1
Planariidae	4	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 103
% Contribution of Dominant Family: 41.75 % (Chironomidae)
Family Biotic Index: 5.93
Scraper/Filterer Collector Ratio: 0.77
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.91
EPT/C: 0.06
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 135
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 45/2
Substrate: Mud....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Mostly Closed....Other: rural, forested; log across stream at base of bridge
Water temp. 24.1C / pH 7.3SU / DO 4.9mg/L / Cond. 317umhos;

Station: AN0694
Major Run, Pointers-Sharptown Rd., Mannington Twp., Salem County
Woodstown USGS Quadrangle
Date Sampled: 8/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	83
Corixidae	9	10
BloodRed Chironomidae	8	6
Planariidae	4	1

Statistical Analysis

Number of Taxa: 4
Total Number of Individuals: 100
% Contribution of Dominant Family: 83.00 % (Tubificidae)
Family Biotic Index: 9.72
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 0
Biological Condition: Severely Impaired
Habitat Analysis: 94
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant - Low Diversity - - Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 8/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Weeds, trees/Poor
Canopy: Closed....Other: rural; Water temp. 26.0C / pH 7.4SU / DO 3.1mg/L / Cond. 604 umhos

Station: AN0695
Two Penny Run, E Quillytown Rd., Upper Penns Neck Twp., Salem County
Penns Grove USGS Quadrangle
Date Sampled: 8/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	46
Hydropsychidae	4	17
BloodRed Chironomidae	8	14
Elmidae	4	9
Leptoceridae	4	5
Tubificidae	10	4
Libellulidae	9	3
Corixidae	9	2
Empididae	6	2
Viviparidae	6	1
Planariidae	4	1
Gomphidae	1	1
Lumbriculidae	8	1
Planorbidae	6	1
Sialidae	4	1
Corduliidae	5	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 110
% Contribution of Dominant Family: 41.82 % (Chironomidae)
Family Biotic Index: 5.92
Scraper/Filterer Collector Ratio: 0.39
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 20.00
EPT/C: 0.37
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 119
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 5/2
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Mostly Closed....Other: rural; storm sewers present
Water temp. 25.3C / pH 7.4SU / DO 5.3mg/L / Cond. 270umhos;

Station: AN0696
Game Ck, Rt. 48 (Outlet Of Layton's Lake), Upper Penns Neck Twp., Salem County
Penns Grove USGS Quadrangle
Date Sampled: 8/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Caenidae	7	42
Chironomidae	6	15
Gammaridae	4	11
BloodRed Chironomidae	8	9
Talitridae	8	8
Coenagrionidae	9	6
Elmidae	4	3
Naididae	7	2
Planorbidae	6	1
Leptoceridae	4	1
Palaemonidae	6	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 42.00 % (Caenidae)
Family Biotic Index: 6.70
Scraper/Filterer Collector Ratio: 0.44
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 43.00
EPT/C: 1.79
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 126
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 35/1-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Mostly Open....Other: rural; storm sewers present
station downstream of Layton's Lake; Water temp. 27.7C / pH 8.3SU / DO 8.7mg/L / Cond. 244umhos

Station: AN0697
Unt To Culliers Run, Basset Rd., Mannington Twp., Salem County
Salem USGS Quadrangle
Date Sampled: 9/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	31
Asellidae	8	21
Tubificidae	10	18
Chironomidae	6	12
Planorbidae	6	5
Coenagrionidae	9	4
Sphaeriidae	8	4
Sialidae	4	3
Hydrobiidae	8	1
Corydalidae	0	1
Gomphidae	1	1
Lumbriculidae	8	1
Libellulidae	9	1
Polycentropodidae	6	1
Physidae	7	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 106
% Contribution of Dominant Family: 29.25 % (BloodRed Chironomidae)
Family Biotic Index: 7.76
Scraper/Filterer Collector Ratio: 0.41
Shredder/Total Ratio: 0.49
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.94
EPT/C: 0.02
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 155
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 20/3
Substrate: Mud, snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Partly Open....Other: agriculture-cropland, forested; bridge construction; water color: green
turtles, frogs, and macrophytes present; Water. temp. 13.8C / pH 7.7SU / DO 5.7mg/L / Cond. 382umhos

Station: AN0698
Swedes Run, Swedes Bridge Rd., Mannington Twp., Salem County
Salem USGS Quadrangle
Date Sampled: 9/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	27
Chironomidae	6	20
Elmidae	4	14
Gammaridae	4	14
Asellidae	8	6
Physidae	7	4
Planorbidae	6	3
Tubificidae	10	3
Aeshnidae	3	1
Viviparidae	6	1
Planariidae	4	1
BloodRed Chironomidae	8	1
Polycentropodidae	6	1
Lymnaeidae	6	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 98
% Contribution of Dominant Family: 27.55 % (Sphaeriidae)
Family Biotic Index: 6.21
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.02
EPT/C: 0.05
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 148
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 10/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: agriculture-cropland, forested; water color: green
Water temp. 13.8C / pH 7.8SU / DO 6.7mg/L / Cond. 348umhos;

Station: AN0699
Alloway Ck, Yorktown-Friesburg Rd. (Rt. 672), Alloway Twp., Salem County
Alloway USGS Quadrangle
Date Sampled: 8/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	66
BloodRed Chironomidae	8	15
Tubificidae	10	13
Sphaeriidae	8	3
Baetidae	4	1
Culicidae	8	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 100
% Contribution of Dominant Family: 66.00 % (Chironomidae)
Family Biotic Index: 6.89
Scraper/Filterer Collector Ratio: 0.01
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 0.01
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 124
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant -
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass/Good
Canopy: Open....Other: agriculture-cropland and livestock upstream, forested downstream; fish present
Water temp. 21.9C / pH 7.3SU / DO 8.5mg/L / Cond. 241umhos;

Station: AN0700
Cool Run, Stockington-Pleasant Hill Rd., Alloway Twp., Salem County
Alloway USGS Quadrangle
Date Sampled: 8/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	28
Chironomidae	6	21
Heptageniidae	4	18
Elmidae	4	6
Sphaeriidae	8	4
Gomphidae	1	3
Tetrastemmatidae	7	3
Physidae	7	2
Ephemerellidae	1	2
Sialidae	4	2
Simuliidae	6	2
Tubificidae	10	2
Calopterygidae	5	1
Astacidae	7.2	1
Viviparidae	6	1
Planariidae	4	1
Hydrophilidae	5	1
Lumbricidae	10	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 100
% Contribution of Dominant Family: 28.00 % (Hydropsychidae)
Family Biotic Index: 4.87
Scraper/Filterer Collector Ratio: 0.62
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 49.00
EPT/C: 2.33
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 174
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 17/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: agriculture-cropland and livestock, forested; storm sewers present
school bus parking downstream; Water temp. 25.5C / pH 7.3SU / DO 6.3mg/L / Cond. 219umhos

Station: AN0701
Unt To Alloway Ck (Cedar Bk), Alloway-Aldine Rd., Alloway Twp., Salem County
Alloway USGS Quadrangle
Date Sampled: 9/5/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	30
Elmidae	4	29
BloodRed Chironomidae	8	9
Gammaridae	4	6
Leptoceridae	4	6
Sphaeriidae	8	5
Tubificidae	10	4
Sabellidae	6	2
Ceratopogonidae	6	2
Glossiphoniidae	8	1
Calopterygidae	5	1
Hydropsychidae	4	1
Gomphidae	1	1
Lumbriculidae	8	1
Sialidae	4	1
Gerridae	8	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 30.00 % (Chironomidae)
Family Biotic Index: 5.58
Scraper/Filterer Collector Ratio: 1.06
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 7.00
EPT/C: 0.18
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 145
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 18/1
Substrate: Mud....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: rural, forested; station downstream of Sycamore Lake
Water temp. 23.0C / pH 6.7SU / DO 6.3mg/L / Cond. 130;

Station: AN0702
Alloway Ck, Welchville-Alloway Rd, Alloway Twp., Salem County
Alloway USGS Quadrangle
Date Sampled: 09/05/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Palaemonidae	6	33
Corixidae	9	24
Tubificidae	10	21
BloodRed Chironomidae	8	19
Sphaeriidae	8	2
Planorbidae	6	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 100
% Contribution of Dominant Family: 33.00 % (Palaemonidae)
Family Biotic Index: 7.98
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.19
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 122
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 45/3
Substrate: Mud....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Open....Other: Rural,forested; downstream of Alloway Lake; Turtles observed
Water temp.23.0 C /pH 7.2 SU/ DO 7.0mg/L /Cond.258umhos ;

Station: AN0703
Deep Run, Waterworks Rd., Alloway Twp., Salem County
Alloway USGS Quadrangle
Date Sampled: 9/5/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	33
Elmidae	4	21
Chironomidae	6	15
Naididae	7	6
Lumbriculidae	8	4
Ceratopogonidae	6	4
Tubificidae	10	4
Tetrastemmatidae	7	3
Asellidae	8	2
Caenidae	7	2
Coenagrionidae	9	2
Sialidae	4	2
Glossiphoniidae	8	1
Viviparidae	6	1
Corixidae	9	1
Gyrinidae	3	1
Planariidae	4	1
Gomphidae	1	1
Dytiscidae	5	1
Sabellidae	6	1
Leptoceridae	4	1
Palaemonidae	6	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 109
% Contribution of Dominant Family: 30.28 % (BloodRed Chironomidae)
Family Biotic Index: 6.53
Scraper/Filterer Collector Ratio: 0.48
Shredder/Total Ratio: 0.32
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.75
EPT/C: 0.06
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 151
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 18/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: rural, forested; station downstream of Elkington Mill Pond
salt marsh odor observed; Water temp. 23.9C / pH 7.1SU / DO 7.9mg/L / Cond. 111umhos

Station: AN0704
Lower Alloway Ck, Perry Rd., Lower Alloways Creek Twp., Salem County
Salem USGS Quadrangle
Date Sampled: 9/5/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Corixidae	9	46
Chironomidae	6	23
Leptoceridae	4	7
Elmidae	4	4
Coenagrionidae	9	4
Gomphidae	1	3
Corydalidae	0	2
Sphaeriidae	8	2
Tubificidae	10	2
Gammaridae	4	1
Lumbricidae	10	1
Libellulidae	9	1
Gerridae	8	1
Naididae	7	1
Curculionidae	7	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 46.00 % (Corixidae)
Family Biotic Index: 7.21
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 7.00
EPT/C: 0.30
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 147
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/1
Substrate: Gravel/sand, mud, silt....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Closed....Other: rural, forested; sulfur odor
Water temp. 17.7C / pH 6.4SU / DO 8.3mg/L / Cond. 106umhos;

Station: AN0705
Sarah Run, Telegraph Rd. (Rt. 647), Quinton Twp., Salem/Cumberland County
Shiloh USGS Quadrangle
Date Sampled: 10/17/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	21
Gammaridae	4	19
Calopterygidae	5	12
Leptophlebiidae	2	7
Limnephilidae	4	5
Tetrastemmatidae	7	4
Hydropsychidae	4	3
Sphaeriidae	8	3
BloodRed Chironomidae	8	3
Sialidae	4	3
Tubificidae	10	3
Brachycentridae	1	2
Leptoceridae	4	2
Physidae	7	2
Phryganeidae	4	2
Planariidae	4	1
Planorbidae	6	1
Corixidae	9	1
Hydrobiidae	8	1
Nematoda	6	1
Corydalidae	0	1
Pyralidae	5	1
Tipulidae	3	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 24
Total Number of Individuals: 100
% Contribution of Dominant Family: 21.00 % (Chironomidae)
Family Biotic Index: 5.05
Scraper/Filterer Collector Ratio: 0.89
Shredder/Total Ratio: 0.26
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 22.00
EPT/C: 0.92
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 131
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/2
Substrate: Gravel/sand, mud, clay....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Mostly Open....Other: agriculture-cropland and livestock, rural, forested; pipe coming from residence
macrophytes and fish present; Water temp. 14.2C / pH 6.6SU / DO 7.5mg/L / Cond. 97umhos

Station: AN0706
Stow Ck, Buckhorn Rd., Lower Alloways Creek Twp., Salem County
Shiloh USGS Quadrangle
Date Sampled: 9/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	29
Chironomidae	6	26
Calopterygidae	5	12
Elmidae	4	7
Hydrobiidae	8	6
BloodRed Chironomidae	8	3
Sphaeriidae	8	3
Baetidae	4	2
Ephemerellidae	1	2
Leptoceridae	4	2
Aeshnidae	3	1
Hydrophilidae	5	1
Pyralidae	5	1
Polycentropodidae	6	1
Tetrastemmatidae	7	1
Gerridae	8	1
Heptageniidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Gammaridae)
Family Biotic Index: 5.22
Scraper/Filterer Collector Ratio: 0.33
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 8.00
EPT/C: 0.28
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 177
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 13/3
Substrate: Mud....StreamBank Vegetation/Stability: Trees, grass, shrubs/Fair
Canopy: Partly Open....Other: rural, forested; turtles, macrophytes, and aquatic plants present
Water temp. 20.8C / pH 6.9SU / DO 7.8mg/L / Cond. 143umhos;

Station: AN0707
Canton Drain, Maskell Mill Rd. (Outlet Of Pond), Lower Alloways Creek Twp., Salem County
Canton USGS Quadrangle
Date Sampled: 9/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	33
Talitridae	8	14
BloodRed Chironomidae	8	11
Coenagrionidae	9	10
Palaemonidae	6	7
Naididae	7	4
Elmidae	4	4
Planariidae	4	3
Baetidae	4	2
Libellulidae	9	2
Leptoceridae	4	2
Gerridae	8	2
Philopotamidae	3	1
Corixidae	9	1
Gomphidae	1	1
Polycentropodidae	6	1
Corduliidae	5	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 33.00 % (Chironomidae)
Family Biotic Index: 6.70
Scraper/Filterer Collector Ratio: 2.00
Shredder/Total Ratio: 0.44
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 6.00
EPT/C: 0.14
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 150
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees, shrubs/Good
Canopy: Mostly Open....Other: rural, forested (Maskell's Mill Wildlife Mgmt. Area); station downstream of dam
fish present; water color: cedar brown; Water temp. 23.1C / pH 6.4SU / DO 6.5mg/L / Cond. 66umhos

Station: AN0708
Raccoon Ditch, Davis Mill Rd., Stow Creek Twp., Cumberland County
Shiloh USGS Quadrangle
Date Sampled: 9/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	86
Palaemonidae	6	10
Chironomidae	6	3
Elmidae	4	1
Gammaridae	4	1
Planorbidae	6	1
Phryganeidae	4	1
Ceratopogonidae	6	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 105
% Contribution of Dominant Family: 81.90 % (BloodRed Chironomidae)
Family Biotic Index: 7.59
Scraper/Filterer Collector Ratio: 0.02
Shredder/Total Ratio: 0.84
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.95
EPT/C: 0.01
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 171
Deficiency(s) noted: BloodRed Chironomidae Family Overwhelmingly Dominant - - Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 50/3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: rural; station downstream of lake
Water temp. 23.4C / pH 7.6SU / DO 8.3mg/L / Cond. 148umhos;

Station: AN0709
Cohansey River, Beal Rd., Alloway Twp., Salem County
Alloway USGS Quadrangle
Date Sampled: 10/17/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	40
Sphaeriidae	8	13
BloodRed Chironomidae	8	6
Lumbriculidae	8	3
Molannidae	6	3
Ancylidae	6	2
Gammaridae	4	2
Polycentropodidae	6	2
Ceratopogonidae	6	2
Sialidae	4	2
Tabanidae	6	2
Tipulidae	3	2
Elmidae	4	1
Hydropsychidae	4	1
Psychomyiidae	2	1
Planorbidae	6	1
Naididae	7	1
Corydalidae	0	1
Physidae	7	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 87
% Contribution of Dominant Family: 45.98 % (Chironomidae)
Family Biotic Index: 6.22
Scraper/Filterer Collector Ratio: 0.56
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 8.05
EPT/C: 0.15
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 5/<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: agriculture-cropland, forested; Water temp. 16.1C / pH 7.0SU / DO 8.0mg/L / Cond. 85umhos

Station: AN0710
Cohansey River, Rt. 540, Hopewell Twp., Cumberland County
Alloway USGS Quadrangle
Date Sampled: 10/17/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	36
Elmidae	4	6
Tubificidae	10	5
Corixidae	9	2
Gammaridae	4	2
Lumbriculidae	8	2
Leptoceridae	4	2
Sphaeriidae	8	2
Glossiphoniidae	8	2
Ceratopogonidae	6	2
Pyralidae	5	1
Planariidae	4	1
Talitridae	8	1
Planorbidae	6	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 66
% Contribution of Dominant Family: 54.55 % (Chironomidae)
Family Biotic Index: 6.23
Scraper/Filterer Collector Ratio: 3.50
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 4.55
EPT/C: 0.08
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 131
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 27/3
Substrate: Mud....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Partly Open....Other: agriculture-cropland, forested; fish present retention pond and agricultural pumping station on left bank; Water temp. 15.0C / pH 6.6SU / DO 7.5mg/L / Cond. 135umhos

Station: AN0711
Parsonage Run, Finley Rd., Upper Deerfield Twp., Cumberland County
Shiloh USGS Quadrangle
Date Sampled: 10/17/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	73
Chironomidae	6	17
Sphaeriidae	8	5
Gammaridae	4	4
Pyralidae	5	2
Asellidae	8	1
Simuliidae	6	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 104
% Contribution of Dominant Family: 70.19 % (Tubificidae)
Family Biotic Index: 8.81
Scraper/Filterer Collector Ratio: 0.17
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 158
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 10/2
Substrate: Mud, silt, snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Open....Other: rural, forested; macrophytes present
Water temp. 15.5C / pH 6.6SU / DO 6.8mg/L / Cond. 283umhos;

Station: AN0712
Cohansey River, Silver Lake Rd., Upper Deerfield Twp., Cumberland County
Shiloh USGS Quadrangle
Date Sampled: 9/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Gammaridae	4	27
Baetidae	4	10
Elmidae	4	8
Tubificidae	10	5
Calopterygidae	5	4
Simuliidae	6	3
Planariidae	4	2
Coenagrionidae	9	2
Sialidae	4	2
Heptageniidae	4	2
BloodRed Chironomidae	8	1
Hydropsychidae	4	1
Lepidostomatidae	1	1
Leptoceridae	4	1
Pyralidae	5	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Chironomidae)
Family Biotic Index: 5.13
Scraper/Filterer Collector Ratio: 2.50
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 15.00
EPT/C: 0.50
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 176
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 20/2
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Open....Other: forested; fish and macrophytes present
creasote odor from bridge; Water temp. 17.7C / pH 6.8SU / DO 7.8mg/L / Cond. 215umhos

Station: AN0713
Barrett Run, Randloph Ave., Hopewell Twp., Salem County
Shiloh USGS Quadrangle
Date Sampled: 10/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Coenagrionidae	9	37
Haliplidae	5	15
Hydrobiidae	8	11
Physidae	7	9
Tetrastemmatidae	7	8
Tubificidae	10	4
Sphaeriidae	8	4
Dytiscidae	5	3
Libellulidae	9	3
Baetidae	4	2
Chironomidae	6	2
Planorbidae	6	2
Naididae	7	2
Glossiphoniidae	8	1
Cambaridae	5	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 104
% Contribution of Dominant Family: 35.58 % (Coenagrionidae)
Family Biotic Index: 7.58
Scraper/Filterer Collector Ratio: 5.50
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.92
EPT/C: 1.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 117
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 10/1
Substrate: Mud, silt....StreamBank Vegetation/Stability: Trees, grass/Fair
Canopy: Mostly Open....Other: agriculture-cropland (orchards); macrophytes, tadpoles
Water temp. 15.1C / pH 6.6SU / DO 6.6mg/L / Cond. 182umhos;

Station: AN0714
Barrett Run, Beebe Run Rd., Bridgeton, Cumberland County
Bridgeton USGS Quadrangle
Date Sampled: 9/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	35
Chironomidae	6	28
Tubificidae	10	23
Naididae	7	7
Lumbriculidae	8	5
Corbiculidae	8	2
Hydrobiidae	8	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 102
% Contribution of Dominant Family: 34.31 % (BloodRed Chironomidae)
Family Biotic Index: 7.81
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 154
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 20/2
Substrate: Cobble, gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Open....Other: suburban, forested; storm sewers present; Bridgeton STP pumping station nearby
station downstream of Mary Elmer Lake; fish present; Water temp. 21.3C / pH 7.2SU / DO 8.1mg/L / Cond. 151umhos

Station: AN0715
Indian Fields Br, Grove St., Bridgeton, Cumberland County
Bridgeton USGS Quadrangle
Date Sampled: 9/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	50
Sphaeriidae	8	21
Gammaridae	4	13
Tubificidae	10	8
Lumbriculidae	8	5
Hydrobiidae	8	4
BloodRed Chironomidae	8	2
Planariidae	4	2
Asellidae	8	1
Planorbidae	6	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 108
% Contribution of Dominant Family: 46.30 % (Chironomidae)
Family Biotic Index: 6.63
Scraper/Filterer Collector Ratio: 0.01
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 129
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/<1
Substrate: Cobbles, gravel/sand....StreamBank Vegetation/Stability: Trees, weeds/Fair
Canopy: Partly Open....Other: urban; storm sewers, trash, and oil odor present
macrophytes and fish present; Water temp. 18.9C / pH 6.6SU / DO 8.0mg/L / Cond. 136umhos

Station: AN0716
Island Br, Fayette St, Bridgeton, Cumberland County
Bridgeton USGS Quadrangle
Date Sampled: 11/01/00

Family	Family Tolerance Value (FTV)	Number of Individuals

THIS SITE WAS NOT SAMPLED

This site was dry in 2000

Station: AN0717
Pine Mount Ck, Rt. 623, Greenwich Twp., Salem County
Shiloh USGS Quadrangle
Date Sampled: 10/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	28
Lumbriculidae	8	19
Tubificidae	10	17
Calopterygidae	5	10
Chironomidae	6	9
Planorbidae	6	3
Naididae	7	3
Planariidae	4	2
BloodRed Chironomidae	8	2
Physidae	7	2
Tetrastemmatidae	7	2
Sialidae	4	2
Empididae	6	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 101
% Contribution of Dominant Family: 27.72 % (Gammaridae)
Family Biotic Index: 6.43
Scraper/Filterer Collector Ratio: 7.00
Shredder/Total Ratio: 0.28
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.99
EPT/C: 0.09
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 97
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 4/<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Mostly Closed....Other: rural; storm sewers present
Water temp. 14.4C / pH 6.4SU / DO 7.2mg/L / Cond. 98umhos;

Station: AN0718
Cedar Ck, Rt. 553 (Main St.) (Outlet Of Cedar Lake), Lawrence Twp., Cumberland County
Cedarville USGS Quadrangle
Date Sampled: 10/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	44
BloodRed Chironomidae	8	23
Naididae	7	8
Chironomidae	6	8
Gammaridae	4	6
Tetrastemmatidae	7	3
Planariidae	4	2
Coenagrionidae	9	2
Corduliidae	5	1
Lumbriculidae	8	1
Sphaeriidae	8	1
Hydrobiidae	8	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 44.00 % (Tubificidae)
Family Biotic Index: 8.28
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 146
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 20/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Mostly Open....Other: suburban; station downstream of Cedar Lake; tidal stream macrophytes and mud crabs present; Water temp. 13.7C / pH 6.7SU / DO 9.6mg/L / Cond. 79umhos

Station: AN0719
Pages Run, Rt. 553, Downe Twp., Cumberland County
Cedarville USGS Quadrangle
Date Sampled: 10/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	87
Lumbriculidae	8	4
Elmidae	4	2
Tubificidae	10	2
Gomphidae	1	2
Chironomidae	6	1
Naididae	7	1
Ancylidae	6	1
Gammaridae	4	1
Empididae	6	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 103
% Contribution of Dominant Family: 84.47 % (Sphaeriidae)
Family Biotic Index: 7.68
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.97
EPT/C: 1.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 176
Deficiency(s) noted: Sphaeriidae Family Overwhelmingly Dominant -
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 7/2
Substrate: Gravel/sand, snags....StreamBank Vegetation/Stability: Trees, shrubs, grass/Good
Canopy: Closed....Other: agriculture-cropland, rural; macrophytes present, leaf litter on stream bottom
Water temp. 13.8C / pH 5.8SU / DO 7.5mg/L / Cond. 36umhos;

Station: AN0720
Dividing Ck, Haleyville Rd., Commercial Twp., Cumberland County
Dividing Creek USGS Quadrangle
Date Sampled: 10/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	35
Naididae	7	24
Chironomidae	6	16
Asellidae	8	9
Tubificidae	10	5
Dytiscidae	5	2
Libellulidae	9	2
Entomobryidae	10	1
Leptoceridae	4	1
Ceratopogonidae	6	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 97
% Contribution of Dominant Family: 36.08 % (BloodRed Chironomidae)
Family Biotic Index: 7.43
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.45
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.03
EPT/C: 0.02
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 150
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/2-3
Substrate: Gravel/sand, mud, silt....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: forested; water color: cedar brown; station downstream of impoundment
riprap on banks near bridge; oil sheen present; Water temp. 17.2C / pH 4.5SU / DO 4.7mg/L / Cond. 347umhos

Station: AN0721
Scotland Run, Rt. 322, Monroe Twp., Gloucester County
Pitman East USGS Quadrangle
Date Sampled: 11/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	48
Chironomidae	6	38
Sphaeriidae	8	4
Lumbriculidae	8	2
Metretopodidae	2	2
Hydropsychidae	4	1
Dytiscidae	5	1
Calamoceratidae	0	1
Leuctridae	0	1
Simuliidae	6	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 48.00 % (Asellidae)
Family Biotic Index: 6.89
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 5.00
EPT/C: 0.13
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 155
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/1
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs, grass/Good
Canopy: Mostly Open....Other: suburban, forested; macrophytes and fish present
Water temp. 7.0C / pH 5.9SU / DO 9.7mg/L / Cond. 76umhos;

Station: AN0722
Scotland Run, Rt. 610, Clayton Boro, Gloucester County
Pitman East USGS Quadrangle
Date Sampled: 2/7/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	34
Chironomidae	6	22
Hydrobiidae	8	11
Physidae	7	8
Gomphidae	1	5
Coenagrionidae	9	4
Gammaridae	4	3
Gyrinidae	3	3
Phryganeidae	4	2
Planariidae	4	2
Talitridae	8	2
Lymnaeidae	6	2
Asellidae	8	1
Aeshnidae	3	1
Elmidae	4	1
Ephemerellidae	1	1
Hydroptilidae	4	1
Libellulidae	9	1
Lumbriculidae	8	1
Macromiidae	3	1
Planorbidae	6	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 108
% Contribution of Dominant Family: 31.48 % (Sphaeriidae)
Family Biotic Index: 6.54
Scraper/Filterer Collector Ratio: 1.29
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 3.70
EPT/C: 0.18
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 20/2.5
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Partly Open....Other: rural; outlet to Wilson Lake
Water temp. 3.8C / pH 6.0SU / DO 14.1mg/L / Cond. 72.0umhos;

Station: AN0723
Scotland Run, Rt. 538, Franklin Twp., Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/6/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	57
Gammaridae	4	21
Hydropsychidae	4	3
Corbiculidae	8	3
Sericostomatidae	3	2
Brachycentridae	1	2
Tubificidae	10	2
Sphaeriidae	8	2
Odontoceridae	0	2
Ephemerellidae	1	1
Tipulidae	3	1
Lumbriculidae	8	1
Molannidae	6	1
Limnephilidae	4	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 57.00 % (Chironomidae)
Family Biotic Index: 5.32
Scraper/Filterer Collector Ratio: 0.07
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 12.00
EPT/C: 0.21
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 25/2-3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, grass, shrubs/Good
Canopy: Partly Open....Other: forested, industrial (recycling dump off left bank); storm sewers; site appears slightly flooded
filamentous algae; water cedar brown; Water temp. 3.9C / pH 5.5SU / DO 12.3mg/L / Cond. 110umhos

Station: AN0724
Indian Br, Rt. 47, Franklin Twp., Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Corixidae	9	39
Gammaridae	4	28
Chironomidae	6	18
Ephemerellidae	1	6
Limnephilidae	4	4
Sphaeriidae	8	3
Leptophlebiidae	2	2
Tubificidae	10	2
Hydropsychidae	4	1
Enchytraeidae	10	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 105
% Contribution of Dominant Family: 37.14 % (Corixidae)
Family Biotic Index: 6.28
Scraper/Filterer Collector Ratio: 1.50
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 13.33
EPT/C: 0.78
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 163
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 12/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Mostly Open....Other: suburban, forested; macrophytes and leaf litter appeared flooded; pipe coming from residence; Water temp. 4.1C / pH 5.4SU / DO 10.2mg/L / Cond. 44umhos

Station: AN0725
Scotland Run, Rt. 40, Franklin Twp., Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	55
Sphaeriidae	8	19
Ephemerellidae	1	10
Heptageniidae	4	3
Planariidae	4	2
Leptophlebiidae	2	2
Asellidae	8	2
Lumbricidae	10	2
Gammaridae	4	1
Chironomidae	6	1
Lumbriculidae	8	1
Elmidae	4	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 55.00 % (Hydropsychidae)
Family Biotic Index: 4.66
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 71.00
EPT/C: 71.00
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 173
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 30/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Mostly Closed....Other: suburban, forested; station downstream of Malaga Lake foam on surface; water cedar brown; Water temp. 5.2C / pH 6.3SU / DO 12.8mg/L / Cond. 62umhos

Station: AN0726A
Little Ease Run, Carpenter Rd., Glassboro Boro, Gloucester County
Pitman East USGS Quadrangle
Date Sampled: 11/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	39
Naididae	7	26
Asellidae	8	11
Tubificidae	10	8
BloodRed Chironomidae	8	6
Chironomidae	6	4
Lumbriculidae	8	4
Ptychopteridae	8	3
Aeshnidae	3	1
Hydropsychidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 103
% Contribution of Dominant Family: 37.86 % (Sphaeriidae)
Family Biotic Index: 7.74
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.97
EPT/C: 0.10
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 151
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 5-7/1-2
Substrate: Mud....StreamBank Vegetation/Stability: no data/Fair
Canopy: Partly Open....Other: rural, forested (wildlife mgmt. area); fish and macrophytes
Water temp. 4.9C / pH 5.9SU / DO 3.0mg/L / Cond. 83umhos;

Station: AN0727
Little Ease Run, Grant Ave., Franklin Twp., Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/7/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	34
Sphaeriidae	8	21
Leptophlebiidae	2	17
Asellidae	8	9
Sialidae	4	6
Polycentropodidae	6	4
Lumbriculidae	8	2
Limnephilidae	4	2
Dytiscidae	5	1
Gammaridae	4	1
Lumbricidae	10	1
Leptoceridae	4	1
Metretopodidae	2	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 34.00 % (Chironomidae)
Family Biotic Index: 5.75
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 25.00
EPT/C: 0.74
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 162
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 15/3
Substrate: Mud....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: rural, forested; Water temp. 3.0C / pH 5.4SU / DO 8.6mg/L / Cond. 92.2umhos

Station: AN0728
Little Ease Run, Leonard Cake Rd., Franklin Twp., Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/6/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	50
Sericostomatidae	3	12
Chironomidae	6	7
Gomphidae	1	6
Brachycentridae	1	5
Ephemerellidae	1	4
Leptoceridae	4	4
Elmidae	4	3
Gammaridae	4	3
Planorbidae	6	2
Simuliidae	6	1
Empididae	6	1
Macromiidae	3	1
BloodRed Chironomidae	8	1
Tipulidae	3	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 102
% Contribution of Dominant Family: 49.02 % (Sphaeriidae)
Family Biotic Index: 5.70
Scraper/Filterer Collector Ratio: 0.08
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 24.51
EPT/C: 3.13
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 154
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, vines/Fair
Canopy: Mostly Closed....Other: rural, forested; cobble on left bank
water cedar brown; Water temp. 4.0C / pH 6.0SU / DO 12.1mg/L / Cond. 96umhos

Station: AN0729
Still Run, Aura Rd., Elk Twp., Gloucester County
Pitman West USGS Quadrangle
Date Sampled: 11/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	30
Ephemerellidae	1	15
Hydropsychidae	4	11
Calopterygidae	5	10
Taeniopterygidae	2	10
Hydroptilidae	4	5
Coenagrionidae	9	2
Empididae	6	2
Cambaridae	5	2
BloodRed Chironomidae	8	2
Polycentropodidae	6	2
Ceratopogonidae	6	2
Tetrastemmatidae	7	2
Baetidae	4	1
Corydalidae	0	1
Leptoceridae	4	1
Elmidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 30.00 % (Chironomidae)
Family Biotic Index: 4.45
Scraper/Filterer Collector Ratio: 1.77
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 45.00
EPT/C: 1.41
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 172
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/1-2
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Mostly Open....Other: rural, forested; fish and macrophytes
Water temp. 6.4C / pH 6.3SU / DO 8.5mg/L / Cond. 153umhos;

Station: AN0730
Still Run, Little Mill Rd., Franklin Twp., Gloucester County
Pitman East USGS Quadrangle
Date Sampled: 2/7/01

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	23
Talitridae	8	14
Chironomidae	6	12
Palaemonidae	6	11
Polycentropodidae	6	10
Coenagrionidae	9	6
Hydrobiidae	8	5
Sphaeriidae	8	5
Ancylidae	6	1
Asellidae	8	1
Glossiphoniidae	8	1
Aeshnidae	3	1
Simuliidae	6	1
Ephemeridae	4	1
Libellulidae	9	1
Hydroptilidae	4	1
Astacidae	7.2	1
Pyralidae	5	1
Taeniopterygidae	2	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 98
% Contribution of Dominant Family: 23.47 % (BloodRed Chironomidae)
Family Biotic Index: 7.14
Scraper/Filterer Collector Ratio: 1.88
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 13.27
EPT/C: 0.37
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 169
Deficiency(s) noted:
- Significant Organic Pollution -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 25/2.5
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Partly Open....Other: rural; storm sewers present
fish and macrophytes; Water temp. 7.0C / pH 6.5SU / DO 8.3mg/L / Cond. 116umhos

Station: AN0731
Reed Br, Royal Ave., Franklin Twp., Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/6/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	71
Chironomidae	6	13
Hydrobiidae	8	3
Planariidae	4	3
Heptageniidae	4	3
Phryganeidae	4	2
Baetidae	4	1
Caenidae	7	1
Simuliidae	6	1
Lumbriculidae	8	1
Ephemerellidae	1	1
Leptoceridae	4	1
Physidae	7	1
Polycentropodidae	6	1
Elmidae	4	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 105
% Contribution of Dominant Family: 67.62 % (Sphaeriidae)
Family Biotic Index: 7.15
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 10.48
EPT/C: 0.85
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 174
Deficiency(s) noted: Sphaeriidae Family Overwhelmingly Dominant - - Significant Organic Pollution -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 25/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Partly Open....Other: rural, forested; station downstream from Idle Acres Lake fish; creasote covering bridge and in water; Water temp. 2.7C / pH 6.4SU / DO 13.6mg/L / Cond. 89umhos

Station: AN0732
Still Run, Rt. 40, Franklin Twp., Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/6/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	60
Brachycentridae	1	6
Limnephilidae	4	5
Sericostomatidae	3	4
Hydrobiidae	8	4
Molannidae	6	3
Sphaeriidae	8	3
Elmidae	4	3
Ephemerellidae	1	2
Lepidostomatidae	1	2
Tubificidae	10	2
Macromiidae	3	2
BloodRed Chironomidae	8	2
Gomphidae	1	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 60.00 % (Chironomidae)
Family Biotic Index: 5.34
Scraper/Filterer Collector Ratio: 0.25
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 22.00
EPT/C: 0.35
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 162
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 40/3->4
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Partly Open....Other: agriculture-livestock (horses), suburban, forested; appears flooded and braided
Water temp. 3.2C / pH 6.6SU / DO 13.4mg/L / Cond. 108umhos;

Station: AN0733
Maurice River (Scotland Run), Willow Grove Rd. (Rt. 690), Pittsgrove Twp., Cumberland County
Newfield USGS Quadrangle
Date Sampled: 1/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	23
Sphaeriidae	8	20
Lumbriculidae	8	11
Hydropsychidae	4	10
Corbiculidae	8	10
Elmidae	4	5
Philopotamidae	3	3
Naididae	7	3
Gammaridae	4	2
Tetrastemmatidae	7	2
Heptageniidae	4	2
Planariidae	4	1
Ephemerellidae	1	1
Empididae	6	1
Erpobdellidae	8	1
Palaemonidae	6	1
Physidae	7	1
Simuliidae	6	1
Taeniopterygidae	2	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Chironomidae)
Family Biotic Index: 6.29
Scraper/Filterer Collector Ratio: 0.18
Shredder/Total Ratio: 0.30
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 17.00
EPT/C: 0.74
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: rural; station downstream from Willow Grove Lake
Water temp. 1.2C / pH 6.4SU / DO 11.5mg/L / Cond. 89umhos;

Station: AN0734
Burnt Mill Br, West Blvd., Newfield, Gloucester County
Newfield USGS Quadrangle
Date Sampled: 2/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Leptophlebiidae	2	43
Chironomidae	6	19
Lumbriculidae	8	11
Asellidae	8	5
Limnephilidae	4	5
Phryganeidae	4	4
Talitridae	8	3
Corydalidae	0	3
Coenagrionidae	9	2
Leptoceridae	4	2
Sphaeriidae	8	2
Sialidae	4	2
Tubificidae	10	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 103
% Contribution of Dominant Family: 41.75 % (Leptophlebiidae)
Family Biotic Index: 4.43
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 52.43
EPT/C: 2.70
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 154
Deficiency(s) noted:
-

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): >70/>4
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Good
Canopy: Open....Other: forested; site appears to be man-made lake
Water temp. 5.9C / pH 6.5SU / DO 9.6mg/L / Cond. 153umhos;

Station: AN0735
Burnt Mill Br, Rt. 55, Vineland, Cumberland County
Newfield USGS Quadrangle
Date Sampled: 1/4/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	39
Hydropsychidae	4	13
Heptageniidae	4	12
Chironomidae	6	10
Taeniopterygidae	2	5
Calopterygidae	5	3
Leptoceridae	4	3
BloodRed Chironomidae	8	3
Brachycentridae	1	2
Lepidostomatidae	1	2
Aeshnidae	3	1
Coenagrionidae	9	1
Planorbidae	6	1
Empididae	6	1
Cambaridae	5	1
Leptophlebiidae	2	1
Sphaeriidae	8	1
Gomphidae	1	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 39.00 % (Gammaridae)
Family Biotic Index: 4.21
Scraper/Filterer Collector Ratio: 0.81
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 38.00
EPT/C: 2.92
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 158
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 24/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grass, trees/Good
Canopy: Mostly Open....Other: forested; macrophytes
Water temp. 4.1C / pH 6.5SU / DO 11.2mg/L / Cond. 146umhos;

Station: AN0736
Green Br, Crow Pond Rd., Pittsgrove Twp., Salem County
Newfield USGS Quadrangle
Date Sampled: 12/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	26
Hydropsychidae	4	23
Leuctridae	0	8
Simuliidae	6	8
Gammaridae	4	6
Tipulidae	3	4
Molannidae	6	4
Elmidae	4	4
Lepidostomatidae	1	3
Asellidae	8	2
Aeshnidae	3	2
Calopterygidae	5	2
Empididae	6	2
Calamoceratidae	0	2
Corydalidae	0	2
Lumbriculidae	8	1
Naididae	7	1
BloodRed Chironomidae	8	1
Sphaeriidae	8	1
Limnephilidae	4	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 104
% Contribution of Dominant Family: 25.00 % (Chironomidae)
Family Biotic Index: 4.40
Scraper/Filterer Collector Ratio: 0.10
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 40.38
EPT/C: 1.56
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 169
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/<1
Substrate: Gravel/sand, mud, silt....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: forested; macrophytes present
Water temp. 6.2C / pH 5.8SU / DO 8.6mg/L / Cond. 52umhos;

Station: AN0737
Green Br, Jesse Bridge Rd., Pittsgrove Twp., Salem County
Newfield USGS Quadrangle
Date Sampled: 1/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	30
Chironomidae	6	14
Sphaeriidae	8	14
Gammaridae	4	9
Simuliidae	6	7
Ephemerellidae	1	6
Heptageniidae	4	6
Elmidae	4	4
Tubificidae	10	4
Leptophlebiidae	2	2
Lumbriculidae	8	1
Molannidae	6	1
BloodRed Chironomidae	8	1
Odontoceridae	0	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 30.00 % (Hydropsychidae)
Family Biotic Index: 5.06
Scraper/Filterer Collector Ratio: 0.18
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 46.00
EPT/C: 3.07
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 174
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 11/<1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: rural, forested; Water temp. 0.7C / pH 5.8SU / DO 12.1mg/L / Cond. 46umhos

Station: AN0738
Blackwater Br, Main Rd., Franklin Twp., Gloucester County
Buena USGS Quadrangle
Date Sampled: 2/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	50
BloodRed Chironomidae	8	46
Tubificidae	10	5
Ptychopteridae	8	1
Naididae	7	1
Lumbriculidae	8	1
Planorbidae	6	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 105
% Contribution of Dominant Family: 47.62 % (Sphaeriidae)
Family Biotic Index: 8.07
Scraper/Filterer Collector Ratio: 0.02
Shredder/Total Ratio: 0.44
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 143
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/2
Substrate: Cobble, mud....StreamBank Vegetation/Stability: Grass, shrubs, trees/Poor
Canopy: Mostly Closed....Other: suburban, forested; cobbles on banks; leaf litter
water cedar brown; Water temp. 1.6C / pH 6.8SU / DO 7.2mg/L / Cond. 82umhos

Station: AN0739
Blackwater Br, Maurice River Pkwy., Vineland, Cumberland County
Newfield USGS Quadrangle
Date Sampled: 2/1/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	34
Gammaridae	4	30
Hydropsychidae	4	15
Chironomidae	6	7
Brachycentridae	1	3
Ephemerellidae	1	2
Empididae	6	2
Sphaeriidae	8	2
Ancylidae	6	1
Helicopsychidae	3	1
Limnephilidae	4	1
Psychomyiidae	2	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 34.00 % (Simuliidae)
Family Biotic Index: 4.80
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 24.00
EPT/C: 3.43
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 161
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 17/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, Phragmites/Fair
Canopy: Partly Open....Other: rural, forested; macrophytes
cobbles on left bank; Water temp 6.8C / pH 7.2SU / DO 11.1mg/L / Cond. 106umhos

Station: AN0740
Maurice River, Almond Ave., Vineland, Cumberland/Salem County
Millville USGS Quadrangle
Date Sampled: 12/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	22
Taeniopterygidae	2	15
Chironomidae	6	14
Leptophlebiidae	2	9
Ephemerellidae	1	6
Elmidae	4	5
Hydropsychidae	4	3
Naididae	7	3
Leptoceridae	4	2
Haliplidae	5	2
Ceratopogonidae	6	2
Limnephilidae	4	2
Sialidae	4	2
Sericostomatidae	3	1
Baetidae	4	1
Brachycentridae	1	1
Corbiculidae	8	1
Planariidae	4	1
Coenagrionidae	9	1
Empididae	6	1
Planorbidae	6	1
Physidae	7	1
Polycentropodidae	6	1
Lymnaeidae	6	1
Heptageniidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 26
Total Number of Individuals: 100
% Contribution of Dominant Family: 22.00 % (Gammaridae)
Family Biotic Index: 3.99
Scraper/Filterer Collector Ratio: 0.25
Shredder/Total Ratio: 0.20
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 42.00
EPT/C: 3.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 179
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 60/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Open....Other: rural, forested; station downstream of lake
macrophytes and algae present; Water temp. 4.7C / pH 6.7SU / DO 11.5mg/L / Cond. 75umhos

Station: AN0741
Muddy Run, Burlington Rd., Upper Pittsgrove Twp., Salem County
Elmer USGS Quadrangle
Date Sampled: 1/2/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	25
Hydroptilidae	4	24
Chironomidae	6	20
Capniidae	1	12
Asellidae	8	8
Leptophlebiidae	2	4
Simuliidae	6	4
Baetidae	4	1
Calopterygidae	5	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Hydropsychidae)
Family Biotic Index: 4.41
Scraper/Filterer Collector Ratio: 0.86
Shredder/Total Ratio: 0.20
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 66.00
EPT/C: 3.14
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 110
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 5.5/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Grass/Poor
Canopy: Open....Other: agriculture-cropland and livestock (horses), rural; chain link fincing for stabilization on banks, continues through bottom
fish and macrophytes; Water temp. 3.9C / pH 6.4SU / DO 9.6mg/L / Cond. 199umhos

Station: AN0742
Muddy Run, Salem St. (Rt. 611), Elmer Boro, Salem County
Elmer USGS Quadrangle
Date Sampled: 1/4/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	43
BloodRed Chironomidae	8	10
Tubificidae	10	9
Naididae	7	6
Coenagrionidae	9	5
Planorbidae	6	5
Caenidae	7	4
Ceratopogonidae	6	4
Lumbriculidae	8	3
Libellulidae	9	2
Physidae	7	2
Valvatidae	4	2
Hydrophilidae	5	1
Corydalidae	0	1
Hydropsychidae	4	1
Elmidae	4	1
Planariidae	4	1
Ephemerellidae	1	1
Leptophlebiidae	2	1
Lumbricidae	10	1
Pleidae	9	1
Hydroptilidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 105
% Contribution of Dominant Family: 40.95 % (Chironomidae)
Family Biotic Index: 6.70
Scraper/Filterer Collector Ratio: 0.27
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 7.62
EPT/C: 0.15
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 161
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 25/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Mostly Open....Other: rural, forested; station downstream from Elmer Lake
Water temp. 2.1C / pH 6.6SU / DO 11.4mg/L / Cond. 189umhos;

Station: AN0743
Palatine Br, Shirley Rd., Upper Pittsgrove Twp., Salem County
Elmer USGS Quadrangle
Date Sampled: 1/2/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	52
Simuliidae	6	17
Hydropsychidae	4	4
Leptophlebiidae	2	4
Ephemerellidae	1	3
Gammaridae	4	3
Taeniopterygidae	2	3
Aeshnidae	3	2
Tipulidae	3	2
Psychomyiidae	2	2
Tubificidae	10	2
Dytiscidae	5	1
Glossiphoniidae	8	1
Lumbriculidae	8	1
BloodRed Chironomidae	8	1
Physidae	7	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 52.00 % (Chironomidae)
Family Biotic Index: 5.35
Scraper/Filterer Collector Ratio: 0.24
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 16.00
EPT/C: 0.30
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 135
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/<1-1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Partly Open....Other: agriculture-cropland; macrophytes and fish
Water temp. 3.4C / pH 6.5SU / DO 11.9mg/L / Cond. 221umhos;

Station: AN0744
Palatine Br, Dubois Rd., Pittsgrove Twp., Salem County
Elmer USGS Quadrangle
Date Sampled: 1/4/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	25
Leptophlebiidae	2	19
Sphaeriidae	8	14
Physidae	7	10
Tubificidae	10	9
Naididae	7	4
Ephemerellidae	1	3
Planorbidae	6	3
BloodRed Chironomidae	8	3
Lymnaeidae	6	3
Taeniopterygidae	2	3
Notonectidae	9	2
Limnephilidae	4	2
Phryganeidae	4	2
Dytiscidae	5	1
Calopterygidae	5	1
Gammaridae	4	1
Coenagrionidae	9	1
Pyralidae	5	1
Sialidae	4	1
Valvatidae	4	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 109
% Contribution of Dominant Family: 22.94 % (Chironomidae)
Family Biotic Index: 5.75
Scraper/Filterer Collector Ratio: 1.64
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 26.61
EPT/C: 1.04
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted:
-

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 21/2-3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Mostly Open....Other: agriculture-cropland, forested; macrophytes and fish
Water temp. 1.7C / pH 6.4SU / DO 12.7mg/L / Cond. 169umhos;

Station: AN0745
Muddy Run, Rt. 690 (Out. Of Palatine Lake), Pittsgrove Twp., Salem County
Elmer USGS Quadrangle
Date Sampled: 12/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	43
Sphaeriidae	8	22
Planariidae	4	15
Chironomidae	6	4
Tetrastemmatidae	7	3
BloodRed Chironomidae	8	2
Planorbidae	6	2
Polycentropodidae	6	2
Physidae	7	2
Taeniopterygidae	2	2
Coenagrionidae	9	1
Libellulidae	9	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 43.00 % (Hydropsychidae)
Family Biotic Index: 5.35
Scraper/Filterer Collector Ratio: 0.06
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 47.00
EPT/C: 7.83
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 164
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: rural, forested; station downstream of Palatine Lake water color brown; Water temp. 3.5C / pH 6.7SU / DO 11.4mg/L / Cond. 100umhos

Station: AN0746
Indian Run, Cedar Lane Rd., Upper Pittsgrove Twp., Salem County
Elmer USGS Quadrangle
Date Sampled: 1/2/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	48
Chironomidae	6	26
Tubificidae	10	13
Physidae	7	5
Planorbidae	6	4
Diplopoda	5	2
Gammaridae	4	1
Lumbricidae	10	1
Lumbriculidae	8	1
Naididae	7	1
Tetrastemmatidae	7	1
Lymnaeidae	6	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 105
% Contribution of Dominant Family: 45.71 % (Sphaeriidae)
Family Biotic Index: 7.49
Scraper/Filterer Collector Ratio: 0.21
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 153
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 2/1-1.5
Substrate: Cobble, gravel/sand, mud....StreamBank Vegetation/Stability: Trees, grass, shrubs/Fair
Canopy: Partly Open....Other: agriculture-cropland, rural; fish and salamanders
Water temp. 1.5C / pH 6.6SU / DO 10.0mg/L / Cond. 203umhos;

Station: AN0747
Indian Run, Husted Station Rd., Pittsgrove Twp., Salem County
Elmer USGS Quadrangle
Date Sampled: 1/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	40
Sphaeriidae	8	25
Corbiculidae	8	7
Planorbidae	6	6
BloodRed Chironomidae	8	3
Gomphidae	1	3
Hydrobiidae	8	3
Physidae	7	3
Tubificidae	10	3
Gammaridae	4	1
Coenagrionidae	9	1
Taeniopterygidae	2	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 97
% Contribution of Dominant Family: 41.24 % (Chironomidae)
Family Biotic Index: 6.72
Scraper/Filterer Collector Ratio: 0.38
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.03
EPT/C: 0.02
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 175
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 16/1
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: agriculture-cropland, forested; algae, macrophytes, salamanders
Water temp. 1.1C / pH 7.3SU / DO 11.0mg/L / Cond. 160umhos;

Station: AN0748
Muddy Run, Parvins Mill Rd., Pittsgrove Twp., Salem County
Elmer USGS Quadrangle
Date Sampled: 1/3/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	35
Chironomidae	6	23
Tubificidae	10	21
BloodRed Chironomidae	8	8
Planariidae	4	4
Corbiculidae	8	2
Planorbidae	6	1
Leptoceridae	4	1
Physidae	7	1
Sphaeriidae	8	1
Limnephilidae	4	1
Tetrastemmatidae	7	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 35.00 % (Gammaridae)
Family Biotic Index: 6.22
Scraper/Filterer Collector Ratio: 0.67
Shredder/Total Ratio: 0.45
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 3.00
EPT/C: 0.10
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 162
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 48/3
Substrate: Cobble, gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Partly Open....Other: forested (Parvin State Park); station downstream of Parvin Lake
Water temp. 2.3C / pH 7.1SU / DO 11.5mg/L / Cond. 130umhos;

Station: AN0749
Muddy Run, Lebanon Rd., Pittsgrove Twp., Salem County
Millville USGS Quadrangle
Date Sampled: 11/8/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	17
Chironomidae	6	13
Hydropsychidae	4	11
Taeniopterygidae	2	10
Corbiculidae	8	9
Heptageniidae	4	9
Elmidae	4	7
Ancylidae	6	6
Lumbriculidae	8	5
Glossosomatidae	0	4
Lepidostomatidae	1	2
Simuliidae	6	2
Hydrobiidae	8	1
Brachycentridae	1	1
Planariidae	4	1
Empididae	6	1
Pyralidae	5	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 17.00 % (Gammaridae)
Family Biotic Index: 4.60
Scraper/Filterer Collector Ratio: 0.75
Shredder/Total Ratio: 0.30
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 37.00
EPT/C: 2.85
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 174
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 61/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Open....Other: forested-wildlife management area; macrophytes present
very deep near bridge; Water temp. 10.9C / pH 6.6SU / DO 10.8mg/L / Cond. 108umhos

Station: AN0750
Parvin Br., Rt. 55, Vineland, Cumberland County
Millville USGS Quadrangle
Date Sampled: 12/5/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Asellidae	8	14
Tubificidae	10	5
Ptychopteridae	8	4
Sialidae	4	2
Calopterygidae	5	1
Veliidae	9	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 57
% Contribution of Dominant Family: 50.88 % (Chironomidae)
Family Biotic Index: 6.98
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 149
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 24/1-2
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: Forested; iron precipatate
Water temp. 6.3C / pH 7.2SU / DO 9.8 mg/L / Cond. 399umhos;

Station: AN0751
Maurice River, Sherman Ave., Vineland, Cumberland County
Millville USGS Quadrangle
Date Sampled: 11/28/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	22
Chironomidae	6	18
Sphaeriidae	8	15
Tubificidae	10	13
Hydrobiidae	8	7
Ptychopteridae	8	4
Lumbriculidae	8	3
Polycentropodidae	6	3
Coenagrionidae	9	2
Physidae	7	2
BloodRed Chironomidae	8	2
Ceratopogonidae	6	1
Viviparidae	6	1
Libellulidae	9	1
Ephemerellidae	1	1
Notonectidae	9	1
Leptoceridae	4	1
Tetrastemmatidae	7	1
Sialidae	4	1
Pyralidae	5	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 22.00 % (Gammaridae)
Family Biotic Index: 6.75
Scraper/Filterer Collector Ratio: 0.61
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 5.00
EPT/C: 0.25
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 59/3
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Open....Other: forested; Water temp. 9.7C / pH 6.4SU / DO 9.3mg/L / Cond. 114umhos

Station: AN0752
Lebanon Br. (Mill Ck.), Sherman Rd., Deerfield Twp., Cumberland County
Millville USGS Quadrangle
Date Sampled: 11/8/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	19
Capniidae	1	18
Leuctridae	0	14
Hydropsychidae	4	11
Chironomidae	6	11
Asellidae	8	5
Heptageniidae	4	5
Taeniopterygidae	2	4
Brachycentridae	1	3
Aeshnidae	3	2
Perlodidae	2	2
Leptophlebiidae	2	2
Lepidostomatidae	1	1
Odontoceridae	0	1
Limnephilidae	4	1
Metretopodidae	2	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 19.00 % (Simuliidae)
Family Biotic Index: 3.34
Scraper/Filterer Collector Ratio: 0.18
Shredder/Total Ratio: 0.43
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 63.00
EPT/C: 5.73
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 171
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 13/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Fair
Canopy: Mostly Closed....Other: Agricultural cropland-probably unused, forested; macrophytes present
irragation pipe downstream; Water temp. 10.2C / pH 5.7SU / DO 8.9mg/L / Cond. 65umhos

Station: AN0753
Mill Ck., Off Rt. 552 (Union Lake Wma), Millville, Cumberland County
Millville USGS Quadrangle
Date Sampled: 12/5/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Brachycentridae	1	22
Chironomidae	6	21
Capniidae	1	15
Taeniopterygidae	2	9
Gammaridae	4	5
Hydropsychidae	4	5
Limnephilidae	4	5
Leuctridae	0	4
Heptageniidae	4	4
Calopterygidae	5	2
Ephemerellidae	1	2
Leptoceridae	4	2
Metretopodidae	2	2
Lepidostomatidae	1	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 22.00 % (Brachycentridae)
Family Biotic Index: 2.90
Scraper/Filterer Collector Ratio: 0.15
Shredder/Total Ratio: 0.34
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 71.00
EPT/C: 3.38
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 166
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 13/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Mostly Closed....Other: forested-Union Lake WMA; macrophytes
Water temp. 5.5C / pH 5.4SU / DO 11.3mg/L / Cond. 59umhos;

Station: AN0754
White Marsh Run, Hogbin Rd., Millville, Cumberland County
Millville USGS Quadrangle
Date Sampled: 10/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	55
Sphaeriidae	8	10
BloodRed Chironomidae	8	9
Gammaridae	4	8
Tubificidae	10	7
Lumbriculidae	8	4
Molannidae	6	4
Coenagrionidae	9	3
Corixidae	9	1
Erpobdellidae	8	1
Ephemerellidae	1	1
Glossiphoniidae	8	1
Calamoceratidae	0	1
Libellulidae	9	1
Phryganeidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 108
% Contribution of Dominant Family: 50.93 % (Chironomidae)
Family Biotic Index: 6.57
Scraper/Filterer Collector Ratio: 0.08
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 6.48
EPT/C: 0.11
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 169
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 9/2
Substrate: Mud, silt, snags....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Open....Other: rural, forested; oily sheen on surface; debris in water (newspaper box)
looks more like a pond; Water temp. 10.2C / pH 6.0SU / DO 9.5mg/L / Cond. 59umhos

Station: AN0755
White Marsh Run, Rt. 555, Millville, Cumberland County
Millville USGS Quadrangle
Date Sampled: 11/8/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	24
Hydrobiidae	8	21
Chironomidae	6	17
Ancylidae	6	11
Tubificidae	10	8
Gammaridae	4	6
Naididae	7	4
Erpobdellidae	8	2
Haliplidae	5	2
Physidae	7	2
Lymnaeidae	6	2
Elmidae	4	1
Lumbriculidae	8	1
Enchytraeidae	10	1
Planorbidae	6	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 103
% Contribution of Dominant Family: 23.30 % (BloodRed Chironomidae)
Family Biotic Index: 7.18
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 137
Deficiency(s) noted:
- Significant Organic Pollution - Paucity of Clean Water Organisms -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 11.5/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Closed....Other: suburban, industrial-boat factory near left bank; storm sewers present, station downstream from impoundment
melting plastic odor in the air (probably from boat factory); Water temp. 8.7C / pH 6.5 / DO 6.5mg/L / Cond. 147umhos

Station: AN0756
Buckshutem Ck, Rt. 555, Millville, Cumberland County
Millville USGS Quadrangle
Date Sampled: 10/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	31
Chironomidae	6	28
Leptophlebiidae	2	15
Molannidae	6	7
Calopterygidae	5	4
Gammaridae	4	4
Phryganeidae	4	4
Calamoceratidae	0	2
Corydalidae	0	2
BloodRed Chironomidae	8	2
Coenagrionidae	9	1
Aeshnidae	3	1
Gyrinidae	3	1
Pyralidae	5	1
Polycentropodidae	6	1
Metretopodidae	2	1
Tabanidae	6	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 107
% Contribution of Dominant Family: 28.97 % (Asellidae)
Family Biotic Index: 5.56
Scraper/Filterer Collector Ratio: 0.24
Shredder/Total Ratio: 0.37
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 28.04
EPT/C: 1.00
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 178
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 9/1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, weeds/Good
Canopy: Partly Open....Other: forested; water color: cedar brown; storm sewers present macrophytes and aquatic plants present; Water temp. 14.8C / pH 4.3SU / DO 7.4mg/L / Cond. 97umhos

Station: AN0757
Cedar Br., Italia Ave., Vineland, Cumberland County
Five Points USGS Quadrangle
Date Sampled: 12/5/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	48
Sphaeriidae	8	21
Hydropsychidae	4	6
Gammaridae	4	6
Calopterygidae	5	4
Ephemerellidae	1	4
Lumbriculidae	8	4
Planorbidae	6	2
Taeniopterygidae	2	2
Tubificidae	10	2
Coenagrionidae	9	1
Elmidae	4	1
Leptoceridae	4	1
BloodRed Chironomidae	8	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 104
% Contribution of Dominant Family: 46.15 % (Chironomidae)
Family Biotic Index: 6.01
Scraper/Filterer Collector Ratio: 0.12
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 13.46
EPT/C: 0.29
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 177
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 17/2-3
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Mostly Closed....Other: rural; macrophytes
Water temp. 6.5C / pH 6.3SU / DO 10.1mg/L / Cond. 143umhos;

Station: AN0758
Panther Br. (Manantico Ck.), Italia Ave., Vineland, Cumberland County
Five Points USGS Quadrangle
Date Sampled: 12/5/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Ephemerellidae	1	45
Calopterygidae	5	10
Gammaridae	4	10
Chironomidae	6	7
Leptoceridae	4	6
Taeniopterygidae	2	5
Sialidae	4	3
Elmidae	4	2
Sphaeriidae	8	2
Limnephilidae	4	2
Heptageniidae	4	2
Tubificidae	10	2
Coenagrionidae	9	1
Aeshnidae	3	1
BloodRed Chironomidae	8	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 45.00 % (Ephemerellidae)
Family Biotic Index: 3.07
Scraper/Filterer Collector Ratio: 1.50
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 61.00
EPT/C: 7.63
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 154
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 19/2-3
Substrate: Gravel/sand, mud, silt....StreamBank Vegetation/Stability: Grass, shrubs, trees/Good
Canopy: Mostly Open....Other: rural, houses on bank; macrophytes
Water temp. 6.5C / pH 6.0SU / DO 9.7mg/L / Cond. 153umhos;

Station: AN0759
Manatico Ck, Hance Bridge Rd (Rt. 673), Vineland, Cumberland County
Five Points USGS Quadrangle
Date Sampled: 11/01/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	19
Simuliidae	6	12
Calopterygidae	5	10
Lumbriculidae	8	10
Tubificidae	10	9
Sphaeriidae	8	7
Elmidae	4	6
Naididae	7	5
Gammaridae	4	4
Planariidae	4	4
Baetidae	4	3
Planorbidae	6	3
Tetrastemmatidae	7	3
Brachycentridae	1	2
Hydropsychidae	4	2
BloodRed Chironomidae	8	2
Empididae	6	1
Ephemerellidae	1	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 104
% Contribution of Dominant Family: 18.27 % (Chironomidae)
Family Biotic Index: 6.19
Scraper/Filterer Collector Ratio: 0.61
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 7.69
EPT/C: 0.38
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 175
Deficiency(s) noted:
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/1-3
Substrate: Gravel, sand, silt....StreamBank Vegetation/Stability: Trees, grass, shrubs/Good
Canopy: Mostly Open....Other: Water color: none; Water temp 10.5C / pH 6.4SU / Cond 218umhos / DO 8.7mg/L
Macrophytes abundant;

Station: AN0760
Manantico Creek, Rt. 49, Millville, Cumberland County
Five Points USGS Quadrangle
Date Sampled: 11/1/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Brachycentridae	1	43
Chironomidae	6	16
Elmidae	4	10
Gammaridae	4	8
Limnephilidae	4	8
Hydropsychidae	4	5
Odontoceridae	0	3
Perlidae	1	2
Sericostomatidae	3	2
Leuctridae	0	2
Simuliidae	6	2
Heptageniidae	4	2
Taeniopterygidae	2	2
Lumbriculidae	8	1
Glossosomatidae	0	1
Empididae	6	1
Perlodidae	2	1
Pyralidae	5	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 110
% Contribution of Dominant Family: 39.09 % (Brachycentridae)
Family Biotic Index: 2.87
Scraper/Filterer Collector Ratio: 0.48
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 64.55
EPT/C: 4.44
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 175
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): NA/<1-3.5
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Mostly Open....Other: suburban; Water temp. 9.8C / pH 6.2SU / DO 10.2mg/L / Cond. 115umhos

Station: AN0761
Berryman Br, Rt. 49, Millville, Cumberland County
Five Points USGS Quadrangle
Date Sampled: 11/1/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Leptophlebiidae	2	29
Hydropsychidae	4	23
Heptageniidae	4	9
Asellidae	8	7
Calamoceratidae	0	6
Sphaeriidae	8	6
Polycentropodidae	6	3
Chironomidae	6	2
Brachycentridae	1	2
Calopterygidae	5	2
Leptoceridae	4	2
Tubificidae	10	2
Psychomyiidae	2	1
Corydalidae	0	1
Odontoceridae	0	1
Sialidae	4	1
Simuliidae	6	1
Naididae	7	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Leptophlebiidae)
Family Biotic Index: 3.85
Scraper/Filterer Collector Ratio: 0.31
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 76.00
EPT/C: 38.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 165
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Mostly Closed....Other: suburban; leaf litter along banks
Water temp. 9.9C / pH 6.2SU / DO 7.5mg/L / Cond. 76umhos;

Station: AN0762
Manumuskin River, Old Mays Landing Rd., Maurice River Twp., Cumberland County
Five Points USGS Quadrangle
Date Sampled: 11/1/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	29
Simuliidae	6	19
Chironomidae	6	12
Hydropsychidae	4	10
Lepidostomatidae	1	6
Leptoceridae	4	5
Tipulidae	3	3
Capniidae	1	3
Limnephilidae	4	3
Naididae	7	3
Leptophlebiidae	2	2
Tubificidae	10	2
Elmidae	4	1
Lumbriculidae	8	1
Ephemerellidae	1	1
Leuctridae	0	1
Psychomyiidae	2	1
Corydalidae	0	1
Polycentropodidae	6	1
Odontoceridae	0	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 106
% Contribution of Dominant Family: 27.36 % (Asellidae)
Family Biotic Index: 5.47
Scraper/Filterer Collector Ratio: 0.10
Shredder/Total Ratio: 0.44
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 32.08
EPT/C: 2.83
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 173
Deficiency(s) noted:
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Fair
Canopy: Mostly Open....Other: rural, forested-Peaslee Wildlife Mgmt. Area; water cedar brown, macrophytes present
Water temp. 8.6C / pH 5.3SU / DO 3.5mg/L / Cond. 37umhos;

Station: AN0763
Manumuskin River, Fries Mill, Maurice River Twp., Cumberland County
Port Elizabeth USGS Quadrangle
Date Sampled: 6/12/01

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	74
Asellidae	8	13
Polycentropodidae	6	2
Sialidae	4	2
Brachycentridae	1	1
Gyrinidae	3	1
Gomphidae	1	1
Calamoceratidae	0	1
Tipulidae	3	1
Hydropsychidae	4	1
Lepidostomatidae	1	1
Sphaeriidae	8	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 74.00 % (Chironomidae)
Family Biotic Index: 5.93
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 7.00
EPT/C: 0.09
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 174
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant -
- Paucity of Clean Water Organisms -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 35/3
Substrate: Gravel/sand, silt....StreamBank Vegetation/Stability: Grasses/Fair
Canopy: Open....Other: forested; macrophytes present
Water temp. 20.5C / pH 4.4SU / DO 6.6mg/L / Cond. 32umhos;

Station: AN0764
Muskee Ck (Middle Br), Rt. 548, Maurice River Twp., Cumberland County
Port Elizabeth USGS Quadrangle
Date Sampled: 10/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	70
Asellidae	8	8
Lumbriculidae	8	4
Leptoceridae	4	4
Polycentropodidae	6	4
Leptophlebiidae	2	4
Naididae	7	2
Odontoceridae	0	2
BloodRed Chironomidae	8	2
Tubificidae	10	2
Aeshnidae	3	1
Ceratopogonidae	6	1
Ancylidae	6	1
Gyrinidae	3	1
Molannidae	6	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 108
% Contribution of Dominant Family: 64.81 % (Chironomidae)
Family Biotic Index: 5.94
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.77
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 14.81
EPT/C: 0.22
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 185
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant -
-

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 14/<1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Open....Other: forested; water color: cedar brown; clams and macrophytes present
remains of old wooden bridge submerged; Water temp. 14.8C / pH 5.0SU / DO 9.4mg/L / Cond. 65umhos