

*Suffolk County Vector Control  
and Wetlands Management Long Term Plan  
and Generic Environmental Impact Statement  
Task 12*

*For the:*

**Wertheim National Wildlife Refuge  
Open Marsh Water Management Demonstration Project  
Data Report 2003-2004**



Submitted to:  
Suffolk County Department of Public Works  
Suffolk County Department of Health Services

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## List of Abbreviations and Acronyms

CA	Cashin Associates
DU	Ducks Unlimited
LTP	Long Term Plan (the Suffolk County Vector Control and Wetlands Management Long-Term Plan and Generic Environmental Impact Statement)
MSRC	Marine Sciences Research Center, University at Stony Brook
OMWM	Open Marsh Water Management
PEHL	Suffolk County Department of Health Services Public and Environmental Health Laboratory
SCDHS	Suffolk County Department of Health Services
SCVC	Suffolk County Vector Control
USFWS	US Fish and Wildlife Service
USGS	US Geological Survey
WNWR	Wertheim National Wildlife Refuge

## **I. Introduction**

As part of the development of a Long-Term Plan (LTP) for Vector Control and Wetlands Management, Suffolk County has determined that local demonstration projects of various kinds are in order. It is widely believed that the most effective, economical, and potentially environmentally benign means of control for salt marsh mosquitoes is to manage their habitat so as to minimize breeding of larvae and so minimize the development of adult populations. Open Marsh Water Management (OMWM) is a guild of techniques that has been developed with the intention of controlling mosquito production but avoiding environmental impacts associated with traditional grid or parallel ditch maintenance. OMWM is intended to enhance habitat for the fish that consume mosquito larvae and to increase access for these fish to potential breeding sites. OMWM is intended to at least partially restore water levels to pre-ditching variability. OMWM is therefore often classified as a means of salt marsh restoration.

There have been several projects that have used OMWM principles or OMWM-like techniques in certain wetlands on Long Island. However, none of these projects have constituted a comprehensive demonstration project of standard OMWM, especially with the overt intention of demonstrating mosquito control feasibility.

Therefore, as part of the development of its LTP for vector control, Suffolk County would like to institute a wide-ranging, long-term, comprehensive demonstration project of several alternatives of OMWM. The US Fish and Wildlife Service (USFWS) has offered to allow portions of the Wertheim National Wildlife Refuge (WNWR), Shirley, to be used for this purpose (see Figure 1).

In order to detect impacts from the OMWM construction projects, pre-project environmental monitoring has been undertaken to establish a data baseline. This report provides a complete set of pre-project data collected for the time period August 2003 to November 2004. Data tables are located at the end of each corresponding section.

WNWR is comprised of approximately 2,550 acres located on the south shore of Long Island at the mouth of the Carmans River. The project locations (four distinct areas, called Area 1, Area 2, Area

3, Area 4 [see Figure 2]) are along the east bank of the Carmans River in the salt marshes found near its confluence with the bay. Generally, the marshes are ditched, and are comprised of nearly monotonous stands of *Spartina alterniflora* (low marsh) and *S. patens* (high marsh). Invasive *Phragmites australis* stands are found throughout the proposed project region. More *Phragmites* are found in Areas 1 and 4 (see Figures 3 and 6) along some of the mosquito control ditches, but *Phragmites* stands are also common in higher elevations of the marshes where they appear to be promoted by fresh water inflows.

Most of the mosquito control ditches were plugged at various times in the 1980s and 1990s. Many of the plugs have failed, either due to physical processes (erosion caused by tides or storms) or undermining by muskrats. However, some are still effectively retaining water within the marsh during tidal cycling. A three year monitoring project conducted between Areas 3 and 4 has been completed by MJ James-Pirri (part of a North-East US project covering 11 different sites, sponsored by USFWS and US Geological Survey [USGS]).

The marsh is an active breeding area for salt marsh mosquitoes, although some other species breed in the refuge as well. Suffolk County Vector Control (SCVC) and USFWS conduct weekly larval monitoring at selected locations. Increases in larval counts result in aerial applications of larvicides (commonly, methoprene). WNWR has also been included in one aerial adulticide application since 1999, intended to prevent West Nile virus infestations in the Bellport-Brookhaven-Mastic-Shirley area.

Sampling has been conducted by a consortium of organizations. These include Cashin Associates (CA), the consultant to the County on the LTP, Ducks Unlimited (DU) (a sub consultant to CA), SCVC, Suffolk County Department of Health Services (SCDHS) including the Public and Environmental Health Laboratory (PEHL), and USFWS staff from WNWR. Researchers from the Goodbred and Cerrato laboratories, Marine Sciences Research Center (MSRC), University at Stony Brook, have also assisted.

It should be noted that the OMWM installations designs were not judged solely on the data collected as part of this project. The OMWM design chosen for Wertheim was incorporated from information

generated by the James-Pirri project as well as prior OMWM/OMWM-like efforts conducted on the south shore in Suffolk County such as Seatuck, Sayville, William Floyd, and Fireplace Neck (Brookhaven hamlet), and similar projects elsewhere on Long Island.

### 1.1. Station Selection

Transects were identified across each Area, using the USFWS/USGS protocols (James-Pirri et al., 2002). Twenty-four stations were established in each of Areas 1 and 2, and 20 stations were established in Areas 3 and 4, for a total of 88 marsh surface stations. In addition, 10 ditch sampling points (“fish stations”) were established, again using the USFWS/USGS protocols. SCDHS also established four permanent Carmans River water quality monitoring stations (one associated with each Area), and two water quality monitoring stations in navigable sections of the major creeks. Station locations are represented in Figures 3 through 6.

**STATION LOCATIONS**

<b>AREA 1</b>	<b>AREA 2</b>	<b>AREA 3</b>	<b>AREA 4</b>
1-1-00	2-1-00	3-1-00	4-1-00
1-1-40	2-1-40	3-1-40	4-1-40
1-1-80	2-1-80	3-1-80	4-1-80
1-1-120	2-1-120	3-1-120	4-1-120
1-2-00	2-1-160	3-1-160	4-1-160
1-2-40	2-2-00	3-1-200	4-2-00
1-2-80	2-2-40	3-2-00	4-2-40
1-2-120	2-2-80	3-2-40	4-2-80
1-3-00	2-2-120	3-2-80	4-2-120
1-3-40	2-2-160	3-2-120	4-2-160
1-3-80	2-2-200	3-2-160	4-3-00
1-3-120	2-3-00	3-2-200	4-3-40
1-3-160	2-3-40	3-3-00	4-3-80
1-3-200	2-3-80	3-3-40	4-3-120
1-4-00	2-3-120	3-3-80	4-3-160
1-4-40	2-3-160	3-3-120	4-4-00
1-4-80	2-3-200	3-4-00	4-4-40
1-4-120	2-4-00	3-4-40	4-4-80
1-4-160	2-4-40	3-4-80	4-4-120
1-4-200	2-4-80	3-4-120	4-4-160
1-4-240	2-4-120		
1-5-00	2-5-00		
1-5-40	2-5-40		
1-5-80	2-5-80		



## II. Biological Parameters

### 2.1 Mosquito Breeding Concentration Areas

Mosquito breeding concentration areas were identified throughout the four areas of the marsh in September 2003. For a period of four weeks, the areas were visually inspected five times for small pools of stagnant water that might contain mosquito larvae using the USFWS/USGS protocols (James-Pirri et al., 2002). The pools were selected arbitrarily with a mosquito dipper. Each location containing mosquito larvae was flagged and the GPS coordinates were documented. An assessment of the data was made and the locations of concentrated areas of mosquito larvae were estimated.

### 2.2 Mosquito Dip Transects

Mosquito larvae were collected during a period of six weeks in September and October 2003, and July and August 2004. Larvae was sampled every 15-20 meters along each transect in all four marsh areas using a mosquito dipper in accordance with USFWS/USGS protocols (James-Pirri et al., 2002). At each sampling location, the nearest standing water within a three meter radius was noted. If standing water was present within a three meter radius, the edges of the standing water were sampled with the mosquito dipper. If a full dipper of water was not possible, the volume increments inside the mosquito dipper were used to estimate the water volume collected. The larvae collected in the mosquito dipper were counted and recorded. If there were more than 100 larvae estimated to be in the dipper, the sample was coded into one of four categories (100 to 200 larvae; 200 to 300 larvae; 300 to 500 larvae; or >500 larvae). The mosquito larvae data is listed in Table 2-1.



*Larvae sampling in Area 3*

### 2.3 Vegetation Quadrats

In order to detect differences in the vegetative community composition and abundance, vegetation quadrats were placed at 88 stations in all four areas of the marsh, following USFWS/USGS protocols (James-Pirri et al., 2002). The vegetation was sampled once towards the end of the growing season in October 2003 and September 2004, when plants were easily identifiable. The quadrats measured 1 m<sup>2</sup> and consisted of a meter stick and dowels ( $\leq 3$  mm in diameter). The dowels were placed perpendicular to the meter stick at 0, 25, 50, 75 and 100 cm. Each dowel was one meter in length with a total of ten marks, each spaced 11.1 cm apart. Thus, the 1 m<sup>2</sup> quadrant is divided into a grid of 50 evenly spaced points. A thin rod, approximately 3 mm in diameter, was placed vertically to the first sampling point and lowered through the vegetation canopy to the sampling point on the ground. All vegetation species that came in contact with the rod were recorded. Categories other than plant species, such as “water,” “bare ground,” and “wrack and litter” were also recorded. This process was repeated for all remaining points on the sampling quadrat until all 50 points had been sampled. The total number of times each species was recorded was tallied for each quadrat. All vegetation quadrats were sampled within one to two weeks and during a period when the marsh surface was not flooded. The results of the vegetation quadrats are listed in Table 2-2.

### 2.4 Marsh Composition

In March 2004, marsh composition maps were created using aerial photographs. Areas of high marsh (areas predominantly consisting of *Spartina patens*), low marsh (areas dominated by *S. alterniflora*), and *Phragmites australis* were plotted for all four areas. Marsh composition maps for all four areas are located in Figures 8a through 8d.

### 2.5 Nekton Sampling

Nekton sampling was conducted in accordance with USFWS/USGS protocols (James-Pirri et al., 2002) at all fish stations located throughout the four marsh areas in October 2003, and June, July and September 2004. A total of 40 samples were collected during each sampling

event using ditch nets. At each sampling point a ditch net, consisting of nylon netting (1.8 inch mesh), was placed along the sides and bottom of a one linear meter section of the ditch. The nets were placed in the ditches at the station locations at least 30 minutes before sampling to minimize any disturbance to the fish caused by placing the net in the ditch. Two doors located on the open ends of the net were pulled to close the net after 30 minutes. Once closed, the ditch net enclosed an area of water one meter long and as wide as the ditch. The net was quickly removed from the water onto the marsh surface where the fish were identified, counted and measured. Water quality parameters were also conducted and recorded at each sampling location. The data collected for all three nekton sampling rounds is listed in Table 2-3.

## 2.6 Invertebrates

Invertebrates commonly used as a measure of overall habitat function and health. Invertebrate samples were collected from three different areas: marsh surface; mosquito ditches (water column samples); and mosquito ditch sediments (benthic samples). Invertebrate samples were collected from the marsh surface, water column and benthos in fall 2003, and again in August 2004.

Twenty-six marsh surface samples were collected at the randomly selected stations sampled the previous season. The stations were stratified by area, and then again by vegetation type: low marsh (LM), high marsh (HM), and *Phragmites*. One *Phragmites* samples and two samples from both the high marsh and low marsh were taken from Areas 2 and 3. Two *Phragmites* samples and three samples each from high and low marsh were taken in Areas 1 and 4.

A circular metal frame, 30 centimeters in diameter, was used to define the marsh surface sampling area. The frame was inserted into the surface of the marsh to a depth of approximately five centimeters. To ensure capture of mobile insects, a plastic bag was attached to the top of the frame. Soil and root mass within the frame were excavated using a machete and the surface mass was collected in the attached plastic bag. Each marsh surface sample was initially processed in a sorting tray. Plant detritus material was examined to

ensure that sessile species were included in the sample. Samples were then rinsed and sieved through a 0.5 millimeter screen to further separate invertebrates. All specimens caught were preserved in 91% alcohol for later identification. Results of the marsh surface invertebrate sampling are listed in Table 2-4.

Water column invertebrates were sampled at 28 fish stations (seven randomly selected stations in each area). Samples were collected using a D-frame sweep net (500 micron mesh) in accordance with the USFWS/USGS protocols (James-Pirri et al., 2002). Twelve net-sweeps were performed along a one-meter length segment above the benthos at each sampling station. The contents of the net were emptied into individually labeled buckets and processed in separate sorting trays. Dense samples were split in half or thirds during processing. Each sorting tray was examined under light and dense matter was searched and separated from the tray. The trays were examined until no organisms had been observed for 15 minutes. Invertebrates captured were stored in 91% alcohol. Results of the water column invertebrate sampling are listed in Table 2-5.

Benthic samples were collected from the same 28 fish stations as the water column samples. A screened dipper, 10 centimeters in diameter (0.5 mm mesh), was used to collect samples at the top five centimeters of benthos. Three replicate samples were taken from every station and stored in individual plastic bags. Concentrated sugar water (one five-pound bag of sugar per gallon of water) was poured into each sorting tray containing the sample, for better observation (Lewis 2000). Organic material in the tray floated to the surface of the sugar water. All invertebrates observed were removed and preserved in 91% alcohol for later identification. Results of the benthic invertebrate sampling are listed in Table 2-6.

## 2.7 Invertebrate Analysis

Specimens collected from each invertebrate sample (marsh surface, water column, and benthos) were identified by a taxonomist with the use of a dissecting microscope and magnifying glass. Each invertebrate was identified to the family level using various reference guides (Weiss 1995; Borrer and White, 1970; Emerton, 1961). Assistance was also received from the Cerrato Laboratory, MSRC.

## 2.8 Vegetation Biomass

As an extension of the vegetation speciation effort described above, vegetation biomass sampling was also conducted. In October 2003 and 2004, half of the transect locations in each area were sampled for above-ground vegetation mass, and a quarter were sampled for above-ground and root mass. The samples stations were selected randomly (stratified by area).

A metal ring, 27 centimeters in diameter, was placed at each above-ground biomass station to determine the vegetation plot to be sampled. The vegetation within the plot was clipped at ground level and bagged separate from dead vegetation. The samples were weighed and dried in an oven at 105 degrees Celsius. After a period of 12 hours, the samples were removed and re-weighed. The sample weight after drying was subtracted from the initial weight to obtain the biomass of the vegetation. Results of the vegetation biomass sampling are listed in Table 2-7.



*Measuring and clipping vegetation in high marsh*

Soil biomass samples were collected using a seven centimeter core sampler. Prior to obtaining a soil core, the live vegetation above the plot to be sampled was clipped at ground level and stored in individual bags. These samples were analyzed as above. The core sampler was driven into the marsh surface to a depth of 20 centimeters below ground surface (method adopted from Allison 1996). The soil was extracted from the core and placed in individual labeled bags. The soil core samples were weighed and dried in an oven at 105

degrees Celsius. After 24 hours, the samples were removed and re-weighed to obtain the biomass of the soil core. Results of the soil core biomass samples are listed in Table 2-8.

## 2.9 Bird Surveys

The bird fauna within the refuge have been continuously observed and documented. The marsh lies along migration corridors used by shorebirds, raptors and songbirds. In addition, the refuge supports nine federal and/or New York State designated endangered/threatened avian species. Through anecdotal observations, approximately 22 species of birds have been observed in the marsh. The most abundant species observed include black duck, Northern harrier, and a variety of wading birds. Tree and barn swallows are very common during migrating season. During September and October 2003, swallows were observed in swarms of hundreds. An immature bald eagle has wintered at the Refuge the past several years.

In June 2004, a salt marsh bird survey was performed to provide a baseline estimate for salt marsh breeding bird distribution and abundance (Shriver, 2000). A walking route was established within each of the four study areas by using aerial photos and a GIS coverage. Along this route, 50-meter radius points were located, with point centers being at least 150 meters apart (Figures 9a through 9d). Point counts were conducted from sunrise to 11am, and lasted for 10 minutes. Points were repeated three times during the breeding season (May 20 – July 5), but were not conducted during high winds or heavy rain. All birds seen and/or heard during the 10-minute count were counted. It was noted when the bird was detected during the point count (0-3 minutes, 3-5 minutes, 5-10 minutes), and whether the individual was within three distance categories (0-50m, 50-100m, >100m). Individuals observed along the walking route during travel between points were also noted, as were birds that were flying over the marsh during the survey. Flyovers were not included in any of the summary tabulations. Surveys will be repeated during the 2005 winter season (January 10 – March 10). Data were summarized to reflect the density, diversity, and dominant species detected during the surveys. For each area, birds were also separated into guilds to provide an additional density comparison.

Eighteen species were observed on all four areas combined during the breeding season surveys (see Table 2-9). In Area 1, 14 species were observed, with Marsh Wren and Red-winged Blackbird as the most common species, respectively. When separated into bird guilds, passerines were by far the most common group. Nine species were observed in Area 2, with Marsh Wren and Seaside Sparrow as the most common species, respectively. When separated into bird guilds, passerines were the most common group observed on the marsh. In Area 3, 11 species were observed, with Red-winged Blackbird and Marsh Wren as the most common species, respectively. When separated into bird guilds, passerines were the most common group. Thirteen species were observed in Area 4, with Marsh Wren and Red-winged Blackbird as the most common species, respectively. When separated into bird guilds, passerines were again the most common group observed on the marsh.

The breeding season data reflect a baseline monitoring effort for avian use of the study area marshes at WNWR. Across all study areas, passerines were the most dominant species group, due largely to the high occurrence of Marsh Wren, Red-winged Blackbird, and Seaside Sparrow. All other guilds showed very low densities across all areas. These data will be combined with the upcoming winter season surveys to provide a seasonal perspective of bird use of the marsh.

#### 2.10 Photo Stations

Permanent photo stations were established in an effort to evaluate vegetation community response to marsh alterations in Area 1 and proposed marsh alterations for Area 2. These photo stations will aid in determining if a “stable post-project vegetation regime” is achieved over time. Permanent photo stations were also established in control Areas 3 and 4 to determine if any vegetation changes are occurring naturally over time. The placement of the photo stations in Areas 1 and 2 were determined based on locations of the proposed alterations and the use of aerial photographs. Where possible, photo stations were placed at existing fish stations or transect points. In determining the placement of the photo stations, obstacles that may hinder a clear view of the marsh, such as tall stands of *Phragmites australis*, were taken into consideration; the locations were thus modified to provide a

panoramic view of the immediate area. Initial photo documentation took place in September 2004 to document the existing vegetation conditions. Photo documentation of Area 1 immediately following marsh alterations was recorded in April 2005. Subsequent photo documentation of all Areas took place in September 2005. The locations of the photo stations are depicted in Figures 10a through 10d. A photo comparison for all photo stations are listed in Tables 2-10a through 2-10d.



**Table 2-1. Mosquito Larvae Sampling**

**AREA 1**

<b>Date</b>	<b>Condition</b>	<b>Total # of Larvae</b>	<b>Comment</b>
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Pool	-	
9/03/2003	Ditch	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	1	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	6	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	1	
9/03/2003	Standing Water	1	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	10	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	17	
9/03/2003	Standing Water	34	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	30	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	6	
9/03/2003	Standing Water	-	



9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	3	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	4	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Dry	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	2	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Pool	-	
10/03/2003	Dry	-	
10/03/2003	Dry	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	

10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Dry	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	1	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Pool	-	
10/09/2003	ditch	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	2	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	

10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	2	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	1	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Panne	-	
10/17/2003	Ditch	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	

10/17/2003	Standing Water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing Water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing Water	-	
10/17/2003	Dry	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Panne	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
10/17/2003	Standing Water	-	
7/06/2004	Standing Water	-	
7/06/2004	Standing Water	-	
7/06/2004	Standing Water	5	
7/06/2004	Pooled	36	
7/06/2004	Pooled	68	
7/06/2004	Pooled	30	
7/06/2004	Standing Water	-	
7/06/2004	Standing Water	-	
7/06/2004	Standing Water	1	
7/06/2004	Standing Water	1	
7/06/2004	Pooled	27	
7/06/2004	Standing Water	-	
7/06/2004	Standing Water	-	
7/06/2004	Ditch	-	
7/06/2004	Standing Water	-	
7/06/2004	Standing Water	-	
7/06/2004	Standing Water	-	
7/07/2004	Pooled	39	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	50	
7/07/2004	Standing Water	11	
7/07/2004	Standing Water	10	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	45	
7/07/2004	Standing Water	51	

7/07/2004	Standing Water	51	
7/07/2004	Standing Water	24	
7/07/2004	Ditch	55	
7/07/2004	Standing Water	50	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	50	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	3	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	10	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	24	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	15	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	1	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	1	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	3	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	5	
7/07/2004	Ditch	-	
7/07/2004	Ditch	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	

7/07/2004	Standing Water	-	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Pooled	39	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	50	
7/07/2004	Standing Water	11	
7/07/2004	Standing Water	10	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	65	
7/07/2004	Standing Water	51	
7/07/2004	Standing Water	51	
7/07/2004	Standing Water	24	
7/07/2004	Ditch	55	
7/07/2004	Standing Water	50	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	50	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	3	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	10	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	24	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	15	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	1	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	



7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	1	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	3	
7/07/2004	Standing Water	2	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	5	
7/07/2004	Standing Water	5	
7/07/2004	Ditch	-	
7/07/2004	Ditch	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	12	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/07/2004	Standing Water	-	
7/12/2004	Standing Water	-	
7/12/2004	Ditch	-	
7/12/2004	Standing Water	-	
7/12/2004	Ditch	-	
7/12/2004	Ditch	-	
7/12/2004	Ditch	-	
7/12/2004	Ditch	-	
7/19/2004	Standing Water	2	
7/19/2004	Pooled	2	
7/19/2004	Pooled	1	
7/19/2004	Pooled	2	
7/19/2004	Pooled	1	
7/19/2004	Standing Water	-	
7/19/2004	Standing Water	1	
7/19/2004	Standing Water	-	2 fish in dipper
7/19/2004	Standing Water	1	
7/19/2004	Pooled	-	
7/19/2004	Panne	-	a ten ft remnant panne
7/19/2004	Panne	-	dead patens
7/19/2004	Standing Water	-	patens hummock area
7/19/2004	Standing Water	1	
7/19/2004	Standing Water	6	
7/19/2004	Standing Water	5	
7/19/2004	Standing Water	-	50ft x20ft patens comm. hummocks
7/19/2004	Standing Water	-	alterniflora
7/19/2004	Dry	-	remnant panne 25x30
7/19/2004	Dry	-	low marsh alt mud area
7/19/2004	Dry	-	dead paten 3sq pan 10x10
7/19/2004	Dry	-	remnant patens pool
7/19/2004	Dry	-	low area along ditch

7/19/2004	Standing Water	-	
7/19/2004	Standing Water	-	
7/19/2004	Dry	-	three-square & patens
7/19/2004	Dry	-	extra soft spongy area
7/19/2004	Dry	-	soft to ditch
7/19/2004	Standing Water	-	
7/19/2004	Dry	-	patens hummocky area
7/19/2004	Standing Water	-	
7/19/2004	Dry	-	
7/19/2004	Dry	-	
7/19/2004	Panne	-	remnant
7/19/2004	Standing Water	-	
7/19/2004	Dry	-	three-square & patens
7/19/2004	Dry	-	Juncus & patens comm.
7/19/2004	Standing Water	-	
7/19/2004	Standing Water	8	
7/19/2004	Standing Water	5	
7/19/2004	Standing Water	1	
7/19/2004	Standing Water	1	
7/19/2004	Dry	-	three-square & Iva
7/19/2004	Dry	-	Juncus community
7/19/2004	Pooled	-	
7/19/2004	Dry	-	alterniflora mud flat area
7/19/2004	Standing Water	-	
7/19/2004	Standing Water	2	
7/19/2004	Standing Water	-	
7/19/2004	Pooled	-	
7/23/2004	Standing Water	-	
7/23/2004	Standing Water	-	fish observed
7/23/2004	Standing Water	-	
7/23/2004	Standing Water	-	
7/23/2004	Standing Water	-	fish observed
7/23/2004	Standing Water	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Standing Water	-	
7/23/2004	Dry	-	
7/23/2004	Standing Water	-	
7/23/2004	Standing Water	-	
7/23/2004	Dry	-	

7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Standing Water	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Standing Water	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Dry	-	
7/23/2004	Ditch	-	
7/23/2004	Standing Water	-	
7/23/2004	Standing Water	-	
7/23/2004	Dry	-	
7/23/2004	Standing Water	-	
7/23/2004	Dry	-	
7/26/2004		-	
8/09/2004		-	
8/09/2004	Standing Water	14	
8/09/2004	Standing Water	13	
8/09/2004	Standing Water	6	
8/09/2004		20	
8/09/2004	Standing Water	-	
8/09/2004	Standing Water	-	
8/09/2004	Standing Water	-	
8/09/2004	Standing Water	-	
8/09/2004	Standing Water	21	
8/09/2004		-	
8/16/2004		20	
8/16/2004	Pooled	10	
8/16/2004		10	
8/16/2004		20	
8/16/2004		10	
8/16/2004		20	
8/16/2004		10	heavy rain
8/16/2004		3	
8/16/2004		20	
8/16/2004		-	
8/16/2004		-	
8/16/2004		-	
8/16/2004		1	
8/16/2004		10	
8/16/2004		8	
8/16/2004		7	
8/30/2004		-	
8/30/2004		-	
8/30/2004		-	

8/30/2004	Standing Water	6	
8/30/2004	Pooled	-	
8/30/2004	Standing Water	1	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	1	
8/30/2004	Standing Water	-	
8/30/2004	Flooded	-	
8/30/2004	Standing Water	4	
8/30/2004	Pooled	2	
8/30/2004	Standing Water	1	
8/30/2004	Flooded	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	1	
8/30/2004	Standing Water	-	
8/30/2004	Dry	-	
8/30/2004	Dry	-	
8/30/2004	Flooded	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Pooled	-	fish observed
8/30/2004	Panne	-	fish observed
8/30/2004	Standing Water	2	

**Area 2**

Date	Condition	Total # of Larvae	Comment
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Plugged Ditch	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	30	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	10	
9/03/2003	Standing Water	1	
9/03/2003	Dry	-	
9/03/2003	Standing Water	10	
9/03/2003	Plugged Ditch	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Standing Water	-	
9/03/2003	Plugged Ditch	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Standing Water	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/03/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Plugged Ditch	-	

9/16/2003	Plugged Ditch	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Plugged Ditch	-	
9/16/2003	Standing Water	-	
9/16/2003	Dry	-	
9/16/2003	Standing Water	-	
9/16/2003	Dry	-	
9/16/2003	Standing Water	12	
9/16/2003	Standing Water	9	
9/16/2003	Standing Water	3	
9/16/2003	Tidal Creek	-	
9/16/2003	Standing Water	11	
9/16/2003	Standing Water	8	
9/16/2003	Dry	-	
9/16/2003	Plugged Ditch	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Plugged Ditch	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Plugged Ditch	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Dry	-	
9/16/2003	Plugged Ditch	-	
9/16/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Pool	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	

9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Pool	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Pool	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Pool	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Dry	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	

10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Pool	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Standing Water	-	
10/03/2003	Pool	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Pool	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Dry	-	
10/09/2003	Dry	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	



10/09/2003	Pool	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Standing Water	-	
10/09/2003	Pool	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Pool	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Dry	-	
10/16/2003	Standing Water	-	
10/16/2003	Dry	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Pool	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	

10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Pool	-	
7/04/2004	Creek	-	
7/04/2004	Ditch	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	12	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	7	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	3	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	4	
7/04/2004	Standing Water	2	
7/04/2004	Standing Water	6	
7/04/2004	Standing Water	12	
7/04/2004	Standing Water	14	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	4	
7/04/2004	Standing Water	-	

7/04/2004	Standing Water	-	
7/04/2004	Standing Water	3	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	2	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Pool	50	
7/04/2004	Pool	12	
7/04/2004	Pool	24	
7/04/2004	Standing Water	17	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Ditch	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004		8	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	24	
7/04/2004	Pool	36	
7/04/2004	Pool	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	3	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	2	
7/04/2004	Ditch	-	

7/04/2004	Creek	-	
7/04/2004	Ditch	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	12	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	7	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	3	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	4	
7/04/2004	Standing Water	2	
7/04/2004	Standing Water	6	
7/04/2004	Standing Water	12	
7/04/2004	Standing Water	14	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	4	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	3	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	2	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	

7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Pool	5	
7/04/2004	Pool	12	
7/04/2004	Pool	24	
7/04/2004	Standing Water	17	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Ditch	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004		8	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	24	
7/04/2004	Pool	36	
7/04/2004	Pool	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	3	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	-	
7/04/2004	Standing Water	1	
7/04/2004	Standing Water	5	
7/04/2004	Standing Water	2	
7/04/2004	Ditch	-	
7/12/2004	Ditch	-	
7/12/2004	Ditch	-	
7/12/2004	Ditch	-	
7/12/2004	Panne	-	
7/12/2004	Standing Water	-	
7/12/2004	Ditch	-	
7/12/2004	Pooled	-	
7/12/2004	Panne	-	
7/12/2004	Panne	-	
7/12/2004	Panne	-	
7/12/2004	Panne	-	
7/19/2004	Standing Water	-	fish juvenile in dipper
7/19/2004	Standing Water	-	4 fish juvenile in dipper
7/19/2004	Standing Water	-	2 juvenile fish in dipper

7/19/2004	Pool	4	
7/19/2004	Standing Water	-	
7/19/2004	Flooded	-	
7/19/2004	Standing Water	-	
7/19/2004	Standing Water	9	
7/19/2004	Standing Water	16	
7/19/2004	Dry	-	patens & pockets of alterniflora
7/19/2004	Standing Water	41	
7/19/2004	Pool	22	
7/19/2004	Pool	-	fish in ponds
7/19/2004	Pool	5	
7/19/2004		28	
7/19/2004	Dry	-	patens and alterniflora community
7/19/2004	Flooded	-	
7/19/2004	Standing Water	-	
7/19/2004	Dry	-	patens & three-square community
7/19/2004	Dry	-	three-square community
7/19/2004	Standing Water	-	
7/19/2004	Standing Water	5	
7/19/2004	Dry	-	alterniflora & patens
7/19/2004	Dry	-	alterniflora community
7/19/2004	Flooded	-	
7/19/2004	Dry	-	three-square community
7/19/2004	Standing Water	-	
7/19/2004	Standing Water	-	
7/19/2004	Standing Water	-	hummocky area
7/19/2004	Standing Water	7	
7/23/2004	Standing Water	2	
7/23/2004		4	
7/23/2004		13	
7/23/2004	Standing Water	2	
7/23/2004	Standing Water	15	
7/23/2004	Standing Water	11	
7/23/2004	Pooled	-	
7/23/2004	Pooled	-	
8/02/2004	Standing Water	-	
8/02/2004	Standing Water	5	
8/02/2004	Standing Water	-	fish observed
8/02/2004	Standing Water	7	
8/02/2004	Standing Water	-	
8/02/2004	Standing Water	-	
8/02/2004	Standing Water	5	
8/02/2004	Standing Water	11	
8/02/2004	Standing Water	5	
8/02/2004	Standing Water	5	
8/02/2004	Standing Water	5	
8/02/2004	Standing Water	-	
8/02/2004	Standing Water	-	

8/02/2004	Standing Water	2	
8/02/2004	Standing Water	-	
8/02/2004	Standing Water	-	
8/02/2004	Standing Water	-	
8/02/2004	Standing Water	1	
8/02/2004	Standing Water	10	
8/02/2004	Standing Water	10	
8/02/2004	Standing Water	10	
8/02/2004	Standing Water	10	fish observed
8/02/2004	Standing Water	10	
8/02/2004	Standing Water	10	
8/02/2004	Standing Water	10	
8/02/2004	Standing Water	50	
8/02/2004	Standing Water	20	
8/02/2004	Standing Water	100	
8/02/2004	Standing Water	80	
8/02/2004		110	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	-	
8/16/2004		10	
8/16/2004	Standing Water	5	
8/16/2004	Standing Water	-	
8/16/2004		3	
8/16/2004	Standing Water	4	
8/16/2004	Ditch	-	very full
8/16/2004		4	
8/16/2004		2	
8/16/2004		4	
8/16/2004	Standing Water	1	
8/16/2004	Standing Water	4	
8/16/2004	Standing Water	7	
8/16/2004	Standing Water	3	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	30	
8/16/2004	Creek	-	
8/16/2004	Ditch	-	
8/16/2004	Standing Water	1	
8/16/2004	Standing Water	2	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	5	breeding throughout
8/16/2004	Pool	7	
8/16/2004	Pool	7	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	

8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Dry	-	
8/30/2004	Standing Water	1	
8/30/2004	Pool	-	fish and boatmen observed
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	16	
8/30/2004	Pool	2	
8/30/2004	Pool	4	
8/30/2004		15	
8/30/2004	Panne	5	



**Area 3**

<b>Date</b>	<b>Condition</b>	<b>Total # of Larvae</b>	<b>Comment</b>
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Plugged Ditch	-	
9/3/2003	Dry	-	
9/3/2003	Standing Water	-	
9/3/2003	Dry	-	
9/3/2003	Pool	-	
9/3/2003	Ditch	-	
9/3/2003	Ditch	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Standing Water	25	
9/3/2003	Dry	-	
9/3/2003	Standing Water	-	
9/3/2003	Standing Water	-	
9/3/2003	Standing Water	-	
9/3/2003	Standing Water	-	
9/3/2003	Standing Water	-	
9/3/2003	Dry	-	
9/3/2003	Plugged Ditch	-	
9/3/2003	Dry	-	
9/3/2003	Standing Water	-	
9/3/2003	Standing Water	30	
9/3/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Tidal creek	-	
9/15/2003	Dry	-	
9/15/2003	Tidal creek	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	

9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Panne	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Standing Water	4	
9/15/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Pool	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Pool	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Pool	-	
9/26/2003	Dry	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Dry	-	

9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Dry	-	
9/26/2003	Dry	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
9/26/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Standing Water	-	
10/3/2003	Dry	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Pool	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Dry	-	
10/3/2003	Pool	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Dry	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	
10/3/2003	Standing Water	-	



10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Dry	-	
10/16/2003	Dry	-	
10/16/2003	Pool	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Dry	-	
10/16/2003	Pool	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Dry	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Dry	-	
10/16/2003	Dry	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
10/16/2003	Standing Water	-	
8/9/2004		4	
8/9/2004		14	
8/9/2004	Standing Water	9	
8/9/2004	Standing Water	16	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Pooled	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Standing Water	-	
8/9/2004	Pooled	-	
8/9/2004	Standing Water	-	
8/9/2004	Pooled	-	
8/9/2004	Dry	-	

8/9/2004	Standing Water	1	
8/9/2004	Pooled	-	
8/9/2004	Dry	-	
8/9/2004	Standing Water	-	
8/16/2004	Standing Water	8	
8/16/2004	Pooled	10	
8/16/2004		10	
8/16/2004	Pooled	10	
8/16/2004		7	
8/16/2004		6	
8/16/2004	Standing Water	9	
8/16/2004	Standing Water	22	
8/16/2004		7	
8/16/2004	Standing Water	10	
8/16/2004	Standing Water	20	
8/16/2004		20	

**AREA 4**

Date	Condition	Total # of Larvae	Comment
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Standing water	30	
9/3/2003	Standing water	10	
9/3/2003	Standing water	-	
9/3/2003	Dry	-	
9/3/2003	Plugged Ditch	-	
9/3/2003	Dry	-	
9/3/2003	Standing water	-	
9/3/2003	Standing water	5	
9/3/2003	Ditch	-	
9/3/2003	Standing water	-	
9/3/2003	Ditch	-	
9/3/2003	Ditch	-	
9/3/2003	Standing water	1	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Standing water	-	
9/3/2003	Ditch	-	
9/3/2003	Standing water	-	
9/3/2003	Dry	-	
9/3/2003	Standing water	-	
9/3/2003	Standing water	7	
9/3/2003	Ditch	-	
9/3/2003	Standing water	-	
9/3/2003	Panne	-	
9/3/2003	Dry	-	
9/3/2003	Ditch	-	
9/3/2003	Standing water	-	
9/3/2003	Ditch	-	
9/3/2003	Standing water	-	
9/3/2003	Standing water	15	
9/3/2003	Dry	-	
9/3/2003	Dry	-	
9/3/2003	Standing water	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Standing water	-	
9/15/2003	Dry	-	

9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Standing water	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Standing water	-	
9/15/2003	Standing water	-	
9/15/2003	Dry	-	
9/15/2003	Standing water	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Standing water	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Plugged Ditch	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Dry	-	
9/15/2003	Standing water	-	
9/15/2003	Dry	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Dry	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Pool	-	
9/26/2003	Standing water	-	
9/26/2003	Dry	-	
9/26/2003	Standing water	-	
9/26/2003	Pool	-	
9/26/2003	Dry	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Pool	-	
9/26/2003	Standing water	-	
9/26/2003	Pool	-	



9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Pool	-	
9/26/2003	Standing water	-	
9/26/2003	Panne	-	
9/26/2003	Pool	-	
9/26/2003	Pool	-	
9/26/2003	Standing water	-	
9/26/2003	Pool	-	
9/26/2003	Standing water	-	
9/26/2003	Standing water	-	
9/26/2003	Pool	-	
9/26/2003	Pool	-	
9/26/2003	Standing water	-	
10/3/2003	Dry	-	
10/3/2003	Ditch	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Pool	-	
10/3/2003	Standing water	-	
10/3/2003	Dry	-	
10/3/2003	Ditch	-	
10/3/2003	Standing water	-	
10/3/2003	Panne	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Ditch	-	
10/3/2003	Standing water	-	
10/3/2003	Standing water	-	
10/3/2003	Dry	-	

10/3/2003	Dry	-	
10/3/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Ditch	-	
10/9/2003	Standing water	-	
10/9/2003	Standing water	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Standing water	-	
10/9/2003	Standing water	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Standing water	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Standing water	-	
10/9/2003	Standing water	-	
10/9/2003	Standing water	-	
10/9/2003	Pool	-	
10/9/2003	Standing water	-	
10/9/2003	Dry	-	
10/9/2003	Ditch	-	
10/9/2003	Standing water	-	
10/9/2003	Panne	-	
10/9/2003	Standing water	-	
10/9/2003	Standing water	-	
10/9/2003	Standing water	-	
10/9/2003	Ditch	-	
10/9/2003	Standing water	-	
10/9/2003	Standing water	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/9/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Ditch	-	
10/17/2003	Standing water	-	
10/17/2003	Standing water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing water	-	

10/17/2003	Standing water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Standing water	-	
10/17/2003	Standing water	-	
10/17/2003	Standing water	-	
10/17/2003	Pool	-	
10/17/2003	Standing water	-	
10/17/2003	Dry	-	
10/17/2003	Ditch	-	
10/17/2003	Standing water	-	
10/17/2003	Panne	-	
10/17/2003	Standing water	-	
10/17/2003	Standing water	-	
10/17/2003	Standing water	-	
10/17/2003	Ditch	-	
10/17/2003	Standing water	-	
10/17/2003	Standing water	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
10/17/2003	Dry	-	
7/20/2004	Standing Water	-	
7/20/2004	Pooled	-	fish present
7/20/2004	Pooled	-	fish present
7/20/2004	Standing Water	-	
7/20/2004	Pooled	-	
7/20/2004	Pooled	-	fish present
7/20/2004	Pooled	-	
7/20/2004	Ditch	-	
7/20/2004	Pooled	-	fish present
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Panne	-	
7/20/2004	Ditch	-	
7/20/2004	Standing Water	1	
7/20/2004	Standing Water	-	
7/20/2004	Ditch	-	remnant ditch
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Ditch	-	remnant
7/20/2004	Dry	-	low marsh
7/20/2004	Panne	-	water boatmen present
7/20/2004	Panne	-	Salicornia



7/20/2004	Standing Water	2	
7/20/2004	Standing Water	1	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	1	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	baby fish noted
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	1	
7/20/2004	Dry	-	
7/20/2004	Dry	-	
7/20/2004	Dry	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	baby fish noted
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	baby fish noted
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	
7/20/2004	Standing Water	-	baby fish noted
7/20/2004	Standing Water	-	
8/2/2004	Standing Water	10	
8/2/2004	Standing Water	-	
8/2/2004	Standing Water	1	
8/2/2004	Standing Water	-	
8/2/2004	Standing Water	-	
8/2/2004	Standing Water	5	
8/2/2004	Standing Water	8	
8/2/2004	Standing Water	5	
8/2/2004	Standing Water	10	
8/2/2004	Standing Water	10	
8/2/2004	Standing Water	50	

8/2/2004	Standing Water	20	
8/2/2004	Standing Water	80	
8/2/2004	Standing Water	50	
8/2/2004	Standing Water	28	
8/2/2004	Standing Water	10	
8/2/2004	Standing Water	-	
8/2/2004	Dry	-	
8/2/2004	Dry	-	
8/2/2004	Standing Water	-	
8/2/2004	Standing Water	-	
8/2/2004	Standing Water	-	
8/2/2004	Standing Water	-	
8/2/2004	Standing Water	-	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	1	
8/16/2004	Standing Water	4	
8/16/2004	Standing Water	7	
8/16/2004		9	
8/16/2004	Standing Water	-	
8/16/2004	Pooled	1	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	2	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	4	
8/16/2004	Standing Water	1	
8/16/2004	Standing Water	2	
8/16/2004	Standing Water	-	
8/16/2004	Standing Water	24	
8/16/2004	Standing Water	12	
8/16/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Pooled	1	
8/30/2004	Panne	2	
8/30/2004	Panne	6	
8/30/2004	Panne	2	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	-	
8/30/2004	Standing Water	2	
8/30/2004	Flooded	-	
8/30/2004	Standing Water	1	
8/30/2004	Pooled	9	
8/30/2004	Pooled	24	

**Table 2-2. Vegetation Quadrats**

**AREA 1**

Date	Plot ID	Agalinis_maritima	Aster_tenuifolius	Bare Ground	Distichlis_spicata	Distichlis_spicata (dead)	Iva frutescens	Iva frutescens young <2 in	Iva frutescens (Dead)	Juncus	Atriplex patula	Juncus_spp (dead)	Limonium_carolinianum	Spartina_spp	Panicum_spp	Scirpus_robustus	Phragmites australis (dead)	Phragmites australis	Plantago_maritima	Pluchea_purpureascens	Salicornia_europaea	Salicornia_europaea (dead)	Salidago_spp	Scirpus_olneyi	Scirpus_olneyi (Dead)	Scirpus_paludosus	Spartina_alterniflora	Spartina_alterniflora (dead)	Spartina_patens	Spartina_patens (dead)	Triglochin merittimum	Water (creek or ditch not delineated)	Creek	Ditch	Panne	Wrack Line			
10/22/03	1-1-00			50													50	50						50															
10/22/03	1-1-40																												50										
10/22/03	1-1-80			2																				34				50	16										
10/22/03	1-1-120			8	28												27	2	7					34				50	18										
10/22/03	1-2-120			23									8				13	18					3	34				50											
10/22/03	1-2-80			5	31	1																	2				50	20											
10/22/03	1-2-40			8	5																						50	13											
10/22/03	1-2-00			50													50	50	5					43															
10/22/03	1-3-00			14	33																			50															
10/22/03	1-3-40			20	5													37									50												
10/22/03	1-3-80			2	18		3																				50	1											
10/22/03	1-3-120			1	4																						50												
10/22/03	1-3-160			1	5															6							50												
10/22/03	1-3-200			7			17					4					50	50																					
10/22/03	1-4-240						1																				2	50											
10/22/03	1-4-200			8	37																			39	4		50												
10/22/03	1-4-160						9																	34			34	10											
10/22/03	1-4-120			3	19		3					1												20			50												
10/22/03	1-4-80			9	39		5											12						8			50												
10/22/03	1-4-40			2	5																			7			50												
10/22/03	1-4-00			4													18	38						40	18														





**AREA 2**

Date	Plot ID	Agalinis_maritima	Aster_tenuifolius	Bare Ground	Distichlis_spicata	Distichlis_spicata (dead)	Iva frutescens	Iva frutescens young <2 in	Iva frutescens (Dead)	Juncus	Atriplex patula	Juncus_spp (dead)	Limonium_carolinianum	Spartina_spp	Panicum_spp	Scirpus_robustus	Phragmites australis (dead)	Phragmites australis	Plantago_maritima	Pluchea_purpurescens	Salicornia_europaea	Salicornia_europaea (dead)	Salidago_spp	Scirpus_olneyi	Scirpus_olneyi (Dead)	Scirpus_paludosus	Spartina_alterniflora	Spartina_alterniflora (dead)	Spartina_patens	Spartina_patens (dead)	Triglochin_meritimum	Water (creek or ditch not delineated)	Creek	Ditch	Panne	Wrack Line		
10/20/03	2-5-00						1										6	2								5		50										
10/20/03	2-5-40																												50									
10/20/03	2-5-80			11			4										43	29		18									50								3	
10/20/03	2-4-120			13			17										48	49							43				45									
10/20/03	2-4-80																												50	41								
10/20/03	2-4-40			23																4							50	13	50	36								
10/20/03	2-4-00																												50	32								
10/20/03	2-3-00			41																24							50											
10/20/03	2-3-40			1																							8		50									
10/20/03	2-3-80			38																6							50		50									
10/20/03	2-3-120			11																							29		50	1								
10/20/03	2-3-160			4																10							50	1	50	22								
10/20/03	2-3-200			25			1													9							50	8										
10/20/03	2-2-200																4	9											50	13								
10/20/03	2-2-160			10																3							36	2	50	26								
10/20/03	2-2-120																												50	37								
10/20/03	2-2-80			5																									50	9								
10/20/03	2-2-40																												50	11								
10/20/03	2-2-00																												50									
10/20/03	2-1-00																46	30							43				50								8	
10/20/03	2-1-40																										23		50	16								
10/20/03	2-1-80																												50									
10/20/03	2-1-120			6																							37		50	27								



**AREA 3**

Date	Plot ID	Aga_mari	Aste_ten	Bare Ground	Dis_spic	Dis_spic (dead)	Iva_fruit	Iva_fruit young <2 in	Iva_fruit (Dead)	Juncus	Atriplex patula	Juncus_sp (dead)	Lim_caro	Spartina_sp	Panicum_sp	Sci_robu	Phr_aust (dead)	Phr_aust	Pla_mari	Plu_purp	Sal_euro	Sal_euro (dead)	Sci_olne	Sci_olne (Dead)	Sci_palu	Spa_alte	Spa_alte (dead)	Spa_pate	Spa_pate (dead)	Tri_meri	Water (creek or ditch not delineated)	Creek	Ditch	Panne	Wrack Line	
10/17/03	3-4-00			13																					50	19										
10/17/03	3-4-40																											50	19							
10/17/03	3-4-80																									25		50								
10/17/03	3-4-120			16																						44		36	4							
10/17/03	3-3-120						12							16			50	50								12										
10/17/03	3-3-80			46																						50	10									
10/17/03	3-3-40																											50								
10/17/03	3-3-00																									38		50								
10/17/03	3-2-00													18						2						6		44						15		
10/17/03	3-2-40																											50								
10/17/03	3-2-80																2	21	6									8			47					
10/17/03	3-2-120			8																5						34	7	50								
10/17/03	3-2-160			2																								50	10							
10/17/03	3-2-200																									23		50								
10/17/03	3-1-200																			1						23		50								
10/17/03	3-1-160			5																1						30		50								
10/17/03	3-1-120				2																			16	14			50	5							
10/17/03	3-1-80						1										16	26	7					34	3	7		50								
10/17/03	3-1-40				7																							50	23							
10/17/03	3-1-00			4	18												16	23	2					38				50								
9/24/04	3-4-00			15																						50	20									
9/24/04	3-4-40																											50	21							



**AREA 4**

Date	Plot ID	Aga_mari	Aste_ten	Bare Ground	Dis_spic	Dis_spic (dead)	Iva_frut	Iva_frut young <2 in	Iva_frut (Dead)	Juncus	Atriplex patula	Juncus_sp (dead)	Spartina_sp	Lim_caro	Panicum_sp	Sci_robu	Phr_aust (dead)	Phr_aust	Pla_mari	Plu_purp	Sal_euro	Sal_euro (dead)	Salidago_spp	Sci_olne	Sci_olne (Dead)	Sci_palu	Spa_alte	Spa_alte (dead)	Spa_pate	Spa_pate (dead)	Tri_meri	Water (creek or ditch not delineated)	Creek	Ditch	Panne	
10/2003	4-1-00			41													29	20									13		50							
10/2003	4-1-40																													50	38					
10/2003	4-1-80			3																										50						
10/2003	4-1-120			25																								45	34	40	10					
10/2003	4-1-160			20													4	22										44	12	47	10					
10/2003	4-2-00																													50						
10/2003	4-2-40			1				1																						50						
10/2003	4-2-80																	1												50						
10/2003	4-2-120			4	12													2									46	10	31	2						
10/2003	4-2-160			5													29	12									50	6								
10/2003	4-3-00																													50						
10/2003	4-3-40			2	9																						21		50							
10/2003	4-3-80																													50						
10/2003	4-3-120				41	5		1									6	11												50						
10/2003	4-3-160								1																					31			33			
10/2003	4-4-00			6													41	21						50	50					27						
10/2003	4-4-40																24	28									2		50							
10/2003	4-4-80				27	3																								50						
10/2003	4-4-120				2																									50	24					
10/2003	4-4-160			41													50	50		7																
9/24/04	4-1-00			44													30	21									10		50							
9/24/04	4-1-40																													50	31					



**Table 2-3. Nekton Sampling**

**AREA 1**

Date	Station	Water Depth (cm)	Creek Depth (cm)	Tide	Habitat	Area (m <sup>2</sup> )	Water Temp ( C )	Salinity (ppt)	DO (mg/L)	<i>Fundulus heteroclitus</i>		<i>Lucania parva</i>		<i>Uca spp.</i>	
										Total #	Avg. Size (mm)	Total #	Avg. Size (mm)	Total #	Avg. Size (mm)
10/7/2003	D-1	11	11	Ebb	plugged ditch	0.77	15.8	8.9	0.1	.	.	.	.	.	.
10/7/2003	D-2	9.4	9.4	Ebb	plugged ditch	0.83	15.2	3.3	0.44	1	.	.	.	.	.
10/7/2003	D-3	15	15	Ebb	plugged ditch	0.72	12.9	5.5	0.33	.	.	.	.	.	.
10/7/2003	D-4	41	41	Ebb	plugged ditch	0.57	14.7	11.1	1.29	5	41	.	.	2	26.5
10/7/2003	D-5	10	10	Ebb	plugged ditch	0.83	16.3	6.2	0.1	.	.	.	.	.	.
10/7/2003	D-6	22	28	Ebb	plugged ditch	0.74	14	9.3	0.61	.	.	.	.	.	.
10/7/2003	D-7	5	5	Ebb	plugged ditch	0.54	17	11.2	9.3	.	.	.	.	.	.
10/7/2003	D-8	24	32	Ebb	plugged ditch	0.97	12.6	10.6	0.56	.	.	.	.	.	.
10/7/2003	D-9	13	17	Ebb	plugged ditch	0.64	15.9	12.6	1.09	.	2	.	.	.	.
10/7/2003	D-10	36	52	Ebb	plugged ditch	0.47	14.9	11	0.55	.	.	.	.	.	.
6/14/2004	D-1	8.0	.	Ebb	plugged ditch	0.70	19.3	0.00	.	.	.	.	.	.	.
6/14/2004	D-2	7.0	.	Ebb	plugged ditch	0.87	18.9	1.70	.	.	.	.	.	.	.
6/14/2004	D-3	13.0	.	Ebb	plugged ditch	0.73	19.5	1.50	.	.	.	.	.	.	.
6/14/2004	D-4	20.0	.	Ebb	plugged ditch	0.75	18.6	8.80	.	.	.	1	37	.	.
6/14/2004	D-5	9.0	.	Ebb	plugged ditch	0.91	19.1	2.20	.	.	.	.	.	.	.
6/14/2004	D-6	21.0	30.0	Ebb	plugged ditch	0.84	19.2	3.80	.	.	.	2	38.5	.	.
6/14/2004	D-7	6.0	28.0	Ebb	plugged ditch	0.74	18.5	4.30	.	.	.	.	.	.	.
6/14/2004	D-8	21.0	32.0	Ebb	plugged ditch	0.72	18.9	7.10	.	.	.	.	.	.	.
6/14/2004	D-9	14.0	19.0	Ebb	plugged ditch	0.74	18.8	7.80	.	.	.	.	.	.	.
6/14/2004	D-10	13.0	35.0	Ebb	plugged ditch	0.83	18.8	7.10	.	.	.	.	.	.	.
7/29/2004	D-1	12.0	24.0	Ebb	plugged ditch	0.78	24.8	9.90	0.55	.	.	.	.	.	.
7/29/2004	D-2	12.0	24.0	Ebb	plugged ditch	0.91	23.5	7.20	3.70	.	.	.	.	.	.
7/29/2004	D-3	23.0	32.0	Ebb	plugged ditch	0.73	21.5	5.10	4.00	.	.	.	.	.	.
7/29/2004	D-4	23.0	26.0	Ebb	plugged ditch	0.45	23.2	11.00	2.40	3	29.6	1	15	.	.

7/29/2004	D-5	11.0	20.0	Ebb	plugged ditch	0.67	21.1	7.20	2.70	.	.	.	.	.	.
7/29/2004	D-6	18.0	22.0	Ebb	plugged ditch	0.82	21.7	8.30	1.20	.	.	.	.	.	.
7/29/2004	D-7	.	.	Ebb	plugged ditch	0.56	.	.	.	.	.	.	.	.	.
7/29/2004	D-8	18.0	23.0	Ebb	plugged ditch	0.80	22.3	8.70	2.50	1	45	7	18	.	.
7/29/2004	D-9	7.0	12.0	Ebb	plugged ditch	0.83	27.9	10.30	0.18	.	.	.	.	.	.
7/29/2004	D-10	23.0	29.0	Ebb	plugged ditch	0.77	24.7	11.00	0.74	.	.	.	.	.	.
9/14/2004	D-1	.	.	Flood	plugged ditch	.	.	.	.	.	.	.	.	.	.
9/14/2004	D-2	6.0	7.0	Flood	plugged ditch	0.46	23.3	7.80	0.80	.	.	.	.	.	.
9/14/2004	D-3	20.0	35.0	Flood	plugged ditch	0.44	21.0	7.10	0.40	.	.	.	.	.	.
9/14/2004	D-4	9.0	10.0	Flood	plugged ditch	0.49	24.1	12.10	3.10	1	42	.	.	.	.
9/14/2004	D-5	6.0	10.0	Flood	plugged ditch	0.43	24.1	7.80	4.90	.	.	.	.	.	.
9/14/2004	D-6	11.0	21.0	Flood	plugged ditch	0.43	21.8	11.70	2.60	.	.	2	19.5	.	.
9/14/2004	D-7	.	.	Flood	plugged ditch	.	.	.	.	.	.	.	.	.	.
9/14/2004	D-8	8.0	9.0	Flood	plugged ditch	0.48	21.7	11.30	2.80	.	.	3	20.33	.	.
9/14/2004	D-9	4.0	5.0	Flood	plugged ditch	0.55	23.1	13.70	4.40	.	.	2	21.5	.	.
9/14/2004	D-10	34.0	44.0	Flood	plugged ditch	0.57	24.8	12.40	2.40	.	.	2	25	.	.



**AREA 2**

Date	Station	Water Depth (cm)	Creek Depth (cm)	Tide	Habitat	Area (m <sup>2</sup> )	Water Temp ( C )	Salinity (ppt)	DO (mg/L)	<i>Fundulus heteroclitus</i>		<i>Lucania parva</i>		<i>Fundulus luciae</i>		<i>Palaemonetes</i> spp.		Juvenile Unknown		<i>Callinectes</i> spp.		
										#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	
10/8/03	D-1	33.0	40	Ebb	plugged ditch	0.692	14.0	13.8	0.37	.	5	.	.	.	.	.	.	.	.	.	.	.
10/8/03	D-2	28.0	42	Ebb	plugged ditch	0.853	14.2	14.4	0.24	.	2	.	1	.	.	.	.	.	.	.	.	.
10/8/03	D-3	30.0	37	Ebb	plugged ditch	0.991	13.1	15.1	0.06	9	3	.	.	.	.	.	.	.	.	.	.	.
10/8/03	D-4	10.0	15	Ebb	plugged ditch	0.872	14.2	11.2	0.36	.	.	.	.	.	.	.	.	.	.	.	.	.
10/8/03	D-5	21.0	30	Ebb	plugged ditch	0.855	14.8	10.8	0.16	.	2	.	.	.	.	.	.	.	.	.	.	.
10/8/03	D-6	20.0	20	Ebb	plugged ditch	0.840	14.3	14.7	0.21	.	.	.	.	.	.	.	.	.	.	.	.	.
10/8/03	D-7	13.0	13	Ebb	plugged ditch	0.740	16.7	18	0.38	.	.	.	.	.	.	.	.	.	.	.	.	.
10/8/03	D-8	14.0	14	Ebb	plugged ditch	0.869	15.3	16.7	4.1	44	2	.	.	.	.	.	.	.	.	.	.	.
10/8/03	D-9	23.0	23	Ebb	plugged ditch	0.657	13.7	16.7	5.75	15	.	.	60	.	2	.	.	.	.	.	.	.
10/8/03	D-10	36.0	36	Ebb	plugged ditch	1.144	14.3		1.69	7	4	.	8	.	.	.	.	.	.	.	.	.
6/14/04	D-1	26.0	.	Ebb	plugged ditch	0.77	19.8	10.2	.	.	.	1	43	.	.	.	.	.	.	.	.	.
6/14/04	D-2	29.0	.	Ebb	plugged ditch	0.82	19.3	9.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6/14/04	D-3	26.0	.	Ebb	plugged ditch	0.77	19.4	16.9	.	.	.	1	15	.	.	.	.	.	.	.	.	.
6/14/04	D-4	11.0	.	Ebb	plugged ditch	0.68	21.3	0.7	.	.	.	1	22	.	.	.	.	.	.	.	.	.
6/14/04	D-5	28.0	.	Ebb	plugged ditch	1.01	20.1	9.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6/14/04	D-6	25.0	45.0	Ebb	plugged ditch	0.91	20.5	10.9	.	2	19.5	.	.	.	.	.	.	.	.	.	.	.

6/14/04	D-7	12.0	28.0	Ebb	plugged ditch	0.86	22.1	15.6	.	.	.	.	.	.	.	.	.	5	15.2	.	.
6/14/04	D-8	11.0	38.0	Ebb	plugged ditch	0.77	22.7	19.1	.	.	.	.	.	.	.	.	.	.	.	.	.
6/14/04	D-9	20.0	35.0	Ebb	plugged ditch	0.92	21.1	22.4	.	.	.	.	.	.	.	.	.	.	.	.	.
6/14/04	D-10	33.0	45.0	Ebb	plugged ditch	0.77	21.3	16.2	.	1	13	.	.	.	.	.	.	2	13	.	.
7/30/04	D-1	29.0	43.0	Ebb	plugged ditch	0.90	23.6	12.6	0.15	3	23.3	.	.	.	.	.	.	.	.	.	.
7/30/04	D-2	32.0	40.0	Ebb	plugged ditch	0.80	23.2	16.1	3.00	9	21	5	21	.	.	5	19.8	.	.	.	.
7/30/04	D-3	27.0	34.0	Ebb	plugged ditch	0.88	24.0	17.6	3.50	7	31.7	.	.	.	.	.	.	.	.	.	.
7/30/04	D-4	24.0	32.0	Ebb	plugged ditch	0.99	24.2	15.4	0.20	11	24.5	.	.	.	.	.	.	.	.	.	.
7/30/04	D-5	35.0	42.0	Ebb	plugged ditch	1.12	21.4	13.5	4.10	51	32.4	.	.	.	.	3	23	.	.	.	.
7/30/04	D-6	27.0	40.0	Ebb	plugged ditch	0.75	23.7	11.9	0.66	2	34.5	3	22.6	.	.	.	.	.	.	.	.
7/30/04	D-7	12.0	20.0	Ebb	plugged ditch	0.54	23.7	14.6	1.75	.	.	7	20.4	.	.	.	.	.	.	.	.
7/30/04	D-8	24.0	34.0	Ebb	plugged ditch	0.59	23.6	15.2	1.45	11	25	9	22.5	.	.	2	24.5	.	.	.	.
7/30/04	D-9	29.0	36.0	Ebb	plugged ditch	0.66	24.5	19.1	2.59	15	28.2	1	23	.	.	28	22.6	.	.	.	.
7/30/04	D-10	34.0	44.0	Ebb	plugged ditch	0.85	24.5	17.5	1.31	20	27.9	3	18	.	.	.	.	.	.	.	.
9/15/04	D-1	29.0	44.0	Flood	plugged ditch	0.55	20.1	13.3	3.60	.	.	6	31	.	.	.	.	.	.	.	.
9/15/04	D-2	25.0	43.0	Flood	plugged ditch	0.38	20.5	14.4	3.00	3	27	8	23.4	.	.	.	.	.	.	.	.
9/15/04	D-3	23.0	43.0	Flood	plugged ditch	0.55	20.9	21.0	7.70	13	28.2	21	23.3	.	.	40	.	.	.	.	.
9/15/04	D-4	20.0	30.0	Flood	plugged ditch	0.56	20.8	16.6	1.80	4	32.3	17	25.7	.	.	.	.	.	.	.	.
9/15/04	D-5	29.0	37.0	Flood	plugged ditch	0.54	20.9	17.0	7.80	14	33.6	7	33.6	.	.	.	.	.	.	.	.
9/15/04	D-6	25.0	55.0	Flood	plugged ditch	0.42	21.3	16.8	12.5	6	32.3	.	.	.	.	2	.	.	.	.	.
9/15/04	D-7	7.0	19.0	Flood	plugged ditch	0.47	21.6	19.3	16.7	10	29.7	23	28.5	.	.	.	.	.	.	.	.

9/15/04	D-8	10.0	20.0	Flood	plugged ditch	0.35	24.3	24.5	0.50	.	.	3	24.6	.	.	.	.	.	.	.
9/15/04	D-9	22.0	32.0	Flood	plugged ditch	0.45	22.4	25.4	0.40	1	42	.	.	.	.	29	.	.	.	1
9/15/04	D-10	31.0	46.0	Flood	plugged ditch	0.41	22.0	11.2	4.30	18	39.6	7	32.7	.	.	2	.	.	.	1

**AREA 3**

Date	Station	Water Depth (cm)	Creek Depth (cm)	Tide	Habitat	Area (m <sup>2</sup> )	Water Temp ( C )	Salinity (ppt)	DO (mg/L)	<i>Fundulus heteroclitus</i>		<i>Lucania parva</i>		<i>Fundulus luciae</i>		<i>Palaemonetes</i> spp.	
										Total #	Avg. Size (mm)	Total #	Avg. Size (mm)	Total #	Avg. Size (mm)	Total #	Avg. Size (mm)
10/8/03	D-1	21	21	Ebb	plugged ditch	0.85	17.3	10.2	0.8	1	4	.	.	.	.	.	.
10/8/03	D-2	17	17	Ebb	plugged ditch	0.76	16.4	7.1	0.09	1	9	.	.	.	.	.	.
10/8/03	D-3	10	10	Ebb	plugged ditch	0.81	17.4	8.7	0.81	.	.	.	.	.	.	.	.
10/8/03	D-4	5	5	Ebb	plugged ditch	0.62	19	10.5	0.31	.	4	.	.	.	.	.	.
10/8/03	D-5	22	22	Ebb	plugged ditch	0.89	16.7	5.4	1.32	.	3	.	7	.	.	.	.
10/8/03	D-6	18	18	Ebb	plugged ditch	0.82	17.9	11	0.17	.	.	.	.	.	.	.	.
10/8/03	D-7	25	25	Ebb	plugged ditch	0.92	16.6	12.2	0.73	37	8	.	.	.	.	.	.
10/8/03	D-8	26	26	Ebb	plugged ditch	0.63	19.2	7.6	5.6	1	.	.	.	.	.	.	.
10/8/03	D-9	14	14	Ebb	plugged ditch	0.86	18.8	13.8	1.4	.	.	.	.	.	.	.	.
10/8/03	D-10	38	38	Ebb	plugged ditch	1.04	14.4	21.1	5.15	5	2	.	62	.	.	.	.
6/15/04	D-1	37.0	62.0	Ebb	plugged ditch	0.86	28.5	8.5	0.90	.	.	.	.	.	.	.	.
6/15/04	D-2	37.0	40.0	Ebb	plugged ditch	0.76	24.5	5.6	6.90	.	.	.	.	.	.	.	.
6/15/04	D-3	5.0	10.0	Ebb	plugged ditch	0.87	25.9	7.7	2.00	.	.	.	.	.	.	.	.
6/15/04	D-4	5.0	9.0	Ebb	plugged ditch	0.67	31.2	8.3	2.00	.	.	.	.	.	.	.	.
6/15/04	D-5	34.0	52.0	Ebb	plugged ditch	0.81	25.4	6.7	8.10	.	.	.	.	.	.	.	.
6/15/04	D-6	13.0	25.0	Ebb	plugged ditch	1.00	27.4	9.2	4.66	1	19	.	.	.	.	.	.

6/15/04	D-7	29.0	36.0	Ebb	plugged ditch	0.89	26.1	10.0	0.70	.	3	.	.	.	.	.	.
6/15/04	D-8	31.0	36.0	Ebb	plugged ditch	0.79	27.4	5.6	6.21	1	33	.	.	.	.	.	.
6/15/04	D-9	15.0	38.0	Ebb	plugged ditch	0.78	31.9	4.9	3.50	1	11	.	.	.	.	.	.
6/15/04	D-10	35.0	54.0	Ebb	plugged ditch	0.95	22.3	16.8	0.60	.	.	.	.	.	.	.	.
7/30/04	D-1	27.0	34.0	Ebb	plugged ditch	0.93	24.8	11.8	0.20	.	.	.	.	.	.	.	.
7/30/04	D-2	0.0	0.0	Ebb	plugged ditch	0.79	23.2	10.8	2.20	8	20.7	3	19.6	.	.	.	.
7/30/04	D-3	17.0	27.0	Ebb	plugged ditch	0.51	25.0	9.5	0.30	1	16	3	17.3	.	.	.	.
7/30/04	D-4	7.0	10.0	Ebb	plugged ditch	0.54	25.8	9.6	2.00	2	19.5	2	19.5	.	.	.	.
7/30/04	D-5	45.0	52.0	Ebb	plugged ditch	0.76	23.9	8.1	3.30	8	26.5	5	24	.	.	1	24
7/30/04	D-6	19.0	28.0	Ebb	plugged ditch	0.72	23.9	9.9	1.99	.	.	6	42	.	.	.	.
7/30/04	D-7	23.0	35.0	Ebb	plugged ditch	0.70	24.1	12.4	2.64	1	20	3	23.3	.	.	.	.
7/30/04	D-8	30.0	38.0	Ebb	plugged ditch	0.39	24.3	10.1	2.86	1	20	1	17	.	.	.	.
7/30/04	D-9	14.0	30.0	Ebb	plugged ditch	0.47	24.1	13.1	3.40	.	.	.	.	.	.	.	.
7/30/04	D-10	28.0	40.0	Ebb	plugged ditch	0.48	24.1	21.3	3.81	38	24.2	.	.	.	.	.	.
9/15/04	D-1	21.0	32.0	Flood	plugged ditch	0.87	23.1	14.1	3.74	.	.	1	19	.	.	.	.
9/15/04	D-2	32.0	39.0	Flood	plugged ditch	0.73	21.1	13.6	6.89	3	30.7	5	23.2	.	.	1	25
9/15/04	D-3	13.0	21.0	Flood	plugged ditch	0.63	22.3	11.4	4.47	1	15	2	15.5	.	.	.	.
9/15/04	D-4	6.0	10.0	Flood	plugged ditch	0.77	21.6	10.7	4.41	.	.	.	.	.	.	.	.
9/15/04	D-5	50.0	54.0	Flood	plugged ditch	0.63	21.9	17.1	5.24	.	.	.	.	.	.	16	28.8
9/15/04	D-6	29.0	34.0	Flood	plugged ditch	0.86	21.2	14.0	5.23	4	30.8	5	26.4	.	.	30	29.5
9/15/04	D-7	35.0	42.0	Flood	plugged ditch	0.96	21.1	15.8	4.66	.	.	2	29.5	.	.	2	31

9/15/04	D-8	42.0	47.0	Flood	plugged ditch	0.77	22.0	19.2	5.32	2	31	.	.	.	.	2	28
9/15/04	D-9	32.0	40.0	Flood	plugged ditch	0.94	20.9	16.6	3.01	1	42	.	.	.	.	.	.
9/15/04	D-10	41.0	46.0	Flood	plugged ditch	0.95	20.2	23.6	5.65	16	35.1	1	25	.	.	2	27.5

**AREA 4**

Date	Station	Water Depth (cm)	Creek Depth (cm)	Tide	Habitat	Area (m <sup>2</sup> )	Water Temp ( C )	Salinity (ppt)	DO (mg/L)	<i>Fundulus heteroclitus</i>		<i>Lucania parva</i>		<i>Fundulus luciae</i>		<i>Palaemonetes</i> spp.		Juvenile Unknown		<i>Menidia</i>		<i>Pungitius pungitius</i>	
										#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)	#	Avg. Size (mm)
10/2003	D-1	8.5	20.0	Flood	plugged ditch	0.44	10.9	20.7	5.15	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10/2003	D-2	20.0	26.0	Flood	plugged ditch	0.36	11.3	15.7	0.53	.	3	.	.	.	.	.	.	.	.	.	.	.	
10/2003	D-3	70.0	83.0	Flood	plugged ditch	0.68	14.6	22.7	4.67	7	1	.	89	.	.	.	.	.	.	.	.	.	
10/2003	D-4	15.0	15.0	Ebb	plugged ditch	0.65	10.5	8.0	1.30	3	.	.	.	.	.	.	.	.	.	.	.	.	
10/2003	D-5	14.0	14.0	Ebb	plugged ditch	0.80	11.5	3.4	1.05	.	.	.	.	.	.	.	.	.	.	.	.	.	
10/2003	D-6	37.5	37.5	Ebb	plugged ditch	0.70	9.9	1.7	3.75	7	.	.	.	.	.	.	.	.	.	.	.	.	
10/2003	D-7	13.0	13.0	Ebb	plugged ditch	0.78	11.0	0.8	2.46	.	.	.	.	.	.	.	.	.	.	.	1	14	
10/2003	D-8	27.5	27.5	Ebb	plugged ditch	0.77	10.3	2.1	2.23	.	.	.	.	.	.	.	.	.	.	.	.	.	
10/2003	D-9	7.0	12.0	Flood	plugged ditch	0.45	14.0	20.8	0.45	.	1	.	.	.	.	.	.	.	.	.	.	.	
10/2003	D-10	30.0	35.0	Flood	plugged ditch	0.77	11.8	8.2	1.93	3	1	.	.	.	.	.	.	.	.	.	.	.	
6/15/04	D-1	14.0	20.0	Ebb	plugged ditch	0.44	21.5	16.4	0.40	.	.	.	.	.	.	.	.	.	.	.	.	.	
6/15/04	D-2	20.0	26.0	Ebb	plugged ditch	0.66	22.7	12.5	1.49	.	.	.	.	.	.	.	.	.	.	.	.	.	
6/15/04	D-3	85.0	85.0	Ebb	plugged ditch	1.00	19.7	7.1	2.03	.	.	.	.	.	3	29	.	.	1	23	.	.	
6/15/04	D-4	.	.	Ebb	plugged ditch	0.93	20.0	6.2	3.70	14	26.9	5	14.8	1	15	.	.	.	.	.	.	.	
6/15/04	D-5	10.0	15.0	Ebb	plugged ditch	1.05	17.9	2.2	2.40	.	.	.	.	.	.	.	.	.	.	.	.	.	
6/15/04	D-6	34.0	38.0	Ebb	plugged ditch	0.71	18.7	0.9	4.10	.	.	.	.	.	.	.	.	.	.	.	.	.	
6/15/04	D-7	19.0	29.0	Ebb	plugged ditch	0.69	21.2	0.5	2.80	.	.	.	.	.	.	.	1	8	.	.	.	.	
6/15/04	D-8	37.0	45.0	Ebb	plugged ditch	0.72	17.6	0.4	1.60	.	.	.	.	.	.	.	.	.	.	.	.	.	

6/15/04	D-9	9.0	14.0	Ebb	plugged ditch	0.72	24.6	19.5	3.10	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6/15/04	D-10	35.0	43.0	Ebb	plugged ditch	0.97	21.9	16.1	3.80	2	20.5	.	.	.	.	.	.	.	.	.	.	.	.
7/29/04	D-1	14.0	30.0	Ebb	plugged ditch	0.33	29.0	21.0	5.00	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7/29/04	D-2	17.0	27.0	Ebb	plugged ditch	0.69	30.7	14.1	0.10	4	17.5	.	.	.	.	.	.	.	.	.	.	.	.
7/29/04	D-3	68.0	80.0	Ebb	plugged ditch	0.58	24.3	13.1	2.76	13	32	.	.	.	.	163	23.6	.	.	.	.	.	.
7/29/04	D-4	17.0	34.0	Ebb	plugged ditch	0.73	21.4	10.2	1.25	2	17.5	4	22.6	.	.	.	.	.	.	.	.	.	.
7/29/04	D-5	7.0	12.0	Ebb	plugged ditch	0.47	21.0	3.6	2.52	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7/29/04	D-6	23.0	34.0	Ebb	plugged ditch	0.89	23.8	1.5	6.00	1	33	1	17	.	.	.	.	.	.	.	.	.	.
7/29/04	D-7	11.0	14.0	Ebb	plugged ditch	0.58	21.1	0.3	2.20	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7/29/04	D-8	12.0	22.0	Ebb	plugged ditch	0.59	21.2	2.2	2.60	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7/29/04	D-9	17.0	25.0	Ebb	plugged ditch	0.63	31.4	22.2	1.50	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7/29/04	D-10	20.0	32.0	Ebb	plugged ditch	0.69	27.5	13.0	7.60	68	33	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-1	11.0	27.0	Ebb	plugged ditch	0.46	25.1	25.8	1.50	11	18	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-2	19.0	23.0	Ebb	plugged ditch	0.64	25.8	15.0	3.61	1	29	1	20	.	.	.	.	.	.	.	.	.	.
9/14/04	D-3	59.0	76.0	Ebb	plugged ditch	0.82	24.6	19.4	6.20	.	.	.	.	.	.	26	37.3	.	.	.	.	.	.
9/14/04	D-4	18.0	44.0	Ebb	plugged ditch	0.72	21.0	9.7	4.81	1	34	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-5	9.0	14.0	Ebb	plugged ditch	0.74	18.3	4.8	5.57	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-6	.	.	Ebb	plugged ditch	1.06	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-7	.	.	Ebb	plugged ditch	0.71	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-8	.	.	Ebb	plugged ditch	0.78	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-9	17.0	23.0	Ebb	plugged ditch	0.67	27.8	24.1	3.91	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9/14/04	D-10	21.0	44.0	Ebb	plugged ditch	0.92	25.4	11.3	6.32	8	24.9	.	.	.	.	.	.	.	.	.	.	.	.



**Table 2-4. Vegetation Invertebrate Identification**

**AREA 1**

Date	Station	Vegetation	Class	Order	Family	Quantity
10/30/2003	1-2-40	High marsh	Gastropoda		Melampodidae	1
				Stylommatophora	Succineidae	17
			Crustacea	Isopoda	Oniscidae	33
				Amphipoda	Talitridae	5
			Arachnida	Araneae	Lycosidae	7
					Clubionidae	1
					Micryphantidae	1
Insecta	Hemiptera	Hebridae	1			
10/30/2003	1-3-160	High marsh	Crustacea	Isopoda	Oniscidae	12
				Amphipoda	Talitridae	18
			Arachnida	Araneae	Lycosidae	4
					Clubionidae	2
			Insecta	Hemiptera	Hebridae	1
	Diptera	Tabindae (larva)	1			
10/30/2003	1-5-40	High marsh	Gastropoda	Stylommatophora	Succineidae	5
			Crustacea	Isopoda	Oniscidae	66
				Amphipoda	Talitridae	24
			Arachnida	Araneae	Lycosidae	24
					Clubionidae	9
					Salticidae	1
			Insecta	Hemiptera	Hebridae	6
				Coleoptera	Anthicidae	2
					Chrysomelidae	1
					Heteroceridae (larva)	1
	Lepidoptera	Pyralidae (larva)	1			
10/30/2003	1-1-80	Low marsh	Gastropoda		Melampodidae	14
				Stylommatophora	Succineidae	23
			Crustacea	Isopoda	Oniscidae	62
				Amphipoda	Talitridae	71
					Nematoda	2

			Arachnida	Araneae	Lycosidae	17
					Clubionidae	10
			Insecta	Hemiptera	Hebridae	2
				Hymenoptera	Formicidae	8
				Diptera	Tabanidae (larva)	2
					Dolichopodidae (larva)	1
				Coleoptera	Chrysomelidae (larva)	1
10/30/2003	1-4-160	Low marsh	Gastropoda		Melampodidae	1
				Stylommatophora	Succineidae	7
			Crustacea	Isopoda	Oniscidae	64
				Amphipoda	Talitridae	13
			Arachnida	Araneae	Lycosidae	11
					Clubionidae	2
			Insecta	Hemiptera	Hebridae	1
10/30/2003	1-1-120	Low marsh	Gastropoda	Stylommatophora	Succineidae	3
			Crustacea	Isopoda	Oniscidae	16
				Amphipoda	Talitridae	4
			Arachnida	Araneae	Lycosidae	3
					Clubionidae	1
			Insecta	Diptera	Tabanidae (larva)	1
10/30/2003	1-3-200	<i>Phragmites australis</i>	Crustacea	Isopoda	Oniscidae	24
				Amphipoda	Talitridae	24
			Gastropoda		Melampodidae	2
				Stylommatophora	Succineidae	1
10/30/2003	1-4-00	<i>Phragmites australis</i>	Crustacea	Isopoda	Oniscidae	3
				Amphipoda	Talitridae	1
			Arachnida	Araneae	Clubionidae	1
					Micryphantidae	2
			Insecta	Lepidoptera	Pyralidae (larva)	1
				Diptera	Sciomyzidae	1
8/03/2004	1-1-80	High marsh	Gastropoda	Stylommatophora	Succineidae	8
			Crustacea	Isopoda	Oniscidae	5
				Amphipoda	Talitridae	6
			Insecta	Hemiptera	Reduviidae	1

8/03/2004	1-2-40	High marsh	Crustacea	Isopoda	Oniscidae	1
				Amphipoda	Talitridae	9
			Arachnida	Araneae	Lycosidae	2
					Micryphantidae	8
					Clubionidae	3
Insecta	Collembola	Sminthuridae	1			
8/03/2004	1-3-160	High marsh	Gastropoda	Stylommatophora	Succineidae	8
			Crustacea	Isopoda	Oniscidae	45
				Amphipoda	Talitridae	22
			Arachnida	Araneae	Lycosidae	9
					Clubionidae	1
			Insecta	Hemiptera	Hebridae	1
				Diptera	Tabanidae (larva)	1
8/03/2004	1-1-120	Low marsh	Gastropoda	Archaeopulmonata	Melampodidae	1
				Stylommatophora	Succineidae	1
			Crustacea	Isopoda	Oniscidae	5
				Amphipoda	Talitridae	7
			Insecta	Diptera	Tabanidae (larva)	1
				Coleoptera	Carabidae	1
8/03/2004	1-4-160	Low marsh	Gastropoda	Stylommatophora	Succineidae	28
			Crustacea	Isopoda	Oniscidae	17
				Amphipoda	Talitridae	5
			Insecta	Hemiptera	Pentatomidae	1
			Arachnida	Araneae	Lycosidae	4
					Clubionidae	1
8/03/2004	1-5-40	Low marsh	Gastropoda	Stylommatophora	Succineidae	8
			Crustacea	Isopoda	Oniscidae	18
				Amphipoda	Talitridae	19
			Arachnida	Araneae	Lycosidae	13
					Clubionidae	3
					Micryphantidae	7
			Insecta	Coleoptera	Staphylinidae	4
					Sminthuridae	1
Hemiptera	Hebridae	2				

				Homoptera	Delphacidae	1
8/03/2004	1-3-200	<i>Phragmites australis</i>	Crustacea	Isopoda	Oniscidae	12
				Amphipoda	Talitridae	20
			Insecta	Diptera	Tabanidae (larva)	1
8/03/2004	1-4-00	<i>Phragmites australis</i>	Gastropoda	Stylommatophora	Succineidae	1
			Crustacea	Isopoda	Oniscidae	2
				Amphipoda	Talitridae	16
			Arachnida	Araneae	Lycosidae	1
					Clubionidae	1
					Micryphantidae	1
Insecta	Coleoptera	Staphylinidae	2			

**AREA 2**

Date	Station	Vegetation	Class	Order	Family	Quantity
10/31/03	2-2-40	High marsh	Crustacea	Isopoda	Oniscidae	2
			Arachnida	Araneae	Lycosidae	6
					Clubionidae	3
			Insecta	Hemiptera	Hebridae	2
				Diptera	Tabanidae (larva)	1
10/31/03	2-3-40	High marsh	Gastropoda	Stylommatophora	Succineidae	9
			Crustacea	Isopoda	Oniscidae	4
				Amphipoda	Talitridae	7
			Arachnida	Araneae	Lycosidae	9
					Clubionidae	1
					Tetragnathidae	1
			Insecta	Hemiptera	Hebridae	5
			10/31/03	2-4-80	Low marsh	Crustacea
Amphipoda	Talitridae	7				
Arachnida	Araneae	Lycosidae				8
		Micryphantidae				2
		Salticidae				1
10/31/03	2-3-120	Low marsh	Crustacea	Isopoda	Oniscidae	25
				Amphipoda	Talitridae	26
			Arachnida	Araneae	Lycosidae	3
					Clubionidae	1
					Micryphantidae	1
			Insecta	Coleoptera	Staphylinidae	4
				Hymenoptera	Formicidae	1
				Coleoptera	Cantharidae	1
Diptera	Tabanidae (larva)	1				
10/31/03	2-1-80	<i>Phragmites australis</i>	Gastropoda		Melampodidae	1
					Succineidae	1
			Crustacea	Isopoda	Oniscidae	1
				Amphipoda	Talitridae	4
			Arachnida	Araneae	Lycosidae	1
					Clubionidae	1

8/3/2004	2-3-40	High marsh	Crustacea	Amphipoda	Talitridae	6
			Arachnida	Araneae	Lycosidae	9
8/3/2004	2-2-40	High marsh	Gastropoda	Stylommatophora	Succineidae	2
			Crustacea	Amphipoda	Talitridae	29
			Arachnida	Araneae	Lycosidae	2
					Clubionidae	2
					Insecta	Coleoptera
			Chrysomelidae	1		
			Nitidulidae	1		
8/3/2004	2-3-160	Low marsh	Gastropoda	Archaeopulmonata	Melampodidae	2
				Stylommatophora	Succineidae	2
			Crustacea	Isopoda	Oniscidae	20
				Amphipoda	Talitridae	18
			Arachnida	Araneae	Lycosidae	4
					Clubionidae	1
					Salticidae	1
					Micryphantidae	1
			Insecta	Diptera	Tabanidae (larva)	1
					Dolichopodidae (larva)	1
				Hemiptera	Pentatomidae	1
					Reduviidae	1
				Coleoptera	Carabidae	1
				Collembola	Sminthuridae	1
8/3/2004	2-4-40	Low marsh	Crustacea	Isopoda	Oniscidae	4
				Amphipoda	Talitridae	12
			Arachnida	Araneae	Lycosidae	2
					Clubionidae	1
			Insecta	Hemiptera	Pentatomidae	1
				Diptera	Tabanidae (larva)	1
				Coleoptera	Carabidae (larva)	1
Chrysomelidae	2					
8/3/2004	2-1-00	<i>Phragmites australis</i>	Crustacea	Isopoda	Oniscidae	5
			Arachnida	Araneae	Lycosidae	1

**AREA 3**

Date	Station	Vegetation	Class	Order	Family	Quantity
10/31/2003	3-3-40	High marsh	Gastropoda	Stylommatophora	Succineidae	6
			Crustacea	Isopoda	Oniscidae	3
				Amphipoda	Talitridae	9
				Arachnida	Araneae	Lycosidae
			Clubionidae			2
			Tetragnathidae			1
			Insecta	Diptera	Tabanidae (larva)	2
10/31/2003	3-3-120	High marsh	Crustacea	Isopoda	Oniscidae	4
				Amphipoda	Talitridae	11
			Arachnida	Araneae	Lycosidae	5
			Insecta	Diptera	Tabanidae (larvae)	2
				Coleoptera	Carabidae	1
					Heteroceridae (larva)	1
			10/31/2003	3-3-160	Low marsh	Gastropoda
Crustacea	Isopoda	Oniscidae				24
	Amphipoda	Talitridae				9
Arachnida	Araneae	Lycosidae				17
		Clubionidae				2
Insecta	Hemiptera	Hebridae				4
	Diptera	Tabanidae (larva)				1
	Lepidoptera	Pyralidae (larva)				1
	Diptera	Dolichopodidae (larva)				1
10/31/2003	3-4-40	Low marsh	Gastropoda		Melampodidae	1
			Crustacea	Isopoda	Oniscidae	2
			Arachnida	Araneae	Lycosidae	4
					Clubionidae	1
			Insecta	Hemiptera	Hebridae	5
10/31/2003	3-5-80	<i>Phragmites australis</i>	Crustacea	Isopoda	Oniscidae	4
			Arachnida	Araneae	Micryphantidae	1
8/9/2004	3-2-40	High marsh	Gastropoda	Stylommatophora	Succineidae	8
			Crustacea	Isopoda	Oniscidae	28
				Amphipoda	Talitridae	53

			Arachnida	Araneae	Lycosidae	9
					Tetragnathidae	6
					Clubionidae	2
					Thomisidae	1
			Insecta	Collembola	Sminthuridae	1
				Hemiptera	Anthocoridae	1
					Hebridae	1
					Pentatomidae	1
				Coleoptera	Heteroceridae (larva)	1
8/9/2004	3-3-40	High marsh	Crustacea	Isopoda	Oniscidae	50
				Amphipoda	Talitridae	26
			Arachnida	Pseudoscorpionida	Chernetidae	1
				Araneae	Lycosidae	18
					Tetragnathidae	20
					Micryphantidae	1
					Thomisidae	1
			Insecta	Diptera	Tabanidae (larvae)	5
				Hemiptera	Pentatomidae	1
					Miridae	1
				Homoptera	Aphididae	1
				Collembola	Entombryidae	2
8/9/2004	3-2-200	Low marsh	Gastropoda	Stylommatophora	Succineidae	2
			Crustacea	Isopoda	Oniscidae	24
				Amphipoda	Talitridae	20
			Arachnida	Araneae	Lycosidae	7
					Micryphantidae	4
					Tetragnathidae	2
					Thomisidae	1
			Insecta	Diptera	Tabanidae (larvae)	2
				Hemiptera	Reduviidae	1
					Hebridae	2
				Orthoptera	Gryllidae	1
8/9/2004	3-4-80	Low marsh	Gastropoda	Stylommatophora	Succineidae	1
			Crustacea	Isopoda	Oniscidae	10



				Amphipoda	Talitridae	26	
			Arachnida	Araneae	Lycosidae	7	
					Clubionidae	1	
					Thomisidae	3	
					Micryphantidae	4	
			Insecta	Hemiptera	Scutelleridae	1	
					Nabidae	1	
8/9/2004	3-3-120	<i>Phragmites australis</i>	Crustacea	Isopoda	Oniscidae	66	
				Amphipoda	Talitridae	35	
			Arachnida	Araneae	Lycosidae	3	
					Tetragnathidae	7	
					Salticidae	1	
					Pseudoscorpionida	Chernetidae	1
			Insecta	Diptera	Tabanidae (larva)	1	
					Hemiptera	Hebridae	2
						Lygaeidae	1
				Coleoptera	Chrysomelidae (larva)	1	
					Anthicidae	2	
Pselaphidae	1						
Hymenoptera	Formicidae	1					

**AREA 4**

Date	Station	Vegetation	Class	Order	Family	Quantity
10/30/2003	4-4-80	High marsh	Gastropoda		Melampodidae	1
				Stylommatophora	Succineidae	20
			Crustacea	Isopoda	Oniscidae	43
				Amphipoda	Talitridae	6
			Arachnida	Araneae	Lycosidae	10
					Clubionidae	3
					Tetragnathidae	1
			Insecta	Hemiptera	Hebridae	1
				Diptera	Tabanidae (larva)	1
				Coleoptera	Heteroceridae (larva)	1
Hymenoptera	Formicidae	1				
10/30/2003	4-3-80	High marsh	Gastropoda	Stylommatophora	Succineidae	16
			Crustacea	Isopoda	Oniscidae	2
				Amphipoda	Talitridae	1
			Arachnida	Araneae	Lycosidae	6
					Micryphantidae	1
			Insecta	Coleoptera	Chrysomelidae	2
Hymenoptera	Formicidae	1				
10/30/2003	4-3-00	High marsh	Gastropoda	Stylommatophora	Succineidae	2
			Crustacea	Isopoda	Oniscidae	16
				Amphipoda	Talitridae	37
			Arachnida	Acarina	Suborder Trombidiformes	1
				Araneae	Lycosidae	4
					Tetragnathidae	1
10/30/2003	4-1-120	Low marsh	Gastropoda		Melampodidae	3
				Stylommatophora	Succineidae	4
			Crustacea	Isopoda	Oniscidae	29
				Amphipoda	Talitridae	4
			Arachnida	Acarina	Sub order Trombidiformes	1
				Araneae	Lycosidae	6
					Clubionidae	5
			Insecta	Coleoptera	Chrysomelidae	1

				Diptera	Tabanidae (larva)	1
				Coleoptera	Curculionidae	1
10/30/2003	4-2-00	Low marsh	Gastropoda		Melampodidae	9
				Stylommatophora	Succineidae	2
			Crustacea	Isopoda	Oniscidae	172
				Amphipoda	Talitridae	8
			Arachnida	Acarina	Suborder Trombidiformes	2
				Araneae	Lycosidae	14
					Clubionidae	5
					Micryphantidae	4
					Tetragnathidae	2
			Insecta	Hemiptera	Hebridae	3
				Coleoptera	Chrysomelidae	1
					Heteroceridae (larva)	1
10/30/2003	4-1-160	Low marsh	Gastropoda		Melampodidae	8
				Stylommatophora	Succineidae	3
			Crustacea	Amphipoda	Talitridae	5
			Arachnida	Araneae	Lycosidae	7
					Clubionidae	5
10/30/2003	4-2-120	<i>Phragmites australis</i>	Gastropoda		Melampodidae	1
			Crustacea	Isopoda	Oniscidae	33
				Amphipoda	Talitridae	8
			Arachnida	Araneae	Lycosidae	4
					Clubionidae	4
					Micryphantidae	1
			Insecta	Diptera	Tabanidae (larvae)	3
10/30/2003	4-4-00	<i>Phragmites australis</i>	Crustacea	Amphipoda	Talitridae	1
			Insecta	Coleoptera	Chrysomelidae	1
8/10/2004	4-3-00	High marsh	Crustacea	Isopoda	Oniscidae	32
				Amphipoda	Talitridae	33
			Arachnida	Araneae	Lycosidae	6
					Clubionidae	2
					Tetragnathidae	2
					Micryphantidae	1

			Insecta	Diptera	Tabanidae (larva)	1
				Psocoptera	unknown	3
8/10/2004	4-3-80	High marsh	Gastropoda	Archaeopulmonata	Melampodidae	1
				Stylommatophora	Succineidae	28
			Crustacea	Isopoda	Oniscidae	24
				Amphipoda	Talitridae	52
			Arachnida	Araneae	Lycosidae	2
					Clubionidae	3
					Tetragnathidae	2
					Micryphantidae	1
				Pseudoscorpionida	Chernetidae	1
			Insecta	Hemiptera	Lygaeidae	1
8/10/2004	4-4-80	High marsh	Gastropoda	Stylommatophora	Succineidae	7
			Crustacea	Isopoda	Oniscidae	1
				Amphipoda	Talitridae	15
			Arachnida	Araneae	Lycosidae	10
					Clubionidae	1
			Insecta	Diptera	Tabanidae	1
				Orthoptera	Gryllidae	1
				Coleoptera	Chrysomelidae	1
				Hemiptera	Miridae	2
8/10/2004	4-1-120	Low marsh	Gastropoda	Archaeopulmonata	Melampodidae	2
				Stylommatophora	Succineidae	6
			Crustacea	Isopoda	Oniscidae	29
				Amphipoda	Talitridae	28
			Arachnida	Araneae	Lycosidae	3
					Clubionidae	4
					Micryphantidae	6
			Insecta	Diptera	Tabanidae (larvae)	2
				Hemiptera	pentatomidae	1
				Collembola	Sminthuridae	1
				Orthoptera	Gryllidae	1
8/10/2004	4-1-160	Low marsh	Gastropoda	Stylommatophora	Succineidae	7
			Crustacea	Isopoda	Oniscidae	31

				Amphipoda	Talitridae	35
			Arachnida	Araneae	Lycosidae	4
					Clubionidae	2
					Tetragnathidae	4
				Pseudoscorpionida	Chernetidae	1
			Insecta	Diptera	Tabanidae (larva)	1
				Hemiptera	Phymatidae	1
				Coleoptera	Heteroceridae (larvae)	3
					Pselaphidae	1
					Staphylinidae	2
					Staphylinidae (larva)	1
8/10/2004	4-3-40	Low marsh	Crustacea	Isopoda	Oniscidae	19
				Amphipoda	Talitridae	26
			Arachnida	Araneae	Lycosidae	7
					Clubionidae	2
					Micryphantidae	4
				Pseudoscorpionida	Chernetidae	1
			Acariformes	unknown	1	
			Insecta	Diptera	Tabanidae (larva)	1
				Collembola	Sminthuridae	1
				Homoptera	Delphacidae	1
				Coleoptera	Chrysomelidae	1
					Carabidae (larvae)	3
				Hemiptera	Miridae	1
8/10/2004	4-2-120	<i>Phragmites australis</i>	Gastropoda	Archaeopulmonata	Melampodidae	3
			Crustacea	Isopoda	Oniscidae	8
				Amphipoda	Talitridae	22
			Insecta	Diptera	Muscidae (larva)	1
				Collembola	Entomobryidae	1
				Coleoptera	Chrysomelidae	1
					Carabidae (larva)	1
					Staphylinidae	1
			8/10/2004	4-4-00	<i>Phragmites australis</i>	Gastropoda
Crustacea	Isopoda	Oniscidae				2

			Amphipoda	Talitridae	21
		Arachnida	Araneae	Lycosidae	3
				Micryphantidae	1
			Acariformes	unknown	1
		Insecta	Diptera	Tabanidae (larva)	1
			Hymenoptera	Formicidae	1
			Collembola	Entomobryidae	4
			Orthoptera	Gryllidae	4
			Coleoptera	Chrysomelidae	1
				Carabidae (larva)	1
				Heteroceridae (larvae)	2

**Table 2-5. Water Column Invertebrate Identification**

**AREA 1**

Date	Station	Class	Order	Family	Quantity
11/13/2003	D-1	Oligochaeta		Megascolecidae	6
		Amphipoda		Gammaridae	2
				Talitridae	1
		Insecta	Hymenoptera	Formicidae	1
11/13/2003	D-3	Ostracoda			1
		Oligochaeta		Naididae	1
		Amphipoda		Talitridae	4
11/13/2003	D-4	Polychaeta		Ampharetidae	5
		Insecta	Diptera	Chironomidae	1
11/13/2003	D-6	Polychaeta		Ampharetidae	1
		Ostracoda			1
		Insecta	Diptera	Ceratopogonidae	1
11/13/2003	D-8	Ostracoda			2
		Oligochaeta		Megascolecidae	1
		Amphipoda		Gammaridae	1
		Arachnida		Clubionidae	1
		Insecta		Chironomidae	2
11/13/2003	D-9	Insecta	Hemiptera	Corixidae	6
11/13/2003	D-10	Insecta	Hemiptera	Corixidae	3
8/11/2004	D-2	Oligochaeta	Haplotaaxida	Megascolecidae	107
		Arachnida	Acariformes	unknown	1
8/11/2004	D-3	Oligochaeta	Haplotaaxida	Naididae	12
		Crustacea	Ostracoda	unknown	2
		Arachnida	Araneae	Clubionidae	1
		Insecta	Hemiptera	Corixidae	1
				Hebridae	1
	Homoptera	Aphididae	1		
8/11/2004	D-4	Oligochaeta	Haplotaaxida	Naididae	1
		Crustacea	Ostracoda	unknown	7

		Arachnida	Acariformes	unknown	1
		Insecta	Hemiptera	Corixidae	54
8/11/2004	D-6	Oligochaeta	Haplotaxida	Naididae	43
		Crustacea	Ostracoda	unknown	1
8/11/2004	D-8	Oligochaeta	Haplotaxida	Megascolecidae	115
		Crustacea	Ostracoda	unknown	2
		Gastropoda	Stylommatophora	Succineidae	4
		Arachnida	Acariformes	unknown	2
		Insecta	Hemiptera	Corixidae	2
8/11/2004	D-9	Oligochaeta	Haplotaxida	Naididae	>200
		Crustacea	Ostracoda	unknown	2
		Arachnida	Araneae	Clubionidae	1
		Insecta	Hemiptera	Corixidae	10
			Diptera	Syrphidae	3
8/11/2004	D-10	Oligochaeta	Haplotaxida	Megascolecidae	2
		Insecta	Hemiptera	Corixidae	4



**AREA 2**

Date	Station	Class	Order	Family	Quantity
11/14/2003	D-1	Oligochaeta		Naididae	2
		Amphipoda		Aoridae	1
11/14/2003	D-2	Amphipoda		Gammaridae	2
11/14/2003	D-3	Insecta	Hemiptera	Corixidae	4
			Diptera	Tabanidae	1
				Chironomidae	1
11/14/2003	D-5	Oligochaeta		Naididae	1
11/14/2003	D-6	Polychaeta		Ampharetidae	3
		Oligochaeta		Megascolecidae	2
		Arachnida		Lycosidae	1
11/14/2003	D-7	Polychaeta		Ampharetidae	44
		Amphipoda		Gammaridae	1
		Arachnida		Clubionidae	1
		Insecta	Diptera	Chironomidae	1
11/14/2003	D-8	Polychaeta		Ampharetidae	1
		Amphipoda		Gammaridae	12
		Isopoda		Idoteidae	1
8/13/2004	D-1	Insecta	Hemiptera	Corixidae	58
			Odonata	Libellulidae	1
8/13/2004	D-2	Gastropoda	Stylommatophora	Succineidae	2
		Crustacea	Decapoda	Palaemonidae	21
		Insecta	Hemiptera	Corixidae	100
8/13/2004	D-3	Polychaeta	Terebellida	Ampharetidae	1
		Crustacea	Decapoda	Palaemonidae	2
		Insecta	Hemiptera	Corixidae	12
8/13/2004	D-5	Insecta	Hemiptera	Corixidae	20
			Diptera	Empididae	1
				Dolichopodidae	1
8/13/2004	D-6	Insecta	Hemiptera	Corixidae	3
			Homoptera	Aphididae	1
8/13/2004	D-7	Crustacea	Decapoda	Palaemonidae	2
		Arachnida	Araneae	Salticidae	1

		Insecta	Hemiptera	Corixidae	31
			Homoptera	Aphididae	4
			Hymenoptera	Formicidae	1
			Coleoptera	Staphylinidae	2
8/13/2004	D-8	Insecta	Hemiptera	Corixidae	20
			Homoptera	Aphididae	3

**AREA 3**

Date	Station	Class	Order	Family	Quantity
11/15/2003	D-1	Insecta	Trichoptera	Limnephilidae	3
			Hemiptera	Corixidae	5
			Diptera	Culicidae	1
11/15/2003	D-2	Crustacea	Decapoda	Palaemonidae	6
11/15/2003	D-3	Polychaeta		Ampharetidae	20
		Oligochaeta		Megascolecidae	22
		Arachnida		Lycosidae	2
		Insecta	Hemiptera	Belostomatidae	1
			Diptera	Chironomidae	1
		Coleoptera	Staphylinidae	1	
11/15/2003	D-5	Oligochaeta		Naididae	3
		Arachnida		Lycosidae	1
		Insecta		Chironomidae	2
11/15/2003	D-6	Polychaeta		Ampharetidae	19
		Oligochaeta		Naididae	13
				Megascolecidae	1
		Ostracoda			3
		Gastropoda		Succineidae	1
8/13/2004	D-1	Insecta	Hemiptera	Corixidae	17
			Hemiptera	Belostomatidae	1
			Coleoptera	Chrysomelidae	1
8/13/2004	D-2	Polychaeta	Phyllodocida	Nereidae	1
		Insecta	Hemiptera	Corixidae	24
8/13/2004	D-3	Insecta	Hemiptera	Corixidae	14
			Diptera	Syrphidae	2
			Homoptera	Aphididae	1
8/13/2004	D-5	Crustacea	Amphipoda	Gammaridae	1
			Decapoda	Palaemonidae	32
		Insecta	Hemiptera	Belostomatidae	1
8/13/2004	D-6	No specimens			
8/13/2004	D-7	Oligochaeta	Haplotaxida	Naididae	1
		Insecta	Hemiptera	Corixidae	10

			Hymenoptera	Formicidae	1
8/13/2004	D-8	Oligochaeta	Haplotaxida	Naididae	1
		Polychaeta	Terebellida	Ampharetidae	3
		Crustacea	Decapoda	Palaemonidae	2
		Arachnida	Araneae	Lycosidae	1
		Insecta	Hemiptera	Corixidae	38

**AREA 4**

Date	Station	Class	Order	Family	Quantity
11/20/2003	D-1	Anthozoa	Ceriantharia		4
		Amphipoda		Gammaridae	1
				Talitridae	2
		Crustacea	Decapoda	Palaemonidae	1
		Insecta	Hemiptera	Corixidae	7
			Diptera	Culicidae	1
			Odonata	Libellulidae	2
Coleoptera	Hydrophilidae		1		
11/20/2003	D-2	Gastropoda		Succineidae	1
		Insecta	Hemiptera	Corixidae	2
			Diptera	Syrphidae	1
11/20/2003	D-3	Amphipoda		Gammaridae	5
		Insecta	Diptera	Chironomidae	5
11/20/2003	D-4	Anthozoa	Ceriantharia		1
		Amphipoda		Talitridae	1
11/20/2003	D-6	Polychaeta		Ampharetidae	6
		Oligochaeta		Naididae	1
8/11/2004	D-1	Insecta	Hemiptera	Corixidae	14
		Arachnida	Araneae	Lycosidae	1
8/11/2004	D-2	Oligochaeta	Haplotaxidae	Naididae	1
		Polychaeta	Terebellida	Ampharetidae	4
		Crustacea	Ostracoda	unknown	2
		Insecta	Hemiptera	Corixidae	16
			Homoptera	Cicadellidae	1
8/11/2004	D-3	Crustacea	Decapoda	Palaemonidae	15
		Arachnida	Araneae	Clubionidae	1
8/11/2004	D-4	Insecta	Hemiptera	Corixidae	16
			Homoptera	Aphididae	1
8/11/2004	D-6	Arachnida	Araneae	Lycosidae	1
		Insecta	Hemiptera	Corixidae	3
8/11/2004	D-7	Insecta	Hemiptera	Corixidae	1
8/11/2004	D-8	Insecta	Hemiptera	Corixidae	2

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		Diptera	Chironomidae	1
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**Table 2-6. Benthic Invertebrate Identification**

**AREA 1**

Date	Station	Sample	Class	Sub Class	Order	Family	Quantity
12/5/2003	D-1	R-1	Polychaeta			Ampharetidae	1
		R-2					0
		R-3					0
12/5/2003	D-3	R-1	Polychaeta			Ampharetidae	1
		R-2	Polychaeta			Ampharetidae	1
		R-3					0
12/5/2003	D-4	R-1	Polychaeta			Ampharetidae	3
		R-2	Polychaeta			Ampharetidae	17
			Oligochaeta			Naididae	2
			Insecta		Diptera	Ceratopogonidae	1
		R-3	Polychaeta			Ampharetidae	2
			Oligochaeta			Naididae	1
						Megascolecidae	1
			Insecta		Diptera	Ceratopogonidae	1
12/5/2003	D-6	R-1	Polychaeta			Ampharetidae	4
						Ampharetidae	1
			Oligochaeta			Megascolecidae	1
		R-2	Polychaeta			Ampharetidae	3
			Oligochaeta			Naididae	4
			Insecta		Diptera	Ceratopogonidae	1
		R-3	Oligochaeta			Naididae	8
		12/5/2003	D-8	R-1	Crustacea	Ostracoda	
R-2	Crustacea			Ostracoda			9
	Insecta				Diptera	Ceratopogonidae	1
	Polychaeta					Ampharetidae	22
	Oligochaeta					Naididae	3
						Megascolecidae	1
Crustacea				Amphipoda	Gammaridae	1	
R-3	Crustacea	Ostracoda			2		

			Insecta		Diptera	Ceratopogonidae	5	
			Polychaeta			Ampharetidae	12	
			Oligochaeta			Naididae	5	
						Megascolecidae	2	
12/5/2003	D-9	R-1	Polychaeta			Ampharetidae	4	
			Oligochaeta			Megascolecidae	1	
			Crustacea		Amphipoda	Gammaridae	1	
					Isopoda	Idoteidae	3	
				Insecta		Diptera	Ceratopogonidae	2
		R-2	Crustacea	Ostracoda				1
						Isopoda	Idoteidae	3
			Polychaeta			Ampharetidae	4	
				Insecta		Diptera	Ceratopogonidae	1
		R-3	Crustacea			Isopoda	Idoteidae	3
				Amphipoda	Gammaridae	2		
			Insecta		Hemiptera	Corixidae	2	
12/5/2003	D-10	R-1	Polychaeta			Ampharetidae	1	
			Oligochaeta			Naididae	2	
		R-2				0		
		R-3	Oligochaeta			Naididae	1	
8/24/2004	D-1	R-1	Oligochaeta		Haplotaxida	Naididae	14	
			Crustacea		Ostracoda	unknown	1	
		R-2	Oligochaeta		Haplotaxida	Naididae	10	
			Insecta		Hemiptera	Corixidae	1	
		R-3	Oligochaeta		Haplotaxida	Naididae	21	
			Insecta		Diptera	Syrphidae	3	
8/24/2004	D-3	R-1					0	
		R-2	Polychaeta		Terebellida	Ampharetidae	2	
			Oligochaeta		Haplotaxida	Naididae	4	
			Insecta		Diptera	Chironomidae	22	
		R-3	Polychaeta		Terebellida	Ampharetidae	1	
			Oligochaeta		Haplotaxida	Naididae	1	
Insecta			Diptera	Chironomidae	1			
8/24/2004	D-4	R-1	Oligochaeta		Haplotaxida	Naididae	6	



			Crustacea		Ostracoda	unknown	1
		R-2	Polychaeta		Terebellida	Ampharetidae	3
			Oligochaeta		Haplotaxida	Naididae	2
			Insecta		Hemiptera	Corixidae	1
		R-3	Crustacea		Ostracoda	unknown	1
			Insecta		Hemiptera	Corixidae	1
8/24/2004	D-6	R-1					0
		R-2	Insecta		Hemiptera	Corixidae	1
		R-3	Oligochaeta		Haplotaxida	Megascolecidae	1
	Haplotaxida			Naididae	2		
8/24/2004	D-8	R-1	Oligochaeta		Haplotaxida	Megascolecidae	2
						Naididae	16
		R-2	Oligochaeta		Haplotaxida	Megascolecidae	4
						Naididae	9
		R-3	Oligochaeta		Ostracoda	unknown	1
					Haplotaxida	Megascolecidae	4
		Naididae	1				
8/24/2004	D-9	R-1	Polychaeta		Terebellida	Ampharetidae	3
			Insecta		Hemiptera	Corixidae	1
					Diptera	Syrphidae	3
		R-2	Oligochaeta		Haplotaxida	Naididae	104
		R-3	Insecta		Hemiptera	Corixidae	13
					Diptera	Ephydriidae	1
8/24/2004	D-10	R-1	Polychaeta		Terebellida	Ampharetidae	4
			Oligochaeta		Haplotaxida	Naididae	6
		R-2					0
		R-3					0

Note: R = replicate

**AREA 2**

Date	Station	Sample	Class	Sub Class	Order	Family	Quantity
12/11/2003	D-1	R-1					0
		R-2					0
		R-3	Polychaeta			Ampharetidae	3
			Oligochaeta			Naididae	2
12/11/2003	D-2	R-1					0
		R-2				0	
		R-3				0	
12/11/2003	D-3	R-1					0
		R-2	Ostracoda				2
			Oligochaeta			Naididae	2
			Insecta		Diptera	Ceratopogonidae	3
					Chironomidae	1	
R-3	Polychaeta			Ampharetidae	3		
12/11/2003	D-5	R-1	Polychaeta			Ampharetidae	2
			Oligochaeta			Naididae	1
		R-2				0	
		R-3				0	
12/11/2003	D-6	R-1					0
		R-2				0	
		R-3				0	
12/11/2003	D-8	R-1					0
		R-2	Crustacea		Amphipoda	Gammaridae	1
					Decapoda	Palaemonidae	1
R-3	Insecta		Diptera	Ceratopogonidae	1		
8/25/2004	D-1	R-1					0
		R-2				0	
		R-3				0	
8/25/2004	D-2	R-1					0
		R-2				0	
		R-3				0	
8/25/2004	D-3	R-1	Insecta		Diptera	Chironomidae	1
		R-2				0	

		R-3					0
8/25/2004	D-5	R-1	Insecta		Hemiptera	Corixidae	1
		R-2	Insecta		Hemiptera	Corixidae	1
		R-3					0
8/25/2004	D-7	R-1	Insecta		Diptera	Syrphidae	1
		R-2	Insecta		Hemiptera	Corixidae	1
		R-3					0
8/25/2004	D-8	R-1					0
		R-2					0
		R-3	Insecta		Hemiptera	Corixidae	1

**AREA 3**

Date	Station	Sample	Class	Sub Class	Order	Family	Quantity
12/9/2003	D-1	R-1					0
		R-2	Amphipoda			Aoridae	1
			Insecta		Diptera	Chironomidae	1
		R-3					0
12/9/2003	D-3	R-1	Polychaeta			Ampharetidae	9
			Oligochaeta			Megascolecidae	2
			Insecta		Diptera	Chironomidae	1
						Ceratopogonidae	1
		R-2	Polychaeta			Ampharetidae	3
		R-3	Polychaeta			Ampharetidae	2
Insecta			Diptera	Chironomidae	1		
12/9/2003	D-5	R-1					0
		R-2	Polychaeta			Ampharetidae	3
			Oligochaeta			Megascolecidae	3
						Naididae	1
R-3					0		
12/9/2003	D-6	R-1	Polychaeta			Ampharetidae	29
		R-2	Polychaeta			Ampharetidae	8
			Oligochaeta			Megascolecidae	1
		R-3	Polychaeta			Ampharetidae	1
			Ostracoda				1
12/9/2003	D-7	R-1	Oligochaeta			Megascolecidae	1
		R-2					0
		R-3					0
12/9/2003	D-8	R-1	Polychaeta			Ampharetidae	1
		R-2					0
		R-3					0
8/26/2004	D-1	R-1	Insecta		Coleoptera	Hydrophilidae	1
		R-2	Polychaeta		Terebellida	Ampharetidae	1
			Oligochaeta		Haplotaixidae	Naididae	3
		R-3					0
8/26/2004	D-2	R-1	Oligochaeta		Haplotaixida	Naididae	15

		R-2	Polychaeta		Terebellida	Ampharetidae	2
			Oligochaeta		Haplotaxida	Naididae	4
			Insecta		Diptera	Chironomidae	1
		R-3	Oligochaeta		Haplotaxida	Megascolecidae	3
						Naididae	2
8/26/2004	D-3	R-1	Crustacea		Ostracoda	unknown	25
			Arachnida		Acariformes	unknown	1
			Insecta		Hemiptera	Corixidae	3
		R-2	Oligochaeta		Haplotaxida	Megascolecidae	1
						Naididae	8
		R-3	Oligochaeta		Haplotaxida	Naididae	1
			Insecta		Hemiptera	Corixidae	9
					Diptera	Ceratopogonidae	1
8/26/2004	D-5	R-1					0
		R-2	Insecta		Diptera	Chironomidae	1
			Polychaeta		Coleoptera	Hydrophilidae	1
		R-3					0
8/26/2004	D-6	R-1					0
		R-2					0
		R-3					0
8/26/2004	D-7	R-1					0
		R-2					0
		R-3					0
8/26/2004	D-8	R-1	Insecta		Hemiptera	Corixidae	1
		R-2	Oligochaeta		Haplotaxida	Naididae	1
			Polychaeta		Terebellida	Ampharetidae	2
		R-3					0

**AREA 4**

Date	Station	Sample	Class	Sub Class	Order	Family	Quantity
12/4/2003	D-1	R-1					0
		R-2	Anthozoa		Cerlantharia		1
			Insecta		Diptera	Tabanidae	1
	R-3					0	
12/4/2003	D-2	R-1					0
		R-2	Crustacea	Ostracoda			5
			Oligochaeta			Naididae	3
			Insecta		Diptera	Ceratopogonidae	6
		R-3	Oligonchaeta			Naididae	1
			Crustacea	Ostracoda			1
Insecta			Diptera	Ceratopogonidae	13		
12/4/2003	D-3	R-1	Polychaeta			Ampharetidae	11
						Nephthydae	2
			Oligochaeta			Naididae	6
		Crustacea		Isopoda	Anthuridae	1	
		R-2	Oligochaeta			Naididae	4
			Crustacea		Tanaidacea	Tanaidae	1
R-3	Crustacea		Tanaidacea	Tanaidae	6		
12/4/2003	D-4	R-1	Polychaeta			Ampharetidae	1
			Insecta		Diptera	Ceratopogonidae	1
		R-2	Crustacea	Ostracoda			2
			Polychaeta			Ampharetidae	7
			Oligochaeta			Megascolecidae	2
		R-3	Insecta		Diptera	Ceratopogonidae	1
					0		
12/4/2003	D-6	R-1	Polychaeta			Ampharetidae	5
			Insecta		Diptera	Ceratopogonidae	2
		R-2	Polychaeta			Ampharetidae	15
			Insecta		Diptera	Ceratopogonidae	2
		R-3	Polychaeta			Ampharetidae	64
			Oligonchaeta			Naididae	16
				Megascolecidae	2		

			Insecta		Diptera	Tipulidae	3
			Amphipoda			Gammaridae	1
12/4/2003	D-7	R-1	Oligochaeta			Naididae	1
			Decapoda			Palaemonidae	1
		R-2	Polychaeta			Ampharetidae	1
			Oligonchaeta			Megascolecidae	6
			Decapoda			Palaemonidae	1
R-3					0		
12/4/2003	D-8	R-1					0
		R-2					0
		R-3					0
9/1/2004	D-1	R-1	Insecta		Hemiptera	Corixidae	14
		R-2	Insecta		Hemiptera	Corixidae	2
		R-3	Insecta		Hemiptera	Corixidae	4
					Coleoptera	Dyficidae	1
			Odonata	Libellulidae	1		
9/1/2004	D-2	R-1	Oligochaeta		Haplotaixidae	Naididae	3
		R-2					0
		R-3	Insecta		Diptera	Syrphidae	1
9/1/2004	D-3	R-1	Polychaeta		Terebellida	Ampharetidae	4
		R-2	Polychaeta		Terebellida	Ampharetidae	13
			Insecta		Diptera	Chironomidae	3
		R-3	Polychaeta		Terebellida	Ampharetidae	4
			Crustacea		Ostracoda	unknown	4
		Insecta		Diptera	Chironomidae	1	
9/1/2004	D-4	R-1	Crustacea		Ostracoda	unknown	1
		R-2	Crustacea		Amphipoda	Gammaridae	1
		R-3	Insecta		Hemiptera	Corixidae	1
9/1/2004	D-6	R-1	Crustacea		Ostracoda	unknown	1
		R-2	Oligochaeta		Haplotaixida	Naididae	1
		R-3					0
9/1/2004	D-7	R-1					0
		R-2	Insecta		Diptera	Ceratopogonidae	1
		R-3					0

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9/1/2004	D-8	R-1				0
		R-2				0
		R-3	Crustacea		Ostracoda	unknown



**Table 2-7. Vegetation Biomass –Vegetation Clippings**

Date	Sample Location	Live Vegetation Weight (g)	Dead Vegetation Weight (g)	Vegetation Description
10/13/2003	1-2-00	40.4	-	<i>Phragmites australis, Pluchea purpurascens, Scirpus americanus, Iva frutescens</i>
10/13/2003	1-2-40	47.3	-	<i>Spartina patens</i>
10/13/2003	1-2-80	43.4	-	<i>Spartina patens</i>
10/13/2003	1-2-120	14.8	-	<i>Phragmites australis, Scirpus americanus, Solidago spp., Spartina patens</i>
10/13/2003	1-3-00	28.4	-	<i>Scirpus americanus, Spartina patens, Distichlis spicata</i>
10/13/2003	1-3-80	54.6	-	<i>Spartina patens</i>
10/13/2003	1-3-120	14.9	-	<i>Spartina patens</i>
10/13/2003	1-3-160	44.9	-	<i>Spartina patens</i>
10/13/2003	1-4-80	43.6	-	<i>Spartina, Scirpus americanus</i>
10/13/2003	1-4-120	24.0	-	<i>Iva frutescens, Spartina patens, Scirpus americanus, Distichlis spicata</i>
10/13/2003	1-4-160	38.4	-	<i>Scirpus americanus, Pluchea purpurascens, Spartina patens</i>
10/13/2003	1-5-00	56.3	-	<i>Phragmites australis, Scirpus americanus, Spartina patens</i>
10/20/2004	1-2-00	8.9	40.7	<i>Scirpus americanus, Distichlis spicata</i>
10/20/2004	1-2-40	17.8	13.4	<i>Spartina patens, Pluchea purpurascens</i>
10/20/2004	1-2-80	33.3	9.3	<i>Spartina patens</i>
10/20/2004	1-2-120	32.2	16.7	<i>Phragmites australis, Spartina patens, Solidago virgauria</i>
10/20/2004	1-3-00	33.2	14.1	<i>Scirpus americanus, Distichlis spicata</i>
10/20/2004	1-3-80	22.2	26.1	<i>Spartina patens, Scirpus americanus</i>
10/20/2004	1-3-120	31.1	19.5	<i>Spartina patens</i>
10/20/2004	1-3-160	33.0	11.9	<i>Spartina patens</i>
10/20/2004	1-4-80	41.9	10.8	<i>Spartina patens</i>
10/20/2004	1-4-120	32.1	8.4	<i>Spartina patens, Scirpus americanus, Solidago virgauria</i>

10/20/2004	1-4-160	27.1	10.6	<i>Spartina patens</i> , <i>Scirpus americanus</i> , <i>Solidago virgauria</i>
10/20/2004	1-5-00	10.3	23.1	<i>Spartina patens</i> , <i>Scirpus americanus</i> , <i>Pluchea purpurascens</i>

**AREA 2**

Date	Sample Location	Live Vegetation Weight (g)	Dead Vegetation Weight (g)	Vegetation Description
10/14/2003	2-1-40	21.2	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/14/2003	2-1-120	38.7	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i> , <i>Iva frutescens</i>
10/14/2003	2-1-160	29.0	-	<i>Spartina patens</i>
10/14/2003	2-2-40	40.9	-	<i>Spartina patens</i>
10/14/2003	2-2-80	67.5	-	<i>Spartina patens</i>
10/14/2003	2-3-40	32.1	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/14/2003	2-3-80	26.1	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/14/2003	2-3-120	41.4	-	<i>Spartina patens</i>
10/14/2003	2-4-40	28.3	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i> , <i>Pluchea purpurascens</i>
10/14/2003	2-4-80	42.9	-	<i>Spartina patens</i>
10/14/2003	2-5-00	73.5	-	<i>Spartina patens</i> , <i>Iva frutescens</i>
10/14/2003	2-5-40	53.3	-	<i>Spartina patens</i> , <i>Iva frutescens</i>
10/14/2003	2-5-80	36.0	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/20/2004	2-1-40	31.6	24.6	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	2-1-120	28.6	10.8	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/20/2004	2-1-160	46.9	17.4	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	2-2-40	3.6	20.6	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	2-2-80	21.6	15.1	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	2-3-40	50.6	26.8	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	2-3-80	26.4	2.7	<i>Spartina patens</i> , <i>S. alterniflora</i> , <i>Pluchea purpurascens</i>
10/20/2004	2-3-120	13.2	23.3	<i>Spartina patens</i> , <i>Distichlis spicata</i> , <i>Pluchea purpurascens</i>
10/20/2004	2-4-40	20.8	24.7	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/20/2004	2-4-80	18.2	41.1	<i>Spartina patens</i> , <i>Distichlis spicata</i>

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10/20/2004	2-5-00	-	12.2	No vegetation
10/20/2004	2-5-40	49.6	38.5	<i>Spartina patens</i>
10/20/2004	2-5-80	28.2	32.9	<i>Spartina patens, Distichlis spicata</i>

**AREA 3**

<b>Date</b>	<b>Sample Location</b>	<b>Live Vegetation Weight (g)</b>	<b>Dead Vegetation Weight (g)</b>	<b>Vegetation Description</b>
10/14/2003	3-1-00	18.2	-	<i>Spartina patens</i> , <i>Scirpus americanus</i> , <i>Phragmites australis</i>
10/14/2003	3-1-80	12.0	-	<i>Phragmites australis</i> , <i>Scirpus americanus</i> , <i>Spartina patens</i>
10/14/2003	3-1-200	30.2	-	<i>Spartina patens</i>
10/14/2003	3-2-80	24.6	-	<i>Spartina patens</i>
10/14/2003	3-2-120	35.5	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/14/2003	3-2-160	32.5	-	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/14/2003	3-2-200	20.5	-	<i>Spartina alterniflora</i> , <i>Spartina patens</i> , <i>Pluchea purpurascens</i>
10/14/2003	3-3-40	27.4	-	<i>Spartina patens</i>
10/14/2003	3-3-120	9.0	-	<i>Phragmites australis</i>
10/14/2003	3-4-80	46.1	-	<i>Spartina alterniflora</i>
10/20/2004	3-1-00	35.5	30.5	<i>Phragmites australis</i> , <i>Spartina patens</i> , <i>Distichlis spicata</i> , <i>Pluchea purpurascens</i>
10/20/2004	3-1-80	10.7	9.4	<i>Distichlis spicata</i> , <i>Scirpus americanus</i> , <i>Phragmites australis</i>
10/20/2004	3-1-200	18.9	20.8	<i>Spartina patens</i>
10/20/2004	3-2-80	94.0	26.9	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	3-2-120	38.9	10.7	<i>Spartina patens</i> , <i>Spartina alterniflora</i> , <i>Distichlis spicata</i> , <i>Pluchea purpurascens</i>
10/20/2004	3-2-160	38.9	12.3	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	3-2-200	39.7	16.9	<i>Spartina patens</i>
10/20/2004	3-3-40	35.4	40.8	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	3-3-120	30.1	17.1	<i>Spartina alterniflora</i> , <i>Pluchea purpurascens</i>
10/20/2004	3-4-80	28.2	12.5	<i>Spartina alterniflora</i> , <i>Spartina patens</i>

**AREA 4**

<b>Date</b>	<b>Sample Location</b>	<b>Live Vegetation Weight (g)</b>	<b>Dead Vegetation Weight (g)</b>	<b>Vegetation Description</b>
10/13/2003	4-1-40	28.6	-	<i>Spartina patens</i>
10/13/2003	4-1-80	68.0	-	<i>Spartina patens</i>
10/13/2003	4-1-120	33.7	-	<i>Spartina patens, Spartina alterniflora</i>
10/13/2003	4-2-00	19.6	-	<i>Spartina patens</i>
10/13/2003	4-2-40	36.1	-	<i>Spartina patens</i>
10/13/2003	4-3-00	36.9	-	<i>Spartina patens</i>
10/13/2003	4-3-80	41.0	-	<i>Spartina patens</i>
10/13/2003	4-3-120	48.8	-	<i>Spartina patens, Phragmites australis</i>
10/13/2003	4-4-00	2.0	-	<i>Phragmites australis</i>
10/13/2003	4-4-80	67.8	-	<i>Spartina patens, Scirpus americanus</i>
10/20/2004	4-1-40	11.3	4	<i>Spartina patens, Pluchea purpurascens</i>
10/20/2004	4-1-80	66.6	10.2	<i>Spartina patens</i>
10/20/2004	4-1-120	28.1	6.4	<i>Spartina patens, Spartina alterniflora</i>
10/20/2004	4-2-00	28.3	18.2	<i>Spartina patens, Scirpus americanus</i>
10/20/2004	4-2-40	26.9	5.8	<i>Spartina patens</i>
10/20/2004	4-3-00	45.1	17.8	<i>Spartina patens, Spartina alterniflora</i>
10/20/2004	4-3-120	35.4	5.6	<i>Phragmites australis, Spartina patens, Solidago virgauria</i>
10/20/2004	4-4-00	25.0	21.0	<i>Phragmites australis, Pluchea purpurascens, Scirpus americanus</i>
10/20/2004	4-4-80	12.2	12.5	<i>Spartina patens, Distichlis spicata</i>

**Table 2-8. Vegetation Biomass – Soil Core Samples**

**AREA 1**

<b>Date</b>	<b>Sample Location</b>	<b>Soil Core Weight (g)</b>	<b>Soil Core Vegetation Weight (g)</b>	<b>Vegetation Description</b>
10/13/2003	1-3-200	33.1	2.7	<i>Phragmites australis</i>
10/13/2003	1-4-80	14.1	1.3	<i>Spartina patens, Scirpus americanus</i>
10/13/2003	1-4-160	16.2	1.2	<i>Scirpus americanus, Spartina patens</i>
10/13/2003	1-4-200	22.6	NA	No vegetation
10/13/2003	1-4-240	26.4	0.3	<i>Scirpus americanus, Spartina patens</i>
10/13/2003	1-5-00	11.0	NA	No vegetation
10/20/2004	1-3-200	34.7	16.3	<i>Phragmites australis</i>
10/20/2004	1-4-80	25.8	6.4	<i>Spartina patens</i>
10/20/2004	1-4-160	21.9	6.5	<i>Spartina patens, S. americanus, Solidago spp.</i>
10/20/2004	1-4-200	28.8	10.2	<i>Phragmites australis</i>
10/20/2004	1-4-240	18.5	14.2	<i>Scirpus americanus, Spartina patens</i>
10/20/2004	1-5-00	20.4	8.3	<i>Scirpus americanus, S. patens, Pluchea purpurascens</i>

**AREA 2**

<b>Date</b>	<b>Sample Location</b>	<b>Soil Core Weight (g)</b>	<b>Soil Core Vegetation Weight (g)</b>	<b>Vegetation Description</b>
10/14/2003	2-1-00	26.4	3.4	<i>Phragmites australis</i>
10/14/2003	2-1-40	30.6	1.1	<i>Spartina patens</i> , <i>Spartina alterniflora</i>
10/14/2003	2-1-80	37.2	1.0	<i>Spartina patens</i>
10/14/2003	2-2-00	26.4	5.8	<i>Spartina patens</i>
10/14/2003	2-2-40	20.2	10.7	<i>Spartina patens</i>
10/14/2003	2-2-80	31.6	11.3	<i>Spartina patens</i>
10/14/2003	2-5-40	31.5	6.4	<i>Spartina patens</i>
10/20/2004	2-1-00	33.2	4.5	<i>Phragmites australis</i>
10/20/2004	2-1-40	24.8	3.2	<i>Spartina patens</i>
10/20/2004	2-1-80	32.1	2.9	<i>Spartina patens</i>
10/20/2004	2-2-00	20.1	-	No vegetation
10/20/2004	2-2-40	15.4	8.3	<i>Spartina patens</i> , <i>Distichlis spicata</i>
10/20/2004	2-2-80	53.2	1.4	<i>Spartina patens</i>
10/20/2004	2-5-40	27.8	1.3	<i>Spartina patens</i>



**AREA 3**

<b>Date</b>	<b>Sample Location</b>	<b>Soil Core Weight (g)</b>	<b>Soil Core Vegetation Weight (g)</b>	<b>Vegetation Description</b>
10/14/2003	3-1-00	15.1	1.9	<i>Spartina patens, Scirpus americanus</i>
10/14/2003	3-1-80	9.6	0.9	<i>Spartina patens, Scirpus americanus, Phragmites australis</i>
10/14/2003	3-1-120	43.7	2.5	<i>Spartina patens</i>
10/14/2003	3-1-160	19.6	5.4	<i>Spartina patens, Spartina alterniflora</i>
10/14/2003	3-1-200	18.8	0.7	<i>Spartina patens</i>
10/20/2004	3-1-00	31.2	3.1	<i>Distichlis spicata, Spartina patens, Pluchea purpurascens, Phragmites australis</i>
10/20/2004	3-1-80	9.6	-	<i>Distichlis spicata, Scirpus americanus, Phragmites australis</i>
10/20/2004	3-1-120	17.7	0.6	<i>Spartina patens</i>
10/20/2004	3-1-160	27.9	13.2	<i>Spartina patens, Distichlis spicata</i>
10/20/2004	3-1-200	35.4	12.8	<i>Spartina patens, Spartina alterniflora</i>

**AREA 4**

<b>Date</b>	<b>Sample Location</b>	<b>Soil Core Weight (g)</b>	<b>Soil Core Vegetation Weight (g)</b>	<b>Vegetation Description</b>
10/13/2003	4-1-40	20.7	4.8	<i>Spartina patens</i>
10/13/2003	4-2-80	15.9	5.7	<i>Spartina patens</i>
10/13/2003	4-3-00	8.1	-	No vegetation apparent
10/13/2003	4-3-40	9.2	-	No vegetation apparent
10/13/2003	4-4-80	19.8	0.4	<i>Spartina patens, Scirpus americanus</i>
10/13/2003	4-4-120	16.3	7.1	<i>Phragmites australis, Spartina patens</i>
10/20/2004	4-1-40	20.8	19.7	<i>Spartina patens, Pluchea purpurascens</i>
10/20/2004	4-2-80	10.3	15	<i>Spartina patens</i>
10/20/2004	4-3-00	20.4	25.2	<i>Spartina patens, Spartina alterniflora</i>
10/20/2004	4-3-40	33.9	28.5	<i>Spartina alterniflora, Distichlis spicata, Spartina patens</i>
10/20/2004	4-4-80	10.9	25.1	<i>Spartina patens, Distichlis spicata</i>
10/20/2004	4-4-120	12.3	20.5	<i>Spartina patens</i>























### Bird Species Acronym Key

AMGO	American Golden fin
AMRO	American Robin
BASW	Barn Swallow
BCNH	Black Night Heron
CHSP	Chipping Sparrow
COGR	Common Grackle
COYE	Common Yellowthroat
FICR	Fish crow
GREG	Great Egret
GRHE	Green Heron
HEGU	Herring Gull
MALL	Mallard
MAWR	Marsh wren
MODO	Morning dove
OSPR	Osprey
RBGU	Ring billed Gull
RWBL	Red winged black bird
SESP	Seaside sparrow
SOSP	Song sparrow
SPAR	Sparrow
SSTS	Saltmarsh sharp tailed sparrow
STAR	Starling
TRSW	Tree swallow
WILL	Willet
YEWA	Yellow warbler