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Benthic Macroinvertebrate Population Distributions in Relation to the C. P. Crane Power Plant Thermal Discharge
Final Report

by

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For

State of Maryland
Department of Natural Resources

and

Power Plant Siting Program

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Abstract

Benthic macroinvertebrates (0.5 mm sieve) were sampled quarterly during the period June 1979-April 1980 in the oligohaline habitat in the vicinity of the C. P. Crane Generating Station, and in three reference areas in tributaries of Chesapeake Bay. Communities were distinguished according to sediment type (sand vs mud groups) and water depth (creek vs river-bay assemblages).

The mud community in the immediate power plant discharge zone exhibited late summer depressions of numbers of species, species diversity, and species richness. On the species level five types of responses to the discharge were suggested by spatial and temporal distributions: (1) mitigation of a winter population reduction (*Rangia cuneata* in sand areas near the plant); (2) acceleration of growth or development (increase in *R. cuneata* shell size with increasing proximity to the plant; accelerated spring population buildups of *Scolecolepides viridis*, *Leptocheirus plumulosus*, *Tanytarsus* sp., and Tubificidae near the discharge); (3) transport from the intake to the discharge waters of individuals entrained in the cooling water (*S. viridis* in April and *Coelotanypus* sp. in September); (4) extension of range (presence of creek dipterans at river stations downstream from the discharge); (5) intensification of summer population declines near the discharge (*S. viridis*, *L. plumulosus*, *Xenochironomus* sp., *Polypedilum* sp.). Affected species exhibited widened or narrowed annual ranges of population density, relative to populations in oligohaline reference areas.

The power plant cooling water maintains elevated salinity as well as temperature in the discharge zone. In the absence of the salinity effect the benthos would probably resemble the community in

the near-freshwater reference area, with a predominance of chironomid species and wide year-to-year fluctuations in abundance of oligohaline estuarine species. Thus, although the power plant discharge may reduce the seasonal stability of certain invertebrate populations, due mainly to thermal effects, it may at the same time enhance the year-to-year stability of the community by preserving the oligohaline salinity regime.

CONTENTS

List of Tables

List of Figures

List of Figures (continued).

List of Figures (continued).

List of Figures (continued).

Acknowledgments

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Introduction

This report presents the results of a one year (April 1979-April 1980) study of the benthic macroinvertebrate community in the vicinity of the C. P. Crane Generating Station. The study was sponsored by the Maryland Power Plant Siting Program, and was prompted by the results of a physical investigation (Binkerd *et al.* 1978) that indicated that the hydrographic conditions in the waters receiving the plant's thermal discharge did not comply with State of Maryland water use regulations.

The C. P. Crane Generating Station is located between two tidal creeks that are adjacent to the Gunpowder River, a tributary of upper Chesapeake Bay (Fig. 1). The water in this section of the bay and its tributaries is oligohaline to fresh, and originates mostly in the Susquehanna River drainage basin. The power plant cooling water is pumped at a rate of approximately 650 ft^3 (18.4 m^3) per second from Seneca Creek and is discharged into Saltpeter Creek. On flood tide some of the cooling water mixes with the tidal flow that enters Dundee Creek, therefore this creek as well as Saltpeter Creek is considered part of the discharge area. A small portion of the discharged cooling water is recirculated to the intake, via Seneca Creek, and another portion enters Seneca Creek directly through a hole in the discharge canal wall (Binkerd *et al.* 1978, Ecological Analysts Inc. 1979). This hole is maintained intentionally to prevent winter ice from blocking docks used by barges which deliver the oil used to power the plant's generators. The power plant is operated at full capacity (approximately 400 megawatts) only during the day, and is cut back to a lower level during the night. Power production on weekends is lower than on weekdays.

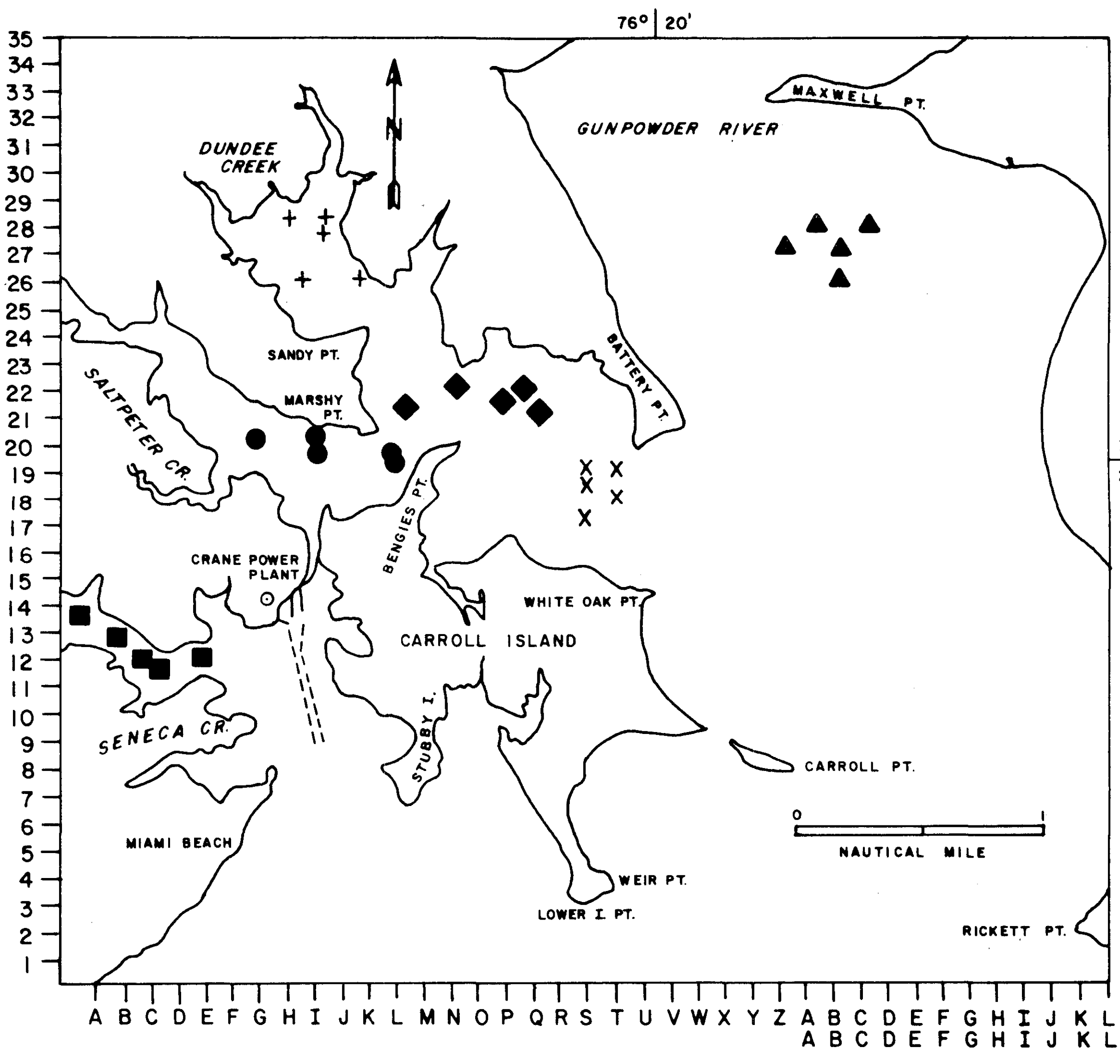

Fig. 1 Final station locations August 16-19, 1978

- ● Stratum I
- ◆ Stratum II
- X Stratum III
- \+ Stratum IV
- ■ Stratum V
- ▲ Stratum VI

The intake and discharge area creeks are shallow, with depths of 1-2 meters in most sections. The Gunpowder River is only slightly deeper, except in channel areas downstream from the mouth of Saltpeter Creek. The power plant discharge exerts a strong influence on the hydrographic regime of Saltpeter and Dundee Creeks and modifications of the habitat in this system are caused by the consequent increase in flow, increase in salinity, elevation of temperature, and increase in diel and seasonal temperature ranges.

A preliminary survey of the mud-dwelling benthic macro-invertebrate community, conducted in July and August 1978 at the C. P. Crane site (Jordan et al. 1979), revealed distributions that appeared to be related to the cooling water discharged by the plant. The largest adults of the brackish water clam, Rangia cuneata, were collected in upper Saltpeter Creek (stratum I, Fig. 1), the body of water that directly receives the thermal effluent.

The greatest population densities of juvenile clams were found in stratum II, downstream from the discharge but under the immediate influence of the plume. Very few adult clams appeared in the samples taken in two reference areas (strata V and VI, Fig. 1). These results led to the speculation that the heating effect of the plant may be favorable to the survival of this species, which is known to be cold sensitive in the Chesapeake Bay latitudes, and that the population of adults in the receiving water creek system (Saltpeter and Dundee Creeks and the lower Gunpowder River, Fig. 1) may be dependent on the Crane plant.

The population densities of other invertebrates differed between the discharge creeks and the reference sites. The dominant amphipod, Leptocheirus plumulosus, appeared to decline more markedly between July and August sampling periods in the discharge area, while an isopod, _Cyathura polita_, and a polychaete, _Scolecolepides viridis_, were more abundant near the discharge than in reference stratum V (Fig. 1).

The results of the physical study by Binkerd _et al_. (1978) indicated that the reference strata, V and VI (Fig. 1), may not have been totally independent of the influence of the plant. A further limitation of the 1978 benthos study was that it investigated only the community living in mud sediments. Mud is the prevailing sediment type present in the discharge area creeks, but the sediments at the immediate discharge canal mouth are sandy, and consequently would be expected to accommodate a fauna differing in composition, and potentially in its response to the thermal effluent, from the mud-dwelling fauna.

Upon consideration of the preliminary indications of a power plant effect, of the uncertainties regarding the 1978 reference sites, and of the limited scope of the preliminary sampling design, an expanded study was proposed for 1979. The overall objective was to evaluate the plant effect in the context of the natural seasonal cycles of the resident invertebrate species and in relation to population patterns observed in a set of reference areas adequately removed from the thermal plume. The study design consisted of the following elements:

1. An exploratory sampling run, conducted in April. Potential reference sites at locations beyond any possible influence of the Crane plant were evaluated, and three were selected for quantitative sampling of the mud community. Sand sampling sites were also located. An effort to locate additional population centers of _Rangia cuneata_ in nearby areas of Chesapeake Bay and its tributaries was begun.

2. A series of four quantitative sampling runs, scheduled for June, September, and November 1979, and April 1980. The June sampling run was intended to assess the invertebrate community following the spring-early summer recruitment period for species such as *Rangia cuneata*, *Scolecolepides viridis*, and *Leptocheirus plumulosus*, and prior to the summer period of maximum water temperatures. The September run was to follow the temperature maximum and to document the late summer population depressions exhibited by a number of species. The purpose of the November sampling was to determine population levels prior to the winter minimum temperature period, while the April run was scheduled to follow the temperature minimum and document the spring recruitment period. Sampling was conducted in mud and sand sediments in the power plant area and at selected reference sites, and at *Rangia cuneata* population centers within and outside the influence of the Crane plant.

3. A characterization of the benthic macroinvertebrate community in the vicinity of Weir Point (Fig. 1), a potential alternative discharge site.

Comparisons of the Crane area and reference area results, within and among the sampling runs, were performed to detect possible power plant effects on the community level, as reflected in station clustering relationships, in numbers of species and individuals, and in indices of species diversity and richness. On the species level emphasis was given to distributions that suggested selective population reduction in or elimination from the discharge area, or alteration of growth or life cycle patterns.

Additional studies, sponsored by PPSP, conducted concurrently at the C. P. Crane site included investigations of the zooplankton populations (Grant *et al*. 1980), of the submerged aquatic vegetation and associated fauna (Nichols et al. 1979), and of the nekton (Texas Instruments, Inc. 1979). Another comprehensive study that included plankton, benthos, nekton, and physical sections (Ecological Analysts 1980) was sponsored by Baltimore Gas and Electric Company, the operators of the plant. Previous benthos studies in the upper Chesapeake Bay area included a spring-summer 1972 effort in lower Seneca Creek (Pearson and Bender 1976), a 1972 sampling program in the Bush and Gunpowder Rivers (Johns Hopkins University 1973), and a 1970 study comparing the faunas in the Patapsco and Chester Rivers (Pfitzenmeyer 1971).

Methods

Station Selection

All station locations are expressed in terms of coordinates obtained from a 0.1 nautical mile grid superimposed over a chart of the study area. For the April 1979 study, potential reference areas were selected from navigation charts, with primary attention given to coves and tributary creeks of the Bush, Middle, and Back Rivers (Fig. 2). Mud sampling stations were determined on the basis of navigation chart depth values. Sand sites were selected in the field, adjacent to sand beaches. The exploration for *R. cuneata* beds was conducted in the main stems of the rivers. Preliminary samples at Weir Point were taken along a depth gradient in order to cover sediment types ranging from sand to mud. Representative stations in the Crane area were sampled for comparison with the reference and Weir Point samples.

For the quarterly studies, stations were selected randomly within pre-selected sampling areas. In the vicinity of the Crane plant the sampling areas included upper Saltpeter Creek (immediate discharge zone, low water retention time), Dundee Creek (discharge zone, greater retention time), lower Saltpeter Creek (lower discharge zone, mixing of discharge water with Gunpowder River water), and areas in the Gunpowder River downstream from the mouth of Saltpeter Creek. Exploration for *R. cuneata* beds was extended into Chesapeake Bay proper. Sampling at Weir Point was conducted in sand, mud, and two intermediate sediment types.

Invertebrate Community Sampling

A .05 m^2 Ponar grab (Wildco model 1725) was used to obtain substrate samples. This device functions in sediments ranging in coarseness from silt-clay to sand, and samples as deep as 12 cm in soft

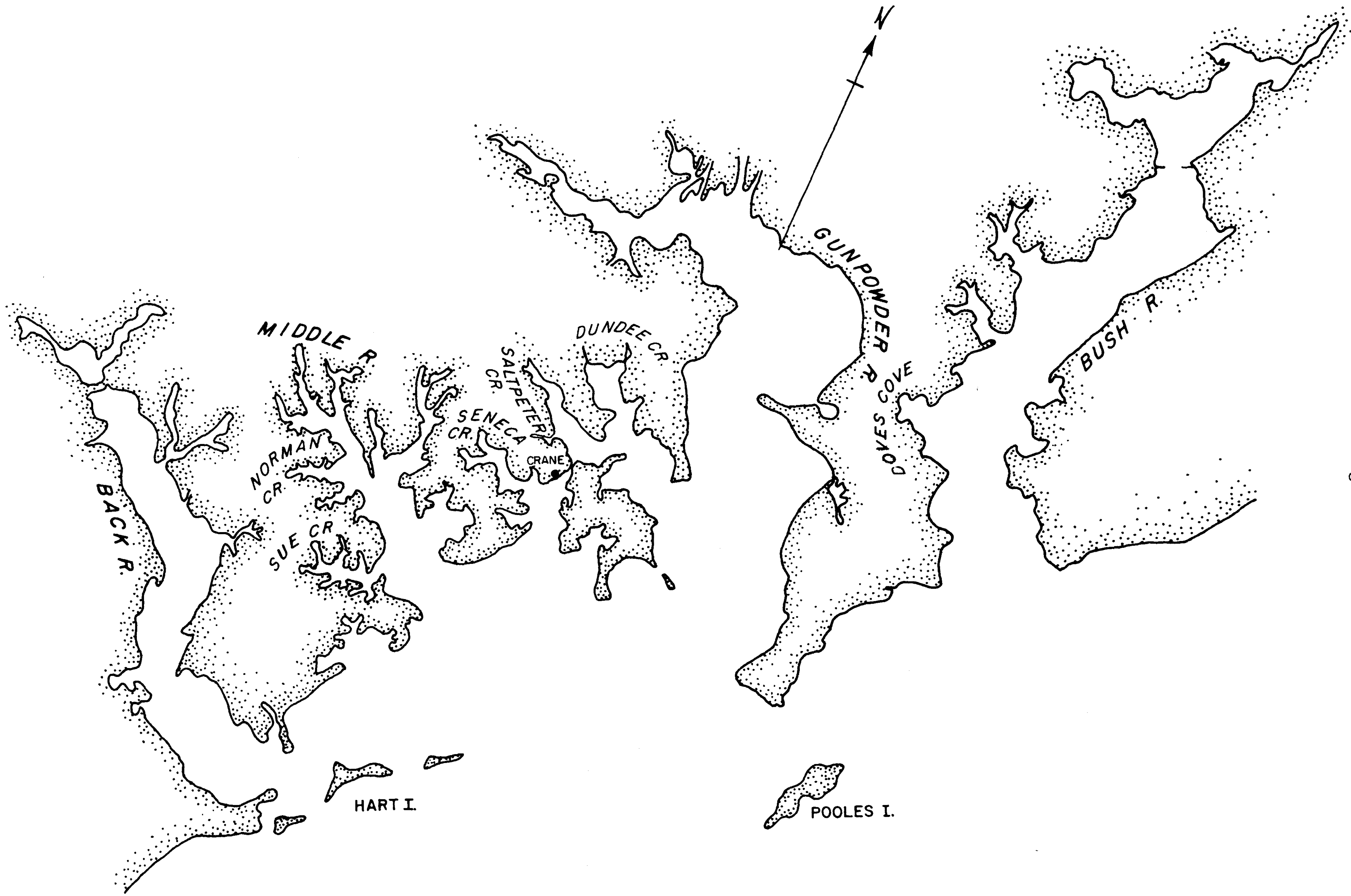

Figure 2. 1979 Benthos Study Area

sediments, greater than the normal burrowing depth documented for the species occurring in the area. During the four quantitative sampling runs, three samples were taken at each of five stations in each creek mud sampling zone, resulting in a total sampling area of .15 m^2 per station and .75 m^2 per area. This sampling intensity was based on analyses of the data from the August 1978 benthos study, in which 1.0 m^2 (four grabs per station) was sampled in each area. Plots of numbers of species obtained vs cumulative area sampled showed that, averaged over six strata, 90% of the species encountered in 1.0 m^2 were obtained in the combined samples from 80% of the total sample area.

Three grabs were taken at each sand station. The results of the April 1979 sampling in the sand area in the vicinity of the C. P. Crane discharge indicated that numbers of species and population densities derived from three combined samples were essentially stable with the incorporation of data from a fourth and a fifth sample. Three stations were sampled in each sand area, resulting in an overall sampling intensity of .45 m^2 per area.

Each sample was washed through a 0.5 mm mesh sieve, and the material retained was fixed in a formalin solution containing the stain Phloxine B. The 0.5 mm screen effectively retained adults of most species groups except nematodes and Orthocladiinae (dipterans, whose fourth instar larvae may pass through a .25 mm screen, Moore 1980). Under dissecting microscopes (Olympus model SZIII) the organisms were separated from debris and were placed in 70% ethanol for preservation. Identifications and counts were performed at magnifications of 7X-80X. Specimens of dipteran larvae were mounted in Hoyer's medium and identified under a compound microscope at 150-645X. Information sources used in invertebrate identification are listed in Appendix F.

Rangia Sampling

It was known from the 1978 study that too few adult *Rangia cuneata* were obtained in the combined Ponar grab samples from an area to provide an adequate representation of the adult size frequency distribution. To accomplish this, sampling of *R. cuneata* beds was performed by towing a scaled-down oyster dredge through the surface layer of the sediment. The dredge was 55 cm wide, was equipped with teeth 12 cm long, and with a 1 cm diagonal mesh bag. Each tow was conducted for approximately three minutes. Sediment was washed out of the sample by towing the dredge through the water, and live clams were sorted from the washed material and stored on ice. Shell lengths were measured to the nearest 0.1 mm.

Sediment Composition

A sediment core was taken at each station sampled with the Ponar grab, and at the site of each clam bed detected using the dredge. The cores were obtained with a K. B.® type heavy duty corer equipped with a 20 inch (50.8 cm) long, 2 inch (5.08 cm) inside diameter core tube (Wildco model 2400). The top 15 cm segment of each core was extruded into a plastic bag and stored on ice.

For sediment characterization, the contents of each bag were homogenized, and approximately 10 g of the wet homogenate were weighed into a tared crucible for determination of organic content by loss on ignition (American Public Health Association 1965). Ignition was performed for one hour at 500°C. Two additional aliquots of each of 35 April samples were wet screened through a 63 micron pore size sieve for separation of the sand and silt-clay fractions. One aliquot was used to determine the relative oven dry weights (105°C) of these fractions. The sand fraction of the final aliquot was dried, and its particle size distribution was obtained using the VIMS Rapid Sand

Analyzer (Zeigler _et al_. 1960). The particle size distribution of the silt-clay fraction was obtained using a Coulter Counter model TA® (Coulter Electronics, Inc.). The fine and coarse particle size distributions were combined graphically, and from the graphs the sand, silt, and clay percentages for each benthos station were obtained.

Physicochemical Parameters

The parameters evaluated at the biological sampling stations included water depth (sounding line), Secchi Disk transparency, water temperature (Hydrolab model RT-125 research thermometer, L5-A50 thermistor), salinity (Beckman model RS-7B salinometer), and dissolved oxygen (Winkler method).

Data Analysis

The invertebrate community composition was compared among stations using cluster analyses employing the Bray-Curtis quantitative similarity coefficient:

$$S_{jk} = \frac{2 \sum_i \min (X_{ij}, X_{ik})}{\sum_i (X_{ij} + X_{ik})}, \text{ where}$$

i = a given species,

j,k = two samples being compared.

The data analyzed were log (X+1) transformed numbers of individuals per 0.1 m^2 of sediment surface for each station. For this report, nematodes were excluded from the analyses, since they were too small to be effectively retained by the 0.5 mm mesh sieve. The clustering method was combinatorial, agglomerative, hierarchical, polythetic, and flexible, with β set at - 0.25 (Boesch 1977). Normal (station clustering) and inverse (species clustering) analyses were performed, and the resulting interrelationships are summarized in dendrograms. Nodal analyses (Boesch 1977) were performed to examine the interrelationships between the station and species clusters, and the degree of relationship was expressed in terms of a fidelity index:

$$F_{ij} = (a_{ij} \sum_i n_j)/(n_j \sum_j a_{ij}), \text{ where}$$

a_{ij} = actual number of occurrences of species group i in sample group j

n_i, n_j = the numbers of entities in the respective species and sample groups

Indices of community structure that were calculated included the Shannon diversity index:

$$H' = \sum_{i=1}^{S} \left(\frac{N_i}{N}\right) \log_2 \left(\frac{N_i}{N}\right), \text{ and}$$

species richness:

$$d = \frac{S-1}{\ln N}, \text{ where}$$

S = number of species in sample

N = number of individuals in sample

N_i = number of individuals in the i^{th} species (Margalef 1958, Pielou 1975).

Population densities of individual species in the Crane area and reference site communities were compared using one way analysis of variance, and significant differences among sampling areas (.05 level) were identified using the Student-Newman-Keuls' test (Steel and Torrie 1960). Log or square root transformations were performed when necessary to normalize the data prior to analysis.

Sampling Designs

April 1979 (Exploratory Survey)

Crane Area

The April sampling station locations in the Crane area are shown in Figure 3. One Ponar grab sample was taken at each station except for stations L2-58.5 and N4-40, at which five grabs were taken. Stations L3-67 (Dundee Creek), L3-60 (upper Saltpeter Creek), N2-60 (lower Saltpeter Creek), and N4-38 (Weir Point) were in mud sediments. Stations L2-58.5 (discharge canal mouth), L5-65 (Sandy Point), N4-42 (Weir Point), and K5-43 (Miami Beach) had sandy sediments. The sediment at station N4-40 (Weir Point) was sandy mud. One *Rangia cuneata* dredge tow was taken at each of the three discharge creek mud stations.

Potential Reference Areas

Dredge sampling for *R. cuneata* was performed at ten stations in the Bush River (Figure 4). Potential reference sites were sampled in Doves Cove, Redman Cove, and Towner Cove, one Ponar grab per station. Sand stations were sampled in Doves Cove (S4-80) and Towner Cove (V4-82).

In the Middle River (Figure 5) nine dredge tows were taken. Reference areas evaluated were Norman Creek, Sue Creek, Galloway Creek, and Browns Creek which actually opens into Hawk Cove of Chesapeake Bay. One grab was taken per station. Sand stations were located in Norman Creek (F2-40) and Sue Creek (H2-31).

Sampling of the Back River (Figure 5) included eight dredge tows, and reference sites at Rocky Point, Todd Point, Walnut Point, and Cox Point (one grab per station). Stations D3-31 and B3-35 had sandy sediments.

June 1979 (First Quantitative Survey)

Based on the results of the April sediment and invertebrate surveys, reference areas in Sue and Norman Creeks and in Doves Cove were selected for sampling in parallel with areas in Saltpeter and

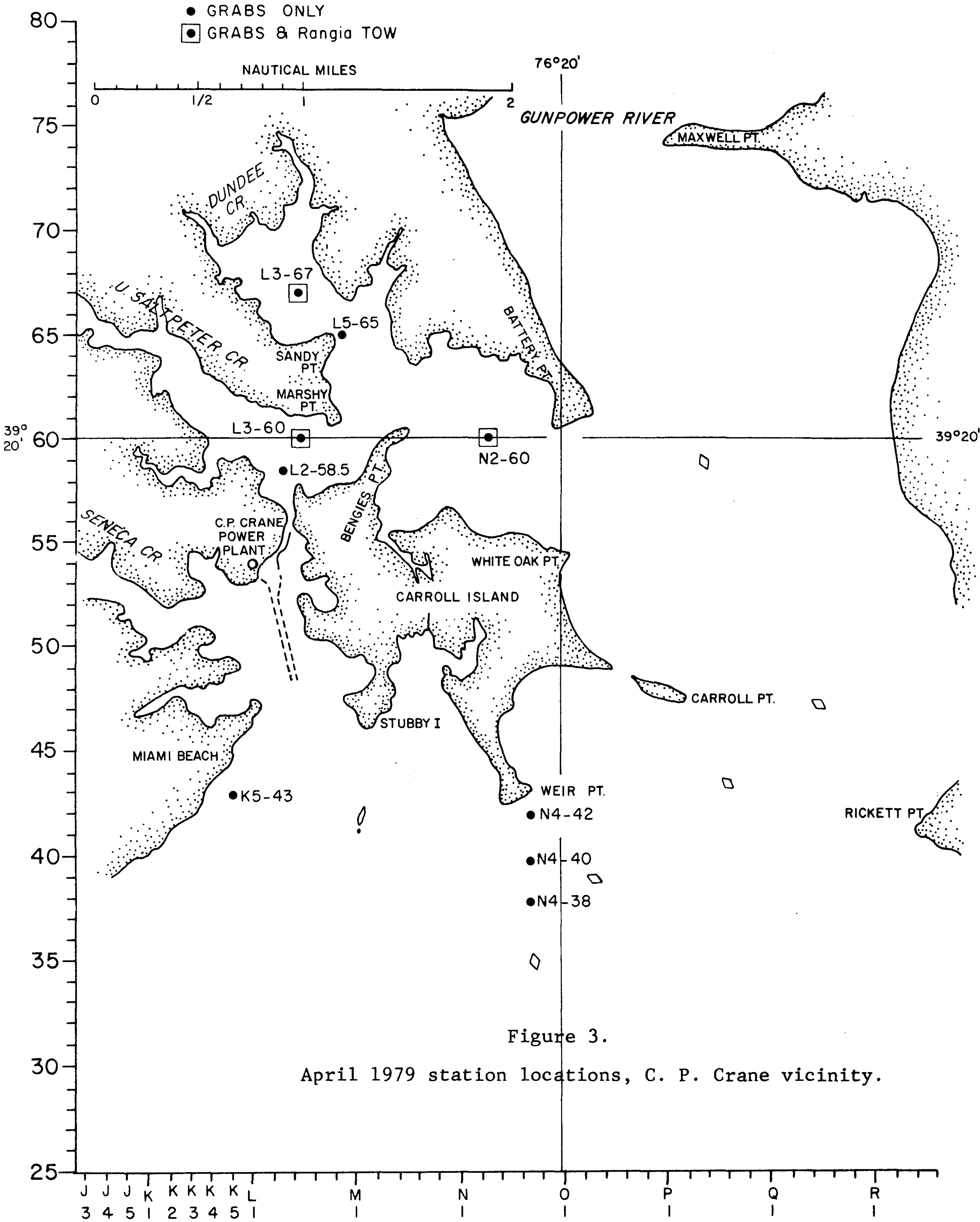

Figure 3.

April 1979 station locations, C. P. Crane vicinity.

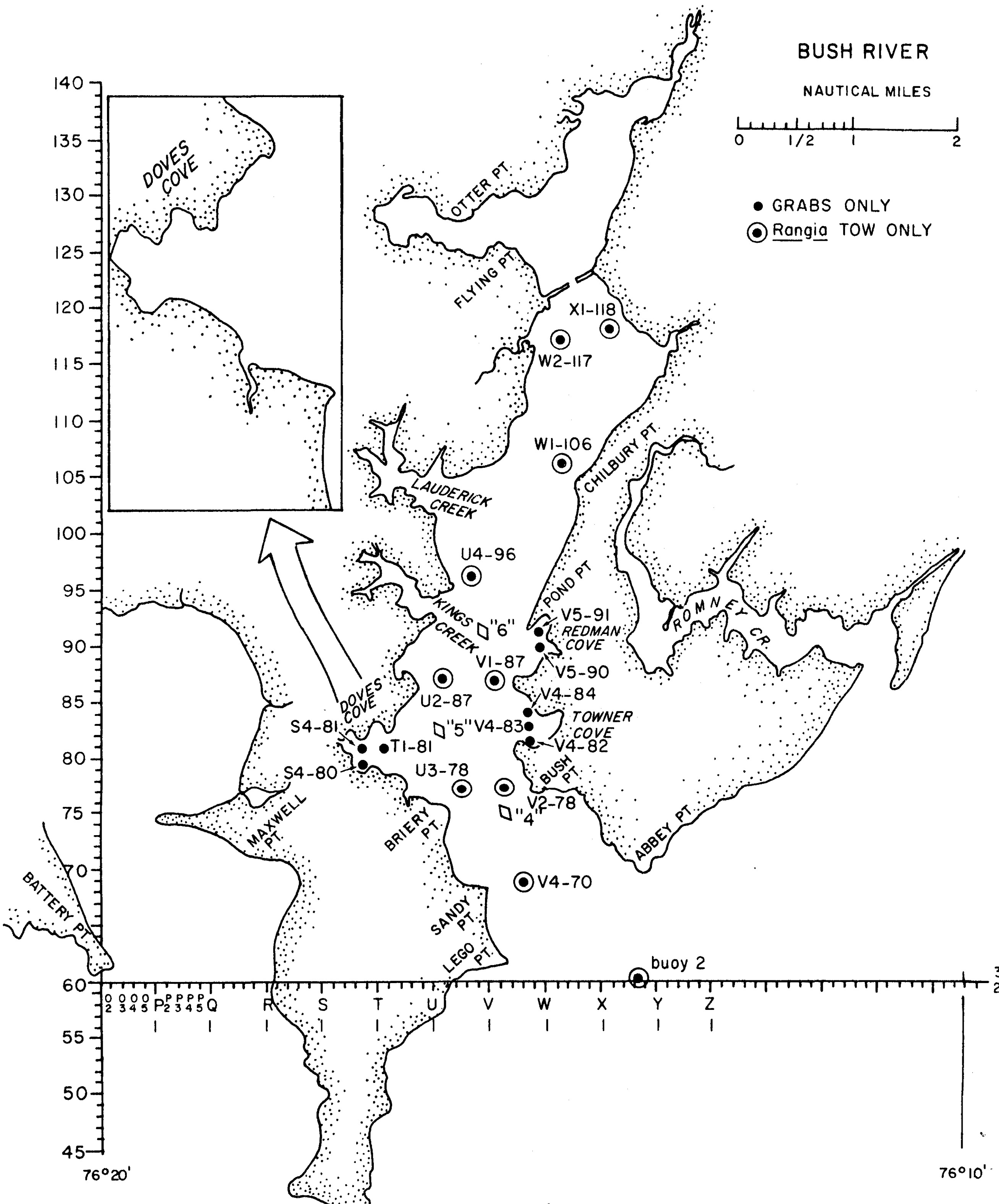

Figure 4

April 1979 station locations, Bush R.

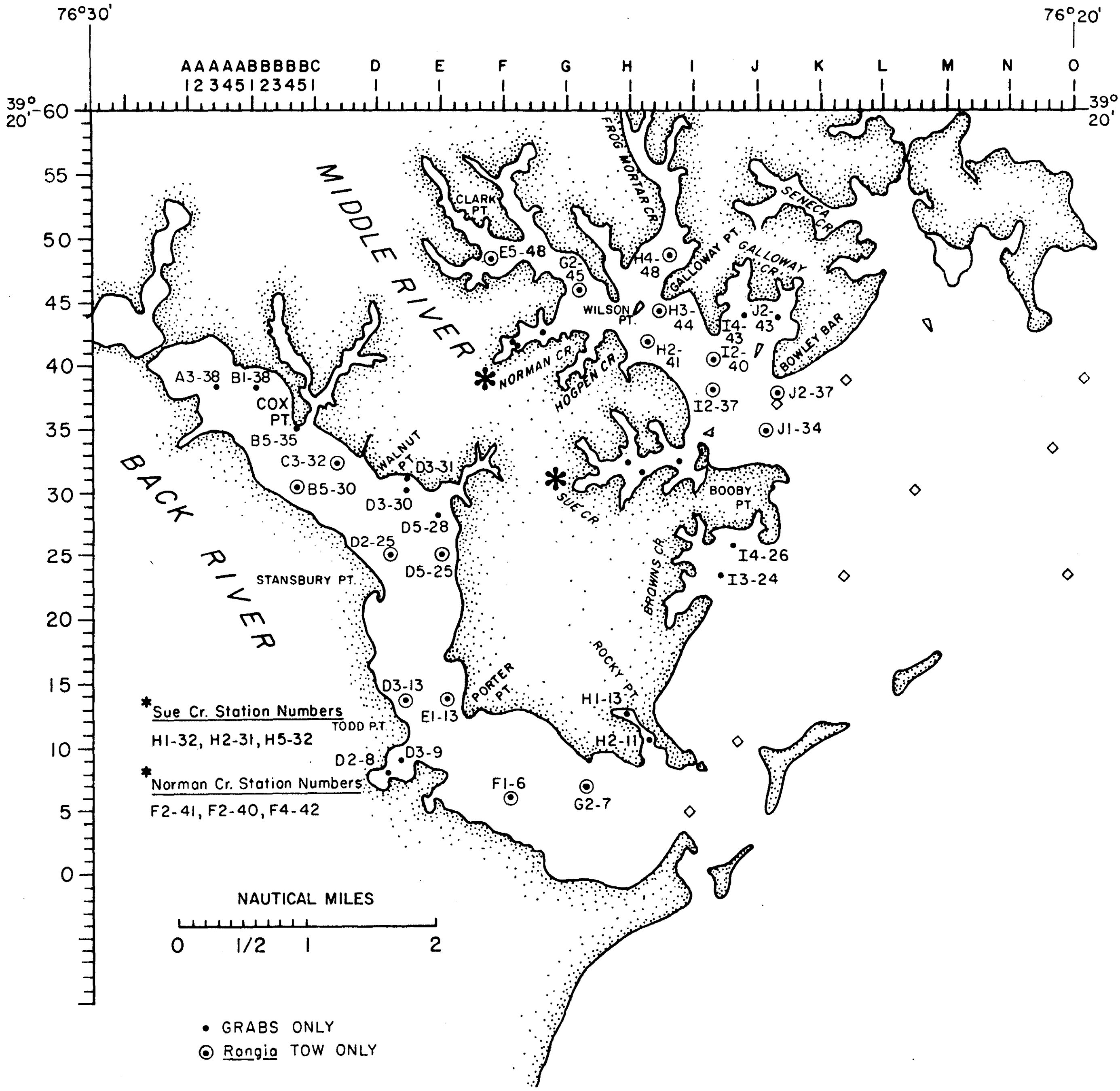

Figure 5.

April 1979 station locations, Middle R. and Back R.

Dundee Creeks (Figures 6-8). Three Ponar grab samples were taken at each station and Rangia tows were performed at selected stations. Five mud stations were sampled in each of upper Saltpeter, lower Saltpeter, Dundee, Norman, and Sue Creeks, and in Doves Cove. Three sand stations were sampled at the power plant discharge in upper Saltpeter Creek, at Sandy Point in Dundee Creek, and in Sue Creek and Doves Cove. At Weir Point eight stations were sampled, two in mud, two in sand, and two each in sandy mud and muddy sand. Two stations in the Gunpowder River were sampled with the Ponar grab and the clam dredge, primarily to determine the R. cuneata size frequency distribution.

R. cuneata beds discovered during the April survey in the lower Middle River were sampled with the clam dredge and the Ponar grab, and exploratory clam tows were performed at ten stations in the Chesapeake Bay, between the Back River and Seneca Creek (Figure 8). A core sample for determination of sediment % loss on ignition was taken at each station.

September 1979 (Second Quantitative Survey)

For the September survey one of the reference areas was relocated. In the June cluster analysis the Norman Creek and Sue Creek mud stations clustered together tightly, suggesting that sampling of one or the other would provide about the same information as sampling of both. The water temperatures and Secchi Disk depths for Norman Creek in June were inexplicably high, relative to those of Sue Creek and the Middle River, suggesting that Norman Creek may have been receiving an input from its drainage basin, that could adversely affect its value as a reference area. For September and subsequent sampling runs, therefore, the Norman Creek reference area was moved to the lower Middle River, to coincide with the R. cuneata bed monitoring area previously established.

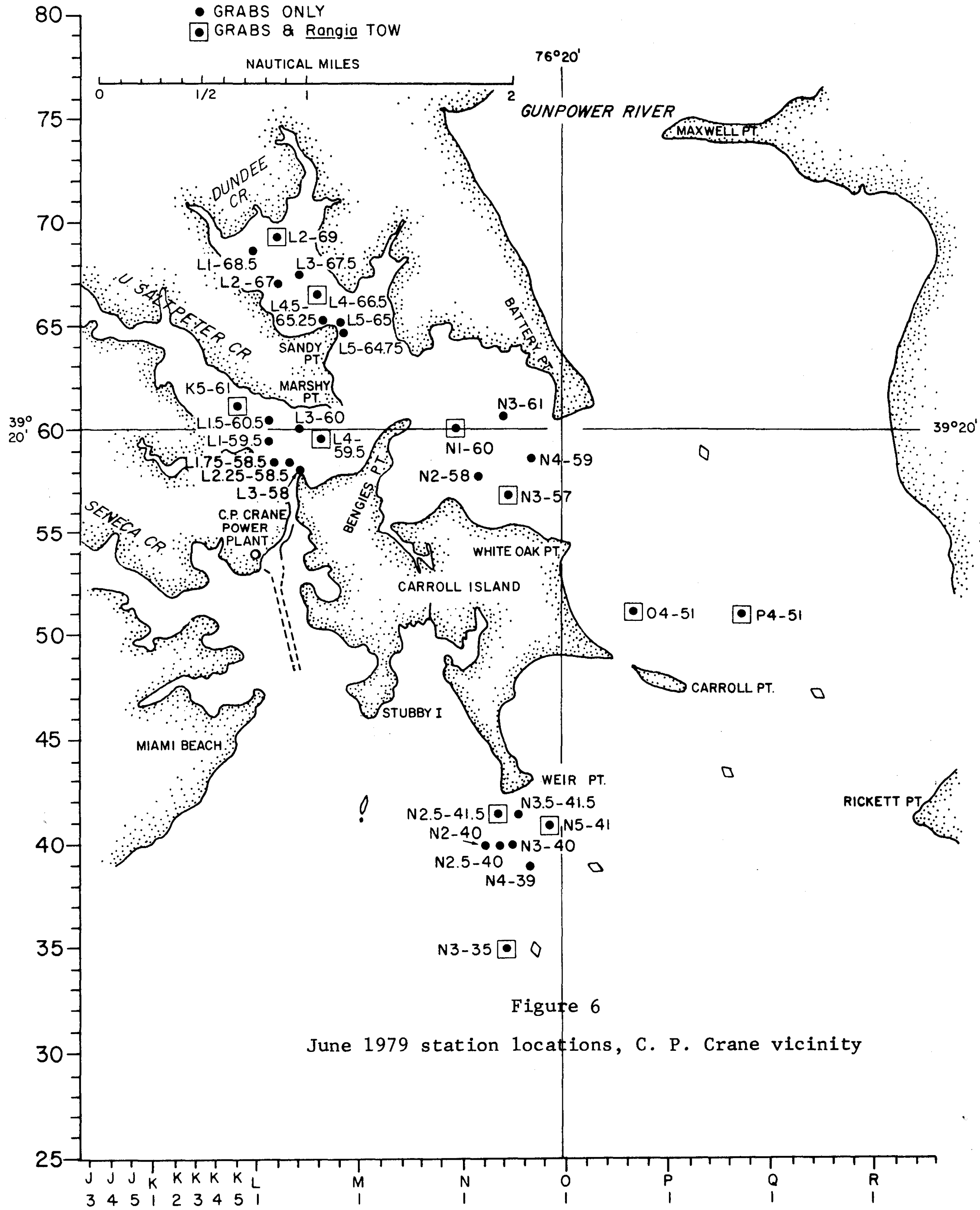

Figure 6

June 1979 station locations, C. P. Crane vicinity

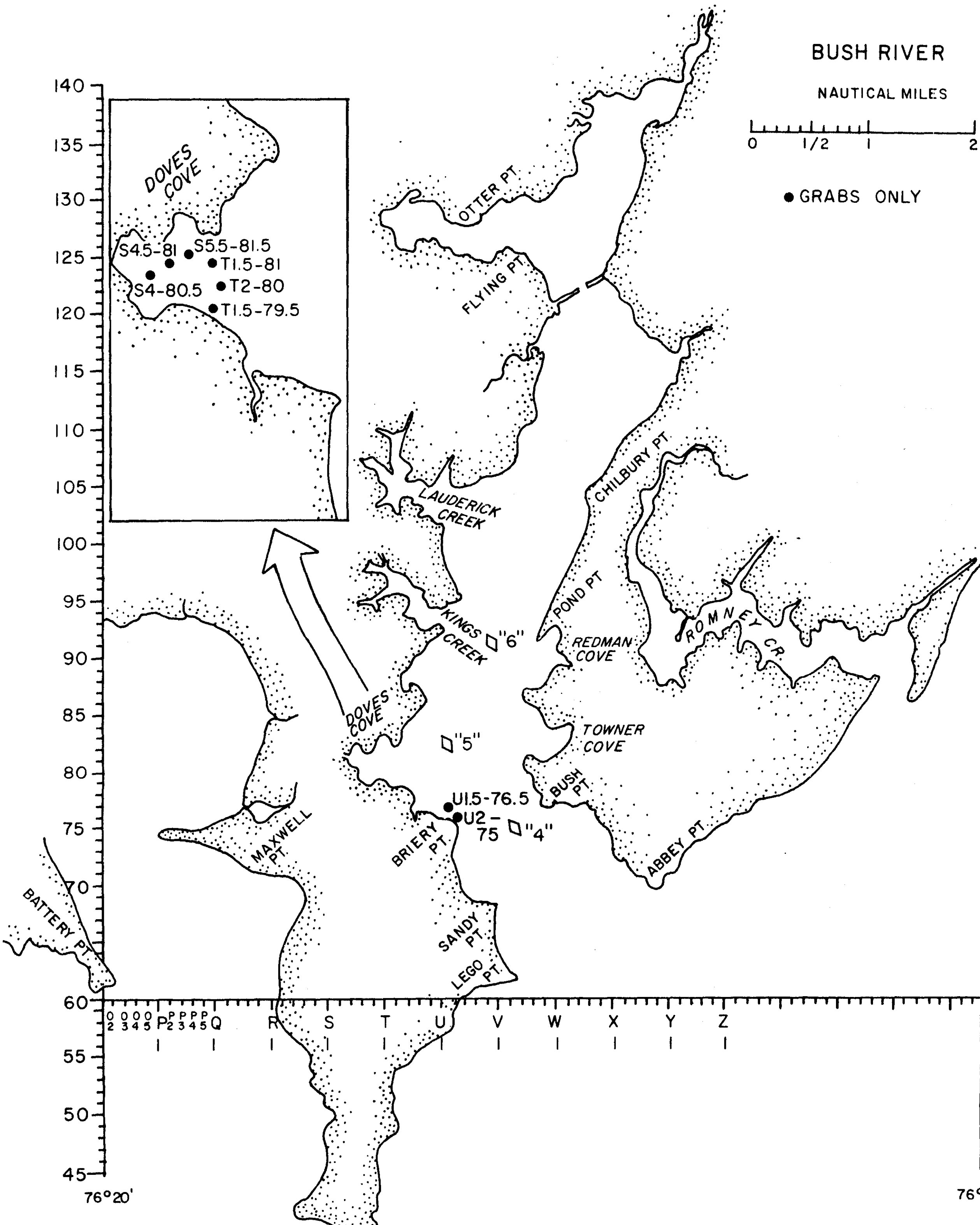

Figure 7

June 1979 station locations, Bush R.

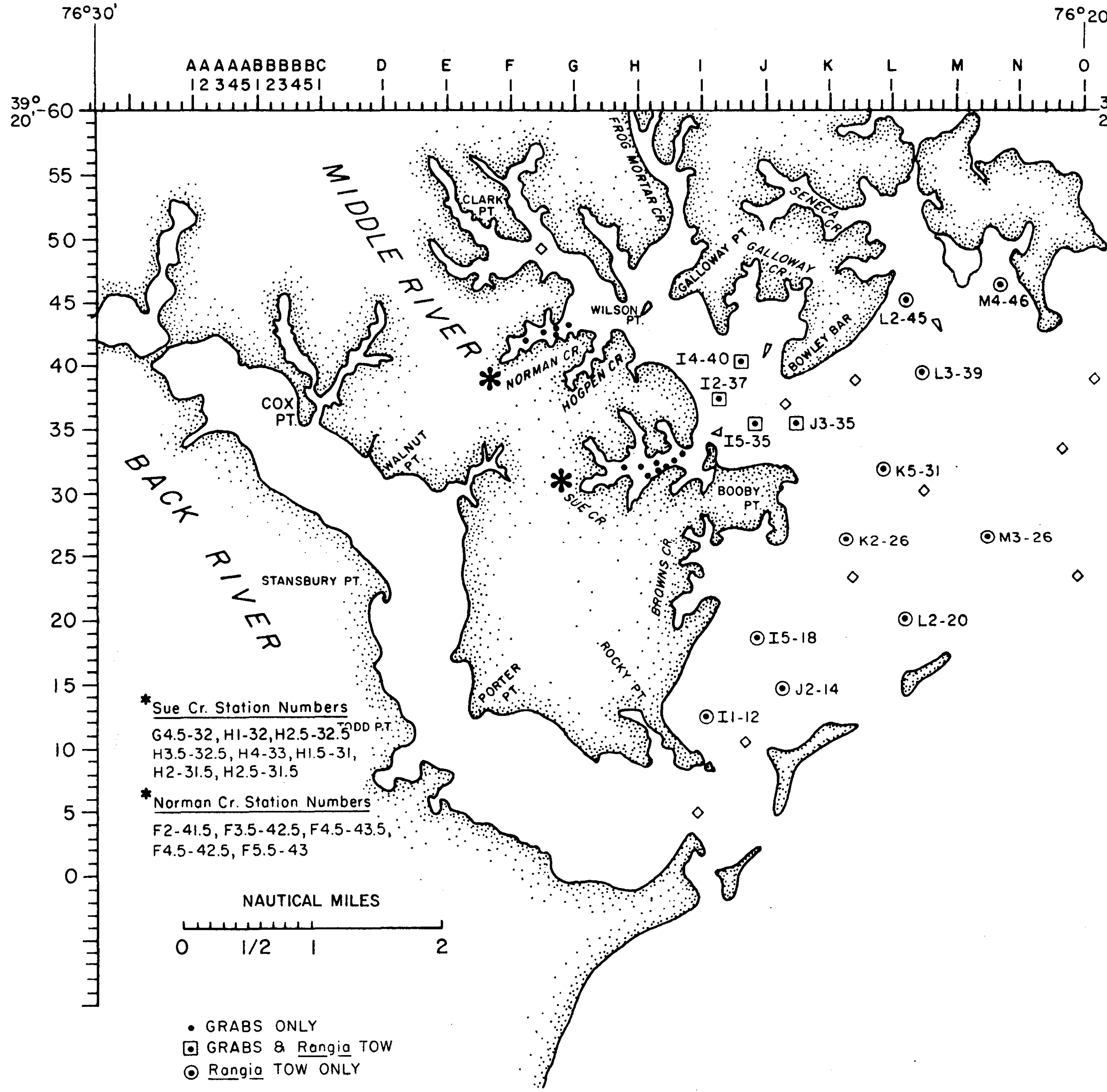

Figure 8

June 1979 station locations, Middle R. and Chesapeake Bay

The Crane area sampling stations are shown in Figure 9. The allocation of stations was the same as for June except for the following additions: exploratory clam tow stations in two additional areas of the Gunpowder River; extension of the upper Saltpeter Creek sampling area further upstream, with the addition of a sixth station in this area; clam dredge sampling at additional stations.

The Bush River stations appear in Figure 10. *Rangia cuneata* tows were performed at three stations, one of which was a mud station sampled also with the Ponar grab.

The Middle River area stations are included in Figure 11. Sue Creek was sampled the same as in June. The number of Middle River stations was increased to five, with clam tows at three of these. Three stations were sampled in each of two Chesapeake Bay clam beds located in June.

Figure 12 shows four exploratory *R. cuneata* dredge stations in Chesapeake Bay included in the September sampling.

November 1979 (Third Quantitative Survey)

The allocation of stations in the Crane area (Figure 13) was similar to the September design. The *R. cuneata* tow stations in the Gunpowder River above Saltpeter Creek were dropped, and three tow stations in Seneca Creek were added. Three stations in the Gunpowder River between Carroll Point and Weir Point were sampled with the Ponar grab and the clam dredge.

Sampling in Doves Cove was limited to Ponar grab sampling of five mud and three sand stations (Figure 14). Stations in the Middle River and the adjacent Chesapeake Bay (Figure 15) were assigned according to a design identical to the September scheme. No outer Chesapeake Bay stations were sampled.

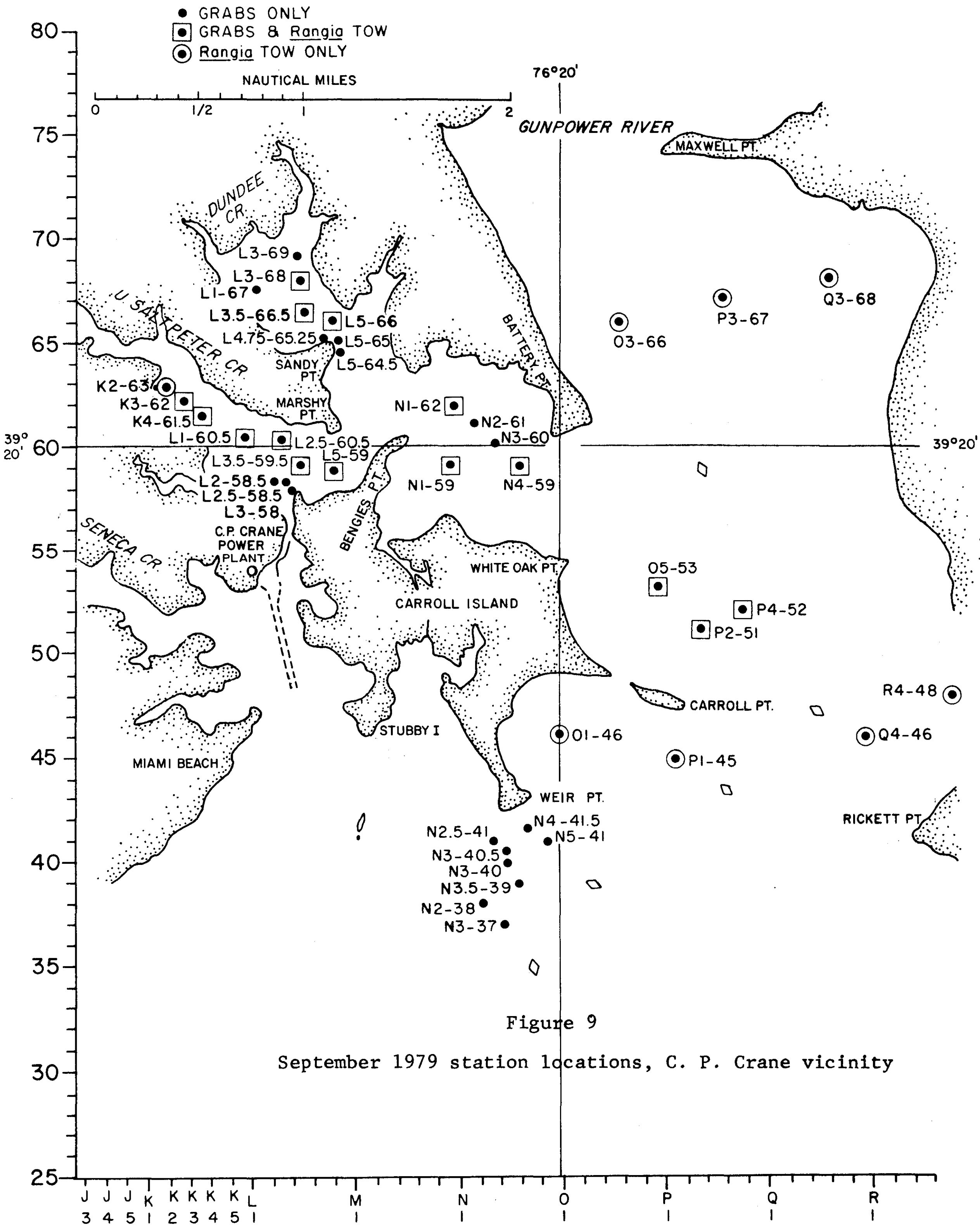

Figure 9

September 1979 station locations, C. P. Crane vicinity

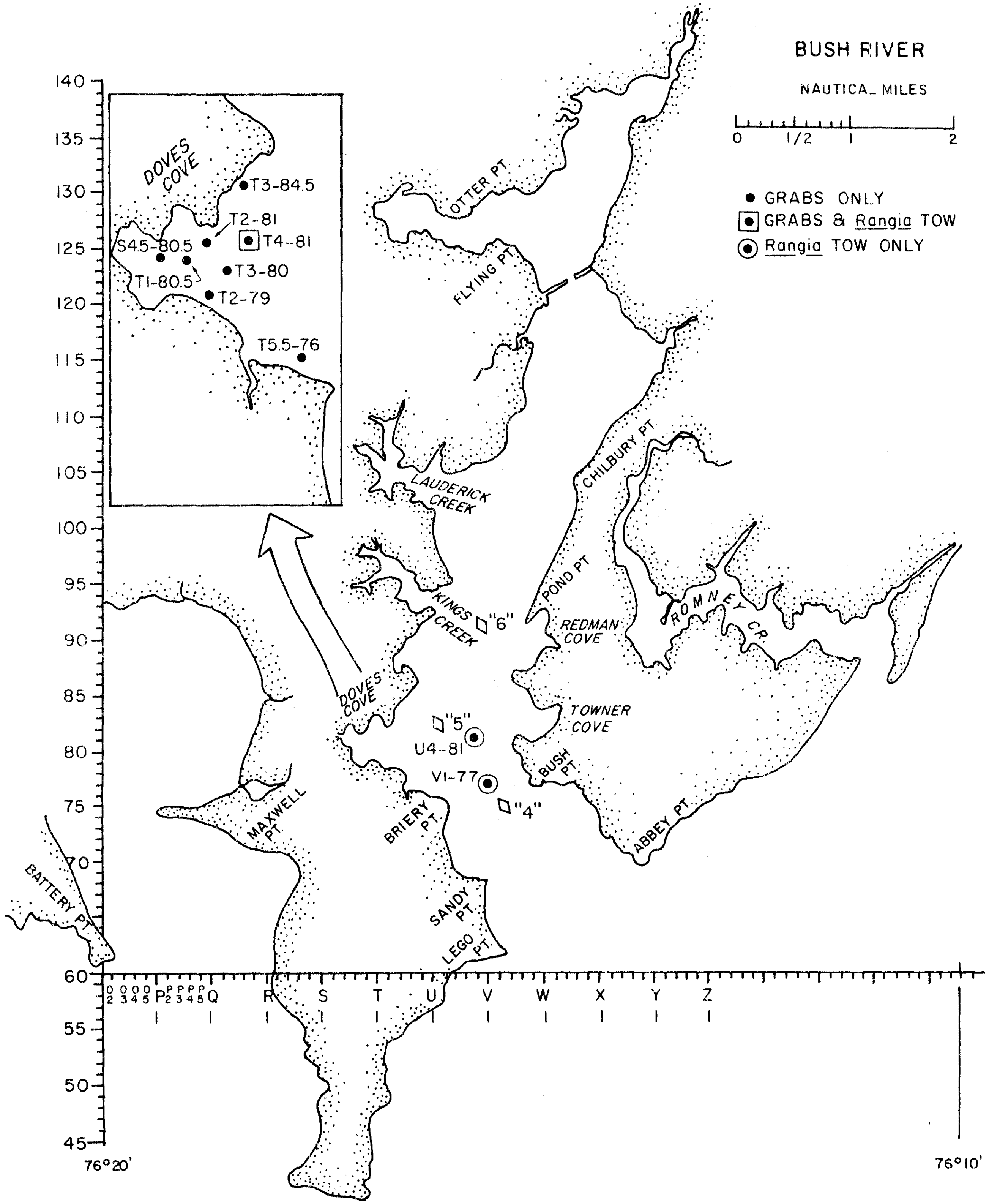

Figure 10

September 1979 station locations, Bush R.

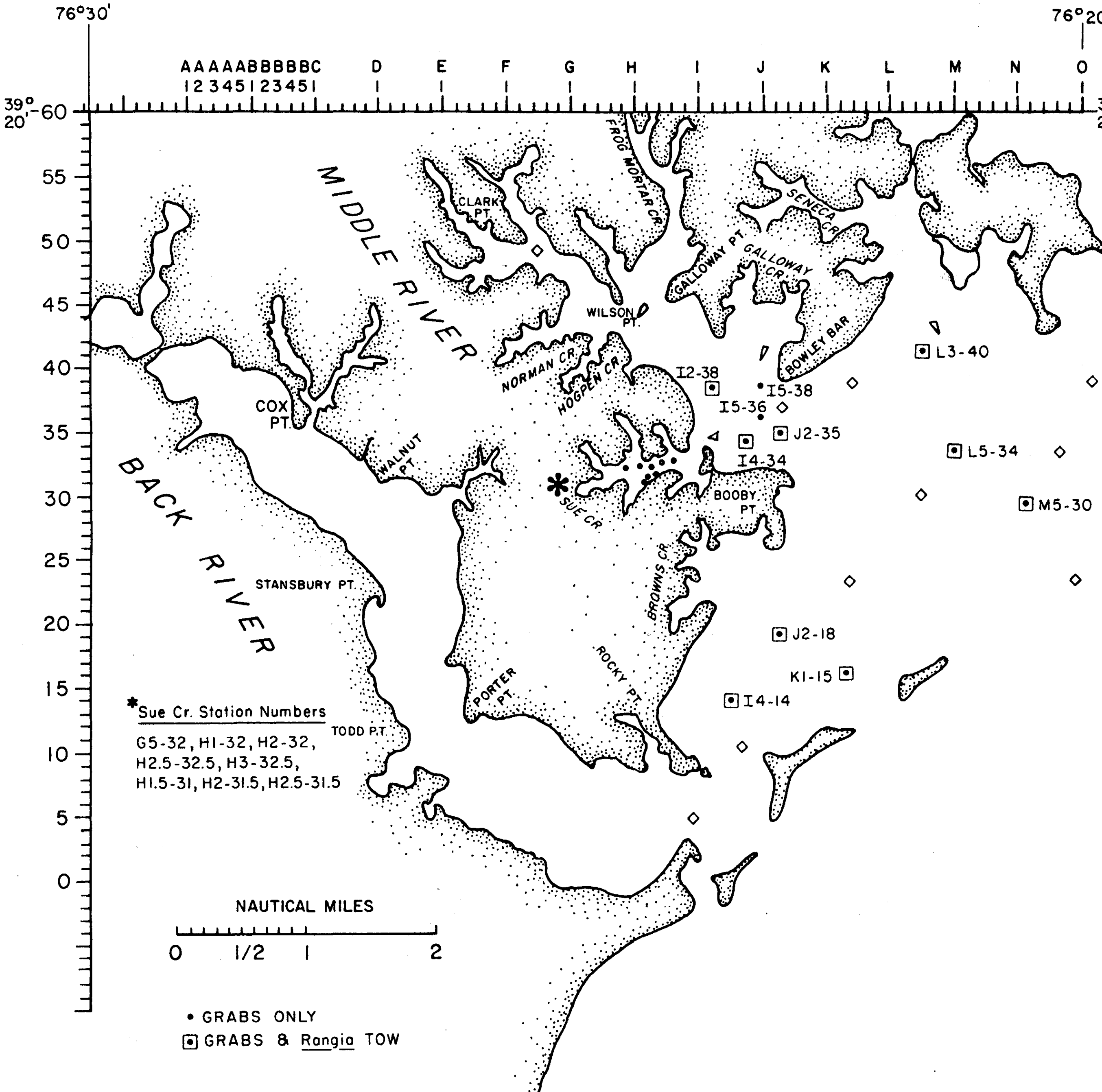

Figure 11

September 1979 station locations, Middle R. and Chesapeake Bay

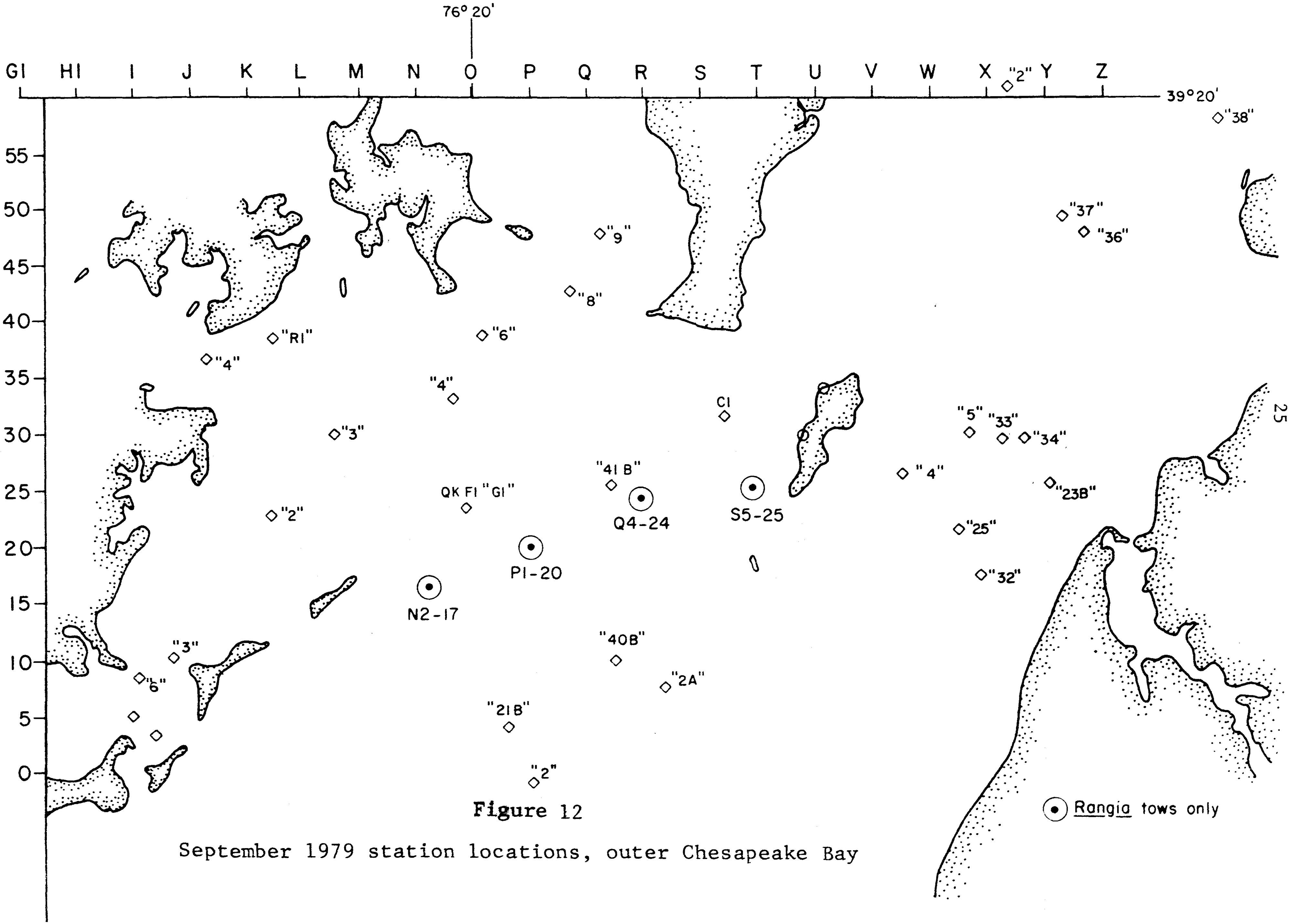

Figure 12

September 1979 station locations, outer Chesapeake Bay

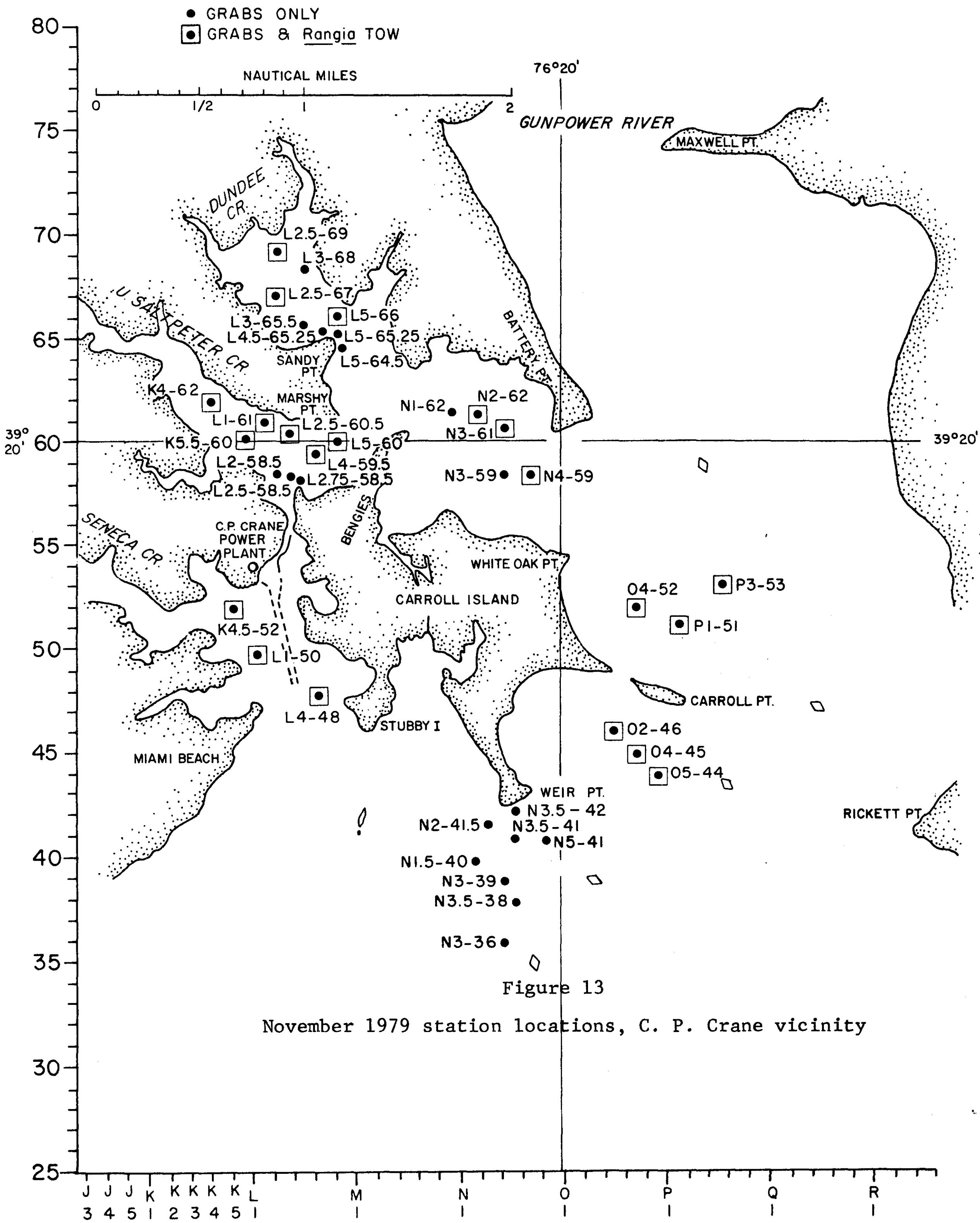

Figure 13

November 1979 station locations, C. P. Crane vicinity

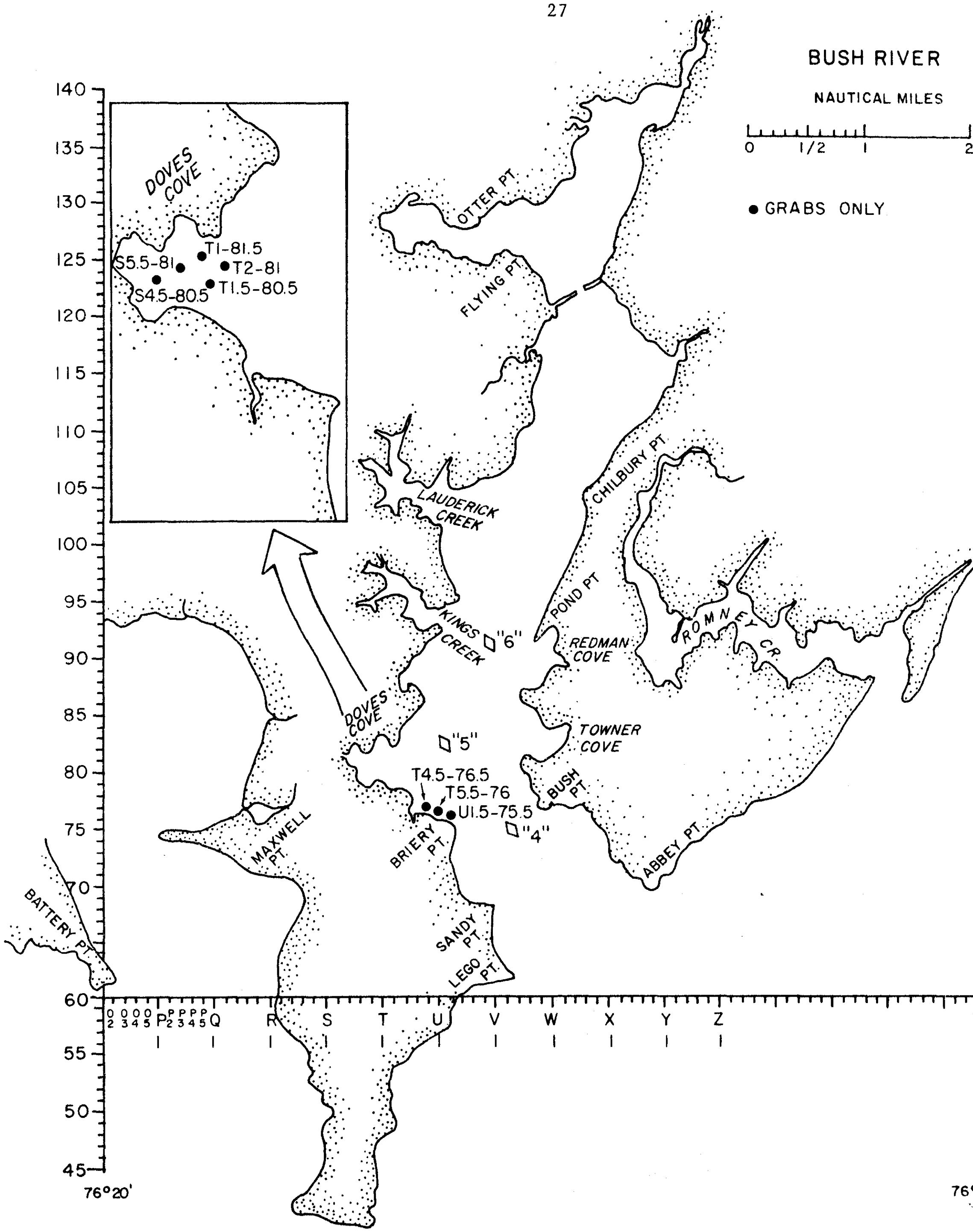

Figure 14

November 1979 station locations, Bush R.

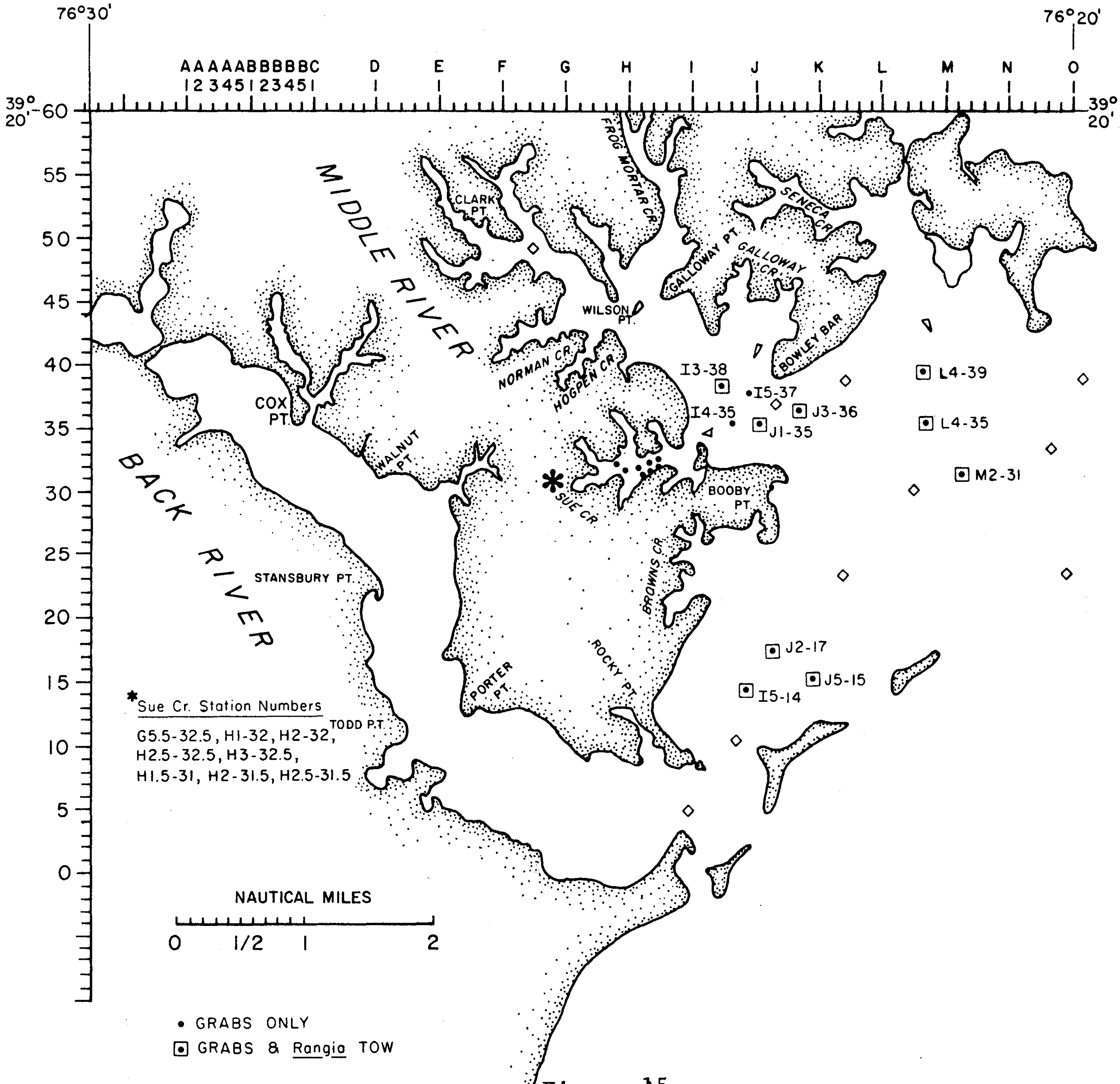

Figure 15

November 1979 station locations, Middle R. and Chesapeake Bay

April 1980 (Fourth Quantitative Survey)

In April, sampling in the Crane area followed the same pattern as in November, except that Seneca Creek was omitted (Figure 16). Stations in Doves Cove (Figure 17) and the Middle River area (Figure 18) were allocated to the same zones sampled in November.

Summary

Although there were minor variations among the four quantitative sampling runs, the core design was held constant: five or more mud stations in each of three sections of the discharge creek system and in each of three reference areas; three sand stations at each of two locations in the discharge area and at each of two reference sites; eight stations at Weir Point covering a series of four sediment types. The shift of a reference area from Norman Creek in June to the lower Middle River in September was done mainly to eliminate an apparent duplication of the sampling effort expended in Sue Creek. A secondary result was the establishment of a joint reference area, Sue Creek-Middle River, that in terms of its depth gradient and general physical features resembled the upper Saltpeter-lower Saltpeter Creek system.

The inclusion of optional stations at locations that varied from run to run was related mainly to the *Rangia cuneata* study. The end result, however, was an expanded core design, employed in November and April, which included four additional mud sediment sampling areas: lower Gunpowder River above Carroll Point, lower Gunpowder River below Carroll Point, Chesapeake Bay between Seneca Creek and the Middle River, and Chesapeake Bay between the Middle River and the Back River, an area known as Hawk Cove.

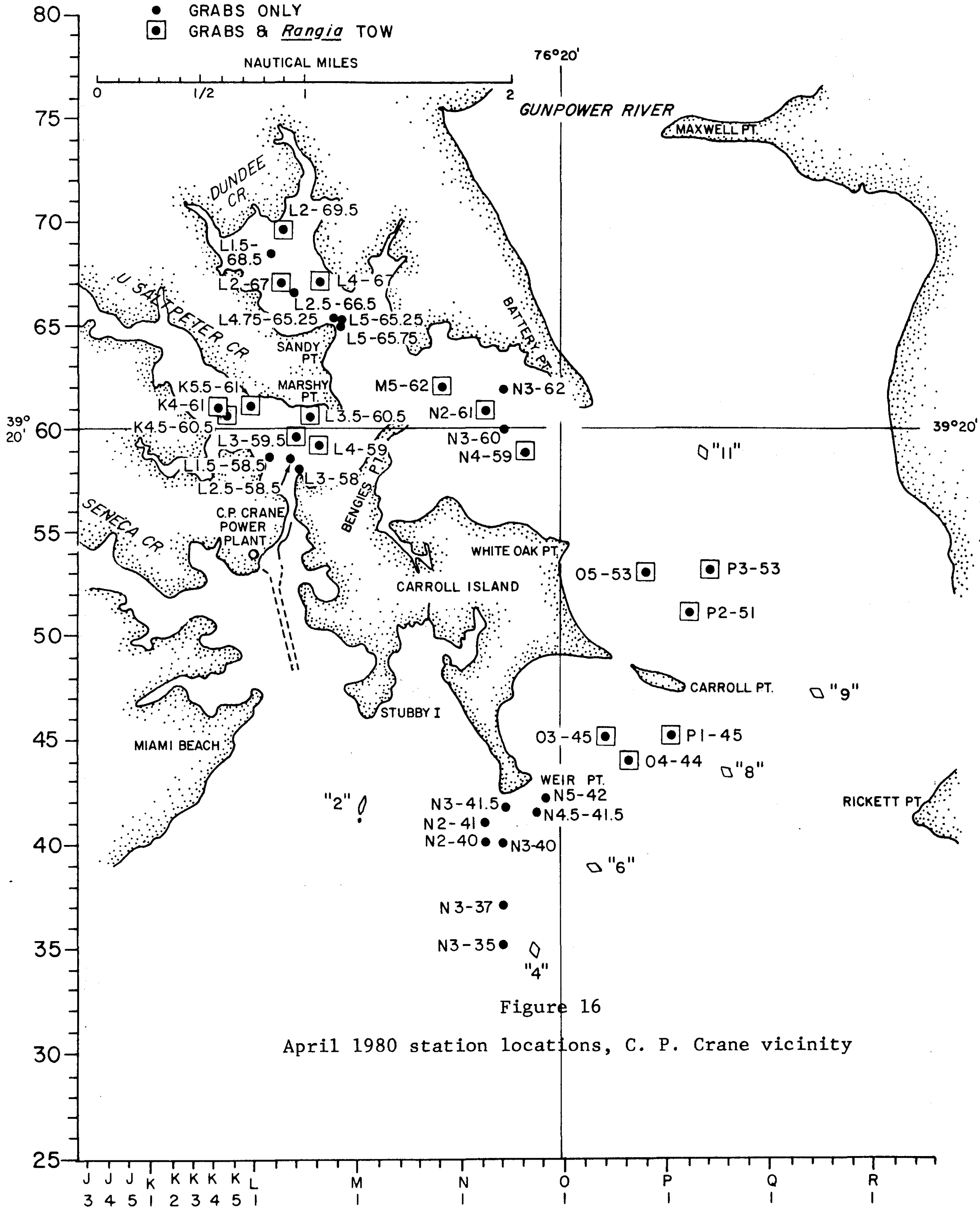

Figure 16

April 1980 station locations, C. P. Crane vicinity

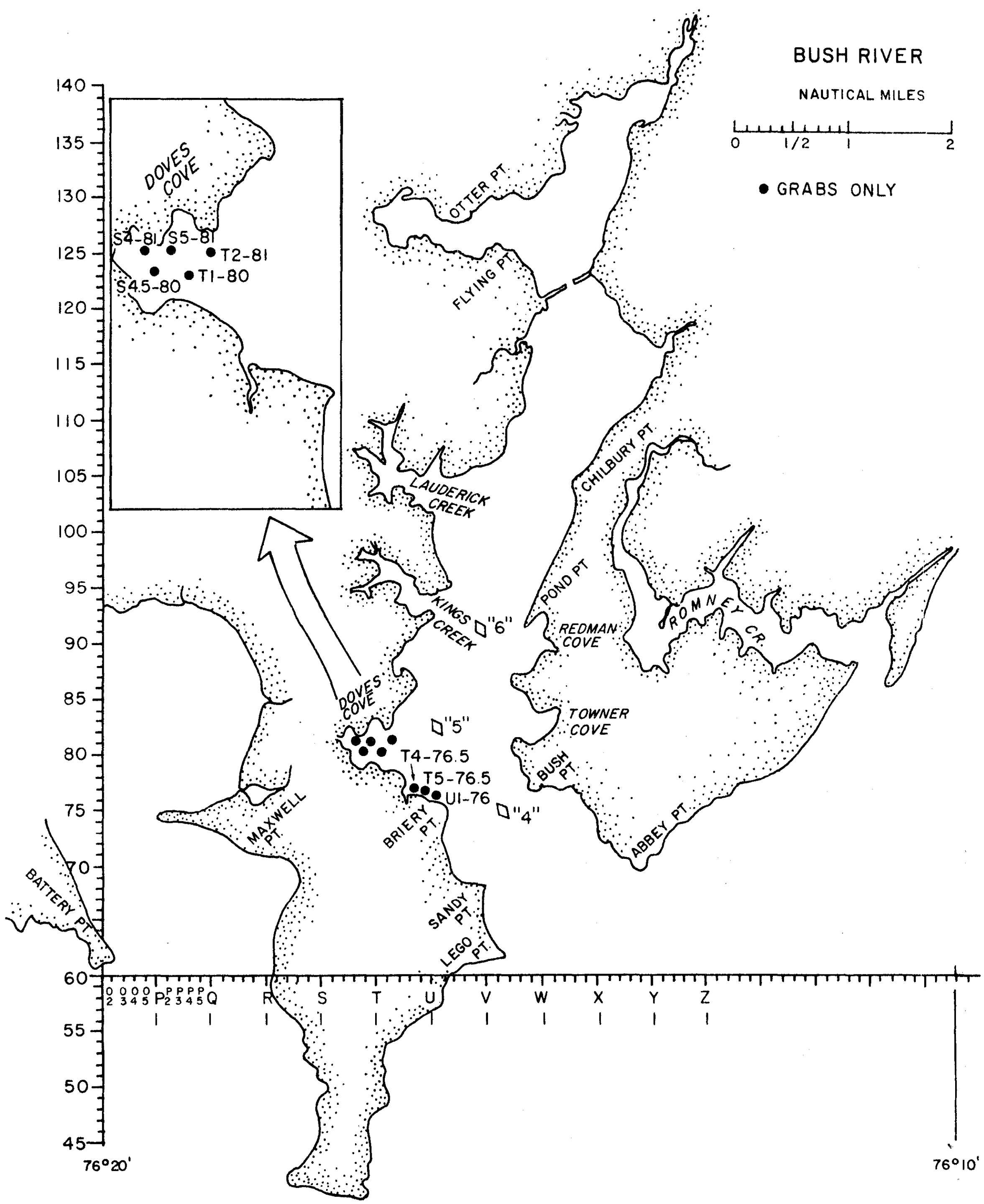

Figure 17

April 1980 station locations, Bush R.

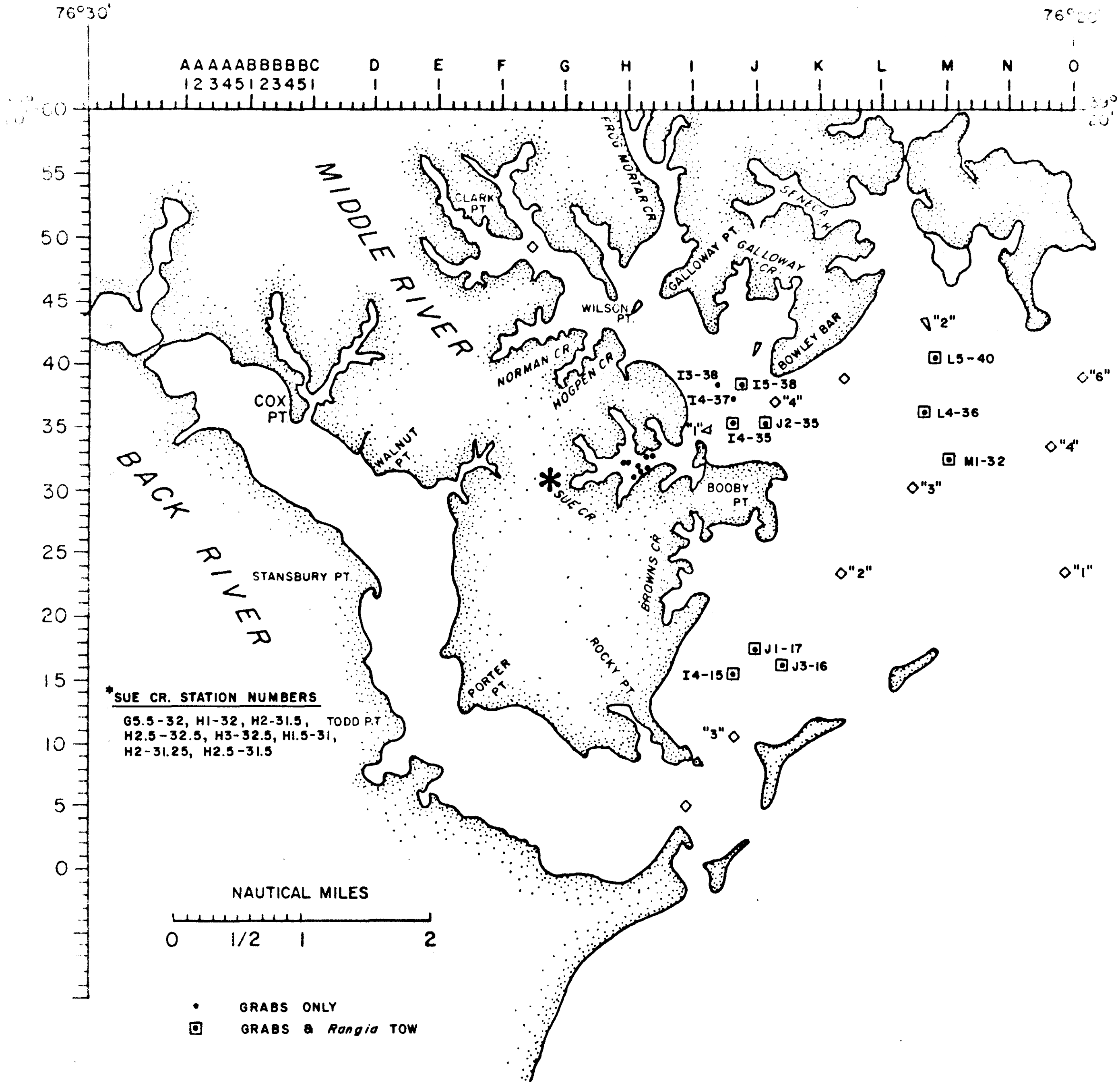

Figure 18

April 1980 station locations, Middle R. and Chesapeake Bay

In Appendix A, the sampling station locations are listed in terms of the chart codes used in this study and in terms of latitude and longitude. The area and station code numbers refer to the format in which the station data were entered into computer files.

Results

Physico-chemical Parameters

The particle size distributions obtained from the April 1979 sediments analyses appear in Appendix B.

Tables 1 and 2 contain summary parameters obtained from these graphs, along with sediment loss on ignition and station water depth information for the mud and sand stations, respectively. The highest loss on ignition values were obtained for samples from mud stations in the Back River, Norman Creek, and Dundee Creek. Mud samples from Doves Cove, the inlet at Rocky Point, Galloway Creek, Sue Creek, and the Middle River were comparable in loss on ignition to the samples from Saltpeter Creek. The sand station loss on ignition values were all below 2% dry weight.

In Figure 19 the stations listed in Tables 1 and 2 are distributed over a three variable diagram on the basis of the proportions of sand, silt, and clay in the sediment samples. The coarse sediments all contained over 80% sand, while most of the fine sediments contained less than 20% sand. The intermediate sediment type encountered at Weir Point stands out, with 68% sand. The silt content of the fine sediments ranged between approximately 40% and 60%.

The remaining physico-chemical data for April 1979, and the data for the four quantitative sampling runs, are presented in Appendix C. The only dissolved oxygen levels that were depressed sufficiently to indicate loading with organic pollutants were measured in April 1979 at stations A3-38 and B1-38, in the upper Back River. Most of the DO variations among sampling runs and among sampling areas within runs were due to seasonal changes in saturation levels and to

Table 1
Summary of sediment analysis results, mud stations, April 1979

Area	Station	Depth (m)	Median particle diameter Mdϕ	Mdμ	% sand >4.0ϕ >63μ	% silt 4.0ϕ-8.0ϕ 63μ-3.9μ	% clay <8.0ϕ <3.9μ	Loss on ignition % by wt.
Upper Saltpeter Cr.	L3-60	1.32	7.4	5.9	9	42	49	9.07
Lower Saltpeter Cr.	N2-60	1.71	7.2	6.8	12	47	41	8.61
Dundee Cr.	L3-67	1.33	6.7	9.6	13	59	28	10.52
Weir Pt.	N4-38	4.00	7.1	7.3	14	44	42	9.78
Middle R.	I2-37	2.98	7.1	7.3	16	43	41	7.99
Middle R.	E5-48	1.73	6.8	9.0	12	55	43	9.82
Sue Cr.	H5-32	1.28	6.7	9.6	16	52	32	8.44
Galloway Cr.	I4-43	1.88	7.6	5.2	12	35	53	9.94
Norman Cr.	F4-42	1.58	7.4	5.9	10	43	47	10.33
Browns Cr.	I4-26	1.37	6.7	9.6	8	59	33	5.39
Back R.	F1-6	2.01	7.4	5.9	13	43	44	10.73
Rocky Pt.	H2-11	1.82	7.4	5.9	4	49	47	9.70
Todd Pt.	D3-9	1.07	7.6	5.2	7	40	53	10.03
Walnut Pt.	D5-28	1.69	7.3	6.3	10	46	44	13.62
Cox Pt.	B1-38	1.49	7.2	6.8	9	49	42	10.68
Bus R.-Doves Cove	T1-81	1.42	6.7	9.6	11	61	28	9.16
Doves Cove	S4-81	1.19	6.9	8.4	14	48	38	9.55

Table 1 (continued).

Area	Station	Depth (m)	Median particle diameter Mdϕ	Mdμ	% sand $>4.0\phi$ $>63\mu$	% silt 4.0ϕ–8.0ϕ 63μ–3.9μ	% clay $<8.0\phi$ $<3.9\mu$	Loss on ignition % by wt.
Towner Cove	V4-84	1.75	6.7	9.6	20	51	29	6.83
Towner Cove	V4-83	1.60	6.3	12.7	29	45	26	6.21
Redman Cove	V5-90	1.86	6.5	11.0	22	49	29	7.52

Table 2
Summary of sediment analysis results, sand stations, April 1979

Area	Station	Depth (m)	Median particle diameter Mdφ	Median particle diameter Mdμ	% sand >4.0φ >63μ	% silt 4.0φ-8.0φ 63μ-3.9μ	% clay <8.0φ <3.9μ	Loss on ignition % by wt.
Upper Saltpeter Cr.	L2-58.5	.82	2.3	203	96	1	3	.46
Dundee Cr.	L5-65	.76	1.7	308	96	2	2	.60
Miami Beach	K5-43	1.87	2.1	233	99	.6	.4	.34
Weir Pt.	N4-42	.97	2.1	233	99	.5	.5	.08
Weir Pt.	N4-40	2.77	2.8	144	68	13	19	1.82
Middle R.	J2-37	1.16	3.0	125	91	2	7	1.00
Sue Cr.	H2-31	.80	2.8	144	80	12	8	.94
Norman Cr.	F2-40	.51	1.3	406	93	5	2	.82
Browns Cr.	I3-24	1.43	2.2	218	98	.3	1.7	.53
Back R.-Walnut Pt.	D3-31	.54	2.8	144	96	2	2	.71
Cox Pt.	B5-35	.61	1.8	287	98	1	1	1.92
Bush R.	U3-78	2.65	1.8	287	93	3	4	.98
Doves Cove	S4-80	.72	2.2	217	94	3	3	.33
Towner Cove	V4-82	.74	1.4	379	99	.3	.7	.40
Redman Cove	V5-91	1.45	3.3	102	82	10	8	1.90

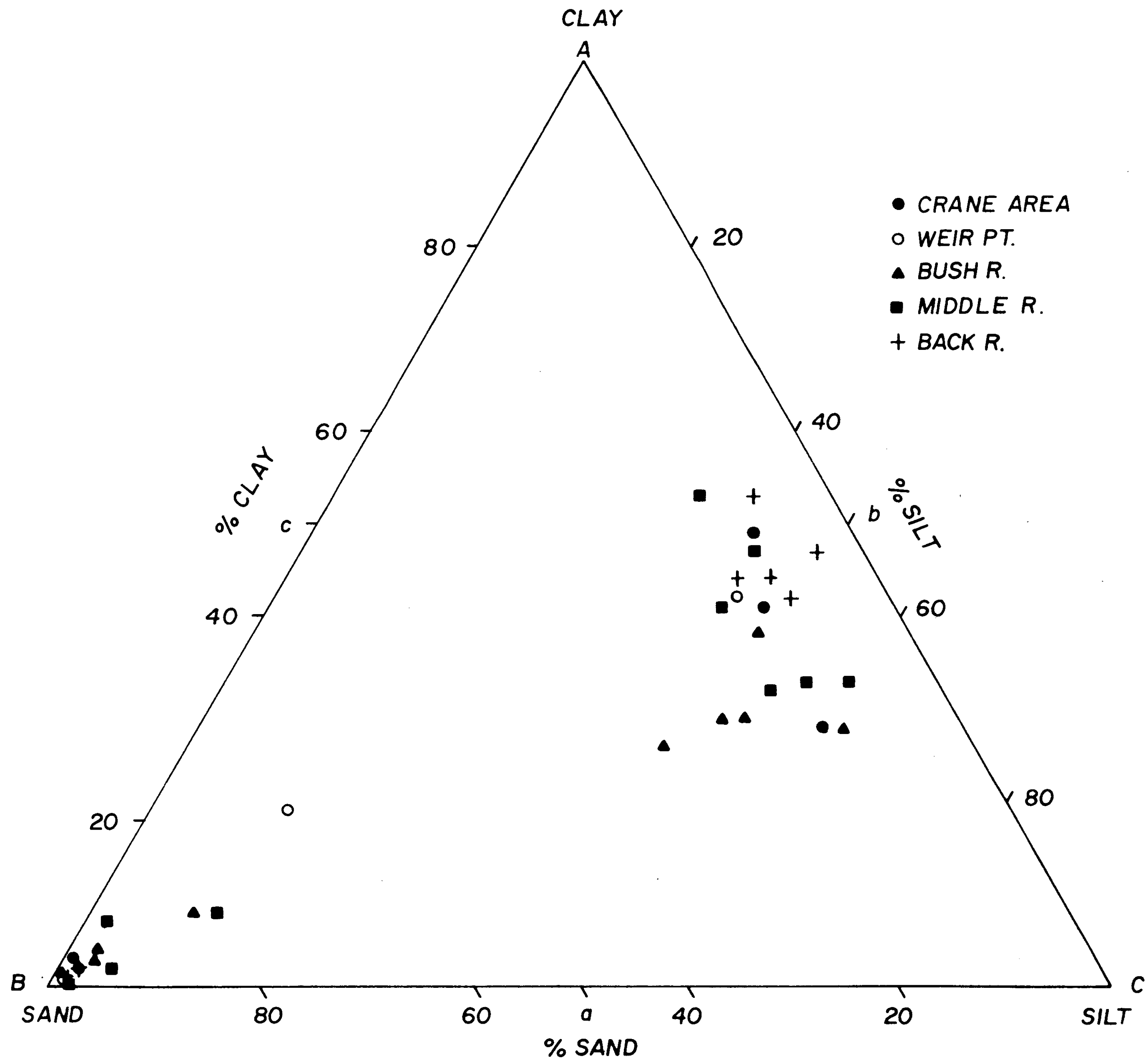

Figure 19 April 1979 Sediment Characteristics

diel fluctuations of photosynthesis and respiration. The lowest concentration measured during the study was 2.99 ppm in water at 1.5 m depth overlain by the Crane Power Plant thermal plume (station L2.5-60.5, September 11). However, other stations with elevated surface water temperatures did not exhibit depressed bottom DO's.

Bottom water salinity varied seasonally, with the highest levels measured in September (Figure 20). Salinities in Doves Cove were lower than in most of the other sampling areas in all runs, but were similar to levels measured in the upper Gunpowder River during the 1979 zooplankton study (Grant _et al_. 1980). June and November averages were below 1 ppt in most of the Crane area, and below or slightly above 1 ppt in the Sue Creek, Middle River, and bay reference areas.

Tidal fluctuations influenced the water depths measured in the study areas, but in general the depths were similar among the creek sampling areas within a given run (Figure 21). In the Crane area, the observed depths were slightly greater in the lower than in the upper sections of Dundee and upper Saltpeter Creek in June and November, and a distinct increase in depth in all four runs was observed along the progression lower Saltpeter, Gunpowder above Carroll Point, Gunpowder below Carroll Point, Weir Pt. For the reference areas, depths in the Middle River were consistently greater than in Sue Creek and Doves Cove, and greater than in the Crane area counterpart, lower Saltpeter Creek. Chesapeake Bay and Hawk Cove depths were similar to depths in the Middle and Gunpowder Rivers.

Secchi depths were divided by total water depth to provide an index of light availability to the benthic community (Figure 22).

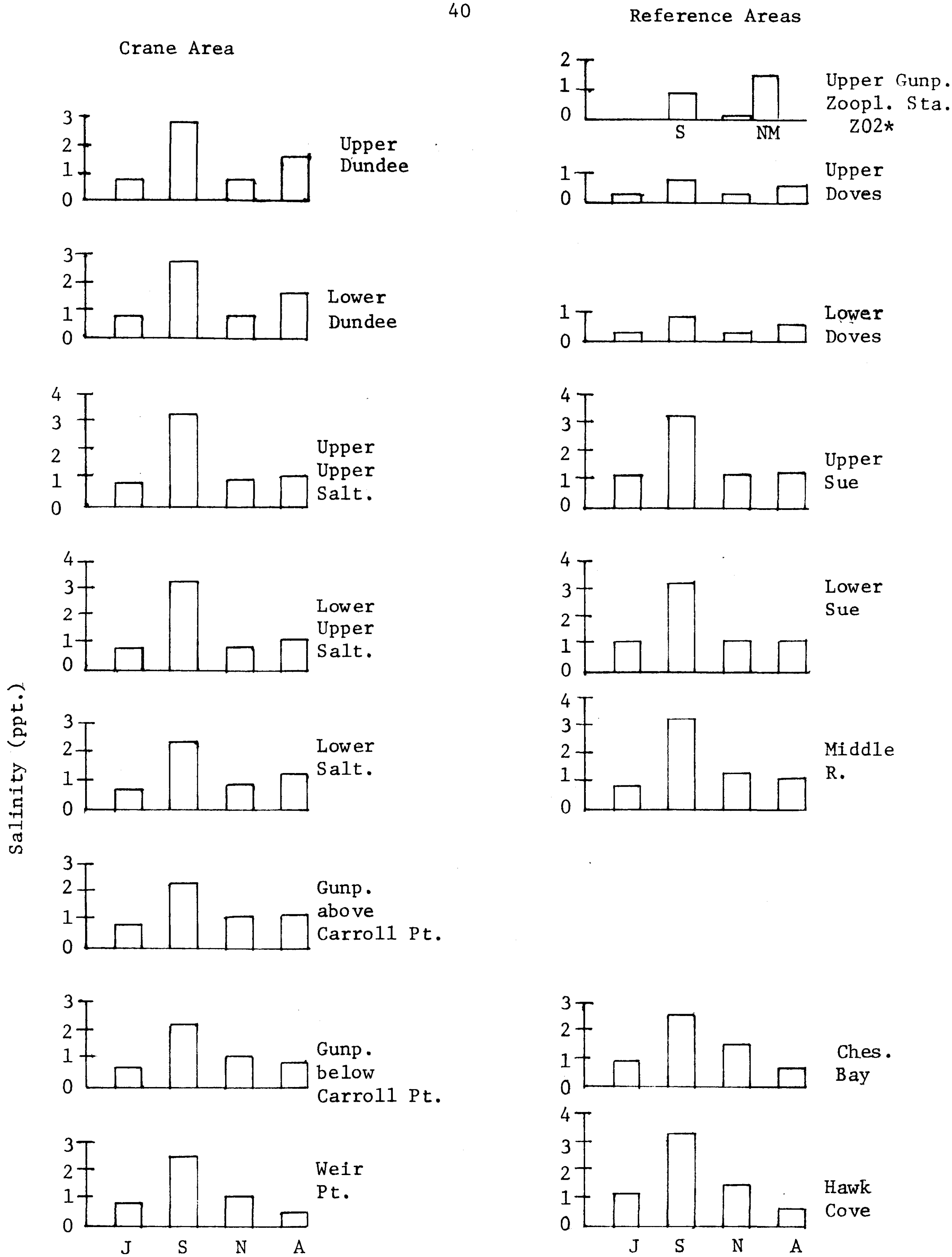

Figure 20. Mean bottom salinity levels, mud stations.
*From Grant et al. 1980.

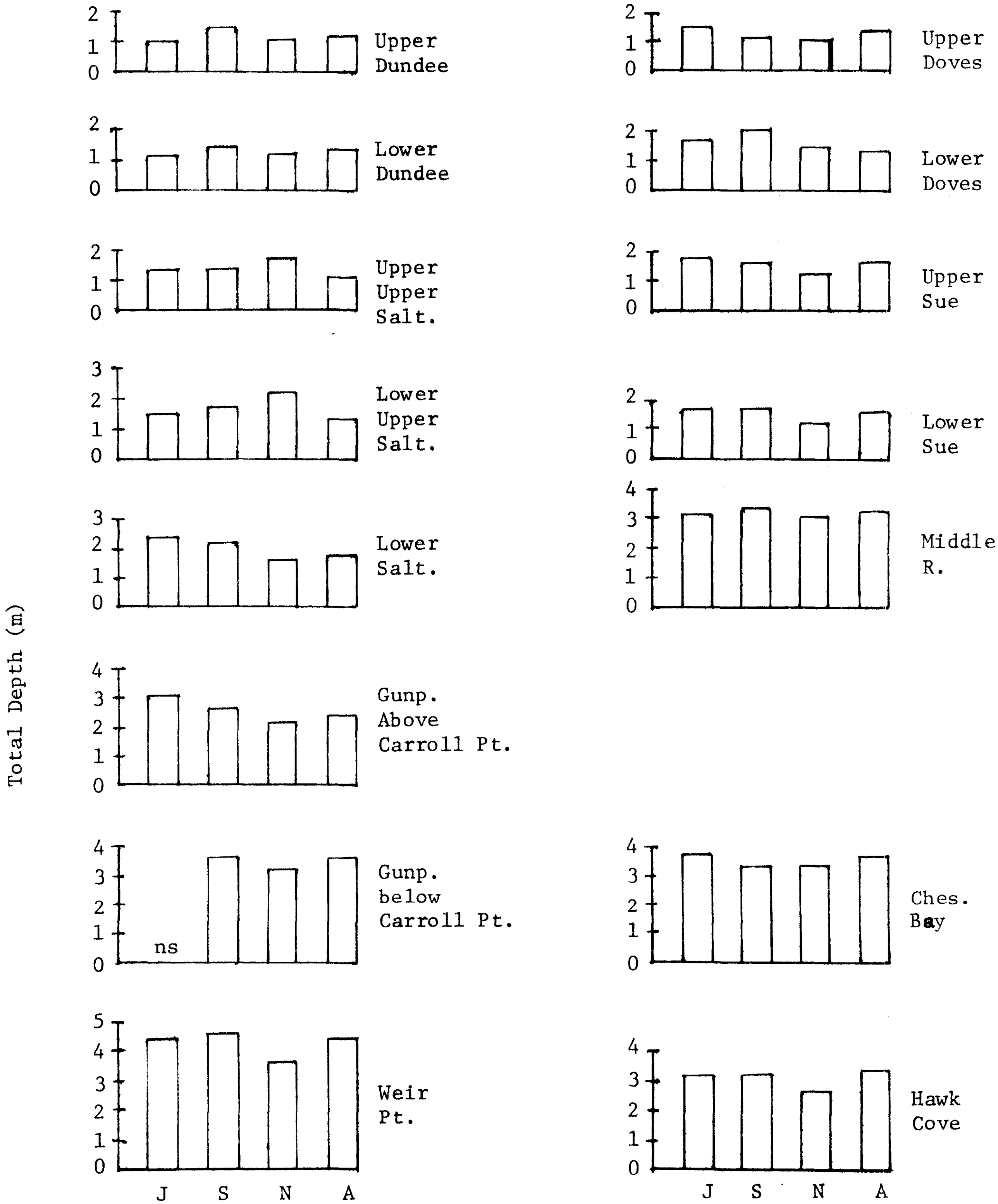

Figure 21. Mean water depths, mud stations.
ns = not sampled

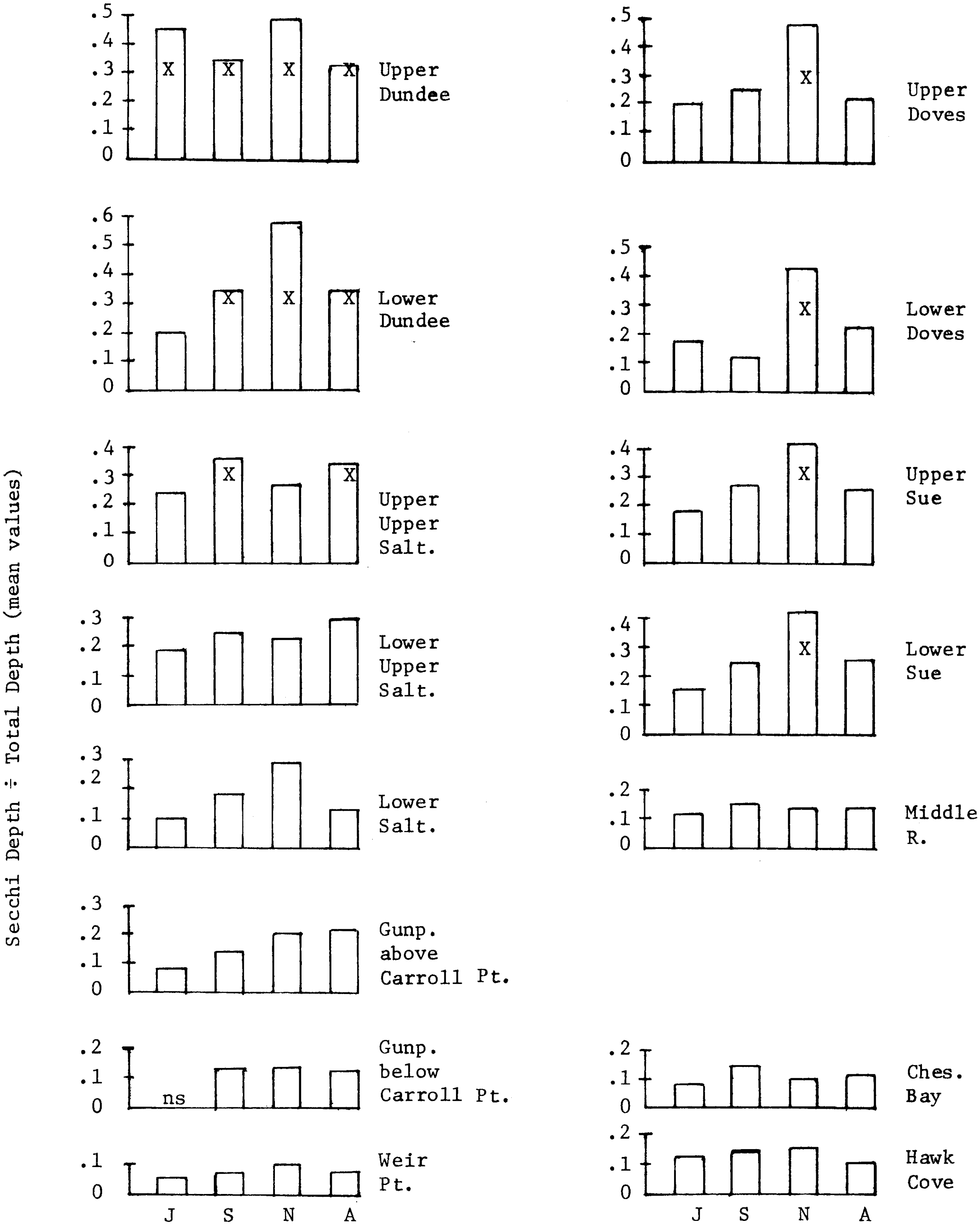

Figure 22. Ratios of Secchi depth to total depth, mud stations.

X = ratios exceeding .306
ns - not sampled

The formula K = 1.41 ÷ Secchi depth (Lorenzen 1980) was used to convert the Secchi depth readings to extinction coefficients. Our calculated K values agreed closely with coefficients obtained photometrically by Ecological Analysts (Michael Barbour, personal communication, Table 3), indicating that the conversion formula was appropriate. A hypothetical ratio of Secchi depth:compensation depth (depth of 1% surface light intensity) of .306 was calculated for the study area. It follows that in only sampling zones with Secchi depth: total depth ratios larger than this value would the bottom sediments be included in the photic zone. Examination of Figure 22 reveals that the ratios calculated for Dundee Creek exceeded .306, with the exception of the June ratio in the lower section. The ratios for upper Saltpeter Creek above the discharge were close to or above the compensation figure, while those for the section below the discharge were lower than the upper section values, with the highest average in April, .30. The ratios for lower Saltpeter Creek were substantially below .306 except in November. In the reference creeks all of the November ratios were above .4. In June and September the ratios for upper sections of Doves Cove and Sue Creek were higher than for the lower sections, but the only value close to .306 was for upper Sue Creek in September. In the river and bay sampling areas, the sediments were beyond the reach of transmitted light, as indicated by Secchi depth: total depth ratios generally below .2.

Bottom water temperatures measured at the time of sampling are presented in Figure 23. Temperatures in all four sampling runs were intermediate between the annual extremes in the study area (Ecological Analysts 1980). The November run coincided with a period

Table 3

Comparisons of extinction coefficients calculated from Secchi depths (this study) and from photometric data (EA study)

	This Study		EA Study	
Area	Date (1979)	K	Date (1979)	K
Hawk Cove	Sept. 12	3.24	Sept. 20	3.18
Lower Upper Saltpeter	Sept. 11	3.20	Sept. 20	3.15
Lower Saltpeter	Sept. 10	3.52	Sept. 20	3.53
Lower Gunpowder	Sept. 13	3.92	Sept. 20	3.68
Dundee	Sept. 10	2.82	Sept. 20	2.77

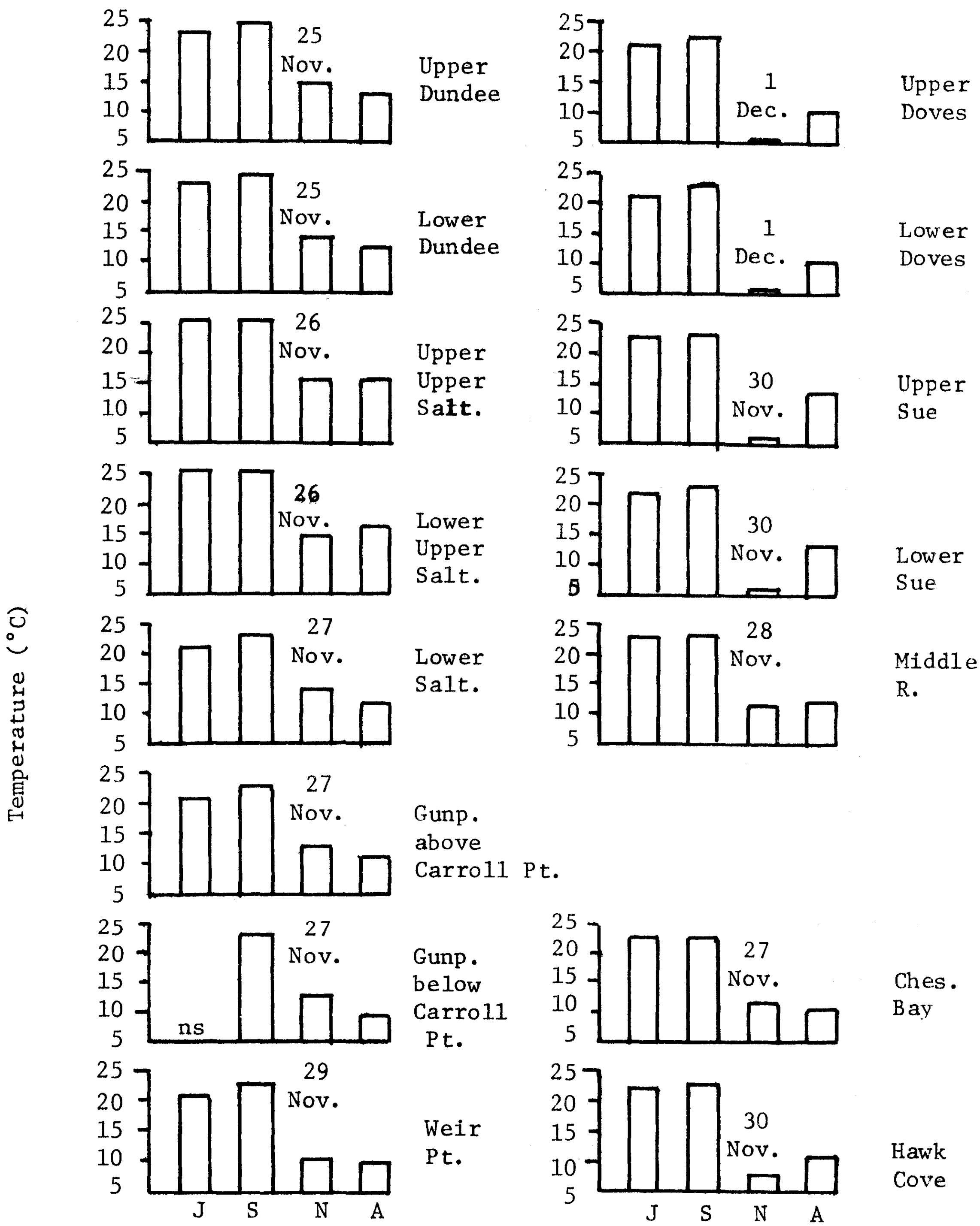

Figure 23. Mean bottom water temperatures, mud sampling areas.
ns - not sampled

of rapid cooling, reflected in progressively lower readings obtained during the seven days of sampling. Within the other runs, temperature variations among the sampling areas were smaller, and reflected diel cycles rather than unidirectional trends. All sampling in upper Saltpeter Creek was performed in mid-afternoon on weekdays, therefore the temperatures included the incremental increases due to the Crane Power Plant discharge.

Sediment organic content as % loss on ignition is presented for the mud sampling areas in Figure 24. Mean values above 12% were obtained for upper Dundee Creek in June and April, in an area populated by rooted aquatic plants and filamentous algae. The remains from the plant production during the 1979 growing season undoubtedly contributed to the high April 1980 LOI's. Within upper Saltpeter and Sue Creeks there was a tendency toward higher LOI's at the upper, shallower stations. Samples from areas in the rivers and bay had generally lower organic levels than did the creek samples.

Invertebrate Community Analyses

The identities and population densities of the benthic biota obtained in the five sampling runs appear in Appendix D. The cluster analysis results for the April 1979 exploratory run are shown in Figure 25, and were used, along with the sediment composition data, as a guide for the selection of the reference sampling areas. Weir Point and the Back River were eliminated on the basis of the low similarities of their communities with the Crane area fauna. Doves Cove, among the Bush River sites, and Sue and Norman Creeks, in the Middle River system, exhibited the greatest similarity in sediment and biota to Dundee and Saltpeter Creeks, and were incorporated into the sampling design for June.

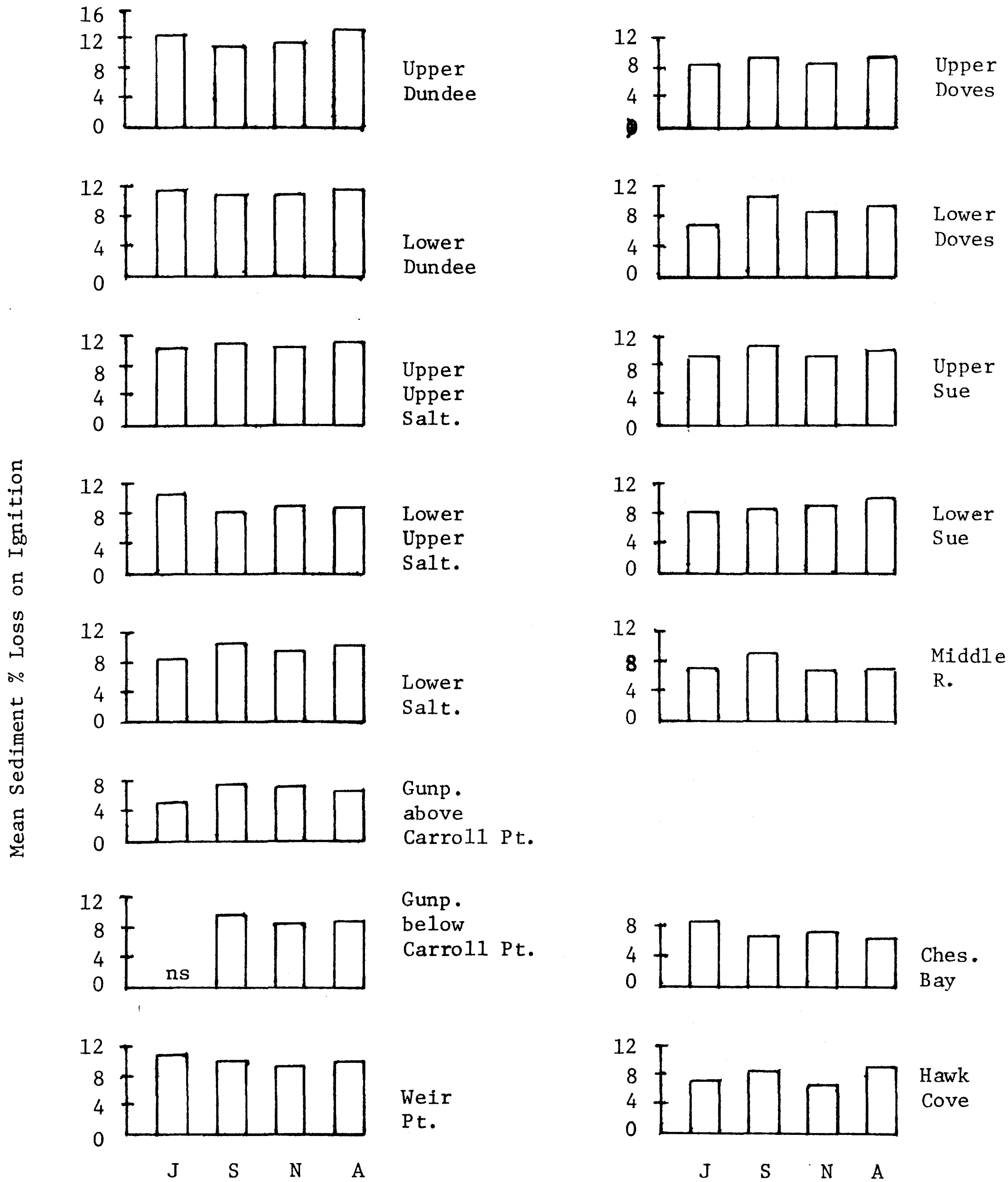

Figure 24. Sediment organic matter, mud sampling areas.
ns - not sampled

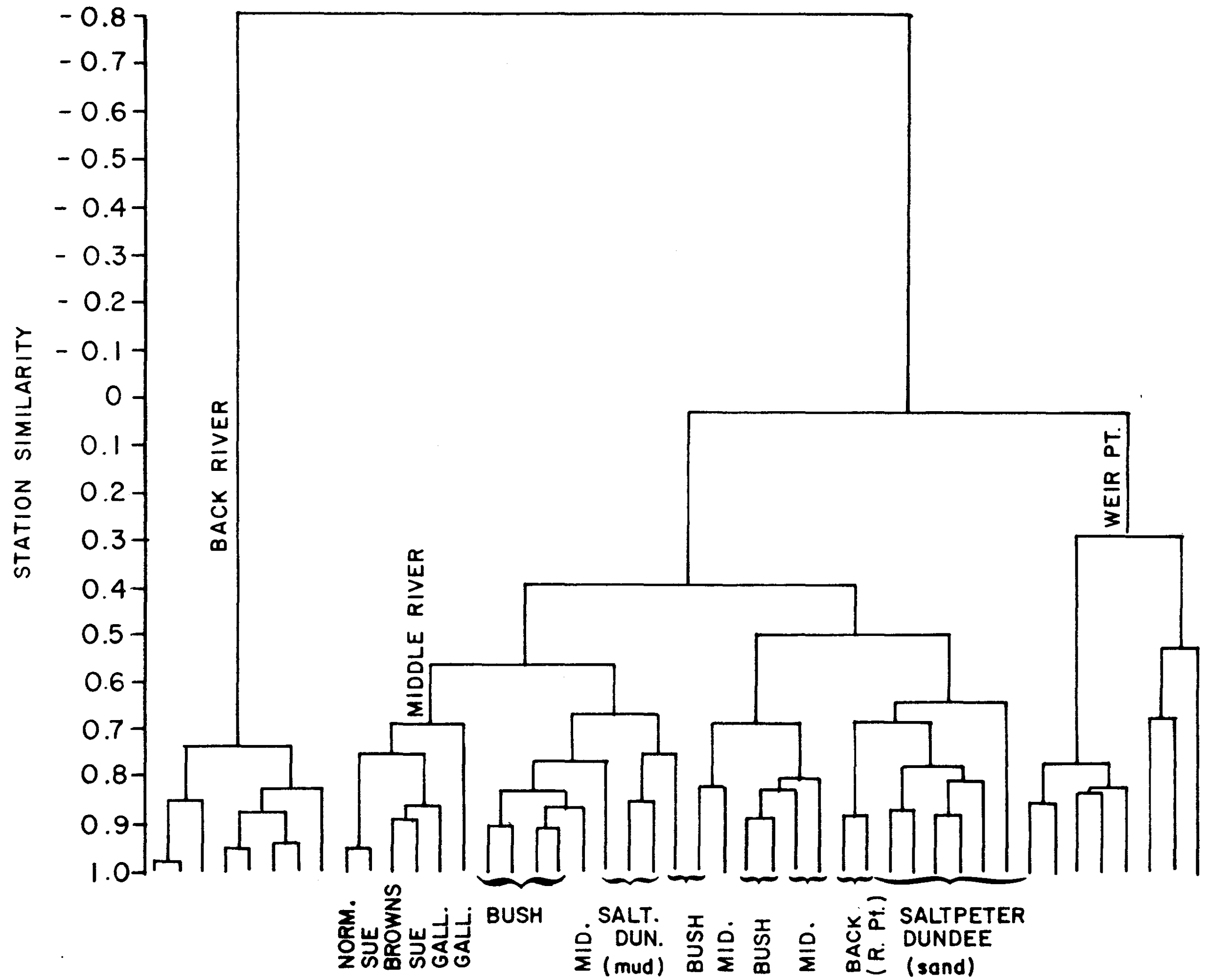

Figure 25 April 1979. Cluster Analysis Results

Detailed dendrograms, depicting station and species clusters interlinked in terms of fidelity indices, are presented in Appendix E. The station clusters have been summarized in simplified dendrograms in Figure 26 and on charts of the study area (Figures 27-38). June 1979: The two major station clusters are distinguished mainly by sediment type, although there is some overlap. Cluster I includes all of the mud sampling areas except Doves Cove. Cluster II contains all of the sand sampling areas except upper Saltpeter Creek.

Seven subdivisions of cluster I can be identified as can five divisions of cluster II, most of which represent geographical zones within the study area. The Doves Cove mud and Bush River sand communities (IIA and IIB, Figure 27) are separated from those of the other areas at the lowest levels of similarity. The separation among the other sand areas is sharp except for the co-clustering of the Sue Creek stations and one Doves Cove station (IIE, Figures 27 and 28) and the grouping of a Middle River station with the Weir Point sand stations (IIC, Figures 28 and 29). The upper Saltpeter Creek sand community (IF, Figure 29) is more similar to the mud communities than to the other sand communities, including the geographically proximate Dundee Creek sand area (IID, Figure 29).

The mud station subclusters exhibit a tendency for overlapping of sampling areas, but at the same time several of the creek station groups are subdivided. Subcluster IA consists of the lower Crane Power Plant discharge area (Figure 29), which includes the five stations in lower Saltpeter Creek, the two stations in upper Saltpeter below the discharge (the lower upper Saltpeter zone), and the two downstream-most Dundee Creek stations (the lower Dundee zone). The

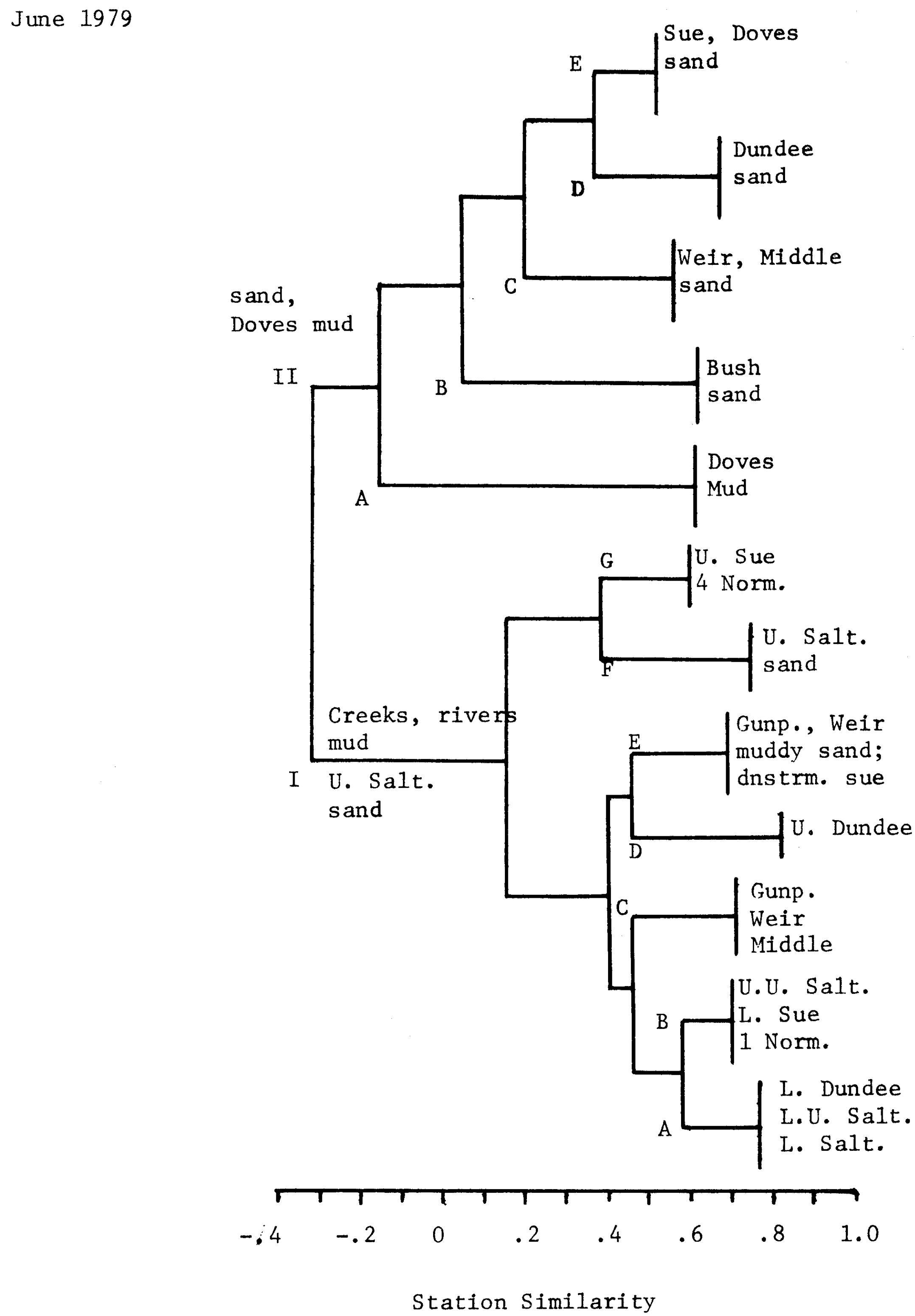

Figure 26. Station cluster analysis summaries.

September 1979

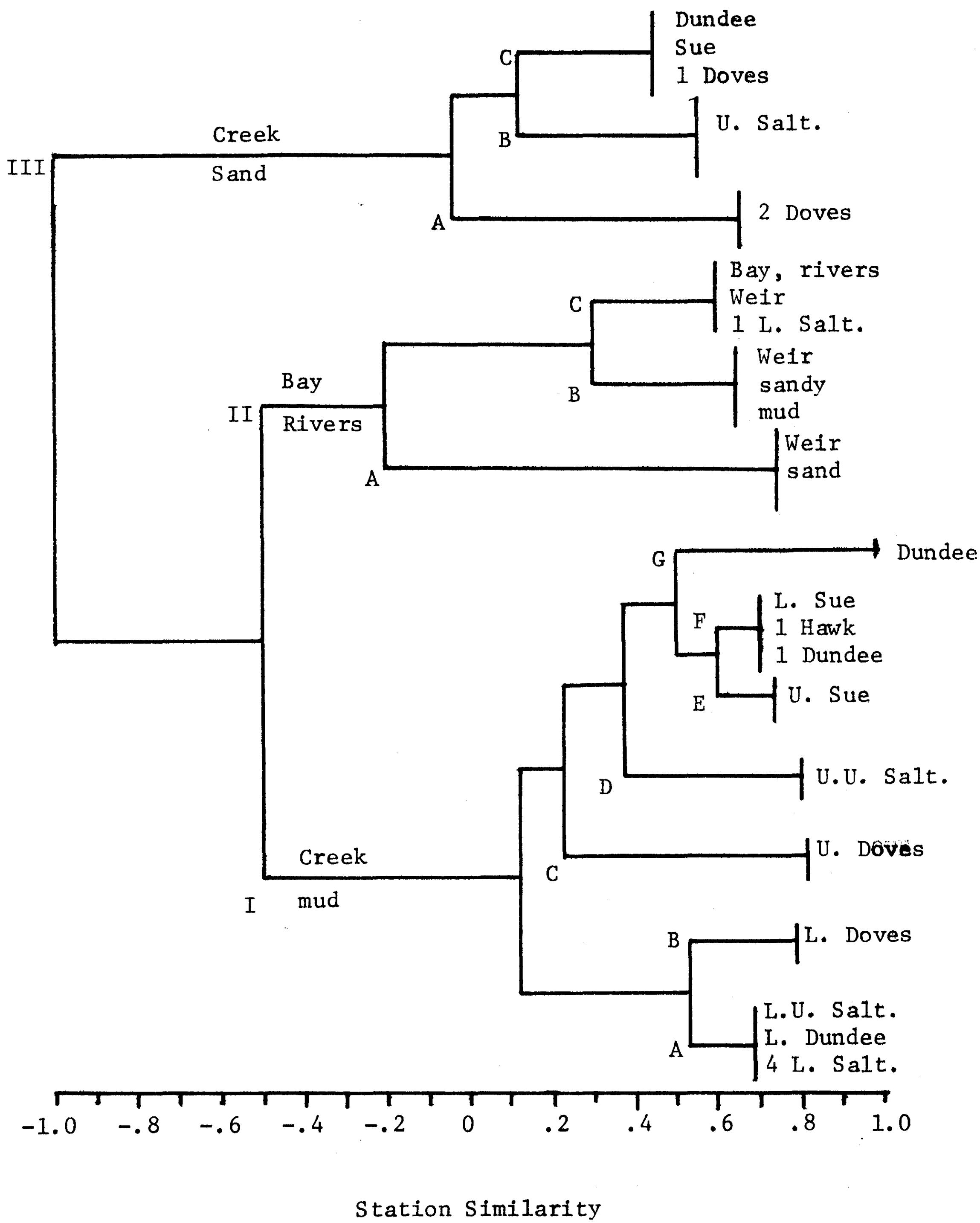

Figure 26 (cont.).

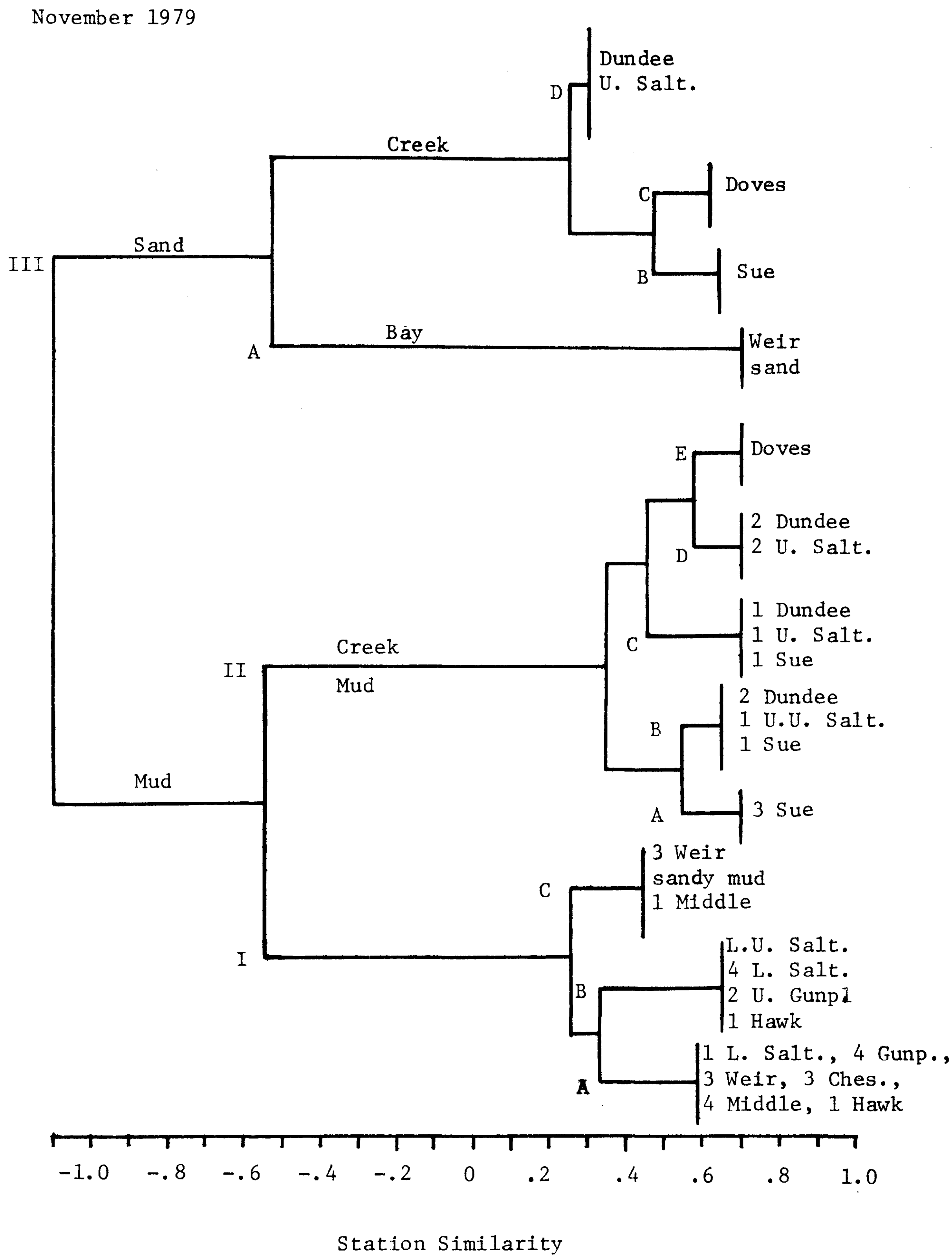

Figure 26 (cont.).

April 1980

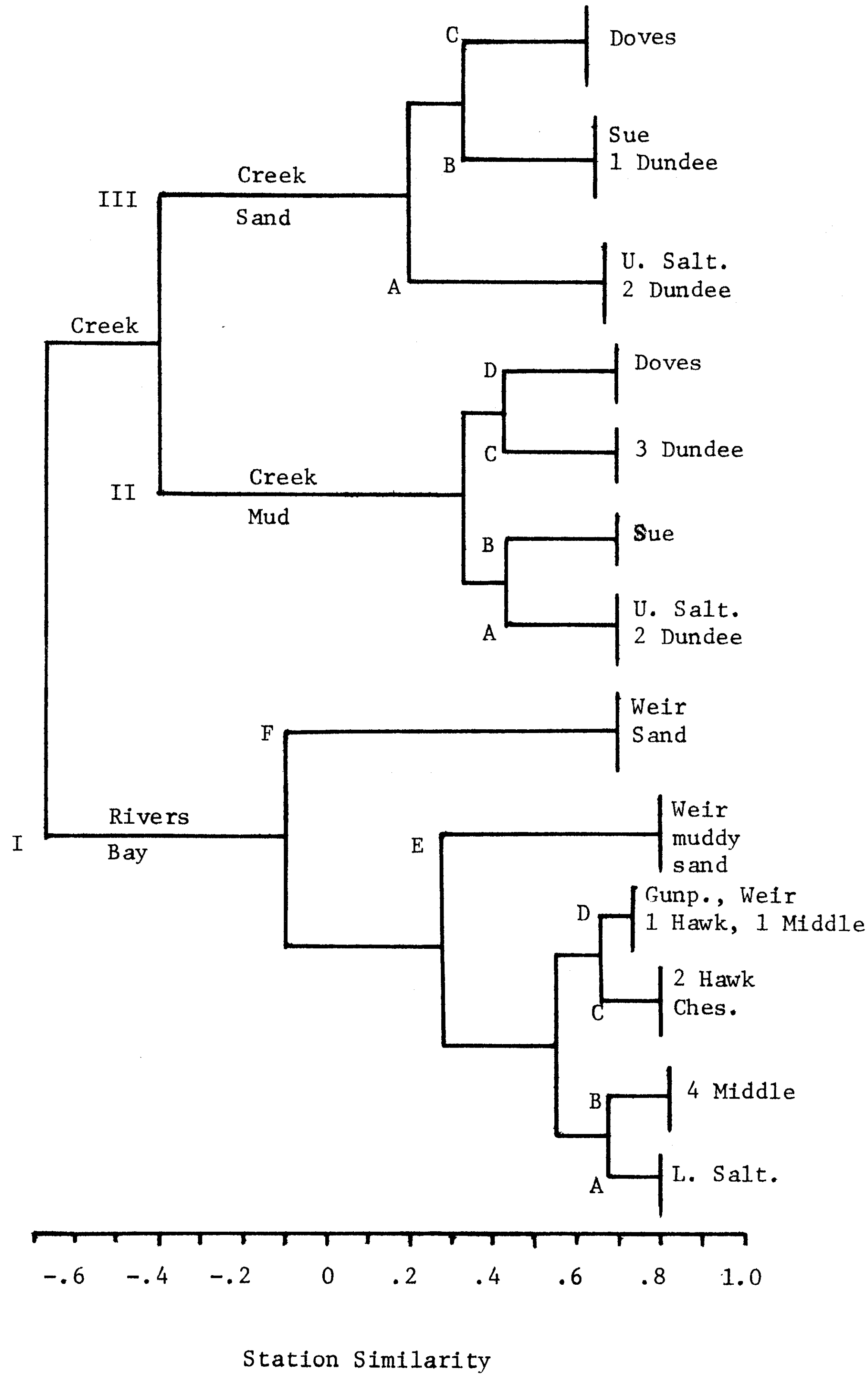

Figure 26 (cont.).

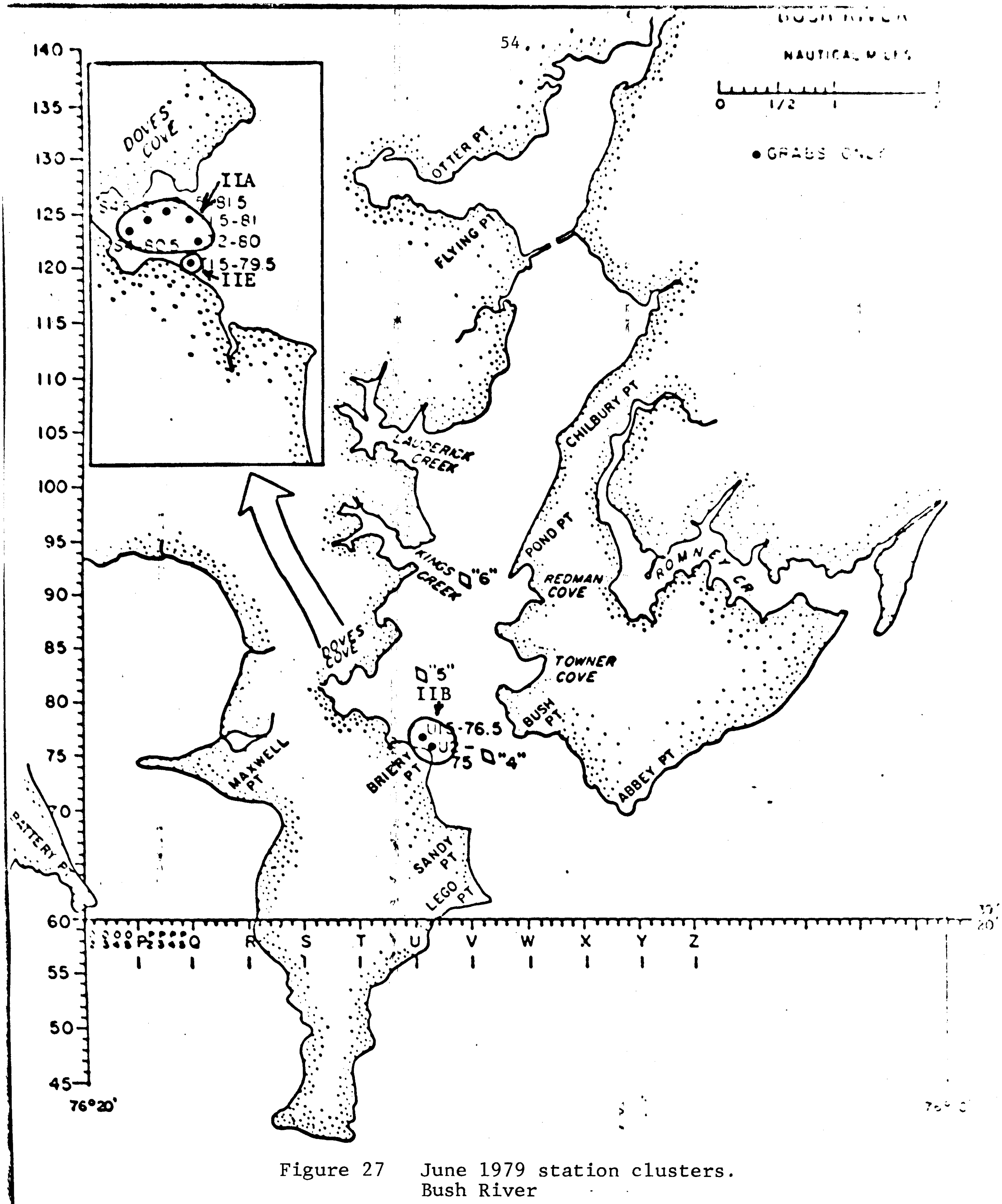

Figure 27 June 1979 station clusters.
Bush River

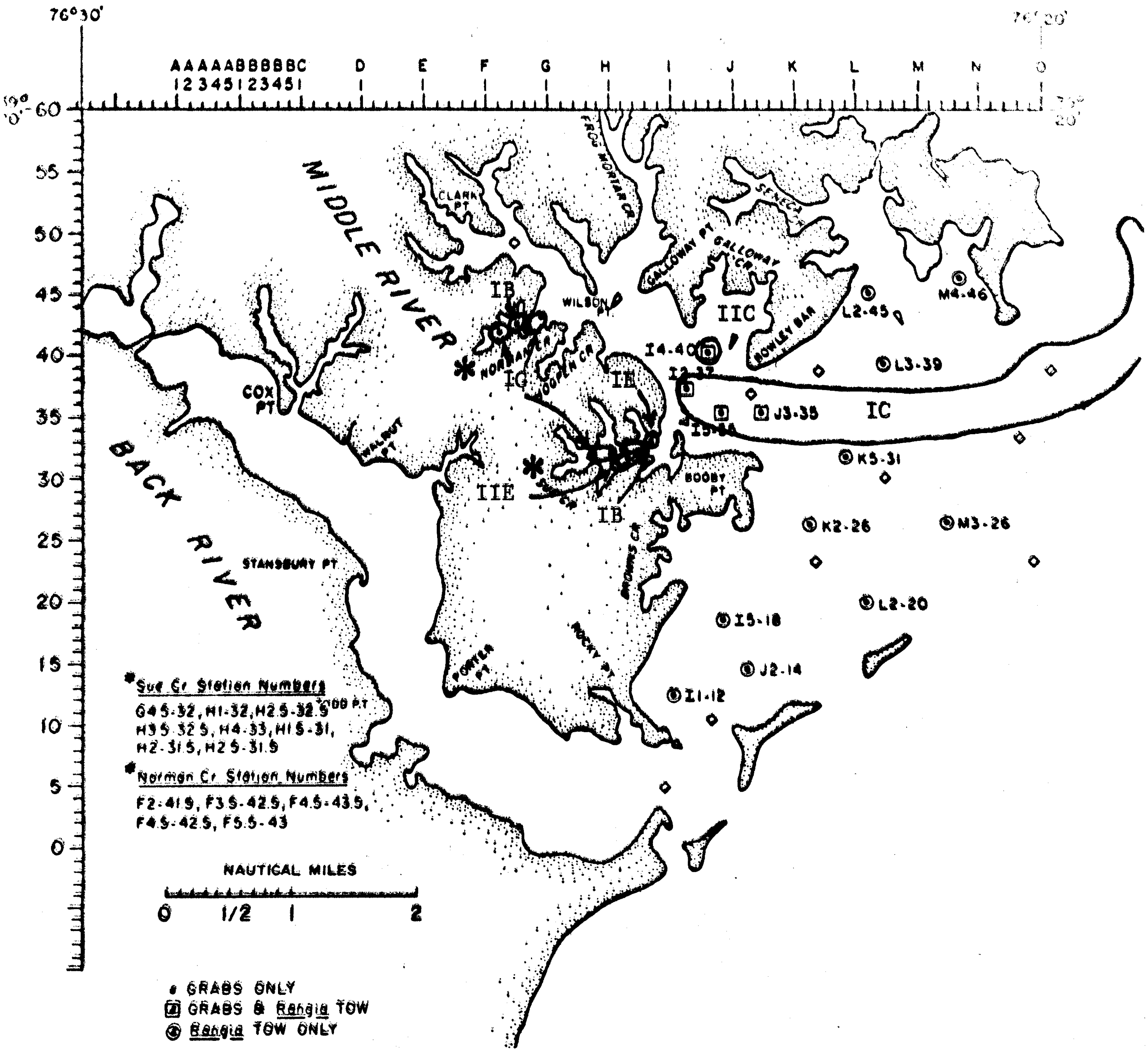

Figure 28. June 1979 station clusters, Middle R. and Chesapeake Bay

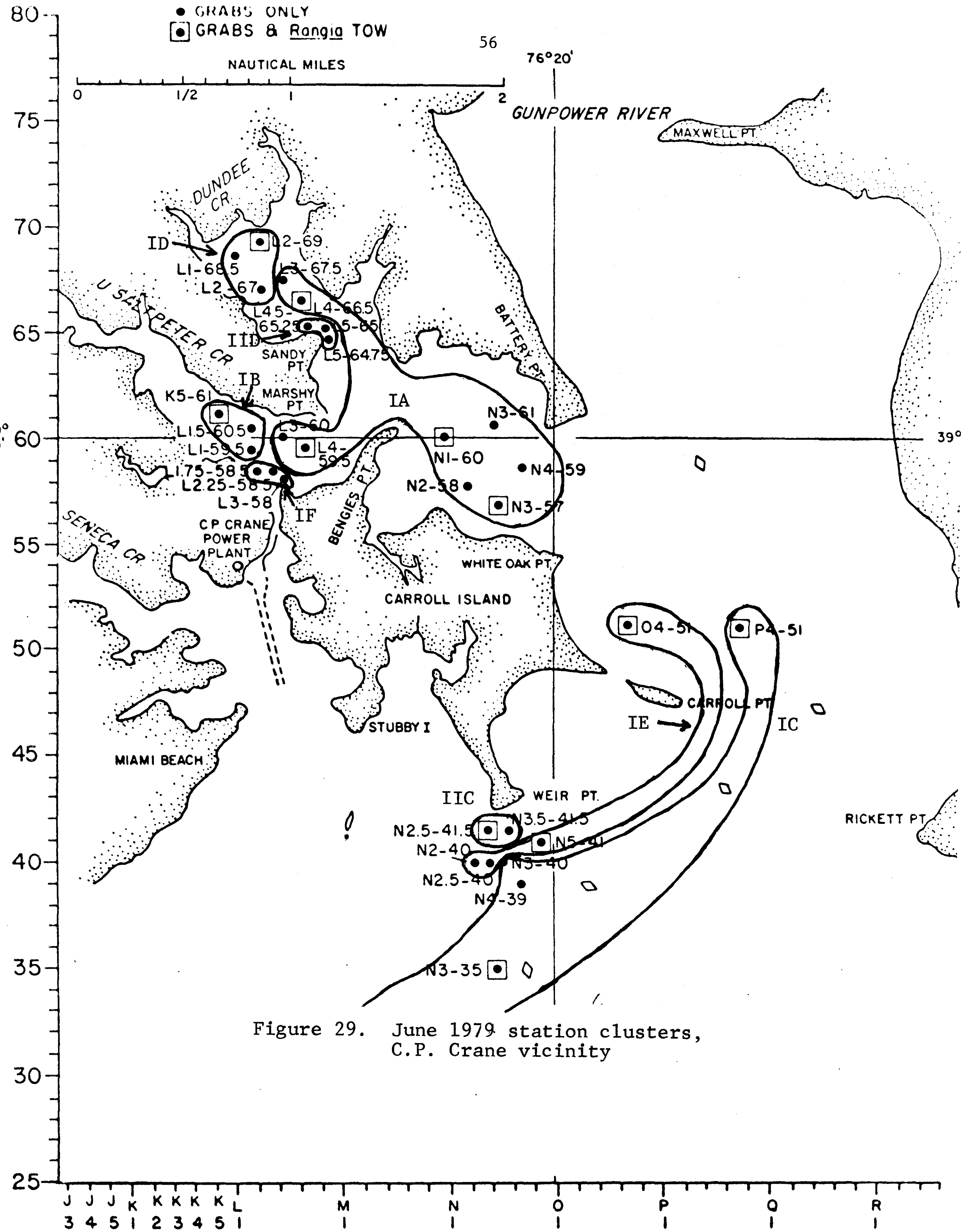

Figure 29. June 1979 station clusters, C.P. Crane vicinity

remaining upper Saltpeter stations, located upstream from the discharge (upper upper Saltpeter zone) are grouped in subcluster IB with two stations in lower Sue Creek and one station in Norman Creek (Figures 28 and 29), while the three upper Dundee Creek stations form a distinct group, subcluster ID (Figure 29). The two upper Sue Creek stations appear in subcluster IG along with the remaining Norman Creek Stations (Figure 28). The downstream-most Sue Creek station is in subcluster IE, which includes sandy mud and muddy sand stations from Weir Point and the Gunpowder River (Figures 28 and 29). The remaining subcluster, IC, contains the Middle River, Gunpowder River, and Weir Point mud stations and one Weir Point sandy mud station (Figures 28 and 29).

September 1979: The September similarity analysis yielded a third main station cluster (Figure 26), due in part to the expansion of the sampling design to include more areas in the rivers and Chesapeake Bay. Sediment type is still a major distinguishing factor, with the sharp separation between cluster III and the others signifying a sand versus mud community dichotomy, at least for the creeks. Within the sand cluster there is overlap among the Dundee, Sue, and Doves Cove sampling sites (subcluster IIIC, Figures 30, 31, and 32). The upper Saltpeter Creek stations once again form a separate subcluster (IIIB), but in contrast with the June pattern, it is within the main sand cluster. The two remaining Doves Cove sand stations form subcluster IIIA.

Cluster I consists almost exclusively of mud sampling areas in the creeks. Subcluster IA (Figure 30) is similar to the June lower Crane area cluster. The lowest lower Saltpeter station, however, is in subcluster IIC which contains the Gunpowder River, Weir Point, Middle River, Chesapeake Bay and two of the three Hawk Cove stations

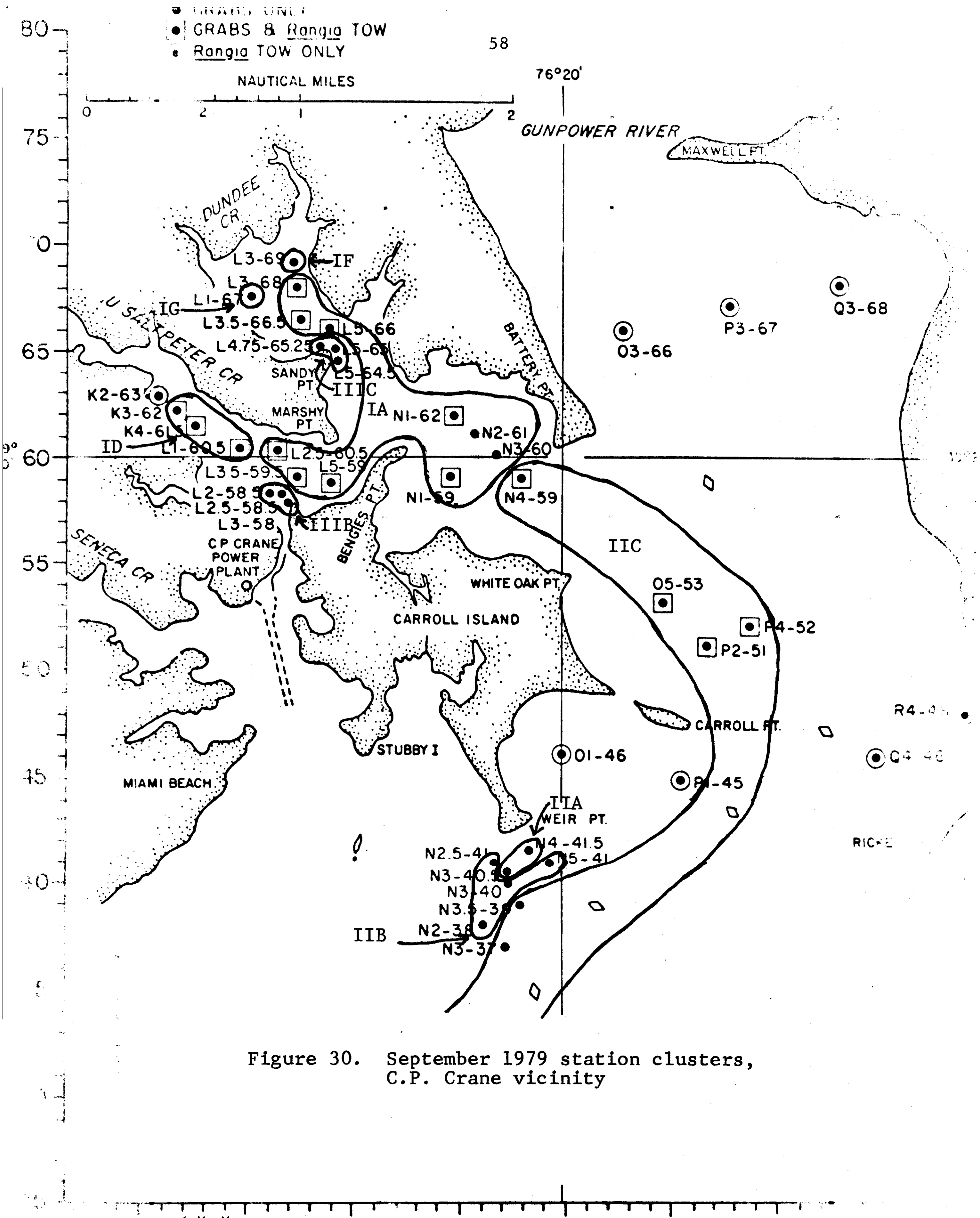

Figure 30. September 1979 station clusters, C.P. Crane vicinity

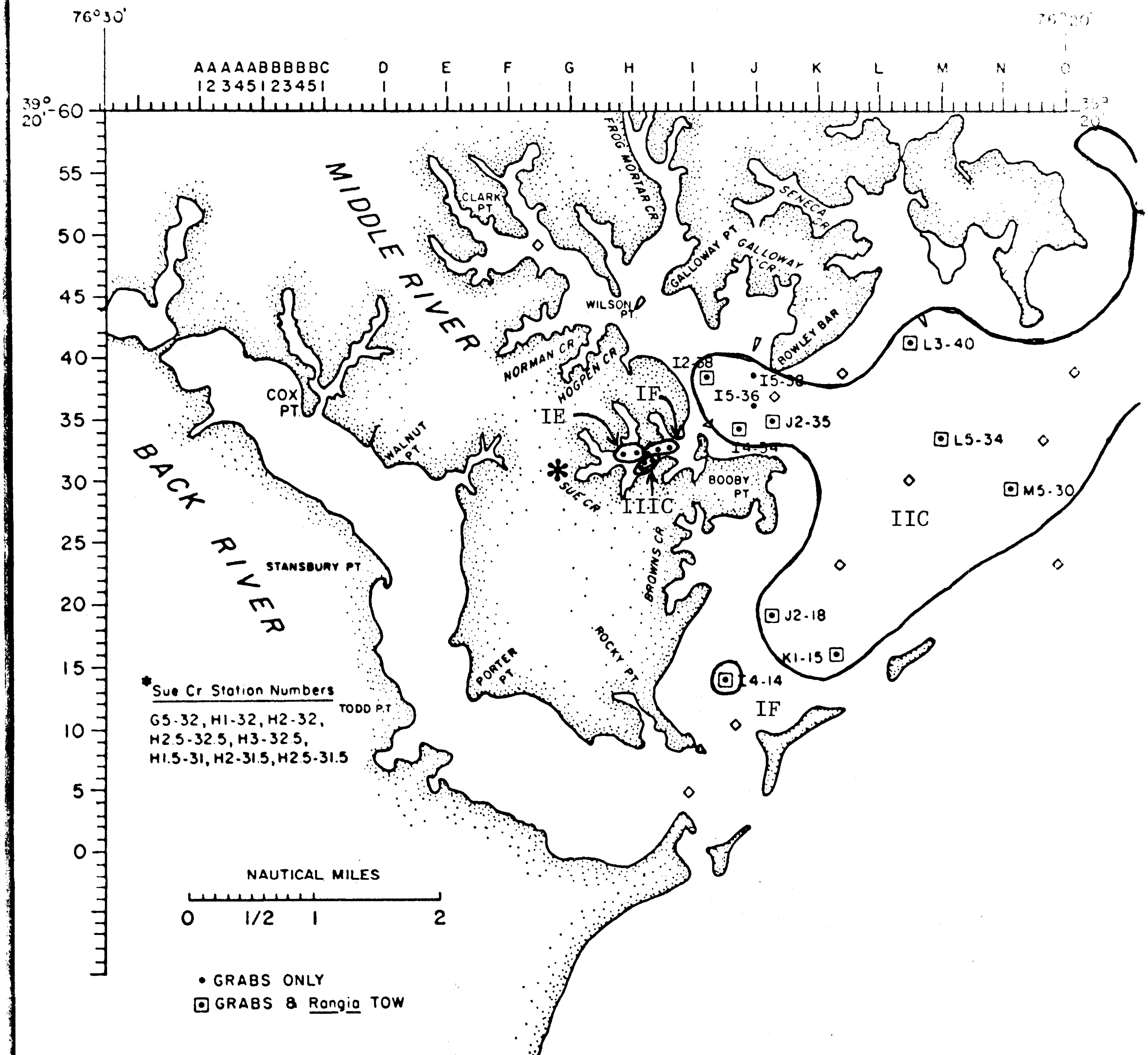

Figure 31. September 1979 station clusters,
Middle R. and Chesapeake Bay

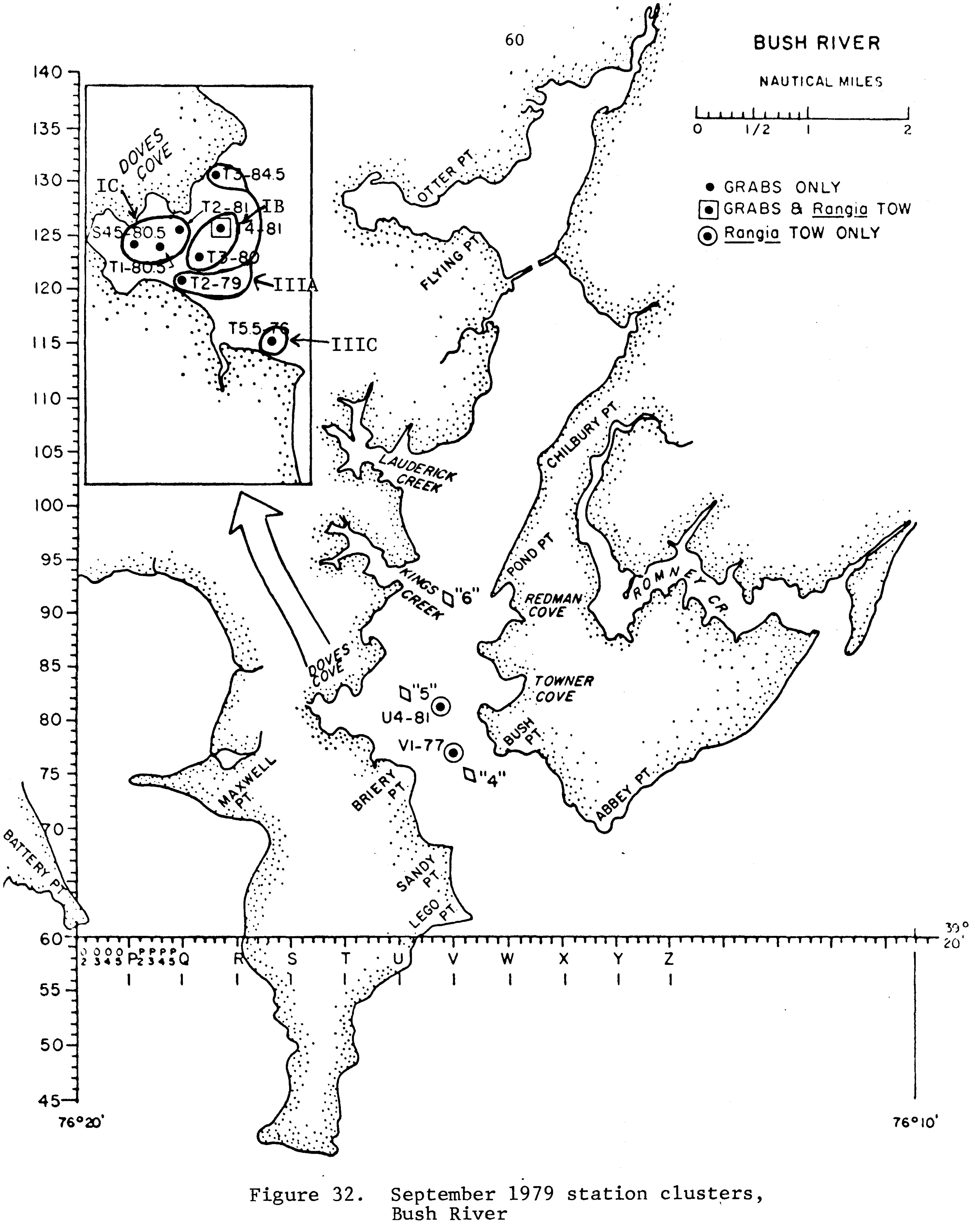

Figure 32. September 1979 station clusters, Bush River

(Figures 30 and 31). Subclusters IB, C, D, E, and G all represent distinct geographical areas, with Doves Cove (IB and C), Sue Creek (IE and F), and upper Saltpeter Creek (IA and D) stations appearing in groups representing upstream and downstream creek zones. The Dundee Creek mud stations occur in three subclusters (IA, F, and G), and the lowest Hawk Cove station (Figure 31) clusters in IF with Sue and Dundee Creek stations.

Cluster II includes the Weir Point sand stations (IIA), the Weir Point sandy mud and muddy sand stations (IIB), and the river-bay complex (IIC). The high levels of similarity exhibited within subcluster IIC indicate that in September spatial variability in the benthos community in the rivers and bay was low relative to the situation in the creeks, in all of which distinct upper and lower zones were evident.

<ins>November 1979</ins>: For November the main sand station cluster (III, Figure 26) contains the Weir Point sand stations (IIIA) as well as the creek sand sampling areas. In contrast with the June and September patterns, the upper Saltpeter and Dundee Creek sand stations cluster together (IIID), while the Sue Creek and Doves Cove stations form separate groups (IIIB and C).

Main cluster I consists principally of the river and bay stations, however the lower Crane discharge area is also included (IB, Figure 26). As in September, the lowest lower Saltpeter Creek station is included in the large river-bay subcluster (IA, Figures 33 and 34), but at the same time two of the Gunpowder River stations are part of the lower Crane subcluster, IB. The lowest Hawk Cove station also appears in this group. Subcluster IC consists of three

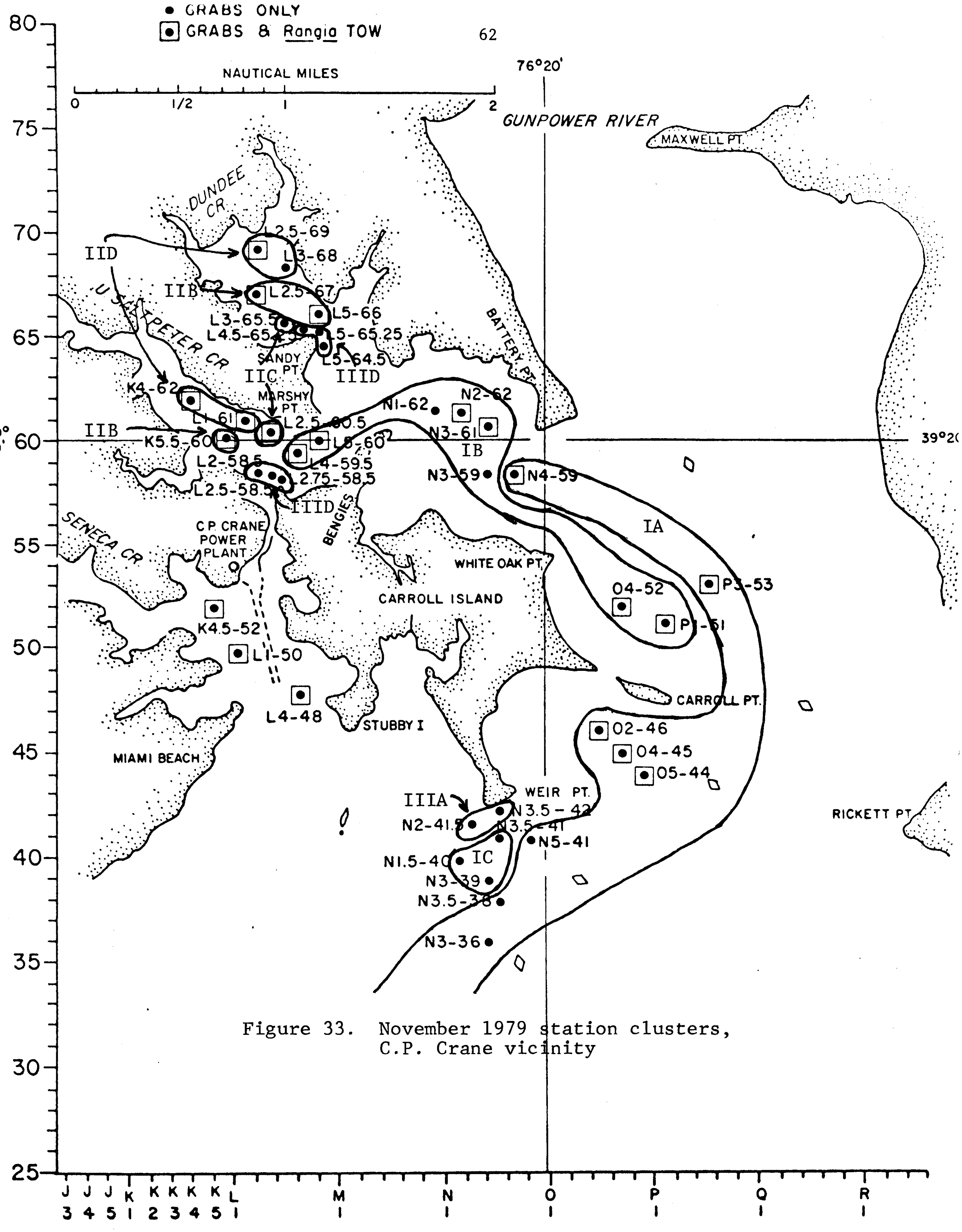

Figure 33. November 1979 station clusters, C.P. Crane vicinity

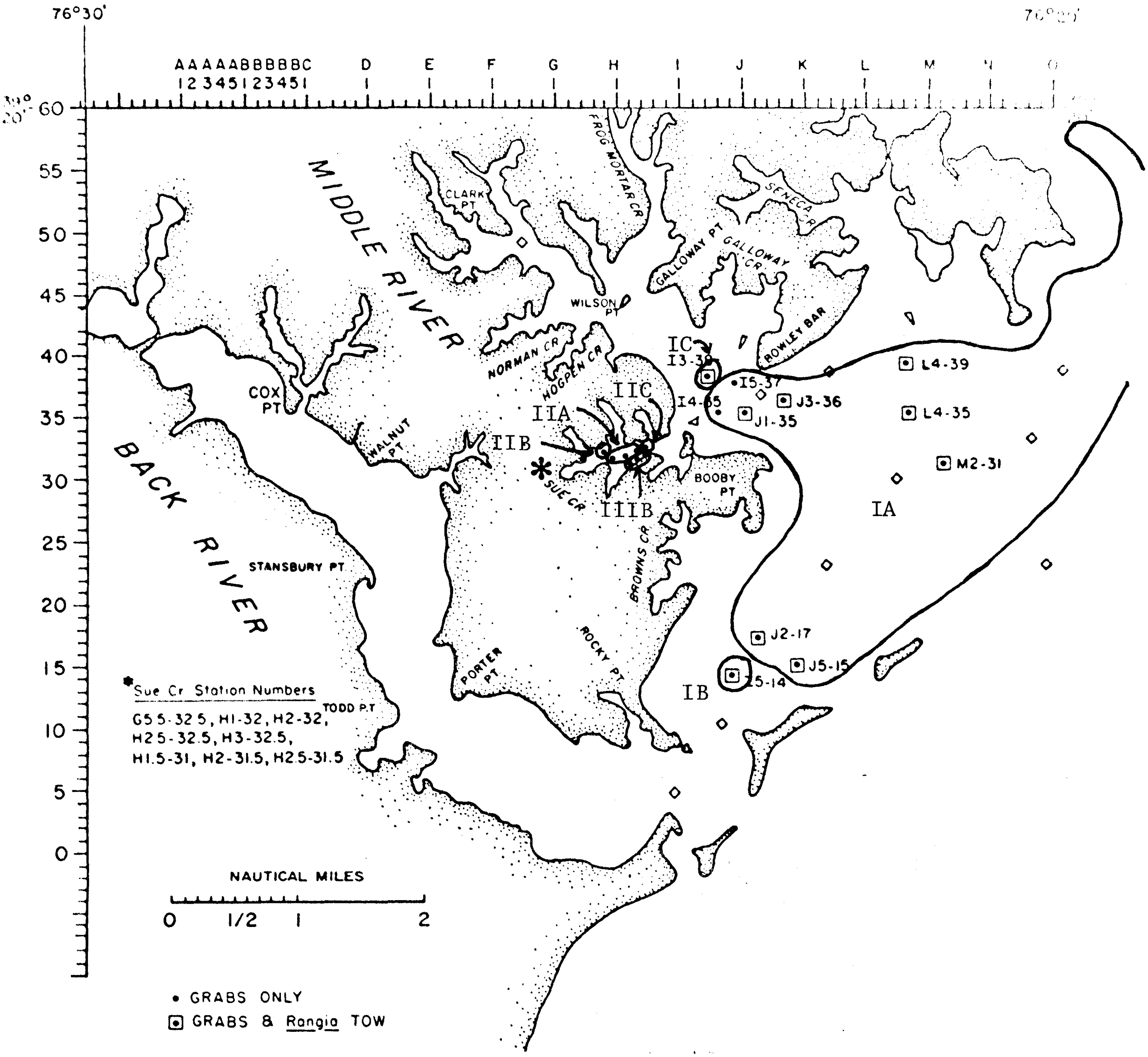

Figure 34. November 1979 station clusters,
Middle R. and Chesapeake Bay

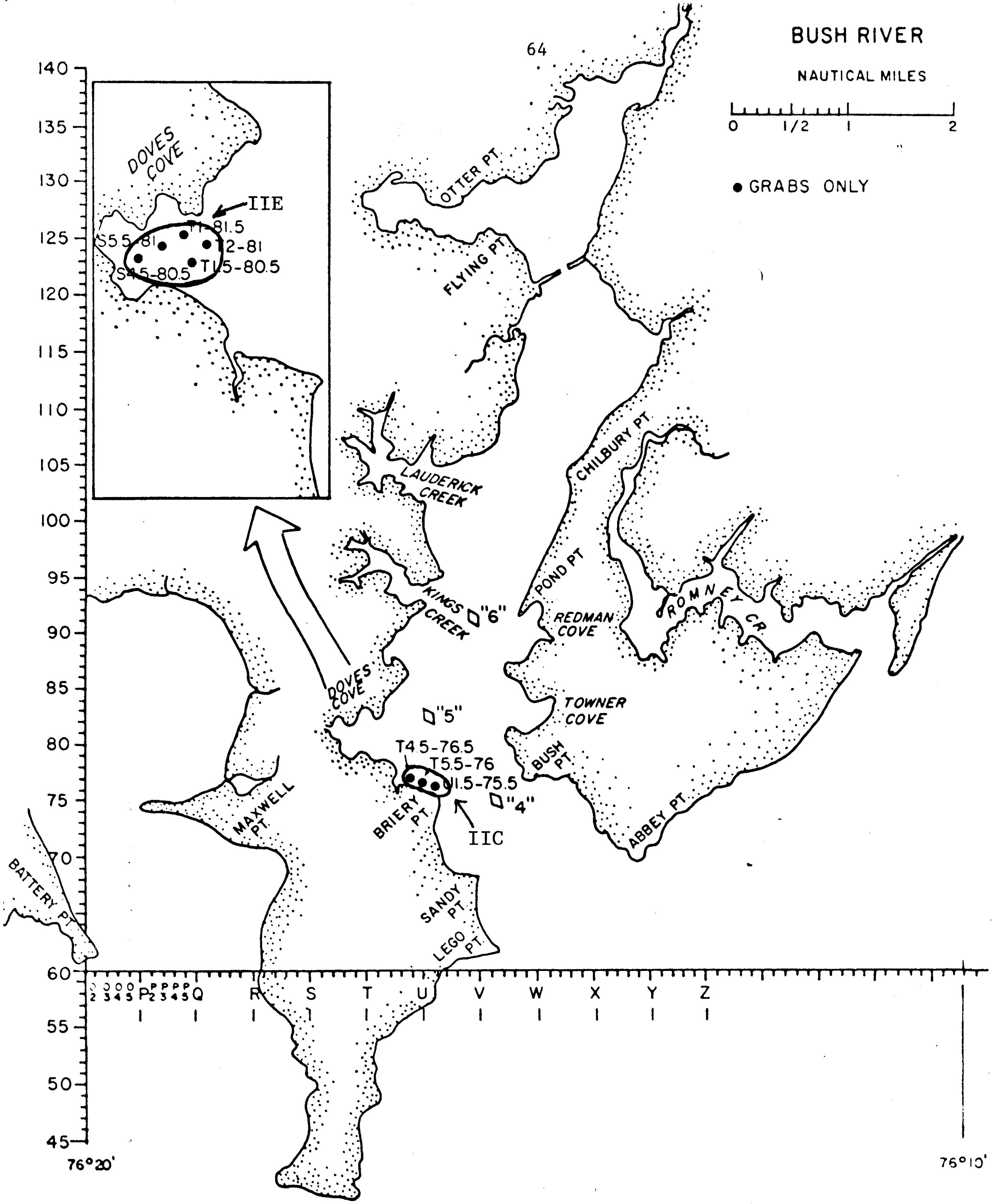

Figure 35. November 1979 station clusters, Bush River

Weir Point mixed sediment stations (Figure 33) and the upstream-most Middle River station (Figure 34).

Main cluster II is composed exclusively of creek stations, which, with the exception of the Doves Cove group (IIE, Figure 35), are distributed, with little fidelity to their geographic zones, among four apparent subclusters (IA-D). Three stations from central Sue Creek comprise subcluster IIA, while the extreme upstream station is in IIB with two lower Dundee stations and one upper upper Saltpeter station. The downstream-most Sue Creek station clusters with one lower Dundee and one upper Saltpeter station in IIC, while the remaining upper Dundee and upper upper Saltpeter stations form subcluster IID (Figure 33). Thus, as for the preceding sampling runs, the similarity analysis of the November data revealed a variability within the creek mud sampling areas that contrasted with the relative spatial homogeneity of the river-bay community. However, the groupings of stations within creeks in November were less clearly oriented along a longitudinal gradient. April 1980: In April, once again, three main station clusters emerged from the analysis (Figure 26). The pattern contrasts somewhat with those of the preceding sampling runs, however, in that the initial separation, between cluster I and clusters II and III, is primarily related to geography (river-bay vs creek areas), rather than to sediment type (sand versus mud). Also, within the river-bay cluster (I) there are several distinct geographical subdivisions. Subcluster IB consists of four Middle River stations, the fifth of which appears in subcluster ID along with the Gunpowder River and Weir Point mud stations, and one station in Hawk Cove (Figures 36 and 37). The remaining two Hawk Cove stations are grouped with the three Chesapeake Bay stations in IC.

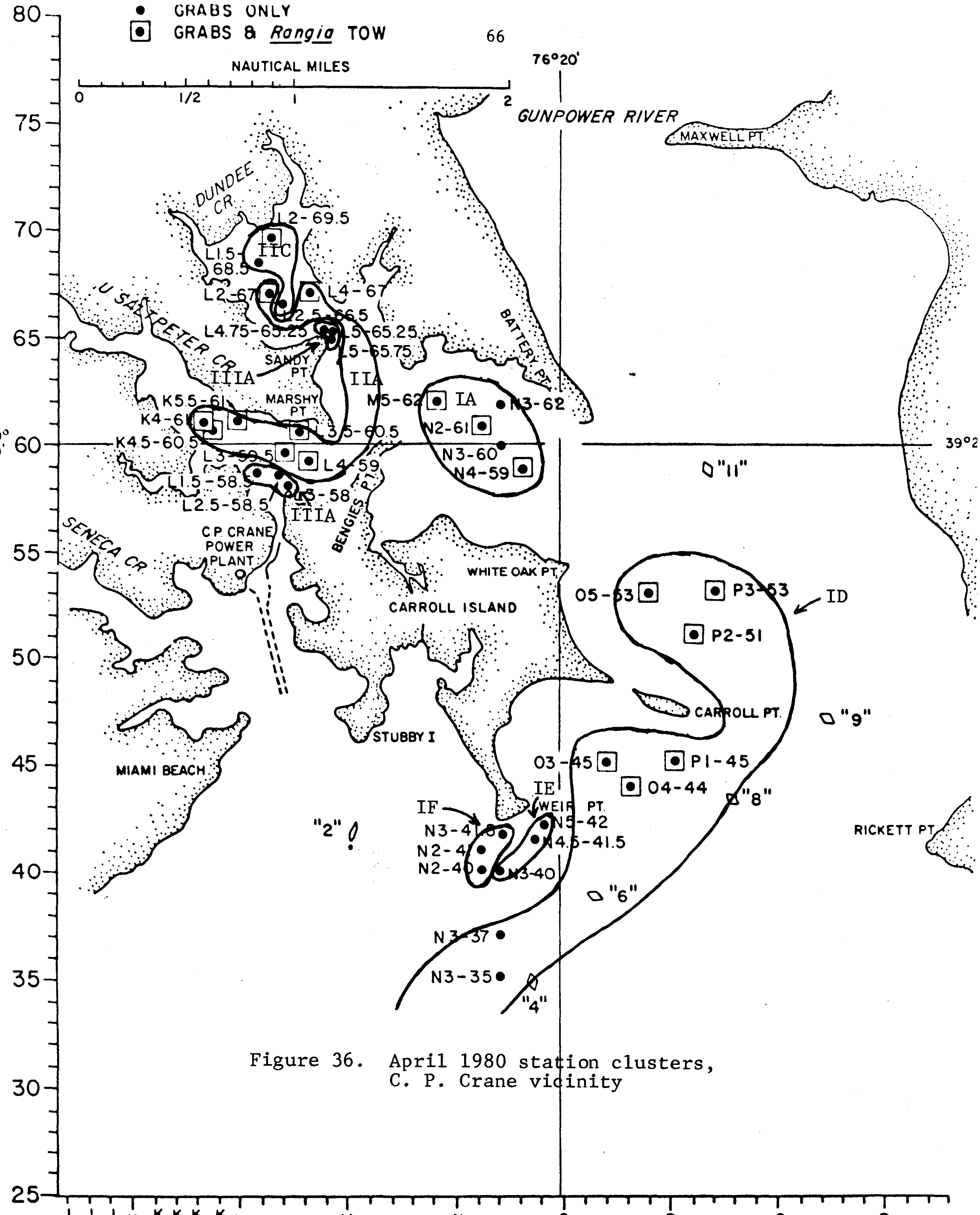

Figure 36. April 1980 station clusters, C. P. Crane vicinity

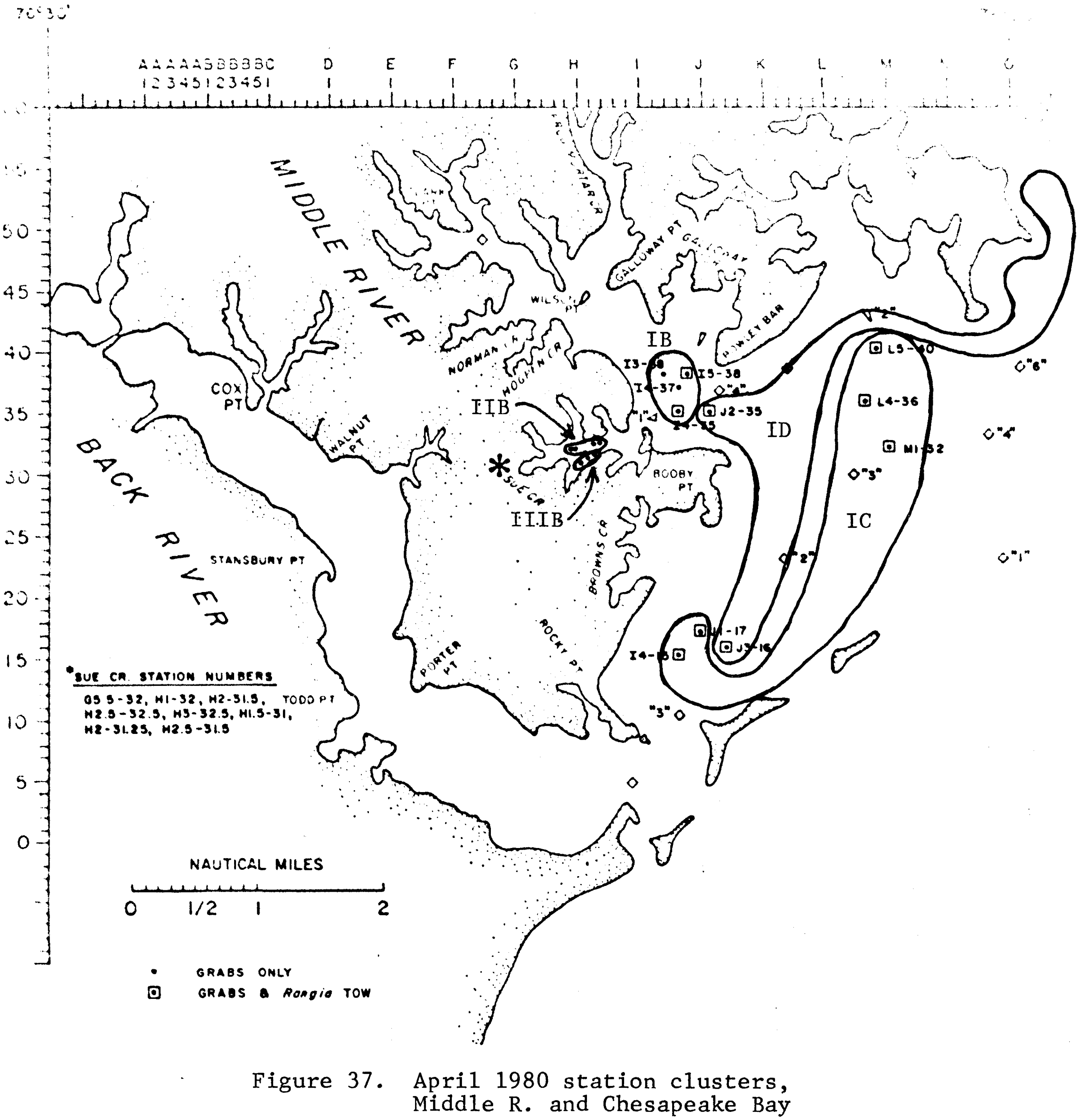

Figure 37. April 1980 station clusters,
Middle R. and Chesapeake Bay

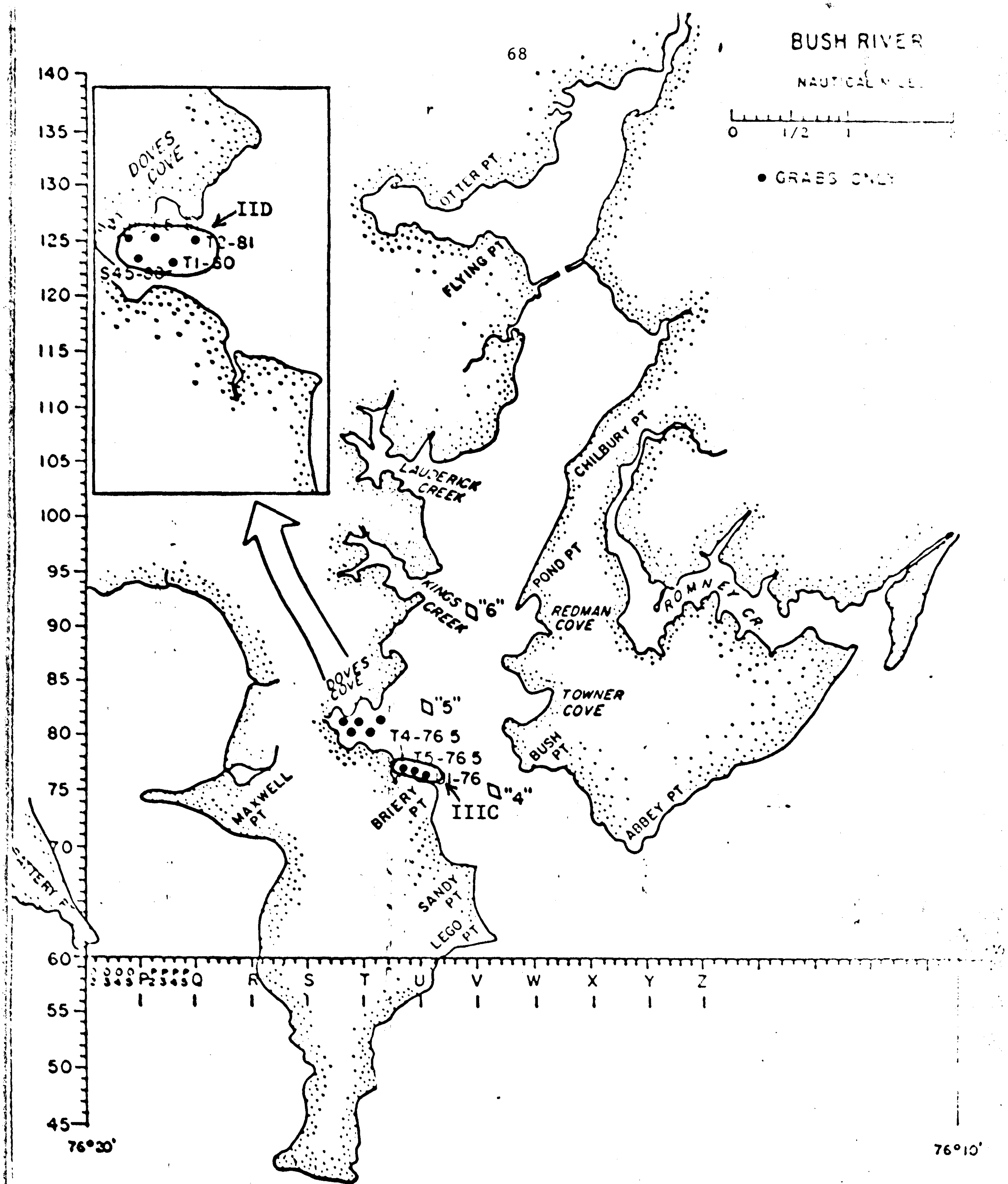

Figure 38. April 1980 station clusters, Bush River

The Weir Point sand and mixed sediment stations occur in subclusters IE and IF (Figure 36). The remaining subdivision of cluster I (IA) consists of the lower Saltpeter Creek stations, which in April apparently had benthic communities more similar to the river-bay fauna than to the creek fauna.

Cluster II consists exclusively of creek mud stations. Only the Dundee stations are split between subclusters, the Doves Cove, Sue Creek, and upper Saltpeter stations being sharply separated. The lower Dundee and upper Saltpeter Creek stations form subcluster IIA (Figure 36) that represents the Crane discharge area. The three Dundee stations in subcluster IIC had higher sediment loss on ignition levels than did any of the other creek stations.

In the sand cluster (III) there is also a partial merging of the Dundee and upper Saltpeter sampling areas (subcluster IIIA, Figure 36). The Doves Cove and Sue Creek sand areas are sharply separated, as are the mud areas in these two systems (Figures 37 and 38).

In the April dendrogram, therefore, the stations throughout the study area are grouped into sharply defined geographical zones, within which the benthic communities are relatively homogeneously distributed, within sediment types. Using this spring situation as a starting point, we may propose that during the progression through the summer and into the fall, the invertebrate populations in the creeks respond to subtle environmental gradients and develop more complicated spatial patterns, while the river and bay populations, in a deeper, less patchy environment, tend to respond to larger scale phenomena, and to exhibit relatively homogeneous spatial distributions.

The division of the upper Saltpeter Creek station set into upper and lower subclusters in June, September, and November is paralleled by patterns in the creek reference areas, and therefore in itself is not evidence of a power plant effect. However, there are some community characteristics by which the upper Saltpeter benthos is set apart, notably in total number of species (lowest of all mud sampling areas in September upper upper Saltpeter, Figure 39), number of dipteran species (lower than any other creek mud area, September, Figure 40), number of dipteran species as a fraction of the total number of species (lowest of all mud creek areas, lower upper Saltpeter, September, Figure 41), and species diversity and richness (lowest of all mud sampling areas, upper upper Saltpeter, September, Figures 42 and 43).

The communities in the sand sampling areas form sharply defined main clusters for three of the sampling runs, September, November and April. However, the June upper Saltpeter sand community falls outside the main sand cluster, as a result, primarily, of a relative lack of dipterans in this zone (Figure 44).

The species clusters tended to separate groups of abundant, widely distributed species from groups of rare, patchily distributed species. Rather than examine the spatial distributions of the invertebrate species in this section by dissecting these clusters, a subsequent section will be devoted to a species by species account of both spatial and temporal patterns.

Invertebrate Species Distributions

The spatial distributions of the major species were examined using analysis of variance to detect significant differences in population densities among the sampling areas (Tables 4-15). For the mud sediment areas two sets of analyses were performed on each data

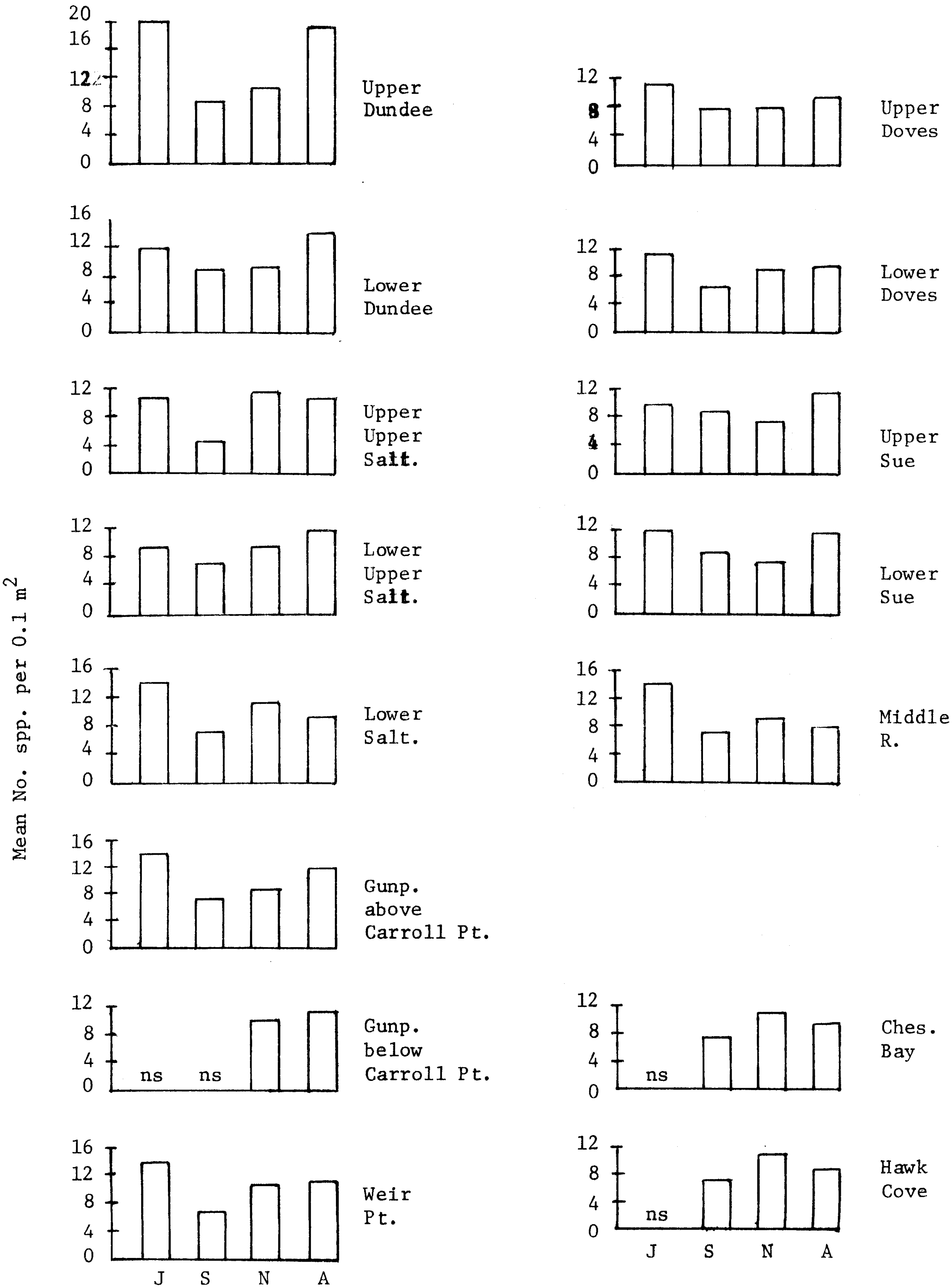

Figure 39. Mean numbers of species per 0.1 m^2 of sediment area, mud sampling areas. ns - not sampled

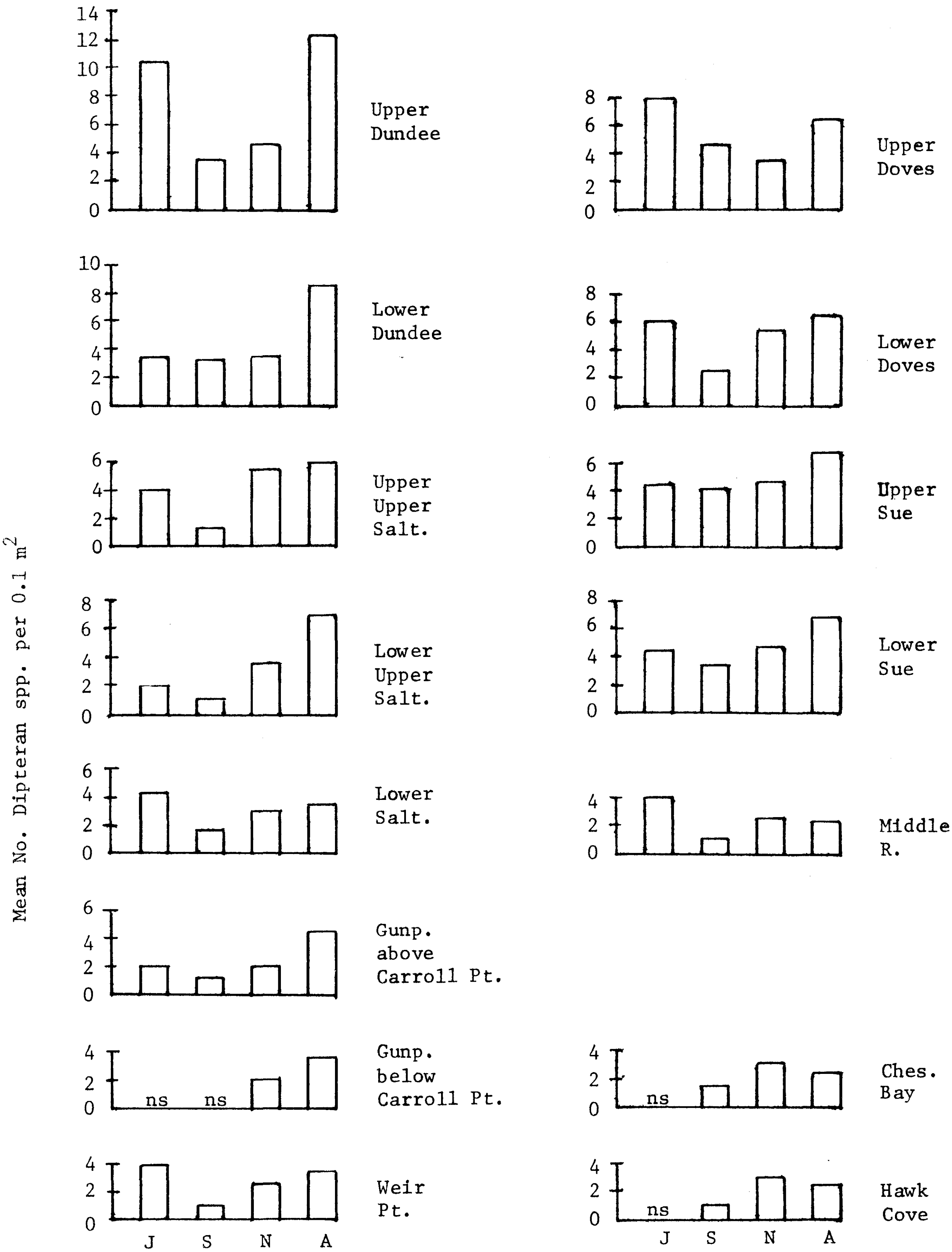

Figure 40. Mean numbers of dipteran species per 0.1 m^2 of sediment area, mud sediments.
ns - not sampled

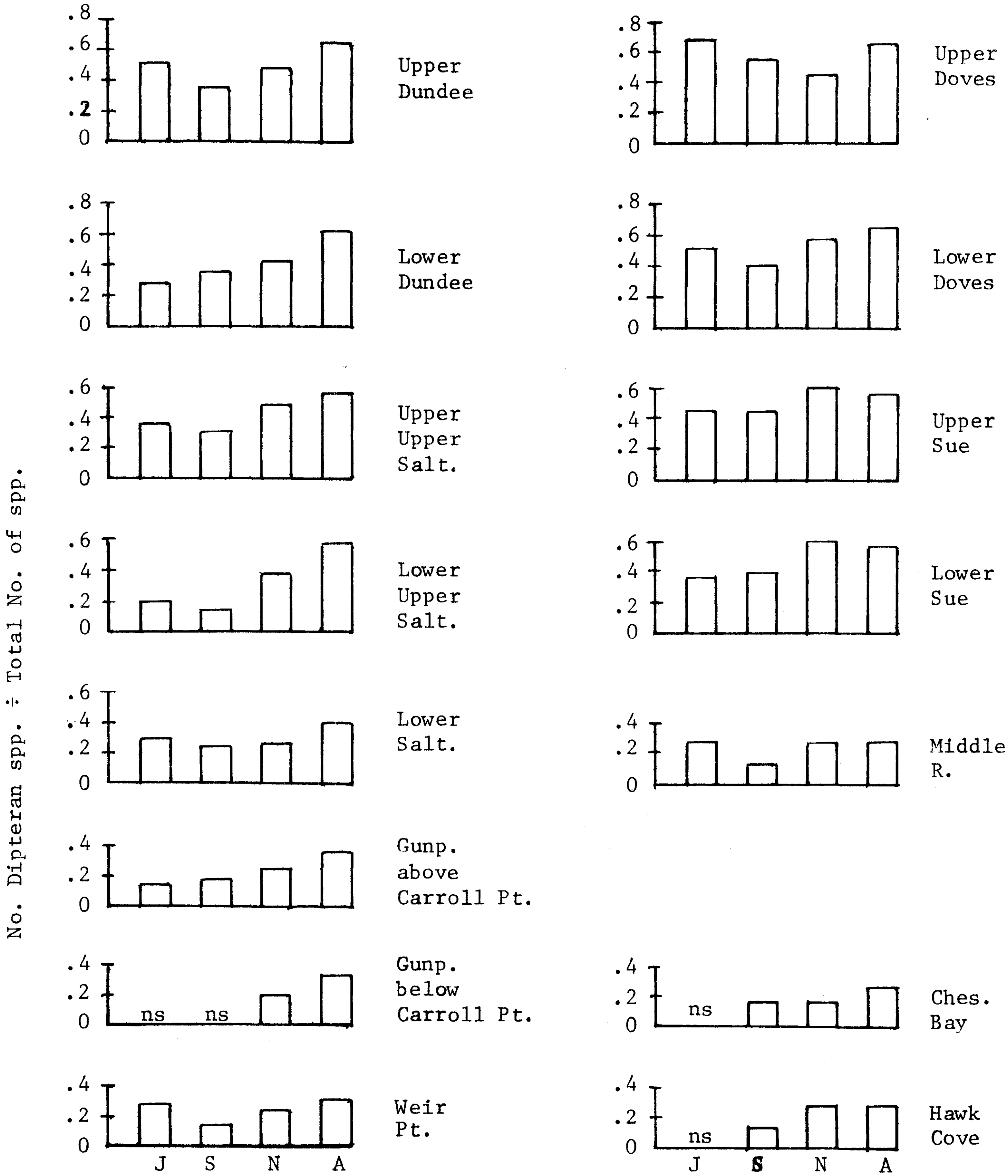

Figure 41. Numbers of dipteran species expressed as fractions of the total numbers of species. Average values, mud sediments. ns - not sampled

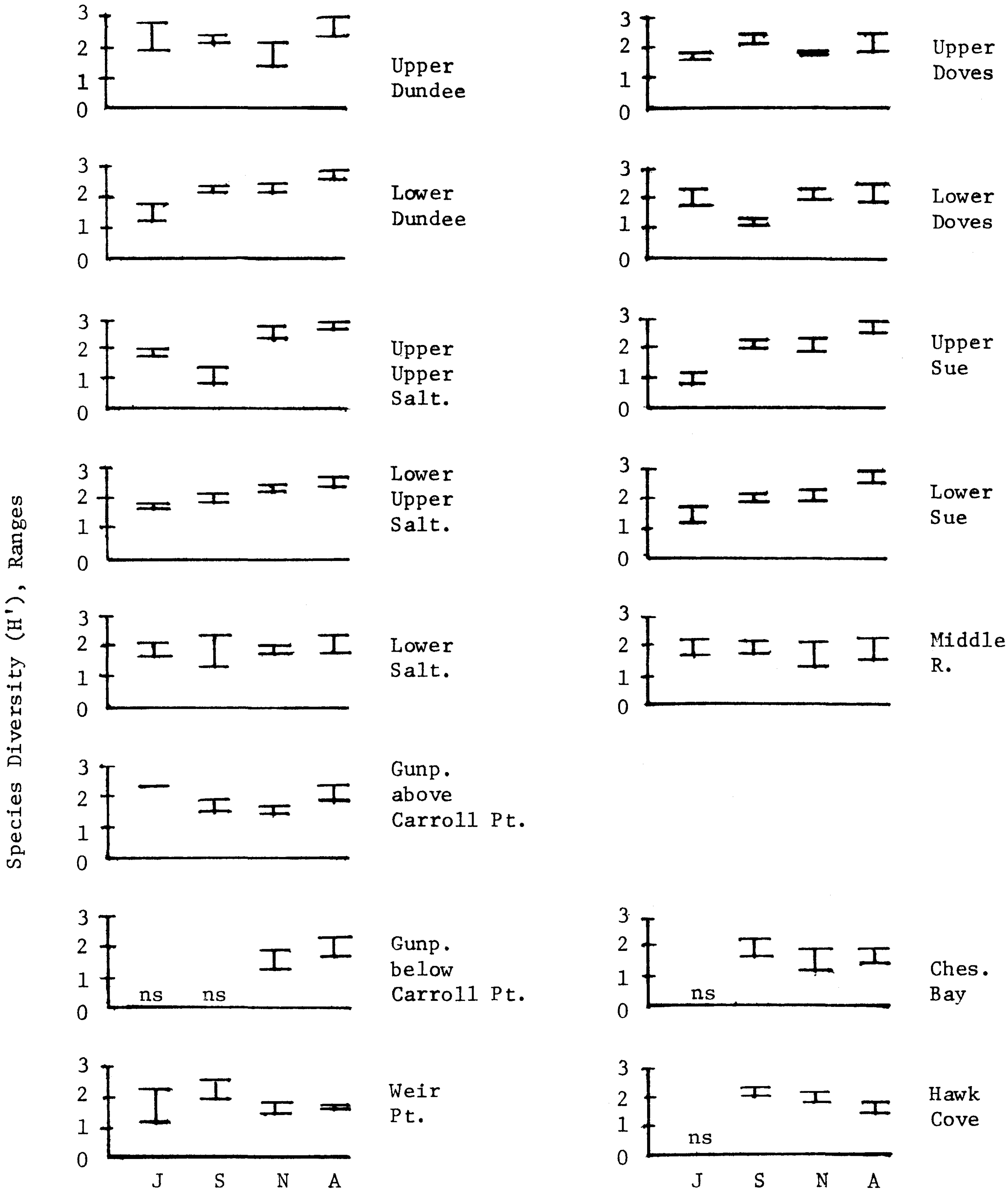

Figure 42. Species diversity ranges, mud sediments.
ns - not sampled

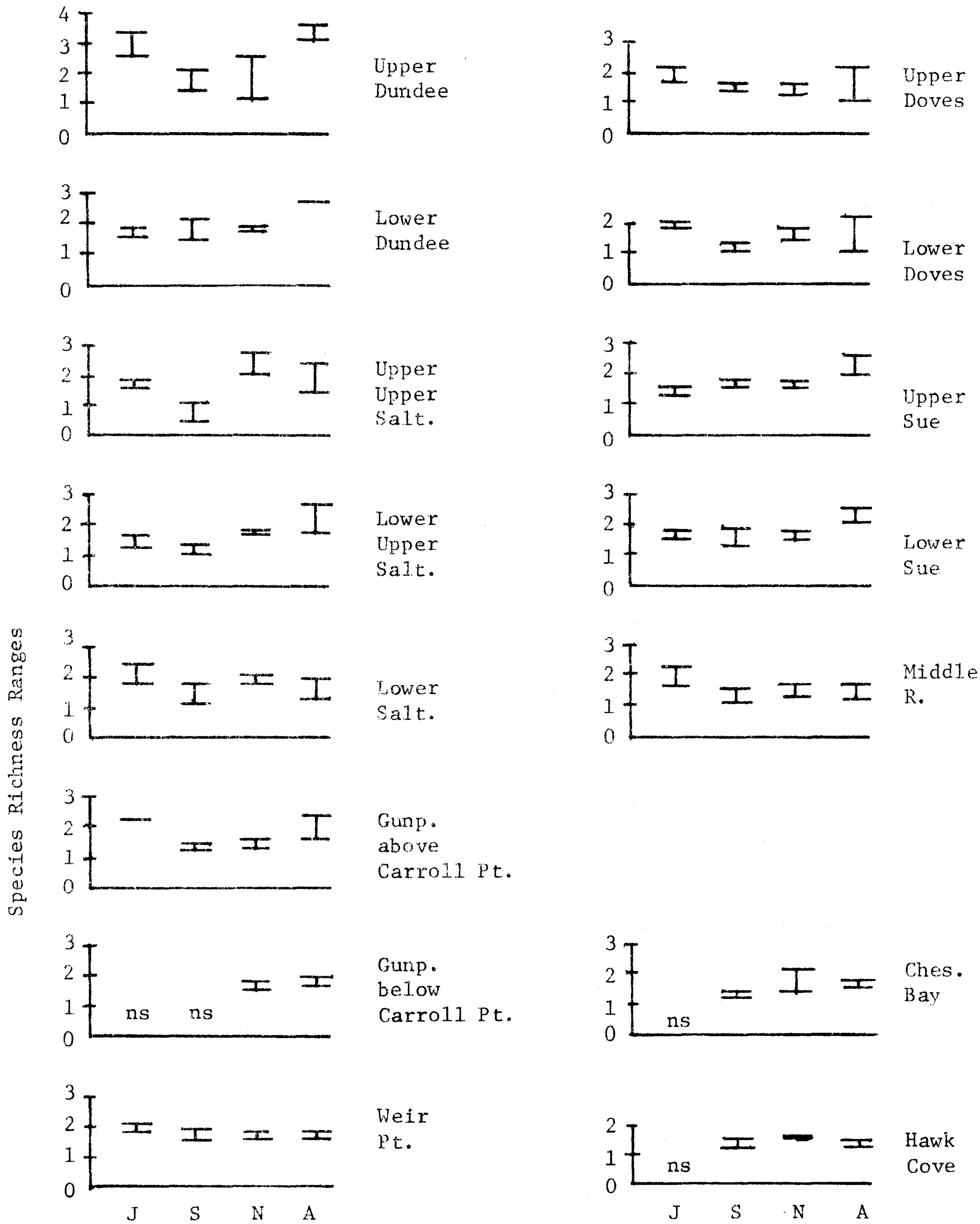

Figure 43. Species richness ranges, mud sediments.
ns - not sampled

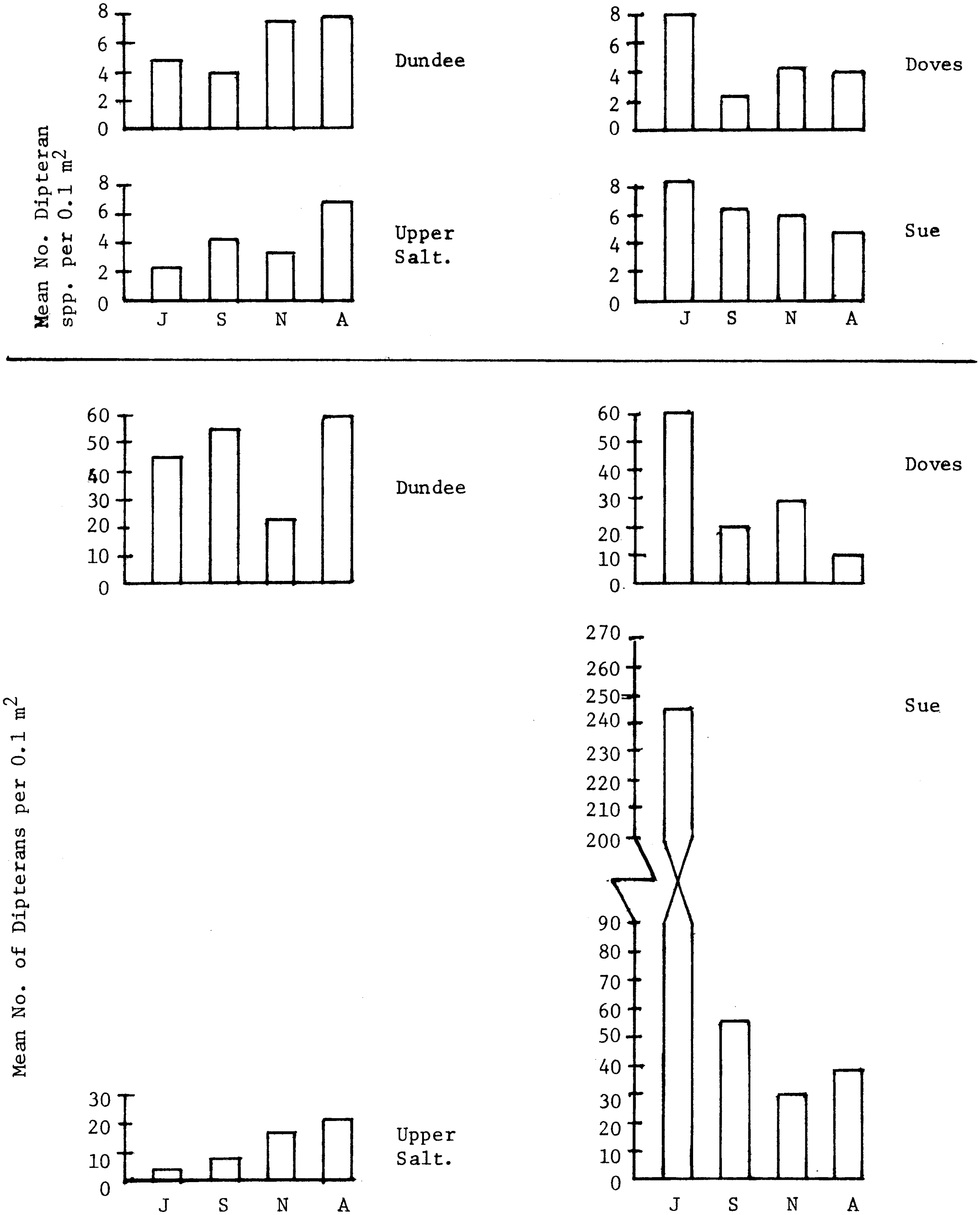

Figure 44. Mean numbers of dipteran species and individuals per $0.1\ m^2$, sand sediments.

Table 4

June 1979 ANOVA Summary - A priori mud station groups

Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Doves	Norm.	Sue	U. Salt.	Dundee	L. Salt.
retransformed ($\sqrt{X+.5}$) mean No./0.1 m^2	6.2	12.7	18.3	31.6	66.8	81.0
Scolecolepides viridis	Norm.	U. Salt.	Dundee	L. Salt.	Sue	Doves
Mean No./0.1 m^2	14.7	15.2	16.1	19.6	27.1	27.2
Tubificidae	Doves	U. Salt.	Dundee	L. Salt.	Sue	Norm.
retransformed ($\sqrt{X}$) mean No./0.1 m^2	24.7	28.3	30.2	32.2	48.9	156.9
Cyathura polita	Doves	Norm.	Sue	U. Salt.	Dundee	L. Salt.
Mean No./0.1 m^2	0	0	4.4	5.2	9.2	10.9
Leptocheirus plumulosus	Doves	U. Salt.	L. Salt.	Dundee	Norm.	Sue
retransformed (log(X+1)) mean No./0.1 m^2	.7	167.8	266.0	273.3	299.2	372.1
Coelotanypus sp.	U. Salt.	Sue	L. Salt.	Doves	Dundee	Norm.
retransformed (log(X+1)) mean No./0.1 m^2	0.2	1.2	2.9	3.0	3.3	4.2
Procladius sp.	Norm.	Sue	Doves	Dundee	U. Salt.	L. Salt.
retransformed (log(X+1)) mean No./0.1 m^2	2.4	3.4	6.1	6.1	9.0	19
Chironomus sp.	L. Salt.	Norm.	Dundee	U. Salt.	Sue	Doves
retransformed (log(X+1)) mean No./0.1 m^2	0.1	1.4	1.5	2.0	5.8	75
Cryptochironomus sp.	U. Salt.	L. Salt.	Norm.	Dundee	Doves	Sue
retransformed (log(X+1)) mean No./0.1 m^2	0.4	0.6	0.8	0.9	0.9	1.9

Table 5
June 1979 ANOVA Summary - sand stations
Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Doves	Dundee	Sue	U. Salt.
retransformed (log (x+1)) mean No./0.1 m^2	1.4	2.4	3.4	12.0
Scolecolepides viridis	Doves	U. Salt.	Sue	Dundee
retransformed (log x) mean No./0.1 m^2	3.3	4.9	7.2	49.1
Tubificidae	Dundee	Doves	Sue	U. Salt.
retransformed (log x) mean No./0.1 m^2	5.5	9.6	25.7	39.4
Cyathura polita	Sue	U. Salt.	Doves	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	1.5	2.3	4.7	7.8
Leptocheirus plumulosus	Doves	U. Salt.	Dundee	Sue
Mean No./0.1 m^2	1.3	81.8	86.7	88.0
Corophium lacustre	U. Salt.	Doves	Sue	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	.4	.9	2.5	5.2
Hypaniola grayi	Doves	Sue	Dundee	U. Salt.
retransformed (log (x+1)) mean No./0.1 m^2	.8	2.0	5.2	23.7
Paratanytarsus sp.	U. Salt.	Doves	Sue	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	0	1.5	2.3	20
Xenochironomus sp.	Dundee	U. Salt.	Doves	Sue
retransformed (log (x+1)) mean No./0.1 m^2	0	0.4	24	173
Polypedilum sp.	U. Salt.	Doves	Dundee	Sue
retransformed (log (x+1)) mean No./0.1 m^2	0.4	1.8	9.0	12
Procladius sp.	Doves	U. Salt.	Dundee	Sue
retransformed (log (x+1)) mean No./0.1 m^2	0.9	1.5	1.9	4.2
Cryptochironomus sp.	U. Salt.	Sue	Doves	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	0	1.1	1.4	2.5

Table 6

June 1979 ANOVA Summary - mud station groups based on cluster analysis results

Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

<u>Rangia</u> <u>cuneata</u> retransformed (logx) mean No./0.1 m^2	U. Doves	L. Doves	U. Sue	L. Sue	U.U. Salt.	L.U. Salt.	Weir Pt.	U. Dundee	L. Dundee	L. Salt.	Middle
	3.7	7.0	14	18	24	44	56	57	79	90	195

<u>Scolecolepides</u> <u>viridis</u> retransformed (logx) mean No./0.1 m^2	U Sue	U.U. Salt.	U. Dundee	L. Dundee	L. Salt.	Weir Pt.	L.U. Salt.	U. Doves	Middle	L. Sue	L. Doves
	7.3	11	12	15	18	18	18	18	19	33	39

Tubificidae retransformed (log(x+1))mean No./0.1 m^2	Middle	Weir Pt.	L.U. Salt.	U. Doves	L. Dundee	L. Salt.	U. Dundee	L. Sue	U.U. Salt.	L. Doves	U. Sue
	1.1	12	15	21	24	25	34	34	39	44	67

<u>Cyathura</u> <u>polita</u> retransformed (log(x+1)) mean No./0.1 m^2	L. Doves	U. Doves	U. Sue	U.U. Salt.	L. Sue	Middle	L.U. Salt.	U. Dundee	L. Dundee	L. Salt.	Weir Pt.
	0	0	0	3.1	3.6	7.2	8.2	8.8	9.3	11	26

<u>Leptocheirus</u> <u>plumulosus</u> retransformed (log(x+1)) mean No./0.1 m^2	U. Doves	L. Doves	U.U. Salt.	L.U. Salt.	U. Dundee	Middle	L. Salt.	L. Dundee	U. Sue	Weir Pt.	L. Sue
	.52	.70	155	189	236	250	282	341	448	452	453

<u>Coelotanypus</u> sp. retransformed (log(x+1)) mean No./0.1 m^2	U.U. Salt.	L.U. Salt.	L. Sue	U. Doves	U. Sue	L. Doves	U. Dundee	L. Salt.	Weir Pt.	Middle	L. Dundee
	.19	.30	1.6	1.7	1.9	2.6	2.9	3.1	3.6	3.9	4.0

<u>Procladius</u> sp. retransformed (log(x+1)) mean No./0.1 m^2	U. Sue	L. Dundee	U. Doves	L. Sue	U.U. Salt.	U. Dundee	L. Doves	L.U. Salt.	Middle	Weir Pt.	L. Salt.
	.98	3.6	5.5	6.2	7.7	8.3	8.9	11	17	18	23

<u>Chironomus</u> sp. retransformed (log(x+1) mean No./0.1 m^2	Weir Pt.	L. Salt.	L.U. Salt.	L. Dundee	Middle	U. Sue	U. Dundee	U.U. Salt.	L. Sue	L. Doves	U. Doves
	0	0	0	0	.32	1.5	3.6	5.3	17	104	120

<u>Cryptochironomus</u> sp. retransformed (log(x+1)) mean No./0.1 m^2	U.U. Salt.	L.U. Salt.	U. Dundee	L. Doves	L. Salt.	Middle	U. Sue	L. Dundee	U. Doves	Weir Pt.	L. Sue
	.32	.52	.58	.70	.83	.88	1.3	1.5	2.1	2.1	2.3

Table 7

September 1979 ANOVA Summary - A priori mud station groups

Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Sue	Doves	U. Salt.	Dundee	L. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	.62	1.1	1.6	1.8	2.6	2.7
Scolecolepides viridis	Sue	Dundee	U. Salt.	Doves	L. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	.37	2.1	4.1	6.6	9.7	14
Tubificidae	Middle	Doves	L. Salt.	U. Salt.	Sue	Dundee
mean No./0.1 m^2	4	10	19	26	33	43
Cyathura polita	Doves	Sue	Dundee	U. Salt.	L. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	.39	.54	1.6	1.8	4.3	8.4
Leptocheirus plumulosus	U. Salt.	Doves	Dundee	L. Salt.	Sue	Middle
retransformed (log (x+1)) mean No. 0.1 m^2	2.3	3.1	8.0	15	18	47
Coelotanypus sp.	Middle	Dundee	Sue	L. Salt.	U. Salt.	Doves
retransformed (log x) mean No./0.1 m^2	8.9	12	19	29	32	46
Chironomus sp.	Middle	U. Salt.	L. Salt.	Dundee	Sue	Doves
retransformed (log (x+1) mean No./0.1 m^2	0	0	0.2	0.6	3.6	12

Table 8
September 1979 ANOVA Summary - sand stations
Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Doves	Sue	U. Salt.	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	1.4	2.2	2.6	2.8
Scolecolepides viridis	U. Salt.	Doves	Dundee	Sue
retransformed (log x) mean No./0.1 m^2	1.3	1.4	2.5	3.9
Tubificidae	Doves	Dundee	Sue	U. Salt.
retransformed (log (x+1)) mean No./0.1 m^2	4.2	5.5	17	30
Cyathura polita	Doves	U. Salt.	Dundee	Sue
retransformed (log (x+1)) mean No./0.1 m^2	0	.58	.88	1.9
Leptocheirus plumulosus	Doves	Dundee	U. Salt.	Sue
retransformed (log (x+1)) mean No./0.1 m^2	.32	1.3	2.6	3.7
Diptera	U. Salt.	Doves	Sue	Dundee
retransformed (log x) mean No./0.1 m^2	7.6	17	55	67
Xenochironomus sp.	U. Salt.	Sue	Doves	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	0.2	3.4	14	23
Polypedilum sp.	Doves	U. Salt.	Dundee	Sue
retransformed (log (x+1)) mean No./0.1 m^2	0	4.6	11	46

Table 9

September 1979 ANOVA Summary - mud station groups based on cluster analysis results

Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata retransformed (log(x+1)) mean No./0.1 m^2	U.U. Salt.	L. Sue	U. Doves	L. Doves	U. Sue	L. Dundee	Weir Pt.	U. Gunp.	Middle	L. Salt.	L.U. Salt.	Hawk Cove	Ches. Bay
	0	.42	.92	.98	.98	2.0	2.3	2.6	3.3	3.4	6.0	8.2	21

Scolecolepides viridis retransformed (log(x+1)) mean No./0.1 m^2	U. Sue	L. Sue	U.U. Salt.	Weir Pt.	L. Dundee	Hawk Cove	L. Doves	U. Doves	Middle	L. Salt.	L.U. Salt.	U. Gunp.	Ches. Bay
	.30	.42	.58	4.4	5.5	5.6	6.4	7.2	10	10	15	16	35

Tubificidae retransformed (log(x+1)) mean No./0.1 m^2	L. Doves	Ches. Bay	Weir Pt.	U. Gunp.	Middle	U. Doves	Hawk Cove	L. Salt.	L.U. Salt.	L. Dundee	L. Sue	U.U. Salt.	U. Sue
	.30	1.1	1.9	3.0	3.2	10	13	16	20	20	26	30	41

Cyathura polita retransformed (log(x+1))mean No./0.1 m^2	U. Doves	U. Sue	U.U. Salt.	L. Doves	L. Sue	L. Dundee	Hawk Cove	Weir Pt.	L. Salt.	Ches. Bay	L.U. Salt.	Middle	U. Gunp.
	0	0	.32	.73	1.1	2.4	2.9	3.6	3.8	4.9	5.1	7.7	8.2

Leptocheirus plumulosus retransformed (log(x+1)) mean No./0.1 m^2	U. Doves	U.U. Salt.	L.U. Salt.	U. Sue	L. Dundee	L. Doves	L. Salt.	Weir Pt.	L. Sue	Hawk Cove	Middle	Ches. Bay	U. Gunp.
	1.3	1.3	3.8	10	10	11	11	14	25	49	50	52	71

Coelotanypus sp. retransformed (log x) mean No./0.1 m^2	Ches. Bay	Weir Pt.	Middle	U. Sue	Hawk Cove	U. Gunp.	U.U. Salt.	L. Sue	L. Salt.	L. Dundee	U. Doves	L.U. Salt.	L. Doves
	4.5	6.6	8.9	13	14	15	18	24	27	28	33	57	76

Chironomus sp. retransformed (log(x+1)) mean No./0.1 m^2	Middle	Hawk Cove	Ches. Bay	Weir Pt.	U. Gunp.	L.U. Salt.	U.U. Salt.	L. Salt.	L. Doves	L. Dundee	L. Sue	U. Sue	U. Doves
	0	0	0	0	0	0	0	.23	.30	.42	1.7	9.0	35

Table 10

November 1979 ANOVA Summary - A priori mud station groups

Student-Newman-Keul's test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Sue	Doves	Dundee	L. Salt.	U. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	.37	.37	.83	2.6	2.9	3.2
Scolecolepides viridis	Sue	Dundee	U. Salt.	Doves	L. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	0	.74	2.1	2.7	8.0	9.6
Tubificidae	Middle	L. Salt.	U. Salt.	Doves	Sue	Dundee
mean No./0.1 m^2	8.9	13	21	22	25	45
Cyathura polita	Doves	Dundee	Sue	U. Salt.	L. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	0	.37	.50	1.5	3.1	6.4
Leptocheirus plumulosus	Doves	U. Salt.	Dundee	Sue	L. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	3.0	4.5	6.7	11	82	85
Corophium lacustre	U. Salt.	Doves	Dundee	L. Salt.	Sue	Middle
retransformed (log (x+1)) mean No./0.1 m^2	.37	.53	.54	.64	1.0	1.8
Coelotanypus sp.	Middle	Dundee	Sue	U. Salt.	L. Salt.	Doves
retransformed (log x') mean No./0.1 m^2	5.4	15	23	26	43	49
Procladius sp.	Dundee	Sue	L. Salt.	U. Salt.	Doves	Middle
retransformed (log (x+1)) mean No./0.1 m^2	0.4	0.9	1.3	1.9	2.8	3.4
Chironomus sp.	Middle	L. Salt.	Sue	U. Salt.	Dundee	Doves
retransformed (log (x+1)) mean No./0.1 m^2	0.2	0.3	3.6	5.3	20	37

Table 11

November 1979 ANOVA Summary - sand stations

Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Doves	U. Salt.	Sue	Dundee
mean No./0.1 m^2	1.3	4.0	5.4	6.9
Scolecolepides viridis	Dundee	U. Salt.	Doves	Sue
mean No./0.1 m^2	.23	.47	.47	1.6
Hypaniola grayi	Doves	Sue	Dundee	U. Salt.
mean No./0.1 m^2	.23	1.1	5.8	11
Tubificidae	Dundee	Doves	Sue	U. Salt.
retransformed (log (x+1)) mean No./0.1 m^2	14	17	65	106
Leptocheirus plumulosus	Doves	U. Salt.	Sue	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	.19	.85	.88	3.6
Corophium lacustre	Doves	Dundee	U. Salt.	Sue
mean No./0.1 m^2	.47	2.9	4.0	4.7
Xenochironomus sp.	U. Salt.	Dundee	Doves	Sue
mean No./0.1 m^2	0	6.5	6.5	16
Polypedilum sp.	Doves	U. Salt.	Sue	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	0.3	0.7	4.6	4.8
Chironomus sp.	Dundee	Sue	U. Salt.	Doves
retransformed (log (x+1)) mean No./0.1 m^2	4.0	4.8	13	13
Trissocladius sp.	U. Salt.	Dundee	Sue	Doves
retransformed (log (x+1) mean No./0.1 m^2	0.2	1.1	1.3	5.8

Table 12

November 1979 ANOVA Summary - mud station groups based on cluster analysis results

Student-Newman Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata retransformed (log(x+1)) mean No./0.1 m^2	Sue	L. Doves	U. Dundee	U. Doves	L. Dundee	U.U. Salt.	L. Salt.	Middle	U. Gunp.	L.U. Salt.	L. Gunp.	Weir Pt.	Ches. Bay	Hawk Cove
	0	.19	.30	.70	1.7	2.1	2.5	3.2	4.7	6.0	9.0	10	21	35

Scolecolepides viridis retransformed (log(x+1)) mean No./0.1 m^2	Sue	U. Dundee	U.U. Salt.	L. Doves	U. Gunp.	L. Dundee	U. Doves	L. Salt.	L.U. Salt.	Weir Pt.	Middle	Ches. Bay	L. Gunp.	Hawk Cove
	0	0	.30	1.6	1.6	3.0	5.2	6.3	6.3	12	14	15	24	25

Tubificidae retransformed (log(x+1)) mean No./0.1 m^2	Ches. Bay	Middle	U.U. Salt.	L. Gunp.	U. Gunp.	L. Salt.	U. Dundee	L. Dundee	Sue	L.U. Salt.	U. Doves	L. Doves	Weir Pt.	Hawk Cove
	3.2	8.8	10	11	11	11	14	15	16	16	21	21	25	142

Cyathura polita retransformed (log(x+1)) mean No./0.1 m^2	U. Doves	L. Doves	Sue	U. Dundee	L. Dundee	U.U. Salt.	L.U. Salt.	L. Salt.	Ches. Bay	Hawk Cove	Weir Pt.	U. Gunp.	L. Gunp.	Middle
	0	0	0	.30	.30	.30	1.5	3.0	4.0	4.0	4.3	4.6	6.3	6.9

Leptocheirus plumulosus retransformed (log(x+1)) mean No./0.1 m^2	U. Doves	U. Dundee	U.U. Salt.	L. Doves	L. Dundee	L.U. Salt.	Sue	L. Salt.	Hawk Cove	Middle	U. Gunp.	Ches. Bay	L. Gunp.	Weir Pt.
	.30	2.0	4.0	7.3	8.0	8.9	10	82	110	110	137	142	155	166

Corophium lacustre retransformed (log(x+1)) mean No./0.1 m^2	L.U. Salt.	U. Dundee	L. Dundee	L. Salt.	L. Doves	U.U. Salt.	U. Gunp.	U. Doves	Sue	Weir Pt.	L. Gunp.	Middle	Ches. Bay	Hawk Cove
	0	.30	.30	.40	.42	.70	.70	.70	.84	.98	1.4	2.1	3.4	5.4

Coelotanypus sp. retransformed (log x) mean No./0.1 m^2	Ches. Bay	Weir Pt.	Hawk Cove	L. Gunp.	Middle	U. Dundee	Sue	L. Dundee	U. Gunp.	U.U. Salt.	U. Doves	L.U. Salt.	L. Salt.	L. Doves
	1.8	4.4	5.0	5.8	6.8	12	16	22	23	28	35	36	47	62

Procladius sp. retransformed (log(x+1)) mean No./0.1 m^2	L. Dundee	U. Dundee	Hawk Cove	Ches. Bay	Sue	U. Doves	L. Salt.	L.U. Salt.	U.U. Salt.	Middle	L. Doves	L. Gunp.	U. Gunp.	Weir Pt.
	0	.70	.70	.90	1.2	1.6	1.8	2.1	2.7	3.5	3.9	4.3	7.6	7.8

Table 12 (continued).

Chironomus sp. retransformed (log(x+1)) mean No./0.1 m^2	Hawk Cove	Ches. Bay	L. Gunp.	U. Gunp.	L.U. Salt.	Weir Pt.	Middle	L. Salt.	Sue	L. Dundee	U.U. Salt.	L. Doves	U. Dundee	U. Doves
	0	0	0	0	0	.30	.30	.41	3.8	5.8	20	21	60	81

Table 13

April 1980 ANOVA Summary - A priori mud station groups

Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Sue	Doves	Middle	L. Salt.	Dundee	U. Salt.
mean No./0.1 m^2	.28	.42	1.2	1.3	1.3	1.6
Scolecolepides viridis	Dundee	Doves	Middle	L. Salt.	Sue	U. Salt.
retransformed (log x) mean No./0.1 m^2	4.2	4.5	6.8	8.5	10	35
Tubificidae	Sue	U. Salt.	Middle	L. Salt.	Dundee	Doves
mean No./0.1 m^2	22	26	29	36	51	74
Cyathura polita	Doves	Dundee	Sue	L. Salt.	U. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	.11	.53	.55	.62	.89	6.2
Leptocheirus plumulosus	Doves	U. Salt.	Dundee	Sue	L. Salt.	Middle
retransformed (log (x+1)) mean No./0.1 m^2	1.4	4.2	7.9	21	69	79
Corophium lacustre	U. Salt.	Doves	L. Salt.	Sue	Dundee	Middle
retransformed (log (x+1)) mean No./0.1 m^2	.3	.4	.9	1.6	5.3	15
Coelotanypus sp.	Middle	Sue	Dundee	Doves	L. Salt.	U. Salt.
mean No./0.1 m^2	11	20	24	29	30	38
Procladius sp.	Sue	U. Salt.	L. Salt.	Doves	Middle	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	1.5	3.8	4.0	5.9	6.9	8.1
Chironomus sp.	L. Salt.	Middle	U. Salt.	Sue	Dundee	Doves
retransformed (log (x+1)) mean No./0.1 m^2	0	0.1	4.1	4.9	18	22
Tanytarsus sp.	Middle	Sue	L. Salt.	Doves	U. Salt.	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	0	0.2	0.3	0.4	10	11

Table 14
April 1980 ANOVA Summary - sand stations
Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq .05$)

Rangia cuneata	Doves	Sue	Dundee	U. Salt.
mean No./0.1 m^2	0	0	2.9	5.3
Scolecolepides viridis	Doves	Sue	Dundee	U. Salt.
retransformed (log x) mean No./0.1 m^2	8.0	9.5	46	72
Hypaniola grayi	Doves	Sue	U. Salt.	Dundee
mean No./0.1 m^2	.23	2.5	5.6	14
Tubificidae	Doves	Dundee	Sue	U. Salt.
retransformed (log x) mean No./0.1 m^2	13	38	59	150
Leptocheirus plumulosus	Doves	Sue	U. Salt.	Dundee
retransformed (log (x+1)) mean No./0.1 m^2	.2	.4	6.4	9.0
Polypedilum sp.	Doves	U. Salt.	Dundee	Sue
retransformed (log (x+1)) mean No./0.1 m^2	1.8	3.7	21	27
Xenochironomus sp.	U. Salt.	Sue	Doves	Dundee
mean No./0.1 m^2	0	4.4	4.7	6.6
Chironomus sp.	Sue	Dundee	Doves	U. Salt.
retransformed (log (x+1)) mean No./0.1 m^2	0.7	1.9	2.0	6.4

Table 15

April 1980 ANOVA Summary - mud station groups based on cluster analysis results

Student-Newman-Keuls' test results; means not sharing an underline are significantly different ($\alpha \leq 0.5$)

	Doves	Sue	L. Dundee	Middle	L. Salt.	U.U. Salt.	L.U. Salt.	U. Dundee	Weir Pt.	L. Gunp.	U. Gunp.	Hawk Cove	Ches. Bay
Rangia cuneata retransformed (log(x+1)) mean No./0.1 m^2	.19	.24	.30	.49	1.3	1.5	1.8	1.8	3.3	3.9	5.0	7.8	11

	U. Dundee	Doves	L. Dundee	Middle	Hawk Cove	L. Salt.	Sue	Ches. Bay	U. Gunp.	Weir Pt.	L. Gunp.	U.U. Salt.	L.U. Salt.
Scolecolepides viridis retransformed (log x) mean No./0.1 m^2	3.5	4.6	5.4	6.4	8.1	8.5	10	13	14	20	21	28	43

	Ches. Bay	L. Dundee	Sue	U.U. Salt.	U. Gunp.	Middle	L.U. Salt.	Hawk Cove	L. Salt.	Doves	L. Gunp.	U. Dundee	Weir Pt.
Tubificidae retransformed (log x) mean No./0.1 m^2	9.5	14	17	19	24	26	29	34	34	40	45	56	115

	Doves	U.U. Salt.	U. Dundee	Sue	L. Salt.	L. Dundee	L.U. Salt.	Ches. Bay	L. Gunp.	Hawk Cove	Weir Pt.	U. Gunp.	Middle
Cyathura polita retransformed (log(x+1)) mean No./0.1 m^2	0	.19	.42	.55	.62	.70	.98	3.4	3.9	4.1	4.2	5.6	6.0

	Doves	U.U. Salt.	L. Dundee	L.U. Salt.	U. Dundee	Sue	L. Salt.	Middle	Ches. Bay	U. Gunp.	L. Gunp.	Hawk Cove	Weir Pt.
Leptocheirus plumulosus retransformed (log(x+1)) mean No./0.1 m^2	1.3	3.0	5.6	5.8	9.8	21	69	70	119	127	130	134	201

	Ches. Bay	Hawk Cove	L. Gunp.	Weir Pt.	U. Dundee	Middle	U. Gunp.	Sue	L. Salt.	U.U. Salt.	L.U. Salt.	Doves	L. Dundee
Coelotanypus sp. mean No./0.1 m^2	2.6	4.2	5.6	5.7	10	11	18	20	30	37	40	44	45

	Sue	Hawk Cove	Ches. Bay	L.U. Salt.	L. Salt.	U.U. Salt.	L. Dundee	Middle	Doves	Weir Pt.	L. Gunp.	U. Dundee	U. Gunp.
Procladius sp. retransformed (log(x+1)) mean No./0.1 m^2	1.5	2.4	2.9	3.3	4.0	4.3	5.7	6.5	6.9	7.5	10	10	14

	Middle	Hawk Cove	Ches. Bay	Weir Pt.	U. Gunp.	L. Salt.	L. Gunp.	L.U. Salt.	L. Dundee	Sue	U.U. Salt.	Doves	U. Dundee
Chironomus sp. retransformed (log(x+1)) mean No./0.1 m^2	0	0	0	0	0	0	.19	1.3	4.3	4.8	10	16	46

Table 15 (continued).

Tanytarsus sp. retransformed (log(x+1)) mean No./0.1 m^2	Middle	Hawk Cove	Ches. Bay	Weir Pt.	L. Gunp.	U. Gunp.	Sue	L. Salt.	Doves	L.U. Salt.	U. Dundee	L. Dundee	U.U. Salt.
	0	0	0	0	0	0	.24	.30	.58	9.0	9.0	13	13

set, one based on the a priori sampling design consisting of five randomly selected stations within each creek zone, and a second in which the stations were grouped according to the clusters discussed in the preceding section. In the second analysis, the river and bay sampling zones were included as well as the creeks, and within the creeks there were frequently two or more subdivisions, corresponding to subclusters appearing in Figures 26-38. The sand area data were analyzed only according to the a priori design.

Rangia cuneata: The highest population densities of this bivalve were observed in the June sampling period in all except the sand sampling areas (Figure 45). The largest creek populations were in Dundee and lower Saltpeter (Table 4). Although the Middle River yielded the largest numbers obtained in Ponar grab samples (Table 6), relatively few individuals were obtained in adjacent Sue and Norman Creeks (Figure 45, Tables 4 and 5). The lowest population densities in mud were found in Doves Cove. The populations in all of the mud areas were predominated by juveniles smaller than 2 mm in length (Figure 46), that had apparently originated during the previous summer's reproduction period (Ecological Analysts 1980). The size composition of the adult population was bimodal in most of the mud sampling areas, with the largest individuals occurring in upper Saltpeter Creek (Figure 47). The densest sand populations occurred in upper Saltpeter Creek (Table 5, Figure 48). At Weir Point the mud samples contained the largest proportion of adults, while the juvenile population was similar in mud, sandy mud, and muddy sand, but relatively sparse in sand (Figure 49).

The September population densities in all of the mud sampling areas were dramatically lower than the June densities, reflecting a

MUD SEDIMENTS

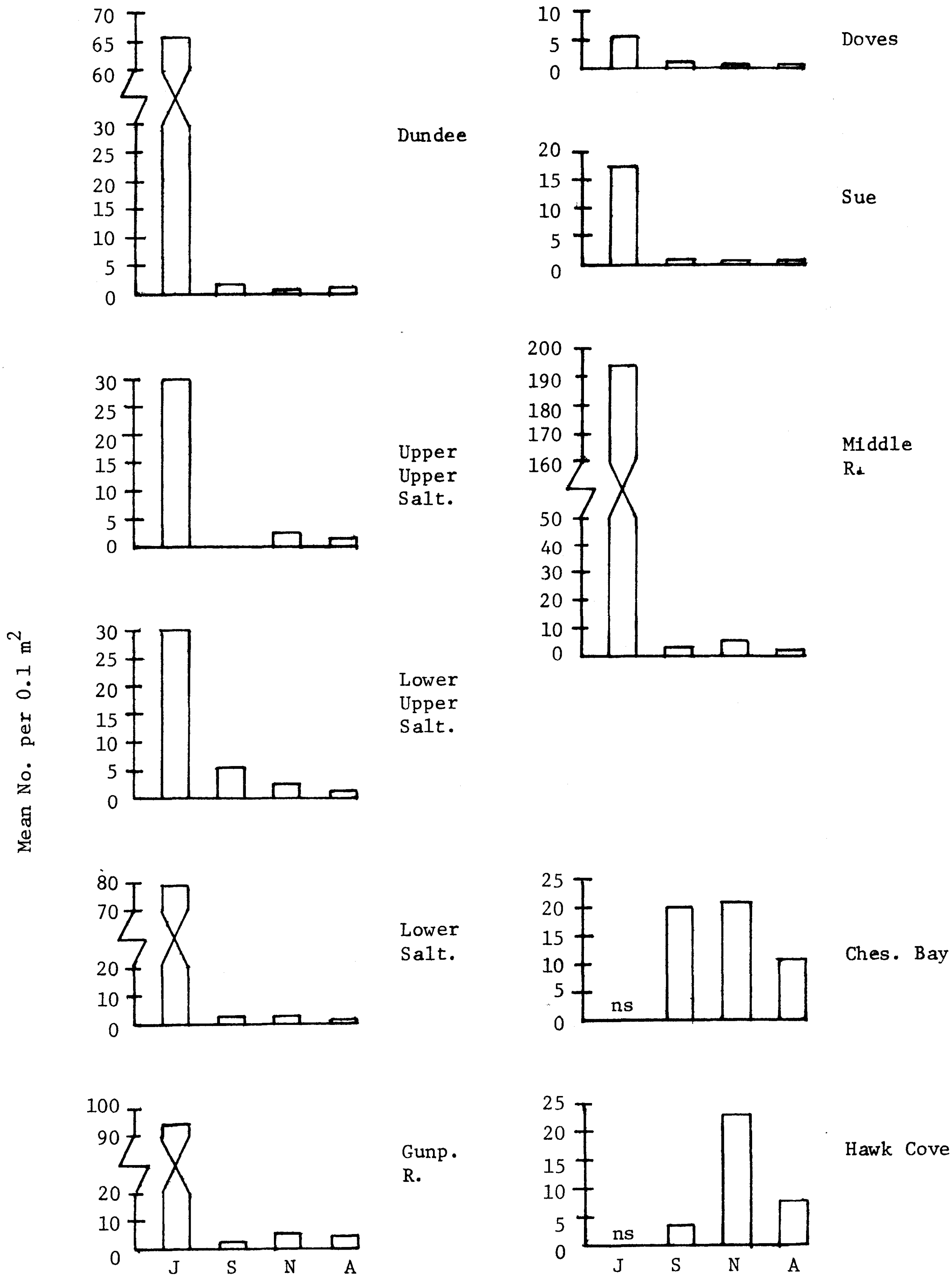

Figure 45. Distribution of <u>Rangia cuneata</u>; ns - not sampled.

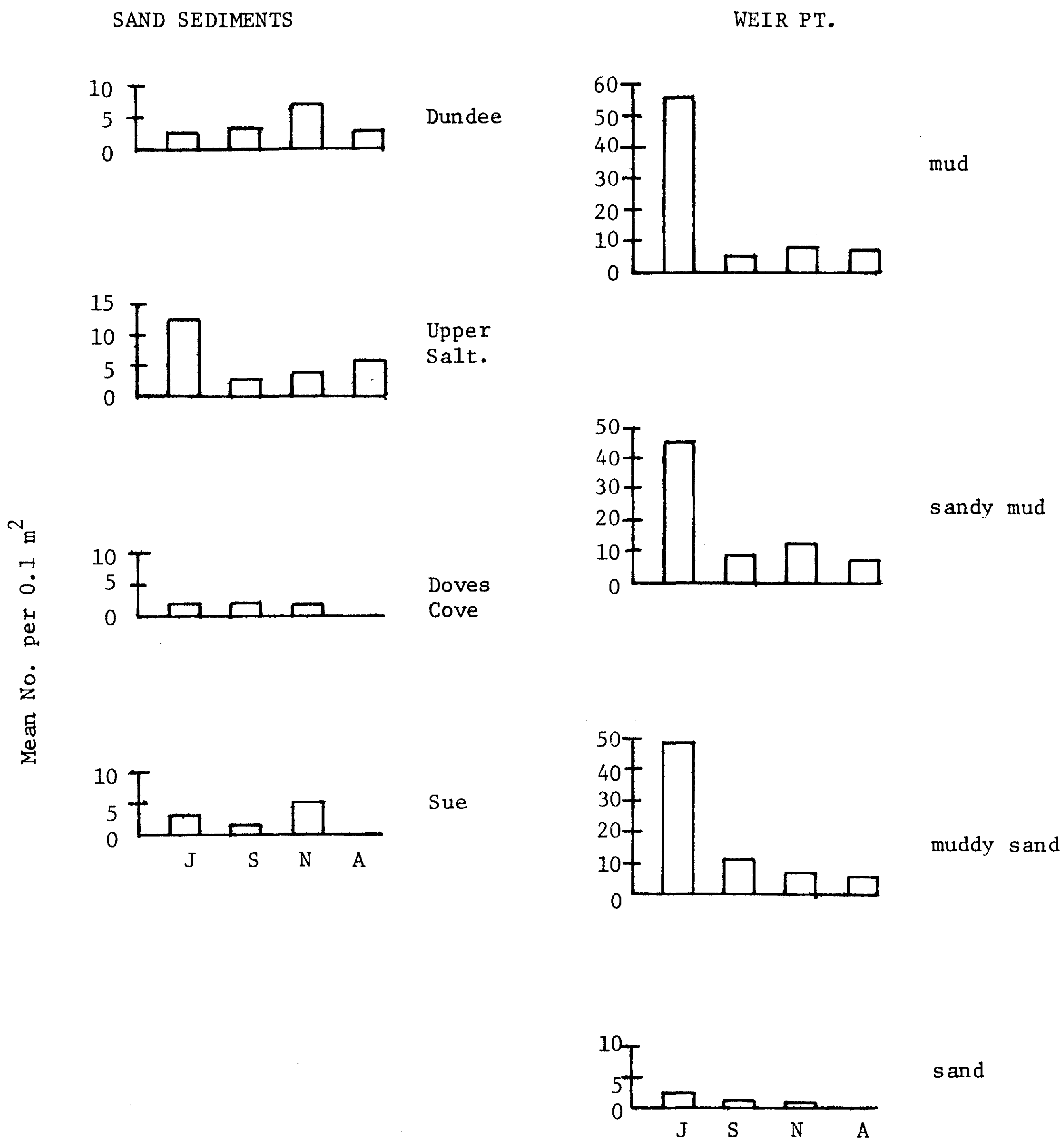

Figure 45 (cont.).

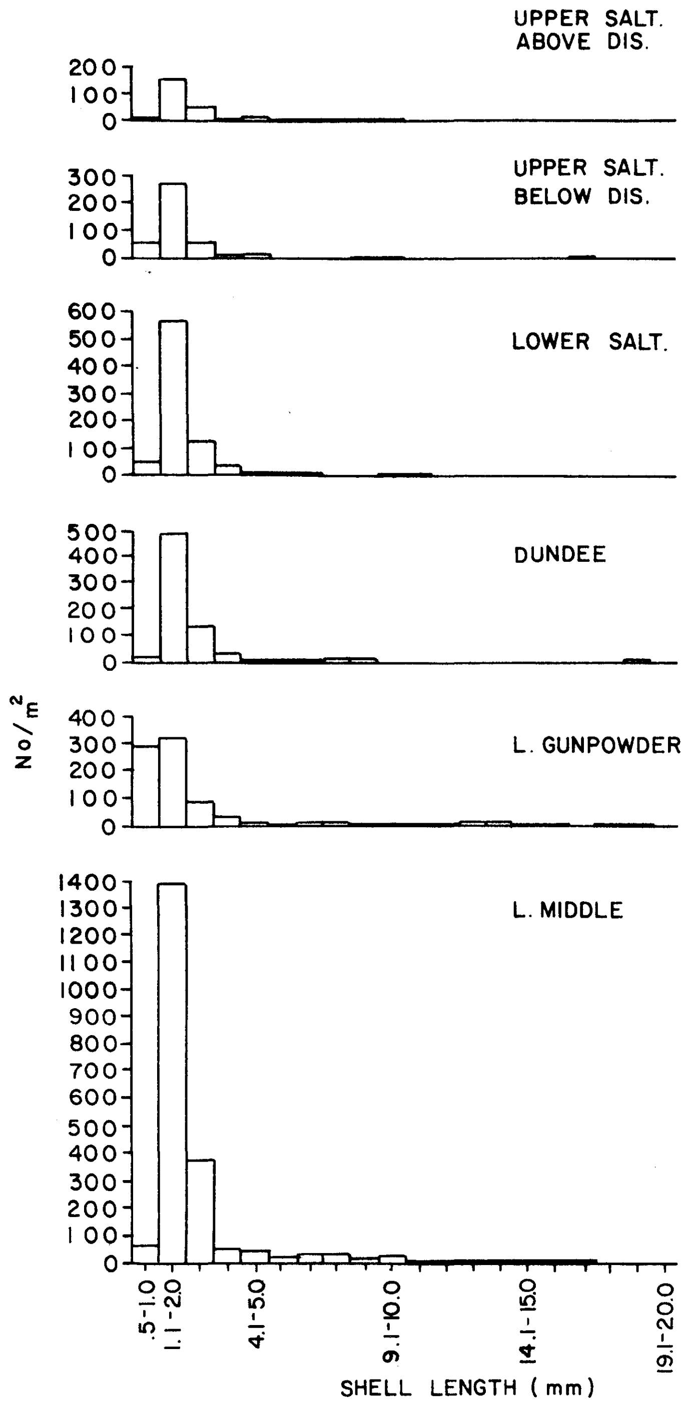

Figure 46

June 1979 juvenile Rangia cuneata size frequency distributions, Ponar grab samples, mud sediments.

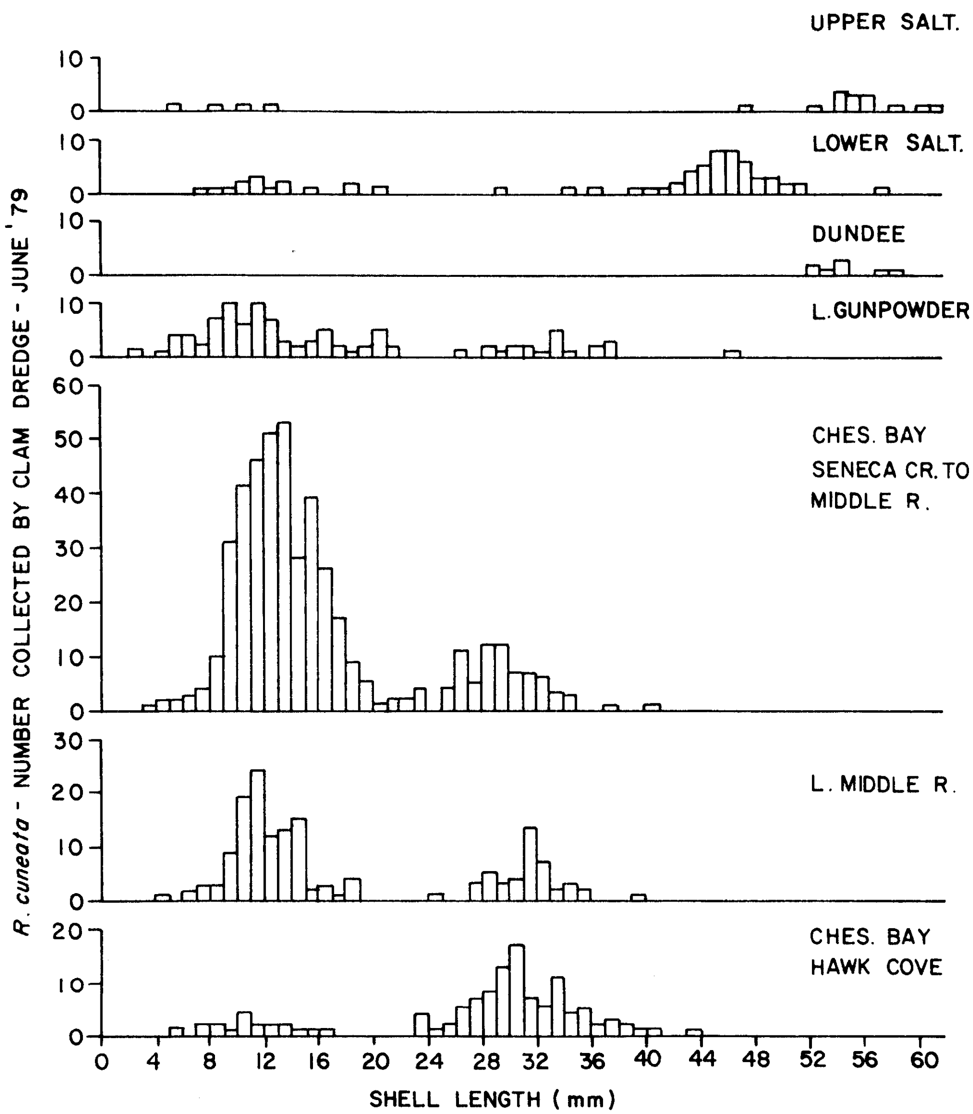

Figure 47

June 1979 Rangia cuneata size frequency distributions, dredge tows.

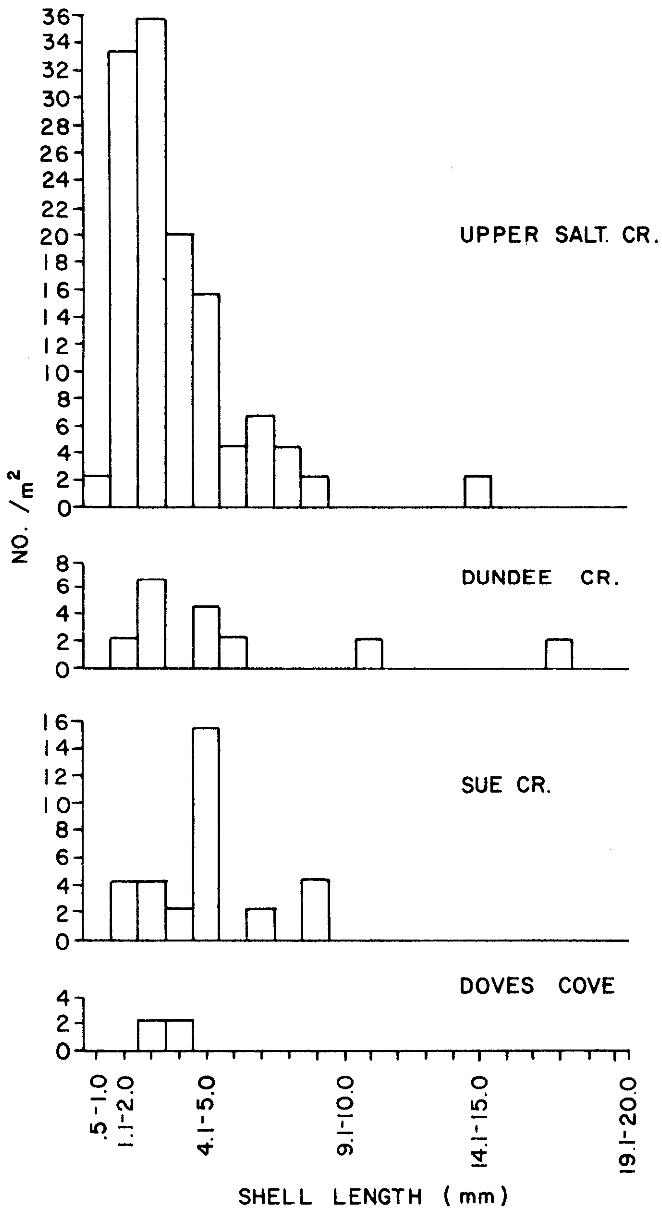

Figure 48

June 1979 Rangia cuneata size frequency distributions, Ponar grab samples, sand sediments.

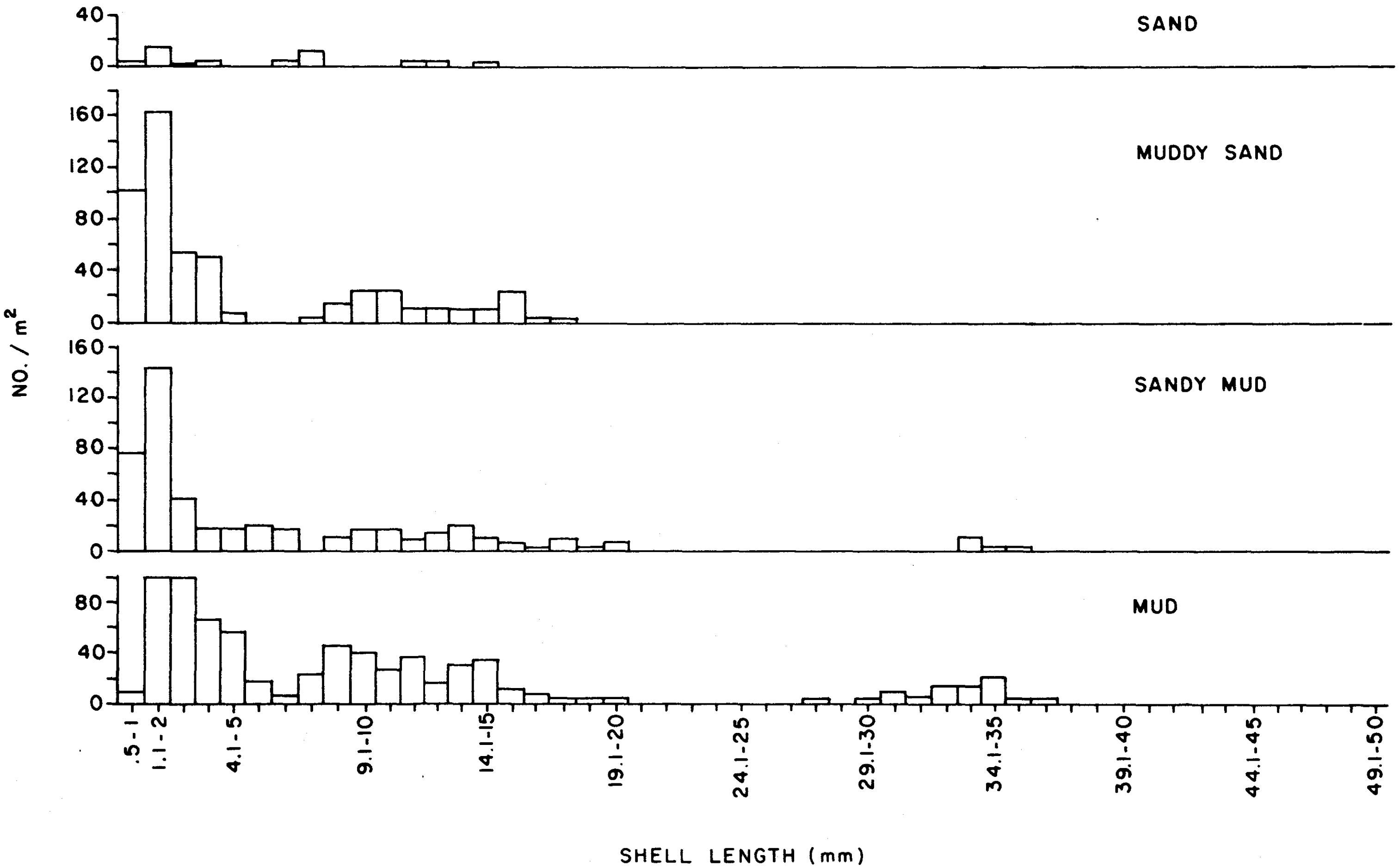

Figure 49

June 1979 Rangia cuneata size frequency distributions, Ponar grab samples, Weir Pt.

drastic decline in numbers of juveniles (Figures 46, 49, 50, 51 and 52). No clams were present in the mud samples taken in upper upper Saltpeter Creek (Table 9, Figure 50). Population densities did not differ significantly among the creek sand areas (Table 8, Figure 54). The population density in the Chesapeake Bay area was significantly higher than in all other areas except Hawk Cove and lower upper Saltpeter. The adult population was again distinctly bimodal in the river and bay sampling areas (Figure 53), and the largest individuals were found in upper Saltpeter Creek, as they were in June. A distinct declining trend in maximum size is evident in the progression from upper Saltpeter to lower Saltpeter to lower Gunpowder (above Carroll Pt.) to lower Gunpowder (below Carroll Pt.) to the Chesapeake Bay above the Middle River.

In November the largest clam populations were found in Hawk Cove and Chesapeake Bay (Table 12), but very few juveniles were present in these areas, compared to upper Saltpeter Creek and the Gunpowder River (Figure 55). The sand populations were similar in upper Saltpeter, Dundee, and Sue Creeks, but sparse in Doves Cove (Table 11 and Figure 56). The mud samples from Dundee, lower Saltpeter, Sue Creek, Doves Cove, and Weir Point all contained very few juvenile clams (Table 12, Figures 55 and 61). The adult population continued to show a progressive reduction in maximum shell size between upper Saltpeter and Chesapeake Bay (Figure 57). Bimodal size frequency distributions were again evident in the rivers and bay, but population densities in the lower size categories were distinctly reduced in the Gunpowder and Chesapeake Bay, compared to the September levels (Figure 53).

In April 1980 clam population densities were low throughout the study area (Figures 58 and 61), and no juveniles were found in the

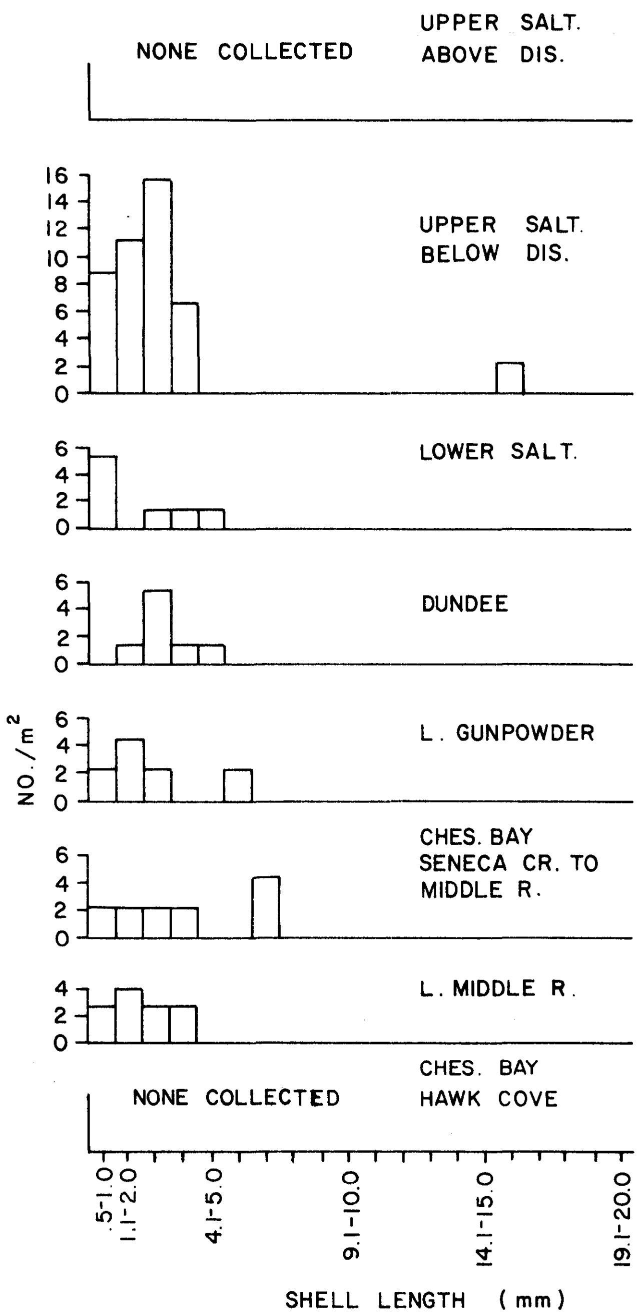

Figure 50

September 1979 juvenile Rangia cuneata size frequency distributions, Ponar grab samples, mud sediments.

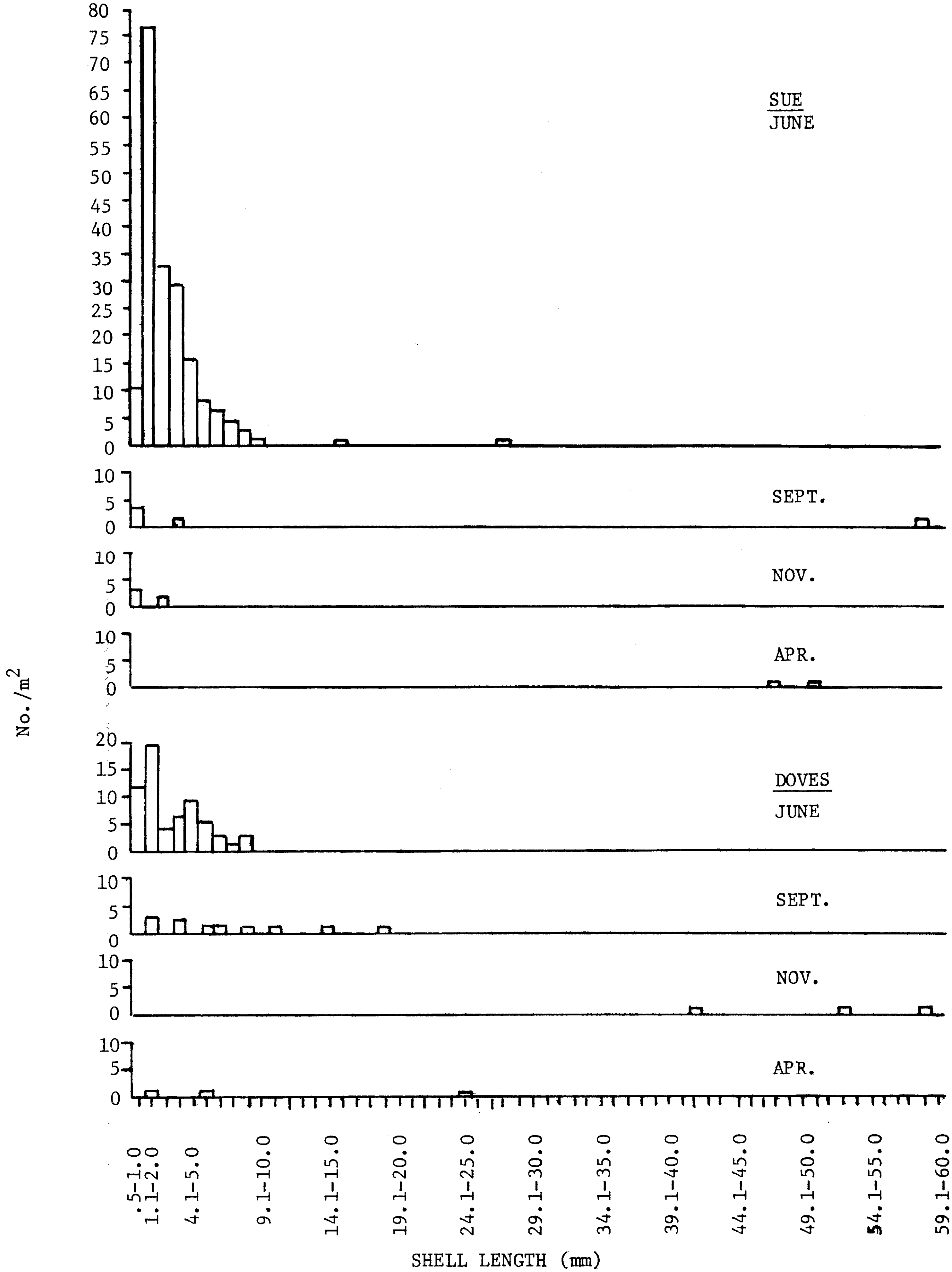

Figure 51. Reference creek Rangia cuneata size frequency distributions, Ponar grab samples, mud sediments.

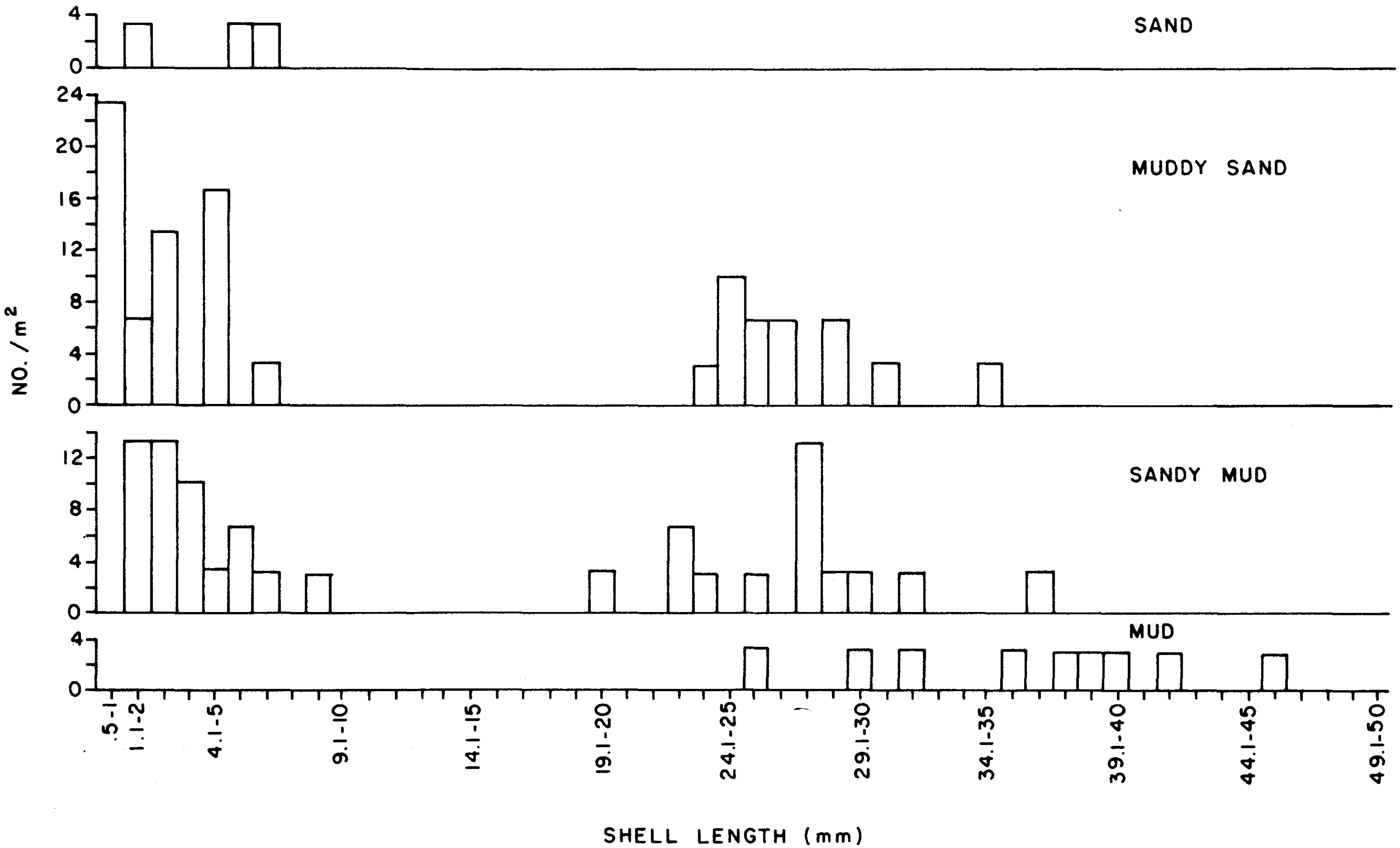

Figure 52

September 1979 Rangia cuneata size frequency distributions,
Ponar grab samples, Weir Pt.

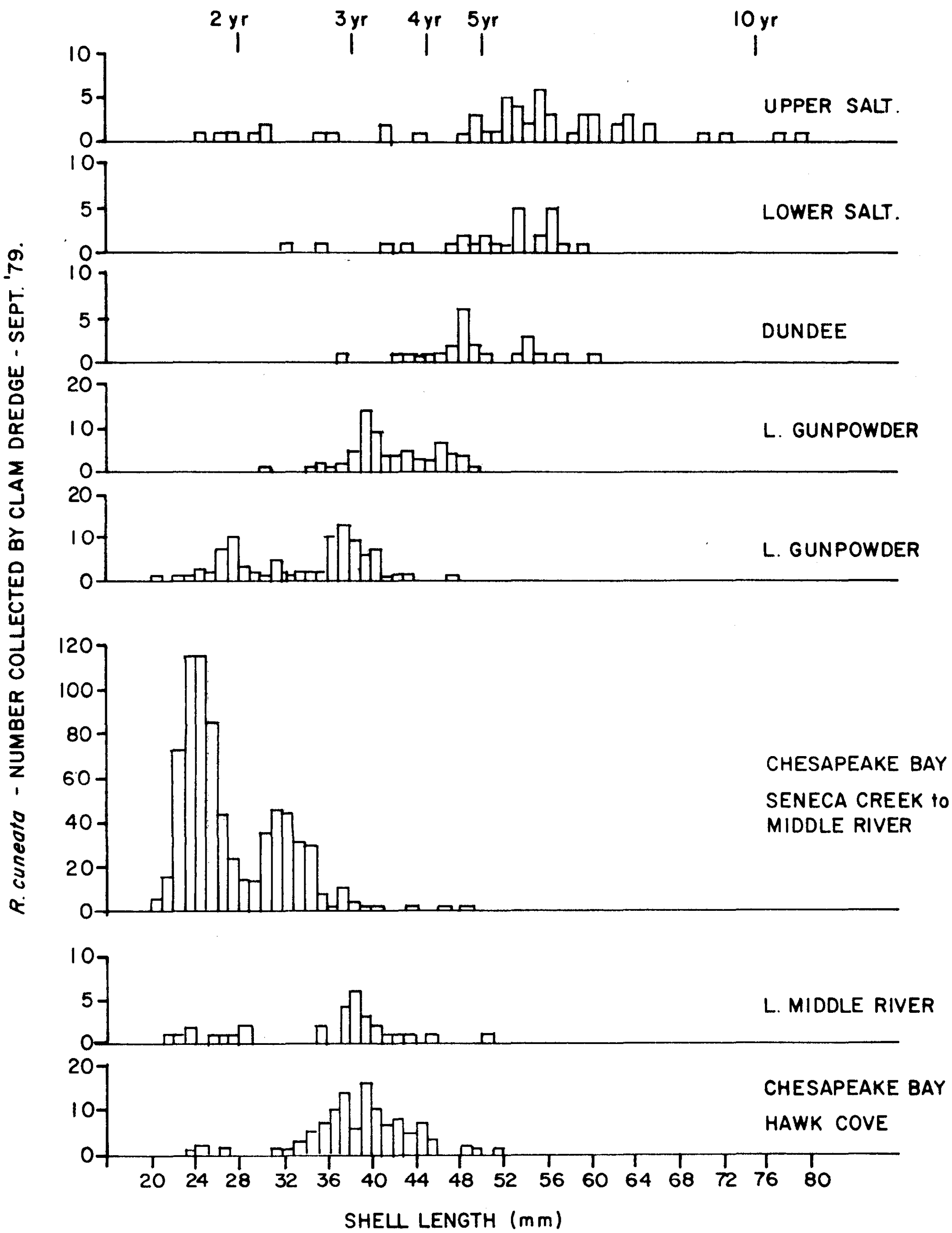

Figure 53

September 1979 Rangia cuneata size frequency distributions, dredge tows.

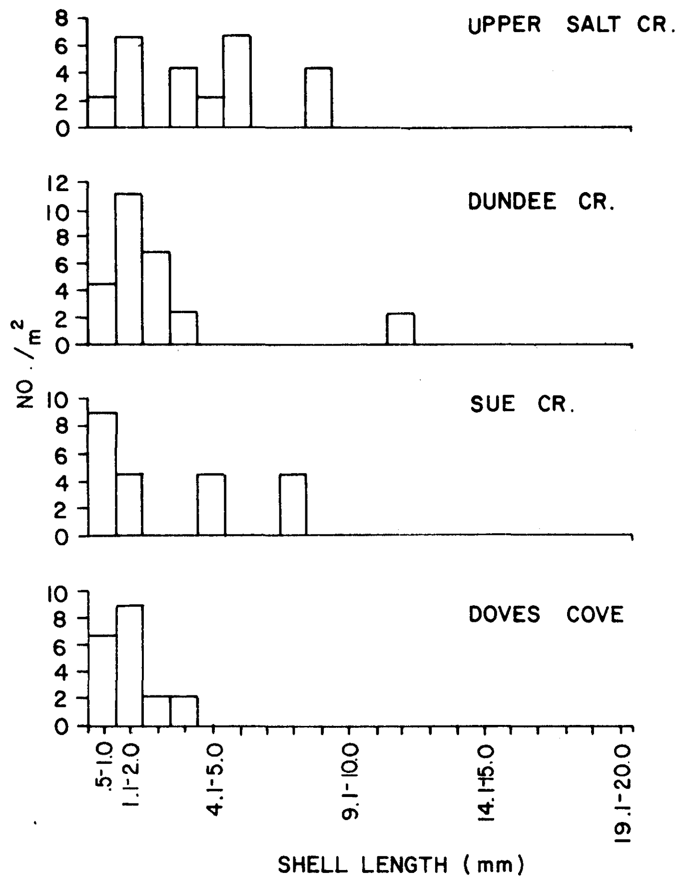

Figure 54

September 1979 *Rangia cuneata* size frequency distributions, Ponar grab samples, sand sediments.

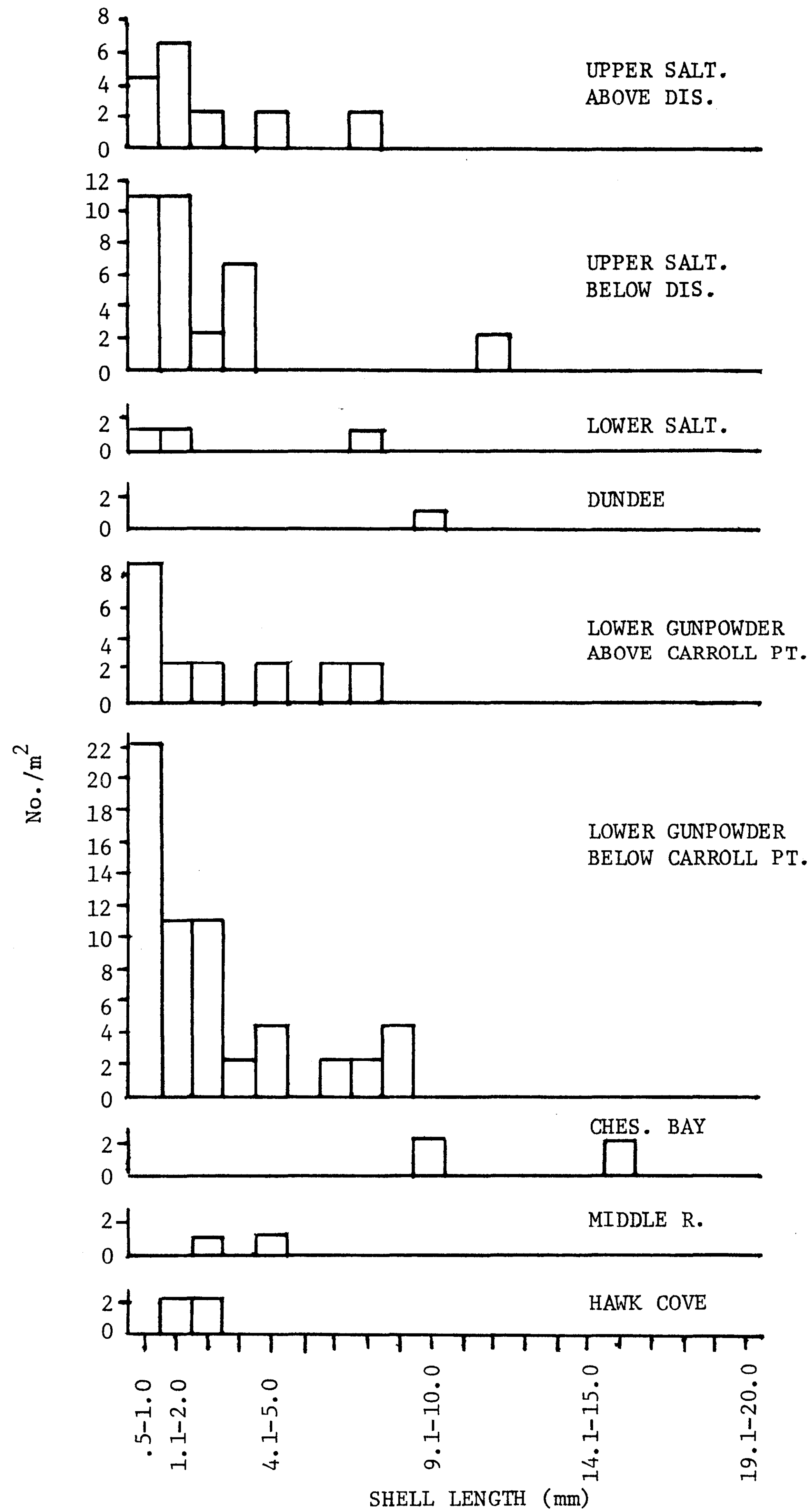

Figure 55. November 1979 juvenile <u>Rangia</u> <u>cuneata</u> size frequency distributions, Ponar grab samples, mud sediments.

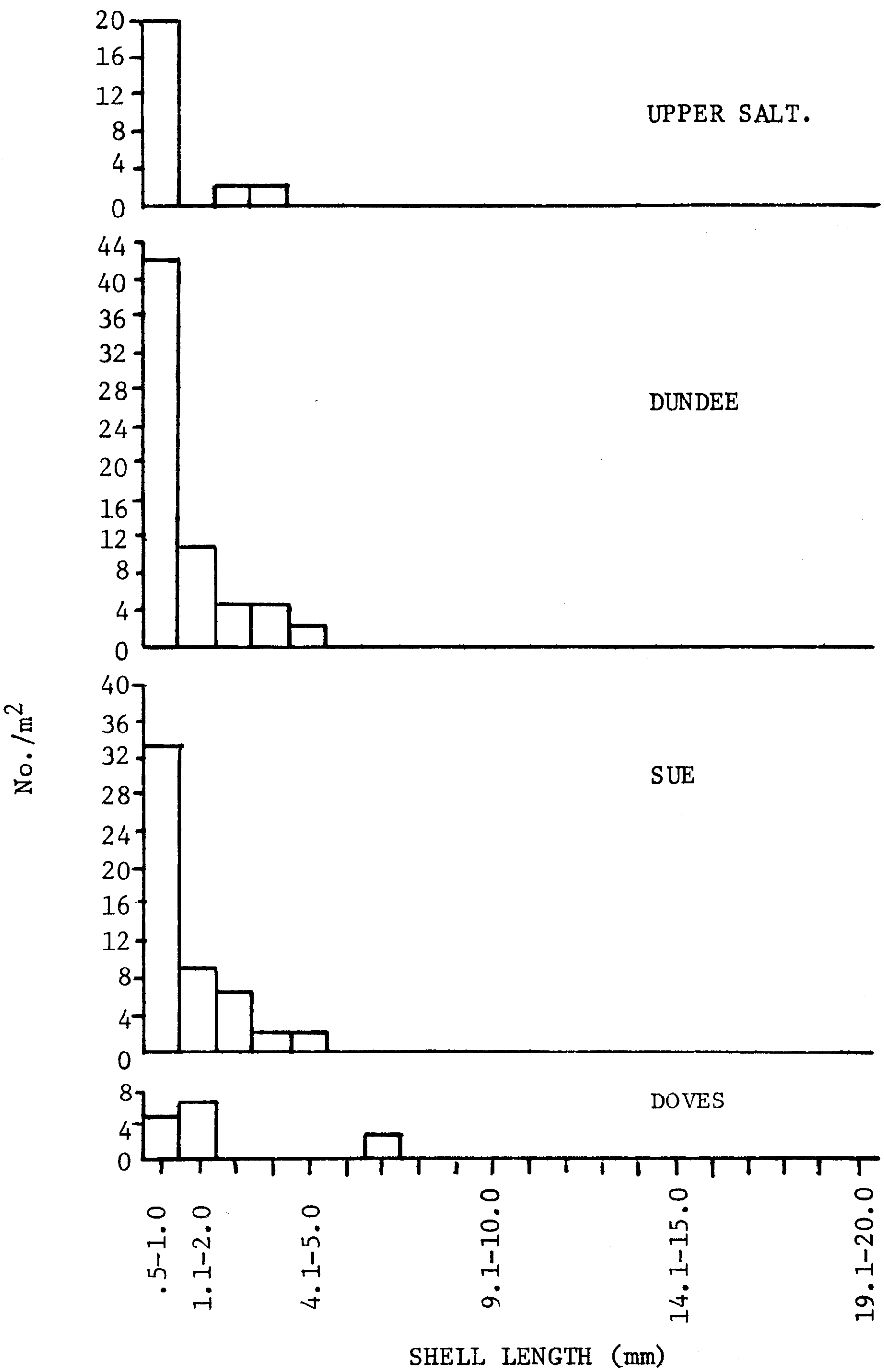

Figure 56. November 1979 juvenile <u>Rangia cuneata</u> size frequency distributions, Ponar grab samples, sand sediments.

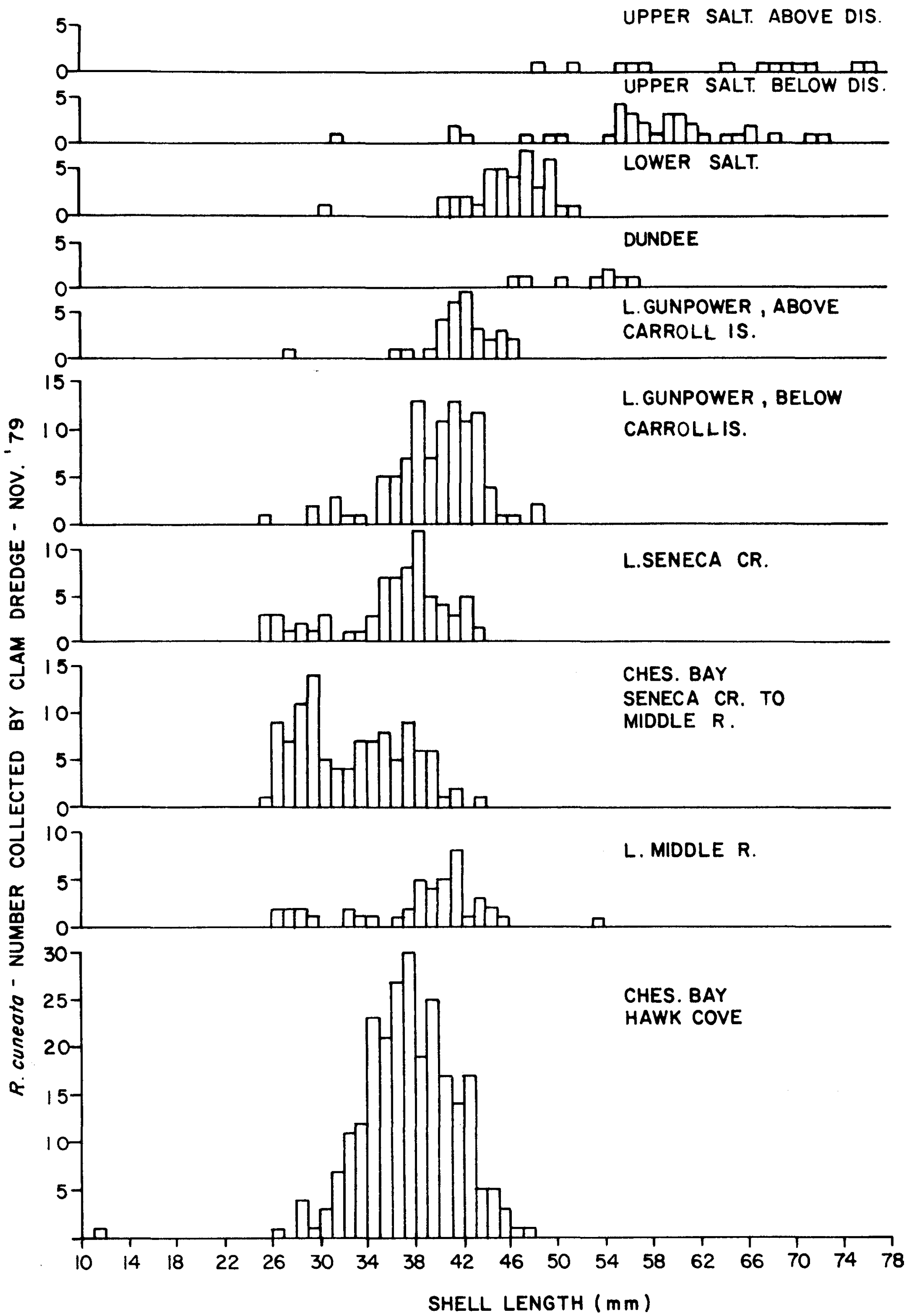

Figure 57

November 1979 Rangia cuneata size frequency distributions, dredge tows.

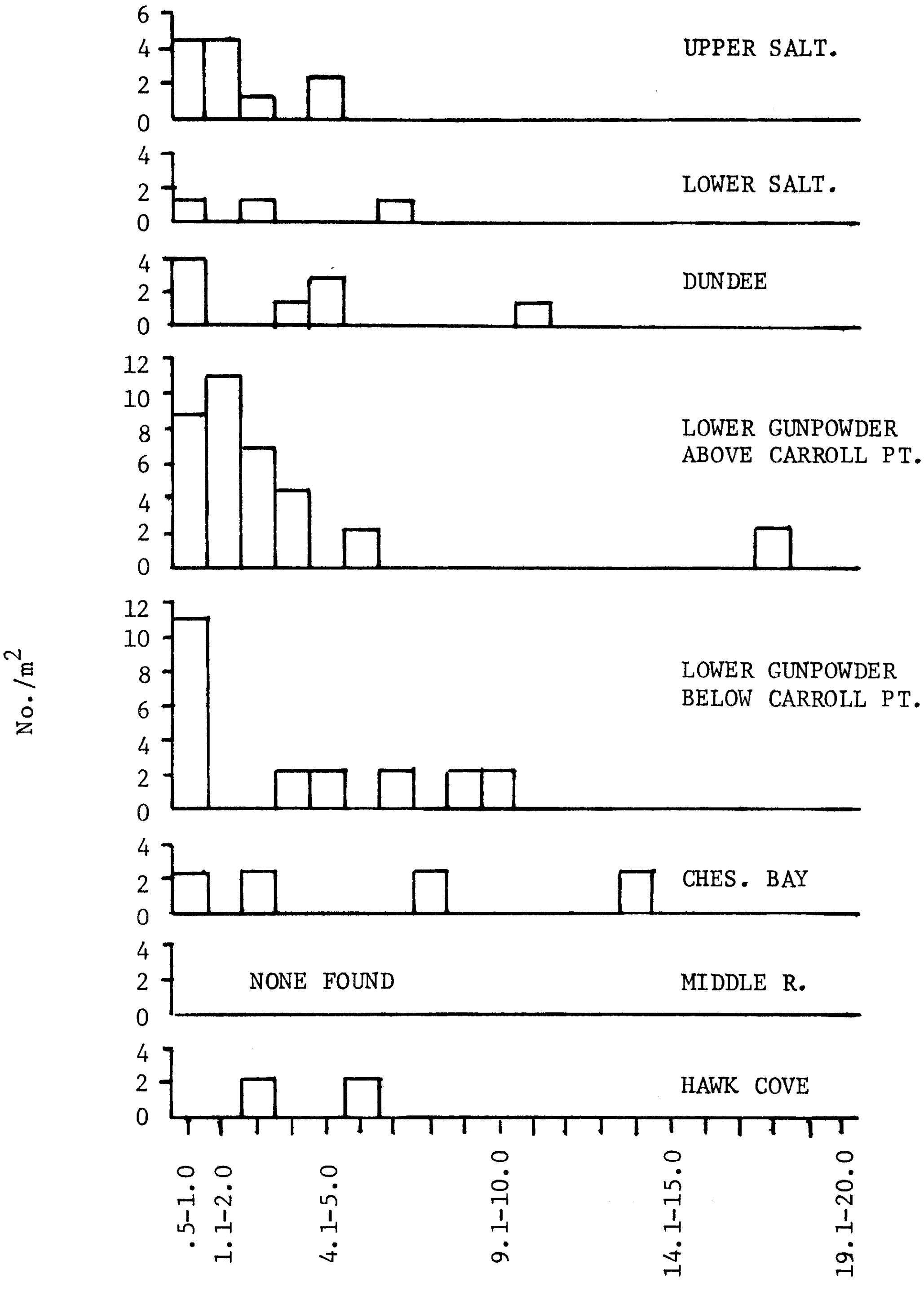

Figure 58. April 1980 juvenile Rangia cuneata size frequency distributions, Ponar grab samples, mud sediments.

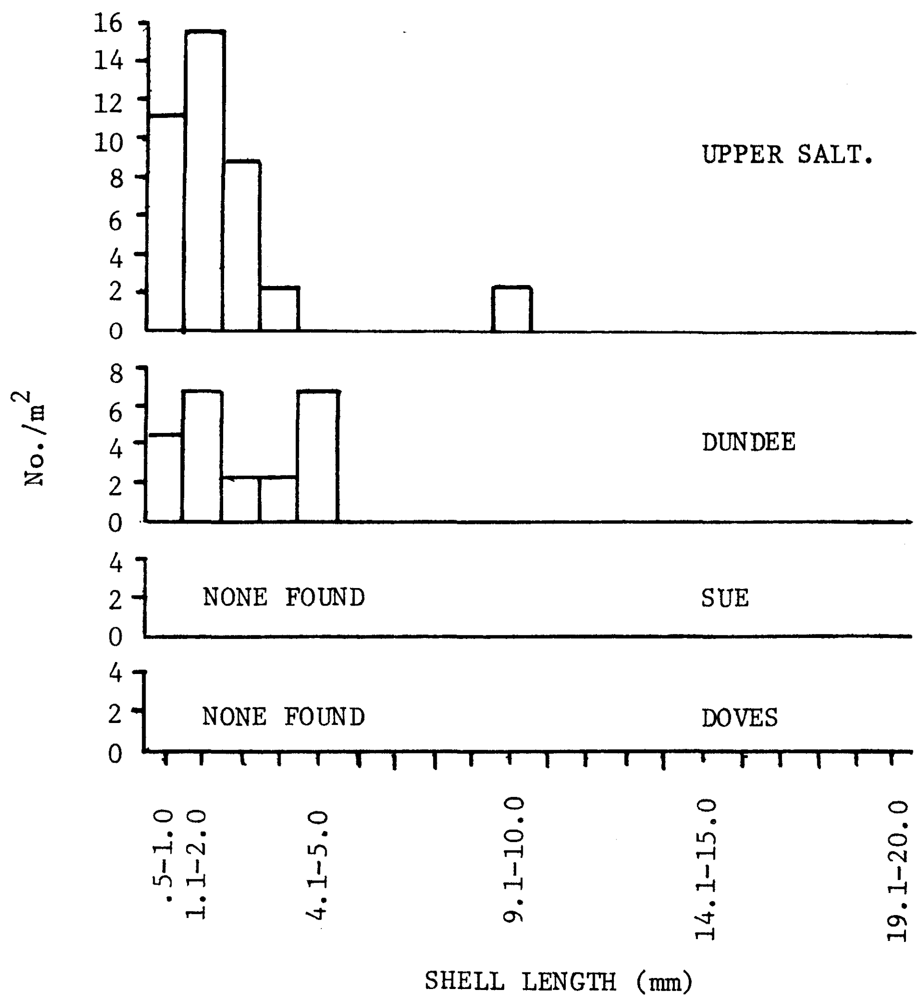

Figure 59. April 1980 juvenile <u>Rangia cuneata</u> size frequency distributions, Ponar grab samples, sand sediments.

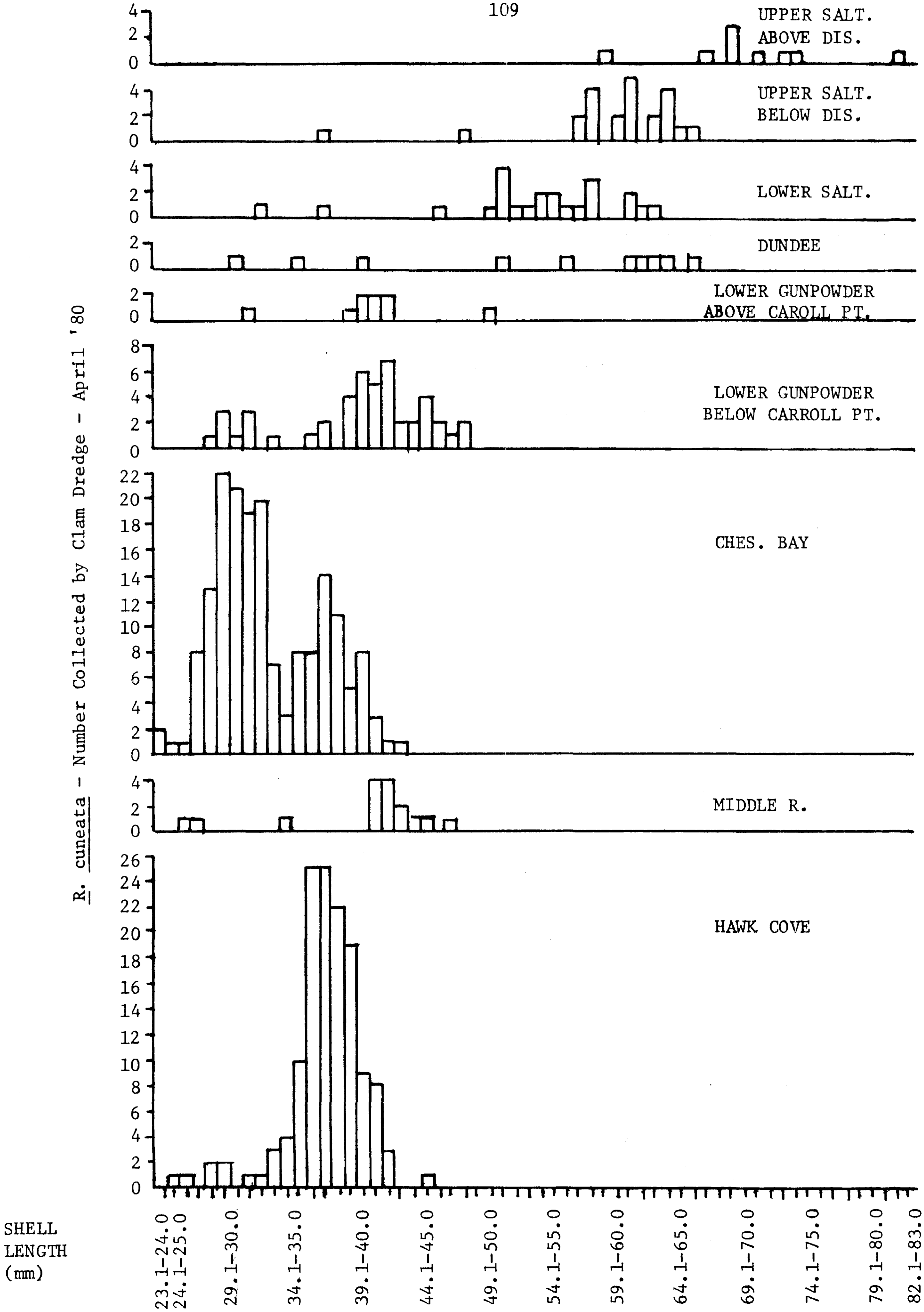

Figure 60. April 1980 *Rangia cuneata* size frequency distributions, dredge tows.

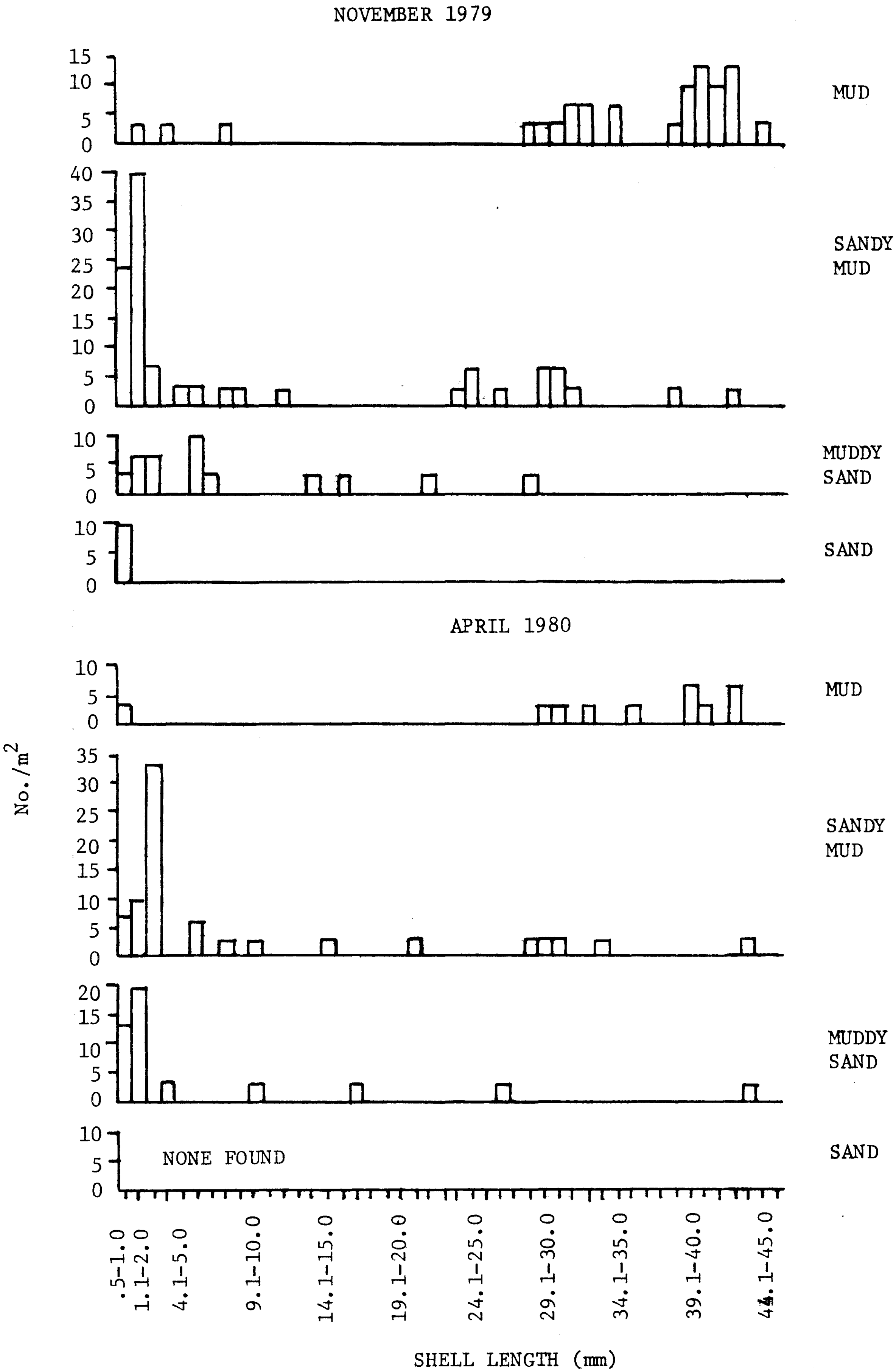

Figure 61. November 1979 and April 1980 Rangia cuneata size frequency distributions, Ponar grab samples, Weir Pt.

Middle River or Sue Creek mud areas or in Sue Creek or Doves Cove sand areas (Figure 59). The largest adult populations were in the Chesapeake Bay and Gunpowder River sampling areas (Table 15), and the progression in maximum size down bay from upper Saltpeter appeared, as in the preceding sampling periods (Figure 60).

During the course of the study, the larger adult fraction of the R. cuneata population showed a gradual increase in median shell size in most of the areas that supported substantial populations (Figure 62). In the bay, the Middle River, and presumably in the Gunpowder below Carroll Point the clams in the smaller size fraction grew rapidly during the summer, with a doubling of the median size between June and September. This segment of the population persisted to some degree throughout the study in these four areas, but was the most successful in the Chesapeake Bay above the Middle River (Figures 47, 53, 57, and 60). In Hawk Cove it was a small proportion of the population in June, and remained so. In the Middle and Gunpowder Rivers the smaller clams outnumbered the larger size fraction in June, but by November they constituted a minor component of the population. The adult clam size frequency distributions changed little between November and April, exhibiting no indication of a size selective winter kill. Overall population densities declined during the winter in most of the study area (Figure 45), and there was a complete absence of clams from the sand samples from Sue Creek, Doves Cove, and Weir Point in April. The persistence of a clam population in the sand areas in upper Saltpeter and Dundee Creeks may be evidence of a protective effect of the power plant plume during the winter.

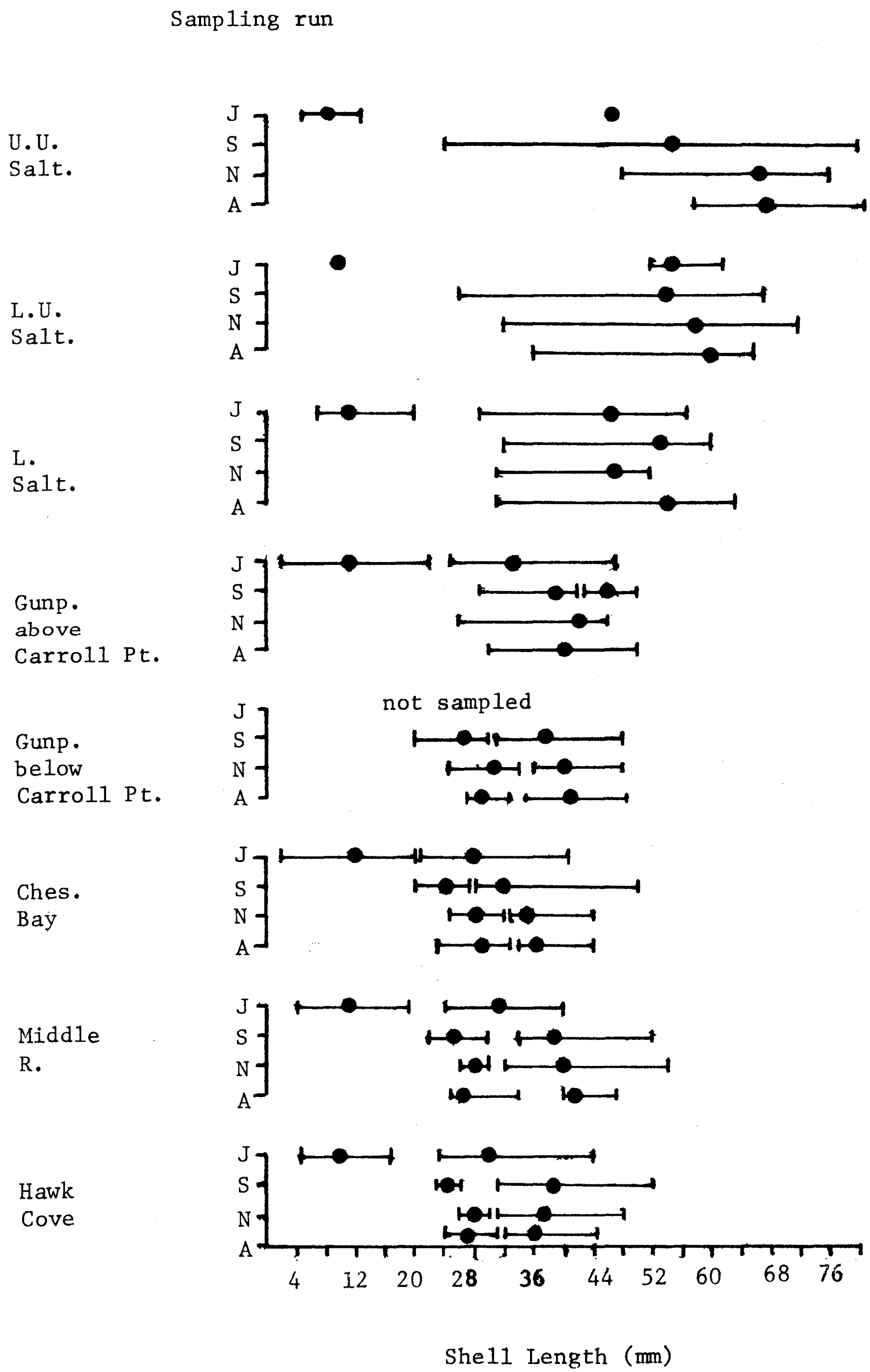

Figure 62. Summary of R. cuneata tow data, shell length medians and ranges.

Scolecolepides viridis: The spring reproductive period of this species of spionid polychaete (George 1966) was reflected in June and April abundance peaks in most of the sampling areas (Figure 63). The June spatial distribution in the creek mud areas was essentially uniform (Tables 4 and 6), while among the sand areas Dundee Creek supported the highest population densities (Table 5). The Weir Point data suggested that an intermediate, mud-sand mixture was actually preferred over more homogeneous mud or sand sediments (Figure 63). In September the Sue Creek mud populations were among the sparsest (Tables 7 and 9) while the sand stations in this creek exhibited relatively dense populations (Table 8). The distributions in mud within the reference creeks were uniform. In upper Saltpeter, however, significantly fewer were present upstream from the discharge, than downstream (Table 9).

In November no S. viridis were found in the Sue Creek mud samples (Tables 10 and 12), while the sand samples yielded a few individuals (Table 11). Overall, the November population densities were higher in the bay and river sampling areas than in the creeks (Table 12). There were no statistically significant differences between the upper and lower sections of creeks, except for Dundee in which S. viridis was absent from samples taken at the upper stations. In the Gunpowder River, fewer were present at the stations above Carroll Point (U. Gunp.) than below (L. Gunp., Table 12).

The April population increase was observed more for the creek mud and sand areas than for the river and bay stations (Figure 63). The highest population densities were in the upper Saltpeter and Dundee Creek sand areas (Table 14). In mud, the population in upper Saltpeter was significantly denser than the other creek populations (Table 13),

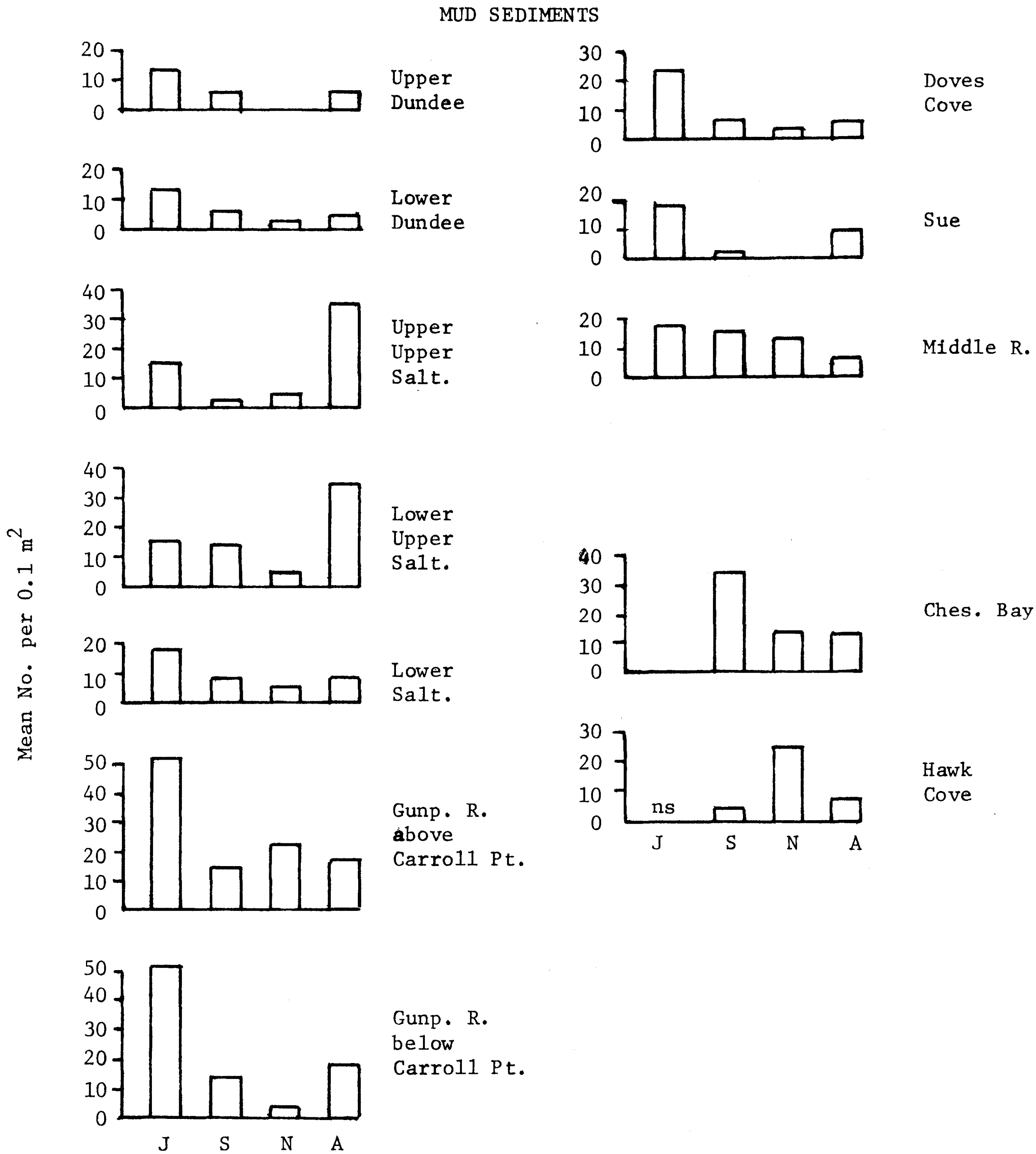

Figure 63. Distribution of <u>Scolecolepides viridis</u>.
ns - not sampled.

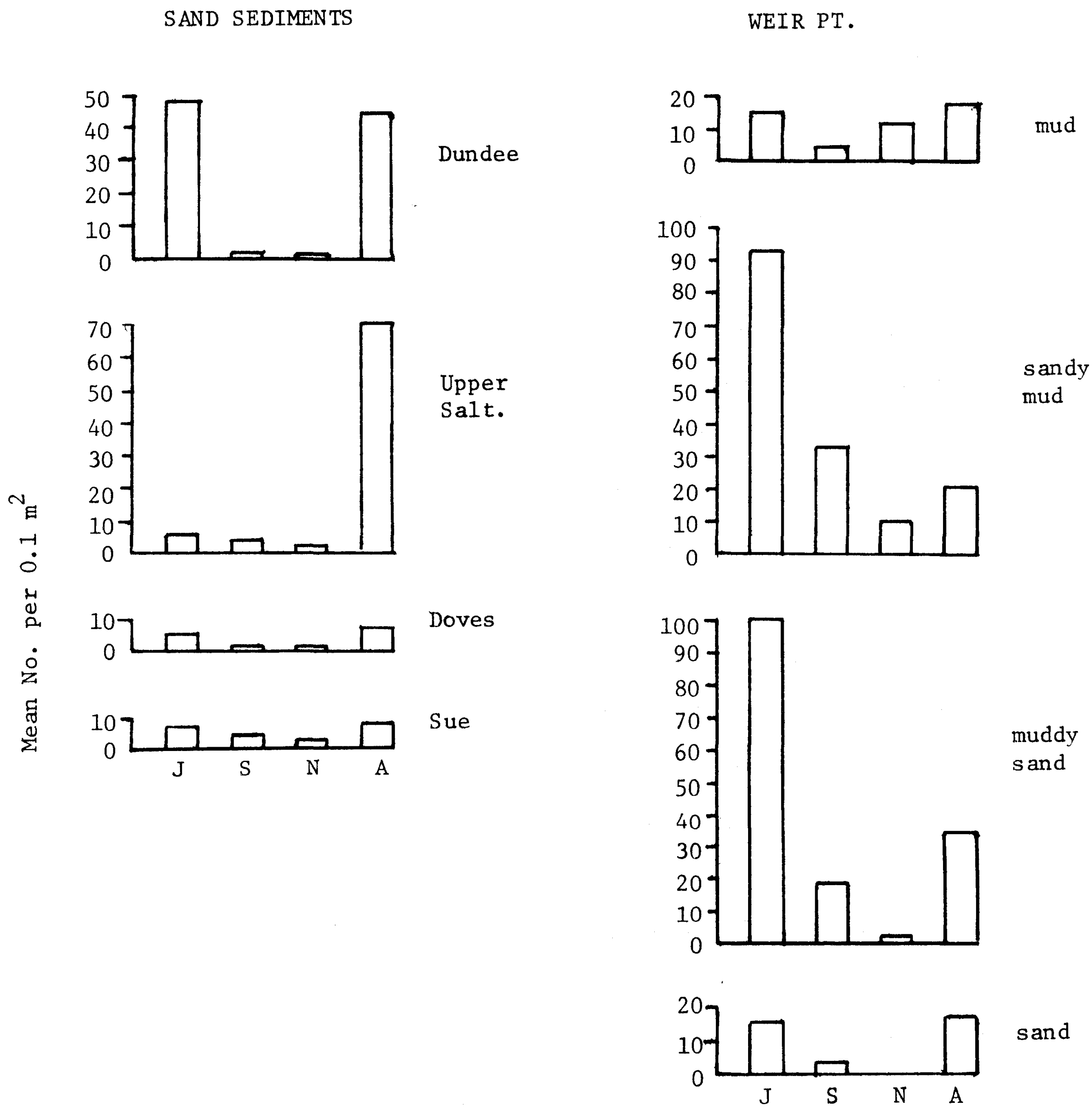

Figure 63. (cont.)

and no significant differences appeared between upper and lower creek sections (Table 15).

The occurrence of the largest April creek S. viridis populations in the upper Saltpeter mud and sand and Dundee Creek sand sampling areas could reflect an acceleration of the reproductive and developmental phases of the life cycle in the presence of the Crane plant's thermal effluent. Spawning is triggered by rising temperature in the spring, and the rate of larval development increases with increasing temperature within the range 2-20°C (George 1966). In addition to larvae produced in Saltpeter and Dundee Creeks, the population in these areas could also receive individuals originating in Seneca Creek and the bay, that are entrained in the Crane plant cooling water. This possible transport mechanism is consistent with the results of the zooplankton study (Grant et al. 1980) in which relatively large numbers of polychaete larvae were found in samples taken in March near the intake and discharge. Judging from the June 1979 data, however, the enhanced spring S. viridis populations in upper Saltpeter Creek do not persist into the summer. The September population reduction in upper Saltpeter Creek upstream from the discharge, relative to downstream,duplicates the pattern shown by Rangia cuneata (Figure 45). For the study area as a whole, the S. viridis populations in the sandy areas in the creeks and at Weir Point exhibited the greatest temporal changes in abundance, followed by the creek mud populations, while the river and bay populations were more temporally stable.

Leptocheirus plumulosus: Population maxima of this amphipod species were observed in June in most of the sampling areas (Figure 64). September minima followed by increases in late fall characterized the bay and river areas, including lower Saltpeter Creek. In contrast, the creek areas excluding lower Saltpeter, in both mud and sand, maintained low population levels from September through April. The population in Doves Cove, the area of lowest salinity, was low in all four sampling periods.

Relative to the Sue Creek reference area, the upper Saltpeter Creek mud area exhibited significantly lower L. plumulosus population densities in September and April (Tables 7 and 13), but not in June and November (Tables 4 and 10). In September the density in lower Saltpeter was significantly lower than in the bay and river areas (Table 9). In sand, however, the April populations in upper Saltpeter and Dundee Creeks were significantly denser than the populations in Sue Creek and Doves Cove (Table 14).

The L. plumulosus distribution pattern in September suggests that the Crane plant effluent may have accentuated the seasonal population depression in upper and lower Saltpeter Creek. Comparison of these sections with their reference area counterparts, Sue Creek and the Middle River, provides estimates of the magnitude of the apparent plant effect: a factor of 8 difference between the upper Saltpeter and Sue Creek populations (2.3 vs 18 per 0.1 m^2,Table 7), and a factor of 5 difference between the lower Saltpeter and Middle River populations (11 vs 50 per 0.1 m^2, Table 9). The population upswing in lower Saltpeter in November indicates that the reproductive ability in the vicinity of the plant was not impaired, and the April distribution among the sand sites suggests an acceleration of the life cycle in the spring in the shallow zones near the discharge. Thus, although the Crane plant may influence the L. plumulosus population in Saltpeter Creek, the effect appears to be mixed, and to be restricted to the seasons when creek population densities are naturally low. The June

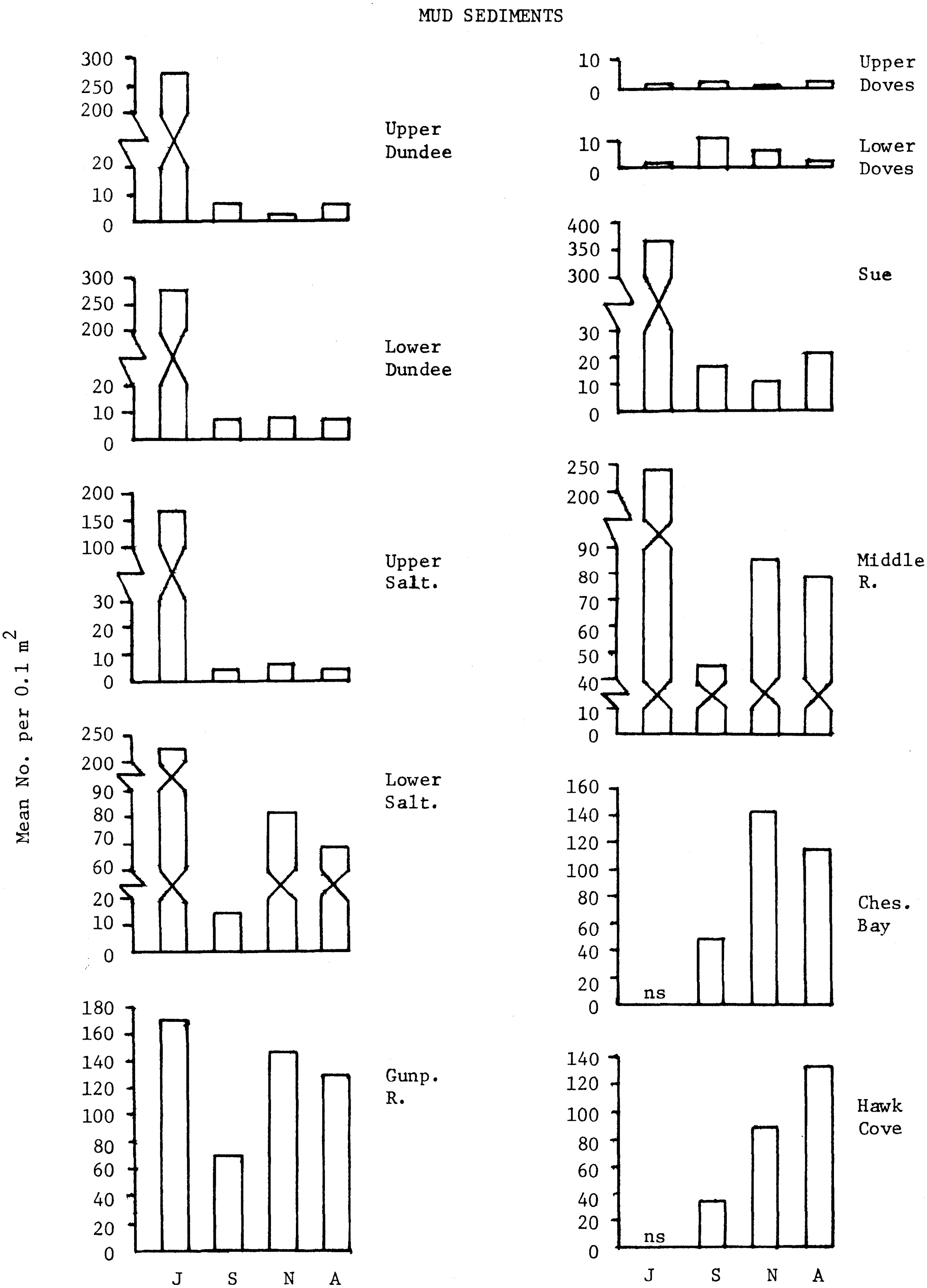

Figure 64. Distribution of Leptocheirus plumulosus.
ns - not sampled

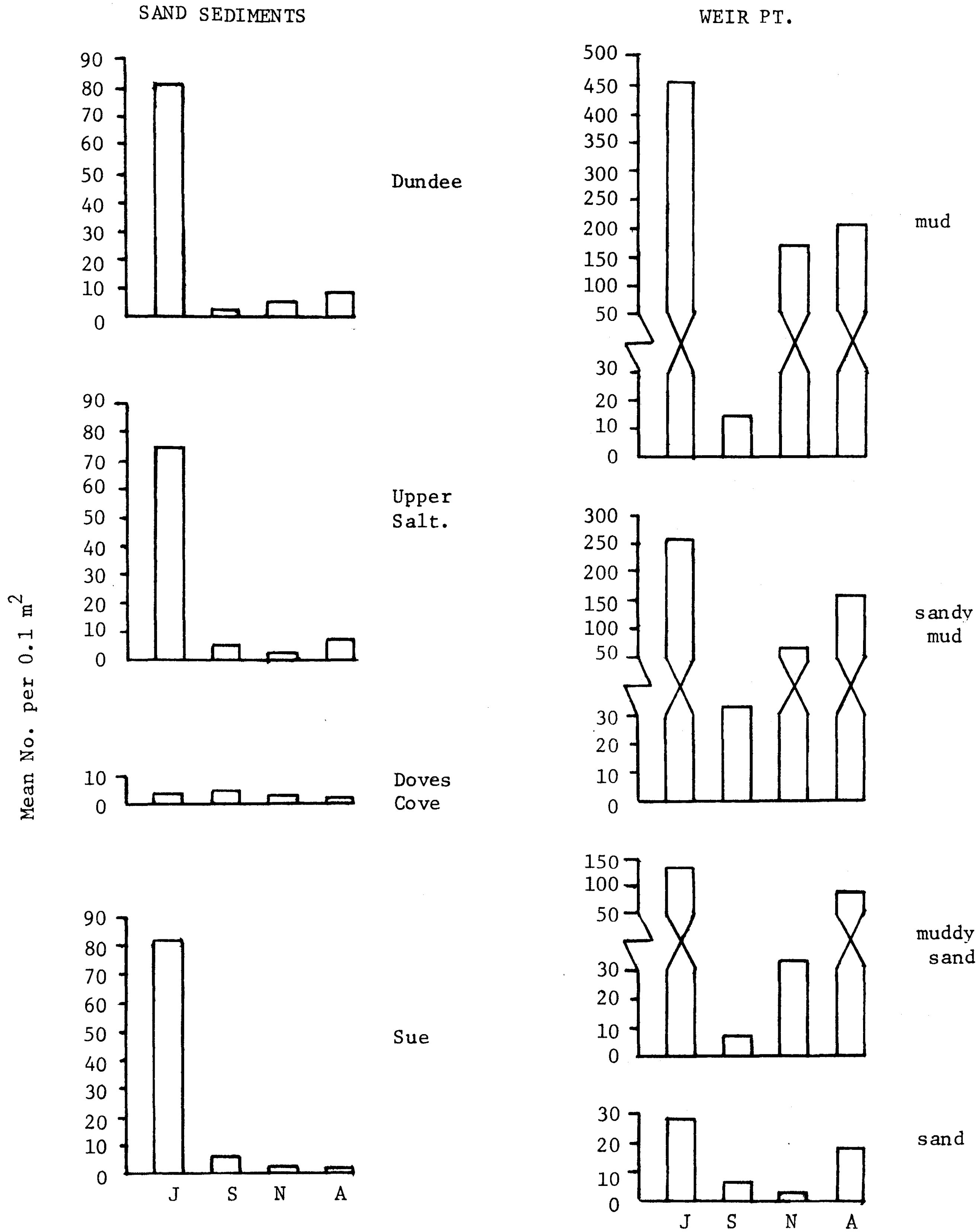

Figure 64 (cont.)

maxima in upper and lower Saltpeter were not significantly reduced, nor were the November and April population levels in lower Saltpeter.

Cyathura polita: The distribution of this isopod species had several features in common with the patterns shown by L. plumulosus; a June maximum in most areas, greater temporal stability in the rivers and bay than in the creeks, and relative scarcity in Doves Cove (Figure 65). A September minimum was evident also, but for C. polita it appeared only in the upper sections of creeks (upper upper Saltpeter, Sue, Doves). The spatial and temporal patterns were similar in the reference areas and in the discharge area, thus there was no evidence of a response to the Crane plant effluent.

Tubificidae: The highest population density of tubificids observed during the study was in the upper Saltpeter Creek sand area in April (Figure 66). The November level at this location was also high, but the differences among sampling areas in this month were not statistically significant (Table 11). Nonetheless, the data from these two sampling runs suggest a positive response of the tubificids in the immediate discharge zone to the Crane plant effluent during the fall and spring. The mud population density in upper Saltpeter varied little among the sampling runs (Figure 66), and was not significantly different from reference creek densities (Tables 4, 7, 10 and 13).

Dipterans: Midge larvae accounted for from 10 to 65% of the species (Figure 41) and from 1 to 80% of the individuals (Figure 67) present in the benthic communities sampled. Seven species, which were sufficiently abundant and widespread to rank among the major taxa encountered during the study, will be discussed individually. An additional 19 species, with scattered occurrence, will be considered as a separate group.

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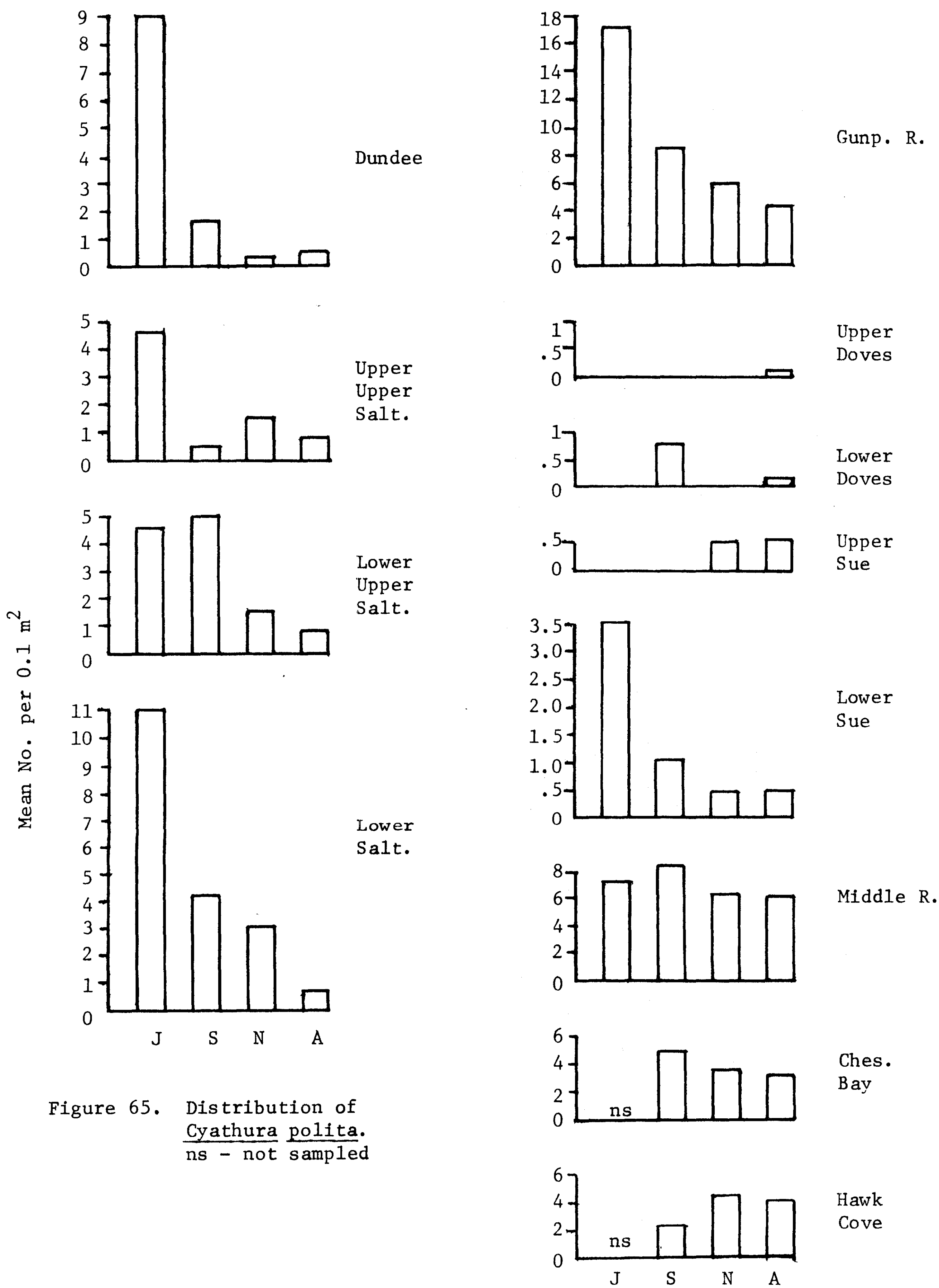

Figure 65. Distribution of *Cyathura polita*.
ns - not sampled

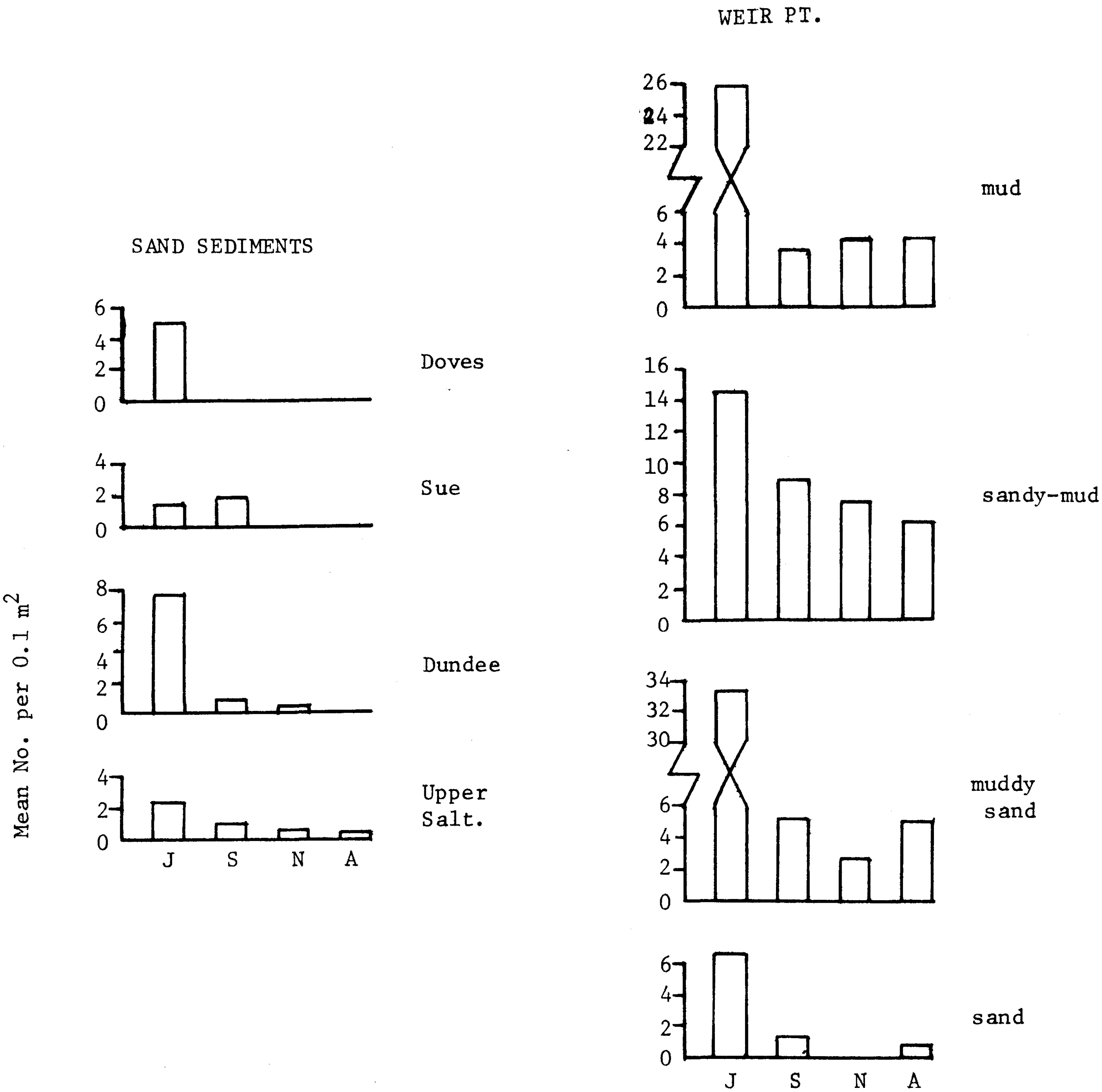

Figure 65 (cont.).

MUD SEDIMENTS

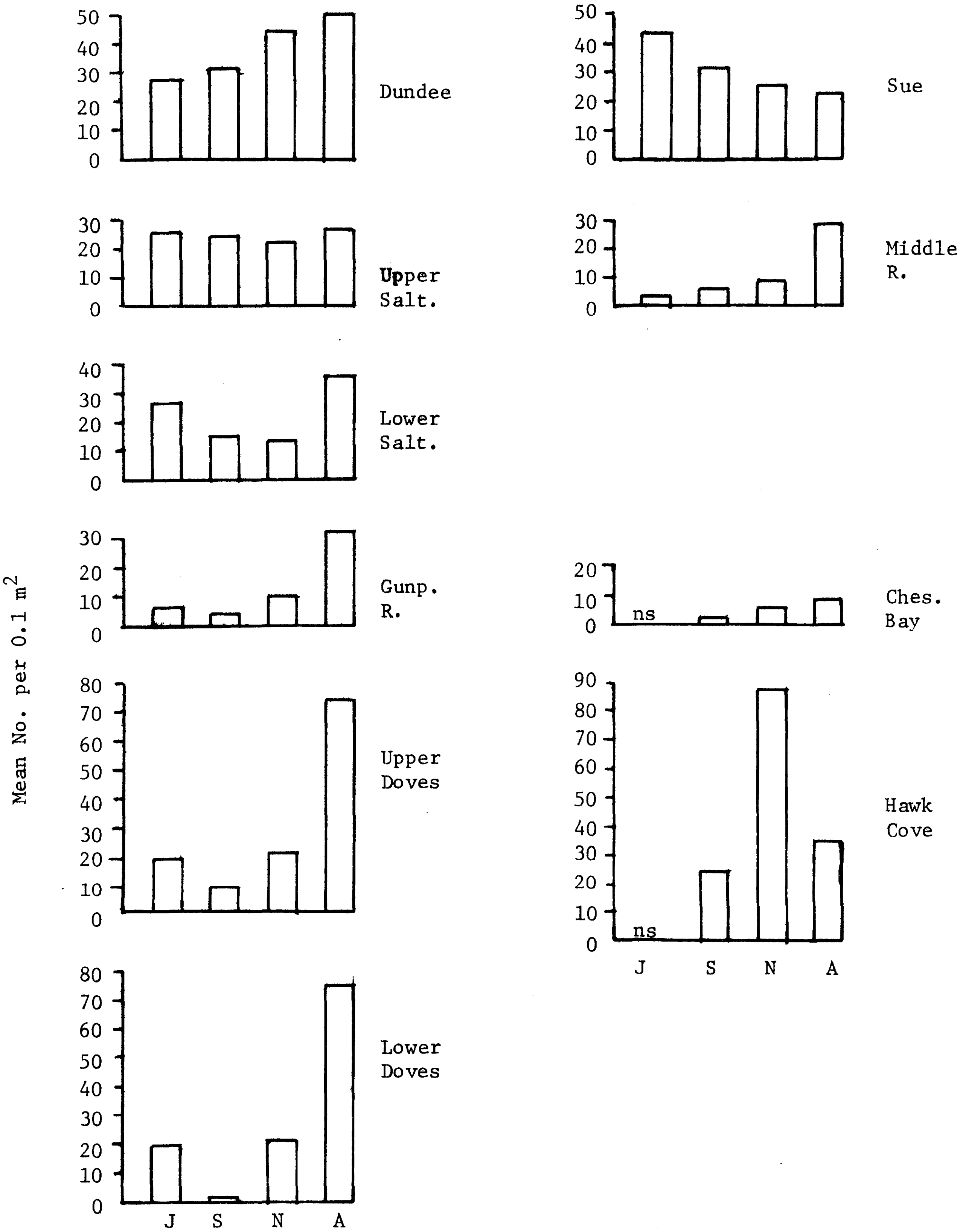

Figure 66. Distribution of Tubificids.
ns - not sampled

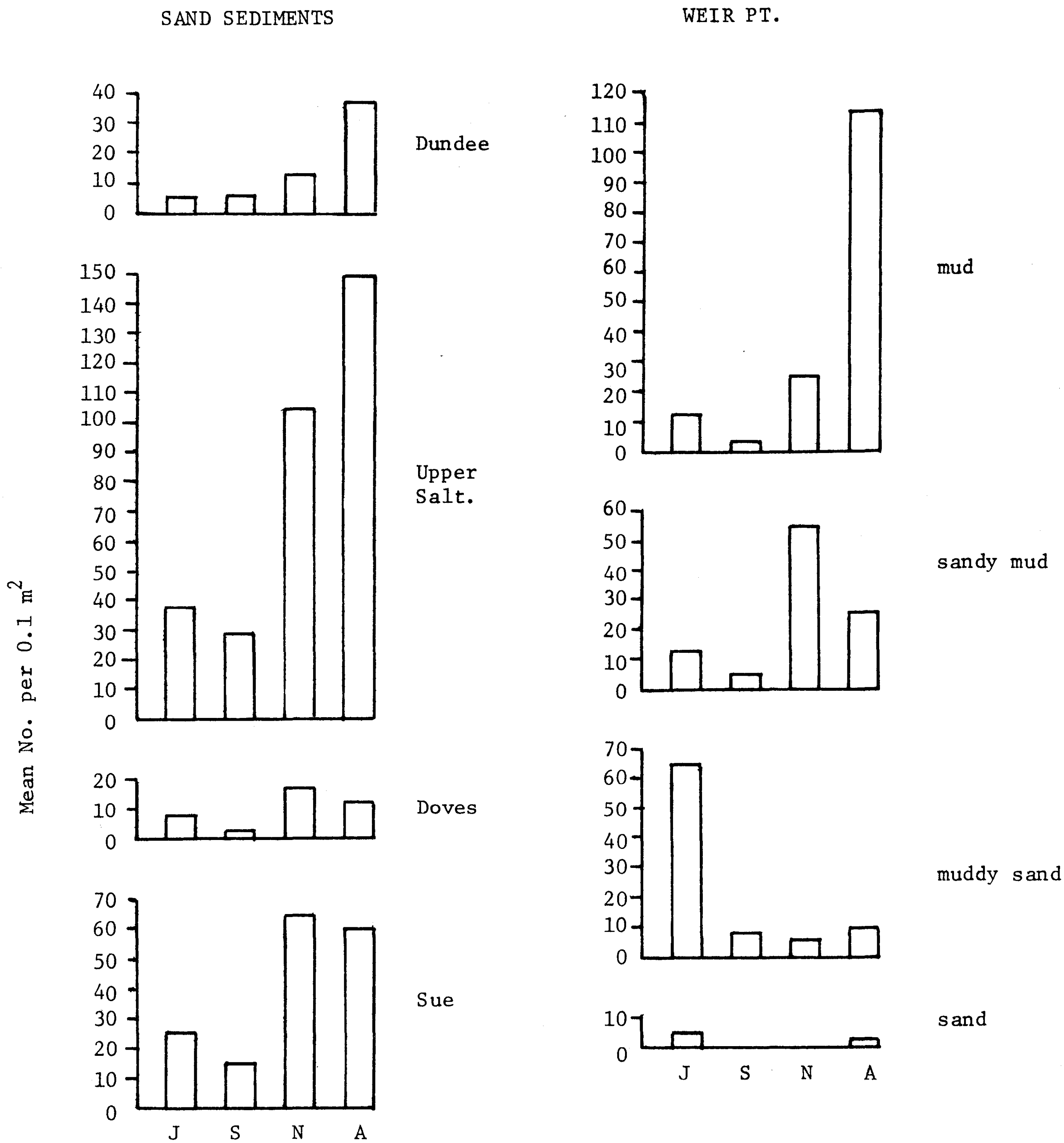

Figure 66 (cont.).

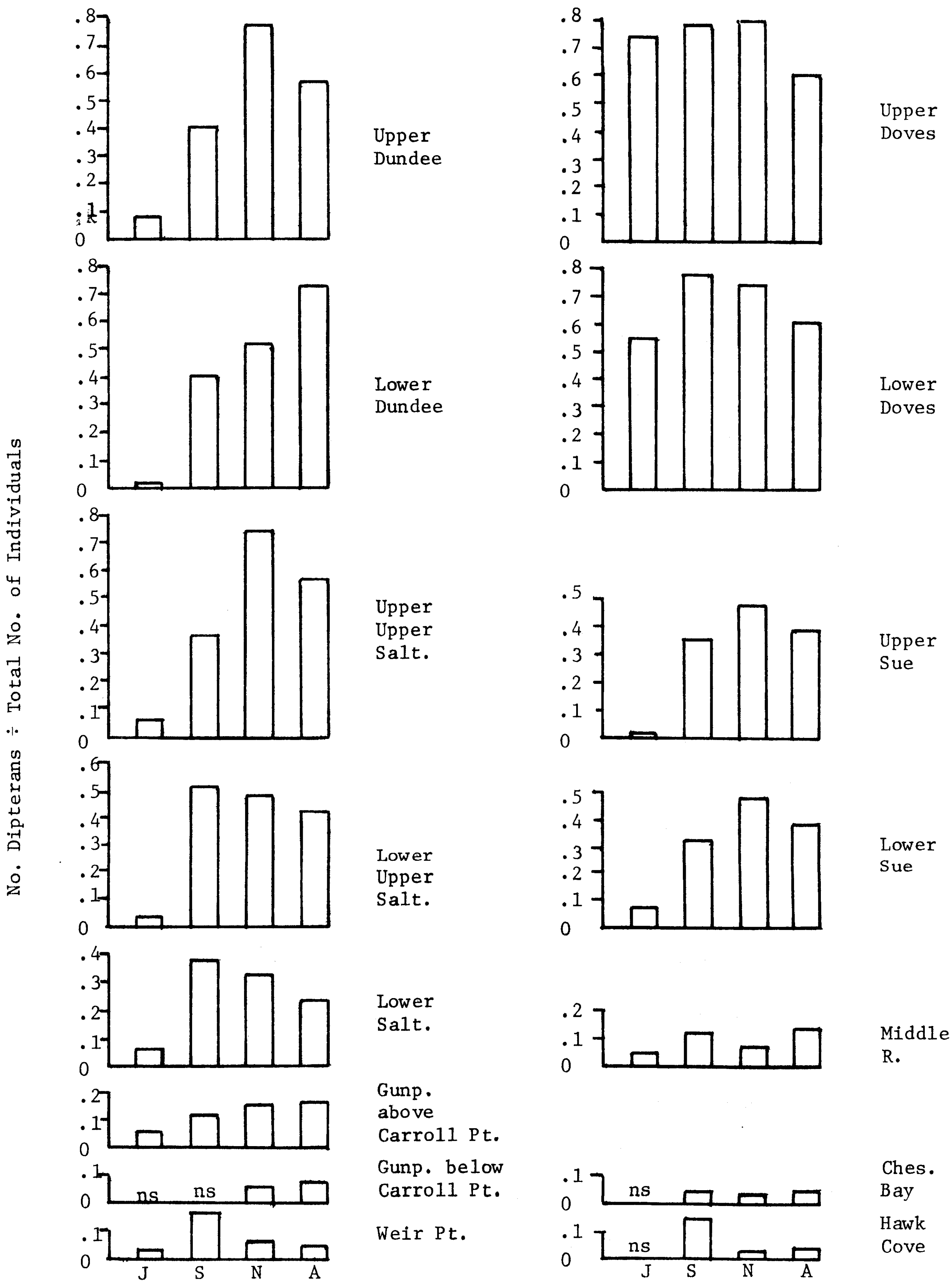

Figure 67. Numbers of dipterans expressed as fractions of the total numbers of individuals, average values, mud sediments. ns - not sampled

Major species - Five of the seven major dipterans (Coelotanypus, Procladius, Cryptochironomus, Xenochironomus and Polypedilum) are considered to be primarily predaceous in their feeding habits (Coffman 1978), and constitute the principal carnivore segment of the benthos in the study area. Their prey consists mainly of smaller organisms, such as protozoa, microcrustacea, oligochaetes, and smaller instars of chironomids.

Coelotanypus sp. - This dipteran species was found in all of the mud sampling areas throughout the study (Figure 68), but was rarely present in the sand samples. Its abundance was generally greater in the creeks than in the rivers and bay, a pattern consistent with its characterization as a lentic littoral organism (Coffman 1978). In the creeks there was a distinct June minimum but no consistent seasonal maximum. The June minimum was lowest in upper Saltpeter (Table 4), suggesting that the temperature elevation due to the Crane discharge may have accelerated maturation and emergence of adults in this area. In September in upper Saltpeter, higher population densities were present downstream from the discharge than upstream (Table 9), a pattern that could reflect an augmentation of the downstream population by eggs or larvae pumped through the power plant from upper Seneca Creek on ebbing tides. In November there was a relatively sharp distinction between a dense creek population and a sparse river and bay population (Table 12), with the exception of the Gunpowder area above Carroll Point in which high densities occurred. This pattern could reflect a Crane plant influence that extended into the immediate Gunpowder River. In April the highest population levels were in the

MUD SEDIMENTS

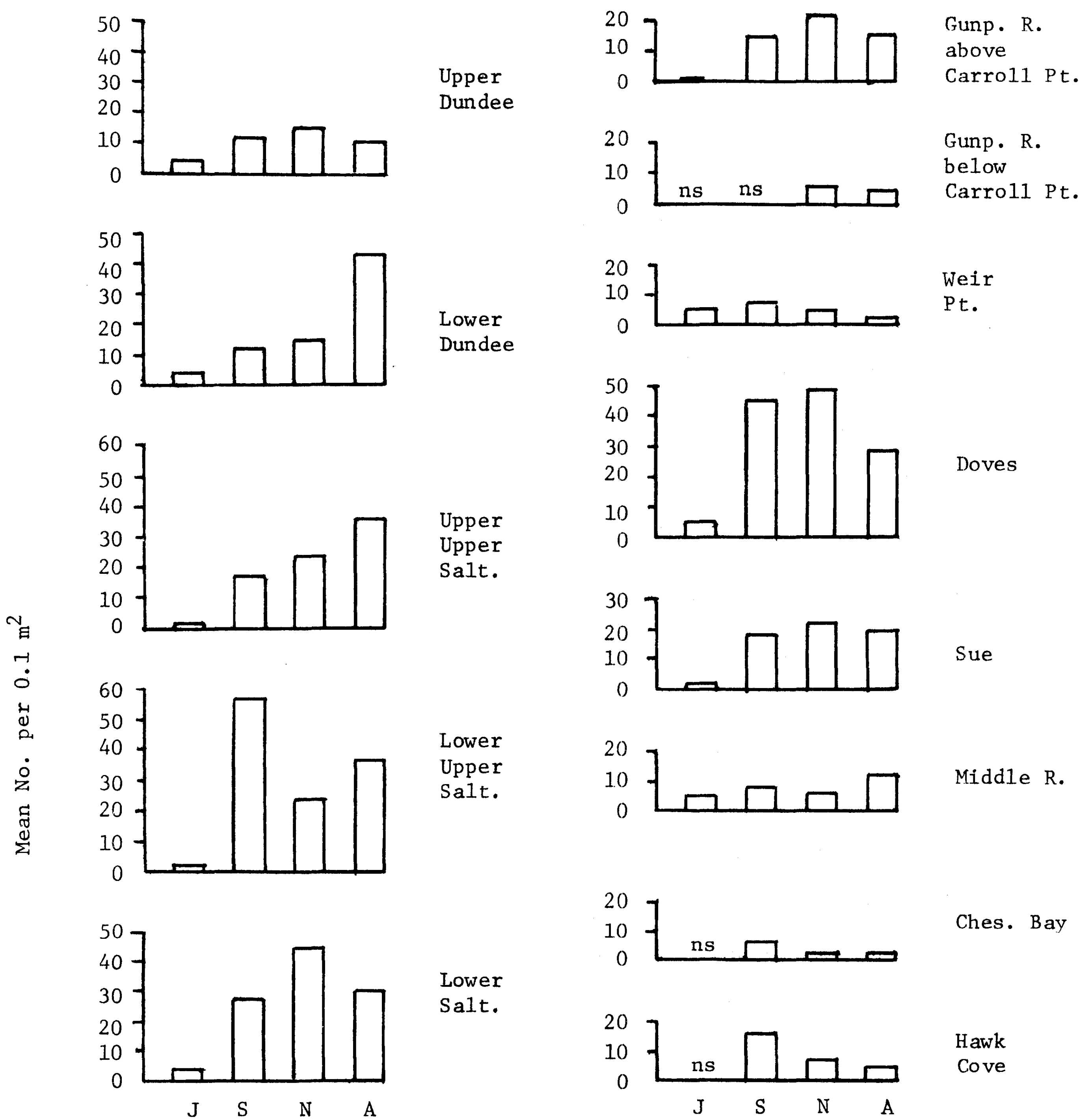

Figure 68. Distribution of Coelotanypus sp.
ns - not sampled

Crane discharge area, including lower Saltpeter Creek, and in Doves Cove (Table 13). Overall, the April distribution was similar to the November and September patterns (Figure 68), indicating a relatively high stability in population levels in the cooler months.

Procladius sp. - This dipteran species apparently emerged later in the summer than did Coelotanypus, and its larvae were rare in the September samples (Figure 69). In June, when peak population densities appeared in most of the sampling areas, the highest densities tended to be associated with the river stations. This pattern is consistent with the lentic profundal habitat preference recorded for Procladius (Coffman 1978), but it could also have resulted from an acceleration of emergence in the creeks relative to the rivers, as observed by Moore (1980). The November and April results documented a population buildup that occurred in the mud but not in the sand sampling areas. None of the distributions indicate a power plant effect.

Chironomus sp. - This species of dipteran was rarely collected in the bay and river areas, including lower Saltpeter Creek (Figure 70). In the creeks there was a greater abundance at the upper stations, consistent with a lentic littoral habitat preference (Coffman 1978). The largest populations in June and September were in Doves Cove, suggesting that salinity may have been a significant factor affecting the distribution of Chironomus in the study area. Upper Saltpeter was the only creek sampling area in which this species was absent from the mud samples in September. If this were a power plant effect it occurred, as with Leptocheirus plumulosus, at a time of naturally low populations.

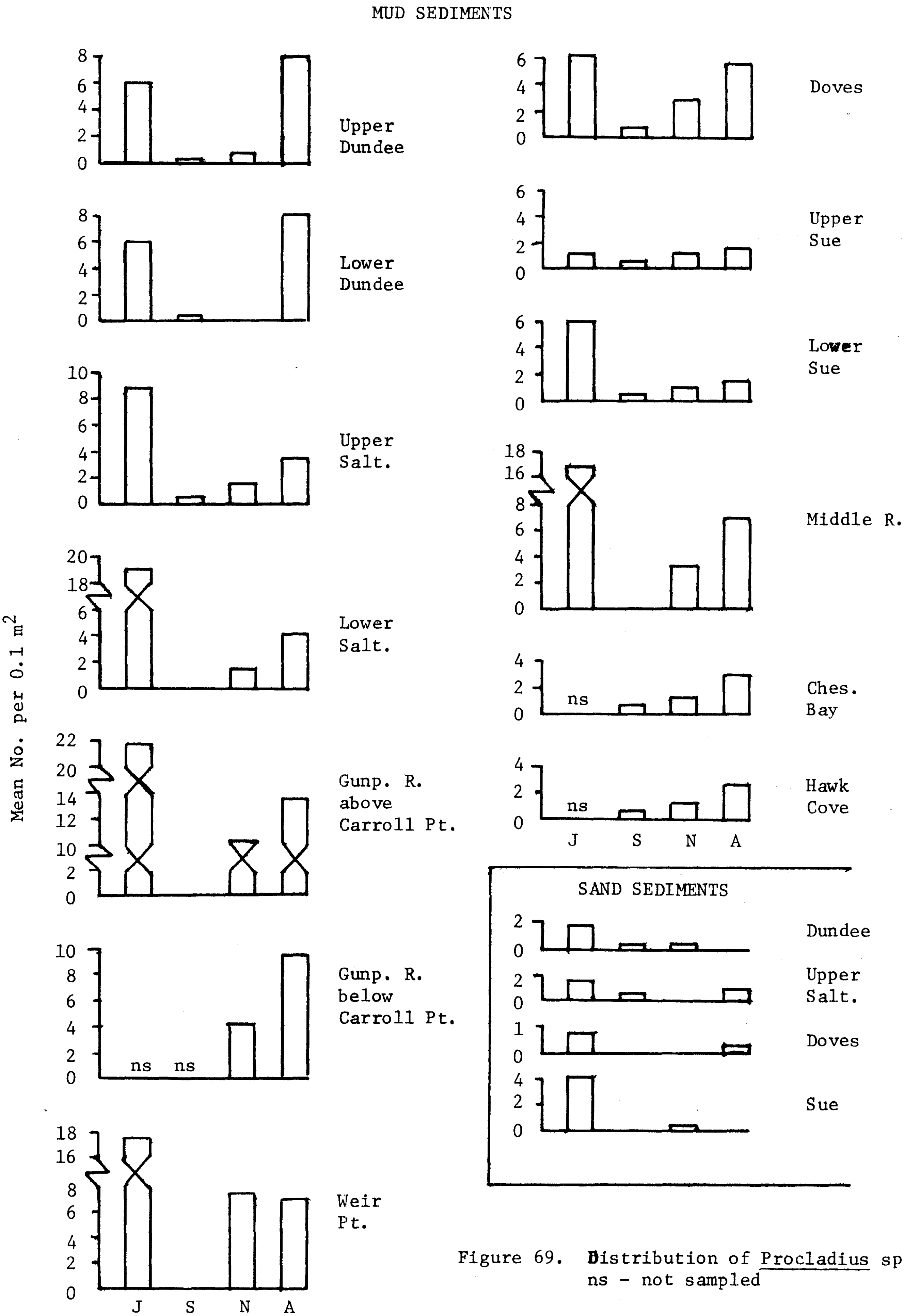

Figure 69. Distribution of Procladius sp.
ns - not sampled

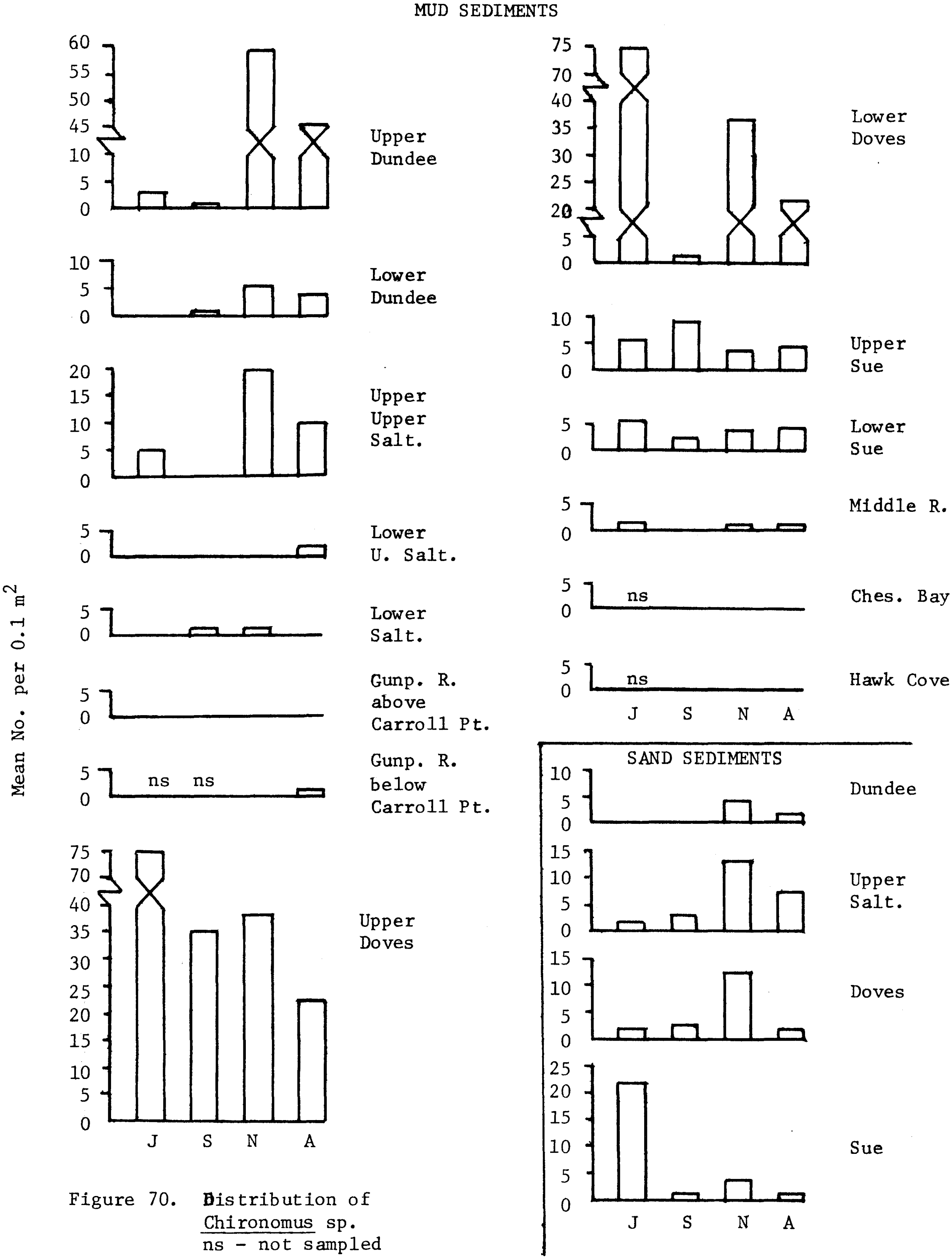

Figure 70. Distribution of *Chironomus* sp.
ns - not sampled

Cryptochironomus sp. - Consistent low abundance associated with a territorial tendency (Curry 1958) is an appropriate description of the distribution of this dipteran species in the study area (Figure 71). No power plant effect is evident.

Tanytarsus sp. - Present exclusively in creek samples, this dipteran species exhibited its highest population densities in the upper Saltpeter and Dundee mud areas (Figure 72). The September minimum indicated for most of the sampling sites was consistent with the documented spring-summer emergence period (Coffman 1978). A positive response to the Crane discharge during the cooler months was suggested by the relatively dense November and April populations in both mud and sand sediments in upper Saltpeter and Dundee Creeks. The large numbers collected in June at the upper Dundee stations probably belonged to the epiphytic species found on the rooted aquatic plants in this area by Nichols _et al_. (1979).

Xenochironomus sp. and _Polypedilum_ sp. - Both of these dipteran species were found predominantly in the sand sampling areas (Figure 73). Both were relatively rare in upper Saltpeter Creek. Temporal variability was high in the Sue Creek and Doves Cove reference areas, as well as in Dundee Creek, and clear seasonal abundance patterns were not evident. Both species preferred the protected creek environment to the more exposed Weir Point sand area.

Minor species - The distributions of 19 minor dipterans are presented in Table 16. Most of these are lentic littoral zone inhabitants that feed mainly on plant material and detritus (Coffman 1978), and the highest frequency of their occurrence was in the upper sections of

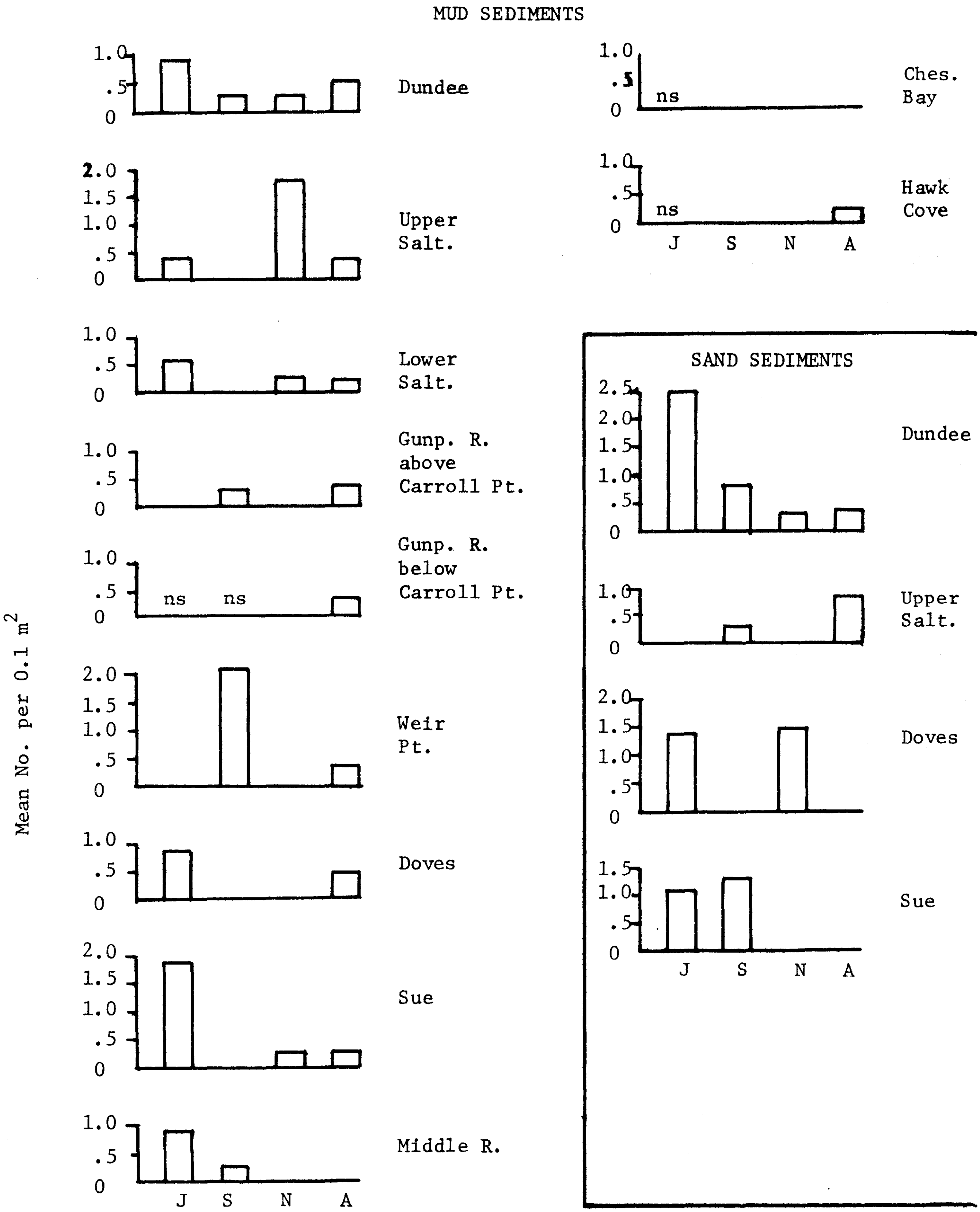

Figure 71. Distribution of <u>Cryptochironomus</u> sp.
ns - not sampled

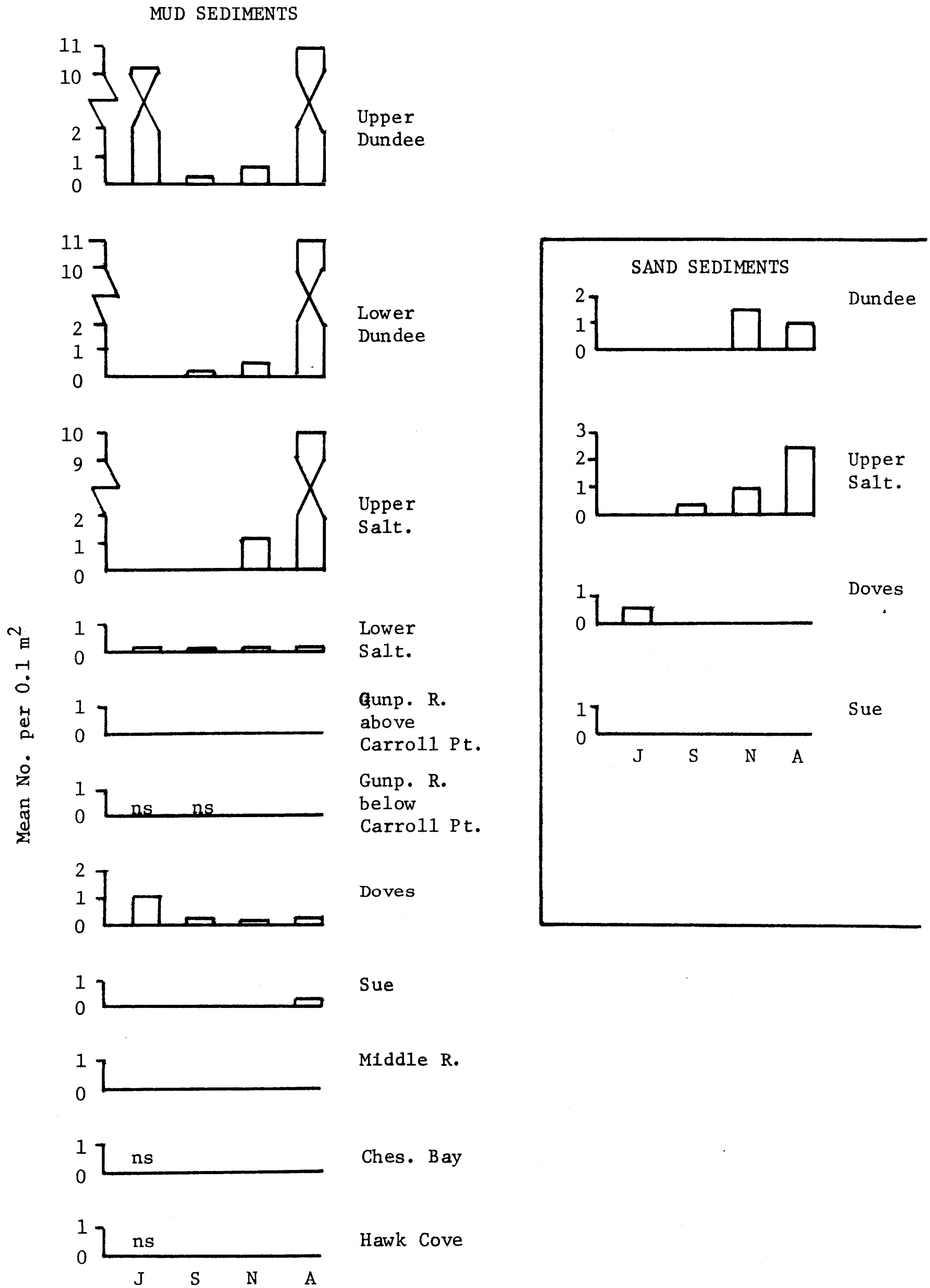

Figure 72. Distribution of <u>Tanytarsus</u> sp.
ns - not sampled

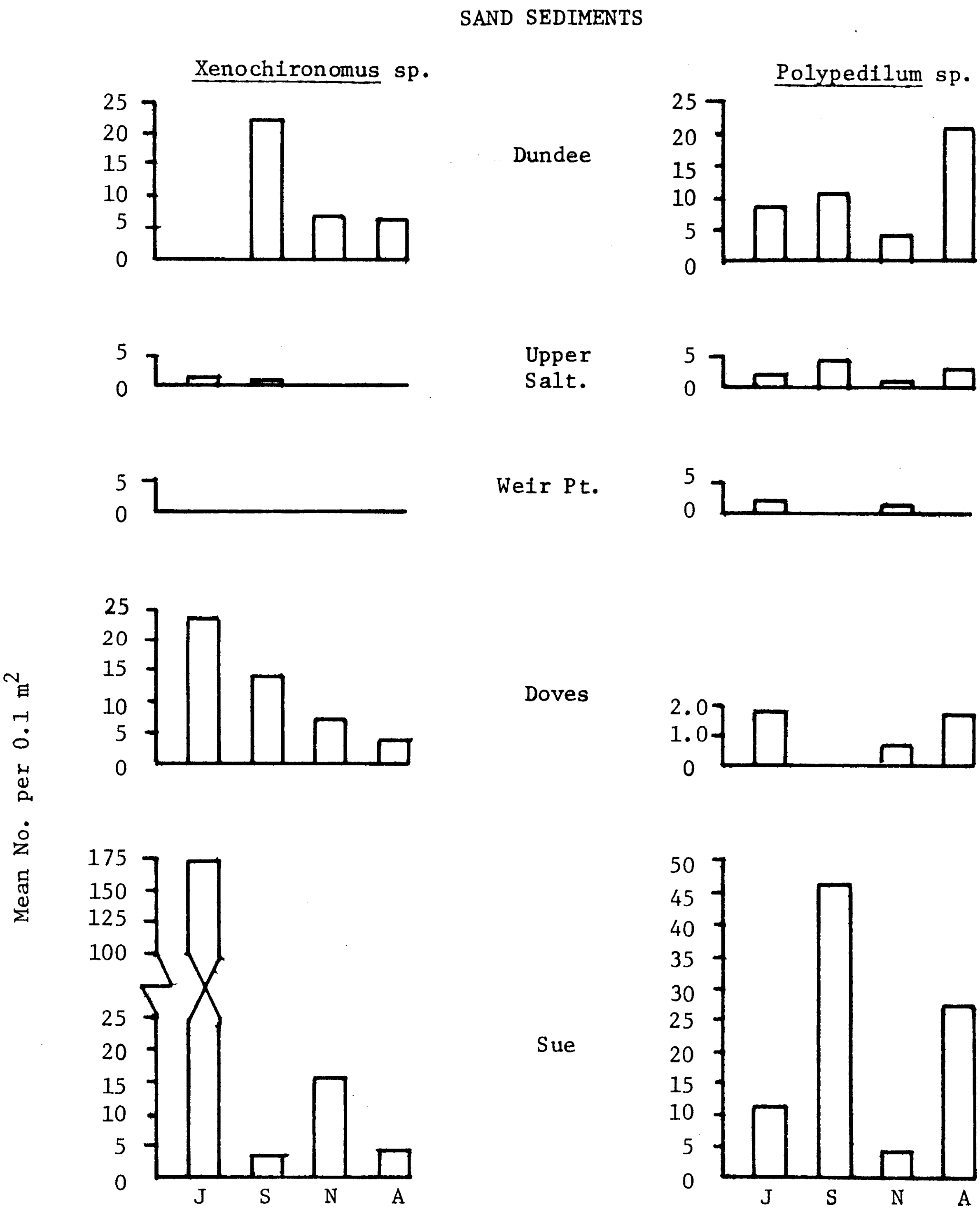

Figure 73. Distributions of *Xenochironomus* sp. and *Polypedilum* sp.

creeks. Several were found only in one creek: Micropsectra, Orthocladius, Smittia, and Trichocladius in Doves Cove; Glyptotendipes and Tribelos in Sue Creek; Brillia and Endochironomus in Dundee Creek. The macrophyte zone in upper Dundee yielded the largest numbers of these species in June (6) and April (10), while the sand area in Sue Creek had the most in September (7) and November (4). Minor dipteran species were found in river areas only in June and April, and were restricted to the Gunpowder and Weir Point sampling areas. This could represent the fringe of the Crane power plant discharge area community in these months. None of these species were found in the upper Saltpeter mud areas in September, the period when the area above the discharge exhibited the lowest species diversity and richness values obtained during the study (Figures 42 and 43). Two dipterans, Tanypus sp. and Parachironomus sp., were found in both the Sue Creek and Doves Cove mud reference areas in this month, and Parachironomus sp. was found also in lower Saltpeter Creek, suggesting that these two species were distributed widely among creeks in this period. Their absence from the September upper Saltpeter and Dundee Creek samples may represent exclusion due to the power plant discharge.

Table 16
Distributions of minor dipteran species

Area	Dundee				Upper Salt.				Lower Salt.				Sue				Doves				Gunpowder				Weir Pt.			
Species Month	J	S	N	A	J	S	N	A	J	S	N	A	J	S	N	A	J	S	N	A	J	S	N	A	J	S	N	A
Cricotopus sp.		U		ULS*				USL				X*	S	LS		UL	U							AB*				
Harnischia sp. 1	U S	L		ULS	U			ULS	X			X				UL	UL			UL	A			AB	X			
Tanypus sp.			U	UL	U			UL						U	UL	UL	U	U		UL								
Psectrocladius sp.	U			U									S	S										A				
Parachironomus sp.				UL			S			X				U S	LS	UL		ULS		LS				A				
Harnischia sp. 2	U S				U				X				S				UL											
Dicrotendipes sp.	U			U S	U			LS					S	S														
Trissocladius sp.															S				LS									
Paratanytarsus sp.	U S	S		U S		S	S	LS	X				S	S	S	S	S											
Brillia sp.		L		UL																								
Endochironomus sp.		S		U																								
Micropsectra sp.																		U										
Orthocladius sp.																				U								
Smittia sp.																			L									
Trichocladius sp.																	S											
Glyptotendipes sp.														S	S	S												
Tribelos sp.														S														
Chaoborus sp.																												X

Table 16 (continued).

Species	Month	Area: Dundee J	Dundee S	Dundee N	Dundee A	Upper Salt. J	Upper Salt. S	Upper Salt. N	Upper Salt. A	Lower Salt. J	Lower Salt. S	Lower Salt. N	Lower Salt. A	Sue J	Sue S	Sue N	Sue A	Doves J	Doves S	Doves N	Doves A	Gunpowder J	Gunpowder S	Gunpowder N	Gunpowder A	Weir Pt. J	Weir Pt. S	Weir Pt. N	Weir Pt. A
Ceratopogonidae		ULS		UL	ULS	U		UL	L	X			X	ULS		U	U	U											

*U= upper section, mud; L=lower section, mud; S=sand; X=present; A=above Caroll Pt.; B=below Carroll Pt.

Discussion

The spatial and temporal distributions of various species have features that suggest that the Crane power plant may influence the composition of the benthic invertebrate community in the discharge creek system and possibly in the near field Gunpowder River. Inferences regarding these apparent effects have been drawn from comparisons of communities in segments of the discharge zone with communities in analagous segments of the reference systems. Particularly in the warmer months of the year, populations in the shallow water creek environments in the study area changed perceptibly over subtle longitudinal gradients in a group of interrelated parameters, including depth, sediment type, and light availability at the sediment surface. A number of species were either restricted to, or more abundant in the upper sections of the creeks, in which the depth of the water column and the depth of the photic zone were similar. Most of these species were dipterans that characteristically inhabit the littoral zones of lentic environments, in which primary productivity and detritus availability are high. Stations in the lower creek sections were only a few cm deeper, but were apparently less littoral in character, and tended to attract fewer species. In contrast, the communities in river and bay areas differing in depth by 1 m and more were sufficiently similar to be grouped together within subclusters.

As well as being less spatially variable in the deeper river and bay waters, the benthic environment and community were more temporally stable than in the shallow creek zones. In the river and bay sampling areas the water depths were sufficient to isolate the sediments from the extremes of temperature and from the seasonal fluctuations of light availability experienced in the creeks, but were not great enough to permit the development of an anoxic bottom water layer similar to the one that causes a summer depletion of macro-invertebrates in the deeper waters in the Calvert Cliffs region of the Chesapeake Bay (Holland et al. 1977).

The inherent differences in community type were reflected in the similarity analyses which, within the mud sediment type, yielded two major clusters, one for the river-bay fauna, the other for the creek fauna. A similar pattern was observed by Ecological Analysts (1980), particularly for their summer 1979 sampling run in the Crane study area. The general benthos distribution is somewhat analogous to the zooplankton study results which also identified two basic clusters, one for an oligohaline estuarine community, the other for a freshwater community (Grant et al. 1980). More directly comparable, however, was the separation within the creek benthos cluster of the Doves Cove community (essentially freshwater) from the Crane area and Sue Creek communities (oligohaline).

At the community level of data analysis, represented by the clustering exercise, a few anomalies were apparent that could represent power plant effects. One of these was the seasonal change in composition of the lower discharge area station cluster. In April, which represented a relatively high runoff, low salinity, low temperature period (Ecological Analysts 1980) the main discharge cluster was limited to upper Saltpeter and Dundee Creeks. The lower Saltpeter stations formed a separate group that was linked more closely to the Middle River and other river-bay station groups, suggesting that in the spring interactions with the Gunpowder River dominated the development of the lower

Saltpeter benthic community. The analyses for the subsequent sampling periods showed incorporation of lower Saltpeter into the discharge zone clusters, a pattern consistent with a shift to dominance by the hydrodynamic regime imposed by the Crane plant. A residual influence of the Gunpowder River in the extreme lower end of lower Saltpeter was suggested by the inclusion in September and November of station N4-59, near the mouth, in a river-bay cluster (Figures 30 and 33). This pattern paralleled the results of the zooplankton study (Grant _et al._ 1980) in which a lower Saltpeter mouth station clustered more often with Gunpowder River stations than with other Saltpeter Creek stations.

The following types of apparent power plant effects were observed. On the community level, the benthos in the immediate discharge zone, upper upper Saltpeter Creek, exhibited a contraction in the late summer, expressed in terms of 1) total number of species (lowest of all mud sampling areas), 2) number of dipteran species (lowest of all creek mud sampling areas), 3) species diversity (lowest of all mud sampling areas, and 4) species richness (lowest of all mud sampling areas). For lower Saltpeter Creek a late summer intensification of the power plant influence may be inferred from the similarity index value at which this area was linked to the Middle River, the most appropriate reference area: -.5 in September, versus a range of +.34 to +.67 for the other sampling periods (Figure 26).

On the species level, five distinct plant effect patterns can be recognized.

1) Mitigation of a winter population reduction, as suggested by the presence in April 1980 of _Rangia cuneata_ in the upper Saltpeter and Dundee sand areas versus its absence from the Sue Creek and Doves Cove sand samples.

2) Acceleration of growth or development. This possible effect is consistent with the increase in maximum shell size of R. cuneata as the discharge was approached. It is also a possible explanation for the April distributions of Scolecolepides viridis, Leptocheirus plumulosus (in sand), Tanytarsus sp., and Tubificidae, which showed significantly higher population densities at discharge area sampling sites than at reference sites. These accelerated invertebrate population build-ups may have been tied to some degree to the earlier initiation of macrophyte growth in the discharge area suggested by the SAV study results (Nichols et al. 1979).

3) Addition of entrained individuals to the discharge area population. Scolecolepides viridis in April and Coelotanypus sp. in September had their highest population levels in the immediate discharge zone. These population build-ups could have been due, in part, to the recruitment of planktonic larvae transported through the Crane cooling system from Seneca Creek.

4) Extension of range. The occurrence of relatively large numbers of Coelotanypus sp., along with minor dipterans characteristic of the creeks in samples from the Gunpowder River suggested a possible extension of the power plant influence beyond Saltpeter Creek.

5) Intensification of summer population declines. The majority of the invertebrate species experienced decreases in population density during the summer throughout the study area. For Scolecolepides viridis, Leptocheirus plumulosus, Xenochironomus sp., and Polypedilum sp. these declines appeared to be more severe in the vicinity of the discharge than in the reference areas.

All of the species showing power plant effects have characteristically large seasonal variations in abundance. For Scolecolepides viridis, Leptocheirus plumulosus, Coelotanypus sp., and Tanytarsus sp. the apparent responses to the power plant discharge tended to widen the annual ranges of population densities exhibited in the discharge zone. For Rangia cuneata, tubificids, Xenochironomus sp., and Polypedilum sp. the effect was the opposite. The reproductive potentials of all of these species are so great that any degree of instability in their population levels induced by the Crane discharge appears to be on a short term, seasonal basis rather than of long term consequence.

The most obvious feature of the adult Rangia cuneata distribution, the progressive decline in shell size with distance from upper Saltpeter, or the progressive increase as the discharge is approached may be a plant effect involving both winter survival and growth rate. During the study period, however, very little recruitment to the adult population was detected in Saltpeter and Dundee Creeks. The most successful population in this regard was in the Chesapeake Bay sampling area, beyond any possible influence of the plant. Thus, although the Crane plant may influence the composition, and may enhance the survival of an adult clam population in the near discharge area, it is not, at the present time, the guardian of the R. cuneata population in the study area as a whole.

The movement of the power plant discharge to Weir Point, the alternative site being considered, would affect the present discharge zone as well as the Weir Point area. Speculation about the nature of the Crane area benthic community in the absence of the power plant must include a consideration of the probable reduction in ambient salinity, hypothesized by Grant et al. (1980), and of the increase in the lentic character of Saltpeter Creek that would probably result from the change from domination of the hydrodynamics in Saltpeter and Dundee Creeks by the pumping system of the plant to domination by the tidal exchange with the Gunpowder River. Under reduced salinities, the Crane area benthic community would probably resemble that of Doves Cove more than the present Crane community or that of Sue Creek. Dipterans would account for a larger proportion of the community in terms of both numbers of species and numbers of individuals, both because species such as Chironomus sp. would be more abundant and because non-dipteran invertebrates would be less numerous. Oligohaline estuarine species such as Rangia cuneata and Leptocheirus plumulosus would probably exhibit wide fluctuations in peak abundance between dry years, when they could build up large populations, and wet years when their recruitment would be depressed. Thus although the Crane plant may be responsible for a degree of seasonal instability in the populations of certain species under the present regime, it may at the same time be maintaining a greater degree of year-to-year stability than would be found under other circumstances.

A discharge at Weir Point would affect a river-bay community rather than a creek community. The sediments in the immediate Weir Point area are variable in composition, with an abundance of mixtures of sand and mud. Higher population densities of Scolecolepides viridis and Cyathura polita were found in this area than in the other areas sampled, and species of polychaetes and isopods normally absent from the creek mud communities were found in addition. The densest clam beds found in this study were located between Weir Point and the Middle River. Overall, therefore, it appears that a relocation of the discharge to Weir Point would ultimately result in a less stable benthic community in the current discharge creek system, while at the same time it would alter the flow and thermal regimes in an area of Chesapeake Bay proper that is at present highly productive in terms of clams and other invertebrate species. Of the two alternatives, the existing discharge arrangement is the more desirable for the maintenance of the benthic invertebrate community.

The overall characterization of the Crane area benthic community accomplished in our study is in close agreement with the results reported by Ecological Analysts (1980). The spatial and temporal distributions of the major species (*Rangia cuneata*, *Scolecolepides viridis*, *Leptocheirus plumulosus*, tubificids, *Coelotanypus* sp., and *Procladius* sp.) described in both sets of results are similar. Patterns shown in the EA data that reinforce our inferences concerning possible power plant effects include comparatively low summer populations in upper Saltpeter Creek for *Scolecolepides viridis* (EA Figure 6.1-35) and *Leptocheirus plumulosus* (EA Figure 6.1-27) (intensification of summer population declines), relatively high population densities in upper Saltpeter Creek of *S. viridis* in March (EA Figure 6.1-35) and of *Coelotanypus* sp. in November (EA Figure 6.1-39) (addition of entrained individuals), and relatively high spring population densities of tubificids (EA Figure 6.1-31) in upper Saltpeter (acceleration of growth or development). The EA study design included a station in the upper, essentially freshwater Gunpowder River, near Maxwell Point, which yielded abundant insect larvae (EA Figure 6.1-38). Thus the dipteran distribution at our lower Gunpowder River stations, which we interpreted as evidence of a possible range extension of the creek community due to the power plant discharge, may actually have represented the fringe of the freshwater Gunpowder community. The proximity of the upper Gunpowder community to the mouth of Saltpeter Creek provides support for the hypothesized transformation of the Saltpeter Creek community from oligohaline to essentially freshwater if the operation of the power plant ceased.

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Appendix A

Sampling Station Locations

Table A1
April 1979 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Crane Power Plant Vicinity	1	1	L3-67	39°20.70'	76°21.677'
		2	L3-60	39°20.00'	76°21.677'
		3	N2-60	39°20.00'	76°20.516'
		4	N4-38	39°17.80'	76°20.258'
		5	L5-65	39°20.50'	76°21.419'
		6	L2-58.5	39°19.85'	76°21.806'
		7	K5-43	39°18.30'	76°22.064'
		8	N4-42	39°18.20'	76°20.258'
		9	N4-40	39°18.00'	76°20.258'
Bush River	4	1	T1-81	39°22.10'	76°16.775'
		2	S4-81	39°22.10'	76°17.033'
		3	V4-84	39°22.40'	76°15.098'
		4	V4-83	39°22.30'	76°15.098'
		5	V5-91	39°23.10'	76°14.969'
		6	V5-90	39°23.00'	76°14.969'
		7	S4-80	39°22.00'	76°17.033'
		8	V4-82	39°22.20'	76°15.098'
		9	V3-78	39°21.80'	76°15.227'
		0	V4-70	39°21.00'	76°15.098'
Back River	6	1	H1-13	39°15.30'	76°24.515'
		2	H2-11	39°15.10'	76°24.386'
		3	D2-8	39°14.80'	76°27.095'
		4	D3-9	39°14.90'	76°26.966'
		5	D3-30	39°17.00'	76°26.966'
		6	D5-28	39°16.80'	76°26.708'
		7	A3-38	39°17.80'	76°28.901'
		8	B1-38	39°17.80'	76°28.514'
		9	D3-31	39°17.10'	76°26.966'
		0	B5-35	39°17.50'	76°27.998'
Back River Dredge Sta.	5	1	F1-6	39°14.60'	76°25.805'
Middle River	7	1	H1-32	39°17.20'	76°24.515'
		2	H5-32	39°17.20'	76°23.999'
		3	F2-41	39°18.10'	76°25.676'
		4	F4-42	39°18.20'	76°25.418'
		5	I4-43	39°18.30'	76°23.483'
		6	J2-43	39°18.30'	76°23.096'
		7	I4-26	39°16.60'	76°23.483'
		8	H2-31	39°17.10'	76°24.386'
		9	F2-40	39°18.00'	76°25.676'
		0	I3-24	39°16.40'	76°23.612'

Table A1 (continued)
April 1979   Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Middle River Dredge Sta.	8	1	E5-48	39°18.80'	76°25.934'
		2	G2-45	39°18.50'	76°25.031'
		3	H3-44	39°18.40'	76°24.257'
		4	I2-40	39°18.00'	76°23.741'
		5	I2-37	39°17.70'	76°23.741'
		6	J2-37	39°17.70'	76°23.096'
		7	J1-34	39°17.40'	76°23.225'

Table A2
June 1979 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Dundee Cr.	1	1	L2-69	39°20.90'	76°21.806'
		2	L1-68.5	39°20.85'	76°21.935'
		3	L3-67.5	39°20.75'	76°21.677'
		4	L2-67	39°20.70'	76°21.806'
		5	L4-66.5	39°20.65'	76°21.548'
		6	L4.5-65.25	39°20.52'	76°21.484'
		7	L5-65	39°20.50'	76°21.419'
		8	L5-64.75	39°20.48'	76°21.419'
Upper Saltpeter Cr.	2	1	K5-61	39°20.10'	76°22.064'
		2	L1.5-60.5	39°20.05'	76°21.871'
		3	L1.5-59.5	39°19.95'	76°21.871'
		4	L3-60	39°20.00'	76°21.677'
		5	L4-59.5	39°19.95'	76°21.548'
		6	L1.75-58.5	39°19.85'	76°21.838'
		7	L2.25-58.5	39°19.85'	76°21.774'
		8	L3-58	39°19.80'	76°21.677'
Lower Saltpeter Cr.	3	1	N1-60	39°20.00'	76°20.645'
		2	N2-58	39°19.80'	76°20.516'
		3	N3-61	39°20.10'	76°20.387'
		4	N4-59	39°19.90'	76°20.258'
		5	N3-57	39°19.70'	76°20.387'
Doves Cove	4	1	S4-80.5	39°22.05'	76°17.033'
		2	S4.5-81	39°22.10'	76°16.969'
		3	S5.5-81.5	39°22.15'	76°16.840'
		4	T1.5-81	39°22.10'	76°16.715'
		5	T2-80	39°22.00'	76°16.646'
		6	T1.5-79.5	39°21.95'	76°16.715'
		7	U1.5-76.5	39°21.65'	76°16.066'
		8	U2-75	39°21.50'	76°16.001'
Sue Cr.	5	1	G4.5-32	39°17.20'	76°24.709'
		2	H1-32	39°17.20'	76°24.515'
		3	H2.5-32.5	39°17.25'	76°24.322'
		4	H3.5-32.5	39°17.25'	76°24.193'
		5	H4-33	39°17.30'	76°24.128'
		6	H1.5-31	39°17.10'	76°24.451'
		7	H2-31.5	39°17.15'	76°24.386'
		8	H2.5-31.5	39°17.15'	76°24.322'
Norman Cr.	6	1	F2-41.5	39°18.15'	76°25.676'
		2	F3.5-42.5	39°18.25'	76°25.483'
		3	F4.5-43.5	39°18.35'	76°25.354'
		4	F4.5-42.5	39°18.25'	76°25.354'
		5	F5.5-43	39°18.30'	76°25.225'

Table A2 (continued)
June 1979 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Middle R.	7	1	I4-40	39°18.00'	76°23.483'
		2	I2-37	39°17.70'	76°23.741'
		3	I5-35	39°17.50'	76°23.354'
		4	J3-35	39°17.50'	76°22.967'
Weir Pt.	8	1	N4-39	39°17.90'	76°20.258'
		2	N3-35	39°17.50'	76°20.387'
		3	N5-41	39°18.10'	76°20.129'
		4	N3-40	39°18.00'	76°20.387'
		5	N2.5-40	39°18.00'	76°20.452'
		6	N2.5-41.5	39°18.15'	76°20.452'
		7	N3.5-41.5	39°18.15'	76°20.323'
		8	N2-40	39°18.00'	76°20.516'
Gunpowder R.	9	1	P4-51	39°19.10'	76°18.968'
		2	04-51	39°19.10'	76°19.613'
Chesapeake Bay (tows only)	0	1	M4-46	39°18.60'	76°20.903'
		2	L2-45	39°18.50'	76°21.806'
		3	L3-39	39°17.90'	76°21.677'
		4	K5-31	39°17.10'	76°22.064'
		5	M3-26	39°16.60'	76°21.032'
		6	L2-20	39°16.00'	76°21.806'
		7	K2-26	39°16.60'	76°22.451'
		8	I5-18	39°15.80'	76°23.354'
		9	J2-14	39°15.40'	76°23.096'
		0	I1-12	39°15.20'	76°23.870'

Table A3
September 1979 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Dundee Cr.	1	1	L3-69	39°20.90'	76°21.677'
		2	L3-68	39°20.80'	76°21.677'
		3	L1-67	39°20.70'	76°21.935'
		4	L3.5-66.5	39°20.65'	76°21.613'
		5	L5-66	39°20.60'	76°21.419'
		6	L4.75-65.25	39°20.52'	76°21.451'
		7	L5-65	39°20.50'	76°21.419'
		8	L5-64.5	39°20.45'	76°21.419'
Upper Saltpeter Cr.	2	1	K3-62	39°20.20'	76°22.322'
		2	K4-61.5	39°20.15'	76°22.193'
		3	L1-60.5	39°20.05'	76°21.935'
		4	L2.5-60.5	39°20.05'	76°21.742'
		5	L3.5-59.5	39°19.95'	76°21.613'
		6	L5-59	39°19.90'	76°21.419'
		7	L2-58.5	39°19.85'	76°21.806'
		8	L2.5-58.5	39°19.85'	76°21.742'
		9	L3-58	39°19.80'	76°21.677'
(*Rangia* metals only)		0	K2-63	39°20.30'	76°22.451'
Lower Saltpeter Cr.	3	1	N1-62	39°20.20'	76°20.645'
		2	N2-61	39°20.10'	76°20.516'
		3	N1-59	39°19.90'	76°20.645'
		4	N3-60	39°20.00'	76°20.387'
		5	N4-59	39°19.90'	76°20.258'
Doves Cove	4	1	S4.5-80.5	39°22.05'	76°16.969'
		2	T1-80.5	39°22.05'	76°16.775'
		3	T2-81	39°22.10	76°16.646'
		4	T3-80	39°22.00'	76°16.517'
		5	T4-81	39°22.10'	76°16.388'
		6	T3-84.5	39°22.45'	76°16.517'
		7	T2-79	39°21.90'	76°16.646'
		8	T5.5-76	39°21.60'	76°16.195'
		9	U4-81	39°22.10'	76°15.743'
Sue Cr.	5	1	G5-32	39°17.20'	76°24.644'
		2	H1-32	39°17.20'	76°24.515'
		3	H2-32	39°17.20'	76°24.386'
		4	H2.5-32.5	39°17.25'	76°24.322'
		5	H3-32.5	39°17.25'	76°24.257'
		6	H1.5-31	39°17.10'	76°24.451'
		7	H2-31.5	39°17.15'	76°24.386'
		8	H2.5-31.5	39°17.15'	76°24.322'

Table A3 (continued)
September 1979 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Ches. Bay between	6	1	M5-30	39°17.00'	76°20.774'
Seneca Cr. & Middle R.		2	L5-34	39°17.40'	76°21.419'
		3	L3-40	39°18.00'	76°21.677'
(tows only)		4	N2-17	39°15.70'	76°20.516'
		5	P1-20	39°16.00'	76°19.355'
		6	S5-25	39°16.50'	76°16.904'
Middle R.	7	1	I2-38	39°17.80'	76°23.741'
		2	I5-38	39°17.80'	76°23.354'
		3	I5-36	39°17.60'	76°23.354'
		4	I4-34	39°17.40'	76°23.483'
		5	J2-35	39°17.50'	76°23.096'
Weir Pt.	8	1	N3-37	39°17.70'	76°20.387'
		2	N3.5-39	39°17.90'	76°20.323'
		3	N5-41	39°18.10'	76°20.129'
		4	N3-40	39°18.00'	76°20.387'
		5	N2.5-41	39°18.10'	76°20.452'
		6	N2-38	39°17.80'	76°20.516'
		7	N4-41.5	39°18.15'	76°20.258'
		8	N3-40.5	39°18.05'	76°20.387'
Gunpowder R.	9	1	O5-53	39°19.30'	76°19.484'
		2	P2-51	39°19.10'	76°19.226'
		3	P4-52	39°19.20'	76°18.968'
(tows only)		4	O1-46	39°18.60'	76°20.000'
		5	P1-45	39°18.50	76°19.355'
		6	Q4-46	39°18.60'	76°18.323'
		7	O3-66	39°20.60'	76°19.742'
		8	Q3-68	39°20.80'	76°18.452'
Hawk Cove	0	1	I4-14	39°15.40'	76°23.483'
		2	J2-18	39°15.80'	76°23.096'
		3	K1-15	39°15.50'	76°22.580'

Table A4
November 1979 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Dundee Cr.	1	1	L2.5-69	39°20.90'	76°21.742'
		2	L3-68	39°20.80'	76°21.677'
		3	L2.5-67	39°20.70'	76°21.742'
		4	L3-65.5	39°20.55'	76°21.677'
		5	L5-66	39°20.60'	76°21.419'
		6	L4.5-65.25	39°20.52'	76°21.484'
		7	L5-65.25	39°20.52'	76°21.419'
		8	L5-64.5	39°20.45'	76°21.419'
Upper Saltpeter Cr.	2	1	K4-62	39°20.20'	76°22.193'
		2	K5.5-60	39°20.00'	76°22.000'
		3	L1-61	39°20.10'	76°21.935'
		4	L4-59.5	39°19.95	76°21.548'
		5	L5-60	39°20.00'	76°21.419'
		6	L2.75-58.5	39°19.85'	76°21.709'
		7	L2.5-58.5	39°19.85'	76°21.742'
		8	L2.5-60.5	39°20.05'	76°21.742'
		9	L2-58.5	39°19.85'	76°21.806'
Lower Saltpeter Cr.	3	1	N4-59	39°19.90'	76°20.258'
		2	N3-59	39°19.90'	76°20.387'
		3	N3-61	39°20.10'	76°20.387'
		4	N2-62	39°20.20'	76°20.516'
		5	N1-62	39°20.20'	76°20.645'
Doves Cove	4	1	T2-81	39°22.10'	76°16.646'
		2	T1.5-80.5	39°22.05'	76°16.711'
		3	T1-81.5	39°22.15'	76°16.775'
		4	S5.5-81	39°22.10'	76°16.840'
		5	S4.5-80.5	39°22.05'	76°16.969'
		6	T4.5-76.5	39°21.65'	76°16.324'
		7	T5.5-76	39°21.60'	76°16.195'
		8	U1.5-75.5	39°21.55'	76°16.066'
Sue Cr.	5	1	H3-32.5	39°17.25'	76°24.257'
		2	H2.5-32.5	39°17.25'	76°24.322'
		3	H2-32	39°17.20'	76°24.386'
		4	H1-32	39°17.20'	76°24.515'
		5	G5.5-32.5	39°17.25	76°24.580'
		6	H1.5-31	39°17.10'	76°24.451'
		7	H2-31.5	39°17.15'	76°24.386'
		8	H2.5-31.5	39°17.15'	76°24.322'
Chesapeake Bay,	6	1	M2-31	39°17.10'	76°21.161'
		2	L4-39	39°17.90'	76°21.548'
		3	L4-35	39°17.50'	76°21.548'
		4	K4.5-52	39°19.20'	76°22.129'
		5	L1-50	39°19.00'	76°21.935'
		6	L4-48	39°18.80'	76°21.548'

Table A4 (continued)
November 1979 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Middle River	7	1	I3-38	39°17.80'	76°23.612'
		2	I5-37	39°17.70'	76°23.354'
		3	I4-35	39°17.50'	76°23.483'
		4	J1-35	39°17.50'	76°23.225'
		5	J3-36	39°17.60	76°22.967'
Weir Point	8	1	N3-36	39°17.60'	76°20.387'
		2	N3.5-38	39°17.80'	76°20.323'
		3	N1.5-40	39°18.00'	76°20.581'
		4	N3.5-41	39°18.10'	76°20.323'
		5	N2-41.5	39°18.15'	76°20.516'
		6	N3.5-42	39°18.20'	76°20.323'
		7	N3-39	39°17.90'	76°20.387'
		8	N5-41	39°18.10'	76°20.129'
Gunpowder River	9	1	02-46	39°18.60'	76°19.871'
		2	04-45	39°18.50'	76°19.613'
		3	05-44	39°18.40'	76°19.484'
		4	04-52	39°19.20'	76°19.613'
		5	P1-51	39°19.10'	76°19.355'
		6	P3-53	39°19.30'	76°19.097'
Hawk Cove	0	1	I5-14	39°15.40'	76°23.354'
		2	J5-15	39°15.50'	76°22.709'
		3	J2-17	39°15.70'	76°23.096'

Table A5
April 1980 Benthos station locations

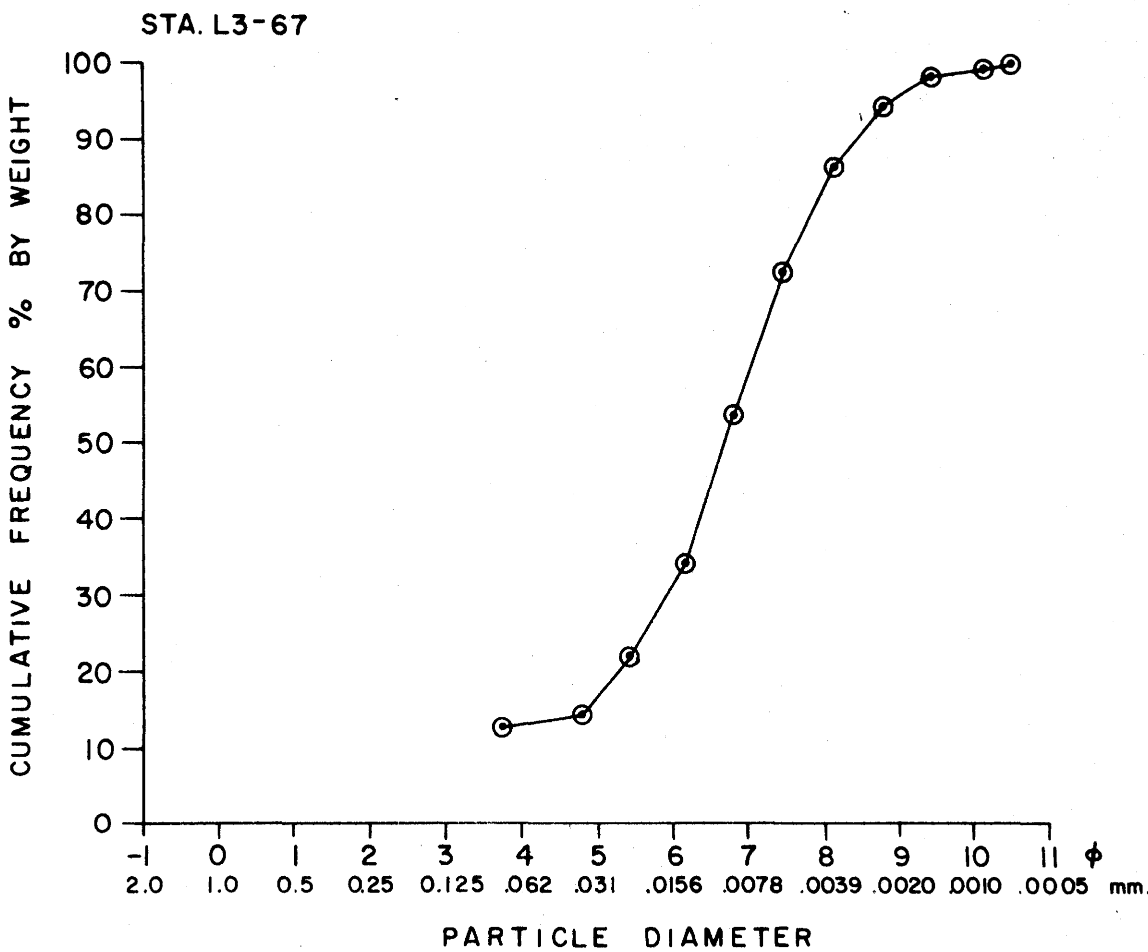
Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Dundee Cr.	1	1	L2-69.5	39°20.95'	76°21.806'
		2	L1.5-68.5	39°20.85'	76°21.871'
		3	L2-67	39°20.70'	76°21.806'
		4	L2.5-66.5	39°20.65'	76°21.742'
		5	L4-67	39°20.70'	76°21.548'
		6	L5-64.75	39°20.48'	76°21.419'
		7	L5-65.25	39°20.52'	76°21.419'
		8	L4.75-65.25	39°20.52'	76°21.451'
Gunpowder R.	9	1	O3-45	39°18.50'	76°19.742'
		2	O4-44	39°18.40'	76°19.613'
		3	P1-45	39°18.50'	76°19.355'
		4	P2-51	39°19.10'	76°19.226'
		5	P3-53	39°19.30'	76°19.097'
		6	O5-53	39°19.30'	76°19.484'
Upper Saltpeter Cr.	2	1	K4-61	39°20.10'	76°22.193'
		2	K4.5-60.5	39°20.05'	76°22.129'
		3	K5.5-61	39°20.10'	76°22.000'
		4	L3-59.5	39°19.95'	76°21.677'
		5	L3.5-60.5	39°20.05'	76°21.613'
		6	L4-59	39°19.90'	76°21.548'
		7	L1.5-58.5	39°19.85	76°21.871'
		8	L2.5-58.5	39°19.85'	76°21.742'
		9	L3-58	39°19.80'	76°21.677'
Lower Saltpeter Cr.	3	1	M5-62	39°20.20'	76°20.774'
		2	N2-61	39°20.10'	76°20.516'
		3	N3-62	39°20.20'	76°20.387'
		4	N3-60	39°20.00'	76°20.387'
		5	N4-59	39°19.90'	76°20.258'
Doves Cove	4	1	S4-81	39°22.10'	76°17.033'
		2	S4.5-80	39°22.00'	76°16.969'
		3	S5-81	39°22.10'	76°16.904'
		4	T1-80	39°22.00'	76°16.775'
		5	T2-81	39°22.10'	76°16.646'
		6	T4-76.5	39°21.65'	76°16.388'
		7	T5-76.5	39°21.65'	76°16.259'
		8	U1-76	39°21.60'	76°16.130'
Sue Cr.	5	1	G5.5-32	39°17.20'	76°24.580'
		2	H1-32	39°17.20'	76°24.515'
		3	H2-31.5	39°17.15'	76°24.386'
		4	H2.5-32.5	39°17.25'	76°24.322'
		5	H3-32.5	39°17.25'	76°24.257'
		6	H1.5-31	39°17.10'	76°24.451'
		7	H2-31.25	39°17.12'	76°24.386'
		8	H2.5-31.5	39°17.15'	76°24.322'

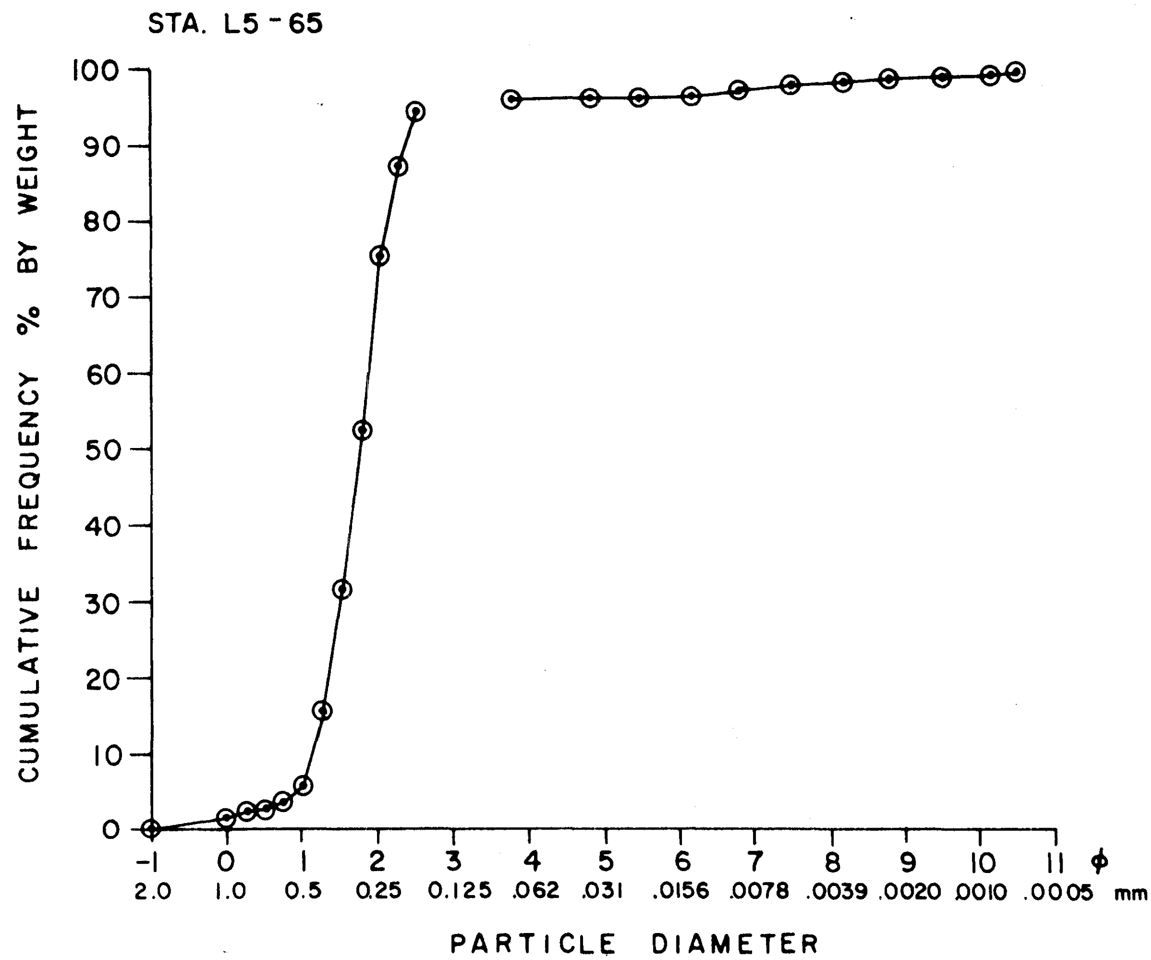
Table A5 (continued)
April 1980 Benthos station locations

Area	Area No.	Sta Code No.	Chart Code	Latitude	Longitude
Chesapeake Bay	6	1	L5-40	39°18.00'	76°21.419'
		2	L4-36	39°17.60'	76°21.548'
		3	M1-32	39°17.20'	76°21.290'
Middle R.	7	1	I3-38	39°17.80'	76°23.612'
		2	I4-37	39°17.70'	76°23.483'
		3	I5-38	39°17.80'	76°23.354'
		4	I4-35	39°17.50'	76°23.483'
		5	J2-35	39°17.50'	76°23.096'
Weir Pt.	8	1	N3-35	39°17.50'	76°20.387'
		2	N3-37	39°17.70'	76°20.387'
		3	N3-40	39°18.00'	76°20.387'
		4	N4.5-41.5	39°18.15'	76°20.194'
		5	N2-40	39°18.00'	76°20.516'
		6	N5-42	39°18.20'	76°20.129'
		7	N2-41	39°18.10'	76°20.516'
		8	N3-41.5	39°18.15'	76°20.387'
Hawk Cove	0	1	J1-17	39°15.70'	76°23.225'
		2	J3-16	39°15.60'	76°22.967'
		3	I4-15	39°15.50'	76°23.483'

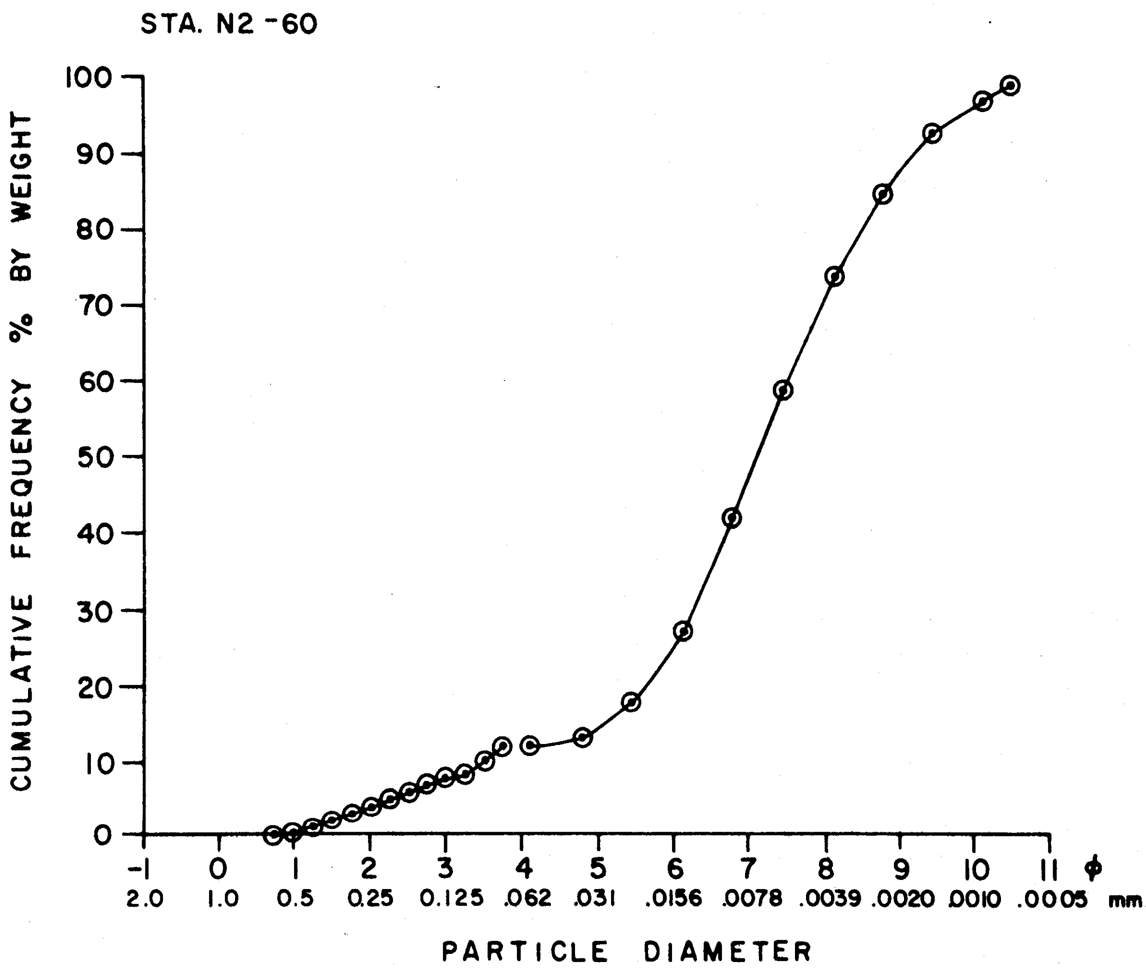
Appendix B

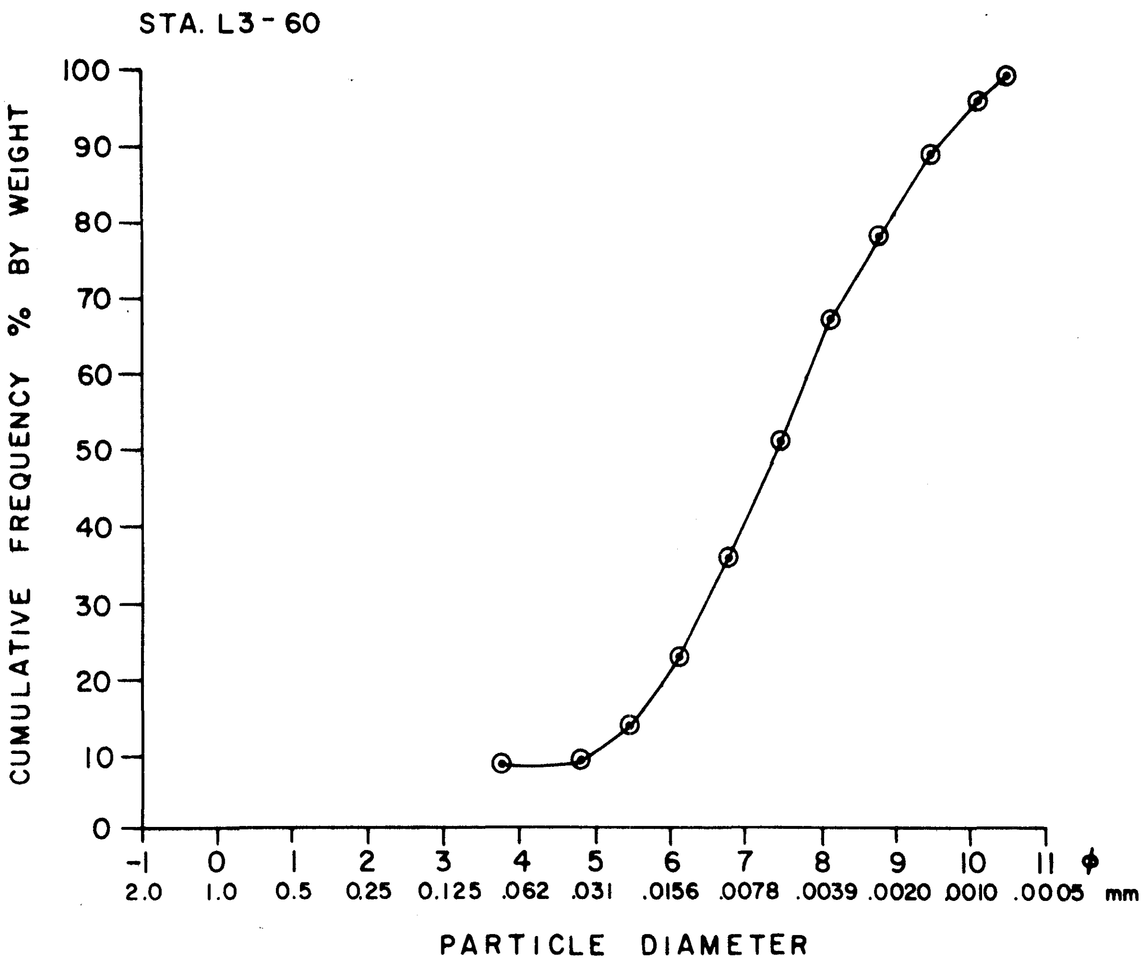
April 1979 Sediment Particle Size Distributions

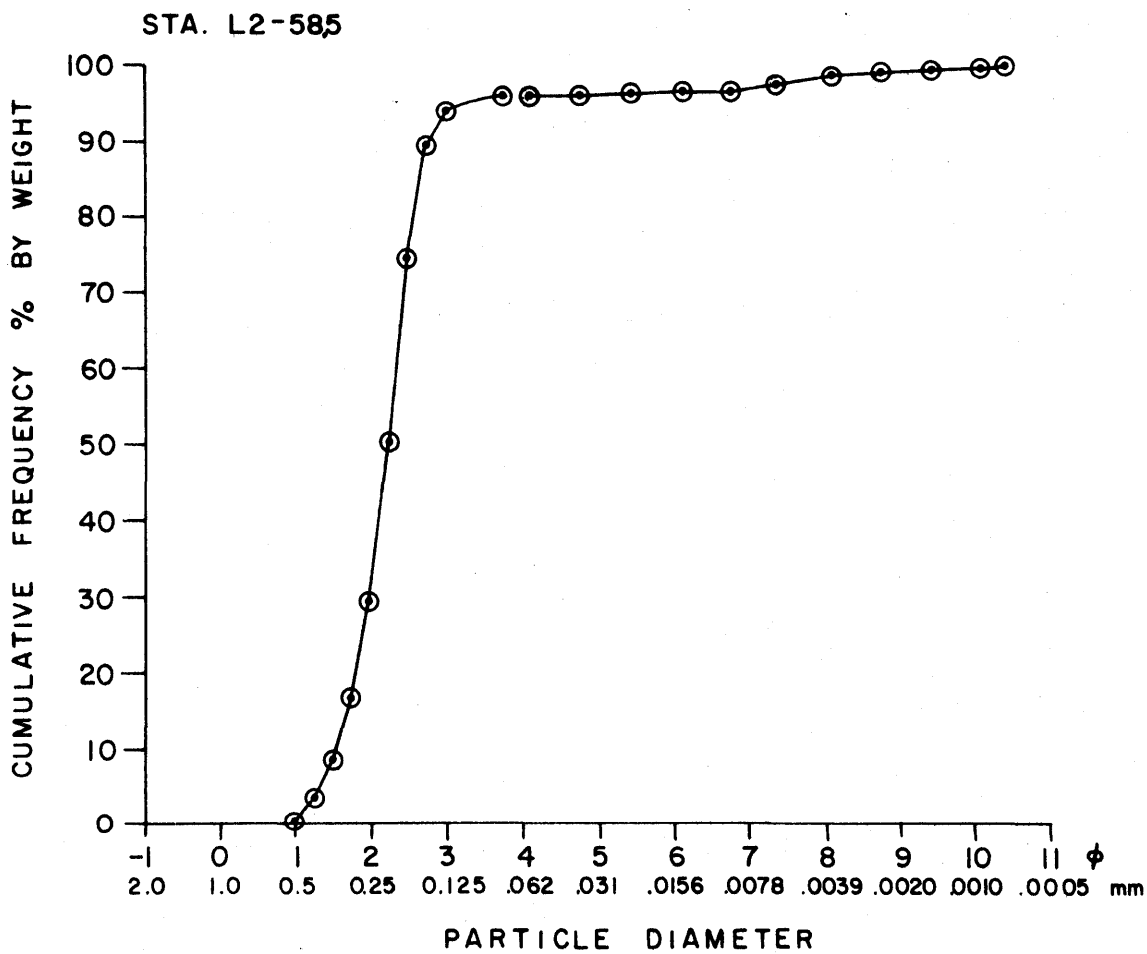

STA. L3-67
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

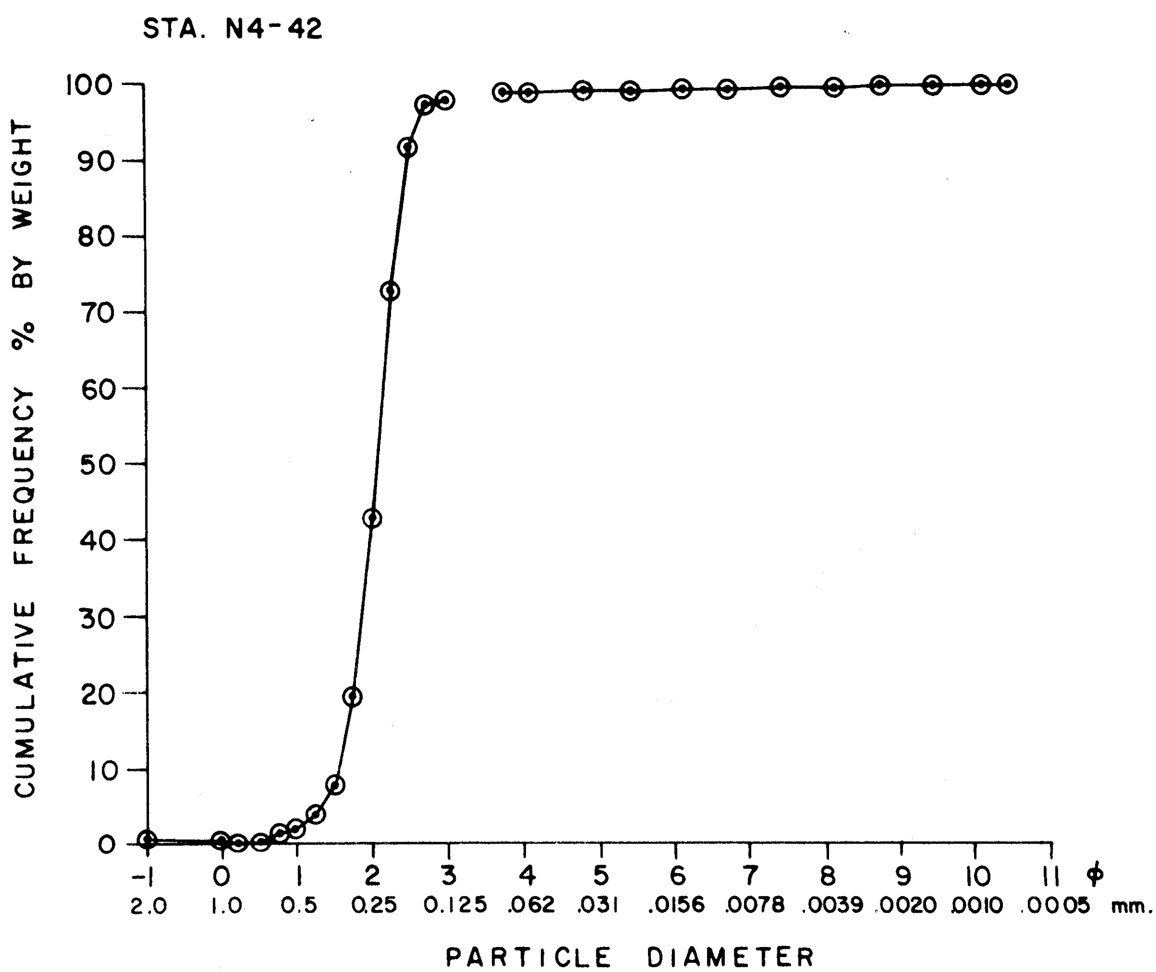


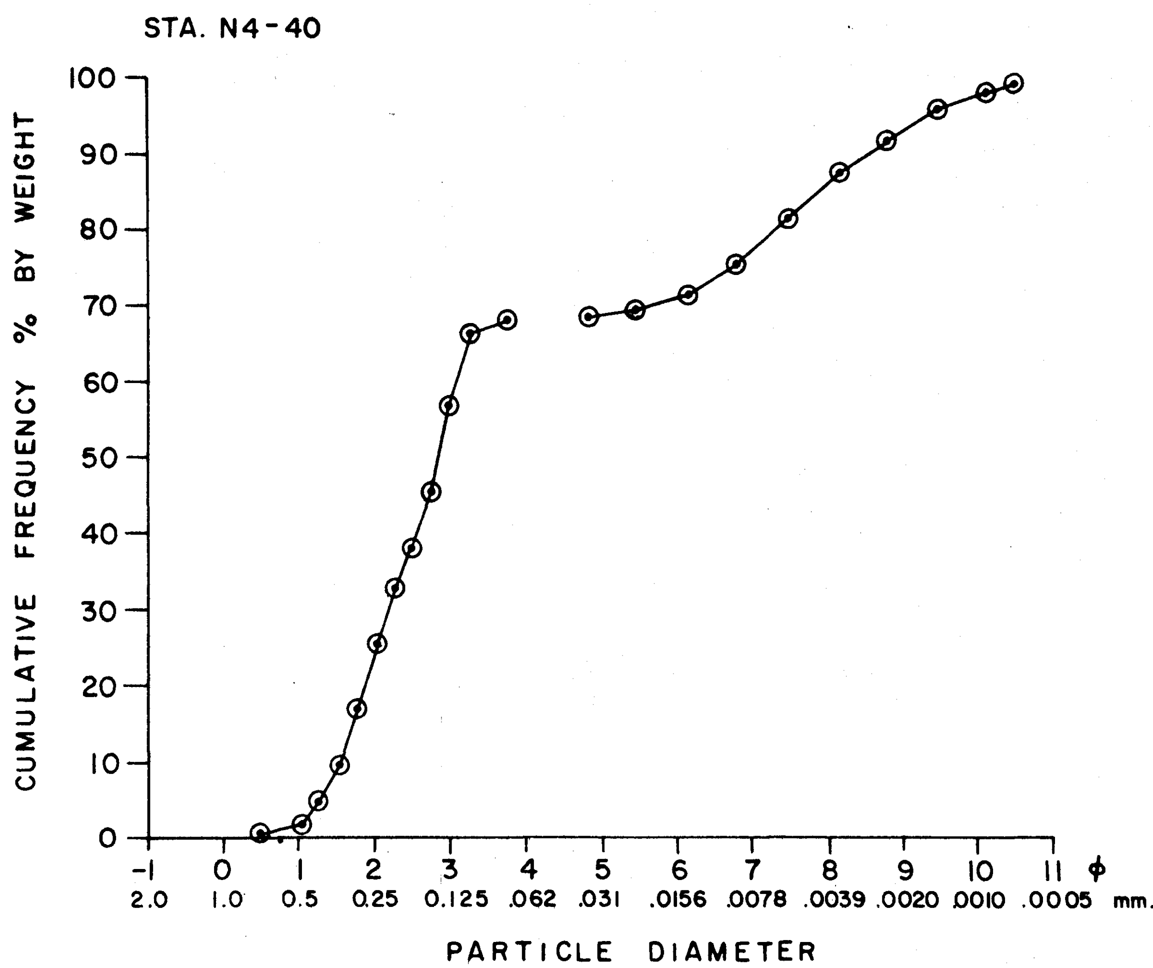
STA. L5 - 65
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1
0
1
2
3
4
5
6
7
8
9
10
11
ϕ
2.0
1.0
0.5
0.25
0.125
.062
.031
.0156
.0078
.0039
.0020
.0010
.0005
mm.
PARTICLE DIAMETER

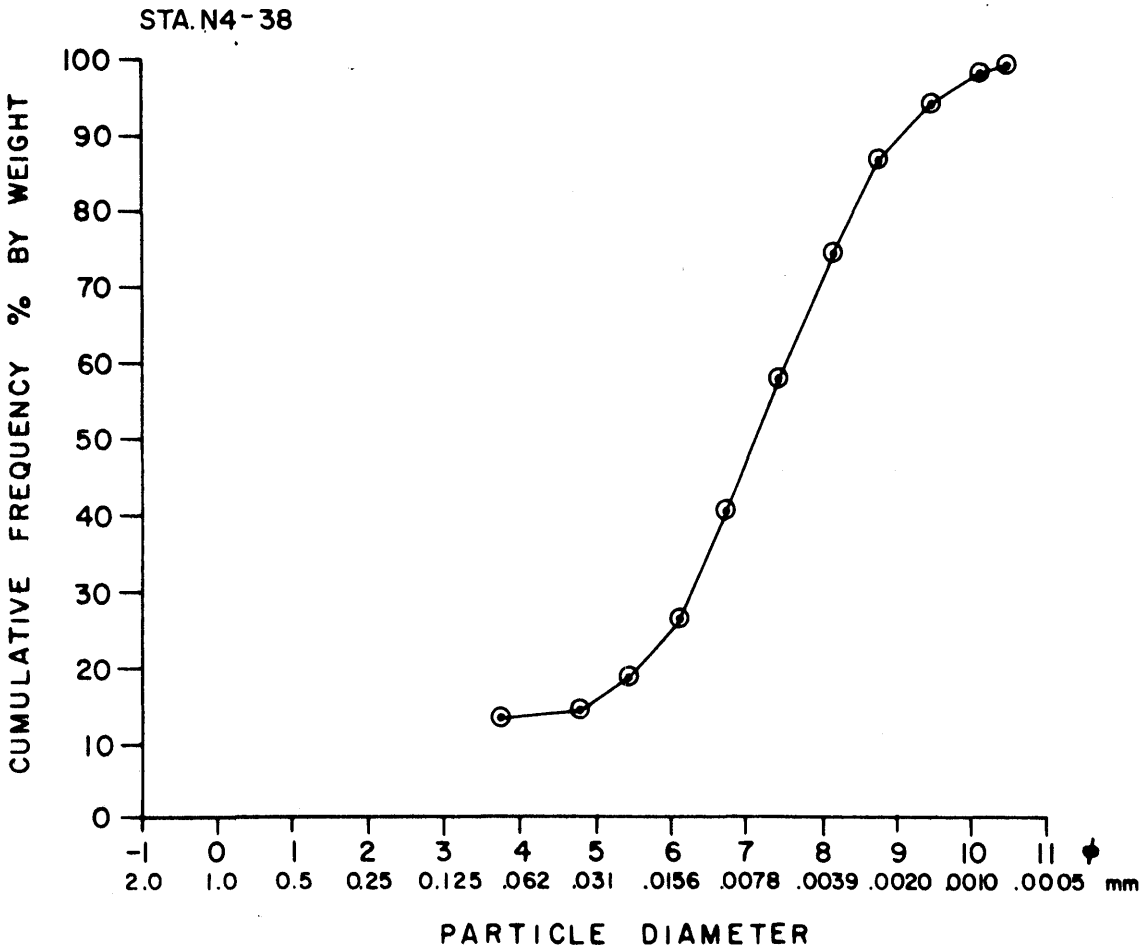

STA. N2 -60
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. L3-60
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

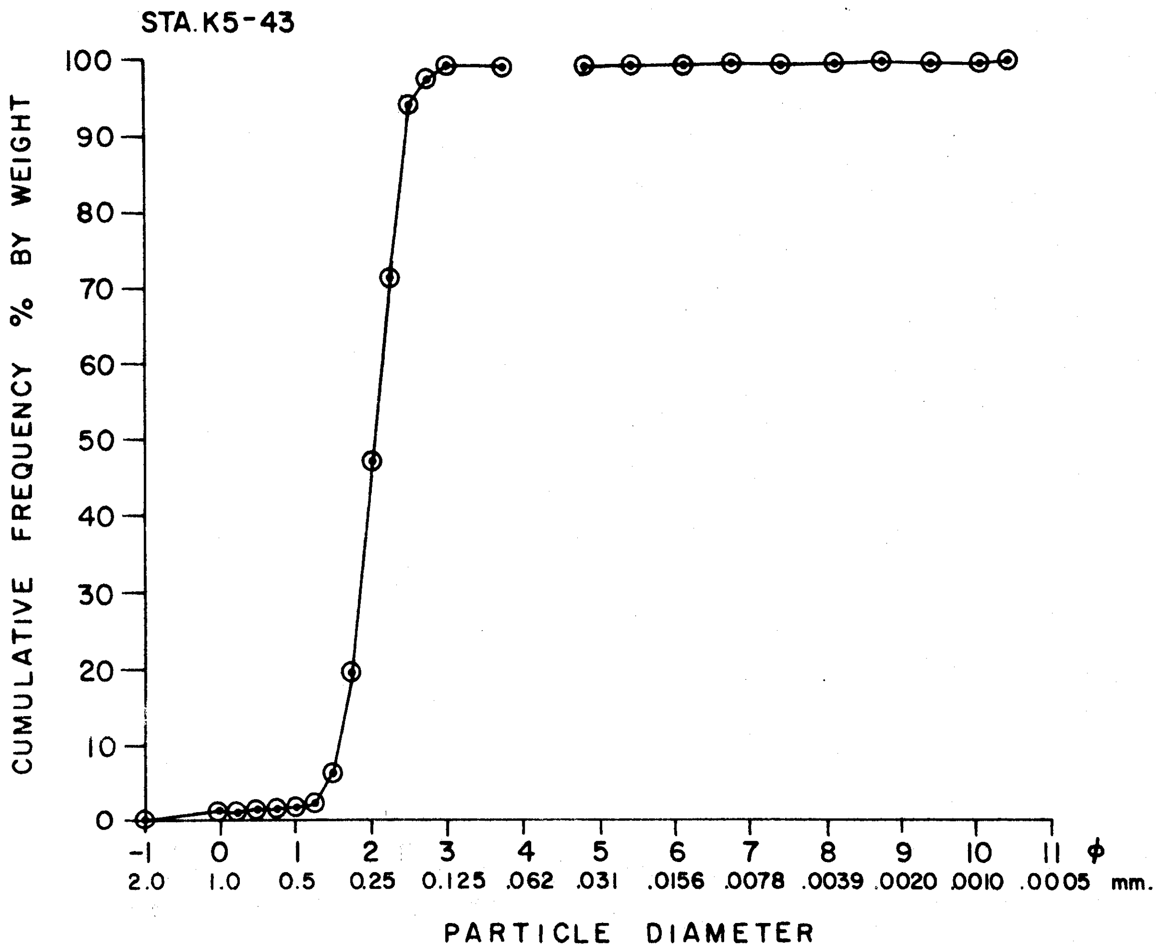

STA. L2-585
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

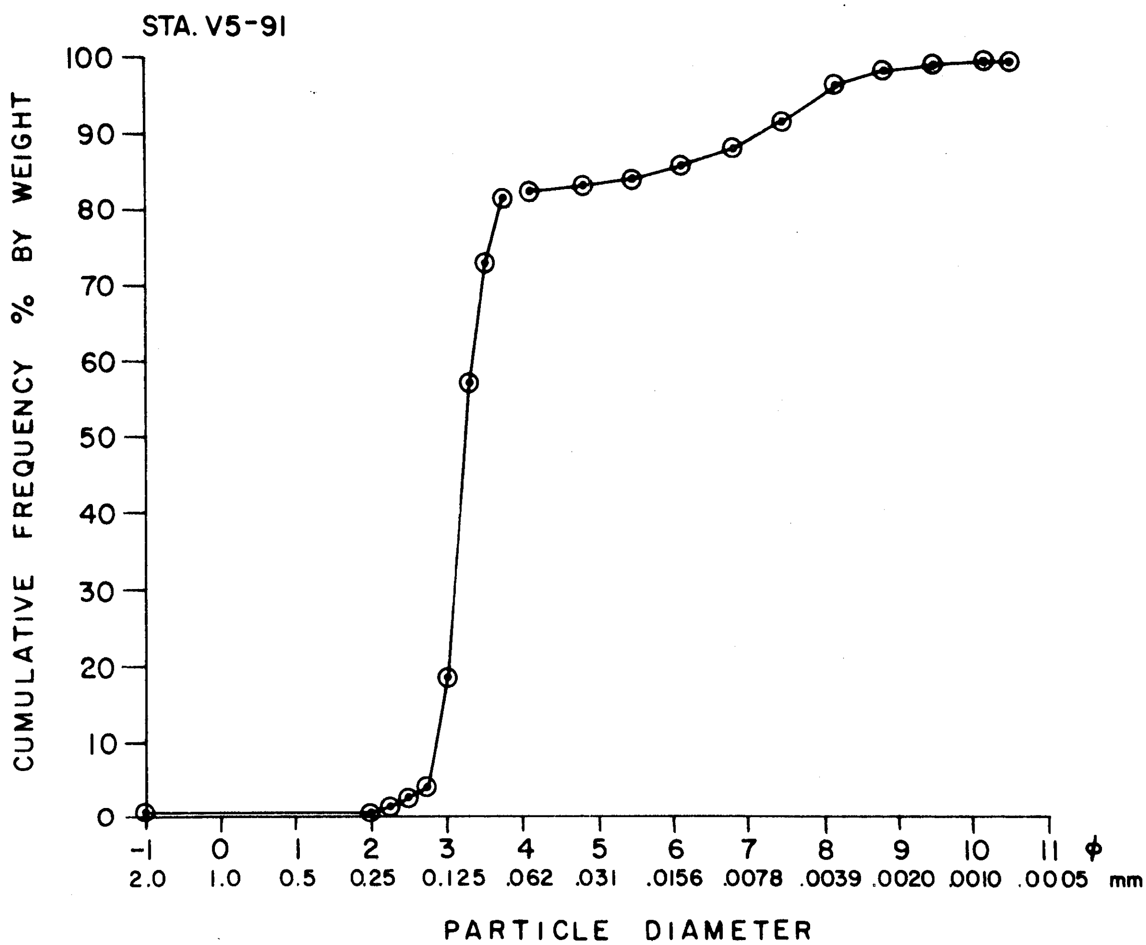

STA. N4-42
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

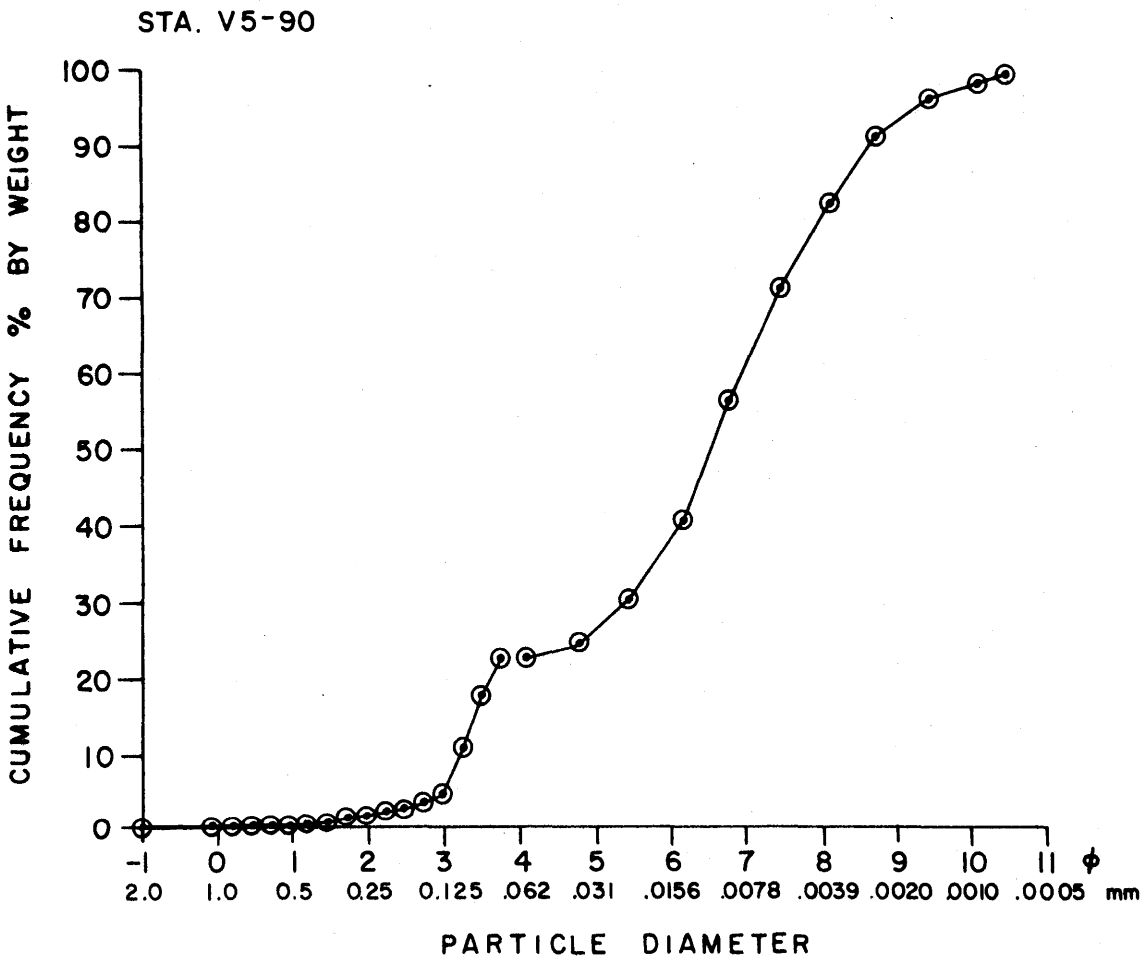

STA. N4-40
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

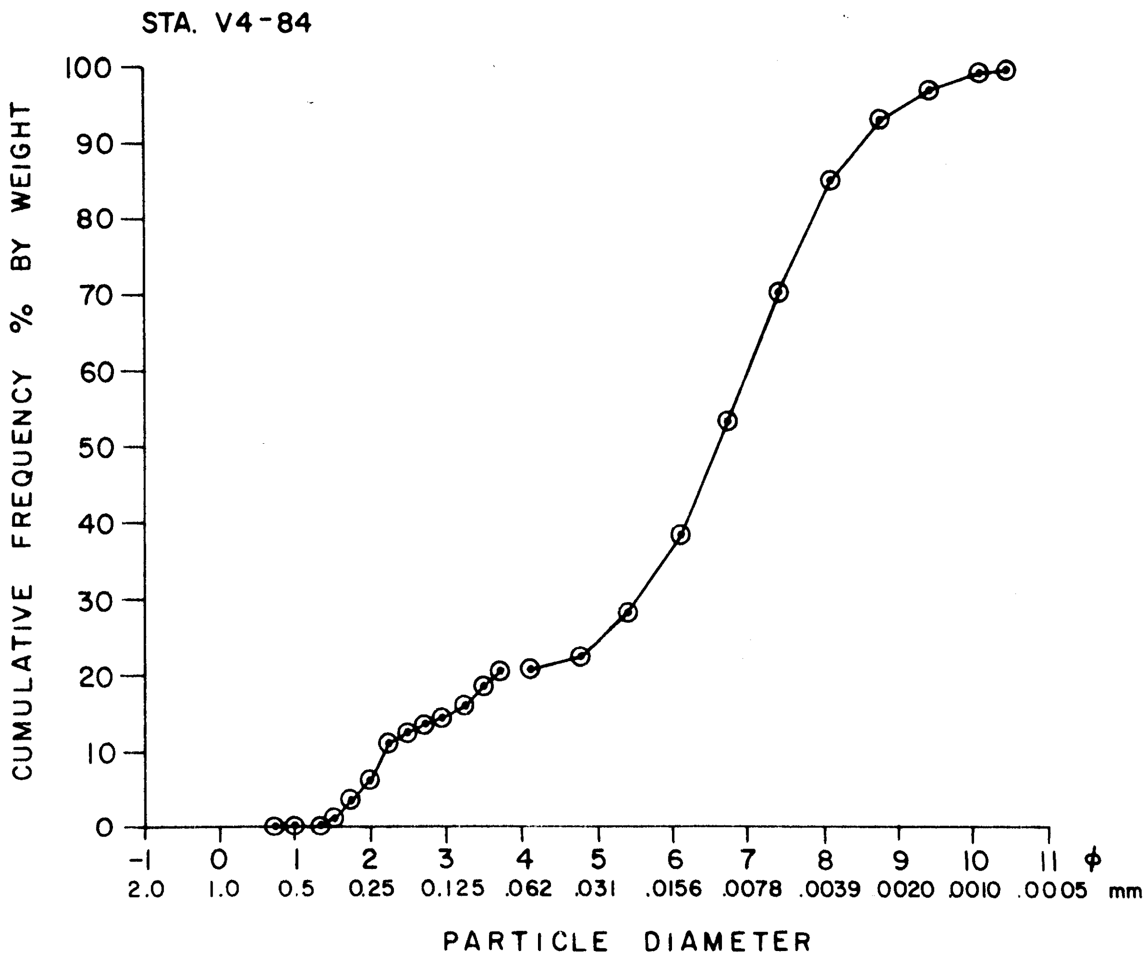


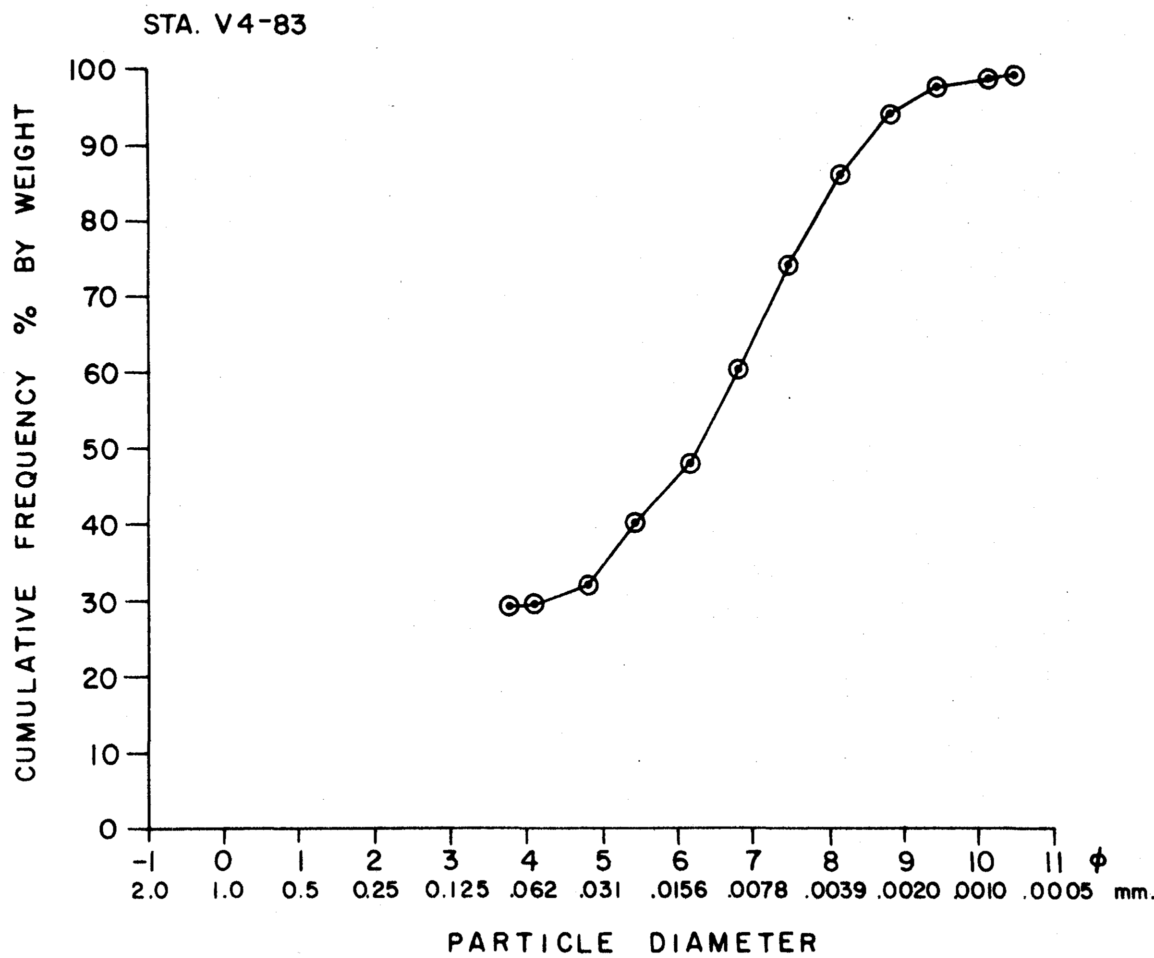
STA. N4-38
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

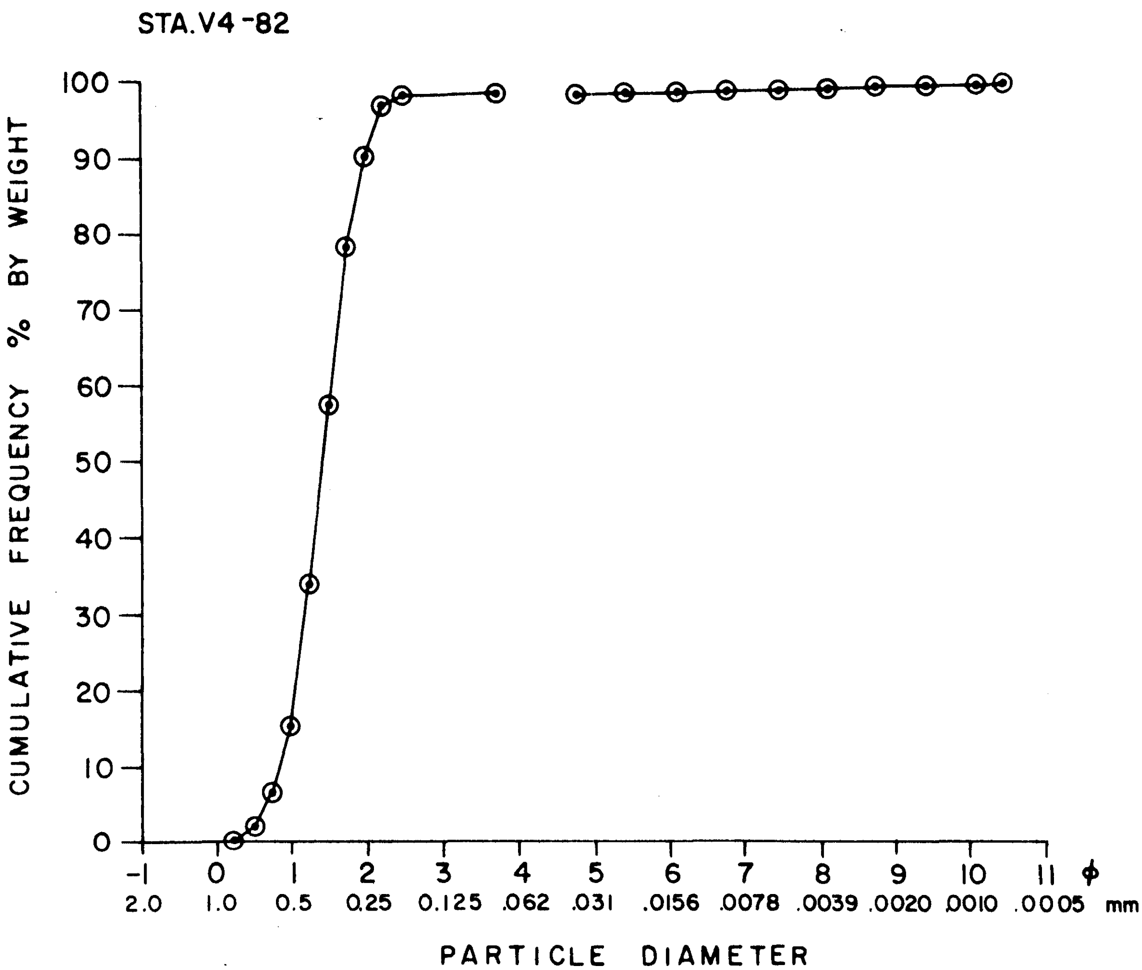

STA. K5-43
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

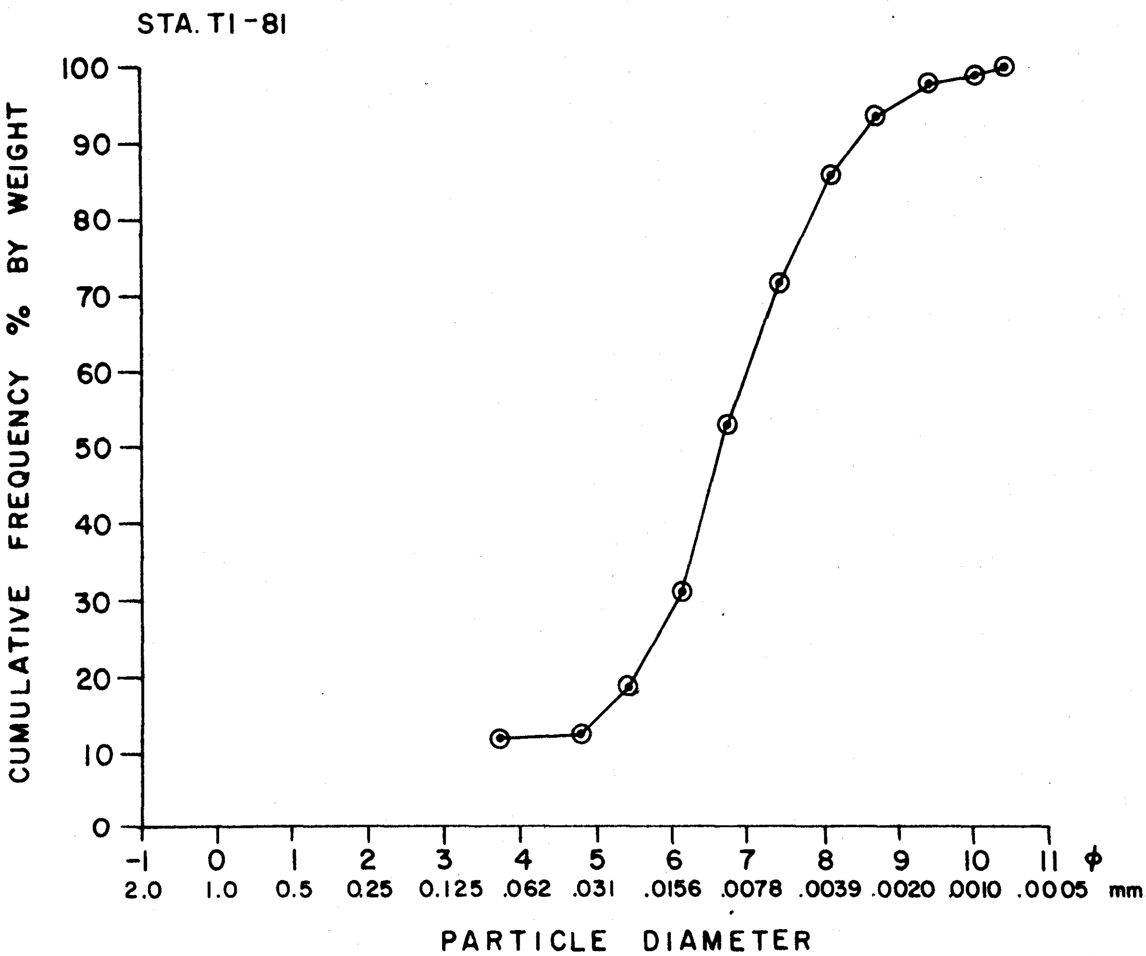

STA. V5-91
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

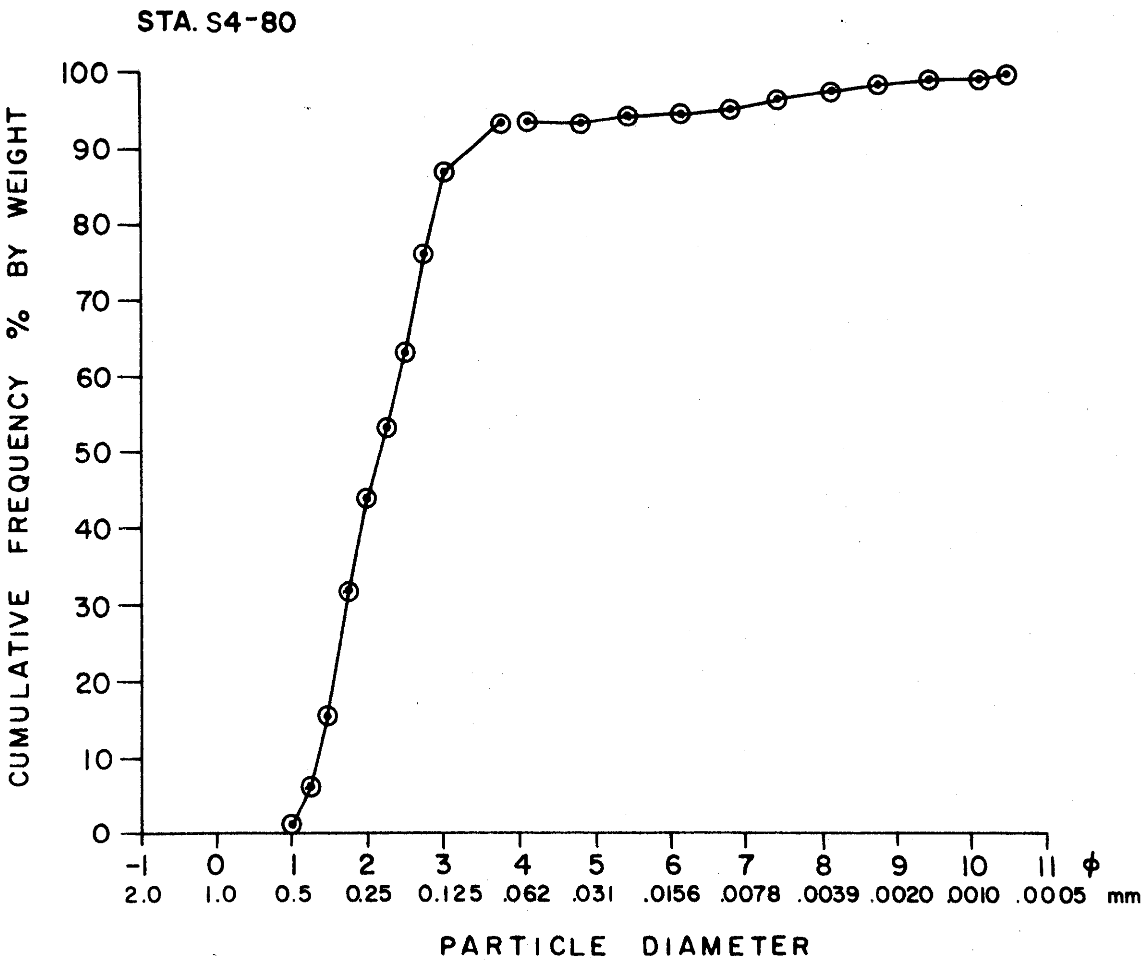

STA. V5-90
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

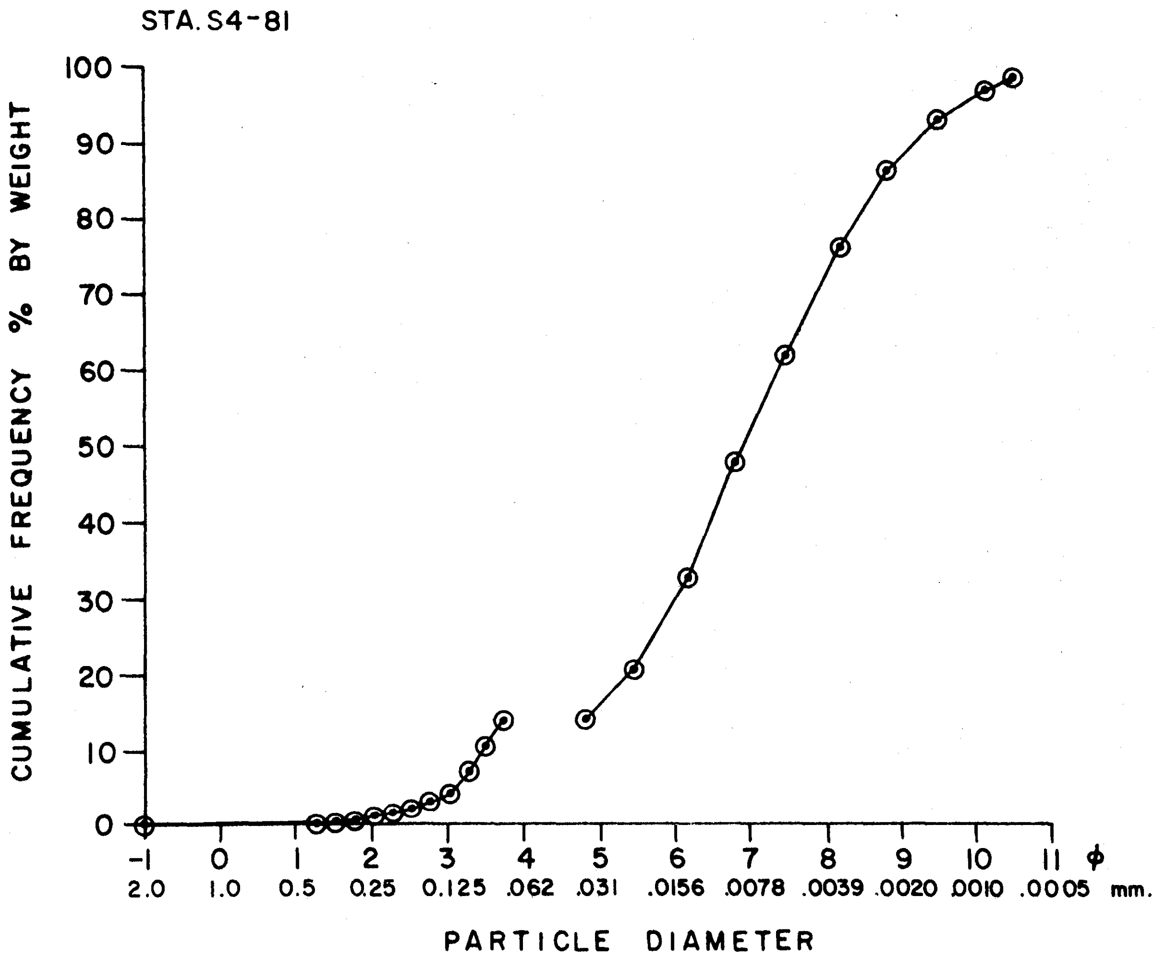

STA. V4-84
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

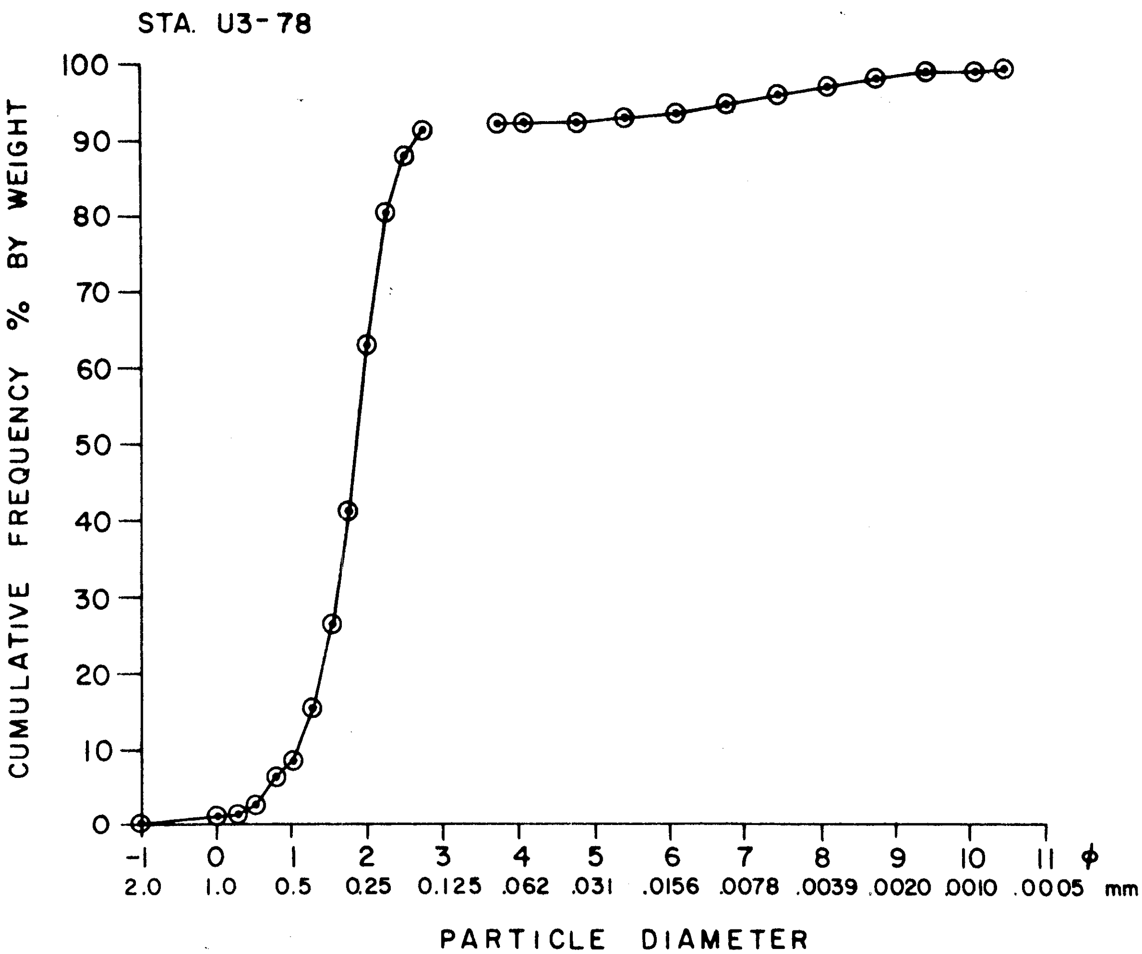

STA. V4-83
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

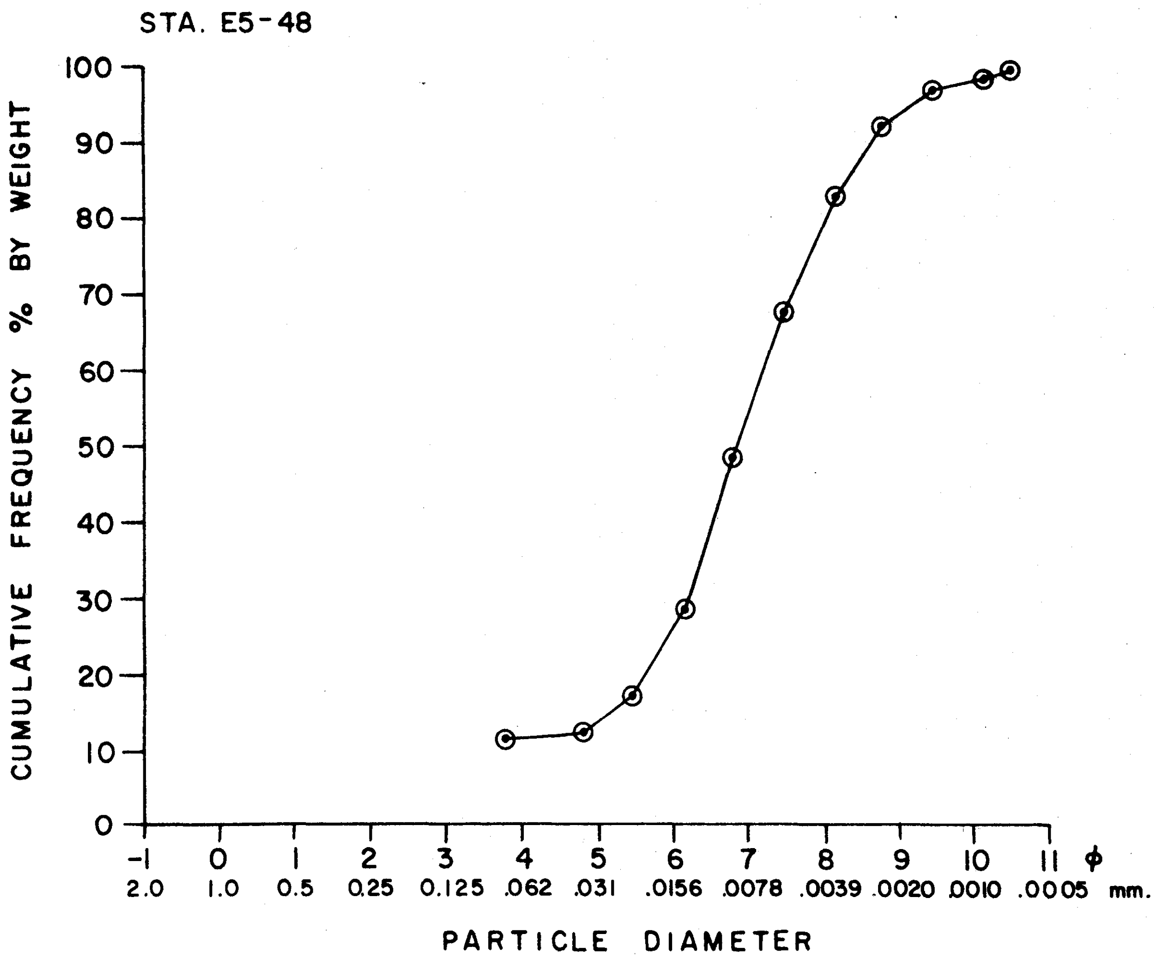

STA.V4-82
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

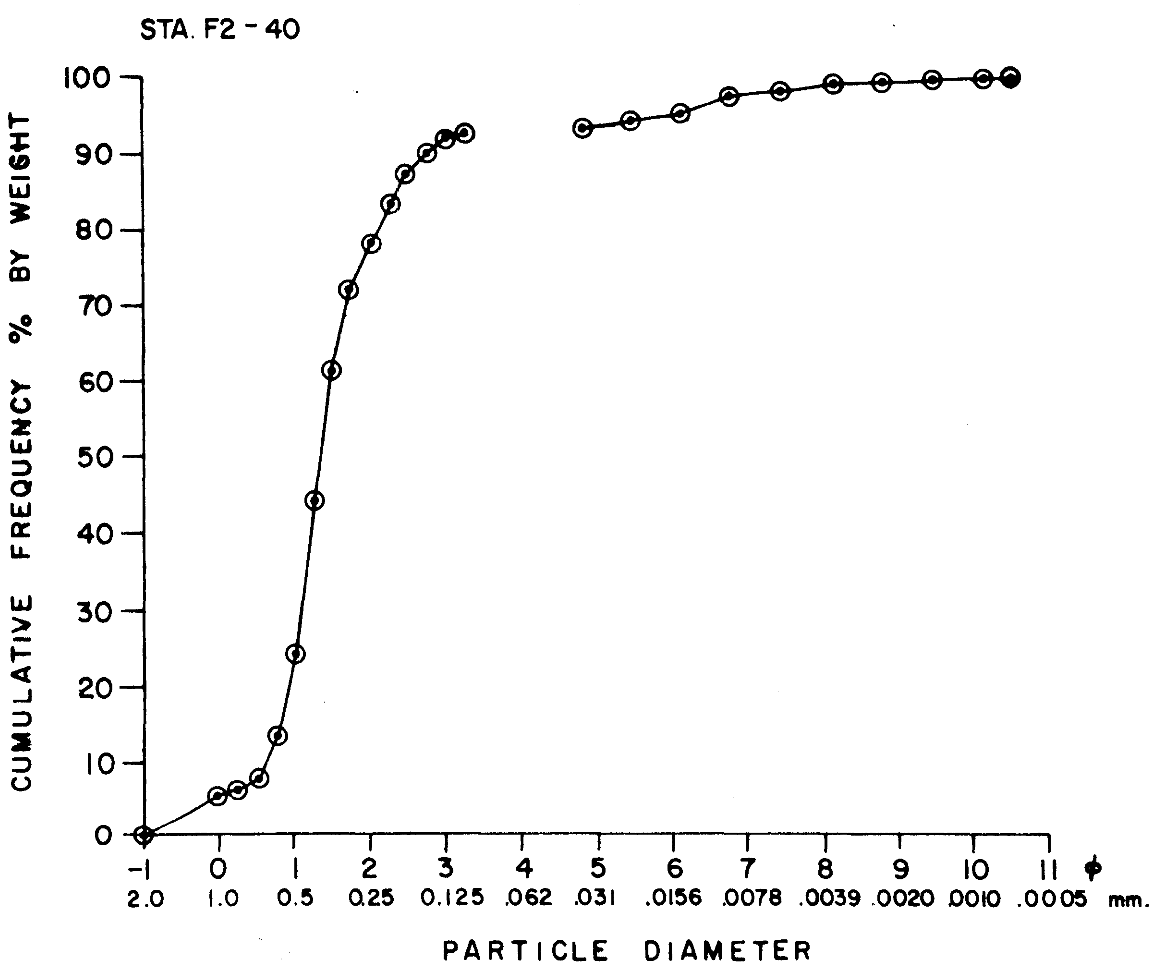

STA. T1-81
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

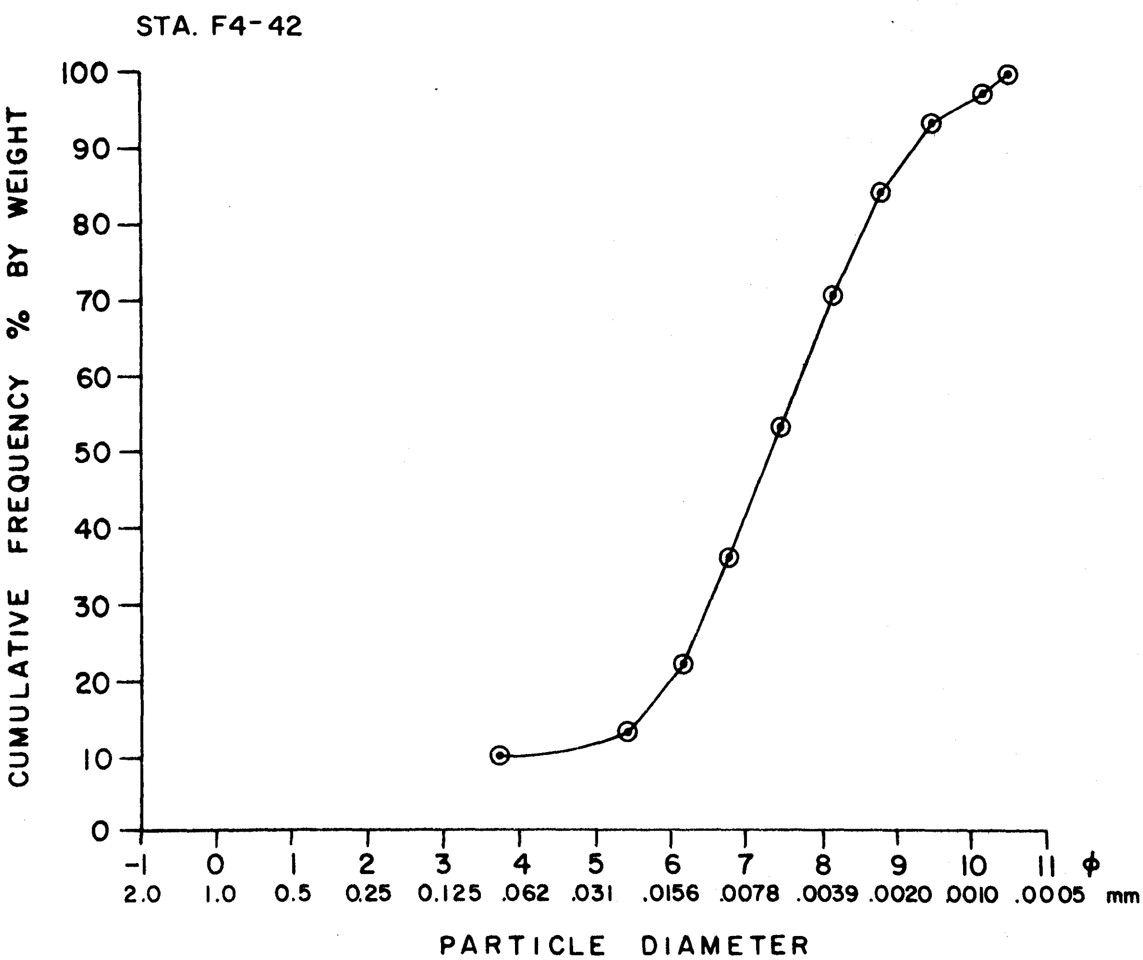

STA. S4-80
CUMULATIVE FREQUENCY % BY WEIGHT
0
10
20
30
40
50
60
70
80
90
100
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

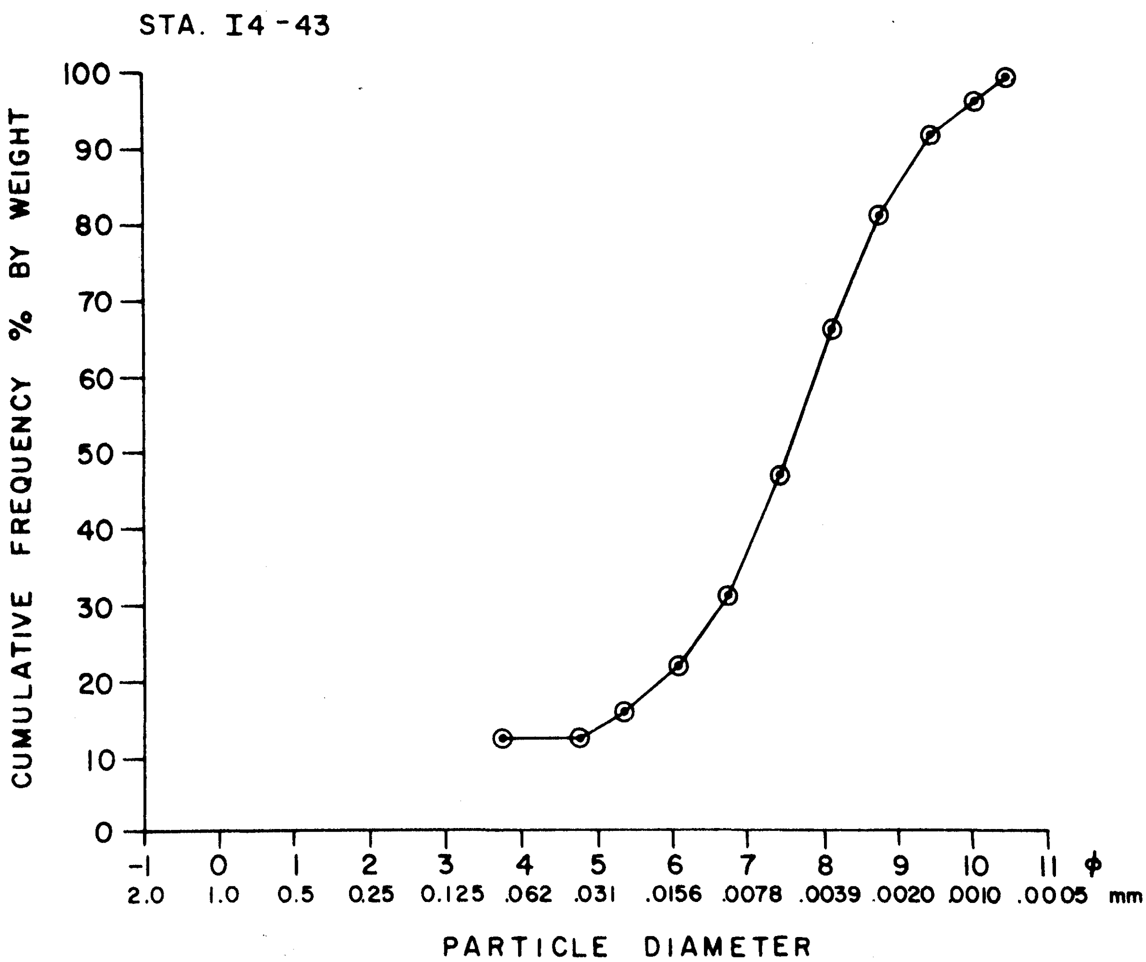

STA. S4-81
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

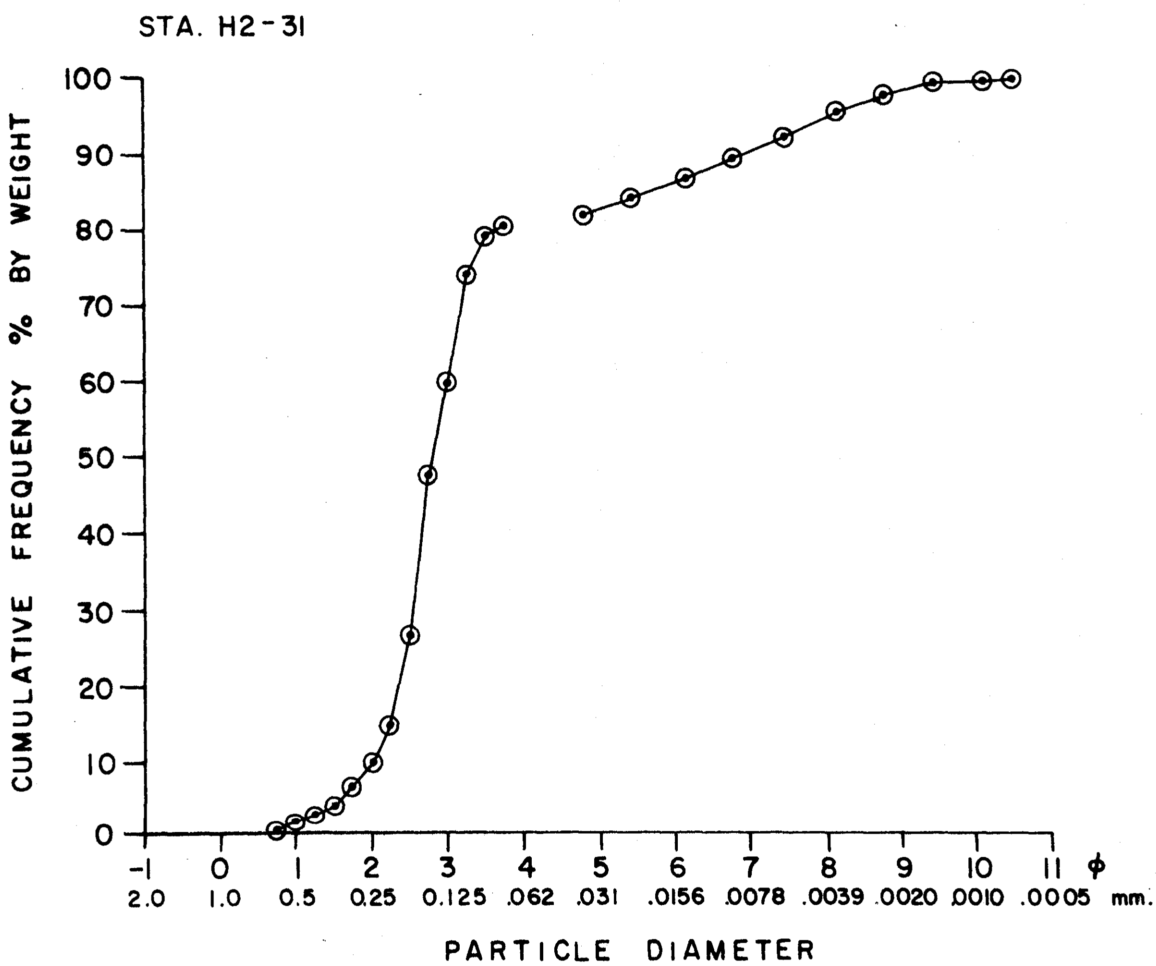

STA. U3-78
CUMULATIVE FREQUENCY % BY WEIGHT
0
10
20
30
40
50
60
70
80
90
100
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. E5-48
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

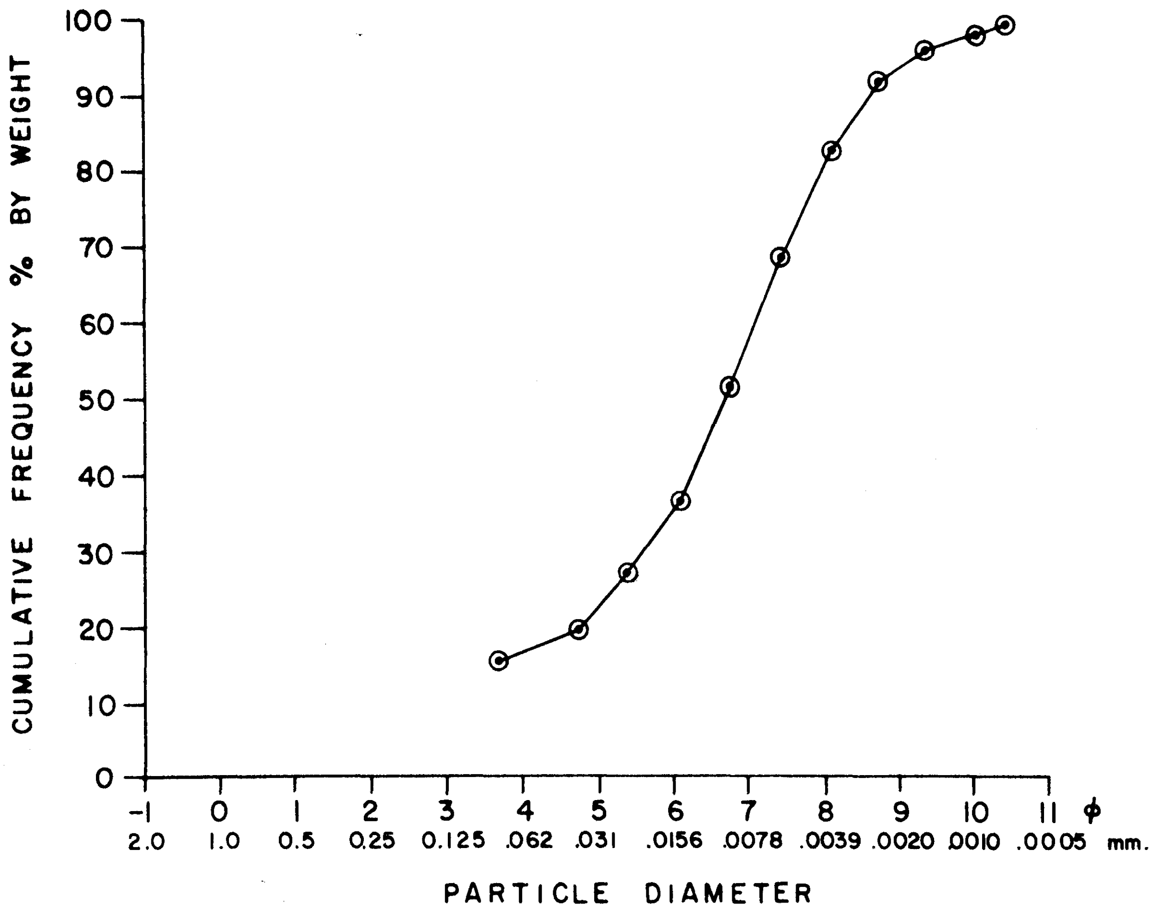

STA. F2 - 40
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

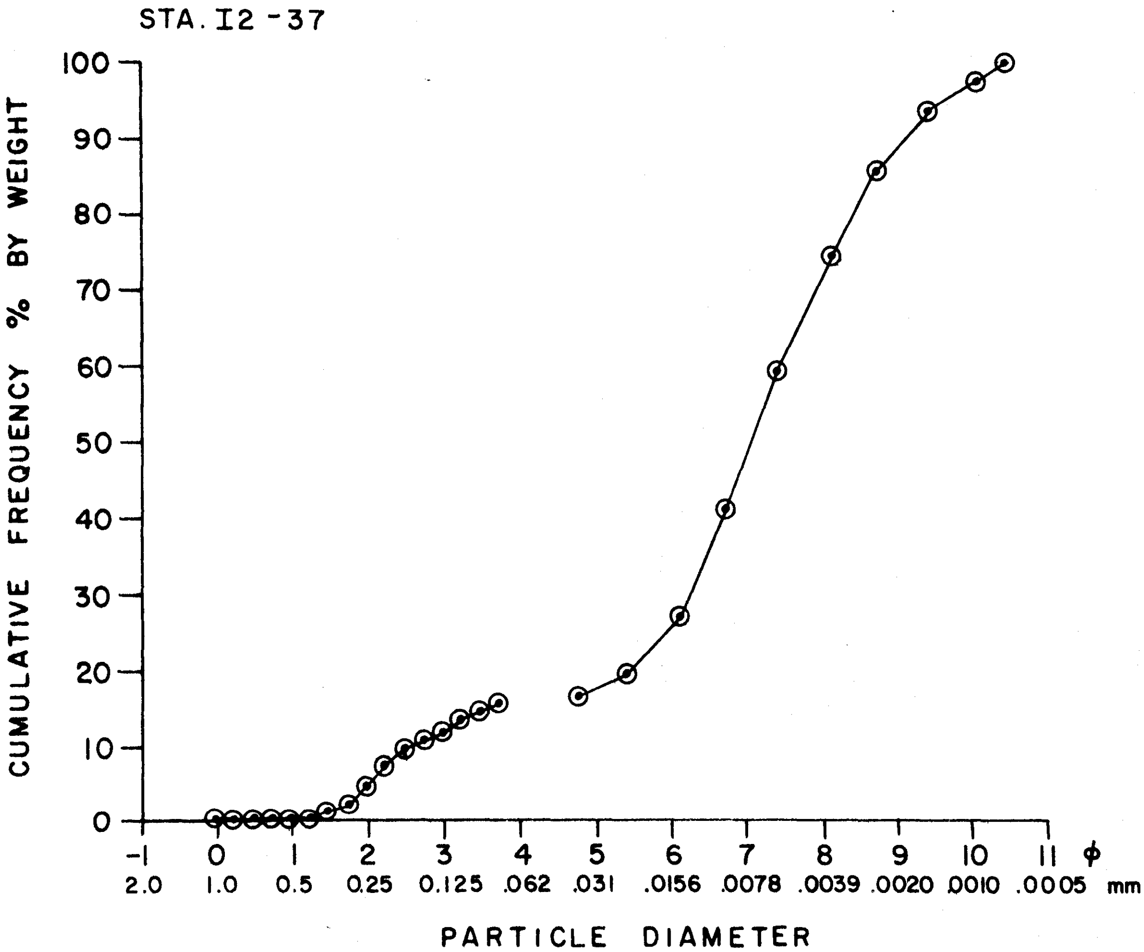

STA. F4-42
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

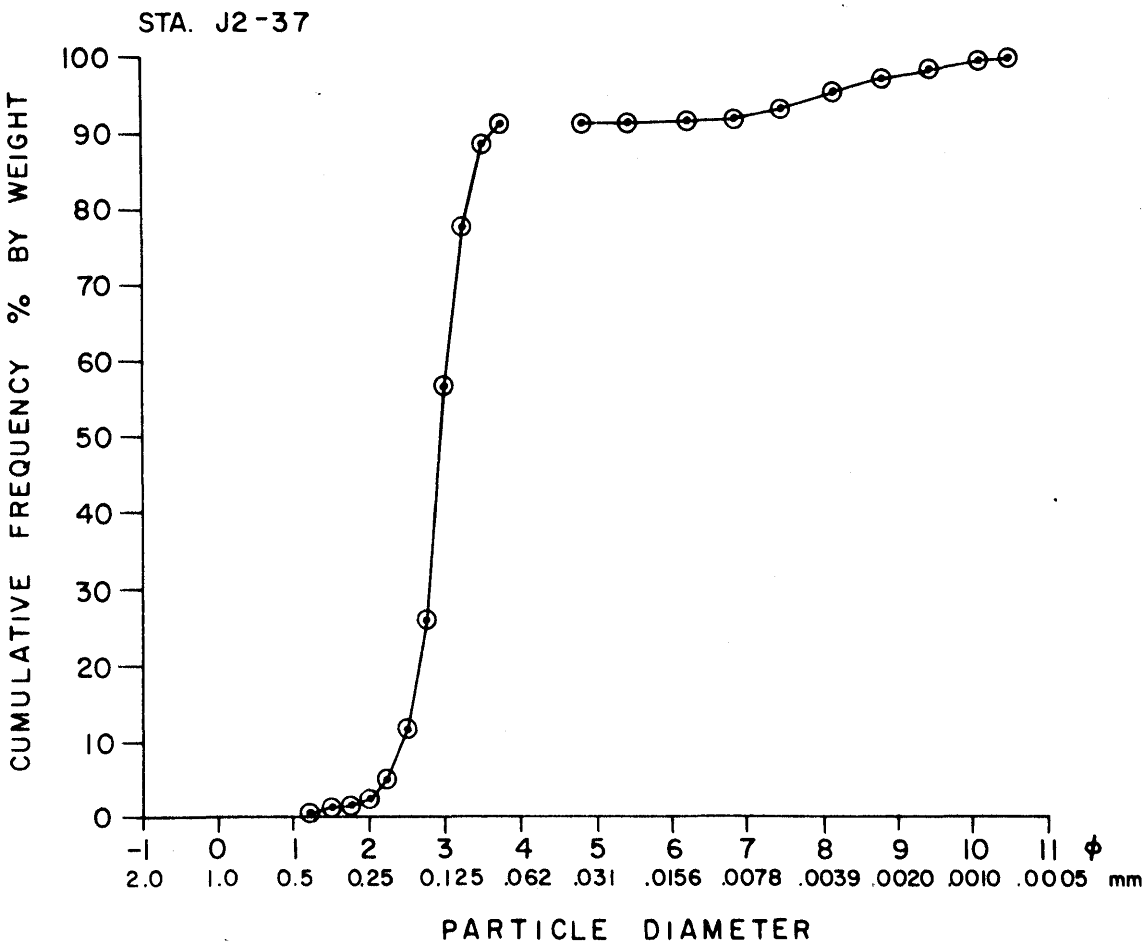

STA. I4-43
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

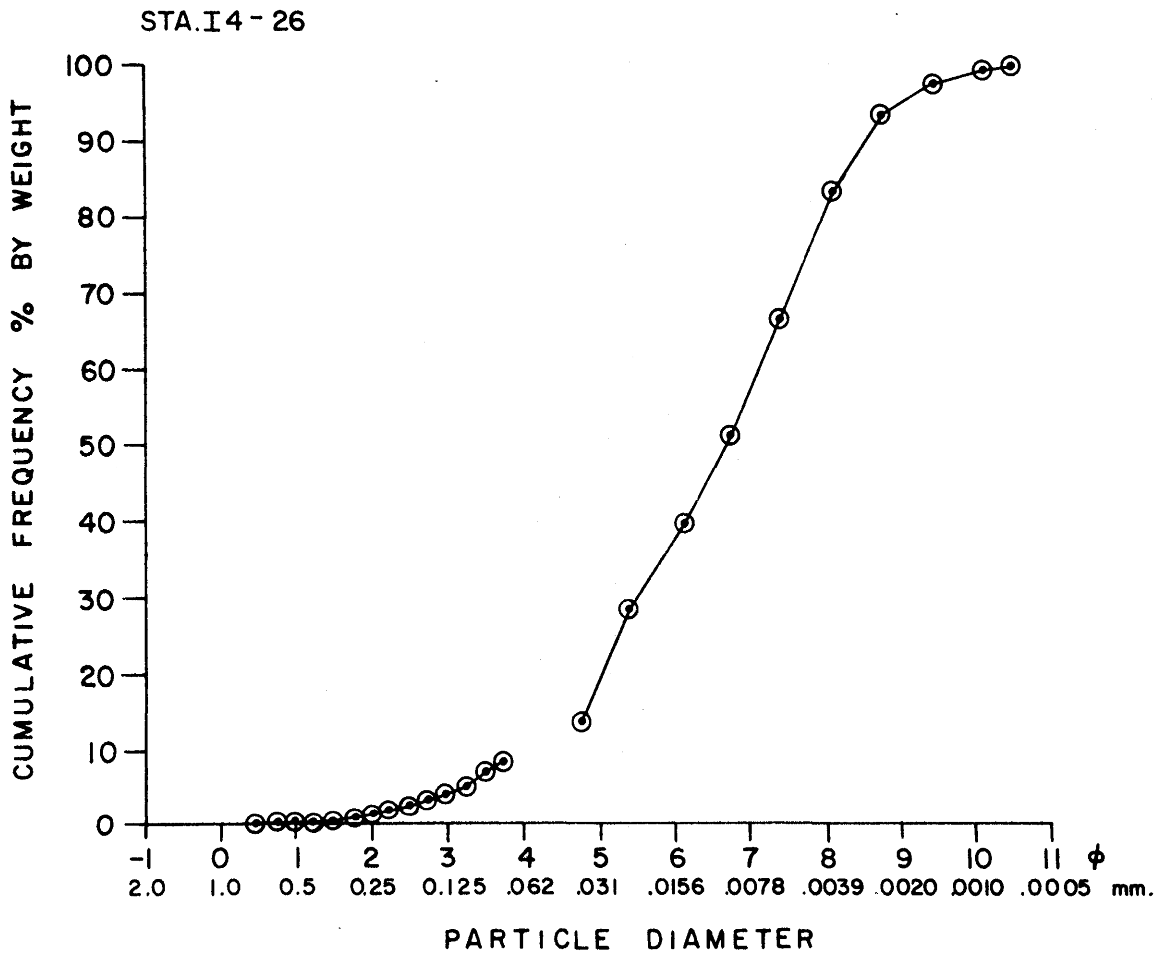

STA. H2-31
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

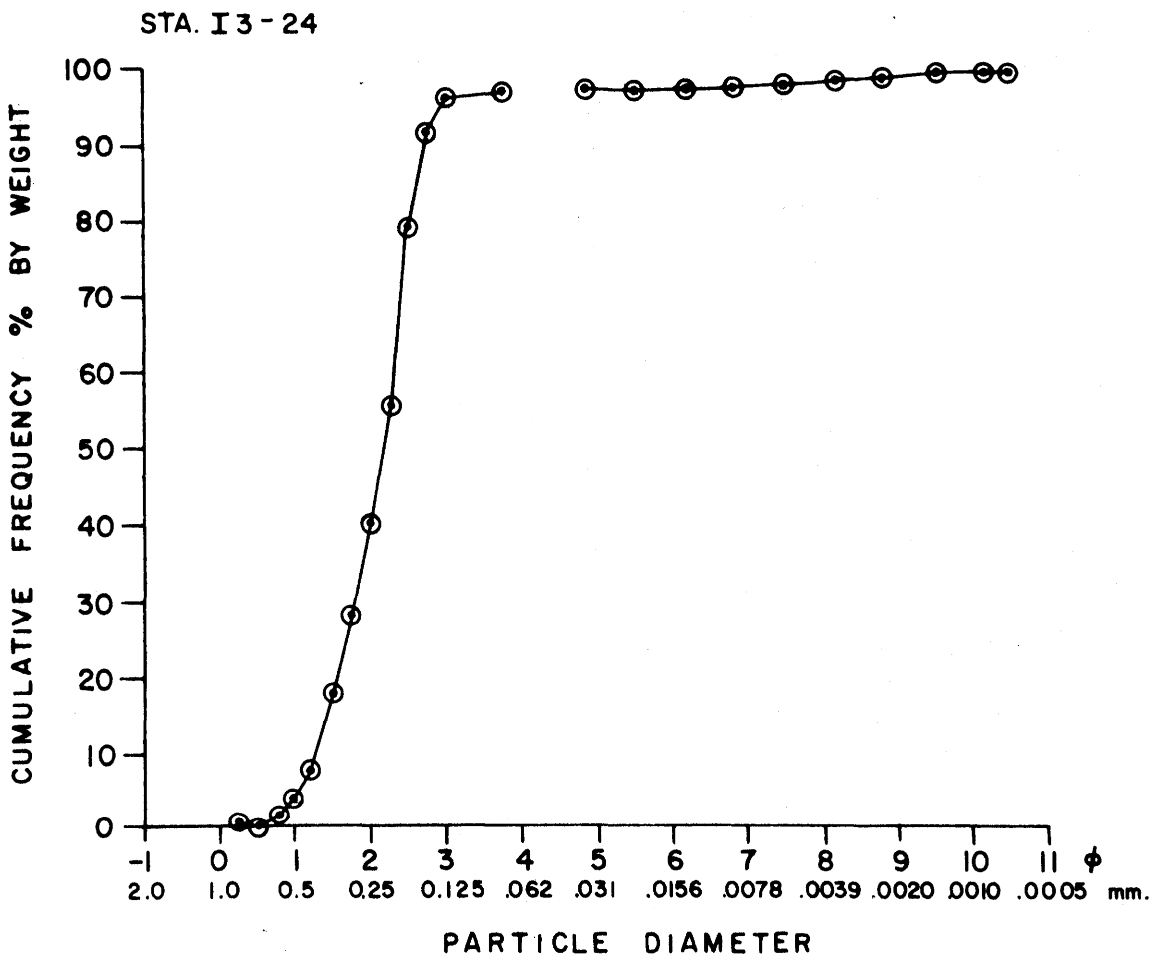
STA. H5-32

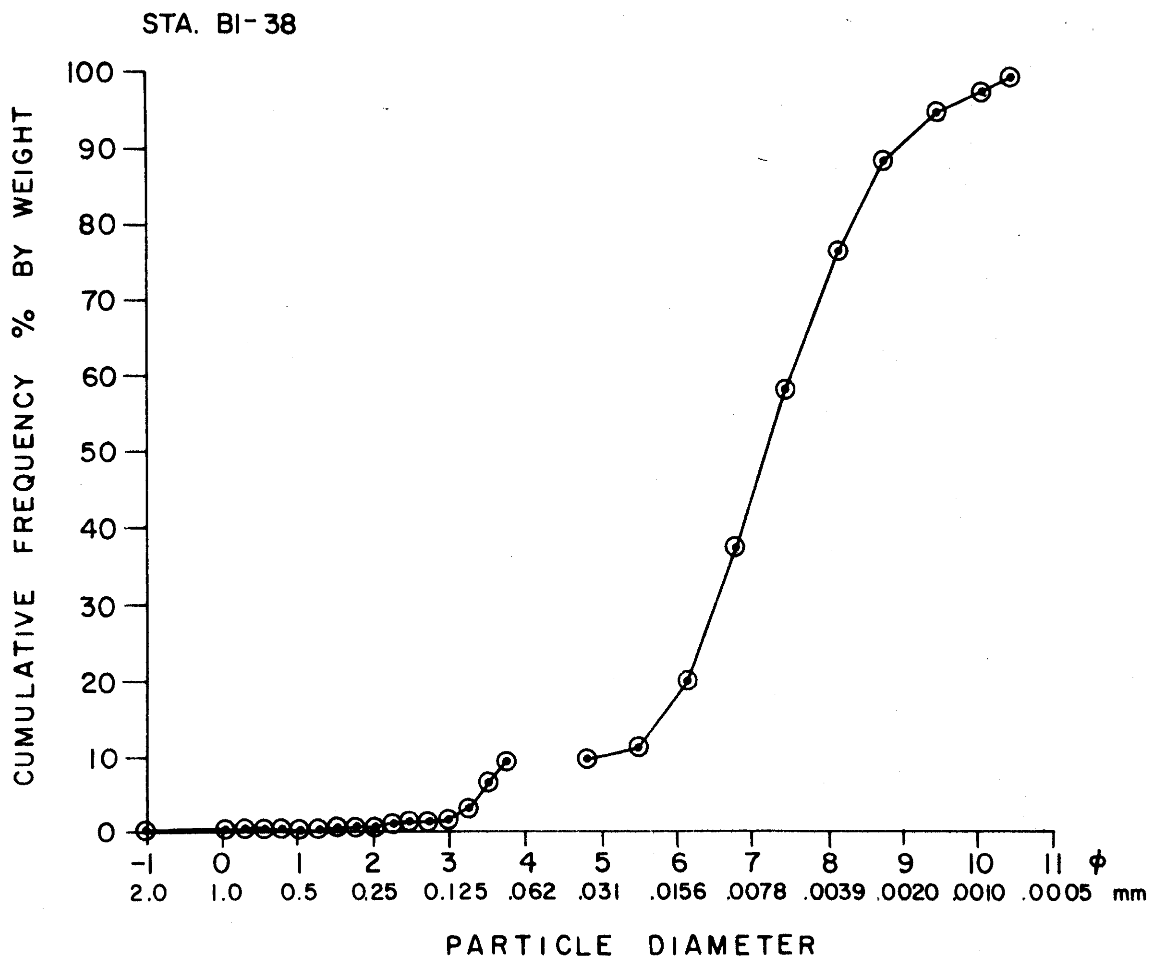

CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

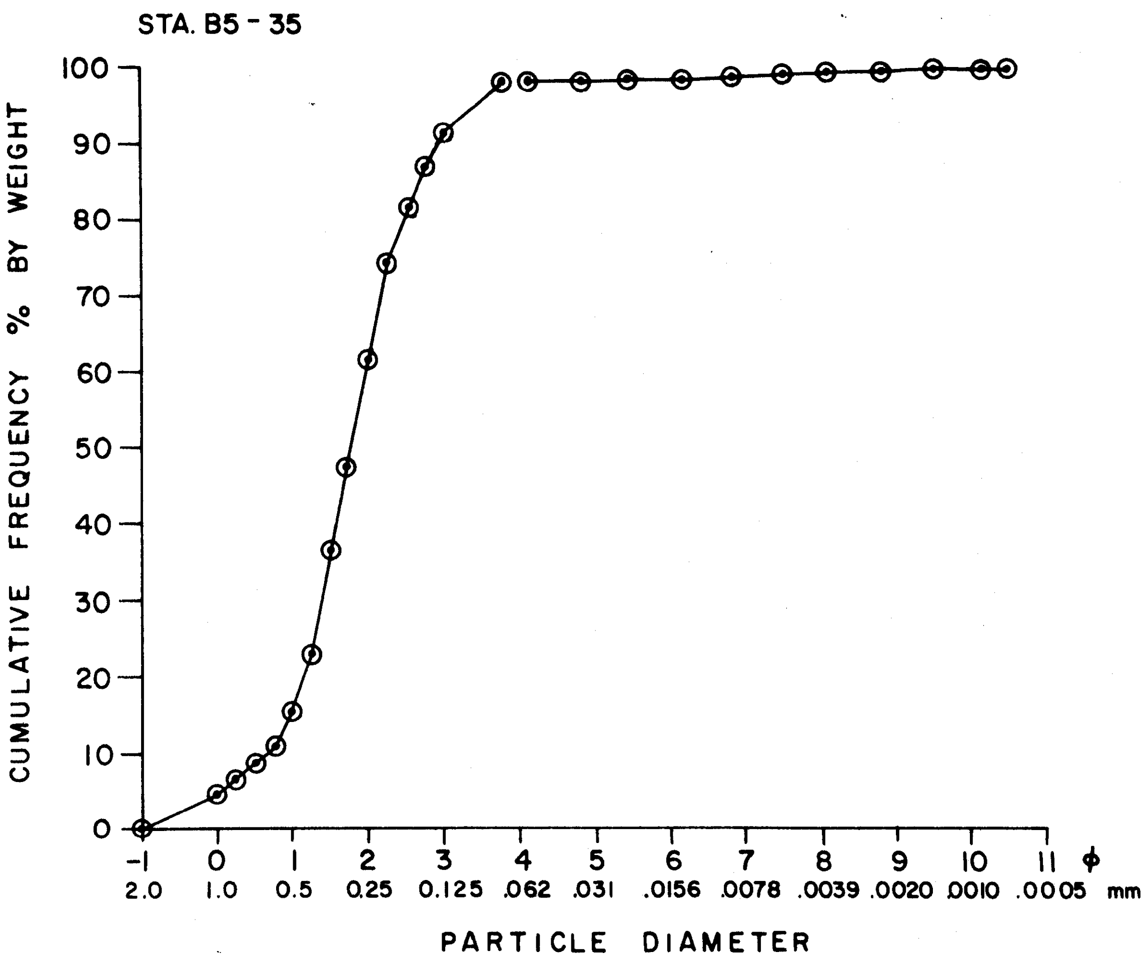

STA. I2 -37
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. J2-37
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

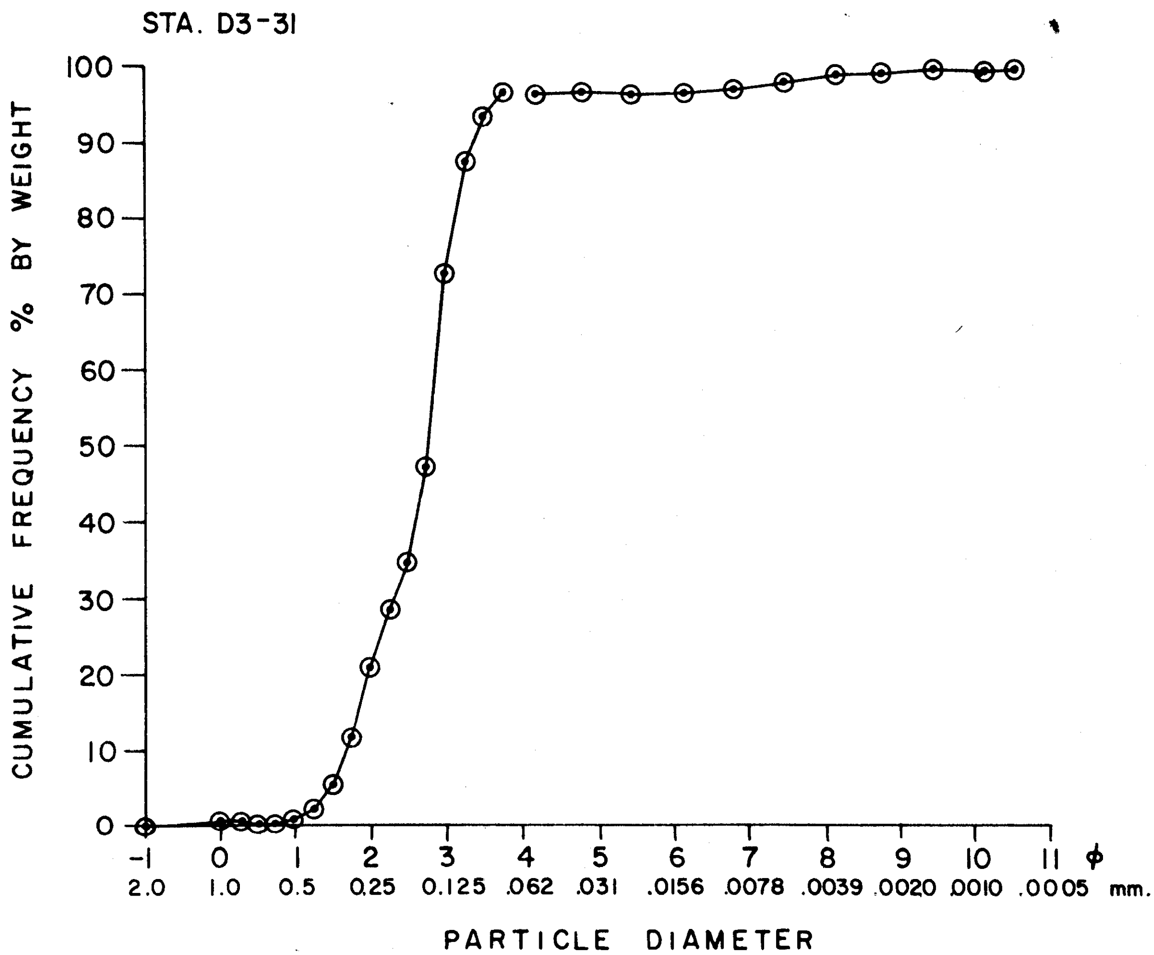

STA.I4-26
CUMULATIVE FREQUENCY % BY WEIGHT
0
10
20
30
40
50
60
70
80
90
100
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. I 3 - 24
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

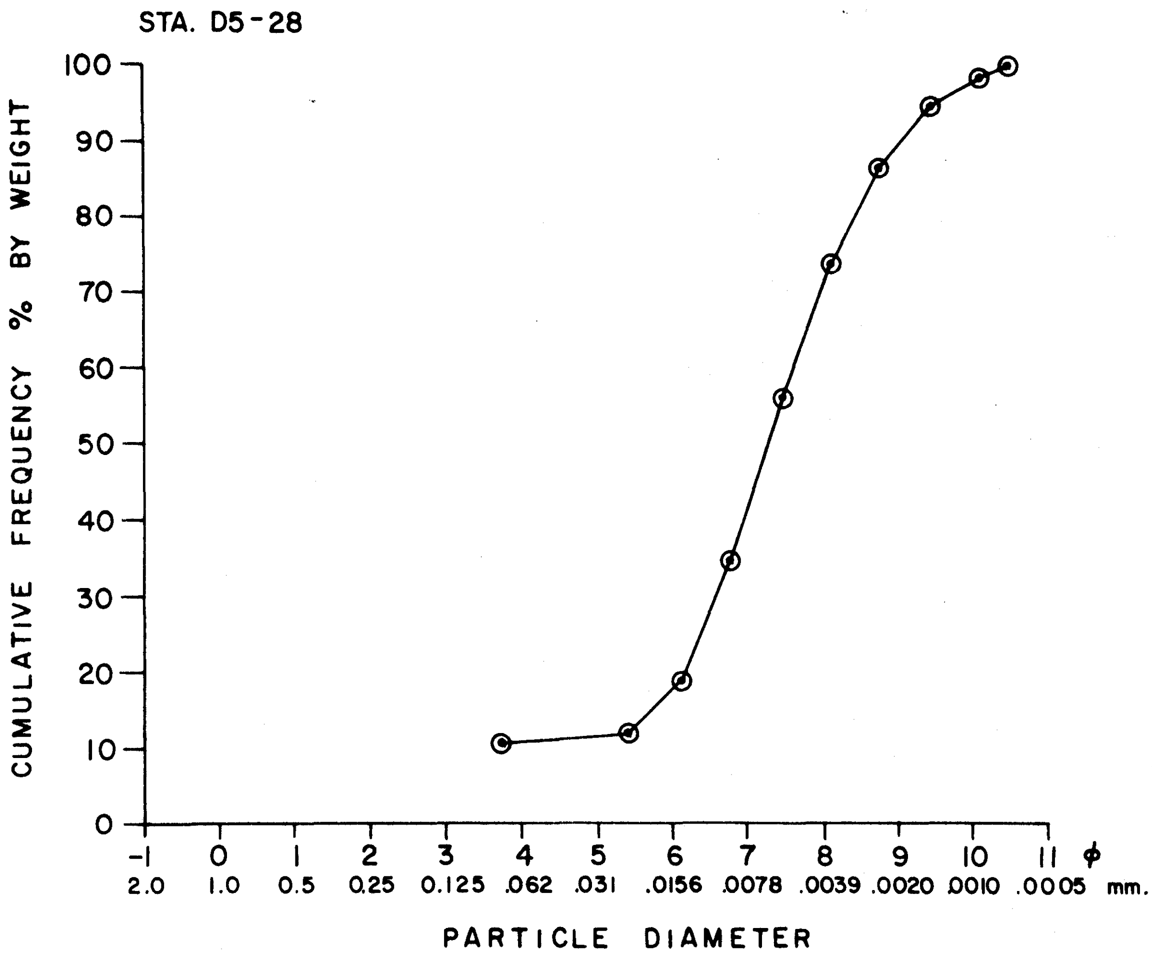

STA. BI-38
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

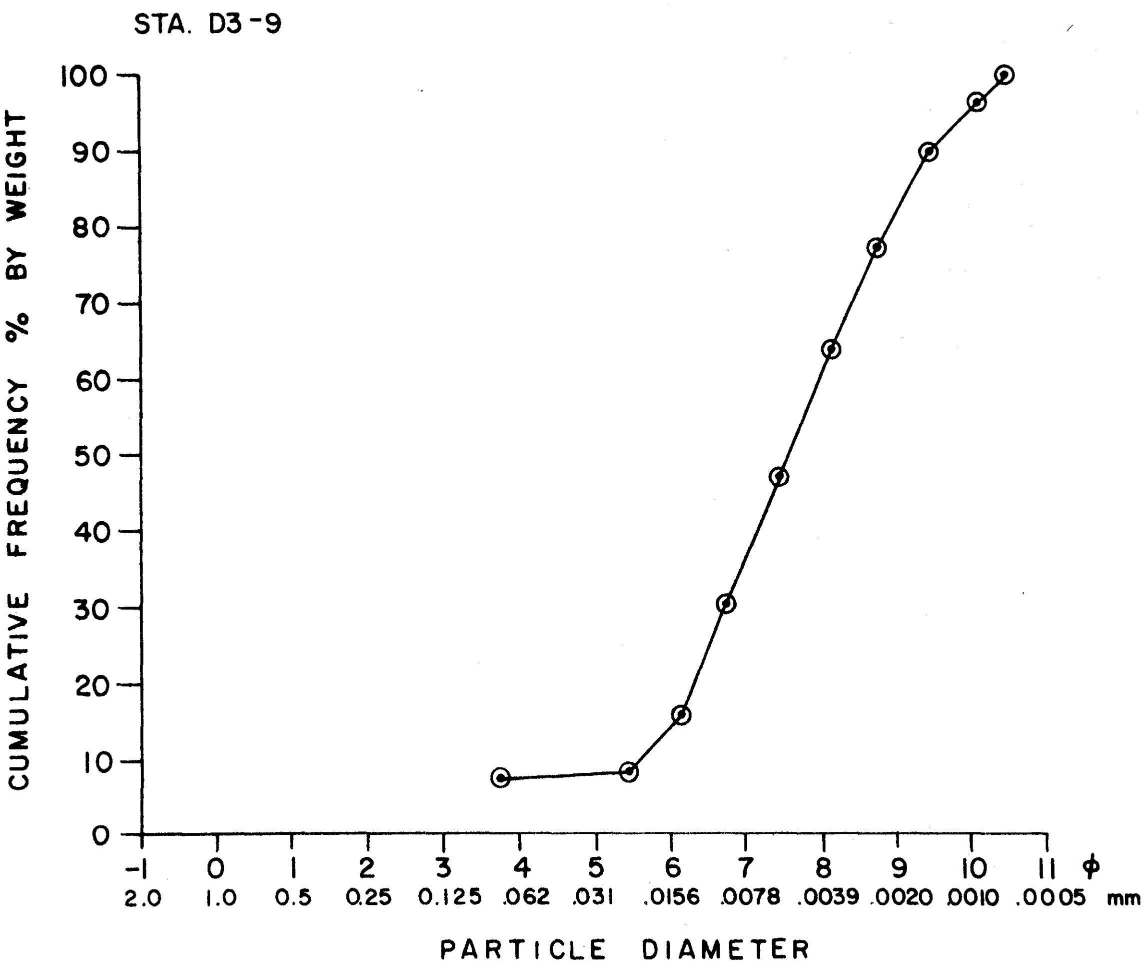


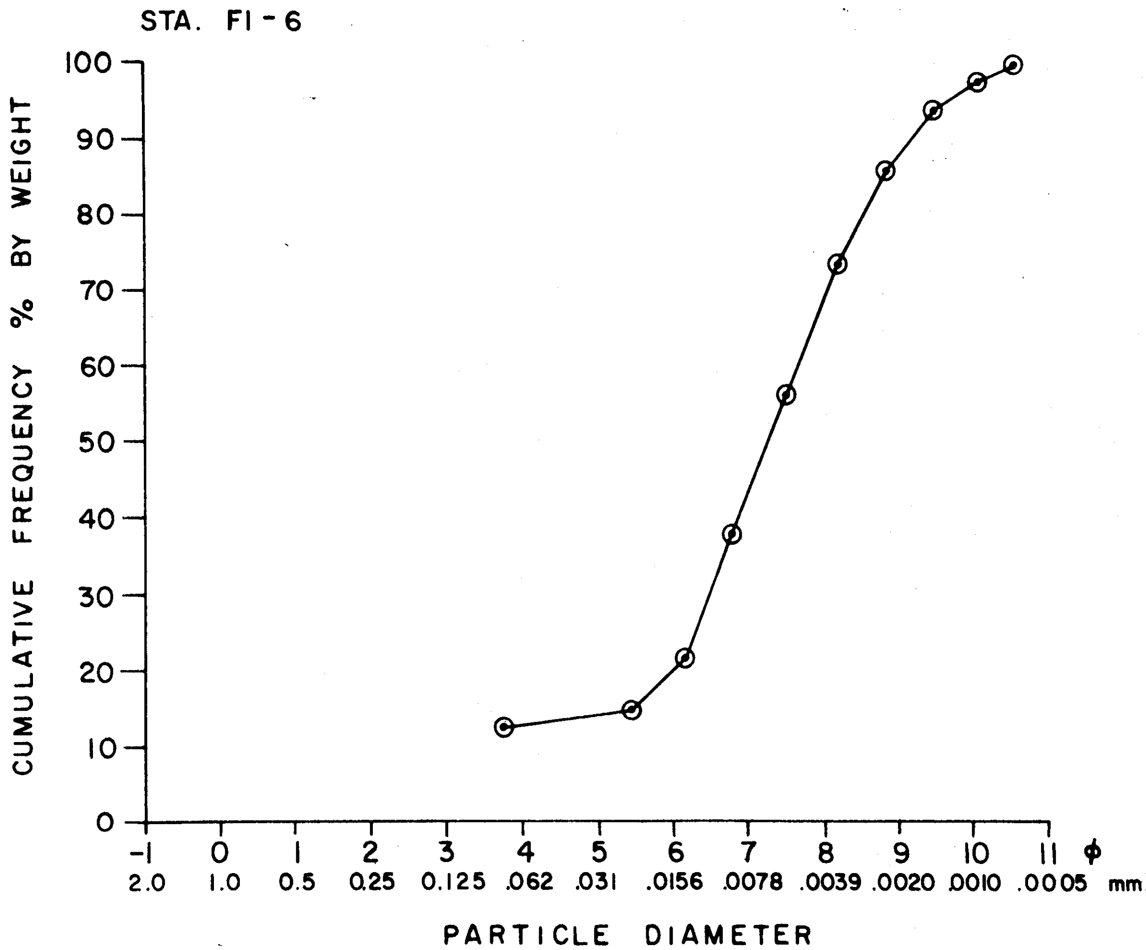
STA. B5 - 35
CUMULATIVE FREQUENCY % BY WEIGHT
0
10
20
30
40
50
60
70
80
90
100
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

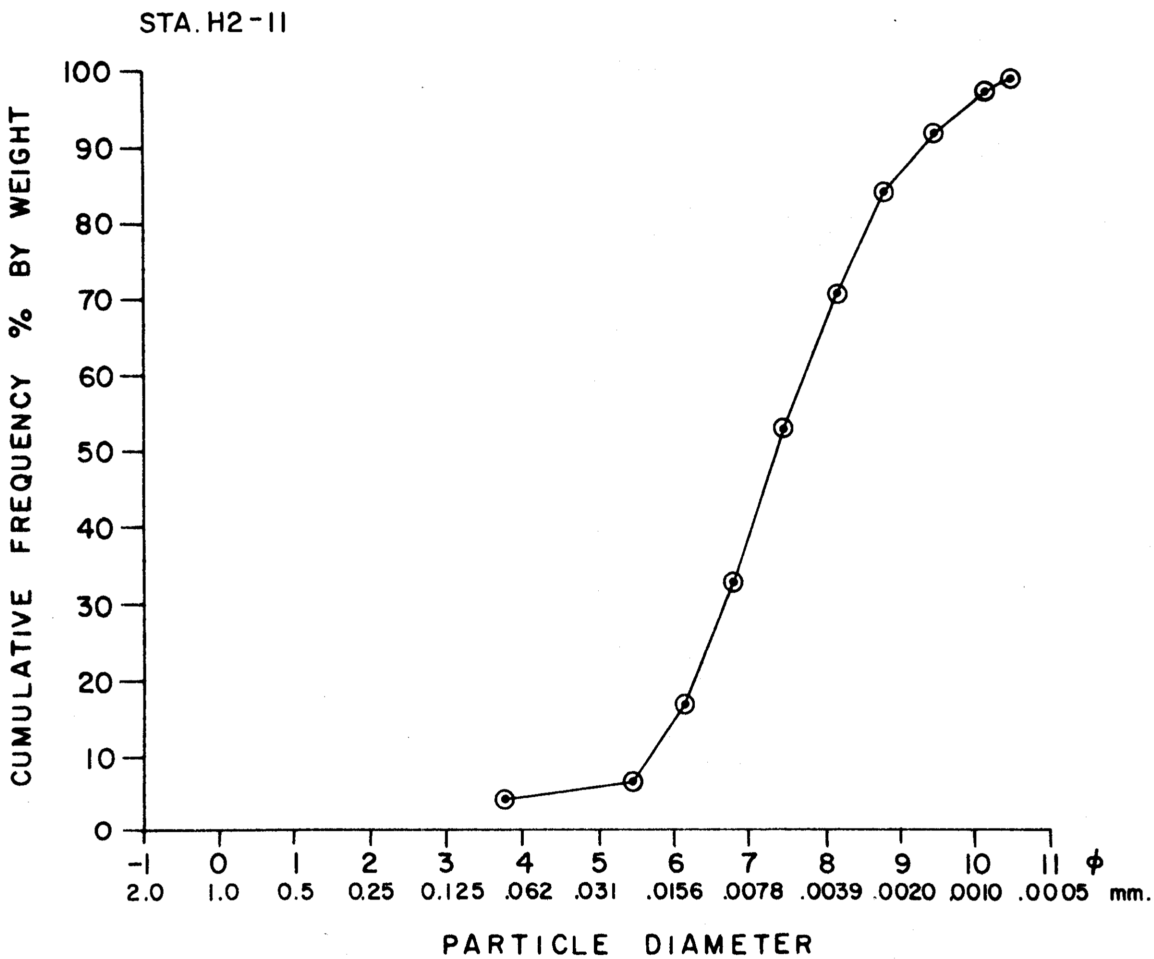


STA. D3-31
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. D5-28
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. D3-9
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. FI - 6
CUMULATIVE FREQUENCY % BY WEIGHT
0
10
20
30
40
50
60
70
80
90
100
-1 0 1 2 3 4 5 6 7 8 9 10 11 ϕ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER


STA. H2-11
CUMULATIVE FREQUENCY % BY WEIGHT
100
90
80
70
60
50
40
30
20
10
0
-1 0 1 2 3 4 5 6 7 8 9 10 11 φ
2.0 1.0 0.5 0.25 0.125 .062 .031 .0156 .0078 .0039 .0020 .0010 .0005 mm.
PARTICLE DIAMETER

Appendix C

Physico-chemical Data

Table C1

Physico-chemical data, April 1979 benthos sampling dates

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/1)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Gunpowder	Buoy 11	4-23	0751	0	13.80	.195	11.23	.37	2.62		
				2.0	13.85	.682	11.21				
	Buoy 9	4-23	0805	0	13.10	.282	11.78	.37	4.56		
				4.0	13.60	.485	11.15				
Seneca Cr.	Lt. 2	4-23	0825	0	13.40	.323	12.75	.45	2.07		
				2.0	13.00	.408	11.64				
	K5-43	4-23	0837	0	12.85	.323	11.62	.37	1.87	.34	sand
				1.0	12.95	.323	11.70				
Weir Pt.	N4-42	4-23	0904	0	13.20	.440	11.72	.35	.97	.08	sand
				0.5	13.40	.440	11.76				
	N4-40	4-23	0935	0	13.60	.480	11.92	.34	2.77	1.82	muddy sand
				2.5	12.90	.706	11.43				
	N4-38	4-23	1015	0	13.75	.599	11.98	.36	4.00	9.78	mud
				3.5	12.20	1.111	10.15				
Lower Saltpeter Cr.	N2-60	4-23	1034	0	17.35	.305	11.35	.33	1.71	8.61	mud
				1.25	17.00	.323	11.17				
Upper Saltpeter Cr.	L3-60	4-23	1108	0	21.05	.305	11.37	.38	1.32	9.07	mud
				1.0	19.35	.305	11.56				
	L2-58.5	4-23	1124	.5	21.75	.305	10.93	.35	.82	.46	sand
Dundee Cr.	L5-65	4-23	1145	.5	17.60	.313	10.64	.38	.76	.60	sand
	L3-67	4-23	1156	0	17.15	.318	10.20	.33	1.33	10.52	mud
				1.0	17.10	.318	10.13				
Redman Cove	V5-91	4-24	0750	0	15.00	.133	10.13	.45	1.45	1.90	sandy mud
				1.0	14.80	.135	10.93				

Table C1 (continued).

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
	V5-90	4-24	0809	0	14.60	.135	11.82	.42	1.86	7.52	mud, shell
				1.5	14.40	.130	11.45				
Towner Cove	V4-84	4-24	0831	0	14.80	.170	11.70	.49	1.75	6.83	sandy mud
				1.5	14.60	.205	11.23				
	V4-83	4-24	0845	0	14.95	.175	11.29	.46	1.60	6.21	mud
				1.50	14.80	.180	11.23				
	V4-82	4-24	0900	.5	14.95	.145	11.41	.42	.74	.40	sand
Doves Cove	T1-81	4-24	0917	0	15.40	.142	11.92	.57	1.42	9.16	mud
				1.0	14.95	.138	11.43				
	S4-81	4-24	0930	0	15.50	.142	11.70	.48	1.19	9.55	mud
				1.0	15.30	.142	10.70				
	S4-80	4-24	0946	.5	15.40	.138	11.82	.51	.72	.33	silty sand
Bush R.	V4-70	4-24	1148	0	13.90	.207	11.35	.43	2.09		mud
				2.0	13.95	.210	11.31				
	Buoy 2	4-24	1210	0	12.50	.145	9.89	.26	3.00		mud
				3.0	12.60	.145	9.12				
	U3-78	4-24	1305	0	14.70	.135	11.82	.45	2.65	.98	sand
				2.0	14.70	.135	11.90				
	W2-117	4-24	1522	0	16.25	.113	10.47	.38	1.43		mud
				1.0	16.25	.116	10.60				
Seneca Cr.	Lt. 2	4-25	0807	0	14.30	.471	12.63	.66	2.41		
				2.0	13.80	.534	11.41				
Hawk Cove	Buoy N2	4-25	0821	0	14.00	.646	11.76	.52	2.36		
				2.0	12.50	1.029	10.66				

Table C1 (continued).

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Browns Cr.	I3-24	4-25	0833	0	15.05	.618	13.08	.45	1.43	.53	muddy
				1.0	15.00	.618	13.20				sand
	I4-26	4-25	0849	0	15.65	.632	12.96	.34	1.37	5.39	mud
				1.0	15.60	.632	12.73				
Sue Cr.	H5-32	4-25	0912	0	15.40	.378	11.11	.39	1.28	8.44	mud
				1.0	15.20	.386	11.07				
	H1-32	4-25	0927	0	15.80	.376	11.21	.40	1.36		mud
				1.0	15.80	.376	11.21				
	H2-31	4-25	0940	.5	15.20	.384	10.95	.29	.80	.94	sand
Galloway Cr.	I4-43	4-25	1020	0	15.40	.378	12.31	.34	1.88	9.94	mud
				1.50	15.15	.378	11.78				
	J2-43	4-25	1035	0	15.40	.381	12.29	.44	2.02		mud
				1.50	15.00	.384	11.90				
Norman Cr.	F4-42	4-25	1052	0	16.70	.445	11.03	.54	1.58	10.33	mud
				1.25	16.00	.437	11.37				
	F2-41	4-25	1106	0	16.60	.442	11.33	.45	1.58		mud
				1.25	16.20	.445	10.80				
	F2-40	4-25	1120	.5	15.20	.448	11.52	.29	.51	.82	sand
Middle R.	G2-45	4-25	1135	0	15.80	.437	11.07	.51	2.26		mud
				2.0	15.40	.437	10.72				
	E5-48	4-25	1202	0	16.40	.496	10.62	.63	1.73	9.82	mud
				1.50	16.55	.480	10.74				
	H3-44	4-25	1240	0	16.60	.394	11.33	.39	1.91		muddy
				1.50	16.70	.400	11.47				sand

Table C1 (continued).

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/1)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Middle R.	I2-40	4-25	1317	0	16.60			.41	2.48		mud
				2.0	15.45	.421	11.35				
	I2-37	4-25	1341	0	15.90			.36	2.98	7.99	mud
				2.50	15.15	.391	10.58				
	J2=37	4-25	1412	0	16.40			.35	1.16	1.00	mud
				1.0	16.30	.418					
	J1-34	4-25	1450	0				.50	3.09		mud
				2.5							
Rocky Pt.	H2-11	4-26	0845	0	17.10	.798	12.06	.46	1.82	9.70	mud
				1.50	16.40	.798	11.62				
	H1-13	4-26	0857	0	17.50	.826	12.81	.46	1.60		mud
				1.25	16.80	.801	11.62				
Back R.	D3-9	4-26	0925	0	17.80	.618	13.28	.34	1.07	10.03	mud
				.75	17.25	.649	12.73				
	D2-8	4-26	0935	0	18.00	.558	11.84	.32	.85		mud
				.5	17.90	.564	11.72				
	D5-28	4-26	0959	0	17.70	.424	12.84	.38	1.69	13.62	mud
				1.50	17.45	.461	11.45				
	D3-30	4-26	1010	0	18.00	.350	12.10	.33	1.30		mud
				1.0	17.70	.413	11.33				
	D3-31	4-26	1020	.5	18.10	.357	12.49	.32	.54	.71	muddy sand
	B1-38	4-26	1036	0	18.65	.355	5.22	.34	1.49	10.68	mud
				1.0	18.60	.357	5.46				
	A3-38	4-26	1050	0	18.70	.334	5.87	.31	1.17		mud
				1.0	19.40	.336	5.73				

Table C1 (continued).

Area	Station	Date	Time (EDT)	Sample Depth	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Back R.	B5-35	4-26	1109	.5	18.80	.360	13.81	.29	.61	1.92	muddy sand
	F1-6	4-26	1243	0	16.80	.682	11.25	.38	2.01	10.73	mud
				1.75	16.60	.712	10.72				

Table C2
Physico-chemical data, June 1979 benthos sampling dates

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. °C	Sal. (o/oo)	D.O. (mg/1)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Gunpowder R.	buoy 11	6-25	0721	0	20.70	.370	7.45	.20			
				2.0	20.50	.389	7.92				
	buoy 9	6-25	0732	0	20.80	.665	7.33	.25			
				4.0	20.60	.673	7.29				
Seneca Cr.	Lt. 2	6-25	0747	0	20.80	.834	7.19	.28			
				2.0	20.60	.820	7.09				
Weir Pt.	N2.5-41.5	6-25	0758	0	20.50	.715	7.23	.28	1.90	.43	muddy sand
				1.5	20.40	.723	7.27				
	N3.5-41.5	6-25	0825	0	20.45	.742	7.23	.32	1.13	.36	sand
				.5	20.40	.742	7.25				
	N5-41	6-25	0905	0	20.30	.759	7.66	.34	2.65	3.14	sandy mud
				2.25	20.20	.867	7.56				
	N4-39	6-25	0936	0	20.90	.742	7.58	.29	5.10	9.61	mud
				4.5	20.40	.756	7.39				
	N3-35	6-25	0959	0	21.00	.938	7.64	.25	3.77	11.81	mud
				3.5	20.90	.941	7.72				
	N3-40	6-25	1030	0	20.30	.723	7.82	.26	3.46	4.51	sandy mud
				3.0	20.20	.742	7.90				
	N2-40	6-25	1056	0	21.00	.754	7.74	.26	1.68	.42	sand
				1.0	20.90	.751	7.86				
	N2.5-40	6-25	1120	0	20.80	.759	7.62	.35	2.27	.88	muddy sand
				2.0	20.60	.754	7.76				
Dundee Cr.	L2-69	6-25	1645	0	23.50	.885	9.12	.43	.98	12.42	mud,
				1.0	23.40	.885	9.55				macrophytes
	L1-68.5	6-25	1700	0	23.40	.941	9.87	.41	1.02	11.99	mud,
				.5	23.20	.874	9.67				macrophytes
	L2-67	6-25	1715	0	23.20	.964	11.25	.54	1.02	12.32	mud,
				.5	23.10	.890	11.37				macrophytes
	L3-67.5	6-25	1730	0	23.70	.910	7.58	.22	1.08	11.80	mud
				.5	23.50	.910	7.43				
	L4-66.5	6-25	1742	0	23.45	.882	7.92	.23	1.15	11.46	mud
				.5	23.40	.882	8.02				

Table C2 (continued).

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. °C	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Gunpowder R.	buoy 11	6-26	0715	0	21.30	.709	7.58	.23			
				2.0	21.20	.712	7.49				
	buoy 9	6-26	0725	0	20.50	.701	8.16	.26			
				4.5	20.40	.790	8.02				
	P4-51	6-26	0734	0	21.05	.695	7.90	.26	3.09	5.60	sandy mud
				2.5	20.95	.756	7.80				
	04-51	6-26	0749	0	21.15	.616	7.94	.20	1.88	2.98	muddy sand
				1.5	20.80	.621	7.66				
Lower Saltpeter Cr.	N4-59	6-26	0900	0	21.30	.599	7.72	.24	2.40	8.63	mud
				2.0	20.95	.602	7.30				
	N3-57	6-26	0909	0	20.85	.629	7.56	.23	2.58	5.08	mud
				2.0	20.80	.682	7.28				
	N2-58	6-26	0940	0	21.60	.488	8.16	.27	2.38	9.50	mud
				1.75	20.95	.509	7.46				
	N1-60	6-26	0955	0	21.65	.621	7.98	.27	2.40	9.18	mud
				1.5	21.40	.693	7.74				
	N3-61	6.26	1025	0	21.85	.483	8.56	.26	2.02	10.46	mud
				1.5	21.65	.693	8.00				
Dundee Cr.	L5-64.75	6-26	1050	.5	24.20	.823	8.81	.33	.79	.35	sand
	L5-65	6-26	1105	.5	23.35	.823	8.57	.35	.92	.48	sand
	L4.5-65.25	6-26	1120	.5	23.85	.823	8.67	.36	1.00	.54	sand
Upper Saltpeter Cr.	L4-59.5	6-26	1430	0	27.20	.784	7.96	.31	1.62	8.91	mud
				1.0	23.80	.818	7.11				
	L3-60	6-26	1510	0	27.30	.779	8.51	.30	1.54	10.48	mud
				1.0	26.60	.784	8.81				
	L1.5-60.5	6-26	1524	0	25.20	.806	9.63	.36	1.39	10.97	mud
				1.0	25.25	.812	9.46				
	K5-61	6-26	1536	0	25.70	.812	10.03	.33	1.36	11.30	mud
				1.0	25.35	.806	9.65				
	L1.5-59.5	6-26	1603	0	25.60	.801	9.48	.30	1.32	10.29	mud
				1.0	25.20	.809	9.40				
	L1.75-58.5	6-26	1620	.5	27.30	.784	8.63	.29	1.00	.43	sand
	L2.25-58.5	6-26	1628	.5	29.80	.754	7.84	.26	.79	.51	sand
	L3-58	6-26	1645	.5	30.20	.837	8.45	.26	.89	.43	sand
				1.0	23.00						

Table C2 (continued).

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. °C	Sal. (o/oo)	D.O. (mg/1)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Bush R. Doves Cove	T2-80	6-27	0910	0	21.25	.225	8.25	.32	1.94	8.98	mud
				1.5	21.30	.240	8.21				
	T1.5-81	6-27	0930	0	21.40	.225	8.73	.34	1.75	6.23	mud
				1.25	21.40	.235	8.45				
	S5.5-81.5	6-27	0945	0	21.60	.230	8.88	.29	1.61	8.09	mud
				1.0	21.40	.233	8.59				
	S4.5-81	6-27	1045	0	21.35	.243	8.90	.29	1.55	7.00	mud
				1.0	21.10	.243	8.75				
	S4-80.5	6-27	1025	0	21.20	.282	8.21	.30	1.44	9.81	mud
				1.0	21.00	.261	7.90				
	T1.5-79.5	6-27	1058	.5	21.70	.258	7.43	.32	.88	.94	sand
	U1.5-76.5	6-27	1120	.5	22.70	.238	9.95	.30	.89	.46	sand
	U2-75	6-27	1135	.5	23.00	.225	9.63	.35	1.11	.68	sand
Saltpeter Cr.	N1-60	6-28	0715	0	24.30	.773	7.41	.32			
				1.25	23.80	.762	6.99				
Gunpowder R.	buoy 11	6-28	0722	0	22.00	.613	-	.29			
				1.75	22.00	.613	7.72				
	buoy 9	6-28	0731	0	21.85	.662	7.86	.29			
				4	21.85	.669	7.84				
Weir Pt.	buoy 6	6-28	0742	0	21.90	.776	7.74	.29			
				4	21.65	.913	8.02				
Sue Cr.	H4-33	6-28	0804	0	22.85	1.057	6.66	.27	1.85	5.65	mud
				1.0	22.35	1.020	6.68				
	H3.5-32.5	6-28	0822	0	22.50	1.009	6.72	.25	1.61	7.55	mud
				1.0	22.40	1.012	6.68				
	H2.5-32.5	6-28	0838	0	22.35	1.006	6.99	.30	1.80	8.48	mud
				1.25	22.20	.998	6.90				
	H1-32	6-28	0853	0	23.25	1.040	6.50	.29	1.77	8.95	mud
				1.25	22.75	1.040	6.09				
	G4.5-32	6-28	0912	0	23.80	1.140	6.90	.31	1.66	10.59	mud
				1.25	23.30	1.131	6.26				
	H1.5-31	6-28	0930	.5	23.10	1.106	6.56	.32	1.00	1.10	sand
	H2-31.5	6-28	0943	.5	23.20	1.097	6.60	.35	.82	.72	sand
	H2.5-31.5	6-28	1003	.5	23.35	1.103	6.72	.35	.58	.94	sand

Table C2 (continued).

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. °C	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Norman Cr.	F5.5-43	6-28	1157	0	25.00	1.123	7.17	.43	2.24	9.69	mud
				2	23.60	1.094	6.56				
	F4.5-42.5	6-28	1220	0	24.60	1.120	7.17	.43	2.13	11.39	mud
				1.5	23.90	1.109	6.80				
	F4.5-43.5	6-28	1235	0	24.8	1.123	7.05	.48	1.93	10.61	mud
				1.5	24.6	1.117	6.99				
	F3.5-42.5	6-28	1251	0	25.3	1.149	7.33	.51	1.69	9.97	mud
				1.0	24.8	1.131	7.27				
	F2-41.5	6-28	1315	0	25.60	1.146	7.82	.52	1.70	10.52	mud
				1.25	24.15	1.146	6.36				
Middle R.	I4-40	6-28	1507	0	23.70	.950	8.88	.39	1.13	.53	muddy sand
				.5	23.70	.944	8.87				
	I2-37	6-28	1525	0	23.30	.972	8.31	.40	3.05	6.77	mud
				2.5	23.30	.975	8.33				
	J3-35	6-28	1545	0	23.00	.890	8.85	.34	3.37	8.50	mud
				2.5	22.95	.876	8.53				
	I5-35	6-28	1603	0	23.30	.995	8.35	.38	2.95	8.36	mud
				2.5	23.20	1.001	7.66				
Saltpeter Cr.	N1-60	6-29	0655	0	24.60	.770	6.84	.31			
				2.25	24.60	.779	6.78				
Gunpowder R.	buoy 11	6-29	0703	0	22.80	.687	7.39	.27			
				1.75	22.70	.693	7.39				
	buoy 9	6-29	0711	0	22.60	.646	7.84	.28			
				4.0	22.50	.776	7.39				
Weir Pt.	buoy 6	6-29	0720	0	22.30	1.077	7.51	.27			
				4.0	22.40	.967	7.49				
Seneca Cr.	M4-46	6-29	0735	0	22.10	.826	7.53	.26	1.20	.55	sand
				1.0	22.00	.832	7.51				
	L2-45	6-29	0748	0	22.60	.756	7.98	.32	2.00	7.24	mud
				1.5	22.50	.762	7.88				

Table C2 (continued).

Area	Station	Date	Time (EDT)	Sample Depth (m)	Temp. °C	Sal. (o/oo)	D.O. (mg/1)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Chesapeake Bay	L3-39	6-29	0800	0	22.80	.756	7.55	.31	3.34	7.34	mud
				3.0	22.75	.756	7.43				
	K5-31	6-29	0900	0	22.35	.840	7.47	.33	3.73	7.78	mud
				3.0	22.30	.843	7.43				
	M3-26	6-29	0945	0	22.50	.958	7.62	.33	4.03	8.37	mud
				4.0	22.25	.995	7.19				
	L2-20	6-29	1040	0	22.50	.868	7.62	.34	3.78	10.11	mud
				3.25	22.30	.936	7.19				
	K2-26	6-29	1110	0	23.00	.795	8.18	.35	2.84	1.80	sand
				2.25	22.50	.809	7.47				
	I5-18	6-29	1210	0	23.00	.921	8.79	.43	3.30	7.28	mud
				3.0	22.55	1.035	8.23				
	J2-14	6-29	1240	0	22.85	.907	7.76	.35	3.31	8.08	mud
				2.0	22.20	1.209	7.98				
	I1-12	6-29	1305	0	22.80	1.066	8.94	.33	2.84	7.71	mud
				2.5	22.40	1.066	7.47				
Middle R.	J3-35	6-29	1400	0	23.30	.874		.38	3.74		
				3.0	22.75	.888					
	I5-35	6-29	1405	0	24.10	.890		.38	3.36		
				2.75	22.90	.893					
	I2-37	6-29	1425	0	24.10	.981		.50	3.24		
				3.0	23.00	.919					
	I4-40	6-29	1445	0	24.70	.972		.41	1.26		
				.75	24.60	.944					

Table C3
Physico-chemical data, September 1979 benthos sampling dates

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Lower Saltpeter Cr.	N2-61	9-10	0745	0	22.50	2.148	6.88	.37			
				1.0	22.50	2.196	7.08				
				1.75	23.00	2.792	6.50				
Gunpowder R.	Buoy 11	9-10	0803	0	21.85	1.336	6.96	.44			
				1.0	21.90	1.472	7.06				
				2.25	22.55	2.449	6.00				
	P4-52	9-10	0815	0	22.55	2.458	6.30	.34	2.82	6.22	mud
				2.5	22.45	2.425	6.36				
	P2-51	9-10	0850	0	22.65	2.268	6.86	.38	2.61	8.74	mud
				2.5	22.60	2.313	6.60				
	05-53	9-10	0920	0	22.30	2.046	6.74	.35	2.52	8.91	mud
				2.25	22.50	2.083	6.26				
Lower Saltpeter Cr.	N4-59	9-10	0953	0	22.70	1.411	8.14	.38	2.44	8.81	mud
				2.0	22.60	2.244	6.04				
	N3-60	9-10	1015	0	22.60	1.583	8.38	.35	2.09	9.25	mud
				1.75	22.90	2.416	5.26				
	N2-61	9-10	1033	0	22.70	1.595	8.74	.42	2.09	9.90	mud
				1.75	23.65	2.519	6.70				
	N1-62	9-10	1047	0	23.20	1.721	8.86	.42	1.93	10.55	mud
				1.5	23.00	1.922	8.20				
	N1-59	9-10	1116	0	23.25	1.795	8.94	.42	2.29	11.12	mud
				2.0	23.85	2.555	6.90				
Dundee Cr.	L5-64.5	9-10	1148	0	23.95	2.104	9.24	.41	1.00	.45	sand
				.5	24.00	2.139	9.12				
	L5-65	9-10	1200	0	24.15	2.716	8.04	.51	1.01	.51	sand
				.5	23.95	2.755	7.70				
	L4.75-65.25	9-10	1217	0	23.80	2.655	7.48	.48	.76	.41	sand
				.5	23.45	2.689	7.66				
	L1-67	9-10	1545	0	23.50	2.734	8.66	.44	1.30	12.58	mud
				1.0	25.25	2.911	6.91				

Table C3 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Dundee Creek	L5-66	9-10	1600	0	24.75	2.792	9.05	.51	1.69	11.78	mud
				1.5	24.30	2.807	8.58				
	L3.5-66.5	9-10	1630	0	25.00	2.774	8.84	.51	1.39	11.76	mud
				1.0	24.85	2.777	8.78				
	L3-68	9-10	1654	0	24.75	2.810	8.18	.49	1.38	9.96	mud
				1.0	24.70	2.816	8.12				
	L3-69	9-10	1718	0	24.70	2.710	7.98	.44	1.32	11.80	mud
				1.0	24.75	2.774	7.86				
Lower Saltpeter Cr.	N2-61	9-10	1735	0	24.60	2.585	8.66	.45			
				1.0	24.75	2.625	8.50				
				1.5	24.95	2.780	8.34				
	N2-61	9-11	0709	0	24.50	3.129	5.93	.43			
				1.0	24.30	3.086	5.83				
				1.5	24.25	3.092	5.57				
Gunpowder R.	Buoy 11	9-11	0718	0	22.20	1.200	6.97	.34			
				1.0	22.25	1.186	6.67				
				2.0	22.20	1.275	6.63				
	Buoy 9	9-11	0727	0	22.40	2.119	6.77	.32			
				2.0	22.40	2.154	6.59				
				4.0	22.40	2.217	6.73				
Seneca Cr.	Lt. 2	9-11	0745	0	22.70	2.759	6.95	.40			
				1.0	22.65	2.762	6.87				
				2.0	22.60	2.768	6.81				
Weir Pt.	N3-37	9-11	0756	0	22.60	2.389	6.61	.34	4.31	9.94	mud
				4.0	22.55	2.461	6.85				
	N3.5-39	9-11	0820	0	22.60	2.359	6.59	.37	4.84	10.13	mud
				4.5	22.60	2.425	6.61				
	N3-40	9-11	0845	0	22.70	2.532	6.51	-	2.65	2.50	sandy mud
				2.25	22.60	2.519	6.35				
	N3-40.5	9-11	0901	0	22.70	2.579	6.67	.45	1.45	.35	sand
				1.0	22.60	2.255	6.53				

Table C3 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Weir Pt.	N5-41	9-11	0920	0	22.70	2.625	6.97	.46	2.67	1.62	sandy mud
				2.25	22.60	2.570	7.36				
	N4-41.5	9-11	0937	0	22.85	2.646	7.14	.42	1.13	.51	sand
				.75	22.80	2.646	7.34				
	N2.5-41	9-11	1014	0	23.15	2.464	7.36	.41	2.72	1.42	muddy sand
				2.25	22.65	2.473	6.75				
	N2-38	9-11	1035	0	23.40	2.404	8.26	.44	3.11	1.66	muddy sand
				2.75	22.70	2.392	6.89				
Upper Saltpeter Cr.	L5-59	9-11	1330	0	28.60	3.203	8.68	.47	1.79	7.58	mud
				1.5	26.55	3.098	8.58				
	L3.5-59.5	9-11	1352	0	30.00	3.237	8.16	.41	1.77	7.22	mud
				1.5	25.40	3.416	6.03				
	L2.5-60.5	9-11	1415	0	29.50	3.292	8.80	.44	1.64	9.47	mud
				1.5	25.05	3.425	2.99				
	L1-60.5	9-11	1445	0	26.65	3.339	9.09	.51	1.56	11.54	mud
				1.25	25.50	3.366	7.56				
	K4-61.5	9-11	1507	0	26.15	3.462	8.92	.53	1.33	10.45	mud
				1.0	26.10	3.472	8.78				
	K3-62	9-11	1530	0	25.40	3.175	8.06	.44	1.13	11.61	mud
				1.0	25.35	3.258	8.06				
	L2-58.5	9-11	1555	0	30.10	-	8.74	.43	1.17	.64	sand
				.75	28.35	3.329	7.32				
	L2.5-58.5	9-11	1608	0	30.40	3.224	6.77	.40	.92	.15	sand
				.5	30.05	3.234	6.59				
	L3-58	9-11	1626	0	30.45	3.221	7.00	.37	.73	.48	sand
				.25	30.30	3.221	6.85				
Lower Saltpeter Cr.	N2-61	9-11	1643	0	25.20	2.743	9.27	.63			
				1.0	25.05	2.676	9.07				
				1.5	24.60	3.224	7.84				
	N2-61	9-12	0740	0	25.70	3.295	5.64	.45			
				1.0	25.70	3.308	5.50				
				1.5	25.60	3.298	5.54				

Table C3 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Gunpowder R.	Buoy 11	9-12	0752	0	22.40	.893	7.70	.34			
				1.0	22.35	.879	7.58				
				1.75	22.20	.921	7.32				
	Buoy 9	9-12	0801	0	22.50	1.940	7.18	.32			
				2.0	22.40	1.946	7.34				
				3.75	22.30	1.928	7.72				
	Buoy 6	9-12	0812	0	22.50	2.005	6.76	.35			
				2.0	22.45	1.996	6.88				
				3.75	22.40	1.996	6.80				
Seneca Cr.	Lt. 2	9-12	0850	0	22.60	2.780	6.84	.50			
				1.0	22.60	2.780	6.70				
				1.75	22.55	2.762	6.88				
	Buoy 8	9-12	0900	0	22.80	3.126	6.78	.41			
				2.0	22.80	3.141	6.76				
				4.0	22.75	3.147	6.68				
Chesapeake Bay	L3-40	9-12	0945	0	22.65	2.780	7.08	.53	3.08	5.73	mud
				2.75	22.50	2.786	6.70				
	L5-34	9-12	1010	0	22.20	2.295	7.22	.45	3.23	7.61	mud
				2.75	22.45	2.713	6.54				
	M5-30	9-12	1145	0	22.75	2.253	7.06	.38	3.73	7.23	mud
				3.5	22.75	2.265	6.96				
Hawk Cove	J2-18	9-12	1152	0	23.10	3.379	8.02	.43	3.12	7.43	mud
				2.75	23.00	3.394	7.60				
	K1-15	9-12	1220	0	22.90	2.905	8.12	.44	3.10	9.54	mud
				2.75	22.85	3.274	6.90				
	I4-14	9-12	1245	0	22.75	3.549	9.12	.44	3.18	10.31	mud
				2.75	23.70	3.444	7.48				
	N2-17	9-12	1545	0	23.65	2.920	8.14	.42	3.21	2.14	sand
				3.5	23.15	2.801	6.96				
	P1-20	9-12	1620	0	26.00	1.993	8.80	.47	4.68	9.58	mud
				4.25	23.50	2.359	6.08				
	S4-25	9-12	1705	0	24.40	1.571	8.06	.43	3.90	9.60	mud
				3.5	23.80	2.029	7.08				

Table C3 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Seneca Cr.	Buoy 8	9-12	1800	0	25.00	2.957	10.06	.52			
				2.0	23.65	3.037	8.72				
				3.75	23.25	3.200	6.78				
	Lt. 2	9-12	1806	0	24.70	2.359	10.28	.43			
				1.0	24.15	2.479	10.40				
				1.75	23.65	2.701	9.38				
Gunpowder R.	Buoy 6	9-12	1820	0	24.20	1.937	9.88	.37			
				2.0	23.10	2.083	7.64				
				3.75	22.55	2.253	6.68				
	Buoy 9	9-12	1829	0	24.95	1.999	10.64	.35			
				2.0	22.95	2.044	7.92				
				3.75	22.75	2.175	6.78				
	Buoy 11	9-12	1839	0	24.60	.896	11.50	.30			
				1.0	23.30	1.998	9.96				
				1.75	23.10	1.592	8.14				
Lower Saltpeter Cr.	N2-61	9-12	1845	0	26.00	2.762	10.17	.56			
				1.0	25.62	3.107	8.16				
				1.5	25.20	3.015	8.00				
	N2-61	9-13	0731	0	23.50	2.350	7.34	.47			
				1.0	23.75	2.537	7.26				
				1.5	23.50	2.908	6.45				
Gunpowder R.	Buoy 11	9-13	0740	0	22.40	1.821	7.08	.41			
				1.0	22.35	1.827	7.16				
				2.0	22.25	1.845	7.10				
Middle R.	J2-35	9-13	0802	0	23.10	3.018	7.22	.50	3.51	8.75	mud
				3.0	23.15	3.043	6.97				
	I5-36	9-13	0830	0	23.30	3.117	7.50	.57	3.17	8.04	mud
				3.0	23.20	3.138	7.22				
	I5-38	9-13	0850	0	23.20	2.982	7.72	.51	2.69	4.58	mud
				2.5	22.95	3.117	6.91				
	I2-38	9-13	0909	0	23.25	3.135	7.06	.56	3.24	10.55	mud
				3.0	23.10	3.141	7.02				
	I4-34	9-13	0938	0	23.30	3.028	7.66	.53	2.76	3.89	mud
				2.5	23.20	3.034	7.36				

Table C3 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Sue Cr.	H3-32.5	9-13	1010	0	23.45	3.172	7.50	.43	1.63	8.93	mud
				1.25	23.35	3.163	7.52				
	H2.5-32.5	9-13	1025	0	23.45	3.163	7.34	.43	1.74	8.45	mud
				1.5	23.25	3.172	7.64				
	H2-32	9-13	1038	0	23.80	3.646	7.44	.42	1.83	8.50	mud
				1.5	23.45	3.163	7.54				
	H1-32	9-13	1055	0	23.70	3.101	8.12	.45	1.64	10.03	mud
				1.5	23.55	3.172	7.42				
	G5-32	9-13	1110	0	24.00	3.157	7.38	.44	1.58	10.56	mud
				1.25	23.90	3.154	7.36				
	H1.5-31	9-13	1130	0	24.10	3.172	7.72	.39	.79	.95	sand
				1.25	24.10	3.172	7.78				
	H2-31.5	9-13	1150	0	24.35	3.175	8.24	.39	.57	.82	sand
	H2.5-31.5	9-13	1208	0	24.70	3.172	8.20	.41	.69	.94	sand
Gunpowder R.	01-46	9-13	1505	0	24.20	2.026	9.14	.42	1.75	.27	sand
				1.25	23.10	2.047	7.56				
	P1-45	9-13	1525	0	24.00	2.029	9.70	.48	3.60	9.89	mud
				3.25	22.65	2.062	7.06				
	Q4-46	9-13	1540	0	23.65	1.780	9.40	.40	5.72	6.97	mud, oyster shell
				5.5	22.65	1.964	6.92				
	R4-48	9-13	1600	0	23.70	1.786	9.22	.41	3.08	5.71	mud
				2.75	22.65	1.946	6.64				
	Q3-68	9-13	1628	0	23.45	1.786	9.56	.43	2.33		mud
				2.0	23.45	1.780	9.52				
	03-66	9-13	1705	0	23.60	1.420	9.14	.41	1.10		mud
				2.0	3.60	1.425	9.00				
	Buoy 11	9-13	1718	0	23.60	1.952	8.90	.36			
				1.0	23.55	1.934	9.00				
				2.0	23.45	1.922	8.70				
Lower Saltpeter Cr.	N2-61	9-13	1727	0	25.00	2.649	8.14	.44			
				1.0	24.90	2.649	8.40				
				1.5	24.90	2.631	8.24				
Bush R.	U4-81	9-15	0800	0	22.40	.646	6.34	.17	2.29	9.27	mud, shell fragments
				2.0	22.20	.734	6.04				

Table C3 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Doves Cove	T4-81	9-15	0847	0	22.90	.865	6.32	.15	2.17	11.28	mud
				1.75	22.70	.865	6.30				
	T3-80	9-15	0915	0	22.85	.854	6.88	.28	1.87	9.42	mud
				1.5	22.65	.857	6.90				
	T2-81	9-15	0937	0	22.35	.657	7.38	.29	1.30	3.93	sandy mud
				1.0	22.10	.687	7.14				
	T1-80.5	9-15	0950	0	22.35	.712	7.38	.25	1.11	8.56	mud
				.75	22.25	.717	7.52				
	S4.5-80.5	9-15	1012	0	22.55	.862	7.24	.26	.95	10.74	mud
				.75	22.40	.845	7.30				
	T2-79	9-15	1029	.5	22.25	.890	6.90	.26	.54	.53	sand
	T5.5-76	9-15	1050	.5	21.90	.834	7.68	.30	.71	.47	sand
	T3-84.5	9-15	1112	.5	22.25	.624	8.70	.25	.67	.47	sand

Table C4
Physico-chemical data, November 1979 benthos sampling dates

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Dundee Cr.	L2.5-69	11-25	1430	0	15.10	.781	7.64	.51	1.01	12.11	mud
				1.75	15.00	.781	7.46				
	L3-68	11-25	1450	0	14.65	.787	7.52	.52	1.09	11.66	mud
				1.0	14.60	.790	7.34				
	L2.5-67	11-25	1505	0	14.35	.812	9.07	.67	1.12	11.28	mud
				1.75	13.95	.815	8.56				
	L3-65.5	11-25	1520	0	14.95	.812	9.11	.80	1.11	10.41	mud
				1.0	13.85	.812	8.50				
	L5-66	11-25	1533	0	14.70	.826	8.99	.72	1.31	10.96	mud
				1.0	14.50	.812	8.78				
	L4.5-65.25	11-26	0730	0	14.35	.815	7.98	.62	.98	.89	sand
				0.5	14.50	.818	7.90				
	L5-65.25	11-26	0746	0	15.15	.868	7.44	.25	.66	.25	sand
				0.25	15.20	.854	7.36				
	L5-64.5	11-26	0807	0	15.15	.893	7.64	.25	1.00	1.30	sand
				0.5	15.20	.896	7.30				
Upper Saltpeter Cr.	L2.75-58.5	11-26	0828	0	15.90	.964	8.00	.68	1.11	1.25	muddy sand
				0.5	15.70	.964	8.34				
	L2.5-58.5	11-26	0844	0	17.55	.976	7.96	.57	1.03	.73	muddy sand
				0.5	17.40	.981	8.00				
	L2-58.5	11-26	0903	0	18.40	.981	7.78	.49	1.59	.48	sand
				1.5	18.20	.984	8.05				
	K4-62	11-26	0934	0	15.80	.905	8.00	.37	1.61	10.98	mud
				1.25	15.90	.913	7.98				
	K5.5-60	11-26	0957	0	16.40	1.080	8.20	.46	1.54	9.84	mud
				1.25	16.55	.996	8.04				
	L1-61	11-26	1020	0	15.50	.930	8.52	.57	1.81	10.91	mud
				1.5	15.50	.916	8.54				
	L2.5-60.5	11-26	1056	0	15.75	1.003	8.62	.59	1.87	1.86	sandy mud
				1.5	15.75	.976	9.28				
	L4-59.5	11-26	1118	0	14.70	.781	8.54	.53	2.20	8.40	mud
				1.75	14.80	.792	8.34				

Table C4 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Upper Saltpeter Cr.	L5-60	11-26	1137	0	14.95	.879	8.20	.44	2.12	9.87	mud
				2.0	15.00	.868	8.72				
Chesapeake Bay	M2-31	11-27	0754	0	11.45	1.402	8.46	.35	3.52	8.85	mud
				3.0	11.60	1.692	8.14				
	L4-35	11-27	0822	0	11.55	1.411	8.42	.33	3.40	7.08	mud, shell
				3.0	11.55	1.665	8.08				
	L4-39	11-27	0856	0	11.65	1.304	8.52	.36	3.06	6.89	mud
				2.5	11.60	1.373	8.44				
Gunpowder R.	O2-46	11-27	0940	0	12.35	.967	8.32	.40	2.20	5.38	mud
				1.75	12.20	1.054	8.46				
	O4-45	11-27	1005	0	12.70	.798	8.26	.37	3.51	9.89	mud, shell
				3.0	12.60	1.029	7.92				
	O5-44	11-27	1035	0	12.45	.695	8.18	.37	3.79	9.22	mud
				3.25	12.30	.986	8.04				
	O4-52	11-27	1110	0	14.40	.952	8.61	.44	2.07	7.12	mud
				1.75	12.95	1.174	7.92				
	P1-51	11-27	1140	0	13.90	.919	8.06	.38	2.17	8.59	mud
				1.75	13.70	.924	7.92				
	P3-53	11-27	1205	0	13.00	1.015	8.32	.38	2.51	5.99	mud
				2.0	13.00	1.018	8.20				
Lower Saltpeter Cr.	N4-59	11-27	1240	0	14.25	.888	8.12	.49	1.68	8.80	mud
				1.25	14.15	.896	8.36				
	N3-59	11-27	1303	0	14.45	.888	8.36	.47	1.71	8.34	mud
				1.25	14.40	.888	8.10				
	N3-61	11-27	1324	0	14.20	.882	8.22	.44	1.60	9.42	mud
				1.25	14.15	.888	8.28				
	N2-62	11-27	1345	0	14.10	.879	8.14	.45	1.53	9.80	mud
				1.25	14.05	.860	8.12				
	N1-62	11-27	1408	0	14.40	.902	8.46	.54	1.57	10.36	mud
				1.25	14.35	.919	8.50				

Table C4 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Middle R.	I3-38	11-28	0810	0	11.90	1.140	8.50	.46	3.09	9.28	mud
				2.75	11.80	1.146	8.60				
	I5-37	11-28	0830	0	11.75	1.097	8.40	.35	2.94	6.40	mud
				2.5	11.70	1.111	8.42				
	I4-35	11-28	0850	0	11.70	1.365	8.40	.49	3.02	8.05	mud
				2.5	11.70	1.367	8.36				
	J1-35	11-28	0907	0	11.80	1.261	8.42	.44	3.27	9.24	mud
				2.75	11.80	1.263	8.48				
	J3-36	11-28	0930	0	11.60	1.307	8.46	.36	2.81	4.08	mud
				2.5	11.70	1.307	8.44				
Weir Pt.	N3-36	11-29	0750	0	10.00	1.103	8.48	.38	3.65	9.56	mud
				3.0	9.80	1.103	8.32				
	N3.5-38	11-29	0805	0	10.45	1.077	8.62	.36	3.79	9.43	mud
				3.5	10.30	1.083	8.46				
	N3-39	11-29	0824	0	9.85	1.252	8.36	.36	2.35	.68	sandy mud
				2.0	9.75	1.261	8.30				
	N1.5-40	11-29	0910	0	9.85	1.249	8.58	.36	1.76	.55	muddy sand
				1.25	9.75	1.249	8.44				
	N2-41.5	11-29	0925	0	9.65	1.263	8.42	.39	.65	.25	sand
				.25	9.5	1.278	8.96				
	N3.5-41	11-29	0945	0	8.70	1.189	9.21	.34	1.23	.74	muddy sand
				1.0	8.55	1.197	9.13				
	N5-41	11-29	1000	0	9.20	1.203	9.11	.33	1.78	1.45	sandy mud
				1.5	8.95	1.215	8.90				
	N3.5-42	11-29	1025	0	8.60	1.189	8.99	.31	.68	.24	sand
				.25	8.55	1.189	8.96				
Seneca Cr.	K4.5-52	11-29	1135	0	9.55	1.123	8.50	.33	1.51	9.94	mud
				1.0	9.80	1.137	8.70				
	L1-50	11-29	1155	0	9.50	1.012	8.97	.33	1.57	9.11	mud
				1.25	9.30	1.040	8.86				
	L4-48	11-29	1214	0	10.25	1.255	8.40	.32	2.20	7.38	mud
				2.0	10.10	1.255	8.40				

Table C4 (continued).

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Hawk Cove	I5-14	11-30	0815	0	8.10	1.402	8.60	.43	2.76	8.90	mud
				2.5	7.90	1.414	8.66				
	J5-15	11-30	0850	0	8.00	1.472	8.64	.46	2.44	5.29	mud
				2.0	7.80	1.457	9.05				
	J2-17	11-30	0920	0	7.90	1.510	8.99	.39	2.80	8.06	mud
				2.5	7.70	1.510	9.11				
Sue Cr.	H3-32.5	11-30	1032	0	6.20	1.060	9.71	.47	1.17	7.36	mud
				1.0	6.00	1.243	9.67				
	H2.5-32.5	11-30	1053	0	6.30	1.091	9.55	.44	.97	8.12	mud
				.75	6.20	1.077	9.93				
	H2-32	11-30	1110	0	6.20	1.003	9.87	.50	1.23	8.48	mud
				1.0	6.00	1.001	9.87				
	H1-32	11-30	1125	0	6.40	1.040	10.01	.48	1.23	9.72	mud
				1.0	6.25	1.040	10.29				
	G5.5-32.5	11-30	1142	0	6.35	.938	10.31	.57	1.23	9.38	mud
				1.0	6.30	.950	10.45				
	H1.5-31	11-30	1203	.25	5.35	.947	10.65	.50	.50	1.02	sand
	H2-31.5	11-30	1225	.25	6.1	.975	10.49	.52	.52	.58	sand
	H2.5-31.5	11-30	1240	.25	6.6	1.003	10.31	.52	.48	.58	sand
Doves Cove	T2-81	12-1	0855	0	5.80	.389	9.01	.61	1.48	8.38	mud
				1.25	5.80	.405	8.70				
	T1.5-80.5	12-1	0915	0	5.75	.381	9.17	.60	1.53	8.52	mud
				1.25	5.70	.381	8.92				
	T1-81.5	12-1	0933	0	5.35	.389	9.17	.59	1.21	8.95	mud
				1.0	5.20	.378	8.70				
	S5.5-81	12-1	0945	0	5.55	.373	8.94	.49	1.11	8.55	mud
				.75	5.40	.376	9.01				
	S4.5-80.5	12-1	1005	0	5.15	.381	7.96	.55	1.03	8.80	mud
				.75	5.00	.389	8.66				
	T4.5-76.5	12-1	1035	.25	4.90	.403	9.15	.51	.59	.48	sand
	T5.5-76	12-1	1050	.25	5.00	.400	9.05	.49	.66	.45	sand
	U1.5-75.5	12.1	1102	.25	6.20	.569	9.37	.47	.70	.35	sand

Table C5
Physico-chemical data April 1980 benthos sampling dates

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Dundee Cr.	L2-69.5	4-2	1454	0	13.45			.33	1.01	14.76	mud
				.5	13.42	1.697	8.80				
	L1.5-68.5	4-2	1512	0	13.50			.38	1.20	13.27	mud
				.75	13.55	1.718	8.80				
	L2-67	4-2	1528	0	12.85			.49	1.29	12.17	mud
				1.0	12.95	1.689	9.20				
	L2.5-66.5	4-2	1547	0	12.90			.46	1.31	12.67	mud
				1.0	12.95	1.327	9.66				
	L4-67	4-2	1600	0	12.85	1.671	9.38	.46	1.40	11.78	mud
				1.0	12.85	1.674	9.38				
	L5-64.75	4-3	1050	.5	13.30	1.376	9.18	.30	.95	0.84	sand
	L5-65.25	4-3	1108	.5	13.65	1.492	8.84	.35	.64	0.40	sand
	L4.75-65.25	4-3	1124	.5	13.60	1.621	9.08	.51	1.07	0.75	sand
Gunpowder R.	03-45	4-3	0730	0	9.90	.930	9.86	.48	2.59	6.20	mud
				2.25	9.85	.936	9.28				
	04-44	4-3	0756	0	9.30	.509	9.40	.34	4.33	10.58	mud
				4.0	9.70	.848	9.40				
	P1-45	4-3	0825	0	9.45	.575	9.14	.40	3.96	10.13	mud
				3.75	9.40	.806	9.16				
	P2-51	4-3	0855	0	10.50	1.160	9.56	.48	2.44	6.24	mud
				2.0	10.55	1.140	9.50				
	P3-53	4-3	0937	0	10.95	1.151	9.10	.49	2.44	6.77	mud
				2.0	10.95	1.154	9.20				
	05-53	4-3	1004	0	11.50	1.215	9.72	.53	2.33	8.84	mud
				2.0	11.55	1.232	9.24				

Table C5
Physico-chemical data April 1980 benthos sampling dates

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Upper Saltpeter Cr.	L4-59	4-3	1412	0	17.25	1.020	9.16	.42	1.43	9.59	mud
				1.0	15.25	1.080	8.82				
	L3-59.5	4-3	1435	0	17.20	1.003	9.10	.36	1.39	9.28	mud
				1.0	16.70	1.032	9.22				
	L3.5-60.5	4-3	1453	0	16.20	1.071	9.77	.41	1.19	7.70	mud
				1.0	16.25	1.074	9.59				
	K5.5-61	4-3	1518	0	15.95	1.069	9.53	.44	1.10	11.44	mud
				.75	15.80	1.071	9.61				
	K4.5-60.5	4-3	1536	0	15.80	1.066	8.90	.30	1.13	11.51	mud
				1.0	15.65	1.066	9.67				
	K4-61	4-3	1554	0	15.20	1.063	9.08	.38	1.05	11.75	mud
				.75	14.75	1.066	9.39				
	L1.5-58.5	4-3	1615	.5	16.45	1.035	8.68	.44	.94	1.25	sand
	L2.5-58.5	4-3	1630	.5	18.95	1.003	8.40	.39	1.07	1.05	sand
	L3-58	4-3	1640	.5	18.85	1.001	8.02	.35	.70	0.44	sand
Chesapeake Bay	M1-32	4-4	1100	0	11.00	.402	9.29	.35	3.91	6.94	mud
				3.5	9.70	.596	9.10				
	L4-36	4-4	1134	0	10.90	.368	9.53	.37	3.68	5.62	mud
				3.25	10.20	.520	9.39				
	L5-40	4-4	1204	0	12.30	.613	9.71	.45	3.41	6.45	mud
				3.0	10.95	.665	9.22				
Weir Pt.	N3-35	4-4	1230	0	10.45	.207	9.79	.31	4.25	10.16	mud
				4.0	9.20	.245	10.01				
	N3-37	4-4	1252	0	10.60	.256	9.81	.36	4.57	9.82	mud
				4.25	10.15	.389	9.27				
	N3-40	4-4	1310	0	10.45	.297	9.59	.35	2.93	1.20	sandy mud
				2.5	11.55	.355	9.51				
	N2-40	4-4	1342	0	10.80	.334	9.81	.42	1.79	0.30	muddy sand
				1.5	10.90	.344	9.99				
	N2-41	4-4	1404					.37	1.37	0.40	sand
	N3-41.5	4-4	1415					.46	1.12	0.19	sand
	N5-42	4-4	1428					.46	2.46	0.92	muddy sand
	N4.5-41.5	4-4	1451					.42	2.21	2.70	sandy mud

Table C5
Physico-chemical data, April 1980 benthos sampling dates

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Lower Saltpeter Cr.	M5-62	4-5	0720	0	12.50	1.160	7.84	.23	1.84	12.33	mud
				1.5	12.30	1.163	7.70				
	N2-61	4-5	0745	0	11.80	1.240	7.98	.24	1.65	11.62	mud
				1.5	11.75	1.232	8.66				
	N3-62	4-5	0820	0	12.50	1.057	8.28	.23	1.59	10.65	mud
				1.25	12.40	1.066	7.94				
	N3-60	4-5	0835	0	11.25	1.203	8.36	.22	1.57	9.65	mud
				1.5	11.15	1.209	8.54				
	N4-59	4-5	0850	0	11.90	1.252	8.50	.21	1.96	8.84	mud
				1.75	11.80	1.240	8.10				
Doves Cove	T2-81	4-6	0735	0	9.95	.591	8.46	.35	1.48	3.46	mud
				1.0	10.30	.602	8.78				
	T1-80	4-6	0745	0	10.65	.591	8.50	.29	1.07	7.61	mud
				.75	10.60	.599	8.70				
	S5-81	4-6	0800	0	10.30	.662	8.26	.26	.91	6.82	mud, much detritus
				.5	10.30	.671	8.58				
	S4.5-80	4-6	0817	0	10.75	.610	8.68	.29	1.29	11.13	mud
				1.0	10.80	.618	8.50				
	S4-81	4-6	0837	0	10.60	.542	8.54	.34	1.60	9.92	mud
				1.25	10.60	.542	8.64				
	T4-76.5	4-6	0900	.5	10.50	.520	8.72	.33	.69	.56	sand
	T5-76.5	4-6	0917	.5	10.80	.520	9.32	.34	.78	.78	sand
	U1-76	4-6	0928	.5	10.55	.569	8.90	.36	.92	.65	sand
Hawk Cove	J1-17	4-7	0814	0	10.25	.408	9.00	.35	3.35	9.94	mud
				3.0	10.00	.434	9.22				
	J3-16	4-7	0841	0	10.40	.413	9.00	.32	3.26	9.88	mud
				2.75	10.15	.408	9.32				
	I4-15	4-7	0918	0	11.10	.575	9.29	.41	3.24	7.13	mud
				3.0	11.05	.723	8.88				

Table C5
Physico-chemical data, April 1980 benthos sampling dates

Area	Station	Date	Time (EST)	Sample Depth (m)	Temp. (°C)	Sal. (o/oo)	D.O. (mg/l)	Secchi Depth (m)	Total Depth (m)	Sediment Loss on Ignition (%)	Sediment Type
Middle R.	J2-35	4-7	0947	0	11.10	.640	8.88	.41	3.52	9.52	mud
				3.25	11.60	.998	8.70				
	I4-35	4-7	1012	0	11.50	.729	9.67	.45	3.22	6.10	mud
				3.0	11.65	1.116	8.68				
	I4-37	4-7	1037	0	11.40	.665	8.88	.41	3.31	6.71	mud
				3.0	11.50	1.083	8.88				
	I5-38	4-7	1152	0	11.60	.706	9.43	.49	3.21	7.88	mud
				3.0	11.60	.792	9.29				
	I3-38	4-7	1117	0	12.00	.709	9.51	.43	3.00	8.90	mud
				2.25	12.35	1.066	9.02				
Sue Cr.	H3-32.5	4-7	1347	0	13.30	1.020	9.55	.42	1.48	10.22	mud
				1.25	13.40	1.018	9.69				
	H2.5-32.5	4-7	1400	0	13.70	1.123	9.29	.45	1.59	9.04	mud
				1.5	13.55	1.123	9.23				
	H2-31.5	4-7	1415	0	13.80	1.220	9.14	.43	1.66	9.59	mud
				1.5	13.75	1.226	9.06				
	H1-32	4-7	1429	0	14.20	1.307	9.04	.43	1.59	10.29	mud
				1.25	14.20	1.310	9.14				
	G5.5-32	4-7	1445	0	14.60	1.310	9.35	.42	1.50	10.74	mud
				1.25	14.30	1.307	9.14				
	H1.5-31	4-7	1500	.5	14.20	1.275	9.22	.41	.54	1.40	sand
	H2-31.25	4-7	1518	.5	13.70	1.192	9.41	.44	.59	.68	sand
	H2.5-31.5	4-7	1528	.5	13.40	1.475	9.28	.48	.62	.72	sand

Appendix D

Benthic Macroinvertebrate Identities and Population Densities

Table D1

Benthic macroinvertebrate counts; C. P. Crane Power Plant vicinity; April 23, 1979; No./0.1 m^2

	Mud Stations				Sand Stations				Sandy Mud
Area	Dundee Cr.	Upper Saltpeter Cr.	Lower Saltpeter Cr.	Weir Pt.	Dundee Cr.	Upper Saltpeter Cr.	Miami Beach	Weir Pt.	Weir Pt.
Station	L3-67	L3-60	N2-60	N4-38	L5-65	L2-58.5*	K5-43	N4-42	N4-40*
Organism									
Pelecypoda									
<u>Rangia cuneata</u>	6	6	2	2	6	7.2			2.8
<u>Congeria leucophaeta</u>									6.4
Gastropoda									
<u>Hydrobia</u> sp. 1		8				.8			
<u>Hydrobia</u> sp. 2									
Polychaeta									
<u>Scolecolepides viridis</u>	32	30	14	48	452	170.4	178	58	281.2
<u>Hypaniola grayi</u>			2		46	12.8			86.8
<u>Nereis succinea</u>				2					1.6
<u>Laeonereis culveri</u>					18	10.8			
<u>Heteromastus filiformis</u>						.4			
Oligochaeta									
Tubificidae	40	48	32	2	432	162	8	2	68.4
Isopoda									
<u>Cyathura polita</u>				14	4	.4			12.4
<u>Chiridotea almyra</u>									
<u>Edotea triloba</u>					2				.4
Amphipoda									
<u>Leptocheirus plumlosus</u>	2	6	2	384	6	14.8	12	6	48.4
<u>Corophium lacustre</u>		2	2	10	10	.4	10	116	88.4
Unid. Gammaridae	2	4		6	24	7.6			1.6
<u>Monoculodes edwardsi</u>					4		4		1.2
<u>Lepidactylus dytiscus</u>							12	6	.4
Decapoda									
<u>Rhithropanopeus harrisii</u>									.8

Table D1 (continued).

Area / Station / Organism	Mud Stations				Sand Stations				Sandy Mud
Area	Dundee Cr.	Upper Saltpeter Cr.	Lower Saltpeter Cr.	Weir Pt.	Dundee Cr.	Upper Saltpeter Cr.	Miami Beach	Weir Pt.	Weir Pt.
Station	L3-67	L3-60	N2-60	N4-38	L5-65	L2-38.5*	K5-43	N4-42	N4-40*
Organism									
Diptera	24	20	46	12	154	32	10	28	2.8
Nematoda	138	62	194	2	90	5.6		32	
Total No.	244	186	294	482	1248	425.2	234	248	603.6
Total No. (excluding nematodes)	106	124	100	480	1158	419.6	234	216	603.6

*Calculations based on combined data from five grabs.

Table D2

Benthic macroinvertebrate counts; Bush River; April 24, 1979; No./0.1 m^2

Area	Mud Stations						Sand Stations	
	Doves Cove		Towner Cove		Redman Cove		Doves Cove	Towner Cove
Station	T1-81	S4-81	V4-84	V4-83	V5-91	V5-90	S4-80	V4-82
Organism								
Pelecypoda								
Rangia cuneata	2	2			2	2	2	
Gastropoda								
Hydrobia sp. 1					2			
Hydrobia sp. 2								
Polychaeta								
Scolecolepides viridis	122	66	142	88	258	54	156	234
Oligochaeta								
Tubificidae	146	192	44	46	190	34	296	250
Isopoda								
Cyathura polita			2	2	4			2
Chiridotea almyra								
Edotea triloba								
Amphipoda								
Leptocheirus plumlosus	10	4	10	4	2	4	2	
Corophium lacustre	2		16	4	10	2	4	12
Unid. Gammaridae			6		2		4	
Monoculodes edwardsi								
Diptera	72	116	64	92	166	86	18	122
Nematoda	44	52	36	66	144	118	60	10
Total No.	398	432	320	302	780	300	542	630
Total No. (excluding nematodes)	354	380	284	236	636	182	482	620

Table D3
Benthic macroinvertebrate counts; Middle River; April 25, 1979; No./0.1 m^2

Area	Mud Stations							Sand Stations		
	Sue Creek		Norman Creek		Galloway Creek		Browns Creek	Sue Creek	Norman Creek	Browns Creek
Station	H1-32	H5-32	F2-41	F4-42	I4-43	J2-43	I4-26	H2-31	F2-40	I3-24
Organism										
Pelecypoda										
<u>Rangia cuneata</u>	4			4		2	2	4	2	2
Gastropoda										
<u>Hydrobia</u> Sp. 1					8			16		
<u>Hydrobia</u> Sp. 2										4
Polychaeta										
<u>Scolecolepides viridis</u>	46	54	32	36	22	32	92	160	108	290
<u>Hypaniola grayi</u>			2					2	12	
Oligochaeta										
Tubificidae	226	82	148	208	40	34	96	230	102	50
Isopoda										
<u>Cyathura polita</u>		2			2	8	12			22
<u>Chiridotea almyra</u>										
<u>Edotea triloba</u>										
Amphipoda										
<u>Leptocheirus plumlosus</u>	74	32	6	36	122	22	38	2		18
<u>Corophium lacustre</u>	2		2	2				22	28	20
Unid. Gammaridae					4			2		
<u>Monoculodes edwardsi</u>										
Diptera	22	26	64	38	40	42	16	126	156	54
Nematoda	8	66			84	92	48	10	26	4
Total No.	382	262	254	324	322	232	304	574	434	464
Total No. (excluding nematodes)	374	196	254	324	238	140	256	564	408	460

Table D4
Benthic macroinvertebrate counts; Back River; April 26, 1979; No./0.1 m^2

	Mud Stations								Sand Stations	
Area	Rocky Point		Todd Point		Walnut Point		Cox Point		Walnut Point	Cox Point
Station	H1-13	H2-11	D2-8	D3-9	D3-30	D5-28	A3-38	B1-38	D3-31	B5-35
Organism										
Pelecypoda										
Rangia cuneata										
Gastropoda										
Hydrobia Sp. 1										
Hydrobia Sp. 2										
Polychaeta										
Scolecolepides viridis	30	36	2	4	2				2	
Hypaniola grayi	34	10	2							
Oligochaeta										
Tubificidae	300	532	334	132	196	82	222	332	66	114
Isopoda										
Cyathura polita										
Chiridetea almyra										
Edotea triloba										
Amphipoda										
Leptocheirus plumlosus	8	28								
Corophium lacustre	2									
Unid. Gammaridae	2	2	2							
Monoculodes edwardsi										
Diptera	48	32	90	56	72	134	42	64	432	138
Nematoda			260		40	10	2	4	44	
Total No.	424	640	690	192	310	226	266	400	544	252
Total No. (excluding nematodes)	424	640	430	192	270	216	264	396	500	252

Table D5

Benthic macroinvertebrate counts; Dundee Cr.; June 25, 1979; mud stations

Station	L2-69 No./.05 m^2			No./ 0.1 m^2	L1-68.5 No./.05 m^2			No./ 0.1 m^2	L3-67.5 No./.05 m^2			No./ 0.1 m^2	L2-67 No./.05 m^2			No./ 0.1 m^2	L4-66.5 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
Rangia cuneata	14	31	36	54	32	35	18	56.7	83	48	33	109.3	30	23	42	63.3	23	27	36	57.3
Gastropoda																				
Hydrobia sp. 1										1		.7					1			.7
Hydrobia sp. 2						2		1.3						2		1.3				
Polychaeta																				
Scolecolepides viridis	4	5	2	7.3	22	20	12	36	2	6	13	14	1	4	5	6.7	11	10	4	16.7
Hypaniola grayi	2		1	2	1	1		1.3						2	1	2				
Oligochaeta																				
Tubificidae	7	9	17	22	25	20	5	33.3	13	8	22	28.7	15	39	25	52.7	15	10	4	19.3
Isopoda																				
Cyathura polita	2	5	3	6.7	4	4	4	8	6	6	2	9.3	4	7	8	12.7	4	4	6	9.3
Chiridotea almyra																				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosus	136	149	119	269.3	134	90	108	221.3	140	149	176	310	124	103	104	220.7	186	195	180	374
Corophium lacustre	6	4	8	12	5	69		49.3	1	3		2.7	1	63	2	44	1	1	1	2
Unid. Gammaridae	1	6	7	9.3	3	12		10		1		.7	5	24	3	21.3			2	1.3
Monoculodes edwardsi																				
Diptera	3	15	11	19.3	27	32	8	44.7	7	3	8	12	11	49	24	56	4	8	1	8.7
Trichoptera		1		.7	2	4		4	1	1		1.4	1	4		3.3				
Nematoda	44	57	41	94.7	98	69	11	118.7	58	80	44	121.3	37	278	36	234	123	52	45	146.7
Total No.	219	282	245	497.3	353	358	166	584.6	311	306	298	610.1	229	598	250	718	368	307	279	636
Total No. (excluding nematodes)				402.6				465.9				488.8				484				489.3

Table D6

Benthic macroinvertebrate counts; Dundee Cr.; June 26, 1979; sand stations

Station	L4.5-65.25 No./.05 m^2			No./ 0.1 m^2	L5-65 No./.05 m^2			No./ 0.1 m^2	L5-64.75 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Polecypoda												
Rangia cuneata					5		2	4.7		1	1	1.3
Gastropoda												
Hydrobia sp. 1												
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis	40	31	55	84	17	18	11	30.7	27	25	17	46
Hypaniola grayi	11	6	13	20	1		2	2		1	3	2.7
Nereis succinea	3			2								
Oligochaeta												
Tubificidae	2	8		6.7			4	2.7	5	6	3	9.3
Isopoda												
Cyathura polita	4	4	3	7.3	3		3	4	9	7	7	15.3
Chiridotea almyra					1	1		1.3	1			.7
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus	59	26	27	74.7	20	39	21	53.3	66	75	57	132
Corophium lacustre	11	5	6	14.7	1		2	2	3	2	1	4
Unid. Gammaridae	6			4								
Monoculodes edwardsi												
Lepidactylus dytiscus					4	2	1	4.7	1			.7
Diptera	53	43	14	73.3	13	25	41	52.7	4	11	4	12.7
Nematoda	1		3	2.7			1	.7		1		.7
Total No.	190	123	121	289.4	65	85	88	158.8	116	129	93	225.1
Total No. (excluding nematodes)				286.7				158.1				224.4

Table D7

Benthic macroinvertebrate counts; Upper Saltpeter Creek; June 26, 1979; mud stations

Station	K5-61 No./.05 m^2			**No./ 0.1 m^2**	L1.5-60.5 No./.05 m^2			**No./ 0.1 m^2**	L1.5-59.5 No./.05 m^2			**No./ 0.1 m^2**	L3-60 No./.05 m^2			**No./ 0.1 m^2**	L4-59.5 No./.05 m^2			**No./ 0.1 m^2**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
<u>Rangia</u> <u>cuneata</u>	14	7	6	18	12	9	11	21.3	17	15	21	35.3	34	24	16	49.3	30	19	10	39.3
Gastropoda																				
<u>Hydrobia</u> sp. 1																				
<u>Hydrobia</u> sp. 2						2	1	2											1	.7
Polychaeta																				
<u>Scolecolepides</u> <u>viridis</u>	5	3	5	8.7	3	6	1	6.7	6	11	20	24.7	10	9	9	18.7	4	13	9	17.3
<u>Hypaniola</u> <u>grayi</u>													1			.7		1		.7
Oligochaeta																				
Tubificidae	26	26	25	51.3	18	6	37	40.7	11	11	19	27.3	21	5	5	20.7	7	3	6	10.7
Isopoda																				
<u>Cyathura</u> <u>polita</u>	1	1	2	2.7	1	1	2	2.7	1	3	2	4	2	3	6	7.3	5	6	3	9.3
<u>Chiridetea</u> <u>almyra</u>																				
<u>Edotea</u> <u>triloba</u>																				
Amphipoda																				
<u>Leptocheirus</u> <u>plumulosus</u>	64	66	81	140.7	92	65	69	150.7	104	62	97	175.3	131	108	52	194	114	149	14	184.7
<u>Corophium</u> <u>lacustre</u>			2	1.3															1	.7
Unid. Gammaridae					1		1	1.3	1	2	2	3.3	2	1		2				
<u>Monoculodes</u> <u>edwardsi</u>						1		.7												
Diptera	2	6	7	10	8	4	13	16.7	15	10	9	22.7	7	4	4	10	6	5	11	14.7
Nematoda	1		2	2	6	4	8	12	7	12	14	22	9	1	20	20	29	6	4	26
Total No.	113	109	130	234.7	141	98	143	254.8	162	126	184	314.6	217	155	112	322.7	195	202	59	304.1
Total No. (excluding nematodes)				232.7				242.8				292.6				302.7				278.1

Table D8

Benthic macroinvertebrate counts; Upper Saltpeter Creek; June 26, 1979; sand stations

Station	L1.75-58.5 No./.05 m^2			**No./ 0.1 m^2**	L2.25-58.5 **No./.05 m^2**			**No./ 0.1 m^2**	L3-58 **No./.05 m^2**			**No./ 0.1 m^2**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism												
Polecypoda												
<u>Rangia</u> <u>cuneata</u>	12	11	4	18	1	3	2	4	7	8	11	17.3
Gastropoda												
<u>Hydrobia</u> sp. 1											1	.7
<u>Hydrobia</u> sp. 2						1	1	1.3		1		.7
Polychaeta												
<u>Scolecolepides</u> <u>viridis</u>	2	4	5	7.3	3	3		4	3	2	1	4
<u>Hypaniola</u> <u>grayi</u>	24	17	12	35.3	8	5	6	12.7	14	15	15	29.3
<u>Laeonereis</u> <u>culveri</u>						1		.7				
Oligochaeta												
Tubificidae	36	10	24	46.7	21	47	30	65.3	14	10	6	20
Isopoda												
<u>Cyathura</u> <u>polita</u>	1	5		4	2		1	2	1		1	1.3
<u>Chiridotea</u> <u>almyra</u>		1	1	1.3								
<u>Edotea</u> <u>triloba</u>												
Amphipoda												
<u>Leptocheirus</u> <u>plumulosus</u>	53	20	28	67.3	65	35	97	131.3	18	32	20	46.7
<u>Corophium</u> <u>lacustre</u>	1			.7						1		.7
Unid. Gammaridae					2	1	7	6.7	1	1		1.3
<u>Monoculodes</u> <u>edwardsi</u>	1	1		1.3	1	1		1.3				
Diptera	6	2	5	8.7			2	1.3		1	3	2.7
Nematoda	2	2	1	3.3	1			.7	5	2		4.7
Total No.	138	73	80	193.9	104	97	146	231.3	63	73	58	129.4
Total No. (excluding nematodes)				190.6				230.6				124.7

Table D9
Benthic macroinvertebrate counts; Lower Satpeter Creek; June 26, 1979; mud stations

Station	N1-60 No./.05 m^2			No./ 0.1 m^2	N2-58 No./.05 m^2			No./ 0.1 m^2	N3-61 No./.05 m^2			No./ 0.1 m^2	N4-59 No./.05 m^2			No./ 0.1 m^2	N3-57 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
Rangia cuneata	43	45	48	90.7	44	37	33	76	15	29	28	48	70	52	37	106	58	31	47	90.7
Gastropoda																				
Hydrobia sp. 1					1	2	2	3.3		1		.7	2	1		2	3	5		5.3
Hydrobia sp. 2	7		2	6	1			.7					1	1	2	2.7	1		1	1.3
Polychaeta																				
Scolecolepides viridis	16	5	7	18.7	12	1	5	12	20	5	14	26	7	15	10	21.3	20	7	3	20
Hypaniola grayi	1			.7	1	3		2.7							1	.7	1			.7
Oligochaeta																				
Tubificidae	6	23	7	24	117	10	8	90	16	24	27	44.7	4	8	11	15.3	10	3	4	11.3
Isopoda																				
Cyathura polita	6	2	4	8	8	4	2	9.3	2	5	4	7.3	6	6	7	12.7	15	11		17.3
Chiridotea almyra													1			.7				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosus	173	182	140	330	140	176	231	364.7	139	116	59	209.3	128	71	125	216	146	110	111	244.7
Corophium lacustre		3		2			3	2	1	3	5	6			1	.7	2	3	5	6.7
Unid. Gammaridae	1			.7	1	1	2	2.7	2	2	2	4	3		4	4.7	1	2	2	3.3
Monoculodes edwardsi																				
Diptera	13	14	11	25.3	18	10	10	25.3	15	10	8	22	17	16	11	29.3	29	11	13	35.3
Nematoda	32	59	55	97.3	91	65	76	154.7	70	36	41	98	94	170	133	264.7	251	128	148	351.3
Total No.	298	333	274	603.4	434	309	372	743.4	280	231	188	466	333	340	342	676.8	537	311	334	787.9
Total No. (excluding nematodes)				506.1				588.7				368				412.1				436.6

Table D10

Benthic macroinvertebrate counts; Doves Cove; June 27, 1979; mud stations

Station	S4-80.5 No./.05 m^2			No./ 0.1 m^2	S4.5-81 No./.05 m^2			No./ 0.1 m^2	S5.5-81.5 No./.05 m^2			No./ 0.1 m^2	T1.5-81 No./.05 m^2			No./ 0.1 m^2	T2-80 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
Rangia cuneata	2		1	2	4	4	2	6.7	3	4	3	6.7	3	4	4	7.3	5	2	8	10
Gastropoda																				
Hydrobia sp. 1											1	.7		1		.7		1		.7
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	9	5	13	18	2	17	8	18	6	27	5	25.3	30	35	26	60.7	6	10	5	14
Oligochaeta																				
Tubificidae	5	7	15	18	14	11	12	24.7	18	11	14	28.7	19	27	53	66	2	3	2	4.7
Isopoda																				
Cyathura polita																				
Chiridotea almyra																				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosus			2	1.3							1	.7		1		.7	1	1		1.3
Corophium lacustre																	1			.7
Unid. Gammaridae																				
Monoculodes edwardsi													1			.7				
Diptera	71	24	54	99.3	47	150	68	176.7	49	122	45	144	47	53	57	104.7	13	13	17	28.7
Nematoda	2		2	2.7	19	35	11	43.3	30	38	55	82	97	41	41	119.3	11	18	18	31.3
Total No.	89	36	88	141.3	86	217	101	269.4	106	202	124	288.1	197	162	181	360.1	39	48	50	91.4
Total No. (excluding nematodes)				138.6				226.1				206.1				240.8				60.1

Table D11
Benthic macroinvertebrate counts; Doves Cove; June 27, 1979; sand stations

Station	T1.5-79.5 No./.05 m^2			No./ 0.1 m^2	U1.5-76.5 No./.05 m^2			No./ 0.1 m^2	U2-75 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism												
Polecypoda												
Rangia cuneata	1			.7		1		.7				
Gastropoda												
Hydrobia sp. 1							1	.7				
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis	1	7	2	6.7		1	1	1.3	1	3	2	4
Hypaniola grayi			8	5.3								
Oligochaeta												
Tubificidae	14	7	8	19.3	2	3	1	4	14		3	11.3
Isopoda												
Cyathura polita	3	15	17	23.3					1	6	3	6.7
Chiridotea almyra	1			.7								
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus		3	1	2.7		1	1	1.3				
Corophium lacustre		3	2	3.3							1	.7
Unid. Gammaridae	1	4	3	5.3		1		.7				
Monoculodes edwardsi												
Diptera	34	32	26	61.3	22	2	16	26.7	15	7	17	26
Nematoda	75	17	19	74	2	1	1	2.7	1		1	1.3
Total No.	130	88	86	202.6	26	10	21	38.1	32	16	27	50
Total No. (excluding nematodes)				128.6				35.4				48.7

Table D12
Benthic macroinvertebrate counts; Sue Creek; June 28, 1979; mud stations

Station	G4.5-32 No./.05 m²			**No./ 0.1 m²**	H1-32 No./.05 m²			**No./ 0.1 m²**	H2.5-32.5 No./.05 m²			**No./ 0.1 m²**	H3.5-32.5 No./.05 m²			**No./ 0.1 m²**	H4-33 No./.05 m²			**No./ 0.1 m²**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
<u>Rangia cuneata</u>	1	8	4	8.7	15	7	13	23.3	6	17	12	23.3	9	4	8	14	10	12	16	25.3
Gastropoda																				
<u>Hydrobia</u> sp. 1					2	1		2	1	1	1	2	3	8	2	8.7	2		4	4
<u>Hydrobia</u> sp. 2																				
Polychaeta																				
<u>Scolecolepides viridis</u>	4	1	3	5.3	3	7	5	10	8	6	15	19.3	40	24	20	56	26	29	12	44.7
<u>Hypaniola grayi</u>																	1	1	1	2
<u>Laeonereis culveri</u>																	1		1	1.3
Oligochaeta																				
Tubificidae	63	52	52	111.3	39	21		40	20	30	22	48	21	7	8	24	15	31	13	39.3
Isopoda																				
<u>Cyathura polita</u>									1	4	2	4.7	1	1	2	2.7	7	9	6	14.7
<u>Chiridotea almyra</u>																		1	1	1.3
<u>Edotea triloba</u>																		1		.7
Amphipoda																				
<u>Leptocheirus plumulosus</u>	221	178	172	380.7	262	246	282	526.7	233	261	281	516.7	168	179	250	398	102	58	99	172.7
<u>Corophium lacustre</u>									1			.7					2	1		2
Unid. Gammaridae		1		.7			1	.7	3	4	4	7.3	3	2	3	5.3				
<u>Monoculodes edwardsi</u>																				
Diptera	4	4	3	7.3	5	2	1	5.3	8	11	4	15.3	38	44	29	74	146	129	106	254
Nematoda	1	1		1.3	2	2	41	30	2	4	1	4.7		11	5	10.7	12	15	5	21.3
Total No.	294	245	234	515.3	328	286	343	638	283	338	342	642	283	280	327	593.4	324	287	264	583.3
Total No. (excluding nematodes)				514				608				637.3				582.7				562

Table D13
Benthic macroinvertebrate counts; Sue Creek; June 28, 1979; sand stations

Station	H1.5-31 No./.05 m^2			No./ 0.1 m^2	H2-31.5 No./.05 m^2			No./ 0.1 m^2	H2.5-31.5 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism												
Polecypoda												
Rangia cuneata	5	2	2	6	1	3	3	4.7				
Gastropoda												
Hydrobia sp. 1		1		.7								
Hydrobia sp. 2	1			.7								
Polychaeta												
Scolecolepides viridis	10	3	1	9.3		7	6	8.7	4	1	2	4.7
Hypaniola grayi			2	1.3			1	.7	2	6	1	6
Laeonereis culveri										2	1	2
Oligochaeta												
Tubificidae	46	38	24	72	8	10	4	14.7	12	9	3	16
Isopoda												
Cyathura polita									9	8	6	15.3
Chiridotea almyra						2		1.3				
Edotea triloba					1			.7				
Amphipoda												
Leptocheirus plumulosus	48	50	33	87.3	21	17	37	50	53	69	68	126.7
Corophium lacustre		1		.7	1			.7	6	4	11	14
Unid. Gammaridae									12	13	16	27.3
Monoculodes edwardsi									1			.7
Diptera	177	215	105	331.3	120	110	158	258.7	69	82	70	147.3
Nematoda	9	8	22	26	4	5	4	8.7	4	7	4	10
Total No.	296	318	189	535.3	156	154	213	348.9	172	201	182	370
Total No. (excluding nematodes)				509.3				340.2				360

Table D14
Benthic macroinvertebrate counts; Norman Creek; June 28, 1979; mud stations

Station	F2-41.5 No./.05 m²			No./ 0.1 m²	F3.5-42.5 No./.05 m²			No./ 0.1 m²	F4.5-43.5 No./.05 m²			No./ 0.1 m²	F4.5-42.5 No./.05 m²			No./ 0.1 m²	F5.5-43 No./.05 m²			No./ 0.1 m²
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
Rangia cuneata	2		1	2	11	7	13	20.7	6	7	8	14	9	6	7	14.7	6	9	12	18
Gastropoda																				
Hydrobia sp. 1											2	1.3		1		.7				
Hydrobia sp. 2													1	2		2				
Polychaeta																				
Scolecolepides viridis	2	3	1	4	32	14	38	56	6	5	2	8.7	2	1	2	3.3			2	1.3
Oligochaeta																				
Tubificidae	99	29	87	143.3	32	45	52	86	74	101	147	214.7	88	60	59	138	175	93	69	224.7
Isopoda																				
Cyathura polita																				
Chiridotea almyra																				
Edotea triloba					1			.7												
Amphipoda																				
Leptocheirus plumulosus	35	29	49	75.3	136	116	136	258.7	222	206	303	487.3	222	193	212	418	343	307	251	600.7
Corophium lacustre					1			.7			11	7.3								
Unid. Gammaridae					2		2	2.7			1	.7		2		1.3				
Monoculodes edwardsi																				
Diptera	9	16	10	23.3	6	2	11	12.7	5	7	5	11.3	7	4	4	10	5	2	6	8.7
Nematoda	1			.7													1			.7
Total No.	148	77	148	248.6	221	184	252	438.2	313	326	479	745.3	329	269	284	588	530	411	340	854.1
Total No. (excluding nematodes)				247.9				438.2				745.3				588				853.4

Table D15
Benthic macroinvertebrate counts; Middle R.; June 28, 1979

Station	I4-40 No./.05 m^2			No./ 0.1 m^2	I2-37 No./.05 m^2			No./ 0.1 m^2	I5-35 No./.05 m^2			No./ 0.1 m^2	J3-35 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																
Polecypoda																
<u>Rangia</u> <u>cuneata</u>	5	3	5	8.7	122	151	163	290.7	59	49	60	112	107	122	112	227.3
Gastropoda																
<u>Hydrobia</u> sp. 1					3	3	7	8.7	2	2	1	3.3	10	12	11	22
<u>Hydrobia</u> sp. 2	2	1		2	9	9	13	20.7	7	4	7	12	26	18	15	39.3
Polychaeta																
<u>Scolecolepides</u> <u>viridis</u>	9	4	7	13.3	10	1	6	11.3	12	8	11	20.7	8	18	17	28.7
<u>Hypaniola</u> <u>grayi</u>										1		.7				
Oligochaeta																
Tubificidae		1	1	1.3		1	2	2					3			2
Isopoda																
<u>Cyathura</u> <u>polita</u>					4	4	2	6.7	1	1	4	4	4	6	10	13.3
<u>Chiridotea</u> <u>almyra</u>			3	2							1	.7				
<u>Edotea</u> <u>triloba</u>															1	.7
Amphipoda																
<u>Leptocheirus</u> <u>plumulosus</u>	33	34	71	92	110	188	144	294.7	89	166	119	249.3	152	112	54	212
<u>Corophium</u> <u>lacustre</u>					2	1		2		1		.7	1			.7
Unid. Gammaridae									1		1	1.3		2		1.3
<u>Monoculodes</u> <u>edwardsi</u>			2	1.3									1			.7
<u>Lepidactylus</u> <u>dytiscus</u>	9	13	5	18												
Diptera	1	3	1	3.3	11	6	15	21.3	13	16	14	28.7	20	18	8	30.7
Nematoda	3			2	2	1	34	24.7	1	1	3	3.3	32	3	1	24
Total No.	62	59	95	143.9	273	365	386	682.8	185	249	221	436.7	364	311	229	602.7
Total No. (excluding nematodes)				141.9				658.1				433.4				578.7

Table D16
Benthic macroinvertebrate counts; Weir Pt.; June 25, 1979

Station	mud								sandy mud							
	N4-39 No./.05 m^2			No./ 0.1 m^2	N3-35 No./.05 m^2			No./ 0.1 m^2	N5-41 No./.05 m^2			No./ 0.1 m^2	N3-40 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																
Polecypoda																
<u>Rangia cuneata</u>	16	14	12	28	47	64	60	114	13	32	21	44	27	20	29	50.7
Gastropoda																
<u>Hydrobia</u> sp. 1									7	13	9	19.3	2		2	2.7
<u>Hydrobia</u> sp. 2	6	11	18	23.3	36	18	24	52					25	12	29	44
Polychaeta																
<u>Scolecolepides viridis</u>	3	4	6	8.7	22	8	24	36	94	23	64	120.6	49	15	42	70.7
<u>Hypaniola grayi</u>		1	2	2			1	.7	1		3	2.7			3	2
<u>Nereis succinea</u>					1			.7								
Oligochaeta																
Tubificidae	8	18	36	41.3		2	3	3.3	12	7	6	16.7	6		7	8.7
Isopoda																
<u>Cyathura polita</u>	13	19	8	26.7	12	11	15	25.3	8	9	6	15.3	9	4	8	14
<u>Chiridotea almyra</u>											1	.7				
<u>Edotea triloba</u>													1	1		1.3
Amphipoda																
<u>Leptocheirus plumulosus</u>	359	503	465	884.7	100	112	134	230.7	203	60	180	295.3	129	114	102	230
<u>Corophium lacustre</u>		2		1.3	3	2	2	4.7	21	17	34	48		6	7	8.7
Unid. Gammaridae	7	14	11	21.3			2	1.3	5	1	6	8	3	8	2	8.7
<u>Monoculodes edwardsi</u>			1	.7												
Diptera	10	22	23	36.7	5	9	14	18.7	14	10	9	22	15	11	10	24
Nematoda	119	201	131	300.7	20	43	14	51.3		1	1	1.3			1	.7
Total No.	541	809	713	1375.4	246	269	293	538.7	378	173	340	593.9	266	191	242	466.2
Total No. (excluding nematodes)				1074.7				487.4				592.6				465.5

Table D16 (continued).

Station	N2.5-40 No./.05 m^2 (muddy sand)			No./0.1 m^2	N2.5-41.5 No./.05 m^2 (muddy sand)			No./0.1 m^2	N3.5-41.5 No./.05 m^2 (sand)			No./0.1 m^2	N2-40 No./.05 m^2 (sand)			No./0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																
Polecypoda																
Rangia cuneata	18	46	31	63.3	16	25	17	38.7			1	.7	6	5	2	8.7
Gastropoda																
Hydrobia sp. 1	10	9	5	16	12		16	18.7					1	1		1.3
Hydrobia sp. 2													1			.7
Polychaeta																
Scolecolepides viridis	44	13	34	60.7	106	93	51	166.7	4	10	4	12	10	10	16	24
Hypaniola grayi	3		7	6.7	2	3	2	4.7	2			1.3				
Oligochaeta																
Tubificidae	8	23	26	38	31	84	50	110	3		2	3.3	1	1		1.3
Isopoda																
Cyathura polita	10	12	11	22	30	25	21	50.7	2	1	2	3.3	5	10	5	13.3
Chiridotea almyra	1			.7	1		1	1.3						3	2	3.3
Edotea triloba					10	1	1	8								
Amphipoda																
Leptocheirus plumulosus	59	84	102	163.3	64	49	51	109.3	6	8	7	14	25	22	43	60
Corophium lacustre	37	11	10	38.7	50	95	69	142.7	3		1	2.7				
Unid. Gammaridae							2	1.3								
Monoculodes edwardsi									2			1.3			1	.7
Lepidactylus dytiscus									15	44	20	52.7	2	5	2	6
Diptera		1	6	4.7	1	1	2	2.7			1	.7	4	1	3	5.3
Nematoda									11	4		10			3	2
Total No.	190	199	232	414.1	323	376	283	654.8	48	67	38	102	55	58	77	126.6
Total No. (excluding nematodes)				414.1				654.8				92				124.6

Table D17

Benthic macroinvertebrate counts; Gunpowder R.; June 26, 1979

Station	sandy mud P4-51 No./.05 m^2			No./ 0.1 m^2	muddy sand 04-51 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total
Organism								
Polecypoda								
Rangia cuneata	25	60	55	93.3	42	33	36	74
Gastropoda								
Hydrobia sp. 1		1	4	3.3	3	1	17	14
Hydrobia sp. 2	1	7	12	13.3				
Polychaeta								
Scolecolepides viridis	7	43	28	52	29	35	5	46
Hypaniola grayi		2		1.3	4	3	1	5.3
Laeonereis culveri					3	1		2.7
Oligochaeta								
Tubificidae	1	8	1	6.7	35	39	36	73.3
Isopoda								
Cyathura polita	3	16	6	16.7	7	11	17	23.3
Chiridotea almyra		1		.7	1	2		2
Edotea triloba								
Amphipoda								
Leptocheirus plumulosus	79	90	84	168.7	102	82	57	160.7
Corophium lacustre	1			.7	1		2	2
Unid. Gammaridae		1	3	2.7	3	2	1	4
Monoculodes edwardsi	2	4		4				
Diptera	6	19	9	22.7	12	16	10	25.3
Nematoda	12	65	39	77.3	15	15	11	27.3
Total No.	137	317	241	463.4	257	240	193	459.9
Total No. (excluding nematodes)				386.1				432.6

Table D18

Benthic macroinvertebrate counts; Dundee Cr.; September 10, 1979; mud stations

Station	L3-69 No./.05 m²			**No./ 0.1 m²**	L3-68 No./.05 m²			**No./ 0.1 m²**	L1-67 No./.05 m²			**No./ 0.1 m²**	L3.5-66.5 No./.05 m²			**No./ 0.1 m²**	L5-66 No./.05 m²			**No./ 0.1 m²**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Pelecypoda																				
Rangia cuneata	1			.7	1	1		1.3			4	2.7		2		1.3	2	2	2	4
Macoma mitchelli														1		.7				
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis					4			2.7					3	1	6	6.7	4	7	2	8.7
Oligochaeta																				
Tubificidae	13	9	19	27.3	11	4	12	18	64	79	43	124	16	8	19	28.7	5	12	6	15.3
Isopoda																				
Cyathura polita			1	.7	1	1	1	2	1			.7	2	2	3	4.7		1	1	1.3
Chiridotea almyra																				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosis	2		7	6	4	2	3	6			7	4.7	5	9	7	14	13	4	2	12.7
Corophium lacustre									2			1.3								
Unid. Gammaridae																				
Monoculodes edwardsi																				
Diptera	4	2	1	4.7	19	6	7	21.3	9	7	8	16	20	26	14	40	13	17	14	29.3
Nematoda	21	16	19	37.3	46	12	10	45.3	11	5	11	18	29	16	10	36.7	15	19	21	36.7
Total No.	41	27	47	76.7	86	26	33	96.6	87	91	73	167.4	75	65	59	132.8	52	62	48	108
Total No. (excluding nematodes)				39.4				51.3				149.4				96.1				71.3

Table D19
Benthic macroinvertebrate counts; Dundee Cr.; September 10, 1979; sand stations

Station	L4.75-65.25			**No./**	L5-65			**No./**	L5-64.5			**No./**
	No./.05 m^2			**0.1 m^2**	**No./.05 m^2**			**0.1 m^2**	**No./.05 m^2**			**0.1 m^2**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism												
Pelecypoda												
Rangia cuneata	2	1		2	4		2	4	1	2	1	2.7
Gastropoda												
Hydrobia sp. 1												
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis		2	1	2	1	1		1.3		1	1	1.3
Hypaniola grayi	6	2	3	7.3								
Nereis succinea									2	1		2
Leonereis culveri										2		1.3
Oligochaeta												
Tubificidae	10	4	4	12	2	1	1	2.7	2	2	3	4.7
Isopoda												
Cyathura polita		1	1	1.3			1	.7		1		.7
Chiridotea almyra												
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus	2		1	2		2		1.3	1			.7
Corophium lacustre		1		.7								
Unid. Gammaridae	5	2		4.7			1	.7				
Monoculodes edwardsi					1	1		1.3				
Lepidactylus dytiscus		1		.7	2		1	2				
Diptera	37	70	18	83.3	58	11	13	54.7	12	56	30	65.3
Nematoda	5	1	2	5.3			1	.7		3	1	2.7
Total No.	67	85	30	121.3	68	16	20	69.4	18	68	36	81.4
Total No. (excluding nematodes)				116				68.7				78.7

Table D20

Benthic macroinvertebrate counts; Upper Saltpeter Cr.; September 11, 1979; mud stations

Station	K3-62 No./.05 m^2			No./ 0.1 m^2	K4-61.5 No./.05 m^2			No./ 0.1 m^2	L1-60.5 No./.05 m			No./ 0.1 m^2	L2.5-60.5 No./.05 m^2			No./ 0.1 m^2	L3.5-59.5 No./.05 m^2			No./ 0.1 m^2	L5-59 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																								
Pelecypoda																								
Rangia cuneata													2	2	1	3.3	4	4	2	6.7	5	4	5	9.3
Gastropoda																								
Hydrobia sp. 1															1	.7			1	.7				
Hydrobia sp. 2																								
Polychaeta																								
Scolecolepides viridis					1			.7		1	1	1.3	2	5	6	8.7	4	10	13	18	13	7	14	22.7
Oligochaeta																								
Tubificidae	22	28	23	48.7	15	8	19	28	8	11	11	20	15	6	5	17.3	6	18	10	22.7	14	6	9	19.3
Isopoda																								
Cyathura polita									2			1.3	1	1	1	2	3	4	5	8	3	5	3	7.3
Chiridotea almyra																								
Edotea triloba																								
Amphipoda																								
Leptocheirus plumulosus	1			.7		3		2			2	1.3			3	2	2	2		2.7	4	2	7	8.7
Corophium lacustre																								
Unid. Gammaridae																	1			.7				
Monoculodes edwardsi																								
Diptera	2	5	11	12	23	14	15	34.7	4	8	11	15.3	14	18	19	34	27	38	58	82	33	23	42	65.3
Nematoda	2	1		2	4	1	1	4	2	3	9	9.3	12	22	23	38	8	24	14	30.7	22	1	19	28
Total No.	27	34	34	63.4	43	26	35	69.4	16	23	34	48.5	46	54	59	106	55	100	103	172.2	94	48	99	160.6
Total No. (excluding nematodes)				61.4				65.4				39.2				68				141.5				132.6

Table D21

Benthic macroinvertebrate counts; Upper Saltpeter Cr.; September 11, 1979; sand stations

Station	L2-58.5 No./.05 m^2			No./ 0.1 m^2	L2.5-58.5 No./.05 m^2			No./ 0.1 m^2	L3-58 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
Rangia cuneata		1		.7	1	2	3	4	3	2	2	4.7
Gastropoda												
Hydrobia sp. 1	1			.7								
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis						1	1	1.3				
Hypaniola grayi	1		1	1.3		6	3	6	2		4	4
Nereis succinea	5	6	2	8.7	4	18	6	18.7	32		35	44.7
Laeonereis culveri			1	.7	4	29	12	30		18	2	13.3
Oligochaeta												
Tubificidae	5	11	7	15.3	16	73	19	72	21	6	10	24.7
Isopoda												
Cyathura polita	1	1		1.3					1			.7
Chiridotea almyra							1	.7				
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus	1	3	3	4.7	1	5	1	4.7	1			.7
Corophium lacustre			2	1.3								
Unid. Gammaridae												
Monoculodes edwardsi												
Diptera	3	10	4	11.3	4	7		7.3	6		3	6
Nematoda									2			1.3
Total No.	17	32	15	42.8	30	141	46	144.7	68	26	56	100.1
Total No. (excluding nematodes)				42.8				144.7				98.8

Table D22
Benthic macroinvertebrate counts; Lower Saltpeter Cr.; September 10, 1979; mud stations

Station	N1-62 No./.05 m^2			**No./ 0.1 m^2**	N2-61 No./.05 m^2			**No./ 0.1 m^2**	N1-59 No./.05 m^2			**No./ 0.1 m^2**	N3-60 No./.05 m^2			**No./ 0.1 m^2**	N4-59 No./.05 m^2			**No./ 0.1 m^2**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Pelecypoda																				
Rangia cuneata	7			4.7	2	1		2		2		1.3	6	3	4	8.7		1		.7
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	13	13	13	26	5	7	4	10.7		1		.7	20	9	17	30.7	4	3	4	7.3
Oligochaeta																				
Tubificidae	33	17	23	48.7	10	6	5	14	6	7	3	10.7	3	3	8	9.3	7	5	4	10.7
Isopoda																				
Cyathura polita	1	2	1	2.7	2	1	5	5.3			3	2	4		6	6.7	1	4	5	6.7
Chiridotea almyra																				
Edotea triloba																		1		.7
Amphipoda																				
Leptocheirus plumulosus	16	23	21	40	2	14	3	12.7	2		1	2	8	5	5	12	26	9	25	40
Corophium lacustre																				
Unid. Gammaridae			1	.7															1	.7
Monoculodes edwardsi																				
Diptera	8	12	8	18.7	10	19	11	26.7	17	16	31	42.7	18	19	8	30	22	17	13	34.7
Nematoda	31	50	61	94.7	15	10	8	22	49	44	67	106.7	17	6	13	24	117	52	49	145.3
Total No.	109	117	128	236.2	46	58	36	93.4	74	70	105	166.1	76	45	61	121.4	177	92	101	246.8
Total No. (excluding nematodes)				141.5				71.4				59.4				97.4				101.5

Table D23
Benthic macroinvertebrate counts; Sue Creek; September 13, 1979; mud stations

Station	G5-32			**No./**	H1-32			**No./**	H2-32			**No./**	H2.5-32.5			**No./**	H3-32.5			**No./**
	No./.05 m^2			**0.1 m^2**	**No./.05 m^2**			**0.1 m^2**	**No./.05 m^2**			**0.1 m^2**	**No./.05 m^2**			**0.1 m^2**	**No./.05 m^2**			**0.1 m^2**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Pelecypoda																				
<u>Rangia cuneata</u>			1	.7	1		1	1.3						1		.7		1		.7
Gastropoda																				
<u>Hydrobia</u> sp. 1																				
<u>Hydrobia</u> sp. 2																				
Polychaeta																				
<u>Scolecolepides viridis</u>					1			.7						1		.7	1			.7
Oligochaeta																				
Tubificidae	25	35	31	60.7	12	10	19	27.3	15	5	17	24.7	14	3	22	26	11	9	21	27.3
Isopoda																				
<u>Cyathura polita</u>										1		.7			1	.7	2	1		2
<u>Chiridotea almyra</u>																				
<u>Edotea triloba</u>																			1	.7
Amphipoda																				
<u>Leptocheirus plumulosus</u>	4	3	6	8.7	4	5	9	12	17	4	5	17.3	9	15	23	31.3	18	15	11	29.3
<u>Corophium lacustre</u>	1			.7																
Unid. Gammaridae			2	1.3	1			.7	1			.7								
<u>Monoculodes edwardsi</u>																				
Diptera	25	17	21	42	11	9	9	19.3	6	16	14	24	14	11	11	24	26	14	11	34
Nematoda	4			2.7	1		1	1.3	4	2	13	12.7	9	4	11	16	109	29	17	103.3
Total No.	59	55	61	116.8	31	24	39	62.6	43	28	49	80.1	46	35	68	99.4	167	69	61	198
Total No. (excluding nematodes)				114.1				61.3				67.4				83.4				94.7

Table D24
Benthic macroinvertebrate counts; Sue Creek; September 13, 1979; sand stations

Station	H1.5-31 No./.05 m^2			No./ 0.1 m^2	H2-31.5 No./.05 m^2			No./ 0.1 m^2	H2.5-31.5 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism												
Pelecypoda												
Rangia cuneata		1	2	2	1	1	2	2.7	1		2	2
Gastropoda												
Hydrobia sp. 1												
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis	1		4	3.3	2		3	3.3		8		5.3
Hypaniola grayi					7	6	12	16.7				
Nereis succinea					1		3	2.7				
Polydora ligni							5	3.3				
Oligochaeta												
Tubificidae	1			.7	16	29	75	80	21	40	4	43.3
Isopoda												
Cyathura polita							7	4.7	3	1	1	3.3
Chiridotea almyra												
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus			1	.7	3	3	23	19.3	1		2	2
Corophium lacustre	2			1.3						4		2.7
Unid. Gammaridae			1	.7		1		.7				
Monoculodes edwardsi												
Diptera	35	45	24	69.3	13	23	31	44.7	17	48	17	54.7
Nematoda			1	.7		2		1.3				
Total No.	39	46	33	78.7	43	65	161	179.4	43	101	26	113.3
Total No. (excluding nematodes)				78.0				178.1				113.3

Table D25
Benthic macroinvertebrate counts; Middle River; September 13, 1979; mud stations

Station	I2-38 No./.05 m^2			**No./ 0.1 m^2**	I5-38 No./.05 m^2			**No./ 0.1 m^2**	I5-36 No./.05 m^2			**No./ 0.1 m^2**	I4-34 No./.05 m^2			**No./ 0.1 m^2**	J2-35 No./.05 m^2			**No./ 0.1 m^2**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Pelecypoda																				
Rangia cuneata		1	2	2	1		1	1.3	1	2	1	2.7	2		2	2.7	2	2	5	6
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	2	1	1	2.7	15	36	11	41.3	6	6	9	14	9	5	6	13.3	11	14	13	25.3
Polydora ligni							1	.7												
Oligochaeta																				
Tubificidae	4	9	7	13.3	1			.7	1			.7	2	1	2	3.3			3	2
Isopoda																				
Cyathura polita	2	7	5	9.3	4	2	8	9.3	7	2	2	7.3	3	3	9	10	3	2	5	6.7
Chiridotea almyra																				
Edotea triloba							1	.7		1		.7								
Amphipoda																				
Leptocheirus plumulosus	31	27	26	56	10	16	7	22	21	21	28	46.7	40	46	39	83.3	27	23	21	47.3
Corophium lacustre																			2	1.3
Unid. Gammaridae					1			.7			1	.7			2	1.3				
Monoculodes edwardsi																				
Diptera	11	7	15	22	8	1	7	10.7	2	5	1	5.3	1	7	4	8	3	3	7	8.7
Nematoda	10	20	24	36	3	9	6	12	12	29	10	34	5	12	23	26.7	5	2	10	11.3
Total No.	60	72	80	141.3	43	64	42	99.4	50	66	52	112.1	62	74	87	148.6	51	46	66	108.6
Total No. (excluding nematodes)				105.3				87.4				78.1				121.9				97.3

Table D26
Benthic macroinvertebrate counts; Doves Cove; September 15, 1979; mud stations

Station	S4.5-80.5 No./.05 m²			No./ 0.1 m²	T1-80.5 No./.05 m²			No./ 0.1 m²	T2-81 No./.05 m²			No./ 0.1 m²	T3-80 No./.05 m²			No./ 0.1 m²	T4-81 No./.05 m²			No./ 0.1 m²
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
Rangia cuneata					1		3	2.7		2	1	2			1	.7	2			1.3
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	2	4	3	6	5		8	8.7	4	3	2	6	2	2	2	4	1	11	3	10
Oligochaeta																				
Tubificidae	1	8	6	10	4	4	7	10	9	4	31	29.3					1			.7
Isopoda																				
Cyathura polita										1		.7							3	2
Chiridotea almyra																				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosus	1			.7	3			2	1			.7	9	7	8	16	2	3	6	7.3
Corophium lacustre																				
Unid. Gammaridae																				
Monoculodes edwardsi																				
Diptera	23	36	31	60	48	33	78	106	91	96	74	174	36	41	41	78.7	43	45	24	74.7
Nematoda	2	1	2	3.3	34	13	32	52.7	12	60	150	148	39	13	25	51.3	7	10	3	13.3
Total No.	29	49	42	80	95	50	128	182.1	117	166	258	360.7	86	63	77	150.7	56	69	39	109.3
Total No. (excluding nematodes)				76.7				129.4				212.7				99.4				96

Table D27
Benthic macroinvertebrate counts; Doves Cove; September 15, 1979; sand stations

Station	T3-84.5 No./.05 m^2			No./ 0.1 m^2	T2-79 No./.05 m^2			No./ 0.1 m^2	T5.5-76 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
Rangia cuneata	1		1	1.3					1	5	1	4.7
Gastropoda												
Hydrobia sp. 1												
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis									1	1	1	2
Nereis succinea						1		.7				
Oligochaeta												
Tubificidae	1			.7	1	7	1	6	3	6	7	10.7
Isopoda												
Cyathura polita												
Chiridotea almyra												
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus									1	1		1.3
Corophium lacustre												
Unid. Gammaridae												
Monoculodes edwardsi												
Diptera	18	15	6	26	9	12	2	15.3	7	9	3	12.7
Nematoda	1		1	1.3		1		.7		1		.7
Total No.	21	15	8	29.3	10	21	3	22.7	13	23	12	32.1
Total No. (excluding nematodes)				28				22				31.4

Table D28

Benthic macroinvertebrate counts; Gunpowder River; September 10, 1979

Station	05-53 No./.05 m^2			**No./ 0.1 m^2**	P2-51 No./.05 m^2			**No./ 0.1 m^2**	P4-52 No./.05 m^2			**No./ 0.1 m^2**
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism												
Pelecypoda												
<u>Rangia</u> <u>cuneata</u>	3	1	2	4	1			.7	1	4	2	4.7
Gastropoda												
<u>Hydrobia</u> sp. 1												
<u>Hydrobia</u> sp. 2												
Polychaeta												
<u>Scolecolepides</u> <u>viridis</u>	7	9	11	18	3	3	2	5.3	19	13	24	37.3
<u>Hypaniola</u> <u>grayi</u>						1		.7				
Oligochaeta												
Tubificidae	2	7	3	8			5	3.3	1			.7
Isopoda												
<u>Cyathura</u> <u>polita</u>	3	7	2	8	6	2	9	11.3	4	3	2	6
<u>Chiridotea</u> <u>almyra</u>												
<u>Edotea</u> <u>triloba</u>									1			.7
Amphipoda												
<u>Leptocheirus</u> <u>plumulosus</u>	44	35	35	76	31	29	69	86	27	16	38	54
<u>Corophium</u> <u>lacustre</u>						1		.7				
Unid. Gammaridae												
<u>Monoculodes</u> <u>edwardsi</u>												
Diptera	13	10	8	20.7	9	4	6	12.7	6	8	6	13.3
Nematoda	49	103	68	146.7	17	27	50	62.7	94	38	33	110
Total No.	121	172	129	281.4	67	67	141	183.4	153	82	105	226.7
Total No. (excluding nematodes)				134.7				120.7				116.7

Table D29

Benthic macroinvertebrate counts; Chesapeake Bay; September 12, 1979

	Hawk Cove																							
Station	I4-14 No./.05 m^2			No./ 0.1 m^2	J2-18 No./.05 m^2			No./ 0.1 m^2	K1-15 No./.05 m^2			No./ 0.1 m^2	M5-30 No./.05 m^2			No./ 0.1 m^2	L5-34 No./.05 m^2			No./ 0.1 m^2	L3-40 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																								
Pelecypoda																								
Rangia cuneata	1			.7	1	3	2	4	4	13	7	16	5	3	3	7.3	18	27	13	38.7	12	17	16	30
Gastropoda																								
Hydrobia sp. 1													1			.7			1	.7				
Hydrobia sp. 2																								
Polychaeta																								
Scolecolepides viridis						5	4	6		7	1	5.3	5	20	16	27.3	12	26	24	41.3	17	21	20	38.7
Oligochaeta																								
Tubificidae	65	29	30	82.7	5	9	7	14	4	9	6	12.7	1	1		1.3	1	1		1.3		1		.7
Isopoda																								
Cyathura polita		2		1.3	2	3	1	4	1	1	1	2	2	9		7.3	1	2	2	3.3	4	3		4.7
Chiridotea almyra																								
Edotea triloba																							1	.7
Amphipoda																								
Leptocheirus plumulosus	13	8	10	20.7	10	25	28	42	22	32	32	57.3	24	80	12	77.3	28	31	5	42.7	7	22	35	42.7
Corophium lacustre						1		.7															2	1.3
Unid. Gammaridae					1	1		1.3		1		.7												
Monoculodes edwardsi																								
Diptera	10	6	10	17.3	16	4	6	17.3	4	7	7	12	4			2.7	6	2	2	6.7	2	2	5	6
Nematoda	5			3.3	11	7	2	13.3	17	9	18	29.3	4	1	1	4	1			.7	1			.7
Total No.	94	45	50	126	46	58	50	102.6	52	79	72	135.3	46	114	32	127.9	67	89	47	135.4	43	66	79	125.5
Total No. (excluding nematodes)				122.7				89.3				106				123.9				134.7				124.8

Table D30

Benthic macroinvertebrate counts; Weir Point; September 11, 1979

Station	mud								sandy mud							
	N3-37 No./.05 m^2			No./ 0.1 m^2	N3.5-39 No./.05 m^2			No./ 0.1 m^2	N5-41 No./.05 m^2			No./ 0.1 m^2	N3-40 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																
Pelecypoda																
Rangia cuneata	2	2	4	5.3		1		.7	4	9	6	12.7	3	3	4	6.7
Macoma mitchelli		1		.7	1		2	2								
Gastropoda																
Hydrobia sp. 1									5	2	2	6				
Hydrobia sp. 2																
Polychaeta																
Scolecolepides viridis	3	4	6	8.7		1	2	2	21	34	27	54.7	6	7	17	20
Hypaniola grayi									1			.7		3	2	3.3
Oligochaeta																
Tubificidae		2		1.3	2	1	1	2.7	3		2	3.3	6	3	3	8
Isopoda																
Cyathura polita	2	2	2	4	1	2	2	3.3	6	6	5	11.3	3	3	4	6.7
Chiridotea almyra											1	.7				
Edotea triloba									3		2	3.3				
Amphipoda																
Leptocheirus plumulosus	3	1	8	8	22	7	7	24	27	32	28	58	10	5	19	22.7
Corophium lacustre																
Unid. Gammaridae																
Monoculodes edwardsi																
Diptera	2	4	3	6	4	3	4	7.3								
Nematoda	27	42	54	82	50	70	86	137.3								
Total No.	39	60	77	117.3	80	85	104	179.3	70	83	73	150.7	28	24	49	67.4
Total No. (excluding nematodes)				35.3				42								

Table D30 (continued).

Station	muddy sand N2.5-41 No./.05 m^2			No./ 0.1 m^2	N2-38 No./.05 m^2			No./ 0.1 m^2	sand N4-41.5 No./.05 m^2			No./ 0.1 m^2	N3-40.5 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																
Pelecypoda																
Rangia cuneata	3	6	3	8	10	5	4	12.7		1		.7	1	1		1.3
Mytilus edulis			1	.7	1			.7								
Modiolus demissus						1		.7								
Mya arenaria										1		.7				
Gastropoda																
Hydrobia sp. 1		1	1	1.3	2			1.3						1		.7
Hydrobia sp. 2																
Polychaeta																
Scolecolepides viridis	10		11	14	13	19	7	26		1	1	1.3	2	1	1	2.7
Hypaniola grayi	1	2	1	2.7	1	1	1	2								
Oligochaeta																
Tubificidae	4		7	7.3	2	3	8	8.7								
Isopoda																
Cyathura polita	4	1	1	4	3	3	3	6		1	1	1.3	1		1	1.3
Chiridotea almyra																
Edotea triloba						1		.7								
Amphipoda																
Leptocheirus plumulosus			1	.7	13	19	14	30.7	1	2	4	4.7	4	6	3	8.7
Corophium lacustre	1	1	5	4.7	2	1	4	4.7								
Unid. Gammaridae						1		.7								
Monoculodes edwardsi									3		1	2.7				
Lepidactylus dytiscus									7	7	2	10.7	10	4	8	14.7
Diptera																
Nematoda		2		1.3	1	1	3	3.3		2		1.3			1	.7
Total No.	23	13	31	44.7	48	55	44	98.2	11	15	9	23.4	18	13	14	30.1
Total No. (excluding nematodes)				43.4				94.9				22.1				29.4

Table D31
Benthic macroinvertebrate counts; Dundee Cr.; November 25, 1979; mud stations

Station	L2.5-69 No./.05 m^2			No./ 0.1 m^2	L3-68 No./.05 m^2			No./ 0.1 m^2	L2.5-67 No./.05 m^2			No./ 0.1 m^2	L3-65.5 No./.05 m^2			No./ 0.1 m^2	L5-66 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Pelecypoda																				
<u>Rangia</u> <u>cuneata</u>	1			.7						2	1	2		1		.7		1	1	1.4
Gastropoda																				
<u>Hydrobia</u> sp. 1																				
<u>Hydrobia</u> sp. 2																				
Polychaeta																				
<u>Scolecolepides</u> <u>viridis</u>									4			2.7					2	1	2	3.3
<u>Hypaniola</u> <u>grayi</u>	1	1		1.3										1		.7				
Oligochaeta																				
Tubificidae	9	11	7	18	5	3	9	11.3	17	14	16	31.3	112	55	74	160.7	8	1	1	6.7
Isopoda																				
<u>Cyathura</u> <u>polita</u>	1			.7											1	.7		1		.7
<u>Chiridotea</u> <u>almyra</u>																				
<u>Edotea</u> <u>triloba</u>																				
Amphipoda																				
<u>Leptocheirus</u> <u>plumulosus</u>	2	1		2			3	2	4	6	3	8.7	20	24	10	36	6	2	3	7.3
<u>Corophium</u> <u>lacustre</u>	1			.7							1	.7	1	1	1	2				
Unid. Gammaridae		1		.7		1		.7					3		1	2.7				
<u>Monoculodes</u> <u>edwardsi</u>																				
Diptera	20	69	17	70.7	16	84	17	78	17	16	29	41.3	22	20	21	42	17	6	14	24.7
Nematoda	7	10	9	17.3	5	18	8	20.7	6	13	9	18.7	10	13	6	19.3	4	4	1	6
Total No.	42	93	33	112.1	26	106	37	112.7	48	51	59	105.3	168	115	114	264.7	37	16	22	50
Total No. (excluding nematodes)				94.8				92.0				86.6				245.4				44

Table D32

Benthic macroinvertebrate counts; Dundee Cr.; November 26, 1979; sand stations

Station	L4.5-65.25 No./.05 m^2			No./ 0.1 m^2	L5-65.25 No./.05 m^2			No./ 0.1 m^2	L5-64.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
<u>Rangia cuneata</u>	4	3	3	6.7	5	2	4	7.3	6	2	2	6.7
Gastropoda												
<u>Hydrobia</u> sp. 1												
<u>Hydrobia</u> sp. 2												
Polychaeta												
<u>Scolecolepides viridis</u>										1		.7
<u>Hypaniola grayi</u>	4	2	1	4.7			1	.7	5	5	8	12
<u>Laeonereis culveri</u>	19	4	7	20			1	.7	5	9	2	10.7
Oligochaeta												
Tubificidae	39	4	4	31.3	1			.7	48	16	10	49.3
Isopoda												
<u>Cyathura polita</u>					1			.7	1	1		1.3
<u>Chiridotea almyra</u>												
<u>Edotea triloba</u>												
Amphipoda												
<u>Leptocheirus plumulosus</u>	4	1	2	4.7	2	1		2		7		4.7
<u>Corophium lacustre</u>	2	1	2	3.3	2	2	1	3.3	1	1	1	2
Unid. Gammaridae			1	.7								
<u>Monoculodes edwardsi</u>												
<u>Lepidactylus dytiscus</u>					2		3	3.3				
Diptera	21	11	14	30.7	5	6	10	14	17	15	4	24
Nematoda	2			1.3		1		.7	5	3		5.3
Total No.	95	26	34	103.3	18	12	20	33.4	88	60	27	116.7
Total No. (excluding nematodes)				102				32.7				111.4

Table D33
Benthic macroinvertebrate counts; Upper Saltpeter Cr.; November 26, 1979; mud stations

Station	K4-62 No./.05 m^2			No./ 0.1 m^2	K5.5-60 No./.05 m^2			No./ 0.1 m^2	L1-61 No./.05 m^2			No./ 0.1 m^2	L4-59.5 No./.05 m^2			No./ 0.1 m^2	L5-60 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
<u>Rangia cuneata</u>	.2			1.3			2	1.3	2		3	3.3	2	4	2	5.3	5	2	3	6.7
Gastropoda																				
<u>Hydrobia</u> sp. 1																				
<u>Hydrobia</u> sp. 2																				
Polychaeta																				
<u>Scolecolepides viridis</u>						.1		.7		1		.7	9	5	11	16.7		1	2	2
Oligochaeta																				
Tubificidae	6	1	13	13.3	6	9	5	13.3	1	8	2	7.3	7	13	12	21.3	8	10	1	12.7
Isopoda																				
<u>Cyathura polita</u>					1	1		1.3	1			.7	2	1	1	2.7		1		.7
<u>Chiridotea almyra</u>																				
<u>Edotea triloba</u>																				
Amphipoda																				
<u>Leptocheirus plumulosus</u>	3	8		7.3					2	1		2	3	8	4	10	5	3	4	8
<u>Corophium lacustre</u>		1		.7							1	.7								
Unid. Gammaridae	2			1.3					2	1		2								
<u>Monoculodes edwardsi</u>																				
Decapods																				
<u>Rhithropanopeus harrisii</u>													1			.7				
Diptera	21	35	33	59.3	21	9	19	32.7	23	13	32	45.3	22	31	35	58.7	16	14	11	27.3
Nematoda		1		.7	6	5	15	17.3	16	27	33	50.7	6	22	10	25.3	5	11	21	24.7
Total No.	34	46	46	83.9	34	25	41	66.6	47	51	71	112.7	52	84	75	140.7	39	42	42	82
Total No. (excluding nematodes)				83.2				49.3				62				115.4				57.3

Table D34

Benthic macroinvertebrate counts; Upper Saltpeter Cr.; November 26, 1979

	muddy sand								sandy mud				sand			
Station	L2.75-58.5 No./.05 m^2			No./ 0.1 m^2	L2.5-58.5 No./.05 m^2			No./ 0.1 m^2	L2.5-60.5 No./.05 m^2			No./ 0.1 m^2	L2-58.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																
Pelecypoda																
<u>Rangia cuneata</u>	3	5	1	6	2		3	3.3	2	3	1	4	1	2	1	2.7
Gastropoda																
<u>Hydrobia</u> sp. 1																
<u>Hydrobia</u> sp. 2																
Polychaeta																
<u>Scolecolepides viridis</u>	1			.7						4	3	4.7			1	.7
<u>Hypaniola grayi</u>	13	16	19	32		3		2		1		.7				
<u>Nereis succinea</u>	1			.7					2			1.3	1	1		1.3
<u>Laeonereis culveri</u>	21	2	28	34	2	8	7	11.3	3	1	8	8	1		1	1.3
Oligochaeta																
Tubificidae	87	109	108	202.7	16	86	27	86	7	49	33	59.3	22	32	46	66.7
Isopoda																
<u>Cyathura polita</u>			1	.7					4	4	4	8		1	1	1.3
<u>Chiridotea almyra</u>																
<u>Edotea triloba</u>	3	2	1	4												
Amphipoda																
<u>Leptocheirus plumulosus</u>	2		2	2.7					4	10	1	10	1			.7
<u>Corophium lacustre</u>	2		1	2		2	2	2.7	1		1	1.3	2	2	7	7.3
<u>Unid. Gammaridae</u>					1		1	1.3			1	.7				
<u>Monoculodes edwardsi</u>																
Diptera	17	14		20.7	7	17	2	17.3	23	31	31	56.7	5	3	3	7.3
Nematoda	1	3	1	3.3	1	2		2	34	50	35	79.3	1		1	1.3
Total No.	151	151	162	309.3	29	118	42	126	80	153	118	234	34	41	61	90.7
Total No. (excluding nematodes)				306				124				154.7				89.4

Table D35
Benthic macroinvertebrate counts; Lower Saltpeter Cr.; November 27, 1979; mud stations

Station	N4-59 No./.05 m^2			No./ 0.1 m^2	N3-59 No./.05 m^2			No./ 0.1 m^2	N3-61 No./.05 m^2			No./ 0.1 m^2	N2-62 No./.05 m^2			No./ 0.1 m^2	N1-62 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
Rangia cuneata	2		3	3.3	1	1	1	2		2	3	3.3	1	1	2	2.7	1		2	2
Macoma mitchelli					2			1.3												
Gastropoda																				
Hydrobia sp. 1					1			.7												
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	14	7	9	20	5	1	4	6.7	4	4	4	8	2	5	1	5.3	2	4	2	5.3
Oligochaeta																				
Tubificidae	4	2	14	13.3	4	1	3	5.3	6	14	9	19.3	7	22	2	20.7	3	5	3	7.3
Isopoda																				
Cyathura polita	1	2	3	4	2	2	4	5.3		1	1	1.3		3	1	2.7	2	2	1	3.3
Chiridotea almyra																				
Edotea triloba		1		.7			1	.7						1		.7				
Amphipoda																				
Leptocheirus plumulosus	36	59	52	98	52	61	63	117.3	38	50	43	87.3	42	58	41	94	26	26	18	46.7
Corophium lacustre		2	1	2					1		1	1.3							1	.7
Unid. Gammaridae						1	1	1.3	2		1	2	1	1		1.3		1		.7
Monoculodes edwardsi										1		.7			1	.7				
Diptera	7	24	10	27.3	41	43	19	68.7	29	13	40	54.7	20	7	16	28.7	29	27	34	60
Nematoda		2	36	25.3	65	81	18	109.3	25	3	16	29.3	42	2	21	43.3	29	25	28	54.7
Total No.	64	99	128	194	173	191	114	318.7	105	88	118	207.3	115	100	85	200	92	90	89	180.7
Total No. (excluding nematodes)				168.7				209.4				178.0				156.7				126

Table D36

Benthic macroinvertebrate counts, Doves Cove; December 1, 1979; mud stations

Station	T2-81 No./.05 m^2			No./ 0.1 m^2	T1.5-80.5 No./.05 m^2			No./ 0.1 m^2	T1-81.5 No./.05 m^2			No./ 0.1 m^2	S5.5-81 No./.05 m^2			No./ 0.1 m^2	S4.5-80.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
Rangia cuneata									1			.7			1	.7		1		.7
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis							1	.7	5	6	3	9.3	7	3	2	8	1	4		3.3
Oligochaeta																				
Tubificidae	11	10	8	19.3	6	11	7	16	19	23	4	30.7	17	7	8	21.3	11	6	14	20.7
Isopoda																				
Cyathura polita																				
Chiridotea almyra																				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosus	4	4	3	7.3	3	3	2	5.3	6	4	5	10			1	.7				
Corophium lacustre		1		.7	1			.7					1			.7	1			.7
Unid. Gammaridae																				
Monoculodes edwardsi																				
Diptera	39	47	40	84	34	44	46	82.7	56	35	72	108.7	109	47	67	148.7	36	65	40	94
Nematoda	19	46	21	57.3	9	6	3	12	40	105	89	156	26	5	15	30.7	6	2	5	8.7
Total No.	73	108	72	168.6	53	64	59	117.4	127	173	173	315.4	160	62	94	210.8	55	78	59	128.1
Total No. (excluding nematodes)				111.3				105.4				159.4				180.1				119.4

Table D37
Benthic macroinvertebrate counts, Doves Cove; December 1, 1979; sand stations

Station	T4.5-76.5 No./.05 m^2			No./ 0.1 m^2	T5.5-76 No./.05 m^2			No./ 0.1 m^2	U1.5-75.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
<u>Rangia cuneata</u>		2	1	2	1	1		1.3		1		.7
Gastropoda												
<u>Hydrobia</u> sp. 1												
<u>Hydrobia</u> sp. 2												
Polychaeta												
<u>Scolecolepides viridis</u>						1		.7		1		.7
<u>Polydora ligni</u>			1	.7	2			1.3	1		1	1.3
<u>Hypaniola grayi</u>							1	.7				
Oligochaeta												
Tubificidae	18	26	13	38	7	9	5	14	6		4	6.7
Isopoda												
<u>Cyathura polita</u>												
<u>Chiridotea almyra</u>										1		.7
<u>Edotea triloba</u>												
Amphipoda												
<u>Leptocheirus plumulosus</u>									1			.7
<u>Corophium lacustre</u>							1	.7		1		.7
Unid. Gammaridae												
<u>Monoculodes edwardsi</u>												
Diptera	8	26	16	33.3	26	19	12	38	5	12	7	16
Nematoda			1	.7	1			.7				
Total No.	26	54	32	74.7	37	30	19	57.4	13	16	12	27.3
Total No. (excluding nematodes)				74.0				56.7				27.3

Table D38
Benthic macroinvertebrate counts, Sue Cr.; November 30, 1979; mud stations

Station	H3-32.5 No./.05 m^2			No./ 0.1 m^2	H2.5-32.5 No./.05 m^2			No./ 0.1 m^2	H2-32 No./.05 m^2			No./ 0.1 m^2	H1-32 No./.05 m^2			No./ 0.1 m^2	G5.5-32.5 No./.05 m^2			No./ 0.1 m^2
Sample	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**	**A**	**B**	**C**	**Total**
Organism																				
Polecypoda																				
Rangia cuneata			2	1.3															1	.7
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis																				
Oligochaeta																				
Tubificidae	19	2	18	26	34	2	13	32.7	1	5	4	6.7	10	5	13	18.7	28	13	18	39.3
Isopoda																				
Cyathura polita	8		2	6.7																
Chiridotea almyra																				
Edotea triloba										1		.7								
Amphipoda																				
Leptocheirus plumulosus	26	29	29	56	13	15	7	23.3	1	1	3	3.3	9	6	3	12	1	1	1	2
Corophium lacustre	1		1	1.3	2		2	2.7						1		.7	1		1	1.3
Unid. Gammaridae																				
Monoculodes edwardsi																				
Diptera	27	13	17	38	11	12	15	25.3	11	15	12	25.3	9	17	14	26.7	23	33	30	57.3
Nematoda	62	23	46	87.3	10	12	10	21.3	1			.7	2			1.3				
Total No.	143	67	115	216.6	70	41	47	105.3	14	22	19	36.7	30	29	30	59.4	53	47	51	100.6
Total No. (excluding nematodes)				129.3				84.0				36.0				58.1				100.6

Table D39
Benthic macroinvertebrate counts, Sue Cr.; November 30, 1979; sand stations

Station	H1.5-31 No./.05 m^2			No./ 0.1 m^2	H2-31.5 No./.05 m^2			No./ 0.1 m^2	H2.5-31.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
<u>Rangia cuneata</u>	1	1	2	2.7	1		3	2.7	2	9	5	10.7
Gastropoda												
<u>Hydrobia</u> sp. 1		1		.7								
<u>Hydrobia</u> sp. 2												
Polychaeta												
<u>Scolecolepides viridis</u>	3	1	1	3.3	1			.7			1	.7
<u>Hypaniola grayi</u>		1		.7	1	1	1	2			1	.7
<u>Nereis succinea</u>			1	.7						1		.7
<u>Polydora ligni</u>	3			2								
Oligochaeta												
Tubificidae	111	79	96	190.7	18	25	32	50	13	7	20	26.7
Isopoda												
<u>Cyathura polita</u>												
<u>Chiridotea almyra</u>									1			.7
<u>Edotea triloba</u>		1	1	1.3	1			.7				
Amphipoda												
<u>Leptocheirus plumulosus</u>	2			1.3		1		.7		1		.7
<u>Corophium lacustre</u>	4	6	4	9.3		1		.7	2	3	1	4
Unid. Gammaridae												
<u>Monoculodes edwardsi</u>												
Diptera	24	19	22	43.3	18	12	11	27.3	12	11	5	18.7
Nematoda			2	1.3								
Total No.	148	109	129	257.3	40	40	47	84.7	30	32	33	63.3
Total No. (excluding nematodes)				256.0				84.7				63.3

Table D40
Benthic macroinvertebrate counts; Gunpowder R.; November 27, 1979; mud stations

Station	02-46 No./.05 m^2			No./ 0.1 m^2	04-45 No./.05 m^2			No./ 0.1 m^2	05-44 No./.05 m^2			No./ 0.1 m^2	04-52 No./.05 m^2			No./ 0.1 m^2	P1-51 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organims																				
Pelecypoda																				
Rangia cuneata	6	10	13	19.3	2	2	1	3.3	6	6	2	9.3	3	2	2	4.7	3	4		4.7
Gastropoda																				
Hydrobia sp. 1						2		1.3			1	.7								
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	8	16	40	42.7	8	5	7	13.3	12	16	6	22.7		2		1.3	2		1	2
Oligochaeta																				
Tubificidae	6	3	3	8	1	4	5	6.7	25	5	6	24	8		4	8		16	7	15.3
Isopoda																				
Cyathura polita	2	5	8	10	4	1	2	4.7	3	5		5.3	3	4	1	5.3	1	3	2	4
Chiridotea almyra																				
Edotea triloba	4		2	4	1			.7	4			2.7								
Amphipoda																				
Leptocheirus plumulosus	92	96	86	182.7	46	37	112	130	95	66	73	156	139	57	47	162	47	49	78	116
Corophium lacustre	1	3		2.7					2	1	1	2.7	1			.7			1	.7
Unid. Gammaridae			1	.7						2		1.3						1		.7
Monoculodes edwardsi																				
Diptera	6	3	5	9.3	1	4	4	6	9	7	13	19.3	20	19	21	40	8	8	18	22.7
Nematoda	8		2	6.7		17	5	14.7	114	5	1	80	27	54	71	101.3	1	100	125	150.7
Total No.	133	136	160	286.0	63	72	136	180.7	270	113	103	324	201	138	146	323.3	62	181	232	316.7
Total No. (excluding nematodes)				279.3				166.0				244				222				166.1

Table D41
Benthic macroinvertebrate counts; Middle R.; November 28, 1979; mud stations

Station	I3-38 No./.05 m²			No./ 0.1 m²	I5-37 No./.05 m²			No./ 0.1 m²	I4-35 No./.05 m²			No./ 0.1 m²	J1-35 No./.05 m²			No./ 0.1 m²	J3-36 No./.05 m²			No./ 0.1 m²
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
Rangia cuneata		2	1	2		1		.7		2	1	2	3	1	2	4	10	4	3	11.3
Macoma mitchelli																	2			1.3
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	2	1		2	7	9	5	14	9	6	6	14	2	2	4	5.3	11	27	8	30.7
Oligochaeta																				
Tubificidae	2	2		2.7	12	10		14.7	1	5	2	5.3			6	4	18	1	8	18
Isopoda																				
Cyathura polita	4	3		4.7	3	5	5	8.7	3	2	4	6	4	1	1	4	7	5	4	10.7
Chiridotea almyra																				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosus	20	16		24	78	64	25	111.3	45	71	50	110.7	72	30	79	120.7	66	31	53	100
Corophium lacustre	1			.7	1	1		1.3	1	2		2	1		3	2.7	2		2	2.7
Unid. Gammaridae																				
Monoculodes edwardsi																				
Diptera	2	5		4.7	3	6	10	12.7	2	10	7	12.7	9	4	9	14.7	3	3	3	6
Nematoda	3			2	1	2	2	3.3	1	14	7	14.7	3	1	3	4.7	12	2	5	12.7
Total No.	34	29	1	42.7	105	98	47	166.7	62	112	77	167.3	94	39	107	160	131	73	86	193.3
Total No. (excluding nematodes)				40.7				163.4				152.6				155.3				180.6

Table D42

Benthic macroinvertebrate counts, Weir Pt., November 29, 1979

	mud				mud				muddy sand				muddy sand			
Station	N3-36 No./.05 m^2			No./ 0.1 m^2	N3.5-38 No./.05 m^2			No./ 0.1 m^2	N1.5-40 No./.05 m^2			No./ 0.1 m^2	N3.5-41 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																
Pelecypoda																
<u>Rangia</u> <u>cuneata</u>	8	5	5	12	2	7	1	6.7	1	1	7	6	1		3	2.7
<u>Macoma</u> <u>mitchelli</u>		1		.7		1	1	1.3		1		.7				
Gastropoda																
<u>Hydrobia</u> sp. 1	2	4	3	6												
<u>Hydrobia</u> sp. 2																
Polychaeta																
<u>Scolecolepides</u> <u>viridis</u>	3	9	6	12	5	6	6	11.3							1	.7
<u>Hypaniola</u> <u>grayi</u>										1		.7				
Oligochaeta																
Tubificidae	9	27	8	29.3	12	8	11	20.7	4	5	1	6.7	2	1	8	7.3
Isopoda																
<u>Cyathura</u> <u>polita</u>	1	2	1	2.7	2	5	3	6.7			1	.7	3	1	4	5.3
<u>Chiridotea</u> <u>almyra</u>																
<u>Edotea</u> <u>triloba</u>																
Amphipoda																
<u>Letocheirus</u> <u>plumulosus</u>	94	57	61	141.3	85	116	91	194.7	16	21	9	30.7	22	18	24	42.7
<u>Corophium</u> <u>lacustre</u>	1	1		1.3			1	.7	1	3		2.7		4	1	3.3
Unid. Gammaridae																
<u>Monoculodes</u> <u>edwardsi</u>	1			.7						1		.7				
<u>Lepidactylus</u> <u>dytiscus</u>									1			.7				
Diptera	6	4	4	9.3	10	6	8	16		1		.7		2	1	2
Nematoda	30	41	30	67.3	70	54	37	107.3							1	.7
Total No.	155	151	118	282.7	186	203	159	365.3	23	34	18	50	28	26	43	64.7
Total No. (excluding nematodes)				215.4				258				50				64.0

Table D43

Benthic macroinvertebrate counts, Weir Pt.; November 29, 1979

Station	sand				sand				sandy mud				sandy mud			
	N2-41.5 No./.05 m^2			No./ 0.1 m^2	N3.5-42 No./.05 m^2			No./ 0.1 m^2	N3-39 No./.05 m^2			No./ 0.1 m^2	N5-41 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																
Pelecypoda																
<u>Rangia</u> <u>cuneata</u>	1			.7	2			1.3	6	4	7	11.3	3	12	5	13.3
Gastropoda																
<u>Hydrobia</u> sp. 1									4	8	4	10.7				
<u>Hydrobia</u> sp. 2																
Polychaeta																
<u>Scolecolepides</u> <u>viridis</u>									6	2	3	7.3	18	4		14.7
<u>Hypaniola</u> <u>grayi</u>									8	21	3	21.3	1	1	1	2
<u>Polydora</u> <u>ligni</u>									2	1	1	2.7				
Oligochaeta																
Tubificidae									44	9	35	58.7	22	52	6	53.3
Isopoda																
<u>Cyathura</u> <u>polita</u>									1	2	4	4.7	9	7	3	12.7
<u>Chiridotea</u> <u>almyra</u>													1			.7
<u>Edotea</u> <u>triloba</u>														3		2
Amphipoda																
<u>Leptocheirus</u> <u>plumulosus</u>			1	.7	1	4	1	4	14	13	7	22.7	44	102	83	152.7
<u>Corophium</u> <u>lacustre</u>									22	21	17	40	10	10	4	16
Unid. Gammaridae										1		.7			1	.7
<u>Monoculodes</u> <u>edwardsi</u>					1			.7								
<u>Lepidactylus</u> <u>dytiscus</u>	22	15	15	34.7	16	8	11	23.3								
Diptera	1			.7		1		.7							2	1.3
Nematoda									1	4	3	5.3	4	1		3.3
Total No.	24	15	16	36.8	20	13	12	30.0	108	86	84	185.4	112	192	105	272.7
Total No. (excluding nematodes)				36.8				30.0				180.1				269.4

Table D44
Benthic macroinvertebrate counts, Seneca Cr.; November 29, 1979; mud stations

Station	K4.5-52 No./.05 m^2			No./ 0.1 m^2	L1-50 No./.05 m^2			No./ 0.1 m^2	L4-48 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
Rangia cuneata	3	3		4		1	4	3.3	16	12	11	26
Gastropoda												
Hydrobia sp. 1										1		.7
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis	8	6	9	15.3	1		2	2	16	12	6	22.7
Oligochaeta												
Tubificidae	7	24	14	30	24		6	20	16	44	8	45.3
Isopoda												
Cyathura polita	3	2	1	4	4		5	6	6	1	5	8
Chiridotea almyra												
Edotea triloba					1			.7		1		.7
Amphipoda												
Leptocheirus plumulosus	49	77	81	138	87	40	39	110.7	82	101	86	179.3
Corophium lacustre	1	2		2	1	2	2	3.3	1	5		4
Unid. Gammaridae					1			.7			1	.7
Monoculodes edwardsi												
Diptera	1	5	4	6.7	8	8	7	15.3	10		11	14
Nematoda	27	129	120	184	32	48	41	80.7	29	50	22	67.3
Total No.	99	248	229	384	159	99	106	242.7	176	227	150	368.7
Total No. (excluding nematodes)				200				162				301.4

Table D45

Benthic macroinvertebrate counts; Gunpowder R.; November 27, 1979; mud stations

Station	P3-53 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total
Organism				
Pelecypoda				
Rangia cuneata	2	2	3	4.7
Gastropoda				
Hydrobia sp. 1				
Hydrobia sp. 2				
Polychaeta				
Scolecolepides viridis	3	21	7	20.7
Hypaniola grayi			1	.7
Oligochaeta				
Tubificidae	2	1	5	5.3
Isopoda				
Cyathura polita	3	5	5	8.7
Chiridotea almyra			1	.7
Edotea triloba				
Amphipoda				
Leptocheirus plumulosus	64	77	75	144
Corophium lacustre				
Unid. Gammaridae				
Monoculodes edwardsi				
Diptera	19	14	12	30
Nematoda	216	6	142	242.7
Total No.	309	126	251	457.3
Total No. (excluding nematodes)				214.6

Table D46
Benthic macroinvertebrate counts; Chesapeake Bay; November 27, 1979

Station	M2-31 No./.05 m^2			No./ 0.1 m^2	L4-39 No./.05 m^2			No./ 0.1 m^2	L4-35 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
Rangia cuneata	12	9	6	18	12	15	12	26	4	14	11	19.3
Gastropoda												
Hydrobia sp. 1		1		.7		1		.7		1		.7
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis	15	5	9	19.3	4	18	13	23.3	1	1	8	6.7
Hypaniola grayi							2	1.3				
Oligochaeta												
Tubificidae	4		1	3.3			1	.7	5	6	3	9.3
Isopoda												
Cyathura polita	2	1	2	3.3	5		5	6.7	1	2		2
Chiridotea almyra												
Edotea triloba							1	.7	2			1.3
Amphipoda												
Leptocheirus plumulosus	112	67	127	204	38	118	79	156.7	41	62	31	89.3
Corophium lacustre	4		3	4.7		1	1	1.3	4	3	1	5.3
Unid. Gammaridae	2			1.3	1			.7	1			.7
Monoculodes edwardsi												
Diptera		2		1.3	3	3	1	4.7	2	3	5	6.7
Nematoda		1	1	1.3						2		1.3
Total No.	151	86	149	275.3	63	156	115	222.7	61	94	59	142.7
Total No. (excluding nematodes)				256				222.7				141.4

Table D47
Benthic macroinvertebrate counts; Hawk Cove; November 30, 1979; mud stations

Station	I5-14 No./.05 m^2			No./ 0.1 m^2	J5-15 No./.05 m^2			No./ 0.1 m^2	J2-17 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
Rangia cuneata	9	3	4	10.7	19	13	16	32	26	16	14	37.3
Macoma mitchelli							1	.7		1		.7
Gastropoda												
Hydrobia sp. 1												
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis		3	1	2.7	14	16	16	30.7	7	17	7	20.7
Hypaniola grayi					1	1	3	3.3				
Oligochaeta												
Tubificidae	17	12	22	34	83	234	79	264	17	64	34	76.7
Isopoda												
Cyathura polita	4	3	1	5.3	3	3	1	4.7	3	1	1	3.3
Chiridotea almyra												
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus	22	47	28	64.7	23	68	59	100	49	96	35	120
Corophium lacustre					4	12	9	16.7	1	1		1.3
Unid. Gammaridae			1	.7								
Monoculodes edwardsi												
Diptera	18	8	7	22	4	1	1	4	4	4	7	10
Nematoda	29	21	10	40	10	13	3	17.3	89	235	236	373.3
Total No.	99	97	74	180	161	361	188	473.3	196	435	334	643.3
Total No. (excluding nematodes)				140				456				270

Table D48
Benthic macroinvertebrate counts; Dundee Cr.; April 2, 1980; mud stations

Station	L2-69.5 No./.05 m^2			No./ 0.1 m^2	L1.5-68.5 No./.05 m^2			No./ 0.1 m^2	L2-67 No./.05 m^2			No./ 0.1 m^2	L2.5-66.5 No./.05 m^2			No./ 0.1 m^2	L4-67 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
Rangia cuneata			1	.7		1	4	3.3	1			.7	2	1		2.0				
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis		5		3.3	3	2	1	4	6	3	4	8.7	4		1	3.3	1		4	3.3
Hypaniola grayi		1		.7	2			1.3												
Oligochaeta																				
Tubificidae	17	29	12	38.7	11	12	21	29.3	4	9	5	12.0	70	39	127	157.3	10	10	6	17.3
Isopoda																				
Cyathura polita			1	.7	1			.7			1	.7							1	.7
Chiridotea almyra																				
Edotea triloba																				
Amphipoda																				
Leptocheirus plumulosus	3	8	13	16	3	6	4	8.7	4	5	1	6.7	6	1	3	6.7	6		1	4.7
Corophium lacustre	1		1	1.3						1		.7		1	1	1.3		1		.7
Unid. Gammaridae					1			.7						4	1	3.3				
Monoculodes edwardsi																				
Diptera	45	59	59	108.7	67	50	89	137.3	46	34	28	72.0	39	61	51	100.7	40	44	46	86.7
Nematoda	62	43	40	96.7	52	37	98	124.7	110	45	37	128.0	33	28	57	78.7	37	34	37	72.0
Total No.	128	145	127	266.8	140	108	217	310	171	97	76	229.5	154	135	241	353.3	94	89	95	185.4
Total No. (excluding nematodes)				170.1				185.3				101.5				274.6				113.4

Table D49
Benthic macroinvertebrate counts; Dundee Cr.; April 3, 1980; sand stations

Station	L4.75-65.25 No./.05 m^2			No./ 0.1 m^2	L5-65.25 No./.05 m^2			No./ 0.1 m^2	L5-64.75 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
Rangia cuneata	5	3		5.3					3	1	1	3.3
Gastropoda												
Hydrobia sp. 1												
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis	3	48	69	80.0	13		15	18.7	35	60	1	64.0
Hypaniola grayi	6	10	10	17.3					14	7	14	23.3
Nereis succinea					2		3	3.3		2	2	2.7
Laeonereis culveri	4	8	16	18.7	1			.7	1	1		1.3
Oligochaeta												
Tubificidae	25	17	30	48.0	16	8	2	17.3	44	33	22	66.0
Isopoda												
Cyathura polita												
Chiridotea almyra												
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus	8	7	3	12.0	1	3	1	3.3	11	4	3	12.0
Corophium lacustre	2	1	3	4.0	6	1	3	6.7	9	5	5	12.7
Unid. Gammaridae	1			.7	1	2	5	5.3			1	.7
Monoculodes edwardsi												
Lepidactylus dytiscus					3	1	5	6.0				
Diptera	12	9	16	24.7	25	7	14	30.7	50	53	37	93.3
Nematoda	4	2	1	4.7	1			.7	26	10	31	44.7
Total No.	70	105	148	215.4	69	22	48	92.7	193	176	117	324
Total No. (excluding nematodes)				210.7				92				279.3

Table D50
Benthic macroinvertebrate counts; Upper Saltpeter Cr.; April 3, 1980; mud stations

Station	K4-61 No./.05 m^2			No./ 0.1 m^2	K4.5-60.5 No./.05 m^2			No./ 0.1 m^2	K5.5-61 No./.05 m^2			No./ 0.1 m^2	L3-59.5 No./.05 m^2			No./ 0.1 m^2	L3.5-60.5 No./.05 m^2			No./ 0.1 m^2	L4-59 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																								
Pelecypoda																								
Rangia cuneata		1	1	1.3		2	1	2.0			2	1.3	2	1	1	2.7	4	2	1	4.7				
Gastropoda																								
Hydrobia sp. 1																								
Hydrobia sp. 2																								
Polychaeta																								
Scolecolepides viridis	7	15	16	25.3	28	20	9	38.0	12	15	7	22.7	13	30	15	38.7	51	32	29	74.7	21	16	4	27.3
Oligochaeta																								
Tubificidae	1	4	12	11.3	15	4	16	23.3	9	17	11	24.7	5	18	8	20.7	29	18	30	51.3	14	19	1	22.7
Isopoda																								
Cyathura polita									1			.7	2	2	2	4.0		2		1.3			2	1.3
Chiridotea almyra																								
Edotea triloba																								
Amphipoda																								
Leptocheirus plumulosus		3	2	3.3	4	2	2	5.3	1		1	1.3	4	1	4	6.0	2	2	1	3.3	5	6	3	9.3
Corophium lacustre										1		.7												
Unid. Gammaridae																		3		2.0				
Monoculodes edwardsi																								
Diptera	40	48	25	75.3	35	25	30	60.0	39	33	52	82.7	35	31	18	56.0	64	44	35	95.3	34	8	23	43.3
Nematoda	12	6		12.0	3	3	2	5.3	27	12	87	84.0	8	15	7	20.0	35	58	18	74.0	23	17	45	56.7
Total No.	60	77	56	128.5	85	56	60	133.9	89	79	160	218.1	69	98	55	148.1	185	161	114	306.6	97	66	78	160.6
Total No. (excluding nematodes)				116.5				128.6				134.1				128.1				232.6				103.9

Table D51

Benthic macroinvertebrate counts; Upper Saltpeter Cr.; April 3, 1980; sand stations

Station	L1.5-58.5 No./.05 m^2			No./0.1 m^2	L2.5-58.5 No./.05 m^2			No./0.1 m^2	L3-58 No./.05 m^2			No./0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
<u>Rangia cuneata</u>	4	3	3	6.7	3	2	4	6.0		3	2	3.3
Gastropoda												
<u>Hydrobia</u> sp. 1												
<u>Hydrobia</u> sp. 2												
Polychaeta												
<u>Scolecolepides viridis</u>	56	29	92	118.0	40	46	18	69.3	6	38	26	46.7
<u>Hypaniola grayi</u>	1			.7	4	8	3	10.0		6	3	6.0
<u>Nereis succinea</u>		15	4	12.7					2	6		5.3
<u>Laeonereis culveri</u>		2	1	2.0	2	2	2	4.0			3	2.0
Oligochaeta												
Tubificidae	110	68	95	182.0	146	159	103	272.0	13	47	43	68.7
Isopoda												
<u>Cyathura polita</u>	2		1	2.0								
<u>Chiridotea almyra</u>												
<u>Edotea triloba</u>		1		.7								
Amphipoda												
<u>Leptocheirus plumulosus</u>	9	9	9	18.0	4	4	1	6.0	3			2.0
<u>Corophium lacustre</u>					1			.7		1	1	1.3
Unid. Gammaridae					2			1.3				
<u>Monoculodes edwardsi</u>												
Diptera	17	23	18	38.7	4	10	7	14.0	5	13	3	14.0
Nematoda	6	7	1	9.3	1	3	1	3.3			1	.7
Total No.	205	157	224	390.8	207	234	139	386.6	29	114	82	150
Total No. (excluding nematodes)				381.5				383.3				149.3

Table D52
Benthic macroinvertebrate counts; Lower Saltpeter Cr.; April 5, 1980; mud stations

Station	M5-62 No./.05 m^2			No./ 0.1 m^2	N2-61 No./.05 m^2			No./ 0.1 m^2	N3-62 No./.05 m^2			No./ 0.1 m^2	N3-60 No./.05 m^2			No./ 0.1 m^2	N4-59 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
<u>Rangia</u> <u>cuneata</u>			2	1.3			1	.7	1	1		1.3	2	1		2.0		2		1.3
<u>Macoma</u> <u>mitchelli</u>	1			.7																
Gastropoda																				
<u>Hydrobia</u> sp. 1																				
<u>Hydrobia</u> sp. 2																				
Polychaeta																				
<u>Scolecolepides</u> <u>viridis</u>	1	3	3	4.7	9	3	2	9.3	4	11	1	10.7	3	7	8	12.0	8	2	2	8.0
<u>Hypaniola</u> <u>grayi</u>	1			.7																
Oligochaeta																				
Tubificidae	8	19	17	29.3	13	18	34	43.3	24	49	10	55.3	19	13	12	29.3	12	15	6	22.0
Isopoda																				
<u>Cyathura</u> <u>polita</u>									2	2		2.7	2		1	2.0				
<u>Chiridotea</u> <u>almyra</u>																				
<u>Edotea</u> <u>triloba</u>														1		.7				
Amphipoda																				
<u>Leptocheirus</u> <u>plumulosus</u>	30	13	21	42.7	41	42	51	89.3	29	38	52	79.3	38	42	23	68.7	42	42	25	72.7
<u>Corophium</u> <u>lacustre</u>					1			.7						1		.7				
Unid. Gammaridae																				
<u>Monoculodes</u> <u>edwardsi</u>														1		.7				
Diptera	7	21	34	41.3	16	13	11	26.7	29	17	20	44.0	22	16	13	34.0	15	19	13	31.3
Nematoda	60	33	53	97.3	25	68	105	132.0	55	41	52	98.7	77	16	35	85.3	126	56	32	142.7
Total No.	108	89	130	218	105	144	204	302	144	159	135	292	163	98	92	235.4	203	136	78	278
Total No. (excluding nematodes)				120.7				170				193.3				150.1				135.3

Table D53

Benthic macroinvertebrate counts; Gunpowder R.; April 1980

Station	05-53			No./	P2-51			No./	P3-53			No./	03-45			No./	04-44			No./	P1-45			No./
	No./.05 m^2			0.1 m^2	No./.05 m^2			0.1 m^2	No./.05 m^2			0.1 m^2	No./.05 m^2			0.1 m^2	No./.05 m^2			0.1 m^2	No./.05 m^2			0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																								
Pelecypoda																								
Rangia cuneata	2	1	4	4.7		3	2	3.3	5	1	6	8		5	3	5.3	2	1	1	2.7	3	2	1	4.0
Gastropoda																								
Hydrobia sp. 1									1	1		1.3												
Hydrobia sp. 2																								
Polychaeta																								
Scolecolepides viridis	6	7	1	9.3	12	2	7	14.0	5	10	16	20.7	3	32	24	39.3	18	2	7	18.0	7	5	8	13.3
Hypaniola grayi													1			.7								
Nereis succinea			1	.7																			1	.7
Laeonereis culveri																							3	2.0
Oligochaeta																								
Tubificidae	11	4	7	14.7	19	11	5	23.3	6	9	47	41.3	8	21	17	30.7	11	20	23	36.0	25	67	28	80.0
Isopoda																								
Cyathura polita	2	2	2	4	6	1	2	6.0	2	2	7	7.3	4	4		5.3	2	2	4	5.3	1	1	1	2.0
Chiridotea almyra																								
Edotea triloba									1			.7												
Amphipoda																								
Leptocheirus plumulosus	102	54	55	140.7	78	39	45	108.0	67	77	56	133.3	43	68	91	134.7	21	38	65	82.7	72	114	107	195.3
Corophium lacustre	1	1	3	3.3	1	8		6.0	3		1	2.7	2	2	7	7.3	7	1	1	6.0			1	.7
Unid. Gammaridae						4	1	3.3															1	.7
Monoculodes edwardsi						2		1.3																
Diptera	21	12	25	38.7	20	18	8	30.7	20	16	17	35.3	4	10	7	14.0	16	2	9	18.0	12	7	8	18.0
Nematoda	207	80	262	366.0	78	215	144	291.3	178	46	39	175.3	21	11	9	27.3	40	86	99	150.0	118	232	48	265.3
Total No.	352	161	360	582.1	214	303	214	487.2	288	162	189	425.9	86	153	158	264.6	117	152	209	318.7	238	428	207	582
Total No. (excluding nematodes)				216.1				195.9				250.6				237.3				168.7				316.7

Table D54
Benthic macroinvertebrate counts; Chesapeake Bay; April 4 and 7, 1980

Station	L5-40 No./.05 m^2			No./ 0.1 m^2	L4-36 No./.05 m^2			No./ 0.1 m^2	M1-32 No./.05 m^2			No./ 0.1 m^2	J1-17 No./.05 m^2			No./ 0.1 m^2	J3-16 No./.05 m^2			No./ 0.1 m^2	I4-15 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																								
Pelecypoda																								
Rangia cuneata	8		6	7.0	5	8	16	19.3	5	4	4	8.7	1	3	3	4.7	2	5	8	10.0	4	4	7	10.0
Gastropoda																								
Hydrobia sp. 1																								
Hydrobia sp. 2																								
Polychaeta																								
Scolecolepides viridis	3		3	3.0	11	8	11	20.0	21	16	15	34.7	2		10	8.0	12	2	5	12.7	4	2	2	5.3
Hypaniola grayi		Sample Lost																						
Nereis succinea																								
Laeonereis culveri																								
Oligochaeta																								
Tubificidae	3		13	8.0	11	9	10	20.0	2	3	3	5.3	1	9	84	62.7	33	5	18	37.3	12	7	6	16.7
Isopoda																								
Cyathura polita	1		3	2.0	3	2	5	6.7		3	1	2.7	1	2	3	4.0	2	1	6	6.0	3	1		2.7
Chiridotea almyra	1			.5																				
Edotea triloba										1		.7												
Amphipoda																								
Leptocheirus plumulosus	156		73	114.5	74	47	46	111.3	45	98	57	133.3	76	47	85	138.7	61	86	78	150.0	57	39	76	114.7
Corophium lacustre	6		2	4.0		1		.7	1	1	1	2.0			1	.7	2	1	1	2.7	1			.7
Unid. Gammaridae																								
Monoculodes edwardsi	1		1	1.0																				
Diptera	4		8	6.0	4	3	4	7.3	3	1	3	4.7	2	3	3	5.3	7	3	4	9.3	2	4	3	6.0
Nematoda					1			.7					30	80	102	141.3	37	18	28	55.3	31	14	12	38.0
Total No.	183		109	146	109	78	92	186	77	127	84	192.1	113	144	291	365.4	156	121	148	283.3	114	71	106	194.1
Total No. (excluding nematodes)				146				185.3				192.1				224.1				228				156.1

Table D55
Benthic macroinvertebrate counts; Middle R.; April 7, 1980

Station	I3-38 No./.05 m^2			No./ 0.1 m^2	I4-37 No./.05 m^2			No./ 0.1 m^2	I5-38 No./.05 m^2			No./ 0.1 m^2	I4-35 No./.05 m^2			No./ 0.1 m^2	J2-35 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
<u>Rangia cuneata</u>	1			.7					1			.7		1		.7	1	2	3	4.0
Gastropoda																				
<u>Hydrobia</u> sp. 1																				
<u>Hydrobia</u> sp. 2																				
Polychaeta																				
<u>Scolecolepides viridis</u>	9	10	8	18.0	5	1	1	4.7	2	3		3.3	3	3	3	6.0	1	8	4	8.7
Oligochaeta																				
Tubificidae	12	2	24	25.3	10	63	28	67.3	36	4	8	32.0	3	2	8	8.7	2	17	1	13.3
Isopoda																				
<u>Cyathura polita</u>	3	2	1	4.0	5	6	6	11.3	1	3	5	6.0	1	2	4	4.7		5	5	6.7
<u>Chiridotea almyra</u>																				
<u>Edotea triloba</u>							1	.7												
Amphipoda																				
<u>Leptocheirus plumulosus</u>	34	23	39	64.0	57	38	31	84.0	37	28	12	51.3	65	44	22	87.3	81	51	57	126.0
<u>Corophium lacustre</u>			3	2.0		2	1	2.0		1		.7						1	1	1.3
<u>Monoculodes edwardsi</u>																				
Diptera	6	12	18	24.0	5	7	7	12.7	11	8	13	21.3	6	6	5	11.3	7	13	10	20.0
Nematoda	3	2	3	5.3	11	29	6	30.7	19	6	18	28.7	3	9	9	14.0	4	18	3	16.7
Total No.	68	51	96	143.3	93	146	81	213.4	107	53	56	144	81	67	51	132.7	96	115	84	196.7
Total No. (excluding nematodes)				138				182.7				115.3				118.7				180

Table D56

Benthic macroinvertebrate counts; Sue Cr.; April 7, 1980; mud stations

Station	G5.5-32 No./.05 m^2			No./ 0.1 m^2	H1-32 No./.05 m^2			No./ 0.1 m^2	H2-31.5 No./.05 m^2			No./ 0.1 m^2	H2.5-32.5 No./.05 m^2			No./ 0.1 m^2	H3-32.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
Rangia cuneata	1			.7					1			.7								
Gastropoda																				
Hydrobia sp. 1																				
Hydrobia sp. 2																				
Polychaeta																				
Scolecolepides viridis	3	1	2	4.0	14		17	20.7	1	13	4	12.0	9	8		11.3	10		7	11.3
Oligochaeta																				
Tubificidae	9	13	1	15.3	3		7	6.7	3	13		10.7	26	32	16	49.3	15	5	23	28.7
Isopoda																				
Cyathura polita									1			.7	1		1	1.3			2	1.3
Chiridotea almyra																				
Edotea triloba																	1		1	1.3
Amphipoda																				
Leptocheirus plumulosus	4	1	9	9.3	5	12	5	14.7	10	9	8	18.0	24	22	20	44.0	8	25	17	33.3
Corophium lacustre						1		.7			1	.7		1		.7				
Unid. Gammaridae						1		.7												
Monoculodes edwardsi																				
Diptera	18	7	24	32.7	22	13	15	33.3	15	9	17	27.3	20	22	22	42.7	26	23	19	45.3
Nematoda	2			1.3	1	1	1	2.0			1	.7	12	10	14	24.0	31	45	22	65.3
Total No.	37	22	36	63.3	45	28	45	78.8	31	44	31	70.8	92	95	73	173.3	91	98	91	186.5
Total No. (excluding nematodes)				62				76.8				70.1				149.3				121.2

Table D57
Benthic macrionvertebrate counts; Sue Cr.; April 7, 1980; sand stations

Station	H1.5-31 No./.05 m^2			No./ 0.1 m^2	H2-31.25 No./.05 m^2			No./ 0.1 m^2	H2.5-31.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
<u>Rangia cuneata</u>												
Gastropoda												
<u>Hydrobia</u> sp. 1												
<u>Hydrobia</u> sp. 2												
Polychaeta												
<u>Scolecolepides viridis</u>	6		5	7.3	6	4	3	8.7	4	10	6	13.3
<u>Hypaniola grayi</u>					1	6		4.7	1	1	2	2.7
<u>Nereis succinea</u>											1	.7
<u>Laeonereis culveri</u>			1	.7	2	3		3.3				
Oligochaeta												
Tubificidae	7	5	8	13.3	59	96	60	143.3	55	39	69	108.7
Isopoda												
<u>Cyathura polita</u>												
<u>Chiridotea almyra</u>												
<u>Edotea triloba</u>												
Amphipoda												
<u>Leptocheirus plumulosus</u>	1			.7		1		.7				
<u>Corophium lacustre</u>	6	1		4.7	4	2	3	6.0				
Unid. Gammaridae						2	2	2.7				
<u>Monoculodes edwardsi</u>												
Diptera	16	8	25	32.7	11	19	13	28.7	23	13	45	54.0
Nematoda	1		1	1.3					2		1	2.0
Total No.	37	14	40	60.7	83	133	81	198.1	85	63	124	181.4
Total No. (excluding nematodes)				59.4				198.1				179.4

Table D58

Benthic macroinvertebrate counts; Doves Cove; April 6, 1980; mud stations

Station	S4-81 No./.05 m^2			No./ 0.1 m^2	S4.5-80 No./.05 m^2			No./ 0.1 m^2	S5-81 No./.05 m^2			No./ 0.1 m^2	T1-80 No./.05 m^2			No./ 0.1 m^2	T2-81 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																				
Pelecypoda																				
<u>Rangia</u> <u>cuneata</u>		1		.7					1			.7							1	.7
Gastropoda																				
<u>Hydrobia</u> sp. 1																				
<u>Hydrobia</u> sp. 2																				
Polycaheta																				
<u>Scolecolepides</u> <u>viridis</u>	1	9	1	7.3	2		3	3.3	1	1	1	2.0	5		1	4.0	1	8	5	9.3
Oligochaeta																				
Tubificidae	23	31	9	42.0	31	5	24	40.0	36	76	51	108.7	23	16	16	36.7	18	94	101	142.0
Isopoda																				
<u>Cyathura</u> <u>polita</u>																			1	.7
<u>Chiridotea</u> <u>almyra</u>																				
<u>Edotea</u> <u>triloba</u>																				
Amphipoda																				
<u>Leptocheirus</u> <u>plumulosus</u>	1	1		1.3					1			.7	2	2	2	4.0	1	4		3.3
<u>Corophium</u> <u>lacustre</u>										1		.7								
Unid. Gammaridae																				
<u>Monoculodes</u> <u>edwardsi</u>																				
Diptera	38	37	31	70.7	31	24	34	59.3	47	55	44	97.3	49	46	42	91.3	14	11	23	32.0
Nematoda	5	1	4	6.7	5	11	8	16.0	89	308	98	330.0	31	49	30	73.3	81	357	375	542.0
Total No.	68	80	45	128.7	69	40	69	118.6	175	441	194	540.1	110	113	91	209.3	115	474	506	730
Total No. (excluding nematodes)				122				102.6				210.1				136				188

Table D59

Benthic macroinvertebrate counts; Doves Cove; April 6, 1980; sand stations

Station	T4-76.5 No./.05 m^2			No./ 0.1 m^2	T5-76.5 No./.05 m^2			No./ 0.1 m^2	U1-76 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism												
Pelecypoda												
Rangia cuneata												
Gastropoda												
Hydrobia sp. 1												
Hydrobia sp. 2												
Polychaeta												
Scolecolepides viridis			4	2.7	3	3	3	6.0	3	5	2	6.7
Hypaniola grayi											1	.7
Oligochaeta												
Tubificidae	12	4	3	12.7	26	6	3	23.3	2	4	6	8.0
Isopoda												
Cyathura polita												
Chiridotea almyra												
Edotea triloba												
Amphipoda												
Leptocheirus plumulosus											1	.7
Corophium lacustre												
Unid. Gammaridae							1	.7				
Monoculodes edwardsi												
Diptera	9	4	5	12.0	2	4	13	12.7	2	3	4	6
Nematoda		1	1	1.3		2		1.3				
Total No.	21	9	13	28.7	31	15	20	44.0	7	12	14	22.1
Total No. (excluding nematodes)				27.4				42.7				22.1

Table D60

Benthic macroinvertebrate counts; Weir Pt.; April 4, 1980

Station	muddy sand N2-40 No./.05 m^2			No./ 0.1 m^2	N5-42 No./.05 m^2			No./ 0.1 m^2	sand N2-41 No./.05 m^2			No./ 0.1 m^2	N3-41.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																
Pelecypoda																
<u>Rangia cuneata</u>					8	6	4	12.0								
Gastropoda																
<u>Hydrobia</u> sp. 1							1	.7								
<u>Hydrobia</u> sp. 2																
Polychaeta																
<u>Scolecolepides viridis</u>	21	5	14	26.7	20	29	22	47.3	12	8	11	20.7	4	8	11	15.3
<u>Hypaniola grayi</u>					1	5	10	10.7								
<u>Nereis succinea</u>																
Oligochaeta																
Tubificidae					26	81	31	92.0						2	5	4.7
Isopoda																
<u>Cyathura polita</u>	1	3		2.7	1	6	6	8.7	1			.7	1			.7
<u>Chiridotea almyra</u>		1		.7	1			.7							1	.7
<u>Edotea triloba</u>							1	.7								
Amphipoda																
<u>Leptocheirus plumulosus</u>	31	11	27	46.0	101	66	75	161.3	29	19	5	35.3	6	4	5	10.0
<u>Corophium lacustre</u>					16	9	14	26.0	1	1	1	2.0				
Unid. Gammaridae																
<u>Monoculodes edwardsi</u>																
<u>Lepidactylus dytiscus</u>	2		2	2.7			3	2.0	4	3		4.7	4	1	1	4.0
Diptera									1			.7				
Nematoda																
Total No.	55	20	43	78.8	174	202	167	362.1	48	31	17	64.1	15	15	23	35.4
Total No. (excluding nematodes)				78.8				362.1				64.1				35.4

Table D61

Benthic macroinvertebrate counts; Weir Pt.; April 4, 1980

Station	mud								sandy mud							
	N3-35 No./.05 m^2			No./ 0.1 m^2	N3-37 No./.05 m^2			No./ 0.1 m^2	N3-40 No./.05 m^2			No./ 0.1 m^2	N4.5-41.5 No./.05 m^2			No./ 0.1 m^2
Sample	A	B	C	Total	A	B	C	Total	A	B	C	Total	A	B	C	Total
Organism																
Pelecypoda																
Rangia cuneata	2	1	1	2.7	2	3	1	4.0	4	6	5	10.0	1	7	3	7.3
Macoma mitchelli		1	1	1.3												
Gastropoda																
Hydrobia sp. 1										2		1.3				
Hydrobia sp. 2																
Polychaeta																
Scolecolepides viridis	13	10	15	25.3	8	7	8	15.3	9	11	11	20.7	10	5	16	20.7
Hypaniola grayi									6	1	4	7.3		2	2	2.7
Nereis succinea																
Oligochaeta																
Tubificidae	8	64	75	98.0	72	74	56	134.7	17	22	5	29.3	2	12	24	25.3
Isopoda																
Cyathura polita	1	3	4	5.3	4		1	3.3	3	2	1	4.0	7	7	1	10.0
Chiridotea almyra											1	.7				
Edotea triloba		1		.7										2		1.3
Amphipoda																
Leptocheirus plumulosus	116	143	59	212.0	82	76	128	190.7	88	137	154	252.7	46	27	62	90.0
Corophium lacustre		1	1	1.3	1	1		1.3	19	14	9	28.0	24	44	24	61.3
Unid. Gammaridae																
Monoculodes edwardsi																
Decapods																
Rhithropanopeus harrisii			1	.7												
Diptera	7	4	9	13.3	9	9	5	15.3	3	2		3.3	3	2	3	5.3
Nematoda	3	63	64	86.7	124	127	5	170.7	9	2	1	8.0	3	1		2.7
Total No.	150	291	230	447.3	302	297	204	535.3	158	199	191	365.3	96	109	135	226.6
Total No. (excluding nematodes)				360.6				364.6				357.3				223.9

Table D62
Dipteran population densities; Dundee Cr.; June 25-26, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	L2-69	L1-68.5	L3-67.5	L2-67	L4-66.5	L4.5-65.25	L5-65	L5-64.75
Coelotanypus	1.3	2.7	4.7	6.0	3.3			
Procladius	4.0	10.7	2.7	12.7	4.7	9.3		1.3
Chironomus	2.0	3.3		6.7				
Tanytarsus	6.0	7.3		17.3				
Dicrotendipes	1.3	2.7		2.0				
Harnischia sp. 2	2.0	14.0		6.0				1.3
Polypedilum	1.3			0.7		16.7	17.3	2.0
Ceratopogonidae	1.3	0.7	2.0	0.7		0.7		
Cryptochironomus		0.7	2.7	1.3	0.7	3.3	4.7	0.7
Harnischia sp. 1		0.7		0.7			0.7	0.7
Psectrocladius		0.7						
Paratanytarsus				2.0		43.3	28.7	6.0
Xenochironomus		1.3		0.7				

Table D63
Dipteran population densities; Upper Saltpeter Cr.; June 26, 1979

No./0.1 m^2

	mud stations					sand stations		
Genus	K5-61	L1.5-60.5	L1.5-59.5	L3-60	L4-59.5	L1.75-58.5	L2.25-58.5	L3-58
Coelotanypus			0.7		0.7			
Procladius	2.7	10.7	14.0	10.0	12.7	2.0	0.7	2.0
Chironomus	6.0	5.3	4.7			4.0		
Harnischia sp. 1	0.7							
Ceratopogonidae	0.7							
Harnischia sp. 2		0.7						
Cryptochironomus			1.3		1.3			
Dicrotendipes			0.7					
Polypedilum						2.0		
Xenochironomus						0.7		0.7

Table D64
Dipteran population densities; Lower Saltpeter Cr.; June 26, 1979

Genus	No./0.1 m^2 N1-60	N2-58	N3-61	N4-59	N3-57
Coelotanypus	3.3	6.7	2.0	1.3	2.7
Procladius	21.3	14.7	14.0	26.0	31.3
Chironomus			0.7		
Harnischia sp. 1		0.7		0.7	
Ceratopogonidae		1.3			
Harnischia sp. 2			4.7		
Cryptochironomus	0.7	0.7		0.7	1.3
Tanytarsus		0.7		0.7	
Paratanytarsus			0.7		

Table D65
Dipteran population densities; Sue Creek, June 28, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	G4.5-32	H1-32	H2.5-32.5	H3.5-32.5	H4-33	H1.5-31	H2-31.5	H2.5-31.5
Coelotanypus	2.7	1.3	2.0	1.3				
Procladius	1.3	0.7	5.3	7.3	6.7	4.0	0.7	16.0
Chironomus	2.7	0.7	4.0	62.7	237.3	39.3	34.7	7.3
Cryptochironomus	0.7	2.0	2.7	2.0	2.7	0.7	1.3	1.3
Harnischia sp. 1					0.7			
Polypedilum					6.7	19.3	4.7	19.3
Ceratopogonidae		0.7	0.7			1.3	0.7	0.7
Xenochironomus						262.7	216.0	93.3
Paratanytarsus						2.7	0.7	4.7
Harnischia sp. 2								1.3
Dicrotendipes								0.7
Psectrocladius								0.7
Cricotopus								2.7

Table D66
Dipteran population densities; Norman Cr.; June 28, 1979

Genus	No./0.1 m^2 F2-41.5	F3.5-42.5	F4.5-43.5	F4.5-42.5	F5.5-43
Coelotanypus	7.3	2.7	5.3	6.0	2.0
Procladius	3.3	6.0	0.7	1.3	2.7
Tanypus	6.7				
Chironomus	1.3	0.7	2.0	1.3	2.0
Tanytarsus	1.3	2.7	0.7		
Dicrotendipes	0.7				
Harnischia sp. 2	0.7		0.7		
Cryptochironomus	0.7		0.7	1.3	2.0
Xenochironomus	0.7				
Harnischia sp. 1		0.7			
Psectrocladius			0.7		
Ceratopogonidae			0.7		

Table D67
Dipteran population densities; Doves Cove; June 27, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	S4-80.5	S4.5-81	S5.5-81.5	T1.5-81	T2-80	T1.5-79.5	U1.5-76.5	U2-75
Coelotanypus	3.3	0.7	2.0	3.3	9.3			
Procladius	3.3	8.7	8.0	10.0	3.3	1.3	0.7	0.7
Chironomus	91.3	157.3	128.7	83.3	14.7	4.7		
Xenochironomus		2.7				23.3	24.0	24.7
Tanytarsus		0.7	3.3	4.7		3.3		
Cryptochironomus	0.7	4.7	0.7	0.7		12.7		
Tanypus	0.7	1.3						
Harnischia sp. 1		0.7	1.3		0.7			
Harnischia sp. 2		0.7		2.7	0.7			
Ceratopogonidae	0.7	0.7						
Polypedilum						12.0	0.7	
Trichocladius						0.7		
Paratanytarsus						2.7	1.3	0.7

Table D68
Dipteran population densities; River and Bay stations; June 1979

No./0.1 m^2

Genus	Gunpowder R. P4-51	Gunpowder R. O4-51	I4-40	Middle R. I2-37	Middle R. I5-35	Middle R. J3-35
Coelotanypus		0.7		10.7	3.3	1.3
Procladius	22.0	6.0	0.7	8.7	21.3	26.0
Harnischia sp. 1	0.7				1.3	0.7
Chironomus		0.7				1.3
Cryptochironomus		0.7	1.3	0.7	1.3	0.7
Polypedilum		10.7	0.7			
Tanytarsus		2.0				
Xenochironomus		2.0	0.7			
Paratanytarsus		1.3				

Weir Point

	mud N4-39	mud N3-35	sandy mud N5-41	sandy mud N3-40	muddy sand N2.5-40	muddy sand N2.5-41.5	sand N3.5-41.5	sand N2-40
Coelotanypus	4.7	2.7						
Procladius	21.3	14.7	19.3	20.0				
Cryptochironomus	4.7	0.7	0.7	3.3	2.0	0.7		2.0
Harnischia sp. 1	4.7	0.7	0.7	0.7				
Chironomus					0.7			
Tanytarsus			0.7					
Dicrotendipes			0.7					
Polypedilum					2.0	2.0	0.7	3.3

Table D69
Dipteran population densities; Dundee Cr.; September 10, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	L3-69	L3-68	L1-67	L3.5 66.5	L5-66	L4.75-65.25	L5-65	L5-64.5
Coelotanypus	3.3	20.7	3.3	37.3	27.3			
Chironomus	1.3		0.7	0.7	0.7			
Tanypus		0.7	0.7					
Cryptochironomus			2.0			2.7		0.7
Parachironomus			6.0		2.0			
Brillia			1.3					
Cricotopus			0.7					
Ceratopogonidae			0.7					
Procladius				0.7				0.7
Tanytarsus				0.7				
Xenochironomus						14.7	14.7	53.3
Polypedilum						24.0	5.3	10.0
Paratanytarsus						40.7		1.3
Endochironomus						2.0		
Harnischia sp. 1				0.7				

Table D70
Dipteran population densities; Upper Saltpeter Cr.; September 11, 1979

	No./0.1 m^2 mud stations						sand stations		
Genus	K3-62	K4-61.5	L1-60.5	L2.5-60.5	L3.5-59.5	L5-59	L2-58.5	L2.5-58.5	L3-58
Coelotanypus	12.0	34.0	15.3	34.0	82.0	65.3	0.7		
Procladius		0.7					0.7		
Chironomus							3.3	2.7	0.7
Cryptochironomus							0.7		
Polypedilum							4.7	4.0	5.3
Tanytarsus							0.7		
Xenochironomus							0.7		
Paratanytarsus								0.7	0.7

Table D71
Dipteran population densities; Lower Saltpeter Cr.; September 10, 1979

Genus	No./0.1 m^2 mud stations N1-62	N2-61	N1-59	N3-60	N4-59
Coelotanypus	16.7	26.7	42.7	30.0	34.7
Chironomus	1.3				
Parachironomus	0.7				
Tanytarsus	1.3				

Table D72
Dipteran population densities; Sue Cr.; September 13, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	G5-32	H1-32	H2-32	H2.5-32.5	H3-32.5	H1.5-31	H2-31.5	H2.5-31.5
Coelotanypus	22.7	7.3	21.3	21.3	31.3			
Tanypus	11.3	1.3						
Chironomus	4.7	16.7	1.3	2.7	1.3		0.7	
Parachironomus	1.3							4.0
Polypedilum		0.7			0.7	60.7	34.7	45.3
Procladius			0.7		0.7			
Cricotopus			0.7					0.7
Xenochironomus						6.7	5.3	0.7
Cryptochironomus						1.3	2.0	0.7
Glyptotendipes						0.7	0.7	
Dicrotendipes							0.7	0.7
Tribelos							0.7	
Paratanytarsus								2.7
Psectrocladius								0.7

Table D73
Dipteran population densities; Doves Cove; September 15, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	S4.5-80.5	T1-80.5	T2-81	T3-80	T4-81	T3-84.5	T2-79	T5.5-76
Coelotanypus	26.7	40.7	30.7	77.3	74.0			7.0
Procladius	0.7	0.7	0.7		0.7			
Tanypus	2.0							
Chironomus	20.7	58.7	135.3	0.7		2.7	4.7	
Parachironomus	4.0	6.0	5.3	0.7			0.7	
Xenochironomus			0.7			23.3	10.0	12.0
Tanytarsus			0.7					
Micropsectra			0.7					

Table D74

Dipteran population densities; River and Bay stations; September 1979

No./0.1 m^2

Genus	Middle R. I2-38	Middle R. I5-38	Middle R. I5-36	Middle R. I4-34	Middle R. J2-35	Gunpowder R. O5-53	Gunpowder R. P2-51	Gunpowder R. P4-52
Coelotanypus	15.3	10.0	5.3	8.0	8.7	20.0	12.7	13.3
Cryptochironomus		0.7				0.7		

Genus	Hawk Cove I4-14	Hawk Cove J2-18	Hawk Cove K1-15	Chesapeake Bay M5-30	Chesapeake Bay L5-34	Chesapeake Bay L3-40
Coelotanypus	16.7	17.3	12.0	2.0	6.7	6.7
Procladius	0.7			0.7		

Genus	Weir Pt. (mud) N3-37	Weir Pt. (mud) N3.5-39
Coelotanypus	6.0	7.3

Table D75
Dipteran population densities; Dundee Cr.; November 25, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	L2.5-69	L3-68	L2.5-67	L5-66	L3-65.5	L4.5-65.25	L5-65.25	L5-64.5
<u>Coelotanypus</u>	14.0	10.7	20.7	22.7	11.3			
<u>Chironomus</u>	53.3	66.7	19.3	1.3	21.3	9.3	.7	6.0
<u>Tanypus</u>	.7							
Ceratopogonidae	1.3		.7	.7	.7	.7	.7	2.0
<u>Procladius</u>	.7	.7			1.3	.7		
<u>Tanytarsus</u>	.7				4.7	.7	.7	6.0
<u>Parachironomus</u>			.7		.7			
<u>Cryptochironomus</u>					1.3			1.3
<u>Polypedilum</u>					.7	3.3	4.7	6.7
<u>Xenochironomus</u>						12.7	4.0	2.7
<u>Paratanytarsus</u>						.7		
<u>Trissocladius</u>						2.0	2.0	
<u>Smittia</u>						.7	.7	
<u>Glyptotendipes</u>							.7	

Table D76
Dipteran population densities; Upper Saltpeter Cr.; November 26, 1979

	No./0.1 m^2 mud stations						sand stations		
Genus	K4-62	K5.5-60	L1-61	L2.5-60.5	L4-59.5	L5-60	L2-58.5	L2.5-58.5	L2.75-58.5
Coelotanypus	28.7	27.3	27.3	10.0	56.7	23.3			1.3
Procladius	2.7	.7	2.7	1.3	1.3	3.3			
Chironomus	26.0	2.7	15.0	36.0			6.7	14.0	21.3
Tanypus	.7	1.3	.7						
Ceratopogonidae	1.3	.7							
Cryptochironomus			1.3	4.7	.7				
Tanytarsus			4.7	4.7		.7	.7		4.0
Paratanytarsus				.7					
Harnischia sp. 1					.7				
Parachironomus								.7	
Polypedilum								1.3	1.3
Trissocladius								.7	

Table D77
Dipteran population densities; Lower Saltpeter Cr.; November 27, 1979

Genus	No./0.1 m^2 mud stations N1-62	N2-62	N3-61	N3-59	N4-59
Coelotanypus	58.7	26.0	51.3	64.7	27.3
Chironomus		1.3	.7		
Procladius	.7	1.3	2.7	3.3	
Cryptochironomus				.7	
Tanytarsus	.7				

Table D78
Dipteran population densities; Sue Cr.; November 30, 1979

Genus	No./0.1 m^2 mud stations G5.5-32.5	H1-32	H2-32	H2.5-32.5	H3-32.5	sand stations H1.5-31	H2-31.5	H2.5-31.5
Coelotanypus	54.0	15.3	20.7	14.0	26.0	.7		
Tanypus	2	3.3	2.7	3.3				
Chironomus	.7	6.7	1.3	5.3	10.0	6.0	5.3	3.3
Ceratopogonidae	.7							
Parachironomus		.7				.7		
Procladius		.7	.7	2.7	1.3	.7		
Xenochironomus						18.7	18.0	11.3
Polypedilum						12.0	2.7	2.7
Glyptotendipes						.7		
Paratanytarsus						.7		
Trissocladius						1.3	1.3	1.3
Cryptochironomus				.7	.7	2.7		

Table D79
Dipteran population densities; Doves Cove; December 1, 1979

	No./0.1 m^2 mud stations					sand stations		
Genus	S4.5-80.5	S5.5-81	T1-81.5	T1.5-80.5	T2-81	T4.5-76.5	T5.5-76	U1.5-75.5
Coelotanypus	26.7	46.0	69.3	54.0	62.7			
Procladius	1.3	2.0	4.7	4.7	2.7			
Chironomus	66.0	100.0	32.0	22.7	13.3	14.7	15.3	5.3
Xenochironomus		0.7			0.7	6.7	6.7	6.0
Tanytarsus			0.7		0.7			
Trissocladius			2.0	1.3	3.3	11.3	14.0	0.7
Smittia					0.7			
Cryptochironomus						0.7	0.7	4.7
Polypedilum							1.3	

Table D80
Dipteran population densities; River and Bay stations, November 1979

No./0.1 m^2

Genus	Gunpowder R. 02-46	04-45	05-44	04-52	P1-51	P3-53	Middle R. I3-38	I5-37	I4-35	J1-35	J3-36
Coelotanypus	6.7	4.0	7.3	29.3	17.3	12.0	2.0	8.0	8.0	10.0	3.3
Procladius	2.7	2.0	12.7	10.7	5.3	18.7	2.7	4.7	3.3	4.7	2.0
Chironomus									0.7		0.7

Genus	Hawk Cove I5-14	J5-15	J2-17	Chesapeake Bay M2-31	L4-39	L4-35
Coelotanypus	20.0	2.7	9.3	1.3	3.3	1.3
Procladius	2.0	0.7	0.7		1.3	2.0
Polypedilum		0.7				
Tanypus			0.7			
Cricotopus						3.3

Weir Point

Genus	Mud N3-36	Mud N3.5-38	Muddy sand N1.5-40	Muddy sand N3.5-41	Sandy mud N5-41	Sand N2-41.5	Sand N3.5-42
Coelotanypus	3.3	6.0					
Procladius	6.0	10.0			1.3		
Chironomus		0.7					
Cryptochironomus			0.7			0.7	
Polypedilum				2.0			0.7

Table D81
Dipteran population densities; Dundee Cr.; April 2-3, 1980

	No./0.1 m^2 mud stations					sand stations		
Genus	L2-69.5	L1.5-68.5	L2-67	L2.5-66.5	L4-67	L4.75-65.25	L5-65.25	L5-64.75
Coelotanypus	3.3	16.0	38.7	10.7	52.0			
Procladius	13.3	14.7	4.0	5.3	8.0			
Tanypus	5.3	1.3		0.7	0.7			
Chironomus	59.3	72.7	2.7	22.0	6.7	4.7		3.3
Cryptochironomus	1.3		.7	2.0		0.7		0.7
Tanytarsus	5.3	24.7	17.3	6.0	9.3		0.7	4.0
Cricotopus	12.7	4.0	1.3	38.0	3.3	2.7	2.0	1.3
Dicrotendipes	0.7	0.7		0.7		0.7	0.7	0.7
Psectrocladius	2.0			1.3				
Parachironomus	0.7			4.0	0.7			
Endochironomus	0.7	0.7						
Ceratopogonidae	4.0	2.0	1.3	0.7				3.3
Harnischia sp. 1		0.7	6.7	0.7	4.7	2.0		
Polypedilum				1.3		6.7	18.0	73.3
Paratanytarsus				3.3			2.0	2.0
Brillia				4.0	0.7			
Xenochironomus						7.3	8.0	4.7

Table D82
Dipteran population densities; Upper Saltpeter Cr.; April 3, 1980

Genus	K4-61	K4.5-60.5	K5.5-61	L3-59.5	L3.5-60.5	L4-59	L1.5-58.5	L2.5-58.5	L3-58
	No./0.1 m^2 mud stations						sand stations		
Coelotanypus	46.7	34.7	28.7	46.0	52.0	22.7	.7		
Procladius	4.7	6.0	2.7	3.3	4.0	2.7	.7		.7
Chironomus	10.0	8.0	14.0	1.3	1.3	1.3	12.7	7.3	2.7
Cryptochironomus	1.3				.7		2.7	.7	
Tanytarsus	6.0	11.3	31.3	3.3	27.3	7.3	10.7	1.3	.7
Harnischia sp. 1	6.7		5.3	2.7	4.7	7.3	.7		
Cricotopus	.7				2.0	.7	1.3	.7	
Tanypus			.7		.7				
Ceratopogonidae			.7						
Dicrotendipes					2.0			.7	
Paratanytarsus					.7				6.7
Polypedilum							6.7	2.7	2.7
Trissocladius									.7

Table D83
Dipteran population densities; Lower Saltpeter Cr.; April 5, 1980

Genus	No./0.1 m^2 mud stations M5-62	N2-61	N3-62	N3-60	N4-59
Coelotanypus	34.7	22.7	38.7	30.0	26.0
Procladius	6.0	2.7	4.0	3.3	4.7
Tanytarsus	2.7				
Harnischia sp. 1	1.3	.7	.7		
Cricotopus		.7			.7
Ceratopogonidae			.7		
Cryptochironomus				.7	

Table D84
Dipteran population densities; Sue Cr.; April 7, 1980

	No./0.1 m^2 mud stations					sand stations		
Genus	G5.5-32	H1-32	H2-31.5	H2.5-32.5	H3-32.5	H1.5-31	H2-31.25	H2.5-31.5
Coelotanypus	16.0	26.7	22.0	15.3	20.0	.7		
Tanypus	4.7	2.7	1.3	9.3	6.7			
Chironomus	7.3	2.0	1.3	12.0	8.0	.7	2.0	
Certopogonidae	.7							
Parachironomus	.7	.7		.7				
Procladius	2.7		2.0	1.3	2.7			
Tanytarsus	.7			.7				
Harnischia sp. 1	.7	.7		2.7	6.7			
Cricotopus		.7	.7		1.3			
Cryptochironomus				.7				
Polypedilum				.7		26.0	17.3	43.3
Xenochironomus						.7	4.7	8.0
Glyptotendipes						3.3	.7	
Paratanytarsus						1.3	4.0	2.7

Table D85
Dipteran population densities; Doves Cove; April 6, 1980

	No./0.1 m^2 mud stations					sand stations		
Genus	S4-81	S4.5-80	S5-81	T1-80	T2-81	T4-76.5	T5-76.5	U1-76
<u>Coelotanypus</u>	51.3	38.0	2.7	43.3	8.0	2.0	.7	
<u>Procladius</u>	8.0	6.7	6.7	6.0	3.3		1.3	
<u>Chironomus</u>	8.7	14.0	74.0	30.7	18.7	2.0	1.3	2.7
<u>Tanytarsus</u>	1.3		.7	.7				
<u>Orthocladius</u>	.7							
<u>Harnischia</u> sp. 1	.7			4.0				
<u>Cryptochironomus</u>		.7	.7	1.3				
<u>Xenochironomus</u>			3.3	1.3	2.0	6.0	8.0	
<u>Parachironomus</u>			9.3	2.0		.7		
<u>Tanypus</u>				1.3				
<u>Polypedilum</u>						1.3	1.3	3.3

Table D86
Dipteran population densities; River and Bay stations; April 1980

No./0.1 m^2

Genus	Gunpowder R. O5-53	P2-51	P3-53	O3-45	O4-44	P1-45	Middle R. I3-38	I4-37	I5-38	I4-35	J2-35
Coelotanypus	26.7	9.3	16.7	4.7	2.7	9.3	15.3	7.3	15.3	4.0	11.3
Procladius	10.0	14.7	17.3	8.7	13.3	8.0	8.7	5.3	5.3	7.3	8.7
Cryptochironomus	0.7	0.7		0.7		0.7					
Harnischia sp. 1	0.7				0.7						
Cricotopus	1.3	4.0			0.7						
Parachironomus		0.7									
Psectrocladius		0.7									
Chironomus					0.7				0.7		

Genus	Hawk Cove J1-17	J3-16	I4-15	Chesapeake Bay L5-40	L4-36	M1-32
Coelotanypus	2.7	6.0	4.0	4.5	2.0	1.3
Procladius	2.7	2.7	2.0	1.5	4.7	3.3
Cryptochironomus		0.7				
Cricotopus					0.7	

Weir Point

Genus	Mud N3-35	N3-37	Sandy mud N3-40	N4.5-41.5	Sand N2-41
Coelotanypus	0.7	10.7			
Procladius	13.3	4.0	2.0	3.3	
Cryptochironomus		0.7			0.7
Polypedilum			1.3	0.7	
Trissocladius				0.7	
Chaoborus	0.7	0.7			

Appendix E

Cluster Analysis Results

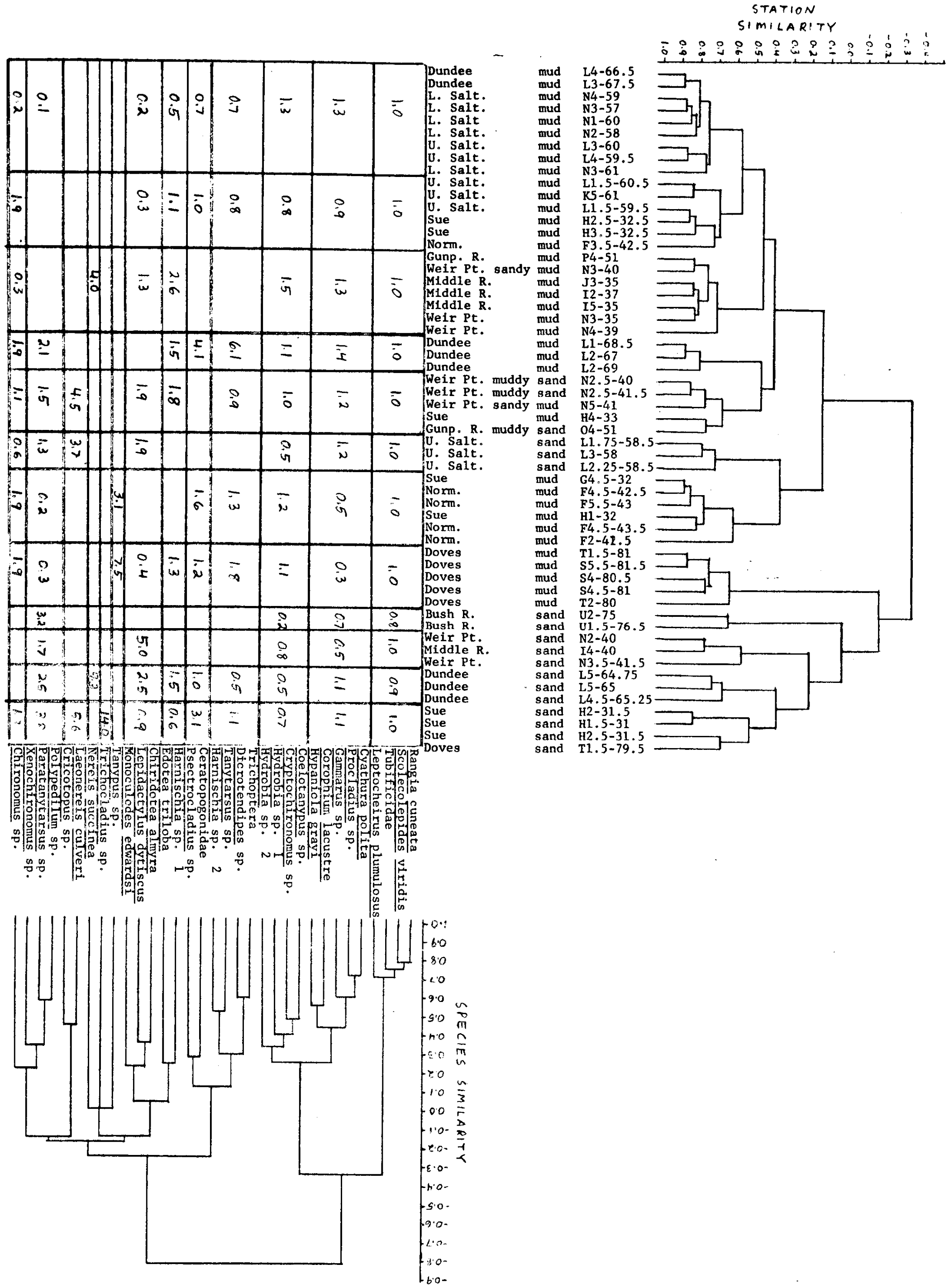


Figure E1. June 1979 cluster analysis results.

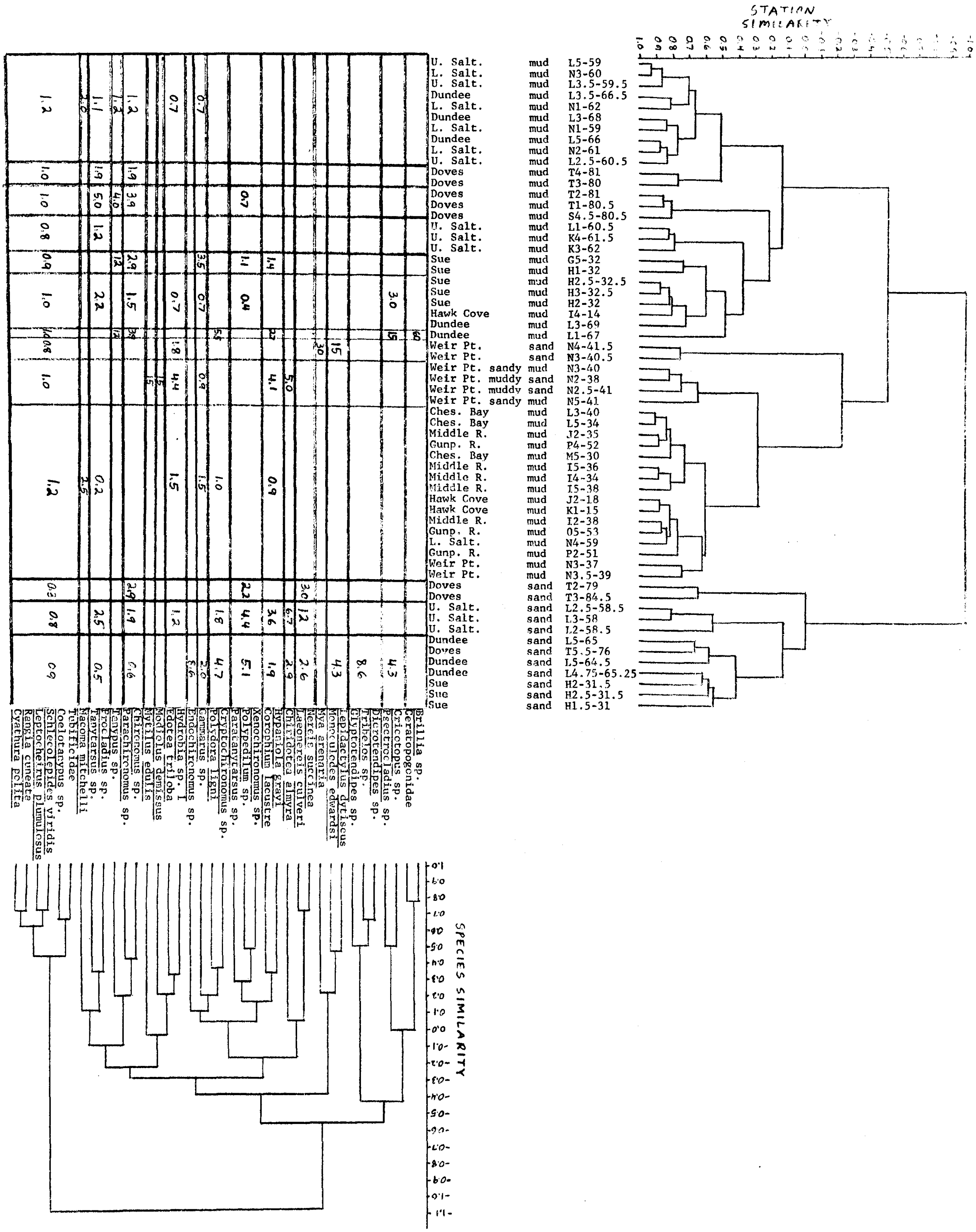


Figure E2. September 1979 cluster analysis results.

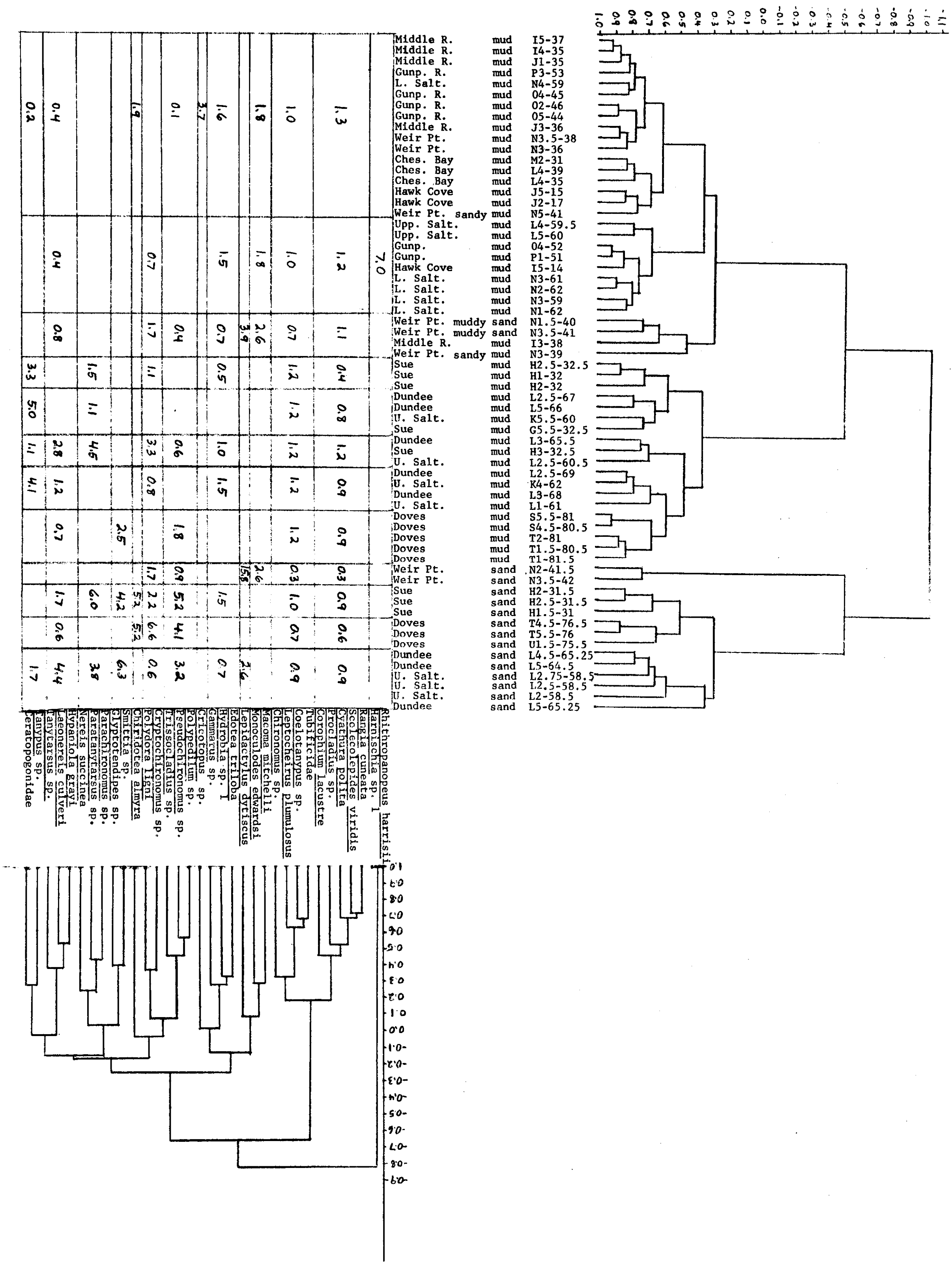


Figure E3. November 1979 cluster analysis results.

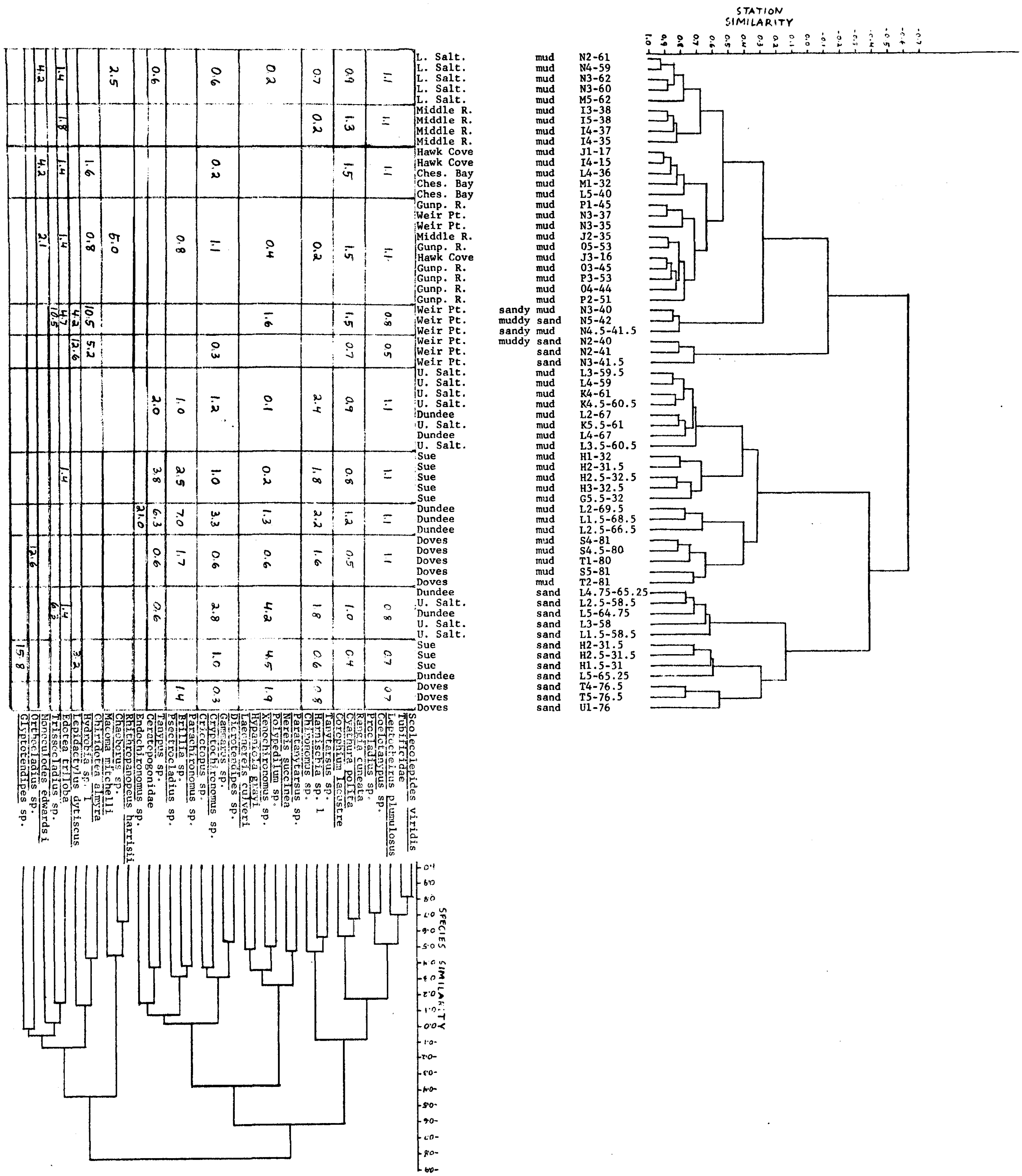


Figure E4. April 1980 cluster analysis results.

Appendix F

Information Sources Used in

Invertebrate Identification

Dipterans

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