State of New Jersey
Donald T. DiFrancesco, Acting Governor

AMBIENT BIOMONITORING NETWORK

Watershed Management Areas 12, 13, 14, 15, and 16

Atlantic Region

1999 - 2000 Benthic Macroinvertebrate Data

New Jersey Department of Environmental Protection
Robert C. Shinn, Jr., Commissioner

March 2001

NJ Department of Environmental Protection
Environmental Planning & Science
Bob Tudor, Assistant Commissioner

Division of Watershed Management
Mary T. Sheil, Director

Water Monitoring Management
James E. Mumman, Administrator

Bureau of Freshwater & Biological Monitoring
Alfred L. Korndoerfer, Jr., Chief

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Water Monitoring Report Prepared By:
Bureau of Freshwater and Biological Monitoring

Victor Poretti, Project Manager
Thomas Miller
Dean Bryson
Stacey Hoeltje
Anna Signor

Map Preparation:

John Sell

Edited By:

Alfred L. Korndoerfer, Jr.
Paul Olsen

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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 temporal than periphytic, or attached microscopic communities.

New Jersey's initial long-term ambient biological stream monitoring 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. In 1991, however, the BFBM received numerous requests from the Office of Regulatory Policy to reinitiate or upgrade long-term monitoring of benthic macroinvertebrate communities; the data obtained would be most beneficial in the generation of the 305b (Water Quality Inventory) biennial report [3], in the updating the 303d List (of water quality limited stream segments). Thus, the present Ambient Biomonitoring Network (AMNET) program was developed to provide NJDEP with the greater resolution of baseline data now necessary to support sound policy decisions in water quality/watershed management, and to direct regulatory, or "permit," activities. Initiated in 1992, AMNET samples over 800 stream sites statewide, with an average of 165 sites in each of five major drainage basins (upper and lower Delaware, greater Passaic, Raritan and Atlantic) once every five years. This ambitious project is facilitated by the use of Rapid Bioassessment Protocol II (RBPII) methods, devised by the USEPA, which provide an expedient tool for site ranking, screening and trend monitoring [2]. The present report, on the Atlantic Region, marks the second round of AMNET sampling for this area.

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, water fleas, 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 and habitat quality can then be made based upon standardized procedures, which can show perturbations measured as changes or differences in community structure [2, 4].

STUDY DESIGN

Data Quality Objectives

The major goal of AMNET is to establish a network of stream sites that would adequately represent New Jersey's major drainage basins and NJDEP's Watershed Management Areas (WMA). Twenty WMAs have been delineated within New Jersey's five basins. Each basin constitutes a "Water Region." Within each WMA are several sub-basins, delineated by the United States Geological Survey (USGS) as "hydrologic units," scale 11 (HUC11). The study area of the present report includes WMAs 12, 13, 14, 15, and 16 (see Maps 1 – 14). The sampling frequency 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 [3], which reexamines 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.

Another program goal is to monitor a complete basin's complement of stations within a fiscal year (July 1 through June 31), giving our modelers and planners a snapshot of ambient biological impacts during that particular year. Monitoring is rotated to a different basin each new fiscal year.

The 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 cannot replace 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

For the first round of AMNET sampling in the Atlantic basin (FY1995), a total of 197 stations were established [5]. This area (shown in Figure 1) included all sub-basins that drain directly to the Atlantic coastal area, plus the Raritan and Sandy Hook Bay tributaries. On the smallest tributaries, sampling sites were located as close to headwaters as practical. To ensure enough flow for sampling, sites on "first-order" streams were 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 were situated on second-order streams (with only first-order streams as tributaries) and higher (with a greater hierarchy of tributaries). All sites were located in reasonably accessible and primarily wadable segments, proceeding downstream to a point near the head-of-tide.

For the second round of AMNET sampling in the Atlantic basin (FY2000), the original study area was realigned to conform with the boundary between the newly established Water Regions. Added to the present study was the Cape May drainage basin (WMA 16), which was previously included in the Lower Delaware Region [6]. The present study area comprises the Atlantic Water Region, and includes those sub-basins that drain to the coastal bays or ocean, Raritan and Sandy Hook Bays, and the Delaware Bay Capeshore area. In the Atlantic Region (WMA #12, 13, 14, 15, and 16), sixteen new sites were added (seven sites in WMA 16), to the 197 previously established, with one site (AN0525) relocated for better access (now designated as AN0525A). This brought the total number of sampling sites in the Atlantic Region to 213 (Figure 2).

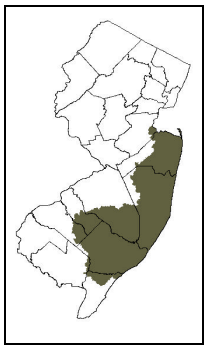


Figure 1

Map of 1995 study area

To maximize data correlation, AMNET, wherever possible, incorporated existing stations of the ambient Surface Water Chemical Monitoring Network, which is administered jointly by NJDEP and the USGS [7]. Prominent features that may affect water or habitat quality in a drainage system were also considered when selecting site locations. This included situating AMNET sites in proximity of tributary confluences, lake outlets or inlets, point source discharges, urban areas, agricultural operations, or natural features such as wetlands, parks and wildlife management areas.

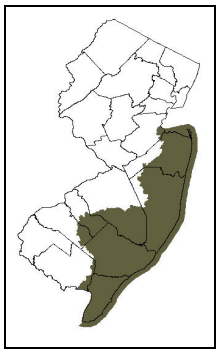


Figure 2

Map of 2000 study area

Exact AMNET site locations were determined via the Global Positioning System (GPS) using Trimble Pathfinder units and the appropriate correction sources utilized by NJDEP. All positions were logged into the Geographical Information System (GIS) (see Maps 1 – 14, Appendix A).

FIELD & LABORATORY METHODS

Benthic macroinvertebrate sampling and analysis was performed in accordance with the NJDEP Field Procedures Manual [8], Rapid Bioassessment (RBP) Protocol II guidelines of the USEPA [2] and Standard Operating Procedures (SOP) of the BFBM Aquatic Biomonitoring Laboratory [9].

Field Collection

Because New Jersey encompasses both high and low gradient terrain, our field methods employ multi-habitat sampling to compensate for concomitant variations in stream habitats. The low gradient of the New Jersey southern regions precludes stream from having dominant riffle areas, which are the preferred sampling habitat. Multi-habitat sampling includes both riffle and run areas, with various types of substrate (e.g. fine sediment, gravel/rocks, woody debris, stream and bank vegetation), plus coarse particulate organic matter or leaf litter (CPOM). This method minimizes habitat or substrate variation between stations, and includes all likely functional groups of macroinvertebrates. Samples were collected in semi-quantitative fashion either with a Surber Sampler, kick net, Petite Ponar dredge. During the field investigation, semi-qualitative observations of habitat, surrounding land use, potential pollution sources, and the presence of other aquatic biota were recorded, although these observations were not used to calculate the final bioassessment rating. At each site, the entire sample was sieved (through standard #30 mesh), put into wide-mouth glass 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 are 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 [9]. Consultation with other scientists in the field provides added assistance and confirmation, when needed.

Quality Assurance (QA) measures have been established, whereby parallel macroinvertebrate identifications and counts are performed by an outside expert (qualified professional) on duplicates of samples collected and analyzed by BFBM. This includes 10% of AMNET sites sampled over a one-year period. Three types of subsamples per site are submitted for QA analysis: (1) raw samples - organisms and associated debris from which 100 individuals have been picked and identified by BFBM; (2) split sort samples - 100 individuals picked from a raw sample by BFBM; (3) exact samples - 100 individuals picked and identified by BFBM.

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: (1) absence of pollution-sensitive taxa, especially the EPT group, i.e. Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies); (2) excessive dominance of pollution-tolerant taxa such as

Chironomidae (midges) and Oligochaeta (worms); (3) low overall taxa numbers, or (4) 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 several different components of community structure, including population and functional parameters, each with a different range of sensitivity to pollution stresses [2, 4]. 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). 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, having been statistically validated based upon data from 200 New Jersey stream sites [10]. The final numerical rating is referred to as the "New Jersey impairment score" (NJIS). 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 1995 Results

In evaluating the 2000 Atlantic Region data against that for 1995, 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 were examined for abnormalities. These results are summarized by sample site in Table 3. For chironomidae, the data is 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 were considered to be significant (personal communication — R. Bode, New York Department of Environmental Conservation; J. Kurtz, NJDEP). Abnormalities were considered to be "chronic" at a particular station if that site yielded >5% abnormalities for both the 1995 and 2000 sampling periods (see Table 3). Photographic examples of abnormalities in midge larvae and amphipods (scuds), are contained in Appendix B. AMNET sites found with significant and chronic abnormalities in chironomids are indicated in Maps 2-14.

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 we 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).

The qualitative habitat assessment involves four condition categories, rating each parameter as optimal, suboptimal, marginal or poor based on recently revised USEPA criteria [11]. Habitat assessments may be temporarily downgraded by adverse weather conditions, such as excessive rainfall or prolonged drought (which existed during this study period, in August). 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 [12]. 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. The trajectory of the Fall Line is traced from the southwest juncture in the Delaware drainage, by the lower Assunpink Creek in alignment with Lawrence Brook to the northeast in the Raritan River drainage. The Atlantic Water Region lies entirely below the Fall Line, encompassing largely low gradient terrain [12].

Sediment Toxicity Testing

To supplement the results of the benthic macroinvertebrate sampling, the BFBM from 1995 to 2000 performed acute sediment toxicity tests on several AMNET sites that exhibited “severely impaired” biological conditions in the earlier survey of the present Atlantic Water Region. The methods conformed to standardized USEPA protocols as reflected in our laboratory Standard Operating Procedures [9]. 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 12 and 13 (Maps 2-3). The test sites, and correlating reference sites are as follows:

WMA	Test Site	Reference Site	Test Date	Map #
12	AN0468 Willow Brook	AN0496 Stan Brook	05/97	1
12	AN0469 Big Brook	AN0496 Stan Brook	05/97	1
12	AN0487 Debois Creek	AN0496 Stan Brook	05/97	1
13	AN0532 Manapaqua Brook	AN0528 Ridgeway Branch	05/97	2

RESULTS AND DISCUSSION

Bioassessment ratings developed for each of the monitoring stations were used as the basis for evaluating the degree of biological impairment within the coincident stream segments. The estimated bioassessment ratings for each stream segment are presented as color-coded highlighted segments on the GIS maps # 2 through 14. In each WMA, starting from the AMNET station farthest downstream, estimated bioassessment ratings were assigned to the stream segments by interpolating from the downstream station to the next contiguous upstream station. These ratings are best estimates of the in-stream biological impairment based upon the available data. For any given segment, however, the actual in-situ conditions may vary due to unknown differences in habitat or sources of degradation. Detailed taxonomic and statistical data, bioassessment ratings, habitat assessment scores and observations for each AMNET site are given in Appendix D.

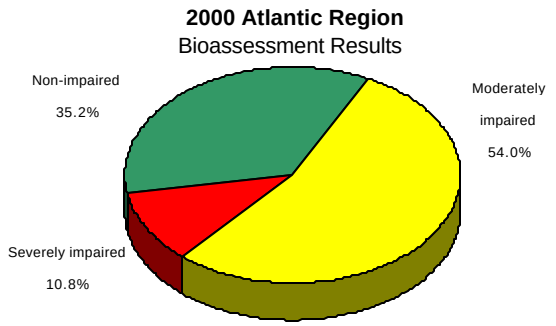


Figure 3

Overall, out of 213 monitoring stations sampled during this study period, 75 or **35.2%** were rated as "**non-impaired**", 115 or **54.0%** were rated as "**moderately impaired**", and 23 or **10.8%** were rated as "**severely impaired**" (see Figure 3, Table 2, Appendix D).

For comparison, Figure 4 depicts the results obtained from the 197 AMNET sites presently in the Atlantic Water Region, that were sampled during the 1995 study period.

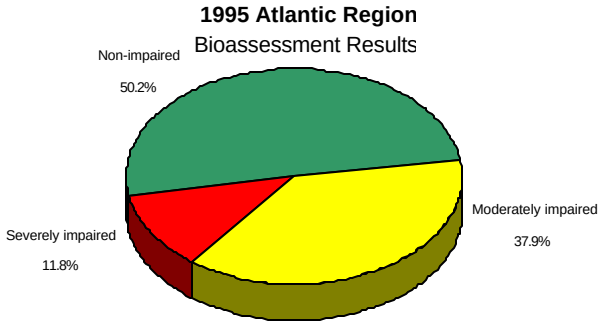


Figure 4

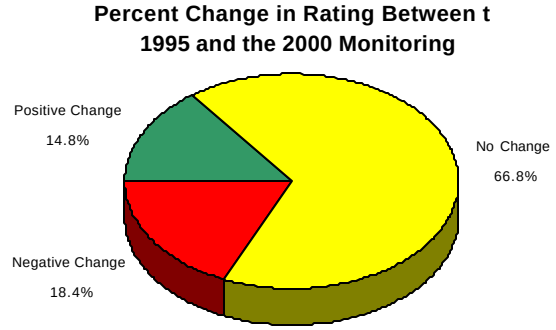


Figure 5

Figure 5 displays the percentage of change in rating at individual sites that has occurred for the 197 sites sampled during the 1995 and 2000 monitoring periods. The green indicates sites that have undergone a positive change, yellow indicates no change, and red indicates a negative change (see Table 2). Notably, fewer severely impaired and fewer non-impaired sites were found in 2000 than in 1995; however the 2000 data also revealed more moderately impaired sites than in 1995 (Figures 3 & 4).

Results for the Atlantic water region 2000 study period are similar to those recently obtained for the major New Jersey drainage systems in the upland and Piedmont ecoregions to the north including the Northeast (greater Passaic River) and Raritan Water Regions [13]. The Atlantic water Region superimposes primarily on the Outer Coastal Plain ecoregion. The northernmost area, however, lies in a portion of the Inner Coastal Plain ecoregion [12] which, in Monmouth County, extends to the New Jersey coast. This includes the Raritan and Sandy Hook Bay tributaries and the upper Manasquan River, comprising most of WMA #12. The table below presents the proportions of non-impaired, moderately impaired and severely impaired AMNET sites in each of the Atlantic region WMA's:

WMA #	Sub-basin (s)	Non-impaired	Moderately impaired	Severely impaired	Total # sites
12	eastern Monmouth County	3 (7%)	31 (72%)	9 (21%)	43
13	Barnegat Bay system	33 (50%)	29 (44%)	4 (6%)	66
14	Mullica River system	25 (43.1%)	28 (48.3%)	5 (8.6%)	58
15	Great Egg Harbor, Absecon Creek system	13 (33.3%)	25 (64.1%)	1 (2.6%)	39
16	lower Cape May County	1 (14.3%)	2 (28.6%)	4 (57.1%)	7
	Totals:	75 (35.2%)	115 (54.0%)	23 (10.8%)	213

Significantly, about 77% (58 of 75) of the non-impaired AMNET sites in the Atlantic Water Region are situated in the "Pinelands" region, largely in Ocean and Burlington Counties (WMA's #13 and 14). Of the severely impaired sites, 56% (13 of 23) are located in the northern and southernmost areas of the Atlantic Water Region (WMA's # 12 and 16), in Monmouth and Cape May Counties. This result may be skewed in part by the fact that, due to tidal/saltwater prevalence and limited freshwater drainage, relatively few (presently seven of 213) AMNET sites could be located in the Cape May region (WMA # 16). Only one severely impaired site was found in WMA #15 (Great Egg Harbor River system), most of which is situated in Atlantic County.

Macroinvertebrate Abnormalities

A listing of all AMNET sites in the Atlantic Water Region exhibiting macroinvertebrate abnormalities (primarily in the Chironomidae), including both the 1994/95 and 1999/00 sampling periods, is presented in Table 3. Also listed in Table 3 are numbers of "significant" 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 2-14. While 28 of the 213 AMNET sites in the current sampling had organisms with abnormalities, only seven sites (25%) were found to have significant levels. Notably, six of the seven sites with significant abnormalities are in Monmouth County (WMA # 12, maps 2 and 3); one is in northern Ocean County (WMA # 13, map 5). None of the sites sampled showed chronic abnormalities, i.e.

exhibiting >5% abnormalities in both the earlier (1994/95) and current data sets. (The occurrence of chronic abnormalities at a given site signifies the presence of chronic environmental stressor(s), possibly 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 plotted to show general trends along a spatial gradient (in Appendix C). In this scenario, paralleling of the trend lines in some degree would reflect a direct relationship or positive correlation between the two parameters. Conversely, in cases of biological impairment, low or declining NJIS scores, relative to habitat scores, 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 in approximate upstream-to-downstream, west to east sequence for each sub-basin. Sub-basins are arranged in approximate north to south order within each WMA; WMA's are in north to south order from #12 to #16 (Appendix C).

In the Atlantic Coastal Region, the overall trend for habitat assessment scores, north to south, ranges from high "suboptimal" to high "optimal" levels. The trend for NJIS scores is also upward, from middle to upper levels within the "moderately impaired" range. Closely parallel lines indicate that stream biotic integrity in this case is largely associated with habitat quality. A wide clustering of sites with high NJIS and habitat scores is seen in the middle area (WMA's #13, 14, 15). Overall, there were almost twice as many sites with habitat ratings of optimal as those with suboptimal ratings. There were only two sites with lower ratings, one "marginal" (in WMA #12) and one "poor" (in WMA #13) (Appendix C).

Within the Atlantic Water Region, the highest modal habitat scores (optimal levels throughout) are seen in WMA #14, in the heart of the Pinelands area. Modal NJIS values here, however, remain slightly depressed (within the moderately impaired range), while the two trend lines are closely parallel. This suggests that water quality factors (possibly low pH) are impacting macroinvertebrate community structure generally throughout the area. Conversely, in WMA #13, to the east and north of WMA #14, modal habitat scores rising from borderline (suboptimal) to optimal levels, are more consistent with NJIS scores, which rise from moderately impaired to non-impaired levels (Appendix C). Lowest modal habitat scores (suboptimal throughout) are seen in the northernmost section (WMA #12), while the lowest modal NJIS scores are seen in WMA #16 at the southern end of the Atlantic Water Region. In WMA #16, a widely divergent (declining) NJIS trend, relative to habitat, indicates that water quality factors (possibly salinity) may be impacting macroinvertebrate communities. Of only seven AMNET sites in WMA #12, four had NJIS scores in the severely impaired range, while their habitat scores were relatively high. All four of these sites are situated in tidally affected reaches proximate to the Delaware Bay Capeshore.

It is important to note here that natural environmental conditions may be contributing to some of the “impaired” RBP II bioassessments (albeit with “optimal” habitat scores), such as we found in the Pinelands and Capeshore areas. Unique properties of the Pinelands region (e.g. low surface water pH, depauperate nutrient levels) support highly characteristic species assemblages at several trophic levels. Even slight increases in pH and nutrient levels, due to urban/residential or agricultural land uses in or adjacent to Pinelands areas, can produce significant composition changes in natural biotic communities [14]. Such changes in benthic macroinvertebrate communities may result in species assemblages more indicative of “non-impaired” status than are found in relatively undisturbed Pinelands streams. The biometrics we employ here have been derived and calibrated for use on a broader

regional scale, and thus may not present an accurate assessment of true Pinelands conditions. Accordingly, we recommend that the macroinvertebrate data analysis be supplemented using a more rigorous method, such as multivariate statistics, as a check on the RBP II multi-metric results for Pinelands stream sites.

Sediment Toxicity Test Results

Acute toxicity, as measured by mortality, was not demonstrated in any of the sites tested. The survival responses observed were not significantly different, based on statistical comparisons, with responses observed in the reference station. The tests did not exhibit chronic toxicity, as measured by the growth of test organisms. Growth responses (average dry weights), at all 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 previously found 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. Toxicants may have been introduced into the stream episodically, rather than continuously. Therefore, it is advisable by these study results that supplemental sampling be performed for target analytes such as nitrogen and phosphorus, pesticides, or other suspected toxic compounds.

			Results	
WMA	**Test Site**	**Reference Site**	**Survival**	**Growth**
12	AN0468 Willow Brook	AN0496 Stan Brook	NMAT	NMAT
12	AN0469 Big Brook	AN0496 Stan Brook	NMAT	NMAT
12	AN0487 Debois Creek	AN0496 Stan Brook	NMAT	NMAT
13	AN0532 Manapaqua Brook	AN0528 Ridgeway Branch	NMAT	NMAT

NMAT = No Measurable Acute Toxicity

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. Lack of dissolved oxygen
2. Higher than normal temperature
3. Excessive turbidity
4. Presence of toxicants (in various chemical forms)
5. Eutrophication (= excessive nutrients promoting undesirable vegetation or algal blooms, and increased turbidity
6. Degraded habitat (see Table 4)
    a. lack of bank vegetation/canopy (= poor bank stability, lack of shade)
    b. excessive sedimentation (= poor substrate and water clarity)
    c. lack of streamflow (= low dissolved oxygen, possible sedimentation, undesirable vegetation)

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 discharge)
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 natural physical terrain, play a major role in controlling the degree of pollution or degradation in a stream system.

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 following section discusses observed impairment of AMNET sites within each Water Management Area of the Atlantic Water Region, and possible contributing factors.

Evaluation by WMA

Watershed Management Area #12 includes a total of 43 AMNET sites encompassing the Raritan/Sandy Hook Bay, Navesink River, Whale Pond Brook, Shark River, Wreck Pond Brook, and the Manasquan River sub-basins (see Maps 1 and 2). Figure 6 shows that 7.0% (3 sites) were rated non-impaired; 76.7% (33 sites) were rated as moderately impaired and 16.3% (7 sites) were rated as severely impaired. Figure 7 depicts the results of 43 of the same sites sampled during the 1995 survey for comparison. A significant improvement was seen at six sites and a significant decline, at seven sites (see Table 2). While the relative proportion of moderately impaired sites increased substantially over that of the earlier data (1995), the proportions of both non-impaired and severely impaired sites have decreased (Figures 6 and 7). In the current data, the great majority of NJIS scores show moderate impairment through the entire WMA, while the great majority of habitat scores were at suboptimal levels (see Appendix C). Abnormalities were found to be significant at six sites, while seven additional sites, although not significant at this time, exhibited levels of abnormalities in chironomid larvae and other invertebrate families (see Table 3, Maps 1 and 2). The table below presents a synopsis of AMNET data for WMA #12.

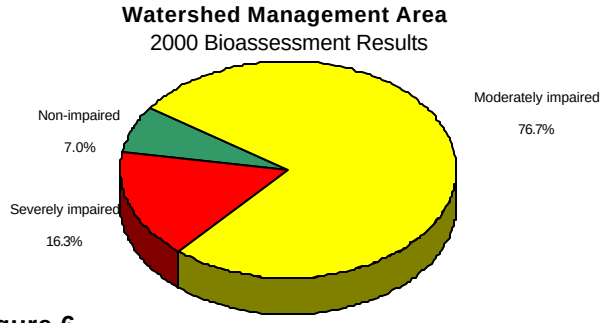


Figure 6

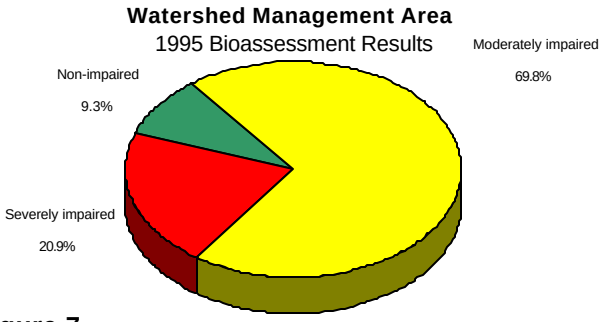


Figure 7

WMA # 12 Combined Results Table

NJIS Rating	1994/95		1999/2000			Habitat Assessment	1999/2000	
non-impaired	4	9.3%	3	7.0%		optimal	7	16.3%
moderate	30	69.8%	33	76.7%		suboptimal	34	79.0%
severe	9	20.9%	7	16.3%		marginal	2	4.7%
						poor	---	-----
Total Sites	43		43				43	
Abnormalities								
chronic		---		---				
significant		3		6				
other		3		7				

Watershed Management Area #13 includes a total of 66 AMNET sites encompassing the drainages of the Metedeconk River, Toms River, Cedar Creek, Forked River, and the smaller Barnegat Bay and Little Egg Harbor tributaries (see Maps 3, 4, and 5). Figure 8 shows that 50% (33 sites) was rated non-impaired, 43.9% (29 sites) was rated as moderately impaired and 6.1% (4 sites) was rated as severely impaired. Figure 9 depicts the results of 61 of the same sites sampled during the 1995 survey for comparison. A significant improvement was seen at 6 sites, and a significant decline, at 16 sites (see Table 2). Negative changes are seen in the current data set in that the number of non-impaired sites is fewer, while the number of moderately impaired sites is greater than that of the earlier data (Figures 8 & 9). The number of severely impaired sites has also increased since 1995. In the current data, the majority of NJIS scores show non-impairment through the entire WMA, while the great majority of habitat scores were at optimal levels (see Appendix C). Abnormalities were found to be significant at one site, while five additional sites, although not significant at this time, exhibited levels of abnormalities in chironomid larvae and other invertebrate families (see Table 3, Maps 3, 4, and 5). The table below presents a synopsis of AMNET data for WMA #13.

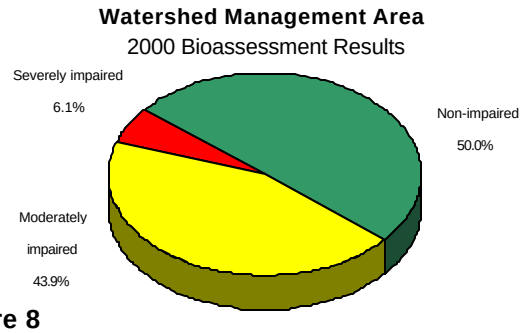


Figure 8

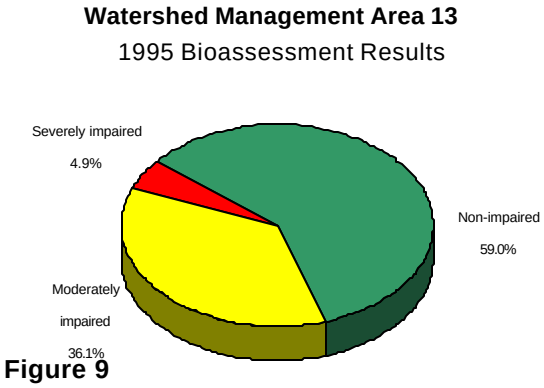


Figure 9

WMA # 13 Combined Results Table

NJIS Rating	1994/95		1999/2000			Habitat Assessment	1999/2000	
non-impaired	36	59.0%	33	50.0%		optimal	50	75.8%
moderate	22	36.1%	29	43.9%		suboptimal	15	22.7%
severe	3	4.9%	4	6.1%		marginal	---	-----
						poor	1	1.5%
Total Sites	61		66				66	
Abnormalities								
chronic		---		---				
significant		1		1				
other		3		5				

Watershed Management Area #14 includes a total of 58 AMNET sites in the Mullica/Wading River and Bass River sub-basins, which comprise the Great Bay drainage system (see Maps 6, 7, and 8). Figure 10 shows that 43.1% (28 sites) was non-impaired; 48.3% (25 sites) was found to be moderately impaired, and 8.6% (5 sites) was severely impaired. Figure 11 depicts the results of 56 of the same sites sampled during the 1995 survey for comparison. A significant improvement was apparent at 10 sites while 8 sites exhibited a decline in impairment rating (see Table 2). Positive changes in NJIS scores are exhibited in the current data relative to the 1995 data. The percentage of moderately impaired sites and non-impaired sites has increased while the number of severely impaired sites has dropped (Figures 10 & 11). In the current data, the majority of NJIS scores show moderate impairment, while the great majority of habitat scores were at optimal levels (see Appendix C). There is a somewhat greater decline in NJIS scores relative to that of the habitat scores, indicating that physiochemical conditions, as well as habitat degradation, are contributing to biological impairment. Abnormalities in chironomid larvae and other invertebrate families, although not significant at this time, were found at five sites (see Table 3, Maps 6, 7, and 8). The table below presents a synopsis of AMNET data for WMA #14.

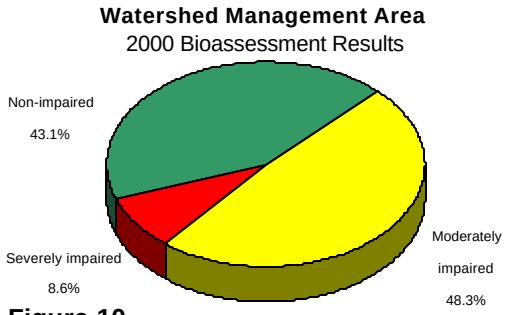


Figure 10

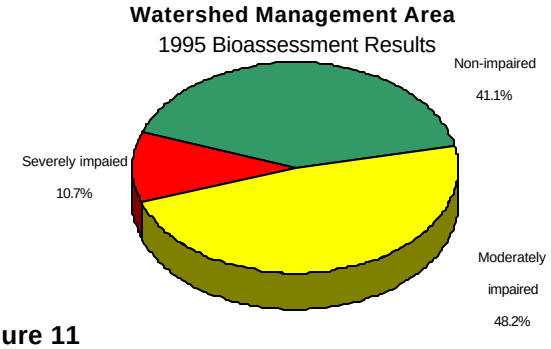


Figure 11

WMA # 14 Combined Results Table

NJIS Rating	1994/95		1999/2000			Habitat Assessment	1999/2000	
non-impaired	23	41.1%	25	43.1%		optimal	49	84.5%
moderate	27	48.2%	28	48.3%		suboptimal	9	15.5%
severe	6	10.7%	5	8.6%		marginal	---	-----
						poor	---	-----
Total Sites	56		58				58	
Abnormalities								
chronic		---		---				
significant		5		---				
other		5		5				

Watershed Management Area #15 includes a total of 39 AMNET sites in the Great Egg Harbor/ Tuckahoe River/ Patcong Creek, and Absecon Creek drainage systems (see Maps 9, 10, 11, and 12). Figure 12 shows that 40.8% (13 sites) was non-impaired, 64.1% (25 sites) was moderately impaired, and 2.6% (1 site) was rated as severely impaired. A significant improvement was seen at 6 sites, and a significant decline, at 6 sites (see Table 2). Figure 13 depicts the results of 37 of the same sites sampled during the 1995 survey for comparison. In the current data, the great majority of NJIS scores show moderate impairment through the entire WMA. While the great majority of habitat scores were at optimal levels. The number of moderately impaired sites has increased over that of the earlier sampling, while the number of non-impaired and severely impaired sites was reduced (Figures 12 & 13). The great majority of sites (more than twice as many) received an optimal score with the remainder receiving a suboptimal score (see Appendix C). Abnormalities in chironomid larvae and other invertebrate families, although not significant at this time, were found at four sites (see Table 3, Maps 9, 10, 11, and 12). The table below presents a synopsis of AMNET data for WMA # 15.

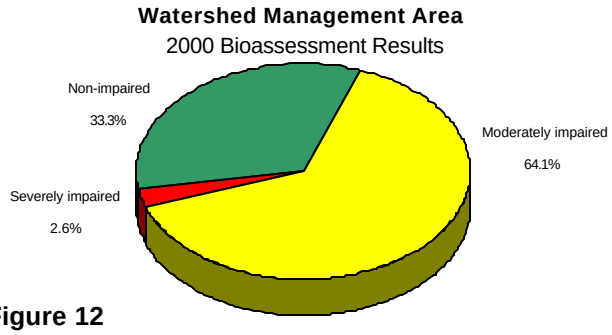


Figure 12

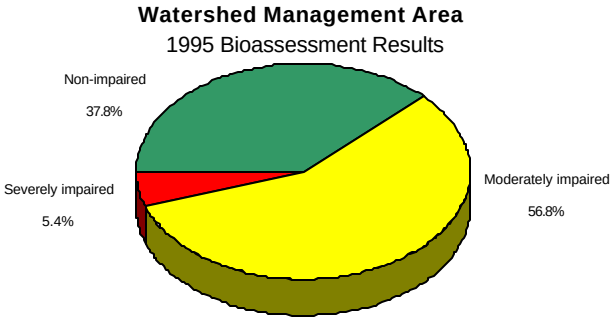


Figure 13

WMA # 15 Combined Results Table

NJIS Rating	1994/95		1999/2000			Habitat Assessment	1999/2000	
non-impaired	14	37.8%	13	33.3%		optimal	27	69.2%
moderate	21	56.8%	25	64.1%		suboptimal	12	30.8%
severe	2	5.4%	1	2.6%		marginal	---	-----
						poor	---	-----
Total Sites	37		39				39	
Abnormalities								
chronic		---		---				
significant		3		---				
other		1		4				

Watershed Management Area #16 includes a total of 7 AMNET sites encompassing freshwater drainages in the lower Cape May County area (see Map 13). None of these sites were included in the previous Atlantic Basin 1995 AMNET report, but they were included in the previous Lower Delaware Basin 1996 AMNET report [6]. The comparisons made here are comparisons to that report. Figure 14 shows that 14.3% (1 site) was non-impaired, 28.6% (2 sites) was moderately impaired, and 57.1% (4 sites) was rated as severely impaired. A significant improvement was seen at only 1 of the sites (see Table 2). Figure 15 depicts the results of 6 of the same sites sampled during the 1996 survey for comparison. One site (AN0766) went from a moderate to a non-impaired rating. Site AN0768 was not sampled during the 1996 sampling period but was sampled during the current round. The ratings of the other sites remained the same (Figures 14 & 15). All sites were in the optimal and suboptimal range for habitat assessment (see Appendix C). There were no abnormalities in chironomid larvae or other invertebrate families found at these sites (see Table 3, Map 13). The table below presents a synopsis of AMNET data for WMA # 15.

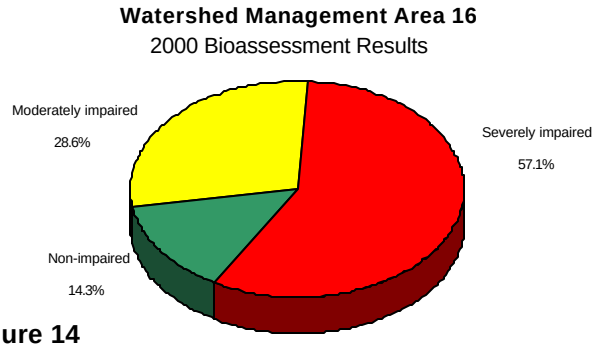


Figure 14

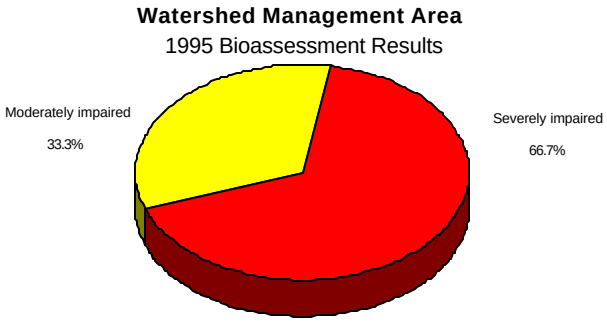


Figure 15

WMA # 16 Combined Results Table

NJIS Rating	1994/95		1999/2000			Habitat Assessment	1999/2000	
non-impaired	---	-----	1	14.3%		optimal	4	57.1%
moderate	2	33.3%	2	28.6%		suboptimal	3	42.9%
severe	4	66.7%	4	57.1%		marginal	---	-----
						poor	---	-----
Total Sites	6		7				7	

Abnormalities		
chronic	---	---
significant	---	---
other	1	---

REFERENCES

1. U.S. Environmental Protection Agency. 1977 and 1985. Basic water monitoring program. EPA 440/9-76-025. USEPA. Washington, D.C. 25 pp. and appendices.

2. Plafkin, J.L., M.T. Barbour, K.D. Porter, S.K. Gross and R.M. Hughes, 1989. Rapid bioassessment protocols for use in streams and rivers—benthic macroinvertebrates and fish. EPA/44/4-89-002. US Environmental Protection Agency. Washington, D.C. 143pp. and appendices.

3. New Jersey Department of Environmental Protection. 1997. 1996 State water quality inventory report. Office of Land and Water Planning. Trenton, NJ. 468pp.

4. Klemm, D.J., P.A. Lewis, F. Fulk and J.M. Lazorchak. 1990. Macroinvertebrate field and laboratory methods for evaluating the biological integrity of surface waters. EPA/600/4-90/030. U.S. Environmental Protection Agency. Cincinnati, OH. 206pp. and appendices.

5. New Jersey Department of Environmental Protection. Data report, 1995. Ambient biomonitoring network, Atlantic coastal drainage basin. Bureau of Water Monitoring. Trenton, NJ. 10pp. plus maps and appendices.

6. New Jersey Department of Environmental Protection. Data report, 1996. Ambient biomonitoring network, Lower Delaware River drainage basin. Bureau of Water Monitoring. Trenton, NJ. 9pp. and maps and appendices.

7. New Jersey Department of Environmental Protection. Data report, 1998. New Jersey's modernized ambient chemical monitoring network. Division of Watershed Management. Trenton, NJ. 12pp.

8. New Jersey Department of Environmental Protection. 1992. Field sampling procedures manual. NJDEP. Trenton, NJ. 360pp.

9. New Jersey Department of Environmental Protection. Unpublished report, 1998. Standard operating procedures for the aquatic biomonitoring laboratory. Bureau of Freshwater & Biological Monitoring. Trenton, NJ.

10. Kurtenbach, J. 1990. A method for rapid bioassessment of streams in New Jersey using benthic macroinvertebrates. Bulletin North American Benthological Society 8(1):129.

11. Barbour, M.T., J. Gerritson, B.D. Snyder and J.B. Stribling. 1997. Revision to rapid bioassessment protocols for use in streams and rivers: periphyton, benthic macroinverbrates, and fish. USEPA 841-D-97-002. Chp. 1–11 and appendices.

12. New Jersey Department of Environmental Protection. 1996. New Jersey State ECOMAP. State Forestry Services. Trenton, NJ.

13. New Jersey Department of Environmental Protection. Data report, 2000. Ambient biomonitoring network, Raritan Region. Bureau of Freshwater & Biological Monitoring. Trenton, NJ. 22pp. plus maps and appendices.

14. Zampella, R.A. and Laidig, K.J. Effect of watershed disturbance on Pinelands stream vegetation. Journal Torrey Botanical Society, 124(1):52-66.

15. U.S. Geological Survey. 1998. Relation of benthic macroinvertebrate community impairment to basin characteristics in New Jersey streams. Fact Sheet FS-057-98. USGS. West Trenton, NJ.

16. Pennak, R.W. 1978. Freshwater Invertebrates of the United States. 2nd ed. John Wiley and Sons, Inc. New York, N.Y. 814 pp.

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 12, 13, 14, 15, and 16

Station	NJ Impairment Score		Change in Rating	Habitat Score		Station	NJ Impairment Score		Change in Rating	Habitat Score		Station	NJ Impairment Score		Change in Rating	Habitat Score	
	94 / 95	99 / 00					94 / 95	99 / 00					94 / 95	99 / 00			
456	15	9	/-	139		498	21	24	+	165		538	15	24	+	129	
457	3	0	/-	127		499	24	9	—	166		539	24	30	/+	152	
458	6	12	+	116		500	24	21	—	166		540	27	27	/	178	
459	3	6	/+	105		501	21	21	/	162		541	30	30	/	161	
460	6	12	+	132		502	18	21	/+	148		542	21	6	—	175	
461	12	15	/+	140		503	9	12	/+	156		543	18	15	/-	161	
462	18	15	/-	156		504	27	18	—	141		544	9	12	/+	155	
463	15	18	/+	146		505	24	24	/	168		545	24	21	—	163	
464	6	9	+	136		506	21	24	+	163		546	27	27	/	178	
465	15	6	—	151		507	15	18	/+	150		547	30	30	/	174	
466	9	15	/+	132		508	27	18	—	180		548	18	30	+	179	
467	12	6	—	127		509	21	12	/-	166		549	24	30	/+	168	
468	6	18	+	138		510	6	21	+	167		550	30	21	—	196	
469	3	12	+	114		510A		24	-	155		551	21	30	+	178	
470	15	21	/+	147		511	12	27	+	150		552	30	30	/	178	
471	12	12	/	152		512	21	18	/-	134		553	30	30	/	175	
472	18	18	/	149		513	21	12	/-	148		554	27	24	/-	180	
473	15	15	/	147		514	6	6	/	53		555	12	9	/-	170	
474	15	6	—	140		515	27	15	—	166		555A		27	-	193	
475	21	9	/-	155		516	12	6	—	155		556	24	21	—	183	
476	18	12	/-	145		517	27	12	—	180		557	30	27	/-	185	
477	9	6	—	108		518	18	12	/-	147		557A		30	-	196	
478	9	12	/+	140		519	30	30	/	164		558	30	24	/-	166	
479	15	12	/-	153		519A		21	-	172		559	21	24	+	179	
480	18	18	/	156		520	27	30	/+	161		559A		24	-	169	
481	6	6	/	140		521	21	15	/-	161		560	18	18	/	176	
482	12	21	/+	163		522	30	30	/	163		561	12	21	/+	177	
483	12	3	—	138		523	30	27	/-	169		562	27	27	/	170	
484	27	15	—	164		524	30	30	/	177		563	18	9	/-	158	
485	12	9	/-	163		525A		18	-	173		564	15	24	+	184	
486	12	12	/	134		526	24	21	—	188		565	30	27	/-	189	
487	6	3	/-	137		527	30	24	/-	169		566	30	24	/-	193	
488	12	9	/-	128		528	30	21	—	159		567	21	9	/-	167	
489	12	15	/+	126		529	27	24	—	193		568	12	3	—	183	
490	18	18	/	131		530	21	21	/	171		569	12	21	/+	165	
491	12	12	/	169		531	27	30	/+	169		570	15	12	/-	154	
492	21	21	/	118		532	0	6	/+	181		571	15	12	/-	177	
493	18	18	/	162		533	21	18	/-	184		572	27	24	/-	176	
494	15	15	/	140		534	27	30	/+	150		573	3	15	+	158	
495	24	21	—	166		535	30	30	/	167		574	24	24	/	172	
496	27	24	/-	137		536	27	30	/+	176		575	15	9	/-	144	
497	24	24	/	146		537	24	18	—	160		576	30	30	/	183	

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 2 (cont)

Comparative Scores / Ratings (see notes)

Watershed Management Areas 12, 13, 14, 15, and 16

Station	NJ Impairment Score		Change in Rating	Habitat Score		Station	NJ Impairment Score		Change in Rating	Habitat Score		Station	NJ Impairment Score		Change in Rating	Habitat Score	
	94 / 95	99 / 00					94 / 95	99 / 00					94 / 95	99 / 00			
577	3	9	+	156		605	30	27	/-	188		635	27	30	/+	143	
578	24	30	/+	187		606	12	21	/+	175		636	0	9	+	125	
579	27	27	/	188		607	24	30	/+	174		637	21	27	+	186	
580	12	9	/-	191		608	18	21	/+	190		638	18	15	/-	180	
581	18	24	+	189		609	9	0	—	171		639	12	18	/+	124	
582	12	15	/+	159		610	24	27	/+	182		640	15	24	+	184	
583	9	12	/+	159		611	24	27	/+	187		640A		12	-	179	
584	9	9	/	171		612	27	24	/-	190		640B		18	-	155	
585	12	18	/+	161		613	24	21	—	180		641	21	27	+	167	
586	21	30	+	178		614	24	30	/+	179		642	21	15	/-	182	
586A		30	-	166		615	6	9	+	182		643	30	24	/-	175	
587	27	24	/-	178		616	12	15	/+	171		644	30	27	/-	180	
588	24	30	/+	168		617	18	12	/-	166		645	24	15	—	151	
589	24	21	—	175		618	21	18	/-	178		646	6	12	+	164	
590	6	6	/	151		619	15	9	/-	157		647	30	30	/	179	
591	30	24	/-	182		620	12	12	/	141		648	12	18	/+	178	
592	27	21	—	182		621	30	24	/-	175		649	27	21	—	178	
593	12	12	/	180		622	21	27	+	129		650	24	21	—	169	
594	24	15	—	159		623	30	21	—	183		651	24	24	/	184	
595	3	15	+	167		624	9	9	/	158		652	21	18	/-	177	
596	12	27	+	170		625	30	18	—	186		765	18	12	/-	173	
597	18	24	+	181		626	27	30	/+	180		766	21	30	+	186	
597A		18	-	182		627	9	12	/+	176		767	6	6	/	132	
598	9	3	—	177		628	9	21	/+	150		768		9	-	186	
599	9	6	—	183		629	12	12	/	180		769	3	3	/	189	
600	12	15	/+	193		630	9	6	—	176		770	3	6	/+	113	
601	6	9	+	188		631	12	9	/-	149		771	3	6	/+	148	
602	24	24	/	186		632	24	24	/	178							
603	12	15	/+	182		633	24	27	/+	155							
604	27	24	/-	180		634	9	9	/	178							

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

Abnormalities (see notes)

Watershed Management Areas 12, 13, 14, 15, and 16

Station	1994 / 95	99 / 2000		Station	1994 / 95	99 / 2000
457		1/14 *		590	2/5 *	
456		1/20 *		592		2/63
459	1/37	1/22		593		1/68
460		1/78		605		1/28
463	1/5 *	+1		615	+2	
464		1/46		617	1/12 *	
467		2/37 *		619	4/33 *	
471		2/34 *		627	1/20 *	2/70
476		1/37		628		1/40
477	2/17 *			641	1/34, +2	
478	+1	+1		642		1/45
482	+1	1/15 *		646		1/44
493		+1		767	1/21	
497	1/12 *					
498		2/19 *				
504		2/45				
506	1/16 *					
507		+1				
510	+3					
528		2/58				
529		2/38 *				
530	1/45					
538		1/33				
553		1/38				
557	+2					
560	1/15 *					
561	+1					
565	2/10 *					
570		1/38				
571	2/19 *					
573	1/28					
575	5/15 *	2/70				
584	1/57					
587	+1					

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 1994 / 1995 and the 1999 / 2000 columns.

Table 4 — **HABITAT ASSESSMENT FOR *HIGH* 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. 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. Riffle Quality	Well-developed riffle and run; riffle is as wide as stream and length extends two times the width of stream; abundance of cobble. (Boulders prevalent in headwater streams).	Riffle is as wide as stream but length is less than two times width; abundance of cobble; boulders and gravel common.	Run area may be lacking; riffle not as wide as stream and its length is less than 2 times the stream width; gravel or bedrock prevalent; some cobble present.	Riffles or runs virtually nonexistent; bedrock prevalent; cobble lacking
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. All 4 velocity/depth patterns present.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. Only 3 of 4 velocity/depth patterns present (i.e. slow [<0.3 m/s]-deep [>0.5 m]; slow-shallow; fast-deep; fast-shallow).	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. May be only 2 velocity/depth patterns present; usually lacking deep areas.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. Dominated by one velocity/depth pattern.
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

MAPS

2000 Atlantic Region AMNET Study
Atlantic Water Region - Map 1
WMA # 12 - Maps 2, 3
WMA # 13 - Maps 4, 5, 6
WMA # 14 - Maps 7, 8, 9
WMA # 15 - Maps 10, 11, 12, 13
WMA # 16 - Maps 14

AMNET site locations and their respective biological ratings, for each major sub-basin, are shown in maps 1-14. Also identified are sites that exhibited significant and chronic macroinvertebrate abnormalities.

Appendix A — Station Numbers and Locations for the 2000 Atlantic Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0456	UNT to Matawan Ck	40 24'12.735"N 74 15'42.577"W	12
AN0457	Gravelly Bk	40 24'28.377"N 74 13'42.797"W	12
AN0458	Wilkson Ck	40 24'24.215"N 74 13'16.701"W	12
AN0459	Flat Ck	40 25'37.403"N 74 10'29.561"W	12
AN0460	Mahoras Bk	40 24'41.014"N 74 08'20.746"W	12
AN0461	Town Bk	40 23'20.121"N 74 06'17.813"W	12
AN0462	McClees Ck	40 23'06.687"N 74 03'58.023"W	12
AN0463	Poricy Bk	40 21'25.358"N 74 05'09.491"W	12
AN0464	Nut Swamp Bk	40 20'48.837"N 74 06'41.162"W	12
AN0465	Hop Bk	40 22'12.645"N 74 10'32.421"W	12
AN0466	Hop Bk	40 19'48.015"N 74 10'19.853"W	12
AN0467	Willow Bk	40 21'37.789"N 74 12'14.399"W	12
AN0468	Willow Bk	40 19'47.304"N 74 10'24.318"W	12
AN0469	Big Bk	40 19'26.412"N 74 14'39.876"W	12
AN0470	Big Bk	40 19'24.881"N 74 10'25.215"W	12
AN0471	Yellow Bk	40 16'33.719"N 74 13'07.024"W	12
AN0472	Yellow Bk	40 17'49.057"N 74 10'14.063"W	12
AN0473	Mine Bk	40 17'30.242"N 74 10'09.093"W	12
AN0474	Swimming River	40 19'12.279"N 74 06'46.344"W	12
AN0475	Hockhockson Bk	40 17'24.123"N 74 07'17.497"W	12
AN0476	Pine Bk	40 18'15.425"N 74 06'02.660"W	12
AN0477	Whale Pond Bk	40 16'31.284"N 74 00'35.573"W	12
AN0478	Poplar Bk	40 15'23.978"N 73 59'48.693"W	12
AN0479	Jumping Bk	40 14'10.903"N 74 04'56.910"W	12
AN0480	Jumping Bk	40 12'11.845"N 74 03'51.907"W	12
AN0481	Shark River	40 13'42.032"N 74 07'28.261"W	12
AN0482	Shark River	40 11'55.088"N 74 04'11.362"W	12
AN0483	Wreck Pond Bk	40 08'38.240"N 74 03'11.170"W	12
AN0484	Hannabrand Bk	40 08'36.888"N 74 03'11.801"W	12
AN0485	Manasquan River	40 12'02.761"N 74 20'28.054"W	12
AN0486	Debois Ck	40 14'58.026"N 74 15'26.422"W	12
AN0487	Debois Ck	40 12'32.333"N 74 16'07.114"W	12
AN0488	UNT to Manasquan River (Killtime Bk)	40 12'32.120"N 74 15'48.845"W	12
AN0489	Manasquan River	40 12'15.745"N 74 15'22.766"W	12
AN0490	Manasquan River	40 11'33.921"N 74 11'42.422"W	12
AN0491	Marsh Bog Bk	40 12'52.149"N 74 10'52.465"W	12
AN0492	Marsh Bog Bk	40 10'01.260"N 74 09'32.215"W	12
AN0493	Manasquan River	40 09'42.051"N 74 09'16.348"W	12
AN0494	Mingamahone Bk	40 12'45.620"N 74 10'04.877"W	12
AN0495	Mingamahone Bk	40 09'57.503"N 74 08'59.733"W	12
AN0496	Stan Bk	40 08'39.281"N 74 09'48.259"W	12
AN0497	Squankum Bk	40 09'03.496"N 74 09'12.710"W	12
AN0498	Manasquan River	40 08'35.408"N 74 07'01.761"W	12
AN0499	N Br Metedeconk River	40 11'39.202"N 74 20'49.876"W	13
AN0500	N Br Metedeconk River	40 10'52.799"N 74 17'15.151"W	13
AN0501	N Br Metedeconk River	40 08'51.913"N 74 15'13.826"W	13
AN0502	N Br Metedeconk River	40 06'36.253"N 74 13'08.040"W	13
AN0503	Haystack Bk	40 08'46.678"N 74 11'57.276"W	13
AN0504	Haystack Bk	40 07'26.667"N 74 11'17.514"W	13
AN0505	Haystack Bk(Muddy Ford Bk)	40 06'34.545"N 74 09'41.915"W	13
AN0506	N Br Metedeconk River	40 04'53.908"N 74 09'06.501"W	13
AN0507	School House Br (Cabinfield Br)	40 04'58.896"N 74 09'27.740"W	13

Appendix A — Station Numbers and Locations for the 2000 Atlantic Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0508	S Br Metedeconk River	40 09'42.417"N 74 21'41.889"W	13
AN0509	S Br Metedeconk River	40 08'51.224"N 74 19'30.814"W	13
AN0510	S Br Metedeconk River	40 07'36.448"N 74 16'40.381"W	13
AN0510A	S Br Metedeconk River	40 08'04.570"N 74 17'43.790"W	13
AN0511	S Br Metedeconk River	40 05'12.980"N 74 12'43.838"W	13
AN0512	S Br Metedeconk River	40 04'43.762"N 74 09'23.207"W	13
AN0513	Beaverdam Ck	40 04'24.382"N 74 06'53.325"W	13
AN0514	Cedar Bridge Br	40 03'19.213"N 74 08'18.571"W	13
AN0515	Kettle Ck	40 03'17.311"N 74 11'45.941"W	13
AN0516	Kettle Ck	40 02'30.867"N 74 08'33.926"W	13
AN0517	Toms River	40 11'06.329"N 74 24'32.297"W	13
AN0518	Toms River	40 09'58.700"N 74 25'05.315"W	13
AN0519	Toms River	40 06'35.239"N 74 22'25.318"W	13
AN0519A	Toms River	40 09'08.063"N 74 24'45.707"W	13
AN0520	UNT to Toms River	40 06'43.052"N 74 20'38.031"W	13
AN0521	Maple Root Br	40 04'52.484"N 74 19'37.719"W	13
AN0522	Dove Mill Br	40 04'08.821"N 74 17'28.182"W	13
AN0523	Toms River	40 03'42.060"N 74 16'28.461"W	13
AN0524	Toms River	40 00'05.063"N 74 13'53.627"W	13
AN0525A	UNT to Ridgeway Br	40 03'40.087"N 74 26'23.513"W	13
AN0526	Shannae Bk	40 03'31.479"N 74 23'29.576"W	13
AN0527	Ridgeway Br	40 02'50.290"N 74 20'04.829"W	13
AN0528	Ridgeway Br	40 01'16.602"N 74 16'25.455"W	13
AN0529	Blacks Br	40 00'46.737"N 74 22'47.782"W	13
AN0530	Blacks Br	40 00'30.662"N 74 19'47.856"W	13
AN0531	Old Hurricane Br	39 59'28.903"N 74 22'44.706"W	13
AN0532	Manapaqua Br	40 00'44.351"N 74 18'08.892"W	13
AN0533	Union Br	40 00'29.381"N 74 17'37.405"W	13
AN0534	Union Br	40 00'22.763"N 74 14'48.685"W	13
AN0535	Toms River	39 59'11.738"N 74 13'25.468"W	13
AN0536	Wrangel Bk	39 58'22.141"N 74 19'26.457"W	13
AN0537	Wrangel Bk	39 57'53.690"N 74 14'36.988"W	13
AN0538	Sunken Br	39 58'02.914"N 74 14'31.134"W	13
AN0539	Wrangel Bk	39 57'39.477"N 74 13'41.257"W	13
AN0540	Davenport Br	39 55'35.966"N 74 20'17.971"W	13
AN0541	Davenport Br	39 57'37.775"N 74 14'40.168"W	13
AN0542	Jakes Br	39 54'55.658"N 74 16'24.661"W	13
AN0543	Jakes Br	39 56'07.451"N 74 12'41.579"W	13
AN0544	UNT to Toms River (Long Swamp Ck)	39 57'19.937"N 74 09'57.889"W	13
AN0545	Webbs Mill Br	39 53'16.503"N 74 22'46.543"W	13
AN0546	Cedar Ck	39 53'50.254"N 74 18'58.633"W	13
AN0547	Factory Br	39 52'52.182"N 74 16'30.652"W	13
AN0548	Cedar Ck	39 53'38.637"N 74 13'30.747"W	13
AN0549	Cedar Ck	39 52'03.701"N 74 10'08.079"W	13
AN0550	Long Br of N Br Forked River	39 49'02.140"N 74 17'34.177"W	13
AN0551	N Br Forked River	39 51'31.375"N 74 13'29.853"W	13
AN0552	Oyster Ck	39 47'53.907"N 74 15'00.327"W	13
AN0553	Waretown Ck	39 47'34.873"N 74 11'45.572"W	13
AN0554	Four Mile Br	39 42'26.783"N 74 16'00.961"W	13
AN0555	Mill Ck	39 41'33.720"N 74 15'31.934"W	13
AN0555A	Mill Ck	39 43'43.456"N 74 19'10.678"W	13
AN0556	Cedar Run	39 40'48.951"N 74 16'15.046"W	13

Appendix A — Station Numbers and Locations for the 2000 Atlantic Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0557	Westecunk Ck	39 39'59.592"N 74 19'12.923"W	13
AN0557A	Westecunk Ck	39 41' 59.527"N 74 21'25.862"W	13
AN0558	Westecunk Ck	39 38'24.939"N 74 18'28.067"W	13
AN0559	Mill Br of Tuckerton Ck	39 36'37.501"N 74 20'59.833"W	13
AN0559A	Mill Br	39 38'31.54"N 74 21'48.16W	13
AN0560	Mullica River	39 47'09.311"N 74 51'36.670"W	14
AN0561	Mullica River	39 46'34.587"N 74 47'55.514"W	14
AN0562	Mullica River	39 44'35.026"N 74 45'25.637"W	14
AN0563	Wesickaman Ck	39 44'27.878"N 74 43'24.077"W	14
AN0564	Mullica River	39 39'33.315"N 74 39'30.917"W	14
AN0565	Hays Mill Ck	39 45'02.448"N 74 50'27.301"W	14
AN0566	Sleeper Br	39 43'21.979"N 74 45'23.637"W	14
AN0567	Clarks Br	39 42'48.684"N 74 46'40.249"W	14
AN0568	Prices Br	39 43'19.550"N 74 47'47.944"W	14
AN0569	Pump Br	39 41'58.655"N 74 50'39.208"W	14
AN0570	Blue Anchor Bk	39 41'17.490"N 74 50'04.093"W	14
AN0571	Albertson Bk	39 41'35.070"N 74 48'22.624"W	14
AN0572	Albertson Bk	39 41'40.910"N 74 44'38.276"W	14
AN0573	Great Swamp Bk	39 40'18.019"N 74 49'30.981"W	14
AN0574	Great Swamp Bk	39 41'03.368"N 74 45'47.927"W	14
AN0575	Cedar Bk	39 39'52.436"N 74 45'56.055"W	14
AN0576	Nescohague Ck	39 38'28.782"N 74 39'40.933"W	14
AN0577	Hammonton Ck	39 37'57.912"N 74 45'37.641"W	14
AN0578	Hammonton Ck	39 37'40.762"N 74 41'36.744"W	14
AN0579	Batsto River	39 48'02.393"N 74 40'20.754"W	14
AN0580	Roberts Br	39 47'16.213"N 74 39'33.924"W	14
AN0581	Skit Br	39 47'08.597"N 74 39'29.778"W	14
AN0582	Indian Mills Bk	39 47'35.360"N 74 44'47.794"W	14
AN0583	Muskingum Bk	39 47'41.517"N 74 44'29.657"W	14
AN0584	Springers Bk	39 46'45.701"N 74 44'18.819"W	14
AN0585	Springers Bk	39 45'19.474"N 74 41'46.395"W	14
AN0586	Batsto River	39 42'34.668"N 74 39'58.838"W	14
AN0586A	Batsto River	39 46'15.486"N 74 40'47.569"W	14
AN0587	Pen Swamp Br	39 41'02.959"N 74 39'01.352"W	14
AN0588	Batsto River	39 38'31.254"N 74 38'59.579"W	14
AN0589	Lucas Br	39 37'03.357"N 74 37'48.428"W	14
AN0590	Landing Ck	39 32'08.751"N 74 39'26.918"W	14
AN0591	Elliots Ck	39 32'41.029"N 74 36'22.910"W	14
AN0592	Landing Ck	39 33'24.529"N 74 36'10.286"W	14
AN0593	Indian Cabin Ck	39 34'15.793"N 74 39'50.060"W	14
AN0594	Indian Cabin Ck	39 33'31.228"N 74 36'17.837"W	14
AN0595	West Br Wading River	39 48'52.036"N 74 32'49.311"W	14
AN0596	West Br Wading River	39 47'23.466"N 74 32'08.800"W	14
AN0597	Shoal Br	39 46'35.273"N 74 30'30.785"W	14
AN0597A	Shoal Br	39 48'51.989"N 74 28'43.608"W	14
AN0598	Mile Run	39 45'14.431"N 74 33'15.274"W	14
AN0599	Tulpehocken Ck	39 46'17.049"N 74 36'52.225"W	14
AN0600	Tulpehocken Ck	39 42'51.783"N 74 33'57.169"W	14
AN0601	Little Hauken Run	39 42'57.765"N 74 32'05.993"W	14
AN0602	Wading River	39 40'26.247"N 74 32'13.815"W	14
AN0603	Oswego River	39 46'32.771"N 74 22'04.117"W	14
AN0604	Plains Br	39 45'51.390"N 74 24'28.223"W	14

Appendix A — Station Numbers and Locations for the 2000 Atlantic Region AMNET Study

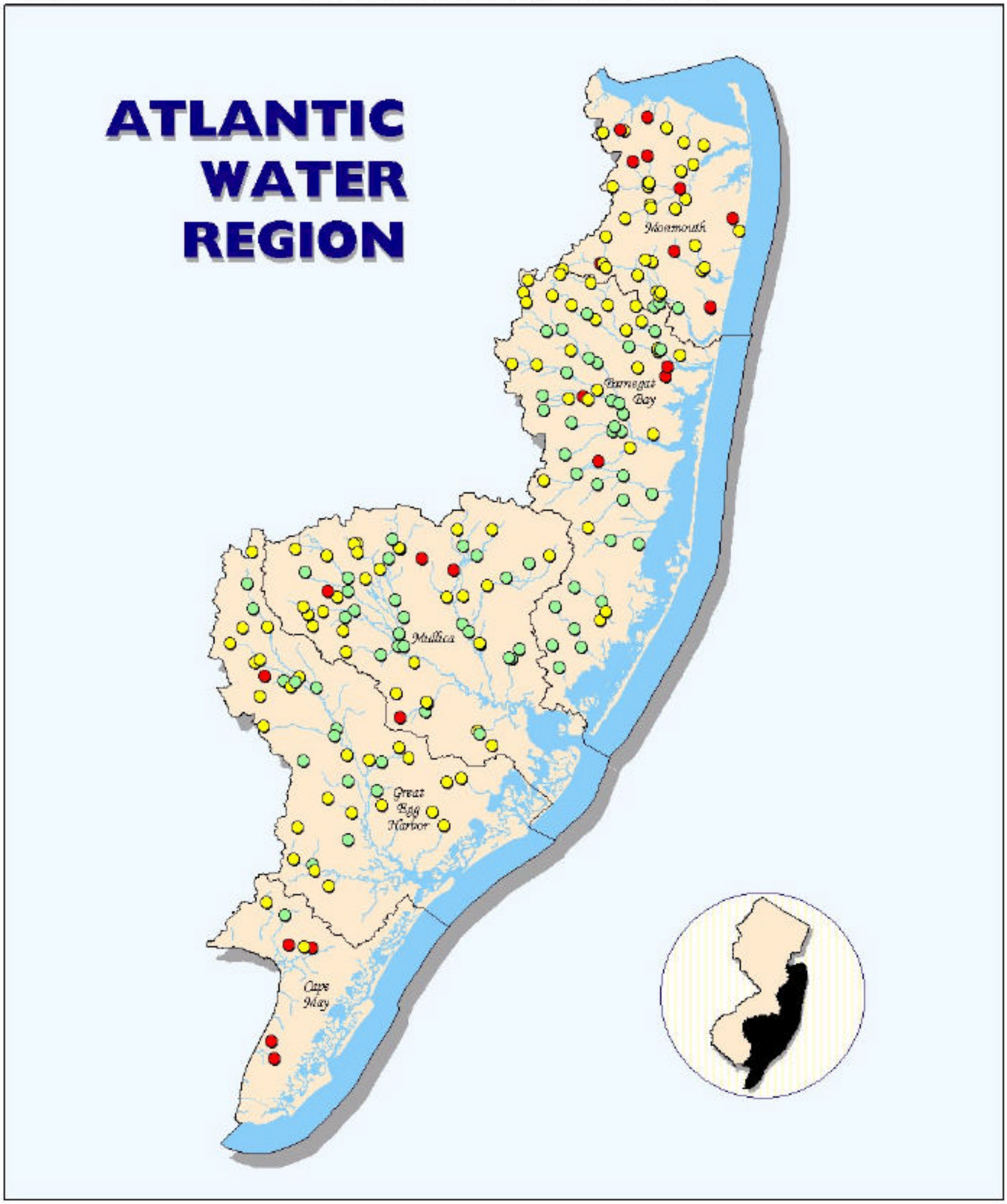
Station	Waterbody	Latitude Longitude	WMA
AN0605	Papoose Br	39 44'32.151"N 74 27'09.681"W	14
AN0606	Oswego River	39 43'53.532"N 74 29'19.798"W	14
AN0607	Oswego River (E Br Wading River)	39 39'48.457"N 74 31'24.552"W	14
AN0608	Arnold Br	39 38'46.247"N 74 30'12.048"W	14
AN0609	Tub Mill Br	39 38'40.920"N 74 30'02.755"W	14
AN0610	West Br Bass River	39 37'27.357"N 74 26'45.044"W	14
AN0611	Dans Bridge Br	39 38'12.016"N 74 25'34.679"W	14
AN0612	East Br Bass River	39 37'24.146"N 74 26'28.020"W	14
AN0613	Clarks Mill Stream	39 30'57.885"N 74 30'28.201"W	14
AN0614	Morses Mill Stream	39 30'39.081"N 74 30'11.840"W	14
AN0615	Mattix Run (Frenches Ditch)	39 29'39.424"N 74 28'45.286"W	14
AN0616	N Br Absecon Ck	39 26'42.079"N 74 32'20.056"W	15
AN0617	S Br Absecon Ck	39 26'23.385"N 74 33'58.793"W	15
AN0618	Mill Br (Fenton's Mill)	39 23'44.571"N 74 35'35.497"W	15
AN0619	Maple Run (Asbury Run)	39 22'32.351"N 74 34'18.285"W	15
AN0620	Great Egg Harbor River	39 46'52.071"N 74 56'35.204"W	15
AN0621	Great Egg Harbor River	39 44'01.753"N 74 57'05.024"W	15
AN0622	Four Mile Br	39 41'47.628"N 74 56'23.787"W	15
AN0623	Great Egg Harbor River	39 40'10.371"N 74 54'48.289"W	15
AN0624	Squankum Br	39 40'04.359"N 74 57'38.194"W	15
AN0625	Great Egg Harbor River	39 35'39.832"N 74 51'04.227"W	15
AN0626	Penny Pot Stream	39 34'48.229"N 74 49'02.597"W	15
AN0627	Hospitality Br	39 38'40.179"N 74 59'08.709"W	15
AN0628	Hospitality Br	39 37'14.233"N 74 55'37.429"W	15
AN0629	Faraway Br	39 36'58.367"N 74 56'09.741"W	15
AN0630	White Oak Br	39 35'47.012"N 74 55'05.246"W	15
AN0631	Marsh Lake Br (Collings Br)	39 33'57.943"N 74 55'33.719"W	15
AN0632	Marsh Lake Br (Collings Br)	39 35'23.355"N 74 52'53.270"W	15
AN0633	Hospitality Br	39 35'18.515"N 74 51'31.545"W	15
AN0634	Three Pond Bk	39 34'51.890"N 74 52'02.117"W	15
AN0635	Great Egg Harbor River	39 31'05.251"N 74 46'43.162"W	15
AN0636	UNT to Deep Run	39 31'20.641"N 74 55'11.740"W	15
AN0637	Deep Run	39 30'26.186"N 74 46'54.885"W	15
AN0638	Mare Run	39 28'43.593"N 74 45'26.992"W	15
AN0639	Watering Race	39 28'21.891"N 74 42'54.977"W	15
AN0640	Babcock Ck	39 28'08.225"N 74 41'33.057"W	15
AN0640A	Babcock Ck	39 28'32.244"N 74 38'29.456"W	15
AN0640B	Jack Pudding Br	39 29'27.912"N 74 39'29.807"W	15
AN0641	Gravelly Run	39 25'38.137"N 74 42'06.261"W	15
AN0642	Miry Run	39 24'20.259"N 74 41'29.242"W	15
AN0643	South River	39 28'16.176"N 74 50'35.343"W	15
AN0644	South River	39 26'25.336"N 74 45'20.120"W	15
AN0645	Stephens Ck	39 24'56.173"N 74 47'41.893"W	15
AN0646	Stephens Ck	39 23'37.822"N 74 44'53.539"W	15
AN0647	Gibson Ck	39 21'11.307"N 74 45'22.319"W	15
AN0648	Tuckahoe River	39 22'20.030"N 74 51'12.404"W	15
AN0649	Tuckahoe River	39 19'26.042"N 74 51'40.518"W	15
AN0650	Tuckahoe River	39 18'25.426"N 74 49'13.234"W	15
AN0651	McNeals Br	39 18'57.708"N 74 49'27.551"W	15
AN0652	Mill Ck	39 17'03.613"N 74 47'31.199"W	15
AN0765	West Ck	39 15'35.447"N 74 54'42.379"W	16
AN0766	Savages Run (East Ck)	39 14'31.592"N 74 52'34.424"W	16

Appendix A — Station Numbers and Locations for the 2000 Atlantic Region AMNET Study

Station	Waterbody	Latitude Longitude	WMA
AN0767	UNT to Dennis Ck	39 11'33.267"N 74 49'30.393"W	16
AN0768	UNT to Dennis Ck	39 11'41.210"N 74 50'27.960"W	16
AN0769	Old Robins Br	39 11'49.963"N 74 52'10.158"W	16
AN0770	Green Ck	39 03'11.637"N 74 54'05.451"W	16
AN0771	Fishing Ck	39 01'39.817"N 74 53'47.128"W	16

Map 1

1999 - 2000 Atlantic Region AMNET Study



BIOASSESSMENT RATING

- Non-Impaired
- Moderately Impaired
- Severely Impaired

Watershed Management Area Boundaries

Major Streams

N
W E
S

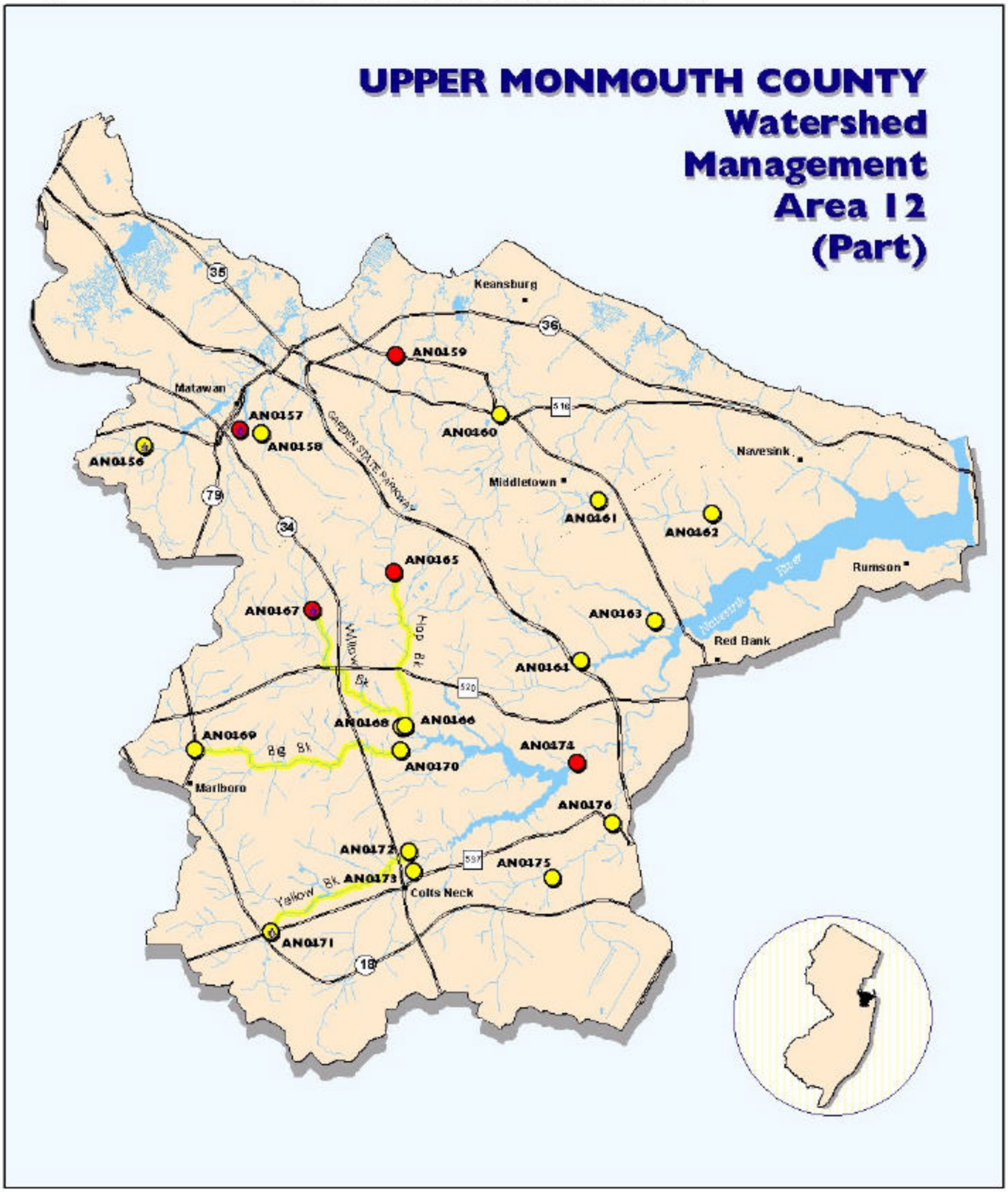
5 0 5 10 15 Miles

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

Map: J. Sell, September 2000

Map 2

1999 - 2000 Atlantic Region AMNET Study



BIOASSESSMENT RATING

- Non-Impaired
- Moderately Impaired
- Severely Impaired

MACROINVERTEBRATE ABNORMALITIES

- Significant during 1999/2000 sampling period *

N W E S

0 1 2 3 Miles

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

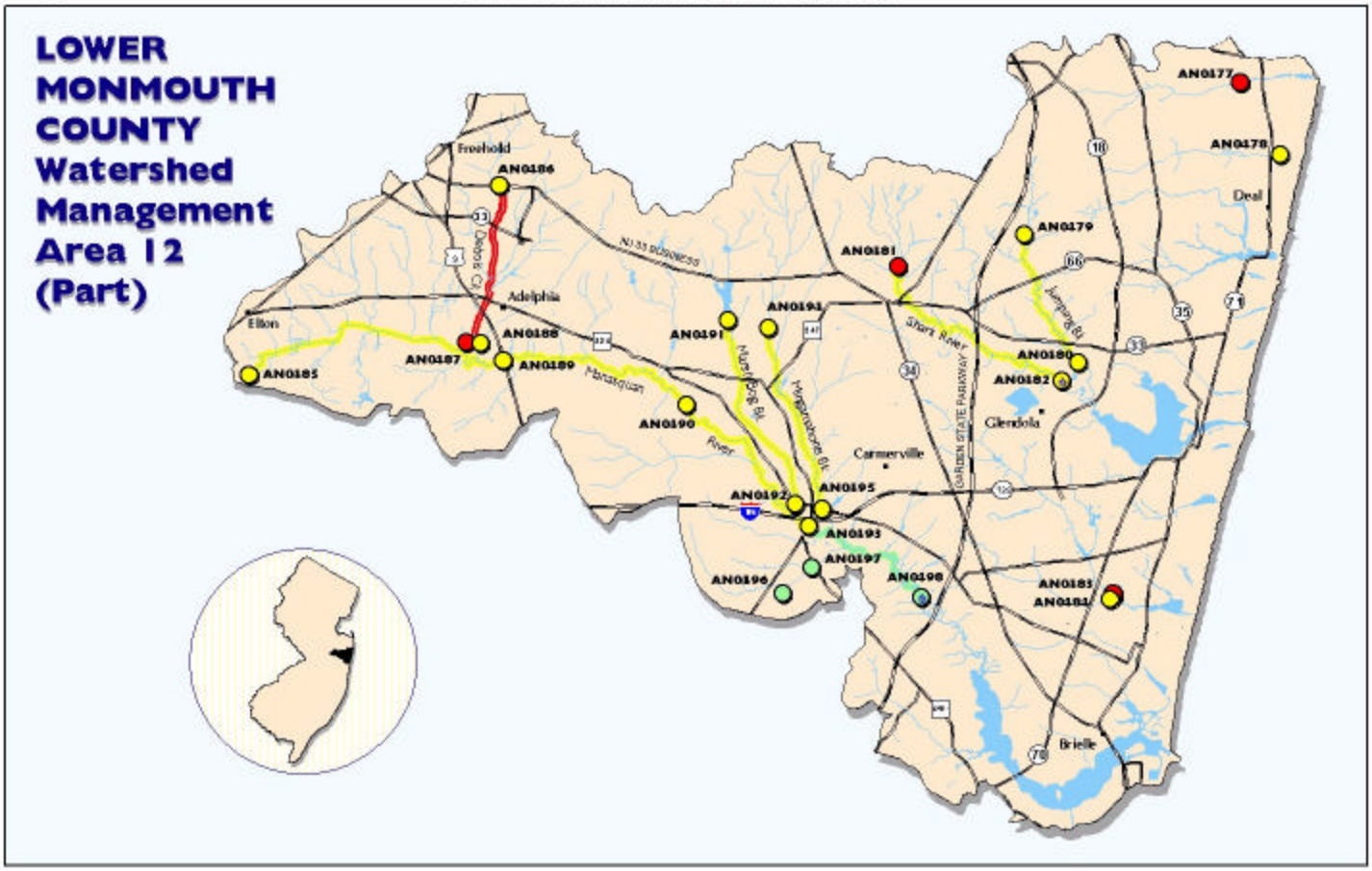
Map: J. Sell, September 2000

* Abnormalities are considered significant if they occurred in > 5% of individuals.

Map 3

1999 - 2000 Atlantic Region AMNET Study

LOWER MONMOUTH COUNTY Watershed Management Area 12 (Part)



BIOASSESSMENT RATING

- Non-Impaired
- Moderately Impaired
- Severely Impaired

MACROINVERTEBRATE ABNORMALITIES

- Significant during 1999/2000 sampling period *

N W E S

2 0 2 4 Miles

* Abnormalities are considered significant if they occurred in > 5% of individuals.

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

Map : J. Sell, September 2000

METEDECONK RIVER AND KETTLE CREEK Watershed Management Area 13 (Part)

BIOASSESSMENT RATING

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N W E S

2 0 2 4 Miles

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

Map: J. Sell, September 2000

Map 5

1999 - 2000 Atlantic Region AMNET Study

BIOASSESSMENT RATING

- Non-Impaired
- Moderately Impaired
- Severely Impaired

MACROINVERTEBRATE ABNORMALITIES

- Significant during 1999/2000 sampling period *

N W E S

2 0 2 4 Miles

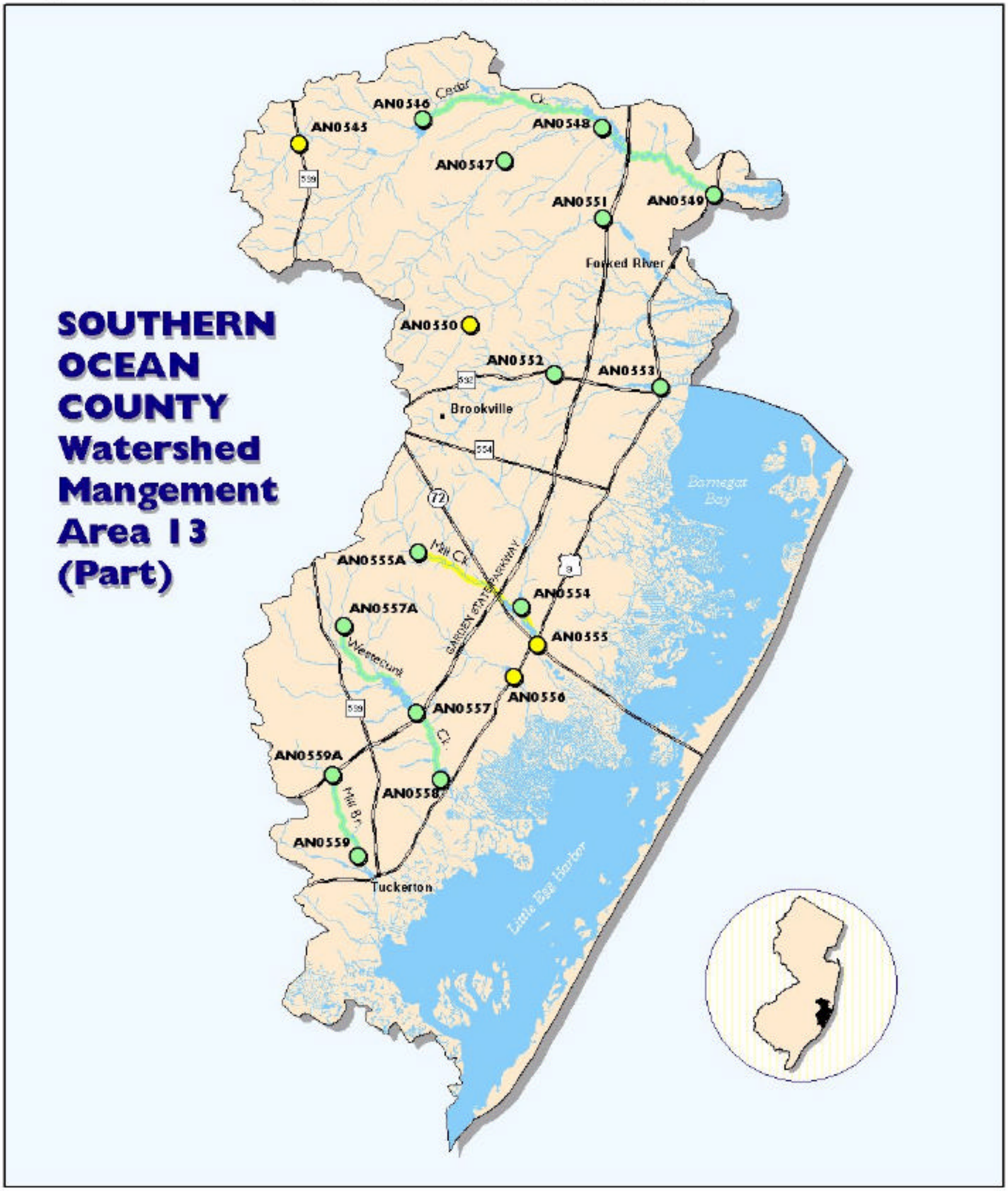
New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: J. Sell, September 2000

* Abnormalities are considered significant if they occurred in > 5% of individuals.

Map 6

1999 - 2000 Atlantic Region AMNET Study



BIOASSESSMENT RATING

- Non - Impaired
- Moderately Impaired
- Severely Impaired

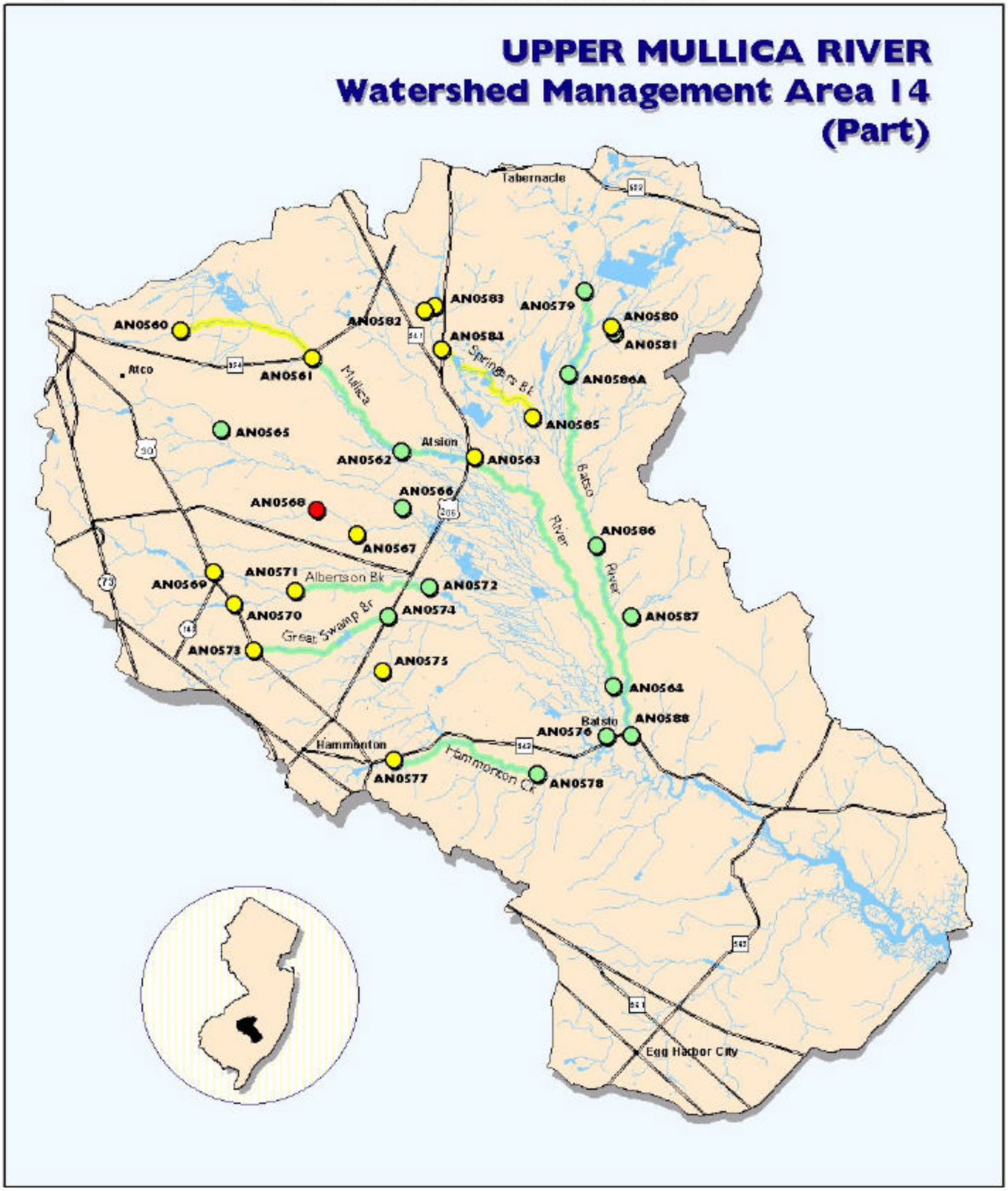
N W E S

3 0 3 6 Miles

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

Map: 1, 2all, September 2000

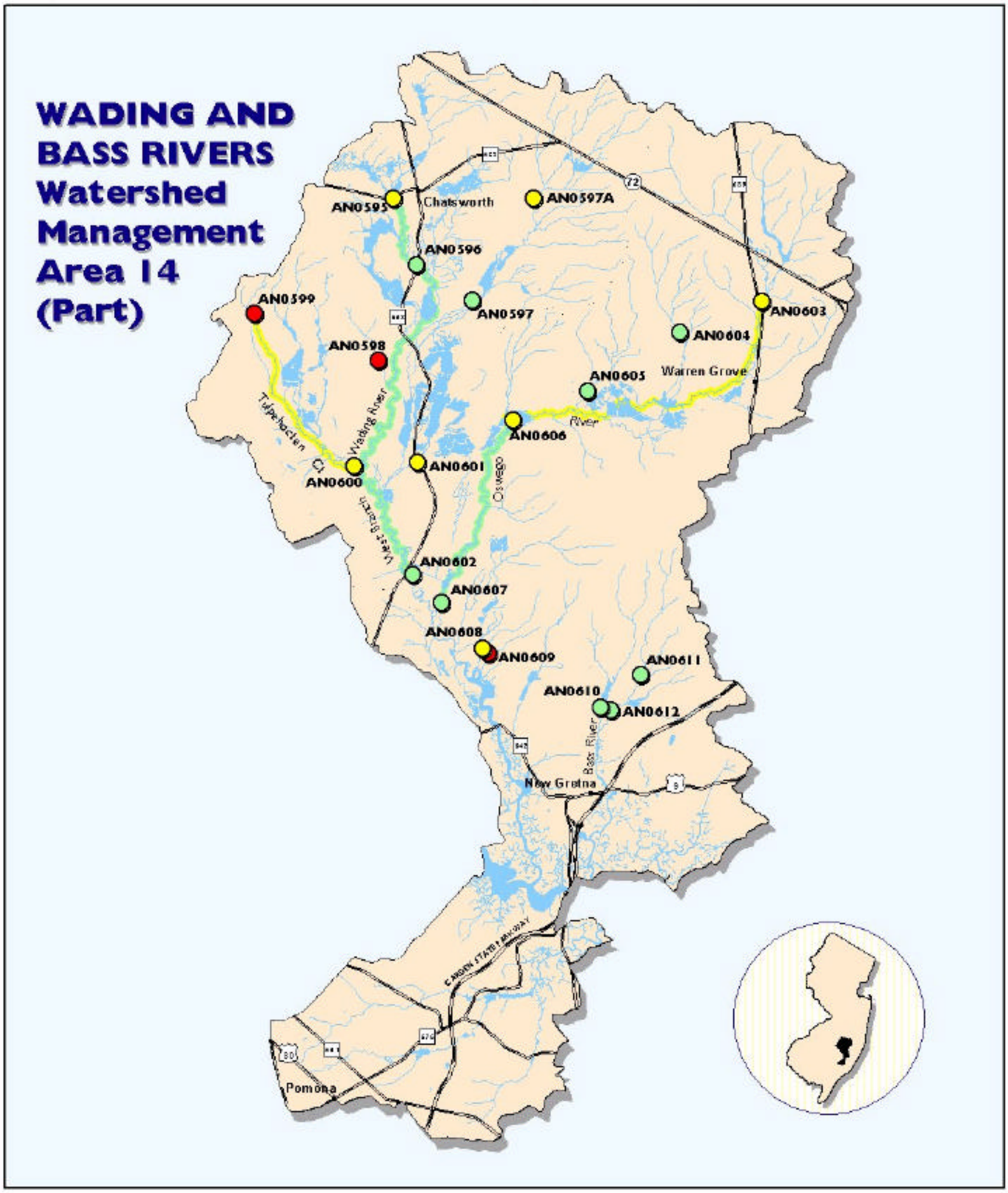
1999 - 2000 Atlantic Region AMNET Study



Map 8

1999 - 2000 Atlantic Region AMNET Study

1999 - 2000 Atlantic Region AMNET Study



BIOASSESSMENT RATING

- Non - Impaired
- Moderately Impaired
- Severely Impaired

N W E S

2 0 2 4 Miles

New Jersey Department of Environmental Protection
Division of Watershed Management
Water monitoring management
Bureau of freshwater & biological Monitoring

Map: I. Jell, September 2000

1999 - 2000 Atlantic Region AMNET Study

EASTERN ATLANTIC COUNTY Watershed Management Area 15 (Part)

BIO ASSESSMENT RATING

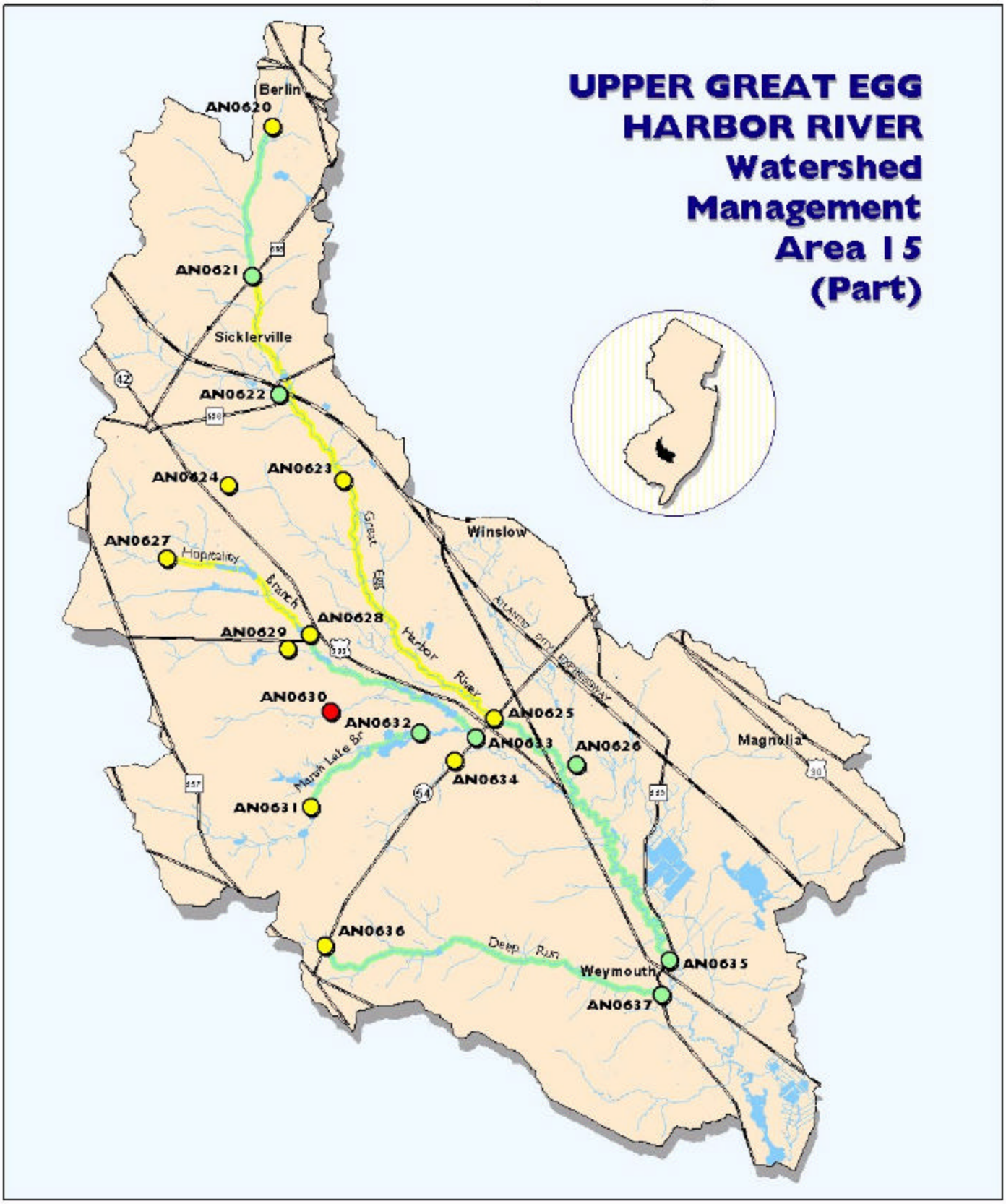
- Non - Impaired
- Moderately Impaired
- Severely Impaired

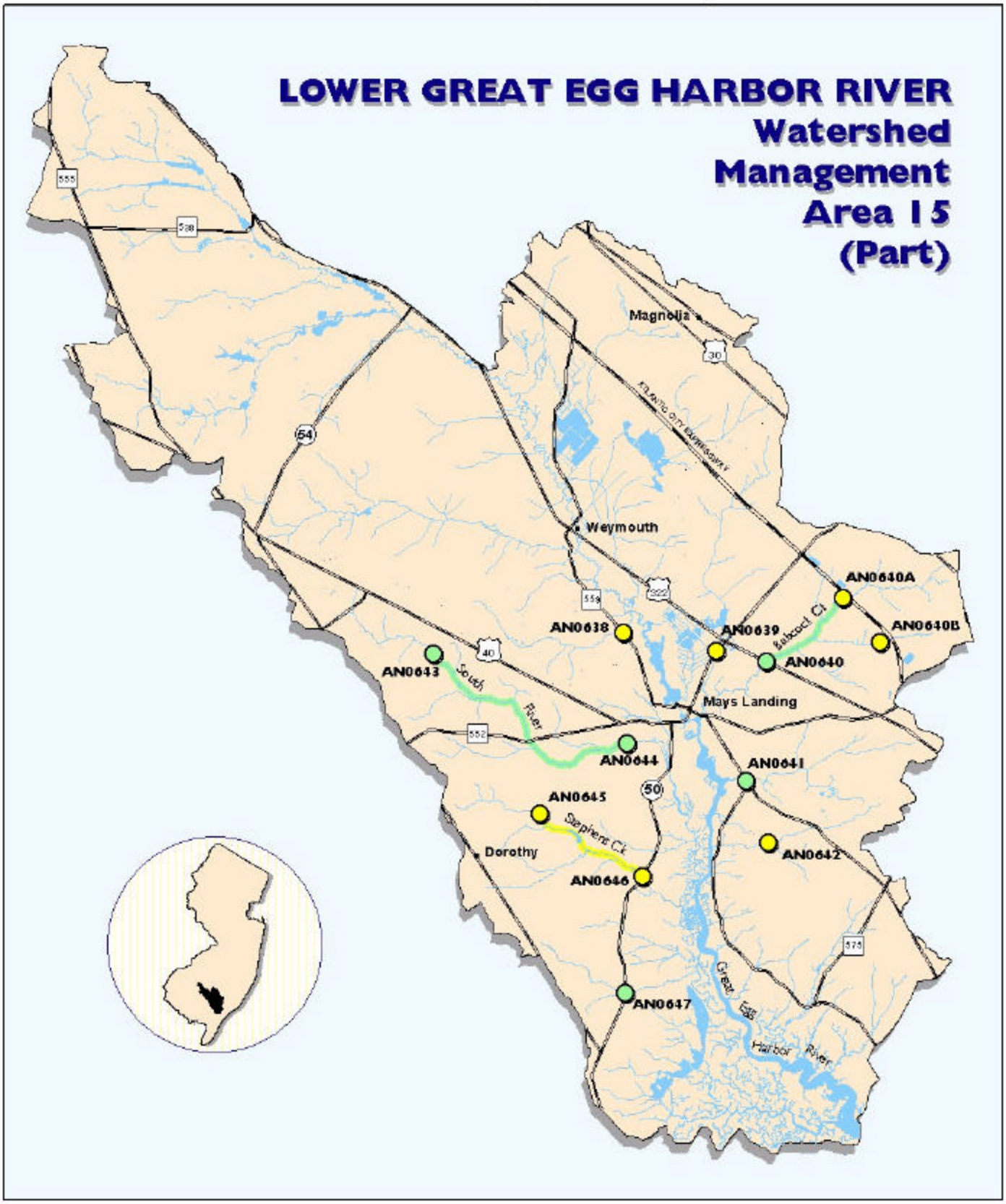
N
W E
S

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, September 2000


UPPER GREAT EGG HARBOR RIVER Watershed Management Area 15 (Part)
Berlin
AN0620
AN0621
Sicklerville
AN0622
AN0624
AN0623
AN0627
Hospitality Branch
Great Egg Harbor River
Winslow
AN0629
AN0628
AN0630
AN0632
AN0625
AN0633
AN0626
AN0634
AN0631
Magnolia
March Late Br
AN0636
Deep Run
Weymouth
AN0635
AN0637
BIOASSESSMENT RATING
Non - Impaired
Moderately Impaired
Severely Impaired
N
W
E
S
2 0 2 4 Miles
New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring
Map: J. Sell, September 2000



BIOASSESSMENT RATING

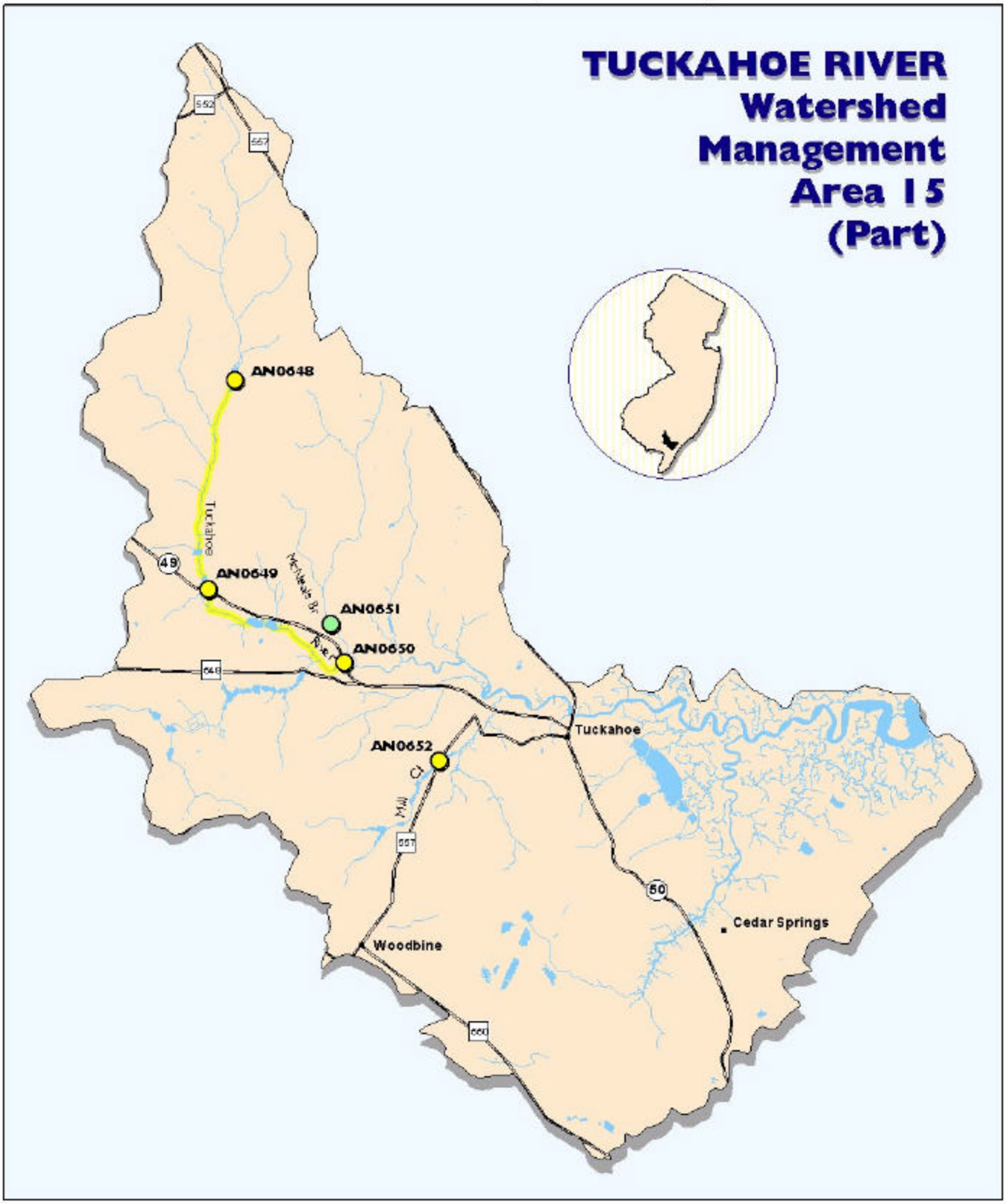
- Non - Impaired
- Moderately Impaired
- Severely Impaired

N W E S

2 0 2 4 Miles

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

Map: J. Sell, September 2000



BIOASSESSMENT RATING

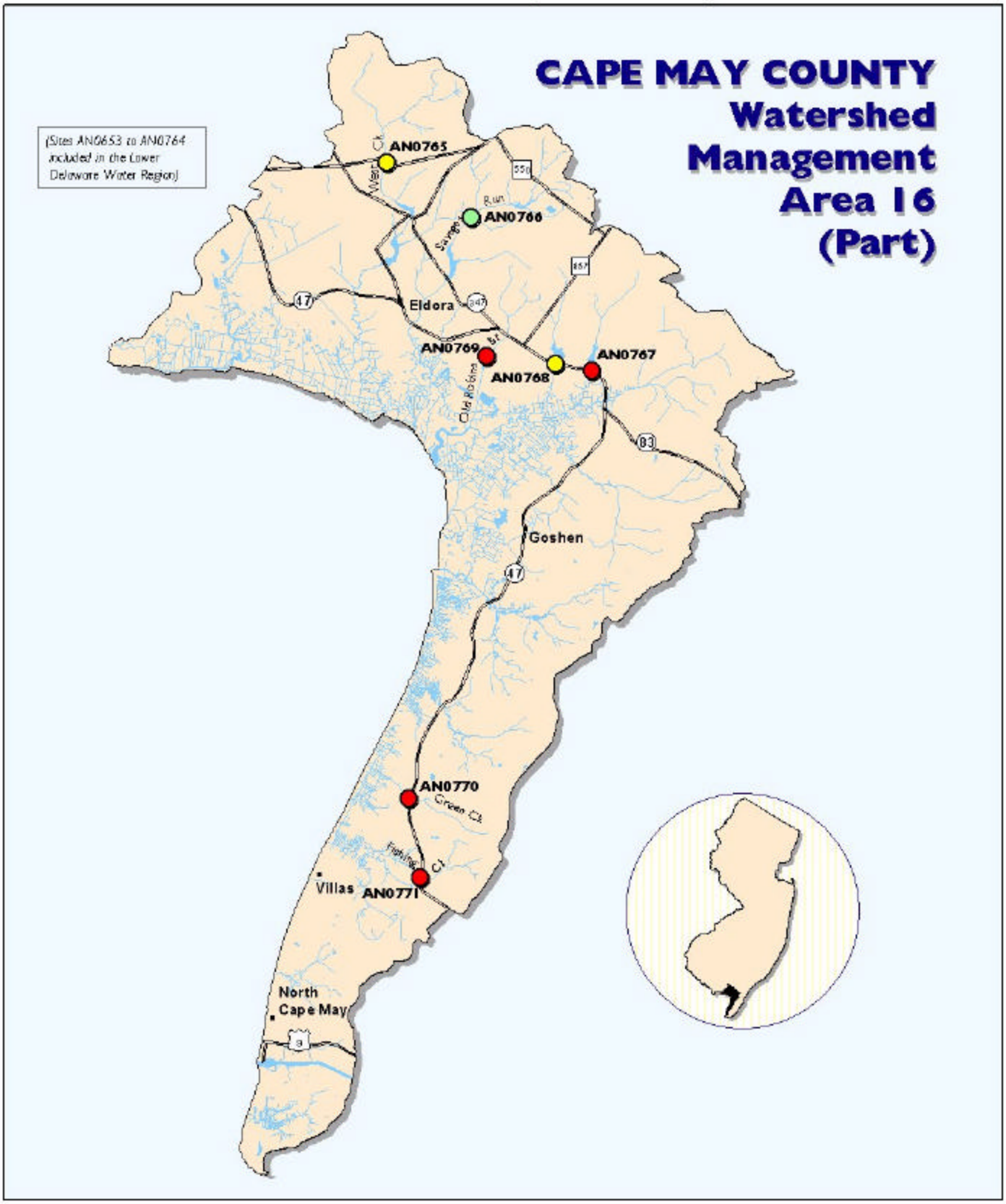
- Non - Impaired
- Moderately Impaired
- Severely Impaired

N
W E
S

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, September 2000



BIOASSESSMENT RATING

- Non- Impaired
- Moderately Impaired
- Severely Impaired

N W E S

2 0 2 4 Miles

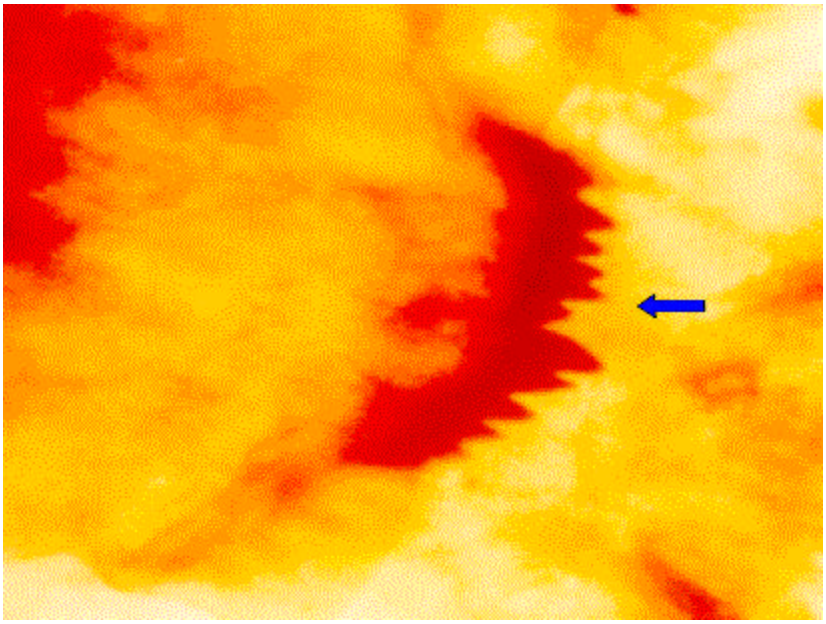
New Jersey Department of Environmental Protection
Division of Watershed Management
Water Monitoring Management
Bureau of Freshwater & Biological Monitoring

Map: I. Jail, September 2000

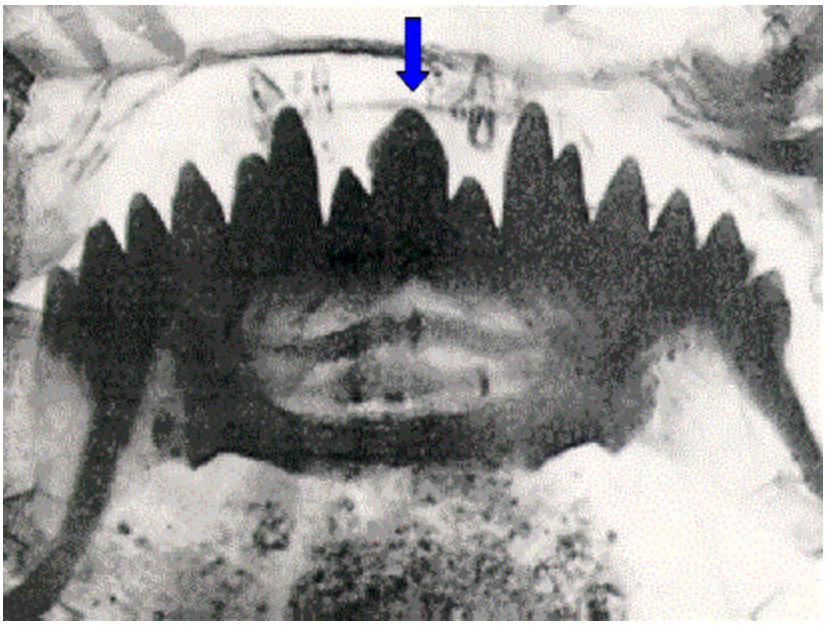
APPENDIX B

Pictures and Site Locations of Morphological Abnormalities in Larval Chironomidae and Amphipoda Recovered in the 2000 Atlantic Region AMNET Study

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



ABNORMAL*

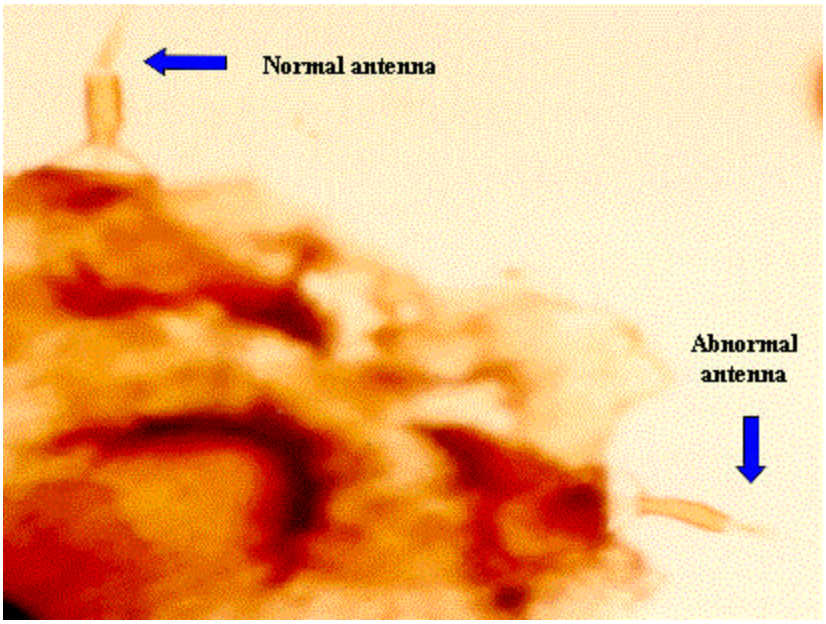


NORMAL**

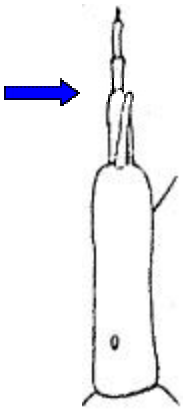
* Photograph taken by J. Kurtz, NJDEP.

** 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*

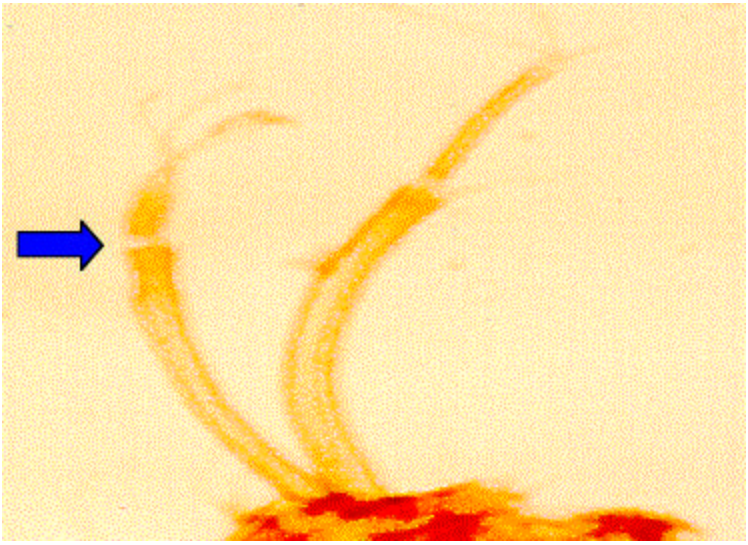


NORMAL antenna**

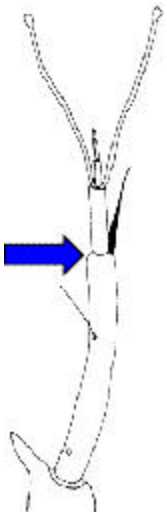
* Photograph taken by J. Kurtz, NJDEP.

** 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*

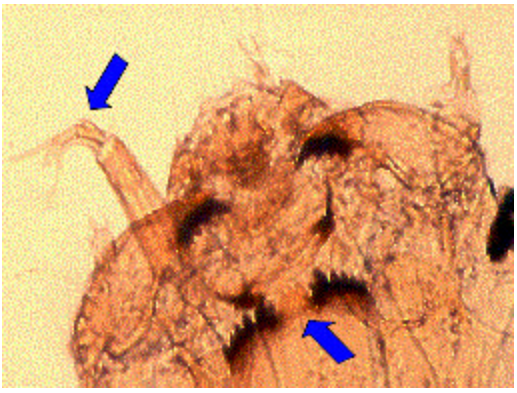


NORMAL**

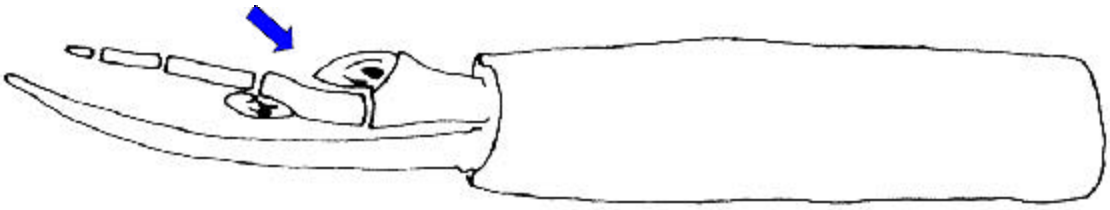
* Photograph taken by J. Kurtz, NJDEP.

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

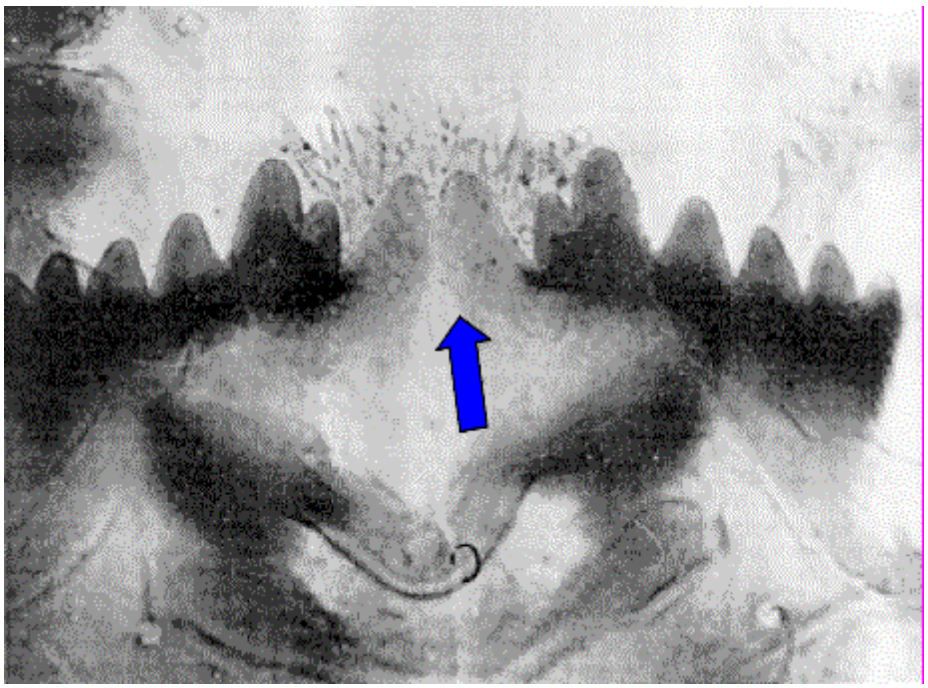
Microtendipes sp. — Note the abnormal teeth and antenna in the top picture compared to the bottom pictures, which depict normal antenna and teeth. The normal pictures on the bottom are magnified to show detail.



ABNORMAL*



NORMAL antenna**



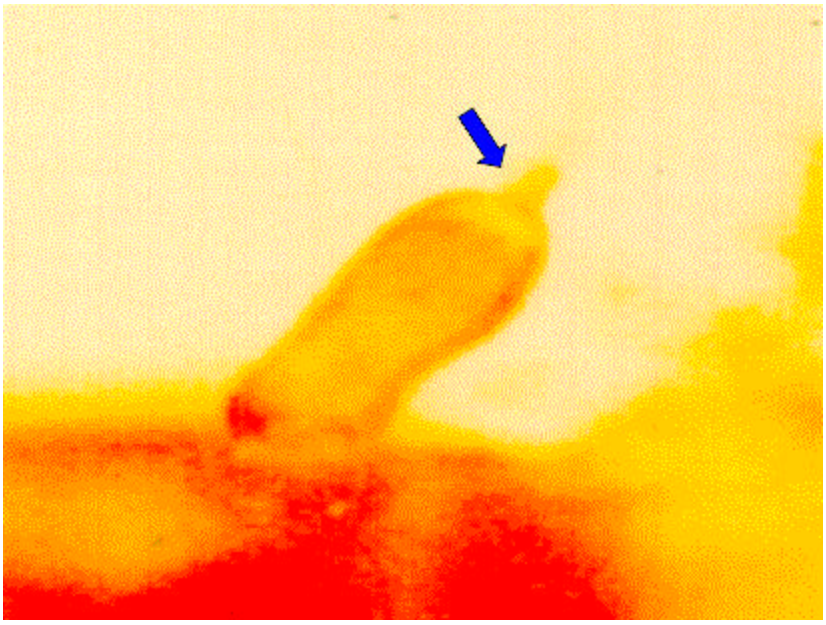
NORMAL teeth***

* Photograph taken by J. Kurtz, NJDEP.

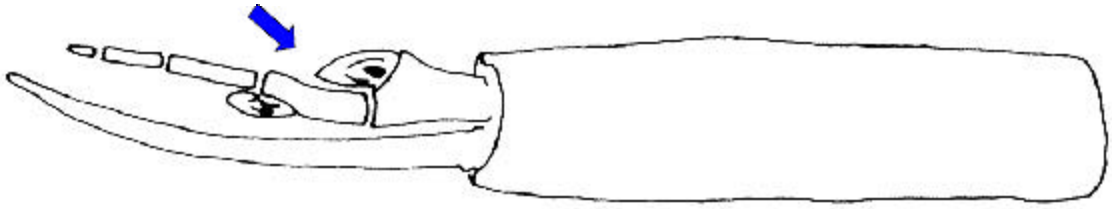
** From: *An Introduction to the Aquatic Insects of North America*, second edition, R.W. Merritt & K.W. Cummins, 1988, Kendall/Hunt Publ. Co.

*** 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 *

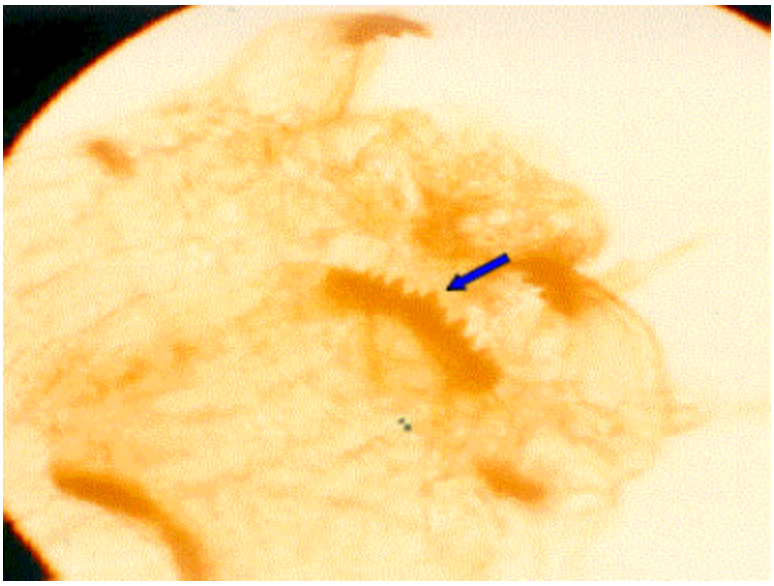


NORMAL antenna**

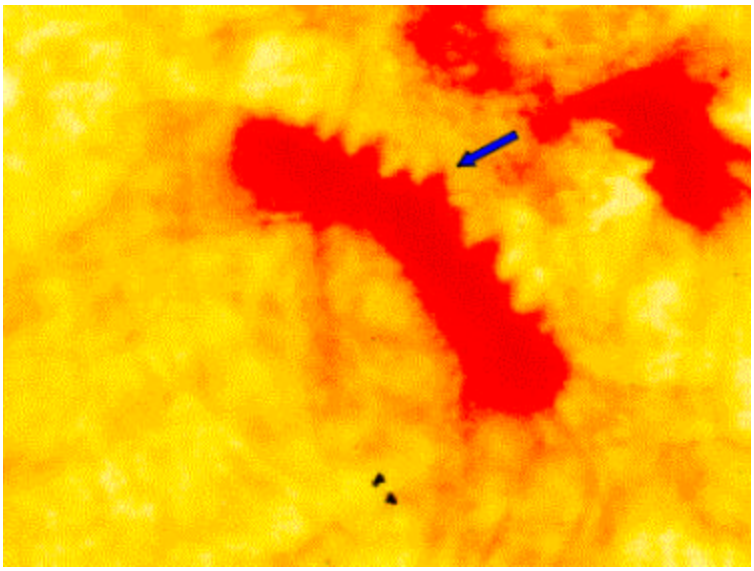
* Photograph taken by J. Kurtz, NJDEP.

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

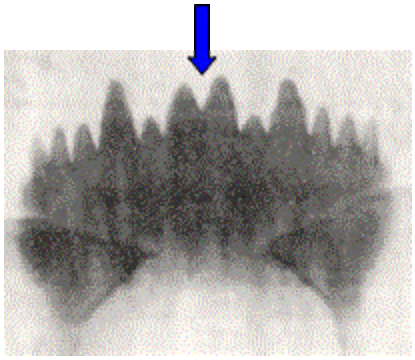
Polypedilum convictum — The first two pictures show abnormal teeth as compared to the normal teeth depicted in the picture below. The second picture is a higher magnification of the first one.



ABNORMAL*



ABNORMAL*

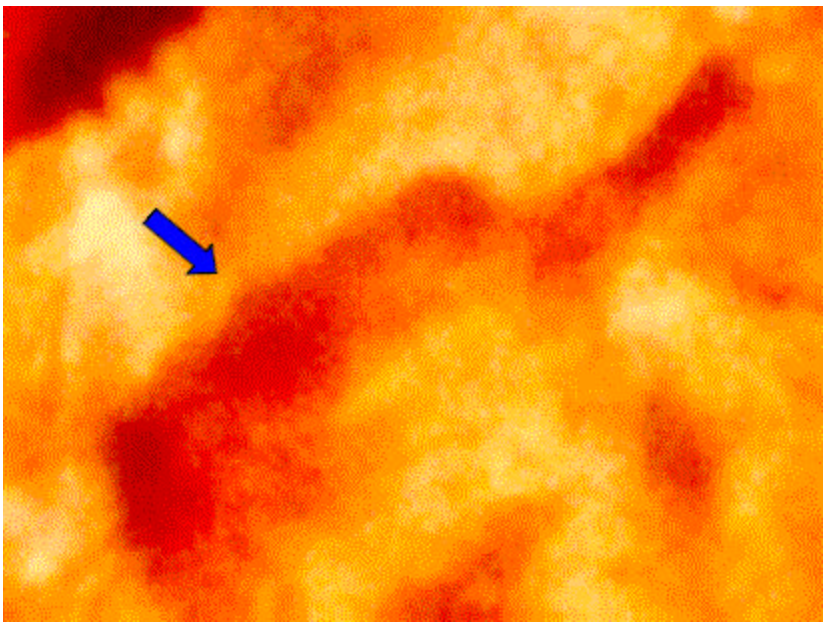


NORMAL**

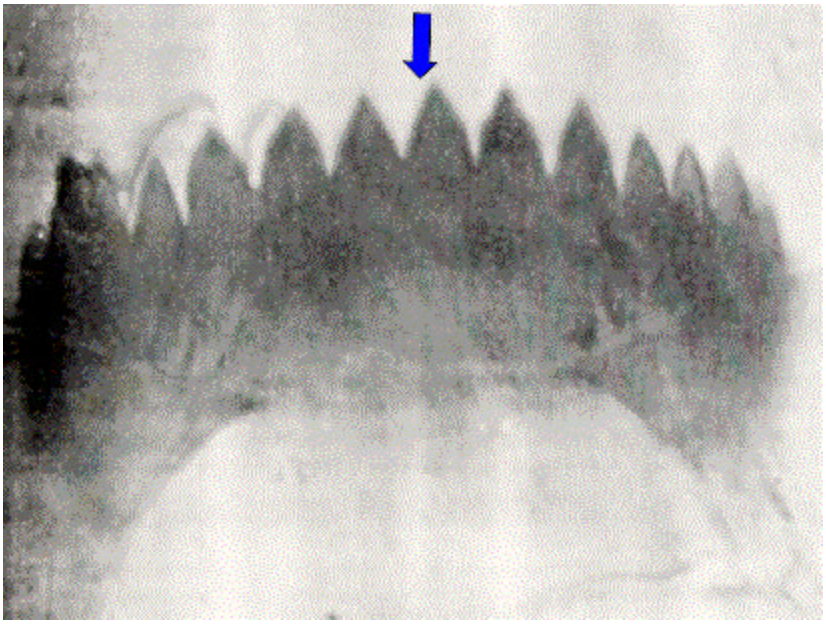
* Photograph taken by J. Kurtz, NJDEP.

** 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*



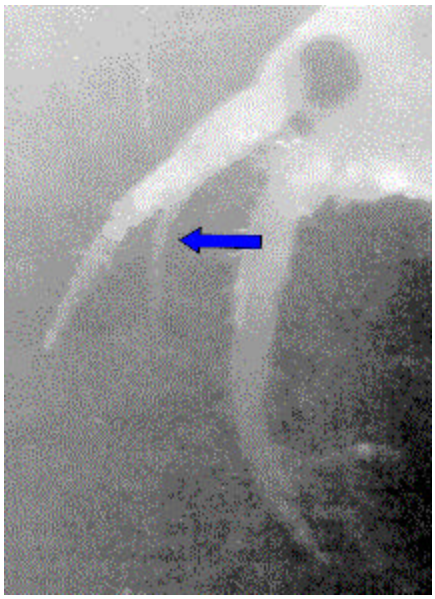
NORMAL**

* Photograph taken by J. Kurtz, NJDEP.

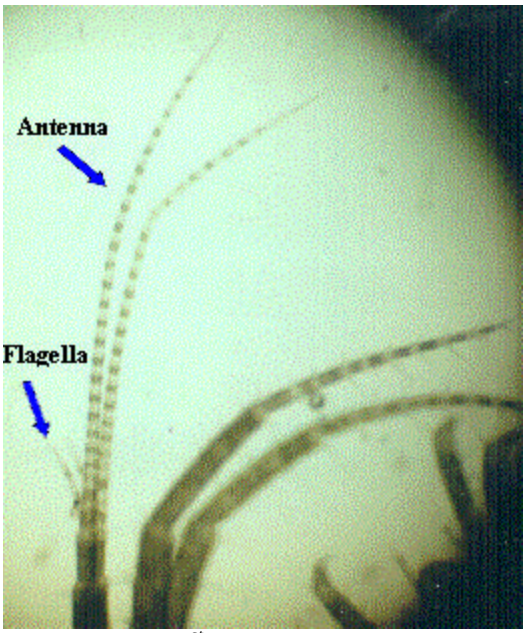
** From: *A Key to Some Larvae of Chironomidae (Diptera) From the Mackenzie & Porcupine River Watersheds,* D.R. Oliver, D. McClymont, & M.E. Roussel, 1978, Fisheries & Marine Service Technical Report # 791.

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.

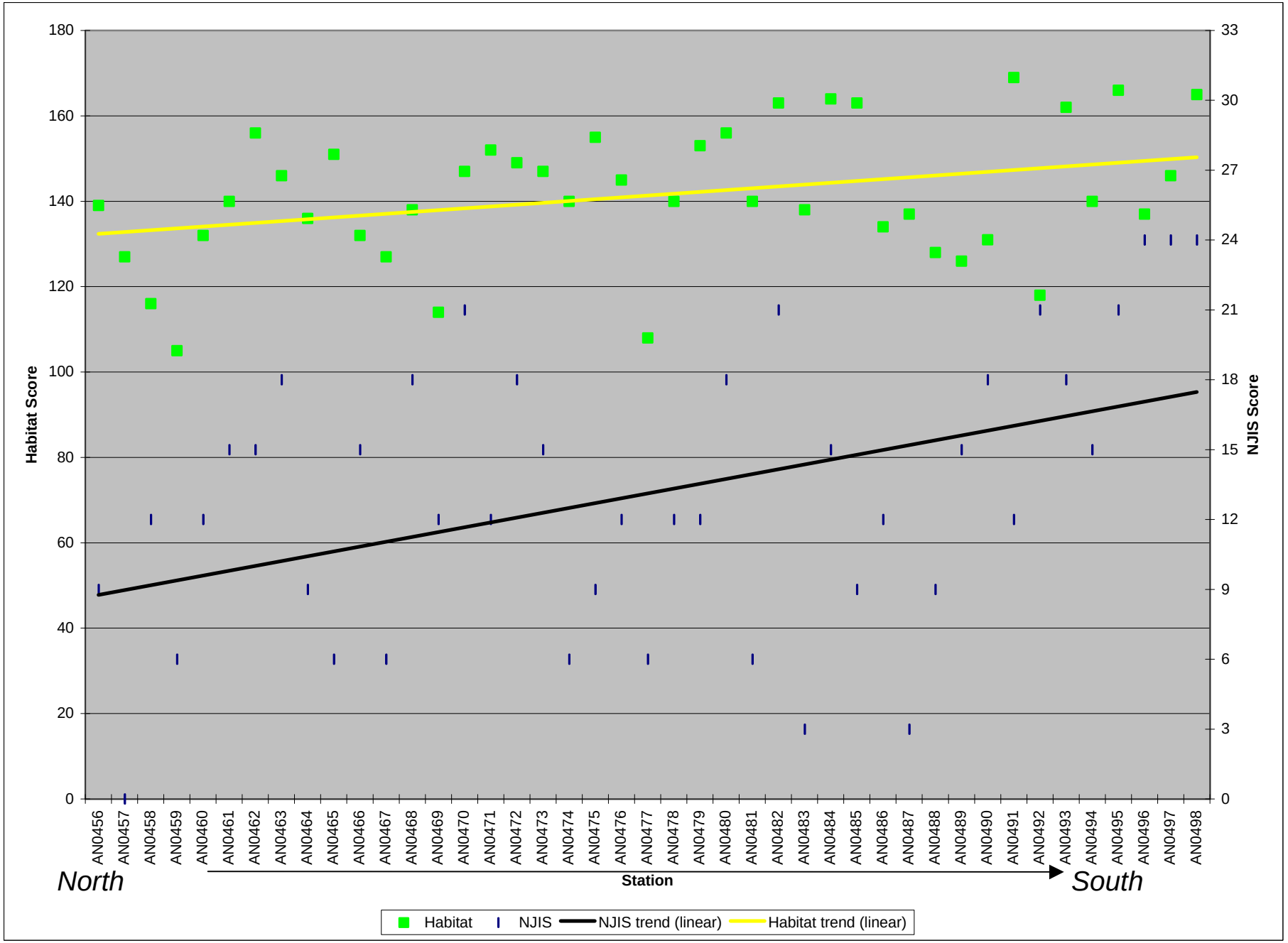
APPENDIX C

Graphical Comparison of Habitat Assessment Scores and New Jersey Impairment Scores from the 2000 Atlantic Region AMNET Study

Comparative Scores of HABITAT vs. NJIS

WMA 12

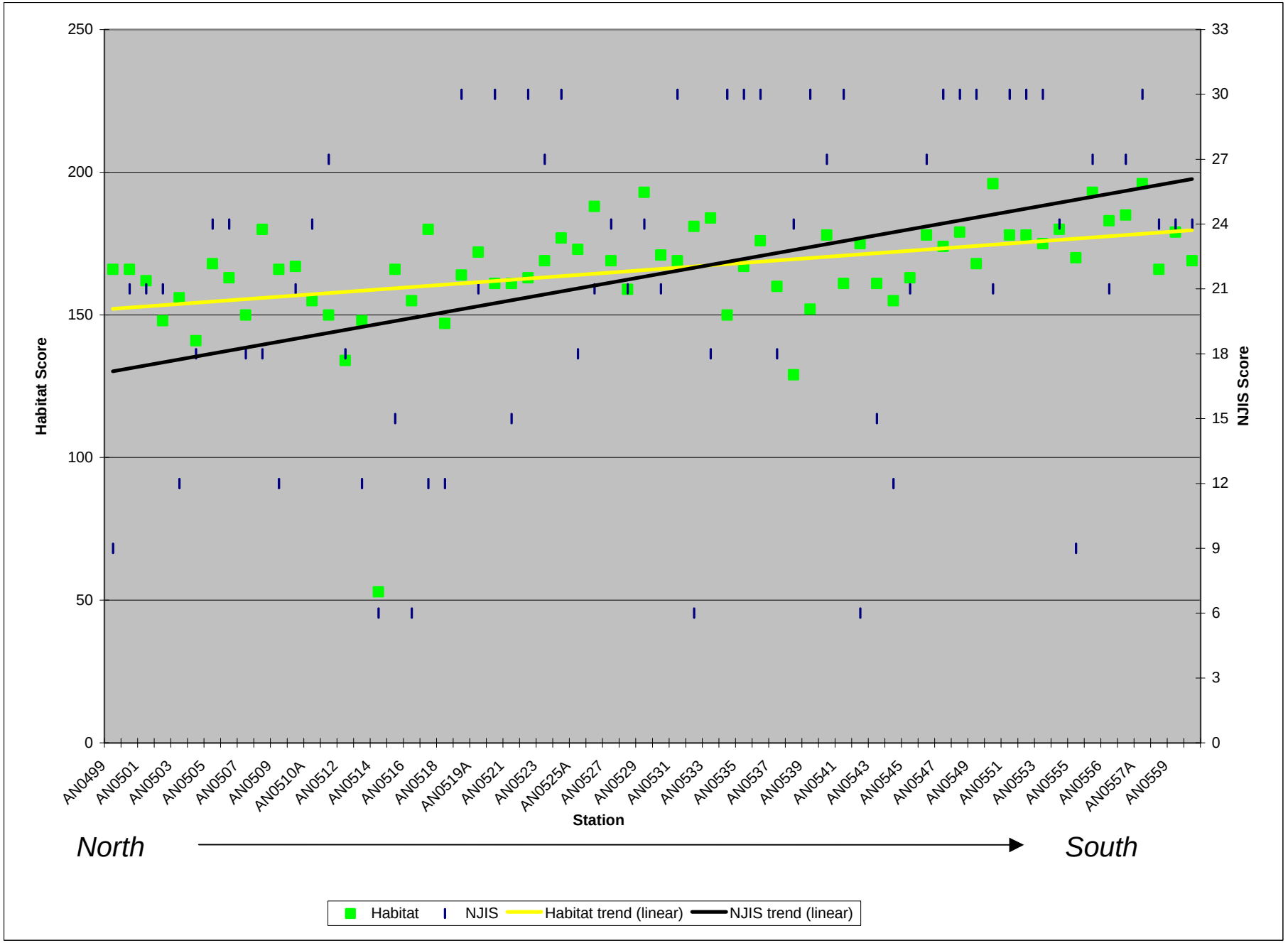
2000



Comparative Scores of HABITAT vs. NJIS

WMA 13

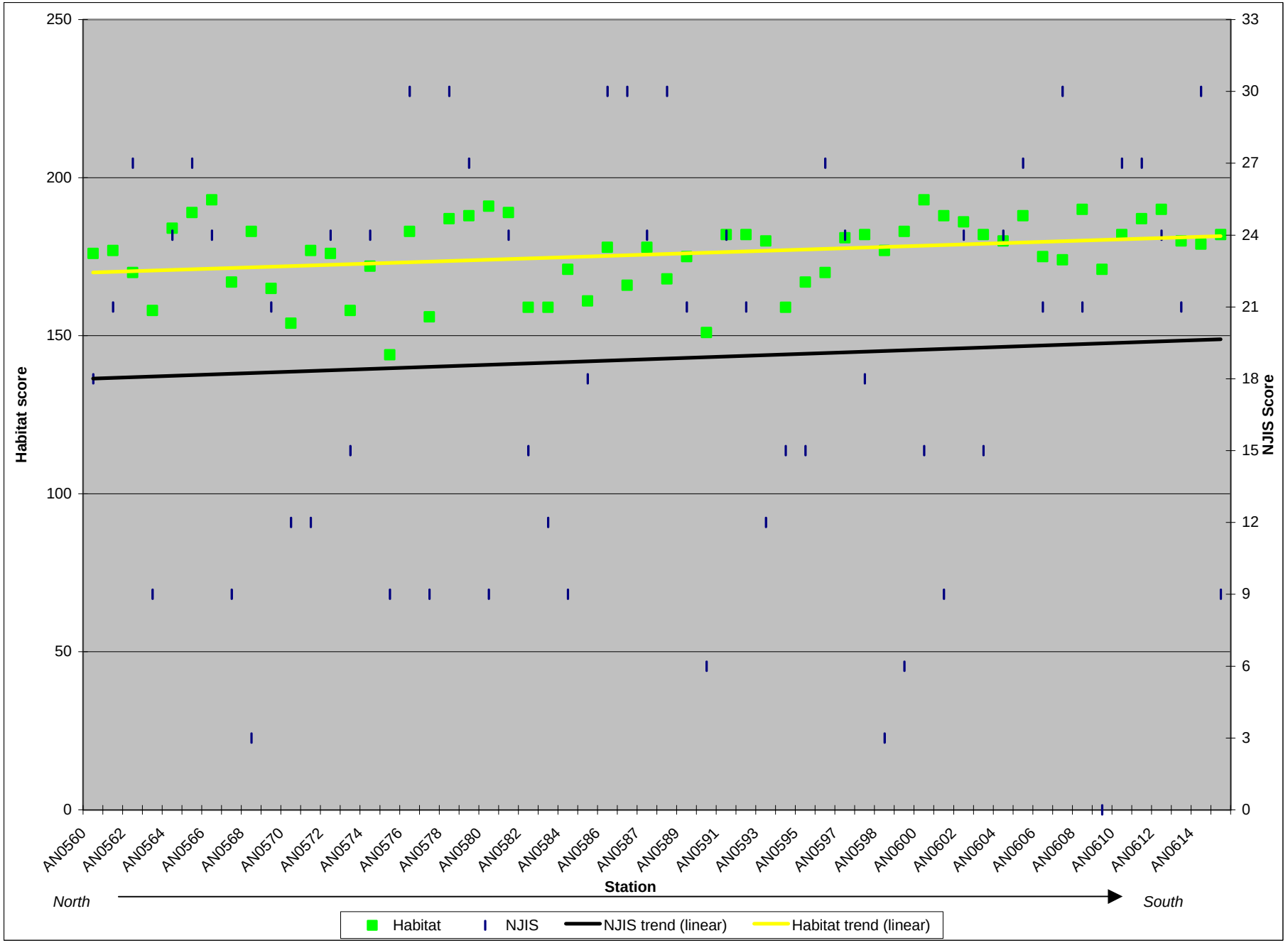
2000



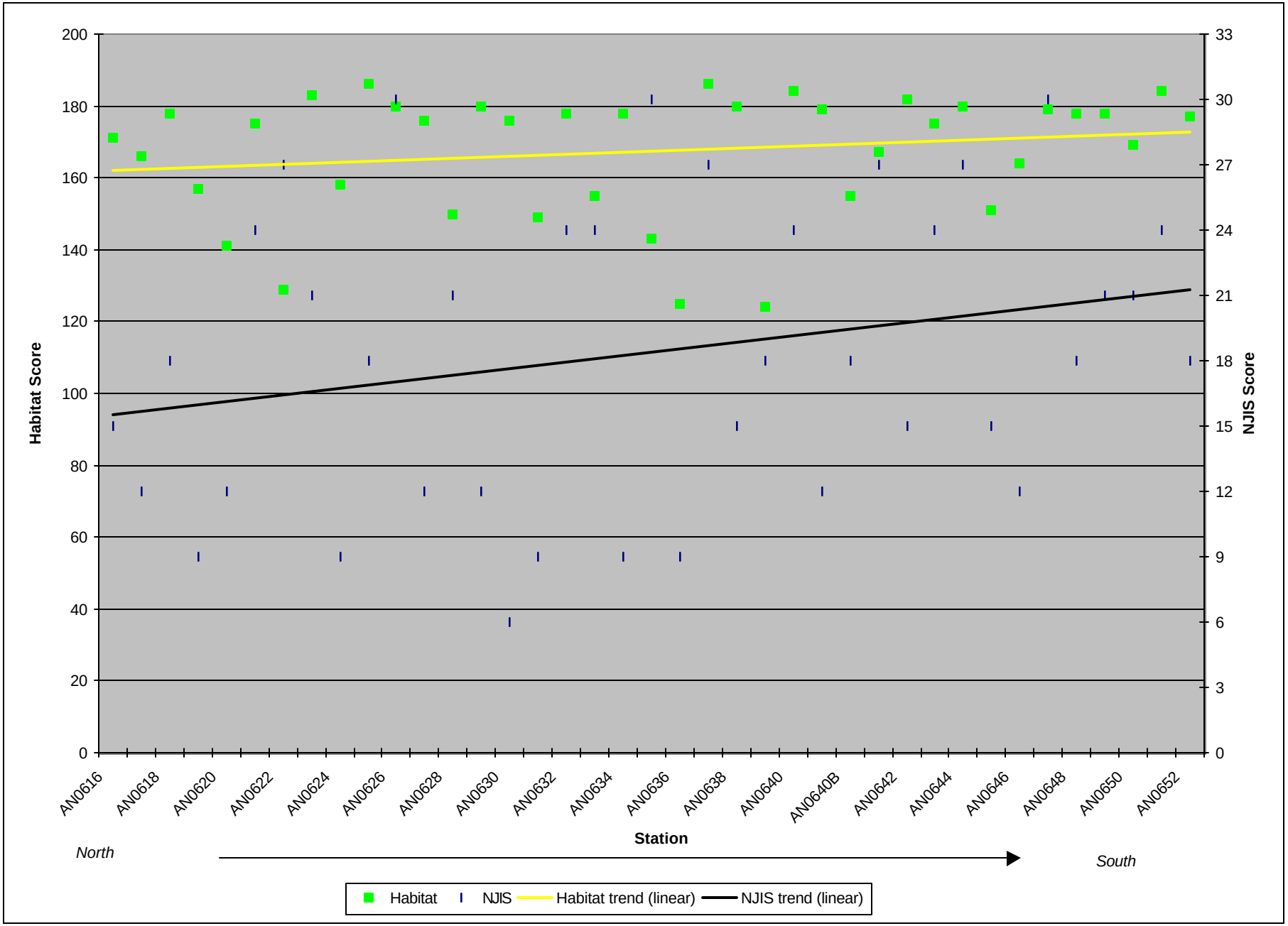
Comparative Scores of
HABITAT vs. NJIS

WMA 14

2000



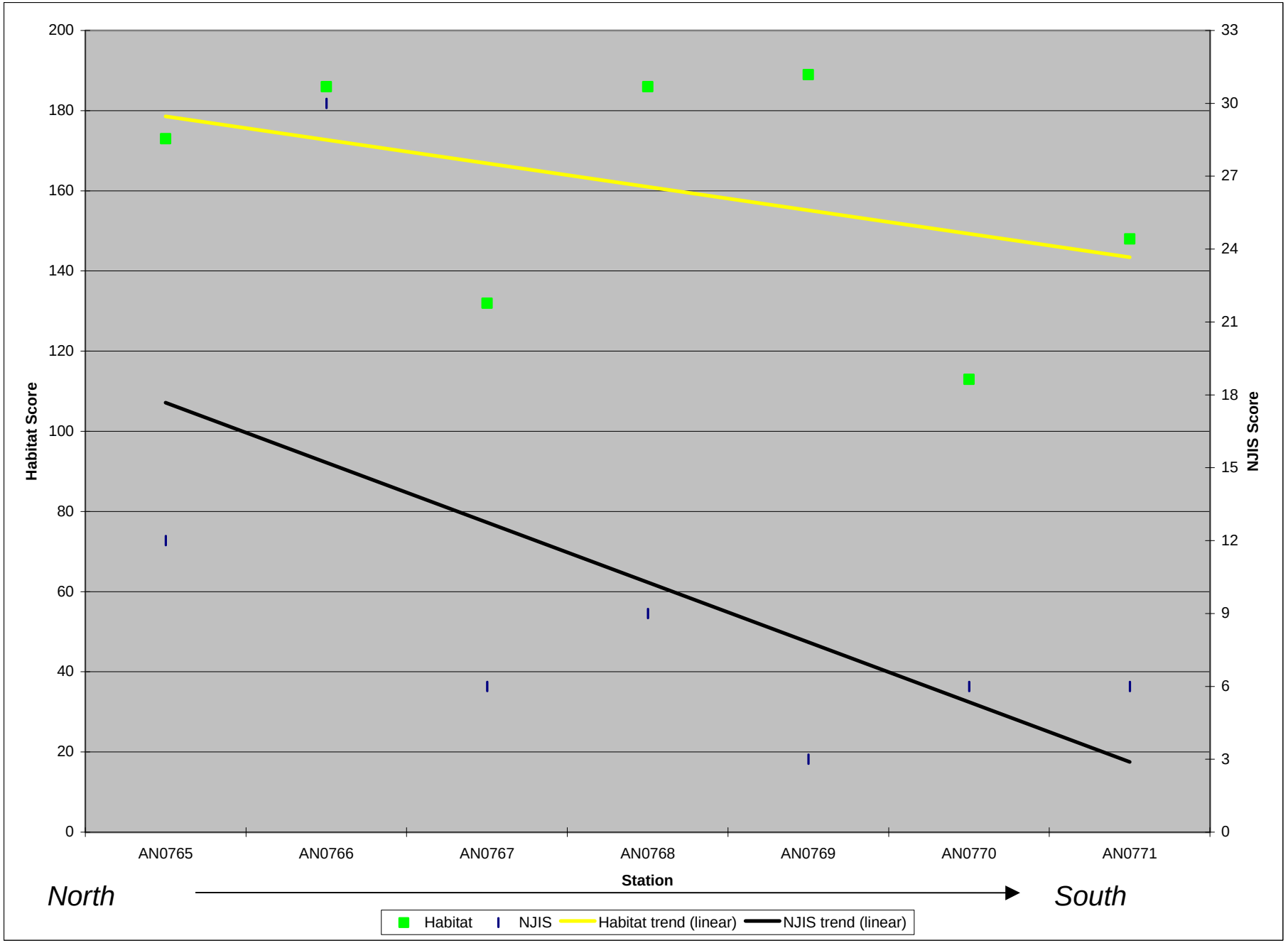
Comparative Scores of
HABITAT vs. NJIS
WMA 15
2000



Comparative Scores of HABITAT vs. NJIS

WMA 16

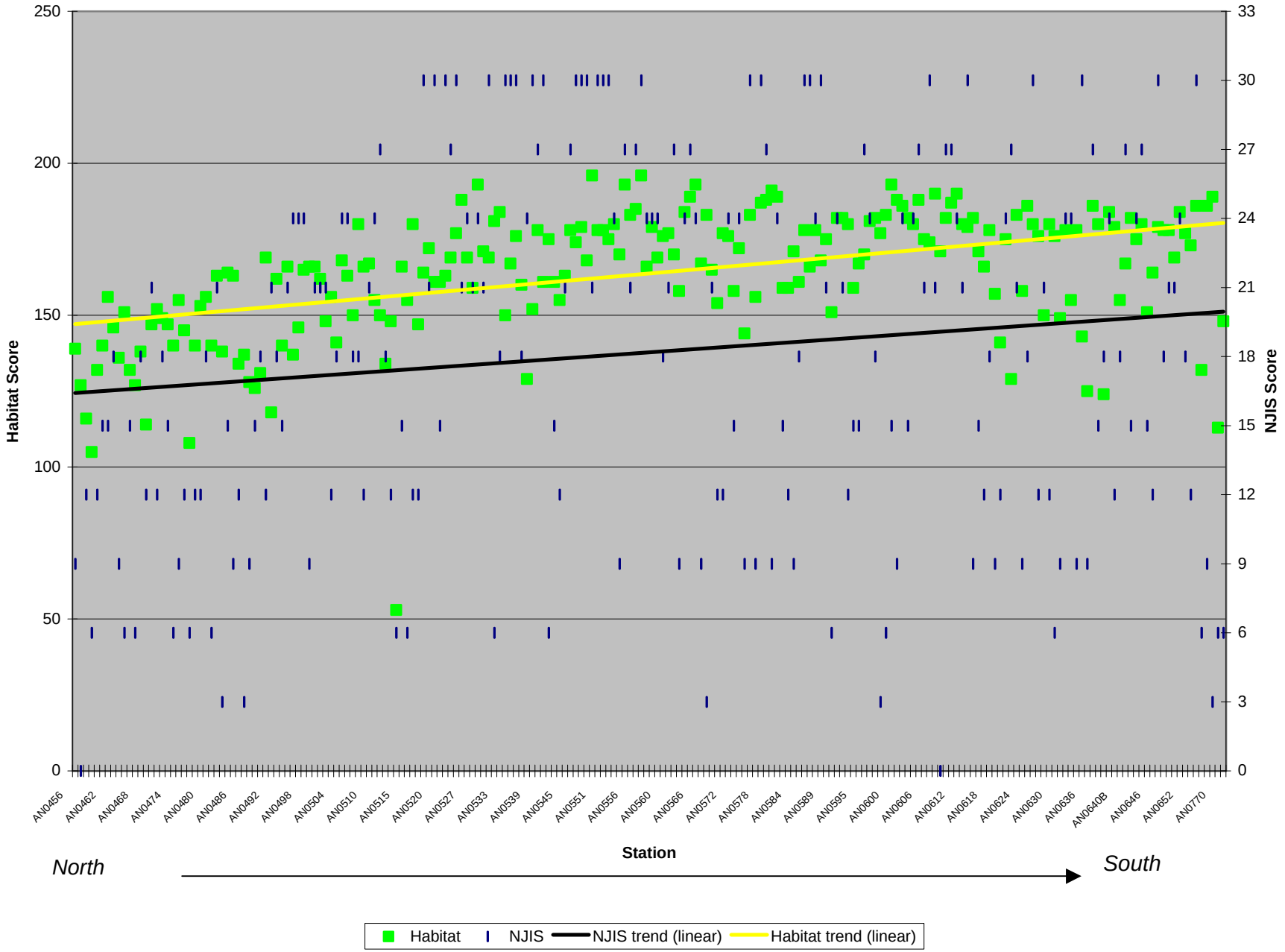
2000



Comparative Scores of
HABITAT vs. NJIS

COMBINED

Atlantic Watershed Region 2000



APPENDIX D

Taxonomic and Statistical Data, NJIS Scores*, Habitat Assessment Scores and Observations from the 2000 Atlantic 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. We also include certain biometrics that are utilized in standard RBPII (and RBPIII) analyses [2], but not for the NJIS.

Not employed in the NJIS analysis are certain ratios of pollution-sensitive to pollution-tolerant types, or relative abundance of different feeding types. These can be indicative of environmental stress caused by organic enrichment and/or the presence of toxicants in the stream system:

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

Polymitarcyidae
Potamanthidae
Siphlonuridae
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) [16].

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
Sphaeriid

Station: AN0456
Unt To Matawan Creek, Morganville Rd., Madison Twp., Middlesex
South Amboy USGS Quadrangle
Date Sampled: 08/03/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	50
Physidae	7	16
Chironomidae	6	12
BloodRed Chironomidae	8	8
Sphaeriidae	8	6
Dytiscidae	5	4
Aeshnidae	3	1
Planorbidae	6	1
Hydropsychidae	4	1
Corydalidae	0	1
Curculionidae	7	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 101
% Contribution of Dominant Family: 49.50 % (Tubificidae)
Family Biotic Index: 8.28
Scraper/Filterer Collector Ratio: 2.43
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.99
EPT/C: 0.05
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 139
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 4-6/<1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Suburban (new development nearby), Forested; Lt. bank has greater erosional areas
Trash & debris, Frog; Water temp 22.9C / pH 6.5SU / DO 3.7mg/L / Cond. 546umhos

Station: AN0457
Gravelly Brook, Church Rd., Aberdeen Twp., Monmouth
Keyport USGS Quadrangle
Date Sampled: 08/03/99

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	11
Chironomidae	6	3
Culicidae	8	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 4
Total Number of Individuals: 16
% Contribution of Dominant Family: 68.75 % (BloodRed Chironomidae)
Family Biotic Index: 7.38
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 6.25
EPT/C: 0.07
NJIS Rating: 0
Biological Condition: Severely Impaired
Habitat Analysis: 127
Deficiency(s) noted: BloodRed Chironomidae Family Overwhelmingly Dominant - Low Diversity - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10-12/1
Substrate: Gravel/Sand, Mud, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Suburban, Storm sewer; Leaf liter abundant, Whole sample sorted
Matawan Public Works Dept. adj. to stream (mulch/composit); Water temp 20.0C / pH 2.8SU / DO 9.0mg/L / Cond. 695umhos

Station: AN0458
Wilsons Brook, Church Rd., Aberdeen Twp., Monmouth
Keyport USGS Quadrangle
Date Sampled: 08/03/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	5
Oniscidae	7	4
Dytiscidae	5	2
BloodRed Chironomidae	8	1
Hydrophilidae	5	1
Lumbriculidae	8	1
Veliidae	9	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 16
% Contribution of Dominant Family: 31.25 % (Chironomidae)
Family Biotic Index: 6.38
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.38
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
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): 10-12/1
Substrate: Cobbles, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Poor
Canopy: Mostly Closed....Other: Suburban, Storm sewers; Rocks covered with orange silt, Cobble probably not natural
Whole sample sorted; Water temp. 18.8C / pH 3.2SU / DO 9.0mg/L / Cond. 442umhos

Station: AN0459
Flat Creek, Rt. 516 (Middle Rd.), Raritan Twp., Monmouth
Keyport USGS Quadrangle
Date Sampled: 08/03/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	47
Chironomidae	6	20
Asellidae	8	18
Tubificidae	10	9
BloodRed Chironomidae	8	2
Lumbricidae	10	2
Aeshnidae	3	1
Tipulidae	3	1
Planariidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 102
% Contribution of Dominant Family: 46.08 % (Sphaeriidae)
Family Biotic Index: 7.65
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.20
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 105
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 4-6/<1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Shrubs, Trees/Poor
Canopy: Mostly Closed....Other: Suburban (homes adj. to stream); Storm sewer
Water temp. 20.5C / pH 5.9SU / DO 8.0mg/L / Cond. 221umhos;

Station: AN0460
Mahorns Brook, Rt. 35, Raritan Twp., Monmouth
Keyport USGS Quadrangle
Date Sampled: 08/05/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	53
BloodRed Chironomidae	8	25
Gammaridae	4	9
Elmidae	4	2
Empididae	6	2
Gyrinidae	3	2
Phryganeidae	4	2
Asellidae	8	1
Aeshnidae	3	1
Chrysomelidae	5	1
Planorbidae	6	1
Psychomyiidae	2	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 101
% Contribution of Dominant Family: 52.48 % (Chironomidae)
Family Biotic Index: 6.10
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.56
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.97
EPT/C: 0.04
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 132
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 5/1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs, Weeds/Fair
Canopy: Partly Open....Other: Urban; Frogs, Tadpoles
Water temp. 20.8C / pH 6.5mg/L / DO na / Cond. 231umhos;

Station: AN0461
Town Brook, Spruce Rd., Middletown Twp., Monmouth
Sandy Hook USGS Quadrangle
Date Sampled: 08/05/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	42
Chironomidae	6	21
Coenagrionidae	9	11
Planariidae	4	10
Physidae	7	10
Asellidae	8	4
Hydropsychidae	4	3
Tubificidae	10	2
Oniscidae	7	2
Aeshnidae	3	1
Hydrophilidae	5	1
Veliidae	9	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 108
% Contribution of Dominant Family: 38.89 % (Gammaridae)
Family Biotic Index: 5.54
Scraper/Filterer Collector Ratio: 3.33
Shredder/Total Ratio: 0.23
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.78
EPT/C: 0.14
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 140
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/<1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Shrubs, Trees/Fair
Canopy: Mostly Closed....Other: Suburban, Forested; Water temp. 21.2C / pH 7.1SU / DO na / Cond. 291umhos

Station: AN0462
Mcclees Creek, Whipporill Rd., Middletown Twp., Monmouth
Sandy Hook USGS Quadrangle
Date Sampled: 08/05/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Coenagrionidae	9	26
Planariidae	4	22
Gammaridae	4	13
Corduliidae	5	8
Physidae	7	6
Asellidae	8	5
Elmidae	4	5
Talitridae	8	5
Sphaeriidae	8	5
BloodRed Chironomidae	8	3
Hydrobiidae	8	3
Glossiphoniidae	8	2
Planorbidae	6	2
Leptoceridae	4	2
Culicidae	8	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 109
% Contribution of Dominant Family: 23.85 % (Coenagrionidae)
Family Biotic Index: 6.39
Scraper/Filterer Collector Ratio: 2.67
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.83
EPT/C: 0.67
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 156
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 4/1
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Shrubs, Weeds, Trees/Fair
Canopy: Partly Open....Other: Agriculture-livestock (horses), Rural; Dwnstr. of Haskell Pond
Fish, Crab, Iron percipiate, Macrophytes; Water temp. 27.2C / pH 7.2SU / DO na / Cond. 201umhos

Station: AN0463
Poricy Brook, Navesink Rd., Middletown Twp., Monmouth
Long Branch USGS Quadrangle
Date Sampled: 08/05/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Planariidae	4	23
Hydropsychidae	4	21
Planorbidae	6	19
Gammaridae	4	10
Elmidae	4	9
Lumbriculidae	8	8
Physidae	7	4
Chironomidae	6	4
Tubificidae	10	3
Naididae	7	3
BloodRed Chironomidae	8	2
Pleuroceridae	6	1
Erpobdellidae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 108
% Contribution of Dominant Family: 21.30 % (Planariidae)
Family Biotic Index: 5.21
Scraper/Filterer Collector Ratio: 1.57
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 19.44
EPT/C: 3.50
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 146
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Shrubs, Trees/Fair
Canopy: Partly Open....Other: Suburban; Storm sewer
Fish, Filamentous algae, Marcophytes; Water temp. 26.8C / pH 7.6SU / DO na / Cond. 249umhos

Station: AN0464
Nut Swamp Brook, Nr. Normandy Rd., Middletown Twp, Monmouth
Long Branch USGS Quadrangle
Date Sampled: 08/10/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	42
Tubificidae	10	36
Gammaridae	4	6
BloodRed Chironomidae	8	4
Physidae	7	3
Asellidae	8	2
Aeshnidae	3	2
Calopterygidae	5	2
Hydropsychidae	4	1
Planariidae	4	1
Planorbidae	6	1
Veliidae	9	1
Tipulidae	3	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 103
% Contribution of Dominant Family: 40.78 % (Chironomidae)
Family Biotic Index: 7.29
Scraper/Filterer Collector Ratio: 0.09
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.97
EPT/C: 0.02
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 136
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 5/<1
Substrate: Gravel/Sand, Silt, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Suburban; Storm sewers
Fish (minnows); Water temp. 17.4C / pH 6.7SU / DO 7.9mg/L / Cond. 341umhos

Station: AN0465
Hop Brook, Roberts Rd., Holmdel Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/10/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	11
Tipulidae	3	1
Hydropsychidae	4	1
BloodRed Chironomidae	8	1
Isotomidae	10	1
Veliidae	9	1
Gerridae	8	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 17
% Contribution of Dominant Family: 64.71 % (Chironomidae)
Family Biotic Index: 6.35
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.71
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 5.88
EPT/C: 0.08
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 151
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 10/<1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Agriculture-cropland, Rural; Fish
Whole sample sorted, Volume of sample small; Water temp. 18.3C / pH 6.9SU / DO 7.1mg/L / Cond. 241umhos

Station: AN0466
Hop Brook, Willow Brook Road, Holmdel Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/11/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	25
BloodRed Chironomidae	8	13
Gammaridae	4	12
Naididae	7	9
Hydropsychidae	4	8
Calopterygidae	5	2
Aeshnidae	3	2
Gyrinidae	3	1
Hydrophilidae	5	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 73
% Contribution of Dominant Family: 34.25 % (Chironomidae)
Family Biotic Index: 5.77
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.34
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 10.96
EPT/C: 0.21
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 132
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/<1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Rural, Forested; Fish present
Water temp. 19.1C / pH 7.0SU / DO 8.4mg/L / Cond. 273umhos;

Station: AN0467
Willow Brook, Schank Rd., Holmdel Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/10/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	35
Tubificidae	10	8
Gammaridae	4	4
Hydropsychidae	4	3
Tipulidae	3	3
BloodRed Chironomidae	8	2
Planorbidae	6	1
Gyrinidae	3	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 58
% Contribution of Dominant Family: 60.34 % (Chironomidae)
Family Biotic Index: 6.19
Scraper/Filterer Collector Ratio: 0.67
Shredder/Total Ratio: 0.60
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 5.17
EPT/C: 0.08
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 127
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/<1
Substrate: Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Poor
Canopy: Mostly Closed....Other: Rural; Construction along roadside
Whole sample sorted; Water temp. 18.9C / pH 6.9SU / DO 7.4mg/L / Cond. 700umhos

Station: AN0468
Willow Brook, Willow Brook Road, Colts Neck Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/11/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	36
Hydropsychidae	4	30
BloodRed Chironomidae	8	8
Veliidae	9	8
Empididae	6	7
Gammaridae	4	4
Calopterygidae	5	2
Elmidae	4	1
Asellidae	8	1
Aeshnidae	3	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 99
% Contribution of Dominant Family: 36.36 % (Chironomidae)
Family Biotic Index: 5.65
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 31.31
EPT/C: 0.70
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 138
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/<1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Fair
Canopy: Partly Open....Other: Rural, Forested; Small channel flowing into stream opp. side of bridge - very turbid
Fish present; Water temp. 19.6C / pH 7.2SU / DO 7.9mg/L / Cond. 346umhos

Station: AN0469
Big Brook, Nj Rt. 79, Marlboro Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/11/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	61
Empididae	6	6
Hydropsychidae	4	6
Psychomyiidae	2	4
BloodRed Chironomidae	8	4
Physidae	7	4
Calopterygidae	5	3
Tubificidae	10	3
Dytiscidae	5	1
Lumbriculidae	8	1
Veliidae	9	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 95
% Contribution of Dominant Family: 64.21 % (Chironomidae)
Family Biotic Index: 5.94
Scraper/Filterer Collector Ratio: 1.33
Shredder/Total Ratio: 0.65
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 10.53
EPT/C: 0.15
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 114
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, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Poor
Canopy: Mostly Closed....Other: Suburban; Storm sewers
Fish, Trash, Iron precipitate; Water temp. 18.2C / pH 6.7SU / DO 7.5mg/L / Cond. 317umhos

Station: AN0470
Big Brook, Cross Rd., Colts Neck Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/11/99

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	21
Gammaridae	4	11
Chironomidae	6	11
Lumbriculidae	8	10
Hydropsychidae	4	7
Heptageniidae	4	4
Elmidae	4	3
Aeshnidae	3	3
Planariidae	4	3
Physidae	7	3
Asellidae	8	2
Psychomyiidae	2	2
Calopterygidae	5	1
Sialidae	4	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 83
% Contribution of Dominant Family: 25.30 % (BloodRed Chironomidae)
Family Biotic Index: 5.88
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.42
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 15.66
EPT/C: 0.41
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 147

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/<1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Storm sewers
Water temp. 20.1C / pH 7.1SU / DO 8.3mg/L / Cond. 337umhos;

Station: AN0471
Yellow Brook, Rt. 537 & Njrt. 18, Freehold Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Tubificidae	10	17
Veliidae	9	12
Hydrophilidae	5	9
BloodRed Chironomidae	8	5
Calopterygidae	5	4
Tetrastemmatidae	7	4
Aeshnidae	3	2
Lumbriculidae	8	2
Oniscidae	7	2
Psychodidae	10	2
Sphaeriidae	8	2
Gerridae	8	2
Asellidae	8	1
Hydropsychidae	4	1
Chrysomelidae	5	1
Ceratopogonidae	6	1
Naididae	7	1
Cambaridae	5	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 98
% Contribution of Dominant Family: 29.59 % (Chironomidae)
Family Biotic Index: 7.22
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.16
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.02
EPT/C: 0.03
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 152
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4/1
Substrate: Mud, Silt....StreamBank Vegetation/Stability: Grasses, Shrubs, Trees/Fair
Canopy: Partly Open....Other: Agriculture-cropland, Suburban, Forested; Iron precipitate
Water temp.19.0C / pH 6.4SU / DO 8.17mg/L / Cond. 132umhos;

Station: AN0472
Yellow Brook, Creamery Road, Colts Neck Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/11/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	30
Tubificidae	10	17
Hydropsychidae	4	16
Chironomidae	6	13
BloodRed Chironomidae	8	11
Tipulidae	3	3
Sphaeriidae	8	2
Corixidae	9	1
Elmidae	4	1
Planorbidae	6	1
Dryopidae	5	1
Psychomyiidae	2	1
Veliidae	9	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 99
% Contribution of Dominant Family: 30.30 % (Gammaridae)
Family Biotic Index: 5.91
Scraper/Filterer Collector Ratio: 0.17
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 17.17
EPT/C: 0.71
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 149
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/<1
Substrate: Cobbles, Mud....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Fair
Canopy: Partly Open....Other: Rural, Forested; Storm sewers
Gray opaque color, Fe precip, CPOM, Filamen algae, Minns, Bullfrg; Water temp. 21.0C / pH 7.13SU / DO 7.6mg/L / Cond. 200umhos

Station: AN0473
Mine Brook, Creamery Road, Colts Neck Twp., Monmouth
Marlboro USGS Quadrangle
Date Sampled: 08/11/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	26
Gammaridae	4	24
BloodRed Chironomidae	8	11
Chironomidae	6	7
Physidae	7	6
Asellidae	8	4
Dytiscidae	5	3
Sphaeriidae	8	3
Hydropsychidae	4	2
Lumbricidae	10	2
Corydalidae	0	2
Sialidae	4	2
Aeshnidae	3	1
Cordulegastridae	3	1
Gyrinidae	3	1
Hydrophilidae	5	1
Psychomyiidae	2	1
Naididae	7	1
Tipulidae	3	1
Viviparidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 26.00 % (Tubificidae)
Family Biotic Index: 6.67
Scraper/Filterer Collector Ratio: 1.40
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 3.00
EPT/C: 0.17
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): 6/<1
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Shrubs, Trees, Grass/Fair
Canopy: Mostly Closed....Other: Rural, Forested; Orange-brown with grayish color Iron precipitate, Fish present; Water temp. 21.5C / pH 7.03SU / DO 7.4mg/L / Cond. 192umhos

Station: AN0474
Swimming River, Swimming River Rd., Middletown Twp., Monmouth
Long Branch USGS Quadrangle
Date Sampled: 08/10/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Corixidae	9	38
BloodRed Chironomidae	8	38
Lumbriculidae	8	4
Chironomidae	6	2
Libellulidae	9	2
Dolichopodidae	4	1
Gammaridae	4	1
Psychodidae	10	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 87
% Contribution of Dominant Family: 43.68 % (Corixidae & BloodRed Chironomidae)
Family Biotic Index: 8.34
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.47
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 140
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid (brown)....Flow: Slow....Width/Depth (ft): 50/3
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Open....Other: Suburban; Water temp. 23.3C / pH 6.5SU / DO 3.5mg/L / Cond. 769umhos

Station: AN0475
Hockhockson Brook, Hockhockson Road, Colts Neck Twp., Monmouth
Long Branch USGS Quadrangle
Date Sampled: 08/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	46
Lumbriculidae	8	27
Asellidae	8	18
BloodRed Chironomidae	8	5
Enchytraeidae	10	3
Polycentropodidae	6	2
Sialidae	4	2
Planariidae	4	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 105
% Contribution of Dominant Family: 43.81 % (Chironomidae)
Family Biotic Index: 6.99
Scraper/Filterer Collector Ratio: 2.50
Shredder/Total Ratio: 0.18
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.86
EPT/C: 0.06
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 155
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/1
Substrate: Mud, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Agriculture-livestock, Forested; Trout stocked, Iron precipitate
Water temp. 20.8C / pH 6.32SU / DO 7.36mg/L / Cond. 251umhos;

Station: AN0476
Pine Brook, Rt. 537 (Tinton Ave.), Tinton Falls, Shrewsbury Twp., Monmouth
Long Branch USGS Quadrangle
Date Sampled: 08/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
BloodRed Chironomidae	8	26
Planariidae	4	23
Tubificidae	10	14
Hydropsychidae	4	6
Corixidae	9	2

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Chironomidae)
Family Biotic Index: 6.56
Scraper/Filterer Collector Ratio: 0.74
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 6.00
EPT/C: 0.11
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 145
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/1
Substrate: Cobbles, Gravel/Sand....StreamBank Vegetation/Stability: Trees, Grasses, Shrubs/Good
Canopy: Mostly Closed....Other: Suburban, Forested; Filamentous algae
Water temp. 19.7C / pH 6.4SU / DO 8.3mg/L / Cond. 177umhos;

Station: AN0477
Whale Pond Brook, Larchwood Ave., Ocean County
Long Branch USGS Quadrangle
Date Sampled: 08/08/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	48
Gammaridae	4	35
Lumbriculidae	8	8
BloodRed Chironomidae	8	4
Planariidae	4	2
Chironomidae	6	2
Planorbidae	6	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 100
% Contribution of Dominant Family: 48.00 % (Tubificidae)
Family Biotic Index: 7.42
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: 108
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 15 / 1'
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs/Poor
Canopy: Mostly Closed....Other: Suburban; storm sewers present, sewage odor;
Construction nearby, pumping station; iron precipitate
Water temp. 19.7 C/pH 6.3 SU/DO 6.8 mg/L /Cond. 127 umhos;

Station: AN0478
Poplar Brook, Almyr Ave., Deal Boro, Monmouth
Long Branch USGS Quadrangle
Date Sampled: 08/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	21
Lumbriculidae	8	20
Asellidae	8	19
Tubificidae	10	16
Sphaeriidae	8	15
Planariidae	4	3
Planorbidae	6	2
Naididae	7	1
Oniscidae	7	1
Physidae	7	1
Chironomidae	6	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 21.00 % (Gammaridae)
Family Biotic Index: 7.27
Scraper/Filterer Collector Ratio: 0.20
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: 140
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 5/2
Substrate: Cobbles, Mud....StreamBank Vegetation/Stability: Trees, Weeds/Good
Canopy: Partly Open....Other: Suburban; Green color
Storm sewers; Water temp. 21.6C / pH 6.7SU / DO 6.0mg/L / Cond. 223umhos

Station: AN0479
Jumping Brook, Essex Road, New Shrewsbury Twp., Monmouth
Long Branch USGS Quadrangle
Date Sampled: 08/17/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	19
Tubificidae	10	18
Tetrastemmatidae	7	12
Coenagrionidae	9	11
Planorbidae	6	9
Lumbriculidae	8	8
Naididae	7	5
BloodRed Chironomidae	8	4
Corixidae	9	3
Planariidae	4	3
Physidae	7	3
Gammaridae	4	1
Sphaeriidae	8	1
Elmidae	4	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 99
% Contribution of Dominant Family: 19.19 % (Chironomidae)
Family Biotic Index: 7.51
Scraper/Filterer Collector Ratio: 13.00
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 153
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 6.5/2.5
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Suburban; Brown color, Odor, Storm sewer
Whole sample sorted; Water temp. 23.1C / pH 6.4SU / DO 4.82mg/L / Cond. 174umhos

Station: AN0480
Jumping Brook, Corlies Ave, Monmouth County
Asbury Park USGS Quadrangle
Date Sampled: 09/22/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	28
Lumbriculidae	8	20
Chironomidae	6	14
Sphaeriidae	8	9
Calopterygidae	5	7
Asellidae	8	4
Aeshnidae	3	3
Tubificidae	10	3
Planariidae	4	2
Coenagrionidae	9	2
Phryganeidae	4	2
Sialidae	4	2
Elmidae	4	1
Tipulidae	3	1
Veliidae	9	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 28.00 % (Hydropsychidae)
Family Biotic Index: 5.97
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 30.00
EPT/C: 2.14
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 156
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/0.5
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Poor
Canopy: Closed....Other: Forested, Suburban; Pile of Litter along right bank near bridge
Water Temp. 15.5C / pH 5.56SU / DO N/A / Cond.178umhos;

Station: AN0481
Shark River, Shark River Road, Wall Twp., Monmouth
Asbury Park USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	65
Sialidae	4	17
BloodRed Chironomidae	8	10
Ptychopteridae	8	2
Tipulidae	3	2
Dytiscidae	5	2
Asellidae	8	1
Curculionidae	7	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 101
% Contribution of Dominant Family: 64.36 % (Chironomidae)
Family Biotic Index: 5.85
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 140
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 10-12/1
Substrate: Gravel/Sand, Silt, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Iron precipitate
Water temp. 13.2C / pH 6.3SU / DO 5.8mg/L / Cond. 183umhos;

Station: AN0482
Shark River, Remsen Mill Rd., Monmouth County
Asbury Park USGS Quadrangle
Date Sampled: 9/22/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	35
Tubificidae	10	17
Chironomidae	6	14
Sialidae	4	6
Polycentropodidae	6	5
Tipulidae	3	3
Enchytraeidae	10	3
Asellidae	8	2
Hydropsychidae	4	2
Dryopidae	5	2
Brachycentridae	1	1
Curculionidae	7	1
Gomphidae	1	1
Hydrophilidae	5	1
Dytiscidae	5	1
Coenagrionidae	9	1
Psychomyiidae	2	1
Leptoceridae	4	1
BloodRed Chironomidae	8	1
Elmidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 35.00 % (Gammaridae)
Family Biotic Index: 5.73
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 10.00
EPT/C: 0.67
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 163

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 10/4
Substrate: Gravel/Sand, Silt, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Rural, Forested; Station Downstream of dam/pump station
Water temp. 14C / pH 5.53SU / DO N/A / Cond. 186mg/L;

Station: AN0483
Wreck Pond Brook, Old Mill Road, Wall Twp., Monmouth
Asbury Park USGS Quadrangle
Date Sampled: 08/17/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydrobiidae	8	67
Elmidae	4	14
Coenagrionidae	9	6
Naididae	7	4
Sphaeriidae	8	3
Gammaridae	4	2
Chironomidae	6	2
Planariidae	4	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 100
% Contribution of Dominant Family: 67.00 % (Hydrobiidae)
Family Biotic Index: 7.29
Scraper/Filterer Collector Ratio: 27.00
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 138
Deficiency(s) noted: Hydrobiidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/2
Substrate: Cobbles, Gravel/Sand, Silt....StreamBank Vegetation/Stability: Grasses, Trees, Shrubs/Fair
Canopy: Partly Open....Other: Suburban, Old Mill Pond upstr.; Brownish color, Storm sewers, Pump station near
Macrophytes; Water temp. 25.4C / pH 6.8SU / DO 7.0mg/L / Cond. 155umhos

Station: AN0484
Hannabrand Brook, Old Mill Road, Wall Twp., Monmouth
Asbury Park USGS Quadrangle
Date Sampled: 08/17/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Elmidae	4	34
Tubificidae	10	27
Lumbriculidae	8	9
Chironomidae	6	8
Gammaridae	4	7
Tipulidae	3	6
Hydropsychidae	4	5
Curculionidae	7	1
Corduliidae	5	1
Limnephilidae	4	1
Naididae	7	1
Corydalidae	0	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 102
% Contribution of Dominant Family: 33.33 % (Elmidae)
Family Biotic Index: 6.11
Scraper/Filterer Collector Ratio: 7.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 5.88
EPT/C: 0.67
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 164
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Cobbles, Gravel/Sand....StreamBank Vegetation/Stability: Weeds, Shrubs, Trees, Grass/Good
Canopy: Mostly Closed....Other: Suburban; Storm sewer
Water temp. 20.3C / pH 6.6SU / DO 7.5mg/L / Cond. 143umhos;

Station: AN0485
Manasquan River Headwaters, Turkey Swamp Road, Monmouth County
Adelphia USGS Quadrangle
Date Sampled: 10/05/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	37
Lumbriculidae	8	9
Tubificidae	10	7
Tipulidae	3	4
Asellidae	8	2
Tabanidae	6	2
Dytiscidae	5	1
Chironomidae	6	1
Gammaridae	4	1
Hydrophilidae	5	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 66
% Contribution of Dominant Family: 56.06 % (Sphaeriidae)
Family Biotic Index: 7.61
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: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 163
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 1.5'/6.0'
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: trees/Good
Canopy: Mostly Closed....Other: Forested, weather:cold, overcast, some rain; Frogs present.
Water temp. 14.1C / pH 3.5SU / DO 5.8mg/L / Cond. 278umhos;

Station: AN0486
Debois Creek, Njrt. 33, Freehold Twp., Monmouth
Adelphia USGS Quadrangle
Date Sampled: 09/22/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	41
Physidae	7	24
Sphaeriidae	8	18
Aeshnidae	3	5
Coenagrionidae	9	5
Glossiphoniidae	8	4
Corduliidae	5	3
Viviparidae	6	3
Naididae	7	2
Tipulidae	3	1
Planorbidae	6	1
Hydrobiidae	8	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 108
% Contribution of Dominant Family: 37.96 % (Tubificidae)
Family Biotic Index: 8.13
Scraper/Filterer Collector Ratio: 1.61
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 134
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 3/1
Substrate: Cobbles....StreamBank Vegetation/Stability: Shrubs, Grass, Some trees/Good
Canopy: Mostly Open....Other: Agriculture-cropland (farm surrounding stream dwnstr), Suburban; Storm sewers - stream flows thru 4' storm pipe undr rd.
Color - brownish gray cloudy; Water temp. 15.8C / pH 5.8SU / DO N/A / Cond. 209umhos

Station: AN0487
Debois Ck, Strickland Rd., Monmouth County
Adelphia USGS Quadrangle
Date Sampled: 9/23/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	78
Chironomidae	6	8
Calopterygidae	5	7
Lumbriculidae	8	4
Elmidae	4	2
Coenagrionidae	9	2
Corixidae	9	2
Planariidae	4	2
Aeshnidae	3	1
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 107
% Contribution of Dominant Family: 72.90 % (Tubificidae)
Family Biotic Index: 8.93
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 137
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 12-15/1-2
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Grasses, Shrubs/Fair
Canopy: Mostly Open....Other: Suburban; Storm sewers, minnows and macrophytes present
Stream overflowed banks recently; Water temp. 14.1C / pH 5.9SU / DO 8.5mg/L / Cond. 202umhos

Station: AN0488
Unt To Manasquan River (Killtime Bk), Strickland Rd., Monmouth County
Adelphia USGS Quadrangle
Date Sampled: 9/23/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Lumbriculidae	8	39
Tubificidae	10	16
Naididae	7	6
BloodRed Chironomidae	8	4
Tipulidae	3	4
Chironomidae	6	4
Coenagrionidae	9	3
Planorbidae	6	2
Sphaeriidae	8	2
Viviparidae	6	1
Lumbricidae	10	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 83
% Contribution of Dominant Family: 46.99 % (Lumbriculidae)
Family Biotic Index: 7.95
Scraper/Filterer Collector Ratio: 1.50
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: 128
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 6-8/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Poor
Canopy: Mostly Open....Other: Suburban; Water temp. 12.7C / pH 6.0SU / DO 9.0mg/L / Cond. 208umhos

Station: AN0489
Manasquan River, Rt. 9, Monmouth County
Adelphia USGS Quadrangle
Date Sampled: 09/23/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	33
Gammaridae	4	21
Calopterygidae	5	10
Coenagrionidae	9	5
Chironomidae	6	5
Hydropsychidae	4	4
Veliidae	9	4
Aeshnidae	3	3
Tipulidae	3	3
Elmidae	4	2
Asellidae	8	2
Lumbriculidae	8	2
Corixidae	9	1
Libellulidae	9	1
Notonectidae	9	1
Haliplidae	5	1
Physidae	7	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 33.00 % (Tubificidae)
Family Biotic Index: 6.92
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 4.00
EPT/C: 0.80
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 126
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly turbid....Flow: Moderate....Width/Depth (ft): 20'-25' / 1'-2'
Substrate: gravel/Sand, Mud, Silt....StreamBank Vegetation/Stability: Trees and shrubs/Poor
Canopy: Partly Open....Other: Urban (Rt. 9 commercialized), Forested; Storm sewers draining into stream.
Minnows and frogs present.; Water Temp. 13.4C / pH 6.0SU / DO 9.0mg/L / Cond. 217umhos

Station: AN0490
Manasquan River, West Farms Road, Howell Twp., Monmouth
Farmingdale USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	49
Lumbriculidae	8	7
Chironomidae	6	7
Gammaridae	4	6
Corixidae	9	5
Empididae	6	4
Naididae	7	4
Enchytraeidae	10	2
Corydalidae	0	2
Brachycentridae	1	1
Tipulidae	3	1
Elmidae	4	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 90
% Contribution of Dominant Family: 54.44 % (Hydropsychidae)
Family Biotic Index: 5.01
Scraper/Filterer Collector Ratio: 0.04
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 55.56
EPT/C: 6.25
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 131
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 30-35/1
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Agriculture-cropland, Rural; Storm sewer
Trout stocked, Iron precipitate; Water temp. 19.3C / pH 6.5SU / DO 7.4mg/L / Cond. 239umhos

Station: AN0491
Marsh Bog Brook, Cranbury Rd., Monmouth County
Farmingdale USGS Quadrangle
Date Sampled: 08/08/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	39
Lumbriculidae	8	28
Chironomidae	6	10
Enchytraeidae	10	8
Tubificidae	10	4
Naididae	7	3
Leptoceridae	4	2
Ceratopogonidae	6	1
Tabanidae	6	1
Tipulidae	3	1
Phryganeidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 99
% Contribution of Dominant Family: 39.39 % (Asellidae)
Family Biotic Index: 7.76
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.40
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 3.03
EPT/C: 0.30
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 169
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4 / 1'
Substrate: Gravel/sand/mud....StreamBank Vegetation/Stability: Shrubs/trees/Good
Canopy: Mostly Closed....Other: Suburban/forested; macrophytes present, abundanat leaf litter
Water temp. 22.6 C/ pH 5.5 SU/ DO 6.5 mg/L / Cond. 60 umhos;

Station: AN0492
Marsh Bog Brook, Yellow Brook Road, Howell Twp., Monmouth
Farmingdale USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	23
Oniscidae	7	14
Chironomidae	6	13
Sphaeriidae	8	11
Sialidae	4	6
Tubificidae	10	5
Hydropsychidae	4	4
Lumbriculidae	8	4
Psychomyiidae	2	4
Physidae	7	4
Tipulidae	3	3
Calopterygidae	5	2
BloodRed Chironomidae	8	2
Aeshnidae	3	1
Corixidae	9	1
Elmidae	4	1
Hydrophilidae	5	1
Corydalidae	0	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 101
% Contribution of Dominant Family: 22.77 % (Heptageniidae)
Family Biotic Index: 5.68
Scraper/Filterer Collector Ratio: 1.87
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 31.68
EPT/C: 2.13
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 118

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 4/1
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Shrubs, Weeds, Trees/Poor
Canopy: Closed....Other: Suburban; 2" PVC pipe
Eel; Water temp. 22.1C / pH 6.1SU / DO 5.7mg/L / Cond. 186umhos

Station: AN0493
Manasquan River, Rt. 547, Howell Twp., Monmouth
Farmingdale USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	35
Calopterygidae	5	14
Gammaridae	4	11
BloodRed Chironomidae	8	6
Planariidae	4	5
Hydropsychidae	4	5
Tubificidae	10	5
Veliidae	9	5
Lumbriculidae	8	3
Naididae	7	3
Baetidae	4	3
Aeshnidae	3	2
Corixidae	9	2
Brachycentridae	1	1
Elmidae	4	1
Physidae	7	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 103
% Contribution of Dominant Family: 33.98 % (Chironomidae)
Family Biotic Index: 5.86
Scraper/Filterer Collector Ratio: 0.15
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 9.71
EPT/C: 0.24
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 162
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Fast....Width/Depth (ft): 20/1
Substrate: Cobbles, Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Weeds/Fair
Canopy: Mostly Open....Other: Forested; Greenish color
Minnows, Frog, Ducks, Macrophytes; Water temp. 21.6C / pH 6.9SU / DO 7.7mg/L / Cond. 208umhos

Station: AN0494
Mingamahone Brook, Cranbury Road, Howell Twp., Monmouth
Farmingdale USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	29
Gammaridae	4	27
Veliidae	9	10
Chironomidae	6	8
Calopterygidae	5	7
Sphaeriidae	8	3
Tubificidae	10	3
Asellidae	8	2
Leptophlebiidae	2	2
Lumbricidae	10	2
Sialidae	4	2
Pyralidae	5	1
Ptychopteridae	8	1
Aeshnidae	3	1
Noteridae	4	1
Dytiscidae	5	1
Gerridae	8	1
Phryganeidae	4	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 103
% Contribution of Dominant Family: 28.16 % (BloodRed Chironomidae)
Family Biotic Index: 6.36
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.31
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.91
EPT/C: 0.08
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 140
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 8-10/1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; USGS staff 1.2, Oily sheen, Stagnet scum dwnstr.
Iron precipitate, Macrophytes; Water temp. 18.5C / pH 6.5SU / DO 7.1mg/L / Cond. 178umhos

Station: AN0495
Mingamahone Brook, Rt. 524, Howell Twp., Monmouth
Farmingdale USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	62
Chironomidae	6	12
Tubificidae	10	4
Corixidae	9	4
Planorbidae	6	3
Heptageniidae	4	3
Corydalidae	0	2
Calopterygidae	5	1
BloodRed Chironomidae	8	1
Empididae	6	1
Gammaridae	4	1
Veliidae	9	1
Naididae	7	1
Elmidae	4	1
Physidae	7	1
Baetidae	4	1
Lymnaeidae	6	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 62.00 % (Hydropsychidae)
Family Biotic Index: 4.86
Scraper/Filterer Collector Ratio: 0.14
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 66.00
EPT/C: 5.08
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted: Hydropsychidae Family Overwhelmingly Dominant

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 6/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Weeds/Good
Canopy: Mostly Open....Other: Forested; Rat, Macrophytes
Water temp. 21.6C / pH 6.4SU / DO 6.9mg/L / Cond. 178umhos;

Station: AN0496
Stan Bk, Easy St., Monmouth County
Farmingdale USGS Quadrangle
Date Sampled: 10/5/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	33
Chironomidae	6	14
Lumbriculidae	8	13
Leptophlebiidae	2	12
Tubificidae	10	7
Leptoceridae	4	5
Sphaeriidae	8	5
Polycentropodidae	6	4
Calamoceratidae	0	3
Ptychopteridae	8	2
Calopterygidae	5	2
Molannidae	6	2
Sialidae	4	2
Cordulegastridae	3	1
Planorbidae	6	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 107
% Contribution of Dominant Family: 30.84 % (Asellidae)
Family Biotic Index: 6.44
Scraper/Filterer Collector Ratio: 0.33
Shredder/Total Ratio: 0.35
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 25.23
EPT/C: 1.93
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 137

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 8/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Ferns/Good
Canopy: Mostly Closed....Other: Agriculture-livestock, Rural, Forested; Discharge pipe of unknown origin
Water color brown; Water temp. 14.5C / pH 4.9SU / DO 6.2mg/L / Cond. 74umhos

Station: AN0497
Squankum Brook, Rt. 549, Howell Twp., Monmouth
Farmingdale USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	15
Chironomidae	6	12
BloodRed Chironomidae	8	11
Psychomyiidae	2	8
Elmidae	4	8
Tubificidae	10	7
Hydropsychidae	4	7
Gammaridae	4	7
Sialidae	4	5
Sphaeriidae	8	4
Brachycentridae	1	3
Tipulidae	3	3
Calopterygidae	5	2
Calamoceratidae	0	2
Lumbriculidae	8	2
Leptoceridae	4	2
Veliidae	9	2
Asellidae	8	1
Belostomatidae	9	1
Aeshnidae	3	1
Dytiscidae	5	1
Planorbidae	6	1
Hydrophilidae	5	1
Lepidostomatidae	1	1
Psychodidae	10	1
Physidae	7	1

Statistical Analysis

Number of Taxa: 26
Total Number of Individuals: 109
% Contribution of Dominant Family: 13.76 % (Heptageniidae)
Family Biotic Index: 5.17
Scraper/Filterer Collector Ratio: 1.86
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 34.86
EPT/C: 1.65
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 146

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/<1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Vines (kudzu)/Fair

Canopy: Mostly Closed....Other: Agriculture-livestock (Horses), Forested; Water temp. 21.8C / pH 7.8SU / DO 7.4mg/L / Cond. 148umhos

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Station: AN0498
Manasquan River, Hospital Road, Wall Twp., Monmouth
Asbury Park USGS Quadrangle
Date Sampled: 08/17/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Caenidae	7	26
Lumbriculidae	8	15
Chironomidae	6	14
Elmidae	4	6
Heptageniidae	4	6
BloodRed Chironomidae	8	5
Gammaridae	4	5
Tubificidae	10	5
Hydropsychidae	4	4
Calopterygidae	5	3
Sialidae	4	3
Corixidae	9	2
Tipulidae	3	2
Dryopidae	5	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 98
% Contribution of Dominant Family: 26.53 % (Caenidae)
Family Biotic Index: 6.35
Scraper/Filterer Collector Ratio: 2.60
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 37.76
EPT/C: 1.95
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 165

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 25/2
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Rural, Forested; Storm sewer
Frog; Water temp. 20.8C / pH 6.5SU / DO 7.6mg/L / Cond. 200umhos

Station: AN0499
N Br Metedeconk River, Rt. 527, Monmouth County
Adelphia USGS Quadrangle
Date Sampled: 9/23/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	41
Lumbriculidae	8	16
Tubificidae	10	16
Sphaeriidae	8	10
Tabanidae	6	3
Chironomidae	6	3
Aeshnidae	3	2
Calamoceratidae	0	2
BloodRed Chironomidae	8	2
Sialidae	4	2
Gammaridae	4	1
Dolichopodidae	4	1
Hydrophilidae	5	1
Noteridae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 101
% Contribution of Dominant Family: 40.59 % (Asellidae)
Family Biotic Index: 7.71
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.44
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.98
EPT/C: 0.40
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10-12/1-2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested with powerlines nearby; Some debris in water, Some macrophytes present
Water temp. 13.6C / pH 4.4SU / DO 7.6mg/L / Cond. 174umhos;

Station: AN0500
N Br Metedeconk River @ Jackson, Mills Rd, Monmouth County
Adelphia USGS Quadrangle
Date Sampled: 09/23/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	31
Tubificidae	10	10
Lumbriculidae	8	9
Tipulidae	3	7
Sialidae	4	7
Polycentropodidae	6	4
Brachycentridae	1	3
Haplotaxidae	8	3
Limnephilidae	4	3
Chironomidae	6	3
Aeshnidae	3	1
Athericidae	2	1
Gyrinidae	3	1
Corydalidae	0	1
Leptoceridae	4	1
Odontoceridae	0	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 86
% Contribution of Dominant Family: 36.05 % (Sphaeriidae)
Family Biotic Index: 6.53
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 13.95
EPT/C: 4.00
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 166

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 10'-12'/ 1'-2'
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly closed....Other: Rural, forested; Macrophytes and minnows present
Temp. 13.8 / pH 5.1SU / DO N/A / Cond. 182umhos;

Station: AN0501
N Br Metedeconk River, Aldrich Rd., Monmouth/Ocean County
Adelphia USGS Quadrangle
Date Sampled: 9/23/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	27
Sphaeriidae	8	24
Simuliidae	6	15
Hydropsychidae	4	9
Baetidae	4	7
Chironomidae	6	5
Brachycentridae	1	3
Planariidae	4	2
Hydrobiidae	8	2
Physidae	7	2
Planorbidae	6	1
Phryganeidae	4	1
BloodRed Chironomidae	8	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 27.00 % (Gammaridae)
Family Biotic Index: 5.47
Scraper/Filterer Collector Ratio: 0.12
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 21.00
EPT/C: 3.50
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 162

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/1
Substrate: Cobble, Gravel/Sand, Mud....StreamBank Vegetation/Stability: Trees, Shrubs, Grasses/Fair
Canopy: Partly Open....Other: Suburban, Forested; Crayfish and Fish present
Water temp. 15.1C / pH 5.56SU / DO N/A / Cond. 183umhos;

Station: AN0502
N Br Metedeconk River, Rt. 9, Ocean/Monmouth County
Lakewood USGS Quadrangle
Date Sampled: 9/27/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	28
Heptageniidae	4	14
Tubificidae	10	12
Baetidae	4	6
Corixidae	9	6
Viviparidae	6	5
Gammaridae	4	5
Chironomidae	6	5
Elmidae	4	4
Lumbriculidae	8	4
Hydropsychidae	4	3
Polycentropodidae	6	3
Naididae	7	3
Pyralidae	5	2
Aeshnidae	3	1
Coenagrionidae	9	1
Planorbidae	6	1
Physidae	7	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 105
% Contribution of Dominant Family: 26.67 % (Sphaeriidae)
Family Biotic Index: 6.65
Scraper/Filterer Collector Ratio: 0.63
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 24.76
EPT/C: 5.20
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 148

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Weeds/Fair
Canopy: Mostly Open....Other: Urban; Storm Sewers present
Macrophytes and Fish present; Water temp. 15.2C / pH 6.0SU / DO 6.7mg/L / Cond. 157umhos

Station: AN0503
Haystack Bk, Southard Rd, Monmouth County
Farmingdale USGS Quadrangle
Date Sampled: 8/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	35
Lumbriculidae	8	15
Sphaeriidae	8	15
Corixidae	9	9
Planariidae	4	5
Planorbidae	6	5
Physidae	7	5
Coenagrionidae	9	4
Chironomidae	6	4
Baetidae	4	1
Gammaridae	4	1
Hydrobiidae	8	1
Haliplidae	5	1
Veliidae	9	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 103
% Contribution of Dominant Family: 33.98 % (Tubificidae)
Family Biotic Index: 8.28
Scraper/Filterer Collector Ratio: 0.73
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.97
EPT/C: 0.25
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 156
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8-10/1-2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Suburban, Forested; Macrophytes present
Water temp. 23.0C / pH 6.6SU / DO 6.3mg/L / Cond. 136umhos;

Station: AN0504
Haystack Brook, Rt. 547, Howell Twp., Monmouth
Lakewood USGS Quadrangle
Date Sampled: 08/18/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	38
Sphaeriidae	8	17
Tubificidae	10	8
Lumbriculidae	8	7
BloodRed Chironomidae	8	7
Planariidae	4	4
Sialidae	4	4
Elmidae	4	4
Heptageniidae	4	3
Aeshnidae	3	1
Macromiidae	3	1
Erpobdellidae	8	1
Corydalidae	0	1
Leptoceridae	4	1
Polycentropodidae	6	1
Psychodidae	10	1
Veliidae	9	1
Gerridae	8	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 101
% Contribution of Dominant Family: 37.62 % (Chironomidae)
Family Biotic Index: 6.60
Scraper/Filterer Collector Ratio: 0.39
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 4.95
EPT/C: 0.11
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 141
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10-12/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Fair
Canopy: Mostly Closed....Other: Rural, Trailer park adj.; Cedar color
Storm sewer flowing orange silt; Water temp. 23.0C / pH 6.5SU / DO 6.4mg/L / Cond. 118umhos

Station: AN0505
Haystack Bk (Muddy Ford Bk), Ramtown-Greenville Rd., Monmouth County
Lakewood USGS Quadrangle
Date Sampled: 9/27/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	24
Chironomidae	6	23
Elmidae	4	10
Calopterygidae	5	9
Baetidae	4	6
Tipulidae	3	6
Sphaeriidae	8	4
Tabanidae	6	4
Ptilodactylidae	1	3
Aeshnidae	3	2
Corixidae	9	2
Gammaridae	4	2
Corydalidae	0	2
Veliidae	9	2
Cordulegastridae	3	1
Leptophlebiidae	2	1
Tubificidae	10	1
Lumbriculidae	8	1
Leptoceridae	4	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 105
% Contribution of Dominant Family: 22.86 % (Heptageniidae)
Family Biotic Index: 4.79
Scraper/Filterer Collector Ratio: 0.86
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 31.43
EPT/C: 1.43
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 168

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 5/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Grasses, Shrubs/Good
Canopy: Mostly Closed....Other: Suburban, Forested; Storm Sewers Present
Macrophytes Present; Water temp. 14.7C / pH 6.0SU / DO 6.9mg/L / Cond. 105umhos

Station: AN0506
N Br Metedeconk River, Rt. 88, Ocean County
Lakewood USGS Quadrangle
Date Sampled: 9/27/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	24
Ephemerellidae	1	13
Brachycentridae	1	11
Hydrobiidae	8	9
Elmidae	4	9
Sphaeriidae	8	7
Chironomidae	6	7
Heptageniidae	4	6
Tubificidae	10	3
Physidae	7	3
Calopterygidae	5	2
Planorbidae	6	2
Polycentropodidae	6	2
Tetrastemmatidae	7	2
Coenagrionidae	9	1
Libellulidae	9	1
Tipulidae	3	1
Psychodidae	10	1
BloodRed Chironomidae	8	1
Viviparidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 106
% Contribution of Dominant Family: 22.64 % (Gammaridae)
Family Biotic Index: 4.66
Scraper/Filterer Collector Ratio: 2.05
Shredder/Total Ratio: 0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 30.19
EPT/C: 4.00
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 163

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 15/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Grasses/Good
Canopy: Partly Open....Other: Suburban, Forested; Storm Sewers present
Macrophytes present; Water temp. 15.5C / pH 6.0SU / DO 7.1mg/L / Cond. 148umhos

Station: AN0507
School House Br (Cabinfield Br), Lanes Mill Rd, Ocean County
Lakewood USGS Quadrangle
Date Sampled: 9/27/99

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	19
Sphaeriidae	8	19
Chironomidae	6	19
Elmidae	4	15
Tubificidae	10	8
Lumbriculidae	8	4
Polycentropodidae	6	3
Asellidae	8	2
Corydalidae	0	2
Tetrastemmatidae	7	2
Sialidae	4	2
Gammaridae	4	1
Lepidostomatidae	1	1
Naididae	7	1
Corduliidae	5	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 19.00 % (BloodRed Chironomidae & Sphaeriidae & Chironomidae)
Family Biotic Index: 6.67
Scraper/Filterer Collector Ratio: 1.59
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 5.00
EPT/C: 0.13
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 150
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/1
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Urban, pavement runs all the way to stream; Brown water color
Water temp. 16.3C / pH 5.9SU / DO 6.4mg/L / Cond. 92umhos;

Station: AN0508
S Br Metedeconk River, Diamond Rd., Ocean County
Adelphia USGS Quadrangle
Date Sampled: 10/5/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	45
Sphaeriidae	8	21
Sialidae	4	8
Lumbriculidae	8	6
Hydropsychidae	4	5
Limnephilidae	4	4
Polycentropodidae	6	3
Chironomidae	6	3
Asellidae	8	2
Psychomyiidae	2	2
Tipulidae	3	2
Capniidae	1	1
Molannidae	6	1
Leptoceridae	4	1
Pyralidae	5	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 106
% Contribution of Dominant Family: 42.45 % (Tubificidae)
Family Biotic Index: 7.70
Scraper/Filterer Collector Ratio: 0.12
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 16.98
EPT/C: 6.00
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 180
Deficiency(s) noted: Significant Organic Pollution

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6/2
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, Shrubs, Moss, Grass/Good
Canopy: Mostly Closed....Other: Rural, Forested; Water color brown
Water temp. 14C / pH 4.8SU / DO 7.6mg/L / Cond. 80umhos;

Station: AN0509
S Br Metedeconk River, Jacksons Mill Rd. (Out. Jacksons Mill Pond), Ocean County
Adelphia USGS Quadrangle
Date Sampled: 9/28/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Coenagrionidae	9	38
Talitridae	8	20
Elmidae	4	10
Sphaeriidae	8	7
Corixidae	9	5
Lestidae	9	5
Planariidae	4	3
Glossiphoniidae	8	2
Lumbriculidae	8	2
Asellidae	8	1
Baetidae	4	1
Viviparidae	6	1
Gyrinidae	3	1
Libellulidae	9	1
Tubificidae	10	1
Notonectidae	9	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (Coenagrionidae)
Family Biotic Index: 7.86
Scraper/Filterer Collector Ratio: 1.57
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 40/2
Substrate: Mud....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Open....Other: Forested, Minnows present; Station Downstream of dam
Water temp. 16.7C / pH 5.5SU / DO 6.9mg/L / Cond. 79umhos;

Station: AN0510
S Br Metedeconk River, Bennetts Mill Rd (Out. Lake Enno), Ocean County
Adelphia USGS Quadrangle
Date Sampled: 9/28/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	27
Naididae	7	16
Hydrobiidae	8	10
Gammaridae	4	8
Hydropsychidae	4	7
Coenagrionidae	9	7
Leptoceridae	4	4
Planariidae	4	3
Gyrinidae	3	3
Tubificidae	10	3
BloodRed Chironomidae	8	3
Elmidae	4	3
Planorbidae	6	2
Enchytraeidae	10	2
Physidae	7	2
Aeshnidae	3	1
Caenidae	7	1
Ephemerellidae	1	1
Libellulidae	9	1
Phryganeidae	4	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 106
% Contribution of Dominant Family: 25.47 % (Sphaeriidae)
Family Biotic Index: 6.69
Scraper/Filterer Collector Ratio: 0.53
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 13.21
EPT/C: 4.67
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 167

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 12/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Suburban, Forested; Station downstream of dam
Trout Stocked stream; Water temp. 18.6C / pH 6.1SU / DO 7.2mg/L / Cond. 109umhos

Station: AN0510A
S Br Metedeconk River, Cooks Bridge Rd., Ocean County
Adelphia USGS Quadrangle
Date Sampled: 9/28/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	23
Chironomidae	6	13
Heptageniidae	4	10
Tubificidae	10	9
Hydrophilidae	5	5
Elmidae	4	5
Viviparidae	6	4
Hydrobiidae	8	4
Tabanidae	6	4
Baetidae	4	3
Veliidae	9	3
Asellidae	8	2
Brachycentridae	1	2
Molannidae	6	2
Corydalidae	0	2
Physidae	7	2
Perlidae	1	1
Ptilodactylidae	1	1
Calopterygidae	5	1
Hydropsychidae	4	1
Lepidostomatidae	1	1
Planorbidae	6	1
Ceratopogonidae	6	1
BloodRed Chironomidae	8	1
Odontoceridae	0	1
Limnephilidae	4	1
Simuliidae	6	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 28
Total Number of Individuals: 105
% Contribution of Dominant Family: 21.90 % (Sphaeriidae)
Family Biotic Index: 6.16
Scraper/Filterer Collector Ratio: 1.11
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 20.95
EPT/C: 1.57
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 155

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 7/3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Storm Sewers discharging gray colored water present
Water temp. 16.6C / pH 6.1SU / DO 6.9mg/L / Cond. 93umhos;

Station: AN0511
S Br Metedeconk River, Cedar Bridge Ave, Ocean County
Lakewod USGS Quadrangle
Date Sampled: 10/7/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	21
Hydropsychidae	4	20
Heptageniidae	4	16
Sphaeriidae	8	12
Elmidae	4	11
Gammaridae	4	5
Tubificidae	10	5
Lumbriculidae	8	5
Brachycentridae	1	4
Polycentropodidae	6	3
Coenagrionidae	9	2
Baetidae	4	2
Viviparidae	6	2
Empididae	6	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 110
% Contribution of Dominant Family: 19.09 % (Asellidae)
Family Biotic Index: 5.75
Scraper/Filterer Collector Ratio: 0.74
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 41.82
EPT/C: 0.00
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 150

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Suburban; Water color brown, fish present sewage odor, a lot of debris in water; Water temp. 14.6C / pH 5.6SU / DO 9.0mg/L / Cond. 108umhos

Station: AN0512
S Br Metedeconk River, Chambers Bridge Rd, Ocean County
Lakewood USGS Quadrangle
Date Sampled: 10/07/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	56
Coenagrionidae	9	10
Baetidae	4	9
Haliplidae	5	6
Naididae	7	6
Elmidae	4	4
Pyralidae	5	4
Corixidae	9	2
Chironomidae	6	2
Lumbriculidae	8	2
Heptageniidae	4	2
Libellulidae	9	1
Hydroptilidae	4	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 106
% Contribution of Dominant Family: 52.83 % (Gammaridae)
Family Biotic Index: 5.00
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 11.32
EPT/C: 6.00
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 134

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15' / 3'
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Grasses, shrubs and trees/Good
Canopy: Mostly Open....Other: Suburban, storm sewers present; Water had sewage smell. Macrophytes present.
Water Temp. 15.1C / pH 5.9SU / DO 9.1mg/L / Cond. 110umhos;

Station: AN0513
Beaverdam Ck, Rt. 88, Ocean County
Point Pleasant USGS Quadrangle
Date Sampled: 9/27/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	39
Sphaeriidae	8	30
Coenagrionidae	9	8
Caenidae	7	6
Gammaridae	4	4
Erpobdellidae	8	4
Glossiphoniidae	8	3
Chironomidae	6	2
Lumbriculidae	8	2
Baetidae	4	1
Corixidae	9	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 39.00 % (Asellidae)
Family Biotic Index: 7.79
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.39
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 7.00
EPT/C: 3.50
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 148
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/1
Substrate: Mud, Silt....StreamBank Vegetation/Stability: Grasses, Shrubs, Trees/Fair
Canopy: Open....Other: Urban; Macrophytes present
Water temp. 18.7C / pH 6.0SU / DO 5.0mg/L / Cond. 119umhos;

Station: AN0514
Cedar Br, Moore Rd, Ocean County
Lakewood USGS Quadrangle
Date Sampled: 10/07/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	60
Chironomidae	6	13
Sphaeriidae	8	8
Tubificidae	10	7
Coenagrionidae	9	5
Planariidae	4	3
Physidae	7	3
Pyralidae	5	1
Baetidae	4	1
Tetrastemmatidae	7	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 102
% Contribution of Dominant Family: 58.82 % (Naididae)
Family Biotic Index: 7.12
Scraper/Filterer Collector Ratio: 0.38
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.98
EPT/C: 0.08
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 53
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): N/A
Substrate: Gravel/Sand, silt....StreamBank Vegetation/Stability: shrubs/poor
Canopy: Open....Other: Retaining wall along both banks.; Urban (commercialized area)
Water Temp. 13.1C / pH 5.9SU / DO 11.1mg/L / Cond. 132 umhos;

Station: AN0515
Kettle Ck, Off Rt. 70 (New Hampshire Ave.), Ocean County
Lakewood USGS Quadrangle
Date Sampled: 10/7/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	42
Asellidae	8	21
Chironomidae	6	12
Coenagrionidae	9	8
Sialidae	4	6
Sphaeriidae	8	4
Naididae	7	4
Planariidae	4	2
Polycentropodidae	6	2
Corixidae	9	1
Hydropsychidae	4	1
Ephemerellidae	1	1
Calamoceratidae	0	1
Dytiscidae	5	1
Psychomyiidae	2	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 107
% Contribution of Dominant Family: 39.25 % (Tubificidae)
Family Biotic Index: 8.01
Scraper/Filterer Collector Ratio: 0.29
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 5.61
EPT/C: 0.50
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 166
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4/<1
Substrate: Gravel/Sand/Mud/Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Suburban, Forested; Water temp. 11.8 C / pH 6.1SU / DO 8.2mg/L / Cond. 92umhos

Station: AN0516
Kettle Ck, Moore Rd., Ocean
Lakewood USGS Quadrangle
Date Sampled: 10/7/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	86
Planariidae	4	6
Chironomidae	6	4
Tubificidae	10	4
Lumbriculidae	8	1
BloodRed Chironomidae	8	1
Coenagrionidae	9	1
Hydrobiidae	8	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 104
% Contribution of Dominant Family: 82.69 % (Naididae)
Family Biotic Index: 6.95
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 155
Deficiency(s) noted: Naididae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/2.5
Substrate: Cobbles, gravel/sand....StreamBank Vegetation/Stability: Grasses, shrubs, trees/Good
Canopy: Open....Other: Suburban; Water temp. 16.6C / pH 6.1SU / DO 10.1mg/L / Cond. 87umhos
macrophytes, eels;

Station: AN0517
Toms R., Paint Island Rd., Monmouth County
Roosevelt USGS Quadrangle
Date Sampled: 10/5/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	27
Physidae	7	13
Tubificidae	10	10
Planorbidae	6	6
Naididae	7	6
Haliplidae	5	5
Calopterygidae	5	3
Coenagrionidae	9	3
Enchytraeidae	10	3
Corduliidae	5	2
Chironomidae	6	1
Aeshnidae	3	1
Chrysomelidae	5	1
Planariidae	4	1
Elmidae	4	1
Curculionidae	7	1
Corydalidae	0	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 85
% Contribution of Dominant Family: 31.76 % (Sphaeriidae)
Family Biotic Index: 7.31
Scraper/Filterer Collector Ratio: 0.74
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 180
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Moderate....Width/Depth (ft): 7/<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Fair
Canopy: Mostly Closed....Other: Agriculture-cropland, Rural, Forested; Water temp. 14.8 C/ pH 5.6SU / DO 8.0mg/L / Cond. 249umhos
Iron precipitate, oily film;

Station: AN0518
Toms River, Rt. 571, Monmouth County
Roosevelt USGS Quadrangle
Date Sampled: 10/5/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	36
Coenagrionidae	9	25
Asellidae	8	10
Chironomidae	6	10
Planorbidae	6	10
BloodRed Chironomidae	8	5
Tubificidae	10	2
Lumbriculidae	8	2
Haliplidae	5	2
Tipulidae	3	2
Glossiphoniidae	8	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 106
% Contribution of Dominant Family: 33.96 % (Sphaeriidae)
Family Biotic Index: 7.73
Scraper/Filterer Collector Ratio: 0.42
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 147
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 15/3
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Trees, Grass, Shrubs/Fair
Canopy: Open....Other: Suburban / Forested; Water temp. 14.4 C/ pH 5.1SU / DO 7.6mg/L / Cond. 162umhos

Station: AN0519
Toms River, Rt. 528, Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/14/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Gyrinidae	3	8
Elmidae	4	8
Heptageniidae	4	8
Calopterygidae	5	7
Limnephilidae	4	7
Tipulidae	3	6
Leptoceridae	4	6
Chironomidae	6	6
BloodRed Chironomidae	8	6
Simuliidae	6	5
Taeniopterygidae	2	5
Tubificidae	10	4
Lumbriculidae	8	3
Ptilodactylidae	1	2
Baetidae	4	2
Hydropsychidae	4	2
Helicopsychidae	3	2
Lepidostomatidae	1	2
Veliidae	9	2
Sericostomatidae	3	1
Brachycentridae	1	1
Gammaridae	4	1
Glossiphoniidae	8	1
Polycentropodidae	6	1
Phryganeidae	4	1
Hydrobiidae	8	1
Sphaeriidae	8	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 28
Total Number of Individuals: 100
% Contribution of Dominant Family: 8.00 % (Gyrinidae & Elmidae & Heptageniidae)
Family Biotic Index: 4.73
Scraper/Filterer Collector Ratio: 2.50
Shredder/Total Ratio: 0.19
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 38.00
EPT/C: 3.17
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 164

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 15-20/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Surburban, Forested; Dead, rotting odor, Macrophytes
Water temp. 14 C / pH 5.6SU / DO 8.0mg/L / Cond. 100 umhos;

Station: AN0519A
Toms River, Anderson Rd., Ocean County
Roosevelt USGS Quadrangle
Date Sampled: 5/23/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	20
Brachycentridae	1	18
BloodRed Chironomidae	8	16
Chironomidae	6	14
Polycentropodidae	6	8
Asellidae	8	7
Naididae	7	7
Enchytraeidae	10	4
Sphaeriidae	8	4
Gyrinidae	3	2
Ceratopogonidae	6	2
Elmidae	4	2
Tipulidae	3	2
Ephemerellidae	1	1
Dytiscidae	5	1
Nepidae	8	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 110
% Contribution of Dominant Family: 18.18 % (Tubificidae)
Family Biotic Index: 6.41
Scraper/Filterer Collector Ratio: 0.07
Shredder/Total Ratio: 0.23
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 25.45
EPT/C: 0.93
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 172

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/2-3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Weeds, Shrubs, Trees/Fair
Canopy: Mostly Closed....Other: Suburban, Forested; Storm Sewers
Macrophytes present; Water temp. 12.6C / pH 5.7SU / DO 7.7mg/L / Cond. 132umhos

Station: AN0520
Unt To Toms River, Rt. 528, Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/14/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Baetidae	4	12
Calopterygidae	5	11
Simuliidae	6	8
Chironomidae	6	7
Limnephilidae	4	7
Tipulidae	3	5
Odontoceridae	0	5
Elmidae	4	5
Aeshnidae	3	3
Brachycentridae	1	3
Hydropsychidae	4	3
Pyralidae	5	3
Asellidae	8	2
Sphaeriidae	8	2
Coenagrionidae	9	1
Capniidae	1	1
BloodRed Chironomidae	8	1
Corixidae	9	1
Gammaridae	4	1
Empididae	6	1
Veliidae	9	1
Leptoceridae	4	1
Haliplidae	5	1
Heptageniidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 25
Total Number of Individuals: 87
% Contribution of Dominant Family: 13.79 % (Baetidae)
Family Biotic Index: 4.51
Scraper/Filterer Collector Ratio: 0.69
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 37.93
EPT/C: 4.13
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 161

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8-10/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, shrubs/Good

Canopy: Mostly closed....Other: Rural, Forested; Macrophytes present
Water temp. 13.4C / pH 5.6SU / DO 8.2mg/L / Cond. 125umhos;

Station: AN0521
Maple Root Br, Bowman Rd., Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/14/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	49
BloodRed Chironomidae	8	20
Asellidae	8	9
Lumbriculidae	8	6
Tipulidae	3	5
Tubificidae	10	3
Corixidae	9	2
Lestidae	9	2
Phryganeidae	4	2
Gammaridae	4	2
Psychomyiidae	2	1
Ephemerellidae	1	1
Sialidae	4	1
Corduliidae	5	1
Lepidostomatidae	1	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 105
% Contribution of Dominant Family: 46.67 % (Chironomidae)
Family Biotic Index: 6.51
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 4.76
EPT/C: 0.07
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 161
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20-25/2-3
Substrate: Gravel, Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested; Water temp. 12.4 C / pH 4.0SU / DO 4.9mg/L / Cond. 87umhos

Station: AN0522
Dove Mill Br, Grawtown Rd., Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/14/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	26
Sericostomatidae	3	18
Sphaeriidae	8	7
Brachycentridae	1	2
Calamoceratidae	0	2
Leptophlebiidae	2	2
BloodRed Chironomidae	8	2
Limnephilidae	4	2
Sialidae	4	2
Heptageniidae	4	2
Corduliidae	5	2
Asellidae	8	1
Tipulidae	3	1
Hydrophilidae	5	1
Molannidae	6	1
Elmidae	4	1
Lepidostomatidae	1	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 73
% Contribution of Dominant Family: 35.62 % (Chironomidae)
Family Biotic Index: 4.78
Scraper/Filterer Collector Ratio: 0.44
Shredder/Total Ratio: 0.37
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 41.10
EPT/C: 1.07
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 163

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 12-15/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Macrophytes
Water temp. 14.5 C / pH 5.5SU / DO 8.5mg/L / Cond. 75umhos;

Station: AN0523
Toms River, S Hope Chapel Rd, Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/14/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	35
Limnephilidae	4	26
Sphaeriidae	8	10
Helicopsychidae	3	8
Asellidae	8	4
Sericostomatidae	3	3
Lumbriculidae	8	3
Elmidae	4	2
Baetidae	4	2
Brachycentridae	1	2
Tipulidae	3	2
Erpobdellidae	8	2
Heptageniidae	4	2
Perlidae	1	1
Aeshnidae	3	1
Calopterygidae	5	1
Hydropsychidae	4	1
Dytiscidae	5	1
Tubificidae	10	1
Molannidae	6	1
Notonectidae	9	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 109
% Contribution of Dominant Family: 32.11 % (Chironomidae)
Family Biotic Index: 5.27
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.30
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 42.20
EPT/C: 1.31
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 169

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 25'-30' / 2'-2.5'
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees and shrubs/Good
Canopy: Partly Open....Other: Rural, forested, water color: cedar brown; Macrophytes and filamentous algae present.
Water temp. 13.4C / pH 5.6SU / DO 9.7mg/L / Cond. 91umhos;

Station: AN0524
Toms River, Rt. 571, Ocean County
Lakewood USGS Quadrangle
Date Sampled: 10/19/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Helicopsychidae	3	25
Brachycentridae	1	16
Chironomidae	6	11
Limnephilidae	4	9
Sphaeriidae	8	8
Sericostomatidae	3	4
Lepidostomatidae	1	4
Elmidae	4	4
Hydropsychidae	4	4
Heptageniidae	4	3
Taeniopterygidae	2	3
Perlidae	1	2
Tubificidae	10	2
Calopterygidae	5	1
Corixidae	9	1
Tipulidae	3	1
Leptoceridae	4	1
Pyralidae	5	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Helicopsychidae)
Family Biotic Index: 3.71
Scraper/Filterer Collector Ratio: 1.46
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10
% EPT: 71.00
EPT/C: 6.45
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 177

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 30/2.5
Substrate: Cobbles, Gravel/sand....StreamBank Vegetation/Stability: Trees, Grasses, Shrubs/Good
Canopy: Partly Open....Other: Suburban, Forested; Storm Sewers, Cedar Water
Water temp. 12.4C / pH 5.4SU / DO 9.4mg/L / Cond. 91umhos;

Station: AN0525A
Unt To Ridgeway Br (Bordens Mill Br), Outlet To Turn Mill Pond, Ocean County
Cassville USGS Quadrangle
ERR

Family	Family Tolerance Value (FTV)	Number of Individuals
Palaemonidae	6	22
BloodRed Chironomidae	8	17
Coenagrionidae	9	16
Asellidae	8	9
Chironomidae	6	9
Haliplidae	5	8
Naididae	7	7
Baetidae	4	5
Caenidae	7	2
Talitridae	8	2
Tubificidae	10	1
Libellulidae	9	1
Ephemerellidae	1	1
Gomphidae	1	1
Erpobdellidae	8	1
Corduliidae	5	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 104
% Contribution of Dominant Family: 21.15 % (Palaemonidae)
Family Biotic Index: 6.91
Scraper/Filterer Collector Ratio: 0.10
Shredder/Total Ratio: 0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 7.69
EPT/C: 0.31
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 173
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30' / 2'
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs, grass/Good
Canopy: Mostly Open....Other: Forested (Colliers Mill Wildlife Preserve); Impoundment at Turn Mill Pond
Fish, grass shrimp and macrophytes present.; Water temp. 17.3C / pH 5.3SU / Do 7.9mg/L / Cond. 65umhos

Station: AN0526
Shannae Bk, Colliers Mill Wildlife Area (Out. Lake Success), Ocean County
Cassville USGS Quadrangle
Date Sampled: 10/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Lumbriculidae	8	22
Coenagrionidae	9	13
Naididae	7	8
Leptophlebiidae	2	7
Tubificidae	10	7
Chironomidae	6	6
Ptychopteridae	8	5
Ephemerellidae	1	5
Naucoridae	8	3
Phryganeidae	4	2
Asellidae	8	1
Belostomatidae	9	1
Gomphidae	1	1
Dytiscidae	5	1
Hydroptilidae	4	1
Sphaeriidae	8	1
Glossiphoniidae	8	1
Corduliidae	5	1
Elmidae	4	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 88
% Contribution of Dominant Family: 25.00 % (Lumbriculidae)
Family Biotic Index: 6.83
Scraper/Filterer Collector Ratio: 13.00
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 17.05
EPT/C: 2.50
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 188

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20' / 2'
Substrate: Cobble, Gavel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Partly Open....Other: Water color: brown cedar; Forested (Colliers Mill Wildlife Preserve), impoundment: Lake success
Foam on surface of water.; Water temp. 16.3 / pH 5.4SU / DO 9.3mg/L / Cond. 49umhos

Station: AN0527
Ridgeway Br, Near Legler Off Rt. 571, Monmouth County
Lakehurst USGS Quadrangle
Date Sampled: 10/19/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Leptophlebiidae	2	21
Tubificidae	10	14
Limnephilidae	4	4
Tipulidae	3	4
Chironomidae	6	2
Asellidae	8	2
Empididae	6	2
Lumbriculidae	8	2
BloodRed Chironomidae	8	2
Dytiscidae	5	1
Hydrophilidae	5	1
Perlidae	1	1
Phryganeidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 58
% Contribution of Dominant Family: 36.21 % (Leptophlebiidae)
Family Biotic Index: 5.22
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 46.55
EPT/C: 6.75
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 169

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/2
Substrate: Mud, some other firm material....StreamBank Vegetation/Stability: trees, grass/good
Canopy: Partly Open....Other: Cedar Wetlands adjacent to stream, cedar water; Debris dumped along road to stream.
Water temp. 12.1C / pH 4.3SU / DO 6.4mg/L / Cond. 78umhos;

Station: AN0528
Ridgeway Br, Rt. 70, Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/14/99

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	32
Sphaeriidae	8	22
Chironomidae	6	21
Leptophlebiidae	2	10
Tipulidae	3	4
Lumbriculidae	8	3
Asellidae	8	2
Tubificidae	10	2
Corixidae	9	2
Coenagrionidae	9	1
Dytiscidae	5	1
Palaemonidae	6	1
Metretopodidae	2	1
Tabanidae	6	1
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 104
% Contribution of Dominant Family: 30.77 % (BloodRed Chironomidae)
Family Biotic Index: 6.73
Scraper/Filterer Collector Ratio: 1.45
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 11.54
EPT/C: 0.23
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 159

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30-35/>2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Urban (Comercial Area), Forested; Cedar water, macrophytes
Water temp. 13.1 C / pH 4.5SU / DO N/A / Cond. 70umhos;

Station: AN0529
Blacks Br, Naval Air Station Boundary, Ocean County
Cassville USGS Quadrangle
Date Sampled: 10/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	32
Simuliidae	6	11
Phryganeidae	4	9
Hydropsychidae	4	7
BloodRed Chironomidae	8	6
Coenagrionidae	9	6
Dytiscidae	5	2
Lepidostomatidae	1	2
Limnephilidae	4	2
Sialidae	4	2
Caenidae	7	1
Gyrinidae	3	1
Leptophlebiidae	2	1
Tipulidae	3	1
Polycentropodidae	6	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 85
% Contribution of Dominant Family: 37.65 % (Chironomidae)
Family Biotic Index: 5.65
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 27.06
EPT/C: 0.61
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 193

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10 / 2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: Forested, wetlands/swamp upstream, water color: brown; Water temp. 12.1C / pH 4.7SU / DO 6.3mg/L / Cond. 75umhos

Station: AN0530
Blacks Br, Rt. 70, Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	57
Polycentropodidae	6	10
Sphaeriidae	8	8
Leptoceridae	4	4
Calamoceratidae	0	3
Coenagrionidae	9	3
Chironomidae	6	3
Hydroptilidae	4	2
Sialidae	4	2
Elmidae	4	1
Aeshnidae	3	1
Corixidae	9	1
Planariidae	4	1
Dytiscidae	5	1
Limnephilidae	4	1
Tubificidae	10	1
Psychomyiidae	2	1
Molannidae	6	1
Haliplidae	5	1
Odontoceridae	0	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 103
% Contribution of Dominant Family: 55.34 % (Asellidae)
Family Biotic Index: 6.88
Scraper/Filterer Collector Ratio: 0.22
Shredder/Total Ratio: 0.60
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 22.33
EPT/C: 7.67
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 171

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/3
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Suburban, Forested; Water temp. 13 C / pH 4.7SU / DO 8.9mg/L / Cond. 43umhos

Station: AN0531
Old Hurricane Br, Beckerville Rd. (Central Ave.), Ocean County
Whiting USGS Quadrangle
Date Sampled: 11/4/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	18
Hydropsychidae	4	16
Heptageniidae	4	14
Chironomidae	6	10
Philopotamidae	3	8
Taeniopterygidae	2	6
Baetidae	4	5
Odontoceridae	0	5
Limnephilidae	4	4
Aeshnidae	3	3
Corydalidae	0	2
Asellidae	8	1
Brachycentridae	1	1
Tabanidae	6	1
Corixidae	9	1
Gyrinidae	3	1
Calamoceratidae	0	1
Polycentropodidae	6	1
BloodRed Chironomidae	8	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 18.00 % (Simuliidae)
Family Biotic Index: 4.13
Scraper/Filterer Collector Ratio: 0.43
Shredder/Total Ratio: 0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10
% EPT: 61.00
EPT/C: 5.55
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 169

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Mostly Open....Other: Suburban, Forested; Water temp. 10.5C / pH 3.5SU / DO 7.1mg/L / Cond. 77umhos

Station: AN0532
Manapaqua Br, Rt 70, Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/12/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	64
Leptoceridae	4	7
BloodRed Chironomidae	8	7
Coenagrionidae	9	6
Tubificidae	10	5
Planariidae	4	4
Chironomidae	6	1
Dytiscidae	5	1
Lepidostomatidae	1	1
Enchytraeidae	10	1
Veliidae	9	1
Sphaeriidae	8	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 64.00 % (Asellidae)
Family Biotic Index: 7.62
Scraper/Filterer Collector Ratio: 7.00
Shredder/Total Ratio: 0.66
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 8.00
EPT/C: 1.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 181
Deficiency(s) noted: Asellidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 10 / 3
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Partly Open....Other: Water color: brown; Suburban, forested
Water temp. 14.4C / pH 5.3SU / DO 8.5mg/L / Cond. 48umhos;

Station: AN0533
Union Br, Colonial Dr., Ocean County
Lakehurst USGS Quadrangle
Date Sampled: 10/19/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	48
Tubificidae	10	10
Sphaeriidae	8	7
Hydropsychidae	4	5
Elmidae	4	5
Calopterygidae	5	4
Limnephilidae	4	4
Naididae	7	4
Empididae	6	3
BloodRed Chironomidae	8	2
Coenagrionidae	9	1
Asellidae	8	1
Aeshnidae	3	1
Philopotamidae	3	1
Lumbriculidae	8	1
Glossiphoniidae	8	1
Phryganeidae	4	1
Pyralidae	5	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 101
% Contribution of Dominant Family: 47.52 % (Chironomidae)
Family Biotic Index: 6.30
Scraper/Filterer Collector Ratio: 0.36
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 10.89
EPT/C: 0.22
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 184

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 15/2
Substrate: Cobbles, Gravel/sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Good
Canopy: Mostly Open....Other: Suburban, Forested; Storm Sewers, Cedar Water

Station: AN0534
Union Br, Beacon Ave In Pine Lakes Park, Ocean
Lakewood USGS Quadrangle
Date Sampled: 11/16/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	26
Chironomidae	6	23
Elmidae	4	15
Taeniopterygidae	2	8
Coenagrionidae	9	5
Heptageniidae	4	5
Asellidae	8	4
Limnephilidae	4	4
Calopterygidae	5	3
BloodRed Chironomidae	8	3
Naididae	7	3
Empididae	6	2
Philopotamidae	3	1
Lumbriculidae	8	1
Talitridae	8	1
Perlodidae	2	1
Leptophlebiidae	2	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 106
% Contribution of Dominant Family: 24.53 % (Hydropsychidae)
Family Biotic Index: 4.96
Scraper/Filterer Collector Ratio: 0.74
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 43.40
EPT/C: 1.77
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 150

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 15/2
Substrate: Gravel/sand, Mud, Snags....StreamBank Vegetation/Stability: Grass, Trees/Fair
Canopy: Mostly Open....Other: Suburban; Storm Sewers with gray water coming out macrophytes, ducks; Water temp. 7.5C / pH 5.1SU / DO 15.2mg/L / Cond. 64umhos

Station: AN0535
Toms River, Oak Ridge Pkwy, Ocean County
Toms River USGS Quadrangle
Date Sampled: 10/19/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Leptoceridae	4	19
Lumbriculidae	8	11
Elmidae	4	9
Sericostomatidae	3	7
Heptageniidae	4	6
Baetiscidae	3	5
Lepidostomatidae	1	5
Tubificidae	10	5
Chironomidae	6	4
Asellidae	8	3
Cordulegastridae	3	3
Limnephilidae	4	3
Perlidae	1	3
BloodRed Chironomidae	8	3
Calopterygidae	5	2
Helicopsychidae	3	2
Naididae	7	1
Planariidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 92
% Contribution of Dominant Family: 20.65 % (Leptoceridae)
Family Biotic Index: 4.76
Scraper/Filterer Collector Ratio: 5.00
Shredder/Total Ratio: 0.20
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 54.35
EPT/C: 7.14
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 167

Observations

Streamwater: Clear....Flow: Moderate ....Width/Depth (ft): 20' / 4'
Substrate: Gravel/sand, snags....StreamBank Vegetation/Stability: Trees and shrubs/Fair
Canopy: Mostly Open....Other: Rural, storm sewers present.; Salamanders and turtles present.
Water temp. 13.0 / pH 5.64SU / DO 8.7mg/L / Cond. 44umhos;

Station: AN0536
Wrangel Bk, Whiting Wildlife Area, Ocean
Keswick Grove USGS Quadrangle
Date Sampled: 11/4/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Leuctridae	0	38
Lumbriculidae	8	12
Chironomidae	6	12
Simuliidae	6	11
Tubificidae	10	4
BloodRed Chironomidae	8	3
Polycentropodidae	6	3
Philopotamidae	3	2
Tipulidae	3	2
Phryganeidae	4	2
Elmidae	4	2
Cordulegastridae	3	1
Empididae	6	1
Hydropsychidae	4	1
Lepidostomatidae	1	1
Leptoceridae	4	1
Leptophlebiidae	2	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: 38.00 % (Leuctridae)
Family Biotic Index: 3.76
Scraper/Filterer Collector Ratio: 0.12
Shredder/Total Ratio: 0.44
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 50.00
EPT/C: 3.33
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 176

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/1
Substrate: Gravel/sand, Silt, Snags....StreamBank Vegetation/Stability: Trees/Fair
Canopy: Mostly Closed....Other: Suburban, Forested; Water temp. 11.5C / pH 4.6SU / DO 7.5mg/L / Cond. 43umhos

Station: AN0537
Wrangel Bk, Mule Rd., Ocean
Toms River USGS Quadrangle
Date Sampled: 11/9/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	21
Tubificidae	10	17
Lumbriculidae	8	14
Chironomidae	6	12
BloodRed Chironomidae	8	9
Sphaeriidae	8	5
Taeniopterygidae	2	5
Elmidae	4	4
Heptageniidae	4	4
Simuliidae	6	3
Dytiscidae	5	2
Erpobdellidae	8	2
Sericostomatidae	3	1
Hydropsychidae	4	1
Lepidostomatidae	1	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 101
% Contribution of Dominant Family: 20.79 % (Asellidae)
Family Biotic Index: 7.21
Scraper/Filterer Collector Ratio: 0.89
Shredder/Total Ratio: 0.28
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 11.88
EPT/C: 0.57
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 160
Deficiency(s) noted: Significant Organic Pollution

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/2.5
Substrate: Cobbles, Gravel/sand, Silt....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Partly Open....Other: Suburban, Storm Sewers, Cedar Water; Detention basin discharging into stream
Oily sheen near storm sewer; Water temp. 11.0C / pH 5.2SU / DO 12.7mg/L / Cond. 57umhos

Station: AN0538
Sunken Br, Mule Rd, Ocean County
Toms River USGS Quadrangle
Date Sampled: 11/9/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Baetidae	4	20
BloodRed Chironomidae	8	19
Hydroptilidae	4	15
Coenagrionidae	9	11
Tubificidae	10	7
Caenidae	7	7
Chironomidae	6	7
Corixidae	9	7
Corduliidae	5	3
Naididae	7	2
Hydrophilidae	5	1
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 20.00 % (Baetidae)
Family Biotic Index: 6.54
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 42.00
EPT/C: 1.62
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 129

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 50/ 2.5
Substrate: Gravel/ Sand, Silt....StreamBank Vegetation/Stability: Grass, trees/Fair
Canopy: Open....Other: Suburban, Storm Sewers, Sticks/rocks blocking flow; Macrophytes present, geese present
Brown/gray water; Water temp. 10.7C / pH 5.5SU / DO 11.4mg/L / Cond. 64 umhos

Station: AN0539
Wrangel Br, Southampton Rd., Ocean County
Toms River USGS Quadrangle
Date Sampled: 11/16/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	23
Hydropsychidae	4	14
Taeniopterygidae	2	14
Asellidae	8	9
Calopterygidae	5	5
Limnephilidae	4	5
Lepidostomatidae	1	4
Simuliidae	6	4
Elmidae	4	4
Heptageniidae	4	4
Sericostomatidae	3	3
Sphaeriidae	8	3
Tubificidae	10	3
Leptoceridae	4	2
Aeshnidae	3	1
Gammaridae	4	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Chironomidae)
Family Biotic Index: 4.85
Scraper/Filterer Collector Ratio: 0.18
Shredder/Total Ratio: 0.37
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 46.00
EPT/C: 1.92
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 152

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Grass, trees/Good
Canopy: Open....Other: Suburban, storm sewers and macrophytes present; Water color: brown

Station: AN0540
Davenport Br, Lacey Rd. (Rt. 614), Ocean
Keswick Grove USGS Quadrangle
Date Sampled: 11/4/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	41
Simuliidae	6	19
Philopotamidae	3	16
Chironomidae	6	7
Lumbriculidae	8	4
Empididae	6	3
Naididae	7	3
Sphaeriidae	8	3
Asellidae	8	2
Ephemerellidae	1	2
Talitridae	8	2
Ceratopogonidae	6	1
Planariidae	4	1
Tubificidae	10	1
Hydroptilidae	4	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 107
% Contribution of Dominant Family: 38.32 % (Hydropsychidae)
Family Biotic Index: 4.91
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 56.07
EPT/C: 8.57
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 5/1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Rural, Forested; Station Downstream from Impoundment - Cranberry bog or Lake
Macrophytes; Water temp. 13.0C / pH 4.6SU / DO 10.6mg/L / Cond. 52umhos

Station: AN0541
Davenport Br, Mule Rd, Ocean
Toms River USGS Quadrangle
Date Sampled: 11/9/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Taeniopterygidae	2	32
Ephemerellidae	1	17
Elmidae	4	13
Heptageniidae	4	6
Brachycentridae	1	5
Baetidae	4	5
Baetiscidae	3	4
Leptophlebiidae	2	4
Chironomidae	6	4
Hydropsychidae	4	3
Lepidostomatidae	1	2
Asellidae	8	1
Lumbriculidae	8	1
Limnephilidae	4	1
Simuliidae	6	1
Metretopodidae	2	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 32.00 % (Taeniopterygidae)
Family Biotic Index: 2.68
Scraper/Filterer Collector Ratio: 6.25
Shredder/Total Ratio: 0.40
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 80.00
EPT/C: 20.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 161

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/2
Substrate: Gravel/sand, Silt....StreamBank Vegetation/Stability: Trees, Grass/Good
Canopy: Mostly Open....Other: Suburban; Storm Sewers, macrophytes
Cable laying across stream under bridge, wetland mitigation area; Water temp. 10.4C / pH 5.0SU / DO 14.4mg/L / Cond. 48umhos

Station: AN0542
Jakes Br, Dover Rd. (Rt. 618), Ocean County
Keswick Grove USGS Quadrangle
Date Sampled: 11/4/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	79
Asellidae	8	9
Gammaridae	4	4
Chironomidae	6	2
Tipulidae	3	2
Phryganeidae	4	2
Ceratopogonidae	6	1
Leuctridae	0	1
BloodRed Chironomidae	8	1
Corduliidae	5	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 103
% Contribution of Dominant Family: 76.70 % (Tubificidae)
Family Biotic Index: 9.00
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.91
EPT/C: 1.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 175
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/<1
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Grasses, Shrubs, Trees/Good
Canopy: Partly Open....Other: Rural, Forested; Macrophytes, Fish
Water Temp. 12.6C / pH 4.0SU / DO 2.5mg/L / Cond. 114umhos;

Station: AN0543
Jakes Br, Double Trouble Rd, Ocean County
Toms River USGS Quadrangle
Date Sampled: 11/9/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	61
Elmidae	4	10
Lumbriculidae	8	5
Leptophlebiidae	2	5
Gammaridae	4	4
Chironomidae	6	3
Planariidae	4	3
Limnephilidae	4	3
Hydropsychidae	4	2
Taeniopterygidae	2	2
Phryganeidae	4	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 61.00 % (Asellidae)
Family Biotic Index: 6.59
Scraper/Filterer Collector Ratio: 5.00
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 13.00
EPT/C: 4.33
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 161
Deficiency(s) noted: Asellidae Family Overwhelmingly Dominant

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/1-3
Substrate: Gravel/Sand, Mud, Silt....StreamBank Vegetation/Stability: Trees, some Grass/Good
Canopy: Mostly Closed....Other: Cedar water, Suburban, Forested; Storm sewers
Macrophytes present; Water temp. 9.8C / pH 4.1SU / DO 10mg/L / Cond. 52umhos

Station: AN0544
Unt To Toms River (Long Swamp Ck), Rt. 37, Ocean County
Toms River USGS Quadrangle
Date Sampled: 10/26/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	35
BloodRed Chironomidae	8	12
Planorbidae	6	11
Tubificidae	10	10
Chironomidae	6	7
Lumbriculidae	8	6
Coenagrionidae	9	5
Asellidae	8	2
Caenidae	7	2
Gammaridae	4	2
Physidae	7	2
Naididae	7	2
Pyralidae	5	1
Aeshnidae	3	1
Planariidae	4	1
Libellulidae	9	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 35.00 % (Sphaeriidae)
Family Biotic Index: 7.64
Scraper/Filterer Collector Ratio: 0.71
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.00
EPT/C: 0.11
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 155
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/1.5
Substrate: Gravel/sand, Mud....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Open....Other: Suburban, Forested; Macrophytes
Water temp. 11.4C / pH 5.3SU / DO 6.7mg/L / Cond. 116umhos;

Station: AN0545
Webbs Mill Br, Rt. 539, Ocean County
Whiting USGS Quadrangle
Date Sampled: 12/16/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Talitridae	8	39
Chironomidae	6	24
Hydroptilidae	4	23
Naididae	7	4
Tubificidae	10	2
Phryganeidae	4	2
Corixidae	9	1
BloodRed Chironomidae	8	1
Gyrinidae	3	1
Erpobdellidae	8	1
Dytiscidae	5	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 39.00 % (Talitridae)
Family Biotic Index: 6.39
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 26.00
EPT/C: 1.04
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 163

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/2.5
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs, Wetland vegetation/Good
Canopy: Mostly Open....Other: Rural, Forested, Greenwood Wildlife Management Area; Filamentous algae and Macrophytes present
Cedar brown water color; Water temp. 10C / pH 4.5SU / DO 9.8mg/L / Cond. 34umhos

Station: AN0546
Cedar Ck, Lacey Rd (Downstream Of Bamber Lake), Ocean County
Keswick Grove USGS Quadrangle
Date Sampled: 12/2/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	30
Elmidae	4	9
Hydroptilidae	4	8
Heptageniidae	4	7
Leptophlebiidae	2	6
Limnephilidae	4	5
BloodRed Chironomidae	8	5
Talitridae	8	4
Metretopodidae	2	4
Tubificidae	10	3
Ephemerellidae	1	3
Hydropsychidae	4	3
Coenagrionidae	9	2
Corixidae	9	2
Lumbriculidae	8	2
Gomphidae	1	2
Empididae	6	2
Molannidae	6	2
Sialidae	4	2
Sphaeriidae	8	2
Brachycentridae	1	1
Philopotamidae	3	1
Tipulidae	3	1
Naididae	7	1
Corydalidae	0	1
Tabanidae	6	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 27
Total Number of Individuals: 110
% Contribution of Dominant Family: 27.27 % (Chironomidae)
Family Biotic Index: 5.06
Scraper/Filterer Collector Ratio: 4.14
Shredder/Total Ratio: 0.37
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 37.27
EPT/C: 1.17
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10' / 3.5'
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, grass/Fair
Canopy: Mostly Open....Other: Rural, Forested; Water temp. 2.2C / pH 4.7SU / DO 13.6mg/L / Cond. 2.8umhos
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Station: AN0547
Factory Br, Lacey Rd., Ocean County
Keswick Grove USGS Quadrangle
Date Sampled: 12/2/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	17
Taeniopterygidae	2	17
Ephemerellidae	1	16
Hydroptilidae	4	14
Chironomidae	6	13
Heptageniidae	4	7
Asellidae	8	6
Polycentropodidae	6	5
Coenagrionidae	9	3
Philopotamidae	3	2
Lumbriculidae	8	2
Elmidae	4	2
Caenidae	7	1
Chloroperlidae	1	1
Leptophlebiidae	2	1
Simuliidae	6	1
Metretopodidae	2	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 109
% Contribution of Dominant Family: 15.60 % (Hydropsychidae & Taeniopterygidae)
Family Biotic Index: 3.97
Scraper/Filterer Collector Ratio: 0.92
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 75.23
EPT/C: 6.31
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 174

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/1
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Cedar trees, grass/Good
Canopy: Partly Open....Other: Rural, forested, storm sewers draining into stream;
Beaver dam constructed, bag of garbage dumped in stream
Fish and macrophytes abundant; Water temp. 4.8C / pH 4.6SU / DO 10.9mg/L / Cond. 52umhos

Station: AN0548
Cedar Cr, Double Trouble State Park, Ocean County
Toms River USGS Quadrangle
Date Sampled: 12/2/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydroptilidae	4	23
Tubificidae	10	15
Chironomidae	6	14
Brachycentridae	1	7
Taeniopterygidae	2	7
Perlodidae	2	5
Metretopodidae	2	5
Coenagrionidae	9	3
Leptophlebiidae	2	3
BloodRed Chironomidae	8	2
Gomphidae	1	2
Tipulidae	3	2
Asellidae	8	1
Baetiscidae	3	1
Hydrophilidae	5	1
Ceratopogonidae	6	1
Planariidae	4	1
Talitridae	8	1
Naucoridae	8	1
Phryganeidae	4	1
Limnephilidae	4	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 98
% Contribution of Dominant Family: 23.47 % (Hydroptilidae)
Family Biotic Index: 4.88
Scraper/Filterer Collector Ratio: 1.14
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 54.08
EPT/C: 3.31
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 179

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 13 / 2
Substrate: Cobbles, Gravel/Sand, Silt....StreamBank Vegetation/Stability: Cedar trees, shrubs/Good
Canopy: Mostly Open....Other: Forested, rural, water color: cedar brown; Filamentous algae abundant, macrophytes and fish present

Water temp. 4.3C / pH 4.8SU / DO 13.9mg/L / Cond. 35umhos;

Station: AN0549
Cedar Ck, Rt. 9 (Usgs Gauge), Ocean County
Forked River USGS Quadrangle
Date Sampled: 12/02/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Taeniopterygidae	2	22
Elmidae	4	15
Limnephilidae	4	13
Ephemerellidae	1	8
Brachycentridae	1	5
Hydropsychidae	4	4
Tubificidae	10	4
Leptoceridae	4	4
Simuliidae	6	4
Chironomidae	6	3
Hydroptilidae	4	3
Heptageniidae	4	3
Coenagrionidae	9	2
Leptophlebiidae	2	2
BloodRed Chironomidae	8	2
Chloroperlidae	1	1
Hydrophilidae	5	1
Aeshnidae	3	1
Empididae	6	1
Lumbriculidae	8	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 100
% Contribution of Dominant Family: 22.00 % (Taeniopterygidae)
Family Biotic Index: 3.74
Scraper/Filterer Collector Ratio: 0.43
Shredder/Total Ratio: 0.37
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 66.00
EPT/C: 13.20
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 168

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 25 / 3
Substrate: Gravel/sand, silt, snags....StreamBank Vegetation/Stability: Trees, shrubs, grass/Good
Canopy: Partly Open....Other: Suburban, forested, macrophytes present, water color: cedar brown; Water main crossing upstream of bridge.
Water temp. 4.0C / pH 5.2SU / DO 12.7mg/L / Cond. 4.1umhos;

Station: AN0550
Long Br Of N Br Forked River, Lacey/Ocean Twp Bdry., Ocean County
Brookville USGS Quadrangle
Date Sampled: 12/07/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	37
Simuliidae	6	34
Dytiscidae	5	13
Leptophlebiidae	2	5
Corixidae	9	3
Tubificidae	10	3
Asellidae	8	2
Hydropsychidae	4	2
Ephemerellidae	1	2
Hydroptilidae	4	2
Elmidae	4	2
Pyralidae	5	1
Ceratopogonidae	6	1
Tabanidae	6	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 109
% Contribution of Dominant Family: 33.94 % (Chironomidae)
Family Biotic Index: 5.68
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.06
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 11.01
EPT/C: 0.32
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 196

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 4/3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees/Good
Canopy: Mostly closed....Other: Water color: cedar brown, rural, forested; Braided stream located near Ironside Gun Club
Water temp. 8.9C / pH 4.2SU / DO 8.3mg/L / Cond. 79umhos;

Station: AN0551
N Br Forked River, Power Lines Upstream Of Gs Pkwy, Ocean County
Forked River USGS Quadrangle
Date Sampled: 11/9/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Heptageniidae	4	23
Simuliidae	6	15
Hydropsychidae	4	12
Chironomidae	6	11
Taeniopterygidae	2	10
Lepidostomatidae	1	9
Leptoceridae	4	5
Brachycentridae	1	4
Tipulidae	3	3
Tubificidae	10	2
Corydalidae	0	2
Hydroptilidae	4	2
Limnephilidae	4	2
Calopterygidae	5	1
Ephemerellidae	1	1
Talitridae	8	1
Perlodidae	2	1
Leuctridae	0	1
Elmidae	4	1
Libellulidae	9	1
Polycentropodidae	6	1
Baetidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 109
% Contribution of Dominant Family: 21.10 % (Heptageniidae)
Family Biotic Index: 3.97
Scraper/Filterer Collector Ratio: 0.96
Shredder/Total Ratio: 0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 13
% EPT: 66.06
EPT/C: 6.55
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/6
Substrate: Gravel/ Sand....StreamBank Vegetation/Stability: Trees/Good
Canopy: Open....Other: Rural, Forested, Much pool variation and sinuosity;
Litter/debris upstream
Water temp. 7.8C / pH 4.11SU / DO 11.47mg/L / Cond. 49umhos;

Station: AN0552
Oyster Ck., Rt. 532, Ocean County
Brookville USGS Quadrangle
Date Sampled: 12/07/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	34
Taeniopterygidae	2	13
Brachycentridae	1	10
Hydropsychidae	4	8
Elmidae	4	6
Heptageniidae	4	5
Philopotamidae	3	4
Leptoceridae	4	4
Limnephilidae	4	4
Hydroptilidae	4	3
Corydalidae	0	3
Tipulidae	3	2
Tubificidae	10	2
Polycentropodidae	6	2
Naididae	7	2
Coenagrionidae	9	1
Cordulegastridae	3	1
Perlodidae	2	1
Leptophlebiidae	2	1
Simuliidae	6	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 108
% Contribution of Dominant Family: 31.48 % (Chironomidae)
Family Biotic Index: 4.18
Scraper/Filterer Collector Ratio: 0.93
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 50.93
EPT/C: 1.62
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 7/2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Partly Open....Other: Water color: cedar brown; rural, forested; Macrophytes present, small rock dam upstream
Staff gauge 3.6; Water temp. 9.3 / pH 5.1SU / DO 9.0mg/L / Cond. 49umhos

Station: AN0553
Waretown Ck, Rt. 9 Bridge #1502-152/78.05, Ocean County
Forked River USGS Quadrangle
Date Sampled: 12/07/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	30
Leptophlebiidae	2	14
Leuctridae	0	10
Polycentropodidae	6	9
Naididae	7	9
Sialidae	4	4
BloodRed Chironomidae	8	3
Limnephilidae	4	2
Hydropsychidae	4	2
Corydalidae	0	2
Leptoceridae	4	2
Pyralidae	5	1
Aeshnidae	3	1
Calopterygidae	5	1
Ceratopogonidae	6	1
Philopotamidae	3	1
Ephemerellidae	1	1
Dytiscidae	5	1
Coenagrionidae	9	1
Perlodidae	2	1
Tipulidae	3	1
Simuliidae	6	1
Elmidae	4	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 24
Total Number of Individuals: 100
% Contribution of Dominant Family: 30.00 % (Chironomidae)
Family Biotic Index: 4.45
Scraper/Filterer Collector Ratio: 0.23
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10
% EPT: 43.00
EPT/C: 1.30
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 175

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5 / 1.5
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Mostly closed....Other: Suburban, forested, macrophytes and submerged grasses

present; Water color: brown
Water temp. 10.3C / pH 4.5SU / DO 8.8mg/L / Cond. 81;

Station: AN0554
Four Mile Br, Nr. Mill Ck Confl (End Of Oxycoccus Rd), Ocean County
West Creek USGS Quadrangle
Date Sampled: 12/16/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	31
Hydroptilidae	4	30
Polycentropodidae	6	10
Chironomidae	6	9
Coenagrionidae	9	5
Baetidae	4	5
Sialidae	4	5
Naididae	7	4
Tubificidae	10	2
Elmidae	4	2
Corixidae	9	1
Talitridae	8	1
Corduliidae	5	1
Leptoceridae	4	1
Gomphidae	1	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 109
% Contribution of Dominant Family: 28.44 % (Sphaeriidae)
Family Biotic Index: 6.00
Scraper/Filterer Collector Ratio: 0.62
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 43.12
EPT/C: 5.22
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 180

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Good
Canopy: Partly Open....Other: Rural, Forested, National Wildlife Refuge; Agriculture-Cropland, inactive cranberry bogs
Water temp. 8.0C / pH 5.1SU / DO 10.6mg/L / Cond. 73umhos;

Station: AN0555
Mill Ck, Rt. 72, Ocean County
West Creek USGS Quadrangle
Date Sampled: 12/16/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	68
Hydrobiidae	8	10
Tubificidae	10	4
Chironomidae	6	4
Planariidae	4	3
Coenagrionidae	9	3
Baetiscidae	3	1
Hydropsychidae	4	1
Lumbriculidae	8	1
Macromiidae	3	1
Polycentropodidae	6	1
Simuliidae	6	1
Heptageniidae	4	1
Valvatidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 68.00 % (Sphaeriidae)
Family Biotic Index: 7.65
Scraper/Filterer Collector Ratio: 0.16
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 4.00
EPT/C: 1.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 170
Deficiency(s) noted: Sphaeriidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6/3
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Open....Other: Suburban, Forested; Storm Sewers Present
Water Temp. 10.1C / pH 5.3SU / DO 9.9mg/L / Cond. 77umhos;

Station: AN0555A
Mill Ck, Off Hay Rd., Ocean County
West Creek USGS Quadrangle
Date Sampled: 12/15/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Lumbriculidae	8	13
Metretopodidae	2	11
Tubificidae	10	10
Leptophlebiidae	2	9
Limnephilidae	4	6
Polycentropodidae	6	3
Calopterygidae	5	2
Tipulidae	3	2
Empididae	6	2
Perlodidae	2	2
Leptoceridae	4	2
Tabanidae	6	2
Cordulegastridae	3	1
Dytiscidae	5	1
Hydropsychidae	4	1
Hydroptilidae	4	1
Phryganeidae	4	1
Gammaridae	4	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Chironomidae)
Family Biotic Index: 5.38
Scraper/Filterer Collector Ratio: 0.25
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10
% EPT: 37.00
EPT/C: 1.28
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 193

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/ 1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees, grass/Good
Canopy: Partly Open....Other: Forested, logs laid across stream, macrophytes present;
Water color: brown
Water temp. 10.0C / pH 4.3SU / SO 9.8mg/L / Cond. 53umhos;

Station: AN0556
Cedar Run, Rt. 9, Ocean County
West Creek USGS Quadrangle
Date Sampled: 12/15/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	47
Chironomidae	6	8
Limnephilidae	4	8
Gammaridae	4	6
Lumbriculidae	8	6
Asellidae	8	5
Philopotamidae	3	4
Hydropsychidae	4	4
Polycentropodidae	6	3
Ephemerellidae	1	2
Phryganeidae	4	2
Heptageniidae	4	2
Leptophlebiidae	2	1
BloodRed Chironomidae	8	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 47.00 % (Naididae)
Family Biotic Index: 5.97
Scraper/Filterer Collector Ratio: 0.36
Shredder/Total Ratio: 0.16
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 27.00
EPT/C: 3.00
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 183

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10 / 2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, grass/Good
Canopy: Mostly Closed....Other: Suburban, water color: brown, impoundment upstream: lake/bog; Macrophytes present, water has a foul smell.
Water temp. 9.3C / pH 4.7SU / DO 10.8mg/L / Cond. 65umhos;

Station: AN0557
Westecunk Ck, Forge Rd. (Stafford Forge), Ocean County
West Creek USGS Quadrangle
Date Sampled: 12/15/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	44
Chironomidae	6	17
Philopotamidae	3	12
Elmidae	4	11
Ephemerellidae	1	6
Leptophlebiidae	2	3
Leptoceridae	4	3
Empididae	6	2
Corydalidae	0	2
Corixidae	9	1
Hydrobiidae	8	1
Gomphidae	1	1
Tipulidae	3	1
Limnephilidae	4	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 106
% Contribution of Dominant Family: 41.51 % (Hydropsychidae)
Family Biotic Index: 4.02
Scraper/Filterer Collector Ratio: 0.21
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 65.09
EPT/C: 4.06
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 185

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10-25 / 2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Shrubs, trees/Good
Canopy: Partly Open....Other: Forested, impoundment upstream: cranberry bog/lake; Some macrophytes present, water color: brown
Water temp. 8.5C / pH 4.9SU / DO 13.5mg/L / Cond 32umhos;

Station: AN0557A
Westecunk Ck, Pollypod Rd., Ocean County
West Creek USGS Quadrangle
Date Sampled: 12/15/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	23
Chironomidae	6	19
Lumbriculidae	8	9
Polycentropodidae	6	6
Leuctridae	0	5
Odontoceridae	0	5
Limnephilidae	4	5
Taeniopterygidae	2	5
Tubificidae	10	4
Leptophlebiidae	2	4
Philopotamidae	3	3
Naididae	7	2
Corydalidae	0	2
Leptoceridae	4	2
Simuliidae	6	2
Tabanidae	6	2
Calopterygidae	5	1
Cordulegastridae	3	1
Perlodidae	2	1
Molannidae	6	1
Elmidae	4	1
Hydroptilidae	4	1
Ceratopogonidae	6	1
Rhyacophilidae	0	1
Metretopodidae	2	1
BloodRed Chironomidae	8	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 27
Total Number of Individuals: 109
% Contribution of Dominant Family: 21.10 % (Hydropsychidae)
Family Biotic Index: 4.50
Scraper/Filterer Collector Ratio: 0.24
Shredder/Total Ratio: 0.32
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 15
% EPT: 58.72
EPT/C: 3.20
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 196

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 1-4 / 1-2
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly closed....Other: Forested, braided stream, Water color: cedar brown;
Some macrophytes
Water temp. 9.3C / pH 4.3SU / DO 10.3mg/L / Cond. 56umhos;

Station: AN0558
Westecunk Ck, Railroad Ave. (Off Mill St.), Ocean County
West Creek USGS Quadrangle
Date Sampled: 12/15/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	40
Elmidae	4	21
Metretopodidae	2	6
Tubificidae	10	3
Perlodidae	2	3
Leptophlebiidae	2	3
Tipulidae	3	3
Sericostomatidae	3	2
Baetiscidae	3	2
Ephemerellidae	1	2
BloodRed Chironomidae	8	2
Heptageniidae	4	2
Taeniopterygidae	2	2
Baetidae	4	1
Ceratopogonidae	6	1
Coenagrionidae	9	1
Molannidae	6	1
Corydalidae	0	1
Leptoceridae	4	1
Limnephilidae	4	1
Naididae	7	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 40.00 % (Chironomidae)
Family Biotic Index: 4.75
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 26.00
EPT/C: 0.62
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 166

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/4
Substrate: Cobbles, Gravel/sand, Silt....StreamBank Vegetation/Stability: Trees, shrubs, grass/Good
Canopy: Mostly open....Other: Suburban, water color: brown, macrophytes present; Water temp. 9.4C / pH 4.9SU / DO 9.4mg/L / Cond 48umhos

Station: AN0559
Mill Bk Of Tuckerton Ck, Nugentown Rd., Ocean County
Tuckerton USGS Quadrangle
Date Sampled: 12/16/99

Family	Family Tolerance Value (FTV)	Number of Individuals
Limnephilidae	4	19
Talitridae	8	17
Gyrinidae	3	16
Asellidae	8	9
Corixidae	9	8
Chironomidae	6	5
Baetidae	4	4
Ephemerellidae	1	4
Dytiscidae	5	4
Polycentropodidae	6	3
Sialidae	4	3
Phryganeidae	4	2
Coenagrionidae	9	2
Lestidae	9	2
Tubificidae	10	2
Hydroptilidae	4	2
Metretopodidae	2	2
Aeshnidae	3	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 106
% Contribution of Dominant Family: 17.92 % (Limnephilidae)
Family Biotic Index: 5.58
Scraper/Filterer Collector Ratio: 2.00
Shredder/Total Ratio: 0.28
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 33.96
EPT/C: 7.20
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 179

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30 / >4
Substrate: Gravel/sand, Mud, Snags....StreamBank Vegetation/Stability: Cedar Trees, grass, shrubs/Good
Canopy: Mostly Open....Other: Ducks inhabiting stream, macrophytes present, cedar swamp adjacent; Water color: brown, rural, forested
Water temp. 9.0C / pH 4.2SU / DO 9.9mg/L / Cond. 60umhos;

Station: AN0559A
Mill Branch, Poor Mans Parkway, Ocean County
West Creek USGS Quadrangle
Date Sampled: 1/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	52
Leuctridae	0	9
Tipulidae	3	6
Tubificidae	10	4
Lumbriculidae	8	4
Odontoceridae	0	4
Gyrinidae	3	3
Calamoceratidae	0	3
Limnephilidae	4	3
Aeshnidae	3	2
Calopterygidae	5	2
Ephemerellidae	1	2
Molannidae	6	2
Cordulegastridae	3	1
BloodRed Chironomidae	8	1
Corydalidae	0	1
Leptoceridae	4	1
Polycentropodidae	6	1
Sialidae	4	1
Metretopodidae	2	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 104
% Contribution of Dominant Family: 50.00 % (Chironomidae)
Family Biotic Index: 4.67
Scraper/Filterer Collector Ratio: 8.00
Shredder/Total Ratio: 0.14
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 25.00
EPT/C: 0.49
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 169

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1-2
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Forested; Macrophytes present
Water temp. 5.1C / pH 5.5SU / DO 10.3mg/L / Cond. 49umhos;

Station: AN0560
Mullica River, Medford Rd, Burlington & Camden County
Medford Lakes USGS Quadrangle
Date Sampled: 3/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	31
Naididae	7	19
BloodRed Chironomidae	8	8
Sphaeriidae	8	8
Tetrastemmatidae	7	7
Hydrobiidae	8	6
Tubificidae	10	4
Lumbriculidae	8	4
Caenidae	7	2
Talitridae	8	2
Hydroptilidae	4	2
Hydropsychidae	4	1
Corixidae	9	1
Gomphidae	1	1
Planorbidae	6	1
Pyralidae	5	1
Physidae	7	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 31.00 % (Chironomidae)
Family Biotic Index: 6.90
Scraper/Filterer Collector Ratio: 0.20
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 5.00
EPT/C: 0.13
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 176
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 8/<1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Mostly Open....Other: Suburban, Forested- development less than half mile away; Station downstream of lake
Lake water with sewage odor, garbage downstream, Clams present; Water temp. 8.1C / pH 5.4SU / DO 12.5mg/L / Cond. 140umhos

Station: AN0561
Mullica River, Off Jackson, Burlington & Camden County
Medford Lakes USGS Quadrangle
Date Sampled: 3/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	32
Asellidae	8	16
Leptophlebiidae	2	13
Limnephilidae	4	9
Gammaridae	4	9
Polycentropodidae	6	8
Tubificidae	10	5
Simuliidae	6	2
Dytiscidae	5	2
Leuctridae	0	2
Sialidae	4	2
Corixidae	9	1
Capniidae	1	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 102
% Contribution of Dominant Family: 31.37 % (Chironomidae)
Family Biotic Index: 5.45
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 32.35
EPT/C: 1.03
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 177

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/2-3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Shrubs, Trees, Weeds/Good
Canopy: Partly Open....Other: Rural, Forested; Macrophytes Present
Water color- Brown; Water temp. 6.2C / pH 4.0SU / DO 12.2mg/L / Cond. 72umhos

Station: AN0562
Mullica River, Burnt House Rd (Nr Goshen Pond Outlet), Burlington County
Hammonton USGS Quadrangle
Date Sampled: 3/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	48
Leptophlebiidae	2	24
Limnephilidae	4	6
Sialidae	4	4
Asellidae	8	3
Simuliidae	6	3
Tubificidae	10	3
Hydropsychidae	4	2
Corixidae	9	1
Tipulidae	3	1
Coenagrionidae	9	1
Lumbriculidae	8	1
Leptoceridae	4	1
Hydroptilidae	4	1
Phryganeidae	4	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 101
% Contribution of Dominant Family: 47.52 % (Chironomidae)
Family Biotic Index: 4.96
Scraper/Filterer Collector Ratio: 0.40
Shredder/Total Ratio: 0.57
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 35.64
EPT/C: 0.75
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 170

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 25/4
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Shrubs, Trees, Grass/Good
Canopy: Open....Other: Forested- Warton State Forest; Macrophytes and Fish Present
Water temp. 11.5C / pH 4.5SU / DO 9.0mg/L / Cond. 47umhos;

Station: AN0563
Wesickaman Ck, Quaker Bridge Rd, Burlington County
Atsion USGS Quadrangle
Date Sampled: 2/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	51
Simuliidae	6	37
Nemouridae	2	8
Asellidae	8	3
Tipulidae	3	3
Leuctridae	0	2
Tubificidae	10	1
Cordulegastridae	3	1
Corydalidae	0	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 107
% Contribution of Dominant Family: 47.66 % (Chironomidae)
Family Biotic Index: 5.51
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.12
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 9.35
EPT/C: 0.20
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12-15/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Grass/Good
Canopy: Mostly Closed ....Other: Rural; Water temp. 0.3C / pH 5.3SU / DO 8.7mg/L / Cond. 95umhos

Station: AN0564
Mullica River, Constable Bridge, Burlington & Atlantic County
Atsion USGS Quadrangle
Date Sampled: 2/10/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	14
Chironomidae	6	7
Tubificidae	10	4
Leptoceridae	4	2
Taeniopterygidae	2	2
Coenagrionidae	9	1
Baetiscidae	3	1
Perlodidae	2	1
Tipulidae	3	1
Lumbricidae	10	1
Corydalidae	0	1
Polycentropodidae	6	1
Ceratopogonidae	6	1
Limnephilidae	4	1
Elmidae	4	1
BloodRed Chironomidae	8	1
Libellulidae	9	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 41
% Contribution of Dominant Family: 34.15 % (Simuliidae)
Family Biotic Index: 5.90
Scraper/Filterer Collector Ratio: 0.07
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 19.51
EPT/C: 1.00
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 184

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/3.5
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Open....Other: Rural, Forested- Wharton State Forest; Water temp. 2.0C / pH 4.6SU / DO 11.9mg/L / Cond. 60umhos

Station: AN0565
Hays Mill Ck, Tremont Ave, Camden County
Medford Lakes USGS Quadrangle
Date Sampled: 3/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	46
Leptophlebiidae	2	15
Lepidostomatidae	1	10
Limnephilidae	4	5
Tubificidae	10	5
Heptageniidae	4	4
Baetidae	4	3
Ephemerellidae	1	3
Sphaeriidae	8	3
Hydropsychidae	4	2
Planariidae	4	2
Hydrobiidae	8	2
Perlodidae	2	1
Leuctridae	0	1
Psychomyiidae	2	1
Leptoceridae	4	1
Polycentropodidae	6	1
Elmidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 107
% Contribution of Dominant Family: 42.99 % (Chironomidae)
Family Biotic Index: 4.63
Scraper/Filterer Collector Ratio: 1.83
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 43.93
EPT/C: 1.02
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 189

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1-<1
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Mostly Closed....Other: Suburban- less than quater mile behind a development; Forested
Water Color- Brown, Macrophytes Present; Water temp. 8.8C / pH 5.2SU / DO 11.9mg/L / Cond. 125umhos

Station: AN0566
Sleeper Br, Parkdale, Camden County
Hammonton USGS Quadrangle
Date Sampled: 3/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	46
Tipulidae	3	8
Leptophlebiidae	2	8
Simuliidae	6	8
Heptageniidae	4	7
Naididae	7	5
Lepidostomatidae	1	5
Perlodidae	2	3
Sericostomatidae	3	2
Lumbriculidae	8	2
Limnephilidae	4	2
Leptoceridae	4	2
Polycentropodidae	6	2
Poduridae	10	1
Aeshnidae	3	1
Gomphidae	1	1
Leuctridae	0	1
Hydroptilidae	4	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 106
% Contribution of Dominant Family: 43.40 % (Chironomidae)
Family Biotic Index: 4.81
Scraper/Filterer Collector Ratio: 1.10
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 10
% EPT: 31.13
EPT/C: 0.72
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 193

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 15/1-3.5
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Moss, Shrubs/Good
Canopy: Open....Other: Forested: Wharton State Forest; Logs on stream bottom
Water color: Cedar Brown; Water temp. 1.0C / pH 5.6SU / DO 11.6mg/L / Cond. 67umhos

Station: AN0567
Clarks Br, Burnt Mill Rd, Camden County
Hammonton USGS Quadrangle
Date Sampled: 3/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	50
Asellidae	8	37
Enchytraeidae	10	4
Simuliidae	6	4
Phryganeidae	4	2
Chloroperlidae	1	1
Dytiscidae	5	1
Gammaridae	4	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 101
% Contribution of Dominant Family: 49.50 % (Chironomidae)
Family Biotic Index: 6.74
Scraper/Filterer Collector Ratio: 12.50
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.97
EPT/C: 0.06
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 167
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 6.5-1.5/2-<1
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested: Wharton State Forest; Macrophytes and Filamentous Algae Present
Wood debris in stream, Water color: Cedar Brown; Water temp. 7.8C / pH 4.6SU / DO 7.7mg/L / Cond. 57umhos

Station: AN0568
Prices Br, Burnt Mill Rd, Camden County
Hammonton USGS Quadrangle
Date Sampled: 3/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	68
Chironomidae	6	25
Naididae	7	2
BloodRed Chironomidae	8	2
Gammaridae	4	2
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 100
% Contribution of Dominant Family: 68.00 % (Asellidae)
Family Biotic Index: 7.40
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.70
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 183
Deficiency(s) noted: Asellidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/1-<1
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Forested: Wharton State Forest; Marcrophytes and Filamentous algae Present
Leaf Litter, Water Color: Brown; Water temp. 8.9C / pH 5.6SU / DO 6.6mg/L / Cond. 79umhos

Station: AN0569
Pump Br, Old White Horse Pike, Camden County
Hammonton USGS Quadrangle
Date Sampled: 3/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	53
Hydroptilidae	4	9
Coenagrionidae	9	7
Viviparidae	6	7
Ephemerellidae	1	5
Hydropsychidae	4	3
Erpobdellidae	8	2
Lumbriculidae	8	2
Naididae	7	2
Leptoceridae	4	2
Sphaeriidae	8	2
Hydrobiidae	8	2
Tubificidae	10	1
Caenidae	7	1
Phryganeidae	4	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 53.00 % (Chironomidae)
Family Biotic Index: 5.89
Scraper/Filterer Collector Ratio: 0.39
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 21.00
EPT/C: 0.40
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 165

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8-10/2->3
Substrate: Mud....StreamBank Vegetation/Stability: Weeds, Shrubs/Fair
Canopy: Mostly Open....Other: Agriculture-orchard nearby; Macrophytes and Clams Present
Water temp. 9.6C / pH 5.9SU / DO 11.3mg/L / Cond. 113;

Station: AN0570
Blue Anchor Bk, Rt. 30, Camden County
Hammonton USGS Quadrangle
Date Sampled: 3/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	24
Sphaeriidae	8	22
Lumbriculidae	8	18
Planariidae	4	10
Naididae	7	8
Tubificidae	10	5
Chironomidae	6	5
Asellidae	8	2
Physidae	7	2
Caenidae	7	1
Ceratopogonidae	6	1
Hydrobiidae	8	1
Libellulidae	9	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 24.00 % (BloodRed Chironomidae)
Family Biotic Index: 7.48
Scraper/Filterer Collector Ratio: 0.14
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 0.03
NJIS Rating: 12
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): 8/<1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Shrubs, Trees/Fair
Canopy: Mostly Closed....Other: Suburban, Forested; Station downstream of Elm Lake, Fish present, Litter on Banks
Iron precipatate, metalic smell present; Water temp. 9.4C / pH 5.8SU / DO 10.5mg/L / Cond. 81umhos

Station: AN0571
Albertson Bk, Off Wharton Ave, Camden County
Hammonton USGS Quadrangle
Date Sampled: 3/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	45
Hydrobiidae	8	17
Lumbriculidae	8	16
Tubificidae	10	7
Enchytraeidae	10	5
Tetrastemmatidae	7	4
Chironomidae	6	3
Heptageniidae	4	3
Coenagrionidae	9	2
Simuliidae	6	2
Hydropsychidae	4	1
Gomphidae	1	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 107
% Contribution of Dominant Family: 42.06 % (Sphaeriidae)
Family Biotic Index: 7.88
Scraper/Filterer Collector Ratio: 0.41
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 4.67
EPT/C: 1.67
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 177
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 20-12/1-3
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Partly Open....Other: Agriculture-orchards about 1 mile away; Forested
Macrophytes present; Water temp. 9.3C / pH 5.7SU / DO 12.2mg/L / Cond. 84umhos

Station: AN0572
Albertson Bk, Old Bridge Crossing, Atlantic County
Atsion USGS Quadrangle
Date Sampled: 3/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	36
Leptophlebiidae	2	22
Lumbriculidae	8	7
BloodRed Chironomidae	8	7
Elmidae	4	6
Sphaeriidae	8	5
Tubificidae	10	4
Perlodidae	2	4
Philopotamidae	3	2
Planorbidae	6	2
Polycentropodidae	6	2
Glossiphoniidae	8	1
Calopterygidae	5	1
Hydropsychidae	4	1
Leptoceridae	4	1
Tetrastemmatidae	7	1
Sialidae	4	1
Tricorythidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 104
% Contribution of Dominant Family: 34.62 % (Chironomidae)
Family Biotic Index: 5.29
Scraper/Filterer Collector Ratio: 1.50
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 31.73
EPT/C: 0.77
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 176

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/4
Substrate: Gravel/Sand, Mud, Snags, Macrophytes....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Forested, Water color: Brown; Water temp. 8.3C / pH 4.9SU / DO 11.7mg/L / Cond. 78

Station: AN0573
Great Swamp Bk, Rt. 30, Camden County
Hammonton USGS Quadrangle
Date Sampled: 3/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	25
BloodRed Chironomidae	8	22
Naididae	7	18
Chironomidae	6	13
Lumbriculidae	8	7
Glossiphoniidae	8	4
Coenagrionidae	9	3
Planariidae	4	2
Corduliidae	5	2
Caenidae	7	1
Polycentropodidae	6	1
Phryganeidae	4	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 25.00 % (Tubificidae)
Family Biotic Index: 7.88
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.23
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 3.00
EPT/C: 0.09
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 10-5/1-2
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Grass, Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Suburban; Station downstream of a lake
Fish present; Water temp. 12.1C / pH 5.5SU / DO 10.1mg/L / Cond. 141umhos

Station: AN0574
Great Swamp Bk, Rt. 206, Atlantic County
Hammonton USGS Quadrangle
Date Sampled: 3/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	28
Asellidae	8	16
Leptophlebiidae	2	12
Naididae	7	8
BloodRed Chironomidae	8	4
Coenagrionidae	9	4
Notonectidae	9	3
Limnephilidae	4	3
Polycentropodidae	6	3
Sialidae	4	3
Planorbidae	6	2
Haliplidae	5	2
Phryganeidae	4	2
Baetidae	4	1
Simuliidae	6	1
Corixidae	9	1
Elmidae	4	1
Libellulidae	9	1
Hydroptilidae	4	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 97
% Contribution of Dominant Family: 28.87 % (Chironomidae)
Family Biotic Index: 6.05
Scraper/Filterer Collector Ratio: 0.80
Shredder/Total Ratio: 0.28
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 22.68
EPT/C: 0.69
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 172

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 10/3-3.5
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Trees, Grasses, Shrubs/Good
Canopy: Partly Open....Other: Rural, Forested: Wharton State Forest; Water color: Brown
Cedar Swamp; Water temp. 10.6C / pH 5.5SU / DO 5.8mg/L / Cond. 137umhos

Station: AN0575
Cedar Bk, Myrtle Ave. (Columbia Rd.), Atlantic County
Hammonton USGS Quadrangle
Date Sampled: 3/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	66
Corixidae	9	5
Elmidae	4	5
Sphaeriidae	8	5
Tubificidae	10	5
Coenagrionidae	9	4
BloodRed Chironomidae	8	3
Planorbidae	6	2
Haliplidae	5	2
Physidae	7	2
Asellidae	8	1
Dytiscidae	5	1
Lestidae	9	1
Naididae	7	1
Notonectidae	9	1
Sialidae	4	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 106
% Contribution of Dominant Family: 62.26 % (Chironomidae)
Family Biotic Index: 6.55
Scraper/Filterer Collector Ratio: 0.13
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 144
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 10/1.5
Substrate: Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Partly Open....Other: Agricutlure-cropland: Blueberries, Rural; Water color: Brown
Water Temp. 11.1C / pH 6.4SU / DO 9.9mg/L / Cond. 213;

Station: AN0576
Nescohague Ck, Pleasant Mills (Behind Um Church), Atlantic County
Atsion USGS Quadrangle
Date Sampled: 3/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	35
Elmidae	4	13
Ephemerellidae	1	12
Simuliidae	6	9
Hydropsychidae	4	8
Heptageniidae	4	7
Limnephilidae	4	5
Leptophlebiidae	2	3
Leptoceridae	4	2
Tubificidae	10	2
Lumbriculidae	8	2
BloodRed Chironomidae	8	2
Sericostomatidae	3	1
Gomphidae	1	1
Lepidostomatidae	1	1
Brachycentridae	1	1
Nemouridae	2	1
Sphaeriidae	8	1
Metretopodidae	2	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 107
% Contribution of Dominant Family: 32.71 % (Chironomidae)
Family Biotic Index: 4.60
Scraper/Filterer Collector Ratio: 1.11
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 39.25
EPT/C: 1.14
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 183

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/3
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested; Water color: Cedar Brown
Water temp. 7.6C / pH 4.8SU / DO 11.9mg/L / Cond. 82umhos;

Station: AN0577
Hammonton Ck, Boyer Rd, Atlantic County
Hammonton USGS Quadrangle
Date Sampled: 1/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Talitridae	8	71
Asellidae	8	9
Tubificidae	10	5
Enchytraeidae	10	4
Chironomidae	6	3
Naididae	7	3
Hydropsychidae	4	2
Molannidae	6	2
Limnephilidae	4	2
Erpobdellidae	8	1
Coenagrionidae	9	1
Cambaridae	5	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 104
% Contribution of Dominant Family: 68.27 % (Talitridae)
Family Biotic Index: 7.88
Scraper/Filterer Collector Ratio: 1.00
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 5.77
EPT/C: 2.00
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 156
Deficiency(s) noted: Talitridae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/1
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs, Thorns/Fair
Canopy: Mostly Open....Other: Suburban, Rural; Hammonton STP Discharge Upstream Storm Sewers, Macrophytes, and Crayfish Present; Water temp. 9.0C / pH 5.4SU / DO 9.3mg/L / Cond. 142umhos

Station: AN0578
Hammonton Ck, Columbia Rd, Atlantic County
Atsion USGS Quadrangle
Date Sampled: 1/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	24
Ephemerellidae	1	16
Chironomidae	6	13
Leptophlebiidae	2	11
Sphaeriidae	8	11
Elmidae	4	8
Heptageniidae	4	7
Tipulidae	3	5
Tubificidae	10	4
Hydropsychidae	4	2
Lumbriculidae	8	2
Limnephilidae	4	2
Planariidae	4	1
Molannidae	6	1
Gammaridae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 109
% Contribution of Dominant Family: 22.02 % (Simuliidae)
Family Biotic Index: 4.72
Scraper/Filterer Collector Ratio: 0.22
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 35.78
EPT/C: 3.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 187

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Water color: brown
Macrophytes Present; Water temp. 7.4C / pH 6.0SU / DO 9.9mg/L / Cond. 83umhos

Station: AN0579
Batsto River, Carranza Rd., Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 2/1/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Limnephilidae	4	16
Leptophlebiidae	2	13
Asellidae	8	12
Tubificidae	10	12
Chironomidae	6	8
Molannidae	6	7
Sphaeriidae	8	5
Tipulidae	3	5
Polycentropodidae	6	3
Simuliidae	6	3
Tabanidae	6	2
Phryganeidae	4	2
Aeshnidae	3	1
Perlodidae	2	1
Hydroptilidae	4	1
Pyralidae	5	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 93
% Contribution of Dominant Family: 17.20 % (Limnephilidae)
Family Biotic Index: 5.69
Scraper/Filterer Collector Ratio: 0.73
Shredder/Total Ratio: 0.40
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 46.24
EPT/C: 4.78
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 188

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/2
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Forested-Warton State Forest; Water Color: Cedar Brown; Waterfowl and macrophytes present
Oily film on surface; Water temp. 2.2C / pH 5.3SU / DO 11.1mg/L / Cond. 55umhos

Station: AN0580
Roberts Br, Carranza Rd, Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 02/01/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	82
Asellidae	8	9
Chironomidae	6	5
Hydropsychidae	4	1
Limnephilidae	4	1
Lestidae	9	1
Leuctridae	0	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 100
% Contribution of Dominant Family: 82.00 % (Simuliidae)
Family Biotic Index: 6.11
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 3.00
EPT/C: 0.60
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 191
Deficiency(s) noted: Simuliidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly turbid....Flow: Moderate....Width/Depth (ft): 8/4
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: Water color: cedar brown, Land Use: forested- Wharton State Forest; Water temp. 0.1C / pH 5.2SU / DO 10.6mg/L / Cond. 41umhos

Station: AN0581
Skit Br, Carranza Rd, Shamong Twp, Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 02/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	23
Simuliidae	6	13
Hydropsychidae	4	13
Lumbriculidae	8	9
Sialidae	4	8
Asellidae	8	5
Gammaridae	4	4
Leuctridae	0	3
Tubificidae	10	3
Leptoceridae	4	3
Sphaeriidae	8	3
Perlodidae	2	2
Tipulidae	3	2
Tabanidae	6	1
Leptophlebiidae	2	1
Erpobdellidae	8	1
Naididae	7	1
Hydroptilidae	4	1
Pyralidae	5	1
Limnephilidae	4	1
Polycentropodidae	6	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Chironomidae)
Family Biotic Index: 5.48
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 26.00
EPT/C: 1.13
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 189

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/3
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Partly Open....Other: Water color: cedar brown, Land Use: forested-Wharton State Forest; Water temp. 1.5C / pH 4.5SU / DO 12.0mg/L / Cond. 30umhos

Station: AN0582
Indian Mills Bk, Willow Grove Rd, Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 2/1/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	34
Simuliidae	6	18
Tubificidae	10	12
Sphaeriidae	8	10
Naididae	7	10
Planorbidae	6	5
Physidae	7	4
Caenidae	7	2
Lumbriculidae	8	2
Libellulidae	9	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 99
% Contribution of Dominant Family: 34.34 % (Chironomidae)
Family Biotic Index: 6.94
Scraper/Filterer Collector Ratio: 0.31
Shredder/Total Ratio: 0.35
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.02
EPT/C: 0.06
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 159
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, Grass/Fair
Canopy: Open....Other: Rural; Station Downstream of Impoundment
Filamentous algae and Macrophytes Present; Water temp. 10C / pH 5.1SU / DO 12.3mg/L / Cond. 113umhos

Station: AN0583
Muskingum Bk, Willow Grove Rd, Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 02/01/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	31
Planorbidae	6	17
Tubificidae	10	8
BloodRed Chironomidae	8	8
Lumbriculidae	8	8
Chironomidae	6	6
Caenidae	7	5
Planariidae	4	4
Haliplidae	5	3
Talitridae	8	1
Hydrobiidae	8	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 93
% Contribution of Dominant Family: 33.33 % (Naididae)
Family Biotic Index: 7.02
Scraper/Filterer Collector Ratio: 18.00
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 5.38
EPT/C: 0.36
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 159
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 15/2
Substrate: Sand, Mud, Silt....StreamBank Vegetation/Stability: Trees, phragmites/Good
Canopy: Open....Other: Water color: none, Land Use: agriculture- livestock, rural;
Water temp. 1.1C / pH 5.2SU / DO 10.5mg/L / Cond. 22.8umhos
Geese and ducks utilizing stream, algae and fish present;

Station: AN0584
Springers Bk, Rt. 206, Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 2/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	62
Simuliidae	6	16
Coenagrionidae	9	6
Lumbriculidae	8	4
Sphaeriidae	8	4
Hydropsychidae	4	2
Planorbidae	6	2
Glossiphoniidae	8	1
Palaemonidae	6	1
Limnephilidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 62.00 % (Chironomidae)
Family Biotic Index: 6.28
Scraper/Filterer Collector Ratio: 0.09
Shredder/Total Ratio: 0.63
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 3.00
EPT/C: 0.05
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 171
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 15/2-3
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Weeds, Trees/Fair
Canopy: Mostly Open....Other: Rural, Forested; Storm Sewers Present
Macrophytes Present; Water temp. 2.5C / pH 5.4SU / DO 13mg/L / Cond. 193umhos

Station: AN0585
Springers Br, Hampton Rd., Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 02/9/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	45
Chironomidae	6	25
Gammaridae	4	7
Limnephilidae	4	7
Tubificidae	10	3
Leptoceridae	4	3
Elmidae	4	2
Dytiscidae	5	2
Polycentropodidae	6	2
Sialidae	4	2
Ceratopogonidae	6	1
Corixidae	9	1
Leptophlebiidae	2	1
Naididae	7	1
Nemouridae	2	1
Tipulidae	3	1
Simuliidae	6	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 106
% Contribution of Dominant Family: 42.45 % (Sphaeriidae)
Family Biotic Index: 6.47
Scraper/Filterer Collector Ratio: 0.04
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 13.21
EPT/C: 0.56
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 161

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, shrubs/Fair
Canopy: Partly Open....Other: Water color: cedar brown, Land Use: forested; Water temp. 0.7C / pH 5.6SU / DO 11.3mg/L / Cond. 97umhos
Macrophytes present;

Station: AN0586
Batsto River, Quaker Bridge, Burlington County
Atsion USGS Quadrangle
Date Sampled: 02/09/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tipulidae	3	17
Leptophlebiidae	2	15
Brachycentridae	1	13
Metretopodidae	2	12
Simuliidae	6	7
Chironomidae	6	4
Taeniopterygidae	2	4
Leptoceridae	4	3
Ephemerellidae	1	3
Elmidae	4	3
Capniidae	1	3
Perlidae	1	2
Philopotamidae	3	2
Talitridae	8	2
Lumbriculidae	8	2
Heptageniidae	4	2
Cordulegastridae	3	1
Gomphidae	1	1
Hydropsychidae	4	1
Perlodidae	2	1
Tubificidae	10	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 17.00 % (Tipulidae)
Family Biotic Index: 2.94
Scraper/Filterer Collector Ratio: 0.22
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 13
% EPT: 62.00
EPT/C: 15.50
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 25/2-3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Shrubs, trees, grass/Good
Canopy: Mostly open....Other: Water color: brown, Land Use: forested; Water temp. 3.5 / pH 5.4SU / DO 10.3mg/L / Cond. 4.1umhos
Macrophytes present; Depth gauge: 6.0ft

Station: AN0586A
Batsto River, Hampton Furnace, Burlington County
Indian Mills USGS Quadrangle
Date Sampled: 3/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tipulidae	3	23
Brachycentridae	1	20
Chironomidae	6	14
Leptoceridae	4	8
Odontoceridae	0	6
Tubificidae	10	4
Corydalidae	0	4
Cordulegastridae	3	3
Limnephilidae	4	3
Calopterygidae	5	2
Leuctridae	0	2
Lumbriculidae	8	2
Simuliidae	6	2
Elmidae	4	2
Ephemerellidae	1	1
Hydropsychidae	4	1
Leptophlebiidae	2	1
Veliidae	9	1
Molannidae	6	1
Sphaeriidae	8	1
Hydrophilidae	5	1
Gammaridae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 104
% Contribution of Dominant Family: 22.12 % (Tipulidae)
Family Biotic Index: 3.43
Scraper/Filterer Collector Ratio: 0.42
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 41.35
EPT/C: 3.07
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 166

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 6-10/1-3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Grasses, Trees/Fair
Canopy: Partly Open....Other: Forested; Macrophytes Present, Water color: Brown
Remains of old bridge in water; Water temp. 9.4C / pH 4.5SU / DO 10.6mg/L / Cond.

47umhos

Station: AN0587
Pen Swamp Br, Quaker Bridge-Batsto Rd, Burlington County
Atsion USGS Quadrangle
Date Sampled: 02/10/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	38
Gammaridae	4	17
Asellidae	8	16
Simuliidae	6	9
Polycentropodidae	6	6
Metretopodidae	2	4
Limnephilidae	4	3
Molannidae	6	2
Taeniopterygidae	2	2
Tubificidae	10	1
Philopotamidae	3	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 38.00 % (Chironomidae)
Family Biotic Index: 5.67
Scraper/Filterer Collector Ratio: 0.13
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 18.00
EPT/C: 0.47
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 178

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 6/1
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, grass, some shrubs/Good
Canopy: Mostly Open....Other: Water color: cedar brown, Land use: rural, forested-Wharton State Forest; Water temp. 4.4C / pH 3.6SU / DO 10.2mg/L / Cond. 65umhos

Station: AN0588
Batsto River, Rt. 542, Burlington County
Atsion USGS Quadrangle
Date Sampled: 2/10/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	19
Taeniopterygidae	2	7
Hydropsychidae	4	6
Leptophlebiidae	2	5
Lumbriculidae	8	3
Tipulidae	3	3
Leptoceridae	4	2
Limnephilidae	4	2
Naididae	7	1
Empididae	6	1
Hydroptilidae	4	1
Perlodidae	2	1
Tubificidae	10	1
Sphaeriidae	8	1
Elmidae	4	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 55
% Contribution of Dominant Family: 34.55 % (Chironomidae)
Family Biotic Index: 4.65
Scraper/Filterer Collector Ratio: 0.43
Shredder/Total Ratio: 0.16
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 45.45
EPT/C: 1.32
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 168

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 30/3.5
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Open....Other: Rural, Forested- Wharton State Forest; Station downstream of dam
Several areas of exposed roots near bridge; Water temp. 3.8C / pH 4.1SU / DO 11.6mg/L / Cond 39umhos

Station: AN0589
Lucas Br., Pleasant Mills-Weekstown Rd., Atlantic County
Egg Harbor City USGS Quadrangle
Date Sampled: 3/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	43
Ephemerellidae	1	9
Limnephilidae	4	6
Simuliidae	6	6
Ceratopogonidae	6	5
Coenagrionidae	9	3
Asellidae	8	3
Calopterygidae	5	3
Hydropsychidae	4	3
Lepidostomatidae	1	3
Enchytraeidae	10	2
Molannidae	6	2
Baetidae	4	1
Aeshnidae	3	1
Tipulidae	3	1
Gammaridae	4	1
Dytiscidae	5	1
Perlodidae	2	1
Leptophlebiidae	2	1
Psychomyiidae	2	1
Naididae	7	1
Polycentropodidae	6	1
Phryganeidae	4	1
Siphlonuridae	7	1

Statistical Analysis

Number of Taxa: 24
Total Number of Individuals: 100
% Contribution of Dominant Family: 43.00 % (Chironomidae)
Family Biotic Index: 5.19
Scraper/Filterer Collector Ratio: 1.20
Shredder/Total Ratio: 0.57
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 30.00
EPT/C: 0.70
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 175

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Rural, Forested; Station Downstream from homemade dam

Water color: cedar brown; Water temp. 6.9C / pH 3.9SU / DO 10.9mg/L / Cond. 59umhos
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Station: AN0590
Landing Ck, Rt. 30, Atlantic County
Egg Harbor City USGS Quadrangle
Date Sampled: 4/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	47
Lumbriculidae	8	33
Chironomidae	6	9
Asellidae	8	7
Haplotaxidae	8	3
Naididae	7	3
BloodRed Chironomidae	8	3
Planariidae	4	2
Gammaridae	4	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 108
% Contribution of Dominant Family: 43.52 % (Tubificidae)
Family Biotic Index: 8.56
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.19
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 151
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 20/2
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Open....Other: Urban; Storm Sewers, trash, and concrete slabs present
Algae present; WAter temp. 12.5C / pH N/A / DO 5.9mg/L / Cond. N/A

Station: AN0591
Elliots Ck, Bremen Rd., Atlantic County
Green Bank USGS Quadrangle
Date Sampled: 3/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Leptophlebiidae	2	47
Chironomidae	6	19
Simuliidae	6	14
Limnephilidae	4	5
Sialidae	4	5
Asellidae	8	4
Leptoceridae	4	2
Tabanidae	6	2
Dytiscidae	5	1
Coenagrionidae	9	1
BloodRed Chironomidae	8	1
Philopotamidae	3	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 102
% Contribution of Dominant Family: 46.08 % (Leptophlebiidae)
Family Biotic Index: 4.01
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 53.92
EPT/C: 2.75
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 182

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/3
Substrate: Gravel/Sand, Silt, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Agriculture-cropland (winery), Forested; Water temp. 9.9C / pH 4.5SU / DO 8.5mg/L / Cond. 67umhos

Station: AN0592
Landing Ck , Indian Cabin Rd, Atlantic County
Green Bank USGS Quadrangle
Date Sampled: 3/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	65
Leptophlebiidae	2	10
Leptoceridae	4	9
Limnephilidae	4	7
Coenagrionidae	9	2
Polycentropodidae	6	2
Tabanidae	6	2
Sericostomatidae	3	1
Elmidae	4	1
Calopterygidae	5	1
Cordulegastridae	3	1
Tipulidae	3	1
Ephemerellidae	1	1
Dytiscidae	5	1
Lepidostomatidae	1	1
Psychomyiidae	2	1
Molannidae	6	1
Corydalidae	0	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 109
% Contribution of Dominant Family: 59.63 % (Chironomidae)
Family Biotic Index: 5.11
Scraper/Filterer Collector Ratio: 2.00
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 30.28
EPT/C: 0.51
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 182

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20 (Width)
Substrate: Gravel/Sand, Silt, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Forested; Water temp. 8.7C / pH 4.1SU / DO 11.0mg/L / Cond. 74umhos

Station: AN0593
Indian Cabin Ck, Fifth Ave., Atlantic County
Egg Harbor City USGS Quadrangle
Date Sampled: 4/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	60
Asellidae	8	15
Tubificidae	10	13
Leptophlebiidae	2	4
Simuliidae	6	3
Ceratopogonidae	6	1
Hydrophilidae	5	1
Lepidostomatidae	1	1
Tipulidae	3	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 100
% Contribution of Dominant Family: 60.00 % (Chironomidae)
Family Biotic Index: 6.55
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.18
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 6.00
EPT/C: 0.10
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 180
Deficiency(s) noted:
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/<1
Substrate: Gravel/Sand, Snags, Root Mats....StreamBank Vegetation/Stability: Cedars, Shrubs/Good
Canopy: Closed....Other: Forested; Braided Stream
Water temp. 11.1C / pH N/A / DO 4.9mg/L / Cond. N/A;

Station: AN0594
Indian Cabin Ck, Outlet Of Egg Harbor City Lake, Atlantic County
Green Bank USGS Quadrangle
Date Sampled: 3/14/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	50
Coenagrionidae	9	14
Corixidae	9	12
Asellidae	8	11
Corduliidae	5	3
BloodRed Chironomidae	8	2
Lumbriculidae	8	2
Phryganeidae	4	2
Limnephilidae	4	2
Macromiidae	3	1
Naididae	7	1
Polycentropodidae	6	1
Sphaeriidae	8	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 103
% Contribution of Dominant Family: 48.54 % (Chironomidae)
Family Biotic Index: 6.92
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.15
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 4.85
EPT/C: 0.10
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 159
Deficiency(s) noted:
Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/2
Substrate: Snags....StreamBank Vegetation/Stability: Trees/Good
Canopy: Mostly Closed....Other: Forested, park recreation area; Station downstream of Egg Harbor City Lake
Fish Present, Water Color: Cedar Brown; Water Temp. 11.5C / pH 4.1SU / DO 9.6mg/L / Cond. 60umhos

Station: AN0595
West Br Wading River, Rt. 532, Burlington County
Chatsworth USGS Quadrangle
Date Sampled: 1/27/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	35
Tubificidae	10	24
Coenagrionidae	9	9
BloodRed Chironomidae	8	8
Chironomidae	6	8
Dytiscidae	5	4
Polycentropodidae	6	4
Libellulidae	9	3
Corixidae	9	2
Lestidae	9	2
Limnephilidae	4	2
Leptophlebiidae	2	1
Lumbriculidae	8	1
Nepidae	8	1
Sphaeriidae	8	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 105
% Contribution of Dominant Family: 33.33 % (Asellidae)
Family Biotic Index: 8.13
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 6.67
EPT/C: 0.44
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 167
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 10/3
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Rural, Forested; Station downstream of Chatsworth Lake
Oil Sheen on surface; Water temp. 2.0C / pH 4.6SU / DO 4.8mg/L / Cond 346umhos

Station: AN0596
West Br Wading River, Rt. 563, Burlington County
Chatsworth USGS Quadrangle
Date Sampled: 1/27/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	33
Asellidae	8	30
Simuliidae	6	18
Chironomidae	6	9
Leptophlebiidae	2	4
Piscicolidae	7	3
BloodRed Chironomidae	8	3
Philopotamidae	3	1
Polycentropodidae	6	1
Leptoceridae	4	1
Hydroptilidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 104
% Contribution of Dominant Family: 31.73 % (Hydropsychidae)
Family Biotic Index: 5.81
Scraper/Filterer Collector Ratio: 0.02
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 39.42
EPT/C: 3.42
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 170

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/2-3
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Grass, Shrubs/Good
Canopy: Open....Other: Rural, Forested; Some Macrophytes present
Fish and Beaver Present; Water temp. 0.2C / pH 5.2SU / DO 10.2mg/L / Cond. 44umhos

Station: AN0597
Shoal Br, Jones Mill Rd, Burlington County
Chatsworth USGS Quadrangle
Date Sampled: 1/28/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	37
Chironomidae	6	21
Simuliidae	6	8
Elmidae	4	8
Hydropsychidae	4	7
Leptophlebiidae	2	6
Gammaridae	4	5
Tubificidae	10	4
Empididae	6	2
Polycentropodidae	6	2
Limnephilidae	4	2
Tipulidae	3	1
Perlodidae	2	1
Lumbriculidae	8	1
Leptoceridae	4	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 107
% Contribution of Dominant Family: 34.58 % (Asellidae)
Family Biotic Index: 6.16
Scraper/Filterer Collector Ratio: 0.47
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 17.76
EPT/C: 0.86
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 181

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 12/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Rural, Forested; Water temp. 1.4C / pH 4.5SU / DO 10.6mg/L / Cond. 42umhos

Station: AN0597A
Shoal Br, Off Rt. 532, Burlington County
Woodmainse USGS Quadrangle
Date Sampled: 2/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	34
Asellidae	8	11
Tubificidae	10	7
Leptophlebiidae	2	7
Corixidae	9	4
Metretopodidae	2	4
Hydroptilidae	4	3
Coenagrionidae	9	2
Gammaridae	4	1
Lumbriculidae	8	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 75
% Contribution of Dominant Family: 45.33 % (Chironomidae)
Family Biotic Index: 6.21
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.61
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 20.00
EPT/C: 0.44
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 182

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/3
Substrate: Mud, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested; Water Color- Brown
Logs across stream; Water temp 4.6C / pH 4.1SU / DO 9.0mg/L / Cond. 55umhos

Station: AN0598
Mile Run, Hawkins-Speedwell Rd., Burlington County
Chatsworth USGS Quadrangle
Date Sampled: 02/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	85
Tubificidae	10	15

Statistical Analysis

Number of Taxa: 2
Total Number of Individuals: 100
% Contribution of Dominant Family: 85.00 % (Chironomidae)
Family Biotic Index: 6.60
Scraper/Filterer Collector Ratio:
Shredder/Total Ratio: 0.0
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.0
EPT/C: 0.0
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 177
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Low Diversity - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 5/<1
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Forested; Water color - brown
Water temp. 2.8C / pH 4.3 SU / DO 9.2 mg/L / Cond. 58 umhos

Station: AN0599
Tulpehocken Ck, Carranza Rd, Burlington County
Chatsworth USGS Quadrangle
Date Sampled: 2/15/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	67
Asellidae	8	14
Ceratopogonidae	6	8
Sialidae	4	8
Tubificidae	10	7
Taeniopterygidae	2	4
Dytiscidae	5	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 110
% Contribution of Dominant Family: 60.91 % (Chironomidae)
Family Biotic Index: 6.23
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 3.64
EPT/C: 0.06
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 183
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 3/2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Forested- State Forest; Water Temp. 3.2C / pH 4.0SU / DO 9.8mg/L / Cond. 49umhos

Station: AN0600
Tulpehocken Ck, Maxwell-Friendship Rd, Burlington County
Jenkins USGS Quadrangle
Date Sampled: 1/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	5
Sialidae	4	3
Hydropsychidae	4	1
Lumbriculidae	8	1
Leptoceridae	4	1
BloodRed Chironomidae	8	1
Ceratopogonidae	6	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 13
% Contribution of Dominant Family: 38.46 % (Chironomidae)
Family Biotic Index: 5.54
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 15.38
EPT/C: 0.33
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 193
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/2
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Forested: State Forest; Macrophytes Present
Water temp. 7.2C / pH 4.8SU / DO 9.6mg/L / Cond. 37umhos;

Station: AN0601
Little Hauken Run, Rt. 563, Burlington County
Jenkins USGS Quadrangle
Date Sampled: 01/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	43
Asellidae	8	27
Chironomidae	6	17
Gammaridae	4	6
Tubificidae	10	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 95
% Contribution of Dominant Family: 45.26 % (Simuliidae)
Family Biotic Index: 6.46
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.05
EPT/C: 0.06
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 188
Deficiency(s) noted:
Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 8/3
Substrate: Silt, snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Closed....Other: Water color: brown, Land Use: agriculture- cranberry bogs, forested; Water temp. .01C / pH 4.0SU / DO 9.0mg/L / Cond. 49umhos

Station: AN0602
Wading River, Downstream Of Rt. 563, Burlington County
Jenkins USGS Quadrangle
Date Sampled: 1/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	39
Asellidae	8	16
Metretopodidae	2	10
Capniidae	1	7
Tubificidae	10	6
Perlodidae	2	5
Gammaridae	4	5
Lumbriculidae	8	3
Perlidae	1	3
Limnephilidae	4	3
Hydropsychidae	4	2
Leptoceridae	4	2
Elmidae	4	2
Baetiscidae	3	1
Hydrophilidae	5	1
Gomphidae	1	1
BloodRed Chironomidae	8	1
Ceratopogonidae	6	1
Phryganeidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 110
% Contribution of Dominant Family: 35.45 % (Chironomidae)
Family Biotic Index: 5.21
Scraper/Filterer Collector Ratio: 1.50
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 30.91
EPT/C: 0.85
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 186

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 25/2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Open....Other: Water color: cedar brown; Water Temp. 0.6C / pH 4.5SU / 12.1mg/L / Cond. 41umhos

Station: AN0603
Oswego River, Rt. 539, Ocean County
Brookville USGS Quadrangle
Date Sampled: 1/28/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	60
Asellidae	8	27
Limnephilidae	4	8
Sialidae	4	2
Tubificidae	10	1
Hydroptilidae	4	1
Phryganeidae	4	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 100
% Contribution of Dominant Family: 60.00 % (Chironomidae)
Family Biotic Index: 6.34
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.36
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 10.00
EPT/C: 0.17
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 182

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 3/1
Substrate: Gravel, Sand....StreamBank Vegetation/Stability: Shrubs, Grass, Trees/Good
Canopy: Mostly Open....Other: Forested; Macrophytes Present
Layer of ice had to be broken to sample; Water temp. 0.9C / pH 4.3SU / DO 6.8mg/L / Cond. 74umhos

Station: AN0604
Plains Br, Jenkins Rd, Burlington County
Woodmansie USGS Quadrangle
Date Sampled: 1/28/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	46
Hydroptilidae	4	29
Simuliidae	6	7
Polycentropodidae	6	4
Baetidae	4	3
Hydropsychidae	4	3
Philopotamidae	3	2
Gomphidae	1	2
Coenagrionidae	9	1
Leptophlebiidae	2	1
Tubificidae	10	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 46.00 % (Chironomidae)
Family Biotic Index: 5.19
Scraper/Filterer Collector Ratio: 1.81
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 42.00
EPT/C: 0.89
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 180

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/1-4
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Forested; Macrophytes Present
Water temp. 0.6C / pH 4.1SU / DO 11mg/L / Cond. 65umhos;

Station: AN0605
Papoose Brook, Jenkins Rd., Burlington County
Oswego Lake USGS Quadrangle
Date Sampled: 1/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	23
Heptageniidae	4	14
Tubificidae	10	13
Simuliidae	6	10
Polycentropodidae	6	9
Hydropsychidae	4	5
Ephemerellidae	1	3
Perlodidae	2	3
Leuctridae	0	3
Empididae	6	2
Nemouridae	2	2
Limnephilidae	4	2
Metretopodidae	2	2
Perlidae	1	1
Brachycentridae	1	1
Calopterygidae	5	1
Hydroptilidae	4	1
Leptophlebiidae	2	1
Molannidae	6	1
Naididae	7	1
Ceratopogonidae	6	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 100
% Contribution of Dominant Family: 23.00 % (Chironomidae)
Family Biotic Index: 5.29
Scraper/Filterer Collector Ratio: 0.64
Shredder/Total Ratio: 0.08
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 15
% EPT: 49.00
EPT/C: 2.13
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 188

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Water color: Brown Cedar; Water Temp. 2.1C / pH 4.6SU / DO 11.1mg/L / Cond. 36umhos

Station: AN0606
Oswego River, Andrews Rd, Burlington County
Oswego Lake USGS Quadrangle
Date Sampled: 1/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	46
Hydropsychidae	4	17
Hydroptilidae	4	5
Leptoceridae	4	5
Elmidae	4	5
Tubificidae	10	4
Philopotamidae	3	3
Naididae	7	3
Gyrinidae	3	2
Corydalidae	0	2
Baetidae	4	1
Planariidae	4	1
Ephemerellidae	1	1
Empididae	6	1
Macromiidae	3	1
Molannidae	6	1
Gomphidae	1	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 46.00 % (Chironomidae)
Family Biotic Index: 5.13
Scraper/Filterer Collector Ratio: 0.60
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 33.00
EPT/C: 0.70
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 175

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Agriculture-cropland (Cranberry), Forested; Station Downstream of Oswego Lake
Macrophytes and Fish Present; Water temp. 0.9C / pH 4.5SU / DO 14.1mg/L / Cond. 46umhos

Station: AN0607
Oswego River, Rt. 679, Burlington County
Jenkins USGS Quadrangle
Date Sampled: 1/19/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Hydropsychidae	4	35
Philopotamidae	3	11
Elmidae	4	11
Lumbriculidae	8	7
Hydroptilidae	4	6
Tipulidae	3	5
Tubificidae	10	4
Gyrinidae	3	4
Chironomidae	6	3
Baetiscidae	3	2
Gammaridae	4	2
Gomphidae	1	2
Empididae	6	2
Polycentropodidae	6	2
Chrysomelidae	5	1
Perlodidae	2	1
Leptoceridae	4	1
Sphaeriidae	8	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 101
% Contribution of Dominant Family: 34.65 % (Hydropsychidae)
Family Biotic Index: 4.39
Scraper/Filterer Collector Ratio: 0.36
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 58.42
EPT/C: 19.67
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 174

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/2
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Forested; Station Downstream of Harrisville Pond
Fish and Macrophytes Present; Water temp. 1.1C / pH 4.6SU / DO 15.9mg/L / Cond. 41umhos

Station: AN0608
Arnold Br, Spur Rt. 563, Burlington County
Jenkins USGS Quadrangle
Date Sampled: 1/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	34
Simuliidae	6	28
Gammaridae	4	11
Hydropsychidae	4	11
Leuctridae	0	4
Tubificidae	10	4
Polycentropodidae	6	3
Asellidae	8	1
Ceratopogonidae	6	1
Corixidae	9	1
Gyrinidae	3	1
Corydalidae	0	1
Phryganeidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 102
% Contribution of Dominant Family: 33.33 % (Chironomidae)
Family Biotic Index: 5.41
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.17
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 18.63
EPT/C: 0.56
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 190

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 2/<1
Substrate: Gravel/Sand, Snags, Root Mats....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Forested; Macrophytes Present
Water temp. 6.1C / pH 3.8SU / DO 9.0mg/L / Cond. 70umhos;

Station: AN0609
Tub Mill Br, Spur Rt. 563 (Chatsworth Rd), Burlington County
Oswego Lake USGS Quadrangle
Date Sampled: 01/06/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Tubificidae	10	87
Chironomidae	6	19

Statistical Analysis

Number of Taxa: 2
Total Number of Individuals: 106
% Contribution of Dominant Family: 82.08 % (Tubificidae)
Family Biotic Index: 9.28
Scraper/Filterer Collector Ratio:
Shredder/Total Ratio: 0.0
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.0
EPT/C: 0.0
NJIS Rating: 0
Biological Condition: Severely Impaired
Habitat Analysis: 171
Deficiency(s) noted: Tubificidae Family Overwhelmingly Dominant - Low Diversity - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 2/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Partly Open....Other: Forested; Water color - Cedar brown
Water temp. 5.0C / pH 3.5 SU / DO 9.4 mg/L / Cond. 144 umhos

Station: AN0610
West Br Bass River, Stage Rd, Burlington County
New Gretna USGS Quadrangle
Date Sampled: 1/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Philopotamidae	3	49
Simuliidae	6	15
Hydropsychidae	4	13
Chironomidae	6	4
BloodRed Chironomidae	8	3
Elmidae	4	2
Empididae	6	2
Leptophlebiidae	2	2
Heptageniidae	4	2
Naididae	7	2
Tipulidae	3	1
Corydalidae	0	1
Polycentropodidae	6	1
Limnephilidae	4	1
Sialidae	4	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 100
% Contribution of Dominant Family: 49.00 % (Philopotamidae)
Family Biotic Index: 4.02
Scraper/Filterer Collector Ratio: 0.05
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 69.00
EPT/C: 9.86
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 182

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested; Brown Water Color
Fish and Macrophytes Present; Water temp. 6.1C / pH 5.0SU / DO 11.7mg/L / Cond. 36umhos

Station: AN0611
Dans Bridge Br, Dans Bridge Rd, Burlington County
Oswego Lake USGS Quadrangle
Date Sampled: 1/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Limnephilidae	4	20
Talitridae	8	15
Corixidae	9	11
Chironomidae	6	11
Hydroptilidae	4	9
Metretopodidae	2	8
Leptophlebiidae	2	5
Naididae	7	4
BloodRed Chironomidae	8	3
Tubificidae	10	3
Polycentropodidae	6	3
Coenagrionidae	9	2
Planariidae	4	1
Hydropsychidae	4	1
Perlodidae	2	1
Lestidae	9	1
Leuctridae	0	1
Lumbriculidae	8	1
Molannidae	6	1
Leptoceridae	4	1
Phryganeidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 22
Total Number of Individuals: 104
% Contribution of Dominant Family: 19.23 % (Limnephilidae)
Family Biotic Index: 5.67
Scraper/Filterer Collector Ratio: 2.50
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 11
% EPT: 49.04
EPT/C: 3.64
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 187

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/2
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Forested; Macrophytes present
Water temp. 5.7C / pH 4.7SU / DO 10.3mg/L / Cond. 57umhos;

Station: AN0612
East Br Bass River, Stage Rd, Burlington County
New Gretna USGS Quadrangle
Date Sampled: 1/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	28
Polycentropodidae	6	9
Naididae	7	5
Philopotamidae	3	4
Leptophlebiidae	2	4
Enchytraeidae	10	3
Hydroptilidae	4	3
Metretopodidae	2	2
Calopterygidae	5	1
Gyrinidae	3	1
Tipulidae	3	1
Molannidae	6	1
Leptoceridae	4	1
Limnephilidae	4	1
Sialidae	4	1
Tabanidae	6	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 17
Total Number of Individuals: 67
% Contribution of Dominant Family: 41.79 % (Chironomidae)
Family Biotic Index: 5.37
Scraper/Filterer Collector Ratio: 0.31
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 38.81
EPT/C: 0.93
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 190

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 50-10/2-3
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs, Grasses/Good
Canopy: Mostly Open....Other: Macrophytes Present; Water temp. 4.6C / pH 4.7SU / DO 9.7mg/L / Cond. 48umhos

Station: AN0613
Clarks Mill Stream, Rt. 575, Atlantic County
Green Bank USGS Quadrangle
Date Sampled: 4/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	29
Simuliidae	6	27
Elmidae	4	14
Perlodidae	2	6
Philopotamidae	3	5
Lumbriculidae	8	4
Tipulidae	3	4
Ceratopogonidae	6	3
Hydropsychidae	4	3
Odontoceridae	0	2
Tubificidae	10	1
Empididae	6	1
Corydalidae	0	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Chironomidae)
Family Biotic Index: 5.09
Scraper/Filterer Collector Ratio: 0.46
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 16.00
EPT/C: 0.55
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 180

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/2-<1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Mostly Closed....Other: Rural, Suburban; Cobbles under bridge
Water color brown; Water temp. 10.6C / pH 4.6SU / DO 9.4mg/L / Cond. 74umhos

Station: AN0614
Morses Mill Stream, Riverside Dr., Atlantic County
Green Bank USGS Quadrangle
Date Sampled: 4/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Philopotamidae	3	26
Chironomidae	6	17
Leuctridae	0	12
Simuliidae	6	10
BloodRed Chironomidae	8	9
Polycentropodidae	6	4
Ceratopogonidae	6	3
Lumbriculidae	8	3
Tipulidae	3	3
Tubificidae	10	3
Talitridae	8	2
Hydropsychidae	4	2
Corydalidae	0	2
Sialidae	4	2
Asellidae	8	1
Ephemerellidae	1	1
Perlodidae	2	1
Leptophlebiidae	2	1
Naididae	7	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 104
% Contribution of Dominant Family: 25.00 % (Philopotamidae)
Family Biotic Index: 4.55
Scraper/Filterer Collector Ratio: 0.02
Shredder/Total Ratio: 0.21
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 45.19
EPT/C: 1.81
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 179

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/1-2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Water color: Brown
Trash Downstream; Water temp. 11.4C / pH 5.0SU / DO 8.8mg/L / Cond. 79umhos

Station: AN0615
Mattix Run, Moss Mill Rd., Atlantic County
Oceanville USGS Quadrangle
Date Sampled: 4/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	59
Naididae	7	31
Coenagrionidae	9	3
Simuliidae	6	3
Tubificidae	10	2
Asellidae	8	1
Dytiscidae	5	1

Statistical Analysis

Number of Taxa: 7
Total Number of Individuals: 100
% Contribution of Dominant Family: 59.00 % (Chironomidae)
Family Biotic Index: 6.49
Scraper/Filterer Collector Ratio: 0.00
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: 182
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 4/2-<1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Suburban (new development less than mile away), Forested; filamentous algae and some macrophytes present
Water temp. 10.9C / pH 4.0SU / DO 9.0mg/L / Cond. 83umhos;

Station: AN0616
N Br Absecon Ck, Garden State Pkwy (North), Atlantic County
Pleasantville USGS Quadrangle
Date Sampled: 4/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	43
Chironomidae	6	22
Talitridae	8	7
Hydroptilidae	4	7
Naididae	7	4
BloodRed Chironomidae	8	4
Gammaridae	4	3
Sphaeriidae	8	2
Tubificidae	10	2
Aeshnidae	3	1
Coenagrionidae	9	1
Leptoceridae	4	1
Elmidae	4	1
Limnephilidae	4	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 43.00 % (Asellidae)
Family Biotic Index: 6.96
Scraper/Filterer Collector Ratio: 0.33
Shredder/Total Ratio: 0.44
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 9.00
EPT/C: 0.35
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 171
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grasses/Good
Canopy: Mostly Open....Other: Forested; Water color brown
Water temp. 9.1C / pH 5.8SU / DO 9.0mg/L / Cond. 83umhos;

Station: AN0617
S Br Absecon Ck, Faa Tech Center, Atlantic County
Pleasantville USGS Quadrangle
Date Sampled: 06/13/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	69
Asellidae	8	8
Gammaridae	4	5
Sialidae	4	4
Naididae	7	3
BloodRed Chironomidae	8	3
Dytiscidae	5	2
Elmidae	4	2
Brachycentridae	1	1
Lepidostomatidae	1	1
Leuctridae	0	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 69.00 % (Chironomidae)
Family Biotic Index: 5.85
Scraper/Filterer Collector Ratio: 0.03
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 3.00
EPT/C: 0.04
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: no data
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/<1-1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Forested, FAA testing areas; Water Temp. 14.8C / pH 5.2SU / DO 7.8g/ml / Cond 57uhmos
Silt fence along stream crossing and surrounding bank.;

Station: AN0618
Mill Br., Spruce Ave (Cr 684), Atlantic County
Pleasantville USGS Quadrangle
Date Sampled: 4/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Talitridae	8	47
Ephemerellidae	1	12
Asellidae	8	9
Chironomidae	6	8
Coenagrionidae	9	4
Leptophlebiidae	2	4
Tubificidae	10	4
Lestidae	9	3
Baetidae	4	2
Sialidae	4	2
Corixidae	9	1
Planariidae	4	1
Hydroptilidae	4	1
Leptoceridae	4	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 47.00 % (Talitridae)
Family Biotic Index: 6.61
Scraper/Filterer Collector Ratio: 0.13
Shredder/Total Ratio: 0.09
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 20.00
EPT/C: 2.50
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/2-3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees/Good
Canopy: Open....Other: Possible former agriculutral livestock field adjacent, Rural; Storm Sewers and Macrophytes present
Water temp. 9.8C / pH 4.9SU / DO 8.7mg/L / Cond. 45umhos;

Station: AN0619
Maple Run, Mill Rd. (Cr 662), Atlantic County
Pleasantville USGS Quadrangle
Date Sampled: 4/6/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Lumbriculidae	8	31
Naididae	7	29
Chironomidae	6	20
BloodRed Chironomidae	8	14
Sphaeriidae	8	4
Planorbidae	6	3
Asellidae	8	2
Simuliidae	6	2

Statistical Analysis

Number of Taxa: 8
Total Number of Individuals: 105
% Contribution of Dominant Family: 29.52 % (Lumbriculidae)
Family Biotic Index: 7.25
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: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 157
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 10-5/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Shrubs, Trees/Good
Canopy: Mostly Closed....Other: Old Agriculture cropland adjacent to site, Suburban; Filamentious Algae and Fish present
Oil sheen on surface, Water color Brown; Water temp. 10.9C / pH 6.0SU / DO 7.3mg/L / Cond. 108umhos

Station: AN0620
Great Egg Harbor River, Watsontown-New Freedom Rd., Camden County
Clementon USGS Quadrangle
Date Sampled: 5/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	29
Naididae	7	26
Hydrobiidae	8	11
Chironomidae	6	10
Corixidae	9	6
Tubificidae	10	6
Planorbidae	6	4
Coenagrionidae	9	4
Physidae	7	2
Libellulidae	9	1
Tipulidae	3	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Sphaeriidae)
Family Biotic Index: 7.62
Scraper/Filterer Collector Ratio: 0.59
Shredder/Total Ratio: 0.10
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 141
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 12-15/1-2
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Partly Open....Other: Urban (small airport adjacent), Forested (county park); Storm Sewers Present
Macrophytes present, Little flow; Water temp. 14.0C / pH 6.5SU / DO 11.3mg/L / Cond. 191umhos

Station: AN0621
Great Egg Harbor River, Williamstown-New Freedom Rd. (Rt. 536 Spur), Camden County
Williamstown USGS Quadrangle
Date Sampled: 06/13/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	33
Simuliidae	6	32
Baetidae	4	18
BloodRed Chironomidae	8	3
Lumbriculidae	8	2
Naididae	7	2
Hydroptilidae	4	2
Brachycentridae	1	1
Gyrinidae	3	1
Ephemerellidae	1	1
Dytiscidae	5	1
Leptophlebiidae	2	1
Elmidae	4	1
Heptageniidae	4	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 33.00 % (Chironomidae)
Family Biotic Index: 5.54
Scraper/Filterer Collector Ratio: 0.08
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 24.00
EPT/C: 0.67
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 175

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/2-3
Substrate: Gravel/sand....StreamBank Vegetation/Stability: Trees, Grasses, Shrubs/good
Canopy: Mostly Open....Other: Rural, forested; Macrophytes Present; tires discarded upstream
Water temp. 16.5C / pH 6.0SU / DO 6.6mg/L / Conductivity 60umhos;

Station: AN0622
Four Mile Br, Malaga Rd., Gloucester County
Williamstown USGS Quadrangle
Date Sampled: 3/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Talitridae	8	36
Chironomidae	6	17
Ephemerellidae	1	17
Hydroptilidae	4	10
Leptophlebiidae	2	5
Baetidae	4	3
Calopterygidae	5	2
Hydropsychidae	4	2
Polycentropodidae	6	2
Asellidae	8	1
Leptoceridae	4	1
Haliplidae	5	1
BloodRed Chironomidae	8	1
Simuliidae	6	1
Metretopodidae	2	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 36.00 % (Talitridae)
Family Biotic Index: 5.32
Scraper/Filterer Collector Ratio: 5.40
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 41.00
EPT/C: 2.28
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 129

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Poor
Canopy: Open....Other: Suburban; Fish Present
Water cedar brown color; Water temp. 8.2C / pH 5.0SU / DO 10.5mg/L / Cond. 110umhos

Station: AN0623
Great Egg Harbor River, Winslow Rd., Gloucester County
Williamstown USGS Quadrangle
Date Sampled: 6/13/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	46
Baetidae	4	15
Elmidae	4	11
Leptophlebiidae	2	5
Brachycentridae	1	4
Simuliidae	6	3
Coenagrionidae	9	2
Asellidae	8	2
Polycentropodidae	6	2
Tubificidae	10	2
Perlidae	1	1
Hydropsychidae	4	1
Ephemerellidae	1	1
Gyrinidae	3	1
Leuctridae	0	1
Molannidae	6	1
Leptoceridae	4	1
Limnephilidae	4	1
Sialidae	4	1
Heptageniidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 103
% Contribution of Dominant Family: 44.66 % (Chironomidae)
Family Biotic Index: 5.00
Scraper/Filterer Collector Ratio: 0.23
Shredder/Total Ratio: 0.04
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 12
% EPT: 33.01
EPT/C: 0.74
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 183

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Rural, Forested- Winslow Wildlife Mgmt. Area;
Macrophytes Present, Water Color: Cedar Brown
Tires discarded along bank; Water temp. 17.3C / pH 6.5SU / DO 7.2mg/L / Cond. 74umhos

Station: AN0624
Squankum Br, Malaga Rd, Gloucester County
Williamstown USGS Quadrangle
Date Sampled: 3/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	41
Sphaeriidae	8	35
Enchytraeidae	10	14
Tubificidae	10	4
Physidae	7	4
Polycentropodidae	6	2
Sialidae	4	2
Corixidae	9	1
Limnephilidae	4	1
Haliplidae	5	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 105
% Contribution of Dominant Family: 39.05 % (Chironomidae)
Family Biotic Index: 7.35
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.41
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.86
EPT/C: 0.07
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 158
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): no data
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Fair
Canopy: Mostly Open....Other: Suburban, Forested; Storm Sewers
Fish, Macrophytes and Filamentous algae Present; Water temp. 8.2C / pH 5.3SU / DO 8.6mg/L / Cond. 132umhos

Station: AN0625
Great Egg Harbor River, Rt. 54, Gloucester County
Newtonville USGS Quadrangle
Date Sampled: 6/13/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Brachycentridae	1	63
Chironomidae	6	20
Elmidae	4	6
Perlidae	1	4
Simuliidae	6	4
Baetidae	4	1
Hydropsychidae	4	1
Naididae	7	1
Corydalidae	0	1
BloodRed Chironomidae	8	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 102
% Contribution of Dominant Family: 61.76 % (Brachycentridae)
Family Biotic Index: 2.53
Scraper/Filterer Collector Ratio: 0.10
Shredder/Total Ratio: 0.00
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 67.65
EPT/C: 3.29
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 186
Deficiency(s) noted: Brachycentridae Family Overwhelmingly Dominant

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/1.5-3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Good
Canopy: Open....Other: Suburban, Forested; Storm Sewers and Macrophytes Present
Station Downstream of Impoundment, USGS Gauging Station; Water temp. 17.8C / pH 6.5SU / DO 7.5mg/L / Cond. 63umhos

Station: AN0626
Penny Pot Stream, Eighth Ave., Atlantic County
Newtonville USGS Quadrangle
Date Sampled: 3/22/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Limnephilidae	4	37
Lepidostomatidae	1	16
Chironomidae	6	15
Tubificidae	10	11
Ephemerellidae	1	4
Polycentropodidae	6	3
Capniidae	1	2
Ceratopogonidae	6	2
Perlodidae	2	2
Sialidae	4	2
Curculionidae	7	2
Planorbidae	6	1
Hydrophilidae	5	1
Tipulidae	3	1
Corydalidae	0	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 101
% Contribution of Dominant Family: 36.63 % (Limnephilidae)
Family Biotic Index: 4.40
Scraper/Filterer Collector Ratio: 1.33
Shredder/Total Ratio: 0.57
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 64.36
EPT/C: 4.33
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 180

Observations

Streamwater: Clear....Flow: Fast....Width/Depth (ft): 10/2->3
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Trees, Grass, Shrubs/Good
Canopy: Partly Open....Other: Rural, Forested; Water color cedar brown
Water temp. 6.1C / pH 5.5SU / DO 9.3mg/L / Cond. 79umhos;

Station: AN0627
Hospitality Br., Blue Bell Rd., Gloucester County
Williamstown USGS Quadrangle
Date Sampled: 5/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	67
Tubificidae	10	10
Sphaeriidae	8	7
Asellidae	8	4
Dytiscidae	5	2
Tabanidae	6	2
Corixidae	9	2
Ephemerellidae	1	2
Planorbidae	6	2
Tipulidae	3	2
Molannidae	6	1
Nemouridae	2	1
BloodRed Chironomidae	8	1
Ceratopogonidae	6	1
Simuliidae	6	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 106
% Contribution of Dominant Family: 63.21 % (Chironomidae)
Family Biotic Index: 6.43
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.68
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 3.77
EPT/C: 0.06
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 176
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15-18/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Station Downstream of Small Pond (no dam present)
Macrophytes present, Cedar Brown water color; Water temp. 14.3C / pH 6.1SU / DO 11.5mg/L / Cond. 65umhos

Station: AN0628
Hospitality Br, Rt. 538, Gloucester County
Buena USGS Quadrangle
Date Sampled: 5/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Caenidae	7	16
Sphaeriidae	8	13
Palaemonidae	6	11
BloodRed Chironomidae	8	11
Chironomidae	6	10
Naididae	7	9
Leptoceridae	4	5
Tubificidae	10	4
Talitridae	8	4
Haliplidae	5	4
Hydrobiidae	8	3
Coenagrionidae	9	2
Pyralidae	5	2
Ceratopogonidae	6	2
Asellidae	8	1
Planorbidae	6	1
Glossiphoniidae	8	1
Hydroptilidae	4	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 16.00 % (Caenidae)
Family Biotic Index: 6.95
Scraper/Filterer Collector Ratio: 0.22
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 22.00
EPT/C: 1.05
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 150

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Grass/Fair
Canopy: Mostly Open....Other: Suburban, Forested; Station downstream of lake, Right bank on residential property
Fish and Geese Present; Water temp. 18.0C / pH 6.6SU / DO 9.7mg/L / Cond. 62umhos

Station: AN0629
Faraway Br., Jackson Rd. , Gloucester County
Buena USGS Quadrangle
Date Sampled: 5/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Asellidae	8	38
Chironomidae	6	24
Tubificidae	10	15
BloodRed Chironomidae	8	5
Coenagrionidae	9	4
Tipulidae	3	4
Corduliidae	5	4
Hydropsychidae	4	2
Tabanidae	6	2
Ceratopogonidae	6	1
Gomphidae	1	1
Dytiscidae	5	1
Leptoceridae	4	1
Simuliidae	6	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 104
% Contribution of Dominant Family: 36.54 % (Asellidae)
Family Biotic Index: 7.23
Scraper/Filterer Collector Ratio: 0.04
Shredder/Total Ratio: 0.41
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 2.88
EPT/C: 0.10
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 180
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, Shrubs/Good
Canopy: Partly Open....Other: Rural, Forested; Station downstream of cranberry bog
Water color: cedar brown, Macrophytes present; Water temp. 17.3C / pH 4.6SU / DO 7.1mg/L / Cond. 40umhos

Station: AN0630
White Oak Br., Jackson Rd., Gloucester County
Buena USGS Quadrangle
Date Sampled: 5/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	73
Chironomidae	6	21
BloodRed Chironomidae	8	2
Tubificidae	10	2
Ceratopogonidae	6	1
Naididae	7	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 100
% Contribution of Dominant Family: 73.00 % (Simuliidae)
Family Biotic Index: 6.13
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.00
EPT/C: 0.00
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 176
Deficiency(s) noted: Simuliidae Family Overwhelmingly Dominant
- Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10-15/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Forested; Macrophytes present, cedar brown water color
Debris (ie. tires, etc.) in stream; Water temp. 12.6C / pH 3.9SU / DO 8.1mg/L / Cond. 64umhos

Station: AN0631
Marsh Lake Br (Collings Br), Unexpected Rd., Gloucester County
Buena USGS Quadrangle
Date Sampled: 5/2/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	43
Tubificidae	10	32
Asellidae	8	9
Naididae	7	5
Chironomidae	6	4
BloodRed Chironomidae	8	2
Ptychopteridae	8	2
Caenidae	7	1
Leptoceridae	4	1
Planariidae	4	1
Dytiscidae	5	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 101
% Contribution of Dominant Family: 42.57 % (Sphaeriidae)
Family Biotic Index: 8.39
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 2
% EPT: 1.98
EPT/C: 0.33
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 149
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15-18/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Station Downstream of inactive bog Beaver activity possible, Debris in water, Water cedar color; Water temp. 17.1C / pH 6.0SU / DO 6.9mg/L / Cond. 49

Station: AN0632
Marsh Lake Br (Collings Br), Blue Anchor, Atlantic County
Buena USGS Quadrangle
Date Sampled: 5/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	27
Chironomidae	6	26
Hydropsychidae	4	9
Tubificidae	10	5
Baetidae	4	4
Brachycentridae	1	4
Sphaeriidae	8	4
Philopotamidae	3	3
Coenagrionidae	9	3
Naididae	7	3
Ceratopogonidae	6	2
Lumbriculidae	8	2
Asellidae	8	1
BloodRed Chironomidae	8	1
Gammaridae	4	1
Enchytraeidae	10	1
Dytiscidae	5	1
Leptoceridae	4	1
Perlidae	1	1
Polycentropodidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 27.00 % (Simuliidae)
Family Biotic Index: 5.87
Scraper/Filterer Collector Ratio: 0.02
Shredder/Total Ratio: 0.27
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 23.00
EPT/C: 0.85
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/1
Substrate: Gravel/ sand....StreamBank Vegetation/Stability: Grass, Trees, Shrubs/Good
Canopy: Mostly open ....Other: Suburban, forested; Water temp. 16.3C / pH 5.8SU / DO 7.6mg/L / Cond. 92umhos
Macrophytes, algae, fish present.; Wetlands located upstream.

Station: AN0633
Hospitality Br, Rt. 54, Atlantic County
Newtonville USGS Quadrangle
Date Sampled: 3/22/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Simuliidae	6	14
Diplopoda	5	10
Tubificidae	10	6
Ephemerellidae	1	5
Heptageniidae	4	5
Chironomidae	6	4
Pleuroceridae	6	4
Leptophlebiidae	2	4
Lumbriculidae	8	3
Sphaeriidae	8	3
Asellidae	8	2
Coenagrionidae	9	2
Palaemonidae	6	2
Leptoceridae	4	1
Gyrinidae	3	1
Hydrophilidae	5	1
Ephydridae	6	1
Planorbidae	6	1
Perlodidae	2	1
Lumbricidae	10	1
Hydroptilidae	4	1
Polycentropodidae	6	1
Sialidae	4	1
Corduliidae	5	1
Curculionidae	7	1

Statistical Analysis

Number of Taxa: 25
Total Number of Individuals: 76
% Contribution of Dominant Family: 18.42 % (Simuliidae)
Family Biotic Index: 5.67
Scraper/Filterer Collector Ratio: 0.50
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 23.68
EPT/C: 4.50
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 155

Observations

Streamwater: Slightly Turbid....Flow: Fast....Width/Depth (ft): 10-3->3
Substrate: Gravel/Sand, Mud, Snags....StreamBank Vegetation/Stability: Grass,

Shrubs/Good
Canopy: Open....Other: Suburban, Forested, Industrial (Railroad leading to manufacturer); Water color: Cedar brown
Water temp. 6.9C / pH 4.8SU / DO 9.8mg/L / Cond. 41umhos;

Station: AN0634
Three Pond Bk, Rt. 54, Atlantic County
Newtonville USGS Quadrangle
Date Sampled: 5/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Enchytraeidae	10	45
Chironomidae	6	21
Lumbriculidae	8	18
Sphaeriidae	8	4
Asellidae	8	2
Ceratopogonidae	6	1
Planariidae	4	1
Talitridae	8	1
Dytiscidae	5	1
Naididae	7	1
Libellulidae	9	1
Polycentropodidae	6	1
BloodRed Chironomidae	8	1
Simuliidae	6	1
Elmidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 45.00 % (Enchytraeidae)
Family Biotic Index: 8.31
Scraper/Filterer Collector Ratio: 0.17
Shredder/Total Ratio: 0.24
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 0.05
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 178
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 20/2
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Storm Sewers Present
Algae and Macrophytes Present; Water temp. 17.3C / pH 4.7SU / DO 8.6mg/L / Cond. 53umhos

Station: AN0635
Great Egg Harbor River, Rt. 559, Atlantic County
Newtonville USGS Quadrangle
Date Sampled: 6/8/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Brachycentridae	1	31
Chironomidae	6	24
Ephemerellidae	1	7
Naididae	7	7
Perlidae	1	6
Elmidae	4	6
Hydropsychidae	4	4
Leptophlebiidae	2	4
Enchytraeidae	10	3
Gyrinidae	3	2
Empididae	6	2
BloodRed Chironomidae	8	2
Leuctridae	0	1
Heptageniidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 31.00 % (Brachycentridae)
Family Biotic Index: 3.53
Scraper/Filterer Collector Ratio: 0.12
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 54.00
EPT/C: 2.08
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 143

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 75/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Grasses/Good
Canopy: Mostly Open....Other: Suburban; Filamentous algae present, Water color: cedar brown
Bare sand on right bank; Water temp. 17.0C / pH 6.1SU / DO 9.2mg/L / Cond. 53umhos

Station: AN0636
Unt To Deep Run, Rt. 54, Atlantic County
Buena USGS Quadrangle
Date Sampled: 3/21/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	33
Tubificidae	10	19
Lumbriculidae	8	17
Sphaeriidae	8	17
Chironomidae	6	8
Naididae	7	4
Physidae	7	2
Hydropsychidae	4	1
Planariidae	4	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 102
% Contribution of Dominant Family: 32.35 % (BloodRed Chironomidae)
Family Biotic Index: 8.08
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.32
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.98
EPT/C: 0.02
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 125
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Slightly Turbid....Flow: Moderate....Width/Depth (ft): 3-5/<1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Shrubs, Trees, Grass/Poor
Canopy: Mostly Open....Other: Suburban, Forested; Storm Sewers Present, Junkyard Upstream, Water color Mucky Brown
Filamentous Algae Present, Sewage odor in water; Water temp. 9.3C / pH 5.8SU / DO 11.0mg/L / Cond. 582umhos

Station: AN0637
Deep Run, Rt. 559, Atlantic County
Newtonville USGS Quadrangle
Date Sampled: 3/22/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Leptophlebiidae	2	41
Tubificidae	10	16
Chironomidae	6	10
Ephemerellidae	1	6
Hydroptilidae	4	3
Leptoceridae	4	2
Naididae	7	2
Dytiscidae	5	2
Tipulidae	3	2
Planorbidae	6	2
Corydalidae	0	1
Lepidostomatidae	1	1
Lumbriculidae	8	1
Limnephilidae	4	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 90
% Contribution of Dominant Family: 45.56 % (Leptophlebiidae)
Family Biotic Index: 4.26
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.02
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 60.00
EPT/C: 5.40
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 186

Observations

Streamwater: Slightly Turbid....Flow: Fast....Width/Depth (ft): 8-10/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Grass, Shrubs/Good
Canopy: Partly Open....Other: Rural, Forested; Cedar Brown water color, High water level
Water temp. 6.9C/ pH 4.0SU / DO 9.7mg/L / Cond. 68umhos;

Station: AN0638
Mare Run, Rt. 559, Atlantic County
Dorothy USGS Quadrangle
Date Sampled: 5/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	77
Gammaridae	4	4
Enchytraeidae	10	4
Leptoceridae	4	4
Ephemerellidae	1	3
Corixidae	9	1
Empididae	6	1
Calamoceratidae	0	1
Polycentropodidae	6	1
BloodRed Chironomidae	8	1
Limnephilidae	4	1
Sialidae	4	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 77.00 % (Chironomidae)
Family Biotic Index: 5.80
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 10.00
EPT/C: 0.13
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 180
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant -

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested; Macrophytes and Algae present
Water temp. 13.9C / pH 4.5SU / DO 12.4mg/L / Cond. 38umhos;

Station: AN0639
Watering Race, Rt. 50 (Cape May Ave), Hamilton Twp, Atlantic County
Mays Landing USGS Quadrangle
Date Sampled: 4/4/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	36
Asellidae	8	23
BloodRed Chironomidae	8	11
Simuliidae	6	9
Leptophlebiidae	2	5
Tipulidae	3	3
Sialidae	4	3
Dytiscidae	5	2
Tubificidae	10	2
Calopterygidae	5	1
Limnephilidae	4	1
Lumbriculidae	8	1
Molannidae	6	1
Naididae	7	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 36.00 % (Chironomidae)
Family Biotic Index: 6.38
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.35
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 7.00
EPT/C: 0.15
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 124
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/3
Substrate: Gravel/Sand, Silt, Snags....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Partly Open....Other: Agricultural cropland, Surburban, Forested; Cedar swamp upstream
Water color: cedar brown; Water temp. 14.4C / pH NA / DO 8.0mg/L / Cond. NA

Station: AN0640
Babcock Ck., Rt. 322, Atlantic County
Mays Landing USGS Quadrangle
Date Sampled: 5/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Leuctridae	0	41
Chironomidae	6	19
Elmidae	4	16
Asellidae	8	6
Simuliidae	6	5
Heptageniidae	4	5
Tipulidae	3	3
Leptoceridae	4	2
Hydropsychidae	4	1
Lepidostomatidae	1	1
Lumbriculidae	8	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 100
% Contribution of Dominant Family: 41.00 % (Leuctridae)
Family Biotic Index: 3.06
Scraper/Filterer Collector Ratio: 3.50
Shredder/Total Ratio: 0.67
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 50.00
EPT/C: 2.63
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 184

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 15/1-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Forested; Water color brown
Water temp. 14.8C / pH 4.6SU / DO 7.7mg/L / Cond. 73umhos;

Station: AN0640A
Babcock Bk., Holly St., Atlantic County
Mays Landing USGS Quadrangle
Date Sampled: 5/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	76
Naididae	7	4
Corixidae	9	3
Leptoceridae	4	3
Ceratopogonidae	6	2
Dytiscidae	5	2
Tubificidae	10	2
Haliplidae	5	2
Asellidae	8	1
BloodRed Chironomidae	8	1
Hydrophilidae	5	1
Leptophlebiidae	2	1
Leuctridae	0	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 100
% Contribution of Dominant Family: 76.00 % (Chironomidae)
Family Biotic Index: 6.03
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 5.00
EPT/C: 0.06
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 179
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 6/1.5
Substrate: Gravel/Sand, Mud....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Snapping Turtle and Filamentous Algae Present
Water temp. 14.1C / pH 4.1SU / DO 7.8mg/L / Cond. 90umhos;

Station: AN0640B
Jack Pudding Bk, Cologne Ave. , Atlantic County
Mays Landing USGS Quadrangle
Date Sampled: 5/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	53
Caenidae	7	14
Ceratopogonidae	6	5
Elmidae	4	5
Tubificidae	10	5
Asellidae	8	4
Haliplidae	5	4
Baetidae	4	3
Corixidae	9	2
Lumbriculidae	8	2
Gomphidae	1	1
Planariidae	4	1
Planorbidae	6	1
Leuctridae	0	1
BloodRed Chironomidae	8	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 103
% Contribution of Dominant Family: 51.46 % (Chironomidae)
Family Biotic Index: 6.19
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.60
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 17.48
EPT/C: 0.33
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 155

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Open....Other: Rural, Forested; junk dumped downstream; Homeowner appears to be digging to expand pond
Filamentous algae, frogs, beaver dam present; Water temp. 18.7C / pH 5.8SU / DO 6.8mg/L / Cond. 100umhos

Station: AN0641
Gravelly Run, Rt. 559, Atlantic County
Mays Landing USGS Quadrangle
Date Sampled: 5/11/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	32
Elmidae	4	15
Lepidostomatidae	1	10
Asellidae	8	7
Leuctridae	0	6
BloodRed Chironomidae	8	5
Leptoceridae	4	4
Calamoceratidae	0	3
Limnephilidae	4	3
Heptageniidae	4	3
Lumbriculidae	8	2
Naididae	7	2
Tipulidae	3	1
Dytiscidae	5	1
Perlodidae	2	1
Corydalidae	0	1
Polycentropodidae	6	1
Odontoceridae	0	1
Sialidae	4	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 20
Total Number of Individuals: 100
% Contribution of Dominant Family: 32.00 % (Chironomidae)
Family Biotic Index: 4.54
Scraper/Filterer Collector Ratio: 9.50
Shredder/Total Ratio: 0.61
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 32.00
EPT/C: 0.86
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 167

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 12/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Suburban, Forested; Filamentous Algae Present
Water temp. 14.6C / pH 4.5SU / DO 10.1mg/L / Cond. 52umhos;

Station: AN0642
Miry Run, Thelma Ave., Atlantic County
Mays Landing USGS Quadrangle
Date Sampled: 5/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	44
Tubificidae	10	19
Lumbriculidae	8	6
Polycentropodidae	6	3
Elmidae	4	2
Ceratopogonidae	6	2
Hydroptilidae	4	2
Coenagrionidae	9	1
Molannidae	6	1
Leptoceridae	4	1
Tipulidae	3	1
BloodRed Chironomidae	8	1
Sialidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 85
% Contribution of Dominant Family: 51.76 % (Chironomidae)
Family Biotic Index: 6.92
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.01
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 8.24
EPT/C: 0.16
NJIS Rating: 15
Biological Condition: Moderately Impaired
Habitat Analysis: 182
Deficiency(s) noted: - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 12/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Closed....Other: Forested; Water temp. 11.6C / pH 4.2SU / DO 9.2mg/L / Cond. 60umhos
Possible sand mining operation within vicinity.; Frogs present.

Station: AN0643
South River, Estelle Ave, Atlantic County
Dorothy USGS Quadrangle
Date Sampled: 5/10/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	58
Leuctridae	0	12
Lepidostomatidae	1	6
Sphaeriidae	8	5
Simuliidae	6	4
Calamoceratidae	0	3
Limnephilidae	4	3
Lumbriculidae	8	2
Asellidae	8	1
Ephemerellidae	1	1
Tubificidae	10	1
Molannidae	6	1
Leptoceridae	4	1
BloodRed Chironomidae	8	1
Sialidae	4	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 58.00 % (Chironomidae)
Family Biotic Index: 4.87
Scraper/Filterer Collector Ratio: 0.11
Shredder/Total Ratio: 0.26
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 7
% EPT: 27.00
EPT/C: 0.46
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 175

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/.5-2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Good
Canopy: Partly Open....Other: Rural, Forested; Beaver Present, Submerged Vegetation Present
Oily sheen on surface, Water color: Cedar Brown; Water temp. 16.3C / pH 5.3SU / DO 8.6mg/L / Cond. 88umhos

Station: AN0644
South River, Forty Wire Rd, Atlantic County
Dorothy USGS Quadrangle
Date Sampled: 5/10/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	43
Ephemerellidae	1	12
Elmidae	4	12
Asellidae	8	8
Chloroperlidae	1	6
Simuliidae	6	5
Helicopsychidae	3	4
Tubificidae	10	4
Brachycentridae	1	3
Lepidostomatidae	1	2
Perlidae	1	1
Ptilodactylidae	1	1
Leptophlebiidae	2	1
Dytiscidae	5	1
Lumbriculidae	8	1
Sphaeriidae	8	1
BloodRed Chironomidae	8	1
Ceratopogonidae	6	1
Baetidae	4	1
Tipulidae	3	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 21
Total Number of Individuals: 110
% Contribution of Dominant Family: 39.09 % (Chironomidae)
Family Biotic Index: 4.79
Scraper/Filterer Collector Ratio: 0.67
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 8
% EPT: 27.27
EPT/C: 0.68
NJIS Rating: 27
Biological Condition: Nonimpaired
Habitat Analysis: 180

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 15/2.5
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grass/Good
Canopy: Partly Open....Other: Rural, Forested; Submerged vegetation, Macrophytes, Fish and Frogs Present
Water color: Cedar Brown; Water temp. 18.2C / pH 6.2SU / DO 3.3mg/L / Cond. 48umhos

Station: AN0645
Stephens Ck , Eleventh Ave., Atlantic County
Dorothy USGS Quadrangle
Date Sampled: 5/10/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	58
Simuliidae	6	33
Heptageniidae	4	3
Asellidae	8	3
BloodRed Chironomidae	8	3
Lumbriculidae	8	2
Leuctridae	0	2
Naididae	7	1
Psychomyiidae	2	1
Ephemerellidae	1	1
Philopotamidae	3	1

Statistical Analysis

Number of Taxa: 11
Total Number of Individuals: 108
% Contribution of Dominant Family: 53.70 % (Chironomidae)
Family Biotic Index: 5.88
Scraper/Filterer Collector Ratio: 0.12
Shredder/Total Ratio: 0.05
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 7.41
EPT/C: 0.13
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): 6'/2'
Substrate: Gravel/Sand, Snags....StreamBank Vegetation/Stability: Shrubs, thickets, grass, trees/Fair
Canopy: Mostly Closed....Other: Rural, Forested; Water temp. 18.5C / pH 4.9SU / DO 7.7mg/L / Cond. 32 umhos32
Stream is channelized under bridge.;

Station: AN0646
Stephens Ck, Rt. 50, Atlantic County
Mays Landing USGS Quadrangle
Date Sampled: 5/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	30
Sabellidae	6	20
Sphaeriidae	8	16
Tetrastemmatidae	7	11
Chironomidae	6	10
Naididae	7	3
Elmidae	4	2
Hydropsychidae	4	2
Ceratopogonidae	6	2
Erpobdellidae	8	1
Planorbidae	6	1
Lumbriculidae	8	1
Hydrobiidae	8	1

Statistical Analysis

Number of Taxa: 13
Total Number of Individuals: 100
% Contribution of Dominant Family: 30.00 % (BloodRed Chironomidae)
Family Biotic Index: 7.04
Scraper/Filterer Collector Ratio: 0.22
Shredder/Total Ratio: 0.40
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 2.00
EPT/C: 0.05
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 164
Deficiency(s) noted: Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20 (width)
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Mostly Closed....Other: Rural, Forested; Station downstream of Stephens Lake Water color cedar brown and foam present; Water temp. 19.6C / pH 6.0SU / DO 8.2mg/L / Cond. 31umhos

Station: AN0647
Gibson Ck, Rt. 50, Atlantic County
Tuckahoe USGS Quadrangle
Date Sampled: 5/16/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	20
Leuctridae	0	19
Elmidae	4	18
Hydroptilidae	4	10
Lumbriculidae	8	6
Simuliidae	6	6
Ephemerellidae	1	5
Tipulidae	3	5
Odontoceridae	0	3
Heptageniidae	4	3
Tubificidae	10	3
Hydropsychidae	4	2
Corydalidae	0	2
BloodRed Chironomidae	8	2
Philopotamidae	3	1
Empididae	6	1
Perlodidae	2	1
Limnephilidae	4	1
Tabanidae	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 109
% Contribution of Dominant Family: 18.35 % (Chironomidae)
Family Biotic Index: 3.88
Scraper/Filterer Collector Ratio: 1.78
Shredder/Total Ratio: 0.25
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 9
% EPT: 41.28
EPT/C: 2.05
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 179

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 10/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: Forested; Water color cedar brown
Water temp. 12.2C / pH 4.7SU / DO 8.3mg/L / Cond 30umhos;

Station: AN0648
Tuckahoe River, Cumberland Ave (Rt. 637), Atlantic & Cumberland County
Tuckahoe USGS Quadrangle
Date Sampled: 6/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	27
Naididae	7	20
Talitridae	8	16
Asellidae	8	7
Elmidae	4	7
Planariidae	4	6
Coenagrionidae	9	5
BloodRed Chironomidae	8	4
Ceratopogonidae	6	3
Caenidae	7	2
Hydroptilidae	4	2
Gomphidae	1	1
Dytiscidae	5	1
Molannidae	6	1
Leptoceridae	4	1
Corduliidae	5	1

Statistical Analysis

Number of Taxa: 16
Total Number of Individuals: 104
% Contribution of Dominant Family: 25.96 % (Chironomidae)
Family Biotic Index: 6.50
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.11
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 5.77
EPT/C: 0.19
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 178
Deficiency(s) noted: Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/1
Substrate: Gravel/Sand, Mud, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Rural, Forested; Geese, Algae, and Macrophytes Present Campground Downstream, Water color: cedar brown; Water temp. 16.5C / pH 5.1SU / DO 8.2mg/L / Cond. 27umhos

Station: AN0649
Tuckahoe River, Rt. 49 (Hunters Mill), Atlantic/Cape May/Cumberland County
Tuckahoe USGS Quadrangle
Date Sampled: 6/7/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	29
Corixidae	9	19
Chironomidae	6	16
Ephemerellidae	1	6
Baetidae	4	4
BloodRed Chironomidae	8	4
Heptageniidae	4	4
Talitridae	8	3
Elmidae	4	3
Dytiscidae	5	2
Leptophlebiidae	2	2
Sphaeriidae	8	2
Asellidae	8	1
Ceratopogonidae	6	1
Gyrinidae	3	1
Ancylidae	6	1
Gammaridae	4	1
Gomphidae	1	1

Statistical Analysis

Number of Taxa: 18
Total Number of Individuals: 100
% Contribution of Dominant Family: 29.00 % (Naididae)
Family Biotic Index: 6.34
Scraper/Filterer Collector Ratio: 7.00
Shredder/Total Ratio: 0.22
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 4
% EPT: 16.00
EPT/C: 0.80
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 178

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 30/3
Substrate: Gravel/Sand, Snags, Roots....StreamBank Vegetation/Stability: no data/Good
Canopy: Mostly Closed....Other: Forested; Station Downstream of Impoundment
Water color: cedar brown; Water temp. 16.1C / pH 5.3SU / DO 8.5mg/L / Cond. 25umhos

Station: AN0650
Tuckahoe River, Rt. 49 (Head Of River), Atlantic/Cape May County
Tuckahoe USGS Quadrangle
Date Sampled: 6/8/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	30
Chironomidae	6	24
Leptoceridae	4	16
Asellidae	8	8
Hydroptilidae	4	6
BloodRed Chironomidae	8	6
Elmidae	4	4
Coenagrionidae	9	3
Leptophlebiidae	2	2
Sabellidae	6	2
Ephemerellidae	1	1
Gomphidae	1	1
Polycentropodidae	6	1
Tubificidae	10	1

Statistical Analysis

Number of Taxa: 14
Total Number of Individuals: 105
% Contribution of Dominant Family: 28.57 % (Naididae)
Family Biotic Index: 6.01
Scraper/Filterer Collector Ratio: 0.04
Shredder/Total Ratio: 0.29
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 5
% EPT: 24.76
EPT/C: 0.87
NJIS Rating: 21
Biological Condition: Moderately Impaired
Habitat Analysis: 169

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 15/2-3
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Fair
Canopy: Partly Open....Other: Forested; Station downstream of dam; Site possible tidal, depth gauge-1.75
Filamentous algae and areas of bare sand on banks present; Water temp. 17.3C / pH 5.1SU / DO 8.5mg/L / Cond. 29umhos

Station: AN0651
Mcneals Br, Rt. 666 (Cape May Ave), Atlantic County
Tuckahoe USGS Quadrangle
Date Sampled: 6/8/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	21
Asellidae	8	15
Ephemerellidae	1	8
Hydroptilidae	4	8
Coenagrionidae	9	7
Tubificidae	10	7
Leptoceridae	4	6
Elmidae	4	5
Ancylidae	6	4
Corixidae	9	3
Leuctridae	0	3
BloodRed Chironomidae	8	3
Calopterygidae	5	2
Lepidostomatidae	1	2
Polycentropodidae	6	2
Gyrinidae	3	1
Ceratopogonidae	6	1
Sialidae	4	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 19
Total Number of Individuals: 100
% Contribution of Dominant Family: 21.00 % (Chironomidae)
Family Biotic Index: 5.81
Scraper/Filterer Collector Ratio: 0.71
Shredder/Total Ratio: 0.23
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 6
% EPT: 29.00
EPT/C: 1.21
NJIS Rating: 24
Biological Condition: Nonimpaired
Habitat Analysis: 184

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 10/2
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs, Grasses/Good
Canopy: Mostly Closed....Other: Forested; Clams, Lilys and Macrophytes Present
Water color: cedar brown; Water temp. 14.3C / pH 4.5SU / DO 6.1mg/L / Cond. 36umhos

Station: AN0652
Mill Ck, Rt. 57, Cape May County
Tuckahoe USGS Quadrangle
Date Sampled: 06/08/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	50
BloodRed Chironomidae	8	10
Hydropsychidae	4	6
Leuctridae	0	6
Hydroptilidae	4	5
Lumbriculidae	8	4
Naididae	7	4
Elmidae	4	4
Coenagrionidae	9	2
Ceratopogonidae	6	2
Aeshnidae	3	2
Tubificidae	10	2
Macromiidae	3	1
Sphaeriidae	8	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 15
Total Number of Individuals: 100
% Contribution of Dominant Family: 50.00 % (Chironomidae)
Family Biotic Index: 5.73
Scraper/Filterer Collector Ratio: 1.13
Shredder/Total Ratio: 0.16
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 17.00
EPT/C: 0.28
NJIS Rating: 18
Biological Condition: Moderately Impaired
Habitat Analysis: 177

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 5/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested; Water Temp. 19.1C / pH 4.2SU / DO 9.7mg/L / Cond. 60umhos

Station: AN0765
West Ck, Rt. 550 (Out. Of Hoffmans Mill Pond), Cumberland County
Port Elizabeth USGS Quadrangle
Date Sampled: 2/17/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	75
Phryganeidae	4	7
Asellidae	8	5
Leptophlebiidae	2	5
Hydrophilidae	5	4
Naididae	7	2
Lumbriculidae	8	2
Molannidae	6	2
Corixidae	9	1
Dytiscidae	5	1

Statistical Analysis

Number of Taxa: 10
Total Number of Individuals: 104
% Contribution of Dominant Family: 72.12 % (Chironomidae)
Family Biotic Index: 5.81
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.07
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 3
% EPT: 13.46
EPT/C: 0.19
NJIS Rating: 12
Biological Condition: Moderately Impaired
Habitat Analysis: 173
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant -

Observations

Streamwater: Slightly Turbid....Flow: Slow....Width/Depth (ft): 10/3->4
Substrate: Mud, Silt....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Mostly Closed....Other: Forested; Water Color: Brown
Station downstream of Hoffmans Mill Pond; Water temp. 4.2C / pH 3.6SU / DO 13.2mg/L / Cond. 64umhos

Station: AN0766
Savages Run (East Ck), Sunset Rd, Cape May County
Heislerville USGS Quadrangle
Date Sampled: 02/02/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	42
Leuctridae	0	16
Simuliidae	6	12
Psychomyiidae	2	5
Hydropsychidae	4	4
Leptoceridae	4	3
Philopotamidae	3	3
Empididae	6	2
Perlodidae	2	2
Lepidostomatidae	1	2
Lumbriculidae	8	2
Corydalidae	0	2
Limnephilidae	4	2
Heptageniidae	4	2
Aeshnidae	3	1
Calopterygidae	5	1
Cordulegastridae	3	1
Leptophlebiidae	2	1
Tubificidae	10	1
Molannidae	6	1
Polycentropodidae	6	1
BloodRed Chironomidae	8	1
Taeniopterygidae	2	1

Statistical Analysis

Number of Taxa: 23
Total Number of Individuals: 108
% Contribution of Dominant Family: 38.89 % (Chironomidae)
Family Biotic Index: 4.31
Scraper/Filterer Collector Ratio: 0.40
Shredder/Total Ratio: 0.20
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 13
% EPT: 39.81
EPT/C: 1.00
NJIS Rating: 30
Biological Condition: Nonimpaired
Habitat Analysis: 186

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/<1
Substrate: Gravel/sand, snags....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Open....Other: Water color: colorless, Land Use: forested (Belleplain State Forest); Water temp. 4.6 / pH 4.7SU / DO N/A / Cond. 60umhos

Could not obtain DO reading due to bad membrane on probe.;

Station: AN0767
Unt To Dennis Ck, Rt. 47, Cape May County
Woodbine USGS Quadrangle
Date Sampled: 2/3/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Naididae	7	45
BloodRed Chironomidae	8	19
Tubificidae	10	16
Gammaridae	4	10
Chironomidae	6	9
Leptoceridae	4	1

Statistical Analysis

Number of Taxa: 6
Total Number of Individuals: 100
% Contribution of Dominant Family: 45.00 % (Naididae)
Family Biotic Index: 7.25
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.19
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 0.04
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 132
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 8/1
Substrate: Gravel/Sand, Silt....StreamBank Vegetation/Stability: Trees/Poor
Canopy: Mostly Open....Other: Station downstream of impoundment; Rip rap along banks near bridge
Large cobble dumped in stream; Water temp. 5.1C / pH 6.4SU / DO 12.8mg/L / Cond. 84umhos

Station: AN0768
Unt To Dennis Ck (Ludlams Pond Outlet), Rt 47, Cape May County
Woodbine USGS Quadrangle
Date Sampled: 02/02/00

Family	Family Tolerance Value (FTV)	Number of Individuals
BloodRed Chironomidae	8	39
Chironomidae	6	32
Naididae	7	17
Tubificidae	10	14
Hydrobiidae	8	1
Asellidae	8	1
Caenidae	7	1
Gammaridae	4	1
Planariidae	4	1

Statistical Analysis

Number of Taxa: 9
Total Number of Individuals: 107
% Contribution of Dominant Family: 36.45 % (BloodRed Chironomidae)
Family Biotic Index: 7.42
Scraper/Filterer Collector Ratio: 0.00
Shredder/Total Ratio: 0.38
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 0.93
EPT/C: 0.01
NJIS Rating: 9
Biological Condition: Moderately Impaired
Habitat Analysis: 186
Deficiency(s) noted:
Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Moderate....Width/Depth (ft): 20/<1
Substrate: Gravel/ Sand....StreamBank Vegetation/Stability: Trees, shrubs/Good
Canopy: Mostly Open....Other: Water color:; Impoundment: outlet to pond
Water temp. 2.4C / pH 4.4SU / DO 13.8mg/L / Cond. 66umhos;

Station: AN0769
Old Robbins Br, Beaver Causeway, Cape May County
Woodbine USGS Quadrangle
Date Sampled: 02/02/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Chironomidae	6	95
Dytiscidae	5	2
Culcidae	8	1

Statistical Analysis

Number of Taxa: 3
Total Number of Individuals: 98
% Contribution of Dominant Family: 96.94 % (Chironomidae)
Family Biotic Index: 6.00
Scraper/Filterer Collector Ratio: 95.00
Shredder/Total Ratio: 0.0
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.0
EPT/C: 0.0
NJIS Rating: 3
Biological Condition: Severely Impaired
Habitat Analysis: 189
Deficiency(s) noted: Chironomidae Family Overwhelmingly Dominant - Low Diversity - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 3/1
Substrate: Gravel/Sand....StreamBank Vegetation/Stability: Trees, Shrubs/Good
Canopy: Closed....Other: forested-Belleplain State Park; Water color - cedar brown; Braided stream....Water temp. 1.9C / pH N/A / DO 8.5 mg/L / Cond. 168 umhos

Station: AN0770
Green Ck, Rt. 47, Cape May County
Rio Grande USGS Quadrangle
Date Sampled: 02/03/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Gammaridae	4	6
Chironomidae	6	1
Curculionidae	7	1

Statistical Analysis

Number of Taxa: 3
Total Number of Individuals: 8
% Contribution of Dominant Family: 75.00 % (Gammaridae)
Family Biotic Index: 4.63
Scraper/Filterer Collector Ratio:
Shredder/Total Ratio: 0.13
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 0
% EPT: 0.0
EPT/C: 0.0
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 113
Deficiency(s) noted: Gammaridae Family Overwhelmingly Dominant - Low Diversity - Paucity of Clean Water Organisms

Observations

Streamwater: Turbid....Flow: Slow....Width/Depth (ft): 10/1
Substrate: Mud....StreamBank Vegetation/Stability: Phragmites, wool grass, tree roots/Fair
Canopy: Open....Other: Suburban; Water color - grey-brown, dead trees in waterway; Dead forest bordering stream, channelized from road to bay on map
6 brackish water organisms in sample, not identified
Water temp. 2.7C / pH 5.6 SU / DO 9.9 mg/L / Cond. 1902 umhos

Station: AN0771
Fishing Ck, Rt. 47, Cape May County
Rio Grande USGS Quadrangle
Date Sampled: 02/03/00

Family	Family Tolerance Value (FTV)	Number of Individuals
Sphaeriidae	8	65
Tetrastemmatidae	7	16
Planariidae	4	5
Tubificidae	10	3
Corixidae	9	2
Chironomidae	6	2
Haliplidae	5	2
Glossiphoniidae	8	1
Phryganeidae	4	1
Asellidae	8	1
Planorbidae	6	1
Simuliidae	6	1

Statistical Analysis

Number of Taxa: 12
Total Number of Individuals: 100
% Contribution of Dominant Family: 65.00 % (Sphaeriidae)
Family Biotic Index: 7.54
Scraper/Filterer Collector Ratio:
Shredder/Total Ratio: 0.03
E+P+T (Ephemeroptera, Plecoptera, Trichoptera): 1
% EPT: 1.00
EPT/C: 0.50
NJIS Rating: 6
Biological Condition: Severely Impaired
Habitat Analysis: 148
Deficiency(s) noted: Sphaeriidae Family Overwhelmingly Dominant - Significant Organic Pollution - Paucity of Clean Water Organisms

Observations

Streamwater: Clear....Flow: Slow....Width/Depth (ft): 8/1.5
Substrate: Gravel/sand, mud....StreamBank Vegetation/Stability: Trees, grass/Fair
Canopy: Partly Open....Other: Suburban; Water color - brown;
Impoundment: small dam (location of the Wildwood pumping station)
Some foam on surface near dam and water has chlorine odor
Water temp. 2.8C / pH 5.8 SU / DO 7.3 mg/L / Cond. 154 umhos