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WSRC-TR--91-63

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QUANTITATIVE STUDIES OF SAVANNAH RIVER AQUATIC INSECTS 1959-1985

DISCLAIMER

Report No. 86-15F

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October 30, 1986

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EXECUTIVE SUMMARY

As part of a long-term study of water quality patterns, scientists from the Academy of Natural Sciences have collected aquatic insects from artificial substrates placed at several stations in the Savannah River. This report presents the first detailed compilation and analysis of this substantial data base, and examines patterns of variation of insect distribution and abundance (both spatial and temporal) during the last quarter century. Data on the number of individuals of various taxa found in the insect traps were obtained from tables in the Academy's cursory reports. Computer data files created from these records were subjected to extensive statistical analyses in order to examine variation among stations, seasons and years in the abundances of major taxa and various aggregate properties of the insect assemblage. Although a total of 83 taxa were collected over the 27-year study, 10 taxa accounted for nearly 80% of the individuals collected from the traps, hence these 10 taxa were analyzed more intensively. Most of these taxa are either filter-feeders that ingest fine particles suspended in the water column or collector-gatherers that remove living and detrital particles from substrates.

Because these aquatic insect collections were intended to supplement the Academy's more detailed hand collections, several points were considered critically before subjecting these data to detailed statistical analyses. For example,

over the 27-year period during which these collections were made, there were changes in both sampling technique and the level of taxonomic resolution of the insects. Such changes complicate any attempt to examine long-term trends in population and community patterns. The guiding philosophy in these analyses, however, was to examine the data from as many different perspectives as possible. Rather than emphasizing patterns that were only apparent when a single parameter was analyzed, we have instead focused on those ecological patterns that were consistently apparent when the data were evaluated using several different analytical techniques and assumptions.

For example, the abundance pattern of a given taxon can potentially provide useful information regarding ecological conditions, yet several different indices of abundance can be employed. We approached this problem by performing statistical analyses of abundance patterns using three different measures of abundance: absolute, proportional and rank-ordered. Overall, the results of the analyses based on these different measures were relatively consistent with each other. For example, the abundances of most of the taxa studied varied significantly* among stations, seasons and years for all three measures. The total number of insects

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*Throughout this report, the term "significant difference" is used to describe the outcome of a statistical test where there is a low probability (i.e., $P < 0.05$) that the years, stations, or seasons are alike. However, even where a significant difference is detected, the magnitude of this difference varies depending on the particular variable being analyzed.

collected from the traps tended to increase somewhat over the course of the study. Abundances were usually greater in the summer and fall than in the winter and spring. Most taxa were significantly more abundant at the downstream station (Station 6) than at the reference station (Station 1).

Both univariate and multivariate analyses indicated that Stations 1 and 6 differed from each other ecologically. The average number of taxa collected per trap at Station 6 was significantly greater (usually by more than 30%) than at Station 1. Both cluster analyses and ordination analyses indicate that the taxa characteristic of Station 1 are quite distinct from the assemblage characteristic of Station 6.

Hilsenhoff's biotic index was used to compare the average pollution tolerance of the insect assemblage at the two stations. This index is an average of an empirically derived pollution tolerance score for each taxon, weighted by each taxon's proportional abundance. The index is most sensitive to organic pollution and other nutrient additions, but has not been evaluated in terms of its response to thermal pollution, heavy metals, and other toxic materials. Although the index is most accurate when applied to samples identified to species level, the present analyses are based largely on samples identified to the generic level. Furthermore, the index was developed to describe pollution tolerance in midwestern streams and rivers, whereas in this study it is applied to a southeastern river. Nonetheless,

we believe that the index does provide valuable information of a comparative nature. For example, the insect assemblage at Station 6 was significantly less pollution-tolerant as (reflected by Hilsenhoff's biotic index) than the assemblage at Station 1. Collectively, these station differences suggest that water quality is either comparable at the two stations or better at Station 6. Pollutants entering the Savannah River upstream from Station 1 may have a stronger impact at Station 1 than Station 6.

Perhaps the most dramatic change in insects over the 27-year study is an approximately 100% increase in the number of taxa collected at both Stations 1 and 6. More subtly, the decline at Station 6 of an index of pollution tolerance for the insect assemblage suggests that effects of pollutants at this downstream station may have diminished over the course of the study.

INTRODUCTION

This study examines historical patterns of aquatic insect distribution and abundance from 1959 to 1985 using the long-term data base established by the Savannah River cursory studies conducted by the Academy of Natural Sciences of Philadelphia (ANSP). Particular attention is focused on the utility of the insect trap sampling method as a means of monitoring river water quality.

The Savannah River rises in the southern Appalachians and flows through the Piedmont and Coastal Plain into the Atlantic Ocean. Prior to 1954, the river was receiving a moderate amount of city and industrial waste (ANSP, 1970), eroded soil caused by agricultural practices and waste discharged from boats (ANSP, 1981). There was a heavy silt load, which seemed to be contributed largely by Broad Creek. As the human population along the Savannah River increased, so did organic waste in the river in the form of sanitary waste, farm waste and various organic chemicals associated with farming, industry and domestic activities.

The main flora and fauna were composed of those species which can live on or among floating logs and debris. The bottom fauna was poorly developed because most of the river bed consisted of shifting sand. Most of the species collected were species which live in water rich in nutritive ions. The region of the river that was studied contained a

considerable amount of organic material from upstream and had been reduced to a "mineralogical" condition (ANSP, 1953).

Since the 1950s, industrial growth on the Savannah River has been rapid around and below Augusta, Georgia. Many environmental changes have occurred that may have independently or jointly affected river biota. Identified changes (ANSP, 1981) include: (1) the construction and operation of the Savannah River Plant; (2) the construction and closure of the Clark Hill Reservoir; (3) hydraulic dredging of the entire river reach by the U.S. Army Corps of Engineers (USACE) between 1956 and 1960; (4) increased effluent discharge by a rapid urban and industrial development in and surrounding Augusta; (5) flow regulation and temperature alteration due to operation of Clark Hill Dam, a hydroelectric station that began operation in 1954; (6) the operation of the reactors of the Savannah River Plant; (7) the operation of the L-reactor of the Savannah River Plant from 1954 to February 1968; (8) the increase in the number of sewage treatment plants at Augusta; and, (9) the influence of Par Pond on the Savannah River when its water was used to cool off reactors.

After the operation of the Clark Hill Dam, the frequency of "cave-ins" of the banks due to the rapidly rising and falling water no longer occurred because the dam stabilized river flow. The banks became vegetated with higher plants that held the soil in place. Also, suspended solids tended to settle out behind Clark Hill Dam, with the result

that downstream waters were clearer. Algal growth extended to a greater depth, and therefore the population of filter-feeding insects increased. Thus, shortly after the dam was built there was an increase in aquatic life in the Savannnah River below the dam.

The dredging by the Corps of Engineers caused serious, though temporary, changes in the biological aspect of the river (ANSP, 1970). It created several bars that in turn have developed pools of quiet water. The amount of silt was high during this time.

From 1958 on, quarterly studies of aquatic insects have been conducted by ANSP at the Savannah River Plant to monitor its impact on the Savannah River biota. In these cursory surveys, insect traps are placed in the river at various stations for approximately 30 days. The number of individuals and taxa colonizing these artificial substrates are then determined.

The long-term data base resulting from these aquatic insect collections is truly unique. We know of no other study in which aquatic insects have been quantitatively sampled at regular intervals for such an extended period of time. This report presents detailed statistical analyses and interpretations of this data set, in order to provide insights regarding the changes in the ecology and water quality of the Savannah River between 1959 and 1985.

Prior to 1985, field collections were carried out by Dr. Selwyn Roback and Mr. Jay Richardson, and laboratory

identifications were made by Dr. Roback. In 1985, Ms. Terry Nagy conducted the field collections and laboratory identification of samples in consultation with Dr. David Hart and Dr. Selwyn Roback. This report was written by Dr. David Hart and Ms. Terry Nagy and edited by Ms. Robin Soltis.

LOCATION AND DESCRIPTION OF STATIONS

Until 1982, one upstream "control" station (Station 1) and one downstream "impact" station (Station 6) were examined. Since 1982, an additional downstream station (Station 5) has been studied to monitor potential effects resulting from the restart of the L-reactor. The general survey area is depicted in Figure 1.

The stations selected for the study include comparable ecological habitats. The bottom has similar structure, e.g., sand and mud, and it is stable. Small amounts of sedimentation occur and the current is slow to moderate. The contour of the river bed is irregular. Comparable amounts of floating debris were present at each station. A considerable shallow water area or beaches were present.

Station 1 (Fig. 2) is a 200-m section of the river at Mile 160.7, approximately 1.25-mi downstream (southeast) from Shell Bluff Landing, Burke County, Georgia, and Aiken County, South Carolina. The area includes all of the pilings (marked* as #78) on the left bank** and the opposite area on the right bank. There is a sand beach among the pilings. The right bank slopes off gently; at the lower boundary there is an area of stone rip-rap where a small stream enters the river. Station 1 is the reference station, where the condition of the biota before it encounters any influence from the plant complex can be examined.

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*Markings appear on pilings themselves and in USACE (1980).
**Downstream orientation.

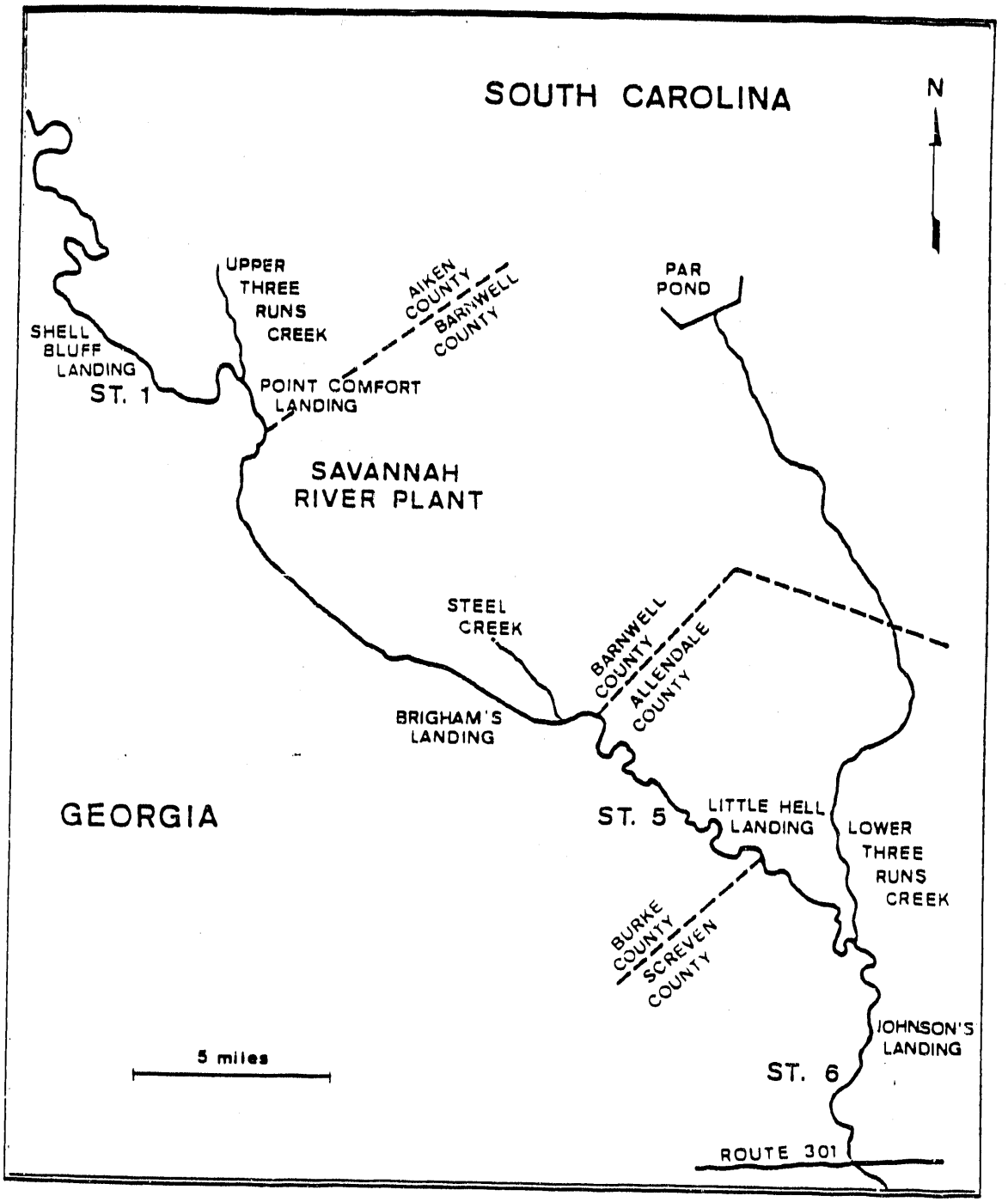

Figure 1. Survey stations on the Savannah River.

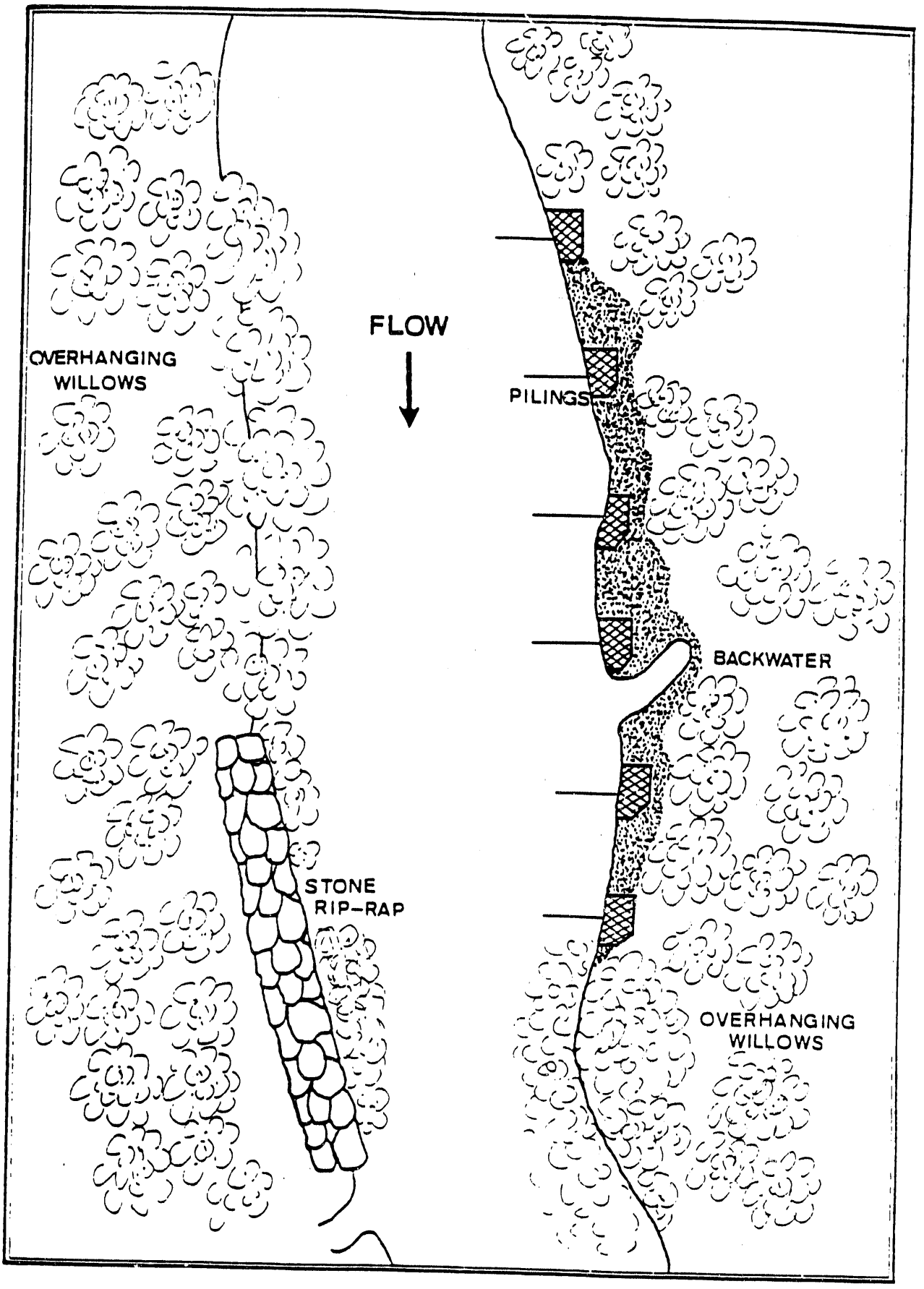

Figure 2. Field sketch of Station 1 on the Savannah River. Map is not drawn to scale.

Station 5 (Fig. 3) is a section of the river at Mile 135.8 in Allendale County, South Carolina, approximately 1.5-mi upstream (west) from Little Hell Landing, Burke County, Georgia. It is located at a bend in the river between Catfish Hole Point and Devil's Elbow. A set of pilings (#55) is present near the upper-right bank boundary of the station. A small slough is located on the left-bank side and below this is an area of stone rip-rap. A sand bar is present along the lower right bank. This station is approximately 5 mi below the mouth of Steel Creek, which is the L-reactor's discharge point. It will reflect the impact resulting from this effluent.

Station 6 (Figs. 4 and 5) is a river section at Mile 123.1 in Allendale County, South Carolina, approximately 1.25-mi downstream (southeast) from Johnson's Landing, Screven County, Georgia. It lies below the Savannah River Plant and the confluence of Lower Three Runs Creek and the Savannah River. There are sand beaches on both sides of the river. This station contains two reaches, an upstream reach with a large backwater on the right-bank side and a downstream reach with backwater on the left-bank side. A set of pilings (#42) is present near the lower left-bank limit of the downstream reach. At this station, the net impact of the Savannah River Plant can be studied.

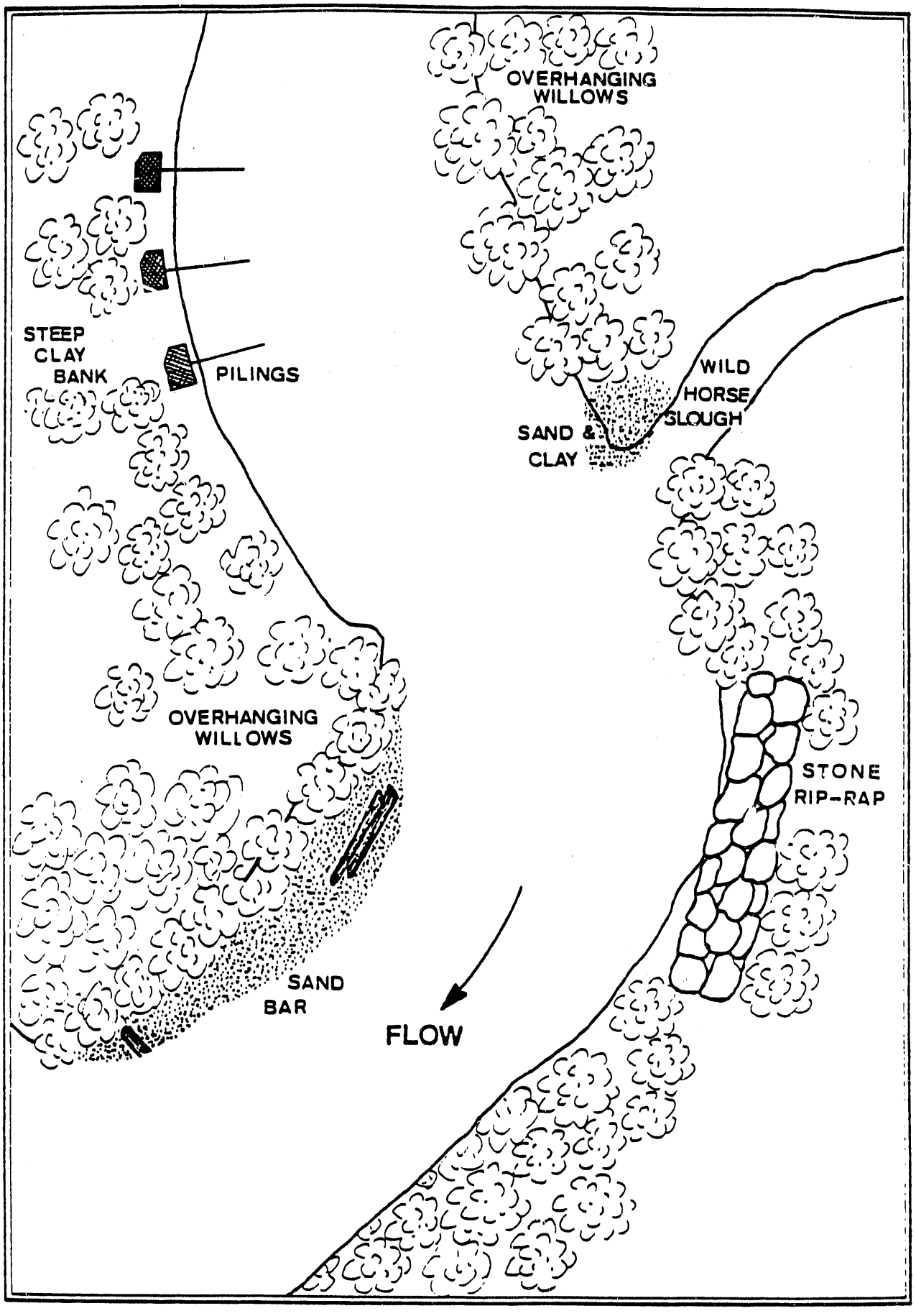

Figure 3. Field sketch of Station 5 on the Savannah River. Map is not drawn to scale.

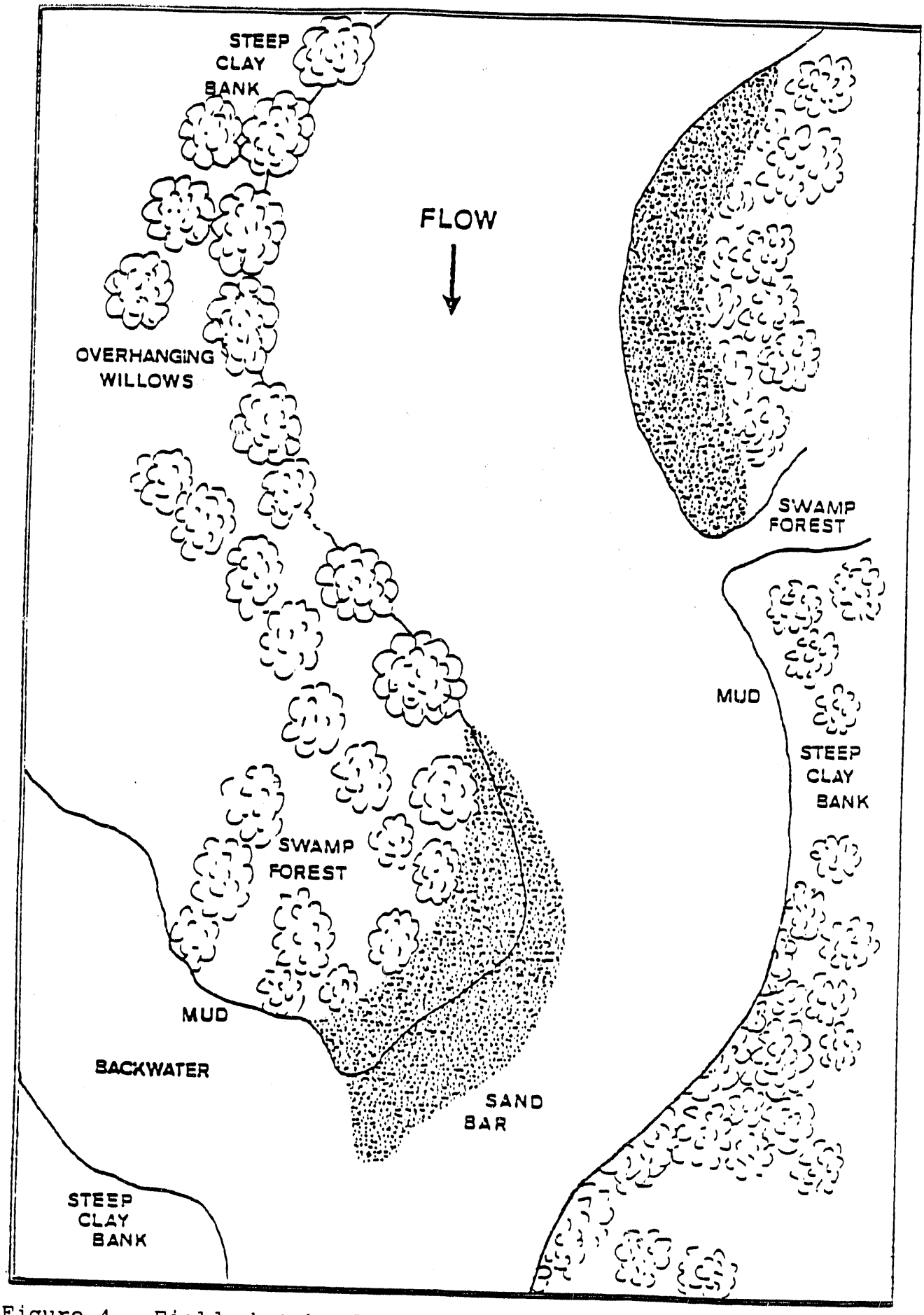

Figure 4. Field sketch of upstream reach of Station 6 on the Savannah River. Map is not drawn to scale.

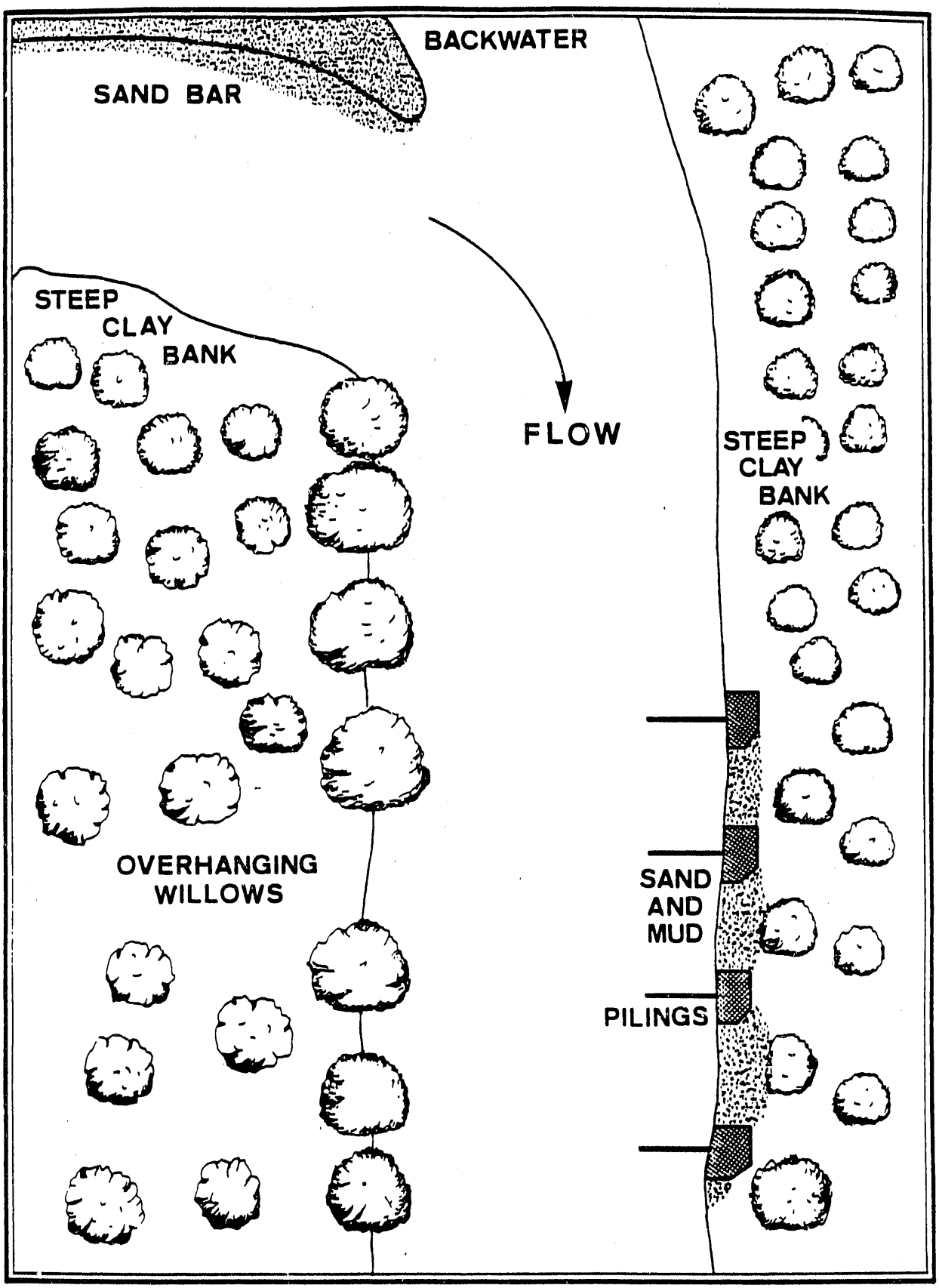

Figure 5. Field sketch of downstream reach of Station 6 on the Savannah River. Map is not drawn to scale.

METHODS

The data for this study were gathered from tables of insect taxa collected in traps presented in past cursory reports from 1959 on. A total of 95 cursory surveys have been conducted since 1959; 30 of these have been since the start up of the L-reactor and 65 have been after it shut down in 1968. The 1958 report did not contain tables of taxa collected during that year; hence, this date was excluded from the data set.

All taxa names from the cursory report tables were listed and given to Dr. Selwyn (Sam) Roback, who assisted in the construction of a consistent summary of taxa collected during the study. From 1959 to 1984, Dr. Roback and Mr. Jay Richardson were responsible for collecting and identifying aquatic insects from the Savannah River. Beginning in 1985, Ms. Terry Nagy was responsible for these aspects of the study. Because of taxonomic inconsistency at the species level between reports, most of the similar species were combined under one generic name. An example of this is *Stenonema* sp. 1, *Stenonema* sp. 2, etc. Sp. 1 from one report was not always the same sp. 1 of other reports. For some of the earlier reports, some insect groups were not identified beyond genus due to lack of suitable taxonomic keys. To ensure consistency, taxa in later reports that were identified to a higher level with the availability of better taxonomic keys were combined under the level they

appeared in earlier reports. This corrects for the possibility of naming a taxon as two different categories and later analyzing the same taxon as two separate taxa. Small specimens could not be identified past the generic or sometimes family level (i.e. Baetidae) because of immaturity of important morphological structures used as identifiable species characteristics in taxonomic keys. When immature and adult insects were collected for the same taxon, they were recorded and analyzed separately. A list of the taxa names used and the average number of individuals collected per trap per station for any given year for each of the four seasons appears in Appendices A to D.

The cursory reports were also checked for: the date the survey was done; what substrate was used (wood and/or webbing); and the size of the mesh opening (0.25 in or 0.50 in).

From 1958 to 1971, 8-in X 6-in X 12-in (15.2-cm X 20.3-cm X 30.5-cm) boxes constructed from 0.25-in (0.64-cm) mesh hardware cloth and filled with wood and styrofoam were used for the surveys. In 1972, 8-in X 6-in X 12-in (15.2-cm X 20.3-cm X 30.5-cm) boxes constructed from 0.5-in (1.27-cm) mesh hardware filled with wood or plastic mesh and a piece of styrofoam were used for that survey. From 1973 to 1985, the surveys used 8-in X 6-in X 12-in (15.2-cm X 20.3-cm X 30.5-cm) boxes made from 0.25-in mesh hardware cloth and filled with 8 to 10 sheets of plastic Conservation webbing (manufactured by the 3M Company) and 1 or 2 pieces of styrofoam. Each station had four boxes (or traps) which were

placed in the river by SRP personnel. In general, two traps were tied to separate pilings on the bank with pilings at the upper and lower ends of the station, and the other two were each tied to overhanging tree branches on the opposite bank at the upper and lower ends of the station. The traps were tied about 4 m from the shoreline and had enough rope to allow them to float approximately 4 m from the point where they were tied. These traps were left floating in the water approximately 30 days before the onset of a survey.

For analysis the survey data were grouped by seasons: spring includes March and April surveys; summer includes May, June and July surveys; fall includes September and October surveys plus one August survey in 1959; and winter includes November and December surveys.

The taxa abundance data and any other information obtained from the reports were entered into an IBM/XT computer. All data were thoroughly proofed for accuracy.

Water chemistry data for April 1968 to April 1985 were obtained from the DuPont Company's Savannah River Water Analyses reports. Water chemistry samples were collected by Savannah River Plant personnel approximately once per month at two locations which closely corresponded to our Stations 1 and 6. These data were also entered into a microcomputer file and proofed.

Most statistical analyses were done on the IBM microcomputer using the following statistical software: BMDP (Dixon, 1983); SYSTAT (SYSTAT, Inc., 1985); and P-STAT (P-

STAT, Inc., 1985). Additional analyses were performed on a VAX model #730 mainframe computer using SAS (SAS Institute, Inc., 1985) statistical software.

Taxa were assigned to functional feeding groups according to their method of food acquisition (Cummins, 1973). The five major categories used were collector-gatherer, filterer, predator, shredder, and other. Collector-gatherers are organisms which scrape or collect microalgae or organic matter from substrate surfaces. Organisms classified as filterers feed by removing fine particulate organic matter from the water column using either nets or other filtering structures. Predators are carnivorous macroinvertebrates that are adapted specifically for either piercing or engulfing other animals. Shredders feed by chewing living or decomposing plant tissue. Organisms were assigned to the "other" category when either information was unavailable or our level of taxonomic identification was too broad (e.g., midges in the subfamily Chironominae). Table 1 shows the assignment of the functional feeding groups to the taxa collected. Merritt and Cummins (1984) and Brigham, Brigham and Gnilka (1982) were used as cross-references.

Hilsenhoff's (1982) biotic index was also used to quantify the relative abundance of various aquatic insects as a function of their ability to tolerate pollution. This index averages the pollution tolerance of each taxon weighted by its proportional abundance. The assigned pollution tolerance values for each taxon were obtained from Hilsenhoff

Table 1. Assignment of functional feeding groups and biotic index values to the taxa collected on the Savannah River from 1959 to 1985.

Taxa	FFG[1] (source[2])	Biotic index[3]
Phylum Arthropoda		
Class Insecta		
Subclass Pterygota		
Division Exopterygota		
Order Ephemeroptera		
Suborder Schistonata		
Family Baetidae		
Baetidae spp.	G(1)	-
Callibaetis sp.	G(2)	-
Family Heptageniidae		
Heptagenia spp.	G(2)	0.5
Stenonema spp.	G(2)	2.0
Family Oligoneuriidae		
Isonychia spp.	F(2)	2.0
Family Leptophlebiidae		
Leptophlebia spp.	G(2)	2.0
Paraleptophlebia spp.	G(1)	-
Suborder Pannota		
Family Ephemerellidae		
Ephemerella spp.	G(2)	1.0
Family Tricorythidae		
Tricorythodes spp.	G(2)	2.0
Family Caenidae		
Caenis sp.	G(2)	3.0
Order Odonata		
Odonata spp. (Immature)	P(1)	-
Suborder Anisoptera		
Family Aeshnidae		
Aeshnidae spp.	P(1)	-
Boyeria sp.	P(1)	1.0
Family Gomphidae		
Hagenius brevistylus	P(1)	-
Family Macromiidae		
Macromia sp.	P(1)	1.0
Family Corduliidae		
Neurocordulia molesta	P(1)	1.[illegible]
Family Libellulidae		
Libellulidae spp.	P(1)	-
Suborder Zygoptera		
Family Calopterygidae		
Calopteryx spp.	P(1)	-
Hetaerina sp.	P(1)	-
Family Coenagrionidae		
Coenagrionidae spp.	P(1)	-
Argia spp.	P(1)	2.5
Order Plecoptera		
Group Euholognatha		
Family Nemouridae		
Nemoura sp.	S(2)	-
Family Taeniopterygidae		
Taeniopteryx spp.	S(2)	1.0
Family Capniidae		
Allocapnia sp.	S(2)	-
Group Systellognatha		
Family Pteronarcyidae		
Pternarcys sp.	G(2)	-
Family Perlodidae		
Isoperla sp.	P(2)	0.0
Isogenoides (=*Isogenus*) sp.	P(2)	0.0
Family Perlidae		
Perlidae spp.	P(1)	-
Acroneuria sp.	P(2)	-
Perlesta perlesta	P(2)	2.0
Paragnetina sp.	P(2)	1.0

Table 1 (continued). Assignment of functional feeding groups and biotic index values to the taxa collected on the Savannah River from 1959 to 1985.

Taxa	FFG[1] (source[2])	Biotic index[3]
Order Hemiptera		
Family Corixidae		
Trichocorixa calva	P(1)	-
Family Belostomatidae		
Belostoma fluminea	P(1)	-
Family Naucoridae		
Pelocoris femoratus	P(1)	-
Division Endopterygota		
Order Coleoptera		
Suborder Adephaga		
Family Haliplidae		
Haliplidae spp.	S(2)	-
Family Dytiscidae		
Dytiscidae spp. (L)	P(1)	-
Dytiscidae spp. (A)	P(1)	-
Family Gyrinidae		
Gyrinidae spp. (L)	P(1)	2.0
Gyrinidae spp. (A)	P(1)	-
Dineutus spp. (A)	P(1)	-
Suborder Polyphaga		
Series Staphliniformia		
Family Hydrophilidae		
Hydrophilidae spp. (L)	P(1)	-
Hydrophilidae spp. (A)	P(1)	-
Tropisternus glaber	P(1)	-
Berosus sp. (L)	P(1)	-
Series Scarabaeiformia		
Family Helodidae		
Helodidae sp. (L)	G(1)	-
Series Elateriformia		
Family Dryopidae		
Dryopidae spp.	S(1)	-
Family Elmidae		
Elmidae spp. (L)	G(1)	-
Elmidae spp. (A)	G(1)	-
Ancyronyx variegatus (A)	G(1)	2.0
Machronychus glabratus (A)	G(1)	2.0
Stenelmis spp.	G(1)	3.0
Order Megaloptera		
Family Corydalidae		
Chauliodes sp.	P(1)	-
Corydalus cornutus	P(1)	2.0
Nigronia sp.	P(1)	-
Order Neuroptera		
Family Sisyridae		
Climacia sp.	P(1)	-
Order Trichoptera		
Suborder Annulipalpia		
Family Hydropsychidae		
Hydropsychidae spp.	F(1)	-
Cheumatopsyche spp.	F(2)	3.0
Hydropsyche spp.	F(2)	2.0
Macronema spp.	F(2)	2.0
Family Philopotamidae		
Chimarra spp.	F(2)	1.0
Family Polycentropodidae		
Neureclipsis spp.	O(2)	4.0
Polycentropus sp.	P(2)	-
Suborder Integripalpia		
Family Hydroptilidae		
Hydroptila sp.	O(1)	3.0
Oxyethira sp.	G(1)	-

Table 1 (continued). Assignment of functional feeding groups and biotic index values to the taxa collected on the Savannah River from 1959 to 1985.

Taxa	FFG[1] (source[2])	Biotic index[3]
Family Lepidostomatidae		
Lepidostoma sp.	S(1)	-
Family Limnephilidae		
Limnephilidae spp.	S(1)	-
Hydatophylax (=*Astenophylax*) sp.	S(1)	-
Pycnopsyche sp.	S(1)	-
Family Leptoceridae		
Ceraclea spp.	G(1)	2.0
Nectopsyche spp.	S(1)	2.0
Triaenodes spp.	S(1)	-
Oecetis sp.	P(1)	2.0
Order Diptera		
Suborder Nematocera		
Family Tipulidae		
Tipula spp.	O(1)	-
Family Ceratopogonidae		
Palpomyia spp.	P(1)	3.0
Family Chironomidae		
Subfamily Tanypodinae		
Tanypodinae spp.	P(1)	-
Subfamily Orthocladiinae		
Orthocladiinae spp.	G(1)	-
Subfamily Chironominae		
Chironominae spp.	O(1)	-
Family Simulidae		
Simulium spp.	F(1)	2.5
Suborder Brachycera		
Family Tabanidae		
Tabanus sp.	P(1)	-
Family Athericidae		
Atherix sp.	P(1)	-
Family Empididae		
Hemerodromia sp.	P(1)	3.0
Suborder Cyclorrhapha		
Division Schizophora		
Section Acalyptratae		
Family Ephydridae		
Ephydridae sp.	O(1)	-
Section Calyptratae		
Superfamily Muscoidea		
Muscoidea (L)	O(1)	-

[1] Functional feeding group (FFG) codes are:
G = Collector-gatherers and scrapers S = Shredder
O = Other (? = Undetermined) F = Collector-filterer
P = Predator

[2] Number in parentheses indicates the reference for the functional feeding group assignment.
(1) Merritt and Cummins, 1984.
(2) Brigham, Brigham and Gnilka, 1982.

[3] From Hilsenhoff, 1982.

(1982) and range from 0 to 5, with 5 assigned to taxa that are most tolerant of organic pollution. When the tolerance value differed for species within the same genera, we used the average of the tolerance values. Table 1 shows the assignment of the biotic index levels to the taxa collected.

DATA ANALYSES

The average number of individuals per trap at a given station was calculated for every taxon during each season and year. The majority of the subsequent statistical analyses focused on taxa whose mean abundances per trap were greater than or equal to 0.5 in any one year. A three-way analysis of variance (ANOVA) was used to examine how the number of individuals per trap varied among stations, seasons and years. All possible interaction terms (i.e., season x year, season x station, year x station, season x year x station) were also tested in the ANOVA model. Duncan's multiple range test was also used to indicate which stations differed from one another. Analysis of variance was also used to compare the proportional (as opposed to absolute) and rank-ordered abundances of the major taxa. Proportional abundance was calculated as the number of individuals of a given taxon divided by the total number of individuals in the trap.

Taxa richness was calculated, based upon identification of invertebrates to the generic level for the most part, rather than species identification per se. Shannon-Wiener diversity (H') and evenness (J') were measured according to formulas in Peet (1974), using base 2 logarithms. Three-way ANOVA was used to compare total abundance, number of taxa (taxa richness), Shannon-Wiener diversity, Hilsenhoff's biotic index, and the proportions of individuals in each

functional feeding group. Following the recommendations of Sokal and Rohlf (1981), log base 10 transformations of abundances and arcsin transformations of proportions were made.

Most of the statistical analyses were done on the IBM microcomputer using the following statistical software packages: BMDP (Dixon, 1983); SYSTAT (SYSTAT, Inc., 1985); and P-STAT (P-STAT, Inc., 1985). For 3-way ANOVAs, the data were transferred to a mainframe computer, and SAS (SAS Institute, Inc., 1985) statistical software was used.

Jaccard's coefficient was used to calculate the similarity in taxonomic composition between pairs of stations. Jaccard's coefficient quantifies the similarity of two samples based on patterns of presence and absence of taxa, irrespective of their abundance. Such similarity coefficients are usually based on identification of taxa to the species level whereas the present coefficients are based primarily on patterns of generic presence and absence. Jaccard's coefficient is defined as the number of taxa that are common to any two stations divided by the total number of taxa present at the two stations (Sneath and Sokal, 1973). Thus, values for the Jaccard's coefficient vary between 0 (indicating no species in common between the two samples) and 1 (indicating that both samples have identical sets of species). A similarity matrix was then generated for all unique combinations of station pairs, and this matrix was clustered via SYSTAT's hierarchical CLUSTER

algorithm (Wilkinson, 1984). The cluster analysis produced a branching arrangement called a dendogram which illustrates the relative similarity of stations. This form of analysis is fundamentally different from the previously discussed ANOVA's which examine how similar the stations are in terms of the density of a particular taxon. The cluster analysis compares the stations based on the number of taxa that they have in common.

A form of ordination called detrended correspondence analysis (DCA) (Hill and Gauch, 1980) was used to arrange stations in two-dimensional space so that similar stations were placed close together and dissimilar stations far a-part. All analyses were conducted using DECORANA (Hill, 1979), a program in the Cornell Ecology Program Series (Gauch, 1982). The variable analyzed was the average number of individuals in each taxon per trap at each station during each year of the study. One ordination was performed for each of the four seasonal data sets.

RESULTS

A total of 83 taxa (Table 1) were considered in the analyses that follow, although many more species were actually collected in the 95 cursory surveys from which the present data set was obtained. However, species-level taxonomy was not used consistently throughout the study and some taxa could not be identified to species. Thus, a decision was made to classify taxa at the level of genus, sub-family, or family to permit comparisons over the course of the study. Of these 83 taxa, 55 were sufficiently abundant (average abundance per trap in at least one year greater than or equal to 0.5 individuals) to merit detailed statistical analysis.

The collections were numerically dominated by a small number of taxa (Table 2). The most common taxon was the filter-feeding caddisfly larva *Chimarra*, which builds very fine-meshed filtering nets. The second most common taxon was the sub-family Chironominae. The larvae of many of these midge species are also filter-feeders. Filter-feeding mayfly nymphs of the genus *Isonychia* comprised the third most abundant taxon and the mayfly genus *Stenonema* was fourth. *Stenonema* nymphs live on hard substrates, where they graze algae and collect detrital particles. Net-spinning caddisfly larvae in the genus *Cheumatopsyche* were the fifth most abundant taxon. These five taxa comprised

Table 2. Mean abundance per trap of the 10 most abundant insect taxa collected in the Savannah River, 1959-1985.

Taxa	Mean Abundance
Chimarra spp.	44.9
Chironominae spp.	26.4
Isonychia spp.	22.9
Stenonema spp.	18.9
Cheumatopsyche spp.	18.2
Orthocladiinae spp.	17.0
Ephemerella spp.	11.7
Hydropsyche spp.	10.8
Simulium spp.	9.7
Baetidae spp.	7.7
Total individuals	235.8

approximately 56% of the total number of individuals collected.

The midge sub-family Orthocladiinae was the sixth most common taxon. The larvae of many of the species in this group are believed to be deposit feeders. Sprawling mayfly nymphs belonging to the genus *Ephemerella* were the seventh most common taxon, followed by net-spinning caddisfly larvae in the genus *Hydropsyche*. Filter-feeding black fly larvae in the genus *Simulium* and grazing/deposit-feeding mayfly nymphs in the family Baetidae were ninth and tenth most abundant, respectively. Collectively, these ten most abundant taxa comprised approximately 80% of the total number of individuals collected during the 27-year study period.

Overall, filter-feeders were the most abundant functional group in the traps. Collector-gatherers were second most abundant, followed by predators and finally shredders.

Virtually all of the 55 taxa evaluated with analysis of variance exhibited significant differences in abundances either among years, stations, or seasons (Table 3). Significant differences among years and seasons occurred for nearly all taxa, whereas significant differences among stations occurred in almost two-thirds of the taxa studied. For many of these taxa, there were also significant "interaction effects," indicating that the patterns of abundance variation among values of one factor (e.g., season) depended on the particular values of another factor (e.g., year).

Table 3. Significant differences in abundances, among years, stations, and/or seasons, of insect taxa (with average abundance per trap in one or more years ≥0.5 individuals) collected on the Savannah River, 1959-1985. (SE=season, YR=year, ST=station, *=statistical interaction between listed factors.)

TAXA	FACTOR							
	SE	YR	ST	SE*YR	SE*ST	YR*ST	SE*YR*ST	NONE
Ephemeroptera								
Baetidae spp.	X	X	X	X	-	X	X	-
Heptagenia spp.	X	X	X	X	X	X	X	-
Stenonema spp.	X	X	X	X	X	X	X	-
Isonychia spp.	X	X	X	X	X	X	X	
Leptophlebia spp.	X	X	X	X	X	X	X	-
Paraleptophlebia spp.	X	X	-	X	-	-	-	-
Ephemerella spp.	X	X	X	X	X	X	X	-
Tricorythodes spp.	X	X	X	X	X	X	X	-
Caenis sp.	X	X	X	X	-	X	X	-
Odonata								
Boyeria sp.	X	X	X	-	-	X	-	-
Hagenius brevistylus	-	-	-	-	-	-	-	X
Neurocordulia molesta	X	X	-	X	-	X	X	-
Calopteryx spp.	X	X	-	X	-	-	X	-
Coenagrionidae spp.	X	X	-	X	-	X	-	-
Argia spp.	X	X	X	X	X	X	X	-
Plecoptera								
Taeniopteryx spp.	X	X	X	X	X	X	X	-
Pteronarcys sp.	-	-	-	-	-	-	-	X
Isoperla sp.	X	X	X	X	X	X	X	-
Isogenoides sp.	X	X	X	X	X	X	X	-
Perlesta placida	X	X	X	X	X	X	X	-
Paragnetina sp.	X	X	X	X	X	X	X	-
Hemiptera								
Pelocoris femoratus	-	X	X	-	X	-	-	-
Coleoptera								
Dytiscidae spp. (L)	X	X	-	X	-	X	-	-
Dytiscidae spp. (A)	X	X	-	X	-	-	-	-
Gyrinidae spp. (L)	X	X	-	X	-	X	X	-
Gyrinidae spp. (A)	X	X	-	X	X	X	X	-
Dineutus sp.	X	X	-	X	-	-	-	-
Hydrophilidae spp. (A)	X	X	X	-	-	-	-	-
Tropisternus glaber	-	-	-	X	-	-	-	-
Helodidae sp.	-	-	-	-	-	-	X	-
Elmidae spp. (L)	X	X	X	X	X	X	X	-
Elmidae spp. (A)	X	X	X	X	X	X	X	-
Ancyronyx variegatus	X	X	X	X	X	X	X	-
Macronychus glabratus	X	-	X	-	-	-	-	-
Stenelmis spp.	X	X	X	X	X	X	X	-
Megaloptera								
Corydalus cornutus	X	X	X	X	X	X	X	-
Nigronia sp.	X	X	-	X	-	X	X	-
Trichoptera								
Hydropsychidae spp.	X	X	-	X	-	X	X	-
Cheumatopsyche spp.	X	X	X	X	X	X	-	-
Hydropsyche spp.	X	X	X	X	X	-	-	-
Macronema spp.	X	X	X	X	X	X	X	-
Chimarra spp.	X	X	X	X	X	X	X	-
Neureclipsis spp.	X	X	-	X	-	X	X	-
Hydroptila spp.	X	X	-	X	-	X	X	-
Limnephilidae spp.	X	X	-	X	-	-	-	-
Pycnopsyche sp.	-	X	X	-	-	-	-	-
Ceraclea spp.	X	X	X	X	X	X	X	-
Nectopsyche spp.	X	X	X	X	X	X	X	-
Oecetis spp.	X	X	X	X	X	X	X	-
Diptera								
Palpomyia spp.	X	X	X	X	X	-	X	-
Tanypodinae spp.	X	X	X	X	X	X	X	-
Orthocladiinae spp.	X	X	X	X	-	X	X	-
Chironominae spp.	X	X	-	X	X	X	X	-
Simulium spp.	X	X	X	X	X	X	X	-
Hemerodromia spp.	X	X	-	X	X	X	X	-

Average abundances per trap of the 83 taxa at Stations 1, 5, and 6 during each year are presented in Appendices A-D during spring, summer, fall and winter, respectively. The following comparisons among stations focuses primarily on differences between Stations 1 and 6 because so many fewer cursory surveys were conducted at Station 5. Table 4 presents the average abundance for each taxon across all years and stations for each of the four seasons to facilitate more direct comparisons of seasonal patterns of abundance variation. Overall, approximately twice as many individuals were collected from the traps in summer and fall than in winter and spring. Of the 55 most common taxa, 19 were most abundant in fall, 18 in summer, 12 in spring and 6 in winter.

Plots of abundance versus time are presented for single seasons because the abundances of most of these taxa differed significantly among seasons. Rather than present the data for all taxa in all seasons, figures are used to illustrate typical patterns of abundance variation among various aquatic insect taxa during seasons in which these taxa were most abundant. Particular attention focuses on patterns of abundance in early fall collections, since this is a time when potentially high temperatures and low discharges combine to create stressful conditions for many aquatic insects. Figures are presented both for taxa that were among the 10 most common and for representative taxa from other insect orders that are of interest for ecological or comparative reasons.

Table 4. Average abundance (no. individuals per trap) of each insect taxon collected on the Savannah River for all study years and stations, for each of the four seasons.

	SEASON			
Taxa	SPRING	SUMMER	FALL	WINTER
Ephemeroptera				
Baetidae spp.	6.17	6.53	10.72	8.37
Caenis sp.	0.09	0.33	0.34	0.05
Callibaetis sp.	0.01	0.03	0.01	0.00
Ephemerella spp.	37.88	0.16	0.02	5.55
Heptagenia spp.	9.82	7.23	1.02	4.82
Isonychia spp.	0.08	54.71	43.89	0.75
Leptophlebia spp.	0.11	0.00	0.01	0.19
Paraleptophlebia spp.	0.04	0.00	0.00	0.01
Stenonema spp.	17.65	26.04	22.87	11.08
Tricorythodes spp.	0.03	12.28	16.69	0.73
Odonata				
Aeshnidae spp.	0.00	0.01	0.02	0.01
Argia spp.	0.09	0.53	0.59	0.26
Boyeria sp.	0.01	0.13	0.05	0.03
Calopteryx spp.	0.01	0.03	0.03	0.00
Coenagrionidae spp.	0.34	0.35	0.73	0.38
Hagenius brevistylus	0.01	0.00	0.00	0.00
Hataerina sp.	0.00	0.02	0.00	0.00
Libellulidae spp.	0.00	0.01	0.04	0.01
Macromia sp.	0.00	0.01	0.02	0.00
Neurocordulia molesta	0.02	0.04	0.21	0.05
Odonata spp. (Immature)	0.01	0.01	0.01	0.02
Plecoptera				
Acroneuria sp.	0.00	0.00	0.00	0.03
Allocapnia sp.	0.00	0.00	0.00	0.01
Isogenoides (=*Isogenus*) sp.	0.27	0.00	0.00	0.01
Isoperla sp.	0.87	0.00	0.00	0.09
Nemoura sp.	0.01	0.00	0.00	0.00
Paragnetina sp.	0.02	0.36	0.08	0.10
Perlesta placida	14.37	3.67	0.01	0.34
Perlidae spp.	0.00	0.01	0.00	0.02
Pternarcys sp.	0.00	0.01	0.04	0.03
Taeniopteryx spp.	0.02	0.00	0.00	8.20
Hemiptera				
Belostoma fluminea	0.02	0.06	0.05	0.01
Pelocoris femoratus	0.04	0.08	0.06	0.04
Trichocorixa calva	0.00	0.01	0.01	0.00
Coleoptera				
Ancyronyx variegatus (A)	0.02	0.16	0.43	0.21
Berosus sp. (L)	0.00	0.03	0.01	0.01
Dineutus spp. (A)	0.00	0.00	0.00	0.36
Dryopidae spp.	0.01	0.00	0.00	0.00
Dytiscidae spp. (L)	0.31	1.35	0.56	0.03
Dytiscidae spp. (A)	0.34	1.82	0.29	0.26
Elmidae spp. (L)	0.02	1.94	0.46	0.06
Elmidae spp. (A)	0.31	2.65	2.89	0.25
Gyrinidae spp. (A)	0.03	0.09	0.00	0.19
Gyrinidae spp. (L)	0.05	0.45	0.39	0.00
Haliplidae spp.	0.00	0.00	0.02	0.00
Helodidae sp. (L)	0.06	0.00	0.02	0.00
Hydrophilidae spp. (A)	0.05	0.26	0.01	0.06
Hydrophilidae spp. (L)	0.00	0.02	0.00	0.04
Machronychus glabratus (A)	0.03	0.03	0.02	0.02
Stenelmis spp.	0.28	0.88	0.23	0.03
Tropisternus glaber	0.03	0.02	0.02	0.00

Table 4 (continued). Average abundance (no. individuals per trap) of each insect taxon collected on the Savannah River for all study years and stations, for each of the four seasons.

	SEASON			
	SPRING	SUMMER	FALL	WINTER
Taxa				
Megaloptera				
Chauliodes sp.	0.01	0.08	0.06	0.02
Corydalus cornutus	0.01	0.14	0.66	0.03
Nigronia sp.	0.00	0.00	0.05	0.00
Neuroptera				
Climacia sp.	0.01	0.00	0.00	0.01
Trichoptera				
Hydatophylax (=*Astenophylax*) sp.	0.00	0.00	0.00	0.01
Ceraclea spp.	0.18	0.00	0.01	0.01
Cheumatopsyche spp.	10.32	26.16	23.94	13.73
Chimarra spp.	3.55	57.75	107.43	14.34
Hydropsyche spp.	2.20	30.48	13.04	3.02
Hydroptychidae spp.	0.47	5.53	1.63	3.14
Hydroptila sp.	0.04	1.85	1.23	0.32
Lepidostoma sp.	0.00	0.00	0.00	0.03
Limnephilidae spp.	0.03	0.00	0.00	0.00
Macronema spp.	0.11	9.55	6.51	0.11
Nectopsyche spp.	1.08	2.87	2.71	2.89
Neureclipsis spp.	1.21	3.71	7.20	2.47
Oecetis sp.	0.55	1.95	2.02	0.47
Oxyethira sp.	0.00	0.00	0.01	0.00
Polycentropus sp.	0.00	0.00	0.00	0.01
Pycnopsyche sp.	0.02	0.02	0.00	0.05
Triaenodes spp.	0.02	0.05	0.00	0.03
Diptera				
Atherix sp.	0.00	0.02	0.02	0.00
Chironominae spp.	11.66	29.81	45.02	24.08
Ephydridae sp.	0.00	0.01	0.00	0.00
Hemerodromia sp.	0.03	1.84	0.88	0.04
Muscoidea (L)	0.00	0.00	0.00	0.01
Orthocladiinae spp.	24.65	15.49	7.88	16.87
Palpomyia spp.	0.01	0.00	0.08	0.00
Simulium spp.	13.70	3.82	17.65	2.41
Tabanus sp.	0.00	0.00	0.00	0.01
Tanypodinae spp.	2.68	9.62	11.13	3.01
Tipula spp.	0.00	0.01	0.01	0.01
Biological Parameters				
Total Individuals	162.02	323.07	352.03	129.81
Filterers	30.42	188.00	214.09	37.51
Predators	20.06	22.70	18.06	5.86
Gatherers	97.44	74.04	63.66	48.32
Shredders	1.19	2.95	2.76	11.25
Others	12.91	35.38	53.46	26.88
Taxa Richness	9.19	13.60	12.69	10.59
Shannon-Wiener	1.45	1.83	1.74	1.66
Evenness	0.70	0.72	0.70	0.75
Biotic Index	1.83	1.99	1.95	1.84

The abundance of *Chimarra* did not increase or decrease consistently over the 27-year period, but it was significantly more abundant at Station 6 than Station 1 (Fig. 6). The abundance of *Cheumatopsyche* increased significantly over the course of the study, but was not significantly greater at Station 6 than Station 1 (Fig. 7). The abundance of *Isonychia* at Station 1 has been consistently low throughout the study, whereas its abundance at Station 6 increased dramatically in the early 1970s (Fig. 8). Before and after this period of high densities, the abundance of *Isonychia* at Station 6 has been low, but consistently greater than at Station 1. Mayfly nymphs in both the genus *Stenonema* (Fig. 9) and the family Baetidae (Fig. 10) have undergone strong cyclical variations in abundance over the last 27 years, although the general trend has been for population densities to increase with time. The abundance of *Stenonema* at Station 6 is significantly greater than at Station 1, whereas the abundance of baetid mayfly nymphs does not differ significantly between the two stations.

Although larvae of the dobsonfly *Corydalus cornutus* were rare prior to 1975 (e.g., only four individuals were collected during this period), they have been found at Station 6 in all but one year since that time (Fig. 11). A comparable pattern of increase has not been observed at Station 1. In fact, *Corydalus* has not been collected there since 1977. Thus, there are significant differences in abundance between the two stations. Midges in the subfamily

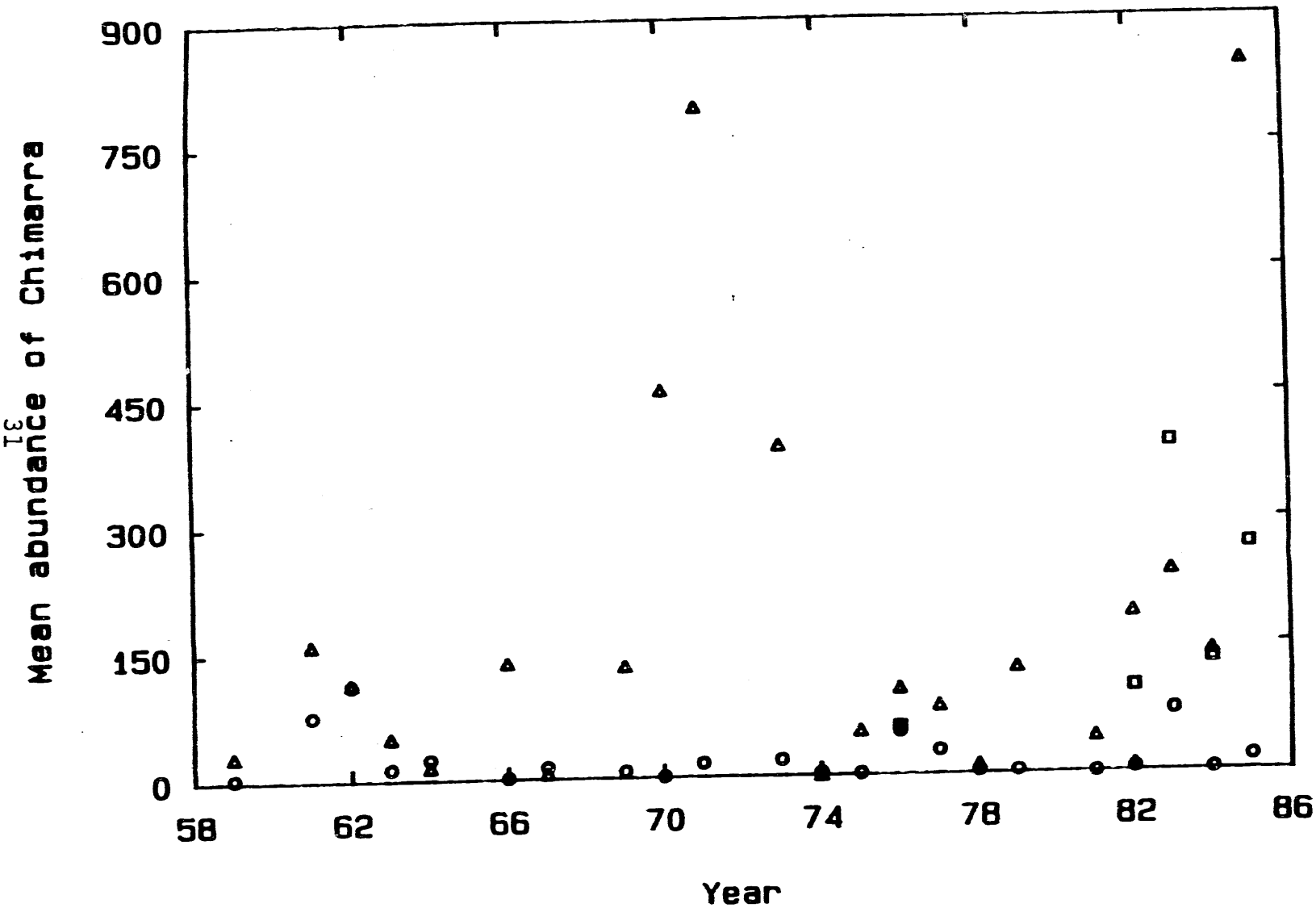

Figure 6. Mean abundance of *Chimarra* per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, △ - Station 6.)

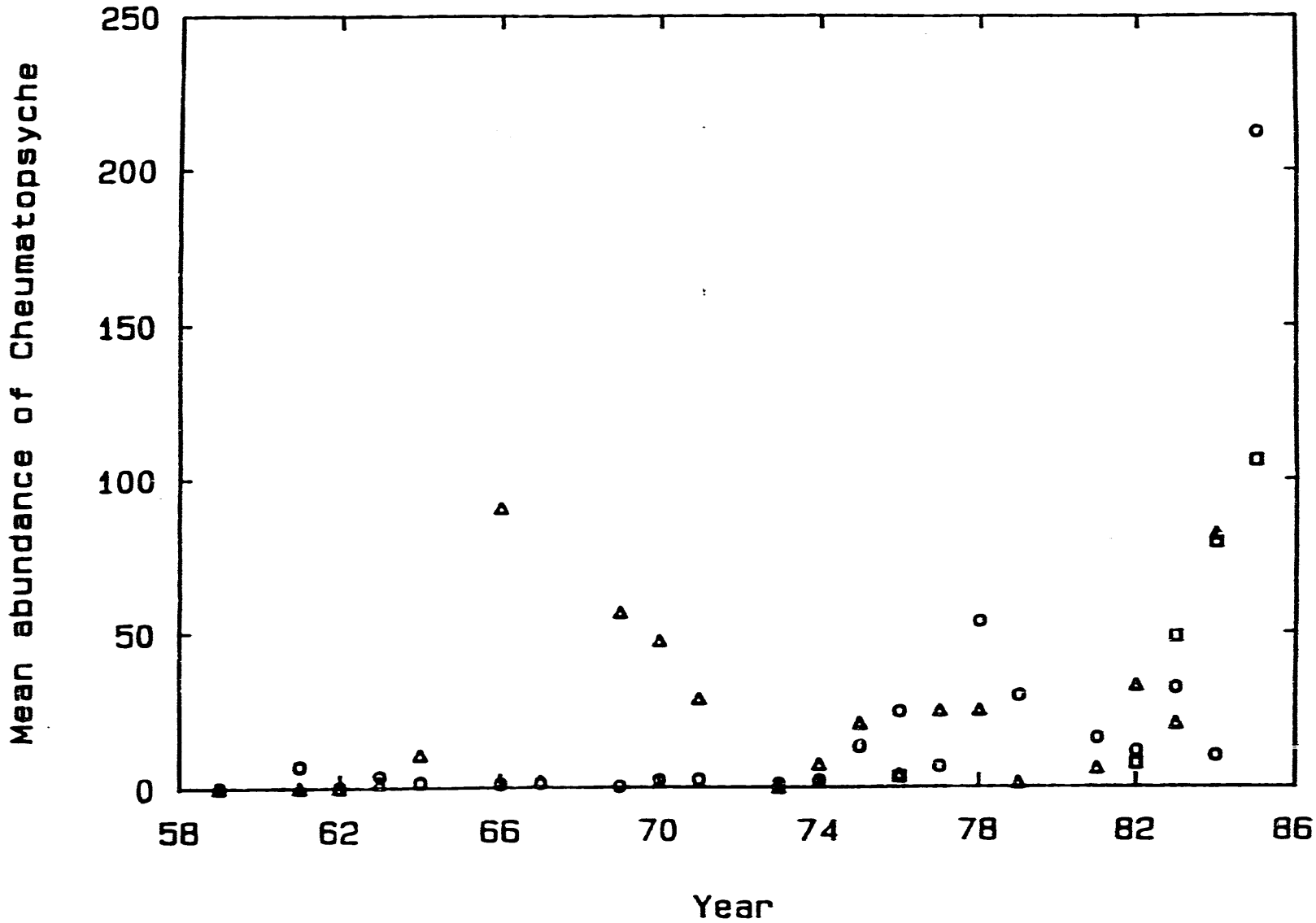

Figure 7. Mean abundance of *Cheumatopsyche* per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, Δ = Station 6.)

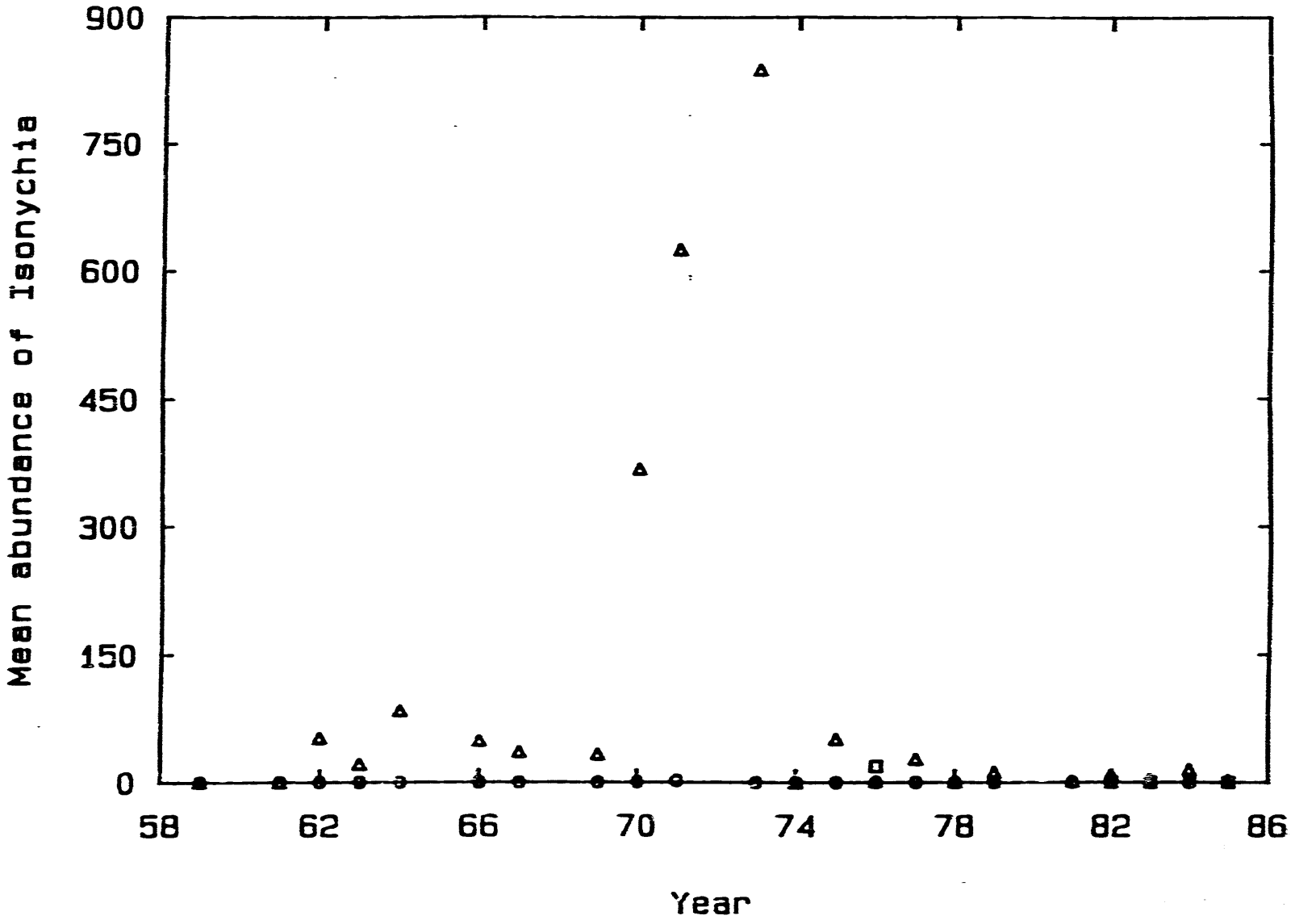

Figure 8. Mean abundance of *Isonychia* per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, △ = Station 6.)

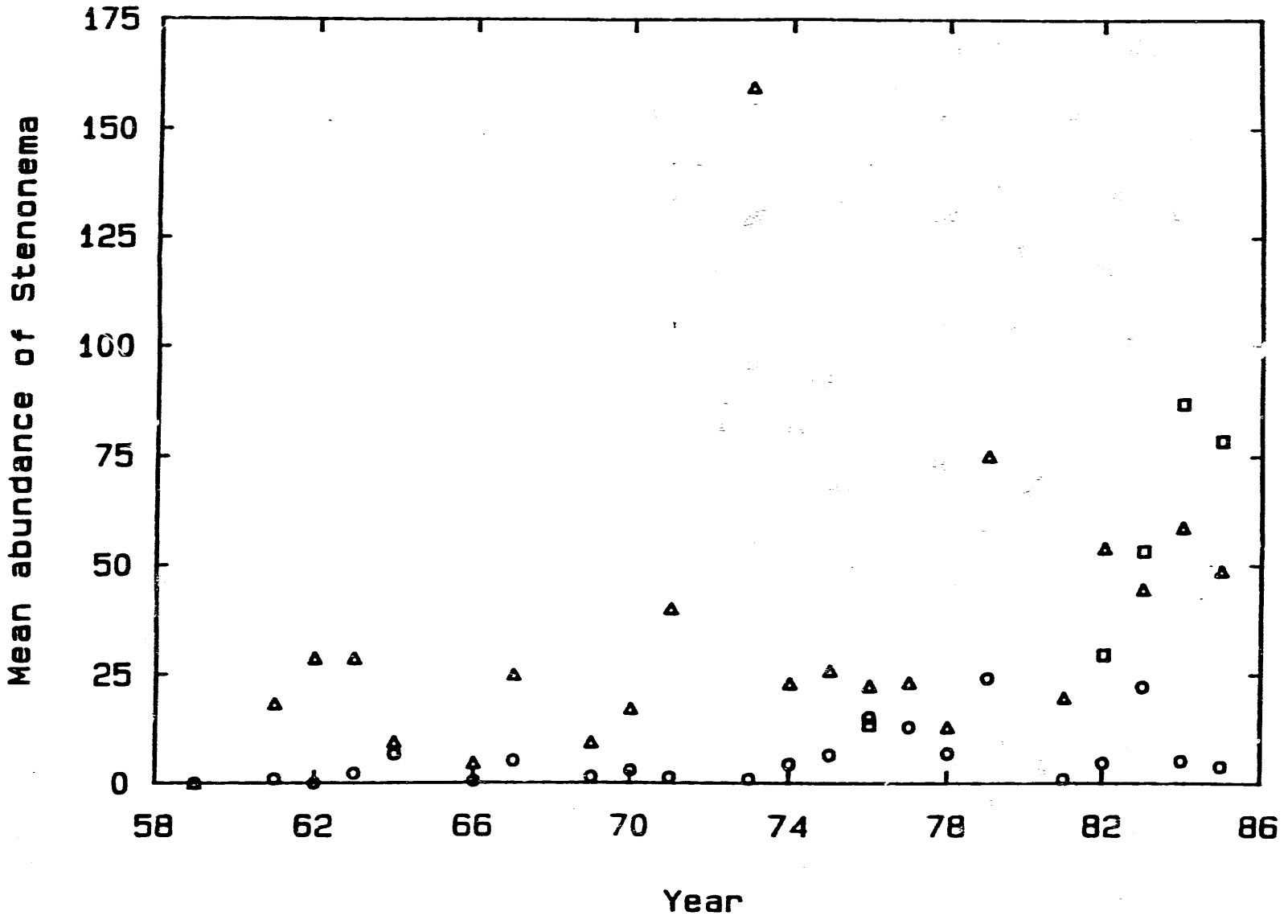

Figure 9. Mean abundance of *Stenonema* per trap at each station, versus year, for fall trap collections on the Savannah River, 1959 1985. (o - Station 1, □ = Station 5, △ = Station 6.)

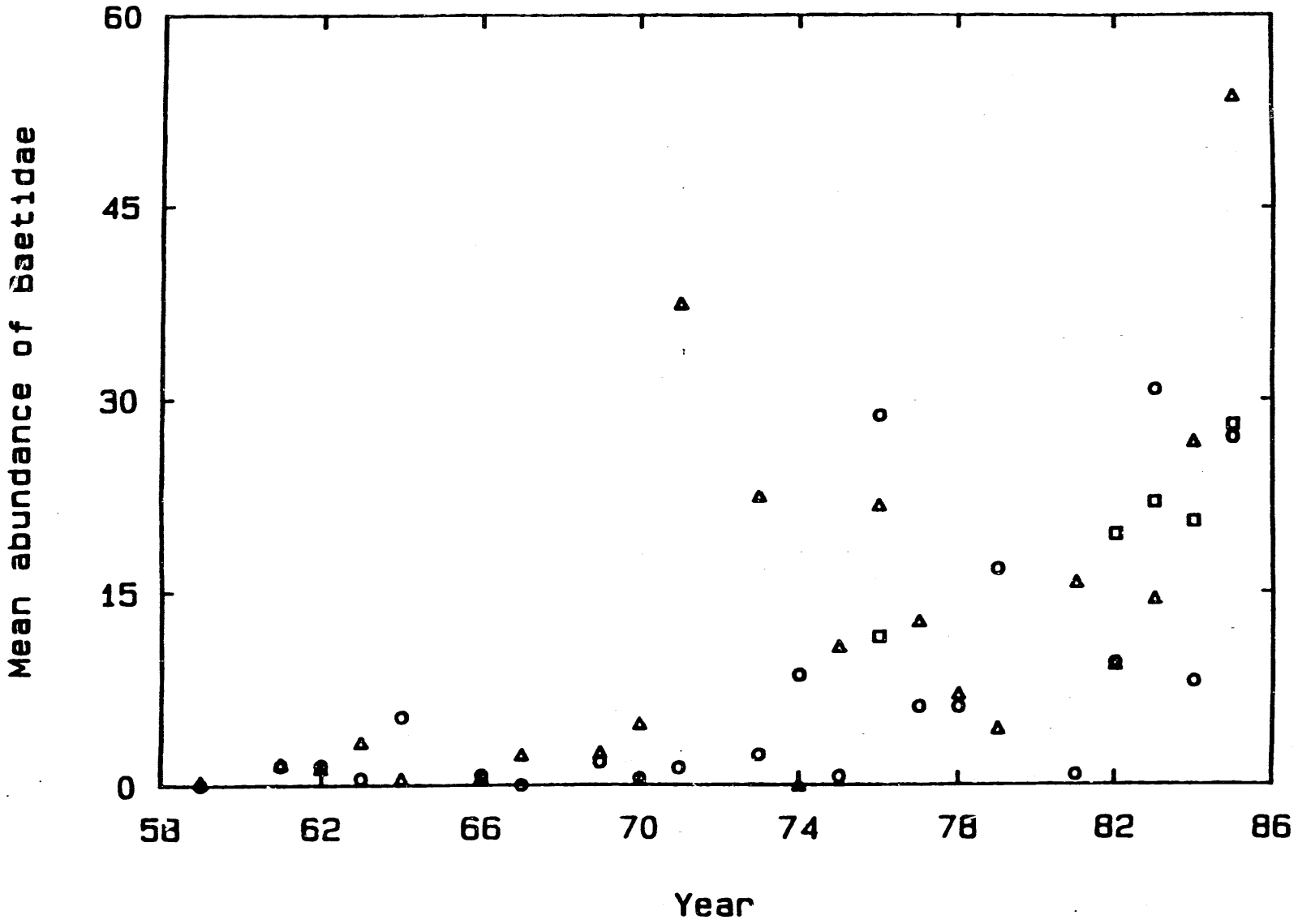

Figure 10. Mean abundance of Baetidae per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, Δ = Station 6.)

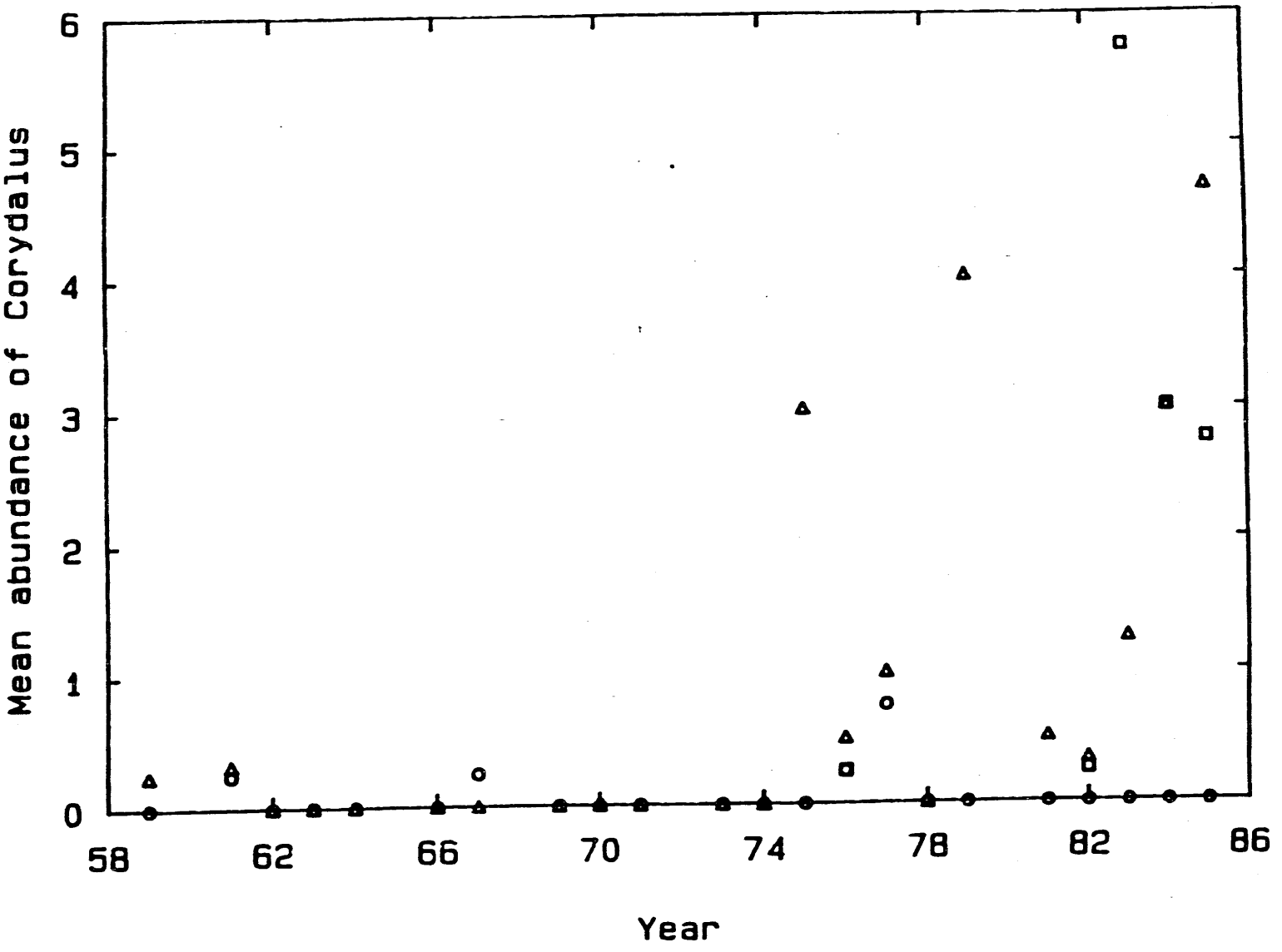

Figure 11. Mean abundance of *Corydalus cornutus* per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, Δ = Station 6.)

Chironominae have increased relatively steadily during the study, yet their relative abundance at Station 1 compared to Station 6 underwent an apparent reversal approximately midway through the study (Fig. 12). Prior to 1974, these midges were more abundant at Station 6 than Station 1 when station differences existed, whereas abundances at Station 1 have usually been greater since that time.

Temporal patterns of abundance variation in filter-feeding black fly larvae of the genus *Simulium* have varied dramatically between Stations 1 and 6 (Fig. 13). At Station 6, *Simulium* was relatively abundant during the first 15 years of the study, whereas its abundance has been quite low since that time. In contrast, abundance of *Simulium* at Station 1 has been consistently low (and usually lower than 6) over the entire 27-year interval. Predatory damselfly nymphs in the genera *Enallagma* and *Ischnura* (grouped together as the family Coenagrionidae) were extremely rare at Station 1 and completely absent at Station 6 prior to 1970 (Fig. 14). Their abundance increased sharply beginning in 1970 and has fluctuated considerably since that time.

The next set of figures examines patterns of spatial and temporal variation in the abundances of taxa that were most common in the spring surveys. There was no significant difference in abundances between Stations 1 and 6. The sprawling mayfly nymph *Ephemerella* at Station 6 was usually uncommon prior to 1977, whereas its abundance has increased considerably since that time (Fig. 15). In contrast, *Ephem-*

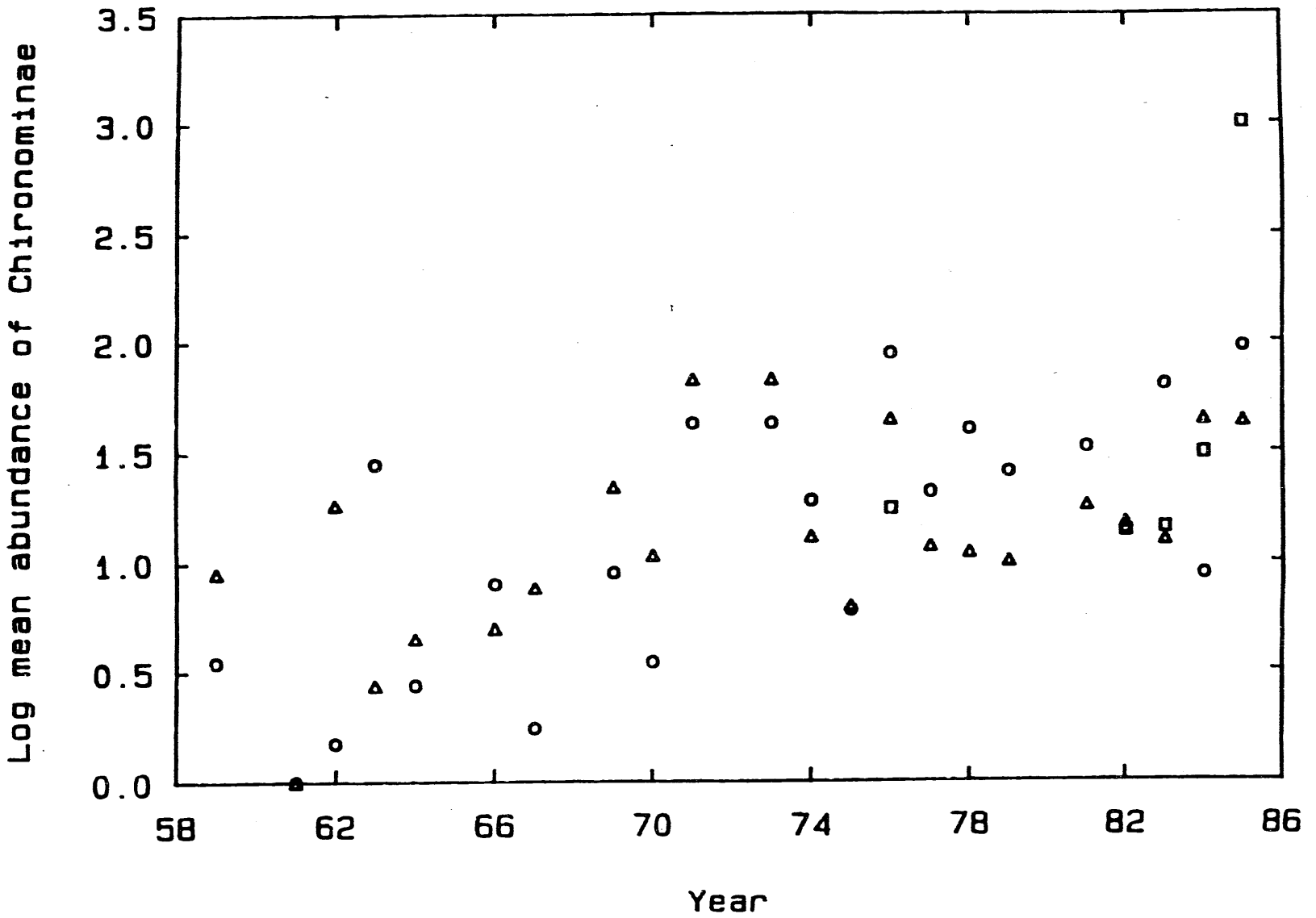

Figure 12. Log10 of the mean abundance, + 1, of Chironominae per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (○ = Station 1, □ = Station 5, △ = Station 6.)

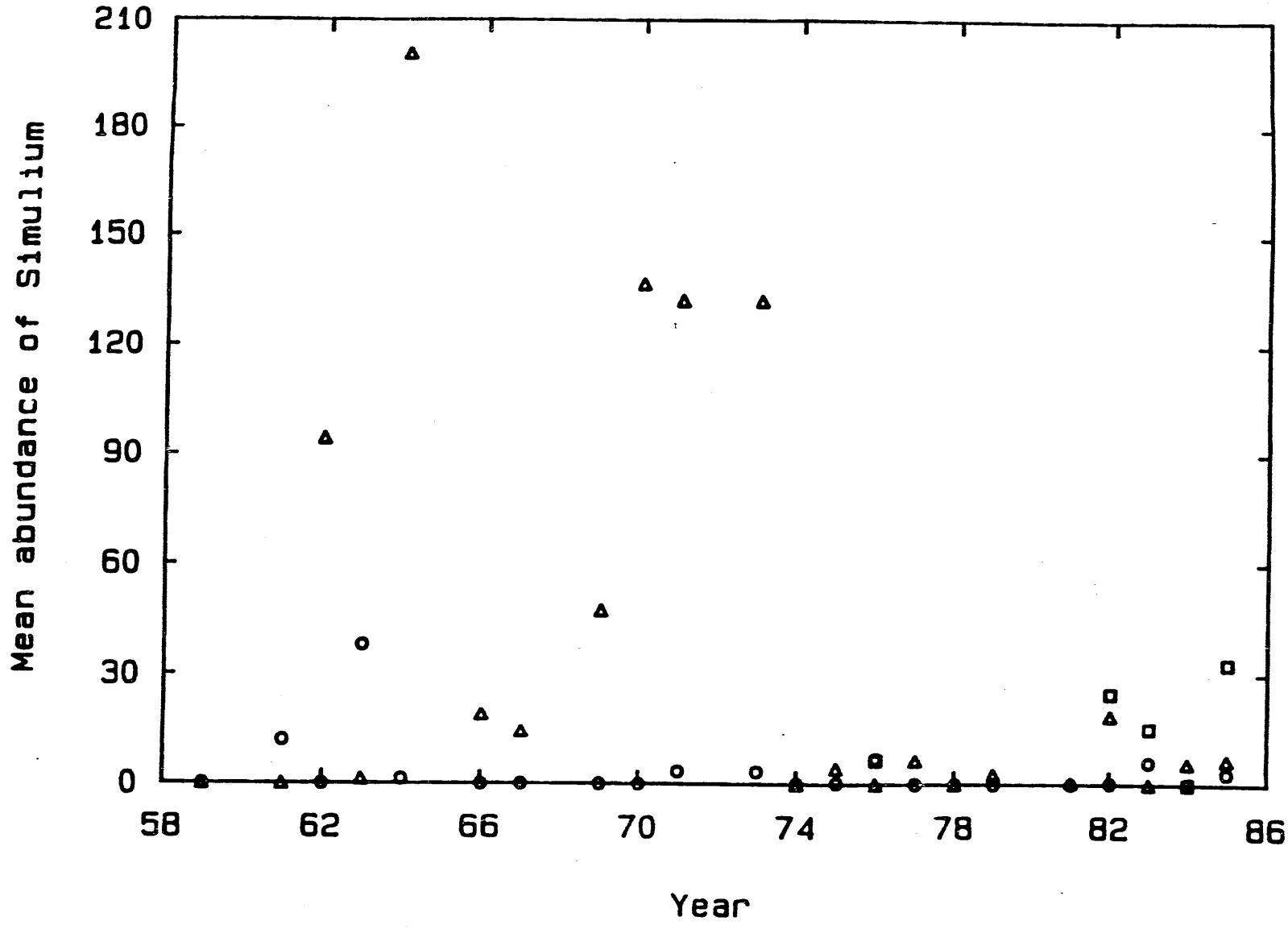

Figure 13. Mean abundance of *Simulium* per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, △ Station 6.)

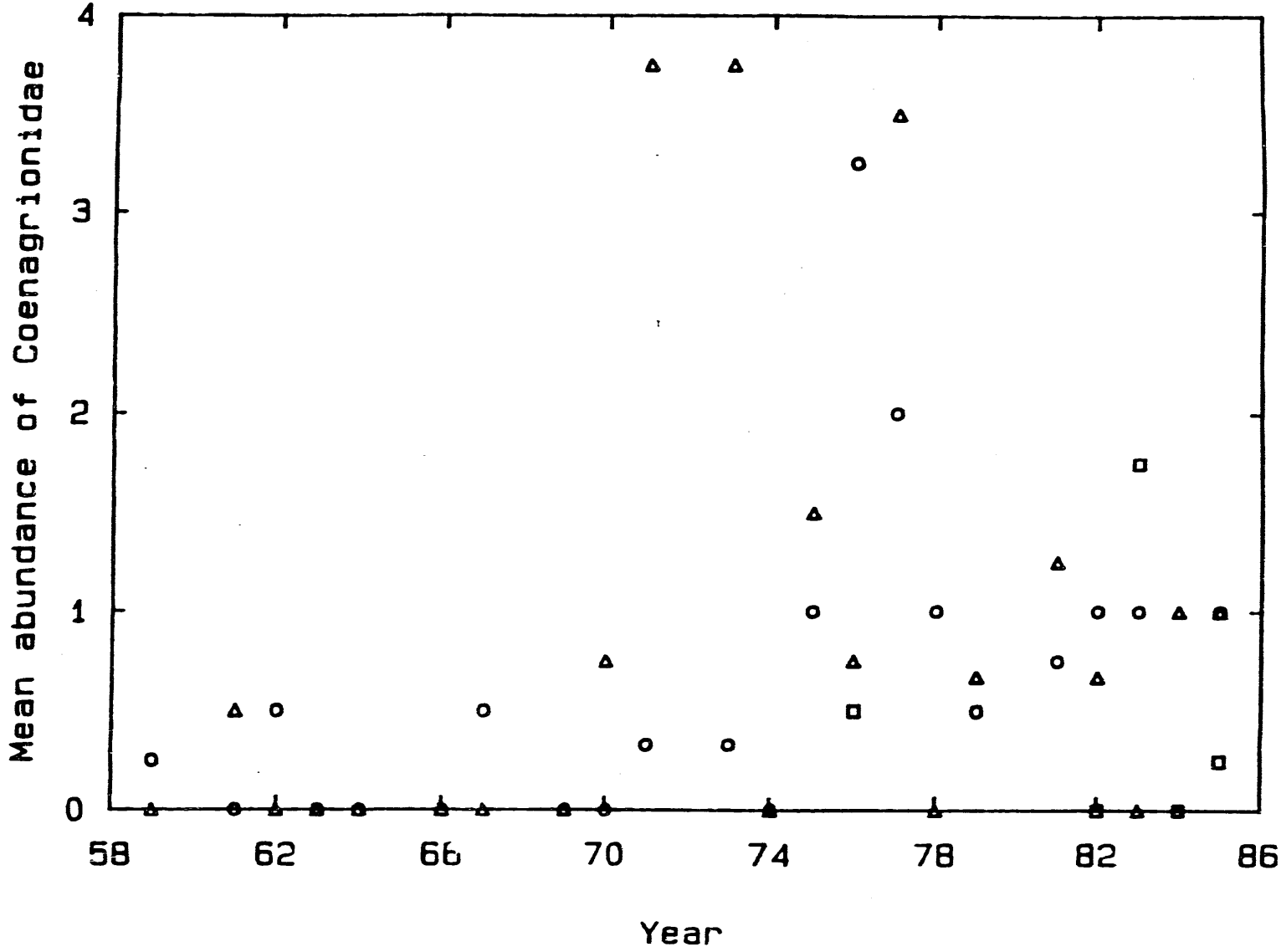

Figure 14. Mean abundance of Coenagrionidae per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, Δ = Station 6.)

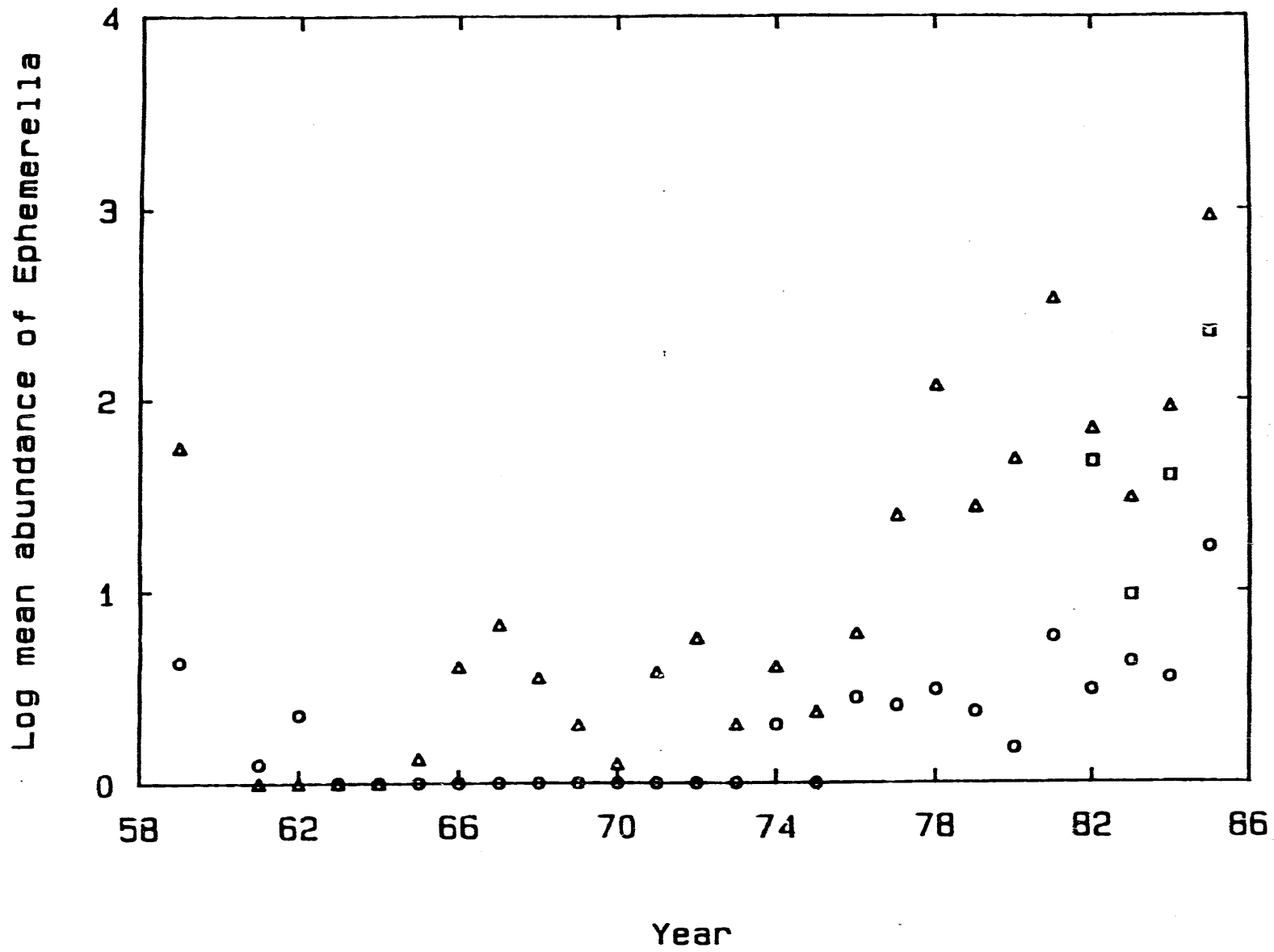

Figure 15. Log_{10} of the mean abundance, + 1, of *Ephemerella* per trap at each station, versus year, for spring trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, Δ = Station 6.)

erella has been consistently rare or absent at Station 1 over the 27-year period.

The stonefly *Perlesta placida* was rarely found at Station 1 (e.g., only 6 individuals were collected) and never at Station 6 prior to 1968, at which time its abundance began to increase considerably at Station 6 (Fig. 16). Increases in the abundance of *Perlesta* at Station 1 began in the mid-1970s, although the species is still found in greater numbers at Station 6. Only eight individuals of the stonefly *Isoperla* were collected prior to 1977, but the species has occurred commonly in surveys during the last decade (Fig. 17). The density of *Isoperla* is significantly greater at Station 6 than Station 1. The abundance of midge larvae in the subfamily Orthocladiinae has increased nearly exponentially since the study's outset, with densities usually greater at Station 1 than Station 6, especially during the first 15 years of the study (Fig. 18).

Patterns of spatial and temporal variation in the proportional abundances of the major taxa largely agreed with those patterns described above for absolute abundances. The most striking difference was observed in larval chironomids. For example, the proportional abundance of Chironominae in the fall was consistently greater at Station 1 than Station 6. For both stations, however, proportional abundance neither decreased or increased dramatically during the 27-year period. The proportional abundance of Orthocladiinae during the spring has been consistently higher at Station 1

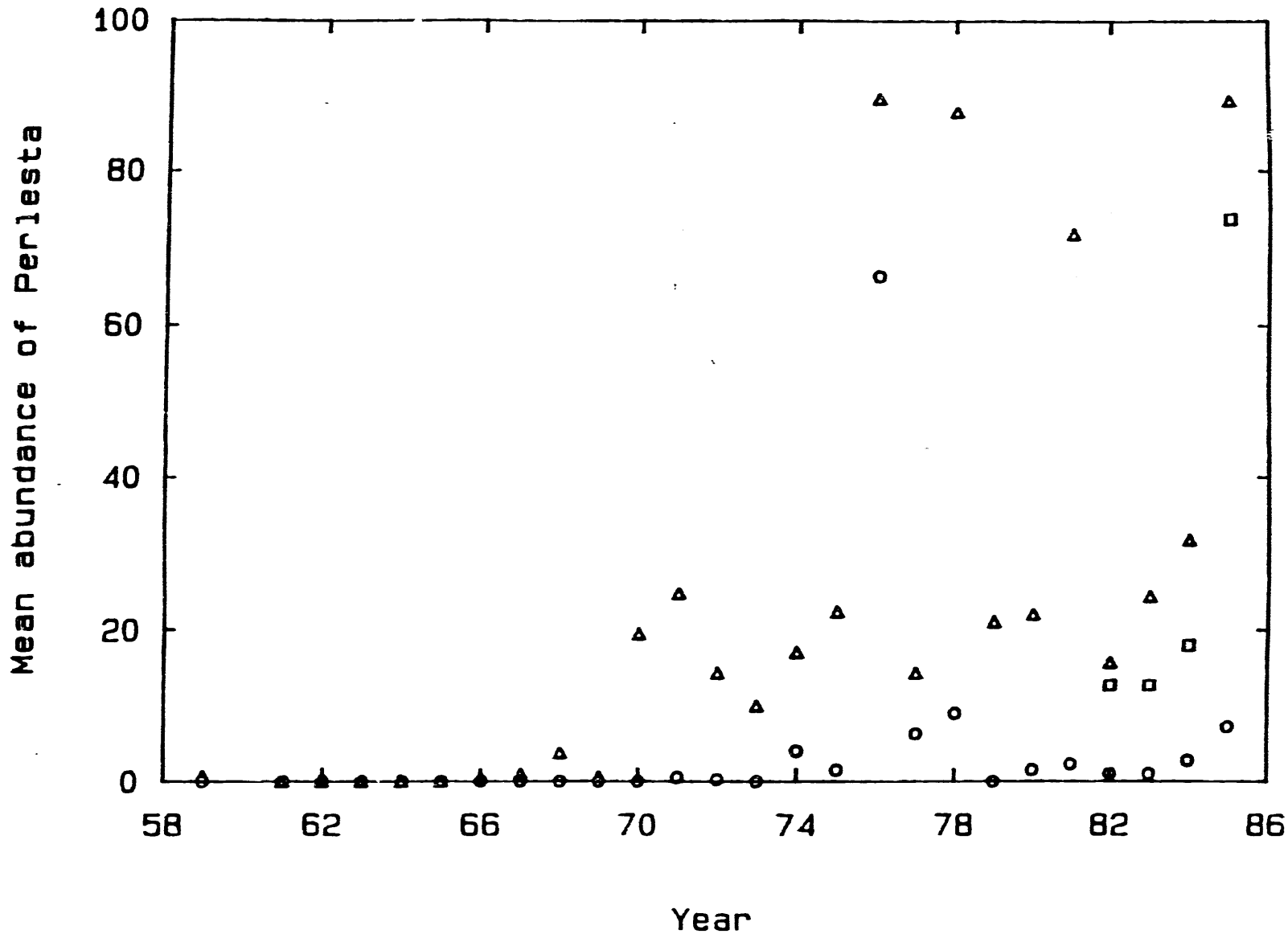

Figure 16. Mean abundance of *Perlesta placida* per trap at each station, versus year, for spring trap collections on the Savannah River, 1959 1985. (O = Station 1, □ - Station 5,

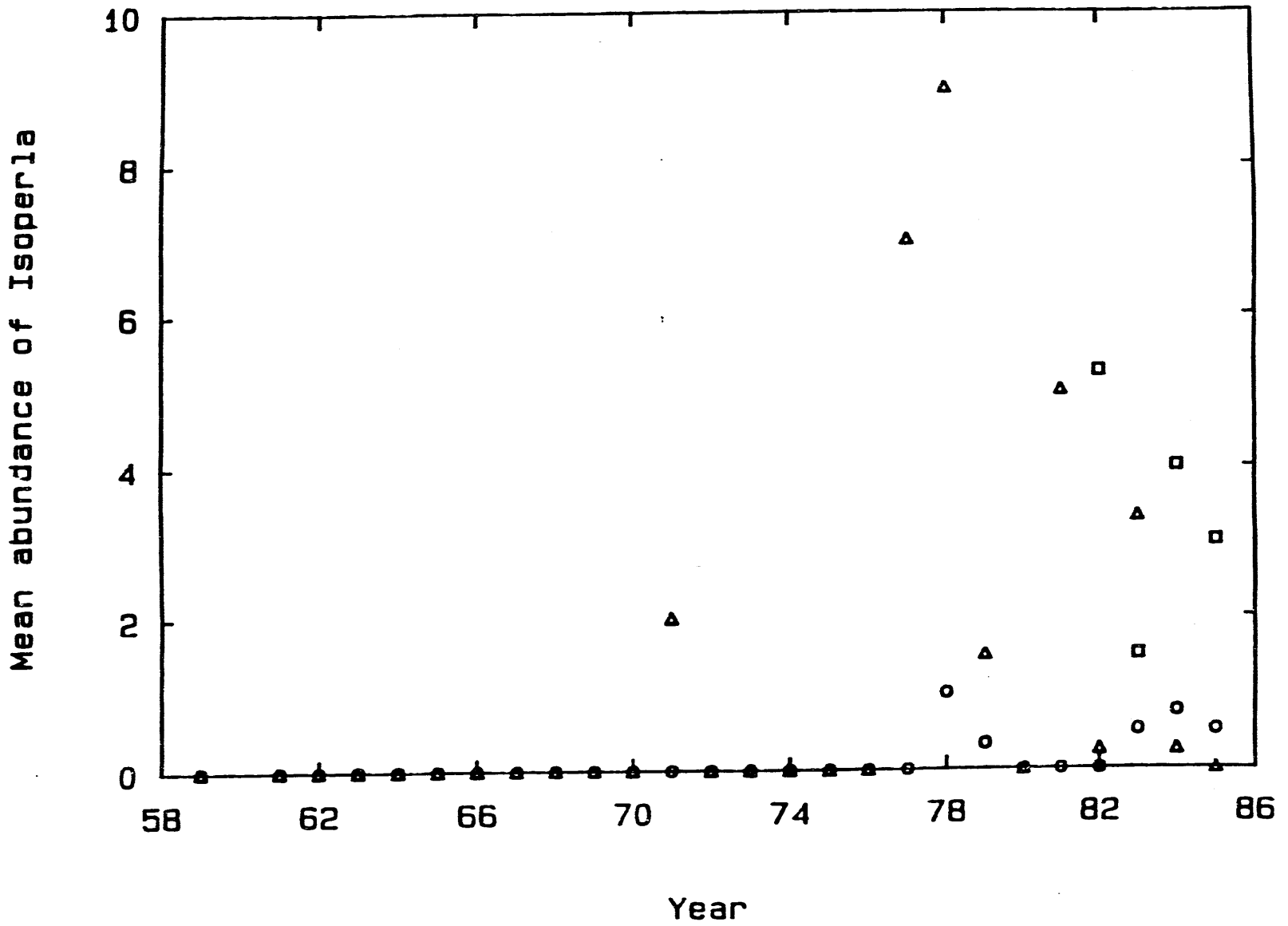

Figure 17. Mean abundance of *Isoperla* per trap at each station, versus year, for spring trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, △ = Station 6.)

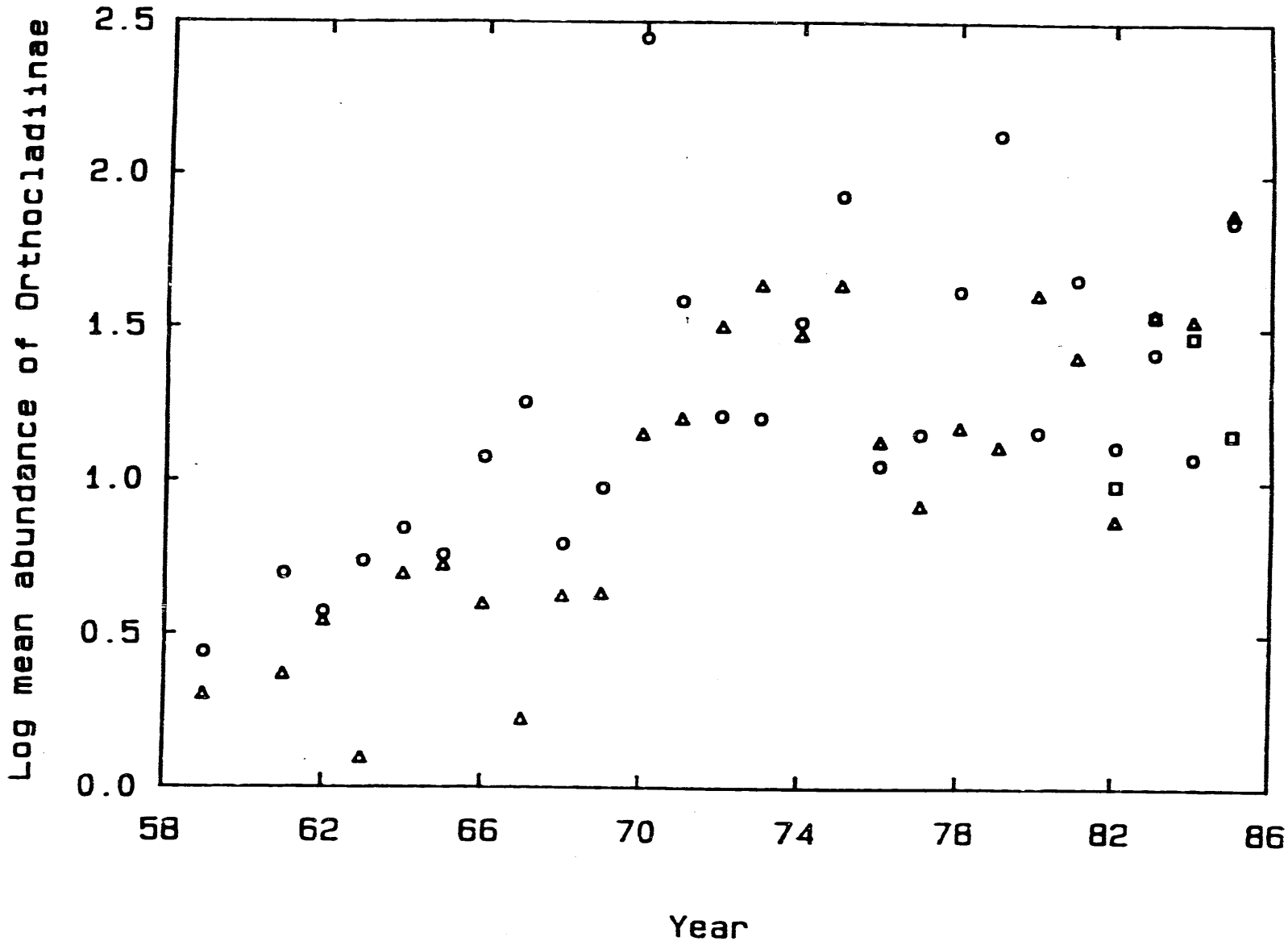

Figure 18. Log10 of the mean abundance, + 1, of Orthocladiinae per trap at each station, versus year, for spring trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, △ = Station 6.)

than Station 6, which contrasts with the patterns exhibited by absolute abundances. Proportional abundance at both stations was low in the early years of the study, peaked in the late 1960s and 1970s, and declined somewhat during the 1980s.

Analyses based on rank-ordered abundances also gave results that usually agreed with those based on either absolute or proportional abundances. One of the few exceptions was with Chironominae; the rank-ordered abundance of this taxon did not differ between stations, in contrast to the significant station effect observed using the other two abundance measures.

The average number of taxa collected per trap in the fall has increased by approximately 100% over the 27-year period (Fig. 19). Relatively steady increases have occurred at both Stations 1 and 6, with the former station represented by signficantly fewer taxa than the latter. The number of individuals per trap also increased somewhat at both stations, although the most striking pattern is the tremendous increase in abundance that occurred at Station 6 during the period between 1970 and 1973 (Fig. 20). The number of individuals at Station 6 was significantly greater than at Station 1. Shannon-Wiener diversity has increased considerably at both Stations 1 and 6 over the study period (Fig. 21), particularly since approximately 1974. There were significant differences among stations, but neither Station 1 nor Station 6 remained consistently higher than the other

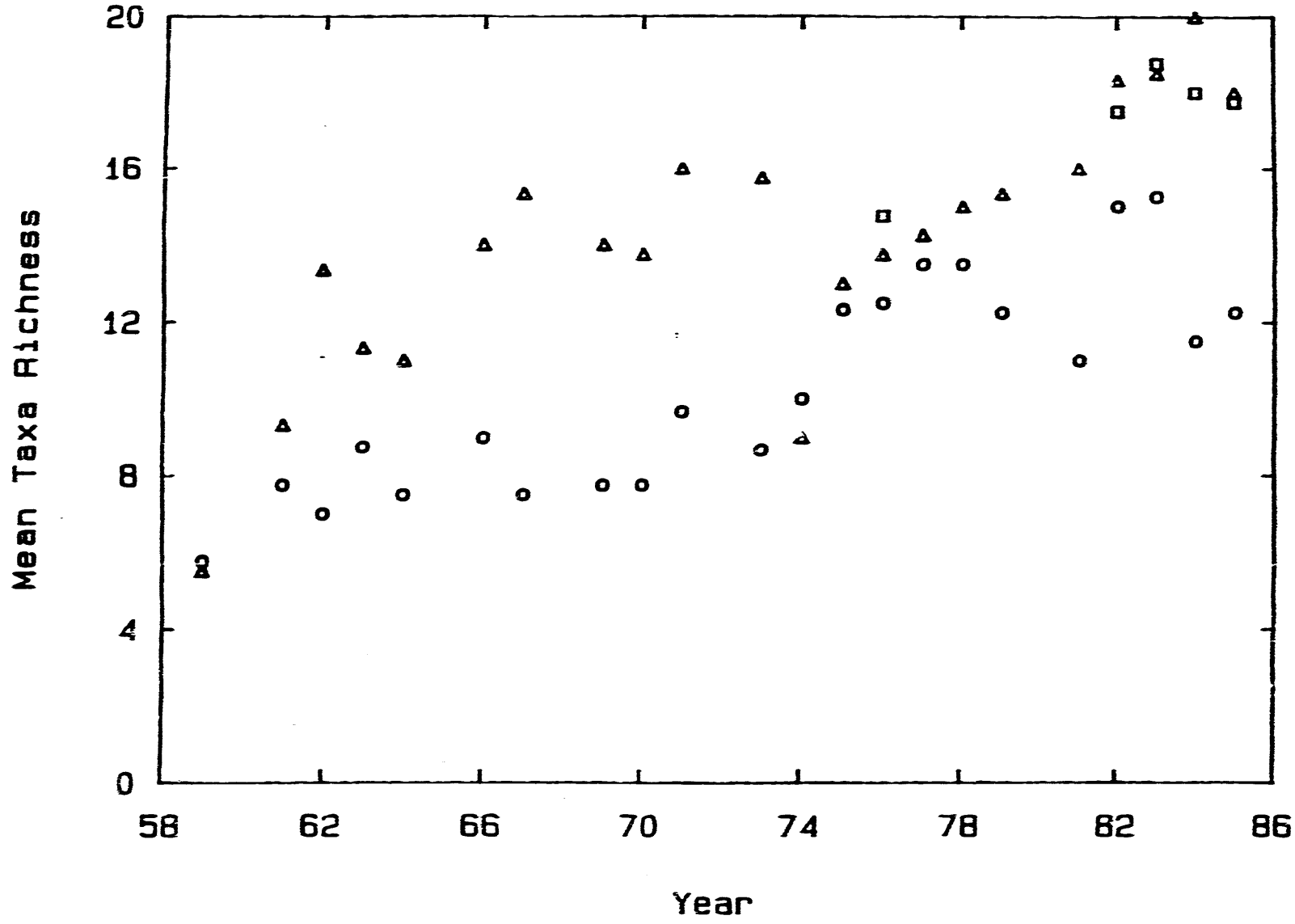

Figure 19. Mean number of taxa (taxa richness) per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, △ = Station 6.)

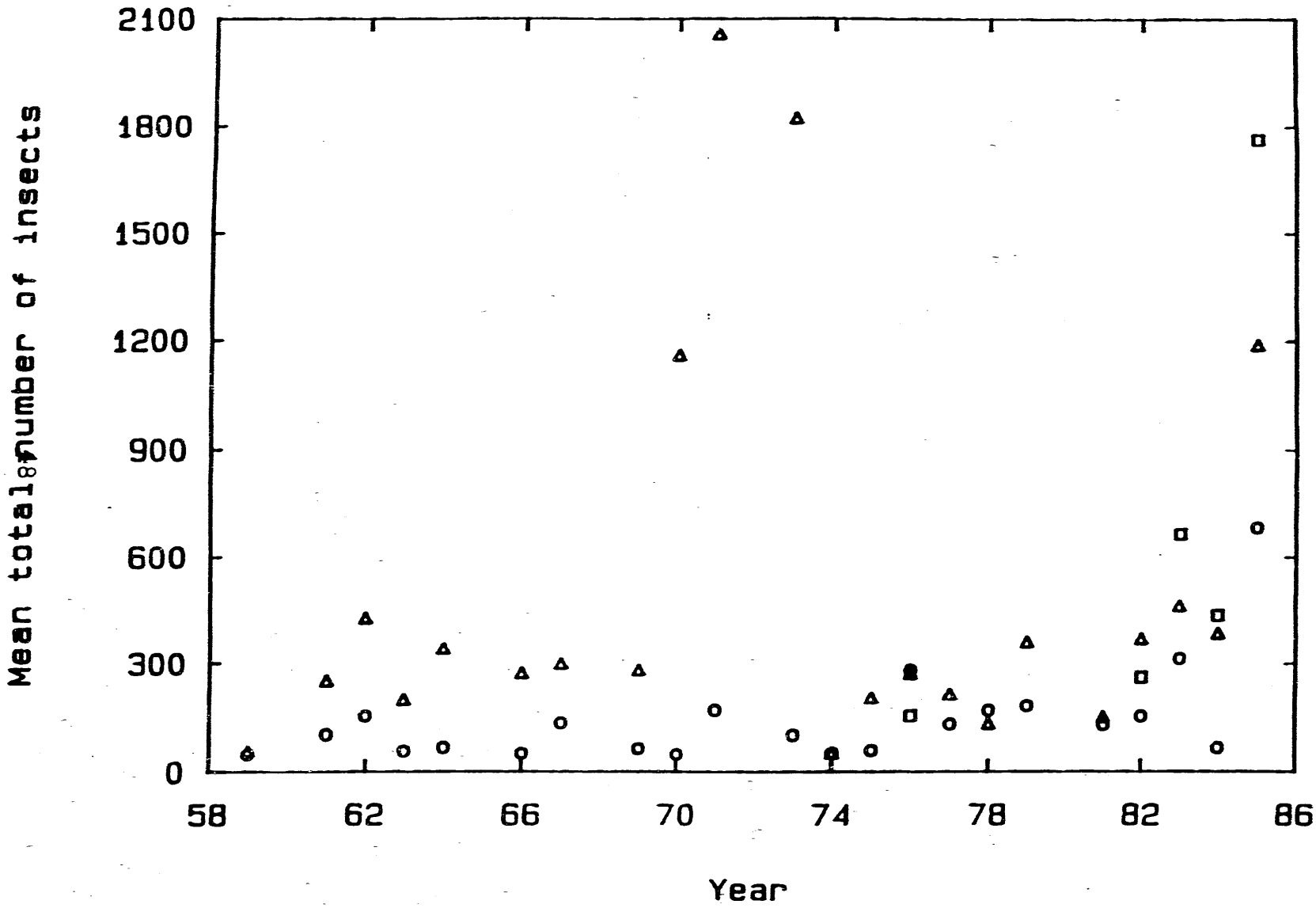

Figure 20. Mean total number of individual insects collected per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, △ = Station 6.)

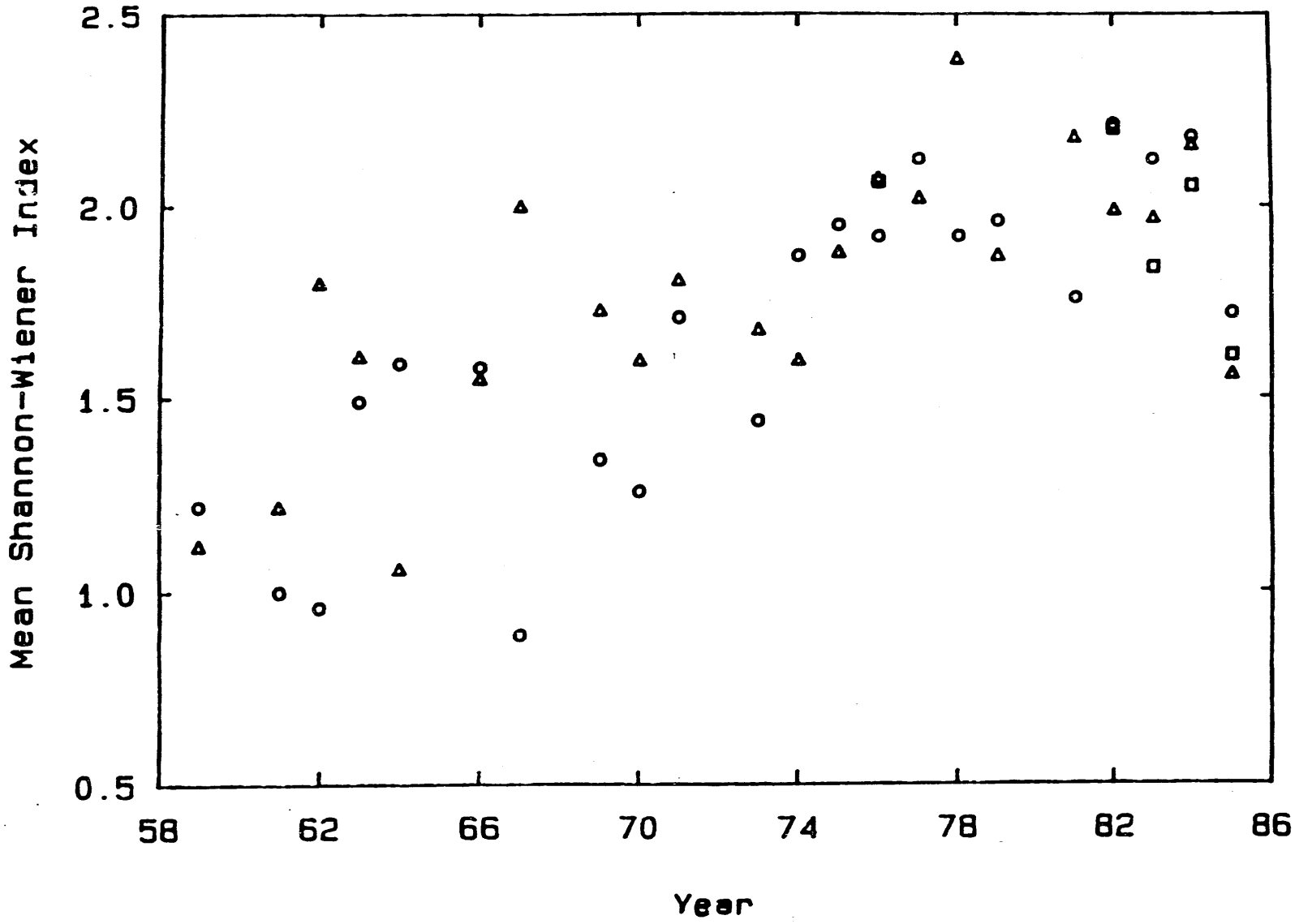

Figure 21. Mean Shannon-Wiener diversity index per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, △ = Station 6.)

throughout the study. Evenness increased with time (Fig. 22), indicating that collections were less dominated by a few very abundant taxa in more recent years. However, there were no significant differences among stations in evenness. Table 5 shows the biological parameters having significant season, year and station effects.

Fall cursory surveys were numerically dominated by filter-feeding aquatic insects during the early years of the study, and the proportion of filter-feeders collected in the traps has steadily declined since that time. Conversely, the relative abundances of collector-gatherers and predators have increased consistently over the 27-year study. None of the functional feeding groups showed significant differences among stations in proportional abundances, although the absolute abundances of filterers, gatherers, and shredders were greater at Station 6.

Figures 23 to 26 present temporal patterns of variation in the average value of the biotic index at each station for spring, summer, fall and winter. Spring biotic index values were usually higher at Station 6 than Station 1 during the first decade of the study, indicating a more pollution tolerant assemblage at Station 6. In contrast, the biotic index value has been greater at Station 1 than Station 6 for every year since 1968, suggesting that Station 1 now supports a more pollution-tolerant fauna. Temporal patterns in the spring data indicate a significant increase in the pollution tolerance of the aquatic insects at Station 1 over

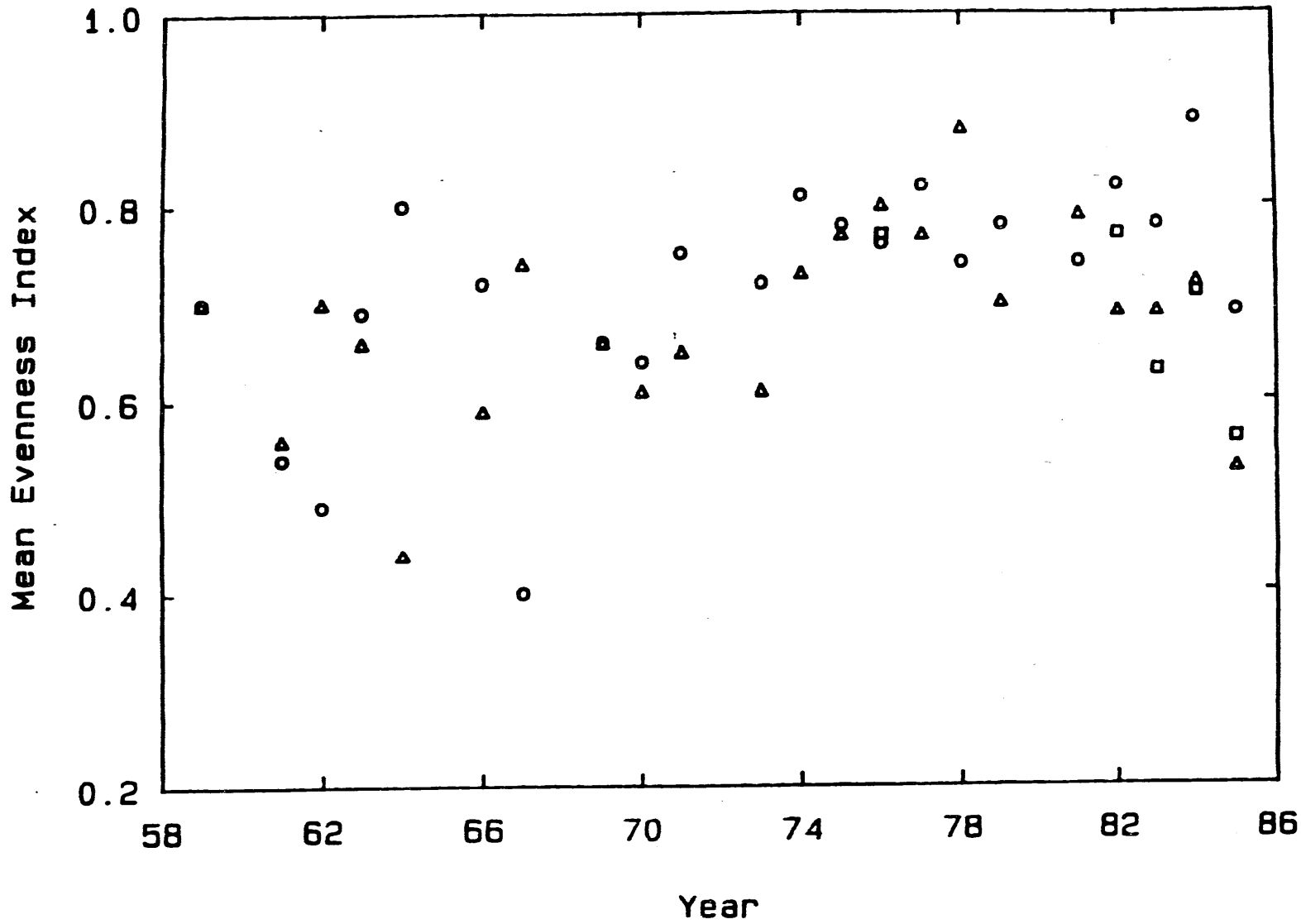

Figure 22. Mean evenness index per trap at each station, versus year, for fall trap collections on the Savannah River, 1959-1985. (O = Station 1, □ = Station 5, Δ = Station 6.)

Table 5. Biological parameters showing significant ($P < 0.05$) season, year and station effects (SE = season, YR = year, ST = station, * = statistical interaction between listed factors).

	FACTOR							
Parameter	SE	YR	ST	SE*YR	SE*ST	YR*ST	SE*YR*ST	NONE
Total Individuals	X	X	X	X	X	X	X	-
Taxa Richness	X	X	X	X	X	X	-	-
Shannon-Wiener	X	X	X	X	X	X	-	-
Evenness	X	X	-	X	X	X	X	-
Filterers	X	X	X	X	-	X	-	-
Predators	X	X	-	X	X	X	X	-
Gatherers	X	X	X	X	-	X	X	-
Shredders	X	X	X	X	X	X	X	-
Biotic Index	X	X	X	X	X	X	X	-

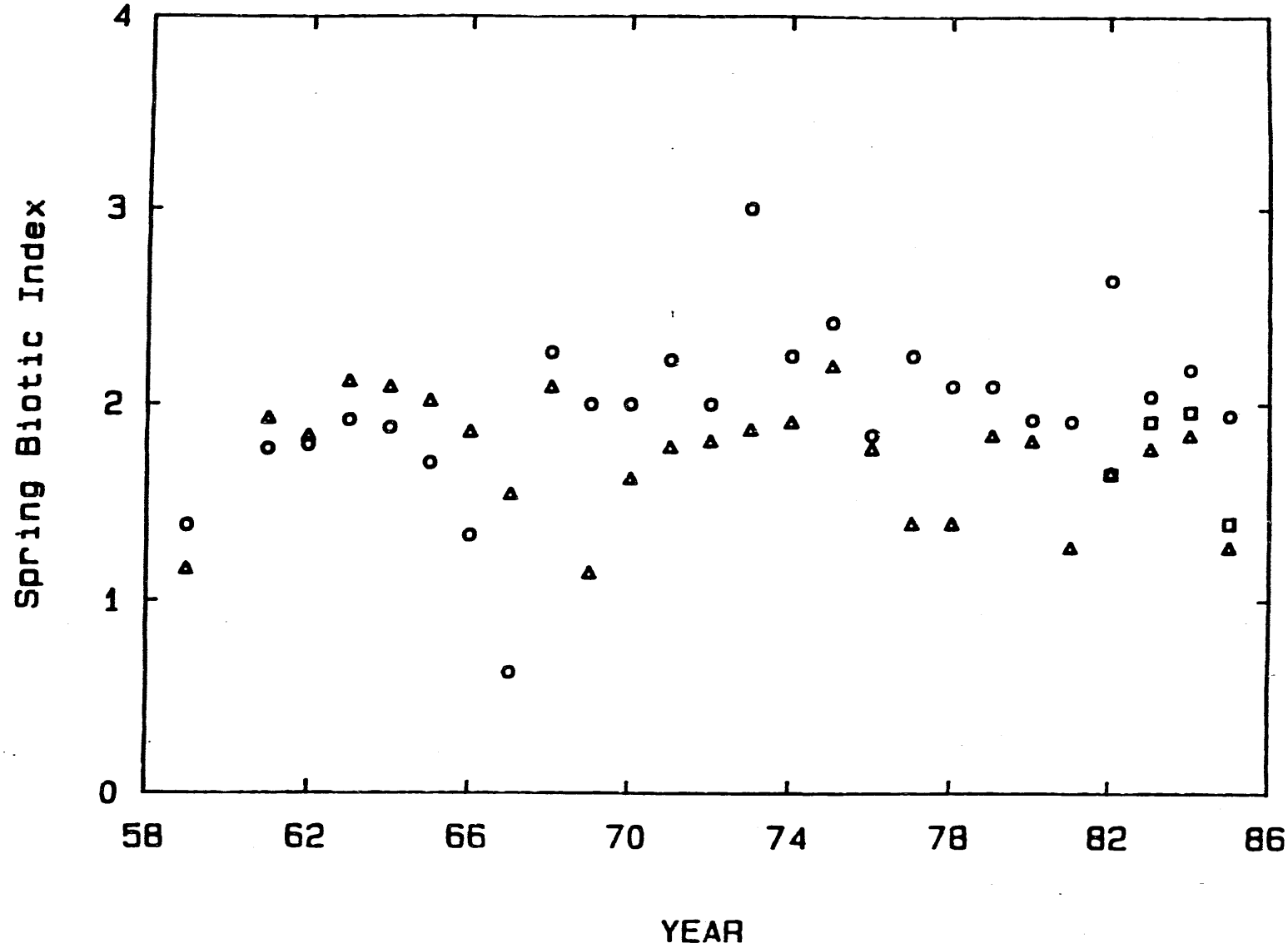

Figure 23. Mean Hilsenhoff's biotic index per trap at each station, versus year, for spring insect trap collections on the Savannah River, 1959-1985. (O = Station 1, □ Station 5, △ = Station 6.)

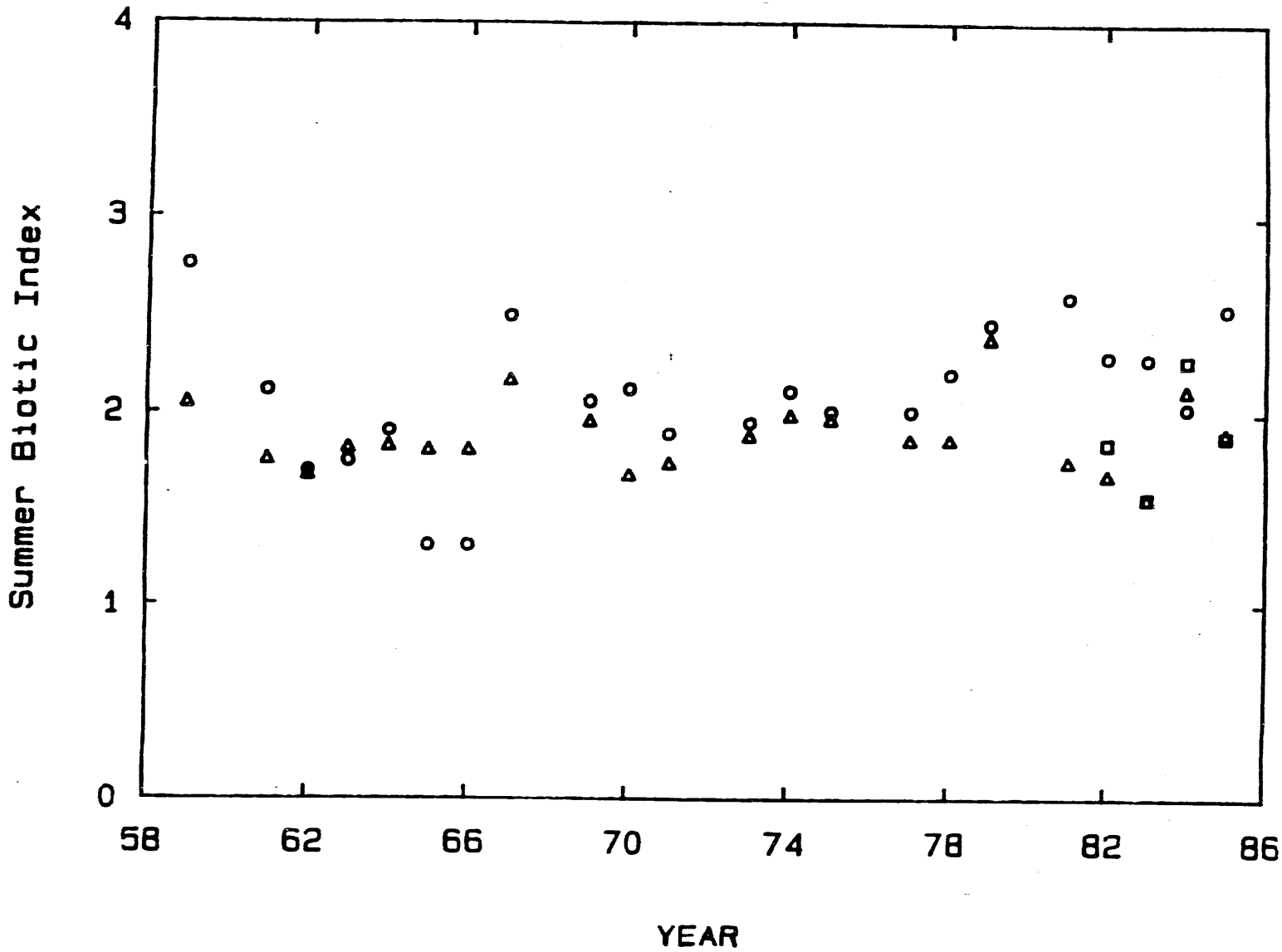

Figure 24. Mean Wilsenhoff's biotic index per trap at each station, versus year, for summer insect trap collections on the Savannah River, 1959-1985. (O = Station 1, □ Station 5, △ = Station 6.)

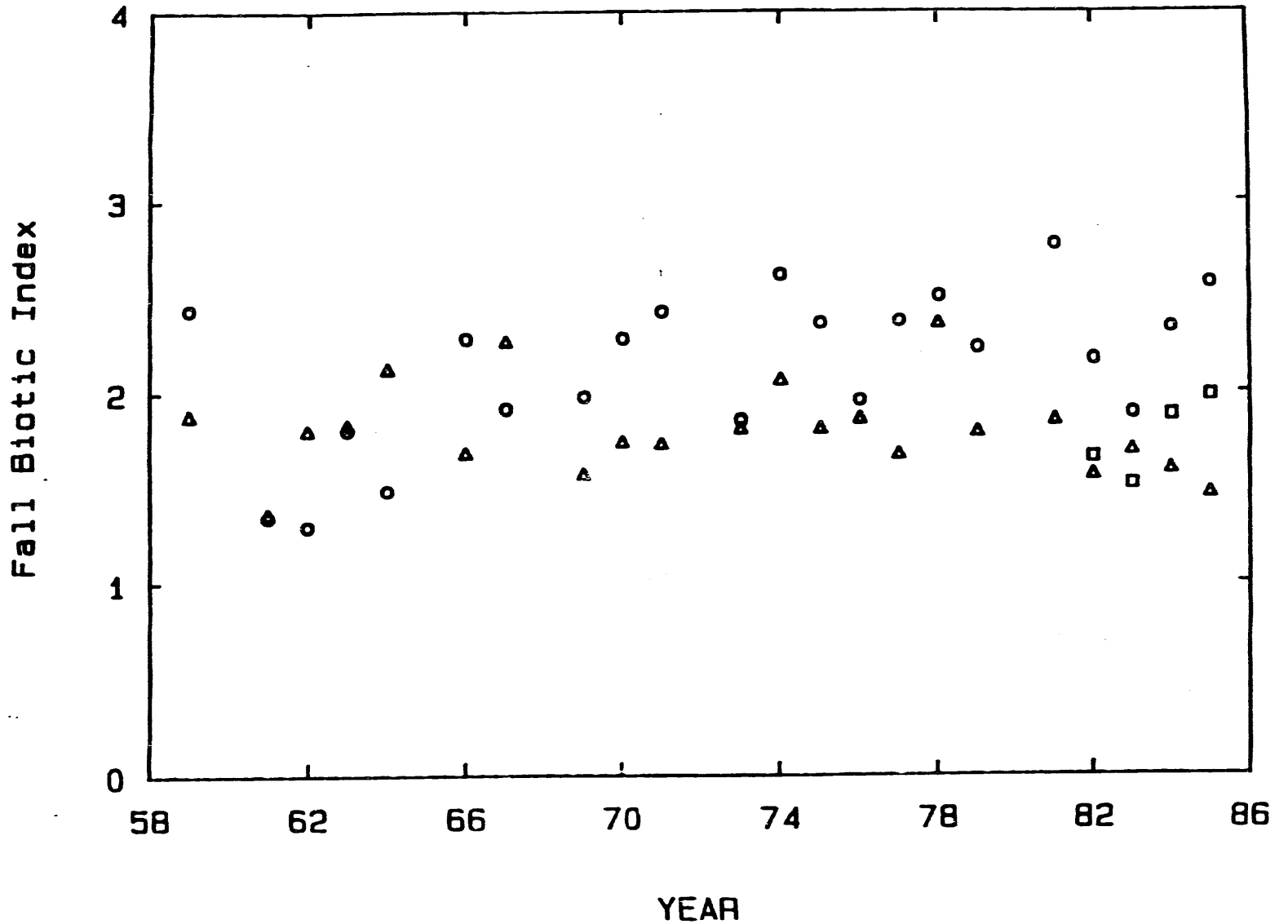

Figure 25. Mean Hilsenhoff's biotic index per trap at each station, versus year, for fall insect trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, Δ = Station 6.)

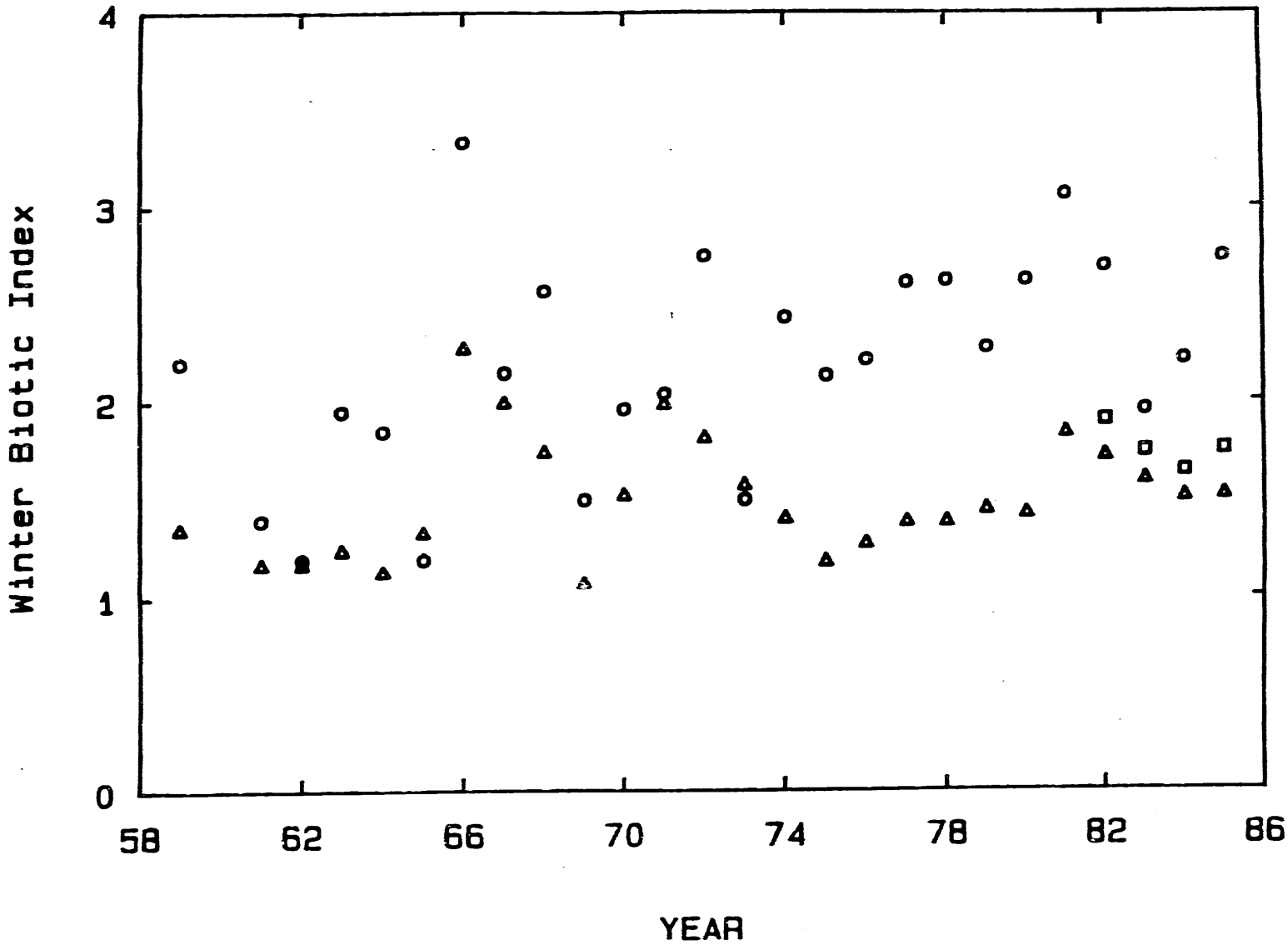

Figure 26. Mean Hilsenhoff's biotic index per trap at each station, versus year, for winter insect trap collections on the Savannah River, 1959-1985. (o = Station 1, □ = Station 5, △ = Station 6.)

the course of the study, whereas the average biotic index exhibited a non-significant decline at Station 6.

Fall cursory surveys yielded a similar pattern of temporal variation in biotic index values. The average value of the biotic index at Station 6 was greater than Station 1 for four of the first six surveys, whereas the biotic index has always been greater at Station 1 since that time. As in the spring, the biotic index increased significantly at Station 1 and declined (non-significantly) at Station 6.

Figure 27 presents the dendogram depicting the degree of similarity among summer stations in patterns of presence and absence of aquatic insect taxa. The sequence of stations and years is indicated along the vertical axis. Positions along the horizontal axis indicate progressively finer divisions of the samples into increasingly homogeneous groups as one moves to the left. By inspecting the pattern of branching in this figure, it is possible to determine which stations are most similar in terms of the number of taxa they have in common. Samples joining each other at the far left are most similar, whereas samples joining at the far right are most dissimilar. The branching pattern indicates the existence of four major groups of samples. The top group is primarily composed of samples from Station 1, and all samples represent early years in the study period. The next lower group is dominated by samples from Station 1 and samples collected between 1964 and 1974. The third and largest group is composed primarily of samples collected

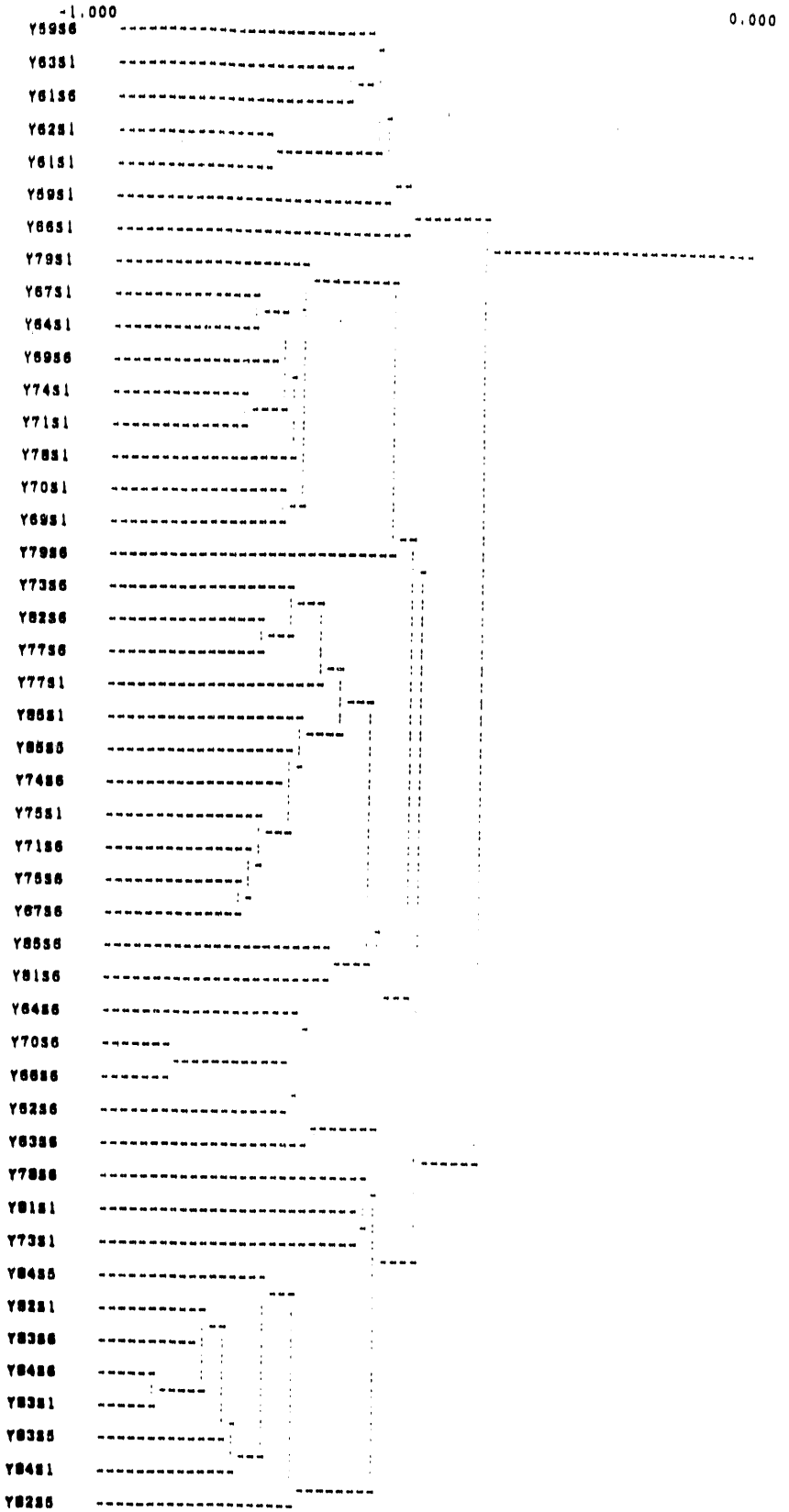

Figure 27. Cluster dendogram depicting the degree of similarity between stations and years in the insect taxa collected on the Savannah River, 1959-1985. (The year and station are preceeded by "Y" and "S" respectively, in the label. Thus, Y59S6 means 1959 at Station 6.)

from Station 6. The bottom group includes a mix of stations that were sampled almost exclusively during the 1980s.

Figure 28 displays the results of the detrended correspondence analysis based on winter surveys. Data points representing individual stations sampled during a given year are arranged along two ordination axes. The most striking pattern in this ordination is that Stations 1 and 6 lie in different regions of the space, which suggests important differences in their faunal assemblages. Data points representing Station 5 usually lie closer to Station 6 than Station 1, although there are far fewer data points for Station 5 than for the other two stations. Stations are also strongly separated according to the year in which they were studied, with early years lying in the upper right portion of the scatter diagram and recent years lying in the lower left portion of the space. Detrended correspondence analysis indicated similar patterns of separation among stations and years for the other three seasonal data sets.

Patterns of variation in major water chemistry parameters based on the 1968-1985 data set collected by Savannah River Plant personnel are presented in Table 6. Most parameters varied significantly among years and seasons, but only 6 of the 16 differed significantly between Stations 1 and 6. The magnitude of these statistically significant differences was often small, however, especially as compared to the wide tolerance limits of many aquatic insects. It was extremely difficult to discern patterns of variation in

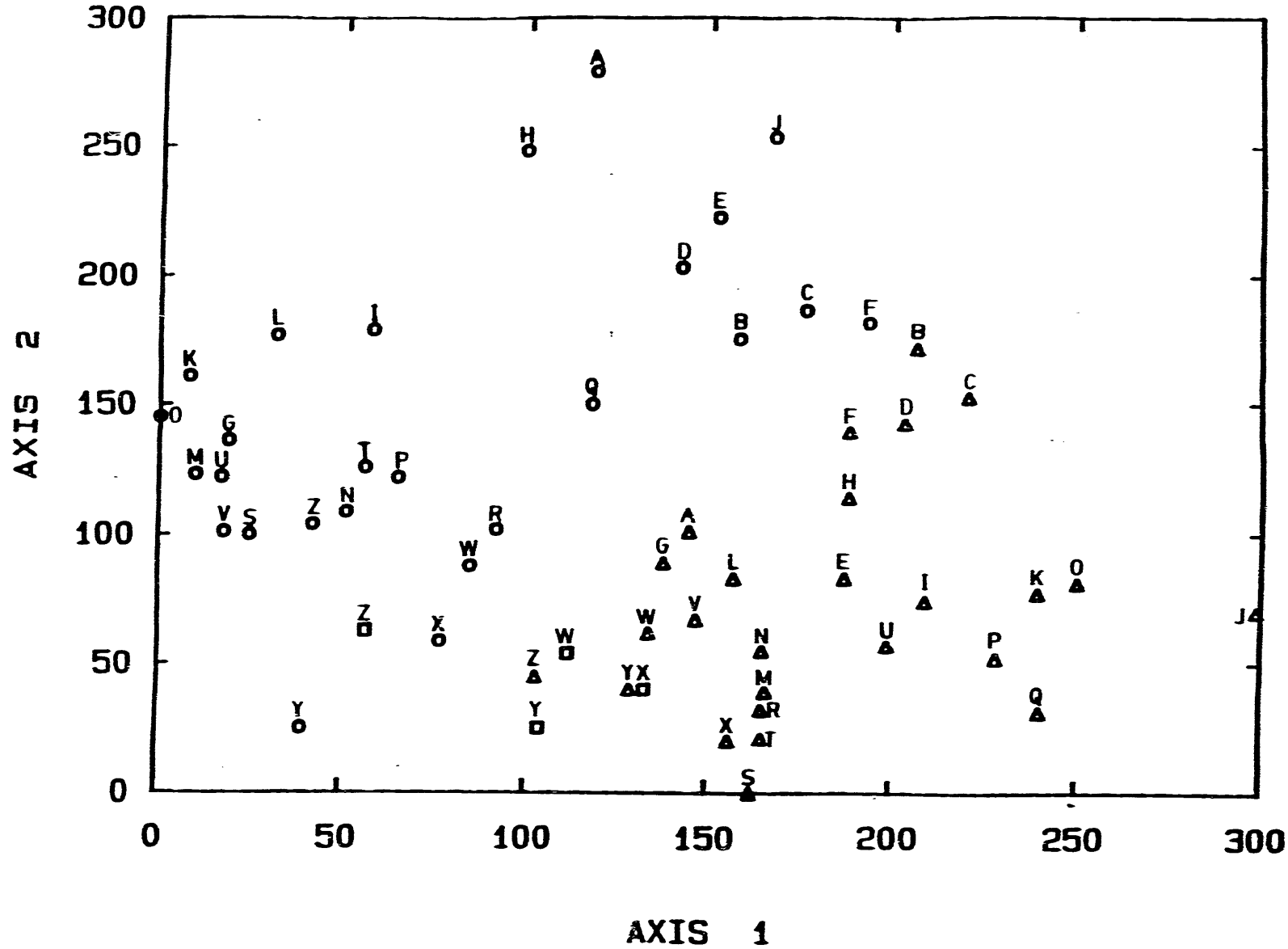

Figure 28. Detrended correspondence analysis based on winter surveys of insects on the Savannah River, 1959–1985. Axes 1 and 2 represent ordination axes generated from the DECORANA program. (o = Station 1, □ = Station 5, Δ = Station 6; A = 1959, B = 1961, C = 1962, D = 1963...Z = 1985.)

Table 6. Major chemical data showing significant ($p \leq 0.05$) season, year, station and interaction effects (SE = season, YR = year, ST = station). All measurements are in mg/L unless otherwise noted.

	FACTOR							
Parameter	SE	YR	ST	SE*YR	SE*ST	YR*ST	SE*YR*ST	NONE
pH	X	X	-	X	-	-	-	-
M.O. Alkalinity	X	X	-	X	-	-	-	-
Chloride	X	X	-	X	-	-	-	-
Dissolved Oxygen	X	X	X	X	-	-	-	-
Hardness	X	X	-	X	-	-	-	-
Conductivity (umh/cm)	X	X	-	X	-	-	-	-
Suspended Solids	X	X	-	X	-	-	-	-
Sodium	-	-	-	-	-	-	-	X
BOD	-	X	-	X	-	-	-	-
Temperature (°C)	X	X	X	X	-	-	-	-
Ammonium	X	-	X	-	X	-	-	-
Calcium	-	X	-	-	-	-	-	-
Total Iron	X	X	X	X	-	-	-	-
Aluminum	X	X	X	-	X	X	-	-
Nitrite	-	X	-	X	X	X	-	-
Nitrate	X	X	X	X	-	-	-	-
Sulfate	X	X	-	X	-	-	-	-
Phosphate	X	X	-	X	-	-	-	-

this data set that shed light on observed trends in the aquatic insect community. Spring ammonium concentrations were greater at Station 6 than 1 in the late 1960s and early 1970s, whereas concentrations have usually been greater at Station 1 during the 1980s. Summer ammonium concentrations have apparently declined at Station 1 since 1969 while remaining relatively unchanged at Station 6. The data set also indicates that winter water temperatures have risen steadily at both stations during this period, perhaps due to changes in the operation of Clark Hill Dam.

Table 7 compares three estimates of aquatic insect diversity for two typical cursory surveys (i.e., 1968 and 1984): 1) the approximate number of species obtained in hand collections that were conducted along with the trap collections; 2) the number of species and higher taxonomic groupings collected from the traps as reported in the cursory report; and 3) the number of taxa used in our analyses based on grouping at the generic and sub-family levels. In 1968, the number of species collected in the traps at Station 1 was approximately two-thirds of that obtained in the hand collections, whereas the number of species collected in the Station 6 traps was $\geq$ 75% of the number found in hand collections. In 1984, the number of species collected in the traps was usually greater than or equal to the number found in the hand collections for both Stations 1 and 6. After combining various multispecies genera into single generic categories and midge genera into chironomid sub-families,

Table 7. Number of taxa found in hand and trap collections for the 1968 and 1984 spring (Spr) and winter (Wint) cursory surveys on the Savannah River.

Year	Station	Hand Collections		Trap Collections			
				Taxa originally reported		Taxa reported after grouping species into higher levels	
		Spr	Wint	Spr	Wint	Spr	Wint
1968	1	15+	13+	9	9	9	9
	6	26+	20+	23	15	17	14
1984	1	17+	20+	18	16	15	14
	5	28+	25+	28	30	20	25
	6	27+	28+	32	34	25	29

the number of taxa analyzed in the present report usually represented about 70-100% of the diversity indicated by species-level identification of the trap collections. Thus, the level of taxa richness reported in the present analyses underestimates the true number of species for some years but not others. Although the number of species present in the traps was sometimes less than that in hand collections, most of the taxa collected in the hand collections were also collected in the traps. However, two principal kinds of organisms found in hand collections were absent from the traps (Table 8). The first group is composed of various taxa which burrow into the sediment, including several genera of dragonfly nymphs and burrowing mayflies in the family Ephemeridae. The second major group was the Hemiptera and several families of true flies which ordinarily occur in either neustonic, planktonic or shoreline habitats. Because comparable habitats are not provided in the traps, it is not surprising that these taxa were rare or absent in the trap collections.

Table 8. Insect taxa found in the 1968 and 1984 hand collections on the Savannah River which were not found in trap collections for those years.

TAXA	YEAR 1968	YEAR 1984
Class Insecta		
Order Odonata		
Suborder Anisoptera		
Family Gomphidae		
Stylurus plagiatus (Selys)	-	X
Gomphus (*Stylurus*)(L) Wmsn.	X	-
Dromogomphus armatus ? Selys	X	-
Family Corduliidae		
Tetragoneuria cynosura (Say)	-	X
Epicordulia princeps (Hagen)	X	-
Order Ephemeroptera		
Family Ephemeridae		
Ephoron sp.	X	-
Order Hemiptera		
Family Hydrometridae		
Hydrometra martini (Kirk.)	X	X
Family Veliidae		
Vellia sp. ? *brachialis* Stal.	X	-
Microvoleia sp.	X	-
Rhagovelia distincta Champ.	X	-
Family Gerridae		
Gerris nebularis D&H	X	-
Gerris sp.	X	X
G. canaliculatus	X	-
G. nr. buenoi Hung.	X	-
G. nr. marginatus Say	X	-
G. conformis Uhler	X	-
G. remigis Say	X	-
Limogonus hesione Kirk.	X	-
Metrobates hesperius Uhler	-	X
Trepobates inermis Esake	X	-
T. pictus (H. S.)	X	-
Trepobates sp.	X	X
Rheumatobates tenuipes (Meinert)	X	X
R. rileyi Bergr.	X	-
R. hungerfordi ? Wiley	X	-
Rheumatobates sp.	X	-
Family Nepidae		
Ranatra buenoi Hung.	X	X
Ranatra sp.	-	X
Family Corixidae		
Almocorixa sp.	-	X
Sp. 1	X	-
Sp. 2	X	-
Sp. 3	X	-
Family Notonectidae		
Notonecta sp.	X	-
N. irrorata Uhler	X	-
N. uhleri Kirk.	X	-
Family Mesoveliidae		

Table 8 (continued). Insect taxa found in the 1968 and 1984 hand collections on the Savannah River which were not found in trap collections for those years.

TAXA	YEAR 1968	1984
Mesovelia mulsanti White	X	X
Family Saldidae		
Salda sp.	X	-
Family Gelastocoridae (=Nerthridae)		
Gelastocris oculatus Fabr.	X	-
Order Megaloptera		
Family Sialidae		
Sialis sp.	X	-
Order Coleoptera		
Family Noteridae		
Hydrocanthus iricolor (Say)	-	X
Suphisellus gibbulus (Aube)	-	X
Family Hydraenidae		
Hydraena sp.	-	X
Order Trichoptera		
Family Brachycentridae		
Brachycentrus numerosus Say	-	X
Micrasema sp. ?	-	X
Order Lepidoptera		
Family Pyralidae		
Parargyractis sp.	X	-
Order Diptera		
Suborder Nematocera		
Family Tipulidae		
Sp.	X	-
Nr. *Helius* sp.	X	-
Dicranoyma sp.	X	-
Family Culicidae		
Anopheles sp.	X	-
Family Chaeboridae		
Chaeborus punctipennis (Say)	X	-
Family Ceratopogonidae		
Atrichopogon sp.	X	X
Bezzia or *Probezzia* sp.	X	-
Culicoides sp.	X	-
Culicoides sp. ?	X	-
Suborder Brachycera		
Family Tabanidae		
Chrysops sp.	-	X
Suborder Cyclorrhapha		
Family Sciomyzidae		
Dictya sp.	-	X
Sp.	X	-

DISCUSSION

Given the extensive data set analyzed here, a tremendous range of patterns might be expected. In spite of this potential for a diversity of outcomes, many consistent patterns emerged from our analyses. This discussion focuses on the common themes that emerged from these investigations.

There are clear differences among stations, seasons, and years, in the abundance of most of the taxa examined, whether abundances were based on actual counts, proportions, or rank-orders. Most of these insect taxa are more common at Station 6 than Station 1. Likewise, the total number of individuals, the number of taxa, and Shannon-Wiener diversity are signficantly greater at Station 6.

Unfortunately, these results do not provide ready answers to questions about what factors are responsible for the differences observed among stations and the patterns of temporal variation that were observed. One of the more revealing patterns is provided by spatial and temporal variations in average values of Hilsenhoff's biotic index (Hilsenhoff, 1982). The index is most sensitive to organic pollution and other nutrient additions, but has not been evaluated in terms of its response to thermal pollution, heavy metals, and other toxic materials. Although the index is most accurate when applied to samples identified to species level, the present analyses are based largely on samples identified to the generic level. Furthermore, the

index was developed to describe pollution tolerance in mid-western streams and rivers, whereas in this study it is applied to a southeastern river. Nonetheless, we believe that the index does provide valuable information of a comparative nature.

The biotic index tended to be higher at Station 6 in the first few years of the cursory surveys, indicating a more pollution-tolerant fauna and presumably greater pollution at the downstream station. However, since approximately 1968, the biotic index value has been consistently higher at Station 1, indicating greater pollution at this upstream site. Indeed, the value of the biotic index at Station 1 has increased significantly over the 27-year period. It seems possible that this trend of an increasingly pollution-tolerant assemblage of aquatic insects at Station 1 stems from increased discharges of pollutants at upstream sites, although it is difficult to document any cause-effect relationship in a non-experimental study such as this. In contrast, the average pollution tolerance of insects at Station 6 has remained steady or declined somewhat, probably indicating that the pollutants affecting Station 1 have been sufficiently assimilated or diluted in the river segment between Stations 1 and 6 to reduce their effects on aquatic insects at the downstream station.

Until 1968, the pollution tolerance of the aquatic insect assemblage was usually greater at Station 6. Thereafter, Station 1 usually had a more pollution tolerant

fauna. Although this change is approximately coincident with the period when the L-reactor ceased to operate, the available evidence does not suggest that this shift in the rankings of pollution tolerance at the two stations is actually caused by the L-reactor shutdown. Unfortunately, very little water chemistry data are available to correlate with the first 10 years of insect trap data, so it is difficult to assess directly how changes in water chemistry correspond to the observed patterns of pollution tolerance in aquatic insects. Nonetheless, because discharges from the L-reactor entered the Savannah River downstream from Station 1, their potential effects on water quality should only have been observed at Station 6. Yet the biotic index at Station 1 increased significantly (by more than 25%)with time, whereas tne index at Station 6 showed no consistent increasing or decreasing trend with time. This suggests that the change in the average biotic index rankings of Stations 1 and 6 are primarily due to increases in pollution tolerance at the upstream station, rather than reductions in the average pollution tolerance of the fauna at Station 6 following the shutdown.

Monthly water chemistry samples were collected near the Academy's Stations 1 and 6 by personnel of the Savannah River Plant, and these data could potentially shed light on changes in the aquatic insect community over the course of our study. However, water chemistry data gathered prior to 1968 could not be located by Savannah River Plant personnel,

so this data set cannot be compared with patterns of aquatic insect distribution and abundance during the first decade of cursory surveys. Water chemistry data gathered every four years in the Academy's comprehensive surveys of the Savannah River might serve as an alternative source of information regarding changes in water chemistry, although these data were not collected at the same times of year as insect trap collections were made.

An examination of water chemistry data presented in the Academy's summary of studies on the Savannah River between 1951 and 1970 (ANSP, 1970) may provide clues regarding factors affecting observed changes in the rankings of biotic index values at Stations 1 and 6. For the spring 1960 data set, the concentration of phosphate (a nutrient that commonly limits primary production in freshwater environments and may thereby influence the amount of food available to secondary consumers) was slightly lower at Station 1 compared to Station 6. By 1968, however, the concentration of phosphate had increased nearly 5-fold at Station 1, whereas it had not increased at Station 6.

One of the most striking trends over the 27-year study period was the increase in the average number of taxa collected per trap. This increase occurred in spite of the fact that the total number of individuals collected per trap increased much less dramatically. Before this pattern can be interpreted, it is important to address potential artifacts related to changes in trap substrate material and in

the consistency with which taxa were identified over the course of the study. Changing the trap substrates from wood to Conservation webbing in 1972 did not appear to affect the number of taxa collected per trap; there were increases in the average number of taxa collected per trap during periods both prior to and following the 1972 substrate change. At least two factors could have caused more taxa to be identified in a trap as the study progressed. One is the greatly increased availability of taxonomic keys that permit identification to the species level. Another is the increased expertise of the taxonomists responsible for the identification and enumeration of these collections (Dr. Selwyn Roback and Mr. Jay Richardson) over the course of the study. When combined, these two factors could have produced a bias in which a greater number of species could be identified from a given collection solely due to increased taxonomic information and expertise.

We chose to combine and analyze the patterns of distribution and abundance of taxa at the generic level to minimize the possiblity that our results would be strongly biased by these potential changes in taxonomic resolution. Whereas species level taxonomy has progressed dramatically over the last three decades, changes in generic level taxonomy have been much more modest. The most important exception to this pattern has been in the family Chironomidae, in which larval keys to the generic level have only recently become available. For this group, we grouped taxa at the

level of sub-families (i.e., Chironominae, Orthocladinae, and Tanypodinae), rather than at the generic level. Because our analyses are not based on species level taxonomy, it is unlikely that the long-term increase in the average number of taxa collected per trap is due solely to the potential bias described above. The difference in level of taxonomic determination may have caused some differences in the numbers of taxa available since we combined taxa that were identified in some cases did not identify them in others. It is probable, however, that there were changes in environmental conditions in the river that have played a role in producing the observed changes in ecological diversity. Several factors probably have played a role in the increase in taxa richness occurring at both Stations 1 and 6. However, enough data is not available to attribute the causes for this increase.

The cluster analysis clearly indicates that samples collected during different years from the same station tended to have more taxa in common than samples collected in the same year from different stations. This pattern of within-station similarity (regardless of the year of collection) also emerged from detrended correspondence analysis (DCA). The most obvious pattern revealed by plotting the stations against the two axes is the clear separation between stations. Nonetheless, the year in which a sample was collected does influence the pattern of similarity among samples in both the cluster analysis and the ordination.

That is, samples collected during a general time period tended to group together.

These common patterns emerged in spite of the fact that the DCA and cluster analysis techniques used here differed in several important respects. For example, DCA relies on quantitative data describing the average densities of each taxon in the traps, whereas the cluster analysis used is based solely on qualitative (i.e., presence-absence) data. Furthermore, cluster analysis assumes that a given sample must belong to one of a discrete number of groups, whereas DCA permits samples to be arrayed in a more continuous fashion. Although these two techniques make different assumptions in their description and classification of the samples, both methods indicate that Station 1 was dissimilar to Station 6, and that samples collected during the same 5-10 year period were more similar than samples collected far apart in time.

SUMMARY

Beginning in 1988, aquatic insects colonizing artificial substrates have been regularly collected from two stations on the Savannah River. The data set resulting from this long-term study was compiled and analyzed to investigate spatial and temporal variations in the absolute, proportional, and rank-ordered abundances of individual taxa. Additional analyses focused on variations in such summary statistics as the number of taxa, Shannon-Wiener diversity, the proportional abundance of various functional-feeding groups, and the average pollution tolerance of the assemblage of aquatic insects.

A relatively small number of taxa dominated the collections numerically. The most common taxa exhibited significant differences in abundance among seasons, years, and stations. Abundances were usually greater at Station 6 than Station 1. Taxa richness and Shannon-Wiener diversity were also greater at the downstream station. The average pollution tolerance of the aquatic insect assemblage was significantly greater at Station 1, possibly due to greater concentrations of organic pollutants discharged from upstream municipalities. None of these station differences suggest that operations at the Savannah River Plant are negatively affecting aquatic insects at Station 6 compared to "control" conditions at Station 1. However, because Station 1 appears to be more strongly affected by pollution discharged farther upstream, its status as a suitable "control" station is

potentially compromised. Thus, more subtle effects of plant operations on aquatic insects in the vicinity of Station 6 may be difficult to discern based solely on a comparison with Station 1.

Two patterns are particularly striking in the analysis of long-term trends. First, the average number of taxa collected per trap during the fall has more than doubled over the last three decades, while the increase in the average number of individuals collected has been much more modest. This increase in taxa occurred at both Stations 1 and 6, but no definite evidence exists regarding what may have caused the increase. It is unlikely that this increase is merely the result of an increased ability to identify taxa to the species-level. The increase in taxa richness may be due to some general change in the ability of the river to support a diverse assemblage of aquatic insects. Second, the average pollution tolerance of aquatic insects during the fall has increased by approximately 50% at Station 1 over the last 30 years, whereas it has remained steady or declined during this period at Station 6.

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APPENDICES

Average numbers of individuals per trap per station of insects collected on the Savannah River, 1959-1985.

Appendix A. Spring collections.
Appendix B. Summer collections.
Appendix C. Fall collections.
Appendix D. Winter collections.

Appendix A. Average number of insects collected per trap per station on the Savannah River, spring 1959-1985.(A) and (L) designate adult and larva, respectively.

Appendix A.

Taxa	Years	1959	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Ancyronyx variegatus (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00
Berosus sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biseutus spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bryopidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (A)	Sta. 1	0.25	0.25	0.25	0.50	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	2.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.25	0.00	0.00	1.00	0.33	0.75	0.67	0.25	0.00	7.00
Elmidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elmidae spp. (A)	Sta. 1	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.33	0.33	2.00	1.25	0.00	0.00	0.25	3.33	2.25	0.00	0.75	1.25	0.00
Gyrinidae spp. (A)	Sta. 1	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gyrinidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haliplidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helodidae sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
Hydrophilidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hoehrenrybus glabratus (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenelmis spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tropisternus glaber	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atherix sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chironomidae spp.	Sta. 1	0.00	0.25	0.00	0.00	0.00	3.00	1.33	0.00	0.25	0.25	0.33	0.00	4.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.33	2.00	0.00	0.25	0.00	1.67	0.25	0.67	0.25	1.33	2.00	0.00	11.33
Ephydridae sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rheorodromia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Muscoidea (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthocladiinae spp.	Sta. 1	1.75	4.00	2.75	4.50	6.00	4.75	11.00	17.00	5.25	8.50	278.00	37.75	15.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.00	1.33	2.50	0.25	4.00	4.33	3.00	0.67	3.25	3.33	13.25	15.00	31.00
Palpomyia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Simulium spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	5.33	13.00	164.25	100.00	133.33	78.75	0.00	0.00	0.00	0.00	0.00	0.00
Tabanus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A.

Taxa	Year: 1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Ascyrosyx variegatus (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berosus sp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dineutus spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dryopidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Dytiscidae spp. (L)	0.00	0.00	1.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	1.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	1.75	1.67	0.33
	0.00	0.00	0.33	0.00	0.00	1.00	0.00	0.75	0.50	0.00	0.67	5.75	0.33
Dytiscidae spp. (A)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.25	0.25	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.25	1.00	0.00	0.00	0.33	0.25	1.50	0.00	0.00	0.00	0.00	0.00	0.00
Elmidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.33
	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elmidae spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.33	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.00	2.00	0.00
Gyrinidae spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.67	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gyrinidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	1.67
	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
Haliplidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Helodidae sp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.33	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	-	-	-	-	-	-	-	-	-	0.50	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.33	0.00	0.00
Hydrophilidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machronychus glabratus (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.33
	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	1.33
Stenelmis spp.	0.00	0.00	0.00	0.25	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.75	0.00	2.67
	0.00	0.00	0.00	0.00	0.33	0.25	0.00	0.50	3.25	2.50	0.00	0.00	4.00
Tropisternus glaber	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atherix sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chironominae spp.	0.00	6.00	0.00	4.50	7.00	0.00	0.00	1.00	5.75	57.50	22.75	36.75	26.75
	-	-	-	-	-	-	-	-	-	14.25	21.00	64.33	109.33
	7.50	10.00	0.00	15.00	5.00	10.25	9.00	10.00	4.75	11.75	14.33	41.75	138.67
Ephydridae sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hemerodromia sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.50
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Muscoidea (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthocladiinae spp.	15.00	32.00	84.50	10.25	13.25	41.00	134.33	13.50	45.00	12.00	25.25	11.00	70.25
	-	-	-	-	-	-	-	-	-	8.75	33.75	28.67	13.33
	43.00	29.00	43.00	12.50	7.33	14.00	12.00	40.00	24.50	6.50	34.33	32.75	74.67
Palpomyia spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Simulium spp.	0.00	0.00	20.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	2.25	0.00
	-	-	-	-	-	-	-	-	-	0.00	28.75	57.67	0.00
	15.75	6.00	32.67	0.00	0.00	0.00	0.50	12.75	0.00	0.00	48.33	24.00	0.00
Tabanus sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A.

Taxa	Year	1959	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Tanypodinae spp.	Sta. 1	0.00	0.00	0.25	0.50	0.00	0.00	0.00	0.50	1.00	0.25	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	1.00	0.00	0.00	0.50	1.00	0.00	0.00	1.25	0.00	0.00	0.00	0.67
Tipula spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baetidae spp.	Sta. 1	1.00	0.25	0.25	0.00	0.00	3.25	2.33	1.50	0.25	0.00	0.33	4.50	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.33	0.33	3.00	2.25	1.00	14.33	3.50	1.67	2.75	1.00	0.25	1.75	2.33
Caenis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Callibaetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephemerella spp.	Sta. 1	3.25	0.25	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	55.67	0.00	0.00	0.00	0.00	0.33	3.00	5.67	2.50	1.00	0.25	2.75	4.67
Heptagenia spp.	Sta. 1	0.00	2.25	1.25	0.50	1.33	8.00	2.00	0.50	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	4.33	13.50	33.25	13.00	34.00	12.00	29.00	1.00	3.00	28.25	9.75	3.67
Isonychia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Leptophlebia spp.	Sta. 1	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paraleptophlebia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenonema spp.	Sta. 1	0.00	1.75	4.00	0.50	1.33	6.25	0.67	0.00	0.25	0.00	0.00	0.50	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	11.00	17.00	94.50	64.50	36.00	90.33	10.75	5.00	46.75	0.67	0.50	3.00	8.33
Tricorythodes spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.33
Belostoma flumineа	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Pelocoris femoratus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trichocorixa calva	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chauliodes sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corydalus cornutus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nigronia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Climacia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aeshnidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Argia spp.	Sta. 1	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boyeria sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calopteryx spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coenagrionidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Hagenius brevistylus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nehalennia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A.

Taxa	Years	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Tanypodinae spp.		0.00	4.00	1.50	0.25	1.75	0.00	0.00	0.00	0.25	8.50	9.00	0.75	1.40
		-	-	-	-	-	-	-	-	-	15.25	6.75	9.00	2.67
		7.00	7.00	3.00	4.00	4.00	10.00	3.75	0.00	5.25	7.50	6.67	10.25	14.07
Tipula spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baetidae spp.		0.50	1.00	7.50	1.00	1.00	0.00	0.00	0.00	0.00	2.00	8.00	5.00	1.75
		-	-	-	-	-	-	-	-	-	0.00	29.75	34.67	5.00
		2.50	5.00	5.67	5.00	1.00	10.00	3.25	3.25	5.00	0.00	69.07	72.00	14.67
Caenis sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.67
		0.00	0.00	0.00	1.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	3.00	0.00
Callibaetis sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Ephemerella spp.		0.00	1.00	0.00	1.75	1.50	2.00	1.33	0.50	4.75	2.00	3.25	2.50	16.00
		-	-	-	-	-	-	-	-	-	46.50	8.50	39.00	225.00
		1.00	3.00	1.33	5.00	24.00	117.00	25.50	48.00	340.75	69.00	29.67	90.75	922.67
Heptagenia spp.		0.00	0.00	0.00	10.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50
		-	-	-	-	-	-	-	-	-	5.75	8.50	28.67	40.00
		9.75	4.00	2.00	21.00	5.33	59.50	3.25	6.00	29.50	6.00	16.33	42.75	30.67
Isonychia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	3.00	0.00	0.25	0.00
Leptophlebia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.50	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.50	1.00	0.00	0.00	0.00
Paraleptophlebia spp.		0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.33	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenonema spp.		0.50	0.00	0.00	4.25	2.75	0.00	0.00	0.00	0.50	0.00	1.50	4.00	5.25
		-	-	-	-	-	-	-	-	-	13.00	5.00	34.67	52.33
		14.50	16.00	4.00	6.00	16.00	22.75	1.25	31.50	33.00	26.75	26.00	63.75	197.33
Tricorythodes spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.67
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Belostoma flumineа		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.33
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67
Peloceris fenestratus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.25	0.00	0.33	1.00
		0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Trichocorixa calva		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaulioides sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.50	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corydalus cornutus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.25	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nigronia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Climacia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Aeshnidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Argia spp.		0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
		-	-	-	-	-	-	-	-	-	1.00	0.00	0.00	0.33
		0.00	4.00	0.00	0.00	0.00	0.50	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Boyeria sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calopteryx spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.33
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coenagrionidae spp.		0.00	1.00	0.00	1.00	0.25	0.00	0.00	1.00	0.00	0.00	0.25	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		1.00	2.00	0.00	0.00	0.67	3.25	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Hagenius brevistylus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enallagma sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A.

???	Year	1959	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Chelifelidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ancronia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neurocordulia molesta	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Odonata spp. (1)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00
Oligoneuria sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oligocapnia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides sp. (=Isogenus)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isoperla sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Nemoura sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perlesta placida	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.67	0.00	0.00	0.00	0.00	0.00	0.50	1.00	3.75	0.67	19.50	24.75	14.33
Perlidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pteronarcys sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taeniopteryx spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydatophylax sp. (=Astenophylax)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceraclea spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cheumatopsyche spp.	Sta. 1	0.00	2.00	0.25	0.00	0.33	1.50	0.33	0.00	0.25	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	10.33	10.00	25.25	9.25	12.00	1.50	8.33	12.25	1.67	6.75	4.50	0.33
Chimarra spp.	Sta. 1	0.00	12.00	0.00	0.50	0.00	0.75	0.00	0.25	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.67	14.67	22.50	9.75	1.00	7.33	1.00	0.33	3.00	2.67	12.50	7.00	3.33
Hydropsyche spp.	Sta. 1	0.50	16.25	4.50	1.00	9.33	3.25	0.00	0.00	6.75	2.50	0.67	1.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.00	17.00	3.50	5.50	1.00	11.33	0.25	1.33	0.75	0.33	0.25	0.25	0.00
Hydropsychidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroptila sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.25	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lepidostoma sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.	Sta. 1	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macronema spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.33	0.00	1.00	2.00	0.50	0.33	0.50	0.00	0.00	0.00	0.25	0.25	0.00
Nectopsyche spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.50	0.75	0.00	0.00	1.00	0.00	1.25	0.00	0.75	0.50	0.33
Neureclipsis spp.	Sta. 1	0.00	1.00	0.50	1.00	0.33	0.75	0.33	0.00	0.83	0.00	0.00	0.25	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.50	0.50	0.00	0.00	0.00	13.00	1.75	0.67	8.00	5.25	2.67

Appendix A.

Taxa	Year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Libellulidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macromia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neurocordulia molesta		0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.50	0.25	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Odonata spp. (1)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acroneuria sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allocapnia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides sp. (=Isogenus)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.50	0.50	0.00	0.00
		0.00	0.00	0.00	0.00	7.33	1.75	0.00	1.25	2.75	0.25	0.00	0.00	0.00
Isoperla sp.		0.00	0.00	0.00	0.00	0.00	1.00	0.33	0.00	0.00	0.00	0.50	0.75	0.50
		-	-	-	-	-	-	-	-	-	5.25	1.50	4.00	3.00
		0.00	0.00	0.00	0.00	7.00	9.00	1.50	0.00	5.00	0.25	3.33	0.25	0.00
Nemoura sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.50	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perlesta placida		0.00	4.00	1.50	66.25	6.25	9.00	0.00	1.50	2.25	1.00	1.00	2.75	7.25
		-	-	-	-	-	-	-	-	-	12.75	12.75	18.00	73.67
		10.00	17.00	22.33	89.50	14.33	87.75	21.00	22.00	71.75	15.75	24.33	31.75	89.33
Perlidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pteronarcys sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taeniopteryx spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Hydatophylax sp. (=Astenophylax)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerasles spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	2.00
		0.00	1.00	0.00	0.00	0.00	1.00	0.25	0.00	2.00	0.00	0.00	2.25	1.33
Cheumatopsyche spp.		0.00	0.00	0.00	0.00	10.50	3.25	2.00	0.00	1.50	6.50	4.50	7.25	16.00
		-	-	-	-	-	-	-	-	-	19.25	8.00	47.00	5.67
		6.75	0.00	6.00	4.00	16.33	30.75	25.00	50.75	29.75	30.00	11.33	89.00	4.00
Chimarra spp.		0.00	0.00	0.00	0.25	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	2.25	2.25	0.00	1.67
		6.25	0.00	0.00	1.50	3.00	9.50	1.75	13.50	11.00	18.75	10.33	5.00	4.00
Hydropsyche spp.		0.00	1.00	0.00	0.00	0.00	0.00	3.00	1.00	1.50	0.00	0.00	1.00	2.75
		-	-	-	-	-	-	-	-	-	0.25	0.00	1.33	0.33
		1.25	3.00	0.00	18.50	1.67	0.25	2.50	0.00	1.00	0.00	1.00	3.25	0.00
Hydropsychidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.50	1.00	0.00
		-	-	-	-	-	-	-	-	-	1.00	0.00	10.33	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	8.25	0.00
Hydroptila sp.		0.00	1.00	0.00	0.25	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lepidostoma sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macrunema spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Neotrichia spp.		0.00	1.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.75
		-	-	-	-	-	-	-	-	-	0.00	0.00	1.33	1.33
		1.00	2.00	0.67	12.00	4.33	7.00	0.00	0.00	14.50	7.00	0.00	1.50	1.33
Neureclipsis spp.		0.50	1.00	0.00	0.75	0.50	2.25	0.00	0.00	0.25	2.00	0.25	0.00	1.00
		-	-	-	-	-	-	-	-	-	2.25	0.25	3.00	0.33
		1.75	0.00	0.00	0.00	0.33	4.50	2.00	0.00	0.50	2.25	1.33	1.00	0.00

Appendix A.

Taxa	Year:	1959	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Oecetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.67	0.00	0.00	0.00	1.11	0.00	0.67	1.00	0.00	0.25	0.40	0.00
Oxyethira sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycentropus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyrnopsyche sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triaenodes spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Individuals	Sta. 1	7.75	42.00	15.50	9.50	14.67	72.38	19.00	20.50	14.75	11.75	279.67	45.00	22.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	78.67	74.67	166.50	300.50	162.25	312.13	116.75	71.67	93.75	17.33	93.75	79.75	98.67
Filterers	Sta. 1	0.50	30.25	4.75	1.50	5.67	5.50	1.00	0.25	7.00	2.50	1.00	1.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.00	47.33	50.00	196.75	107.75	164.33	82.00	10.00	15.00	4.67	19.75	12.00	3.67
Predators	Sta. 1	0.50	0.75	0.50	1.50	0.00	0.25	0.00	1.25	1.00	0.50	0.00	0.50	2.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.33	1.67	0.00	0.75	0.50	2.67	2.00	2.00	7.00	1.67	28.00	27.50	31.00
Gatherers	Sta. 1	6.25	9.75	9.75	5.50	8.07	33.25	16.33	19.00	6.00	8.50	278.33	43.00	15.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	71.67	23.67	115.50	101.50	54.00	143.67	31.50	46.00	58.50	9.00	43.25	34.50	49.67
Shredders	Sta. 1	0.50	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.33	0.00	0.50	0.75	0.00	0.00	1.00	0.00	1.25	0.00	0.75	0.50	0.33
Others	Sta. 1	0.00	1.25	0.50	1.00	0.33	4.00	1.07	0.00	0.75	0.25	0.33	0.50	4.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.33	2.00	0.50	0.75	0.00	1.67	0.25	13.67	2.00	2.00	10.00	5.25	14.00
Taxa Richness	Sta. 1	3.75	6.50	5.25	5.00	3.67	8.25	4.67	3.50	4.00	2.75	2.67	4.25	3.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	7.67	7.67	11.00	10.75	8.00	10.00	9.00	9.67	10.25	6.00	9.75	12.25	11.33
Shannon-Wiener	Sta. 1	1.08	1.43	1.45	1.29	0.88	1.84	1.11	0.58	1.04	0.68	0.21	0.61	0.78
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.83	1.62	1.44	1.39	0.75	1.26	1.48	1.42	1.45	1.38	1.70	2.06	2.00
Evenness	Sta. 1	0.95	0.79	0.91	0.82	0.81	0.89	0.75	0.51	0.79	0.74	0.20	0.42	0.71
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.42	0.84	0.60	0.59	0.43	0.54	0.60	0.66	0.65	0.86	0.75	0.82	0.82
Biotic Index	Sta. 1	1.38	1.77	1.79	1.02	1.88	1.70	1.33	0.63	2.27	2.00	2.00	2.23	2.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.16	1.97	1.84	2.12	2.09	2.02	1.86	1.54	2.09	1.14	1.62	1.78	1.81

Appendix A.

Taxa	Years	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Cheumatopsyche sp.		0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00
		0.25	1.00	0.00	1.00	0.00	1.75	1.25	2.00	1.25	0.50	0.00	2.67	0.67
											1.00	0.67	7.50	1.33
Chrysomela sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00
Polycentropus sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
											0.00	0.00	0.00	0.00
Pycnopsyche sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00
											0.00	0.00	0.00	0.00
Triaenodes spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
		0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.33
											0.00	0.00	0.00	0.00
Total Individuals		16.50	54.00	117.00	101.50	17.00	58.35	142.67	20.50	82.50	93.00	80.00	77.00	166.25
		130.00	112.00	122.33	199.00	119.33	305.25	118.35	342.35	591.00	150.75	170.25	387.00	575.33
											209.75	301.67	538.50	1501.33
Filterers		0.00	1.00	21.00	0.25	11.50	3.25	5.00	1.00	3.00	7.00	6.50	11.50	16.75
		30.00	9.00	39.00	24.00	21.67	30.50	29.75	77.00	41.75	22.75	39.00	116.33	7.67
											52.00	74.00	129.75	8.00
Predators		0.00	10.00	4.00	68.00	8.25	10.50	0.67	3.00	3.00	10.50	12.25	6.25	11.25
		18.75	33.00	36.67	95.50	33.67	116.00	30.50	26.00	86.75	35.75	23.25	35.67	84.00
											24.75	35.67	55.50	106.67
Gatherers		16.00	34.00	92.00	27.50	19.75	43.25	136.33	15.50	50.50	16.00	36.00	22.50	98.25
		90.75	58.00	56.00	52.00	54.33	226.50	47.00	129.25	442.50	75.00	86.25	166.33	372.33
											111.75	176.33	308.75	1246.67
Shredders		0.00	1.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	1.25
		1.25	2.00	0.67	12.00	4.33	7.50	0.00	0.00	14.75	0.75	0.50	1.33	1.67
											7.25	0.00	1.75	1.33
Others		0.50	8.00	0.00	5.50	7.50	2.25	0.67	1.00	6.00	59.50	23.00	36.75	27.75
		9.25	10.00	0.00	15.50	5.33	14.75	11.00	10.00	5.25	16.50	21.25	67.33	109.67
											14.00	15.67	42.75	138.67
Taxa Richness		3.50	12.00	6.00	9.25	9.25	5.25	4.33	5.50	6.50	7.50	9.25	8.00	12.50
		13.25	17.00	10.00	15.50	14.33	17.50	14.00	10.75	16.25	11.50	12.75	14.67	16.33
											12.75	14.33	16.25	12.33
Shannon-Wiener		0.25	1.53	0.80	1.30	1.84	0.97	0.26	1.12	1.02	1.28	1.69	1.67	1.76
		2.04	2.34	1.48	1.91	2.15	2.01	2.00	1.87	1.48	2.02	2.14	2.31	1.75
											2.03	2.27	2.33	1.34
Evenness		0.36	0.63	0.45	0.54	0.83	0.59	0.19	0.65	0.55	0.64	0.78	0.81	0.70
		0.79	0.83	0.60	0.70	0.81	0.71	0.76	0.79	0.53	0.83	0.84	0.87	0.60
											0.80	0.85	0.84	0.52
Biotic Index		3.00	2.25	2.42	1.84	2.35	2.09	2.09	1.92	1.91	2.64	2.04	2.18	1.94
		1.87	1.91	2.20	1.77	1.39	1.39	1.84	1.81	1.27	1.65	1.91	1.96	1.39
											1.65	1.77	1.84	1.27

Appendix B. Average number of insects collected per trap per station on the Savannah River, summer 1959-1985. (A) and (L) designate adult and larva, respectively.

Appendix B.

Taxa	Year:	1959	1961	1962	1963	1964	1966	1967	1969	1970	1971	1973
Ancyronyx variegatus (A)	Sta. 1	0.25	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	2.67	0.00	0.25	0.50	0.00	4.50	0.00	0.00
Berosus sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dineutus spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dryopidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (A)	Sta. 1	2.00	0.00	0.00	1.33	0.25	0.00	1.25	1.67	1.50	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	8.50	0.75	1.33	0.50	1.00	1.00	0.25	0.50	1.00	0.75
Elmidae spp. (L)	Sta. 1	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	5.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	3.50	0.00
Elmidae spp. (A)	Sta. 1	0.75	2.33	5.00	1.67	1.00	0.00	0.75	1.00	1.50	0.50	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	4.25	8.50	19.50	25.00	11.75	5.50	3.00	3.75	7.00	0.75	0.00
Gyrinidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gyrinidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75
Haliplidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heleidae sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Machronychus glabratus (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenelmis spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50
Tropisternus glaber	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00
Atherix sp.	Sta. 1	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
Chironominae spp.	Sta. 1	3.25	0.67	0.75	6.00	3.00	0.33	1.00	24.67	52.75	66.75	182.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	6.00	2.00	1.50	9.00	1.00	1.25	2.00	5.25	0.50	32.75	100.75
Ephydridae sp.	Sta. 1	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoredromia sp.	Sta. 1	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.50	0.00	1.00
Muscoidea (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthocladiinae spp.	Sta. 1	5.75	1.67	1.75	0.33	3.00	2.33	0.75	8.33	3.00	68.00	34.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.00	0.50	1.00	1.67	0.50	0.00	1.50	1.25	0.00	32.75	30.50
Palpomyia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Simulium spp.	Sta. 1	2.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.25	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	20.50	0.00	0.00	0.00	0.00	0.00	0.00	25.25	0.00
Tabanus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix B.

Taxa	Year: 1974	1976	1977	1978	1979	1981	1982	1983	1984	1985
Anacrenyx variegatus (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.40	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.50
Berosus sp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Dineutus spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dryopidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (L)	0.00	1.00	1.25	0.00	5.00	0.00	4.50	2.50	2.00	2.00
	-	-	-	-	-	-	7.00	6.67	2.00	2.25
	0.00	0.00	1.00	0.00	0.00	0.00	5.75	8.50	6.00	0.00
Dytiscidae spp. (A)	0.25	2.25	0.75	0.00	1.33	0.00	1.75	18.50	9.33	0.00
	-	-	-	-	-	-	0.00	10.00	0.00	0.00
	0.00	0.50	5.67	1.00	0.00	0.00	0.25	2.50	8.25	0.00
Simulidae spp. (L)	0.00	0.25	0.00	0.00	0.00	0.00	0.00	1.50	1.00	3.00
	-	-	-	-	-	-	0.00	4.00	0.00	11.00
	0.00	2.75	1.00	0.00	0.00	1.00	0.00	12.25	3.00	50.00
Simulidae spp. (A)	0.00	0.00	0.00	0.33	0.00	0.50	0.50	0.25	2.67	0.00
	-	-	-	-	-	-	0.75	2.00	0.00	0.00
	0.00	2.25	0.00	1.00	0.00	1.50	0.00	0.00	8.50	0.00
Gyrinidae spp. (A)	0.00	0.00	0.00	2.00	1.67	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00
Gyrinidae spp. (L)	0.00	0.00	0.00	0.00	1.67	2.00	0.00	0.34	0.00	4.75
	-	-	-	-	-	-	0.00	0.00	0.00	3.50
	0.00	0.00	0.00	0.00	1.00	0.50	0.00	0.00	0.00	0.50
Haliplidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heleidae sp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	2.00
	1.33	0.25	0.00	0.00	0.00	0.50	0.00	4.50	0.00	4.00
Hydrophilidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00
Machaerychus glabratus (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.50	0.00	0.00	0.25
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenelmis spp.	0.00	0.00	0.50	0.00	0.00	0.00	0.50	0.00	0.00	1.25
	-	-	-	-	-	-	3.50	0.00	0.00	1.50
	10.67	0.00	2.67	0.00	0.00	4.00	5.00	0.00	0.00	3.00
Tropisternus glaber	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atherix sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chironominae spp.	47.50	30.25	18.50	2.00	7.00	20.50	15.25	21.75	26.67	99.00
	-	-	-	-	-	-	13.75	67.00	87.00	31.00
	44.00	31.75	19.00	0.50	4.00	17.50	10.75	69.00	74.00	90.00
Ephydridae sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hexacrobronia sp.	1.00	0.00	0.25	0.00	12.00	0.50	0.50	1.00	1.	19.00
	-	-	-	-	-	-	4.00	8.00	2.00	9.00
	0.00	3.25	0.33	0.00	0.00	1.00	1.00	4.50	5.00	4.00
Muscoidea (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthocladiinae spp.	22.50	10.00	15.00	20.67	25.67	5.50	9.00	17.00	8.67	84.00
	-	-	-	-	-	-	6.50	19.33	50.00	16.00
	28.33	10.25	11.67	1.00	8.50	3.00	7.25	17.00	45.00	70.00
Palpomyia spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00
Simulium spp.	41.50	3.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	3.00
	-	-	-	-	-	-	0.00	4.67	0.00	2.00
	21.00	1.00	0.00	0.00	2.00	1.00	0.00	28.75	0.00	2.00
Tabanus sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix B.

Taxa	Year:	1959	1961	1962	1963	1964	1966	1967	1969	1970	1971	1973
Tanypodinae spp.	Sta. 1	0.50	0.00	0.00	0.33	0.75	2.00	1.25	4.33	1.75	33.75	50.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	0.33	0.00	0.00	2.25	1.25	0.00	8.25	39.00
Tipula spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baetidae spp.	Sta. 1	1.00	0.33	1.50	2.33	1.50	1.67	2.00	2.33	0.50	1.50	2.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.75	0.50	3.75	3.00	1.75	0.25	1.00	2.50	0.50	4.00	10.50
Caenis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Callibaetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephemerella spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25
Heptagenia spp.	Sta. 1	0.00	1.33	19.75	8.67	1.50	3.67	0.25	0.00	0.00	0.25	1.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	12.00	15.33	2.25	2.00	3.25	13.25	23.50	9.25	20.00
Isonychia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.67	36.00	64.25	39.75	66.25	167.50	0.00	983.25
Leptophlebia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paraleptophlebia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenacron spp.	Sta. 1	0.00	0.67	2.75	1.00	3.00	1.67	4.25	0.67	0.75	8.25	15.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.75	3.00	30.00	39.67	22.50	12.00	9.25	7.50	13.50	22.25	69.25
Tricorythodes spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.75	0.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	1.00	3.00	29.67	0.50	3.00	2.75	0.25	7.00	27.25	14.25
Belostoma flumineo	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pelocoris femoratus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trichocorixa calva	Sta. 1	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaulioden sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
Corydalus cornutus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nigronia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Climacia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aeshnidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Argia spp.	Sta. 1	0.00	0.33	0.00	0.67	0.00	0.00	0.00	0.33	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.50	0.00	0.33	0.00	0.00	0.50	0.00	0.00	0.00	2.25
Boyeria sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	1.50
Calopteryx spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphidae spp.	Sta. 1	0.50	0.00	0.00	0.00	0.00	0.00	0.25	2.67	0.25	0.50	0.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	1.75	0.00
Hagenius brevistylus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neoperla sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix B.

Taxa	Year:	1974	1975	1977	1978	1979	1981	1982	1983	1984	1985
Tanypodinae spp.		33.00	7.50	10.25	4.33	11.00	7.00	9.00	9.75	3.67	25.00
		-	-	-	-	-	-	11.25	8.00	10.50	17.00
		24.33	16.25	8.33	0.25	1.00	6.50	12.00	7.75	12.50	14.00
Tipula spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baetidae spp.		1.00	6.00	4.50	3.67	7.00	1.00	16.50	19.75	14.00	6.00
		-	-	-	-	-	-	6.00	39.33	33.50	7.00
		5.33	10.75	3.00	0.25	9.00	11.00	8.00	19.25	20.50	14.00
Cheumatopsyche sp.		0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.67	0.00
		-	-	-	-	-	-	1.00	0.00	2.00	1.00
		0.00	3.50	0.33	0.00	0.00	1.50	2.50	0.00	0.00	4.00
Callibaetis sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	1.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephemerella spp.		0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	2.00
Heptagenia spp.		3.75	13.50	9.75	0.67	0.00	1.50	2.00	1.00	9.67	0.00
		-	-	-	-	-	-	11.00	26.67	24.50	1.00
		18.67	8.25	14.33	9.00	7.00	2.50	4.25	4.50	30.50	0.00
Isonychia spp.		0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		598.67	431.25	48.33	0.00	0.00	7.00	3.75	0.00	0.00	10.00
Leptophlebia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paraleptophlebia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenonema spp.		23.50	47.50	28.00	1.67	4.67	5.50	30.00	13.50	22.67	12.00
		-	-	-	-	-	-	56.75	108.67	44.00	57.00
		29.33	83.00	36.67	12.50	4.00	20.50	55.75	52.00	104.50	60.00
Tricorythodes spp.		0.25	2.50	1.50	0.33	0.00	5.50	30.75	43.25	17.00	51.00
		-	-	-	-	-	-	46.00	62.00	31.50	8.00
		21.33	43.25	1.67	0.50	4.00	2.00	12.50	58.00	17.00	2.00
Belostoma flumineа		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
		-	-	-	-	-	-	0.25	0.00	0.00	0.00
		0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.75	0.00	1.50
Pelocoris femoratus		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.67	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.50	0.33	0.00	0.00	0.00	0.25	0.25	0.25	1.50
Trichocorixa calva		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.33	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chauliodes sp.		0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.25	0.00	0.00
		-	-	-	-	-	-	0.25	0.00	0.00	0.50
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.50
Corydalus cornutus		0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.25
		-	-	-	-	-	-	0.00	0.00	0.50	0.00
		0.00	0.00	2.00	0.00	0.00	2.00	0.00	1.00	0.25	0.00
Nigronia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Climacia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aeshnidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.33	0.00	0.00
		0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Argia spp.		0.00	0.50	0.25	0.67	0.00	0.50	0.50	1.00	0.00	0.25
		-	-	-	-	-	-	0.00	0.33	0.00	0.75
		0.00	5.50	2.67	3.00	0.00	0.50	0.25	0.50	0.00	0.50
Boyeria sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.50	0.50
		0.00	0.50	0.00	0.00	0.00	0.00	0.25	0.25	0.25	1.00
Calopteryx spp.		0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coenagrionidae spp.		0.25	0.25	0.00	2.00	1.00	0.50	0.25	0.00	0.00	0.25
		-	-	-	-	-	-	0.00	0.00	0.00	1.75
		0.00	0.50	0.67	0.25	0.00	1.00	0.00	0.00	0.00	0.00
Sagesius brevistylus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hetaerina sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix B.

Taxa	Year:	1959	1961	1962	1963	1964	1966	1967	1969	1970	1971	1973
Libellulidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macromia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neurocordulia molesta	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Odonata spp. (1)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acroneuria sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allocapnia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides sp. (= *Isogenus*)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isoperla sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoura sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	1.00	5.75	1.75	1.25	0.00	0.00	0.00	0.00
Perlesta placida	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.50	1.50
Perlidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pteronarcys sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taeniopteryx spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydatophylax sp. (= *Asotaophylax*)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceraclea spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cheumatopsyche spp.	Sta. 1	0.00	17.00	4.50	0.00	2.25	0.00	0.25	0.00	1.75	2.00	9.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	9.50	5.75	3.67	0.00	2.50	24.25	18.50	31.50	19.50	59.00
Chimarra spp.	Sta. 1	0.00	44.00	23.50	5.00	8.25	0.00	0.25	0.00	0.00	35.00	14.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.75	60.50	53.75	5.00	13.50	13.75	10.50	13.25	236.50	241.00	225.25
Hydropsyche spp.	Sta. 1	0.25	41.67	59.75	47.33	25.00	2.00	1.00	40.33	77.00	139.25	25.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	4.50	11.00	18.00	29.33	8.75	0.75	5.75	12.00	38.00	242.75	78.00
Hydropsychidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroptila sp.	Sta. 1	0.00	0.33	0.00	1.00	0.75	0.00	3.00	0.67	0.25	0.75	1.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	1.00	0.75	0.00	0.00	1.25	0.25	0.00	0.50	1.50	0.00
Lepidostoma sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nectopsyche spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	2.00	0.00	1.00	0.25	0.50	0.00	0.50	2.00	23.75
Neureclipsis spp.	Sta. 1	1.00	6.67	3.75	0.67	1.50	0.00	0.75	0.33	0.50	9.00	0.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.00	2.00	1.00	0.33	0.00	0.25	4.50	4.25	25.00	25.25	0.00

Appendix B.

Taxa	Year:	1974	1975	1977	1978	1979	1981	1982	1983	1984	1985
Libellulidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
Macromia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.25	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Neurocordulia molesta		0.00	0.00	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00
		-	-	-	-	-	-	0.25	0.67	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Odonata spp. (I)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.50
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acroneuria sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allocapnia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides sp. (=*Isogenus*)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isoperla sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoura sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.25	1.67	0.25	0.00	2.50	0.75	0.00	0.00	2.00
Perlesta placida		1.25	0.25	0.75	18.33	12.67	0.00	6.00	1.00	4.67	2.00
		-	-	-	-	-	-	11.00	14.67	18.50	2.00
		0.67	1.00	1.67	19.00	25.00	0.00	4.00	4.25	28.00	0.00
Perlidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Pteronarcys sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.33	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Taeniopteryx spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydatophylax sp. (=*Astenophylax*)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cerasies spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cheumatopsyche spp.		6.50	17.25	15.50	3.00	34.00	48.50	27.75	16.75	11.67	37.00
		-	-	-	-	-	-	24.50	82.67	341.50	20.00
		14.00	9.50	8.33	2.50	37.00	8.00	13.75	61.25	251.00	36.00
Chimarra spp.		2.00	4.50	4.25	0.00	0.00	0.00	9.25	3.50	0.67	2.00
		-	-	-	-	-	-	96.50	407.33	145.00	72.00
		35.33	37.00	21.00	0.00	0.00	38.00	122.00	445.00	121.00	190.00
Hydropsyche spp.		136.50	69.25	11.00	4.67	57.33	20.50	18.00	9.75	5.67	4.00
		-	-	-	-	-	-	5.00	1.33	2.00	0.00
		24.00	2.50	5.33	0.00	38.50	0.50	0.00	1.75	4.50	0.00
Hydropsychidae spp.		0.00	0.00	0.00	0.00	0.00	46.00	39.00	12.75	9.67	0.00
		-	-	-	-	-	-	18.00	17.33	48.00	0.00
		0.00	0.00	0.00	0.00	0.00	39.00	9.00	10.50	44.00	0.00
Hydroptila sp.		0.00	1.50	0.25	0.00	11.33	2.00	3.75	0.75	0.67	21.00
		-	-	-	-	-	-	5.00	0.00	3.50	2.00
		1.33	3.25	3.00	0.25	2.00	0.50	1.50	4.75	1.00	0.00
Lepidostoma sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nectopsyche spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		5.33	7.75	9.67	0.00	0.50	15.00	14.00	0.00	0.00	2.00
Nectopsyche spp.		2.25	1.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00
		-	-	-	-	-	-	10.00	1.33	0.00	3.00
		29.33	13.00	11.33	0.00	0.00	10.00	5.25	5.50	1.00	10.00
Nectopsyche spp.		6.50	0.75	2.00	2.00	1.00	4.00	6.75	8.50	0.33	0.00
		-	-	-	-	-	-	2.00	7.33	2.00	4.00
		4.33	3.00	1.33	0.00	13.50	0.00	1.00	9.75	1.00	0.00

Appendix B.

Taxa	Year:	1959	1961	1962	1963	1964	1966	1967	1969	1970	1971	1973
Oecetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	1.00	2.00	1.75	1.25	0.25	0.00	4.00	0.75	14.00
Oxyethira sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycentropus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pycnopsyche sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triaenodes spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Individuals	Sta. 1	17.75	119.67	123.50	76.67	52.25	13.67	22.00	87.67	142.25	367.00	347.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	29.75	112.50	197.75	175.67	103.50	111.75	112.50	152.00	599.50	853.50	1793.50
Filterers	Sta. 1	2.25	102.67	87.75	52.33	36.75	2.00	3.50	40.33	78.75	176.50	53.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	5.25	87.00	121.25	44.33	53.75	81.50	81.75	110.00	511.50	679.00	1450.00
Predators	Sta. 1	3.00	1.00	0.25	2.33	1.25	2.00	5.00	9.33	4.00	35.75	53.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	4.00	9.00	2.00	5.00	8.50	4.25	5.50	4.00	5.00	13.25	63.75
Gatherers	Sta. 1	8.25	8.33	31.00	14.33	10.00	9.33	8.75	12.33	6.00	79.25	56.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	13.50	11.50	69.25	117.00	39.25	23.00	18.00	28.50	56.50	99.75	149.25
Shredders	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	2.00	0.00	1.00	0.25	0.50	0.00	0.50	2.00	23.75
Others	Sta. 1	4.25	9.67	4.50	7.67	4.25	0.33	4.75	25.67	53.50	75.50	184.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	7.00	5.00	3.25	9.33	1.00	2.75	6.75	9.50	26.00	59.50	106.75
Taxa Richness	Sta. 1	6.50	9.00	8.75	9.33	8.25	6.00	9.00	9.67	8.50	10.50	10.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	10.00	10.00	13.25	13.67	10.25	11.25	14.25	12.75	15.00	15.75	16.75
Shannon-Wiener	Sta. 1	1.50	1.43	1.36	1.47	1.56	1.64	1.81	1.48	0.92	1.69	1.55
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.70	1.52	1.89	1.93	1.83	1.46	1.96	1.73	1.75	1.99	1.75
Evenness	Sta. 1	0.81	0.66	0.63	0.66	0.76	0.92	0.84	0.65	0.43	0.72	0.65
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.84	0.68	0.73	0.74	0.72	0.81	0.75	0.68	0.65	0.72	0.62
Biotic Index	Sta. 1	2.75	2.11	1.70	1.75	1.91	1.31	2.49	2.06	2.12	1.89	1.95
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.05	1.76	1.68	1.82	1.83	1.81	2.17	1.96	1.68	1.74	1.88

Taxa	Year	1974	1975	1977	1978	1979	1981	1982	1983	1984	1985
Orcetis sp.		0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	3.00	3.67	0.00	3.00
		16.67	8.00	6.00	0.00	0.50	0.00	3.75	14.00	0.00	4.00
Oxyethira sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycentropus sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pycnopsyche sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	0.25	0.00	0.00	0.00
		0.00	0.25	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Triaenodes spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	1.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Total Individuals		329.50	224.25	123.50	66.33	194.67	173.00	233.25	202.50	155.00	377.75
		-	-	-	-	-	-	347.75	696.00	848.50	280.00
		943.33	739.75	230.33	52.00	158.50	204.00	304.75	847.00	791.75	589.50
Filterers		186.50	98.00	30.75	7.67	91.33	115.00	94.00	42.75	29.67	46.00
		-	-	-	-	-	-	144.00	513.33	536.50	94.00
		698.33	489.00	92.67	2.50	78.00	108.50	162.50	547.25	420.50	240.00
Predators		35.75	12.25	14.00	27.33	46.67	10.50	24.25	32.50	21.33	53.50
		-	-	-	-	-	-	37.25	52.67	34.00	40.25
		42.00	36.25	31.33	24.00	28.50	19.50	28.75	45.25	61.25	30.50
Gatherers		51.00	80.00	59.50	27.33	37.33	21.00	89.25	96.25	76.33	157.25
		-	-	-	-	-	-	134.50	254.00	186.50	106.75
		124.00	163.25	71.33	24.75	32.50	48.00	94.75	166.50	233.00	217.00
Shredders		2.25	1.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00
		-	-	-	-	-	-	11.25	1.67	0.00	3.00
		29.33	13.25	11.33	0.00	0.00	10.00	5.50	5.50	1.00	12.00
Others		54.00	32.50	18.75	4.00	19.33	26.50	25.75	31.00	27.67	120.00
		-	-	-	-	-	-	20.75	74.33	92.50	37.00
		49.67	38.00	23.67	0.75	19.50	18.00	13.25	83.50	76.00	90.00
Taxa Richness		12.50	14.75	14.00	10.67	13.33	15.50	16.75	17.25	16.67	13.75
		-	-	-	-	-	-	17.75	19.33	15.50	16.75
		18.33	19.75	23.00	8.00	12.00	23.50	19.25	19.00	18.00	19.50
Shannon-Wiener		1.75	1.88	2.14	1.80	2.04	1.97	2.40	2.32	2.25	1.98
		-	-	-	-	-	-	2.17	1.99	1.95	2.14
		1.60	1.83	2.50	1.51	2.03	2.55	2.14	1.96	2.19	1.81
Evenness		0.70	0.70	0.81	0.77	0.79	0.72	0.85	0.82	0.82	0.76
		-	-	-	-	-	-	0.76	0.68	0.71	0.76
		0.55	0.62	0.80	0.76	0.83	0.81	0.73	0.67	0.76	0.61
Biotic Index		2.11	2.01	2.01	2.20	2.46	2.59	2.29	2.28	2.03	2.53
		-	-	-	-	-	-	1.84	1.56	2.27	1.88
		1.99	1.97	1.86	1.86	2.38	1.75	1.68	1.56	2.12	1.90

Appendix C. Average number of insects collected per trap per station on the Savannah River, fall 1959-1985. (A) and (L) designate adult and larva, respectively.

Appendix C.

Taxa	Year:	1959	1961	1962	1963	1964	1966	1967	1968	1970	1971	1973	1974	1975
Apsectrota variegatus (A)	Sta. 1	0.00	0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.00	0.00	0.00	0.50	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.33	0.67	0.33	0.00	0.00	0.00	0.00	3.25	10.00	0.50	0.00	0.00
Berosus sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dicrotus spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bryocidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bytiscidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00
Bytiscidae spp. (A)	Sta. 1	0.50	0.00	0.00	0.00	0.25	0.50	0.00	0.00	0.25	0.00	0.33	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.50	0.33	0.00	0.00	0.00	0.00	0.00	2.00	0.00
Elmidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Elmidae spp. (A)	Sta. 1	4.50	5.00	1.50	1.00	1.00	0.50	1.00	0.00	0.50	2.67	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	3.25	21.67	38.67	6.67	12.00	3.67	9.67	7.50	9.50	2.50	0.00	0.00	0.50
Gyrinidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gyrinidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haliplidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heleidae sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hoehrenychus glabratus (A)	Sta. 1	0.00	0.25	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenelmis spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Tropisternus glober	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atherix sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.25	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chironominae spp.	Sta. 1	2.50	0.00	0.50	13.00	1.75	7.00	0.75	8.00	2.50	25.33	41.67	18.00	5.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	8.00	0.00	17.33	27.00	3.50	4.00	6.67	21.00	9.75	70.00	66.50	12.00	5.25
Ephydridae sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoredromia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.33
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	0.00	1.25	0.00	0.00
Naucoidae (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthocladiinae spp.	Sta. 1	2.25	1.00	0.50	2.00	0.00	2.00	0.00	2.50	0.25	8.33	3.33	0.00	18.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	1.33	0.00	0.67	1.33	2.00	0.00	47.50	10.50	0.00	7.00
Palpomyia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Simulium spp.	Sta. 1	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.33
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	12.00	94.00	38.00	200.50	19.00	14.33	47.50	137.00	147.50	133.50	0.00	4.25
Tabanus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Taxa	Year:	1976	1977	1978	1979	1981	1982	1983	1984	1986
Ancyronyx variegatus (A)		0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00
		0.25	-	-	-	-	1.00	0.00	1.00	0.00
		0.00	0.00	0.00	0.00	0.50	4.00	0.00	1.67	0.00
Berosus sp. (L)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Dineutus spp. (A)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dryopidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (L)		0.00	0.00	0.00	0.00	0.75	3.50	2.25	1.00	0.00
		0.00	-	-	-	-	2.25	6.50	2.50	0.00
		0.00	0.00	1.00	0.00	0.00	3.00	0.75	2.67	0.00
Dytiscidae spp. (A)		0.00	0.25	0.00	0.00	3.50	0.50	0.00	0.00	0.00
		0.25	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.50	0.00	1.33	3.50	0.00	0.00	0.00	0.00
Elmidae spp. (L)		0.00	0.00	0.00	0.00	0.00	0.00	3.50	0.00	1.00
		0.00	-	-	-	-	0.00	4.25	0.00	2.25
		0.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	5.67
Elmidae spp. (A)		0.00	0.25	0.00	0.00	0.00	0.50	1.00	1.00	0.00
		0.00	-	-	-	-	2.50	1.25	4.50	0.00
		0.00	1.25	0.00	0.67	0.00	5.67	0.50	8.00	0.00
Gyrinidae spp. (A)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gyrinidae spp. (L)		0.00	0.00	0.00	1.00	0.50	0.00	0.00	0.00	6.25
		0.00	-	-	-	-	0.00	0.00	0.00	5.00
		0.00	0.00	0.00	2.00	0.50	0.00	0.00	0.00	1.33
Haliplidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Heleidae sp. (L)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	1.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)		0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.25	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (L)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hoehrsychus glabratus (A)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
Stenelmis spp.		0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
		2.00	-	-	-	-	0.00	0.00	0.00	2.50
		9.25	0.00	0.00	2.33	0.75	0.00	0.00	0.00	1.33
Tropisternus glaber		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atherix sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chironominae spp.		87.50	19.75	38.75	24.50	32.00	13.00	62.25	7.75	93.00
		16.50	-	-	-	-	12.75	13.25	30.00	995.25
		43.25	10.75	10.00	9.00	17.00	14.00	11.50	43.00	42.00
Ephydridae sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eukrodrepsis sp.		0.00	1.00	6.75	0.00	0.25	2.25	2.00	2.00	3.00
		0.00	-	-	-	-	3.25	8.50	2.50	0.00
		0.25	0.00	0.50	0.00	0.25	0.00	0.75	1.33	0.00
Muscoidea (L)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthocladiinae spp.		12.50	6.50	5.25	9.25	13.75	8.75	15.50	8.25	68.00
		6.50	-	-	-	-	7.25	16.00	18.50	12.50
		18.50	6.75	5.00	1.67	3.25	7.33	11.00	27.33	4.00
Palpomyia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.25	0.00	2.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.33
Simulium spp.		7.00	0.00	0.00	0.00	0.00	0.25	6.00	0.25	3.00
		0.50	-	-	-	-	24.75	18.25	0.00	33.00
		0.00	6.50	0.00	2.67	0.50	18.67	0.00	5.67	6.67
Tabanus sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix C.

Taxa	Year:	1959	1961	1962	1963	1964	1966	1967	1969	1970	1971	1973	1974	1975
Tanypodinae spp.	Sta. 1	0.00	0.00	0.00	2.00	1.00	3.25	0.00	1.75	0.50	4.00	15.00	4.00	1.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.50	0.00	0.33	0.67	0.00	1.33	0.33	7.50	6.50	48.00	22.25	4.00	7.00
Tipula spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00
Baetidae spp.	Sta. 1	0.00	1.50	1.50	0.50	5.25	0.75	0.00	1.75	0.50	1.33	2.33	8.50	0.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	1.67	1.33	3.33	0.50	0.67	2.33	2.50	4.75	37.50	22.50	0.00	10.75
Caenis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
Callibaetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephemerella spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heptagenia spp.	Sta. 1	0.00	0.75	1.00	1.25	9.25	1.00	0.25	0.00	0.25	0.00	0.33	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.33	2.67	0.00	2.00	1.00	9.67	1.50	3.75	0.00	0.00	0.00	1.00
Isonychia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	2.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	52.00	21.33	84.50	49.33	36.00	33.00	387.75	625.00	832.25	0.00	51.00
Leptophlebia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paraleptophlebia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenacron spp.	Sta. 1	0.00	1.00	0.00	2.25	6.75	0.50	5.25	1.50	3.00	1.33	1.00	4.50	6.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	18.33	28.67	28.67	9.50	4.67	25.00	9.50	17.25	48.00	159.50	23.00	20.00
Tricorythodes spp.	Sta. 1	0.00	0.00	0.00	0.50	0.25	0.00	0.25	0.25	0.50	0.33	0.67	3.50	3.33
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.33	2.67	7.33	1.50	1.00	8.33	9.00	2.50	38.00	37.50	8.00	8.50
Belostoma flumineа	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pelocoris femoratus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trichocorixa calva	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaulioides sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	0.33
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corydalus cornutus	Sta. 1	0.00	0.25	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Nigronia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
Climacia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aeshnidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Argia spp.	Sta. 1	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	1.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	1.25	1.00	0.00	0.00
Hagenia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
Calopteryx spp.	Sta. 1	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coenagrionidae spp.	Sta. 1	0.25	0.00	0.50	0.00	0.00	0.00	0.50	0.00	0.00	0.33	0.33	0.00	1.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	2.50	3.75	0.00	1.50
Nagenius brevistylus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hetaerina sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Taxa	Year:	1976	1977	1978	1979	1981	1982	1983	1984	1985
Tanypodinae spp.		29.25	18.00	3.50	6.00	26.75	24.50	4.75	7.00	40.00
		4.50	-	-	-	-	13.25	6.75	4.00	101.50
		19.75	14.50	5.00	5.33	9.25	9.67	9.25	4.00	26.33
Tipula spp.		0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baetidae spp.		28.75	6.00	6.00	16.75	0.75	9.50	30.75	8.00	27.00
		11.50	-	-	-	-	19.50	23.00	20.50	28.00
		21.75	12.75	7.00	4.33	15.75	9.33	14.50	26.67	53.67
Caenis sp.		0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.25	0.00
		0.75	-	-	-	-	0.25	0.00	0.00	3.00
		1.50	0.00	0.00	1.67	1.00	0.00	3.25	0.00	4.33
Callibaetis sp.		0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sphaerolia spp.		0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heptagenia spp.		3.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
		0.75	-	-	-	-	2.75	0.00	0.00	0.00
		0.00	2.00	1.00	0.00	0.50	1.33	0.00	1.67	0.00
Isonychia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		19.00	-	-	-	-	0.25	0.00	2.50	0.00
		1.75	27.50	1.00	11.67	1.75	8.67	3.25	14.67	2.67
Leptophlebia spp.		0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paraleptophlebia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenacron spp.		15.25	13.00	7.00	24.25	1.00	4.75	22.25	5.25	4.00
		13.50	-	-	-	-	29.50	53.25	87.00	78.50
		22.50	23.25	13.00	75.00	19.75	54.00	44.50	58.67	48.67
Tricorythodes spp.		1.00	7.25	4.75	23.75	5.00	37.25	33.00	9.75	188.00
		4.25	-	-	-	-	15.75	36.00	9.00	83.50
		4.00	5.75	23.00	60.00	15.00	11.33	57.00	4.33	29.00
Baetisca flumina		0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.25	0.50	0.00	0.00
		0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	1.00
Pelocoris femoratus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	1.50	0.00	0.25
		0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.33
Trichocorixa calva		0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chauliodes sp.		0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.25	0.00	0.00	1.00
		0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00
Corydalus cornutus		0.25	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.25	-	-	-	-	0.25	5.75	3.00	2.75
		0.50	1.00	0.00	4.00	0.50	0.33	1.25	3.00	4.67
Nigronia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Climacia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acshnidae spp.		0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00
Argia spp.		0.25	0.00	0.25	0.25	0.00	0.00	0.00	0.00	1.00
		1.00	-	-	-	-	0.25	0.50	0.00	12.00
		0.25	1.25	1.00	0.00	0.75	0.33	1.50	0.00	2.33
Boperla sp.		0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
		0.25	-	-	-	-	0.25	0.00	0.00	0.25
		0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.67	0.00
Calopteryx spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Coenagrionidae spp.		3.25	2.00	1.00	0.50	0.75	1.00	1.00	0.00	1.00
		0.50	-	-	-	-	0.00	1.75	0.00	0.25
		0.75	3.50	0.00	0.67	1.25	0.67	0.00	1.00	1.00
Nagenius brevistylus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hetaerina sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix C.

Taxa	Year:	1949	1961	1962	1963	1964	1966	1967	1969	1970	1971	1973	1974	1975
Libellulidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macromia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neurocordulia molesta	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Odonata spp. (I)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acroneuria sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allocapnia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides (=*Isogenus*) sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isoperla sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoura sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.67	0.33	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
Perlesta placida	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perlidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pteronarcys sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00
Taeniopteryx spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydatophylax (=*Astenophylax*) sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceraclea spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cheumatopsyche spp.	Sta. 1	0.00	6.75	0.00	3.50	1.50	1.00	1.25	0.25	2.25	2.33	1.00	2.00	13.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	3.67	0.00	3.00	1.50	10.33	90.67	2.00	56.75	47.50	28.50	0.00	7.25
Chimarra spp.	Sta. 1	3.75	77.25	112.50	13.50	24.25	1.50	11.50	7.75	1.00	16.00	19.00	3.00	1.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	30.00	160.33	114.33	50.33	15.00	137.00	6.00	131.50	458.50	795.00	390.75	0.00	92.50
Hydropsyche spp.	Sta. 1	30.00	6.50	30.50	17.75	14.25	29.00	107.75	37.75	31.75	68.00	8.67	0.50	4.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	12.25	0.00	12.00	9.00	10.50	0.33	18.00	0.50	7.75	22.50	4.25	0.00	2.75
Hydropsychidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroptila sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.50	0.25	2.33	0.33	0.00	0.33
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	0.00	0.00	0.33	1.00	0.00	0.00	5.00	0.00	0.00	0.00
Lepidostoma sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macronema spp.	Sta. 1	6.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	31.00	63.33	3.67	0.00	29.67	68.00	3.00	28.50	47.50	50.00	0.00	3.50
Neotrichia spp.	Sta. 1	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.50	0.33
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.33	0.00	0.00	0.33	0.33	0.50	4.25	2.50	38.75	0.00	6.25
Nectopsyche spp.	Sta. 1	4.75	2.50	6.50	0.50	0.50	4.75	1.75	2.75	6.25	38.00	3.67	6.00	2.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.75	0.00	0.67	0.00	0.00	10.67	2.33	4.50	38.75	97.50	2.50	0.00	3.00

Appendix C.

Taxa	Year: 1976	1977	1978	1979	1981	1982	1983	1984	1985
Libellulidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00
	0.00	-	-	-	-	0.00	0.00	0.50	0.00
	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macrogia sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.33	0.25	0.00	0.00
Neurocordulia molesta	0.00	0.75	1.00	0.50	0.00	0.00	0.75	0.00	0.00
	0.00	-	-	-	-	0.00	1.00	1.50	0.00
	0.50	0.25	2.00	0.00	0.25	0.33	0.25	0.67	0.00
Odonata spp. (I)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.25
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
Acroneuria sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allocapnia sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides (=*Isogenus*) sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isoperla sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoura sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.33	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.33	0.00
Perlesta placida	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Perlidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pteronarcys sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Taeniopteryx spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydatophylax (=*Actinophylax*) sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceraclea spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00
Cheumatopsyche spp.	24.25	6.50	53.75	29.50	15.75	11.50	32.00	10.00	212.00
	3.25	-	-	-	-	7.50	48.75	79.50	106.00
	20.50	4.00	24.50	24.67	1.25	6.00	32.75	20.33	82.00
Chimarra spp.	51.50	28.00	3.25	2.75	0.25	4.25	73.00	2.25	17.00
	56.75	-	-	-	-	100.00	390.25	132.50	268.00
	101.00	80.75	10.50	124.33	42.50	188.00	237.00	141.67	844.67
Hydropsyche spp.	6.50	0.00	30.75	37.25	9.75	0.50	8.00	0.75	0.00
	1.00	-	-	-	-	4.25	5.25	11.00	0.00
	1.00	0.00	6.00	5.33	0.50	0.00	0.75	2.33	0.00
Hydropsychidae spp.	0.00	0.00	0.00	0.00	0.00	24.00	5.00	7.00	0.00
	0.00	-	-	-	-	5.25	4.25	16.50	0.00
	0.00	0.00	0.00	0.00	0.00	9.33	1.50	7.67	0.00
Hydroptila sp.	0.50	2.75	2.75	0.25	2.00	0.00	0.50	0.00	16.00
	0.25	-	-	-	-	0.00	0.00	0.00	4.75
	0.25	3.00	4.00	0.00	0.50	0.00	4.50	0.00	5.00
Lepidostoma sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neureclipsis spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1.00	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	2.50	6.00	12.33	0.00	0.00	3.25	0.00	0.00
Nectopsyche spp.	1.25	1.50	0.00	0.00	0.25	1.25	0.75	0.00	0.00
	2.50	-	-	-	-	2.00	6.75	1.00	5.25
	2.25	6.00	1.50	2.33	8.50	7.33	4.25	2.67	8.33
Neureclipsis spp.	7.50	18.75	4.25	5.00	15.75	1.75	4.00	0.00	25.00
	0.00	-	-	-	-	1.50	4.75	1.50	5.25
	13.75	0.00	6.50	4.00	5.75	4.33	6.50	0.00	4.33

Appendix C.

Taxa	Year:	1959	1961	1962	1963	1964	1966	1967	1969	1970	1971	1973
Oecetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.00	4.25	2.50	8.25
Oxyethira sp.	Sta. 1	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycentropus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pycnopsyche sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triaenodes spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Individuals	Sta. 1	48.50	103.50	155.00	58.25	68.00	52.00	135.25	65.00	49.50	171.33	102.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	58.00	252.33	427.00	201.00	343.00	274.67	300.67	283.00	1161.75	2087.50	1822.50
Filterers	Sta. 1	33.75	90.50	143.00	34.75	41.25	31.50	123.00	46.75	35.50	88.33	32.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	42.25	207.00	336.67	125.33	312.00	246.67	233.00	217.50	1054.25	1686.00	1444.25
Predators	Sta. 1	0.75	0.75	0.50	2.00	1.25	4.00	1.50	2.00	1.00	4.33	15.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.00	2.67	1.00	1.00	2.00	2.00	1.00	7.50	13.75	50.00	38.75
Gatherers	Sta. 1	6.75	9.75	4.50	7.50	23.25	4.75	7.25	6.00	5.00	15.00	8.33
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	3.75	42.67	72.00	47.67	25.50	11.67	56.33	32.00	41.00	147.50	230.50
Shredders	Sta. 1	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.33	0.00	0.00	0.33	0.33	0.50	4.25	2.50	40.00
Others	Sta. 1	7.25	2.50	7.00	13.50	2.25	11.75	3.50	11.25	8.00	63.67	46.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	10.00	0.00	18.00	27.00	3.50	15.00	10.00	25.50	48.50	172.50	69.00
Taxa Richness	Sta. 1	5.75	7.75	7.00	8.75	7.50	9.00	7.50	7.75	7.75	9.67	8.67
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	5.50	9.33	13.33	11.33	11.00	14.00	15.33	14.00	13.75	16.00	1 .75
Shannon-Wiener	Sta. 1	1.22	1.00	0.96	1.49	1.59	1.58	0.89	1.34	1.26	1.71	1.44
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.12	1.22	1.80	1.61	1.06	1.55	2.00	1.73	1.60	1.81	1.68
Evenness	Sta. 1	0.70	0.54	0.49	0.69	0.80	0.72	0.40	0.66	0.64	0.75	0.72
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.70	0.56	0.70	0.66	0.44	0.59	0.74	0.66	0.61	0.65	0.61
Biotic Index	Sta. 1	2.44	1.35	1.30	1.81	1.49	2.28	1.92	1.98	2.28	2.42	1.86
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.89	1.37	1.81	1.84	2.13	1.69	2.27	1.58	1.75	1.74	1.82

Appendix C.

Taxa	Year	1974	1975	1976	1977	1978	1979	1981	1982	1983	1984	1985
Cheumatopsyche spp.		1.00	0.33	0.00	1.50	0.00	0.00	0.25	3.75	4.00	0.00	4.00
		-	-	2.75					5.25	10.25	4.00	9.25
		0.00	2.75	0.00	0.50	5.00	1.67	1.25	4.00	7.25	1.33	8.33
Oxyethira sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycentropus sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pycnopsyche sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triaenodes spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	0.00	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Individuals		53.00	60.67	281.00	132.50	170.50	183.00	120.75	153.75	313.50	67.25	681.50
		-	-	155.75	-	-	-	-	262.00	603.75	434.00	1763.25
		53.00	205.50	272.75	215.25	134.00	359.33	152.75	388.00	460.75	383.67	1188.67
Filterers		5.50	19.00	89.25	34.50	87.75	69.50	25.75	40.50	124.00	20.25	232.00
		-	-	87.50	-	-	-	-	142.00	463.75	242.00	407.00
		0.00	121.25	124.25	121.25	48.00	181.00	46.50	230.67	278.50	192.33	936.00
Predators		5.00	5.33	33.50	22.25	12.50	9.00	33.50	35.75	15.00	6.75	55.25
		-	-	9.50	-	-	-	-	25.25	43.25	19.00	134.50
		8.00	15.00	22.50	22.50	15.00	16.33	18.00	18.67	22.50	17.00	46.00
Gatherers		17.00	28.67	61.25	33.00	24.50	74.75	30.50	61.50	107.00	32.50	260.25
		-	-	39.50	-	-	-	-	78.50	132.00	140.50	211.25
		33.00	54.75	66.50	51.75	49.00	145.67	56.50	93.00	132.75	128.67	147.00
Shredders		1.50	0.33	1.25	1.50	0.00	0.00	0.25	1.25	0.75	0.00	0.00
		-	-	2.50	-	-	-	-	2.00	6.75	1.00	5.25
		0.00	6.25	2.25	6.00	1.50	3.33	8.50	7.33	4.50	2.67	8.33
Others		24.00	7.33	95.75	41.25	45.75	29.75	49.75	14.75	66.75	7.75	134.00
		-	-	16.75	-	-	-	-	14.25	18.00	31.50	1005.25
		12.00	8.25	57.25	13.75	20.50	13.00	23.25	18.33	22.50	43.00	51.33
Taxa Richness		10.00	12.33	12.50	13.50	13.50	12.25	11.00	15.00	15.25	11.50	12.25
		-	-	14.75	-	-	-	-	17.50	18.75	18.00	17.75
		9.00	13.00	13.75	14.25	15.00	15.33	16.00	18.33	18.50	20.00	18.00
Shannon-Wiener		1.87	1.95	1.92	2.12	1.92	1.96	1.76	2.21	2.12	2.16	1.72
		-	-	2.06	-	-	-	-	2.20	1.84	2.05	1.61
		1.60	1.88	2.07	2.02	2.08	1.87	2.18	1.99	1.97	2.16	1.56
Evenness		0.81	0.78	0.76	0.82	0.74	0.78	0.74	0.82	0.78	0.89	0.69
		-	-	0.77	-	-	-	-	0.77	0.63	0.71	0.56
		0.73	0.77	0.80	0.77	0.88	0.70	0.79	0.69	0.69	0.72	0.53
Biotic Index		2.61	2.36	1.96	2.37	2.50	2.23	2.77	2.17	1.89	2.33	2.56
		-	-	1.60	-	-	-	-	1.66	1.52	1.88	1.98
		2.07	1.82	1.87	1.68	2.36	1.80	1.86	1.57	1.70	1.60	1.47

Appendix D. Average number of insects collected per trap per station on the Savannah River, winter 1959-1985. A) and L) designate adult and larva, respectively.

Appendix D.

Taxa	Year:	1959	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Ancyronyx variegatus (A)	Sta. 1	0.00	0.25	0.25	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.50	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Berosus sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dineutus spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dryopidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dytiscidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.50	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00
Elmidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Elmidae spp. (A)	Sta. 1	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.75	1.00	1.25	0.50	0.00	0.00	0.00	0.00	0.00	1.00	0.75	0.00	0.00
Gyrinidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.00	0.00	0.00	0.00	3.00	1.75	0.00	0.00	0.00	0.00	0.00	0.00
Gyrinidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haliplidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heleidae sp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrophilidae spp. (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macronemus glabratus (A)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenelmis spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tropisternus glaber	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Atherix sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chironomidae spp.	Sta. 1	2.25	0.00	0.00	0.00	1.67	1.00	2.00	0.00	0.25	0.00	0.33	0.00	14.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.25	0.00	0.00	1.50	0.00	1.50	0.00	0.00	5.50	17.67
Ephydridae sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoura sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Muscoidea (L)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Orthocladiinae spp.	Sta. 1	1.75	4.00	2.25	0.50	1.33	1.50	8.25	3.75	5.25	1.00	18.33	10.75	35.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.75	0.50	1.50	1.75	0.33	0.50	9.00	2.50	0.50	2.00	2.25	9.00	4.00
Palpomyia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Simulium spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.75	0.25	0.00	0.00	0.00	21.50	0.00	0.00	0.00	0.00	12.00	7.33

Taxa	Year: 1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Ancyronyx variegatus (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.25	0.25	0.00	0.50
	0.00	0.00	0.00	0.00	0.00	0.67	0.50	0.00	2.25	1.00	0.25	0.50	0.50
										0.00	0.00	0.00	1.00
Berosus sp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
										0.00	0.00	0.00	0.00
Dineutus spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.25	1.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.50	0.00	0.00
										0.00	1.00	0.00	0.00
Dryopidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Dytiscidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Dytiscidae spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00	0.00	0.25	0.00	0.00
	7.50	0.00	0.00	0.00	0.25	1.00	0.50	0.00	0.50	0.00	0.25	0.00	0.00
										0.00	0.00	0.00	0.00
Elmidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.25	0.00	1.75	0.00	0.00
										0.00	0.00	0.25	0.00
Elmidae spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00
	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.25	1.25	1.00	0.50	0.00
										0.00	1.00	1.00	0.00
Gyrinidae spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.67	0.00	0.33	0.00	0.00	0.00	1.50	0.50	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Gyrinidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Haliplidae spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Helodidae sp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Hydrophilidae spp. (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.50	0.25	0.00	0.75
										0.50	0.00	0.00	0.00
Hydrophilidae spp. (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.75	0.00	0.00
										0.50	0.00	0.00	0.50
Macronychus glabratus (A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.50
										0.00	0.00	0.00	0.00
Stenelmis spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.25
										0.00	0.00	0.00	0.00
Tropisternus glaber	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Atherix sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Chironominae spp.	9.50	3.33	1.50	2.00	8.00	50.00	44.00	24.75	379.00	22.25	19.00	97.50	80.75
	21.00	1.33	3.00	4.00	13.75	15.00	19.75	6.00	19.00	65.25	15.00	31.50	308.00
										19.25	13.50	50.00	114.00
Ephydridae sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Nanocladius sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	2.50	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Muscoidea (L)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Orthocladiinae spp.	7.00	60.33	8.00	4.00	2.33	11.00	30.25	46.25	212.00	7.25	6.25	39.50	141.00
	3.25	5.00	2.67	13.67	6.25	10.67	11.25	10.50	12.75	22.50	19.75	18.00	64.25
										9.75	11.50	19.25	34.00
Polypedilum spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
										0.00	0.00	0.00	0.00
Simulium spp.	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.75	4.00	3.75
	3.50	0.00	0.00	0.00	0.00	0.00	4.00	1.50	0.00	13.75	6.50	9.00	11.75
										1.50	3.00	11.50	5.50

Appendix D.

Taxa	Year:	1959	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Tabanus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
Tanypodinae spp.	Sta. 1	0.00	0.25	0.00	0.50	0.00	0.00	0.25	0.00	0.50	0.00	0.00	0.25	2.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.50	0.33	0.00	0.25	0.00	0.00	0.00	0.00	0.00	10.00
Tipula spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baetidae spp.	Sta. 1	0.00	2.00	9.50	0.75	3.00	4.00	0.00	0.00	0.25	0.00	0.00	0.50	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.00	4.00	10.00	9.75	3.67	20.50	7.50	4.50	1.50	2.00	2.00	2.50	1.00
Caenis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Callibaetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephemerella spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heptagenia spp.	Sta. 1	0.00	8.50	11.25	1.25	6.33	16.25	0.00	0.50	0.50	2.00	0.67	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	18.25	39.75	13.75	15.33	6.00	5.50	5.50	1.00	11.00	4.25	5.00	0.00
Isonychia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	1.50	1.00	1.00	0.50	14.00	0.00	0.00	2.50	13.00	1.67
Leptophlebia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paraleptophlebia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stenonema spp.	Sta. 1	0.00	4.25	2.00	0.25	4.67	2.25	0.00	0.50	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.00	8.00	19.00	11.25	11.67	1.50	2.50	5.50	1.00	5.00	5.50	14.00	16.67
Tricorythodes spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00
Selostoma fluvidae	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Peloscris femoratus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trichocorixa calva	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaulioides sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corydalus cornutus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nigronia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Climacia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aeshnidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Argia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Boyeria sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
Calopteryx spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coenagrionidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.25	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	2.67
Hagenius brevistylus	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix D.

Taxa	Year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Tabanus sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.25
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanypodinae spp.		2.00	1.33	0.50	1.00	4.33	6.00	1.75	0.00	11.00	1.50	1.75	8.00	4.50
		-	-	-	-	-	-	-	-	-	8.00	4.25	6.75	21.25
		9.50	1.00	0.67	1.67	4.00	4.67	2.75	0.25	7.00	5.50	2.25	9.75	23.50
Tipula spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Baetidae spp.		1.00	0.33	6.00	2.00	10.33	1.50	5.50	7.75	1.50	34.50	14.00	16.50	16.25
		-	-	-	-	-	-	-	-	-	40.75	18.00	9.75	38.50
		4.00	1.00	7.00	1.33	10.25	3.67	10.75	17.50	10.50	16.75	12.00	22.25	11.50
Cinnia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	1.25
		0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.75	0.50
Callibaetis sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ephemerella spp.		0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	4.50	0.00	4.50	3.00	0.75
		-	-	-	-	-	-	-	-	-	5.75	21.50	4.75	18.00
		0.75	0.00	4.33	38.00	21.50	45.33	44.50	18.00	8.75	5.50	24.50	6.50	10.00
Heptagenia spp.		0.00	0.00	0.00	0.00	0.00	0.00	2.25	0.00	1.50	0.00	0.00	0.00	2.00
		-	-	-	-	-	-	-	-	-	9.75	1.00	4.00	6.75
		2.75	5.00	1.00	0.67	4.25	2.33	5.50	6.75	0.00	6.50	3.00	1.75	7.50
Isonychia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.50	0.00
		7.00	3.67	0.00	0.00	0.25	0.00	1.00	0.00	0.00	0.25	1.50	0.25	1.50
Leptophlebia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	7.50	0.00	0.00	0.00	0.50	0.75	0.00
Paraleptophlebia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Stenonema spp.		1.50	1.67	0.00	3.50	0.67	0.00	0.50	0.75	0.50	0.25	4.25	14.50	10.00
		-	-	-	-	-	-	-	-	-	38.00	22.00	20.00	20.75
		0.50	10.67	0.00	38.33	7.75	13.33	28.50	10.25	27.25	24.25	23.25	38.50	10.00
Tricorythodes spp.		0.00	0.00	0.00	0.00	0.67	0.00	1.00	0.00	0.00	1.25	1.50	0.50	11.50
		-	-	-	-	-	-	-	-	-	3.50	0.00	1.25	0.25
		0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.25	0.00	0.00	0.00	1.50	3.00
Baetisca flumidea		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycelis fenestrata		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.50	0.50	0.25
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.00	0.00	0.00
Trichocorixa calva		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaetocladus sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.25	0.25	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Corydalus cornutus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.75	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00
Nigronia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Climacia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aeshnidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.25
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Argia spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.75
		-	-	-	-	-	-	-	-	-	0.00	1.50	0.00	3.00
		0.25	0.33	0.00	0.00	0.25	1.33	0.00	0.00	0.50	0.00	0.50	0.50	4.00
Sisyra sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.50	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.25	0.00
Coleotrya spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gomphoidae spp.		0.00	0.00	2.00	0.00	0.33	0.00	0.25	0.00	1.50	0.00	0.00	0.00	1.50
		-	-	-	-	-	-	-	-	-	0.25	0.00	0.75	2.50
		0.00	0.00	1.00	0.00	0.25	0.00	0.75	0.00	3.00	0.00	0.00	1.00	1.00
Dagosima brevistylus		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix D.

Taxa	Year	1959	1961	1963	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Helmerina sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tibellulidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Metromia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neurocordulia molesta	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Odonata spp. (1)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acroneuria sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allocapnia sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides sp. (=*Isogenus*)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isoperla sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nemoura sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.50	0.33	2.00	0.50	0.50	0.00	0.00	0.25	0.00	0.00
Perlesta placida	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
Perlidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pteronarcys sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paomeloreyx spp.	Sta. 1	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.25	1.00	0.33	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.75	0.00	0.25	0.75	2.00	1.50	1.50	4.00	13.00	180.00	24.50	3.00	37.33
Erdotophylax sp. (=*Antocophylax*)	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Corsicia spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cheumatopsyche spp.	Sta. 1	0.00	2.50	1.25	0.75	3.33	3.00	0.00	0.00	0.00	0.00	0.67	0.00	0.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.25	2.25	6.25	0.00	8.00	0.50	1.00	9.00	1.50	7.00	2.00	6.00	40.33
Chimarra spp.	Sta. 1	0.00	0.50	0.50	0.50	0.33	1.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	14.75	1.50	3.00	1.50	47.00	3.00	4.25	4.00	6.50	1.00	9.75	21.50	132.00
Hydropsyche spp.	Sta. 1	25.00	2.75	3.75	3.25	10.33	0.50	0.50	7.50	2.25	5.00	1.33	3.25	1.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	8.00	2.00	0.25	0.50	7.33	1.00	0.25	1.00	0.00	0.00	0.00	2.50	2.00
Hydropsychidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydroptila sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.50	0.25	0.00	0.50	0.50	1.00	0.00	0.00	0.25	0.00	0.33
Lepidostoma sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neureclipsis spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.25	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00
Nectopsyche spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.50	0.75	0.00	0.00	0.00	1.00	1.00	0.00	0.25	0.00	12.67

Appendix D.

Taxa	Year	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Ratsorina sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Libellulidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Macrosia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neureclipsis melaeta		0.00	0.00	0.50	0.00	0.33	0.00	0.00	0.00	0.50	0.00	0.25	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.75
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Odontia spp. (I)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.75	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00
Acroneuria sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.25	1.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Alloecapia sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.25	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isogenoides sp. (=*Isogenus*)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.25	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isoperla sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	2.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.50
Sweltsa sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paragnetina sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.25	0.00
		0.00	0.00	0.00	0.00	0.00	0.33	1.00	0.00	0.00	0.25	0.00	0.00	0.00
Perlesta placida		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.50	0.00	0.25	0.00
		0.50	2.33	0.00	1.33	0.00	0.00	1.00	0.00	0.50	1.75	0.00	0.00	0.00
Perlidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phasganophora sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.63
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	1.75	0.00
Taeniopteryx spp.		1.50	0.33	0.50	2.00	0.67	0.00	0.25	0.00	3.00	0.00	0.00	0.00	0.25
		-	-	-	-	-	-	-	-	-	7.50	0.00	0.50	1.25
		15.25	60.00	33.33	96.67	14.25	3.33	3.50	38.25	9.25	0.25	12.25	0.75	0.00
Hydatophylax sp. (=*Astenophylax*)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00
Cernotina spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ceratopsyche spp.		0.00	1.00	1.00	7.00	2.33	14.50	23.25	9.75	133.00	0.00	2.50	7.50	196.75
		-	-	-	-	-	-	-	-	-	30.00	66.50	4.50	37.50
		2.50	2.00	0.00	4.67	17.75	2.67	16.75	12.25	16.50	4.75	10.50	7.50	21.50
Chimarra spp.		0.00	0.00	0.00	1.50	0.00	0.00	0.25	0.00	0.00	0.00	3.25	1.50	0.00
		-	-	-	-	-	-	-	-	-	32.50	66.00	26.50	68.75
		0.50	1.00	2.00	0.33	32.50	0.00	72.00	7.00	4.00	7.50	17.50	72.50	120.50
Hydropsyche spp.		2.00	1.33	0.00	0.50	1.33	0.50	19.25	2.25	0.00	0.00	1.00	0.50	0.50
		-	-	-	-	-	-	-	-	-	2.00	2.00	0.00	0.75
		1.25	3.67	1.00	2.67	0.00	0.00	5.00	0.75	0.00	0.25	0.00	0.25	0.00
Hydropsychidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	50.00	0.00
		-	-	-	-	-	-	-	-	-	30.00	11.00	25.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.00	10.50	0.00
Hydroptila sp.		0.00	0.00	0.00	0.50	2.00	0.00	0.50	0.00	2.50	0.00	0.00	0.00	0.50
		-	-	-	-	-	-	-	-	-	1.00	0.00	0.00	1.25
		0.50	0.33	0.00	0.67	0.25	0.33	0.50	0.00	1.00	0.25	1.00	0.00	2.50
Lepidostoma sp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	1.25	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Limnephilidae spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rhyacophila spp.		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
		0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neotrichia spp.		0.00	0.67	0.00	0.50	0.00	0.00	0.25	0.00	0.00	0.00	0.75	0.50	0.75
		-	-	-	-	-	-	-	-	-	7.00	5.00	0.75	7.50
		11.75	4.33	0.33	10.67	0.75	7.67	7.75	0.25	14.00	2.00	13.50	3.25	13.50

Appendix D.

Taxa	Year:	1959	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Neureclipsis spp.	Sta. 1	1.75	0.00	0.75	0.75	0.00	1.75	1.00	0.75	0.25	0.00	0.33	0.25	2.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.25	0.00	1.00	7.40	3.00	7.50	1.00	2.25	10.00	23.00
Oecetis sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.25	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.25	0.00	4.67
Oxyethira sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycentropus sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Psychopsyche sp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triaenodes spp.	Sta. 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33
Total Individuals	Sta. 1	31.00	25.75	31.50	8.50	40.67	34.00	13.25	13.00	9.75	9.00	22.00	15.75	61.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	40.25	40.75	91.75	44.00	98.67	42.50	65.50	55.50	37.50	210.00	87.25	108.00	320.67
Filterers	Sta. 1	25.00	5.75	5.50	4.50	23.00	4.50	0.50	7.50	2.50	5.00	2.00	3.50	2.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	23.50	6.50	10.00	3.50	64.67	5.50	27.50	25.00	8.00	8.00	14.25	55.00	187.33
Predators	Sta. 1	0.00	0.25	0.00	0.50	0.00	2.50	1.25	0.00	0.50	0.00	0.00	0.50	4.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.25	2.00	0.25	1.00	1.00	5.00	2.50	0.50	2.00	0.00	0.75	0.50	19.33
Gatherers	Sta. 1	2.00	19.75	25.25	2.75	15.33	24.00	8.50	4.75	6.00	3.00	19.00	11.25	38.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	5.75	32.25	72.25	37.25	31.00	29.00	24.50	18.00	4.50	21.00	18.00	30.50	23.67
Shredders	Sta. 1	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.25	1.00	0.33	0.25	0.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	2.75	0.00	8.75	1.50	2.00	1.50	1.50	5.00	14.00	180.00	24.75	3.50	50.33
Others	Sta. 1	4.00	0.00	0.75	0.75	1.67	3.00	3.00	0.75	0.50	0.00	0.67	0.25	17.50
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	6.00	0.00	0.50	0.75	0.00	1.50	9.50	4.00	9.00	1.00	2.50	15.50	41.00
Taxa Richness	Sta. 1	4.00	6.75	6.75	6.00	6.67	7.50	4.50	2.75	3.00	4.00	4.00	3.50	8.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	8.00	8.50	9.00	9.00	8.67	10.00	11.50	11.00	9.00	9.00	9.50	12.50	16.33
Shannon-Wiener	Sta. 1	0.78	1.66	1.35	1.39	1.50	1.67	1.14	0.61	0.77	1.15	0.64	0.77	1.25
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.72	1.64	1.57	1.68	1.39	1.73	1.97	2.09	1.68	0.65	1.77	2.26	1.95
Evenness	Sta. 1	0.56	0.87	0.79	0.88	0.88	0.78	0.78	0.88	0.89	0.83	0.58	0.78	0.81
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	0.86	0.77	0.73	0.77	0.67	0.78	0.81	0.87	0.78	0.30	0.79	0.90	0.71
Biotic Index	Sta. 1	2.20	1.40	1.20	1.86	1.85	1.20	3.33	2.15	2.57	1.83	1.86	2.04	2.75
	Sta. 5	-	-	-	-	-	-	-	-	-	-	-	-	-
	Sta. 6	1.36	1.18	1.18	1.25	1.14	1.34	2.28	2.00	1.75	1.08	1.53	1.99	1.82

Appendix D.

Taxa	Year: 1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Neureclipsis spp.	0.50	0.67	0.00	1.00	1.00	0.00	4.50	1.25	42.00	1.75	0.75	1.00	7.75
	-	-	-	-	-	-	-	-	-	6.50	1.00	0.50	6.00
	1.00	1.00	0.00	0.00	0.00	1.00	0.75	0.25	2.75	1.25	0.50	0.50	8.50
Oecetis sp.	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	1.50	0.00	0.25	0.00	0.50
	-	-	-	-	-	-	-	-	-	2.75	1.00	0.00	2.00
	0.75	0.67	0.67	0.00	0.00	0.67	0.75	1.25	1.00	0.50	2.25	0.00	1.50
Oxyethira sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Polycentropus sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.25	0.00
	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pycnopsyche sp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.00
	0.00	0.00	0.33	0.00	0.00	0.00	1.00	0.00	1.25	0.00	0.00	0.00	0.00
Triaenodes spp.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-	-	-	-	-	-	-	-	-	0.00	0.00	0.00	0.25
	0.25	0.00	0.00	0.00	0.00	0.67	0.00	0.25	0.00	0.00	0.00	0.00	0.00
Total Individuals	25.00	70.00	20.00	35.00	34.67	91.50	145.50	94.00	704.00	87.50	81.00	262.50	497.50
	-	-	-	-	-	-	-	-	-	330.50	263.00	184.50	629.50
	107.50	99.00	60.33	231.33	139.25	117.33	252.25	147.25	150.25	114.75	178.00	273.75	489.40
Filterers	2.00	2.33	1.00	18.50	3.67	23.00	42.75	12.50	133.00	13.00	13.00	81.50	209.00
	-	-	-	-	-	-	-	-	-	108.25	131.00	73.50	109.00
	21.75	10.33	3.00	16.67	50.75	3.67	58.75	21.50	20.00	20.25	52.50	103.50	155.00
Predators	2.00	1.33	3.00	1.00	5.33	6.00	2.75	0.75	17.00	2.00	16.75	8.00	7.50
	-	-	-	-	-	-	-	-	-	20.25	10.25	10.00	32.25
	18.75	5.00	2.33	3.67	5.50	9.00	7.50	3.00	14.25	6.75	6.75	13.50	31.40
Gatherers	9.50	62.33	14.00	9.50	14.00	12.50	50.50	54.75	227.50	48.50	39.75	74.00	191.00
	-	-	-	-	-	-	-	-	-	123.50	93.50	67.75	184.00
	17.25	26.67	22.00	91.00	50.00	76.67	112.75	72.25	68.75	67.75	75.75	92.50	94.00
Shredders	1.50	1.00	0.50	2.50	0.67	0.00	0.50	0.00	3.00	0.00	0.75	0.50	1.00
	-	-	-	-	-	-	-	-	-	14.75	12.25	1.25	9.00
	27.25	54.33	36.00	116.33	20.00	11.67	12.25	44.25	24.50	7.25	28.00	13.75	13.50
Others	10.00	3.00	1.50	3.50	11.00	50.00	48.00	26.00	323.50	24.00	19.75	98.50	89.00
	-	-	-	-	-	-	-	-	-	72.75	16.00	32.00	318.25
	22.50	2.67	3.00	4.67	13.00	16.33	21.00	6.25	22.75	20.75	18.00	50.50	135.50
Taxa Richness	6.50	7.33	4.00	9.00	9.67	6.00	10.50	6.50	13.00	8.75	9.75	12.00	13.75
	-	-	-	-	-	-	-	-	-	19.50	18.50	14.25	21.50
	12.50	13.67	11.33	12.33	11.75	14.33	19.25	14.75	17.50	17.00	16.00	17.75	21.50
Shannon-Wiener	1.41	0.89	0.70	1.55	1.97	1.33	1.82	1.25	1.56	1.64	1.73	1.73	1.54
	-	-	-	-	-	-	-	-	-	2.42	2.33	2.18	1.74
	1.83	1.78	1.89	1.69	2.00	1.98	2.15	2.18	2.46	2.46	2.43	2.24	2.11
Evenness	0.83	0.43	0.73	0.84	0.87	0.74	0.78	0.67	0.63	0.76	0.76	0.69	0.62
	-	-	-	-	-	-	-	-	-	0.83	0.80	0.82	0.57
	0.72	0.68	0.80	0.87	0.81	0.75	0.73	0.81	0.86	0.84	0.87	0.79	0.69
Biotic Index	1.50	2.43	2.13	2.21	2.81	2.82	2.27	2.82	3.08	2.69	1.95	2.21	2.74
	-	-	-	-	-	-	-	-	-	1.90	1.74	1.84	1.75
	1.58	1.41	1.19	1.28	1.79	1.39	1.45	1.41	1.84	1.72	1.60	1.51	1.52

DATE
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