

## The Factors Influencing the Distribution of Mussels in the Lower St. Croix River.

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## **Introduction**

Freshwater mussels (Family Unionidae) are widely distributed throughout the United States. There are 44 species of freshwater mussels currently on the federally endangered species list (Fish and Wildlife, 1991). Despite this fact, there is little known concerning the factors which control the distribution of these organisms, especially in flowing water systems. Certainly factors such as geology, stream size, water quality, substrate type, water flow, and food availability, among others, are important in the determination of the community structure and population dynamics of these organisms (Strayer, 1983; Holland-Bartels, 1990).

Based on the river continuum concept (Vannote *et al*, 1980) large filter-feeders (such as mussels) are significant components of larger river systems. They are one of the few organisms that are able to process the fine particulate matter which makes up a significant portion of the energy basis for these reaches of river systems. Without filter feeders, such as mussels, the nutrients (small particles) would be swept downstream. However, with the mussels removing these particles from the water column, the residence time for nutrients within the stream increases. This allows for a more efficient use of the available energy. Also, as the mussels die they contribute biomass for utilization by detritivores. It has also been suggested that the feces produced by mussels that is deposited in the sediment, helps to condition the sediment so that is more readily inhabited by other benthic organisms that are important in the aquatic food-chain as energy sources for fish. No studies have been conducted to date which attempt to adequately quantify the role that mussels play in the nutrient processing in larger river systems, although a study by Cohen *et al* (1984) has shown that the introduced asian clam *Corbicula* can influence phytoplankton concentrations in river systems. A significant amount of research has taken place in marine systems that have examined the role of mussels in removing nutrients in tidally influenced regions (similar to river systems). These studies indicate that mussels can have a tremendous impact on nutrient availability (Wildish and Kristmanson, 1984; Frechette *et al*, 1989). There is evidence that mussels "upstream" of others may influence the nutrients available to those downstream. Despite the fact that little is known about the role of unionids in flowing water systems there is evidence that they are important in nutrient cycling in lake systems (Lewandowski and Stanczykowska, 1975; Kasprzak, 1986; Nalepa *et al*, 1991).

Mussels are also well-suited as indicators of pollution levels since they are long-lived and relatively immobile (Fuller 1974; Davis, 1988). They are capable of removing heavy metals, pesticides, and other trace metals from the water and accumulating them in their tissue and shell (Fuller, 1974). Thus they are useful in situ monitors. In addition, there is reason to believe that, as filter feeding organisms, they may be important in controlling natural eutrophication (Officer *et al*, 1982).

In the past, there have been other studies on the unionids in the St. Croix River. Baker (1928) cited 15 species from the St. Croix River although he classifies some species as statewide. Dawley (1947) reported 29 species of unionids from the St. Croix River (in addition to 4 species found in tributaries to the St. Croix River proper). Fuller (1978) recorded 23 species of unionids from the St. Croix River at Hudson, WI. Stern (1983) reported 14 species of unionids from a single site on the St. Croix River. Doolittle (1988) has conducted the most extensive study to date on the distribution of unionids in the St. Croix River. Thirty-seven species of unionids (including two only represented by dead shells) were reported by Doolittle in the river proper. Quantitative studies by Hornbach (1992) at Franconia, MN have indicated densities of 12 mussels/m<sup>2</sup> at that site. Semi-quantitative estimates by Doolittle (1988) gave ranges of 0.1 to 16.3 mussels/m<sup>2</sup> in established beds in the St. Croix River.

Of particular interest in the St. Croix River is the presence of two species of endangered mussels: *Lampsilis higginsi* and *Quadrula fragosa*. *L. higginsi*, while found in the St. Croix River, is also found throughout the Upper Mississippi River, albeit at low densities (Havlik, 1981; HollandBartels, 1990). The

winged mapleleaf, *Q. fragosa*, previously distributed in eleven other states, is presently restricted to the St. Croix River (Fig. 1).

Due to the highly restricted nature of *Q. fragosa*, the primary focus of this research project was to investigate the factors which may influence the distribution and abundance of this species as well as to determine those factors influencing the general freshwater mussel community. In addition, efforts were made to characterize the mussels community associated with the presence and absence of *Q. fragosa*.

## Materials and Methods

### Study Area

The study area encompassed two sites along the St. Croix Scenic Riverway: Interstate Park and a site just north of Osceola WI (Fig. 2) located near the Wisconsin DNR Hatchery effluent. The study area encompasses an extremely diverse and dense mussel population (Doolittle, 1988). Heath and Miller (pers. comet.) have indicated the greatest number of *Q. fragosa* in the St. Croix River are found in the region surrounding Interstate Park (Taylor's Falls) and declines until few mussels are found in the river below Osceola, WI. The Interstate Park site is especially crucial since it contains the greatest number of *Q. fragosa* and is most directly influenced by the NSP hydroelectric plant at Taylor's Falls. Approximate physical locations (longitude, latitude) for each site are 92°40', 45°23' for Interstate and 92°41', 45°20' for Osceola. The precise locations of each sampling site can be found in Tables 1 A - 1 B.

### Qualitative Mussel Sampling

At each location, sampling was done along ten 75 m-long transects oriented perpendicular to the flow of water (Fig. 3). Sampling sites were located at 5 m intervals along each transect. Transects were located within a 200 m stretch of the river at each sampling location. Timed searches (two minutes) were conducted with SCUBA at each of the fifteen sampling sites along each transect. During the search, the diver searched the substrate immediately surrounding the site marked on the transect visually and/or tactiley. All mussels found by this method at sampling points were identified, measured (length, width, height) and replaced. At each site, the substrate type was qualitatively assessed as representing one of five grades (boulder, cobble, gravel, sand, mud) or combinations of grades.

At the fifteen locations along the transects at each site, the water depth was measured with a calibrated rod, and water flow at the bottom and 0.6 depth was taken whenever possible with a Marsh-McBirney Model 201-D flow meter. Flow readings may not have been possible due to the depth of the river at some sites during sampling. The time at which these measurements were taken was also recorded.

### Quantitative Mussel Sampling

Mussels were collected by divers using SCUBA equipment. A minimum of ten and a maximum of fifteen sampling sites were established for quantitative sampling at each location (Fig. 4). The sampling regime at Osceola was arranged such that 5 sites (A-E) were arranged parallel to the flow of the river at locations inshore (I) and outshore (O). Inshore sites were situated within approximately 10 m of the shoreline. Outshore sites were situated near the center of the channel. At the Interstate site, instead of inshore and outshore sites, this location had sites situated along the east bank (E), the West bank (W) and in the middle of the channel (M). Location of each site was recorded using a Magellan NAV-5000 Geographical Positioning System (GPS). At each of these sites a 2 x 5 m PVC grid was placed on the bottom of the river. Using this frame as a guide, ten 0.25 m<sup>2</sup> quadrat samples were taken. All of the substrate within the 0.25 m<sup>2</sup> quadrat was removed to a depth of approximately 10 cm and was sieved.

Any mussels > 0.5 mm in their largest dimension were collected. Mussels were identified and their shell length (anterior-posterior dimension), width (lateral dimension), and height (dorsal-ventral dimension) was measured to the nearest 0.05 mm with a dial caliper. A number of studies have indicated that shell shape may vary along the length of a stream (e.g. Mackie and Topping, 1988). Therefore, since length alone may not be a good indicator of age, we made the measurements of shell width and height.

To study changes in growth rate over time, we removed samples of two common species (*Truncilla truncata* and *Fusconaia flava*) from the river in order to examine both external and internal shell growth rings.

Since Neves and Moyer (1988) have indicated that in some species external growth rings are not an accurate measure of age, we took a representative size-range sample of mussels for these species and will be examining their growth rings as a check on the external aging method. This will be accomplished by cutting the shell with a diamond saw from the umbo to the ventral margin and then sectioning the shell (Neves and Moyer, 1988). The length of the shell deposited each year was determined by measuring the distance between adjacent growth rings. This was accomplished using a Summa digitizing pad attached to a Macintosh Hex computer, and utilizing NIH Image software developed by Wayne Rasband (National Institute of Mental Health).

At the location of the 10 subsamples taken at each site (Fig. 4), the water depth was measured with a calibrated rod, and water flow at the bottom and 0.6 depth was taken whenever possible with a Marsh-McBirney Model 201-D flow meter. Flow readings may not have been possible due to the depth of the river at some sites during sampling. The time at which these measurements were taken was recorded so that the flow and depth could be correlated with discharge measurements from the US Geological Survey (USGS) gage.

When the quadrat samples were taken to determine the population density of mussels, the buckets containing the mussels and substrate were sieved and the wet weight of the substrate fractions retained in each of five sieves (65, 57, 12, 7, 6.35, and 0.5 mm openings) was obtained. From the weights of these fractions the average particle size was determined (Lewis, 1984).

### Water Sampling

In an effort to determine the availability of nutrients to mussels, water samples were taken from the river. Samples were taken at the sediment-water interface and at 0.5 m above the bottom. PVC standpipes (2.54 cm diameter) were attached to a cement block so that the openings of the pipes could be oriented upstream. One pipe allowed samples to be taken at the sediment-water interface, while the other allowed sampling of the water column 0.5 m above the bottom. These pipes were connected by garden hoses to diaphragm pumps which permitted samples of water to be pumped to the surface. The time at which these samples were taken was recorded to allow for total suspended solids (TSS) measurement to be adjusted for discharge.

The amount of suspended solids in the water samples was determined by APHA (1980) methods using Whatman AH934 glass fibre filters. Both the TSS as dry weight and the organic fraction of the TSS (assessed by loss on ignition) was determined.

### Additional Sampling for *Quadrula fragosa*

Based on the 0.25 m<sup>2</sup> quadrats sampled, only one *Q. fragosa* was found (see results). In order to increase the number of samples in which we found *Q. fragosa*, divers were instructed to visually search specifically for the winged mapleleaf. Once a mussel was located, a float was placed to mark the exact

location of the discovery. The location was then recorded with the GPS and a 0.25 m<sup>2</sup> quadrat was taken so that the nature of the substrate and the mussel community in association with *Q. fragosa* could be determined. In addition, the water depth, flow, and the time at which these measures were taken were recorded as noted above. A total of 36 diving hours were spent searching specifically for *Q. fragosa* in 1992 and 11.3 hours in 1993.

Additional data provided by David Heath and Glen Miller for *Q. fragosa* that they have collected in the St. Croix River, were used to examine the age structure of the winged mapleleaf population at Interstate Park. Data were also obtained from USGS to examine the historical trends in discharge at the Interstate site.

## Statistical Analysis

Statistical analyses were conducted with JMP Version 2.05 (SAS Institute, 1989) using a Macintosh Centris 650 microcomputer or on a VAX 4000-400 using SAS (SAS Institute, 1982). Levels of statistical significance were assigned at  $\alpha = 0.05$ .

## Results and Discussion

### Qualitative Sampling Results

#### *Water Depth, Flow, and Substrate Characterization*

The sampling sites, the dates on which the sites were examined, substrate type, depth and flow at the sediment-water interface and at 0.6 above the bottom are given in Appendix 1. Interstate Park depth varied significantly with transect (Fig. 5A) and station (Fig. 5B,  $p < 0.0001$ ). The sampling sites were deeper in the center of the channel, as expected. Downstream transects tended to be deeper than those upstream at Interstate Park as well. Flow at Interstate Park varied significantly with transect (Fig. 5C,  $p < 0.0001$ ), but did not vary significantly with station (Fig. 5D,  $p = 0.156$ ). At the Osceola site, depth varied significantly with station ( $p < 0.0001$ ; Fig 6B), but not with transect (Fig. 6A,  $p = 0.19$ ). Again, the sampling sites tended to be deeper nearer the center of the channel. Flow at the Osceola location varied significantly with both transect and station ( $p < 0.0001$ ; Figs. 6C, 6D respectively). Observed flows tended to be faster near the center of the channel. When combining the data, depth varied significantly with both transect and station ( $p < 0.0001$ ; Figs. 7A, 7B respectively) as did flow ( $p < 0.0001$ ; Figs. 7C, 7D respectively). Overall, the channel tended to be deeper downstream. Flow did not show any clear upstream/downstream patterns, but faster flow was generally to be found nearer the center of the channel. However these flow data must be examined carefully, particularly at the Interstate Park site, since the flow rates were measured at different discharge levels. There are great fluctuations in river discharge at the Interstate Park site due to the activities at the NSP hydroelectric facility at Taylor's Falls. However, water velocity as measured at the sediment-water interface appears to be relatively stable. For example, one site in the Interstate Park quantitative collection study area (CE), water depth and flow at the bottom and at 0.6 depth was measured on June 30, 1992 at 14:29 (UT), when the discharge was 1637.449 cfs. The depth was 0.213 m, the bottom flow was 0.30 m/s and the 0.6 flow was 0.52 m/s. At 15:40 UT on the same day, the depth had increased to 0.68 m, the bottom flow top 0.34 m/s, the 0.6 flow to 0.81 m/s, and the discharge to 5120.075 cfs. Therefore, with an increase of 196% in depth and over 56% increase in water velocity at 0.6 depth, the water velocity at the bottom, where mussels are found, only increased by about 13%.

The character of the substrate at the Interstate Park location varied significantly between transects (Fig 8A, Log Likelihood  $p > x_2 < 0.0001$ ), but not by station (Fig 8B, Log Likelihood  $p > x_2 = 0.94$ ). The substrate tended to be composed of a greater proportion of coarse components at the downstream sites.

The character of the substrate at the Osceola location varied significantly between transects (Fig 9A, Log Likelihood  $p > x_2 = 0.037$ ), but, as with Interstate Park, not with station (Fig. 9B, Log Likelihood  $p > x_2 = 0.59$ ). The sediments observed appeared to composed primarily of shifting sand in most cases, with course substrates generally being relegated to the edge of the river. There appeared to be no consistent upstream/downstream trends in substrate characteristics at the Osceola site. Overall, the character of the substrate also varied with transect (Fig. 10A, Log Likelihood  $p > x_2 < 0.0001$ ), but not with station (Fig. 10B, Log Likelihood  $p > x_2 - 0.89$ ). When examining the overall qualitative substrate data, it appears that downstream sites have a greater proportion of larger sediment sizes (cobble, gravel). When looking at the substrate data as a whole, the qualitatively assessed substrate composition appears to be coarser at the downstream sites and slightly coarser at those stations nearer the shore. When the data is separated by location, there is a significant difference in substrate composition. Osceola is a much more limited site in terms of available habitat types with the majority of the stations' substrate being composed of shifting sand except for those stations located within 20-25 m from shore. Those stations appeared to have a substrate composed of a more heterogenous mix of sediment types. The substrate at the Interstate Park location, however, appeared to be comprised of a more diverse mix of coarser material. The downstream substrate appears to be coarser and there do not appear to be any trends in substrate composition among stations at Interstate Park.

#### *General Community and Population Structure*

A total of 798 individuals representing 25 species were collected at both sites (Fig.. 12, Appendix 2) during the qualitative collection. The deertoe, *Truncilla truncata*, was the dominant species overall comprising 50.5% of all of the mussels found. The pigtoe, *Fusconaia flava*, was found to be the overall subdominant, comprising 18.2% of all mussels found. All other species comprised less than 10% of the individuals found. Overall mussel density, as gaged by the number of individuals collected during the two minute searches, varied significantly with transect (Fig. 11A,  $p = 0.0003$ ), but not with station (Fig. 11B,  $p = 0.64$ ). Observed overall species richness varied significantly with transect (Fig 11C,  $p = 0.014$ ), but not with station (Fig. 11D,  $p = 0.92$ ). Both the number of individuals collected (Fig. 27A) and the observed species richness (Fig. 27B) also varied significantly between locations ( $p < 0.0001$ ). More individuals and a greater number of species were found at Interstate Park. Interstate Park mean number of individuals and mean number of species found per station were 3.65 and 1.86 respectively. At Osceola, these values were 0.97 and 0.59 respectively. Depth was found to be significantly correlated with both the overall number of individuals collected during the two minute search and species richness ( $p < 0.0001$ ) when using either linear or quadratic fits (Table 2). Flow was significantly correlated to the number of species found per search ( $p = 0.031$ ) only when a linear fit was used. However, when adjusting for the effect of location on depth and flow, only depth remains significant (Table 3). This may indicate that depth is a more significant factor in the definition of mussel communities and populations than is flow. Substrate was also significantly correlated with both the number of individuals found during the two minute searches and observed species richness ( $p < 0.0001$ ). Also, when adjusting for the effect of location upon substrate, substrate composition is still significantly correlated to both the number of individuals collected and the observed species richness. The F - values for these correlation are in Table 4.

A total of 656 individuals representing 21 species were collected at Interstate Park (Fig. 13) during the qualitative collections. The deertoe, *Truncilla truncata*, was the dominant species comprising 59.0% of all of the mussels found. The pigtoe, *Fusconaia flava*, was found to be the subdominant, comprising 11.4% of all mussels found. All other species comprised less than 10% of the individuals found. Interstate Park mussel density, as gaged by the number of individuals found during the two minute collections, varied significantly with station (Fig. 1413,  $p < 0.0001$ ), but not with transect (Fig. 14A,  $p = 0.067$ ). Observed species richness also varied significantly with station (Fig. 14D,  $p < 0.0001$ ), but not with transect (Fig. 14C,  $p = 0.24$ ). The number of individuals collected during the two minute collection varied

significantly with station flow and depth values for both linear (Figs. 28A, 2813; flow:  $p = 0.0030$ ; depth:  $p < 0.0001$ ) and polynomial fits (flow:  $p = 0.0114$ ; depth:  $p < 0.0001$ ). The number of species found at Interstate varied significantly with flow and depth when using a linear fit (Fig. 29A, 2913; flow:  $p = 0.029$ ; depth:  $p = 0.0001$ ). Number of species varied significantly with depth ( $p < 0.0001$ ), but not with flow, ( $p = 0.091$ ) when using a polynomial fit. The number of individuals collected during the two minute searches was significantly correlated to the substrate type (Fig. 30A;  $p = 0.003$ ), while the observed species richness was not (Fig. 3013;  $p = 0.50$ ). Positive relationships were observed between the number of individuals found during the collections and flow and depth. There were also positive relationships between the number of species observed and flow and depth at each station. In addition, it was also found that the greatest density of individuals was found in substrates consisting primarily of cobble, gravel, or a mix of cobble and gravel (Fig. 30A).

A total of 142 individuals representing 16 species were collected at Osceola (Fig. 15) during the qualitative collections. The pigtoe, *Fusconaia flava*, was the dominant species at Osceola comprising 49.3% of all mussels found at that site. The deertoe, *Truncilla truncata*, was found to be the subdominant comprising 11.3% of all mussels found at that site. All other species made up less than 10 % of the individuals collected. Osceola mussel density, as gaged by the number of individuals collected during the two minute searches, varied significantly between both transect (Fig. 16A,  $p = 0.017$ ) and station (Fig. 1613,  $p = 0.004$ ). Observed species richness also varied significantly with both transect (Fig 16C,  $p = 0.013$ ) and station (Fig 16D,  $p = 0.0001$ ). The number of individuals collected during the two minute collection varied significantly with flow and depth values for both linear (Figs. 31A, 3113;  $p < 0.0001$  for flow and depth) and polynomial fits (Figs. 32A, 3213;  $p < 0.0001$  for flow and depth). The same holds true for observed species richness. Both the number of individuals collected during the two minute collections and the observed species richness were significantly correlated to substrate type (Figs. 33A, 3313;  $p < 0.0001$ ). Unlike Interstate Park, greater numbers of individuals were found in lower flow and shallower water. Similar to Interstate Park, however, the greatest numbers of individuals per station and the greatest number of species per station were found in the coarser substrates of cobble, gravel, and a mix of cobble and gravel.

In the qualitative portion of this study, there were significant relationships between flow and depth and the number of individuals and the number of species found per station. These relationships, however, were opposite to one another at Interstate Park and Osceola. Interstate Park community had a positive relationship with flow and depth, while Osceola had a negative one. This may have more to do with the effect of substrate texture than an actual effect upon the mussel community by the depth and flow at these sites. At both sites, it appears that mussel density and richness were generally greater in those substrates composed of coarser materials such as cobble, gravel, and a mix of cobble and gravel. It appears, therefore, that the character of the substrate is likely to be the driving factor in the definition of the mussel community, especially at the Osceola location given the apparent spatial restriction of both the number of species and numbers of individuals at the Osceola location.

Interstate Park was by far the more rich and dense site in the qualitative analyses. Doolittle (1988) found that, at Interstate Park, *F. flava* and *T. truncata* were the dominant species: This appears to be the case at the our qualitative study site as well. Osceola seems to be a much more restricted site in terms of the spacial distribution of mussels at the site. The individuals, when found in groups, seem to be limited to sites near shore. This limitation appears to be a result of substrate composition as well as possible influences of flow and depth. In addition, the significant spacial variation of the number of individuals encountered per search and the lack of significant variation in the number of species encountered may denote a relationship between the substrate character and the structure (i.e. richness and/or diversity) of the mussel community, while other physical factors may influence the population of the community.

## Quantitative Sampling Results

### *Water Depth, Flow, Substrate, and Total Suspended Solids Analyses*

The Interstate Park sampling sites, the dates on which they were examined, substrate mean 0 size, depth, and flow at the sediment-water interface and at 0.6 depth (where available) are given in Tables 1a and 1B. There were significant differences in depth of the sites examined (Table 5). The river is fairly shallow along the east side of Folsom Island, and is deeper at the upstream end of the island (sites AE, AM, and AW). There is also a somewhat deeper channel along the most eastern shore. Water velocity (whether measured at the sediment-water interface or higher in the water column at 0.6 depth) varied significantly among sites examined and was greatest at the upstream end of the sampling site and along the eastern shore of the channel. However, as mentioned previously, these flow data must be examined carefully since the rates were measured at different discharge levels.

Substrate composition at Interstate Park was fairly similar throughout the quantitative study reach, though statistical analyses indicated there were significant differences among sites (Table 5, Fig. 17A). The most obvious variant is the somewhat finer grained sediments found at site A. This is most likely due to the greater depth in the region resulting in a depositional area for finer sands. There was in fact a significant relationship ( $F = 24.17$ ,  $p < 0.0001$ ) between water depth and the size of the sediment (Fig. 17B), with finer sediments being associated with deeper water.

Figure 18A and 18B show the amount of total suspended solids and the percent organic matter of the total suspended solids of water collected at 0.5 m above the riverbed. Figures 18C and 18D show similar measures for water taken at the sediment-water interface. It is apparent that there is variation among sites in both the total suspended solids and the organic content of these solids (Table 5). It is also obvious that there is a difference in the amount of total suspended solids in water collected at the sediment-water interface or above this interface. Generally there were greater amounts of suspended solids in the water collected at the sediment-water interface (least square means for total suspended solids as dry weight at the sediment-water interface was 17.3 mg/L and only 11.3 mg/L for water taken 0.5 m above the riverbed). An analysis of variance indicated that the difference in total suspended solids as dry weight between water collected at the sediment-water .

interface or above was not quite statistically significant ( $F = 2.9$ ,  $p = 0.09$ ). We believe that the greater amount of suspended solids at the sediment-water interface is due to transport of materials along the bottom of the river. Much of the material in the suspended solids is inorganic in nature (low percent organic matter) and is probably fine sand (Hornbach, 1992). There was a significantly greater amount of total suspended solids as ash-free dry weight in water taken from the sediment-water interface as compared to that taken 0.5 m above the riverbed (least square mean for sediment-water interface = 3.15 mg/L and for 0.5 m above riverbed = 2.17 mg/L;  $F = 5.72$ ,  $p = 0.02$ ). This difference in the amount of total suspended solids as dry weight between water drawn from the sediment-water interface and water drawn from the bottom, coupled with the almost statistically significant difference in total suspended solids as dry weight, led[ to significant variations in the percent organic matter in the suspended solids. The amount of organic matter varied significantly with the interaction between depth and location in the river, i.e. upstream downstream and east-to-west ( $F = 1370$ ,  $p < 0.01$ ). This significant interaction meant that depending upon location in the river, there may or may not be differences in the amount of organic content of the suspended solids in the water taken from the sediment-water interface or 0.5 m above the riverbed. This variability is most likely due to variation in substrate type and flow which could lead to turbulence and the resuspension of deposited sediments. There was a significant relationship between rate of flow at 0.6 depth and the percent organic matter in the suspended solids collected at the sediment-water interface ( $F = 8.33$ ,  $p = 0.01$ ) and close to a significant relationship between the percent organic matter and the flow at the bottom ( $f = 3.6.5$ ,  $p =$

0.08). At higher rates of bottom flow there was a lower percent organic matter in the suspended solids collected from the bottom at Interstate Park. For water taken from 0.5 m above the riverbed there was a significant relationship between depth and percent organic matter of the suspended solids from this sample with water taken from the shallower areas having a greater percent organic matter ( $F = 7.71, p = 0.02$ ). However, there were no significant relationships among water velocity or depth and other measures of suspended solids: the amount of suspended solids or the percent organic matter of the suspended solids at the sediment-water interface (*for water drawn from the sediment-water interface : total as dry weight vs depth, F = 0.52, p = 0.48; total as ash-free dry weight vs depth, F = 0.002, p = 0.97; percent organic matter vs depth, F = 1.78, p = 0.21; total as dry weight vs bottom flow, F = 0.75, p = 0.04; ash-free dry weight vs bottom flow, F = 0.23,*

$p = 0.64$ ; total as dry weight vs 0.6 flow,  $F = 2.26, p = 0.16$ ; total ash-free dry weight vs 0.6 flow,  $F = 0.79, p = 0.39$ ; *for water drawn from 0.5 m above the sediment-water interface : total as dry weight vs depth, F = 2.36, p = 0.43*; percent organic matter vs depth,  $F = 1.78, p = 0.21$ ; total as dry weight vs bottom flow,  $F = 0.04, p = 0.85$ ; total ash-free dry weight vs bottom flow,  $F = 0.02, p = 0.89$ ; percent organic matter vs bottom flow,  $F = 0.16, p = 0.69$ ; total as dry

weight vs 0.6 flow,  $F = 0.21, p = 0.66$ ; total ash-free dry weight vs 0.6 flow,  $F = 0.79, p = 0.62$ ; percent organic matter vs 0.6 flow,  $F = 1.52, p = 0.24$ ). It therefore appears that there is a greater amount of suspended material at the sediment-water interface and that often this material is fine sand, especially in areas of greater depth and/or greater flow.

The Osceola sampling sites, the dates on which they were examined, substrate mean 0 size, depth, and flow at the sediment-water interface and at 0.6 depth (where available) are given in Table 1B. There were significantly differences in depth of the sites examined (Table 5). Sites tended to be slightly deeper at the downstream sites along the shoreline. Mid-channels sites were deeper than shoreline sites. Water velocity (whether measured at the sediment-water interface or at 0.6 depth) varied significantly among sites examined (Table 5). Flow tended to be higher at the downstream locations and higher in the center of the channel.

Substrate size at Osceola varied significantly among sites (Table 5; Fig. 23). Finer grained sediments (shifting sand) were found in the center of the channel. The most obvious difference is that the mid-channel station sediments were uniformly composed of shifting sand while the more coarse substrates were found at the inshore sites. There was some upstream/downstream variation in the sediment composition of the inshore stations. In general, more coarse substrates were found at the upstream sites. Substrate size did not vary significantly with depth ( $p = 0.09$ ; Fig 23 B). Generally, however, fine sediments were associated with deeper water.

Figure 36A and 36B show the amount of total suspended solids and the percent organic matter of the total suspended solids of water collected at 0.5 m above the riverbed. Figures 36C and 36D show similar measures for water taken at the sediment-water interface. It is again apparent that there is variation among sites in both total suspended solids and the organic matter solids (Table 5). Generally, as with Interstate Park, there were greater amounts of total suspended solids in the water collected at the sediment-water interface (means for total suspended solids as dry weight at the sediment-water interface was 31.1 mg/L and only 22.8 mg/L for water taken 0.5 m above the riverbed). Mean suspended solids as ash-free dry weight in water collected at the sediment-water interface and in water collected at 0.5 m above the riverbed were 2.5 mg/L and 3.1 mg/L respectively. Mean percent organic matter of the suspended solids in the water collected at the sediment-water interface and water collected at 0.5 m above the riverbed were 13.5 and 24.4 respectively. Analysis of variance indicated a significant relationship between the total suspended solids as dry weight from water taken at the sediment-water interface and water taken at 0.5 m above the riverbed. Like Interstate Park total suspended solids, Osceola total suspended solids at the sediment-water interface appears to have a greater dry weight and a lower percent organic matter, indicating that a larger proportion of the material suspended at the sediment-water interface is inorganic

in nature. This is likely to be due to the transport of materials along the riverbed. All of the total suspended solids parameters were significantly correlated to the upstream-to-downstream location (Table 7) although no upstream-to-downstream pattern was noted. All total suspended solids values with the exception of total suspended solids as dry mass in water collected at the sediment-water interface were significantly correlated to the sampling stations' proximity to shore. All of the relationships indicated a greater amount of suspended material and a higher percent organic matter content at the inshore stations. This effect could be due to the contribution of detritus to the water column by the shoreline. The only total suspended solids parameters correlated significantly to depth were the percent organic matter of the total suspended solids collected at the sediment-water interface and the total suspended solids as dry weight in water collected 0.5 m above the riverbed. Total suspended solids parameters correlated to flow at the bottom and flow at 0.6 depth were total suspended solids as ash-free dry weight in water collected at the sediment-water interface, total suspended solids as dry and ash-free dry weight in water collected at 0.5 m above the riverbed, and percent organic matter content of total suspended solids in water collected 0.5 m above the riverbed. Mean sediment size was correlated significantly with total suspended solids as ash-free dry weight in water collected at the sediment-water interface and at 0.5 m above the bottom, percent organic matter content of total suspended solids in water collected at the sediment-water interface and 0.5 m above the bottom.

As with Interstate Park, at higher rates of bottom flow, there was a lower percent organic matter content in total suspended solids in water collected at the sediment-water interface. This also holds true for samples taken from 0.5 m above the riverbed. Interestingly, at Osceola, higher flows tended to be associated with lower total suspended solids as dry weight as well. This may have to do with the fact that, in general, the higher flows were found at the offshore sites, which had a substrate of almost exclusively shifting sand. In addition, given the morphology of the shoreline (generally steep banks, and well-covered with vegetation) it may be that the variation in total suspended solids in this area is defined, at least in part, by the position in relation to the shoreline rather than being governed primarily by substrate type, flow and/or depth.

#### *General Community and Population Structure*

A total of 1174 individual mussels representing 29 species were found in the 150 0.25 m<sup>2</sup> quadrats examined at Interstate Park, including one specimen of the endangered species *Quadrula fragosa* (Fig. 19, Appendix 2). The deertoe, *Truncilla truncata*, dominated the community, comprising 58.5% of all mussels found. All other species comprised less than 10 % of individuals found. Doolittle (1988) showed that *Actinonaias ligamentina* (= *Actinonaias carinata*), *Fusconaia (lava)*, *Elliptio dilatata*, *Amblema plicata*, and *Lampsilis radiata* were the most common and abundant species found in the river as a whole. Also, these species were often found in association with one another. He also noted, however, that less common species, such as *Truncilla donaciformis*, *Quadrula metanevra*, and *Tritigonia verrucosa* are also found associated with one another. At Interstate Park, we found *T. truncata* as the dominant, with *T. donaciformis*, *A. carinata*, and *Q. pustulosa* as abundant subdominants. Thus at Interstate Park, there appears to be a unique mussel community composition when compared to other reaches of the St. Croix River. On average we found 3.25 species of mussels per 0.25 m<sup>2</sup> quadrat at the Interstate Park location. The mean mussel richness (number of species per quadrat) varied significantly with site of collection (Fig. 20A). The maximum number of species per quadrat was ten.

Doolittle (1988) collected two semi-quantitative sample from the Interstate site (his :relative abundance samples). In one sample, he found 3.73 mussels/m<sup>2</sup> and in the other, 1.6.3 mussels/m<sup>2</sup>. These values are much lower than the overall average of 56.6 mussels/m<sup>2</sup> that we found. Part of the difference could be that we sieved the substrate for mussels while Doolittle only removed mussels from the river without sieving the substrate. There were significant influences of upstream/downstream location and relation to shore (E, M, W) in mussel density (Table 5). The greatest density of mussels were found at the upstream end of the

sampling site and along the eastern shore (Fig. 20B). The size of the mussels found were not as influenced by location in the river (Table 5, Fig. 20C), although there was a significant interaction between the upstream/downstream location and the relation to the shore (E, M, W).

At the Interstate Park location we found a significant relationship between the community richness and the sediment size ( $F = 10.22$ ,  $p = 0.0001$ ; Fig. 21 A) and between water depth and richness ( $F = 40.12$ ,  $p < 0.0001$ ). Figure 21B shows the relationship between mussel density and the average sediment particle sized from each of the samples ( $F = 5.01$ ,  $p = 0.02$ ). Mussel density was also significantly correlated by depth ( $F = 131.04$ ,  $p < 0.0001$ ; Fig. 22B), with greater numbers of mussels being found in deeper areas of the river. The average size of mussel collected was not significantly related to substrate size at the Interstate Park location ( $F = 0.59$ ,  $p = 0.44$ ; Fig. 21C). It is interesting to note that while on average there was an increase in the average size of mussel collected with depth (Fig. 22C), the smallest mussels collected were only found in shallow areas.

A number of analyses were conducted to examine the relationship between the amount of suspended solids and the mussel population density and community richness. Few significant relationships were found (Table 6). This could partially be due to the fact that the water samples were taken when water discharge varied greatly. The two interesting significant relationships that were found included decreases in mussel density and mussel community richness at sites where there was high organic content of the suspended solids collected at 0.5 m above the riverbed. Whether or not this is a causal relationship, or simply coincidental is not known. Since there was no relationship between mussel density and community richness and the amount of organic matter in the suspended solids collected at the sediment-water interface, a causal relationship with water collected 0.5 m above where the mussels are found seems doubtful.

A total of 232 individual mussels representing 16 species were found in the 100 0,25 m<sup>2</sup> quadrats examined at the Osceola location (Fig. 34 - Appendix 2). No federally endangered species were encountered, although two examples of the Wisconsin endangered species *T. verrucosa* were found. The pigtoe, *F. flava*, and the deertoe, *T. truncata*, dominated the community, comprising 39.2% and 37.1% of the community respectively. All other species comprised less than 10% of individuals found. In comparison with the abovementioned overall data presented by Doolittle (1988), the Osceola site also seems to be a unique mussel community. Transect data given by Doolittle (1988) for a location near our location indicates a total on five mussels found comprised of a single example of *E. dilatata*, *Leptodea fragilis*, *T. verrucosa*, *T. donaciformis*, and *T. truncata*. Other nearby locations examined by Doolittle (1988) consisted of examinations of midden piles found on the shoreline. We found an average of 1.27 species of mussels per 0.25 m<sup>2</sup> quadrat at the Osceola location. The mean mussel richness varied significantly with the site of collection (Fig. 24A, Table 5). The maximum number of species per quadrat was five.

At the Osceola location, we found a significant relationship between the community richness and sediment size ( $F = 104.8$ ,  $p < 0.0001$ ; Fig. 25A) and between mussel density and sediment size ( $F = 68.8$ ,  $p < 0.0001$ ; Fig. 25B). Mussel density was not significantly correlated to station depth ( $F = 1.75$ ,  $p < 0.19$ ; Fig. 26B), but species richness was significantly correlated to station depth ( $F = 5.34$ ,  $p = 0.023$ ; Fig. 26A). Unlike the Interstate Park location, at the Osceola location, mussel length was significantly correlated to substrate size ( $F = 69.08$ ,  $p < 0.0001$ ; Fig. 25C). Mussel length was also significantly related to depth at the Osceola location ( $F = 6.58$ ,  $p = 0.011$ ; Fig. 26C). This is also at variance with what was found Interstate Park.

Analyses conducted to examine the relationship between the amount of suspended solids and the mussel population density and community richness indicated that the population density was significantly correlated to the total suspended solids as ash-free dry weight collected at the sediment-water interface (F

= 26.7, p < 0.0001; Table 6); organic matter content of those samples ( $F = 32.08$ , p < 0.0001); total suspended solids as ash-free dry weight collected at 0.5 m above the riverbed ( $F = 14.02$  p = 0.0003; Table 6); organic matter content of those samples ( $F = 13.42$ , p < 0.0005). Mussel community richness was also significantly correlated to the total suspended solids as ash-free dry weight collected at the sediment-water interface ( $F = 41.37$ , p < 0.0001); organic matter content of those samples ( $F = 27.41$ , p < 0.0001); total suspended solids as ash-free dry weight collected at 0.5 m above the riverbed ( $F = 11.89$  p = 0.0008); organic matter content of those samples ( $F = 7.33$ , p = 0.0083). Individual length was also correlated significantly with the total suspended solids as ash-free dry weight collected at the sediment-water interface ( $F = 32.60$ , p < 0.0001) and the total suspended solids as dry weight collected at 0.5 m above the riverbed ( $F = 3.91$ , p = 0.49).

It is evident that mussel density was greatest in areas of substrate size in the mid-sized range. A relationship between sediment size and mussel density was noted by Stern (1983) for sites in the St. Croix and Wisconsin rivers. He found the greatest density of mussels in areas where there was a mixture of sediment from mud through boulders (> 64 mm), which would include the gravel substrate in which we found most of our mussels. Doolittle (1988) and Hornbach (1992) also found that the greatest percentage of mussels in the St. Croix River were found in sand/gravel and sand/rock or gravel/rock substrates: In area with very fine sand (such as the offshore sites of the Osceola location), Hornbach (1992) and Stern (1988) found few mussels. At the other extreme, few mussels were generally found to be associated with extremely large substrates (e.g. boulders), thus the Interstate Park location in particular appears to represent a site with high quality substrate for mussel populations. Thin shelled species are often found in greater density in finer substrates (e.g. silt) [Ortmann's (1920) "Law of Stream Distribution" see discussion in Mackie and Topping (1988)] but many of the species found at Interstate Park are thicker shelled species as are those found at the Osceola location.

One hypothesis for the significant relationship between sediment size and density states that coarse substrates are indicative of stable habitats. These habitats are thus inhabited by greater numbers of mussels. One might also expect that there should have been significant relationships among sediment size and mussel community richness and average mussel size. This was true for community richness (Figs. 21B, 25B) but not for mussels size (Figs. 21C, 25C). Holland-Bartels (1990) and Duncan and Thiel (1983) however noted no difference in the community structure among different substrate types but did not find that the abundance of mussels did vary among sediment types. The differences in the nature of the relationships between physical and community parameters may be a result of the availability of preferred habitat in the form of substrate composition. At Interstate Park, with its abundance of what is traditionally considered "preferred" habitat (i.e. cobble, gravel or a mix thereof) other factors such as rate of flow, depth, water temperature, and water quality may come into play in the definition of the community population and structure. While at Osceola, where "preferred" habitat is severely limited, it may be that the correlations between community parameters and physical parameters are playing less of a role in the definition of the area's mussel community structure and composition.

In this study, there were significant relationships among water depth and mussel density and community richness. It is possible that even if sediment texture is conducive to mussel habitation, the depth of water is important to structuring mussel communities. The cause behind the relationship between water depth and increased mussel density and richness is not known. It is possible that differences in fish-host behavior accounts for the noted distributions. One confounding factor in the comparison of data from Interstate Park and Osceola is the disparate nature of the two sites. While Interstate Park appears to have a more diverse and comprehensive sediment composition, Osceola displays a partitioning of sediment type between the inshore and offshore sites with the coarser substrates restricted primarily to those sites near the shoreline. The sediment at the Osceola location also occupies a narrower range of sizes. Interstate Park mean 0 ranges from 0.46 to -4.38 while Osceola mean 0 ranges from 1.03 to -2.83. This may

account for the differences in the observed mussel communities at these sites and may be further evidence of the influence of substrate composition upon mussel communities in the St. Croix River as a whole.

### Mussel Aging

A total of 126 specimens of *T. truncata*, and *F. flava* were taken and examined for the purposes of internal and external aging comparisons as well as determination of growth rates over time. Range values, means, standard deviations are listed in Table 8. External age as determined by visible annuli was significantly correlated to the internal age as determined by the examination of annuli on shell thin sections (Fig. 37A;  $F = 392.8$ ,  $p < 0.0001$ ). External age was also significantly correlated with measured length, width, nor height of individuals (Figs. 37 B-D, respectively). All R<sup>2</sup> values for the correlations are approximately 0.75. The correlation values are given in Table 9. These results seem to indicate that our method of external aging, while not perfect, is reasonably close to the age of the animal as determined by the counting of internal annuli for *T. truncata*, and *F. flava*. Growth rate as mm of shell material was also measured. The growth rate vs the internally determined age is shown in Figure 38. It is apparent that the growth rate of individuals diminishes as the individual grows older and approaches an asymptotic value, as one might expect.

### *Quadrcda fragosa* distribution at Interstate Park

As mentioned earlier, only one *Q. fragosa* was found among the 150 quantitative quadrats taken.

Because of the lack of specimens, additional searches were undertaken for *Q. fragosa*. An additional 20 *Q. fragosa* were found (Table 10).

### Water Velocity and Depth and Substrate Characteristics

The water velocity at the sediment-water interface varied considerably where *Q. fragosa* was found. The water velocity recorded ranged from 0.04 m/s to 0.34 m/s with a mean recorded velocity of 0.17 m/s. When comparing the water velocity at the sediment-water interface between quadrats where *Q. fragosa* was found and quadrats where *Q. fragosa* was not found there is no statistically significant difference ( $t = 0.579$ ,  $p = 0.56$ ; Fig. 39A). Water depth also varied considerably where *Q. fragosa* was found. The depth ranged from 0.42 m to 1.9 m with a mean depth of 0.93 m (standard deviation 0.42). The water depth does not differ significantly where *Q. fragosa* was and was not found ( $t = 0.891$ ,  $p = 0.37$ ; Fig 39B). The depth and flow of the water are of special concern at the Interstate site because of the presence of a hydro-electric, peaking plant located 3.5 km upstream. In response to human energy demand this plant alters the amount of water discharge which creates considerable fluctuations in flow and depth. Due to the high fluctuation in discharge from day to day it is difficult to make direct comparisons between quadrats with and without *Q. fragosa*. A large scale study that recorded the water depth and water velocity at all of our sampling sites simultaneously could reveal a relationship between water depth and velocity and the presence of *Q. fragosa*.

The percentage of sediment in each sieve was calculated for each quadrat as well as the mean phi sediment size for the whole quadrat. The mean phi size for quadrats containing a *Q. fragosa* ranged from 0.3 (sandy) to -2.7 (cobble). There were no significant differences found between quadrats with *Q. fragosa* and quadrats without *Q. fragosa* and substrate mean phi size ( $t = 1.22$ ,  $p = 0.22$ ; Fig 39C).

### Community Composition

The species richness ranged from 2 to 9 species with a mean of 5.05 species in quadrats containing *Q. fragosa*. This was significantly higher than quadrats not containing *Q. fragosa* ( $t = 4.21$ ,  $p < 0.0001$ ;

Fig. 40A). Mussel density was also significantly correlated to the presence of *Q. fragosa* which has a mean density of 10.75 mussels per 0.25 m<sup>2</sup> ( $t = 2.09$ ,  $p = 0.037$ ; Fig. 40B). Mussel size was also correlated significantly with the presence of *Q. fragosa* ( $t = 4.49$ ,  $p < 0.0001$ ; Fig. 41A). Even when examining a single species (*T. truncata*), larger specimens of this species are found to be associated with *Q. fragosa* ( $t = 3.98$ ,  $p = 0.0001$ , Fig. 41B).

Based on the data of this study, it would seem that *Q. fragosa* prefers only the "ideal mussel habitat," defined as habitats that are rich in mussel density and mussel species richness. It is not fully understood why this habitat might be selectively populated by *Q. fragosa*. Paterson (1983) observed that the respiration rate of aggregated mussels was lower than when the same mussels were alone. Although Paterson only used a single species in his study and we have yet to find more than one individual *Q. fragosa* in a single quadrat, a similar response might occur when individuals of a variety of species are aggregated. *Q. fragosa* might also prefer to aggregate with other mussels to avoid predation. Neves (1989) discovered by analyzing midden piles that muskrats were preferentially consuming an endangered species of mussel in the North Fork Holston River in Virginia. The distribution of *Q. fragosa* and other mussels could be determined by the actions of the fish host (Watters, 1992, Bauer et al., 1991). Most unionid mussels have a parasitic larval stage in their life cycle involving a vertebrate host, usually a fish (Fuller, 1974). Because of this dependency on fish, the mussel distribution is often limited to the distribution of its host fish. Currently the fish host for *Q. fragosa* is unknown.

In an attempt to ascertain the association of *Q. fragosa* with other species, a chi-square analysis using a 2 x 2 contingency table was completed (Zar, 1974). The presence of four species were found to be significantly positively correlated with the presence of *Q. fragosa*. The species are: *Quadrula metanevra* ( $p > \text{ChiSq} = 0.0007$ ), *Truncilla donaciformis* ( $p > \text{ChiSq} = 0.0034$ ), *Truncilla truncata* ( $p > \text{ChiSq} = 0.0011$ ), *Tritogonia verrucosa* ( $p > \text{ChiSq} = 0.089$ ), and *Obovaria olivaria* ( $p > \text{ChiSq} = 0.085$ ). Doolittle (1988) also found associations among *Truncilla truncata*, *Tritogonia verrucosa*, and *Quadrula metanevra*.

It is not fully understood why these species of mussels are found more frequently with *Q. fragosa* present. It is possible that these species prefer a similar habitat characteristic or utilize the same fish species as a host. Both *Quadrula metanevra* and *Tritogonia verrucosa* are on the Wisconsin State Threatened Species list. It is also possible that these species populations are low because they, as well as *Quadrula fragosa*, may be habitat specialists and are more often found where conditions are specifically suited to their needs or preferences.

#### Remote Sensing and additional sampling.

Remote sensing for the purposes of the characterization of the substrate of the beds, Dissolved oxygen and pH at both sites, chlorophyll analyses, simultaneous sampling of total suspended solids at both sites, and sediment organic content were included in the original proposal. Because of the constraints of time brought about by the inclement weather in 1993, this was not done.

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Table 1A. Locations of sampling sites at Interstate Park, and physical characteristics of these sites at the time of sampling.

Location	Site	Longitude	Latitude	Date Sampled	Mean Depth (m)	Mean Bottom Flow (m/s)	Depth flow (m/s)	Mean Phi
Interstate	AE	92°39.53	45°23.7	6/24/92	1.60	0.21	0.40	-2.0257
Interstate	AM	92°39.59	45°23.74	6/24/92	2.50	0.14	0.37	-2.3320
Interstate	AW	92°39.56	45°23.87	7/1/92	2.50	0.16	0.41	-0.3615
Interstate	BE	92°39.63	45°23.73	6/30/92	0.94	0.28	0.67	-1.9703
Interstate	BM	92°39.59	45°23.77	6/18/92	0.66	0.30	0.60	-2.4154
Interstate	BW	92°39.62	45°23.74	6/18/92	0.71	0.34	0.66	-2.4378
Interstate	CE	92°39.71	45°23.62	6/30/92	023	0.31	0.52	-2.8772
Interstate	CM	92°39.88	45°23.70	6/17/92	0.48	0.19	0.38	-2.0980
Interstate	CW	92°39.76	45°23.64	6/17/92	0.74	0.13	0.29	-0.7961
Interstate	DE	92°39.76	45°23.6	6/25/92	1.60	0.21	0.53	-0.8940
Interstate	DM	92°32.79	45°23.59	6/4/92	0.22	0.09	0.12	-1.6006
Interstate	DW	92°39.82	45°23.58	6/9/92	0.25	0.06	0.12	-1.8897
Interstate	EE	92°39.91	45°23.52	6/25/92	1.60	0.20	0.50	-1.4982
Interstate	EM	92°39.92	45°23.54	6/23/92	1.27	0.24	0.42	-1.4364

Table 1B. Locations of sampling sites at Osceola, and physical characteristics of these sites at the time of sampling.

Location	Site	Longitude	Latitude	Date Sampled	Mean 0.6			
					Mean Depth (m)	Mean Bottom Flow (m/s)	Depth flow (m/s)	Mean Phi
Osceola	Al	92°41.83'	45°20.40'	7/23/93	1.04	0.01	0.04	-1.9065
Osceola	AO	92°41.88'	45°20.38'	8/2/93	0192	0.24	0.61	0.9700
Osceola	BI	92°41.88'	45°20.39'	7/23/93	1.11	0.11	0.20	-0.8122
Osceola	BO	92°41.91'	45°20.38'	8/2/93	1.14	0.24	0.63	1.0000
Osceola	CI	92°41.86'	45°20.36'	7/26/93	1.11	0.17	0.24	-1.3542
Osceola	CO	92°41.83'	45°20.31'	8/3/93	1.22	0.33	0.57	1.0000
Osceola	DI	NA	NA	7/26/93	1.11	0.17	0.27	-1.0482
Osceola	DO	NA	NA	8/3/93	1.28	0.34	0.57	1.0000
Osceola	EI	NA	NA	7/29/93	0.80	0.08	0.26	-0.1468
Osceola	EO	NA	NA	8/6/93	1.09	0.35	0.58	1.0000

NA - No data available due to mechanical or other failure.

Table 2. F-values for the relationships between the number of individuals and the number of species found per search and flow and depth. \* denotes statistically significant values.

	Linear Fit - Flow	Polynomial Fit - Flow	Linear Fit - Depth	Polynomial Fit - Depth
Overall number of individuals	1.18	0.605	39.87*	21.41*
Overall number of species	4.72*	2.38	19.72*	11.19*
Interstate number of individuals	9.14*	4.62*	28.48*	22.19*
Interstate number of species	4.87*	2.44	16.79*	19.05*
Osceola number of individuals	21.20*	11.10*	48.05*	24.21
Osceola number of species	20.94*	10.52*	49.82*	25.54*

Table 3. F-values for the relationships between the number of individuals and species found during two minute searches and flow, depth, and substrate adjusted for the influence of location.

	Flow	Depth	Substrate
Overall Number of individuals	0.188	5.51*	24.79*
Overall number of species	2.70	15.56*	2.39*
Interstate number of individuals	9.14*	28.48*	3.698*
Interstate number of species	4.87*	16.79*	0.881
Osceola number of individuals	21.20*	48.05*	11.94
Osceola number of species	20.94*	49.81*	20.17*

Table 4. F-Values for sediment characteristics vs. Number of individuals collected per station and observed species richness.

	Unadjusted correlations		Correlations adjusted for Location	
	Number of Individuals	Number of Species	Number of Individuals	Number of Species
All data	11.34*	7.16*	24.79*	32.89*
Interstate Only	3.698*	0.881	-	-
Osceola Only	11.94*	20.17*	-	-

Table 5. F- Values from analysis of variance with various habitat and community parameters as dependent variables and the location in the stream (upstream-downstream, east/west/middle location and their interaction) as independent variables. In all cases (except where noted) the F-values given are statistically significant at the 0.05 level.

Independent Variables	Interstate Park	Depth	Dependent Variables									
			Sediment Size	Bottom Flow	0.6 depth flow	Total; suspended solids - 0.5 m above riverbed	% organic matter in TSS - 0.5 sediment - water interface	Total	% organic matter in TSS - sediment - water interface	Richness	Density	Shell Length
Upstream-downstream	12760.2	12.61	93.96	536.42	1.6*	4.37	0.6* 13.27			8.98	33.95	1.38*
East/West/Middle	671.2	8.18	24.32	205.39	.19*	7.05	2.67*10.69			20.97	27.87	1.90*
Interaction	2496.2	36.1	18.82	95.51	1.01 *	3.98	0.66*	12.77	8.63	13.19	3.13 †	
Osceola												
Upstream-Downstream	40.26	21.06	40.61	29.34	51.33	1447.14	7.97	43.05	4.12	3.02	1.34	
Inshore/Outshore	35.58	1072.20	585.00	3403.98	42.34	88.96	4.42	25.09	258.37	124.17	96.68	
Interaction	17.82	19.89	10.15	57.34	^	^	^	^	2.59	2.66	^	

\* Not significant at the 0.05 level.

† degrees of freedom for interaction term 7,149. Since no mussels were found at site EM, tests of significance are difficult to ascertain. The interaction term was significant while the main effects were not statistically significant.

^ Comparison of the crossed interaction was not possible using this data set due to a loss of degrees of freedom.

Table 6. F-Values for the relationship between various measures of the amount of suspended solids in the water column and mussel density, mussel community richness and mussel shell length. All values are not statistically significant unless otherwise indicated.

Dependent Variables	Independent Variables					
	Total suspended solids as dry weight - 0.5 m above riverbed	suspended solids as ash-free dry weight - 0.5 m above riverbed	Percent organic matter of suspended solids - 0.5 m above riverbed	Total suspended solids as dry weight - bottom	Total suspended solids as ash-free dry weight - bottom	Percent organic matter of suspended solids - bottom
Mussel Density - Interstate	3.17	0.34	8.89*	0.48	0.63	0.38
Mussel community Richness - Interstate	2.39	0.03	5.99*	1.46	4.21	0.17
Mussel Length - Interstate	2.8	0.95	0.39	0.27	4.91 *	0.23
Mussel Density Osceola	0.017	14.02*	13.42*	0.009	26.72*	32.08*
Mussel Community Richness - Osceola	0.687	11.89*	7.33*	0.017	41.37*	27.41
Mussel Length - Osceola	3.91 *	2.96	0.129	0.029	32.60*	2.32

\* Indicates statistically significant relationship at the 0.05 level.

Table 7. F-Values for the relationships between suspended solids parameters and station physical parameters for the Osceola site. All relationships are significant at the 0.05 level unless otherwise noted.

Independent Variables	Dependent Variables					
	Total suspended Solids as Dry Weight at the Sediment-water Interface	Total suspended Solids as Ash-Free Dry Weight at the Sediment-water Interface	Percent Organic Matter of Total suspended Solids at the Sediment-water Interface	Total suspended Solids as Dry Weight at 0.5 m Above Riverbed	Total suspended Solids as Ash-Free Dry Weight at 0.5 m Above Riverbed	Percent Organic Matter of Total suspended Solids at 0.5 m Above Riverbed
Mean Phi	1.57*	143.1	13.29	.983*	40.98	7.1
Bottom Flow (m/s)	0.277*	72.07	3.934*	7.847	53.71	12.99
0.6 Depth Flow (m/s)	.571 *	146.5	3.934*	4.178	65.84	13.20
Depth (m)	.00031*	.399*	15.59	34.3	.103*	.269*
Inshore/Outshore (1/0)	.459*	103.4	25.75	5.574	41.57	14.81
Up - Downstream Site (A - E)	6.751	8.87	43.25	29.48	15.09	783.8

\* Denotes an insignificant relationship at the 0.05 level of significance

Table 8. Range Values, means, and standard deviations for aging data from Interstate Park.

	Maximum	Minimum	Mean	Standard Deviation	N
Length (mm)	69.45	12.4	42.78	13.221	126
External Age	17	1	4.613	2.967	126
Internal Age	17	1	5.44	2.961	126

Table 9. Correlation values for internally determined age vs. externally determined age, animal length, animal width, and animal height.

Independent Variables	F--value	p	R Squared	Intercept	Slope
External Age	392.8	< 0.0001	0.760	1.19	0.844
Length (mm)	312.2	< 0.0001	0.716	-1.05	0.187
Width (mm)	379.8	< 0.0001	0.754	-0.97	0.312
Height (mm)	331.7	< 0.0001	0.729	0.40	0.226

Table 10. Collection data for the *Quadrula fragosa* found in searches made specifically for this species.

Date	Longitude	Latitude	Time (UT)	Discharge cfs	Bottom Depth (m/s)	0.6 flow depth (m/s)	0.6 flow depth (m/s)	Age (yr)	Year of Birth (mm)	Length (mm)	Width (mm)	Height (mm)	Total density of mussels found with Q. fragosa	Total density of mussels including Q. fragosa	Species found in association with Q. fragosa	Mean sediment size (phi)
06/09/92	92°39.18	45°23.59	16:23	3026	0.62	0.14	0.23	13	1979	73.33	44.45	68.15	4	28	ED, QM, 3TT	-2.710
06/30/92	92°39.53	45°23.66	18:14	5210	1.24	0.18	0.53	15	1977	71.20	42.00	68.00	6	28	AC, TV, 2TT, TD, QP	-3.230
07/01/92	92°39.65	45°23.72	18:24	5327	1.6	0.12	0.36	16	1976	74.50	45.55	70.35	5	64	OR, AC, 2CT, 1IT	-3.180
07/01/92	92°39.65	45°23.72	18:43	5327	1.6	0.15	0.39	12	1980	70.05	38.10	64.55	4	64	2TD, 2QP, 1IT	-2.460
07/11/92	92°39.59	45°23.72	18:32	6370	0.6	0.04	0.16	9	1983	69.00	39.55	62.33	9	52	AC, AM, TV, LF, AP, TD, LRL, 5TT	-2.570
08/13/92	92°39.70	45°23.62	17:49	3153	0.82	•	•	5	1987	34.90	22.65	32.45	6	36	2QM, 2TT, 2TD, FF, CP	-1.570
08/20/92	•	14.53	•	6	0.6	•	•	3	1989	17.15	10.70	15.05	6	48	7TT, TD, AC, EL, PS	-2.410
08/20/92	92°39.58	45°23.70	15:51	•	0.86	•	•	6	1986	44.85	26.75	40.15	5	40	6TT, TD, QM, TV	-2.600
08/20/92	92°39.58	45°23.72	17:31	•	0.82	•	•	5	1987	36.70	23.00	32.15	6	64	200, 2TD, 9TT, TD, OR	-2.790
08/20/92	92°39.57	45°23.64	18:33	•	0.64	•	•	6	1986	55.55	33.95	44	6	60	12TT, EL, TD	-3.120
08/16/93	92°40.24	45°23.32	18:35	4630	1.1	0.24	•	8.5-9	1984	69.02	62.8	65.56	6	40	AP, 5TT, OO, QP, TD	-0.461
08/16/93	92°40.21	45°23.32	18:49	4630	1	0.28	•	9	1984	58.68	36.91	56.67	5	44	QM, 7TT, TD, EL	-0.770
08/16/93	92°40.19	45°23.34	19:13	4630	1.1	0.08	•	5	1988	36.10	25.94	22.51	6	32	PT, QM, 3TT, TD, PS	-1.017
08/17/93	92°40.16	45°23.36	15:08	1730	0.5	0.12	•	16	1977	93.99	46.67	82.7	3	32	5TT, 2TD	-0.838
08/17/93	92°40.18	45°23.37	16:24	1760	0.42	0.24	•	11	1982	58.34	36.9	56.68	6	32	CT, FF, AC, 3TT, TD	-1.115
08/17/93	92°39.98	45°23.28	17:14	3180	0.5	0.21	•	13	1980	53.56	33.18	50.69	6	32	AC, 3TT, QP, TD, OO	-1.419
08/17/93	92°40.14	45°23.29	18:29	4430	0.81	0.34	•	10	1983	74.83	41.73	69.24	6	40	5TT, QP, CT, EL	-1.576
08/19/93	92°40.65	45°23.30	18:02	4720	1.9	0.13	•	16.5	1976	105.97	49.99	97.62	7	64	7TT, 4FF, PA, QM, AC, AP	-1.494
08/19/93	92°40.51	45°23.01	•	1.4	0.3	•	•	11.5	1981	75.41	38.3	68.15	5	40	QM, 6TT, QP, FF	-0.992

\* Missing data

Species designations: ED - *Elliptio dilatata*, QM - *Quadrula metanevra*, TT - *T. truncata*, AC - *Actinonaias carinata*, TV - *Trigona verrucosa*, TD - *T. donaciformis*, QP - *Q. pustulosa*, OR - *Oboliquaria reflexa*, CT - *Cyclonaias tuberculata*, AM - *Alasmidonta marginata*, LF - *Leptodaca fragilis*, AP - *Ambloema plicata*, LR - *Ligumia recta*, FF - *Fusconaia flava*, CP - *carneolima parva*, EL - *ellipsaria lineolata*, PS - *Pleurobema sintoxia*, oo - *olivaria olivaria*, PT - *Plagiola triquetra*, PA - *Proteria alata*.

*Quadrula fragosa* distribution.

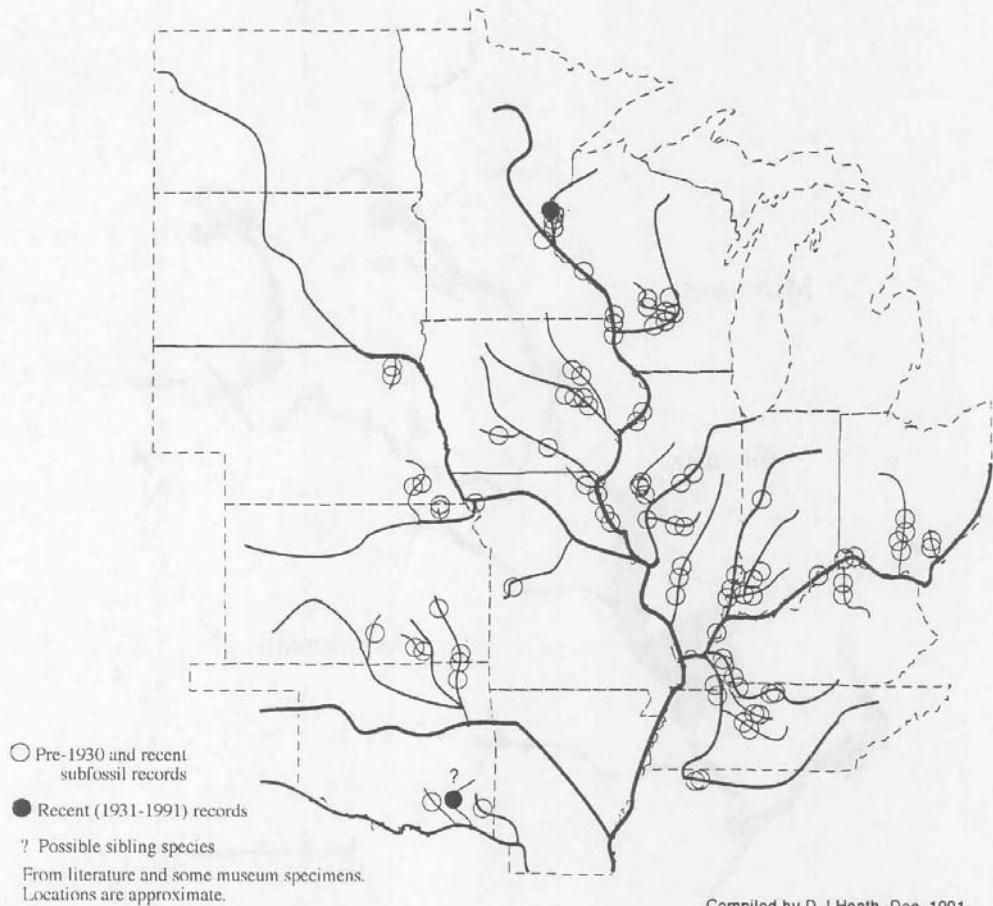


Figure 1. Past and present distribution of *Quadrula fragosa*

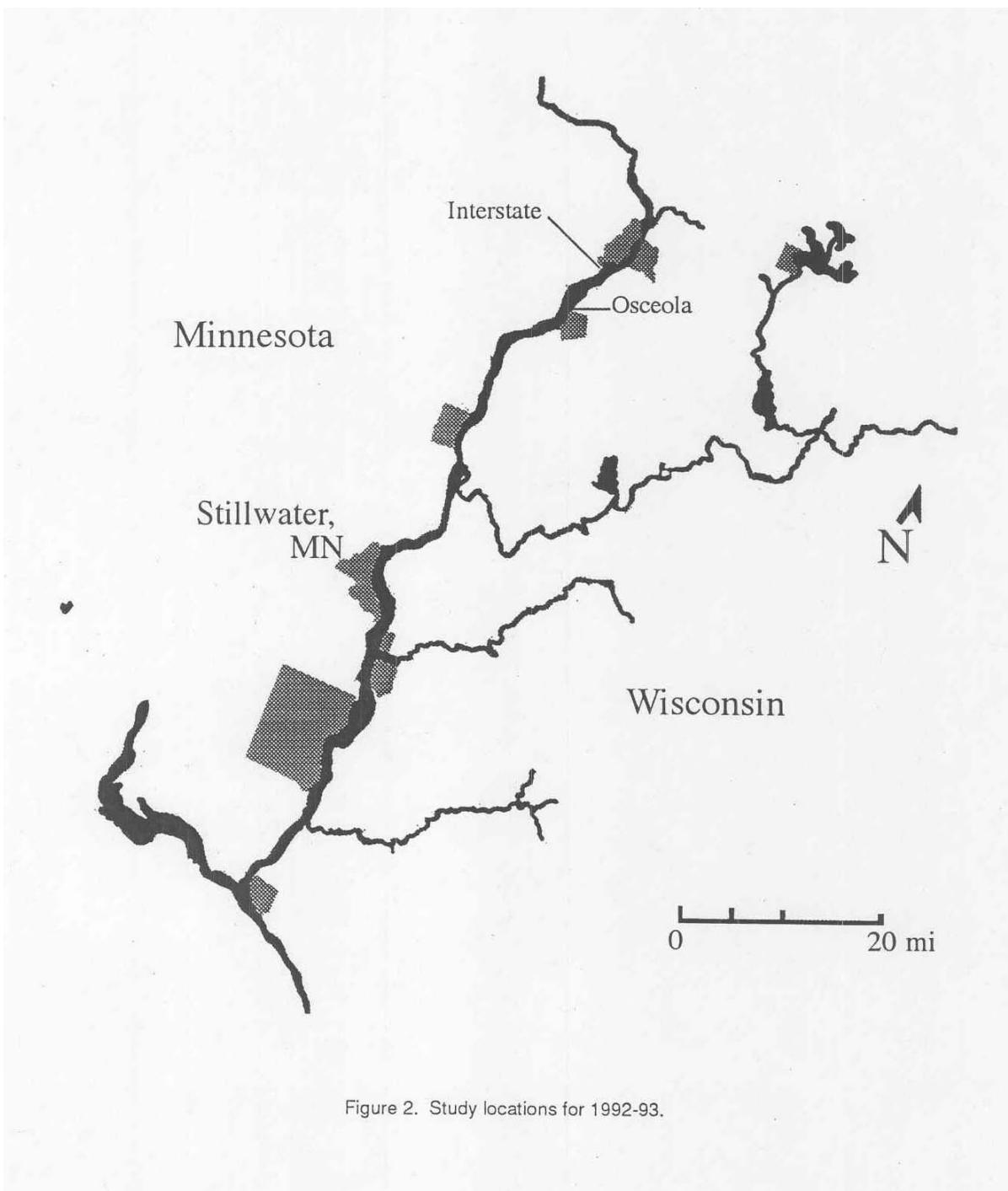
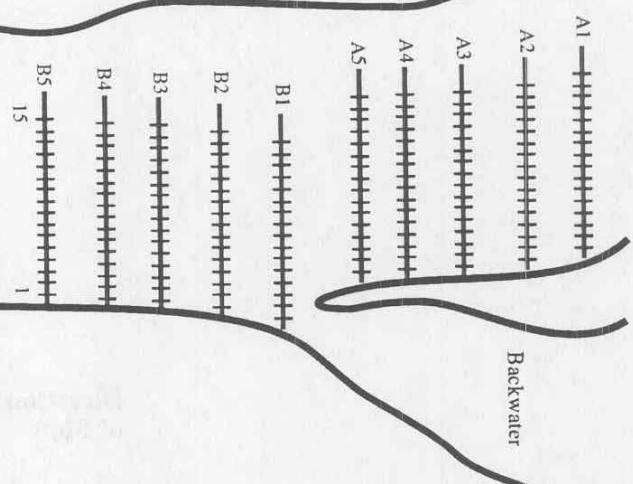


Figure 2. Study locations for 1992-93.

### A. Osceola Location



### B. Interstate Park Location

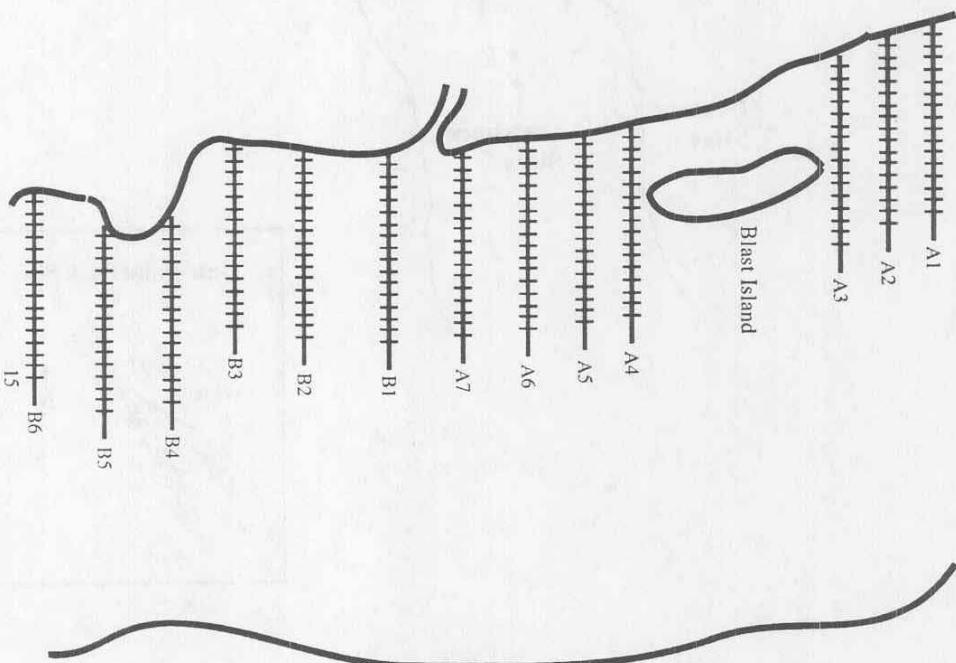


Figure 3. Site diagrams illustrating the transect disposition at Osceola and Interstate Park locations. Objects are not to scale.

15

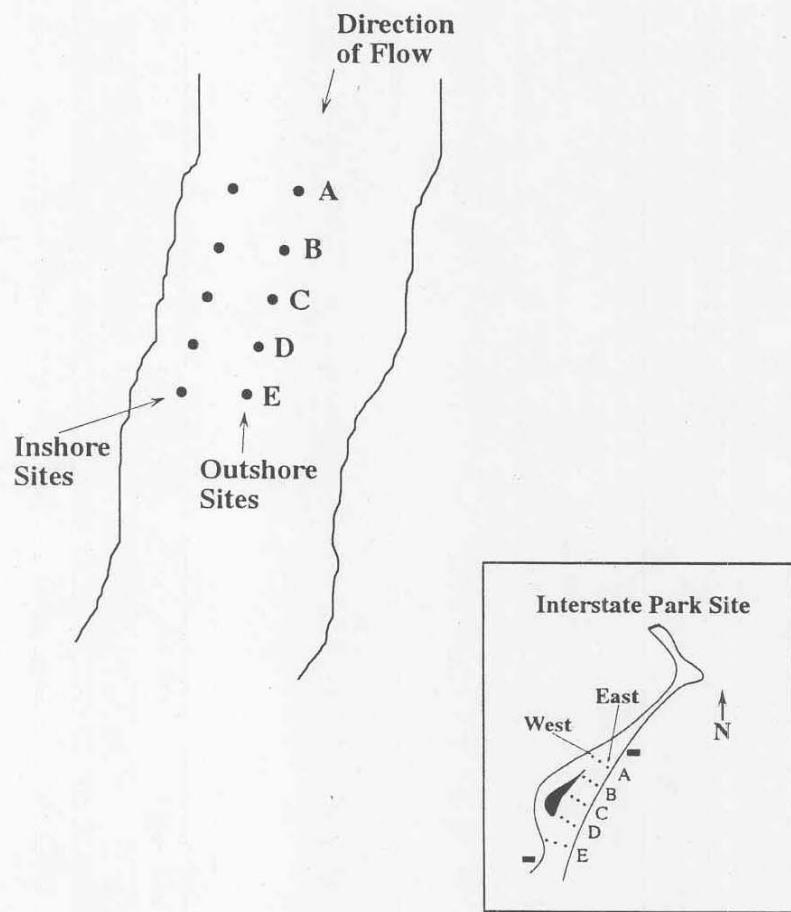


Figure 4. Qualitative sampling site configuration. Inset shows the Interstate Park site.

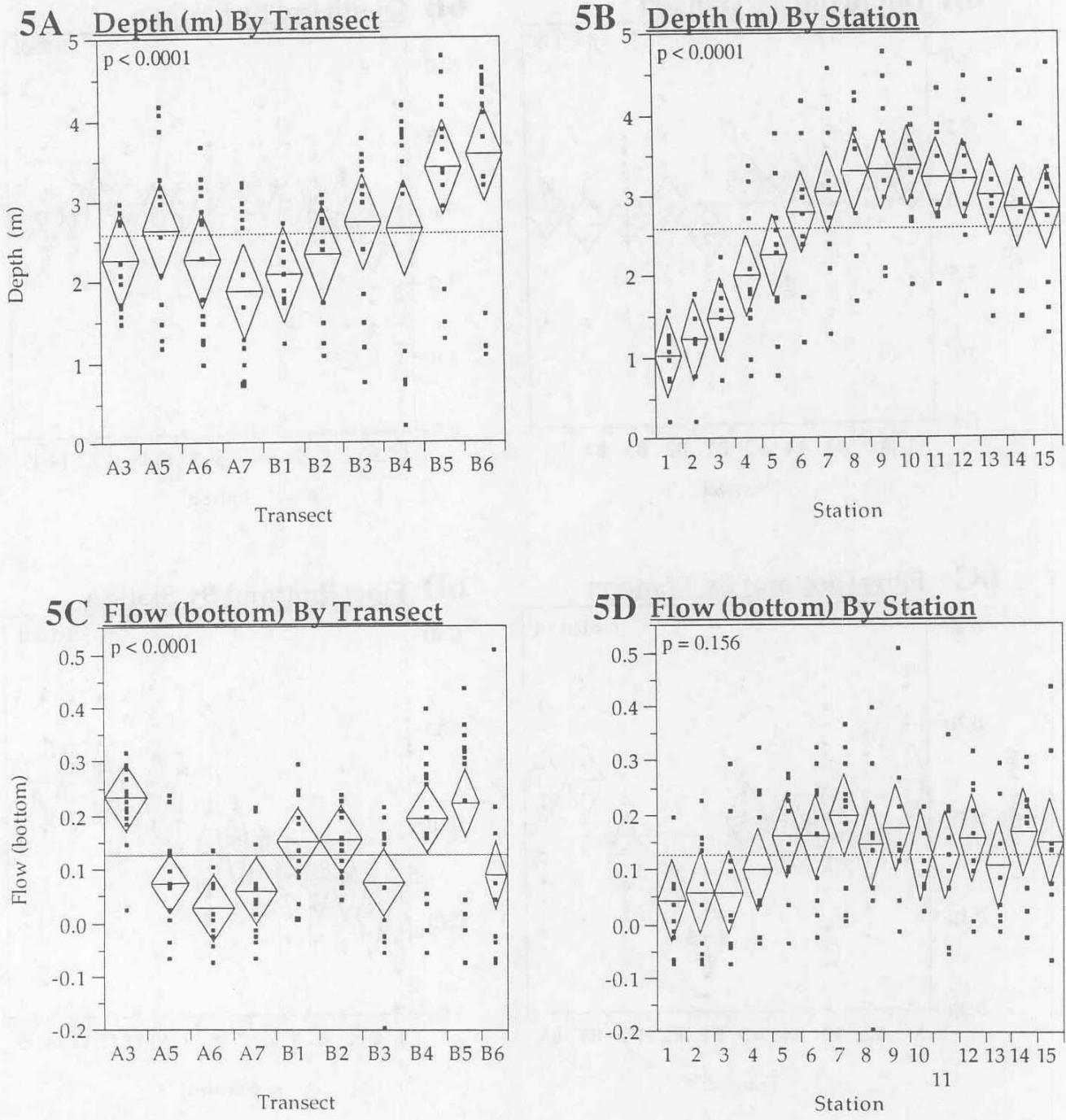
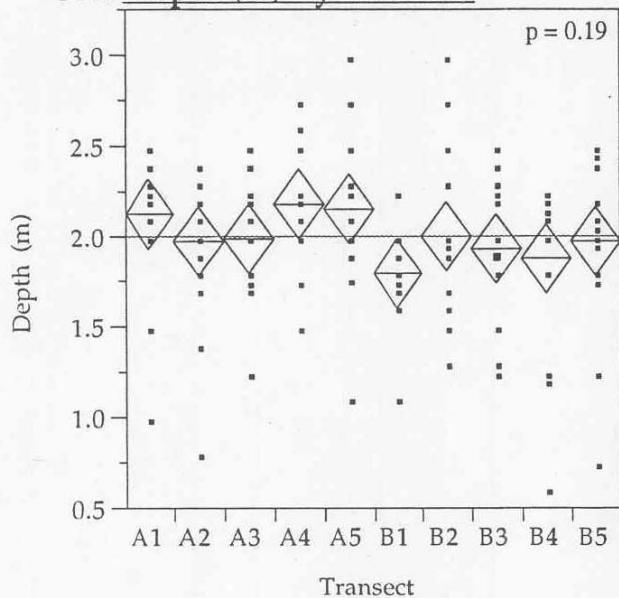
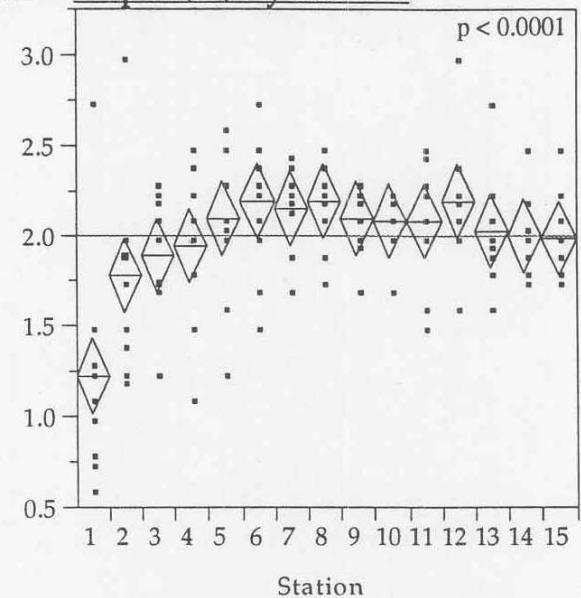


Figure 5. Flow and depth by transect and station for the Interstate Park location qualitative data.

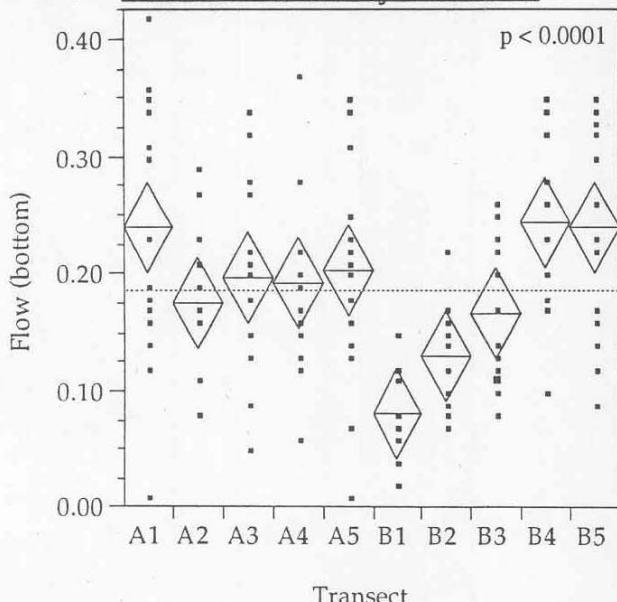
**6A Depth (m) By Transect**



**6B Depth (m) By Station**



**6C Flow (bottom) By Transect**



**6D Flow (bottom) By Station**

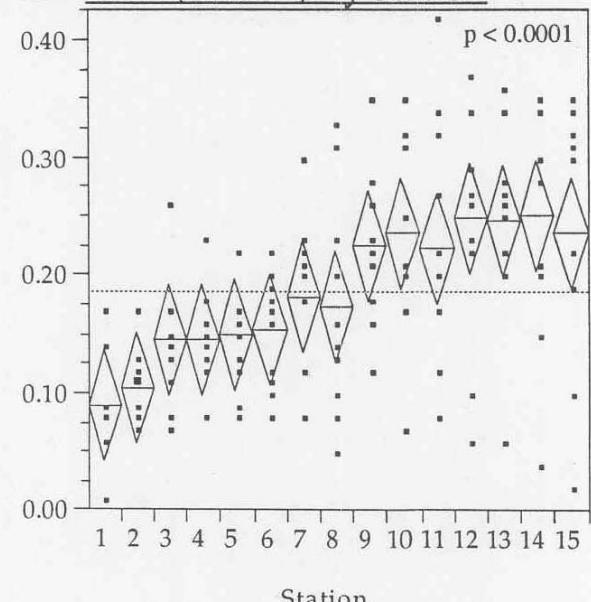
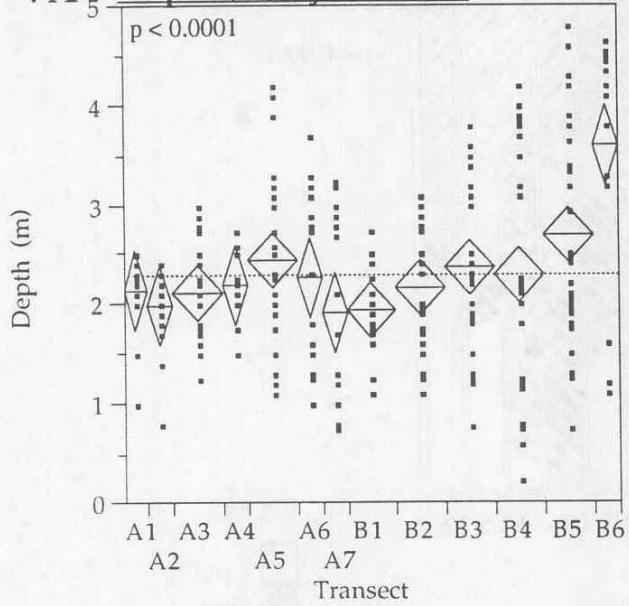
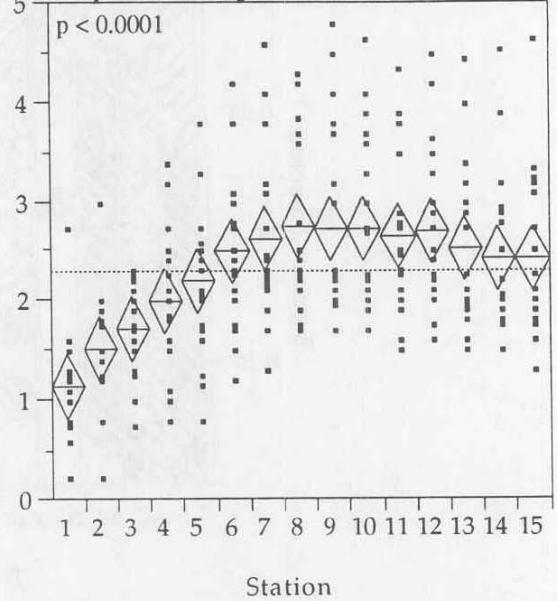


Figure 6. Flow and depth by transect and station for the Osceola location qualitative data.

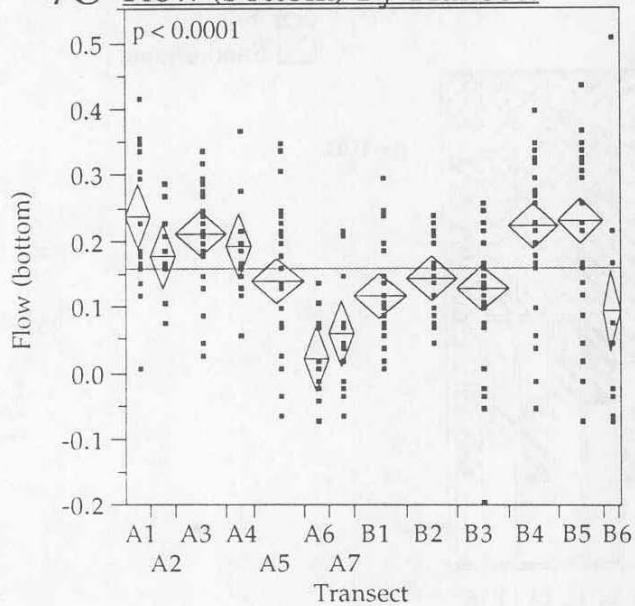
**7A Depth (m) By Transect**



**7B Depth (m) By Station**



**7C Flow (bottom) By Transect**



**7D Flow (bottom) By Station**

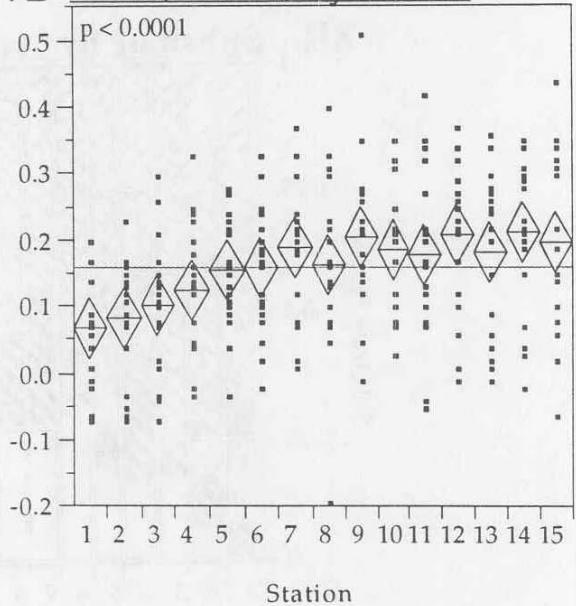


Figure 7. Flow and depth by transect and station for all qualitative data combined.

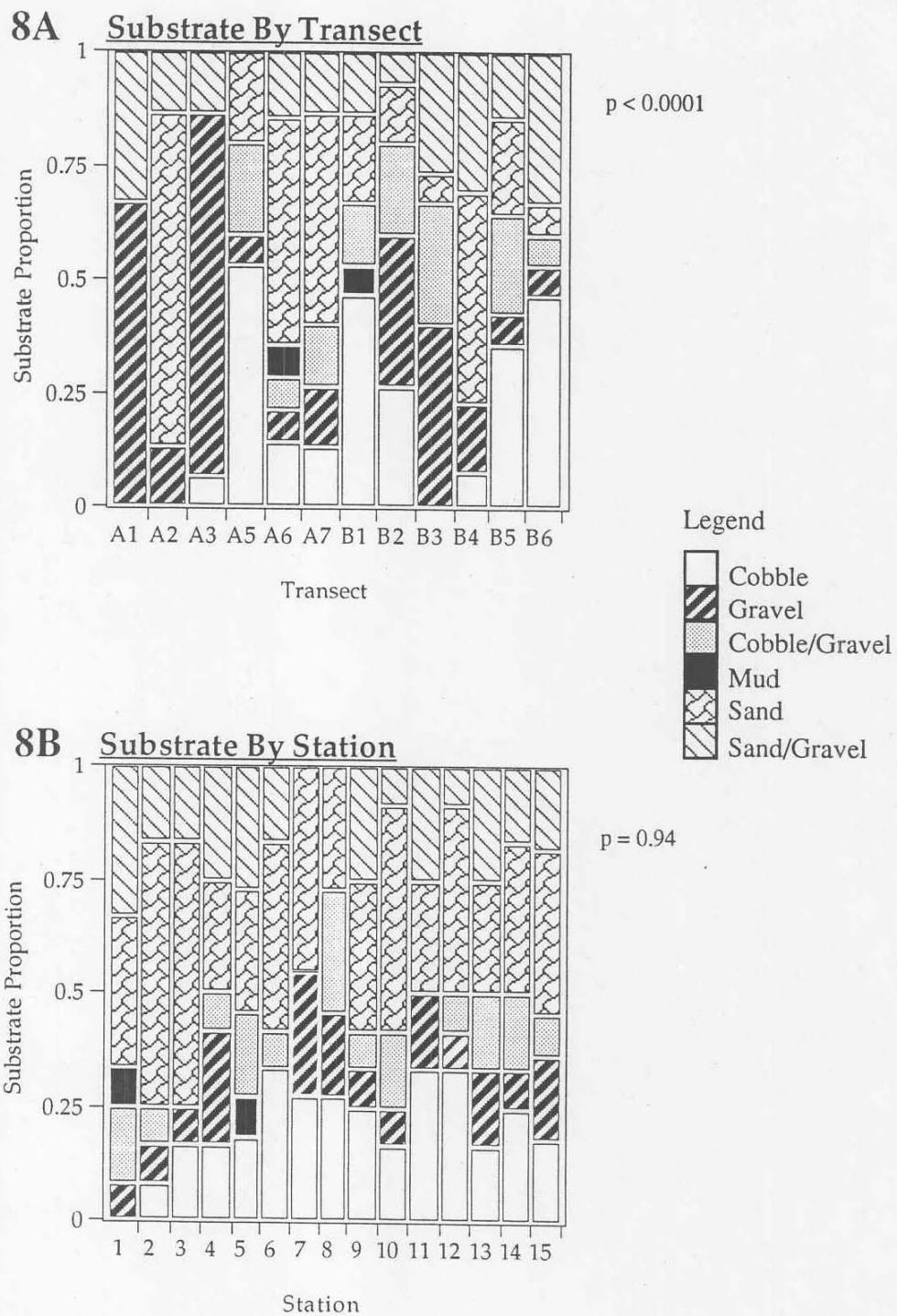


Figure 8. Interstate substrate composition.

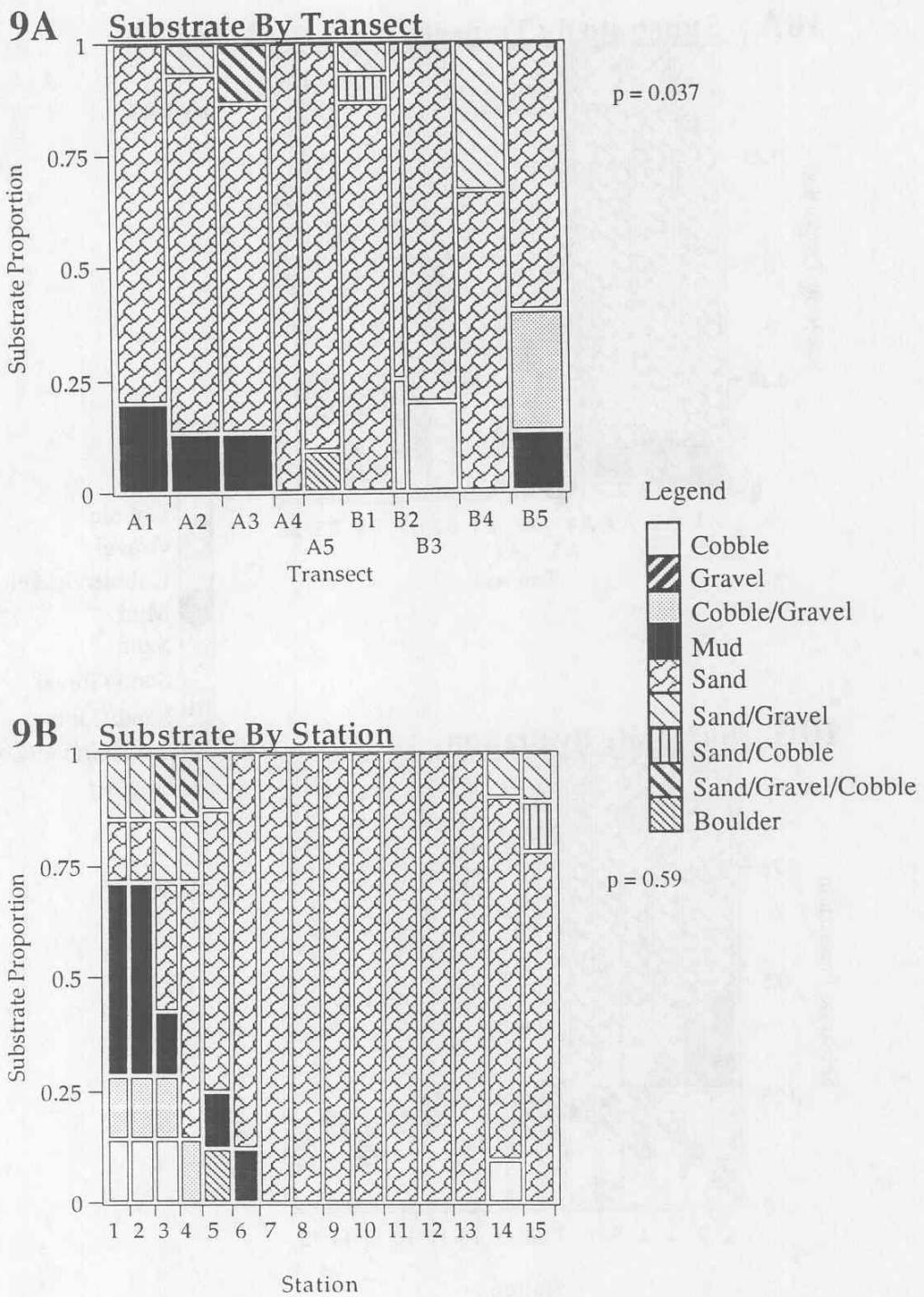


Figure 9. Osceola substrate composition.

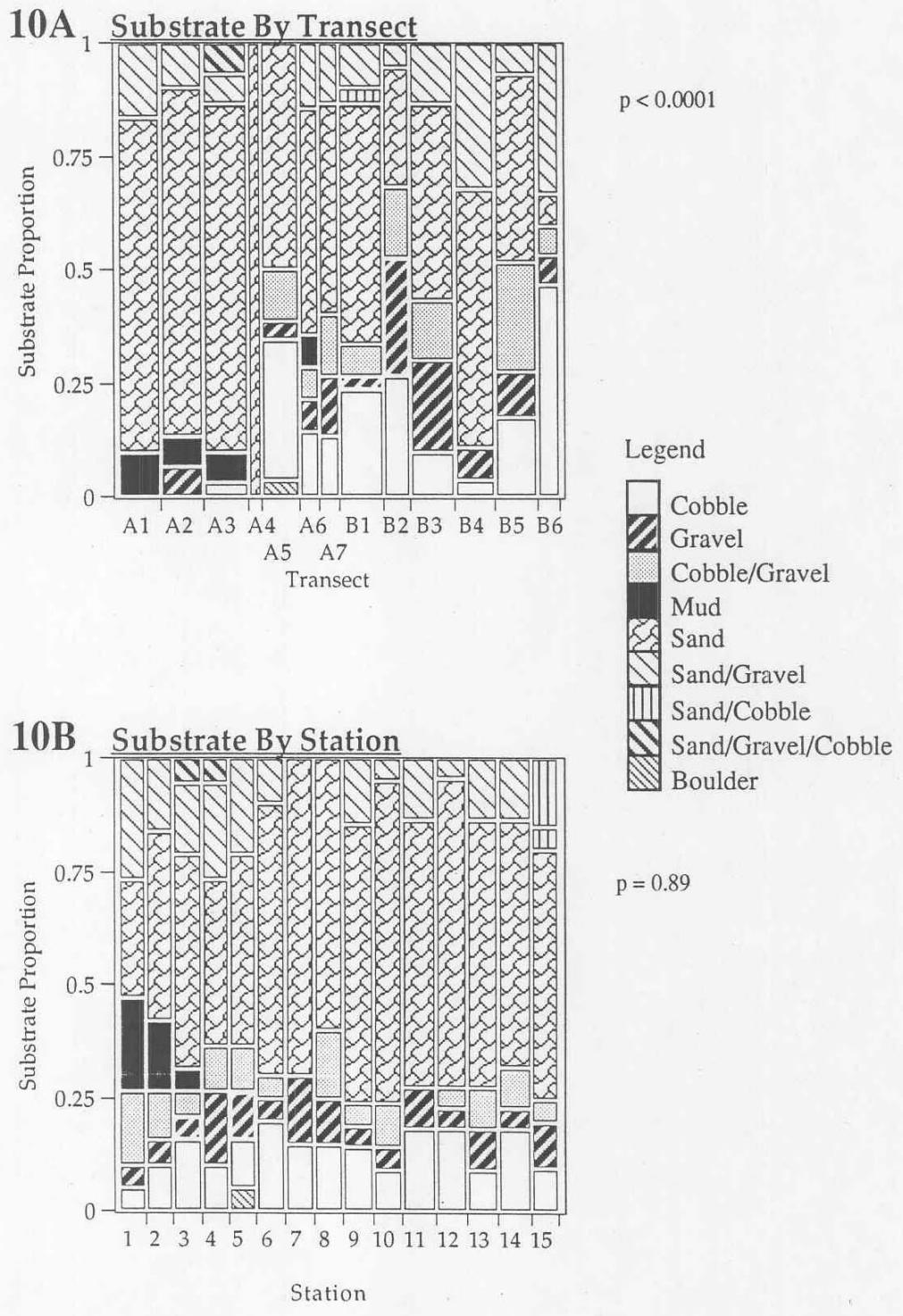


Figure 10. Overall substrate composition.

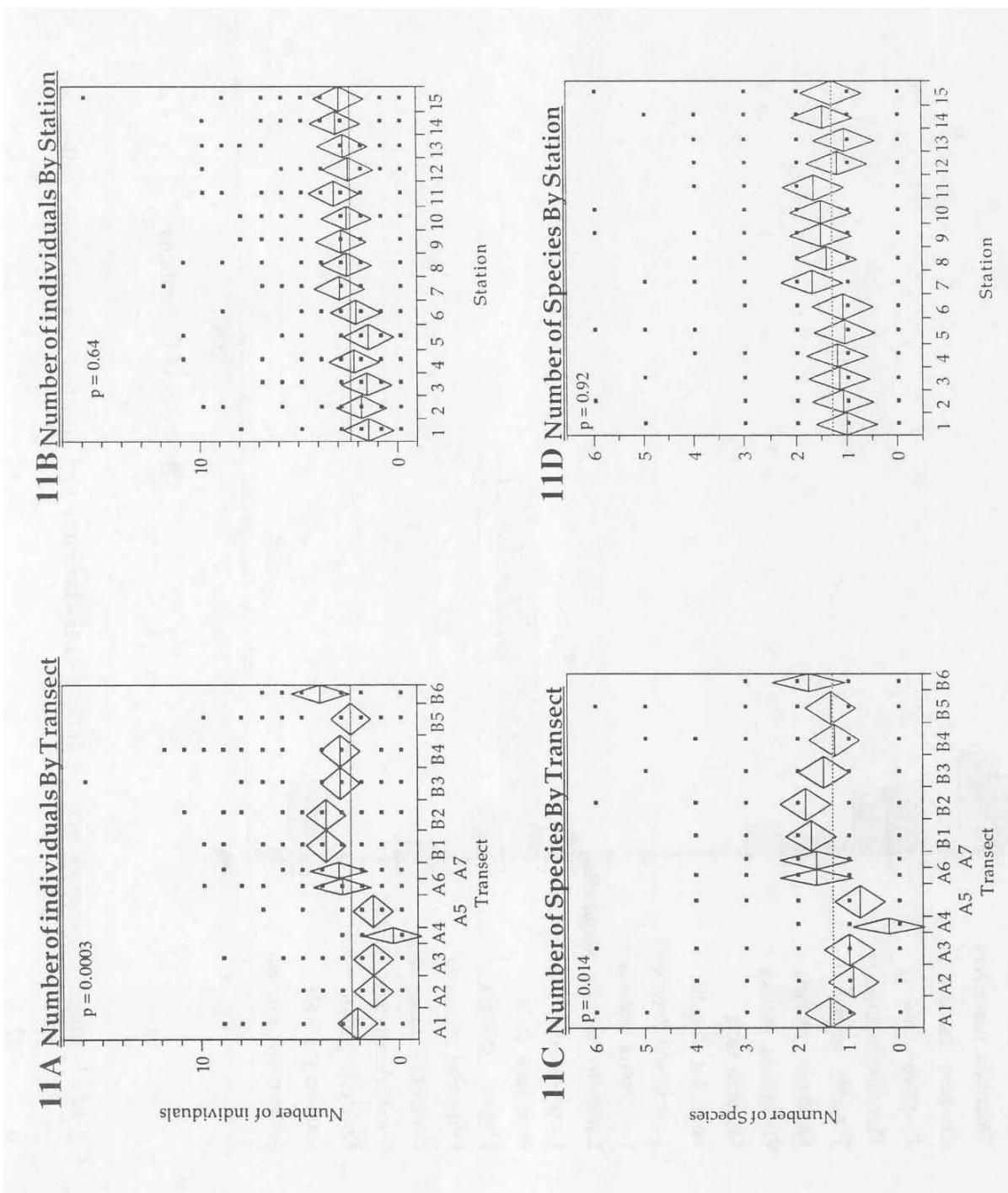


Figure 11. Overall number of individuals and number of species collected by transect and station during qualitative sampling.

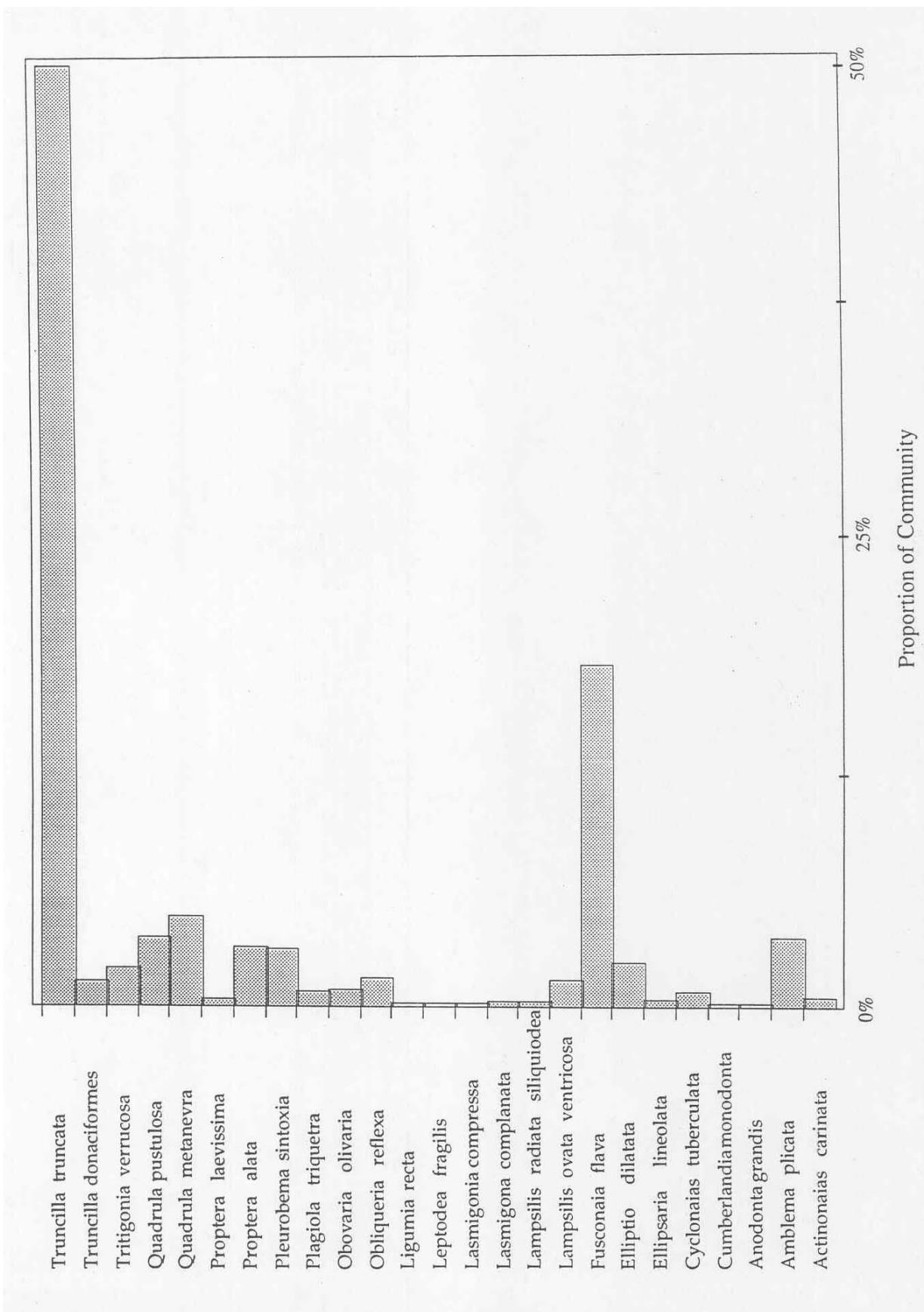


Figure 12. Mussel community structure at Osceola and Interstate Park sites based on qualitative collections.

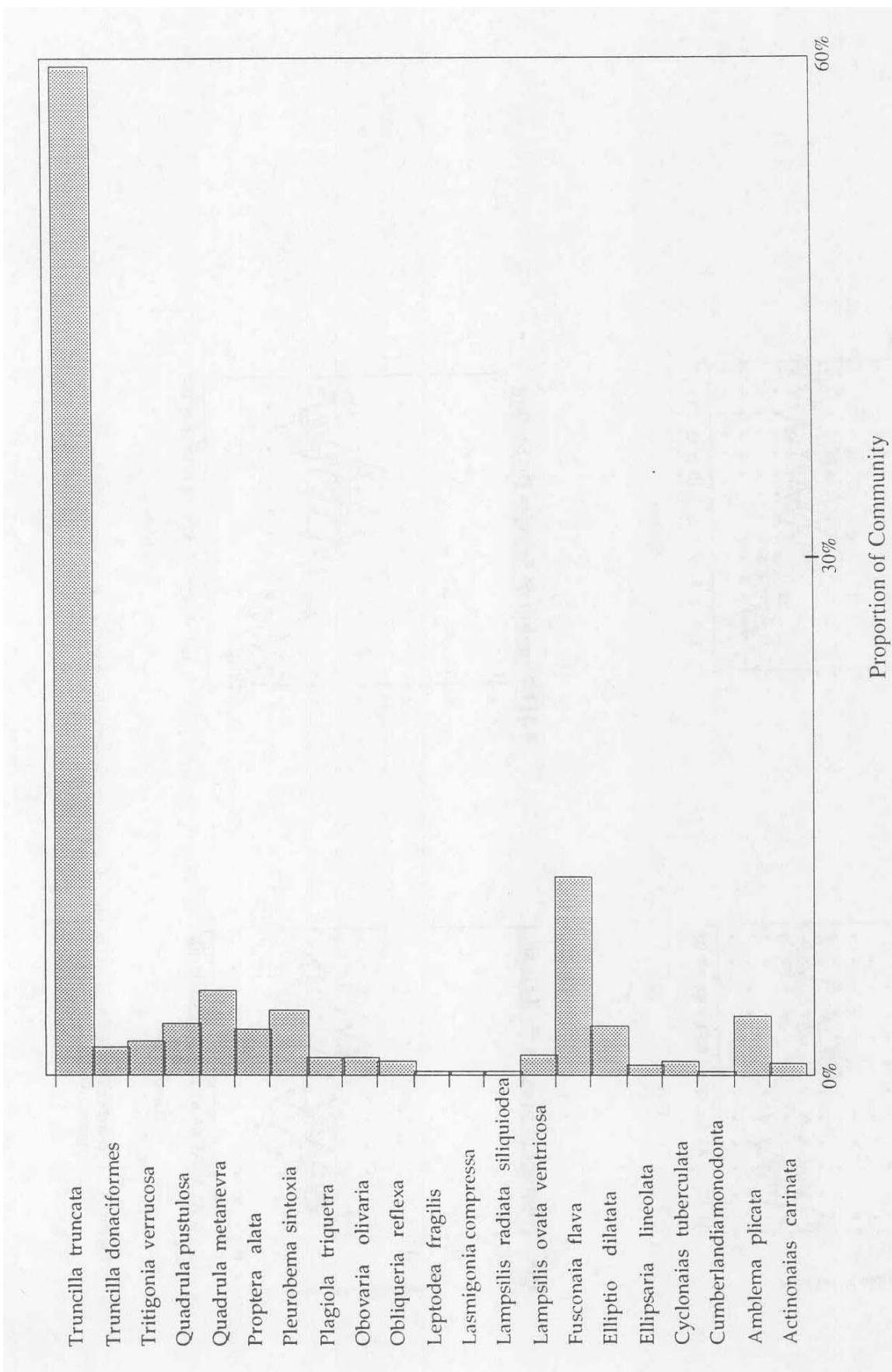


Figure 13. Mussel community structure at Interstate Park location.

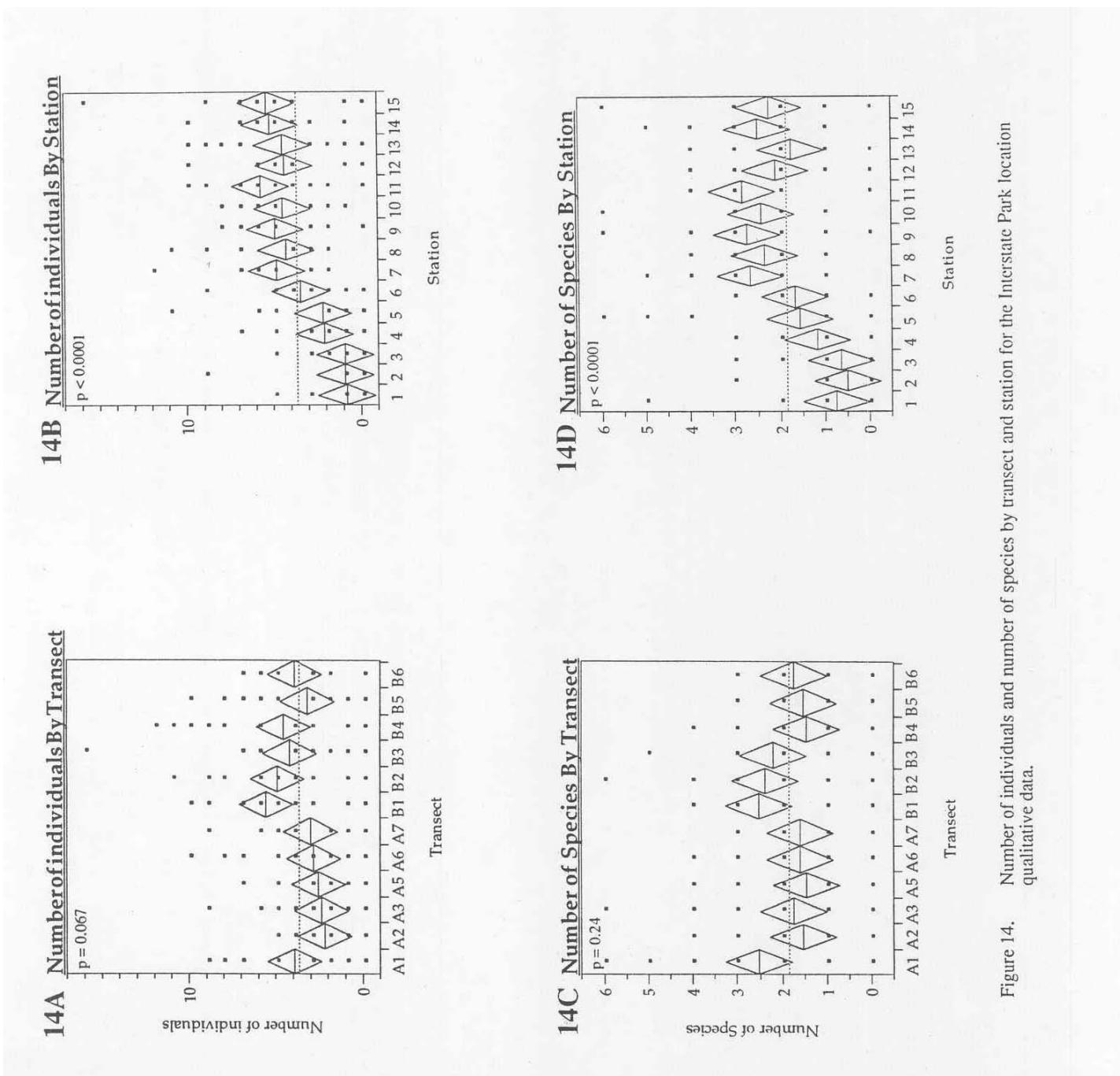


Figure 14. Number of individuals and number of species by transect and station for the Interstate Park location qualitative data.

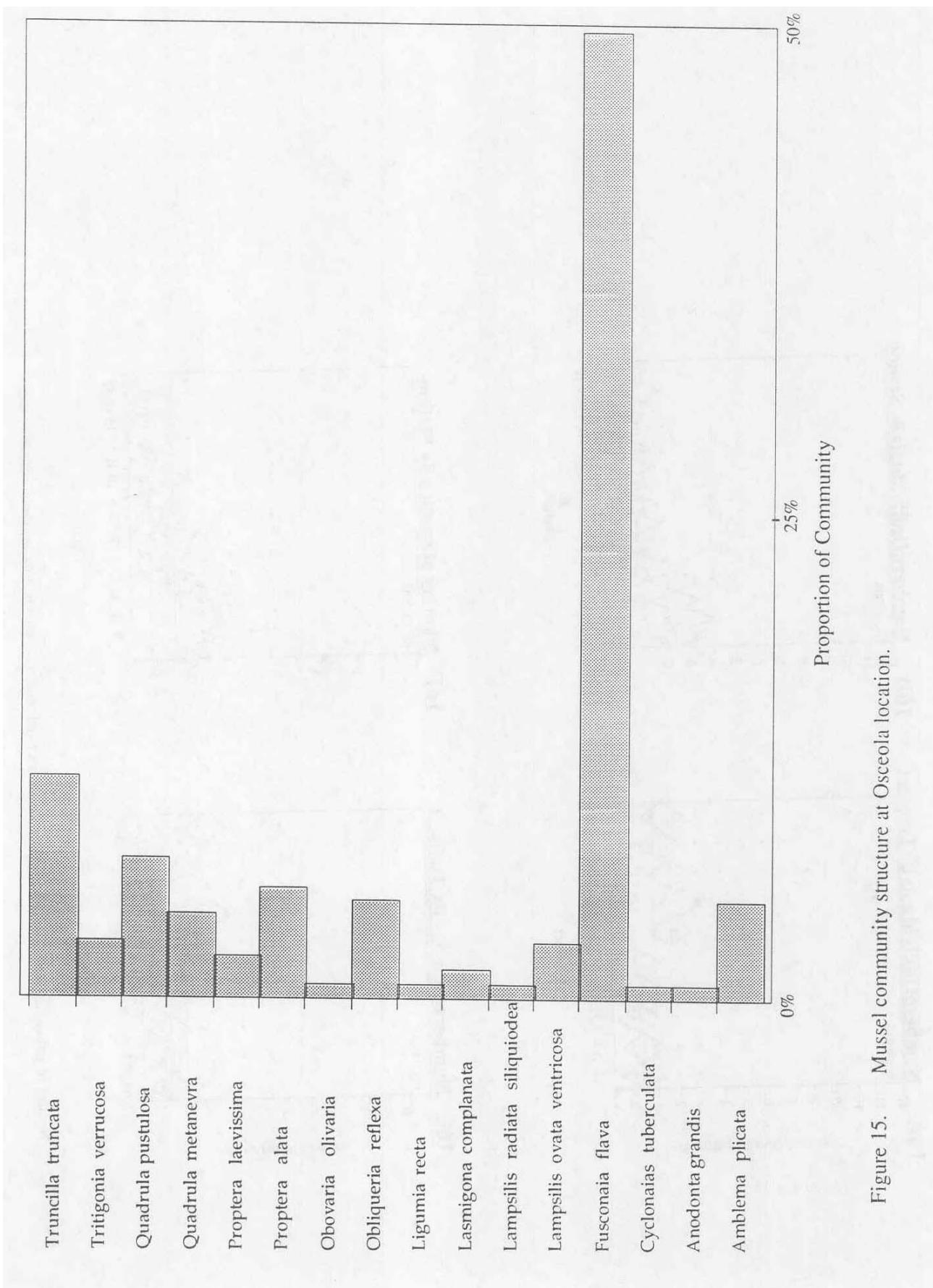


Figure 15. Mussel community structure at Osceola location.

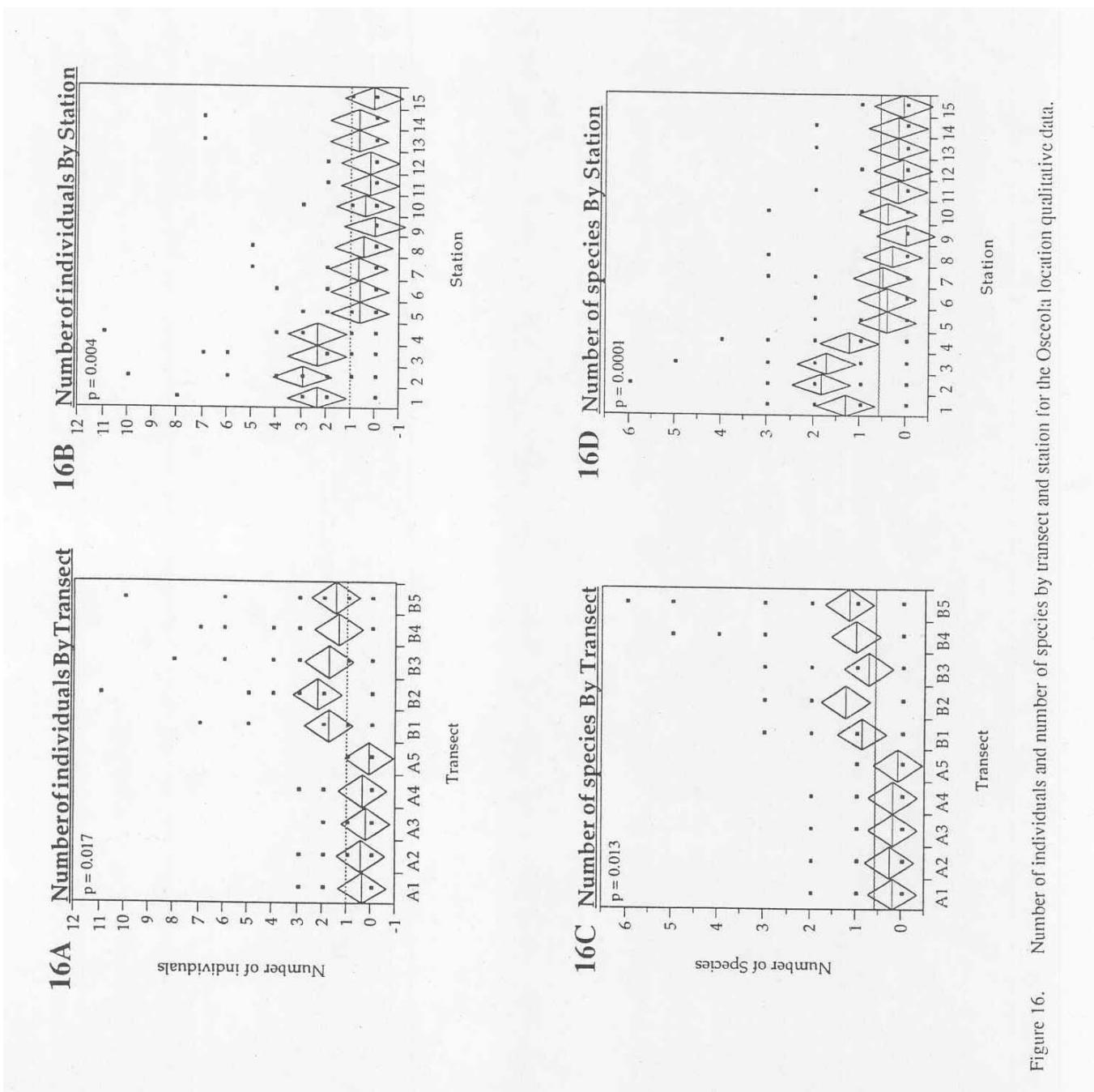


Figure 16. Number of individuals and number of species by transect and station for the Osceola location qualitative data.

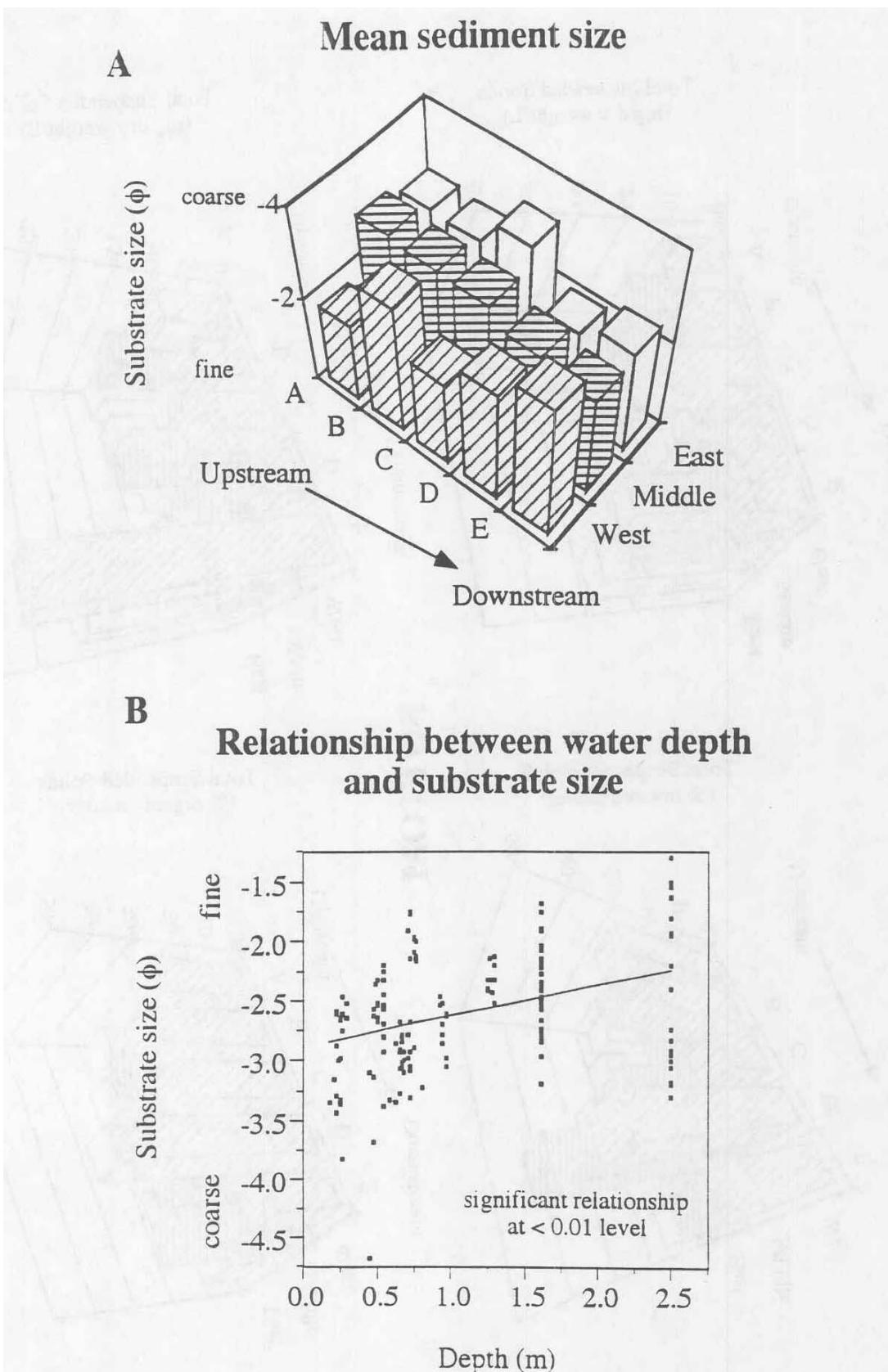
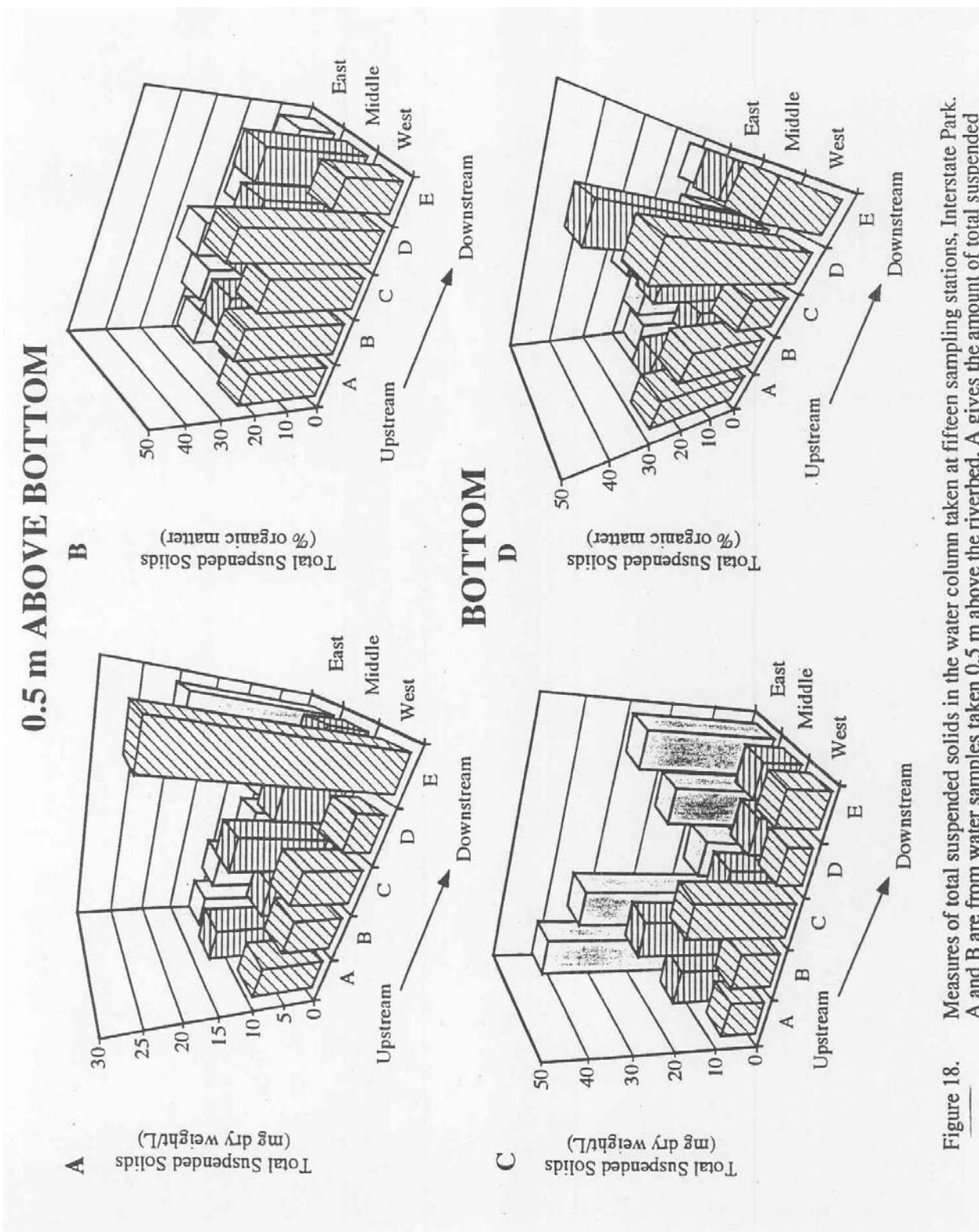


Figure 17. The mean size at fifteen sampling stations, Interstate Park (A) and the relationship between sediment size and water depth at these sites.



**Figure 18.** Measures of total suspended solids in the water column taken at fifteen sampling stations, Interstate Park. A and B are from water samples taken 0.5 m above the riverbed, A gives the amount of total suspended solids as dry weight and B gives the percent organic matter of the solids. C and D are from water samples collected from the sediment-water interface; C gives the amount of total suspended solids as dry weight and D gives the percent organic matter of the solids.

## Mussel community composition at Interstate Park

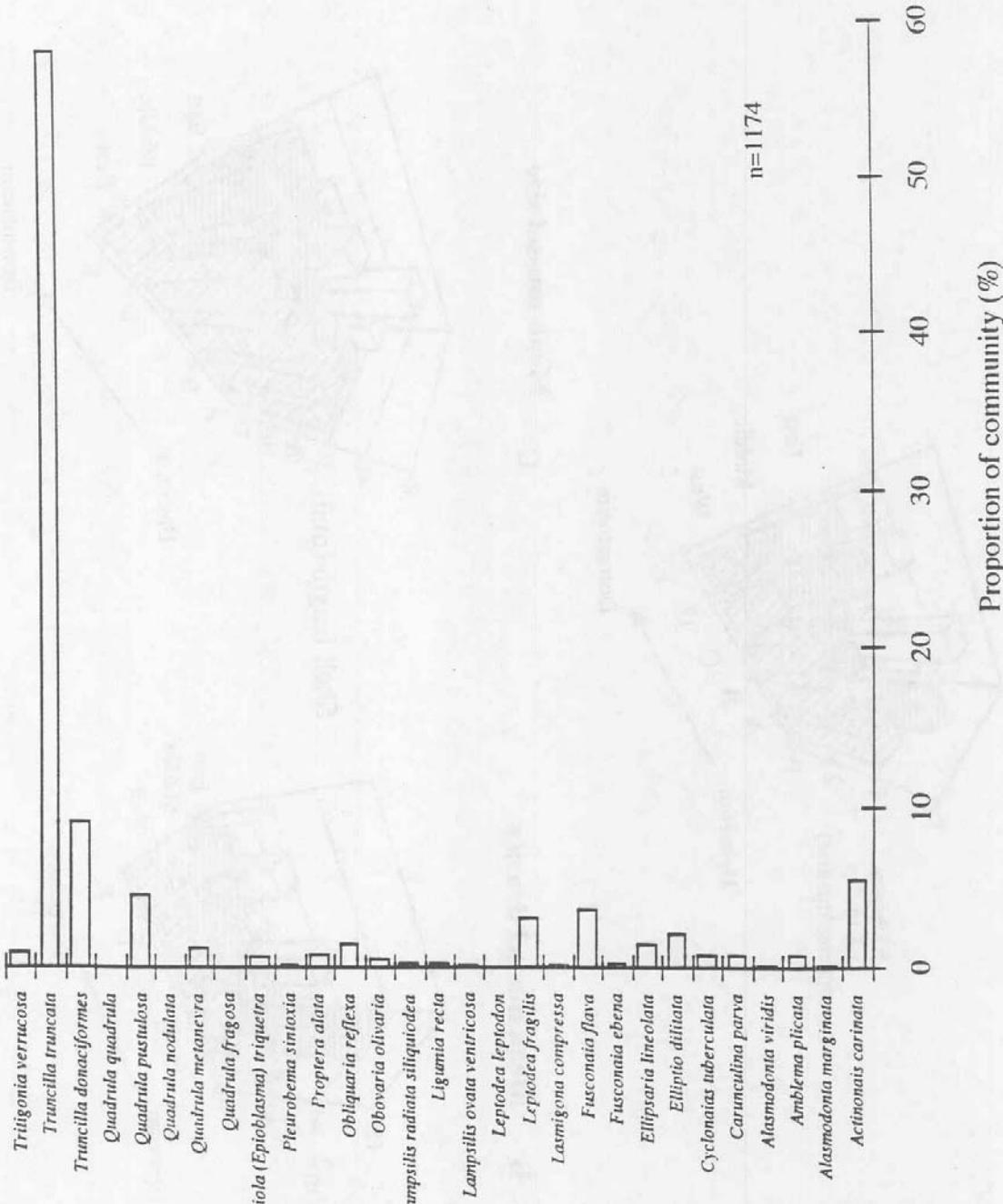
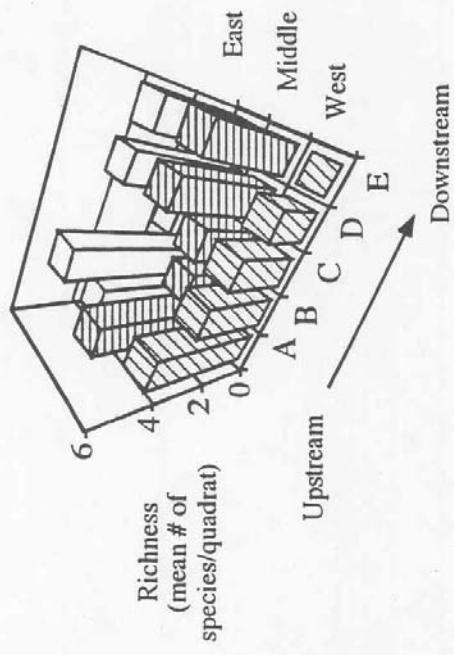
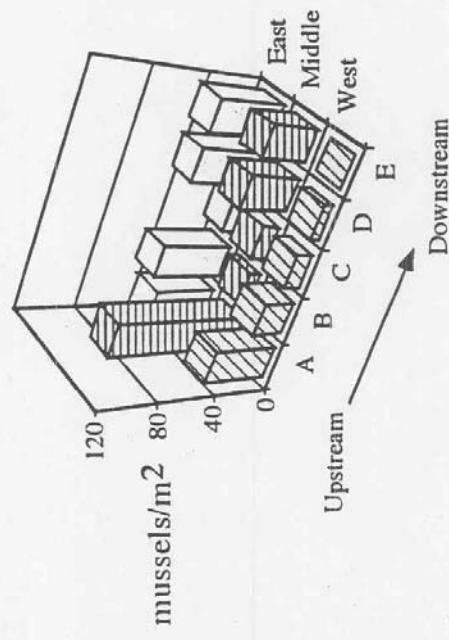


Figure 19. Mussel community structure based on fifteen 0.25 m<sup>2</sup> quadrats.

**A** Mussel species richness



**B** Mean mussel density



**C** Mean mussel size

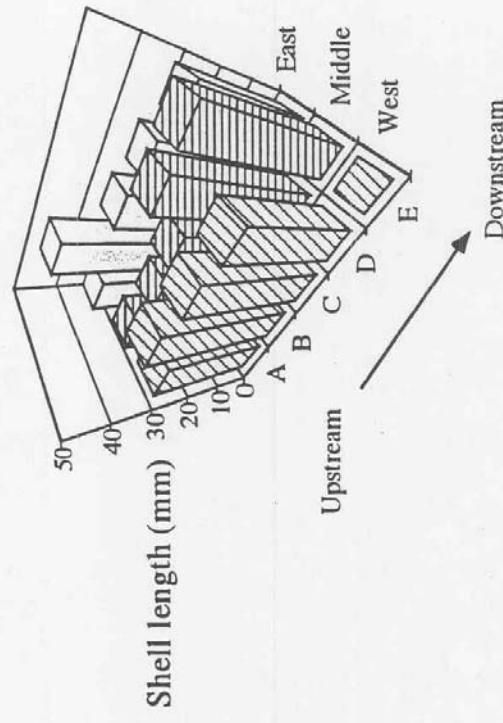


Figure 20.

Mussel community structure at fifteen sites, Interstate Park. A. Community richness, B. Mussel density, C. Mussel length.

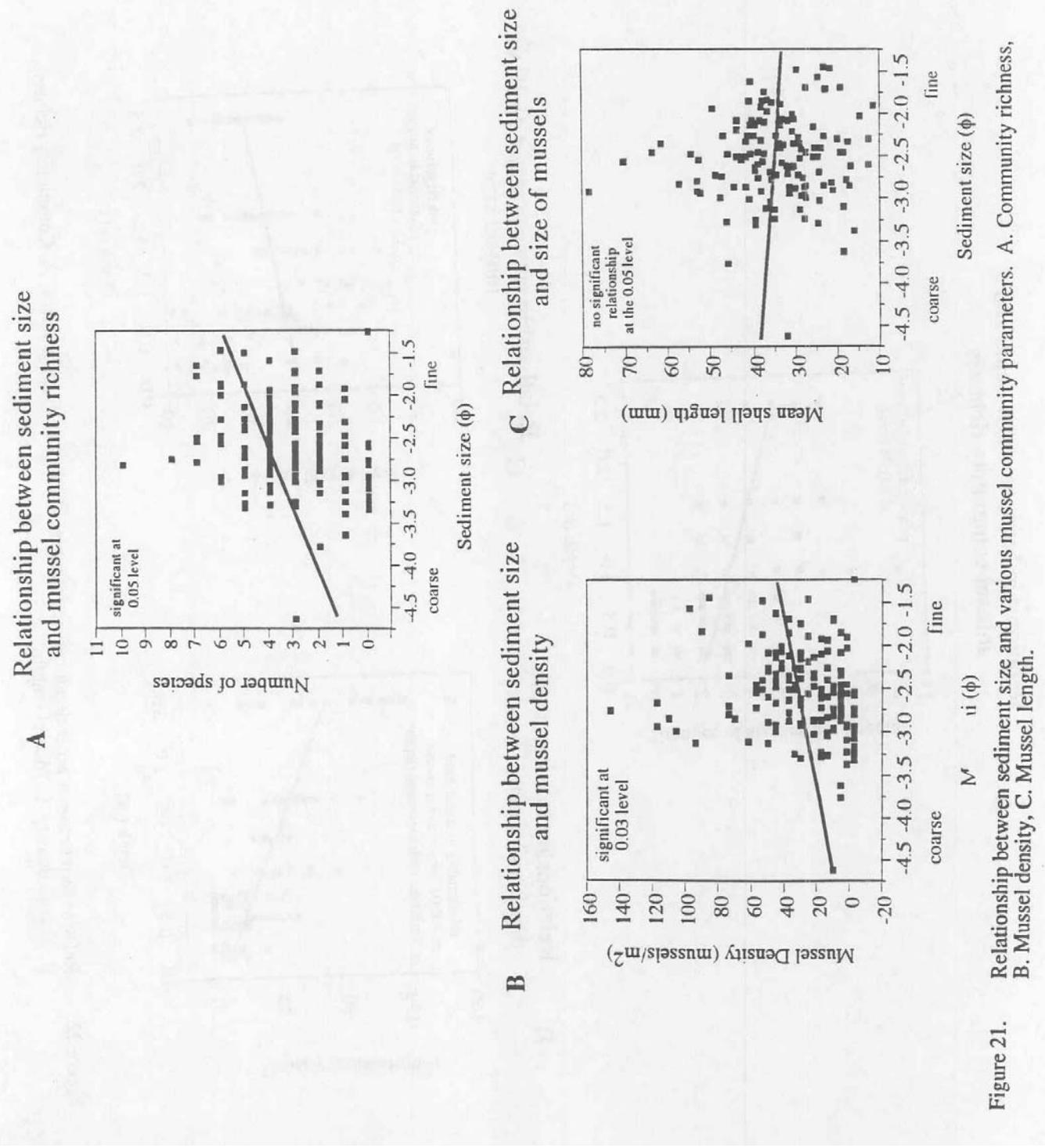


Figure 21. Relationship between sediment size and various mussel community parameters. A. Community richness, B. Mussel density, C. Mussel length.

Figure 21.

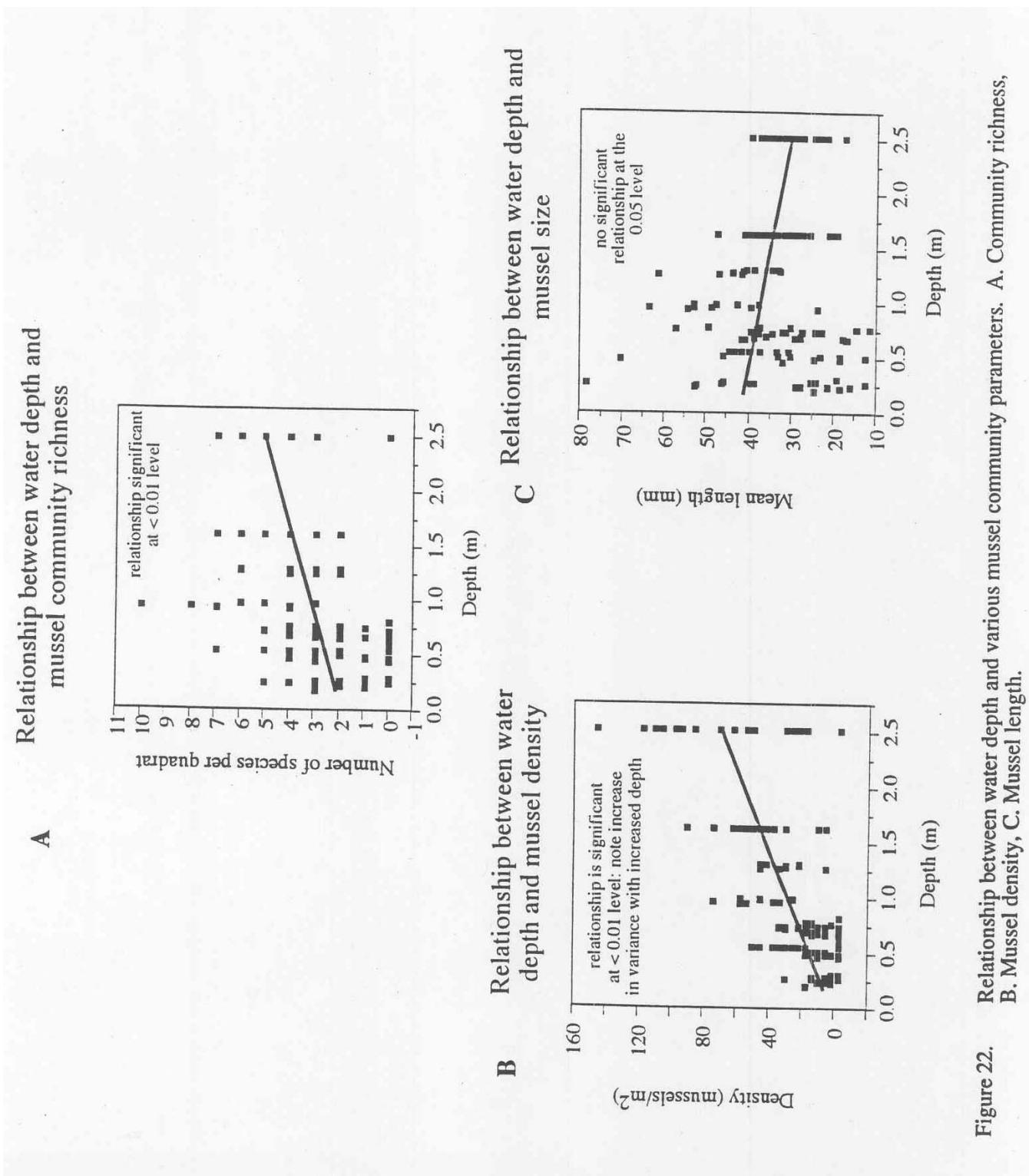


Figure 22. Relationships between water depth and various mussel community parameters. A. Community richness, B. Mussel density, C. Mussel length.

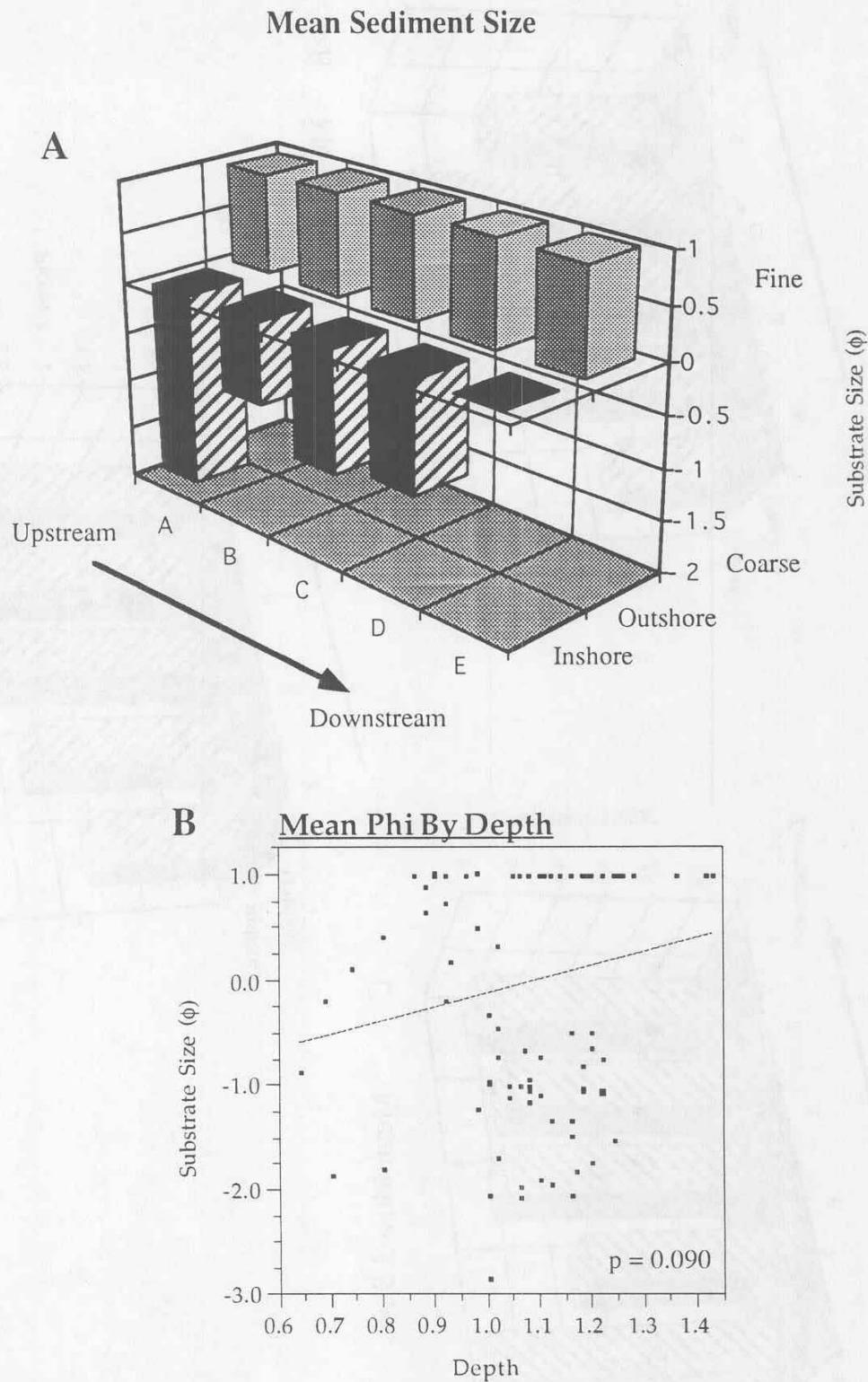


Figure 23. The mean sediment size at ten sampling stations, Osceola Location (A) and the Relationship between sediment size and water depth at these sites.

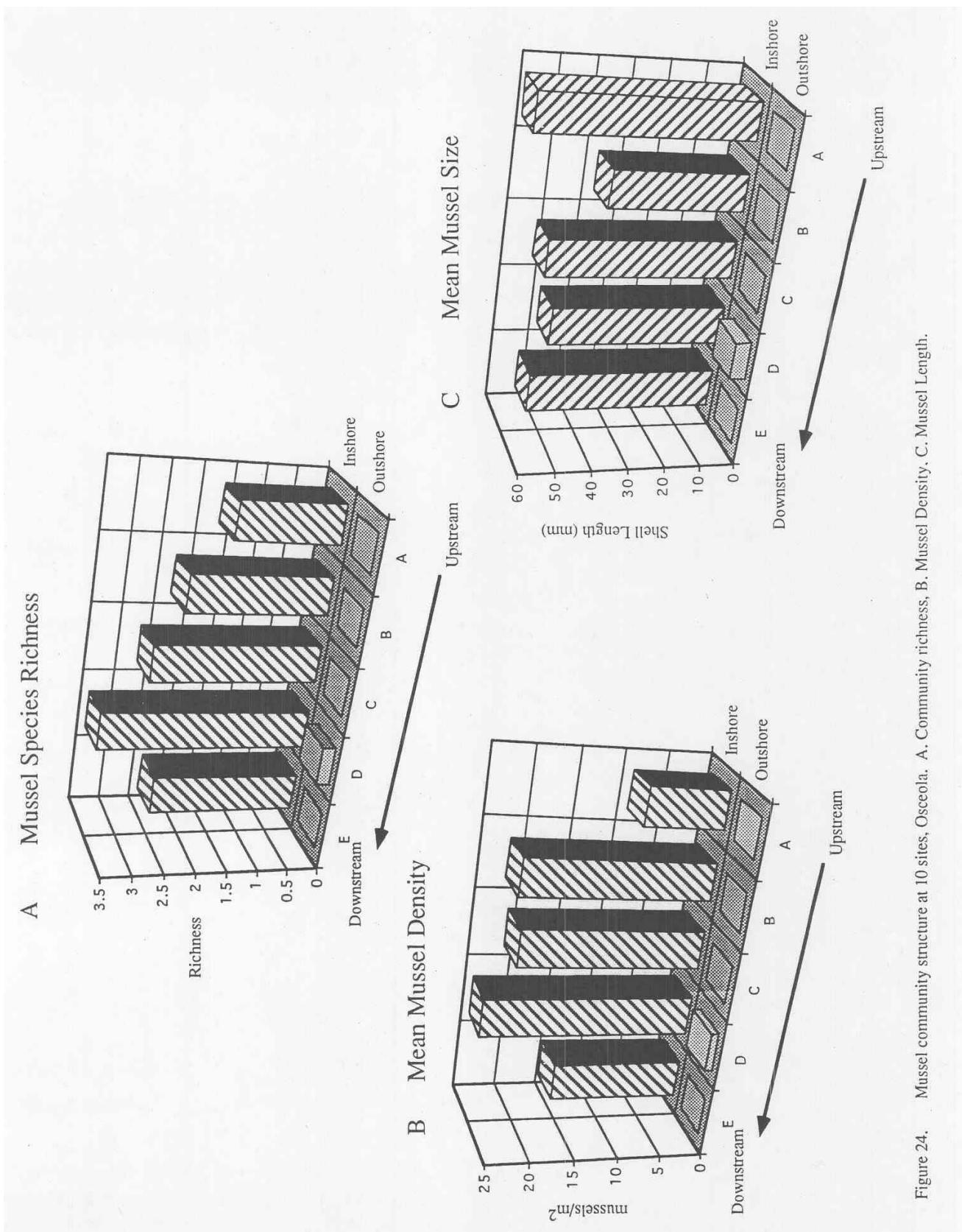


Figure 24. Mussel community structure at 10 sites, Osceola. A. Community richness, B. Mussel Density, C. Mussel Length.

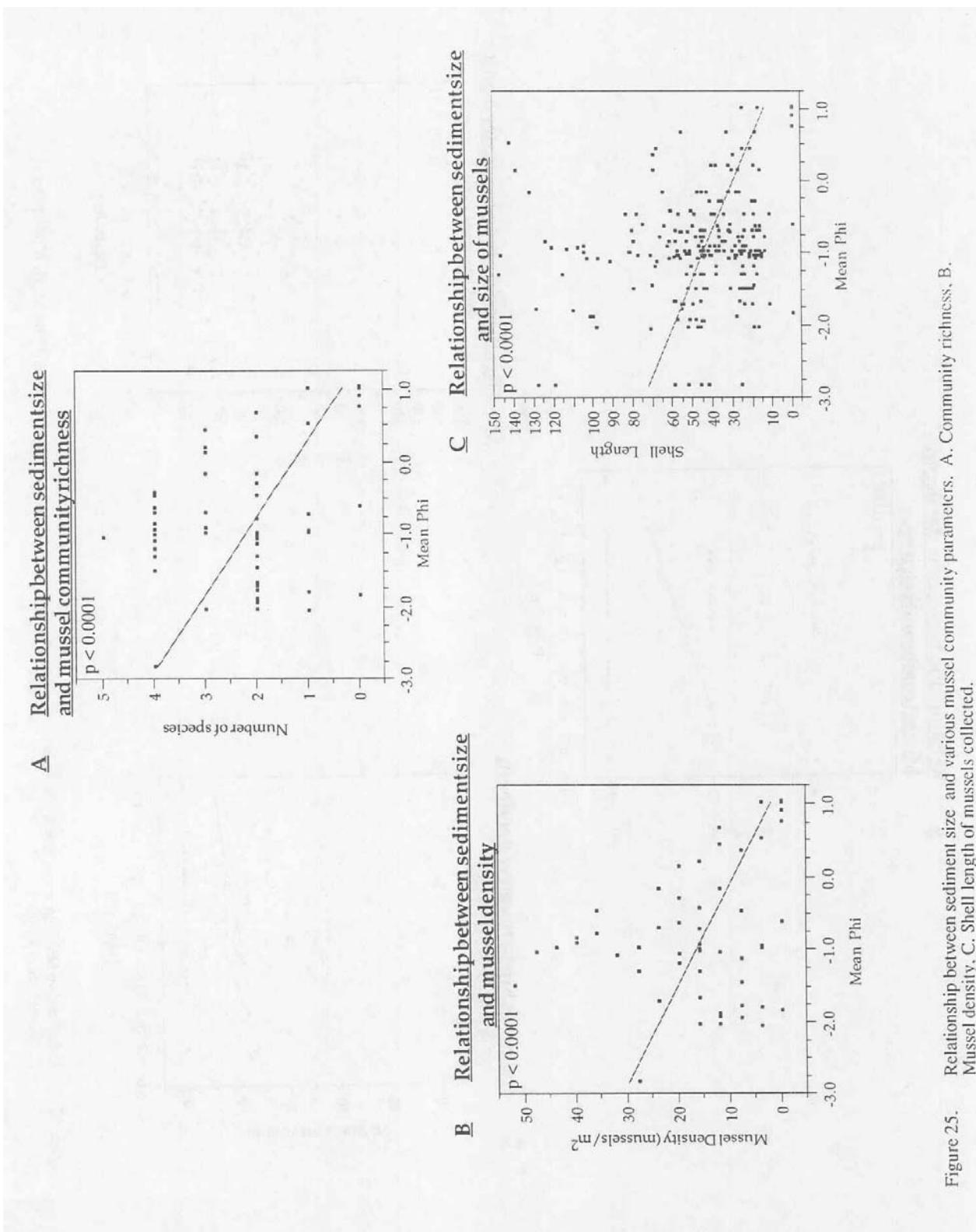


Figure 25. Relationship between sediment size and various mussel community parameters. A. Community richness, B. Mussel density, C. Shell length of mussels collected.

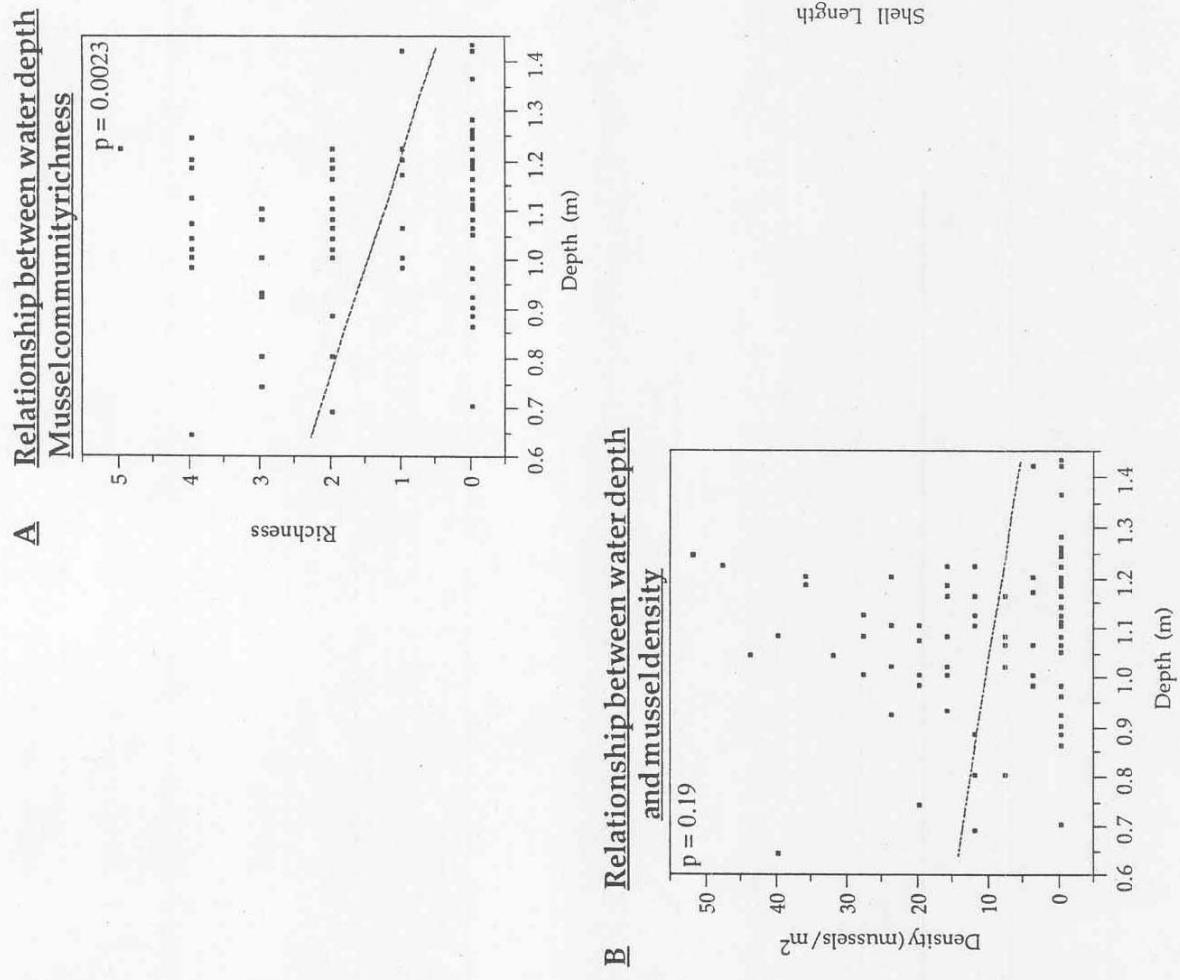
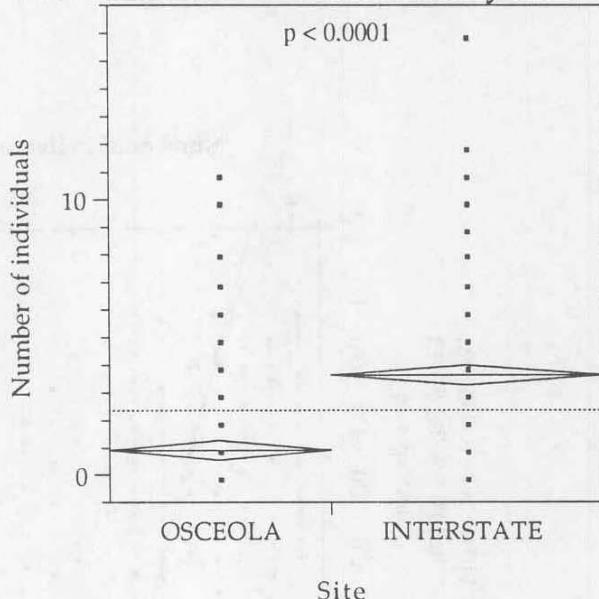


Figure 26. Relationship between water depth and various mussel community parameters. A. Community Richness, B. Mussel Density, C. Mussel shell length.

### A Number of individuals By Site



### B Number of Species By Site

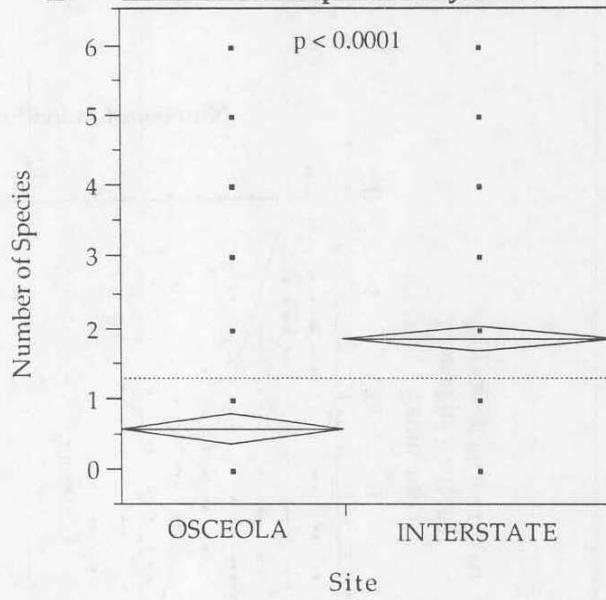


Figure 27. Mean number of individuals and number of species encountered per qualitative search for Interstate Park and Osceola sites.

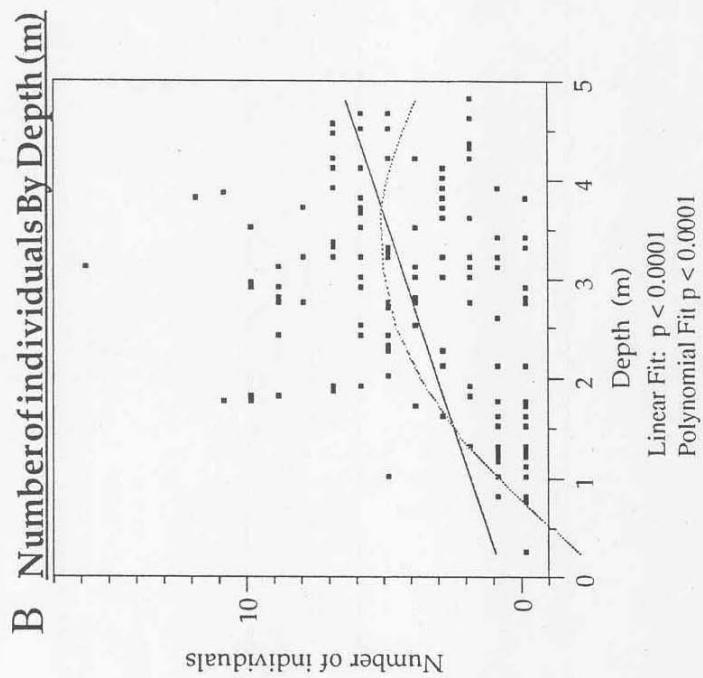
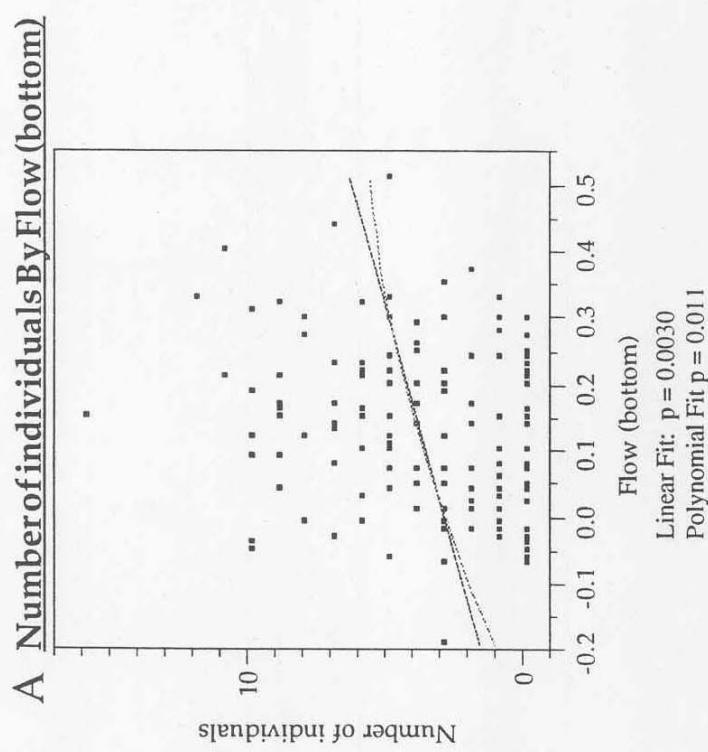


Figure 28.

Linear and polynomial fits of number of individuals encountered per qualitative search *vs* bottom flow (m/s) and depth (m) at Interstate Park.

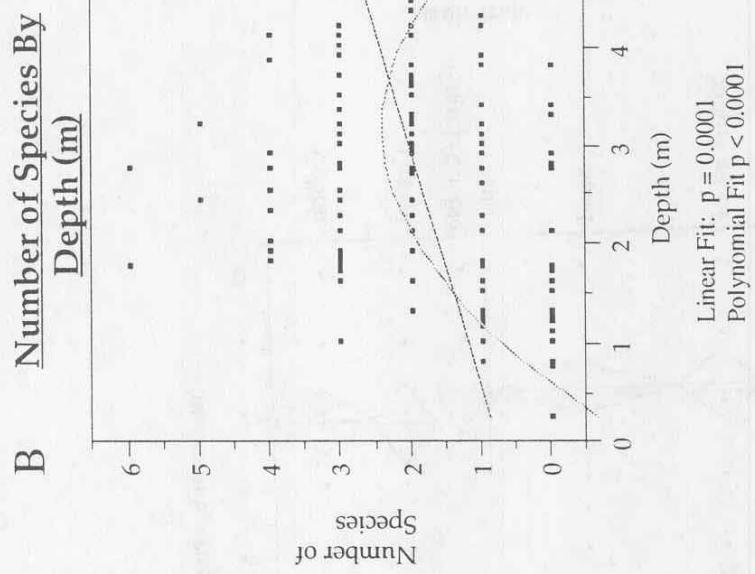
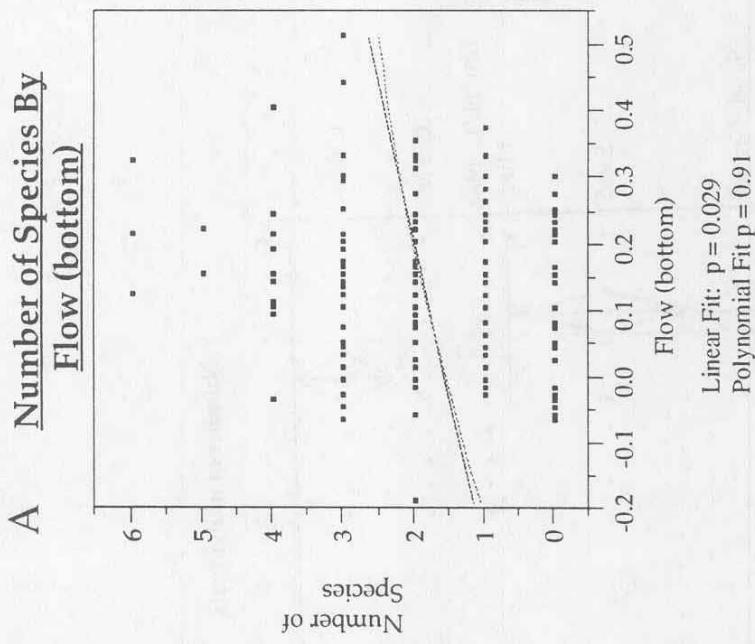
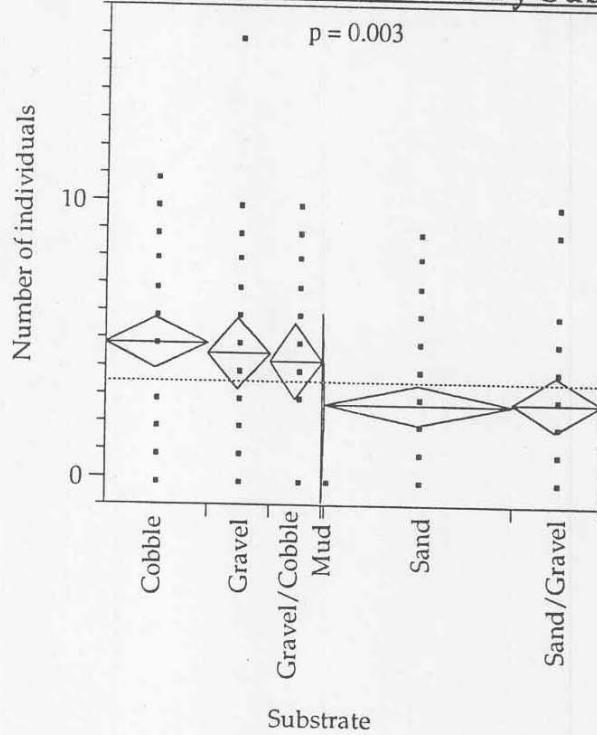


Figure 29. Linear and polynomial fits of number of species encountered per qualitative search vs bottom flow (m/s) and depth (m) at Interstate Park.

### A Number of individuals By Substrate



### B Number of Species By Substrate

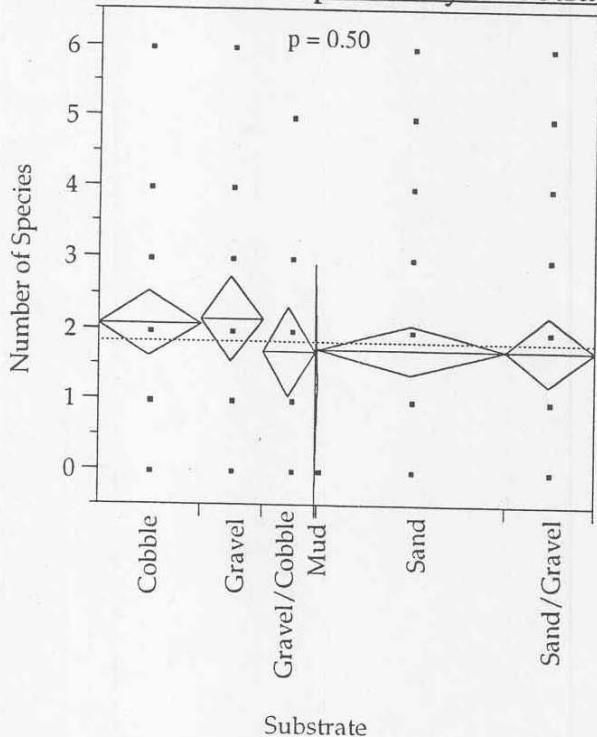


Figure 30.

Number of individuals and number of species encountered per qualitative search vs substrate type at Interstate Park.

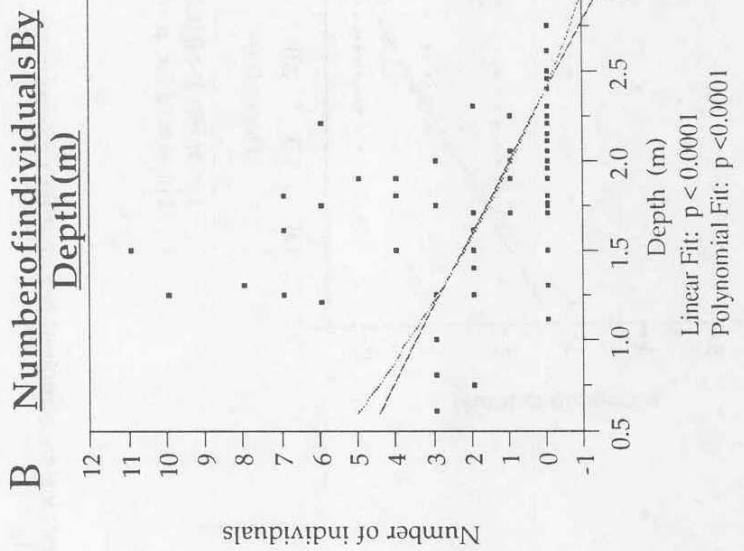
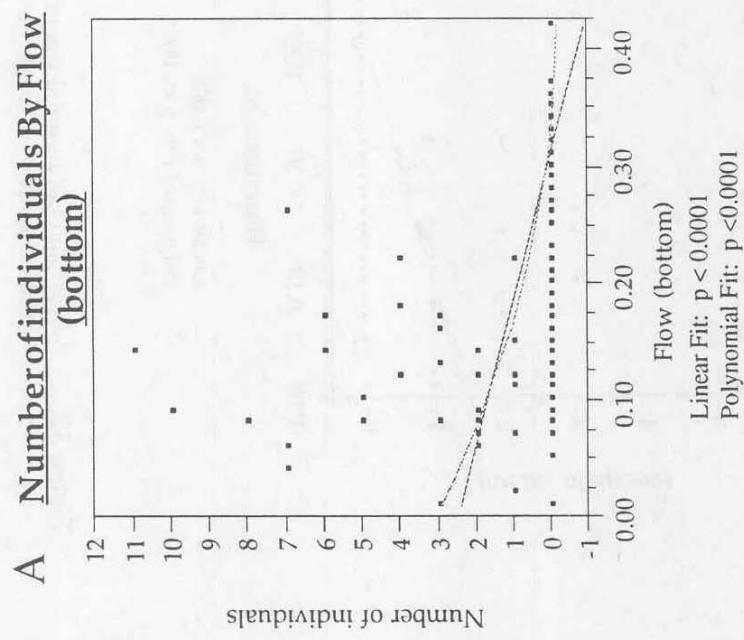


Figure 31.

Linear and polynomial fits of number of individuals encountered per qualitative search *vs* bottom flow (m/s) and depth (m) at Osceola.

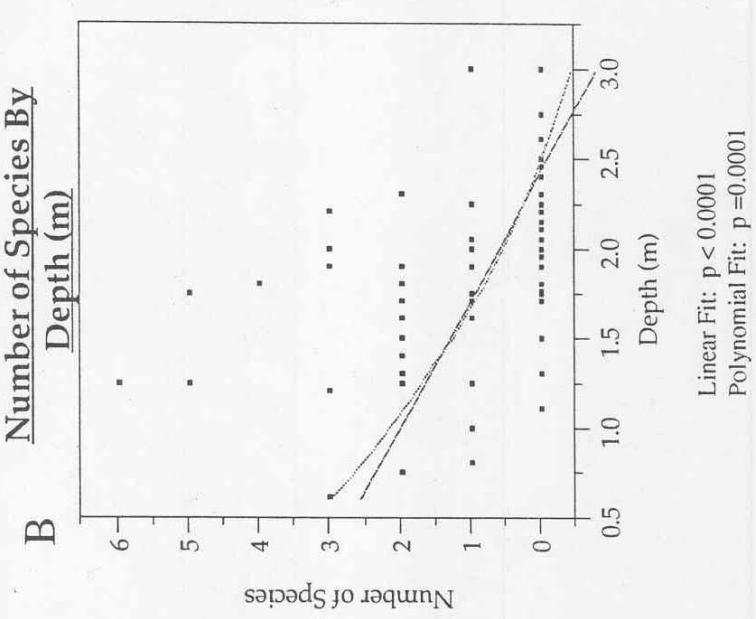
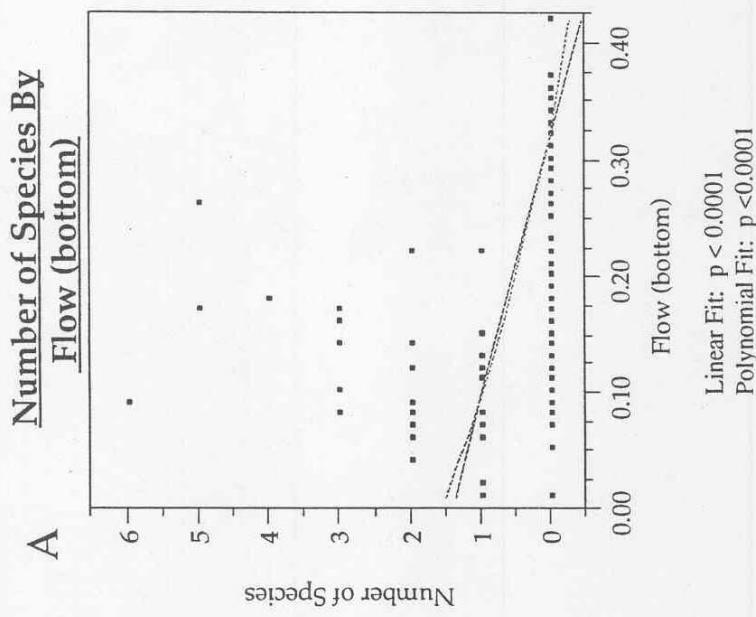
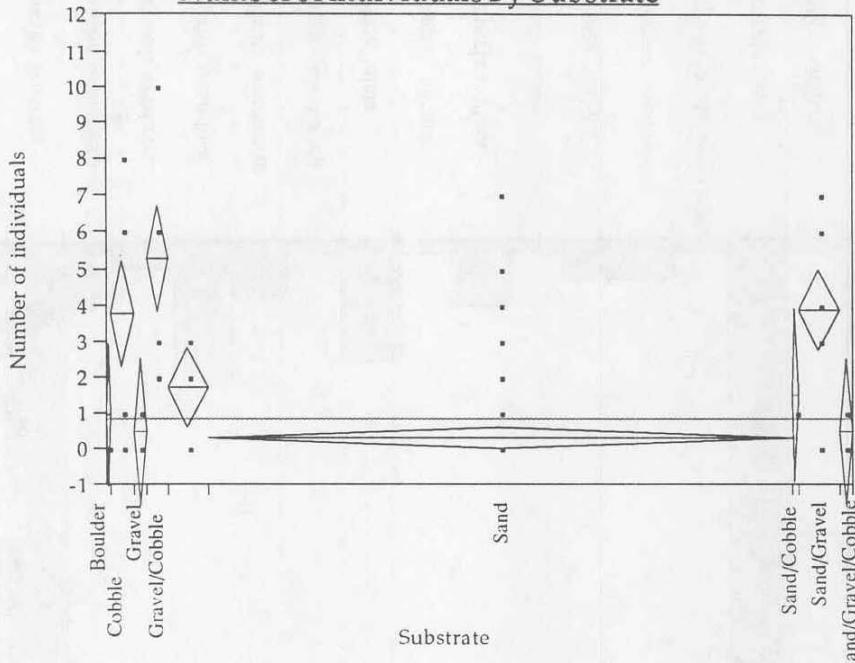


Figure 32. Linear and polynomial fits of number of species encountered per qualitative search vs bottom flow (m/s) and depth (m) at Osceola.

A

Number of individuals By Substrate



B

Number of Species By Substrate

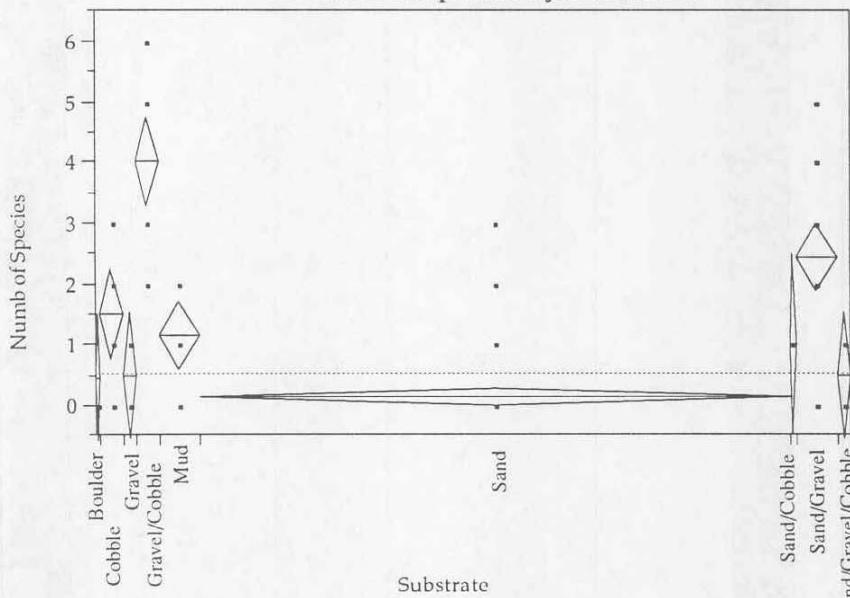


Figure 33. Number of individuals and number of species encountered per qualitative search vs substrate type at Osceola.

### Unionid Species

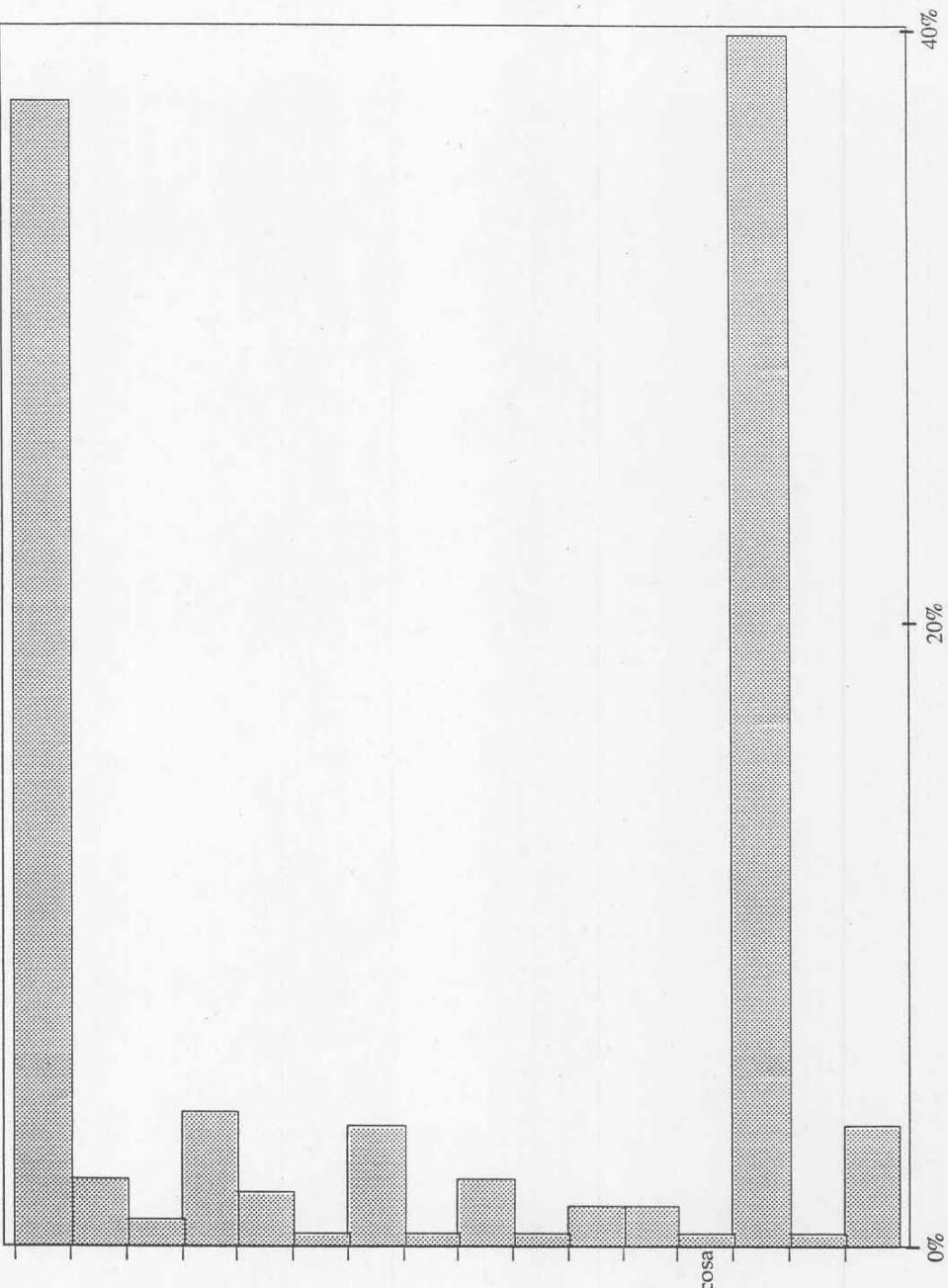


Figure 34. Mussel community structure at Osceola as determined by qualitative sampling.

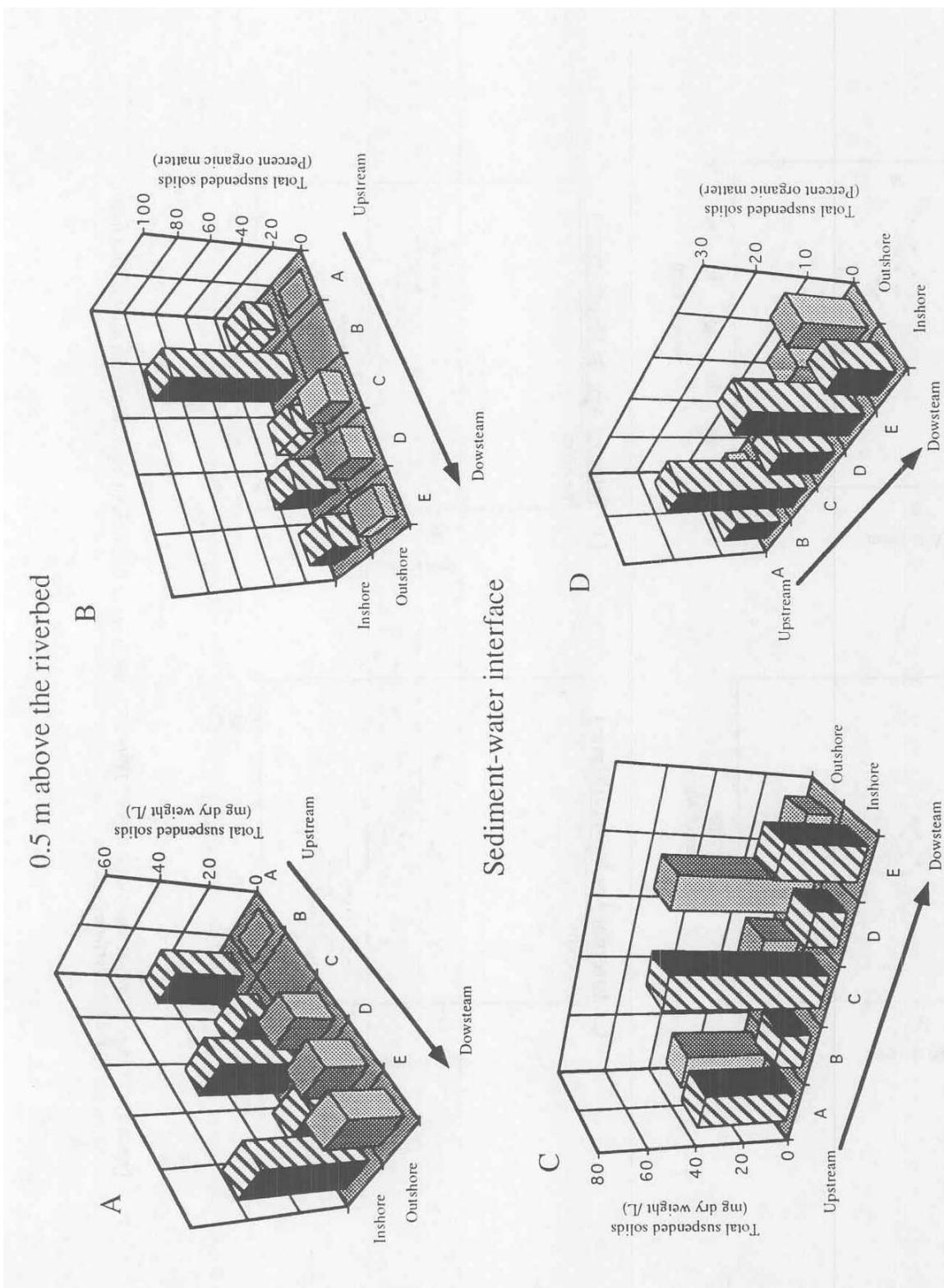


Figure 36.

Measures of total suspended solids in the water column taken at ten sampling stations, Osceola. A and B are from water samples taken 0.5 m above the riverbed, A gives the amount of total suspended solids as dry weight and B gives the percent organic matter of the solids. C and D are from, water samples collected from the sediment-water interface; C gives the amount of total suspended solids as dry weight and D gives the percent organic matter of the solids.

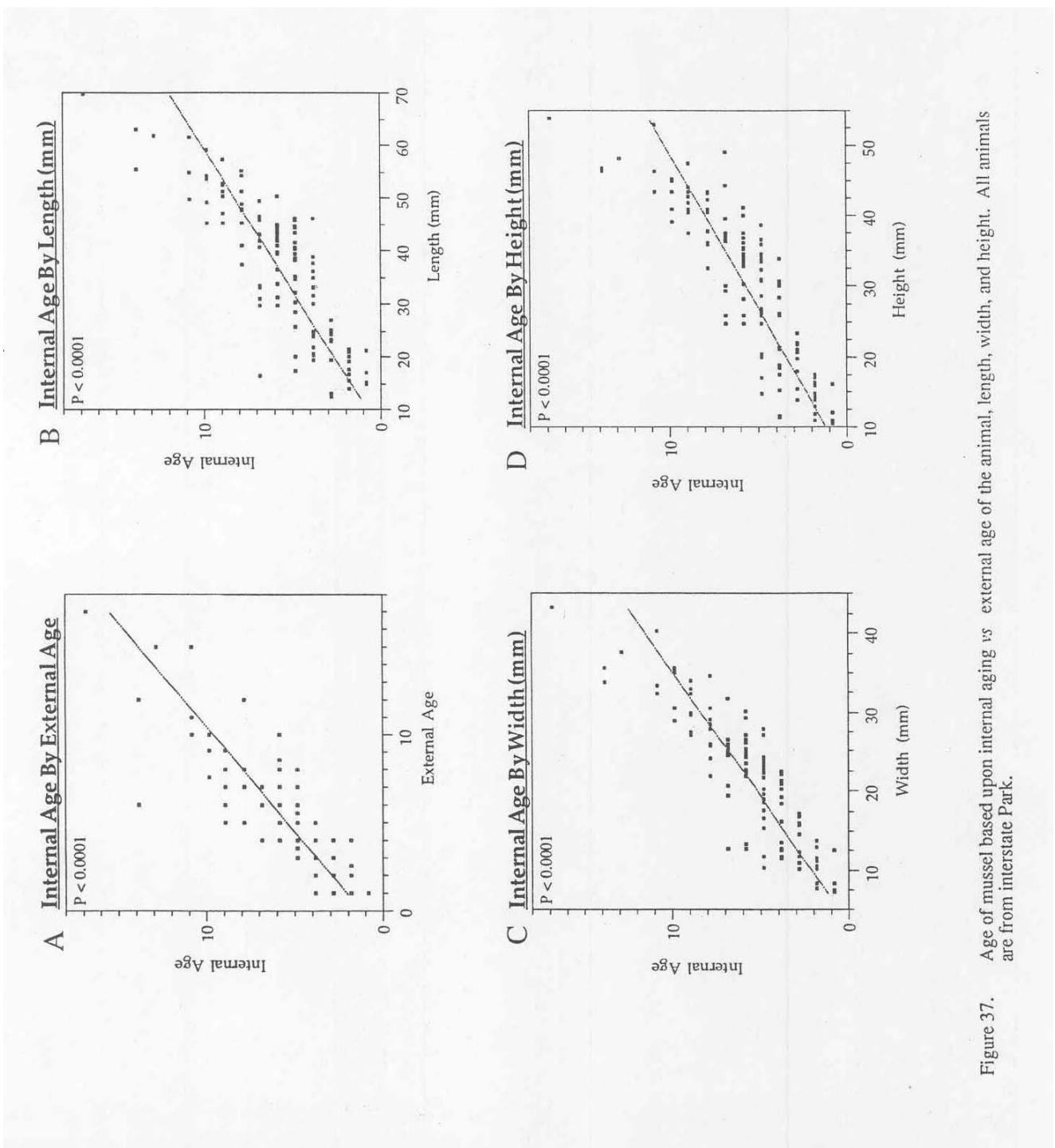


Figure 37. Age of mussel based upon internal aging vs external age of the animal, length, width, and height. All animals are from Interstate Park.

Mussel Age vs. Mean Growth Rate (mm)

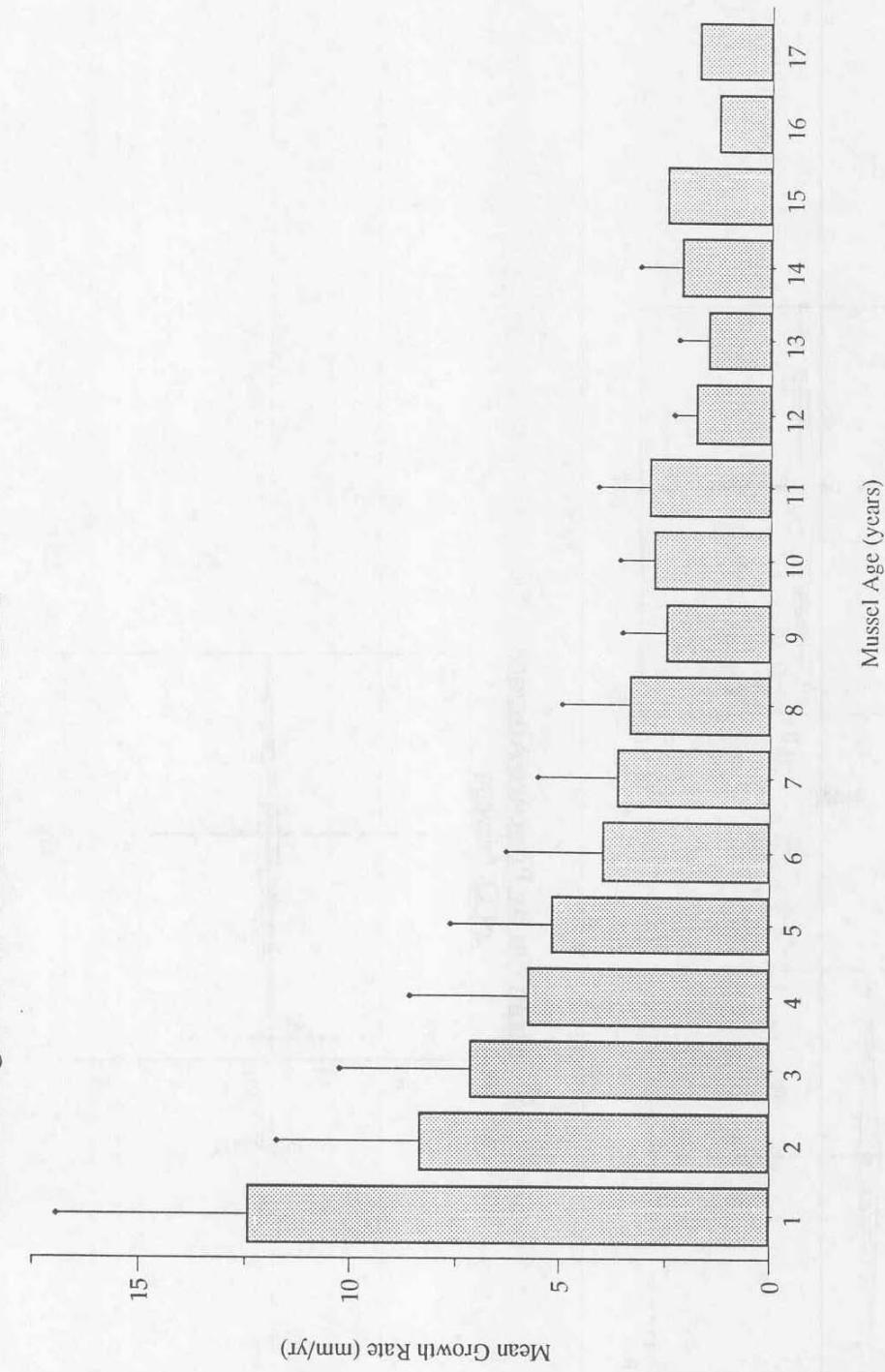
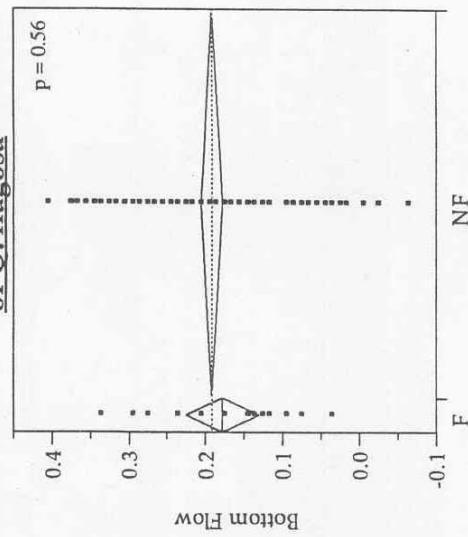


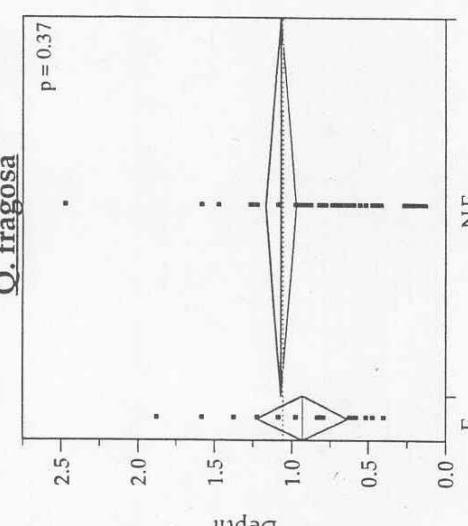
Figure 38.

Mussel age vs mean growth rate of animals as determined by internal aging.

A Bottom Flow By Presence/Absence  
of *Q. fragosa*



B Depth By Presence/Absence  
of *Q. fragosa*



C Mean Phi By Presence/Absence  
of *Q. fragosa*

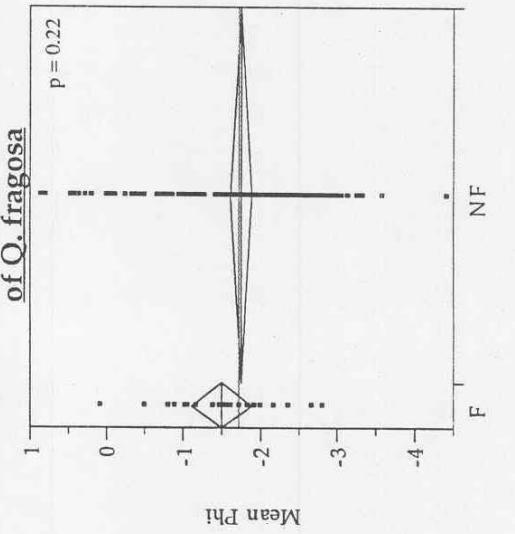
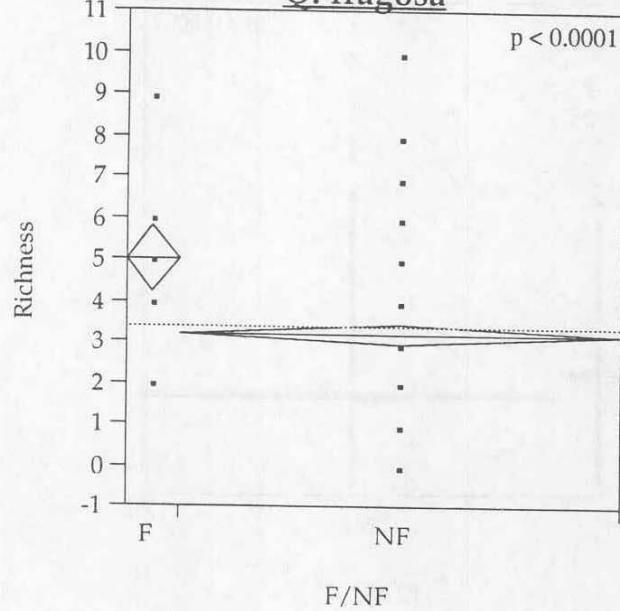


Figure 39. Flow, depth, and sediment size by the presence (F) or Absence (NF) of *Q. fragosa*.

A Richness By Presence/Absence of  
*Q. fragosa*



B Density By Presence/Absence of  
*Q. fragosa*

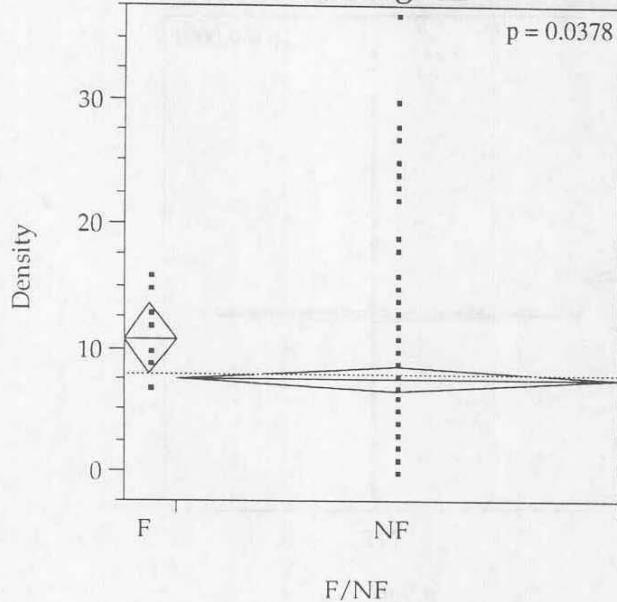
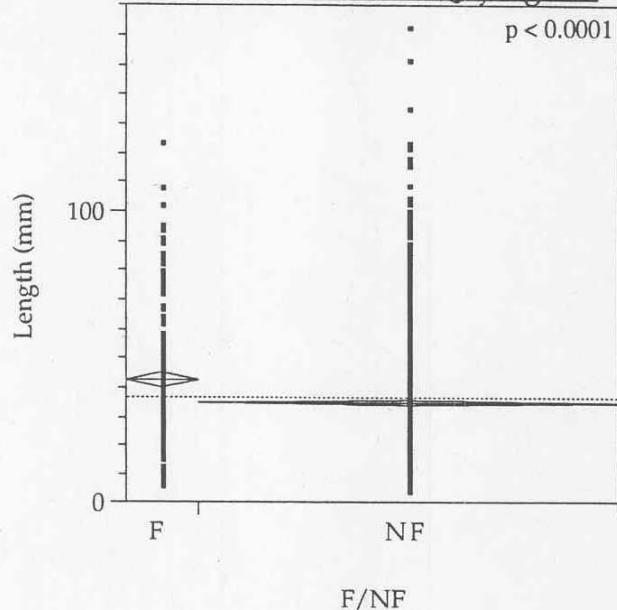


Figure 40. Mussel density and community richness by the presence (F) or absence (NF) of *Q. fragosa*.

A Length of individuals found with and without *Q. fragosa*



B Length of *T. truncatas* found with and without *Q. fragosa*

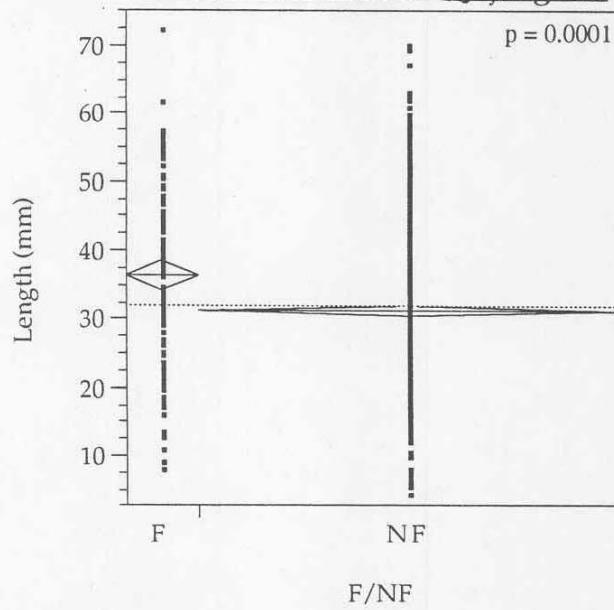


Figure 41. Length of all individuals found and length of *T. truncatas* by the presence (F) or absence (NF) of *Q. fragosa*.

Appendix 1 – Qualitative data summary table.

Location	Date	Transect	Station	Substrate	Depth (m)	Flow (bottom)
Interstate Park	6/4/93	A1	1	S/G	2.50	0.34
Interstate Park	6/4/93	A1	2	S/G	NA	NA
Interstate Park	6/4/93	A1	3	S/G	NA	NA
Interstate Park	6/4/93	A1	4	S/G	NA	NA
Interstate Park	6/4/93	A1	5	S	NA	NA
Interstate Park	6/4/93	A1	6	S	NA	NA
Interstate Park	6/4/93	A1	7	S	NA	NA
Interstate Park	6/4/93	A1	8	S	NA	NA
Interstate Park	6/4/93	A1	9	S	NA	NA
Interstate Park	6/4/93	A1	10	S	NA	NA
Interstate Park	6/4/93	A1	11	S	NA	NA
Interstate Park	6/4/93	A1	12	S	NA	NA
Interstate Park	6/4/93	A1	13	S	NA	NA
Interstate Park	6/4/93	A1	14	S	NA	NA
Interstate Park	6/4/93	A1	15	S	NA	NA
Interstate Park	6/8/93	A2	1	S	NA	NA
Interstate Park	6/8/93	A2	2	S	NA	NA
Interstate Park	6/8/93	A2	3	S	NA	NA
Interstate Park	6/8/93	A2	4	S	NA	NA
Interstate Park	6/8/93	A2	5	S	NA	NA
Interstate Park	6/8/93	A2	6	S	NA	NA
Interstate Park	6/8/93	A2	7	S	NA	NA
Interstate Park	6/8/93	A2	8	S	NA	NA
Interstate Park	6/8/93	A2	9	S/G	NA	NA
Interstate Park	6/8/93	A2	10	S	NA	NA
Interstate Park	6/8/93	A2	11	S	NA	NA
Interstate Park	6/8/93	A2	12	S	NA	NA
Interstate Park	6/8/93	A2	13	S/G	NA	NA
Interstate Park	6/8/93	A2	14	G	NA	NA
Interstate Park	6/8/93	A2	15	G	NA	NA
Interstate Park	6/10/93	A3	1	S	1.60	0.20
Interstate Park	6/10/93	A3	2	S	0.23	1.50
Interstate Park	6/10/93	A3	3	S	1.60	0.21
Interstate Park	6/10/93	A3	4	S	1.60	0.26
Interstate Park	6/10/93	A3	5	S	1.70	0.27
Interstate Park	6/10/93	A3	6	S	1.75	0.30
Interstate Park	6/10/93	A3	7	S	2.10	0.19
Interstate Park	6/10/93	A3	8	C	2.25	0.22
Interstate P;Irk	6/10/93	A3	9	S	2.00	0.15
Interstate Park	6/10/93	A3	10	S	3.00	0.03
Interstate Park	6/10/93	A3	11	S/G	2.75	0.22
Interstate Park	6/10/93	A3	12	S	2.90	0.25
Interstate Park	6/10/93	A3	13	S	2.75	0.24
Interstate Park	6/10/93	A3	14	S	2.80	0.29
Interstate Park	6/10/93	A3	15	S/G	2.75	0.32
Interstate Park	6/14/93	A5	1	G/C	1.20	-0.06
Interstate Park	6/14/93	A5	2	C	1.50	0.04

Cobble > 0.5 in, Gravel = Sand - 0.5 in. M = Mud, S - Sand, S/G = Sand and Gravel, G =Gravel, G/C = Gravel and Sand, C = Cobble, X = Missing Data

Appendix 1 – Qualitative data summary table.

<b>Location</b>	<b>Date</b>	<b>Transect</b>	<b>Station</b>	<b>Substrate</b>	<b>Depth (m)</b>	<b>Flow (bottom)</b>
Interstate Park	6/14/93	A5	3	C	1.75	-0.03
Interstate Park	6/14/93	A5	4	C	2.10	-0.03
Interstate Park	6/14/93	A5	5	C	2.60	0.10
Interstate Park	6/14/93	A5	6	C	3.10	0.24
Interstate Park	6/14/93	A5	7	C	3.20	0.23
Interstate Park	6/14/93	A5	8	G	4.20	0.14
Interstate Park	6/14/93	A5	9	S	4.10	0.14
Interstate Park	6/14/93	A5	10	S	4.10	0.07
Interstate Park	6/14/93	A5	11	S	3.90	0.13
Interstate Park	6/14/93	A5	12	G/C	3.30	0.10
Interstate Park	6/14/93	A5	13	G/C	3.00	0.01
Interstate Park	6/14/93	A5	14	C	1.50	0.03
Interstate Park	6/14/93	A5	15	C	1.30	0.08
Interstate Park	6/14/93	A6	1	M	1.00	-0.07
Interstate Park	6/14/93	A6	2	S	1.25	0.14
Interstate Park	6/14/93	A6	3	S	1.30	-0.04
Interstate Park	6/14/93	A6	4	S	1.80	-0.02
Interstate Park	6/14/93	A6	5	X	2.30	0.11
Interstate Park	6/14/93	A6	6	S/G	2.80	0.02
Interstate Park	6/14/93	A6	7	C	3.10	0.01
Interstate Park	6/14/93	A6	8	G/C	3.70	0.07
Interstate Park	6/14/93	A6	9	C	3.20	-0.01
Interstate Park	6/14/93	A6	10	G/C	3.30	0.08
Interstate Park	6/14/93	A6	11	S/G	2.90	-0.04
Interstate Park	6/14/93	A6	12	S	2.75	0.01
Interstate Park	6/14/93	A6	13	S	1.50	0.02
Interstate Park	6/14/93	A6	14	S	1.50	-0.02
Interstate Park	6/14/93	A6	15	S	1.60	0.08
Interstate Park	6/14/93	A7	1	S	0.75	0.07
Interstate Park	6/14/93	A7	2	S	0.80	0.08
Interstate Park	6/14/93	A7	3	S	1.00	-0.03
Interstate Park	6/14/93	A7	4	G	1.00	0.04
Interstate Park	6/14/93	A7	5	S	0.80	0.04
Interstate Park	6/14/93	A7	6	S	1.20	-0.02
Interstate Park	6/14/93	A7	7	S	1.30	0.02
Interstate Park	6/14/93	A7	8	S	1.70	0.05
Interstate Park	6/14/93	A7	9	G/C	2.10	0.15
Interstate Park	6/14/93	A7	10	G/C	2.70	0.22
Interstate Park	6/14/93	A7	11	C	2.80	0.21
Interstate Park	6/14/93	A7	12	C	2.90	-0.01
Interstate Park	6/14/93	A7	13	G	3.00	0.04
Interstate Park	6/14/93	A7	14	S/G	3.20	0.07
Interstate Park	6/14/93	A7	15	S/G	3.25	-0.06
Interstate Park	6/21/93	B I	1	S	1.25	0.01
Interstate Park	6/21/93	B I	2	S	1.80	0.04
Interstate Park	6/21/93	B I	3	S/G	2.25	0.12
Interstate Park	6/21/93	B I	4	G/C	2.75	0.20

Cobble > 0.5 in, Gravel = Sand - 0.5 in. M = Mud, S - Sand, S/G = Sand and Gravel, G =Gravel, G/C = Gravel and Sand, C = Cobble, X = Missing Data

Appcndix 1 - Qualitative data summary table.

<b>Location (bottom)</b>	<b>Flow Date</b>	<b>Transect</b>	<b>Station</b>	<b>Substrate</b>	<b>Depth (m)</b>
Interstate Park	6/21/93	B 1	5	S/G	2.75
Interstate Park	6/21/93	B 1	6	S	2.50
Interstate Park	6/21/93	B 1	7	G	2.40
Interstate Park	6/21/93	B 1	8	G/C	2.25
Interstate Park	6/21/93	B 1	9	C	2.10
Interstate Park	6/21/93	B 1	10	C	1.90
Interstate Park	6/21/93	B 1	11	C	1.90
Interstate Park	6/21/93	B 1	12	C	1.75
Interstate Park	6/21/93	B1	13	C	1.80
Interstate Park	6/21/93	B 1	14	C	1.80
Interstate Park	6/21/93	B 1	15	C	1.90
Interstate Park	6/21/93	B2	1	G	1.10
Interstate Park	6/21/93	B2	2	G/C	1.25
Interstate Park	6/21/93	B2	3	C	1.25
Interstate Park	6/21/93	B2	4	C	1.50
Interstate Park	6/21/93	B2	5	C	1.75
Interstate Park	6/21/93	B2	6	C	2.40
Interstate Park	6/21/93	B2	7	S	2.75
Interstate Park	6/21/93	B2	8	G/C	2.80
Interstate Park	6/21/93	B2	9	S/G	3.00
Interstate Park	6/21/93	B2	10	G	2.75
Interstate Park	6/21/93	B2	11	G	2.75
Interstate Park	6/21/93	B2	12	G	2.50
Interstate Park	6/21/93	B2	13	G	2.90
Interstate Park	6/21/93	B2	14	G/C	2.90
Interstate Park	6/21/93	B2	15	S	3.10
Interstate Park	6/21/93	B3	1	G/C	0.78
	-0.02				
Interstate Park	6/21/93	B3	2	G	1.20
	-0.05				
Interstate Park	6/21/93	B3	3	G	1.50
Interstate Park	6/21/93	B3	4	G	1.85
	-0.03				
Interstate Park	6/21/93	B3	5	G/C	2.40
Interstate Park	6/21/93	B3	6	G/C	3.00
Interstate Park	6/21/93	B3	7	G	3.20
Interstate Park	6/21/93	B3	8	G/C	3.60
	-0.19				
Interstate Park	6/21/93	B3	9	G	3.80
Interstate Park	6/21/93	B3	10	S	3.60
Interstate Park	6/21/93	B3	11	S/G	3.50
Interstate Park	6/21/93	B3	12	S/G	3.50
Interstate Park	6/21/93	B3	13	S/G	3.40
Interstate Park	6/21/93	B3	14	S/G	3.20
Interstate Park	6/21/93	B3	15	G	3.10
Interstate Park	6/21/93	B4	1	S/G	0.25
Interstate Park	6/21/93	B4	2	S	0.25
Interstate Park	6/21/93	B4	3	S	0.75
Interstate Park	6/21/93	B4	4	S/G	0.80
Interstate Park	6/21/93	B4	5	G	1.15
Interstate Park	6/21/93	B4	6	C	3.10
	0.17				

Cobble > 0.5 in, Gravel = Sand - 0.5 in. M = Mud, S - Sand, S/G = Sand and Gravel, G =Gravel, G/C = Gravel and Sand, C = Cobble, X = Missing Data      Page A 1-3

Appendix 1 - Qualitative data summary table.

<b>Location</b>	<b>Date</b>	<b>Transect</b>	<b>Station</b>	<b>Substrate</b>	<b>Depth (m)</b>	<b>Flow (bottom)</b>
Interstate Park	6/21/93	B4	7	X	3.80	0.33
Interstate Park	6/21/93	B4	8	X	3.85	0.40
Interstate Park	6/21/93	B4	9	S	3.70	0.27
Interstate Park	6/21/93	B4	10	S/G	3.70	0.22
Interstate Park	6/21/93	B4	11	G	3.50	-0.05
Interstate Park	6/21/93	B4	12	S	4.20	0.26
Interstate Park	6/21/93	B4	13	S/G	4.00	-0.01
Interstate Park	6/21/93	B4	14	S	3.90	0.20
Interstate Park	6/21/93	B4	15	S	3.20	0.06
Interstate Park	6/23/93	B5	1	S/G	1.30	-0.01
Interstate Park	6/23/93	B5	2	S	1.50	-0.07
Interstate Park	6/23/93	B5	3	S	1.90	0.02
Interstate Park	6/23/93	B5	4	G	3.40	0.05
Interstate Park	6/23/93	B5	5	G/C	3.80	0.23
Interstate Park	6/23/93	B5	6	C	4.20	0.33
Interstate Park	6/23/93	B5	7	C	4.60	0.37
Interstate Park	6/23/93	B5	8	C	4.30	NA
Interstate Park	6/23/93	B5	9	S/G	4.80	NA
Interstate Park	6/23/93	B5	10	S	3.90	NA
Interstate Park	6/23/93	B5	11	C	3.80	0.35
Interstate Park	6/23/93	B5	12	C	3.65	0.32
Interstate Park	6/23/93	B5	13	G/C	3.20	0.30
Interstate Park	6/23/93	B5	14	G/C	2.95	0.31
Interstate Park	6/23/93	B5	15	X	3.35	0.44
Interstate Park	6/23/93	B6	1	S/G	1.10	0.08
Interstate Park	6/23/93	B6	2	S/G	1.20	-0.06
Interstate Park	6/23/93	B6	3	S	1.60	-0.07
Interstate Park	6/23/93	B6	4	S/G	3.20	-0.02
Interstate Park	6/23/93	B6	5	S/G	3.30	-0.03
Interstate Park	6/23/93	B6	6	S/G	3.80	0.05
Interstate Park	6/23/93	B6	7	G	4.10	0.22
Interstate Park	6/23/93	B6	8	C	4.20	0.17
Interstate Park	6/23/93	B6	9	C	4.50	0.51
Interstate Park	6/23/93	B6	10	C	4.65	NA
Interstate Park	6/23/93	B6	11	C	4.35	NA
Interstate Park	6/23/93	B6	12	C	4.50	NA
Interstate Park	6/23/93	B6	13	C	4.45	NA
Interstate Park	6/23/93	B6	14	C	4.55	NA
Interstate Park	6/23/93	B6	15	G/C	4.65	NA
Osceola	7/19/93	A1	1	M	1.00	0.01
Osceola.	7/19/93	A1	2	M	1.50	0.12
Osceola	7/19/93	A1	3	M	2.10	0.17
Osceola	7/19/93	A1	4	S	2.25	0.14
Osceola	7/19/93	A1	5	S	2.50	0.16
Osceola	7/19/93	A1	6	S	2.50	0.19
Osceola	7/19/93	A1	7	S	2.40	0.30
Osceola	7/19/93	A1	8	S	2.30	0.31

Cobble -> 0.5 in, Gravel = Sand - 0.5 in. M = Mud, S - Sand, S/G = Sand and Gravel, G =Gravel, G/C = Gravel and Sand, C = Cobble, X = Missing Data

Appendix 1 - Qualitative data summary table.

<b>Location</b>	<b>Date</b>	<b>Transect</b>	<b>Station</b>	<b>Substrate</b>	<b>Depth (m)</b>	<b>Flow (bottom)</b>
Osceola	7/19/93	A1	9	S	2.30	0.18
Osceola	7/19/93	A1	10	S	2.10	0.31
Osceola	7/19/93	A1	11	S	2.30	0.42
Osceola	7/19/93	A1	12	S	2.40	0.23
Osceola	7/19/93	A1	13	S	2.10	0.36
Osceola	7/19/93	A1	14	S	2.20	0.35
Osceola	7/19/93	A1	15	S	2.00	0.34
Osceola	7/21/93	A2	1	M	0.80	0.08
Osceola	7/21/93	A2	2	M	1.40	0.08
Osceola	7/21/93	A2	3	S	1.70	0.11
Osceola	7/21/93	A2	4	S	2.10	0.08
Osceola	7/21/93	A2	5	S	2.10	0.08
Osceola	7/21/93	A2	6	S	2.30	0.17
Osceola	7/21/93	A2	7	S	2.40	0.21
Osceola	7/21/93	A2	8	S	2.30	0.16
Osceola	7/21/93	A2	9	S	2.30	0.23
Osceola	7/21/93	A2	10	S	2.20	0.21
Osceola	7/21/93	A2	11	S	2.10	0.27
Osceola	7/21/93	A2	12	S	2.20	0.29
Osceola	7/21/93	A2	13	S	2.00	0.27
Osceola	7/21/93	A2	14	S	1.90	0.21
Osceola	7/21/93	A2	15	S/G	1.80	0.19
Osceola	7/21/93	A3	1	M	1.25	0.09
Osceola	7/21/93	A3	2	M	2.00	0.09
Osceola	7/21/93	A3	3	S/G/C	1.70	0.15
Osceola	7/21/93	A3	4	S/G/C	2.40	0.13
Osceola	7/21/93	A3	5	S	2.50	0.22
Osceola	7/21/93	A3	6	S	2.10	0.18
Osceola	7/21/93	A3	7	S	2.20	0.20
Osceola	7/21/93	A3	8	S	2.25	0.05
Osceola	7/21/93	A3	9	S	2.20	0.28
Osceola	7/21/93	A3	10	S	2.00	0.21
Osceola	7/21/93	A3	11	S	2.00	0.20
Osceola	7/21/93	A3	12	S	2.00	0.27
Osceola	7/21/93	A3	13	S	1.80	0.22
Osceola	7/21/93	A3	14	S	1.75	0.34
Osceola	7/21/93	A3	15	S	1.75	0.32
Osceola	7/19/93	A4	1	X	1.50	0.06
Osceola	7/19/93	A4	2	X	1.75	0.13
Osceola	7/19/93	A4	3	X	2.25	0.17
Osceola	7/19/93	A4	4	X	2.50	0.15
Osceola	7/19/93	A4	5	X	2.60	0.12
Osceola	7/19/93	A4	6	X	2.75	0.16
Osceola	7/19/93	A4	7	S	2.25	0.22
Osceola	7/19/93	A4	8	S	2.20	0.20
Osceola	7/19/93	A4	9	S	2.10	0.22
Osceola	7/19/93	A4	10	S	2.00	0.20

Cobble -> 0.5 in, Gravel = Sand - 0.5 in. M = Mud, S - Sand, S/G = Sand and Gravel, G =Gravel, G/C = Gravel and Sand, C = Cobble, X = Missing Data

Appendix 1 - Qualitative data suuntry table.

Location	Date	Transect	Station	Substrate	Depth (m)	Flow (bottom)
Osceola	7/19/93	A4	11	S	2.25	0.12
Osceola	7/19/93	A4	12	S	2.25	0.37
Osceola	7/19/93	A4	13	S	2.25	0.28
Osceola	7/19/93	A4	14	S	2.20	0.28
Osceola	7/19/93	A4	15	S	2.00	0.19
Osceola	7/19/93	A5	1	X	2.75	0.01
Osceola	7/19/93	A5	2	X	3.00	0.07
Osceola	7/19/93	A5	3	X	1.76	0.13
Osceola	7/19/93	A5	4	X	1.10	0.23
Osceola	7/19/93	A5	5	B	2.30	0.16
Osceola	7/19/93	A5	6	S	2.50	0.20
Osceola	7/19/93	A5	7	S	2.30	0.18
Osceola	7/19/93	A5	8	S	2.30	0.14
Osceola	7/19/93	A5	9	S	2.25	0.21
Osceola	7/19/93	A5	10	S	2.25	0.25
Osceola	7/19/93	A5	11	S	2.10	0.22
Osceola	7/19/93	A5	12	S	2.00	0.34
Osceola	7/19/93	A5	13	S	1.90	0.25
Osceola	7/19/93	A5	14	S	1.90	0.35
Osceola	7/19/93	A5	15	S	1.90	0.31
Osceola	7/16/93	B1	1	S	1.10	0.08
Osceola	7/16/93	B1	2	S	1.90	0.07
Osceola	7/16/93	B1	3	S	2.00	0.08
Osceola	7/16/93	B1	4	S	2.00	0.12
Osceola	7/16/93	B1	5	S	2.00	0.15
Osceola	7/16/93	B1	6	S	2.00	0.11
Osceola	7/16/93	B1	7	S	1.90	0.08
Osceola	7/16/93	B1	8	S	1.75	0.08
Osceola	7/16/93	B1	9	S	1.70	0.12
Osceola	7/16/93	B1	10	S	1.70	0.07
Osceola	7/16/93	B1	11	S	1.60	0.08
Osceola	7/16/93	B1	12	S	1.60	0.06
Osceola	7/16/93	B1	13	S	1.60	0.06
Osceola	7/16/93	B1	14	S/G	1.80	0.04
Osceola	7/16/93	B1	15	S/G	2.25	0.02
Osceola	7/16/93	B2	1	X	1.30	0.17
Osceola	7/16/93	B2	2	X	1.90	0.12
Osceola	7/16/93	B2	3	X	2.30	0.07
Osceola	7/16/93	B2	4	X	1.50	0.14
Osceola	7/16/93	B2	5	X	1.60	0.09
Osceola	7/16/93	B2	6	X	1.70	0.08
Osceola	7/16/93	B2	7	X	1.70	0.08
Osceola	7/16/93	B2	8	X	1.90	0.10
Osceola	7/16/93	B2	9	X	1.95	0.16
Osceola	7/16/93	B2	10	X	2.00	0.17
Osceola	7/16/93	B2	11	S	1.50	0.08
Osceola	7/16/93	B2	12	S	3.00	0.22

Cobble -> 0.5 in, Gravel = Sand - 0.5 in. M = Mud, S = Sand, S/G = Sand and Gravel, G = Gravel, G/C = Gravel and Sand, C = Cobble, X = Missing Data

Appendix 1 - Qualitative data suuntry table.

<b>Location</b>	<b>Date</b>	<b>Transect</b>	<b>Station</b>	<b>Substrate</b>	<b>Depth (m)</b>	<b>Flow (bottom)</b>
Osceola	7/16/93	B2	13	S	2.75	0.22
Osceola	7/16/93	B2	14	C	2.50	0.15
Osceola	7/16/93	B2	15	X	2.50	0.10
Osceola	7/19/93	B3	1	C	1.30	0.08
Osceola	7/19/93	B3	2	C	1.90	0.11
Osceola	7/19/93	B3	3	C	2.20	0.14
Osceola	7/19/93	B3	4	X	1.80	0.12
Osceola	7/19/93	B3	5	X	1.25	0.13
Osceola	7/19/93	B3	6	X	1.50	0.22
Osceola	7/19/93	B3	7	X	1.90	0.12
Osceola	7/19/93	B3	8	X	2.40	0.13
Osceola	7/19/93	B3	9	X	2.30	0.23
Osceola	7/19/93	B3	10	X	2.25	0.25
Osceola	7/19/93	B3	11	X	2.50	0.17
Osceola	7/19/93	B3	12	X	2.20	0.10
Osceola	7/19/93	B3	13	X	1.80	0.26
Osceola	7/19/93	B3	14	X	2.00	0.20
Osceola	7/19/93	B3	15	X	1.80	0.22
Osceola	7/21/93	B4	1	S/G	0.60	0.17
Osceola	7/21/93	B4	2	S/G	1.20	0.17
Osceola	7/21/93	B4	3	S/G	1.25	0.26
Osceola	7/21/93	B4	4	S/G	1.80	0.18
Osceola	7/21/93	B4	5	S/G	2.10	0.17
Osceola	7/21/93	B4	6	S	2.25	0.10
Osceola	7/21/93	B4	7	S	2.15	0.20
Osceola	7/21/93	B4	8	S	2.10	0.23
Osceola	7/21/93	B4	9	S	2.00	0.35
Osceola	7/21/93	B4	10	S	2.25	0.32
Osceola	7/21/93	B4	11	S	2.10	0.34
Osceola	7/21/93	B4	12	S	2.20	0.34
Osceola	7/21/93	B4	13	S	2.25	0.20
Osceola	7/21/93	B4	14	S	1.80	0.28
Osceola	7/21/93	B4	15	S	2.10	0.35
Osceola	7/21/93	B5	1	G/C	0.75	0.14
Osceola	7/21/93	B5	2	G/C	1.25	0.09
Osceola	7/21/93	B5	3	G/C	1.75	0.17
Osceola	7/21/93	B5	4	G/C	2.00	0.16
Osceola	7/21/93	B5	5	G	2.05	0.22
Osceola	7/21/93	B5	6	G	2.40	0.12
Osceola	7/21/93	B5	7	S	2.45	0.23
Osceola	7/21/93	B5	8	S	2.50	0.33
Osceola	7/21/93	B5	9	S	2.00	0.26
Osceola	7/21/93	B5	10	S	2.20	0.35
Osceola	7/21/93	B5	11	S	2.45	0.32
Osceola	7/21/93	B5	12	S	2.10	0.26
Osceola	7/21/93	B5	13	S	1.95	0.34
Osceola	7/21/93	B5	14	S	2.05	0.30

Cobble -> 0.5 in, Gravel = Sand - 0.5 in. M = Mud, S = Sand, S/G = Sand and Gravel, G = Gravel, G/C = Gravel and Sand, C = Cobble, X = Missing Data

Appendix 1 - Qualitative data summary table.

<b>Location</b>	<b>Date</b>	<b>Transect</b>	<b>Station</b>	<b>Substrate</b>	<b>Depth (m)</b>	<b>Flow (bottom)</b>
Osceola	7/21/93	B5	15	S	1.80	0.30

Cobble = > 0.5 in., Gravel = Sand - 0.5 in.. M = Mud, S = Sand, S/G = Sand and Gravel, G = Gravel, G/C = Gravel and Sand, Page A1-8  
C = Cobble, X = Missing Data

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	A1	1	6/4/93	Amblema licata	64.90	33.95	55.30
Interstate Park	A1	1	6/4/93	Quadrula metanevra	101.05	47.85	82.30
Interstate Park	A1	1	6/4/93	Fusconaia flava	41.30	29.45	38.65
Interstate Park	A1	1	6/4/93	Obovaria olivaria	58.55	34.95	53.70
Interstate Park	A1	1	6/4/93	Pleurobema sintoxia	67.45	41.40	59.80
Interstate Park	A1	2	6/4/93	Fusconaia flava	71.95	43.95	63.60
Interstate Park	A1	3	6/4/93	NONE			
Interstate Park	A1	4	6/4/93	NONE			
Interstate Park	A1	5	6/4/93	Fusconaia flava	17.20	11.10	15.25
Interstate Park	A1	5	6/4/93	Fusconaia (lava	19.00	12.80	17.40
Interstate Park	A1	6	6/4/93	Fusconaia (lava	68.00	40.35	60.10
Interstate Park	A1	6	6/4/93	Quadrula ustulosa	37.05	35.30	25.00
Interstate Park	A1	7	6/4/93	Pro tera alata	119.20	31.75	103.95
Interstate Park	A1	7	6/4/93	Elliptio dilatata	70.25	20.50	38.05
Interstate Park	A1	7	6/4/93	Truncilla truncata	24.95	13.60	20.05
Interstate Park	A1	7	6/4/93	Quadrula pustulosa	66.80	40.50	63.15
Interstate Park	A1	7	6/4/93	Fusconaia flava	72.15	43.60	61.55
Interstate Park	A1	7	6/4/93	Fuseonaia (lava	68.70	40.40	63.65
Interstate Park	A1	7	6/4/93	Elliptio dilatata	103.60	34.15	54.85
Interstate Park	A1	8	6/4/93	Cyclonaias tuberculata	78.65	43.75	77.45
Interstate Park	A1	8	6/4/93	Elliptio dilatata	117.60	38.60	58.95
Interstate Park	A1	8	6/4/93	Amblema plicata	101.85	55.85	82.95
Interstate Park	A1	9	6/4/93	Tritigonia verrucosa	136.30	45.70	87.6_5
Interstate Park	A1	9	6/4/93	Quadrula metanevra	59.85	42.35	.55.45
Interstate Park	A1	9	6/4/93	Elliptio dilatata	104.60	31.95	58.60
Interstate Park	A1	9	6/4/93	Quadrula pustulosa	69.70	44.65	64.10
Interstate Park	A1	9	6/4/93	Truncilla tru_ncata	41.95	24.35	35.40
Interstate Park	A1	9	6/4/93	Truncilla truncata	34.05	20.65	27.80
Interstate Park	A1	9	6/4/93	Truncilla truncata	31.10	19.00	26.10
Interstate Park	A1	9	6/4/93	Fusconaia flava	31.90	20.60	30.10
Interstate Park	A1	10	6/4/93	Proptera alata	119.50	33.25	92.75
Interstate Park	A1	10	6/4/93	Truncilla truncata	31.00	17.65	26.55
Interstate Park	A1	11	6/4/93	Cyclonaias tuberculata	74.25	42.15	68.65
Interstate Park	A1	11	6/4/93	Truncilla truncata	57.10	38.55	49.60
Interstate Park	A1	11	6/4/93	Quadrula pustulosa	72.15	42.10	69.00
Interstate Park	A1	11	6/4/93	Truncilla truncata	50.90	27.85	45.20
Interstate Park	A1	11	6/4/93	Truncilla truncata	45.75	30.00	39.00
Interstate Park	A1	11	6/4/93	Fusconaia flava	37.80	25.35	35.55
Interstate Park	A1	11	6/4/93	Fusconaia flava	23.75	14.95	22.00
Interstate Park	A1	12	6/4/93	Lampsilis ovata ventricosa	95.75	48.65	72.45
Interstate Park	A1	13	6/4/93	Truncilla truncata	55.20	31.35	45.00
Interstate Park	A1	13	6/4/93	Truncilla truncata	49.90	29.55	36.10
Interstate Park	A1	13	6/4/93	Truncilla truncata	48.10	28.60	39.10
Interstate Park	A1	13	6/4/93	Truncilla truncata	51.35	31.10	41.80
Interstate Park	A1	13	6/4/93	Truncilla truncata	48.50	27.30	39.40
Interstate Park	A1	13	6/4/93	Truncilla truncata	40.95	25.45	35.00
Interstate Park	A1	13	6/4/93	Truncilla truncata	33.85	20.05	27.95

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

Site	Height Transect (mm)	Station	Date	Species	Length (mm)	Width (mm)
Interstate Park	A1 13	6/4/93	Truncilla truncata	34.75	21.10	28.20
Interstate Park	A1 13	6/4/93	Truncilla truncata	26.55	16.30	21.10
Interstate Park	A1 14	6/4/93	Quadrula metanevra	83.45	46.50	74.90
Interstate Park	A1 14	6/4/93	Quadrula metanevra	80.70	51.90	66.95
Interstate Park	A1 14	6/4/93	Obliqueria reflexa	41.15	23.35	34.00
Interstate Park	A1 14	6/4/93	Truncilla truncata	40.75	25.65	35.10
Interstate Park	A1 14	6/4/93	Truncilla truncata	30.00	17.35	24.30
Interstate Park	A1 14	6/4/93	Obovaria olivaria	81.30	45.10	71.75
Interstate Park	A1 14	6/4/93	Truncilla truncat	38.85	24.60	31.05
Interstate Park	A1 15	6/4/93	Truncilla truncata	28.35	15.65	22.45
Interstate Park	A1 15	6/4/93	Truncilla truncata	47.05	28.15	39.30
Interstate Park	A1 15	6/4/93	Truncilla truncata	29.50	16.75	24.30
Interstate Park	A1 15	6/4/93	Quadrula metanevra	61.55	39.10	54.35
Interstate Park	A1 15	6/4/93	Fusconaia flava	43.90	32.70	42.45
Interstate Park	A2 1	6/8/93	NONE			
Interstate Park	A2 2	6/8/93	Fusconaia flava	51.00	36.75	46.15
Interstate Park	A2 3	6/8/93	NONE			
Interstate Park	A2 4	6/8/93	Fusconaia flava	45.95	33.65	41.85
Interstate Park	A2 5	6/8/93	NONE			
Interstate Park	A2 6	6/8/93	Fusconaia flava	54.90	35.20	51.15
Interstate Park	A2 6	6/8/93	Fusconaia flava	22.4.5	15.20	20.05
Interstate Park	A2 6	6/8/93	Fusconaia flava	21.4.5	13.65	18.80
Interstate Park	A2 7	6/8/93	Amblema plicata	69.94	41.10	65.20
Interstate Park	A2 7	6/8/93	Amblema plicata	48.80	28.10	41.45
Interstate Park	A2 7	6/8/93	Obliqueria reflexa	48.15	28.35	37.65
Interstate Park	A2 7	6/8/93	Fusconaia flava	75.58	45.59	67.60
Interstate Park	A2 7	6/8/93	Pleurobema sintoxia	80.65	47.00	75.65
Interstate Park	A2 8	6/8/93	Truncilla truncata	42.50	25.00	35.20
Interstate Park	A2 8	6/8/93	Truncilla truncata	42.05	24.45	35.00
Interstate Park	A2 9	6/8/93	Tritigonia verrucosa	133.35	39.90	71.45
Interstate Park	A2 9	6/8/93	Fusconaia flava	38.45	23.05	33.40
Interstate Park	A2 9	6/8/93	Fusconaia flava	59.50		52.50
Interstate Park	A2 9	6/8/93	Quadrula pustulosa	68.05	39.60	58.85
Interstate Park	A2 9	6/8/93	Truncilla truncata	20.85	11.75	16.75
Interstate Park	A2 10	6/8/93	Fusconaia flava	57.05	37.50	52.00
Interstate Park	A2 10	6/8/93	Fusconaia flava	34.50	26.05	32.50
Interstate Park	A2 10	6/8/93	Fusconaia flava	29.85	20.40	27.65
Interstate Park	A2 11	6/8/93	Quadrula metanevra	46.75	31.65	44.90
Interstate Park	A2 11	6/8/93	Lampsilis ovata ventricosa	105.65	53.95	72.65
Interstate Park	A2 11	6/8/93	Truncilla truncata	52.40	34.35	48.15
Interstate Park	A2 11	6/8/93	Quadrula metanevra	90.60	50.50	82.55
Interstate Park	A2 11	6/8/93	Pleurobema sintoxia	77.05	45.85	69.10
Interstate Park	A2 12	6/8/93	Elliptio dilatata	101.60	37.65	52.25
Interstate Park	A2 13	6/8/93	NONE			
Interstate Park	A2 14	6/8/93	Elliptio dilatata	110.35	33.55	49.35
Interstate Park	A2 14	6/8/93	Tritigonia verrucosa	133.15	43.15	72.65
Interstate Park	A2 14	6/8/93	Truncilla truncata	50.30	27.25	38.55

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

Site	Height Transect	Station	Date	Species	(mm)	Length	Width
						(mm)	(mm)
Interstate Park	A2	15	6/8/93	Quadrula ustulosa	41.30	28.15	39.75
Interstate Park	A2	15	6/8/93	Truncilla truncata	54.00	38.00	47.45
Interstate Park	A2	15	6/8/93	Truncilla truncata	48.95	33.65	42.25
Interstate Park	A2	15	6/8/93	Truncilla truncata	38.10	22.00	31.95
Interstate Park	A3	1	6/10/93	Proptera alata	136.70	43.05	106.75
Interstate Park	A3	1	6/10/93	Fusconaia flava	34.20	24.45	31.45
Interstate Park	A3	1	6/10/93	Fusconaia flava	60.05	36.15	54.45
Interstate Park	A3	2	6/10/93	NONE			
Interstate Park	A3	3	6/10/93	NONE			
Interstate Park	A3	4	6/10/93	NONE			
Interstate Park	A3	5	6/10/93	NONE			
Interstate Park	A3	6	6/10/93	Fusconaia flava	59.95	35.75	51.15
Interstate Park	A3	7	6/10/93	Elliptio dilatata	99.10	32.05	46.10
Interstate Park	A3	7	6/10/93	Fusconaia flava	53.35	37.05	50.30
Interstate Park	A3	7	6/10/93	Truncilla truncata	22.35	12.25	17.40
Interstate Park	A3	8	6/10/93	Fusconaia flava	76.75	48.85	68.50
Interstate Park	A3	8	6/10/93	Fusconaia flava	74.15	46.25	67.20
Interstate Park	A3	8	6/10/93	Truncilla truncata	36.70	19.85	30.05
Interstate Park	A3	9	6/10/93	Fusconaia flava	66.75	44.25	59.00
Interstate Park	A3	9	6/10/93	Fusconaia flava	39.35	31.05	37.20
Interstate Park	A3	9	6/10/93	Tritigonia verrucosa	89.15	28.95	57.40
Interstate Park	A3	9	6/10/93	Truncilla truncata	36.65	21.30	31.05
Interstate Park	A3	9	6/10/93	Quadrula metanevra	57.90	33.90	52.70
Interstate Park	A3	10	6/10/93	Elliptio dilatata	82.60	24.60	38.75
Interstate Park	A3	10	6/10/93	Truncilla truncata	41.80	24.80	35.40
Interstate Park	A3	10	6/10/93	Fusconaia flava	76.30	44.45	60.50
Interstate Park	A3	10	6/10/93	Truncilla truncata	48.30	29.70	40.70
Interstate Park	A3	10	6/10/93	Fusconaia flava	61.70	38.80	53.85
Interstate Park	A3	10	6/10/93	Truncilla truncata	34.20	20.20	28.80
Interstate Park	A3	11	6/10/93	NONE			
Interstate Park	A3	12	6/10/93	NONE			
Interstate Park	A3	13	6/10/93	Tritigonia verrucosa	105.00	33.60	61.00
Interstate Park	A3	13	6/10/93	Truncilla truncata	38.10	20.40	30.55
Interstate Park	A3	14	6/10/93	Actinonaias carinata	81.25	38.05	53.70
Interstate Park	A3	14	6/10/93	Truncilla truncata	46.10	26.55	38.20
Interstate Park	A3	14	6/10/93	Quadrula metanevra	65.30	37.00	58.75
Interstate Park	A3	14	6/10/93	Truncilla truncata	31.30	13.00	26.85
Interstate Park	A3	15	6/10/93	Fusconaia flava	75.30	43.00	64.65
Interstate Park	A3	15	6/10/93	Quadrula pustulosa	43.95	29.80	43.25
Interstate Park	A3	15	6/10/93	Tritigonia verrucosa	91.50	27.25	56.90
Interstate Park	A3	15	6/10/93	Truncilla truncata	35.10	21.85	30.05
Interstate Park	A3	15	6/10/93	Truncilla truncata	33.55	18.65	27.00
Interstate Park	A3	15	6/10/93	Truncilla truncata	27.90	17.60	23.20
Interstate Park	A3	15	6/10/93	Truncilla truncata	46.15	23.60	35.05
Interstate Park	A3	15	6/10/93	Pleurobema sintoxia	61.10	36.15	55.05
Interstate Park	A5	15	6/14/93	NONE			

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

<b>Height Site (mm)</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>
Interstate Park	A5	2	6/14/93	<i>Fusconaia flava</i>	36.35	26.90
Interstate Park	A5	3	6/14/93	NONE		
Interstate Park	A5	4	6/14/93	<i>Amblema plicata</i>	92.95	50.35
Interstate Park	A5	5	6/14/93	<i>Amblema plicata</i>	59.05	30.45
Interstate Park	A5	6	6/14/93	<i>Truncilla truncata</i>	42.30	25.70
Interstate Park	A5	7	6/14/93	<i>Tritonia verrucosa</i>	127.20	39.50
Interstate Park	A5	7	6/14/93	<i>Truncilla truncata</i>	25.65	15.25
Interstate Park	A5	7	6/14/93	<i>Truncilla truncata</i>	28.00	16.30
Interstate Park	A5	7	6/14/93	<i>Truncilla truncata</i>	25.30	15.20
Interstate Park	A5	7	6/14/93	<i>Truncilla truncata</i>	44.00	23.55
Interstate Park	A5	7	6/14/93	<i>Truncilla truncata</i>	39.40	21.10
Interstate Park	A5	7	6/14/93	<i>Truncilla truncata</i>	25.65	14.45
Interstate Park	A5	8	6/14/93	<i>Truncilla truncata</i>	39.55	21.40
Interstate Park	A5	8	6/14/93	<i>Truncilla truncata</i>	25.35	14.75
Interstate Park	A5	9	6/14/93	<i>Quadrula metanevra</i>	93.05	55.00
Interstate Park	A5	9	6/14/93	<i>Truncilla truncata</i>	40.40	22.95
Interstate Park	A5	9	6/14/93	<i>Truncilla truncata</i>	36.20	21.20
Interstate Park	A5	9	6/14/93	<i>Truncilla truncata</i>	21.55	13.55
Interstate Park	A5	9	6/14/93	<i>Truncilla truncata</i>	53.35	33.80
Interstate Park	A5	9	6/14/93	<i>Cyclonaias tuberculata</i>	93.80	54.25
Interstate Park	A5	9	6/14/93	<i>Elliptio dilatata</i>	72.25	21.10
Interstate Park	A5	10	6/14/93	<i>Cyclonaias tuberculata</i>	88.45	46.15
Interstate Park	A5	10	6/14/93	<i>Obovaria olivaria</i>	85.20	46.30
Interstate Park	A5	10	6/14/93	<i>Truncilla truncata</i>	42.50	25.40
Interstate Park	A5	11	6/14/93	<i>Fusconaia flava</i>	46.25	34.95
Interstate Park	A5	11	6/14/93	<i>Obovaria olivaria</i>	84.55	45.70
Interstate Park	A5	11	6/14/93	<i>Truncilla truncata</i>	18.15	10.75
Interstate Park	A5	11	6/14/93	<i>Truncilla truncata</i>	53.95	31.30
Interstate Park	A5	11	6/14/93	<i>Truncilla truncata</i>	23.05	14.00
Interstate Park	A5	11	6/14/93	<i>Truncilia truncata</i>	38.25	24.00
Interstate Park	A5	11	6/14/93	<i>Truncilla truncata</i>	48.30	25.25
Interstate Park	A5	12	6/14/93	<i>Proptera alata</i>	116.60	31.75
Interstate Park	A5	12	6/14/93	<i>Truncilla truncata</i>	15.30	9.15
Interstate Park	A5	12	6/14/93	<i>Truncilla truncata</i>	26.90	16.25
Interstate Park	A5	12	6/14/93	<i>Truncilla truncata</i>	32.05	19.85.
Interstate Park	A5	12	6/14/93	<i>Truncilla truncata</i>	34.00	21.65.
Interstate Park	A5	13	6/14/93	<i>Proptera alata</i>	135.90	33.85
Interstate Park	A5	13	6/14/93	<i>Truncilla truncata</i>	34.45	18.15
Interstate Park	A5	13	6/14/93	<i>Truncilla truncata</i>	55.60	30.05
44.40						
Interstate Park	A5	14	6/14/93	<i>Truncilla truncata</i>	37.70	20.45
30.70						
Interstate Park	A5	15	6/14/93	NONE		
Interstate Park	A6	1	6/14/93	NONE		
Interstate Park	A6	2	6/14/93	NONE		
Interstate Park	A6	3	6/14/93	NONE		
Interstate Park	A6	4	6/14/93	<i>Fusconaia flava</i>	51.70	33.40
47.85						
Interstate Park	A6	4	6/14/93	<i>Fusconaia flava</i>	37.65	26.20
34.20						
Interstate Park	A6	5	6/14/93	<i>Truncilla donaciformis</i>	18.15	9.30
13.10						

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

<b>Site Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	A6	5 6/14/93	Quadrula ustulosa	69.10	44.80	64.60
Interstate Park	A6	5 6/14/93	Amblema plicata	111.45	54.80	80.60
Interstate Park	A6	5 6/14/93	Amblema plicata	94.65	51.40	72.45
Interstate Park	A6	5 6/14/93	Truncilla truncata	21.80	12.65	17.90
Interstate Park	A6	6 6/14/93	NONE			
Interstate Park	A6	7 6/14/93	Truncilla truncata	20.55	11.45	15.25
Interstate Park	A6	7 6/14/93	Fusconaia flava	56.90	35.20	50.05
Interstate Park	A6	8 6/14/93	Pleurobema sintoxia	48.15	32.40	46.00
Interstate Park	A6	8 6/14/93	Truncilla donaciformis	25.00	15.55	18.65
Interstate Park	A6	8 6/14/93	Truncilla truncata	25.60	14.95	20.55
Interstate Park	A6	9 6/14/93	Amblema plicata	98.00	48.70	73.40
Interstate Park	A6	9 6/14/93	Elliptio dilatata	76.60	27.10	39.75
Interstate Park	A6	9 6/14/93	Elliptio dilatata	66.55	19.40	31.80
Interstate Park	A6	9 6/14/93	Truncilla truncata	52.90	33.80	44.95
Interstate Park	A6	9 6/14/93	Truncilla truncata	41.70	21.80	32.75
Interstate Park	A6	9 6/14/93	Truncilla truncata	24.20	14.95	20.65
Interstate Park	A6	9 6/14/93	Truncilla truncata	25.10	15.15	20.75
Interstate Park	A6	9 6/14/93	Truncilla truncata	24.40	15.05	20.45
Interstate Park	A6	106/14/93	Proptem alata	125.80	27.80	117.70
Interstate Park	A6	106/14/93	Truncilla truncata	56.25	32.50	44.40
Interstate Park	A6	106/14/93	Truncilla truncata	25.30	15.30	20.30
Interstate Park	A6	106/14/93	Truncilla truncata	35.55	21.55	29.60
Interstate Park	A6	106/14/93	Truncilla truncata	35.05	20.20	28.85
Interstate Park	A6	106/14/93	Truncilla truncata	21.55	13.10	17.40
Interstate Park	A6	106/14/93	Truncilla truncata	28.30	16.70	23.75
Interstate Park	A6	116/14/93	Plagiola triquetra	33.95	19.40	21.00
Interstate Park	A6	116/14/93	Proptera alata	96.05	25.05	82.60
Interstate Park	A6	116/14/93	Fusconaia flava	58.40	32.80	52.25
Interstate Park	A6	116/14/93	Fusconaia flava	61.70	36.20	50.90
Interstate Park	A6	116/14/93	Truncilla truncata	56.25	38.05	48.75
Interstate Park	A6	116/14/93	Truncilla truncata	39.10	24.05	33.05
Interstate Park	A6	116/14/93	Truncilla truncata	37.45	21.20	30.70
Interstate Park	A6	116/14/93	Truncilla truncata	25.00	15.35	19.00
Interstate Park	A6	116/14/93	Truncilla truncata	20.70	11.40	16.65
Interstate Park	A6	116/14/93	Truncilla truncata	29.70	19.15	26.40
Interstate Park	A6	126/14/93	Lampsilis ovata ventricosa	101.50	49.40	69.25
Interstate Park	A6	126/14/93	Truncilla donaciformis	23.05	12.90	16.25
Interstate Park	A6	126/14/93	Truncilla truncata	34.35	19.00	26.70
Interstate Park	A6	126/14/93	Truncilla truncata	38.75	24.90	34.20
Interstate Park	A6	136/14/93	NONE			
Interstate Park	A6	146/14/93	Truncilla truncata	30.25	17.50	24.70
Interstate Park	A6	156/14/93	Obligeria reflexa	33.85	23.35	27.90
Interstate Park	A7	1 6/14/93	NONE			
Interstate Park	A7	2 6/14/93	NONE			
Interstate Park	A7	3 6/14/93	Quadrula pustulosa	74.95	47.80	68.70
Interstate Park	A7	4 6/14/93	Pleurobema sintoxia	83.55	42.45	72.25
Interstate Park	A7	4 6/14/93	Fusconaia flava	72.85	45.25	63.75

NONE denotes no animals found at the sampling station.

Page A2-5

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	A7	4	6/14/93	Truncilla truncata	39.90	24.15	34.00
Interstate Park	A7	4	6/14/93	Truncilla truncata	32.00		25.50
Interstate Park	A7	4	6/14/93	Truncilla truncata	43.80	23.45	35.55
Interstate Park	A7	5	6/14/93	Pleurobema sintoxia	85.65	44.90	75.75
Interstate Park	A7	6	6/14/93	Fusconaia flava	48.70	33.85	44.10
Interstate Park	A7	7	6/14/93	Lam silis radiata siliquiodae	90.85	37.10	56.10
Interstate Park	A7	7	6/14/93	Truncilla truncata	38.45	22.30	31.55
Interstate Park	A7	8	6/14/93	Lampsilis ovata ventricosa	111.75	62.65	87.05
Interstate Park	A7	8	6/14/93	Elliptio dilatata	86.10	23.25	42.65
Interstate Park	A7	8	6/14/93	Truncilla truncata	28.10	16.25	21.50
Interstate Park	A7	8	6/14/93	Truncilla truncata	49.45	21.30	41.30
Interstate Park	A7	9	6/14/93	NONE			
Interstate Park	A7	10	6/14/93	Fusconaia flava	67.25	41.35	59.50
Interstate Park	A7	10	6/14/93	Truncilla truncata	38.25	22.75	32.35
Interstate Park	A7	10	6/14/93	Truncilla truncata	28.50		24.00
Interstate Park	A7	10	6/14/93	Truncilla truncata	23.40	13.90	18.70
Interstate Park	A7	10	6/14/93	Truncilla truncata	28.00	15.60	22.95
Interstate Park	A7	11	6/14/93	Pleurobema sintoxia	65.65	40.10	61.45
Interstate Park	A7	11	6/14/93	Amblema plicata	40.25	23.00	31.35
Interstate Park	A7	11	6/14/93	Amblema plicata	101.10	53.40	71.70
Interstate Park	A7	11	6/14/93	Truncilla truncata	37.00	23.55	31.95
Interstate Park	A7	11	6/14/93	Truncilla truncata	57.60	28.75	40.70
Interstate Park	A7	11	6/14/93	Truncilla truncata	53.55	30.50	42.70
Interstate Park	A7	11	6/14/93	Truncilla truncata	37.90	20.05	28.05
Interstate Park	A7	11	6/14/93	Truncilla truncata	29.80	13.40	26.60
Interstate Park	A7	11	6/14/93	Truncilla truncatg	30.60	28.40	24.60
Interstate Park	A7	12	6/14/93	Elliptio dilatata	114.50	37.65	58.50
Interstate Park	A7	12	6/14/93	Truncilla truncata	47.40	28.85	40.20
Interstate Park	A7	12	6/14/93	Truncilla truncata	37.55	21.90	32.00
Interstate Park	A7	12	6/14/93	Truncilla truncata	27.60	15.35	22.40
Interstate Park	A7	12	6/14/93	Truncilla truncata	25.20	14.95	19.40
Interstate Park	A7	12	6/14/93	Truncilla truncata	34.00	19.55	26.80
Interstate Park	A7	13	6/14/93	Truncilla truncata	48.90	25.15	38.65
Interstate Park	A7	13	6/14/93	Truncilla truncata	38.35	22.25	32.30
Interstate Park	A7	14	6/14/93	Proptera alata	135.45	31.75	110.95
Interstate Park	A7	14	6/14/93	Quadrula pustulosa	77.10	46.75	71.65
Interstate Park	A7	14	6/14/93	Truncilla truncata	55.85	28.90	44.05
Interstate Park	A7	14	6/14/93	Truncilla truncata	40.90	23.60	33.65
Interstate Park	A7	14	6/14/93	Truncilla truncata	29.90	18.95	26.65
Interstate Park	A7	15	6/14/93	Truncilla truncata	27.00		23.50
Interstate Park	A7	15	6/14/93	Truncilla truncata	37.4.5	21.70	32.75
Interstate Park	A7	15	6/14/93	Truncilla truncata	24.85	14.35	20.55
Interstate Park	A7	15	6/14/93	Truncilla truncata	32.05	19.10	25.85
Interstate Park	A7	15	6/14/93	Truncilla donaciformis	25.25	14.25	17.50
Interstate Park	B 1 1	6/21/93	Fusconaia flava	24.20	15.10	20.15	
Interstate Park	B 1 2	6/21/93	Truncilla truncata	51.70	27.55	42.40	
Interstate Park	B1 2	6/21/93	Fusconaia flava	25.00	17.30	22.25	

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B 1	2	6/21/93	<i>Fusconaia flava</i>	55.70	34.25	48.85
Interstate Park	B 1	2	6/21/93	<i>Proptera alata</i>	73.65	40.50	
Interstate Park	B 1	2	6/21/93	<i>Truncilla truncata</i>	56.05	29.40	42.25
Interstate Park	B 1	2	6/21/93	<i>Truncilla truncata</i>	38.20	23.20	33.35
Interstate Park	B 1	2	6/21/93	<i>Truncilla truncata</i>	32.45	19.45	27.75
Interstate Park	B 1	2	6/21/93	<i>Truncilla truncata</i>	19.00	10.60	15.05
Interstate Park	B 1	2	6/21/93	<i>Truncilla truncata</i>	45.10	25.60	38.30
Interstate Park	B 1	3	6/21/93	<i>Truncilla truncata</i>	56.25	30.50	44.10
Interstate Park	B 1	3	6/21/93	<i>Truncilla truncata</i>	38.45	22.90	33.65
Interstate Park	B 1	3	6/21/93	<i>Truncilla truncata</i>	45.25	25.30	38.50
Interstate Park	B 1	3	6/21/93	<i>Truncilla truncata</i>	32.40	19.30	27.80
Interstate Park	B 1	3	6/21/93	<i>Truncilla truncata</i>	19.05	11.15	14.50
Interstate Park	B 1	4	6/21/93	<i>Truncilla truncata</i>	31.65	18.95	28.40
Interstate Park	B I	4	6/21/93	<i>Truncilla truncata</i>	35.90	21.85	31.50
Interstate Park	B 1	4	6/21/93	<i>Truncilla truncata</i>	34.65	20.60	30.25
Interstate Park	B 1	4	6/21/93	<i>Truncilla truncata</i>	31.00	20.10	27.10
Interstate Park	B 1	4	6/21/93	<i>Truncilla truncata</i>	22.85	15.25	19.60
Interstate Park	B 1	5	6/21/93	NONE			
Interstate Park	B 1	6	6/21/93	<i>Proptera alata</i>	102.25	28.10	57.45
Interstate Park	B 1	6	6/21/93	<i>Fusconaia flava</i>	74.45	52.45	70.80
Interstate Park	B 1	6	6/21/93	<i>Fusconaia flava</i>	52.70	37.60	49.20
Interstate Park	B 1	6	6/21/93	<i>Quadrula pustulosa</i>	69.45	44.25	63.20
Interstate Park	B 1	7	6/21/93	<i>Truncilla truncata</i>	28.20	17.90	24.45
Interstate Park	B 1	7	6/21/93	<i>Truncilla truncata</i>	26.80	16.25	22.35
Interstate Park	B 1	7	6/21/93	<i>Pleurobema sintoxia</i>	81.60	48.55	73.10
Interstate Park	B 1	7	6/21/93	<i>Quadrula metanevra</i>	36.75	24.30	35.55
Interstate Park	B 1	7	6/21/93	<i>Quadrula metanevra</i>	66.45	36.95	62.00
Interstate Park	B 1	8	6/21/93	<i>Quadrula metanevra</i>	67.85	37.90	59.00
Interstate Park	B 1	8	6/21/93	<i>Quadrula pustulosa</i>	63.30	41.20	61.55
Interstate Park	B 1	8	6/21/93	<i>Pleurobema sintoxia</i>	82.40	48.70	75.95
Interstate Park	B 1	9	6/21/93	<i>Pleurobema sintoxia</i>	70.45	41.65	68.10
Interstate Park	B I	9	6/21/93	<i>Pleurobema sintoxia</i>	61.35	40.70	59.60
Interstate Park	B 1	9	6/21/93	<i>Truncilla truncata</i>	65.40	37.25	49.85
Interstate Park	B 1	10	6/21/93	<i>Truncilla truncata</i>	55.40	31.20	46.00
Interstate Park	B 1	10	6/21/93	<i>Fusconaia flava</i>	74.70	44.90	64.05
Interstate Park	B I	10	6/21/93	<i>Fusconaia flava</i>	75.05	48.15	63.80
Interstate Park	B 1	10	6/21/93	<i>Fusconaia flava</i>	65.00	40.50	56.75
Interstate Park	B 1	10	6/21/93	<i>Truncilla truncata</i>	59.20	35.15	47.95
Interstate Park	B 1	10	6/21/93	<i>Truncilla donaciformis</i>	18.35	10.30	13.60
Interstate Park	B 1	11	6/21/93	<i>Proptera alata</i>	123.90	38.80	108.55
Interstate Park	B 1	11	6/21/93	<i>Quadrula metanevra</i>	80.10	43.20	71.45
Interstate Park	B 1	11	6/21/93	<i>Fusconaia flava</i>	58.00	34.30	50.50
Interstate Park	B 1	11	6/21/93	<i>Truncilla truncata</i>	42.00	23.10	33.90
Interstate Park	B 1	11	6/21/93	<i>Truncilla truncata</i>	43.95	27.75	38.40
Interstate Park	B 1	11	6/21/93	<i>Truncilla truncata</i>	32.50	22.30	29.90
Interstate Park	B 1	12	6/21/93	<i>Elliptio dilatata</i>	120.70	55.25	35.70
Interstate Park	B 1	12	6/21/93	<i>Pleurobema sintoxia</i>	77.00	74.15	46.55

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B 1	12	6/21/93	<i>Fusconaia flava</i>	56.95	50.30	33.70
Interstate Park	B 1	12	6/21/93	<i>Fusconaia flava</i>	66.00	60.90	39.50
Interstate Park	B 1	12	6/21/93	<i>Fusconaia flava</i>	68.75	57.60	45.10
Interstate Park	B 1	12	6/21/93	<i>Truncilla truncata</i>	45.30	38.40	27.05
Interstate Park	B 1	12	6/21/93	<i>Truncilla truncata</i>	39.45	34.50	23.00
Interstate Park	B 1	12	6/21/93	<i>Truncilla truncata</i>	40.15	33.20	22.25
Interstate Park	B 1	12	6/21/93	<i>Truncilla truncata</i>	48.45	38.10	24.90
Interstate Park	B 1	12	6/21/93	<i>Truncilla truncata</i>	33.35	28.50	19.25
Interstate Park	B 1	13	6/21/93	<i>Pleurobema sintoxia</i>	86.00	51.35	79.80
Interstate Park	B 1	13	6/21/93	<i>Ellipsaria lineolata</i>	44.05	20.55	38.30
Interstate Park	B 1	13	6/21/93	<i>Quadrula ustulosa</i>	39.00	24.45	36.25
Interstate Park	B 1	13	6/21/93	<i>Truncilla truncata</i>	46.70	28.65	40.05
Interstate Park	B 1	13	6/21/93	<i>Thricilla truncata</i>	41.95	24.35	34.90
Interstate Park	B 1	13	6/21/93	<i>Truncilla truncata</i>	18.45	11.55	14.20
Interstate Park	B 1	13	6/21/93	<i>Truncilla truncata</i>	25.05	14.70	21.85
Interstate Park	B 1	13	6/21/93	<i>Truncilla truncata</i>	30.45	18.65	25.40
Interstate Park	B 1	13	6/21/93	<i>Truncilla truncata</i>	39.30	22.45	32.55
Interstate Park	B 1	13	6/21/93	<i>Truncilla truncata</i>	41.85	25.35	35.45
Interstate Park	B 1	14	6/21/93	<i>Quadrula metanevra</i>	97.30	59.40	76.60
Interstate Park	B 1	14	6/21/93	<i>Aamblema licata</i>	74.10	40.35	63.35
Interstate Park	B 1	14	6/21/93	<i>Aamblema licata</i>	113.55	57.25	84.60
Interstate Park	B 1	14	6/21/93	<i>Fusconaia flava</i>	71.20	45.35	61.05
Interstate Park	B 1	14	6/21/93	<i>Truncilla truncata</i>	38.55	22.85	32.15
Interstate Park	B 1	14	6/21/93	<i>Truncilla truncata</i>	38.30	28.25	30.00
Interstate Park	B 1	14	6/21/93	<i>Truncilla truncata</i>	26.20	15.15	23.25
Interstate Park	B 1	14	6/21/93	<i>Truncilla truncata</i>	29.60	19.70	25.40
Interstate Park	B 1	14	6/21/93	<i>Truncilla truncata</i>	42.25	23.65	34.90
Interstate Park	B 1	14	6/21/93	<i>Truncilla truncata</i>	37.85	23.55	31.75
Interstate Park	B 1	15	6/21/93	<i>Quadrula metanevra</i>	103.90	53.20	84.50
Interstate Park	B 1	15	6/21/93	<i>Quadrula metanevra</i>	89.75	52.65	77.90
Interstate Park	B 1	15	6/21/93	<i>Quadrula metanevra</i>	29.00	21.20	25.90
Interstate Park	B 1	15	6/21/93	<i>Pleurobema sintoxia</i>	85.95	49.75	78.30
Interstate Park	B 1	15	6/21/93	<i>Truncilla truncata</i>	58.30	32.25	47.70
Interstate Park	B 1	15	6/21/93	<i>Truncilla truncata</i>	35.90	21.05	29.55
Interstate Park	B 1	15	6/21/93	<i>Truncilla truncata</i>	29.90	16.75	23.90
Interstate Park	B 2	1	6/21/93	NONE			
Interstate Park	B 2	2	6/21/93	NONE			
Interstate Park	B 2	3	6/21/93	NONE			
Interstate Park	B 2	4	6/21/93	<i>Elliptio dilatata</i>	71.90	22.15	36.40
Interstate Park	B 2	5	6/21/93	<i>Plagiola triquetra</i>	36.10	18.90	20.90
Interstate Park	B 2	5	6/21/93	<i>Truncilla truncata</i>	41.25	23.80	34.75
Interstate Park	B 2	5	6/21/93	<i>Tritigonia verrucosa</i>	108.30	40.25	68.30
Interstate Park	B 2	5	6/21/93	<i>Truncilla truncata</i>	42.35	19.20	31.55
Interstate Park	B 2	5	6/21/93	<i>Cumberlandia monodonta</i>	111.30	38.90	52.00
Interstate Park	B 2	5	6/21/93	<i>Fusconaia flava</i>	63.74	37.70	51.50
Interstate Park	B 2	5	6/21/93	<i>Truncilla truncata</i>	48.10	26.55	39.75
Interstate Park	B 2	5	6/21/93	<i>Actinonaias carinata</i>	114.50	46.15	68.70

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B2	5	6/21/93	Truncilla truncata	46.70	23.80	36.05
Interstate Park	B2	5	6/21/93	Truncilla truncata	51.80	27.85	39.80
Interstate Park	B2	6	6/21/93	Truncilla truncata	55.80	30.55	42.40
Interstate Park	B2	6	6/21/93	Truncilla truncata	53.15	30.40	42.50
Interstate Park	B2	6	6/21/93	Fusconaia flava	51.55	34.05	45.65
Interstate Park	B2	6	6/21/93	Truncilla truncata	39.85	25.45	32.50
Interstate Park	B2	6	6/21/93	Truncilla truncata	51.50	28.70	40.30
Interstate Park	B2	6	6/21/93	Truncilla truncata	43.40	26.80	35.90
Interstate Park	B2	6	6/21/93	Truncilla truncata	30.05	18.80	23.75
Interstate Park	B2	6	6/21/93	Truncilla truncata	27.55	17.80	22.40
Interstate Park	B2	6	6/21/93	Truncilla truncata	25.90	14.30	19.95
Interstate Park	B2	7	6/21/93	Quadrula pustulosa	63.00	39.95	60.75
Interstate Park	B2	7	6/21/93	Quadrula metanevra	94.20	51.35	78.40
Interstate Park	B2	7	6/21/93	Pleurobema sintoxia	62.50	32.95	52.20
Interstate Park	B2	7	6/21/93	Truncilla truncata	44.40	27.20	36.00
Interstate Park	B2	7	6/21/93	Truncilla truncata	14.50	8.30	11.75
Interstate Park	B2	8	6/21/93	Proptera alata	99.15	33.15	79.50
Interstate Park	B2	8	6/21/93	Truncilla truncata	42.50	24.50	32.25
Interstate Park	B2	8	6/21/93	Truncilla truncata	50.85	27.25	38.80
Interstate Park	B2	8	6/21/93	Truncilla truncata	31.90	17.35	23.70
Interstate Park	B2	8	6/21/93	Truncilla truncata	35.60	20.50	27.65
Interstate Park	B2	8	6/21/93	Truncilla truncata	23.00	13.25	19.25
Interstate Park	B2	8	6/21/93	Truncilla truncata	29.95	18.45	25.50
Interstate Park	B2	8	6/21/93	Truncilla truncata	30.80	18.65	24.75
Interstate Park	B2	8	6/21/93	Truncilla truncata	26.15	13.90	21.00
Interstate Park	B2	9	6/21/93	Lampsilis ovata ventricosa	93.65	53.50	69.60
Interstate Park	B2	9	6/21/93	Pleurobema sintoxia	87.40	46.20	77.80
Interstate Park	B2	9	6/21/93	Pleurobema sintoxia	74.40	47.40	67.30
Interstate Park	B2	10	6/21/93	Quadrula metanevra	90.60	44.80	84.40
Interstate Park	B2	10	6/21/93	Pleurobema sintoxia	73.05	41.65	67.85
Interstate Park	B2	10	6/21/93	Fusconaia flava	47.40	34.65	46.70
Interstate Park	B2	10	6/21/93	Fusconaia flava	64.85	40.10	58.45
Interstate Park	B2	10	6/21/93	Elliptio dilatata	65.65	20.20	32.50
Interstate Park	B2	10	6/21/93	Cyclonaias tuberculata	82.65	45.50	86.30
Interstate Park	B2	10	6/21/93	Fusconaia flava	53.15	35.55	50.35
Interstate Park	B2	10	6/21/93	Truncilla truncata	42.55	24.85	35.10
Interstate Park	B2	11	6/21/93	Pleurobema sintoxia	77.50	45.55	69.40
Interstate Park	B2	11	6/21/93	Fusconaia flava	69.30	43.95	60.00
Interstate Park	B2	11	6/21/93	Truncilla truncata	44.10	31.10	41.50
Interstate Park	B2	11	6/21/93	Truncilla truncata	37.35	21.95	31.75
Interstate Park	B2	12	6/21/93	Pleurobema sintoxia	64.15	41.85	62.70
Interstate Park	B2	12	6/21/93	Truncilla truncata	48.30	28.80	39.75
Interstate Park	B2	12	6/21/93	Plagiola triquetra	32.45	12.10	18.90
Interstate Park	B2	12	6/21/93	Truncilla truncata	53.10	34.45	46.40
Interstate Park	B2	12	6/21/93	Quadrula metanevra	31.80	20.60	29.90
Interstate Park	B2	12	6/21/93	Truncilla truncata	32.45	19.25	27.00
Interstate Park	B2	13	6/21/93	Truncilla truncata	72.50	40.25	55.05

NONE denotes no animals found at the sampling station.

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B2	13	6/21/93	<i>Quadrula ustulosa</i>	51.25	30.90	45.65
Interstate Park	B2	13	6/21/93	<i>Truncilla truncata</i>	29.70	20.15	26.80
Interstate Park	B2	13	6/21/93	<i>Truncilla truncata</i>	35.30	20.75	30.30
Interstate Park	B2	13	6/21/93	<i>Truncilla truncata</i>	54.10	40.05	48.65
Interstate Park	B2	13	6/21/93	<i>Truncilla truncata</i>	23.70	13.30	20.05
Interstate Park	B2	13	6/21/93	<i>Truncilla truncata</i>	21.10	13.00	17.70
Interstate Park	B2	13	6/21/93	<i>Truncilla truncata</i>	25.55	14.45	20.25
Interstate Park	B2	13	6/21/93	<i>Truncilla truncata</i>	18.50	11.10	15.50
Interstate Park	B2	14	6/21/93	<i>Truncilla truncata</i>	44.45	27.50	39.55
Interstate Park	B2	14	6/21/93	<i>Truncilla truncata</i>	47.15	34.35	41.30
Interstate Park	B2	14	6/21/93	<i>Truncilla truncata</i>	43.45	25.50	35.80
Interstate Park	B2	14	6/21/93	<i>Truncilla truncata</i>	27.60	11.95	23.20
Interstate Park	B2	14	6/21/93	<i>Truncilla truncata</i>	27.10	11.90	23.60
Interstate Park	B2	14	6/21/93	<i>Truncilla truncata</i>	24.50	15.80	21.25
Interstate Park	B2	15	6/21/93	<i>Truncilla truncata</i>	57.20	33.70	49.70
Interstate Park	B2	15	6/21/93	<i>Truncilla truncata</i>	22.60	14.60	19.25
Interstate Park	B2	15	6/21/93	<i>Quadrula pustulosa</i>	23.50	15.65	22.55
Interstate Park	BZ	15	6/21/93	<i>Truncilla truncata</i>	23.50	12.90	19.50
Interstate Park	B3	1	6/21/93	NONE			
Interstate Park	B3	2	6/21/93	NONE			
Interstate Park	B3	3	6/21/93	<i>Truncilla truncata</i>	45.75	24.05	37.65
Interstate Park	B3	4	6/21/93	<i>Proptera alata</i>	141.50	37.65	108.10
Interstate Park	B3	4	6/21/93	<i>Proptera alata</i>	118.70	32.15	88.10
Interstate Park	B3	4	6/21/93	<i>Amblema plicata</i>	99.50	52.15	75.05
Interstate Park	B3	4	6/21/93	<i>Amblema plicata</i>	78.25	43.50	69.15
Interstate Park	B3	4	6/21/93	<i>Amblema licata</i>	70.50	39.40	61.25
Interstate Park	B3	4	6/21/93	<i>Fusconaia flava</i>	82.90	48.40	69.80
Interstate Park	B3	4	6/21/93	<i>Amblema plicata</i>	64.25	35.05	56.60
Interstate Park	B3	5	6/21/93	<i>Tritigonia verrucosa</i>	104.25	39.90	64.05
Interstate Park	B3	5	6/21/93	<i>Tritigonia vetricosa</i>	86.15	32.55	55.40
Interstate Park	B3	5	6/21/93	<i>Proptera alata</i>	111.55	28.95	88.60
Interstate Park	B3	5	6/21/93	<i>Truncilla donaciiformis</i>	24.15	11.70	15.40
Interstate Park	B3	5	6/21/93	<i>Fusconaia flava</i>	65.20	39.50	55.10
Interstate Park	B3	5	6/21/93	<i>Truncilla truncata</i>	40.00	22.55	34.00
Interstate Park	B3	6	6/21/93	<i>Quadrula pustulosa</i>	70.00	43.60	66.55
Interstate Park	B3	6	6/21/93	<i>Fusconaia flava</i>	40.80	28.30	38.90
Interstate Park	B3	6	6/21/93	<i>Truncilla truncata</i>	45.95	25.05	37.50
Interstate Park	B3	6	6/21/93	<i>Fusconaia flava</i>	86.85	49.55	66.75
Interstate Park	B3	7	6/21/93	<i>Fusconaia flava</i>	69.60	44.40	61.75
Interstate Park	B3	7	6/21/93	<i>Truncilla truncata</i>	37.15	19.85	29.05
Interstate Park	B3	8	6/21/93	<i>Quadrula pustulosa</i>	54.10	37.00	52.45
Interstate Park	B3	8	6/21/93	<i>Truncilla truncata</i>	46.45	26.65	37.35
Interstate Park	B3	8	6/21/93	<i>Truncilla truncata</i>	30.00	18.90	25.75
Interstate Park	B3	9	6/21/93	<i>Truncilla truncata</i>	44.40	27.90	38.15
Interstate Park	B3	9	6/21/93	<i>Truncilla truncata</i>	36.30	19.45	30.15
Interstate Park	B3	9	6/21/93	<i>Truncilla truncata</i>	33.20	21.10	27.90
Interstate Park	B3	9	6/21/93	<i>Truncilla truncata</i>	26.80	15.40	22.00

NONE denotes no animals found at the sampling station.

A2-10

Page

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B3	9	6/21/93	Truncilla truncata	23.20	15.40	20.50
Interstate Park	B3	9	6/21/93	Truncilla truncata	21.60	12.80	17.05
Interstate Park	B3	10	6/21/93	Pleurobema sintoxia	76.30	42.40	65.25
Interstate Park	B3	10	6/21/93	Truncilla truncata	37.10	20.40	29.70
Interstate Park	B3	11	6/21/93	Fusconaia flava	58.70	36.25	56.20
Interstate Park	B3	11	6/21/93	Truncilla truncata	49.80	28.80	38.20
Interstate Park	B3	11	6/21/93	Truncilla truncata	46.25	29.55	40.30
Interstate Park	B3	11	6/21/93	Truncilla truncata	36.40	20.60	29.15
Interstate Park	B3	11	6/21/93	Truncilla truncata	31.65	19.75	27.25
Interstate Park	B3	11	6/21/93	Truncilla truncata	26.00	14.55	20.70
Interstate Park	B3	12	6/21/93	Obliqueria reflexa	45.55	26.85	38.15
Interstate Park	B3	12	6/21/93	Quadrula metanevra	87.40	44.65	78.70
Interstate Park	B3	12	6/21/93	Truncilla truncata	25.00	13.90	20.40
Interstate Park	B3	12	6/21/93	Truncilla truncata	54.50	34.20	46.40
Interstate Park	B3	13	6/21/93	Pleurobema sintoxia	80.05	49.50	72.00
Interstate Park	B3	14	6/21/93	Ellipsaria lineolata	51.80	25.65	43.55
Interstate Park	B3	14	6/21/93	Obliqueria reflexa	34.90	28.00	31.65
Interstate Park	B3	14	6/21/93	Proptera alata	155.40	38.90	111.05
Interstate Park	B3	14	6/21/93	Amblema plicata	112.75	53.30	94.80
Interstate Park	B3	14	6/21/93	Truncilla truncata	25.25	13.90	19.30
Interstate Park	B3	14	6/21/93	Truncilla truncata	23.40	14.35	19.40
Interstate Park	B3	15	6/21/93	Proptera alata	124.25	36.20	89.05
Interstate Park	B3	15	6/21/93	Fusconaia flava	67.00	39.95	58.40
Interstate Park	B3	15	6/21/93	Truncilla truncata	58.50	39.20	47.30
Interstate Park	B3	15	6/21/93	Truncilla truncata	48.75	28.90	38.25
Interstate Park	B3	15	6/21/93	Truncilla truncata	49.95	31.15	43.50
Interstate Park	B3	15	6/21/93	Truncilla truncata	39.00	24.00	33.25
Interstate Park	B3	15	6/21/93	Truncilla truncata	42.75	24.45	34.10
Interstate Park	B3	15	6/21/93	Truncilla truncata	45.55	24.65	38.00
Interstate Park	B3	15	6/21/93	Truncilla truncata	39.45	24.10	31.35
Interstate Park	B3	15	6/21/93	Truncilla truncata	29.50	19.65	25.15
Interstate Park	B3	15	6/21/93	Truncilla truncata	30.80	18.10	25.10
Interstate Park	B3	15	6/21/93	Truncilla truncata	30.20	17.35	24.35
Interstate Park	B3	15	6/21/93	Truncilla truncata	28.35	18.50	23.80
Interstate Park	B3	15	6/21/93	Truncilla truncata	22.00	14.5.5	19.15
Interstate Park	B3	15	6/21/93	Truncilla truncata	24.75	15.30	20.90
Interstate Park	B3	15	6/21/93	Truncilla truncata	22.80	14.15	18.25
Interstate Park	B4	1	6/21/93	NONE			
Interstate Park	B4	2	6/21/93	NONE			
Interstate Park	B4	3	6/21/93	NONE			
Interstate Park	B4	4	6/21/93	Leptodea fragilis	57.70	17.95	30.40
Interstate Park	B4	5	6/21/93	Tritigonia verrucosa	124.10	35.95	62.80
Interstate Park	B4	6	6/21/93	Truncilla truncata	41.80	25.25	35.35
Interstate Park	B4	6	6/21/93	Truncilla truncata	40.70	28.00	34.45
Interstate Park	B4	6	6/21/93	Truncilla truncata	41.75	24.40	35.40
Interstate Park	B4	6	6/21/93	Truncilla truncata	47.25	27.10	39.90
Interstate Park	B4	6	6/21/93	Truncilla truncata	32.75	19.95	38.20

NONE denotes no animals found at the sampling station.

Page A2-11

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B4	6	6/21/93	Truncilla truncata	29.30	18.85	25.70
Interstate Park	B4	6	6/21/93	Truncilla truncata	27.50	15.25	22.70
Interstate Park	B4	6	6/21/93	Truncilla truncata	26.30	14.20	21.75
Interstate Park	B4	6	6/21/93	Truncilla truncata	26.10	13.75	19.40
Interstate Park	B4	7	6/21/93	Truncilla truncata	50.15	33.20	42.55
Interstate Park	B4	7	6/21/93	Truncilla truncata	67.80	38.25	45.70
Interstate Park	B4	7	6/21/93	Fusconaia flava	48.15	32.90	43.35
Interstate Park	B4	7	6/21/93	Fusconaia flava	62.90	41.30	58.30
Interstate Park	B4	7	6/21/93	Truncilla truncata	30.20	16.50	25.00
Interstate Park	B4	7	6/21/93	Truncilla truncata	30.95	17.60	23.50
Interstate Park	B4	7	6/21/93	Truncilla truncata	31.30	19.90	25.75
Interstate Park	B4	7	6/21/93	Truncilla truncata	29.90	16.90	24.40
Interstate Park	B4	7	6/21/93	Truncilla truncata	31.60	20.10	27.15
Interstate Park	B4	7	6/21/93	Truncilla truncata	32.85	20.45	28.05
Interstate Park	B4	7	6/21/93	Truncilla truncata	28.70	18.80	25.80
Interstate Park	B4	7	6/21/93	Truncilla truncata	26.40	15.80	21.50
Interstate Park	B4	8	6/21/93	Pleurobema sintoxia	80.05	43.35	69.25
Interstate Park	B4	8	6/21/93	Obovaria olivaria	61.95	36.50	58.80
Interstate Park	B4	8	6/21/93	Truncilla truncata	48.00	29.70	41.60
Interstate Park	B4	8	6/21/93	Quadrula metanevra	40.55	25.55	37.45
Interstate Park	B4	8	6/21/93	Truncilla truncata	50.20	28.30	39.65
Interstate Park	B4	8	6/21/93	Truncilla truncata	45.40	24.65	36.50
Interstate Park	B4	8	6/21/93	Truncilla truncata	30.45	17.85	25.60
Interstate Park	B4	8	6/21/93	Truncilla truncata	33.40	22.90	28.50
Interstate Park	B4	8	6/21/93	Truncilla truncata	24.50	14.65	19.40
Interstate Park	B4	8	6/21/93	Truncilla truncata	28.50	17.00	23.10
Interstate Park	B4	8	6/21/93	Truncilla truncata	30.40	20.30	27.55
Interstate Park	B4	9	6/21/93	Lampsilis ovata ventricosa	127.35	67.60	95.35
Interstate Park	B4	9	6/21/93	Truncilla truncata	44.65	30.30	40.05
Interstate Park	B4	9	6/21/93	Truncilla truncata	41.10	5.10	40.40
Interstate Park	B4	9	6/21/93	Truncilla truncata	34.20	20.00	28.60
Interstate Park	B4	9	6/21/93	Truncilla truncata	51.50	31.95	45.30
Interstate Park	B4	9	6/21/93	Truncilla truncata	23.95	15.10	19.80
Interstate Park	B4	9	6/21/93	Truncilla truncata	28.60	18.15	25.40
Interstate Park	B4	9	6/21/93	Truncilla truncata	34.15	20.60	26.60
Interstate Park	B4	10	6/21/93	Quadrula metanevra	93.20	48.20	80.60
Interstate Park	B4	10	6/21/93	Truncilla truncata	44.90	26.20	35.10
Interstate Park	B4	10	6/21/93	Truncilla truncata	21.55	13.75	18.70
Interstate Park	B4	10	6/21/93	Truncilla truncata	27.10	15.40	22.25
Interstate Park	B4	10	6/21/93	Truncilla truncata	27.45	15.65	21.25
Interstate Park	B4	10	6/21/93	Truncilla truncata	30.60	18.90	26.05
Interstate Park	B4	11	6/21/93	Lampsilis ovata ventricosa	102.60	58.05	76.50
Interstate Park	B4	11	6/21/93	Quadrula metanevra	92.90	48.40	77.75
Interstate Park	B4	11	6/21/93	Truncilla truncata	59.05	31.30	48.15
Interstate Park	B4	11	6/21/93	Truncilla truncata	48.75	28.00	38.65
Interstate Park	B4	11	6/21/93	Truncilla truncata	26.50	17.35	22.20
Interstate Park	B4	11	6/21/93	Truncilla truncata	38.05	24.30	32.95

NONE denotes no animals found at the sampling station.

Page A2-12

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B4	11	6/21/93	<i>Truncilla truncata</i>	33.20	20.70	29.65
Interstate Park	B4	11	6/21/93	<i>Truncilla truncata</i>	27.20	16.80	21.85
Interstate Park	B4	11	6/21/93	<i>Truncilla truncata</i>	28.30	16.90	22.80
Interstate Park	B4	11	6/21/93	<i>Truncilla truncata</i>	29.25	17.55	23.80
Interstate Park	B4	12	6/21/93	<i>Truncilla truncata</i>	41.45	26.35	34.45
Interstate Park	B4	12	6/21/93	<i>Truncilla truncata</i>	43.60	30.40	40.70
Interstate Park	B4	12	6/21/93	<i>Truncilla truncata</i>	25.65	15.35	21.10
Interstate Park	B4	12	6/21/93	<i>Truncilla truncata</i>	52.10	27.60	42.50
Interstate Park	B4	13	6/21/93	<i>Tritigonia verrucosa</i>	127.40	43.65	73.10
Interstate Park	B4	13	6/21/93	<i>Quadrula metanevra</i>	72.70	40.50	67.25
Interstate Park	B4	13	6/21/93	<i>Truncilla truncata</i>	34.15	20.70	28.60
Interstate Park	B4	14	6/21/93	<i>Truncilla truncata</i>	42.05	23.55	36.05
Interstate Park	B4	14	6/21/93	<i>Truncilla truncata</i>	40.60	24.15	33.60
Interstate Park	B4	14	6/21/93	<i>Truncilla truncata</i>	21.60	13.35	17.80
Interstate Park	B4	15	6/21/93	<i>Truncilla truncata</i>	32.55	21.50	31.00
Interstate Park	B5	1	6/23/93	<i>Truncilla donaciformis</i>	25.75	13.50	19.10
Interstate Park	B5	2	6/23/93	NONE			
Interstate Park	B5	3	6/23/93	<i>Truncilla truncata</i>	35.95	19.00	29.20
Interstate Park	B5	3	6/23/93	<i>Quadrula pustulosa</i>	76.75	48.00	72.0
Interstate Park	B5	4	6/23/93	NONE			
Interstate Park	B5	5	6/23/93	NONE			
Interstate Park	B5	6	6/23/93	<i>Quadrula metanevra</i>	86.05	41.55	80.10
Interstate Park	B5	6	6/23/93	<i>Truncilla truncata</i>	37.40	21.90	32.80
Interstate Park	B5	6	6/23/93	<i>Lasmigonia compressa</i>	22.10	5.40	12.45
Interstate Park	B5	6	6/23/93	<i>Truncilla truncata</i>	24.90	15.10	20.25
Interstate Park	B5	6	6/23/93	<i>Truncilla truncata</i>	30.00	14.35	23.15
Interstate Park	B5	7	6/23/93	<i>Truncilla truncata</i>	48.60	29.40	38.50
Interstate Park	B5	7	6/23/93	<i>Truncilla truncata</i>	20.90	11.85	16.00
Interstate Park	B5	8	6/23/93	<i>Truncilla truncata</i>	48.95	31.15	38.45
Interstate Park	B5	8	6/23/93	<i>Truncilla truncata</i>	41.50	24.40	34.10
Interstate Park	B5	9	6/23/93	<i>Obovaria olivaria</i>	52.70	32.65	41.75
Interstate Park	B5	9	6/23/93	<i>Truncilla truncata</i>	51.25	30.80	46.35
Interstate Park	B5	10	6/23/93	<i>Truncilla donaciformis</i>	31.45	17.90	24.70
Interstate Park	B5	11	6/23/93	<i>Truncilla truncata</i>	43.75	28.35	37.95
Interstate Park	B5	11	6/23/93	<i>Truncilla donaciformis</i>	31.75	20.05	21.40
Interstate Park	B5	11	6/23/93	<i>Truncilla truncate</i>	50.05	31.60	42.25
Interstate Park	B5	12	6/23/93	<i>Truncilla truncata</i>	27.25	12.00	22.55
Interstate Park	B5	12	6/23/93	<i>Truncilla truncata</i>	26.60	15.15	21.40
Interstate Park	B5	12	6/23/93	<i>Truncilla truncata</i>	31.30	13.05	25.65
Interstate Park	BS	12	6/23/93	<i>Truncilla truncata</i>	29.90	18.65	24.60
Interstate Park	BS	12	6/23/93	<i>Truncilla truncata</i>	49.50	28.30	39.90
Interstate Park	BS	12	6/23/93	<i>Actinonaias carinata</i>	101.25	46.55	61.80
Interstate Park	BS	13	6/23/93	<i>Truncilla truncata</i>	36.90	21.05	30.30
Interstate Park	BS	13	6/23/93	<i>Truncilla truncata</i>	29.35	17.15	23.60
Interstate Park	BS	13	6/23/93	<i>Plagiola triquetra</i>	34.50	15.85	21.90
Interstate Park	BS	13	6/23/93	<i>Truncilla truncata</i>	45.90	32.80	42.80
Interstate Park	BS	13	6/23/93	<i>Fusconaia flava</i>	66.60	43.15	59.60

NONE denotes no animals found at the sampling station.

Page A2-13

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate Park	B5	13	6/23/93	<i>Fusconaia flava</i>	72.95	45.65	65.45
Interstate Park	B5	13	6/23/93	<i>Truncilla truncata</i>	30.30	20.25	27.55
Interstate Park	B5	13	6/23/93	<i>Truncilla truncata</i>	24.45	13.45	19.50
Interstate Park	B5	14	6/23/93	<i>Fusconaia flava</i>	63.90	43.70	52.40
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	36.70	21.20	31.60
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	28.70	18.15	24.60
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	44.20	28.05	32.20
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	43.05	23.45	35.15
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	42.20	23.40	33.85
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	28.30	12.80	23.50
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	26.25	15.75	21.50
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	37.75	22.45	30.35
Interstate Park	B5	14	6/23/93	<i>Truncilla truncata</i>	29.35	20.30	25.90
Interstate Park	B5	15	6/23/93	<i>Quadrula metanevra</i>	104.10	50.15	82.95
Interstate Park	B5	15	6/23/93	<i>Truncilla truncata</i>	27.25	17.30	22.80
Interstate Park	B5	15	6/23/93	<i>Truncilla donaciformis</i>	20.90	12.15	14.95
Interstate Park	B5	15	6/23/93	<i>Truncilla truncata</i>	23.00	17.25	24.15
Interstate Park	B5	15	6/23/93	<i>Truncilla truncata</i>	22.50	14.60	18.45
Interstate Park	B5	15	6/23/93	<i>Truncilla truncata</i>	43.80	29.45	39.95
Interstate Park	B5	15	6/23/93	<i>Truncilla truncata</i>	46.90	32.55	43.05
Interstate Park	B6	1	6/24/93	NONE			
Interstate Park	B6	2	6/24/93	NONE			
Interstate Park	B6	3	6/24/93	<i>Amblema plicata</i>	94.70	41.70	79.20
Interstate Park	B6	3	6/24/93	<i>Truncilla truncata</i>	38.30	22.30	30.50
Interstate Park	B6	3	6/24/93	<i>Fusconaia flava</i>	68.70	41.20	57.30
Interstate Park	B6	4	6/24/93	<i>Amblema plicata</i>	91.65	48.80	78.55
Interstate Park	B6	4	6/24/93	<i>Truncilla truncata</i>	38.60	20.40	30.55
Interstate Park	B6	4	6/24/93	<i>Truncilla truncata</i>	38.15	20.80	30.90
Interstate Park	B6	5	6/24/93	NONE			
Interstate Park	B6	6	6/24/93	<i>Elliptio dilatata</i>	121.20	36.10	53.70
Interstate Park	B6	6	6/24/93	<i>Truncilla truncata</i>	41.30	22.75	32.00
Interstate Park	B6	6	6/24/93	<i>Truncilla truncata</i>	23.40	14.35	19.30
Interstate Park	B6	7	6/24/93	<i>Plagiola triquetra</i>	38.55	21.70	21.35
Interstate Park	B6	7	6/24/93	<i>Truncilla truncata</i>	40.75	24.20	33.30
Interstate Park	B6	7	6/24/93	<i>Truncilla truncata</i>	33.20	19.25	26.25
Interstate Park	B6	7	6/24/93	<i>Truncilla truncata</i>	32.95	19.7.5	27.70
Interstate Park	B6	7	6/24/93	<i>Truncilla truncata</i>	20.45	14.60	20.30
Interstate Park	B6	7	6/24/93	<i>Truncilla truncata</i>	22.90	15.55	19.15
Interstate Park	B6	8	6/24/93	<i>Quadrula metanevra</i>	91.60	43.95	77.20
Interstate Park	B6	8	6/24/93	<i>Truncilla truncata</i>	42.85	27.10	35.40
Interstate Park	B6	8	6/24/93	<i>Truncilla truncata</i>	44.80	23.95	36.30
Interstate Park	B6	8	6/24/93	<i>Truncilla truncata</i>	37.00	22.95	30.65
Interstate Park	B6	8	6/24/93	<i>Truncilla truncata</i>	39.50	23.80	34.00
Interstate Park	B6	8	6/24/93	<i>Truncilla truncata</i>	53.20	28.45	41.50
Interstate Park	B6	8	6/24/93	<i>Truncilla truncata</i>	26.10	16.05	20.85
Interstate Park	B6	9	6/24/93	<i>Ellipsaria lineolata</i>	59.20	13.40	44.00
Interstate Park	B69	6/24/93	Amblema licata		65.50	34.00	55.50

NONE denotes no animals found at the sampling station.

Page A2-14

Appendix 2 - Qualitative sampling mussel data

			<b>Width</b>		<b>Height</b>		<b>Length</b>
	<b>Site</b>		<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>(mm)</b>
			<b>(mm)</b>		<b>(mm)</b>		
Interstate Park	B6	9	6/24/93	Truncilla truncata	69.00	39.00	52.00
Interstate Park	B6	9	6/24/93	Truncilla truncata	26.00	13.50	20.00
Interstate Park	B6	9	6/24/93	Truncilla truncata	20.50	11.50	11.50
Interstate Park	B6	10	6/24/93	Truncilla truncata	60.80	41.50	47.80
Interstate Park	B6	10	6/24/93	Truncilla truncata	46.00	32.50	39.20
Interstate Park	B6	10	6/24/93	Quadrula metanevra	38.90	26.00	35.50
Interstate Park	B6	10	6/24/93	Truncilla truncata	38.00	21.60	31.50
Interstate Park	B6	10	6/24/93	Truncilla truncata	33.00	20.00	27.00
Interstate Park	B6	11	6/24/93	Truncilla truncata	31.00	17.50	24.00
Interstate Park	B6	11	6/24/93	Quadrula metanevra	63.60	41.20	51.50
Interstate Park	B6	12	6/24/93	Amblema plicata	79.50	44.50	67.00
Interstate Park	B6	12	6/24/93	Actinonaias carinata	63.30	37.10	41.20
Interstate Park	B6	12	6/24/93	Truncilla truncata	33.50	21.80	29.50
Interstate Park	B6	12	6/24/93	Truncilla truncata	28.00	15.00	22.00
Interstate Park	B6	12	6/24/93	Truncilla truncata	26.10	15.80	20.50
Interstate Park	B6	12	6/24/93	Truncilla truncata	23.50	14.00	18.00
Interstate Park	B6	13	6/24/93	Plagiola triquetra	30.50	17.80	18.50
Interstate Park	B6	13	6/24/93	Truncilla truncata	26.20	15.10	21.50
Interstate Park	B6	13	6/24/93	Truncilla truncata	27.20	18.00	22.00
Interstate Park	B6	13	6/24/93	Truncilla truncata	22.00	13.00	18.20
Interstate Park	B6	13	6/24/93	Truncilla truncata	25.00	15.20	21.50
Interstate Park	B6	13	6/24/93	Truncilla truncata	23.20	14.50	19.00
Interstate Park	B6	13	6/24/93	Truncilla truncata	25.00	14.00	19.00
Interstate Park	B6	14	6/24/93	Truncilla truncata	54.20	34.50	45.50
Interstate Park	B6	14	6/24/93	Truncilla truncatg	53.00	28.20	41.00
Interstate Park	B6	14	6/24/93	Truncilla truncata	53.00	36.20	42.50
Interstate Park	B6	14	6/24/93	Truncilla truncata	45.50	30.00	37.50
Interstate Park	B6	14	6/24/93	Truncilla truncata	30.00	18.50	25.50
Interstate Park	B6	14	6/24/93	Truncilla truncata	25.00	13.80	19.50
Interstate Park	B6	14	6/24/93	Elliptio dilatata	74.20	21.00	35.20
Interstate Park	B6	15	6/24/93	Truncilla truncata	59.00	31.00	39.00
Interstate Park	B6	15	6/24/93	Truncilla truncata	27.00	16.00	21.20
Interstate Park	B6	15	6/24/93	Truncilla truncata	27.00	16.80	20.50
Interstate Park	B6	15	6/24/93	Truncilla truncata	25.00	14.50	20.50
Interstate Park	B6	15	6/24/93	Truncilla truncata	25.50	50.20	22.20
Interstate Park	B6	15	6/24/93	Truncilla truncata	23.50	14.20	19.20
Osceola	A1	1	7/19/93	Fusconaia flava	35.02	27.86	34.52
Osceola	A1	1	7/19/93	Fusconaia flava	42.98	30.82	41.96
Osceola	A1	1	7/19/93	Fusconaia flava	40.20	28.74	38.77
Osceola	A1	2	7/19/93	Fusconaia flava	46.90	31.93	44.35
Osceola	A1	7/19/93	Obliquaria reflexa	44.97	28.71	37.54	
Osceola	A1	3	7/19/93	NONE			
Osceola	A 1	4	7/19/93	NONE			
Osceola	A1	5	7/19/93	NONE			
Osceola	A1	6	7/19/93	NONE			
Osceola	A1	7	7/19/93	NONE			
Osceola	A1	8	7/19/93	NONE			

NONE denotes no animals found at the sampling station.

Page A2-15

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	A1	9	7/19/93	NONE			
Osceola	A1	10	7/19/93	NONE			
Osceola	A1	11	7/19/93	NONE			
Osceola	A1	12	7/19/93	NONE			
Osceola	A1	13	7/19/93	NONE			
Osceola	A1	14	7/19/93	NONE			
Osceola	A1	15	7/19/93	NONE			
Osceola	A2	1	7/21/93	<i>Fusconaia flava</i>	42.58	31.64	39.84
Osceola	A2	1	7/21/93	<i>Fusconaia flava</i>	37.85	25.50	33.40
Osceola	AZ	1	7/21/93	<i>Fusconaia flava</i>	38.99	29.86	36.96
Osceola	A2	2	7/21/93	<i>Lampsilis ovata ventricosa</i>	128.30	60.63	89.60
Osceola	A2	2	7/21/93	<i>Fusconaia flava</i>	31.48	21.67	27.01
Osceola	A2	3	7/21/93	<i>Fusconaia flava</i>	42.07	32.29	39.90
Osceola	A2	4	7/21/93	NONE			
Osceola	A2	5	7/21/93	NONE			
Osceola	A2	6	7/21/93	NONE			
Osceola	A2	7	7/21/93	NONE			
Osceola	A2	8	7/21/93	NONE			
Osceola	A2	9	7/21/93	NONE			
Osceola	A2	10	7/21/93	NONE			
Osceola	A2	11	7/21/93	NONE			
Osceola	A2	12	7/21/93	NONE			
Osceola	A2	13	7/21/93	NONE			
Osceola	A2	14	7/21/93	NONE			
Osceola	A2	15	7/21/93	NONE			
Osceola	A3	1	7/21/93	<i>Fusconaia flava</i>	43.06	41.63	30.92
Osceola	A3	1	7/21/93	<i>Anodonta grandis</i>	125.31	98.50	57.37
Osceola	A3	2	7/21/93	NONE			
Osceola	A3	3	7/21/93	<i>Quadrula metanevra</i>	70.38	65.51	36.75
Osceola	A3	4	7/21/93	NONE			
Osceola	A3	5	7/21/93	NONE			
Osceola	A3	6	7/21/93	NONE			
Osceola	A3	7	7/21/93	NONE			
Osceola	A3	8	7/21/93	NONE			
Osceola	A3	9	7/21/93	NONE			
Osceola	A3	10	7/21/93	NONE			
Osceola	A3	11	7/21/93	NONE			
Osceola	A3	12	7/21/93	NONE			
Osceola	A3	13	7/21/93	NONE			
Osceola	A3	14	7/21/93	NONE			
Osceola	A3	15	7/21/93	NONE			
Osceola	A4	1	7/19/93	<i>Fusconaia flava</i>	57.01	38.63	54.21
Osceola	A4	1	7/19/93	<i>Proptera alata</i>	169.50	42.30	29.72
Osceola	A4	2	7/19/93	<i>Fusconaia flava</i>	66.91	46.28	64.66
Osceola	A4	2	7/19/93	<i>Fusconaia flava</i>	51.82	33.98	49.46
Osceola	A4	2	7/19/93	<i>Fusconaia flava</i>	50.61	34.67	48.78
Osceola	A4	3	7/19/93	NONE			

NONE denotes no animals found at the sampling station.

Page A2-16

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length</b> (mm)	<b>Width</b> (mm)	<b>Height</b> (mm)
Osceola	A4	4	7/19/93	NONE			
Osceola	A4	5	7/19/93	NONE			
Osceola	A4	6	7/19/93	NONE			
Osceola	A4	7	7/19/93	NONE			
Osceola	A4	8	7/19/93	NONE			
Osceola	A4	9	7/19/93	NONE			
Osceola	A4	10	7/19/93	NONE			
Osceola	A4	10	7/19/93	NONE			
Osceola	A4	11	7/19/93	NONE			
Osceola	A4	12	7/19/93	NONE			
Osceola	A4	13	7/19/93	NONE			
Osceola	A4	14	7/19/93	NONE			
Osceola	A4	15	7/19/93	NONE			
Osceola	A5	1	7/19/93	NONE			
Osceola	A5	2	7/19/93	Lampsilis ovata ventricosa	113.13		
Osceola	A5	3	7/19/93	NONE			
Osceola	A5	4	7/19/93	NONE			
Osceola	A5	5	7/19/93	NONE			
Osceola	A5	6	7/19/93	NONE			
Osceola	A5	7	7/19/93	NONE			
Osceola	A5	8	7/19/93	NONE			
Osceola	A5	9	7/19/93	NONE			
Osceola	A5	10	7/19/93	NONE			
Osceola	A5	11	7/19/93	NONE			
Osceola	A5	12	7/19/93	NONE			
Osceola	A5	13	7/19/93	NONE			
Osceola	A5	14	7/19/93	NONE			
Osceola	A5	15	7/19/93	NONE			
Osceola	B 1	1	7/16/93	NONE			
Osceola	B 1	2	7/16/93	NONE			
Osceola	B 1	3	7/16/93	NONE			
Osceola	B 1	4	7/16/93	Fusconaia flava	43.34	29.79	37.36
Osceola	B1	5	7/16/93	NONE			
Osceola	B 1	6	7/16/93	NONE			
Osceola	B 1	7	7/16/93	Proptera alata	74.04	8.35	58.74
Osceola	B 1	7	7/16/93	Proptera alata	114.72	33.54	96.46
Osceola	B 1	7	7/16/93	Amblema plicata	105.30	55.68	96.90
Osceola	B 1	7	7/16/93	Quadrula pustulosa	62.65	40.32	59.87
Osceola	B 1	7	7/16/93	Quadrula pustulosa	69.92	41.15	69.19
Osceola	B 1	8	7/16/93	NONE			
Osceola	B 1	9	7/16/93	NONE			
Osceola	B1	10	7/16/93	UNKNOWN	123.66	51.52	84.34
Osceola	B1	11	7/16/93	Fusconaia flava	53.16	37.47	51.00
Osceola	B1	11	7/16/93	Proptera laevissima	71.81	18.67	44.67
Osceola	B1	12	7/16/93	Fusconaia fava	67.73	43.46	65.38
Osceola	B 1	12	7/16/93	Fusconaia flava	31.58	22.80	30.92
Osceola	B 1	13	7/16/93	Fusconaia flava	46.11	31.62	43.34

NONE denotes no animals found at the sampling station.

Page A2-17

Appendix 2 • Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	B 1	13	7/16/93	<i>Fusconaia flava</i>	61.00	45.32	62.4
Osceola	B1	13	7/16/93	UNKNOWN	52.56	24.59	36.58
Osceola	B 1	13	7/16/93	<i>Truncilla truncala</i>	42.70	21.26	34.39
Osceola	B 1	13	7/16/93	<i>Fusconaia flava</i>	28.47	19.88	24.64
Osceola	B 1	13	7/16/93	<i>Fusconaia flava</i>	37.92	25.73	35.55
Osceola	B1	13	7/16/93	<i>Fusconaia flava</i>	38.80	27.95	38.74
Osceola	B1	14	7/16/93	<i>Proterea laevissima</i>	87.53	23.66	66.68
Osceola	B1	14	7/16/93	<i>Fusconaia flava</i>	57.62	37.73	49.43
Osceola	B1	14	7/16/93	<i>Fusconaia flava</i>	42.33	30.87	40.17
Osceola	B 1	14	7/16/93	<i>Fusconaia flava</i>	28.53	19.39	25.68
Osceola	B 1	14	7/16/93	<i>Fusconaia flava</i>	56.83	33.65	50.45
Osceola	B 1	14	7/16/93	<i>Fusconaia flava</i>	30.98	22.06	27.60
Osceola	B1	14	7/16/93	<i>Fusconaia flava</i>	64.42	40.75	56.68
Osceola	B 1	15	7/16/93	<i>Fusconaia flava</i>	25.76	17.95	23.38
Osceola	B2	1	7/16/93	NONE			
Osceola	B2	2	7/16/93	<i>Amblema plicata</i>	102.30	56.44	90.30
Osceola	B2	2	7/16/93	<i>Amblema plicata</i>	113.10	57.84	111.10
Osceola	B2	2	7/16/93	<i>Fusconaia flava</i>	80.00	50.12	69.24
Osceola	B2	2	7/16/93	<i>Fusconaia flava</i>	74.07	47.09	64.04
Osceola	B2	3	7/16/93	<i>Fusconaia flava</i>	48.00	36.12	45.43
Osceola	B2	3	7/16/93	<i>Proptera alata</i>	151.52	39.22	134.60
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	50.74	34.38	46.61
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	47.43	37.41	47.86
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	46.57	35.10	46.95
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	29.56	20.57	26.80
Osceola	B2	4	7/16/93	<i>Quadrula pustulosa</i>	22.91	14.14	20.51
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	27.47	16.66	23.99
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	33.90	24.88	32.39
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	55.21	34.68	52.55
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	31.18	22.43	29.57
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	42.28	31.11	39.83
Osceola	B2	4	7/16/93	<i>Fusconaia flava</i>	31.33	23.57	30.10
Osceola	B2	5	7/16/93	<i>Fusconaia flava</i>	33.65	23.14	31.29
Osceola	B2	5	7/16/93	<i>Lasmigona complanata</i>	55.38	8.88	49.71
Osceola	B2	6	7/16/93	<i>Amblema plicata</i>	60.55	34.91	58.21
Osceola	B2	6	7/16/93	<i>Fusconaia flava</i>	27.62	18.88	24.30
Osceola	B2	7	7/16/93	<i>Truncilla truncata</i>	47.54	28.52	40.54
Osceola	B2	7	7/16/93	<i>Quadrula pustulosa</i>	42.07	27.85	41.19
Osceola	B2	8	7/16/93	<i>Obliquaria reflexa</i>	36.46	23.23	30.96
Osceola	B2	8	7/16/93	<i>Obliquaria reflexa</i>	37.23	22.85	31.02
Osceola	B2	8	7/16/93	<i>Proptera laevissima</i>	92.96	26.98	73.20
Osceola	B2	8	7/16/93	<i>Obliquaria retlexa</i>	35.30	22.28	28.71
Osceola	B2	8	7/16/93	<i>Fusconaia tlava</i>	36.98	25.35	34.28
Osceola	B2	10	7/16/93	<i>Ligumia recta</i>	88.18	26.77	40.24
Osceola	B2	10	7/16/93	<i>Obovaria olivaria</i>	65.74	39.60	63.24
Osceola	B2	11	7/16/93	NONE			

NONE denotes no animals found at the sampling station.

Page A2-18

Appendix 2 - Qualitative sampling mussel data

Site	Transect	Station	Date	Species	Length (mm)	Width (mm)	Height (mm)
Osceola	B2	12	7/16/93	NONE			
Osceola	B2	13	7/16/93	NONE			
Osceola	B2	14	7/16/93	NONE			
Osceola	B2	15	7/16/93	NONE			
Osceola	B3	1	7/19/93	<i>Fusconaia flava</i>	84.42	52.16	72.01
Osceola	B3	1	7/19/93	<i>Fusconaia flava</i>	85.99	48.84	69.84
Osceola	B3	1	7/19/93	<i>Fusconaia flava</i>	75.34	50.42	64.12
Osceola	B3	1	7/19/93	<i>Fusconaia flava</i>	53.04	39.75	48.85
Osceola	B3	1	7/19/93	<i>Fusconaia flava</i>	60.36	35.66	50.75
Osceola	B3	1	7/19/93	<i>Fusconaia flava</i>	23.76	15.83	20.97
Osceola	B3	1	7/19/93	<i>Fusconaia flava</i>	71.63	42.22	60.83
Osceola	B3	1	7/19/93	<i>Truncilla truncata</i>	17.45	10.96	14.63
Osceola	B3	2	7/19/93	<i>Proptera alata</i>	128.25	33.90	106.75
Osceola	B3	3	7/19/93	<i>Fusconaia flava</i>	48.49	31.65	43.26
Osceola	B3	3	7/19/93	<i>Fusconaia flava</i>	20.80	12.80	18.74
Osceola	B3	3	7/19/93	<i>Fusconaia flava</i>	21.63	14.32	19.69
Osceola	B3	3	7/19/93	<i>Quadrula pustulosa</i>	60.94	38.15	54.24
Osceola	B3	3	7/19/93	<i>Quadrula pustulosa</i>	59.97	38.76	58.42
Osceola	B3	3	7/19/93	<i>Amblema plicata</i>	37.69	21.64	31.25
Osceola	B3	4	7/19/93	<i>Obliqueria reflexa</i>	45.89	26.24	42.74
Osceola	B3	4	7/19/93	<i>Obliqueria reflexa</i>	43.80	21.02	33.17
Osceola	B3	4	7/19/93	<i>Obliqueria reflexa</i>	38.42	20.52	29.03
Osceola	B3	4	7/19/93	<i>Quadrula pustulosa</i>	60.51	37.66	56.67
Osceola	B3	5	7/19/93	<i>Fusconaia flava</i>	27.36	19.70	25.52
Osceola	B3	5	7/19/93	<i>Fusconaia flava</i>	30.90	22.69	28.01
Osceola	B3	5	7/19/93	<i>Fusconaia flava</i>	27.44	17.58	24.36
Osceola	B3	6	7/19/93	<i>Fusconaia flava</i>	68.95	43.27	57.64
Osceola	B3	6	7/19/93	<i>Fusconaia flava</i>	70.00	40.60	59.02
Osceola	B3	6	7/19/93	<i>Fusconaia flava</i>	50.88	35.82	45.57
Osceola	B3	6	7/19/93	<i>Truncilla truncata</i>	46.49	29.72	39.16
			7/19/93	NONE			
			7/19/93	NONE			
			7/19/93	NONE			
			7/19/93	NONE			
			7/19/93	NONE			
			7/19/93	NONE			
Osceola	B3	13	7/19/93	NONE			
Osceola	B3	14	7/19/93	NONE			
Osceola	B3	15	7/19/93	NONE			
Osceola	B4	1	7/21/93	<i>Lampsilis radiata siliquiodae</i>	96.46	42.41	55.72
Osceola	B4	1	7/21/93	<i>Tritigonia verrucosa</i>	142.25	42.60	75.29
Osceola	B4	1	7/21/93	<i>Proptera data</i>	71.84	28.39	53.31
Osceola	B4	2	7/21/93	<i>Truncilla truncata</i>	49.00	26.28	48.56
Osceola	B4	2	7/21/93	<i>Truncilla truncata</i>	44.43	25.12	36.95
Osceola	B4	2	7/21/93	<i>Quadrula metanevra</i>	82.25	50.62	66.46
Osceola	B4	2	7/21/93	<i>Truncilla truncata</i>	47.29	27.51	39.22
Osceola	B4	2	7/21/93	<i>Fusconaia flava</i>	63.41	38.36	52.79

NONE denotes no animals found at the sampling station.

Page A2-19

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	B4	2	7/21/93	<i>Fusconaia flava</i>	81.05	50.46	66.65
Osceola	B4	3	7/21/93	UNKNOWN	120.74	39.00	101.92
Osceola	B4	3	7/21/93	<i>Fusconaia flava</i>	73.63	47.03	71.44
Osceola	B4	3	7/21/93	<i>Quadrula metanevra</i>	76.83	48.95	69.63
Osceola	B4	3	7/21/93	<i>Truncilla truncata</i>	48.15	31.89	42.69
Osceola	B4	3	7/21/93	<i>Fusconaia flava</i>	47.86	30.96	43.87
Osceola	B4	3	7/21/93	<i>Amblema plicate</i>	96.53	52.69	90.35
Osceola	B4	3	7/21/93	<i>Truncilla truncatg</i>	61.40	42.46	55.16
Osceola	B4	4	7/21/93	<i>Lam silis ovata ventricosa</i>	127.53	69.44	105.57
Osceola	B4	4	7/21/93	<i>Quadrula metanevra</i>	74.61	42.09	74.10
Osceola	B4	4	7/21/93	<i>Quadrula ustulosa</i>	67.51	44.26	63.36
Osceola	B4	4	7/21/93	<i>Truncilla truncata</i>	39.92	21.98	34.52
Osceola	B4	5	7/21/93	NONE			
Osceola	B4	6	7/21/93	NONE			
Osceola	B4	7	7/21/93	NONE			
Osceola	B4	8	7/21/93	NONE			
Osceola	B4	9	7/21/93	NONE			
Osceola	B4	10	7/21/93	NONE			
Osceola	B4	11	7/21/93	NONE			
Osceola	B4	12	7/21/93	NONE			
Osceola	B4	13	7/21/93	NONE			
Osceola	B4	14	7/21/93	NONE			
Osceola	B4	15	7/21/93	NONE			
Osceola	B5	1	7/21/93	<i>Fusconaia flava</i>	68.23	40.23	63.23
Osceola	B5	1	7/21/93	<i>Proptera alata</i>	132.00	43.97	121.69
Osceola	B5	2	7/21/93	<i>Proptera alata</i>	144.67	41.69	125.48
Osceola	B5	2	7/21/93	<i>Lasmigona complanata</i>	126.36	30.00	113.01
Osceola	B5	2	7/21/93	<i>Fusconaia flava</i>	79.73	51.61	76.68
Osceola	B5	2	7/21/93	<i>Fusconaia flava</i>	88.43	48.21	81.26
Osceola	B5	2	7/21/93	<i>Fusconaia flava</i>	49.67	35.56	48.09
Osceola	B5	2	7/21/93	<i>Truncilla truncata</i>	49.78	29.86	43.86
Osceola	B5	2	7/21/93	<i>Quadrula pustulosa</i>	68.36	45.43	66.32
Osceola	B5	2	7/21/93	<i>Amblema plicate</i>	80.46	48.74	78.34
Osceola	B5	2	2/21/93	<i>Truncilla truncata</i>	32.12	20.35	28.90
Osceola	B5	2	7/21/93	<i>Truncilla truncata</i>	29.95	16.65	26.88
Osceola	B5	3	7/21/93	<i>Tritigonia verrucosa</i>	131.74	41.03	113.06
Osceola	B5	3	7/21/93	<i>Tritigonia verrucosa</i>	112.54	36.13	96.56
Osceola	B5	3	7/21/93	<i>Quadrula metanevra</i>	114.44	56.90	106.20
Osceola	B5	3	7/21/93	<i>Cyclonaias tuberculata</i>	84.13	43.64	81.18
Osceola	B5	3	7/21/93	<i>Truncilla truncata</i>	34.10	19.76	28.67
Osceola	B5	3	7/21/93	<i>Lampsilis ovata ventricosa</i>	88.04	48.43	68.70
Osceola	B5	4	7/21/93	<i>Quadrula pustulosa</i>	56.13	33.87	53.80
Osceola	B5	4	7/21/93	<i>Truncilla truncate</i>	62.39	36.37	53.87
Osceola	B5	4	7/21/93	<i>Tritigonia verrucosa</i>	53.90	15.70	47.44
Osceola	B5	5	7/21/93	<i>Truncilla truncata</i>	28.28	17.80	24.84
Osceola	B5	6	7/21/93	NONE			
Osceola	BS	7	7/21/93	NONE			

NONE denotes no animals found at the sampling station.

Page A2-20

Appendix 2 - Qualitative sampling mussel data

<b>Site</b>	<b>Transect</b>	<b>Station</b>	<b>Date</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	B5	8	7/21/93	NONE			
Osceola	B5	9	7/21/93	NONE			
Osceola	B5	10	7/21/93	NONE			
Osceola	B5	11	7/21/93	NONE			
Osceola	B5	12	7/21/93	NONE			
Osceola	B5	13	7/21/93	NONE			
Osceola	B5	14	7/21/93	NONE			
Osceola	B5	15	7/21/93	NONE			

NONE denotes no animals found at the sampling station.

age A2-21

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Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AE	1	<i>Ellipsaria lineolata</i>	68.45	25.85	53.20
Interstate	AE	1	<i>Leptodea fra ilis</i>	19.00	5.60	11.30
Interstate	AE	1	<i>Obliqueriareflexa</i>	47.10	30.25	38.65
Interstate	AE	1	<i>Obliqueria reflexa</i>	21.30	14.30	18.00
Interstate	AE	1	<i>Truncilla donaciformis</i>	21.70	11.05	15.15
Interstate	AE	1	<i>Truncilla donaciformis</i>	20.30	11.70	15.90
Interstate	AE	1	<i>Truncilla donaciformis</i>	26.60	15.75	19.05
Interstate	AE	1	<i>Truncilla truncata</i>	69.55	38.05	51.25
Interstate	AE	1	<i>Truncilla truncata</i>	39.25	23.45	33.10
Interstate	AE	1	<i>Truncilla truncata</i>	23.05	12.45	13.05
Interstate	AE	1	<i>Truncilla truncata</i>	55.65	37.95	48.20
Interstate	AE	1	<i>Truncilla truncata</i>	33.65	20.30	28.30
Interstate	AE	1	<i>Truncilla truncata</i>	32.65	17.80	27.05
Interstate	AE	1	<i>Truncilla truncata</i>	21.36	11.85	12.20
Interstate	AE	1	<i>Truncilla truncata</i>	26.00	14.60	20.60
Interstate	AE	1	<i>Truncilla truncata</i>	29.00	16.80	23.35
Interstate	AE	1	<i>Truncilla truncata</i>	22.25	11.95	12.40
Interstate	AE	1	<i>Truncilla truncata</i>	26.10	13.00	20.45
Interstate	AE	1	<i>Truncilla truncata</i>	13.10	6.10	9.15
Interstate	AE	2	<i>Quadrula pustulosa</i>	43.05	27.40	42.60
Interstate	AE	2	<i>Truncilla donaciformis</i>	24.60	14.10	17.85
Interstate	AE	2	<i>Truncilla truncata</i>	47.80	28.80	38.45
Interstate	AE	2	<i>Truncilla truncata</i>	22.15	12.25	17.65
Interstate	AE	2	<i>Truncilla truncata</i>	22.45	11.80	17.05
Interstate	AE	2	<i>Truncilla truncata</i>	49.40	33.35	44.30
Interstate	AE	2	<i>Truncilla truncata</i>	39.55	24.05	32.60
Interstate	AE	2	<i>Truncilla truncata</i>	45.15	23.00	33.65
Interstate	AE	3	<i>Actinonaias carinata</i>	21.50	6.35	12.15
Interstate	AE	3	<i>Actinonaias carinata</i>	19.85	5.20	10.35
Interstate	AE	3	<i>Quadrula pustulosa</i>	72.35	46.00	69.95
Interstate	AE	3	<i>Quadrula pustulosa</i>	13.85	7.50	11.90
Interstate	AE	3	<i>Truncilla donaciformis</i>	30.80	16.80	23.35
Interstate	AE	3	<i>Truncilla donaciformis</i>	16.50	7.30	10.60
Interstate	AE	3	<i>Truncilla truncata</i>	53.30	37.20	46.05
Interstate	AE	3	<i>Truncilla truncata</i>	48.65	27.95	39.65
Interstate	AE	3	<i>Truncilla truncata</i>	22.85	13.70	17.65
Interstate	AE	3	<i>Truncilla truncata</i>	20.60	9.75	14.80
Interstate	AE	3	<i>Truncilla truncata</i>	14.05	6.35	9.90
Interstate	AE	3	<i>Truncilla truncata</i>	18.35	11.35	14.90
Interstate	AE	4	<i>Actinonaias carmata</i>	22.50	6.30	13.50
Interstate	AE	4	<i>Ellipsaria lineolata</i>	7.70	3.45	5.25
Interstate	AE	4	<i>Truncilla donaciformis</i>	28.80	16.90	20.95
Interstate	AE	4	<i>Truncilla truncata</i>	45.00	24.30	35.80
Interstate	AE	4	<i>Truncilla truncata</i>	35.36	23.20	30.40
Interstate	AE	4	<i>Truncilla truncata</i>	22.30	12.75	17.80
Interstate	AE	4	<i>Truncilla truncata</i>	33.35	20.85	.25
Interstate	AE	4	<i>Truncilla truncata</i>	28.95	16.60	24.05

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Length Species</b>	<b>Width (mm)</b>	<b>Height (mm)</b>	<b>(mm)</b>
Interstate	AE	4	Truncilla truncata	27.00	16.25	23.05
Interstate	AE	4	Truncilla truncata	30.45	17.60	26.05
Interstate	AE	4	Truncilla truncata	26.90	17.20	23.05
Interstate	AE	4	Truncilla truncata	18.90	7.10	9.90
Interstate	AE	4	Truncilla truncata	21.10	12.30	17.00
Interstate	AE	4	Truncilla truncata	20.00	11.30	15.20
Interstate	AE	5	Actinonaias carinata	10.25	3.60	5.75
Interstate	AE	5	Obovaria olivaria		54.15	32.00
Interstate	AE	5	Quadrula ustulosa		44.70	28.70
Interstate	AE	5	Truncilla truncata		47.70	29.90
Interstate	AE	5	Truncilla truncata		49.40	29.40
Interstate	AE	5	Truncilla truncata		23.10	13.35
Interstate	AE	5	Truncilla truncata		38.50	24.15
Interstate	AE	5	Truncilla truncata		33.25	19.00
Interstate	AE	5	Truncilla truncata		19.35	10.65
Interstate	AE	5	Truncilla truncata		44.70	28.00
Interstate	AE	6	Cyclonaia tuberculata		74.25	39.90
Interstate	AE	6	Elliptio dilatata		92.40	31.65
Interstate	AE	6	Fusconaia flava		18.00	10.15
Interstate	AE	6	Quadrula pustulosa		76.85	44.25
Interstate	AE	6	Truncilla donaciformis		24.60	13.25
Interstate	AE	6	Truncilla truncam		41.45	25.30
Interstate	AE	6	Truncilla truncata		38.40	23.00
Interstate	AE	6	Truncilla truncata		48.55	28.55
Interstate	AE	6	Truncilla truncata		21.85	11.75
Interstate	AE	6	Truncilla truncatg		22.55	12.65
Interstate	AE	6	Truncilla truncata		18.75	11.55
Interstate	AE	6	Truncilla truncata		19.55	12.20
Interstate	AE	7	Actinonaias carinata		20.55	6.10
Interstate	AE	7	Cyclonai.ts tuberculata		84.40	48.15
Interstate	AE	7	Leptodea fragilis		50.40	16.70
Interstate	AE	7	Leptodea fragilis		23.90	6.40
Interstate	AE	7	Quadrula pustulosa		16.55	9.85
Interstate	AE	7	Truncilla truncata		50.85	30.85
Interstate	AE	7	Truncilla truncata		16.25	9.50
Interstate	AE	7	Truncilla truncatg		60.10	35.20
Interstate	AE	7	Truncilla truncata		42.00	26.05
Interstate	AE	7	Truncilla truncata		47.30	31.80
Interstate	AE	7	Truncilla truncata		45.35	29.50
Interstate	AE	7	Truncilla truncata		35.90	22.60
Interstate	AE	7	Truncilla truncata		19.65	11.70
Interstate	AE	8	Actinonaias carinata		20.80	5.90
Interstate	AE	8	Actinonaias carinata		31.95	10.10
Interstate	AE	8	Carunculina parva		15.10	5.75
Interstate	AE	8	Leptodea fragilis		22.95	5.95
Interstate	AE	8	Truncilla truncata		35.50	23.10
Interstate	AE	8	Truncilla truncata		21.80	13.45

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AM	2	<i>Truncilla truncata</i>	69.95	43.20	60.20
Interstate	AM	2	<i>Truncilla truncata</i>	40.90	25.15	35.80
Interstate	AM	2	<i>Truncilla truncata</i>	34.80	21.85	30.30
Interstate	AM	2	<i>Truncilla truncata</i>	29.50	17.70	26.30
Interstate	AM	2	<i>Truncilla truncata</i>	23.90	13.15	19.20
Interstate	AM	2	<i>Truncilla truncata</i>	21.40	12.10	16.40
Interstate	AM	2	<i>Truncilla truncata</i>	59.60	32.20	43.85
Interstate	AM	2	<i>Truncilla truncata</i>	38.90	24.05	32.85
Interstate	AM	2	<i>Truncilla truncata</i>	30.45	18.10	25.95
Interstate	AM	2	<i>Truncilla truncata</i>	30.55	17.55	25.65
Interstate	AM	2	<i>Truncilla truncata</i>	12.80	10.60	14.00
Interstate	AM	3	<i>Ellipsaria lineolata</i>	53.80	24.50	47.40
Interstate	AM	3	<i>Quadrula ustulosa</i>	53.15	32.10	51.55
Interstate	AM	3	<i>Quadrula pustulosa</i>	31.10	20.45	28.70
Interstate	AM	3	<i>Tritogonia verrucosa</i>	59.15	17.50	35.40
Interstate	AM	3	<i>Truncilla donacifomis</i>	28.10	16.50	20.70
Interstate	AM	3	<i>Truncilla donaciformis</i>	20.40	14.60	18.65
Interstate	AM	3	<i>Truncilla donaciformis</i>	19.35	14.85	17.55
Interstate	AM	3	<i>Truncilla truncata</i>	55.65	35.25	42.70
Interstate	AM	3	<i>Truncilla truncata</i>	42.60	26.05	36.35
Interstate	AM	3	<i>Truncilla truncata</i>	34.35	21.15	29.00
Interstate	AM	3	<i>Truncilla truncata</i>	41.60	24.15	33.55
Interstate	AM	3	<i>Truncilla truncata</i>	41.90	24.80	36.60
Interstate	AM	3	<i>Truncilla truncata</i>	27.00	17.65	22.45
Interstate	AM	3	<i>Truncilla truncata</i>	33.15	21.60	28.45
Interstate	AM	3	<i>Truncilla truncata</i>	34.60	23.30	30.50
Interstate	AM	3	<i>Truncilla truncata</i>	31.55	19.15	25.95
Interstate	AM	3	<i>Truncilla truncata</i>	37.00	21.70	32.60
Interstate	AM	3	<i>Truncilla truncata</i>	20.10	11.80	16.20
Interstate	AM	3	<i>Truncilla truncata</i>	33.65	22.40	29.20
Interstate	AM	3	<i>Truncilla truncata</i>	34.05	20.25	28.15
Interstate	AM	3	<i>Truncilla truncata</i>	33.15	27.20	20.25
Interstate	AM	3	<i>Truncilla truncata</i>	22.80	13.25	19.45
Interstate	AM	3	<i>Truncilla truncata</i>	26.70	15.50	22.10
Interstate	AM	3	<i>Truncilla truncata</i>	22.05	12.70	17.35
Interstate	AM	3	<i>Truncilla truncata</i>	25.85	16.85	22.10
Interstate	AM	3	<i>Truncilla truncata</i>	30.85	11.75	24.45
Interstate	AM	3	<i>Truncilla truncata</i>	23.7.5	12.55	13.00
Interstate	AM	3	<i>Truncilla truncata</i>	24.10	14.80	20.10
Interstate	AM	3	<i>Truncilla truncata</i>	19.95	12.10	16.40
Interstate	AM	3	<i>Truncilla truncata</i>	14.65	7.10	10.45
Interstate	AM	4	<i>Actinonaias carinata</i>	42.85	5.80	11.70
Interstate	AM	4	<i>Actinonaias carinata</i>	10.90	4.05	6.35
Interstate	AM	4	<i>Carunculina arva</i>	10.35	3.90	6.05
Interstate	AM	4	<i>Carunculina parva</i>	7.90	2.75	4.70
Interstate	AM	4	<i>Olivovaria olivaria</i>	56.85	33.70	46.20
Interstate	AM	4	<i>Ohovaria olivaria</i>	15.90	8.35	11.50

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AE	8	<i>Truncilla truncata</i>	12.95	6.65	9.45
Interstate	AE	8	<i>Truncilla truncata</i>	13.60	7.95	9.95
Interstate	AE	9	<i>Cyclonaias tuberculata</i>	80.15	43.90	81.55
Interstate	AE	9	<i>Truncilla truncata</i>	34.80	21.65	28.95
Interstate	AE	9	<i>Truncilla truncata</i>	29.50	16.25	24.00
Interstate	AE	10	<i>Proptera alata</i>	93.20	30.50	89.80
Interstate	AE	10	<i>Truncilla truncata</i>	44.85	27.35	40.00
Interstate	AE	10	<i>Truncilla truncata</i>	48.45	28.05	39.70
Interstate	AE	10	<i>Truncilla truncata</i>	48.35	24.55	36.85
Interstate	AE	10	<i>Truncilla truncata</i>	37.45	20.90	30.70
Interstate	AE	10	<i>Truncilla truncata</i>	40.40	24.05	34.20
Interstate	AE	10	<i>Truncilla truncata</i>	24.50	14.95	19.20
Interstate	AE	10	<i>Truncilla truncata</i>	20.75	12.65	17.10
Interstate	AE	10	<i>Truncilla truncata</i>	21.90	14.45	17.60
Interstate	AE	10	<i>Truncilla truncata</i>	14.05	6.45	9.75
Interstate	AE	10	<i>Truncilla truncata</i>	22.40	12.85	17.30
Interstate	AE	10	<i>Truncilla truncata</i>	19.45	11.05	15.20
Interstate	AE	10	<i>Truncilla truncata</i>	27.75	17.80	23.90
Interstate	AM	1	<i>Actinonaias carinata</i>	37.65	11.10	30.40
Interstate	AM	1	<i>Ellipsaria lineolata</i>	34.70	10.25	30.05
Interstate	AM	1	<i>Quadrula pustulosa</i>	64.45	32.85	67.00
Interstate	AM	1	<i>Quadrula pustulosa</i>	29.60	20.20	29.60
Interstate	AM	1	<i>Truncilla donaciformis</i>	29.05	15.10	26.35
Interstate	AM	1	<i>Truncilla donaciformis</i>	14.00	6.25	11.30
Interstate	AM	1	<i>Truncilla donaciformis</i>	19.70	11.15	15.95
Interstate	AM	1	<i>Truncilla donaciformis</i>	19.60	10.95	15.40
Interstate	AM	1	<i>Truncilla donaciformis</i>	20.30	11.70	15.20
Interstate	AM	1	<i>Truncilla donaciformis</i>	21.90	12.15	18.35
Interstate	AM	1	<i>Truncilla donaciformis</i>	21.80	12.20	17.55
Interstate	AM	1	<i>Truncilla truncata</i>	46.70	33.10	42.35
Interstate	AM	1	<i>Truncilla truncata</i>	39.60	22.50	33.15
Interstate	AM	1	<i>Truncilla truncata</i>	32.70	19.50	25.80
Interstate	AM	1	<i>Truncilla truncata</i>	33.20	17.95	28.95
Interstate	AM	1	<i>Truncilla truncata</i>	23.50	11.55	19.70
Interstate	AM	1	<i>Truncilla truncata</i>	19.50	11.50	16.20
Interstate	AM	1	<i>Truncilla truncata</i>	21.05	12.25	18.25
Interstate	AM	1	<i>Truncilla truncata</i>	49.45	31.75	44.35
Interstate	AM	1	<i>Truncilla truncata</i>	36.35	21.90	31.40
Interstate	AM	1	<i>Truncilla truncata</i>	33.15	25.40	29.35
Interstate	AM	1	<i>Truncilla truncata</i>	27.45	7.10	23.20
Interstate	AM	1	<i>Truncilla truncata</i>	14.90	8.10	10.65
Interstate	AM	1	<i>Truncilla truncata</i>	20.00	11.60	17.20
Interstate	AM	2	<i>Actinonaias carinata</i>	88.90	44.75	74.55
Interstate	AM	2	<i>Quadrula pustulosa</i>	47.35	30.95	44.60
Interstate	AM	2	<i>Truncilla donaciformis</i>	21.20	14.20	17.35
Interstate	AM	2	<i>Truncilla donaciformis</i>	25.75	14.75	20.40
Interstate	AM	2	<i>Truncilla donaciformis</i>	27.80	14.70	21.25

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AM	4	<i>Quadrula pustulosa</i>	49.40	31.00	45.49
Interstate	AM	4	<i>Quadrula pustulosa</i>	23.50	24.55	20.90
Interstate	AM	4	<i>Quadrula pustulosa</i>	16.35	10.55	14.65
Interstate	AM	4	<i>Tritogonia verrucosa</i>	96.45	34.70	57.50
Interstate	AM	4	<i>Truncilla donaciformis</i>	39.15	18.00	26.10
Interstate	AM	4	<i>Truncilla donaciformis</i>	20.35	11.15	13.65
Interstate	AM	4	<i>Truncilla truncata</i>	26.00	13.40	20.85
Interstate	AM	4	<i>Truncilla truncata</i>	21.10	11.65	16.35
Interstate	AM	4	<i>Truncilla truncata</i>	26.40	15.65	21.35
Interstate	AM	4	<i>Truncilla truncata</i>	23.25	13.30	18.40
Interstate	AM	4	<i>Truncilla truncata</i>	20.90	12.00	12.80
Interstate	AM	4	<i>Truncilla truncata</i>	22.15	11.85	16.95
Interstate	AM	4	<i>Truncilla truncata</i>	24.15	12.25	17.60
Interstate	AM	4	<i>Truncilla truncata</i>	13.55	7.60	9.80
Interstate	AM	4	<i>Truncilla truncata</i>	10.10	3.90	6.85
Interstate	AM	4	<i>Truncilla truncata</i>	5.60	2.50	3.40
Interstate	AM	4	<i>Truncilla truncata</i>	7.25	2.70	4.55
Interstate	AM	4	<i>Truncilla truncata</i>	38.40	23.40	32.20
Interstate	AM	4	<i>Truncilla truncata</i>	31.60	12.90	25.80
Interstate	AM	4	<i>Truncilla truncata</i>	37.25	22.20	30.65
Interstate	AM	4	<i>Truncilla truncata</i>	43.25	26.85	34.85
Interstate	AM	4	<i>Truncilla truncata</i>	54.75	41.10	46.05
Interstate	AM	4	<i>Truncilla truncata</i>	27.05	11.40	23.05
Interstate	AM	4	<i>Truncilla truncata</i>	55.10	36.00	43.80
Interstate	AM	4	<i>Truncilla truncata</i>	34.60	27.50	28.65
Interstate	AM	4	<i>Truncilla truncata</i>	21.45	11.80	17.15
Interstate	AM	4	<i>Truncilla truncata</i>	25.35	15.35	20.45
Interstate	AM	4	<i>Truncilla truncata</i>	28.50	17.15	29.20
Interstate	AM	4	<i>Truncilla truncata</i>	22.55	14.05	18.55
Interstate	AM	4	<i>Truncilla truncata</i>	29.50	28.35	25.30
Interstate	AM	4	<i>Truncilla truncata</i>	24.90	13.25	19.30
Interstate	AM	5	<i>Actinonaias carinata</i>	57.50	21.90	42.45
Interstate	AM	5	<i>Alasmidonta viridis</i>	9.75	3.35	5.75
Interstate	AM	5	<i>Leptodea fragilis</i>	24.35	6.30	12.40
Interstate	AM	5	<i>Quadrula metanevra</i>	70.70	42.75	63.70
Interstate	AM	5	<i>Truncilla donaciformis</i>	20.25	12.95	14.55
Interstate	AM	5	<i>Truncilla donaciformis</i>	23.10	12.01	15.55
Interstate	AM	5	<i>Truncilla donaciformis</i>	22.30	13.40	15.40
Interstate	AM	5	<i>Truncilla truncata</i>	55.95	32.70	45.75
Interstate	AM	5	<i>Truncilla truncata</i>	46.00	28.10	40.00
Interstate	AM	5	<i>Truncilla truncata</i>	40.75	25.22	34.35
Interstate	AM	5	<i>Truncilla truncata</i>	44.35	29.95	39.65
Interstate	AM	5	<i>Truncilla truncata</i>	39.15	18.40	26.05
Interstate	AM	5	<i>Truncilla truncata</i>	26.50	14.50	22.50
Interstate	AM	5	<i>Truncilla truncata</i>	32.50	19.25	26.00
Interstate	AM	5	<i>Truncilla truncata</i>	16.60	8.35	13.45
Interstate	AM	5	<i>Truncilla truncata</i>	22.25	12.80	18.00

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>WidthHeight (mm)</b>
Interstate	AM	5	<i>Truncilla truncata</i>	18.70	10.95 14.00
Interstate	AM	5	<i>Truncilla truncata</i>	22.70	12.25 17.70
Interstate	AM	5	<i>Truncilla truncata</i>	33.00	16.40 24.90
Interstate	AM	5	<i>Truncilla truncata</i>	31.70	13.25 26.10
Interstate	AM	5	<i>Truncilla truncata</i>	26.60	15.65 20.75
Interstate	AM	5	<i>Truncilla truncata</i>	16.45	9.15 14.15
Interstate	AM	5	<i>Truncilla truncata</i>	14.55	7.00 9.90
Interstate	AM	5	<i>Truncilla truncata</i>	12.40	6.65 9.60
Interstate	AM	5	<i>Truncilla truncata</i>	12.90	6.65 8.55
Interstate	AM	5	<i>Truncilla truncata</i>	14.30	7.85 10.80
Interstate	AM	5	<i>Truncilla truncata</i>	6.30	2.65 4.15
Interstate	AM	6	<i>Actinonaias carinata</i>	19.45	5.50 10.90
Interstate	AM	6	<i>Fusconaia flava</i>	20.05	11.30 12.20
Interstate	AM	6	<i>Quadrula pustulosa</i>	46.10	31.00 43.30
Interstate	AM	6	<i>Truncilla donaciformis</i>	22.55	12.60 15.65
Interstate	AM	6	<i>Truncilla truncata</i>	21.40	12.10 17.50
Interstate	AM	6	<i>Truncilla truncata</i>	20.90	10.50 15.45
Interstate	AM	6	<i>Truncilla truncata</i>	19.65	11.40 16.60
Interstate	AM	6	<i>Truncilla truncata</i>	6.50	2.65 4.30
Interstate	AM	6	<i>Truncilla truncata</i>	6.45	2.35 3.75
Interstate	AM	6	<i>Truncilla truncata</i>	15.75	7.50 11.20
Interstate	AM	6	<i>Truncilla truncata</i>	49.50	30.10 39.65
Interstate	AM	6	<i>Truncilla truncata</i>	39.65	25.95 34.50
Interstate	AM	6	<i>Truncilla truncata</i>	48.40	33.45 44.85
Interstate	AM	6	<i>Truncilla truncata</i>	40.40	23.75 33.10
Interstate	AM	6	<i>Truncilla truncata</i>	39.30	21.55 33.00
Interstate	AM	6	<i>Truncilla truncata</i>	40.95	25.15 33.15
Interstate	AM	6	<i>Truncilla truncata</i>	21.70	13.35 17.40
Interstate	AM	6	<i>Truncilla truncata</i>	41.85	22.50 33.40
Interstate	AM	6	<i>Truncilla truncata</i>	32.55	13.20 26.00
Interstate	AM	6	<i>Truncilla truncata</i>	24.55	13.50 19.25
Interstate	AM	6	<i>Truncilla truncata</i>	29.00	16.65 22.65
Interstate	AM	6	<i>Truncilla truncata</i>	26.15	15.50 22.85
Interstate	AM	6	<i>Truncilla truncata</i>	21.40	12.45 17.20
Interstate	AM	6	<i>Truncilla truncata</i>	32.25	13.25 26.85
Interstate	AM	6	<i>Truncilla truncata</i>	26.10	16.15 21.20
Interstate	AM	6	<i>Truncilla truncata</i>	21.95	12.10 17.45
Interstate	AM	6	<i>Truncilla truncata</i>	31.70	19.55 27.10
Interstate	AM	6	<i>Truncilla truncata</i>	24.10	15.35 20.55
Interstate	AM	7	<i>Actinonaias carinata</i>	18.00	7.90 11.20
Interstate	AM	7	<i>Quadrula pustulosa</i>	52.75	31.35 .50.00
Interstate	AM	7	<i>Truncilla donaciformis</i>	27.65	14.90 20.25
Interstate	AM	7	<i>Truncilla donaciformis</i>	19.05	10.80 14.05
Interstate	AM	7	<i>Truncilla truncata</i>	48.50	28.45 34.60
Interstate	AM	7	<i>Truncilla truncata</i>	38.65	26.45 35.15
Interstate	AM	7	<i>Truncilla truncata</i>	32.40	19.60 27.45
Interstate	AM	7	<i>Truncilla truncata</i>	20.40	12.15 16.50

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AM	7	<i>Truncilla truncata</i>	24.40	13.05	19.25
Interstate	AM	7	<i>Truncilla truncata</i>	22.65	12.05	17.70
Interstate	AM	7	<i>Truncilla truncata</i>	22.55	11.90	17.00
Interstate	AM	7	<i>Truncilla truncata</i>	20.05	11.30	15.30
Interstate	AM	7	<i>Truncilla truncata</i>	23.30	12.50	18.40
Interstate	AM	7	<i>Truncilla truncata</i>	21.40	11.70	16.40
Interstate	AM	7	<i>Truncilla truncata</i>	14.30	6.80	10.20
Interstate	AM	7	<i>Truncilla truncata</i>	14.80	7.70	11.00
Interstate	AM	7	<i>Truncilla truncata</i>	7.00	2.65	4.30
Interstate	AM	7	<i>Truncilla truncata</i>	6.55	2.55	4.20
Interstate	AM	8	<i>Actinonaias carinata</i>	20.25		10.70
Interstate	AM	8	<i>Ellipsaria lineolata</i>	48.00	23.10	41.80
Interstate	AM	8	<i>Obliqueria reflexa</i>	30.80	19.05	23.45
Interstate	AM	8	<i>Obliqueria reflexa</i>	30.15	18.95	24.15
Interstate	AM	8	<i>Proptera alata</i>	163.55	57.05	
Interstate	AM	8	<i>Truncilla donaciformis</i>	23.60	16.90	14.20
Interstate	AM	8	<i>Truncilla donaciformis</i>	19.95	12.75	14.05
Interstate	AM	8	<i>Truncilla donaciformis</i>	24.35	14.30	17.50
Interstate	AM	8	<i>Truncilla donaciformis</i>	22.90	13.30	16.40
Interstate	AM	8	<i>Truncilla donaciformis</i>	21.40	11.60	15.40
Interstate	AM	8	<i>Truncilla donaciformis</i>	23.75	15.05	17.50
Interstate	AM	8	<i>Truncilla donaciformis</i>	35.90	19.50	25.00
Interstate	AM	8	<i>Truncilla donaciformis</i>	27.80	14.75	19.45
Interstate	AM	8	<i>Truncilla donaciformis</i>	25.05	14.80	18.15
Interstate	AM	8	<i>Truncilla donaciformis</i>	24.20	11.95	17.00
Interstate	AM	8	<i>Truncilla truncata</i>	55.20	32.00	47.10
Interstate	AM	8	<i>Truncilla truncata</i>	28.95	12.15	24.50
Interstate	AM	8	<i>Truncilla truncata</i>	46.35	25.60	38.60
Interstate	AM	8	<i>Truncilla truncata</i>	26.95	15.35	21.50
Interstate	AM	8	<i>Truncilla truncata</i>	39.95	25.80	34.15
Interstate	AM	8	<i>Truncilla truncata</i>	23.60	13.20	19.55
Interstate	AM	8	<i>Truncilla truncata</i>	29.70	17.90	26.60
Interstate	AM	8	<i>Truncilla truncata</i>	26.05	13.50	20.60
Interstate	AM	8	<i>Truncilla truncata</i>	24.55	16.10	20.90
Interstate	AM	8	<i>Truncilla truncata</i>	20.85	11.85	16.00
Interstate	AM	8	<i>Truncilla truncata</i>	22.50	12.35	17.15
Interstate	AM	8	<i>Truncilla truncata</i>	21.75	11.85	17.35
Interstate	AM	8	<i>Truncilla truncata</i>	13.00	6.74	9.35
Interstate	AM	8	<i>Truncilla truncata</i>	21.90	11.65	15.70
Interstate	AM	8	<i>Truncilla truncata</i>	21.15	13.35	16.95
Interstate	AM	9	<i>Cyclonaias tuberculata</i>	9.95	5.80	8.60
Interstate	AM	9	<i>Quadrula pustulosa</i>	42.60	29.0.5	42.55
Interstate	AM	9	<i>Truncilla donaciformis</i>	28.05	16.30	20.05
Interstate	AM	9	<i>Truncilla donaciformis</i>	24.50	14.70	16.85
Interstate	AM	9	<i>Truncilla donaciformis</i>	28.40	15.20	18.55
Interstate	AM	9	<i>Truncilla truncata</i>	49.10	32.70	43.75
Interstate	AM	9	<i>Truncilla truncata</i>	37.15	21.85	32.45

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AM	9	<i>Truncilla truncata</i>	48.20	29.60	42.75
Interstate	AM	9	<i>Truncilla truncata</i>	37.40	22.00	30.20
Interstate	AM	9	<i>Truncilla truncata</i>	38.70	30.00	37.80
Interstate	AM	9	<i>Truncilla truncata</i>	23.25	12.50	18.20
Interstate	AM	9	<i>Truncilla truncata</i>	4.60	2.25	3.25
Interstate	AM	9	<i>Truncilla truncata</i>	28.85	16.25	23.05
Interstate	AM	10	<i>Carunculina arva</i>	17.15	3.90	8.15
Interstate	AM	10	<i>Quadrula pustulosa</i>	33.55	23.80	32.55
Interstate	AM	10	<i>Truncilla truncata</i>	51.70	41.50	42.45
Interstate	AM	10	<i>Truncilla truncata</i>	35.10	20.75	30.20
Interstate	AM	10	<i>Truncilla truncata</i>	40.75	22.40	33.95
Interstate	AW	1	NONE			
Interstate	AW	2	<i>Fusconaia flava</i>	26.70	13.35	24.20
Interstate	AW	2	<i>Proptera alata</i>	152.50	40.65	94.55
Interstate	AW	2	<i>Truncilla donaciformis</i>	21.10	11.80	15.80
Interstate	AW	2	<i>Truncilla donaciformis</i>	15.50	8.35	11.60
Interstate	AW	2	<i>Truncilla donaciformis</i>	23.80	13.50	18.45
Interstate	AW	2	<i>Truncilla truncata</i>	41.35	28.20	37.50
Interstate	AW	2	<i>Truncilla truncata</i>	18.90	10.95	16.20
Interstate	AW	2	<i>Truncilla truncata</i>	22.95	13.45	18.00
Interstate	AW	3	<i>Fusconaia flava</i>	9.70	4.50	6.95
Interstate	AW	3	<i>Obliquaria reflexa</i>	27.60	17.45	22.60
Interstate	AW	3	<i>Proptera alata</i>	136.50	39.05	90.00
Interstate	AW	3	<i>Quadrula pustulosa</i>	23.75	14.35	21.65
Interstate	AW	3	<i>Quadrula quadrula</i>	46.55	30.05	43.40
Interstate	AW	3	<i>Truncilla donaciformis</i>	19.80	12.40	15.40
Interstate	AW	3	<i>Truncilla donaciformis</i>	20.80	12.85	16.45
Interstate	AW	3	<i>Truncilla truncata</i>	21.50	11.10	17.30
Interstate	AW	4	<i>Cyclonaias tuberculata</i>	12.60	7.05	10.75
Interstate	AW	4	<i>Obliquaria reflexa</i>	27.30	18.25	22.70
Interstate	AW	4	<i>Proptera alata</i>	58.10	15.50	32.85
Interstate	AW	4	<i>Quadrula pustulosa</i>	40.15	29.10	38.80
Interstate	AW	4	<i>Quadrula pustulosa</i>	18.00	12.10	17.00
Interstate	AW	4	<i>Truncilla donaciformis</i>	31.20	15.70	20.70
Interstate	AW	4	<i>Truncilla donaciformis</i>	27.70	15.70	19.60
Interstate	AW	4	<i>Truncilla donaciformis</i>	17.45	9.75	13.70
Interstate	AW	4	<i>Truncilla donaciformis</i>	17.95	9.25	18.10
Interstate	AW	4	<i>Truncilla truncata</i>	31.25	18.25	26.90
Interstate	AW	4	<i>Truncilla truncata</i>	18.50	10.95	14.50
Interstate	AW	4	<i>Truncilla truncata</i>	25.40	13.50	19.70
Interstate	AW	4	<i>Truncilla truncata</i>	28.25	15.40	20.00
Interstate	AW	4	<i>Truncilla truncata</i>	22.90	12.65	19.20
Interstate	AW	4	<i>Truncilla truncata</i>	19.60	11.00	15.00
Interstate	AW	4	<i>Truncilla truncata</i>	21.00	15.60	20.70
Interstate	AW	4	<i>Truncilla truncata</i>	17.20	10.30	14.65
Interstate	AW	4	<i>Truncilla truncata</i>	21.80	12.50	16.70
Interstate	AW	4	<i>Truncilla truncata</i>	19.25	11.90	15.70

NONE denotes no animals found at that sampling site.

Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AW	4	<i>Truncilla truncata</i>	14.80	7.85	11.50
Interstate	AW	4	<i>Truncilla truncata</i>	22.25	13.55	18.45
Interstate	AW	4	<i>Truncilla truncata</i>	14.90	7.50	11.00
Interstate	AW	5	<i>Leptodea fragilis</i>	21.00	6.25	13.20
Interstate	AW	5	<i>Le todea fragilis</i>	19.50	5.55	11.40
Interstate	AW	5	<i>Quadrula pustulosa</i>	19.00	11.10	17.10
Interstate	AW	5	<i>Quadrula pustulosa</i>	24.70	15.90	22.65
Interstate	AW	5	<i>Truncilla truncata</i>	37.45	20.80	32.00
Interstate	AW	5	<i>Truncilla truncata</i>	21.75	12.30	16.60
Interstate	AW	5	<i>Truncilla truncata</i>	13.35	6.65	9.50
Interstate	AW	6	<i>Obliquaria reflexa</i>	20.50	11.05	14.85
Interstate	AW	6	<i>Quadrula pustulosa</i>	12.95	7.10	11.25
Interstate	AW	6	<i>Truncilla donaciformis</i>	23.70	14.15	17.20
Interstate	AW	6	<i>Truncilladonaciformis</i>	19.70	12.50	15.55
Interstate	AW	6	<i>Truncilla donaciformis</i>	19.35	10.35	14.00
Interstate	AW	6	<i>Truncilla donaciformis</i>	25.60	13.25	18.25
Interstate	AW	6	<i>Truncilla truncata</i>	29.65	17.55	25.85
Interstate	AW	6	<i>Truncilla truncata</i>	12.50	6.10	8.70
Interstate	AW	6	<i>Truncilla truncata</i>	13.80	7.20	10.35
Interstate	AW	6	<i>Truncilla truncata</i>	30.25	18.05	23.45
Interstate	AW	6	<i>Truncilla truncata</i>	20.80	10.70	15.85
Interstate	AW	6	<i>Truncilla truncata</i>	14.55	7.10	10.70
Interstate	AW	6	<i>Truncilla truncata</i>	17.35	8.70	12.40
Interstate	AW	6	<i>Truncilla truncata</i>	17.45	7.80	11.95
Interstate	AW	6	<i>Truncilla truncata</i>	23.70	14.00	18.85
Interstate	AW	6	<i>Truncilla truncata</i>	16.00	7.75	12.50
Interstate	AW	6	<i>Truncilla truncata</i>	17.00	8.30	13.10
Interstate	AW	6	<i>Truncilla truncata</i>	25.50	13.30	19.90
Interstate	AW	6	<i>Truncilla truncata</i>	31.15	18.00	25.80
Interstate	AW	6	<i>Truncilla truncata</i>	32.65	22.95	25.95
Interstate	AW	6	<i>Truncilla truncata</i>	63.60	34.00	51.30
Interstate	AW	6	<i>Truncilla truncata</i>	63.35	32.90	42.55
Interstate	AW	6	<i>Truncilla truncata</i>	25.55	13.60	20.85
Interstate	AW	6	<i>Truncilla truncata</i>	25.15	13.90	19.60
Interstate	AW	6	<i>Truncilla truncata</i>	34.05	19.30	28.15
Interstate	AW	7	<i>Pleurobema sintoxia</i>	33.75	23.35	34.60
Interstate	AW	7	<i>Quadrula pustulosa</i>	38.65	25.15	37.70
Interstate	AW	7	<i>Tritogonia vetucosa</i>	81.20	24.50	50.00
Interstate	AW	7	<i>Truncilla donaciformis</i>	26.75	13.75	18.55
Interstate	AW	7	<i>Truncilla donaciformis</i>	21.25	11.80	15.20
Interstate	AW	7	<i>Truncilla truncata</i>	43.00	26.40	36.55
Interstate	AW	7	<i>Truncilla truncata</i>	28.45	27.75	24.00
Interstate	AW	7	<i>Truncilla truncata</i>	23.35	12.90	18.05
Interstate	AW	7	<i>Truncilla truncata</i>	29.60	7.75	23.45
Interstate	AW	7	<i>Truncilla truncata</i>	20.30	12.20	15.90
Interstate	AW	7	<i>Truncilla truncata</i>	22.55	13.60	18.20
Interstate	AW	7	<i>Truncilla truncata</i>	19.50	11.35	16.35

NONE denotes no animals found at that sampling site.

Page A3-

AppeAix~3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	AW	7	<i>Truncilla truncata</i>	15.90	9.10	12.35
Interstate	AW	7	<i>Truncilla truncata</i>	21.10	11.90	17.10
Interstate	AW	8	<i>Le todea fragilis</i>	26.80	7.25	16.40
Interstate	AW	8	<i>Obliqueria reflexa</i>	48.20	22.30	34.80
Interstate	AW	8	<i>Obliqueria reflexa</i>	21.05	11.45	15.60
Interstate	AW	8	<i>Proptera alata</i>	116.35	26.10	97.90
Interstate	AW	8	<i>Quadrula ustulosa</i>	12.45	6.60	11.00
Interstate	AW	8	<i>Truncilla donaciformis</i>	19.00	10.95	13.70
Interstate	AW	8	<i>Truncilla donaciformis</i>	17.35	10.10	12.30
Interstate	AW	8	<i>Truncilla donacifomis</i>	24.45	13.85	16.10
Interstate	AW	8	<i>Truncilla donaciformis</i>	39.15	22.90	26.35
Interstate	AW	8	<i>Truncilla donaciformis</i>	30.00	18.10	20.55
Interstate	AW	8	<i>Truncilla donaciformis</i>	18.00	9.20	12.05
Interstate	AW	8	<i>Truncilla truncata</i>	70.60	42.85	53.10
Interstate	AW	8	<i>Truncilla truncata</i>	50.10	28.90	42.30
Interstate	AW	8	<i>Truncilla truncata</i>	15.05	8.10	11.50
Interstate	AW	9	<i>Tritogonia verrucosa</i>	55.75	21.40	33.15
Interstate	AW	9	<i>Truncilla donaciformis</i>	35.40	17.50	23.50
Interstate	AW	9	<i>Truncilla truncata</i>	37.15	22.70	32.10
Interstate	AW	9	<i>Truncilla truncata</i>	29.30	18.05	25.75
Interstate	AW	9	<i>Truncilla truncata</i>	20.10	12.00	17.10
Interstate	AW	9	<i>Truncilla truncata</i>	27.60	17.30	21.65
Interstate	AW	9	<i>Truncilla truncata</i>	33.15	12.75	17.50
Interstate	AW	10	<i>Quadrula pustulosa</i>	14.80	9.00	12.80
Interstate	AW	10	<i>Truncilla donaciformis</i>	24.70	14.35	17.40
Interstate	AW	10	<i>Truncilla donaciformis</i>	15.45	8.90	11.75
Interstate	AW	10	<i>Truncilla truncata</i>	19.60	11.15	15.55
Interstate	AW	10	<i>Truncilla truncata</i>	21.55	12.95	17.35
Interstate	AW	10	<i>Truncilla truncata</i>	14.10	7.30	10.00
Interstate	BE	1	<i>Actinonaias carinata</i>	88.25	33.55	53.75
Interstate	BE	1	<i>Actinonaias carinata</i>	10.40	4.15	6.50
Interstate	BE	1	<i>Actinonaias carinata</i>	105.15	43.85	68.35
Interstate	BE	1	<i>Elliptio dilatata</i>	81.20	22.80	36.40
Interstate	BE	1	<i>Elliptio dilatata</i>	104.65	35.25	54.55
Interstate	BE	1	<i>Leptodea fragilis</i>	18.80	5.40	10.45
Interstate	BE	1	<i>Truncilla donaciformis</i>	17.60	8.90	12.90
Interstate	BE	1	<i>Truncilla truncata</i>	45.35	31.00	41.20
Interstate	BE	1	<i>Truncilla truncata</i>	52.40	32.85	46.75
Interstate	BE	1	<i>Truncilla truncata</i>	54.66	30.95	45.75
Interstate	BE	1	<i>Truncilla truncata</i>	27.10	16.45	21.90
Interstate	BE	1	<i>Truncilla truncata</i>	39.55	25.15	36.25
Interstate	BE	2	<i>Quadrula metanevra</i>	83.90	45.50	74.55
Interstate	BE	2	<i>Quadrula pustulosa</i>	63.60	38.55	64.90
Interstate	BE	2	<i>Truncilla truncata</i>	52.50	31.40	44.15
Interstate	BE	2	<i>Truncilla truncata</i>	48.60	24.90	38.20
Interstate	BE	2	<i>Truncilla truncata</i>	41.15	24.30	33.25
Interstate	BE	2	<i>Truncilla truncata</i>	48.00	28.75	39.50

NONE denotes no animals found at that sampling site.

Page A3-1

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	BE	2	<i>Truncilla truncata</i>	54.25	34.25	46.80
Interstate	BE	2	<i>Truncilla truncata</i>	45.30	24.95	36.30
Interstate	BE	2	<i>Truncilla truncata</i>	35.25	19.55	28.30
Interstate	BE	2	<i>Truncilla truncata</i>	28.95	14.40	21.20
Interstate	BE	2	<i>Truncilla truncata</i>	26.65	<b>12.95</b>	20.40
Interstate	BE	2	<i>Truncilla truncata</i>	50.45	27.50	39.25
Interstate	BE	3	<i>Fusconaia ebena</i>	63.00	36.30	60.30
Interstate	BE	3	<i>Leptodea fragilis</i>	21.60	6.20	11.70
Interstate	BE	3	<i>Obliquaria reflexa</i>	39.25	26.90	31.35
Interstate	BE	3	<i>Quadrula metanevra</i>	76.90	44.45	66.90
Interstate	BE	3	<i>Quadrula ustulosa</i>	47.45	28.35	46.20
Interstate	BE	3	<i>Quadrula pustulosa</i>	46.80	24.80	43.00
Interstate	BE	3	<i>Quadrula ustulosa</i>	79.80	40.95	74.15
Interstate	BE	3	<i>Truncilla truncata</i>	52.15	27.85	38.35
Interstate	BE	3	<i>Truncilla truncata</i>	40.35	23.75	33.70
Interstate	BE	3	<i>Truncilla truncata</i>	57.60	34.60	41.70
Interstate	BE	3	<i>Truncilla truncata</i>	20.95	12.70	17.20
Interstate	BE	3	<i>Truncilla truncata</i>	51.00	29.20	39.90
Interstate	BE	3	<i>Truncilla truncata</i>	24.70	13.80	19.95
Interstate	BE	3	<i>Truncilla truncata</i>	16.75	9.35	12.55
Interstate	BE	3	<i>Truncilla truncata</i>	14.80	7.80	10.80
Interstate	BE	4	<i>Actinonaias carinata</i>	49.50	16.50	29.20
Interstate	BE	4	<i>Actinonaias carinata</i>	84.10	24.60	46.20
Interstate	BE	4	<i>Alasmidonta marginata</i>	67.40	36.55	34.60
Interstate	BE	4	<i>Cyclonaias tuberculata</i>	74.80	46.80	65.90
Interstate	BE	4	<i>Fusconaia ebena</i>	68.60	42.40	61.90
Interstate	BE	4	<i>Ligumia recta</i>	99.60	32.40	43.10
Interstate	BE	4	<i>Obliquaria reflexa</i>	31.30	11.25	26.40
Interstate	BE	4	<i>Pleurobema sintoxia</i>	56.55	39.50	50.90
Interstate	BE	4	<i>Quadrula metanevra</i>	64.25	42.80	59.50
Interstate	BE	4	<i>Tritogonia verrucosa</i>	40.05	9.35	19.00
Interstate	BE	4	<i>Truncilla truncata</i>	69.90	40.65	48.75
Interstate	BE	4	<i>Truncilla truncata</i>	55.85	36.90	33.90
Interstate	BE	4	<i>Truncilla truncata</i>	44.80	28.85	35.70
Interstate	BE	4	<i>Truncilla truncata</i>	50.45	30.00	37.95
Interstate	BE	4	<i>Truncilla truncata</i>	21.09	18.10	17.90
Interstate	BE	4	<i>Truncilla truncata</i>	33.20	18.45	26.60
Interstate	BE	4	<i>Truncilla truncata</i>	24.10	13.00	17.95
Interstate	BE	4	<i>Truncilla truncata</i>	40.70	22.30	30.00
Interstate	BE	4	<i>Truncilla truncata</i>	44.10	25.30	36.80
Interstate	BE	5	<i>Actinonaias carinata</i>	56.75	18.80	34.90
Interstate	BE	5	<i>Cyclonaias tuberculata</i>	86.80	43.90	79.55
Interstate	BE	5	<i>Leptodea fragilis</i>	68.10	23.15	41.25
Interstate	BE	5	<i>Plagiola triquetra</i>	36.05	20.50	20.90
Interstate	BE	5	<i>Proptera alata</i>	31.10	7.75	22.50
Interstate	BE	5	<i>Quadrula pustulosa</i>	43.55	28.25	40.60
Interstate	BE	5	<i>Quadrula pustulosa</i>	82.95	44.10	84.15

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length</b> (mm)	<b>Width</b> (mm)	<b>Height</b> (mm)
Interstate	BE	5	<i>Tritogonia verrucosa</i>	82.00	27.10	50.10
Interstate	BE	5	<i>Truncilla truncata</i>	48.30	26.45	35.30
Interstate	BE	5	<i>Truncilla truncata</i>	39.30	21.60	29.30
Interstate	BE	5	<i>Truncilla truncata</i>	43.15	26.30	36.20
Interstate	BE	5	<i>Truncilla truncata</i>	46.40	29.35	40.25
Interstate	BE	5	<i>Truncilla truncata</i>	40.20	22.55	37.80
Interstate	BE	5	<i>Truncilla truncata</i>	15.30	7.85	11.00
Interstate	BE	5	<i>Truncilla truncata</i>	22.40	12.20	16.95
Interstate	BE	6	<i>Actinonaias carinata</i>	20.00	4.90	10.40
Interstate	BE	6	<i>Truncilla donaciformis</i>	26.50	14.05	18.05
Interstate	BE	6	<i>Truncilla truncata</i>	57.25	35.55	45.60
Interstate	BE	6	<i>Truncilla truncata</i>	50.15	26.60	38.20
Interstate	BE	6	<i>Truncilla truncata</i>	56.75	31.00	41.70
Interstate	BE	6	<i>Truncilla truncata</i>	21.10	11.25	15.85
Interstate	BE	6	<i>Truncilla truncata</i>	37.35	21.85	30.75
Interstate	BE	7	<i>Actinonaias carinata</i>	79.20	35.00	52.85
Interstate	BE	7	<i>Obovaria olivaria</i>	76.55	47.75	61.15
Interstate	BE	7	<i>Tritogonia verrucosa</i>	86.90	30.55	55.80
Interstate	BE	7	<i>Truncilla truncata</i>	29.65	16.50	24.00
Interstate	BE	7	<i>Truncilla truncata</i>	18.00	8.20	12.65
Interstate	BE	7	<i>Truncilla truncata</i>	40.95	21.45	33.35
Interstate	BE	7	<i>Truncilla truncata</i>	23.00	11.70	12.45
Interstate	BE	7	<i>Truncilla truncata</i>	20.40	12.00	16.50
Interstate	BE	7	<i>Truncilla truncata</i>	13.70	6.70	10.10
Interstate	BE	7	<i>Truncilla truncata</i>	13.65	7.45	10.20
Interstate	BE	8	<i>Actinonaias carinata</i>	101.10	38.10	62.60
Interstate	BE	8	<i>Leptodea fragilis</i>	109.60	35.10	65.95
Interstate	BE	8	<i>Leptodea fragilis</i>	54.25	17.35	34.00
Interstate	BE	8	<i>Tritogonia verrucosa</i>	100.65	34.90	62.25
Interstate	BE	8	<i>Truncilla truncata</i>	59.70	32.85	46.15
Interstate	BE	8	<i>Truncilla truncata</i>	45.70	28.80	33.70
Interstate	BE	8	<i>Truncilla truncata</i>	23.85	15.00	19.50
Interstate	BE	8	<i>Truncilla truncata</i>	44.55	26.75	37.05
Interstate	BE	8	<i>Truncilla truncata</i>	37.65	19.00	29.70
Interstate	BE	9	<i>Actinonaias carinata</i>	17.30	4.80	9.50
Interstate	BE	9	<i>Obliqueria reflexa</i>	29.20	16.65	24.45
Interstate	BE	9	<i>Quadrula pustulosa</i>	16.00	9.80	14.00
Interstate	BE	9	<i>Quadrula pustulosa</i>	40.65	26.55	39.45
Interstate	BE	9	<i>Truncilla truncata</i>	49.50	33.15	40.60
Interstate	BE	9	<i>Truncilla truncata</i>	22.50	12.10	17.05
Interstate	BE	9	<i>Truncilla truncata</i>	29.00	16.25	22.15
Interstate	BE	9	<i>Truncilla truncata</i>	25.30	14.85	20.75
Interstate	BE	9	<i>Truncilla truncata</i>	23.05	11.70	17.75
Interstate	BE	9	<i>Truncilla truncata</i>	26.70	14.50	21.00
Interstate	BE	9	<i>Truncilla truncata</i>	15.80	8.35	11.50
Interstate	BE	9	<i>Truncilla truncata</i>	14.25	7.15	9.90
Interstate	BE	9	<i>Truncilla truncata</i>	20.50	12.05	16.50

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	BE	9	<i>Truncilla truncata</i>	14.25	8.40	10.60
Interstate	BE	10	<i>Actinonaias carinata</i>	84.50	35.05	52.10
Interstate	BE	10	<i>Actinonaias minata</i>	14.20	3.90	7.50
Interstate	BE	10	<i>Alasmidonta marginata</i>	45.30	17.50	22.90
Interstate	BE	10	<i>Ellipsaria lineolata</i>	87.40	39.60	72.85
Interstate	BE	10	<i>Plagiola tri uetra</i>	20.85	10.30	13.65
Interstate	BE	10	<i>Quadrula metanevra</i>	64.25	41.95	54.95
Interstate	BE	10	<i>Tritogonia verrucosa</i>	103.50	34.30	66.60
Interstate	BE	10	<i>Truncilla truncata</i>	53.25	35.50	43.40
Interstate	BE	10	<i>Truncilla truncata</i>	56.20	29.40	42.95
Interstate	BE	10	<i>Truncilla truncata</i>	46.15	26.60	35.30
Interstate	BE	10	<i>Truncilla truncata</i>	48.30	32.35	39.90
Interstate	BE	10	<i>Truncilla truncata</i>	33.80	19.10	27.65
Interstate	BE	10	<i>Truncilla truncata</i>	47.05	27.30	39.95
Interstate	BE	10	<i>Truncilla truncata</i>	67.55	37.40	57.15
Interstate	BE	10	<i>Truncilla truncata</i>	56.20	34.00	42.45
Interstate	BM	1	<i>Elliptio dilatata</i>	36.05	9.75	12.45
Interstate	BM	1	<i>Fusconaia flava</i>	45.00	30.40	41.35
Interstate	BM	1	<i>Truncilla truncata</i>	7.25	2.50	4.60
Interstate	BM	2	NONE			
Interstate	BM	3	NONE			
Interstate	BM	4	<i>Quadrula metanevra</i>	54.00	35.40	51.00
Interstate	BM	4	<i>Truncilla donaciformis</i>	23.45	12.30	16.55
Interstate	BM	4	<i>Truncilla truncata</i>	22.95	11.90	17.55
Interstate	BM	4	<i>Truncilla truncata</i>	12.30	9.45	14.05
Interstate	BM	4	<i>Obliqueria reflexa</i>	30.95	13.15	26.60
Interstate	BM	5	<i>Obliqueria reflexa</i>	15.75	13.95	8.15
Interstate	BM	5	<i>Truncilla donaciformis</i>	19.95	8.05	13.65
Interstate	BM	6	<i>Carunculina parva</i>	21.40	4.85	15.95
Interstate	BM	6	<i>Quadrula pustulosa</i>	51.25	33.50	47.70
Interstate	BM	6	<i>Truncilla truncata</i>	46.20	25.40	39.05
Interstate	BM	7	<i>Actinonaias carinata</i>	39.90	13.20	31.20
Interstate	BM	7	<i>Truncilla truncata</i>	44.85	25.55	38.85
Interstate	BM	8	<i>Actinonaias carinata</i>	15.30	4.00	8.30
Interstate	BM	8	<i>Carunculina parva</i>	46.75	13.05	21.35
Interstate	BM	8	<i>Truncilla donaciformis</i>	24.05	10.90	15.60
Interstate	BM	9	<i>Truncilla donaciformis</i>	22.10	13.50	15.70
Interstate	BM	9	<i>Truncilla truncata</i>	15.25	8.40	11.30
Interstate	BM	10	<i>Actinonaias carinata</i>	10.90	4.30	8.90
Interstate	BM	10	<i>Truncilla truncata</i>	24.45	13.40	21.10
Interstate	BW	1	<i>Actinonaias carinata</i>	20.30	5.50	
Interstate	BW	1	<i>Ellipsaria lineolata</i>	40.75	11.00	27.90
Interstate	BW	1	<i>Truncilla truncata</i>	47.90	26.75	37.10
Interstate	BW	1	<i>Truncilla truncata</i>	44.15	26.10	38.15
Interstate	BW	1	<i>Truncilla truncata</i>	40.85	23.50	34.65
Interstate	BW	1	<i>Truncilla truncata</i>	41.60	22.45	32.95
Interstate	BW	1	<i>Truncilla truncata</i>	39.00	23.95	34.65

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	BW	1	<i>Truncilla truncata</i>	37.00	20.40	31.00
Interstate	BW	2	<i>Lampsilis ovata ventricosa</i>	98.55	47.65	68.10
Interstate	BW	2	<i>Quadrula ustulosa</i>	66.60	43.20	61.55
Interstate	BW	2	<i>Truncilla truncata</i>	32.10	18.40	25.15
Interstate	BW	2	<i>Truncilla truncata</i>	34.90	17.60	26.60
Interstate	BW	3	<i>Carunculina parva</i>	34.45	12.60	17.50
Interstate	BW	3	<i>Carunculina arva</i>	34.50	12.10	17.00
Interstate	BW	3	<i>Elli saria lineolata</i>	16.50	11.05	5.50
Interstate	BW	3	<i>Elliptio dilatata</i>	88.50	29.60	46.85
Interstate	BW	3	<i>Truncilla truncata</i>	45.30	29.40	40.00
Interstate	BW	3	<i>Truncilla truncata</i>	44.20	23.65	36.20
Interstate	BW	3	<i>Truncilla truncata</i>	40.85	22.60	4.70
Interstate	BW	3	<i>Truncilla truncata</i>	16.30	10.90	8.10
Interstate	BW	3	<i>Obliqueria reflexa</i>	41.90	30.30	35.90
Interstate	BW	4	<i>Actinonaias carinata</i>	16.80	4.60	9.00
Interstate	BW	4	<i>Truncilla truncata</i>	39.40	20.30	30.95
Interstate	BW	4	<i>Truncilla truncata</i>	35.50	18.70	27.25
Interstate	BW	4	<i>Truncilla truncatg</i>	20.90	12.15	16.95
Interstate	BW	4	<i>Truncilla truncata</i>	23.80	12.65	18.05
Interstate	BW	4	<i>Truncilla truncata</i>	14.40	7.35	9.90
Interstate	BW	5	<i>Actinonaias carinata</i>	19.75	5.45	10.85
Interstate	BW	5	<i>Elliptio dilatata</i>	70.30	23.45	36.00
Interstate	BW	5	<i>Fusconaia flava</i>	12.00	6.00	10.40
Interstate	BW	5	<i>Truncilla truncata</i>	44.10	22.25	34.10
Interstate	BW	6	<i>Actinonaias carinata</i>	19.85	5.90	10.50
Interstate	BW	6	<i>Truncilla donaciformis</i>	22.40	12.00	15.95
Interstate	BW	6	<i>Truncilla donaciformis</i>	23.85	13.40	16.70
Interstate	BW	6	<i>Truncilla truncata</i>	52.10	29.90	43.65
Interstate	BW	6	<i>Truncilla truncata</i>	45.95	22.75	34.50
Interstate	BW	6	<i>Truncilla truncata</i>	40.10	4.20	33.90
Interstate	BW	6	<i>Truncilla truncata</i>	38.55	21.10	30.45
Interstate	BW	6	<i>Truncilla truncatg</i>	20.35	10.30	15.70
Interstate	BW	7	<i>Actinonaias carinata</i>	14.35	3.85	7.90
Interstate	BW	7	<i>Actinonaias carinata</i>	14.05	3.75	8.00
Interstate	BW	7	<i>Truncilla truncata</i>	50.75	27.20	40.70
Interstate	BW	7	<i>Truncilla truncata</i>	43.55	24.65	33.70
Interstate	BW	7	<i>Truncilla truncata</i>	32.50	20.80	28.23
Interstate	BW	7	<i>Truncilla truncatg</i>	38.50	2.80	32.45
Interstate	BW	8	<i>Truncilla truncata</i>	42.05	24.20	34.00
Interstate	BW	8	<i>Truncilla truncata</i>	18.20	9.60	14.75
Interstate	BW	9	<i>Actinonaias carinata</i>	81.85	31.55	50.70
Interstate	BW	9	<i>Truncilla truncata</i>	46.10	25.90	36.60
Interstate	BW	9	<i>Truncilla truncata</i>	22.75	12.25	17.70
Interstate	BW	9	<i>Truncilla truncata</i>	16.50	8.70	11.40
Interstate	BW	10	<i>Actinonaias carinata</i>	71.25	27.70	45.80
Interstate	BW	10	<i>Carunculina parva</i>	29.70	11.35	15.65
Interstate	BW	10	<i>Leptodea fragilis</i>	24.00	6.25	13.60

NONE denotes no animals found at that sampling site.

Page A3-1

**Appendix 3 - Quantitative sampling mussel data.**

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>(mm)</b>	<b>Length</b> <b>(mm)</b>	<b>Width</b> <b>(mm)</b>	<b>Height</b>
Interstate	BW	10	Truncilla truncata	39.00	23.30	32.30	
Interstate	BW	10	Truncilla truncata	13.00	6.60	10.05	
Interstate	CE	1	Actinonaias carinata	20.75	5.45	11.25	
Interstate	CE	1	Actinonaias carinata	20.00	6.10	11.25	
Interstate	CE	1	Fusconaia flava	26.70	15.70	23.10	
Interstate	CE	1	Fusconaia flava	24.85	<b>15.95</b>	21.60	
Interstate	CE	1	Quadrula metanevra	34.25	21.50	31.25	
Interstate	CE	2	Truncilla truncata	16.80	9.75	13.55	
Interstate	CE	3	Elliptio dilatata	53.05	15.30	29.25	
Interstate	CE	4	Actinonaias carinata	17.45	4.35	9.05	
Interstate	CE	4	Truncilla truncata	25.00	16.30	22.80	
Interstate	CE	4	Truncilla truncata	23.70	14.30	18.95	
Interstate	CE	5	Leptodea fragilis	19.40	4.80	10.00	
Interstate	CE	6	Truncilla truncata	28.70	17.05	23.35	
Interstate	CE	7	Ellipsaria lineolata	65.50	22.50	38.50	
Interstate	CE	7	Fusconaia flava	26.00	15.50	22.40	
Interstate	CE	7	Ligumia recta	60.10	14.50	28.30	
Interstate	CE	7	Truncilla truncata	36.6_5	18.00	28.25	
Interstate	CE	8	Actinonaias carinata	79.10	30.25	51.50	
Interstate	CE	9	Actinonaias carinata	41.90	13.40	24.45	
Interstate	CE	9	Elliptio dilatata	57.90	15.25	28.15	
Interstate	CE	9	Elliptio dilatata	53.55	15.20	26.05	
Interstate	CE	9	Fusconaia flava	28.80	16.95	25.20	
Interstate	CE	9	Fusconaia flava	26.00	15.50	22.40	
Interstate	CE	9	Ligumia recta	47.95	13.20	22.45	
Interstate	CE	9	Truncilla truncata	27.30	12.50	23.10	
Interstate	CE	9	Truncilla truncata	39.70	21.65	31.50	
Interstate	CE	10	Obovaria olivaria	70.55	46.00	60.00	
Interstate	CE	10	Truncilla truncata	22.40	11.90	16.70	
Interstate	CM	1	Actinonaias carinata	19.00	3.85	7.65	
Interstate	CM	1	Actinonaias carinata	20.00	5.75	10.75	
Interstate	CM	2	Actinonaias carinata	19.85	5.30	9.85	
Interstate	CM	12	Actinonaias carinata	18.25	5.20	10.05	
Interstate	CMS	2	Fusconaia flava	21.50	13.25	17.80	
Interstate	CM	2	Leptodea fragilis	51.15	13.35	29.90	
Interstate	CM	2	Truncilla truncata	15.35	6.30	10.55	
Interstate	CM	13	Truncilla truncata	14.70	11.85	10.35	
Interstate	CM	3	Truncilla truncata	12.20	6.10	8.75	
Interstate	CM	4	Actinonaias carinata	41.55	13.45	24.25	
Interstate	CM	4	Elliptio dilatata	41.90	11.35	20.25	
Interstate	CM	4	Truncilla donaciformis	14.90	6.80	9.60	
Interstate	CM	5	Quadrula metanevra	71.10	40.05	58.75	
Interstate	CM	6	Actinonaias carinata	32.95	10.60	18.70	
Interstate	CM	6	Elliptio dilatata	42.05	10.90	19.25	
Interstate	CM	6	Elliptio dilatata	43.60	12.05	20.10	
Interstate	CM	6	Plagiola triquetra	35.85	20.75	24.65	
Interstate	CM	6	Truncilla truncata	14.45	7.45	10.80	

NONE denotes no animals found at that sampling site.

**Appendix 3 - Quantitative sampling mussel data.**

<b>Location</b>	<b>Site</b>	<b>Quadrat _</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	CM	7	<i>Leptodea fragilis</i>	18.25	4.10	10.55
Interstate	CM	7	<i>Truncilla truncata</i>	20.70	11.10	16.25
Interstate	CM	8	<i>Fusconaia flava</i>	24.00	15.75	21.20
Interstate	CM	8	<i>Fusconaia flava</i>	24.30	16.20	21.25
Interstate	CM	8	<i>Quadrula metanevra</i>	74.40	44.35	59.65
Interstate	CM	8	<i>Truncilla truncata</i>	16.90	8.75	12.25
Interstate	CM	8	<i>Truncilla truncata</i>	15.45	7.50	11.10
Interstate	CM	9	<i>Leptodea fragilis</i>	49.80	15.90	31.25
Interstate	CM	9	<i>Elliptio dilatata</i>	42.80	11.55	19.80
Interstate	CM	9	<i>Elliptio dilatata</i>	46.90	12.05	21.40
Interstate	CM	10	<i>Actinonaias carinata</i>	23.20	6.45	12.65
Interstate	CM	10	<i>Truncilla donaciformis</i>	17.65	7.20	11.00
Interstate	CM	10	<i>Truncilla truncata</i>	39.60	22.65	34.20
Interstate	CM	10	<i>Truncilla truncata</i>	16.15	7.80	11.40
Interstate	CW	1	<i>Actinonaias carinata</i>	49.55	11.05	30.00
Interstate	CW	1	<i>Truncilla truncata</i>	43.00	25.05	35.65
Interstate	CW	1	<i>Truncilla truncata</i>	40.70	21.60	33.75
Interstate	CW	1	<i>Truncilla truncata</i>	41.25	19.85	30.65
Interstate	CW	1	<i>Truncilla truncata</i>	15.70	6.85	10.90
Interstate	CW	2	<i>Actinonaias carinata</i>	8.90	3.25	5.05
Interstate	CW	2	<i>Fusconaia flava</i>	27.05	17.15	22.85
Interstate	CW	2	<i>Quadrula pustulosa</i>	6.05	3.20	5.00
Interstate	CW	2	<i>Tritogonia verrucosa</i>	81.90	23.40	48.05
Interstate	CW	3	<i>Actinonaias carinata</i>	46.10	17.50	28.95
Interstate	CW	3	<i>Fusconaia flava</i>	45.60	31.50	39.85
Interstate	CW	3	<i>Fusconaia flava</i>	23.35	15.65	20.45
Interstate	CW	3	<i>Tritogonia verrucosa</i>	85.85	27.75	54.00
Interstate	CW	4	<i>Truncilla donaciformis</i>	15.50	7.35	10.45
Interstate	CW	5	<i>Truncilla truncata</i>	12.35	11.05	14.45
Interstate	CW	6	<i>Fusconaia flava</i>	25.00	11.70	21.70
Interstate	CW	6	<i>Leptodea fragilis</i>	25.00	6.00	13.80
Interstate	CW	6	<i>Truncilla truncata</i>	20.70	10.75	13.75
Interstate	CW	7	<i>Actinonaias carinata</i>	44.70	16.00	25.25
Interstate	CW	7	<i>Fusconaia flava</i>	22.70	15.50	19.55
Interstate	CW	7	<i>Leptodea fragilis</i>	16.90	5.20	9.20
Interstate	CW	8	<i>Fusconaia flava</i>	24.25	15.75	22.00
Interstate	CW	8	<i>Elliptio dilatata</i>	47.30	17.15	21.60
Interstate	CW	8	<i>Elliptio dilatata</i>	51.30	12.45	23.00
Interstate	CW	8	<i>Plagiola triquetra</i>	35.05	18.50	20.95
Interstate	CW	8	<i>Truncilla truncata</i>	35.55	18.30	26.25
Interstate	CW	9	<i>Elliptio dilatata</i>	52.50	14.70	27.05
Interstate	CW	9	<i>Truncilla truncata</i>	12.30	5.85	8.45
Interstate	CW	10	<i>Fusconaia flava</i>	24.40	15.70	21.40
Interstate	CW	10	<i>Quadrula metanevra</i>	52.55	31.95	46.20
Interstate	DE	1	<i>Amblema plicata</i>	22.55	14.65	20.40
Interstate	DE	1	<i>Elliptio dilatata</i>	71.20	22.75	36.10
Interstate	DE	1	<i>Leptodea fragilis</i>	122.00	37.00	79.50

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	DE	1	<i>Truncilla donaciformis</i>	25.35	15.00	17.15
Interstate	DE	1	<i>Truncilla truncata</i>	40.00	24.70	33.35
Interstate	DE	1	<i>Truncilla truncata</i>	28.30	11.25	24.90
Interstate	DE	1	<i>Truncilla truncata</i>	38.20	22.60	32.35
Interstate	DE	1	<i>Truncilla truncata</i>	17.00	10.20	13.95
Interstate	DE	1	<i>Truncilla truncata</i>	21.50	11.75	16.50
Interstate	DE	1	<i>Truncilla truncata</i>	19.80	10.25	15.45
Interstate	DE	2	<i>Actinonaias carinata</i>	70.50	29.70	45.85
Interstate	DE	2	<i>Leptodea fragilis</i>	18.65	5.25	10.40
Interstate	DE	2	<i>Leptodea fragilis</i>	98.35	29.90	59.45
Interstate	DE	2	<i>Leptodea fragilis</i>	23.00	6.45	12.20
Interstate	DE	2	<i>Truncilla truncata</i>	48.50	28.60	40.30
Interstate	DE	2	<i>Truncilla truncata</i>	22.45	12.75	18.15
Interstate	DE	2	<i>Truncilla truncata</i>	21.90	11.45	16.55
Interstate	DE	2	<i>Truncilla truncata</i>	21.30	11.20	17.30
Interstate	DE	2	<i>Truncilla truncata</i>	23.65	13.15	18.30
Interstate	DE	2	<i>Truncilla truncata</i>	46.45	24.45	35.75
Interstate	DE	2	<i>Truncilla truncata</i>	41.30	25.40	33.50
Interstate	DE	2	<i>Truncilla truncata</i>	40.65	23.95	32.75
Interstate	DE	2	<i>Truncilla truncata</i>	55.45	32.80	44.05
Interstate	DE	3	<i>Elliptio dilatata</i>	77.25	24.05	39.45
Interstate	DE	3	<i>Leptodea fragilis</i>	105.30	35.40	71.50
Interstate	DE	3	<i>Quadrula metanevra</i>	44.80	28.15	39.20
Interstate	DE	3	<i>Quadrula pustulosa</i>	46.50	32.25	45.10
Interstate	DE	3	<i>Quadrula pustulosa</i>	40.60	27.85	37.80
Interstate	DE	3	<i>Quadrula pustulosa</i>	23.60	13.85	20.40
Interstate	DE	3	<i>Truncilla donaciformis</i>	29.15	18.15	22.10
Interstate	DE	3	<i>Truncilla truncata</i>	40.40	26.95	36.35
Interstate	DE	3	<i>Truncilla truncata</i>	32.85	18.30	25.90
Interstate	DE	3	<i>Truncilla truncata</i>	36.65	21.65	29.80
Interstate	DE	3	<i>Truncilla truncata</i>	27.30	16.90	24.60
Interstate	DE	3	<i>Truncilla truncata</i>	27.15	15.60	22.45
Interstate	DE	3	<i>Truncilla truncata</i>	50.95	28.05	39.90
Interstate	DE	3	<i>Truncilla truncata</i>	14.20	8.20	11.60
Interstate	DE	3	<i>Truncilla truncata</i>	14.40	8.75	12.00
Interstate	DE	3	<i>Truncilla truncata</i>	15.60	7.70	10.90
Interstate	DE	3	<i>Truncilla truncata</i>	6.65	2.85	4.40
Interstate	DE	3	<i>Truncilla truncata</i>	41.50	28.60	38.65
Interstate	DE	3	<i>Truncilla truncata</i>	22.60	13.60	18.95
Interstate	DE	3	<i>Truncilla truncata</i>	45.40	27.55	40.45
Interstate	DE	3	<i>Truncilla truncata</i>	51.50	34.55	43.65
Interstate	DE	3	<i>Truncilla truncata</i>	32.05	17.60	25.90
Interstate	DE	3	<i>Truncilla truncata</i>	30.55	18.75	26.30
Interstate	DE	4	<i>Leptodea fragilis</i>	50.90	15.80	32.25
Interstate	DE	4	<i>Truncilla truncata</i>	30.55	18.90	25.25
Interstate	DE	4	<i>Truncilla truncata</i>	21.85	11.50	16.55
Interstate	DE	4	<i>Truncilla truncata</i>	8.05	3.40	5.10

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	DE	4	<i>Truncilla truncata</i>	7.40	3.40	4.70
Interstate	DE	4	<i>Truncilla truncata</i>	6.60	2.80	4.55
Interstate	DE	4	<i>Truncilla truncata</i>	27.45	16.35	24.35
Interstate	DE	4	<i>Truncilla truncata</i>	18.95	10.40	14.10
Interstate	DE	4	<i>Truncilla truncata</i>	7.00	2.65	4.55
Interstate	DE	4	<i>Truncilla truncata</i>	22.90	12.70	17.20
Interstate	DE	5	<i>Actinonaias carinata</i>	8.35	2.85	4.75
Interstate	DE	5	<i>Actinonaias carinata</i>	68.10	41.20	53.15
Interstate	DE	5	<i>Actinonaias carinata</i>	122.45	62.20	88.95
Interstate	DE	5	<i>Amblema licata</i>	7.80	3.00	4.35
Interstate	DE	5	<i>Cyclonaias tuberculata</i>	16.90	10.05	15.35
Interstate	DE	5	<i>Quadrula ustulosa</i>	55.45	37.10	54.50
Interstate	DE	5	<i>Truncilla truncata</i>	21.00	11.60	16.05
Interstate	DE	5	<i>Truncilla truncata</i>	40.60	24.10	34.50
Interstate	DE	5	<i>Truncilla truncata</i>	16.65	8.40	12.25
Interstate	DE	5	<i>Truncilla truncata</i>	59.85	34.10	49.75
Interstate	DE	6	<i>Ellipsaria lineolata</i>	33.15	11.00	25.35
Interstate	DE	6	<i>Plagiola triquetra</i>	36.40	20.45	22.35
Interstate	DE	6	<i>Quadrula pustulosa</i>	37.65	24.50	33.20
Interstate	DE	6	<i>Truncilla donaciformis</i>	22.80	12.15	15.15
Interstate	DE	6	<i>Truncilla donaciformis</i>	26.15	14.40	17.75
Interstate	DE	6	<i>Truncilla truncata</i>	50.25	29.55	39.40
Interstate	DE	6	<i>Truncilla truncata</i>	33.15	21:15	28.50
Interstate	DE	6	<i>Truncilla truncata</i>	18.70	10.70	14.00
Interstate	DE	6	<i>Truncilla truncata</i>	29.65	16.10	24.25
Interstate	DE	6	<i>Truncilla truncata</i>	20.85	12.55	16.55
Interstate	DE	7	<i>Amblema plicata</i>	21.50	12.85	18.85
Interstate	DE	7	<i>Quadrula metanevra</i>	51.35	32.70	46.55
Interstate	DE	7	<i>Quadrula metanevra</i>	63.85	39.50	57.15
Interstate	DE	7	<i>Quadrula pustulosa</i>	62.55	37.10	60.30
Interstate	DE	7	<i>Truncilla donaciformis</i>	21.75	11.60	15.20
Interstate	DE	7	<i>Truncilla truncata</i>	42.70	28.40	37.90
Interstate	DE	7	<i>Truncilla truncata</i>	22.95	12.75	17.95
Interstate	DE	7	<i>Truncilla truncata</i>	19.40	11.55	16.05
Interstate	DE	7	<i>Truncilla truncata</i>	25.25	14.40	20.80
Interstate	DE	7	<i>Truncilla truncata</i>	33.65	18.70	26.95
Interstate	DE	7	<i>Truncilla truncata</i>	31.10	16.50	24.65
Interstate	DE	7	<i>Truncilla truncata</i>	19.70	11.75	15.70
Interstate	DE	8	<i>Actinonaias carinata</i>	38.45	11.85	25.90
Interstate	DE	8	<i>Amblema plicata</i>	99.45	51.00	72.80
Interstate	DE	8	<i>Elliptio dilatata</i>	58.30	15.50	31.90
Interstate	DE	8	<i>Leptodea fragilis</i>	124.45	36.70	82.10
Interstate	DE	8	<i>Quadrula pustulosa</i>	18.15	11.90	16.70
Interstate	DE	8	<i>Truncilla donaciformis</i>	24.40	10.05	17.75
Interstate	DE	8	<i>Truncilla donaciformis</i>	22.90	12.90	16.95
Interstate	DE	8	<i>Truncilla donaciformis</i>	20.55	12.40	15.90
Interstate	DE	8	<i>Truncilia truncata</i>	25.65	15.05	21.35

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling trussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	DM	3	<i>Fusconaia flava</i>	55.90	36.60	46.75
Interstate	DM	3	<i>Fusconaia flava</i>	81.00	42.00	68.10
Interstate	DM	3	<i>Obovaria olivaria</i>	61.77	39.20	55.68
Interstate	DM	3	<i>Plagiola triquetra</i>	13.80	6.76	10.32
Interstate	DM	3	<i>Truncilla truncata</i>	14.34	8.75	12.51
Interstate	DM	3	<i>Truncilla truncata</i>	42.84	29.34	38.57
Interstate	DM	3	<i>Truncilla truncata</i>	41.06	21.92	33.45
Interstate	DM	4	<i>Actinonaias carinata</i>	70.83	29.57	44.66
Interstate	DM	4	<i>Amblema plicata</i>	30.04	16.57	24.12
Interstate	DM	4	<i>Cyclonaias tuberculata</i>	70.44	44.79	63.52
Interstate	DM	4	<i>Leptodea fra ilis</i>	13.95	3.45	7.84
Interstate	DM	4	<i>Plagiola trig uetra</i>	23.25	12.64	15.70
Interstate	DM	4	<i>Truncilla truncata</i>	42.76	23.57	34.17
Interstate	DM	4	<i>Truncilla truncata</i>	38.95	24.35	34.02
Interstate	DM	4	<i>Truncilla truncata</i>	40.78	27.86	34.80
Interstate	DM	4	<i>Truncilla truncata</i>	33.46	20.87	29.10
Interstate	DM	4	<i>Tritogonia verrucosa</i>	78.30	26.10	49.66
Interstate	DM	5	<i>Actinonaias carinata</i>	22.70	11.40	15.40
Interstate	DM	5	<i>Fusconaia tlvata</i>	59.00	35.60	43.50
Interstate	DM	5	<i>Fusconaia flava</i>	54.40	32.90	46.10
Interstate	DM	5	<i>Leptodea fragilis</i>	20.85	6.50	11.10
Interstate	DM	5	<i>Truncilla truncata</i>	43.60	23.00	33.55
Interstate	DM	5	<i>Truncilla truncata</i>	27.30	14.90	20.30
Interstate	DM	6	<i>Ellipsaria lineolata</i>	55.00	29.30	47.40
Interstate	DM	6	<i>Truncilla truncata</i>	45.45	26.50	40.85
Interstate	DM	6	<i>Truncilla truncata</i>	42.20	23.75	35.40
Interstate	DM	6	<i>Truncilla truncata</i>	42.30	28.10	37.15
Interstate	DM	6	<i>Truncilla truncata</i>	38.25	21.40	30.65
Interstate	DM	7	<i>Ifusconaia ebena</i>	71.05	42.15	68.40
Interstate	DM	7	<i>Fusconaia flava</i>	61.00	31.50	51.50
Interstate	DM	7	<i>Fusconaia flava</i>	55.35	35.10	46.35
Interstate	DM	7	<i>Quadrula nodulata</i>	20.65	13.05	18.70
Interstate	DM	7	<i>Truncilla truncata</i>	42.80	25.70	37.10
Interstate	DM	7	<i>Truncilla truncata</i>	18.70	10.15	14.65
Interstate	DM	7	<i>Truncilla truncata</i>	35.70	21.80	31.50
Interstate	DM	7	<i>Truncilla truncata</i>	52.00	31.60	39.75
Interstate	DM	7	<i>Truncilla truncata</i>	22.50	11.75	15_.00
Interstate	DM	8	<i>Actinonaias carinata</i>	57.85	24.50	36.40
Interstate	DM	8	<i>Ellipsaria lineolata</i>	86.55	35.30	74.90
Interstate	DM	8	<i>Quadrula pustulosa</i>	59.65	38.55	58:15
Interstate	DM	8	<i>Truncilla donaciformis</i>	22.60	12.60	16.20
Interstate	DM	8	<i>Truncilla truncata</i>	46.95	29.75	40.50
Interstate	DM	8	<i>Truncilla truncata</i>	23.80	14.00	20.05
Interstate	DM	8	<i>Truncilla truncata</i>	38.65	23.55	32.90
Interstate	DM	8	<i>Truncilla truncata</i>	50.90	30.65	44.80
Interstate	DM	8	<i>Truncilla truncata</i>	32.10	12.50	20.65
Interstate	DM	8	<i>Truncilla truncata</i>	34.30	20.70	28.00

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	DE	8	<i>Truncilla truncata</i>	22.75	14.25	16.70
Interstate	DE	8	<i>Truncilla truncata</i>	21.45	12.70	17.10
Interstate	DE	8	<i>Truncilla truncata</i>	20.25	9.80	15.75
Interstate	DE	9	<i>Amblema licata</i>	29.40	16.80	26.60
Interstate	DE	9	<i>Obovaria olivaria</i>	49.85	28.90	45.45
Interstate	DE	9	<i>Quadrula metanevra</i>	63.25	43.95	59.40
Interstate	DE	9	<i>Truncilla truncata</i>	18.50	11.40	14.20
Interstate	DE	9	<i>Truncilla truncata</i>	35.05	19.75	29.00
Interstate	DE	9	<i>Truncilla truncata</i>	22.65	11.65	18.15
Interstate	DE	9	<i>Truncilla truncata</i>	25.00	14.85	20.15
Interstate	DE	9	<i>Truncilla truncata</i>	19.00	10.55	15.20
Interstate	DE	9	<i>Truncilla truncata</i>	34.70	20.90	29.55
Interstate	DE	9	<i>Truncilla truncata</i>	24.50	13.35	19.15
Interstate	DE	9	<i>Truncilla truncata</i>	23.10	12.25	17.00
Interstate	DE	10	<i>Fusconaia flava</i>	18.80	11.15	16.35
Interstate	DE	10	<i>Fusconaia flava</i>	20.60	11.60	16.95
Interstate	DE	10	<i>Truncilla donaciformis</i>	19.90		13.65
Interstate	DE	10	<i>Truncilla truncata</i>	51.60	31.50	42.60
Interstate	DE	10	<i>Truncilla truncata</i>	25.50	16.20	23.15
Interstate	DE	10	<i>Truncilla truncata</i>	16.05	8.35	11.10
Interstate	DE	10	<i>Truncilla truncata</i>	37.55	20.55	30.10
Interstate	DE	10	<i>Truncilla truncata</i>	22.80	11.70	17.15
Interstate	DM	1	<i>Fusconaia ebena</i>	95.50	53.04	74.15
Interstate	DM	1	<i>Leptodea fragilis</i>	11.10	3.08	6.56
Interstate	DM	1	<i>Leptodea fragilis</i>	20.68	6.10	11.70
Interstate	DM	1	<i>Truncilla truncata</i>	41.88	28.62	38.50
Interstate	DM	1	<i>Truncilla truncata</i>	39.90	23.64	34.60
Interstate	DM	1	<i>Truncilla truncata</i>	26.56	16.62	22.50
Interstate	DM	1	<i>Truncilla truncata</i>	16.30	9.06	13.87
Interstate	DM	1	<i>Truncilla truncata</i>	33.54	18.85	26.62
Interstate	DM	1	<i>Truncilla truncata</i>	18.14	10.42	14.24
Interstate	DM	1	<i>Truncilla truncata</i>	20.75	11.55	16.00
Interstate	DM	1	<i>Truncilla truncata</i>	49.70	28.85	39.38
Interstate	DM	1	<i>Truncilla truncata</i>	37.45	22.06	33.15
Interstate	DM	2	<i>Ellipsaria lineolata</i>	55.21	24.10	43.23
Interstate	DM	2	<i>Lampsilis radiata siliquoidea</i>	18.02	4.92	9.97
Interstate	DM	2	<i>Plagiola triquetra</i>	29.30	15.41	19.72
Interstate	DM	2	<i>Quadrula fragosa</i>	72.09	43.61	65.90
Interstate	DM	2	<i>Truncilla truncata</i>	49.06	31.00	42.88
Interstate	DM	2	<i>Truncilla truncata</i>	45.78	29.60	38.68
Interstate	DM	2	<i>Truncilla truncata</i>	46.00	28.15	40.70
Interstate	DM	2	<i>Truncilla truncata</i>	39.97	22.24	31.85
Interstate	DM	2	<i>Truncilla truncata</i>	34.04	17.32	27.78
Interstate	DM	2	<i>Truncilla truncata</i>	41.35	22.75	35.00
Interstate	DM	2	<i>Truncilla truncata</i>	58.30	36.30	45.55
Interstate	DM	2	<i>Truncilla truncata</i>	26.49	13.65	20.38
Interstate	DM	2	<i>Truncilla truncata</i>	14.04	7.12	9.95

NONE denotes no animals found at that sampling site.

Page A3-1

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	DM	9	<i>Amblema plicata</i>	26.80	15.40	23.45
Interstate	DM	9	<i>Fusconaia flava</i>	52.25	35.90	45.00
Interstate	DM	9	<i>Fusconaia flava</i>	44.85	40.20	30.60
Interstate	DM	9	<i>Truncilla truncata</i>	43.90	29.70	37.35
Interstate	DM	9	<i>Truncilla truncata</i>	12.15	5.75	8.15
Interstate	DM	9	<i>Truncilla truncata</i>	19.70	9.75	15.20
Interstate	DM	9	<i>Truncilla truncata</i>	37.00	22.45	29.65
Interstate	DM	9	<i>Truncilla truncata</i>	14.05	5.75	9.55
Interstate	DM	10	<i>Amblema plicata</i>	63.80	32.30	53.50
Interstate	DM	10	<i>Elli saria lineolata</i>	27.60	19.50	19.90
Interstate	DM	10	<i>Leptodea fragilis</i>	14.40	4.00	8.30
Interstate	DM	10	<i>Quadrula ustulosa</i>	32.80	21.15	30.80
Interstate	DM	10	<i>Truncilla truncata</i>	40.30	27.85	35.60
Interstate	DM	10	<i>Truncilla truncata</i>	23.15	13.30	18.60
Interstate	DM	10	<i>Truncilla truncata</i>	40.50	27.25	36.30
Interstate	DM	10	<i>Truncilla truncata</i>	31.30	20.70	30.10
Interstate	DW	1	<i>Lampsilis radiata siliquoidea</i>	12.40	4.65	10.30
Interstate	DW	1	<i>Leptodea fragilis</i>	14.20	3.30	7.95
Interstate	DW	2	NONE			
Interstate	DW	3	NONE			
Interstate	DW	4	<i>Lampsilis radiata siliquoidea</i>	18.20	4.60	9.65
Interstate	DW	4	<i>Quadrula pustulosa</i>	32.15	19.00	29.35
Interstate	DW	5	<i>Fusconaia flava</i>	20.00	13.25	17.05
Interstate	DW	6	<i>Lampsilis ovata ventricosa</i>	71.70	35.50	54.95
Interstate	DW	6	<i>Truncilla truncata</i>	41.85	22.75	34.60
Interstate	DW	6	<i>Lasmigona compressa</i>	46.65	10.75	34.30
Interstate	DW	7	<i>Leptodea fragilis</i>	16.00	3.75	10.10
Interstate	DW	7	<i>Truncilla truncata</i>	43.05	25.05	36.55
Interstate	DW	8	<i>Leptodea leptodon</i>	38.55	12.45	30.75
Interstate	DW	8	<i>Proptera alata</i>	23.30	8.15	22.55
Interstate	DW	8	<i>Quadrula metanevra</i>	42.60	27.20	40.15
Interstate	DW	8	<i>Truncilla truncata</i>	53.95	27.75	43.85
Interstate	DW	9	<i>Fusconaia flava</i>	16.55	10.35	13.90
Interstate	DW	9	<i>Fusconaia flava</i>	16.50	9.20	13.45
Interstate	DW	9	<i>Plagiola triquetra</i>	30.05	16.25	23.65
Interstate	DW	9	<i>Obliqueria reflexa</i>	41.60	29.60	36.25
Interstate	DW	10	NONE			
Interstate	EE	1	<i>Elliptio dilatata</i>	118.15	34.10	57.80
Interstate	EE	1	<i>Leptodea fragilis</i>	10.70	4.25	6.35
Interstate	EE	1	<i>Obliqueria reflexa</i>	37.15	24.50	30.70
Interstate	EE	1	<i>Truncilla truncata</i>	40.60	23.00	33.15
Interstate	EE	1	<i>Truncilla truncata</i>	43.00	22.90	32.9_0
Interstate	EE	1	<i>Truncilla truncata</i>	48.60	29.40	40.25
Interstate	EE	1	' <i>Truncilla truncata</i>	42.25	29.65	39.25
Interstate	EE	1	<i>Truncilla truncata</i>	34.40	22.25	28.20
Interstate	EE	1	<i>Truncilla truncata</i>	34.60	19.50	29.75
Interstate	EE	1	<i>Truncilla truncata</i>	24.45	14.80	20.45

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	EE	1	<i>Truncilla truncata</i>	31.50	18.10	25.85
Interstate	EE	1	<i>Truncilla truncata</i>	16.95	9.80	13.25
Interstate	EE	2	<i>Elliptio dilatata</i>	52.80	11.55	26.65
Interstate	EE	2	<i>Fusconaia flava</i>	30.00	20.45	28.90
Interstate	EE	2	<i>Lasmigona compressa</i>	75.15	16.20	58.40
Interstate	EE	2	<i>Truncilla truncata</i>	40.40	22.55	34.05
Interstate	EE	2	<i>Truncilla truncata</i>	17.40	9.65	12.70
Interstate	EE	2	<i>Truncilla truncata</i>	22.60	12.30	17.20
Interstate	EE	2	<i>Truncilla truncata</i>	34.75	21.50	29.40
Interstate	EE	2	<i>Truncilla truncata</i>	14.85	7.65	10.55
Interstate	EE	2	<i>Truncilla truncata</i>	27.20	11.55	22.25
Interstate	EE	2	<i>Truncilla truncata</i>	14.60	7.20	10.80
Interstate	EE	2	<i>Truncilla truncata</i>	14.15	8.00	10.45
Interstate	EE	3	<i>Amblema plicata</i>	21.15	12.30	16.60
Interstate	EE	3	<i>Elliptio dilatata</i>	118.50	39.90	58.85
Interstate	EE	3	<i>Fusconaia flava</i>	18.80	13.00	17.65
Interstate	EE	3	<i>Fusconaia flava</i>	17.30	10.20	15.15
Interstate	EE	3	<i>Lampsilis ovata ventricosa</i>	119.30	36.85	65.85
Interstate	EE	3	<i>Quadrula pustulosa</i>	19.55	11.55	17.65
Interstate	EE	3	<i>Truncilla truncata</i>	38.10	24.65	35.90
Interstate	EE	3	<i>Truncilla truncata</i>	20.80	11.20	15.70
Interstate	EE	3	<i>Truncilla truncata</i>	34.65	20.20	29.35
Interstate	EE	3	<i>Truncilla truncata</i>	16.45	10.50	19.95
Interstate	EE	3	<i>Truncilla truncata</i>	58.65	38.20	46.75
Interstate	EE	3	<i>Truncilla truncata</i>	27.45	17.70	22.95
Interstate	EE	3	<i>Truncilla truncata</i>	30.85	18.45	26.00
Interstate	EE	3	<i>Truncilla truncata</i>	14.60	8.00	10.70
Interstate	EE	3	<i>Truncilla truncata</i>	19.50	11.80	15.35
Interstate	EE	3	<i>Truncilla truncata</i>	23.30	13.05	19.35
Interstate	EE	4	<i>Leptodea fragilis</i>	8.35	2.90	4.95
Interstate	EE	4	<i>Quadrula pustulosa</i>	15.70	9.00	14.15
Interstate	EE	4	<i>Truncilla donaciformis</i>	20.30	11.10	14.15
Interstate	EE	4	<i>Truncilla donaciformis</i>	21.65	10.40	14.60
Interstate	EE	4	<i>Truncilla donaciformis</i>	18.75	8.65	12.75
Interstate	EE	4	<i>Truncilla truncata</i>	32.90	17.75	25.90
Interstate	EE	4	<i>Truncilla truncata</i>	20.25	12.35	16.30
Interstate	EE	4	<i>Truncilla truncata</i>	12.85	6.05	9.70
Interstate	EE	4	<i>Truncilla truncata</i>	37.10	19.55	27.90
Interstate	EE	4	<i>Truncilla truncata</i>	12.85	6.05	9.70
Interstate	EE	4	<i>Truncilla truncata</i>	35.65	18.50	28.30
Interstate	EE	4	<i>Truncilla truncata</i>	19.90	10.80	16.05
Interstate	EE	4	<i>Truncilla truncata</i>	22.30	10.75	16.70
Interstate	EE	4	<i>Truncilla truncata</i>	14.15	7.20	9.75
Interstate	EE	5	<i>Actinonaias carinata</i>	39.90	13.20	23.90
Interstate	EE	5	<i>Actinonaias carinata</i>	9.55	2.95	5.65
Interstate	EE	5	<i>Elliptio dilatata</i>	94.00	29.10	56.20
Interstate	EE	5	<i>Fusconaia flava</i>	16.85	9.40	14.40

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	EE	5	<i>Obliquaria reflexa</i>	22.30	12.30	16.30
Interstate	EE	5	<i>Truncilla donaciformis</i>	25.65	14.10	17.50
Interstate	EE	5	<i>Truncilla donaciformis</i>	15.65	7.20	11.20
Interstate	EE	5	<i>Truncilla truncata</i>	55.90	34.30	44.90
Interstate	EE	5	<i>Truncilla truncata</i>	24.00	12.70	18.55
Interstate	EE	5	<i>Truncilla truncata</i>	22.50	11.55	17.75
Interstate	EE	5	<i>Truncilla truncata</i>	34.60	21.45	29.00
Interstate	EE	5	<i>Truncilla truncata</i>	14.80	7.55	10.00
Interstate	EE	5	<i>Truncilla truncata</i>	10.65	4.50	6.80
Interstate	EE	5	<i>Truncilla truncata</i>	8.20	2.85	4.55
Interstate	EE	6	<i>Elli saria lineolata</i>	87.30	39.40	67.60
Interstate	EE	6	<i>Ligumia recta</i>	79.30	24.55	38.35
Interstate	EE	6	<i>Truncilla donaciformis</i>	24.70	14.50	17.70
Interstate	EE	6	<i>Truncilla truncata</i>	46.55	30.30	39.60
Interstate	EE	6	<i>Truncilla truncata</i>	46.70	30.50	39.45
Interstate	EE	6	<i>Truncilla truncata</i>	26.10	14.00	21.30
Interstate	EE	6	<i>Truncilla truncata</i>	44.90	27.40	39.55
Interstate	EE	6	<i>Truncilla truncata</i>	40.15	23.20	33.65
Interstate	EE	6	<i>Truncilla truncata</i>	21.00	10.75	15.90
Interstate	EE	6	<i>Truncilla truncata</i>	16.40	7.95	11.80
Interstate	EE	6	<i>Truncilla truncata</i>	20.65	11.25	16.15
Interstate	EE	6	<i>Truncilla truncata</i>	14.45	5.90	9.10
Interstate	EE	7	<i>Fusconaia ebena</i>	76.80	44.50	71.70
Interstate	EE	7	<i>Quadrula pustulosa</i>	41.75	26.25	38.30
Interstate	EE	7	<i>Truncilla donaciformis</i>	24.45	12.10	17.30
Interstate	EE	7	<i>Truncilla truncata</i>	35.70	25.00	34.15
Interstate	EE	7	<i>Truncilla truncata</i>	46.95	28.05	33.05
Interstate	EE	7	<i>Truncilla truncata</i>	13.80	6.55	9.30
Interstate	EE	7	<i>Truncilla truncata</i>	41.20	28.05	31.70
Interstate	EE	7	<i>Truncilla truncata</i>	19.75	10.40	15.35
Interstate	EE	7	<i>Truncilla truncata</i>	18.55	11.30	14.55
Interstate	EE	7	<i>Truncilla truncata</i>	24.05	12.80	16.30
Interstate	EE	8	<i>Truncilla donaciformis</i>	21.65	12.00	16.05
Interstate	EE	8	<i>Truncilla truncata</i>	55.70	31.60	43.95
Interstate	EE	9	<i>Ellipsaria lineolata</i>	53.45	22.65	42.55
Interstate	EE	9	<i>Fusconaia flava</i>	18.60	11.10	16.45
Interstate	EE	9	<i>Fusconaia flava</i>	17.05	10.90	14.70
Interstate	EE	9	<i>Fusconaia flava</i>	14.45	18.50	13.05
Interstate	EE	9	<i>Truncilla donaciformis</i>	20.20	11.20	14.95
Interstate	EE	9	<i>Truncilla truncata</i>	18.90	11.00	15.20
Interstate	EE	9	<i>Truncilla truncata</i>	16.25	8.85	12.70
Interstate	EE	9	<i>Truncilla truncata</i>	12.90	10.50	14.75
Interstate	EE	9	<i>Truncilla truncata</i>	21.60	11.95	16.00
Interstate	EE	9	<i>Truncilla truncata</i>	14.60	8.05	11.05
Interstate	EE	9	<i>Truncilla truncatit</i>	19.85	10.55	15.45
Interstate	EE	9	<i>Truncilla truncata</i>	22.20	12.70	18.10
Interstate	EE	9	<i>Truncilla truncata</i>	38.50	21.70	29.60

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data,

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	EE	9	<i>Truncilla truncata</i>	47.15	26.50	39.05
Interstate	EE	9	<i>Truncilla truncata</i>	43.00	28.60	39.05
Interstate	EE	9	<i>Truncilla truncata</i>	48.55	29.30	38.65
Interstate	EE	9	<i>Truncilla truncata</i>	48.05	31.65	40.60
Interstate	EE	9	<i>Truncilla truncata</i>	50.05	30.80	41.55
Interstate	EE	9	<i>Truncilla truncatg</i>	36.60	23.25	31.95
Interstate	EE	10	<i>Ellipsaria lineolata</i>	58.00	32.30	53.70
Interstate	EE	10	<i>Fusconaia flava</i>	20.15	11.65	16.50
Interstate	EE	10	<i>Truncilla donaciformis</i>	22.40	12.00	17.35
Interstate	EE	10	<i>Truncilla truncata</i>	18.75	10.75	15.70
Interstate	EE	10	<i>Truncilla truncata</i>	19.60	11.55	15.75
Interstate	EE	10	<i>Truncilla truncata</i>	28.65	17.00	24.50
Interstate	EE	10	<i>Truncilla truncata</i>	27.60	16.85	23.40
Interstate	EE	10	<i>Truncilla truncata</i>	45.00	23.20	35.40
Interstate	EM	1	<i>Fusconaia flava</i>	40.45	27.50	37.30
Interstate	EM	1	<i>Fusconaia flava</i>	72.25	43.15	58.35
Interstate	EM	1	<i>Obovaria olivaria</i>	76.95	45.15	73.50
Interstate	EM	1	<i>Truncilla truncata</i>	51.40	32.50	42.85
Interstate	EM	1	<i>Truncilla truncata</i>	29.45	13.95	25.00
Interstate	EM	1	<i>Truncilla truncata</i>	30.80	12.70	25.20
Interstate	EM	1	<i>Truncilla truncata</i>	30.30	11.95	25.25
Interstate	EM	1	<i>Truncilla truncata</i>	54.05	34.95	42.05
Interstate	EM	1	<i>Truncilla truncata</i>	44.05	27.10	36.45
Interstate	EM	2	<i>Pleurobema sintoxia</i>	75.50	61.60	41.30
Interstate	EM	2	<i>Leptodea fragilis</i>	16.05	3.75	9.15
Interstate	EM	2	<i>Truncilla donaciformis</i>	21.30	9.10	13.05
Interstate	EM	2	<i>Truncilla truncata</i>	61.40	40.55	49.60
Interstate	EM	2	<i>Truncilla truncata</i>	49.95	24.25	37.85
Interstate	EM	2	<i>Truncilla truncata</i>	41.45	23.75	33.90
Interstate	EM	2	<i>Truncilla truncata</i>	28.60	12.55	23.50
Interstate	EM	2	<i>Truncilla truncata</i>	39.25	22.45	29.35
Interstate	EM	2	<i>Truncilla truncata</i>	48.40	33.10	40.35
Interstate	EM	2	<i>Truncilla truncata</i>	54.60	31.75	45.60
Interstate	EM	2	<i>Truncilla truncata</i>	39.35	22.20	34.05
Interstate	EM	2	<i>Truncilla truncata</i>	32.75	12.05	25.20
Interstate	EM	3	<i>Amblema plicata</i>	11.20	5.50	9.20
Interstate	EM	3	<i>Quadrula pustulosa</i>	75.30	48.65	67.20
Interstate	EM	3	<i>Truncilla donaciformis</i>	19.35	10.00	12.50
Interstate	EM	3	<i>Truncilla truncata</i>	37.70	25.10	31.85
Interstate	EM	3	<i>Truncilla truncata</i>	29.45	12.25	25.80
Interstate	EM	3	<i>Truncilla truncata</i>	30.05	19.25	23.85
Interstate	EM	3	<i>Truncilla truncata</i>	30.95	19.65	25.75
Interstate	EM	3	<i>Truncilla truncata</i>	27.05	12.05	22.75
Interstate	EM	3	<i>Truncilla truncata</i>	43.05	27.05	34.35
Interstate	EM	3	<i>Truncilla truncata</i>	19.35	11.50	14.95
Interstate	EM	3	<i>Truncilla truncata</i>	49.65	32.65	43.55
Interstate	EM	4	<i>Elli do crassidens</i>	11.40	4.40	6.90

NONE denotes no animals found at that sampling site:

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Interstate	EM	4	<i>Lampsilis radiata siliquoidea</i>	71.90	32.35	52.15
Interstate	EM	4	<i>Truncilla donacifomis</i>	26.05	15.55	17.85
Interstate	EM	4	<i>Truncilla donaciformis</i>	14.75	6.50	10.00
Interstate	EM	4	<i>Truncilla truncata</i>	42.00	27.45	37.35
Interstate	EM	4	<i>Truncilla truncata</i>	34.15	21.15	31.15
Interstate	EM	5	<i>Quadrula ustulosa</i>	75.05	49.85	69.10
Interstate	EM	5	<i>Truncilla truncata</i>	49.10	28.70	39.05
Interstate	EM	6	<i>Truncilla donaciformis</i>	32.40	19.15	23.65
Interstate	EM	6	<i>Truncilla donaciformis</i>	23.20	13.15	15.80
Interstate	EM	6	<i>Truncilla donaciformis</i>	21.70	11.80	16.20
Interstate	EM	6	<i>Truncilla donaciformis</i>	23.35	11.10	14.85
Interstate	EM	6	<i>Truncilla truncata</i>	52.75	32.50	42.60
Interstate	EM	6	<i>Truncilla truncata</i>	62.20	37.45	48.10
Interstate	EM	6	<i>Truncilla truncata</i>	49.40	26.20	38.10
Interstate	EM	6	<i>Truncilla truncata</i>	45.30	26.85	38.20
Interstate	EM	6	<i>Truncilla truncata</i>	54.35	34.40	45.50
Interstate	EM	6	<i>Truncilla truncata</i>	48.50	28.90	39.15
Interstate	EM	6	<i>Truncilla truncata</i>	40.30	25.15	36.10
Interstate	EM	6	<i>Truncilla truncata</i>	19.30	11.55	15.45
Interstate	EM	7	<i>Cyclonaias tuberculata</i>	82.75	47.00	79.60
Interstate	EM	7	<i>Truncilla donaciformis</i>	24.60	17.75	13.80
Interstate	EM	7	<i>Truncilla truncata</i>	63.20	33.75	48.50
Interstate	EM	7	<i>Truncilla truncata</i>	26.15	14.30	21.00
Interstate	EM	7	<i>Truncilla truncata</i>	35.15	21.15	29.15
Interstate	EM	7	<i>Truncilla truncata</i>	15.60	7.65	10.80
Interstate	EM	8	<i>Actinonaias carinata</i>	10.25	3.75	6.10
Interstate	EM	8	<i>Carunculina parva</i>	28.35	9.00	16.25
Interstate	EM	8	<i>Elliptio dilatata</i>	119.05	40.00	59.20
Interstate	EM	8	<i>Truncilla truncata</i>	54.90	34.55	43.75
Interstate	EM	8	<i>Truncilla truncata</i>	40.55	36.00	32.60
Interstate	EM	8	<i>Truncilla truncata</i>	19.80	10.65	14.50
Interstate	EM	8	<i>Truncilla truncata</i>	46.94	27.20	37.75
Interstate	EM	8	<i>Truncilla truncata</i>	36.75	20.50	31.90
Interstate	EM	9	<i>Alasmidonta viridis</i>	17.50	8.10	11.90
Interstate	EM	9	<i>Ellipsaria lineolata</i>	43.50	18.40	33.20
Interstate	EM	9	<i>Proptera alata</i>	89.70	24.90	76.95
Interstate	EM	9	<i>Quadrula pustulosa</i>	19.40	11.45	17.30
Interstate	EM	9	<i>Truncilla donaciformis</i>	30.30	16.25	21.15
Interstate	EM	9	<i>Truncilla donaciformis</i>	22.70	11.60	15.40
Interstate	EM	9	<i>Truncilla truncata</i>	54.20	34.90	49.70
Interstate	EM	9	<i>Truncilla truncata</i>	24.70	15.40	20.20
Interstate	EM	9	<i>Truncilla truncata</i>	29.80	19.10	25.90
Interstate	EM	9	<i>Truncilla truneca</i>	23.20	12.80	18.55
Interstate	EM	9	<i>Truncilla truncata</i>	34.20	19.20	27.50
Interstate	EM	10	<i>Ligumia recta</i>	45.75	11.85	18.85
Interstate	EM	10	<i>Proptera alata</i>	73.45	20.80	69.40
Interstate	EM	10	<i>Quadrula metanevra</i>	56.50	35.55	51.45

NONE denotes no animals found at that sampling site.

Page A3-2

Appendix 3 - Quantitative sampling mussel data.

Location	Height Site (mm)	Quadrat	Species	Length (mm)	Width (mm)
Interstate	EM	10	<i>Quadrula ustulosa</i>	34.80	22.45
Interstate	EM	10	<i>Truncilla donaciformis</i>	22.35	13.40
Interstate	EM	10	<i>Truncilla truncata</i>	29.45	17.20
Interstate	EM	10	<i>Truncilla truncata</i>	29.75	19.00
Interstate	EM	10	<i>Truncilla truncata</i>	44.65	25.80
Osceola	AI	1	<i>Fusconaia flava</i>	70.96	45.37
Osceola	AI	2	<i>Amblema licata</i>	110.30	56.34
Osceola	AI	3	<i>Lampsilis ovata ventricosa</i>	98.36	54.35
Osceola	AI	3	<i>Fusconaia flava</i>	52.44	35.88
Osceola	AI	3	<i>Fusconaia flava</i>	19.55	12.28
Osceola	AI	4	<i>Truncilla truncata</i>	46.25	29.42
Osceola	AI	4	<i>Truncilla truncata</i>	59.27	32.49
Osceola	AI	4	<i>Fusconaia flava</i>	59.13	37.99
Osceola	AI	4	<i>Fusconaia flava</i>	26.70	16.55
Osceola	AI	5	<i>Fusconaia flava</i>	46.20	32.74
Osceola	-AI	5	<i>Truncilla donaciformis</i>	47.92	27.60
Osceola	AI	5	<i>Truncilla truncata</i>	17.35	8.59
Osceola	AI	5	<i>Truncilla truncata</i>	52.20	30.30
Osceola	AI	6	<i>Truncilla truncata</i>	48.69	30.19
Osceola	AI	6	<i>Fusconaia flava</i>	51.63	34.72
Osceola	AI	6	<i>Truncilla truncata</i>	57.93	34.46
Osceola	AI	7	<i>Proptera alata</i>	100.15	28.60
Osceola	AI	7	<i>Proptera alata</i>	101.56	32.03
Osceola	AI	7	<i>Fusconaia flava</i>	28.46	19.62
Osceola	AI	8	<i>Leptodea fragilis</i>	129.19	36.19
Osceola	AI	8	<i>Fusconaia flava</i>	55.94	35.48
Osceola	AI	9	NONE		
Osceola	AI	10	<i>Truncilla truncata</i>	44.65	24.30
Osceola	AI	10	<i>Fusconaia flava</i>	45.71	32.35
Osceola	AO	1	NONE		
Osceola	AO	2	NONE		
Osceola	AO	3	NONE		
Osceola	AO	4	NONE		
Osceola	AO	5	NONE		
Osceola	AO	6	NONE		
Osceola	AO	7	NONE		
Osceola	AO	8	NONE		
Osceola	AO	9	NONE		
Osceola	AO	10	NONE		
Osceola	BI	1	<i>Truncilla truncata</i>	22.05	15.61
Osceola	BI	1	<i>Truncilla truncata</i>	15.38	7.87
Osceola	BI	1	<i>Fusconaia flava</i>	59.47	42.87
Osceola	BI	1	<i>Truncilla truncata</i>	45.00	28.10
Osceola	BI	1	<i>Fusconaia flava</i>	29.28	14.39
Osceola	BI	2	<i>Truncilla truncata</i>	53.68	36.00
Osceola	BI	2	<i>Fusconaia flava</i>	46.15	30.62
Osceola	BI	2	<i>Fusconaia flava</i>	26.05	17.88

NONE denotes no animals found at that sampling site.  
A3-2

Page

Appendix 3 – Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat _</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	BI	2	<i>Fusconaia flava</i>	45.25	30.54	40.99
Osceola	BI	3	<i>Fusconaia flava</i>	45.93	29.97	40.99
Osceola	BI	3	<i>Fusconaia flava</i>	66.84	48.45	61.90
Osceola	BI	3	<i>Truncilla truncata</i>	14.43	7.34	10.52
Osceola	BI	3	<i>Truncilla truncata</i>	37.06	20.76	29.88
Osceola	BI	3	<i>Truncilla truncatg</i>	27.85	18.94	25.91
Osceola	BI	3	<i>Truncilla truncatg</i>	25.22	14.67	20.73
Osceola	BI	3	<i>Truncilla truncata</i>	44.71	27.09	39.60
Osceola	BI	3	<i>Fusconaia flava</i>	48.52	34.93	44.86
Osceola	BI	3	<i>Truncilla truncata</i>	19.69	8.96	14.52
Osceola	BI	4	<i>Fusconaia flava</i>	51.53	38.85	48.35
Osceola	BI	4	<i>Truncilla truncata</i>	21.71	12.79	18.05
Osceola	BI	4	<i>Truncilla truncata</i>	21.82	14.08	18.13
Osceola	BI	4	<i>Fusconaia flava</i>	22.29	13.73	19.09
Osceola	BI	5	<i>Amblema plicata</i>	61.54	35.40	52.71
Osceola	BI	5	<i>Fusconaia flava</i>	50.98	34.66	44.82
Osceola	BI	5	<i>Quadrula pustulosa</i>	74.93	45.02	70.48
Osceola	BI	5	<i>Truncilla truncata</i>	31.76	17.41	26.09
Osceola	BI	6	NONE			
Osceola	BI	7	<i>Fusconaia flava</i>	49.24	35.34	47.56
Osceola	BI	7	<i>Fusconaia flava</i>	57.57	39.88	56.29
Osceola	BI	7	<i>Propteria alata</i>	78.56	21.22	58.44
Osceola	BI	7	<i>Fusconaia flava</i>	34.34	25.75	33.81
Osceola	BI	7	<i>Truncilla truncata</i>	40.08	27.20	36.26
Osceola	BI	7	<i>Fusconaia flava</i>	40.60	29.94	38.32
Osceola	BI	7	<i>Truncilla truncata</i>	24.50	16.35	21.79
Osceola	BI	7	<i>Truncilla truncata</i>	39.44	26.52	33.84
Osceola	BI	7	<i>Quadrula pustulosa</i>	83.66	52.55	73.56
Osceola	BI	8	<i>Obliquaria reflexa</i>	46.31	32.37	39.87
Osceola	BI	8	<i>Truncilla donaciformis</i>	18.35	10.01	12.88
Osceola	BI	8	<i>Truncilla donaciformis</i>	17.81	8.33	11.68
Osceola	BI	8	<i>Fusconaia flava</i>	45.35	30.56	43.28
Osceola	BI	8	<i>Fusconaia flava</i>	58.58	36.38	53.76
Osceola	BI	8	<i>Fusconaia flava</i>	16.94	10.86	14.65
Osceola	BI	9	<i>Propteria alata</i>	104.72	27.68	71.81
Osceola	BI	9	<i>Fusconaia flava</i>	47.23	33.96	42.69
Osceola	BI	9	<i>Fusconaia flava</i>	62.84	40.03	54.51
Osceola	BI	9	<i>Truncilla truncata</i>	41.95	27.85	37.55
Osceola	BI	9	<i>Fusconaia flava</i>	24.21	16.76	22.00
Osceola	BI	9	<i>Fusconaia flava</i>	23.25	15.93	21.73
Osceola	BI	9	<i>Truncilla truncata</i>	29.10	17.70	24.50
Osceola	BI	9	<i>Fusconaia flava</i>	36.78	29.37	35.19
Osceola	BI	9	<i>Fusconaia flava</i>	24.86	16.23	22.36
Osceola	BI	9	<i>Fusconaia flava</i>	39.49	26.08	34.67
Osceola	BI	10	<i>Fusconaia (lava</i>	52.55	32.45	45.95
Osceola	BI	10	<i>Fusconaia (lava</i>	55.31	36.13	50.09
Osceola	BI	10	<i>Fusconaia (lava</i>	56.86	35.52	47.92

NONE denotes no animals found at that sampling site.

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Page A3-

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	BI	10	<i>Fusconaia flava</i>	31.49	21.77	28.61
Osceola	BO	1	NONE			
Osceola	BO	2	NONE			
Osceola	BO	3	NONE			
Osceola	BO	4	NONE			
Osceola	BO	5	NONE			
Osceola	BO	6	NONE			
Osceola	BO	7	NONE			
Osceola	BO	8	NONE			
Osceola	BO	9	NONE			
Osceola	BO	10	NONE			
Osceola	CI	1	<i>Fusconaia flava</i>	41.33	29.57	39.32
Osceola	CI	1	<i>Fusconaia flava</i>	35.13	27.17	34.29
Osceola	CI	1	<i>Truncilla truncata</i>	37.26	24.70	33.72
Osceola	CI	1	<i>Fusconaia flava</i>	19.10	13.02	17.51
Osceola	CI	1	<i>Fusconaia flava</i>	20.16	13.23	17.93
Osceola	CI	2	<i>Obliquaria reflexa</i>	11.51	6.81	9.14
Osceola	CI	2	<i>Fusconaia flava</i>	19.99	13.30	19.03
Osceola	CI	3	<i>Fusconaia flava</i>	50.18	34.75	45.57
Osceola	CI	3	<i>Fusconaia flava</i>	55.71	40.38	53.22
Osceola	CI	3	<i>Truncilla truncata</i>	54.74	31.93	43.78
Osceola	CI	3	<i>Truncilla truncata</i>	24.63	17.06	23.18
Osceola	CI	3	<i>Fusconaia flava</i>	11.83	6.12	9.65
Osceola	CI	3	<i>Fusconaia flava</i>	20.77	12.86	18.91
Osceola	CI	4	<i>Proptera alata</i>	113.45	28.46	75.64
Osceola	CI	5	<i>Amblema plicata</i>	119.57	61.00	97.82
Osceola	CI	5	<i>Truncilla truncata</i>	45.96	28.03	39.92
Osceola	CI	5	<i>Truncilla truncata</i>	42.58	22.28	35.08
Osceola	CI	5	<i>Fusconaia flava</i>	59.86	40.03	51.87
Osceola	CI	5	<i>Leptodea fragilis</i>	128.60	35.60	90.34
Osceola	CI	5	<i>Truncilla truncata</i>	52.71	30.09	42.72
Osceola	CI	5	<i>Truncilla truncata</i>	26.24	15.48	19.28
Osceola	CI	6	<i>Leptodea fragilis</i>	68.54	21.94	38.70
Osceola	CI	6	<i>Elliptio dilatata</i>	91.76	31.44	44.07
Osceola	CI	7	<i>Truncilla truncata</i>	28.69	18.29	25.30
Osceola	CI	7	<i>Truncilla truncata</i>	43.86	31.01	40.72 ,
Osceola	CI	7	<i>Fusconaia flava</i>	57.51	38.15	50.17
Osceola	CI	8	<i>Amblema plicata</i>	18.95	12.36	17.01
Osceola	CI	8	<i>Obliquaria reflexa</i>	28.89	18.95	24.82
Osceola	CI	8	<i>Fusconaia flava</i>	32.04	23.13	30.74
Osceola	CI	8	<i>Truncilla truncata</i>	47.64	26.81	38.49
Osceola	CI	8	<i>Truncilla truncata</i>	56.13	33.23	44.69
Osceola	CI	8	<i>Fusconaia flava</i>	61.94	44.61	60.04
Osceola	CI	8	<i>Amblema plicata</i>	97.67	49.18	65.93
Osceola	CI	8	<i>Amblema plicata</i>	103.56	52.68	80.66
Osceola	CI	9	<i>Truncilla truncata</i>	44.07	30.21	38.74
Osceola	CI	9	<i>Fusconaia flava</i>	36.68	27.17	34.55

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length</b> (mm)	<b>Width</b> (mm)	<b>Height</b> (mm)
Osceola	CI	9	<i>Obovaria olivaria</i>	80.91	45.70	66.66
Osceola	CI	9	<i>Fusconaia flava</i>	24.04	16.40	23.01
Osceola	CI	9	<i>Fusconaia flava</i>	32.01	23.68	30.07
Osceola	CI	9	<i>Quadrula pustulosa</i>	20.57	13.07	19.46
Osceola	CI	10	<i>Truncilla truncata</i>	43.05	25.79	35.82
Osceola	CI	10	<i>Amblema licata</i>	52.26	33.80	46.65
Osceola	CI	10	<i>Fusconaia flava</i>	48.72	35.80	45.95
Osceola	CI	10	<i>Amblema licata</i>	79.82	46.04	76.81
Osceola	CI	10	<i>Fusconaia flava</i>	21.96	14.34	20.01
Osceola	CI	10	<i>Fusconaia flava</i>	44.71	32.69	43.58
Osceola	CI	10	<i>Fusconaia flava</i>	31.07	20.06	27.55
Osceola	CI	10	<i>Fusconaia flava</i>	26.93	19.00	25.01
Osceola	CI	10	<i>Truncilla truncata</i>	25.40	16.63	23.05
Osceola	CI	10	<i>Quadrula pustulosa</i>	20.22	12.87	18.87
Osceola	CI	10	<i>Truncilla truncata</i>	22.74	14.16	18.80
Osceola	CI	10	<i>Truncilla truncata</i>	25.43	15.09	21.15
Osceola	CI	10	<i>Fusconaia flava</i>	23.84	16.92	22.06
Osceola	CO	1	NONE			
Osceola	CO	2	NONE			
Osceola	CO	3	NONE			
Osceola	CO	4	NONE			
Osceola	CO	5	NONE			
Osceola	CO	6	NONE			
Osceola	CO	7	NONE			
Osceola	CO	8	NONE			
Osceola	CO	9	NONE			
Osceola	CO	10	NONE			
Osceola	DI	1	<i>Fusconaia flava</i>	69.38	48.81	64.33
Osceola	DI	1	<i>Truncilla truncata</i>	38.22	22.19	27.96
Osceola	DI	1	<i>Truncilla truncata</i>	51.02	27.91	44.33
Osceola	DI	1	<i>Obliquaria reflexa</i>	25.30	14.56	19.89
Osceola	DI	1	<i>Quadrula pustulosa</i>	19.76	13.30	19.56
Osceola	DI	2	<i>Proptera alata</i>	148.40	33.63	120.00
Osceola	DI	2	<i>Fusconaia flava</i>	49.62	38.59	50.06
Osceola	DI	2	<i>Proptera laevissima</i>	115.78	30.30	85.14
Osceola	DI	2	<i>Truncilla truncata</i>	44.44	24.69	36.93
Osceola	DI	2	<i>Fusconaia flava</i>	24.01	16.71	21.68
Osceola	DI	2	<i>Truncilla truncata</i>	38.39	20.78	30.72
Osceola	DI	2	<i>Fusconaia flava</i>	18.40	11.41	15.96
Osceola	DI	3	<i>Fusconaia flava</i>	70.49	42.82	66.28
Osceola	DI	3	<i>Truncilla truncata</i>	19.78	13.91	17.41
Osceola	DI	4	<i>Lasmigona complanata</i>	121.73	26.56	107.20
Osceola	DI	4	<i>Proptera alata</i>	108.04	32.25	85.55
Osceola	DI	4	<i>Fusconaia flava</i>	44.44	31.81	42.03
Osceola	DI	4	<i>Truncilla truncata</i>	44.93	26.19	37.39
Osceola	DI	5	<i>Truncilla truncata</i>	46.28	28.99	40.50
Osceola	DI	5	<i>Fusconaia flava</i>	34.77	26.93	32.75

NONE denotes no animals found at that sampling site.

Appendix 3 – Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	DI	5	<i>Truncilla truncata</i>	36.54	22.14	31.06
Osceola	DI	5	<i>Truncilla truncata</i>	38.24	28.57	37.24
Osceola	DI	5	<i>Truncilla truncata</i>	42.12	25.22	35.42
Osceola	DI	5	<i>Fusconaia flava</i>	18.87	11.31	16.04
Osceola	DI	5	<i>Fusconaia flava</i>	26.75	16.96	24.95
Osceola	DI	5	<i>Truncilla truncata</i>	16.63	8.65	12.50
Osceola	DI	5	<i>Truncilla truncata</i>	16.21	8.30	12.36
Osceola	DI	5	<i>Truncilla truncata</i>	17.64	9.34	13.75
Osceola	DI	5	<i>Fusconaia flava</i>	30.28	23.65	29.07
Osceola	DI	6	<i>Proptera alata</i>	105.26	30.19	79.26
Osceola	DI	6	<i>Amblema licata</i>	82.24	43.79	68.71
Osceola	DI	6	<i>Fusconaia flava</i>	81.78	50.91	70.04
Osceola	DI	6	<i>Truncilla truncata</i>	25.73	14.90	20.37
Osceola	DI	7	<i>Fusconaia flava</i>	53.04	39.01	51.01
Osceola	DI	7	<i>Truncilla truncata</i>	22.04	14.51	19.55
Osceola	DI	7	<i>Truncilla truncata</i>	15.90	7.86	11.26
Osceola	DI	7	<i>Fusconaia flava</i>	26.06	17.26	22.89
Osceola	DI	8	<i>Truncilla truncata</i>	50.27	33.44	47.25
Osceola	DI	8	<i>Truncilla truncata</i>	37.39	28.82	31.94
Osceola	DI	8	<i>Quadrula metanevra</i>	64.12	38.57	61.89
Osceola	DI	8	<i>Quadrula pustulosa</i>	19.29	13.09	18.34
Osceola	DI	8	<i>Fusconaia flava</i>	16.43	10.86	14.24
Osceola	DI	9	<i>Fusconaia flava</i>	51.72	34.03	46.80
Osceola	DI	9	<i>Fusconaia flava</i>	53.96	39.02	53.65
Osceola	DI	9	<i>Truncilla truncata</i>	45.07	27.71	39.95
Osceola	DI	9	<i>Fusconaia flava</i>	57.75	38.57	48.60
Osceola	DI	9	<i>Truncilla donaciformis</i>	21.01	12.93	15.13
Osceola	DI	9	<i>Truncilla truncata</i>	14.31	7.15	11.34
Osceola	DI	9	<i>Fusconaia flava</i>	25.29	16.29	22.22
Osceola	DI	10	<i>Fusconaia flava</i>	41.76	26.70	36.82
Osceola	DI	10	<i>Lasmigona complanata</i>	147.20	38.76	133.40
Osceola	DI	10	<i>Truncilla truncata</i>	57.84	36.32	49.22
Osceola	DI	10	<i>Quadrula pustulosa</i>	40.89	27.28	39.39
Osceola	DI	10	<i>Ligumia recta</i>	77.66	22.91	37.79
Osceola	DI	10	<i>Fusconaia flava</i>	71.25	46.28	65.04
Osceola	DI	10	<i>Fusconaia flava</i>		28.28	20.37 26.93
Osceola	DI	10	<i>Fusconaia flava</i>		19.46	12.34 16.98
Osceola	DI	10	<i>Quadrula pustulosa</i>		19.18	11.86 17.95
Osceola	DI	10	<i>Truncilla truncata</i>		17.02	9.56 12.78
Osceola	DI	10	<i>Truncilla truncata</i>		28.49	15.87 23.06
Osceola	DI	10	<i>Truncilla truncata</i>		45.66	25.53 37.52
Osceola	DO	1	NONE			
Osceola	DO	2	NONE			
Osceola	DO	3	NONE			
Osceola	DO	4	NONE			
Osceola	DO	5	NONE			
Osceola	DO	6	<i>Truncilla truncata</i>		17.15	14.06 10.42

NONE denotes no animals found at that sampling site.

Appendix 3 . Quantitative sampling *jnuyscl* data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	DO	7	NONE			
Osceola	DO	8	<i>Truncilla truncata</i>	24.84	19.64	13.70
Osceola	DO	9	NONE			
Osceola	DO	10	NONE			
Osceola	EI	1	<i>Quadrula ustulosa</i>	58.62	39.20	53.70
Osceola	EI	1	<i>Fusconaia flava</i>	62.30	44.47	58.82
Osceola	EI	1	<i>Fusconaia flava</i>	45.48	31.91	42.94
Osceola	EI	1	<i>Tritogonia verrucosa</i>	124.84	37.69	71.53
Osceola	EI	1	<i>Fusconaia flava</i>	79.77	47.82	69.00
Osceola	EI	1	<i>Truncilla truncata</i>	26.56	15.86	23.35
Osceola	EI	1	<i>Truncilla truncata</i>	53.32	36.24	52.49
Osceola	EI	1	<i>Truncilla truncata</i>	33.79	24.33	30.53
Osceola	EI	1	<i>Truncilla truncata</i>	35.60	23.40	32.00
Osceola	EI	1	<i>Truncilla truncata</i>	26.40	14.59	20.45
Osceola	EI	2	<i>Proptera alata</i>	132.03	44.69	88.90
Osceola	EI	2	<i>Quadrula metanevra</i>	64.95	44.32	62.75
Osceola	EI	2	<i>Truncilla truncata</i>	45.62	27.91	39.61
Osceola	EI	2	<i>Truncilla truncatg</i>	47.65	35.17	45.11
Osceola	EI	2	<i>Truncilla truncata</i>	32.31	18.35	26.44
Osceola	EI	2	<i>Truncilla truncatg</i>	27.76	17.17	24.66
Osceola	EI	3	<i>Fusconaia flava</i>	41.12	29.48	39.02
Osceola	EI	3	<i>Truncilla truncata</i>	38.47	25.81	34.69
Osceola	EI	3	<i>Quadrula pustulosa</i>	19.86	12.63	17.54
Osceola	EI	3	<i>Fusconaia flava</i>	32.28	23.27	30.18
Osceola	EI	4	<i>Obliqueria reflexa</i>	43.05	23.87	34.95
Osceola	EI	4	<i>Truncilla truncata</i>	26.85	17.37	23.64
Osceola	EI	4	<i>Truncilla truncata</i>	28.21	16.31	23.71
Osceola	EI	5	<i>Lasmigona complanata</i>	139.59	33.45	109.50
Osceola	EI	5	<i>Fusconaia flava</i>	69.55	44.70	59.78
Osceola	EI	5	<i>Truncilla truncata</i>	30.80	19.87	26.47
Osceola	EI	5	<i>Truncilla truncata</i>	16.77	7.53	10.90
Osceola	EI	5	<i>Fusconaia flava</i>	27.16	17.63	25.12
Osceola	EI	6	<i>Tritogonia verrucosa</i>	142.44	41.82	79.99
Osceola	EI	7	<i>Quadrula metanevra</i>	69.74	35.81	60.23
Osceola	EI	7	<i>Truncilla truncata</i>	30.04	19.21	26.60
Osceola	EI	8	<i>Truncilla donaciformis</i>	20.89	12.86	16.64
Osceola	EI	8	<i>Quadrula metanevra</i>	68.40	42.87	63.51
Osceola	EI	8	<i>Truncilla truncata</i>	25.38	16.57	21.84
Osceola	EI	9	<i>Truncilla truncata</i>	32.71	19.61	29.7_0
Osceola	EI	9	<i>Truncilla truncata</i>	19.28	9.08	14.10
Osceola	EI	10	<i>Fusconaia flava</i>	55.42	39.04	49.66
Osceola	EI	10	<i>Truncilla truncata</i>	24.06	15.80	20.88
Osceola	EO	1	NONE			
Osceola	EO	2	NONE			
Osceola	EO	3	NONE			
Osceola	EO	4	NONE			
Osceola	EO	5	NONE			

NONE denotes no animals found at that sampling site.

Appendix 3 - Quantitative sampling mussel data.

<b>Location</b>	<b>Site</b>	<b>Quadrat</b>	<b>Species</b>	<b>Length (mm)</b>	<b>Width (mm)</b>	<b>Height (mm)</b>
Osceola	EO	6	NONE			
Osceola	EO	7	NONE			
Osceola	EO	8	NONE			
Osceola	EO	9	NONE			
Osceola	EO	10	NONE			

NONE denotes no animals found at that sampling site.

Page A3-3