

Annotated Checklist of Fishes of the Brooker Creek Preserve, Pinellas County, Florida

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Introduction:

Other than amphibian population counts, there has been no aquatic sampling on the Brooker Creek Preserve (Brooker Creek Preserve Management Plan, 1993). In the fall of 2001 and summer of 2002, personnel from the Water Resources Management Section and Lands Management Division conducted a preliminary fish survey of the main channels and associated ponds and marshes of the Brooker Creek Preserve.

Objectives:

- 1) Create an initial species list of fishes found on the Preserve
- 2) Create a bathymetric and dissolved oxygen profile for two borrow pits
- 3) Determine level of effort needed for additional assessments

Background:

Though the earliest records for freshwater sampling in the area of Lake Tarpon and Brooker Creek Preserve are from 1896, freshwater fish samples from Pinellas County are not well represented in museum records or County documents. No historical records for Brooker Creek were found in the fish collections at the Universities of Auburn, Texas or Florida, or in the Smithsonian or Field museums.

Habitat:

Sampling sites in 2001 were ephemeral pools. While often devoid of emergent vegetation, some pools had considerable amounts of *Utricularia* sp. Rainfall in 2001 ended a drought that began in late 1999. All sites were dry by the end of December 2001. Sampling in 2002 began in August, one month into the rainy season. Site descriptions for both 2001 and 2002 sites include submerged and shoreline vegetation, channel depth profiles, and substrate composition (Table 1 and Appendix 1).

Site Map:

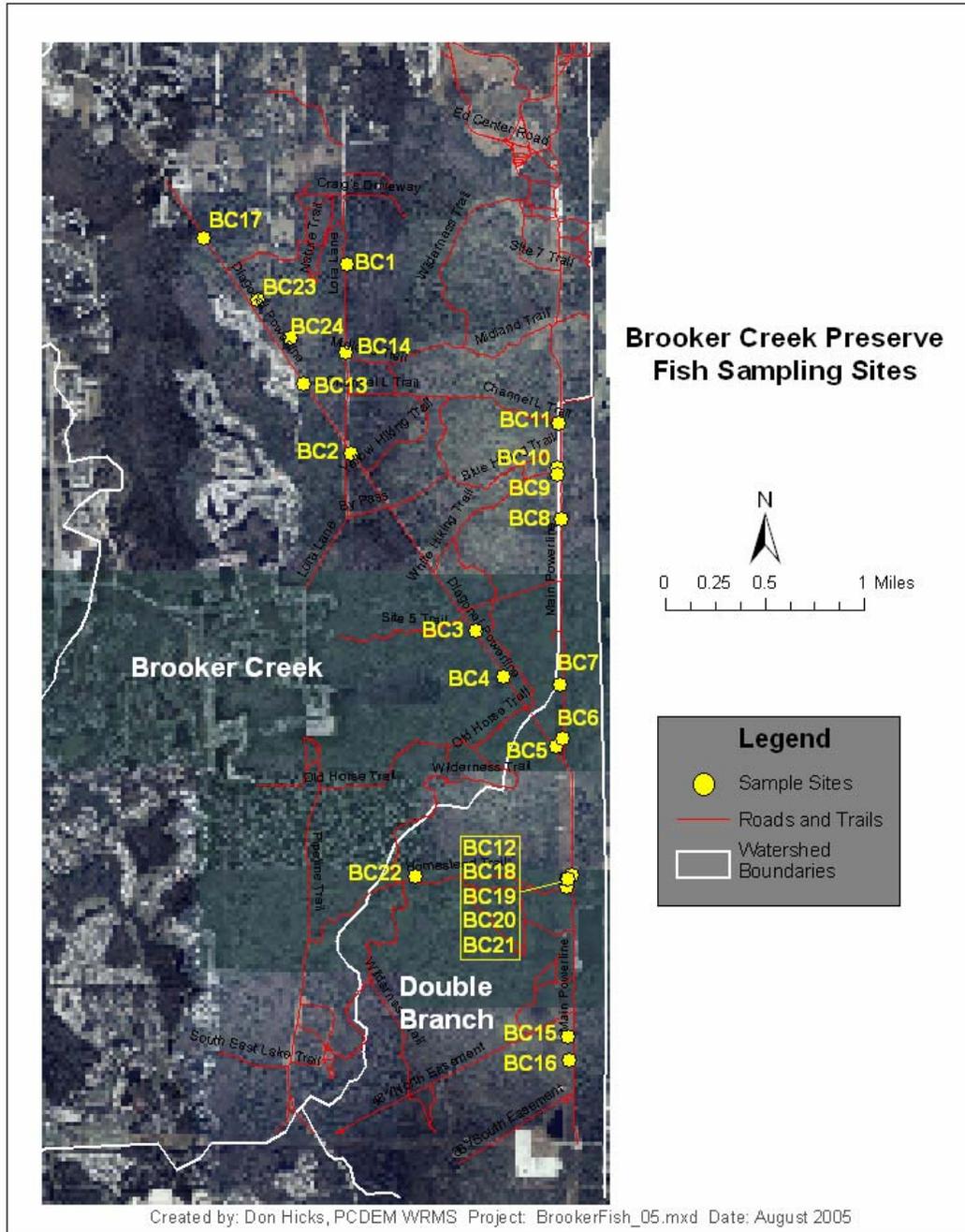


Figure 1: Brooker Creek Fish Sampling Sites

Methods:

Sampling was conducted in the main channels, associated ponds, and marsh areas of the Progress Energy right-of-ways. Two Progress Energy right-of-ways traverse the preserve; the main line runs north and south, and a diagonal line runs southeast and northwest.



Fig. 2: Main right-of-way at BC8



Fig. 3: Diagonal right-of-way at BC3

Seines were the primary sampling devices. Minnow traps and a hoop net were used at selected sites. When present, flow was measured with a Marsh McBirney® flowmeter, following USGS standard procedures for streamflow measurements. Fish samples were anesthetized on ice and preserved in formalin.



Fig. 4: Seine net at BC13



Fig. 5: Hoop net set for sampling at BC14

Specimens were identified to the lowest possible taxon. Classification follows Nelson (2004). Individuals were measured according to protocols used by the University of Florida (Allen 2003). Tables 2 and 3 summarize total length data. Water quality data were collected at most sites using Hydrolab® multiprobes (Table 4). Tables 5 and 6 list the number of specimens captured per site. Tables 7 and 8 show abundance per 100 meters² for each site. At the completion of the project, the Brooker Creek Education Center and the University of Florida Museum of Natural History split the collections.

Discussion

Seventeen orders and 11 families of fishes were found on the Preserve. This included 15 native and 2 non-native species. One additional species, Pomoxis nigromaculatus, was captured just outside the Preserve boundaries. There was a considerable difference in abundance between the end of the 2001 wet season and the beginning of the 2002 wet season.

In 2001, 16,413 specimens of 18 species were captured (Table 5). Due to the dry conditions in December 2001, specimens were concentrated in isolated pools and channels. Gambusia holbrooki and Fundulus chrysotus were collected at all seine sites. G. holbrooki represented 74% of all fish captured. Chaenobryttus gulosus, F. chrysotus, and Cichlasoma bimaculatum represented 8%, 5%, and 4% respectively. Among the four sites where biomass was estimated, G. holbrooki ranged from 1 to 66%, C. gulosus ranged from 27 to 40%, and C. bimaculatum ranged from 2 to 50%.

In 2002, 280 specimens of 11 species were captured (Table 6). Sampling began one month into the rainy season, after the wetlands refilled; the fish were dispersed over a much larger area than the 2001 sampling set. Flooded channels allowed for rapid dispersal from drought refugia. Species such as G. holbrooki, Heterandria formosa, Fundulus cingulatus, and the non-native Clarias batrachus are capable of spreading through shallow water and rapid reproduction. Layne (1999) discussed this type of species dispersal into ephemeral ponds. F. chrysotus was found on the preserve instead of F. cingulatus, but appears able to disperse in a similar manner. Site BC14, located in the Midland Trail roadbed, was flooded to a depth of 0.1 meters. G. holbrooki, H.

Formosa, and F. chrysotus were found at this site. Clarias batrachus was collected at two sites in a deeper pool and a channel in the Double Branch Creek drainage. G. holbrooki was collected at 9 sites. All other species were found at three or fewer locales (Table 6).



Fig. 6: Warmouth (*Chaenobryttus gulosus*)



Fig. 7: Golden topminnow (*Fundulus chrysotus*)

Borrow Pits

Two borrow pits, BC23 and BC24, are located on the northern part of the diagonal power line. Both pits are closed systems that receive water from sheet flow and rainfall. Depths at the center of BC23 varied from 4.5 to 4.9m. Dissolved oxygen (DO) data (Table 4) indicated stratification between two and three meters.

BC24 depth increased rapidly from 3.6 to 4.3m within 15m of the shoreline. Pit depth varied from 4.2 to 5.2m, to a maximum of 5.5m. DO (Table 4) was below the state standard of 5 mg/l for all depths sampled. Stratification occurred between 0.9 and 1.2m

Recommendations

The borrow pit banks were too steep for fish sampling with seines. It is recommended that small boat electrofishing and experimental gill nets be used to survey the fish community. It is likely several species will be added to the Preserve list from these pits. Backpack electrofishing is suggested for sampling the main channels and cypress heads, which will allow staff to sample in areas unsuitable for seining.

Species List

Order Lepisosteiformes

Family Lepisosteidae- gars

 Lepisosteus platyrhincus Florida gar

Order Cypriniformes

Family Cyprinidae – carps and minnows

 Notemigonus crysoleucas Golden shiner

Order Siluriformes

Family Ictaluridae – bullhead catfishes

 Ameiurus natalis Yellow bullhead

Family Clariidae – labyrinth catfishes

 Clarias batrachus Walking catfish non-native

This fish was introduced into the Tampa Bay area in late 1967 or early 1968 from tropical fish farms after the state banned their importation and possession (Fuller et. al., 1999). Impacts are unknown.

Order Cyprinodontiformes

Family Cyprinodontidae – pupfishes and toothcarps

 Jordanella floridae Flagfish

Family Fundulidae – killifishes and topminnows

 Fundulus chrysotus Golden topminnow

This species was captured at every site in 2001

 Lucania goodei Bluefin killifish

Family Poeciliidae – livebearers

 Gambusia holbrooki Eastern mosquitofish

This species is the most ubiquitous and abundant fish, occurring at all sites in 2001 and 69% of sites in 2002.

 Heterandria formosa Least killifish

This small killifish was found at 10 of 13 sites in 2001.

 Poecilia latipinna Sailfin Molly

Order Perciformes

Family Centrarchidae - sunfishes

 Chaenobryttus gulosus Warmouth

This fish is often found in small muddy ponds and backwaters, and is tolerant of low dissolved oxygen conditions (NatureServe, 2005). This species often (though not exclusively) feeds on crayfish, which were found in abundance.

-  Enneacanthus gloriosus Bluespotted sunfish
-  Lepomis macrochirus Bluegill
-  Micropterus salmoides Largemouth bass
-  Pomoxis nigromaculatus Black crappie

This species was captured just outside preserve but may be present in borrow pits, BC23 and BC24. The specimens caught were first year fish (Allen 2003).

Family Percidae – perches

-  Etheostoma fusiforme Swamp darter

Family Elasmobranchidae - pygmy sunfishes

-  Elasmoma evergladei Everglades pygmy sunfish

This species tends to be found in soft water, low nutrient lakes with abundant aquatic vegetation (Hoyer and Canfield, 1994). This species is usually an extremely small percentage of the total fish population. This sunfish was found at seven sites in 2001, where it constituted less than 1.5% of the catch. BC3 had a much larger population of 286 individuals (27% of catch).

Family Cichlidae – cichlids

-  Cichlasoma bimaculatum Black acara non-native

This species is most successful in disturbed habitats. It is often the dominant species in stagnant, roadside ponds due to their ability to tolerate low oxygen conditions (Gulf States Marine Fisheries Commission). Identification of this species was made in part from Fuller et. al. (1999), Page and Burr (1991), and an unpublished key by William Smith-Vaniz (no date). The identity of this fish has been questioned (Justin Krebs, pers. com.) based on a new key by Sven Kullander (2003). That key indicates the species is C. portalegreense (no common name).

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- Table 2:** Size by species end of 2001 wet season
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- Table 4:** Water Quality Parameters
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Table 1: Site Locations			
Site	Collection Number	Latitude N	Longitude W
BC1	DH01-BC1, DH02-1	28° 7.43960	82° 40.22700
BC2	DH01-BC2, DH02-5	28° 6.60650	82° 40.17390
BC3	DH01-BC3, DH02-7	28° 5.82500	82° 39.56400
BC4	DH01-BC4	28° 5.61560	82° 39.40770
BC5	DH01-BC5, DH02-8	28° 5.31780	82° 39.17310
BC6	DH01-BC6	28° 5.35360	82° 39.13870
BC7	DH01-BC7	28° 5.59170	82° 39.15470
BC8	DH01-BC8, DH01-BC14, DH02-13	28° 6.31940	82° 39.15600
BC9	DH01-BC9	28° 6.54600	82° 39.17720
BC10	DH01-BC10	28° 6.51620	82° 39.17350
BC11	DH01-BC11	28° 6.74600	82° 39.16820
BC12	DH01-BC12	28° 4.75200	82° 39.09220
BC13	DH01-BC13, DH02-4	28° 6.90920	82° 40.40830
BC14	DH02-2	28° 7.06200	82° 40.22300
BC15	DH01-BC15	28° 4.03212	82° 39.10872
BC16	DH01-BC16	28° 3.93258	82° 39.10116
BC17	DH02-3	28° 7.55480	82° 40.91360
BC18	DH02-6	28° 4.71670	82° 39.11670
BC19	DH02-9	28° 4.70000	82° 39.11670
BC20	DH02-10	28° 4.73330	82° 39.11670
BC21	DH02-11	28° 4.73280	82° 39.10890
BC22	DH02-12	28° 4.74200	82° 39.87200
BC23	Borrow pit	28° 7.28052	82° 40.67010
BC24	Borrow pit	28° 7.11357	82° 40.50598

Species	Average	Max	Min	Number measured
Ameiurus natalis	67.1	76.5	60	4
Chaenobryttus gulosus	50.9	165	15	246
Cichlasoma bimaculatum	63.8	132	16	272
Clarias batrachus	190.0	-	-	1
Elassoma evergladei	24.2	33	14	52
Enneacanthus gloriosus	29.7	54	18	13
Etheostoma fusiforme	62.0	-	-	1
Fundulus chrysotus	32.5	78	16.5	360
Gambusia holbrooki - male	26.4	34	20	67
Gambusia holbrooki - female	33.8	70	17	128
Heterandria formosa - male	16.8	31	12	25
Heterandria formosa - female	19.5	32.5	11	38
Jordanella floridae	25.0	35.5	11	31
Lepisosteus platyrhincus	235.7	259	212	3
Lepomis macrochirus	100.6	152	40	57
Lucania goodei	25.4	31	18.5	18
Micropterus salmoides	164.5	108	215	8
Notemigonus crysoleucas	124.5	146	81	4
Poecilia latipinna	28.2	33	21.5	23
Pomoxis nigromaculatum	158.6	199	136	5

Species	Average	Max	Min	Number measured
Ameiurus natalis				
Chaenobryttus gulosus	14.9	16.5	13	33
Cichlasoma bimaculatum	26.5	35	21	11
Clarias batrachus	58.5	104	37	4
Elassoma evergladei	39.5	45	34	2
Enneacanthus gloriosus				
Etheostoma fusiforme				
Fundulus chrysotus	40.2	67	22	13
Gambusia holbrooki - male	23.7	31	21	15
Gambusia holbrooki - female	32.1	54	17	104
Heterandria formosa - male	23.0	-	-	1
Heterandria formosa - female				
Jordanella floridae	23.0	23	23	1
Lepisosteus platyrhincus	82.0	97	69	4
Lepomis macrochirus	60.0	83	37	2
Lucania goodei				
Micropterus salmoides	71.0	-	-	1
Notemigonus crysoleucas				
Poecilia latipinna				
Unidentified small sunfish	16.0	16	16	2

Table 4: Water Quality Parameters

Site	Collection #	Date	Time	Depth m	DO mg/l	pH	Temp C	SpCon mS/cm
BC1	DH01-BC1	11/5/2001	0942	0.1	2.85	5.48	20.38	0.126
	DH02-1	8/12/2002	0958	0.2	1.28	4.31	24.19	0.104
BC2	DH01-BC2	11/5/2001	1058	0.2	2.56	4.56	20.52	0.064
	DH02-5	8/15/2002	1003	0.1	0.67	4.87	25.70	0.063
			1004	0.4	0.40	4.73	24.92	0.064
BC3	DH01-BC3	11/5/2001	1252	0.1	7.27	4.08	21.58	0.112
	DH02-7	8/15/2002	1211	0.1	2.50	3.61	26.24	0.078
BC4	DH01-BC4	11/5/2001	1333	0.1	9.98	5.4	21.76	0.112
BC5	DH01-BC5	11/5/2001	1405	0.1	6.78	6.43	21.84	0.119
	DH02-8	8/15/2002	1249	0.1	2.87	5.82	28.61	0.080
BC6	DH01-BC6	11/6/2001	0852	0.2	4.55	6.74	16.88	0.059
BC7	DH01-BC7	11/6/2001	0936	0.2	6.17	6.13	16.72	0.020
BC8	DH01-BC8	11/6/2001	1055	0.2	5.70	5.90	18.81	0.039
	DH02-13	8/16/2002	1322	0.1	2.84	5.38	30.11	0.052
BC9	DH01-BC9	11/6/2001	1217	0.1	7.99	6.07	23.86	0.041
BC10	DH01-BC10	11/6/2001	1218	0.2	5.54	5.59	23.47	0.045
BC11	DH01-BC11	11/6/2001	1301	0.1	7.15	5.79	26.84	0.059
BC12	DH01-BC12	11/20/2001	1040	0.1	3.12	7.05	20.84	0.314
BC13	DH01-BC13	11/20/2001	1241	0.2	2.74	4.80	21.16	0.569
			1244	0.3	1.31	4.62	20.03	0.969
	DH02-4	8/12/2002	1422	0.1	1.07	5.38	29.43	0.090
			1421	0.4	0.47	5.92	26.23	0.094
BC14	DH02-2	8/12/2002	1158	0.1	5.81	4.76	27.88	0.069
BC15	DH01-BC15	12/4/2001	1218	0.1	3.42	7.18	20.54	0.379
BC16	DH01-BC16	12/5/2001	0936	0.1	2.79	7.32	20.53	0.367
			0933	0.4	4.53	7.31	20.31	0.370
BC17	DH02-3	8/12/2002	1305	0.1	2.94	6.75	25.30	0.197
BC18	DH02-6	8/15/2002	1110	0.1	2.09	3.74	25.98	0.079
			1111	0.3	2.03	3.64	25.96	0.077
BC19	DH02-9	8/19/2002	0940	ND	ND	ND	ND	ND
BC20	DH02-10	8/19/2002	1000	ND	ND	ND	ND	ND
BC21	DH02-11	8/19/2002	1020	ND	ND	ND	ND	ND
BC22	DH02-12	8/19/2002	1140	ND	ND	ND	ND	ND
BC23		8/16/2002	1234	0.2	5.09	5.72	28.39	0.084
			1233	1.1	4.54	5.67	29.19	0.079
			1233	2.1	4.14	5.66	29.37	0.079
			1232	3.0	0.55	5.61	30.57	0.079
			1232	4.0	0.42	5.68	26.03	0.110
			1231	4.5	0.49	5.76	24.48	0.129
BC24		8/16/2002	1029	0.1	3.37	5.60	29.21	0.066
			1034	0.9	2.39	5.62	24.90	0.067
			1033	1.9	1.62	5.61	26.41	0.067
			1032	3.0	1.68	5.69	28.51	0.066
			1031	4.0	0.30	5.79	28.72	0.111
			1030	4.7	0.34	5.85	28.80	0.141

ND = No Data

Table 5: Number of Individual Species Collected at End of 2001 Wet Season by Site

<i>Site BC-</i>															
Species	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>15*</i>	<i>16*</i>
Ameiurus natalis			3	1		1		16							
Chaenobryttus gulosus		16		15	84	8	415	6	7	15	12	4			22
Cichlasoma bimaculatum		4		14	130	17	138	4		15	3	91		13	79
Clarias batrachus								1							
Elassoma evergladei	7		286			3	7			1		9	8		
Enneacanthus gloriosus							7			4		1			1
Etheostoma fusiforme			1												
Fundulus chrysotus	30	3	5	15	8	13	96	168	5	36	22	82	43	6	12
Gambusia holbrooki	450	231	780	673	144	1751	2081	1234	641	424	1014	1625	2653		70
Heterandria formosa	22			69	10	46	38	15	3	9	12	181	3		1
Jordanella floridae						14	16	4		1		20			11
Lepisosteus platyrhincus*															3
Lepomis macrochirus	4	3					7						4		39
Lucania goodei												2			17
Micropterus salmoides	2						1								5
Notemigonus crysoleucas		1													3
Poecilia latipinna												1			2
Pomoxis nigromaculatum*															5
Collection method															
15.2x 1.8M seine,0.5cm mesh	x	x	x	x	x	x	x	x	x	x	x	x	x		
15.2x 1.8M seine,0.6cm mesh															x
Hoop net, #126 mesh								x						x	

* Collected at site just outside Brooker Creek Preserve

Table 6: Number of Individual Species Collected at Beginning of 2002 Wet Season by Site

<i>Site BC-</i>													
Species	<i>1</i>	<i>2</i>	<i>3</i>	<i>5</i>	<i>8</i>	<i>13</i>	<i>14</i>	<i>17</i>	<i>18</i>	<i>19</i>	<i>20</i>	<i>21</i>	<i>22</i>
Ameiurus natalis													
Chaenobryttus gulosus				19					1				3
Cichlasoma bimaculatum								3			1		7
Clarias batrachus				1						1			2
Elassoma evergladei									2				
Enneacanthus gloriosus													
Etheostoma fusiforme													
Fundulus chrysotus	2						8	3					
Gambusia holbrooki		15	12	137	1		4		2	7	20	10	
Heterandria formosa							1	1					
Jordanella floridae				4						2	1		
Lepisosteus platyrhincus										2	1	1	
Lepomis macrochirus								1				1	
Lucania goodei													
Micropterus salmoides								1					
Notemigonus crysoleucas													
Poecilia latipinna													
Small unidentified sunfish										1	2		
Collection method													
15.2x 1.8M seine,0.5cm mesh	x	x	x	x	x	x*	x	x	x	x	x	x	x
15.2x 1.8M seine,0.6cm mesh													
Hoop net, #126 mesh	x*								x				
Minnow trap	x*								x*				

* No fish collected

Table 7: Abundance per 100 meters² at End of 2001 Wet Season by Site

<i>Site BC-</i>														
Species	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>	<i>12</i>	<i>13</i>	<i>16*</i>
Ameiurus natalis			2.44	0.75		0.47								
Chaenobryttus gulosus		26.35		16.49	136.43	3.77	78.64	16.11	4.32	9.21	5.00	1.34		4.40
Cichlasoma bimaculatum		5.27		10.49	182.84	8.01	20.13	4.77		9.21	1.25	30.52		15.10
Clarias batrachus								0.30						
Elassoma evergladei	17.16		232.52			1.41	1.02			0.61		3.02	2.14	
Enneacanthus gloriosus							1.02			2.46		0.34		0.19
Etheostoma fusiforme			0.81											
Fundulus chrysotus	73.53	3.95	4.07	11.24	11.25	6.12	14.01	49.52	3.08	22.11	9.16	27.50	11.48	2.29
Gambusia holbrooki	1102.94	304.35	634.15	504.50	202.53	824.78	303.62	363.66	395.19	260.44	422.15	544.94	708.03	13.38
Heterandria formosa	53.92			51.72	14.06	21.67	5.54	4.47	1.85	5.53	5.00	60.70	0.80	0.19
Jordanella floridae						0.47	2.33	1.19		0.61		6.71		2.10
Lepisosteus platyrhincus*														0.57
Lepomis macrochirus	9.80	3.95					1.02						1.07	7.45
Lucania goodei												0.67		3.25
Micropterus salmoides	4.90						0.15							0.96
Notemigonus crysoleucas		1.32												0.57
Poecilia latipinna												0.34		0.38
Pomoxis nigromaculatum*														0.96

* Collected at site outside Brooker Creek Preserve

Table 8: Abundance per 100 meters² at Beginning of 2002 Wet Season by Site

<i>Site BC-</i>													
Species	<i>1</i>	<i>2</i>	<i>3</i>	<i>5</i>	<i>8</i>	<i>13</i>	<i>14</i>	<i>17</i>	<i>18</i>	<i>19</i>	<i>20</i>	<i>21</i>	<i>22</i>
Ameiurus natalis													
Chaenobryttus gulosus				5.28					0.61				0.90
Cichlasoma bimaculatum								4.31			0.85		2.10
Clarias batrachus				0.28						1.94			0.60
Elassoma evergladei									1.21				
Enneacanthus gloriosus													
Etheostoma fusiforme													
Fundulus chrysotus	1.84						11.87	4.31					
Gambusia holbrooki		57.47	7.35	38.06	1.36		5.93		1.21	13.57	17.02	10.68	
Heterandria formosa							1.48	1.44					
Jordanella floridae				1.11						3.88	0.85		
Lepisosteus platyrhincus										3.88	0.85	1.07	
Lepomis macrochirus								1.44				1.07	
Lucania goodei													
Micropterus salmoides								1.44					
Notemigonus crysoleucas													
Poecilia latipinna													
Small unidentified sunfish										1.94	1.70		

Appendix 1: Site Descriptions:

- 2001 Collection nomenclature- DH01-BC01 (Field note taker (Don Hicks)/year collected- lot number)
- 2002 Collection nomenclature- DH02-1 (Field note taker (Don Hicks)/year collected- lot number)

BC1 Watershed: Brooker Creek

DH01-BC1:

Site description: Elliptical pond located south of Lora Lane entrance where channel A crosses road.

Site dimensions: 11.6m by 3.55m

Depth: 0.5m - 0.6m in a scour area east of road

Vegetation: coontail, pickerelweed, and smartweed

Substrate: firm sand

Sampled 11/5/01

Collectors: Don Hicks, Phil Hoffman, Mark Flock

DH02-1:

Site description: The original pond selected was completely choked with vegetation so sampling was conducted on the west side of Lora Lane, where a 48-inch corrugated metal pipe passed under the road. West side: a hardwood floodplain and alluvial swamp including red maple. There was 100% forest cover.

Vegetation: Utricularia present at <1% coverage

Substrate: firm sand, wood debris, and detritus

Flow: 0.30 cfs (cubic feet per second)

Sampled: Traps were soaked overnight and checked on 8/13/02

Collectors: Don Hicks, Scott Deitche, Mark Flock



Fig. 8 : BC1

BC2 Watershed: Brooker Creek

DH01-BC2:

Site description: Restoration site located at Channel L on the west side of the diagonal power line road just southeast of intersection with Lora Lane.

Sampled area dimensions: 11.9m by 6.6m

Vegetation: maidencane, Utricularia, fragrant water lily, and sparse pickerelweed

Sampled 11/5/01

Collectors: Don Hicks, Phil Hoffman, Mark Flock

DH02-5:

Site description: Original site was connected to another pool by channel flowing across Lora Lane. Seine used at opening in maidencane (3m x 8.7m) on west side of road. One and three quarter inches of rain fell during previous evening.

Depth: 1.2m

Vegetation: mainly maidencane with Utricularia at 5% coverage in open water

Substrate: muddy sand with peat and detritus

Flow: 5.82 cfs

Sampled: 8/15/02

Collectors: Don Hicks, Mark Flock, Sue Myers



Fig. 9: BC2

BC3 Watershed: Brooker Creek

DH01-BC3:

Site description: Circular depression located southwest of diagonal power line road at Channel GG near power tower HTE43.

Site dimensions: 12.5m in diameter

Vegetation: none

Substrate: muddy sand

Sampled : 11/5/01

Collectors: Don Hicks, Phil Hoffman, Mark Flock

DH02-7:

Site description: Site located just east of a 36" pipe under the road.

Depth: 0.85m

Vegetation: maidencane (35% coverage) and flooded terrestrial vegetation

Sampled: 8/12/02

Collectors: Don Hicks, Mark Flock, Sue Myers



Fig. 10: BC3

BC4 Watershed: Brooker Creek

DH01-BC4:

Site description: Elliptical pond southwest of diagonal power line road and north of power tower HTE 41 near Wilderness Trail crossing.

Pond dimensions: 15.4m by 7.3m narrowing to 4.3m

Vegetation: pickerelweed and maidencane

Substrate: muddy sand

Sampled : 11/5/01

Collectors: Don Hicks, Phil Hoffman, Mark Flock

BC5 Watershed: Double Branch Creek

DH01-BC5:

Site description: Two small ponds located northwest of the junction of diagonal and main power lines on southwest side of diagonal power line road.

Pond 1 dimensions: 6.1m in diameter

Pond 1 vegetation: pickerelweed, Utricularia, and maidencane

Pond 1 substrate: mud

Pond 2 dimensions: 4.6m by 9.1m

Pond 2 vegetation: none

Sampled : 11/5/01

Collectors: Don Hicks, Phil Hoffman, Mark Flock

DH02-8:

Site description: Area was flooded on both sides of road. Juvenile fish were abundant. A channel connected both sides across the power line road.

Southwest pool depth: 0.46m

Southwest pool vegetation: small willows, maidencane, pickerelweed, Utricularia, and flooded terrestrials including dog fennel and primrose willow- 35% coverage for emergent vegetation and 5% coverage for submergent

Southwest pool substrate: firm sand and detritus

Northeast pool depth: 0.46m to 0.91m

Northeast pool vegetation: similar to the southwest pool plus a small patch of water shield- 35% coverage for emergent vegetation and 2% coverage for submergent

Sampled: 8/15/02

Collectors: Don Hicks, Mark Flock, Sue Myers



Fig. 11: BC5

BC6 Watershed: Double Branch Creek

DH01-BC6:

Site description: Small pond located on main power line road south of towers CLT 273 and CLT 274 and just north of junction of main and diagonal power lines.

Site dimensions: 17.4m by 12.2m

Depth: 0.3m to 0.6m

Vegetation: cattails, Utricularia, cordgrass, smartweed, and a few water lilies

Substrate: muddy sand

Sampled : 11/6/01

Collectors: Don Hicks, Phil Hoffman, Scott Deitche

BC7 Watershed: Double Branch Creek
DH01-BC7:
Site description: Small pond situated south of tower CLT 272 on main power line road.
Site dimensions: 50m by 14.9m
Depth: 0.76m
Vegetation: pickerelweed and smooth cordgrass
Substrate: sand
Sampled : 11/6/01
Collectors: Don Hicks, Phil Hoffman, Scott Deitche

BC8 Watershed: Brooker Creek
DH01-BC8:
Site description: Elongate pond. Small lobe on east end located north of tower CC270 on main power line road.
Site dimensions: 11.8m by 6.4m
Vegetation: pickerelweed, maidencane, Utricularia, and white water lilies
Substrate: muddy sand
Sampled : 11/6/01
Collectors: Don Hicks, Phil Hoffman, Scott Deitche

DH01-BC14:
Site description: Elongate pond. A hoop net was set overnight and checked on 11/21/01.
Collectors: Don Hicks, Scott Deitche, Don Stillwaugh

DH02-13:
Site description: Elongate pond. Tadpoles and crayfish were present.
Site dimensions: 8.17m wide
Vegetation: pickerelweed, Utricularia, maidencane, torpedo grass, and white water lilies
Substrate: firm sand
Sampled: 8/19/02
Collectors: Don Hicks, Scott Deitche, Mark Flock



Fig. 12: BC8

- BC9 Watershed: Brooker Creek
DH01-BC9:
Site description: Pond located on main power line road just north of tower CLT 268.
Site dimensions: 12m by 14.1m
Vegetation: maidencane, Utricularia, and primrose willow
Substrate: dirty sand with detritus
Sampled : 11/6/01
Collectors : Don Hicks, Phil Hoffman, Scott Deitche
- BC10 Watershed: Brooker Creek
DH01-BC10.
Site description: Hourglass shaped pond located on main power line road just north of tower CLT 268 and adjacent to BC9.
Site dimensions: 16.6m by 10.5m
Sampled : 11/6/01
Collectors: Don Hicks, Phil Hoffman, Scott Deitche
- BC11 Watershed: Brooker Creek
DH01-BC11:
Site description: Irregularly shaped ponds located south of tower CC268 on main power line road.
Depth: 0.6m
Vegetation: maidencane, water lilies, pickerelweed, Utricularia, and small Carolina willows
Substrate: muddy sand
Sampled : 11/6/01- stopped sampling due to lack of fish
Collectors: Don Hicks, Phil Hoffman, Scott Deitche

BC12 Watershed: Double Branch Creek

DH01-BC12:

Site description: Two circular ponds situated east of main power line road, north of tower HTE36. Ponds were drying rapidly. Crayfish were present. Everglades pygmy sunfish were collected in the south pond.

North pond dimensions: 7.6m in diameter

North pond depth: 0.07m

North pond vegetation: Willow and two cattails

North pond substrate: muddy sand

South pond dimensions: 6.1m in diameter

South pond depth: 0.07m

South pond vegetation: none

South pond substrate: muddy sand

Sampled : 11/20/01

Collectors: Don Hicks, Phil Hoffman, Scott Deitche, Don Stillwaugh



Fig. 13: BC12 South Pond



Fig. 14: BCB12 North Pond

BC13 Watershed: Brooker Creek

DH01-BC13:

Site description: Two ponds were located on either side of road at north end of diagonal power line road near Preserve's large retention ponds.

West pond dimensions: 26.2m by 11.6m

West pond depth: 0.15m

West pond vegetation: maidencane, water lilies, pickerelweed, and Utricularia

East pond dimensions: 26m by 6m

East pond depth: 0.33m

East pond vegetation: maidencane, water lilies, pickerelweed, and Utricularia

Sampled : 11/20/01

Collectors: Don Hicks, Phil Hoffman, Scott Deitche, Don Stillwaugh

DH02-4:

Site description: A large marsh. The west side was only site sampled. No fish or crayfish were captured. There were the beginnings of an algae bloom with some clumping on the water's surface.

Depth: 0.4m

Vegetation: maidencane, water lily and Utricularia

Substrate: firm, muddy sand with peat and detritus

Sampled: 8/12/02

Collectors: Don Hicks, Scott Deitche, Mark Flock



Fig. 15: BC13

BC14 Watershed: Brooker Creek

DH02-2:

Site description : Site is a flooded road located in the Midland Trail going east from Lora Lane. Many tadpoles, crayfish, and a few frogs were observed.

Depth: 0.1m

Vegetation: none, but some flooded terrestrial vegetation

Substrate: firm with muddy sand (myakka soil)

Sampled : 8/12/02

Collectors: Don Hicks, Scott Deitche, Mark Flock



Fig. 16: BC14

BC15 Watershed: Double Branch Creek

DH01-BC15 :

Site description : Half acre pond located south of Preserve and west of Florida Power access road across from large borrow pit. A large alligator approximately 8 feet long was present. An 18-inch Greater Siren, Siren lacertina, was captured and released. This site was sampled with a hoop net only.

Dept: 0.6m to 0.9m

Vegetation: water lilies and Utricularia

Substrate: soft mud with lots of detritus

Sampled : 12/4/01

Collectors: Don Hicks, Phil Hoffman, Scott Deitche



Fig. 17: Greater siren caught at BC15

BC16 Watershed: Double Branch Creek

DH01-BC16 :

Site description: Pond located south of Preserve and west of Florida Power access road south of a large borrow pit. This pond retained water longer than other sites and had connections to permanent water to the south and east.

Vegetation: Utricularia, cattail fringe surrounded the pond

Substrate: soft mud

Sampled : 12/5/01

Collectors: Don Hicks, Phil Hoffman, Mark Flock

BC17 Watershed: Brooker Creek

DH02-3:

Site description : Site on east side of diagonal power line road where Channel A crosses road between power towers HTE54 & HTE55. Thermocline noted during south pull.

Depth: 0.2m

Vegetation: Water hyacinth, smartweed, Canna flaccida, pennywort, bulrush, maidencane, hempvine- emergent vegetation: 25% coverage and submergent vegetation: 10%

Substrate: soft muddy sand with peat detritus

Flow: 0.53 cfs

Sampled : 8/12/02

Collectors: Don Hicks, Scott Deitche, Mark Flock



Fig. 18: BC17

BC 18 Watershed: Brooker Creek

DH02-6:

Site description : Pool located where Channel G crosses diagonal power line road south of power tower HTE 44. There were two 36" pipes under the road.

Tadpoles, walking sticks, larval water beetles, and dragonfly larvae were found.

Site dimensions: 11m x 15m

Vegetation: maidencane

Flow: 4.964 cfs (combined flow from both pipes)

Sampled : 8/12/02

Collectors: Don Hicks, Mark Flock, Sue Myers



Fig. 19: BC18

BC19 Watershed: Double Branch Creek

DH02-9:

Site description : Sampled middle pond of three located north of Homestead Trail between power lines and east of power tower CC277. No Hydrolab was available.

Vegetation: maidencane, Utricularia, and flooded terrestrial vegetation (dog fennel) in center

Substrate: firm sand with detritus

Sampled : 8/19/02

Collectors: Don Hicks, Scott Deitche, Mark Flock

BC20 Watershed: Double Branch Creek

DH02-10:

Site description: Sampled south pond of three located north of Homestead Trail between power lines and east of power tower CC277. No Hydrolab was available.

Depth: 0.6m

Vegetation: Utricularia with 20% coverage in open water and mixed flooded terrestrial vegetation with maidencane dominant

Sampled : 8/19/02

Collectors: Don Hicks, Scott Deitche, Mark Flock

BC21 Watershed: Double Branch Creek

DH02-11:

Site description: Site was northeast pond of three located north of Homestead Trail between power lines and east of power tower CC277. No Hydrolab was available.

Depth: 1m

Vegetation: Utricularia (10% coverage in open water), willow, cattails

Substrate: firm sand and detritus

Sampled : 8/19/02

Collectors: Don Hicks, Scott Deitche, Mark Flock



Fig. 20 : BC21

BC22 Watershed: Double Branch Creek

DH02-12:

Site description : Site is a channel that crosses Homestead Trail in a pine flatwood environment. Water flows south from the channel into a large cypress head in the Double Branch watershed. (Lisa Baltus, pers. comm.). The water is dark tea colored. No Hydrolab was available.

Depth: 0.4m

Vegetation: patchy pickerelweed, bordered by hardwoods, maple, and cypress

Substrate: firm with detritus

Flow: 2.37 cfs

Sampled : 8/19/02

Collectors: Don Hicks, Scott Deitche, Mark Flock

BC23 Watershed: Brooker Creek

Three-acre triangular borrow pit located on the diagonal power line near tower HTE53 north of BC24.

Vegetation: narrow cattail fringe

Sampled: 8/16/2002

Collectors: Don Hicks, Sue Myers, Don Stillwaugh

BC24 Watershed: Brooker Creek

Site description: Two-acre rhomboid borrow pit located near the Coventry gate on the diagonal power line south of BC23.

Vegetation: mixed vegetation fringe including torpedo grass

Sampled: 8/16/2002

Collectors: Don Hicks, Sue Myers, Don Stillwaugh