Appendix 2B

Biological Assessment Macroinvertebrate and Fish Site Sample Results

Fishing Creek Subbasin HUC 03020102

The full report is available on the DWQ Environmental Sciences Section website: <u>http://portal.ncdenr.org/web/wq/ess/reports</u>. 2010 NC DWQ TAR-PAMLICO RIVER BASIN PLAN Appendix 2B

Waterbo	Waterbody Locati			on	n Station ID			D		Date		Bioclassification
FISHING	G CR		SR 16	00		0	B10	0	07	7/03/07		Good-Fair
County	Subb	asin	8 digit HUC	Lat	itude	Longi	tude	AUN	lumber		Leve	el IV Ecoregion
WARREN	4	ŀ	3020102	36	2128	7808	344	28-	79-(1)		Northe	rn Outer Piedmont
Stream Classifica	ation	D	erainage Area (mi2))	Elevation)	Stream Width		(m) Stream Depth (m)		Stream Depth (m)
C, NSW			54.5			230			6			0.3
	Forested/Wetland		ested/Wetland		Urban	l		Agricult	ure		Oth	her (describe)
Visible Landuse	(%)	6) 100			0			0				0
Upstream NPI	Upstream NPDES Dischargers (>1MGD or <1MGD and					1 1 mile)		NP	DES Nun	nber		Volume (MGD)
			f Warrenton WWTP			,			NC002083			2.0
Water Quality Parameters									Site Pho	tograph		
Temperature (°C)			22		1	The second		1	100		PH -	
Dissolved Oxygen (mg	a/L)		7.1		No.			Sec.	S State	and the state	P	
Specific Conductance)	116		Section 1			1			1	
pH (s.u.)			7.1		128		1		Har P		A F	
Water Clarity		s	lightly turbid							-		Store de
Habitat Assessment	Scores	(max)			16	1/2 P		Velan	- Antal	3. 25		
Channel Modification	(5)		5		-		人下		Philip Street	Alerto -		A A A A A A A A A A A A A A A A A A A
Instream Habitat (20)			11		The second			120	S.C	- Alter	$\langle \lambda \rangle$	
Bottom Substrate (15))		3			1 21				-	-	
Pool Variety (10)			10		140	1.00	100		New			11 AND IN
Riffle Habitat (16)			7		100	EPC.		SR-M	-			
Left Bank Stability (7)			6		1.00	20	Tur		Ser .	-		Sec. 1
Right Bank Stability (7	7)		6	6					and the second			1 States
Light Penetration (10)			10	10			1	The set	110			
Left Riparian Score (5	5)		5	5				1	-	312	1	-
Right Riparian Score ((5)		3					12.13				
Total Habitat Score ((100)		66 Substrate trace						trace of rubble, 10% gravel, 50% sand, 40% silt			

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/03/07	10230	19	19	4.5	4.5	Good-Fair
08/18/97	7448	22	22	4.0	4.0	Good
07/28/92	5944	18	18	4.2	4.2	Good-Fair

Taxonomic Analysis

EPT taxa collected in 1992 and 1997 samples were found in 2007 with the exception of the stonefly *Paragnetina fumosa* and the caddisfly *Pycnopsyche*. *Paragnetina fumosa* was abundant in 1992 and 1997 and *Pycnopsyche* was common. Lower water levels in 2007, that exposed root mats and snags, could be one reason why *Pycnopsyche* was not found as they favor these edge habitats. Both taxa are sensitive to water pollution.

Data Analysis

Fishing Creek at SR 1600 declined from Good in 1997 to Good-Fair in 2007. Since only three sampling events have occurred at this location, the differences in the number of EPT collected among the three samples may reflect natural fluxes. A lack of flow in 2002 prevented this site from being sampled. Of future importance to lotic conditions in the Fishing Creek watershed is evidence of beaver activity. One dam was observed in a Fishing Creek tributary near the sampling location.

Waterbod			ocation		Date	Station ID		Bioclassification		
FISHING	CR	S	R 1600		05/07/0	7 OF15		Excellent		
County	Subbasin	8 digit HUC	Latitude	Long	jitude	AU Number	I	Level IV Ecoregion		
WARREN	4	-	36.35722222	36.35722222 -78.1425		28-79-(1)		rthern Outer Piedmont		
Stream Classificat	tion Drai	inage Area (mi2)	Elevatio			Width (m)	Average Dept			
C;NSW		58.4	250)	1	2	0.4	No		
	Fo	rested/Wetland	Urk	oan		Agriculture		Other (describe)		
Visible Landuse (%)	100	(C		0		0		
Jpstream NPDES Dis				nile)		NPDES N		Volume (MGD)		
	Iown	of Warrenton's W	WIP			NC0020)834	2.0		
Nater Quality Parame	eters					Site	Photograph			
Гemperature (°C)		14.6		1. S.	A Real Property in	AND AN	and and and	Carlos and the		
Dissolved Oxygen (mg	1/L)	8.2		6.			N TY	1. 1 a 1/2		
Specific Conductance	(µS/cm)	95		and the		1 19 C 40				
oH (s.u.)		6.4		Class?	Carlos and		No. No. 2			
		_	100		1.0	-	All and a second	at the last to		
Water Clarity	Slight	ly turbid	SUL.			States -	Pro- Harris			
				100		No later				
Habitat Assessment	Scores (max)	- 4	96 AN	1		and the second	A State		
Channel Modification (5)	5		AL ALLA	A SHARES	A DESCRIPTION	A Contractor			
nstream Habitat (20)		18		James -	2051	1 March	S. Hall			
Bottom Substrate (15)		3	State of the	Contraction of the						
Pool Variety (10)		7				-	-	And These		
Riffle Habitat (16)		5					And the second second			
_eft Bank Stability (7)		6	1000	Martin	and the second			Contraction of the second		
Right Bank Stability (7)	6	The second	C. A. C.		and the second	A DECEMBER OF	and the second second		
ight Penetration (10)		10			and the same	- Barrestor	Carlos and	the second second		
_eft Riparian Score (5))	5				The second	Contraction of the second	Martin Street and		
Right Riparian Score (5)	5								
Total Habitat Score (*	100)	70	Sub	strate	Sand and cla	ау				
Sample Date		Sample I	D	Spe	cies Total	N	CIBI	BI Bioclassification		
05/07/07		2007-39		•	21	58		Excellent		
05/24/99		99-36			24		54	Excellent		

	Losses Rosyside Dac	e Bull Chub Blacktin Jur	prock Redfin Pickerel (only)	voung-of-vear) Pumpkinseer
Most Abundant Species	White Shiner	Exotic Spec	ies Green Sunfish	
-				
02/04/93	93-04	26	48	Good
04/16/97	97-28	24	60	Excellent
05/24/99	99-36	24	54	Excellent

Species Change Since Last Cycle

Losses -- Rosyside Dace, Bull Chub, Blacktip Jumprock, Redfin Pickerel (only young-of-year), Pumpkinseed Sunfish, and Bluegill. Gains -- Creek Chub, Northern Hog Sucker, Yellow Bullhead, and Green Sunfish.

Data Analysis

Watershed -- large tributary to the Tar River; drains north central Vance and central Warren counties; small municipalities include the Towns of Norlina and Warrenton. Habitat -- runs, deadfalls, logs, and sticks in the current creating snags and riffles; good undercuts and roots. 2007 -- 4 species of darters and 3 intolerant species collected; first time an exotic species had been collected. 1993 - 2007 -- primarily Piedmont species; very diverse, 33 species known from the site, including 5 species of suckers and 4 intolerant species; dominant species include Tessellated Darter, Pinewoods Shiner, and White Shiner; has rated Excellent since 1997; may qualify as High Quality Waters if so petitioned.

Waterbody		Locat	ion	Station	ID	Date	Bioclassification	
FISHING CI	ł	US 3	801	OB10	1 0	6/28/07	Excellent	
County St	ıbbasin	8 digit HUC	Latitude	Longitude	AU Number	Le	vel IV Ecoregion	
EDGECOMBE	4	03020102	360903	774135	28-79-(29)	Southeastern F	Floodplains and Low Terraces	
Stream Classification	0	Drainage Area (mi	2) Elev	vation (ft)	Stream Width	n (m)	Stream Depth (m)	
WS-IV, NSW, CA		529.6		83	10		0.3	
			·					
Visible Landuse (%)	Foi	rested/Wetland 100	Urban		Agriculture		ther (describe)	
VISIBle Landuse (%)		100	0		0		0	
Upstream NPDES	Discharge	ers (>1MGD or <1I	MGD and within	n 1 mile)	NPDES Nu	mber	Volume (MGD)	
	Town o	f Warrenton WWT	Р		NC00208	34	2.0	
	Tow	n of Enfield WTP			NC00840	34	not limited	
Water Quality Parameters	;				Site Pho	otograph		
Temperature (°C)		28		ANT HAT IS	A State State	3	All the second second	
Dissolved Oxygen (mg/L)		4.9	24		STAR -	1		
Specific Conductance (µS/						A CONTRACTOR	CARLES IN THE SECOND	
pH (s.u.)	,	6.8	\$. F			LANS C	and the second	
			100	1/2 /			Contraction of the second	
Water Clarity	:	slightly turbid		Care Al	S / Call			
Habitat Assessment Scor	es (max)			1	- the second		- Alt dama	
Channel Modification (5)		15	1981		and the		13 12	
Instream Habitat (20)		15			and the second		the state	
Bottom Substrate (15)		13				and the second		
Pool Variety (10)		9	and the second	and the second			Marke	
Riffle Habitat (16)		0	200	a second pro-	and a second second			
Left Bank Stability (7)		9				and multi	to an a	
Right Bank Stability (7)		10		and the		and the second s	States and a second	
Light Penetration (10)		2		AN PROPERTY			in the second	
Left Riparian Score (5)		5	2. 12				and the second	
Right Riparian Score (5)		5	1					
Total Habitat Score (100)			Substra	ate 20%	0% gravel, 45% sand, 25% silt, trace of rubble and bedrock			
		83	Oubsil	30 % (graver, 45% sanu,	2578 SIIL, LIACE 0	f rubble and bedrock	
Sample Date		Sample ID	ST	EPT	BI	EPT BI	Bioclassification	

Sample Date	Sample ID	51	EFI	DI		Dioclassification
06/28/07	10226	86	30	5.4	4.4	Excellent
08/05/02	8898	63	15	5.8	4.4	Good-Fair
08/18/97	7451	86	25	5.7	4.3	Good
07/22/92	5910	92	26	5.7	4.5	Good
07/13/88	4598	75	21	6.0	4.7	Good
07/24/85	3621	88	26	5.4	4.4	Good
07/25/83	2981	71	27	5.6	4.5	Good

Taxonomic Analysis

Eighty-six taxa were collected here, many of which are sensitive to aquatic pollution. Abundant mayflies included, *Maccaffertium modestum* and *Baetis intercalaris*. Four stonefly taxa were collected: *Acroneria abnormis, Paragnetina fumosa, Pteronarcys dorsata* and *Perlesta*. There were 14 caddisfly taxa with *Cheumatopsyche, Chimarra, Hydropsyche venularis* and *Oecetis persimilis* being abundant. The rock-case caddisfly *Neophylax fuscus*, common here, was found at two other sites in the Tar River watershed in 2007 (both were upstream Piedmont sites). Its presence here highlights some of the Piedmont features (gravel, rubble) of this waterbody not seen at downstream sites. This site also contained the only 2007 record of the uncommonly collected damselfly, *Hetaerina*.

Data Analysis

Seven samples have been collected here since 1983 with ratings from Good-Fair to Excellent. A greater than average number of EPT taxa were found here in 2007, possibly the result of an earlier summer sampling effort (June) compared with past years (July and August). Active discharging from a pipe next to the US 301 bridge was observed presumably associated with the Enfield WTP.

Waterbo	Waterbody Locat			n		Sta	ation I	D		Date		Bioclassification
FISHING	G CR		SR 15	00		0	B99)	00	6/28/07	,	Excellent
County	Subb	asin	8 digit HUC	Lat	itude	Longit	ude	AUN	lumber	Level IV Ecoregion		el IV Ecoregion
EDGECOMBE	4		03020102		355827 773225		25	28-79	9-(30.5)	Southeas	stern Fl	oodplains and Low Terraces
Stream Classifica	ation	Dr	ainage Area (mi2)		Elev	vation (ft)		Strea	am Width	(m)		Stream Depth (m)
C, NSW		784				9			14			1
	Forested/Wetland				Urban			Agricult	ure		Ot	her (describe)
Visible Landuse	se (%) 100		0		0				0			
Upstream NPDES Dischargers (>1MGD or <1M			s (>1MGD or <1M0	3D ar	nd withir	n 1 mile)		NP	DES Nur	nber		Volume (MGD)
			none						n/a			n/a
Water Quality Param	eters							Site Pho	otograph			
Temperature (°C)			27.2				1	100			V.	
Dissolved Oxygen (mg							Er.			walk !	and the second	
Specific Conductance			109		det :		1. S.			1	14 2	Yeller - All
pH (s.u.)			6.9				-	12	and the	14		
Water Clarity			clear				1.5	E	F			
Habitat Assessment	Scores ((max)					A.C.	Ela l	the p	1 P	27-1	the start of
Channel Modification	(15)		15				2.6	V_{ij}	the day		-	Carles In 1
Instream Habitat (20)			13			and the second		- Al		and the second		Har and Hard
Bottom Substrate (15))		13		100	-	100 101	-				- HARRING TOTAL AND STAT
Pool Variety (10)			6			-						
Left Bank Stability (10	Bank Stability (10) 9											
Right Bank Stability (1	0)		9					-	ANA ME			Contraction of the second
Light Penetration (8)			7			A PROPERTY	12	- 10-	-			Exception in the
Left Riparian Score (5	5)		3			-	-					
Right Riparian Score (· /		4									
Total Habitat Score (100)		79		Substra	ate			10%	gravel, 70)% sand	d, 20% silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/28/07	10225	102	31	5.2	3.9	Excellent
08/06/02	8901	21	21	4.5	4.5	Good
08/18/97	7452	56	28	4.7	3.9	Excellent
07/22/92	5911	23	23	3.8	3.8	Good

Taxonomic Analysis

Over 100 taxa were collected here, many of which are sensitive to aquatic pollution. A total of 11 taxa of snails, bivalves and other gastropods were found in this reach. Of these *Elimia* and *Elliptio* were abundant. Abundant mayflies included *Tricorythodes, Maccaffertium modestum, Procloeon, Isonychia, Heptagenia* and *Baetis* intercalaris. Four stonefly taxa were collected: *Acroneria abnormis, Neoperla, Pteronarcys dorsata* and *Perlesta*. There were 14 caddisfly taxa with *Brachycentrus numerosus, Cheumatopsyche, Chimarra, Hydropsyche rossi, Nectopsyche exquisita, Oecetis morsei* and *O. persimilis* being abundant. Seven riffle beetle taxa were recorded here including *Stenelmis antennalis, S. fuscata, S. lignicola* and *S. xylonastis*.

Data Analysis

Fishing Cr at SR 1500 rated Excellent in 2007. This site rated Good in 2002. A diverse and pollution sensitive benthic community resides here. The highest number of EPT (31) and Total Taxa (102) were collected in 2007. The four samples collected here since 19992 employed two methods (EPT and Full Scale). Minor differences existed in the number of EPT taxa between Full Scale samples (28 and 31) and between EPT samples (21 and 23), thus suggesting a stable benthic community over the 15-year data record.

Waterbo	aterbody Locatio			on	s	tation	ID		Date		Bioclassification
SHOCCO	D CR		SR 16	513	C)B1()5	07	7/03/07		Not Rated
County	Subb	asin	8 digit HUC	Latitu	ide Long	jitude	AU N	lumber		Level	IV Ecoregion
WARREN	4	ļ	03020102	3617	25 781	1109 28-7		79-22	Ν		n Outer Piedmont
Stream Classifica	ation	D	orainage Area (mi2))	Elevation (f	(ft) Stre		eam Width (m)		Stream Depth (m)	
C, NSW		23.4			250			4			0.3
	Forested/Wet		ested/Wetland	I	Urban		Agricult	ure		Oth	er (describe)
Visible Landuse	nduse (%) 100		100		0		0				0
Upstream NP	Upstream NPDES Dischargers (>1MGD or <			GD and	within 1 mile	`	NP	DES Nur	nber		Volume (MGD)
	None					,					
Water Quality Param	neters						-	Site Pho	tograph		
Temperature (°C)			22	12		1.0	1	1 2 1	EA MAN	1000	
Dissolved Oxygen (mg	a/L)		5.1					13/1	at the		State 1 State
Specific Conductance)	106				388	19.20	S.W.		
pH (s.u.)	(r)		6.4				Alle C	1.15-1/	T AL	7	
Water Clarity			turbid	ATO D	1		1	1	P		
Habitat Assessment	Scores	(max)				7.6		August	1 200		
Channel Modification	(5)		5			1	1.24/2	Section and	1. 5 -		
Instream Habitat (20)			11	22			AND ALL	W. STE	Que		
Bottom Substrate (15))		3			i sel	5 20				
Pool Variety (10)			10						-Anto-	97 j	No Part
Riffle Habitat (16)			10	19					1		AKRIP (STAT
Left Bank Stability (7)			6	-	S-165-	226		See.	A. Bar		THE SECOND
Right Bank Stability (7	ık Stability (7) 6										
Light Penetration (10)		8				Phil.	A C		Charles .		3 3 4 4
Left Riparian Score (5	5)		5		C-OF		Zave-	70	-	and I tools	
Right Riparian Score											
Total Habitat Score ((100)		69	S	ubstrate				50% sand	, 50% s	silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/03/07	10229	12	12	5.3	5.3	Not Rated
08/18/97	7447	16	16	4.6	4.6	Good-Fair
07/28/92	5947	15	15	4.3	4.3	Good-Fair

Taxonomic Analysis

Stoneflies were absent in 2007, whereas in 1997 and 1992 three and four taxa, respectively, were collected. Only half the number of mayfly taxa collected in 1997 (6) were found in 2007 (3). Caddiflies found in 2007 were similar to previous years with one exception, *Triaenodes marginatus*. This uncommon taxon (n=34 records) appears to favor more lentic conditions. This was only the second record of this taxon for the Tar River basin and the only one found in 2007.

Data Analysis

The decline in the number of taxa here from 1992 and 1997 to 2007 can be attributed to the presence of a large beaver impoundment (see photo). The new hydrologic regime in this waterbody, though still favorable to caddisflies, has discouraged stoneflies and some mayflies, which were present in prior years, from residing in this reach. This site was not sampled in 2002 due to low flows in July and August of that year

None

66

Waterb	ody		Location	Location Date			n ID	Bioclassification	
SHOCC	O CR	SR 1613 04/11/07 OF39			89	Good-Fair			
County	Subbasi	n 8 digit HUC	Latitude Longitude		itude	AU Number		Level IV Ecoregion	
WARREN	4	03020102	36.28722222	28722222 -78.18583333 28-79-22		2	Northern Ou	iter Piedmont	
Stream Classifica	Stream Classification Drainage Area (mi2)		Elevatio	Elevation (ft)		n Width (m)	Av	verage Depth (m)	Reference Site
C;NSW		25.3	265	5	6.5			0.5	No
		Forested/Wetland	Url	Urban		Agriculture		Other (de	escribe)
Visible Landuse	Visible Landuse (%) 100			0		0		0	
Upstream NPDES Di	ostream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)						S Numb	er V	olume (MGD)

Water Quality Parameters		Site Photograph
Temperature (°C) Dissolved Oxygen (mg/L) Specific Conductance (µS/cm) pH (s.u.)	11.1 9.8 73 6.6	A MANAAA
Water Clarity Slightly tann	in stained	
Habitat Assessment Scores (max)		
Channel Modification (5)	4	
Instream Habitat (20)	13	
Bottom Substrate (15)	3	
Pool Variety (10)	10	
Riffle Habitat (16)	4	
Left Bank Stability (7)	6	
Right Bank Stability (7)	6	
Light Penetration (10)	10	
Left Riparian Score (5)	5	
Right Riparian Score (5)	5	

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification				
04/11/07	2007-15	20		Not Rated				
04/09/02	2002-07	18	54	Excellent				
04/16/97	97-27	17	50	Good				
06/18/92	92-21	18	48	Good				
Most Abundant Species	Highfin Shiner	Exotic Spec	ies Green Sunfish					
	Gains Yellow Bullhead, Flier, Rosyside Dace, Eastern Mosquitofish, Green Sunfish, Warmouth, and							

sand, silt, clay

Substrate

Species Change Since Last Cycle

Total Habitat Score (100)

Gains -- Yellow Bullhead, Flier, Rosyside Dace, Eastern Mosquitofish, Green Sunfish, Warmouth, and Largemouth Bass. Losses -- American Eel, Glassy Darter, Least Brook Lamprey (a state Threatened species), Redear Sunfish, and Chainback Darter.

Data Analysis

Watershed -- a tributary to Fishing Creek; drains part of the southwest corner of Warren County. Habitat -- primarily runs with abundant woody debris, clay bank shelves, and some undercuts; a large beaver dam near the top of the sample reach had flooded the surrounding wetlands, causing water to cascade over the banks down into the stream channel (see photo). 2007 -- a diverse fish assemblage was collected at this site including 4 new species of sunfish and bass. However, the altered hydrology in this section of the stream has caused a shift in the trophic function of the fish community, the loss of two darter species (intolerant Chainback Darter and Glassy Darter), and a decline in reproductive function of the fish population. If rated, the altered hydrology would cause an inapropriate decline to Good-Fair. Therefore this site is Not Rated and should be resampled during normal hydrologic conditions. 1992 - 2007 -- overall, 27 species are known from this site including 2 species of suckers, 7 species of sunfish, 6 species of minnows, and 4 species of darters. Despite being Not Rated, this watershed maintains good water quality.

Waterbody	/		ocation		Date	Statio	n ID	Bioclassification				
CROOKED	SWP	S	R 1501		04/11/07	7 OF	66	Ν	ot Rated			
						·						
County	Subbasin	8 digit HUC	Latitude	-	jitude	AU Num			el IV Ecoreg			
NASH	4	03020102	36.1331	-77.8	88094	28-79-2	4	Rol	ling Coastal P	lain		
Stream Classification	on Dra	inage Area (mi2)	Elevatio	on (ft)	Stream V	Vidth (m)	۵۷	erage Depth (i	rage Depth (m) Refere			
C; NSW		6	147			6		0.4		No		
0, 1000		0	147			5		0.4				
	Fo	prested/Wetland	Url	ban		Agriculture		Ot	her (describe	e)		
Visible Landuse (%	6)	95	5 (rural re	esidential)		0			0			
Upstream NPDES Disc	chargers (>		and within 1 r	nile)		NPDE	S Numbe	er	Volume	(MGD)		
		None										
Water Quality Parame	ters						Site Phot	ograph				
Temperature (°C)		11.5	Tener	SIGN -	1 田 1 法	KAT THE	1	and States	the state of the	小大学		
Dissolved Oxygen (mg/	L)	8.6	Aca to		A REAL	tine 1	1	1		See State		
Specific Conductance (89	The second second	2. 作的 言。	A Standard	All Shot	The state	1		770 7		
pH (s.u.)	,	6.6			and the second	the f	and Manual I		and the second	The star		
			E State	T I'll	- And and a start			Star 1		- AND TO		
Water Clarity	Slig	htly tannin stained		Constant State	12	week -	-			Alla Sea		
,			The Martin	1 小型			-Literation	a the	and the	N BA		
Habitat Assessment S	cores (ma	()		5	Sales Sales					- A State		
Channel Modification (1	5)	15	Real Providence	34	Alle and		-	And And And	Ser Spa	S. Share		
Instream Habitat (20)		18		这段情	N 12. 12			1 10200		30		
Bottom Substrate (15)		10	and the second second		State -					1919 1919 19		
Pool Variety (10)		10	20.47	-					They Dive			
Left Bank Stability (10)		9	- Sugar	ALC: NO				\$P	The Party	Yar - 172		
Right Bank Stability (10)	9	and the state	ASSISTER.	a series	1				and Sharefur		
Light Penetration (10)		9	3	1		100						
Left Riparian Score (5)		5		1.16	A CON	. 200	200					
Right Riparian Score (5)	4										
Total Habitat Score (1	00)	89	Sub	strate	sand, gravel,	clay						
Sample Date		Sample	D	Spe	cies Total		NCIBI		Bioclassi	fication		
04/11/07		2007-14			20				Not R	ated		
				•	1							
Most Abundant Spec	ies	Pinewoods Shine	er		Exotic Sp	ecies	Green S	Sunfish				
					J							
Species Change Since	e Last Cycl	e N/A										
Data Analysis												
Watershed a small tr	ibutary to F	ishing Creek locate	ed about one m	ile above	its confluence	; drains part	of rural no	orth central Na	sh County abo	ove the Town		
of Red Oak. Habitat												

coastal plain and piedmont fish species, including 6 sunfish species, 6 minnow species, 2 sucker species, and 2 darter species; the number of species far exceeds what is typically found in a coastal plain stream. This watershed is located very close to, but not within the Northern Outer Piedmont level IV ecoregion. If this site were located within the Northern Outer Piedmont ecoregion and therefore ratable with the NCIBI, the fish community would receive an NCIBI score of 54 and bioclass of Excellent. Currently, coastal plain streams are Not Rated with the NCIBI because the appropriate metrics have yet to be developed.

Waterb	ody			Location		Dat	е	Station	ID	E	Bioclass	ification
LITTLE FIS	HING	CR		SR 1509		04/12	2/07	OF2	6		Exce	llent
County	Sub	obasin	8 digit HUC	Latitude		itude	-	AU Numb	er			Ecoregion
WARREN		4	03020102	36.36583333	-77.943	333333		28-79-25		Nor	thern Ou	iter Piedmont
Stream Classifica	ation	Draina	age Area (mi2)	Elevatio	on (ft)	Strea	am Wid	ith (m)	Ave	erage Depth	ı (m)	Reference Site
C;NSW			28.5	250)		10			0.6		No
		Fores	sted/Wetland	Ur	ban		Agı	riculture		C	Other (de	escribe)
Visible Landuse	(%)		100		0			0			0	
Upstream NPDES Di	ischarge	ers (>1MG	D or <1MGD a	and within 1 mile	e)			NPDES	6 Numbe	r	v	olume (MGD)
			None									
Water Quality Param	neters							s	ite Phot	ograph		
Temperature (°C)			13.9			and the						(m)
Dissolved Oxygen (m	ig/L)		10.0	1 120	APP.	國際中華	10-2				TR. TA	A THE THE
Specific Conductance	e (µS/cm	ı)	74	er de la				学中心		Equility 1	Sec. Co	经备益 的 國际
pH (s.u.)			6.6			1.	a start			- Hallerus	126 11	
Water Clarity	[Turbid					户		and the		
Habitat Assessment	Scores	(max)		and the second	STALL.	A P	1			-		
Channel Modification	(5)		5	6 7		-	14		-	and the		1 12 7 12
Instream Habitat (20)			16	a Maria				and the second	1		- Aller	and the second
Bottom Substrate (15	5)		5			1. De		TORUS -		and the second		And the second
Pool Variety (10)			9	100							A Part	
Riffle Habitat (16)			12	100				and the second second	-		1 and	
Left Bank Stability (7))		4	1000				and the		and the second		A states
Right Bank Stability (7	7)		4				ALC: N	N. H. LER	Sec.	Charles .	- Carlos	and an line
Light Penetration (10))		10			- Al		ALC: NO	State &		S. Statute	Same and
Left Riparian Score (5	5)		5					CALL P. S		- CET IS	and the second	An and the second
Right Riparian Score	(5)		5									
Total Habitat Score	(100)		75	Sub	strate	clay, san	nd, silt, o	cobble				

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/12/07	2007-17	23	54	Excellent
04/11/02	2002-11	23	52	Good
04/16/97	97-29	19	50	Good
02/03/93	93-02	20	54	Excellent

Tessellated Darter

Most Abundant Species

Species Change Since Last Cycle

Gains -- Yellow Bullhead, White Sucker, Satinfin Shiner, Redfin Pickerel, Pinewoods Shiner, Blacktip Jumprock, Creek Chub, and Eastern Mudminnow. Losses -- Rosyside Dace, Bluespotted Sunfish, Warmouth, Notchlip Redhorse, Sicklefin Redhorse, V-lip Redhorse, Golden Shiner, and Swallowtail Shiner.

Green Sunfish

Exotic Species

Data Analysis

Watershed -- a tributary to Fishing Creek; drains part of east central Warren County. Habitat -- fast riffles, deep clay lined runs and pools with submerged deadfalls and side snags. 2007 -- very diverse fish community including 6 species of minnows, 3 species of suckers, and 3 species of darters were collected; almost identical NCIBI metric scores as in 2002; the bioclass improvement in 2007 can be attributed to a slightly higher reproductive function of the fish community. 1993 - 2007 -- this watershed has maintained good water quality and a diverse assemblage of fish fauna over a 14 year period, with a total of 34 known species. This site has the potential to qualify for HQW or ORW status if petitioned.

Waterbo	ody		Locatio	n		Sta	ation	ID		Date		Bioclassification
L FISHIN	G CR		SR 134	43		0	B10	3	00	6/29/07		GOOD
County	Subb	asin	8 digit HUC	Lati	itude	Longi	tude	AUN	lumber		Leve	el IV Ecoregion
HALIFAX	4		03020102	360	0914	7753		28-	79-25			ng Coastal Plain
Stream Classifica	ation	Dr	ainage Area (mi2)		Elev	ation (ft))	Strea	am Width	(m)		Stream Depth (m)
C, NSW			187.1			110			9			0.3
		Fore	sted/Wetland		Urban			Agricult	ure		Otl	ner (describe)
Visible Landuse	: (%)		100		0			0				0
Upstream NP	DES Dise	charger	s (>1MGD or <1MG	SD an	d within	1 mile)		NF	DES Nur	nber		Volume (MGD)
			None									
Water Quality Param	neters								Site Pho	otograph		
Temperature (°C)			25					120	1 11		See 1	
Dissolved Oxygen (mg	g/L)		53			1 Section	1		10-1-10-			
Specific Conductance	e (µS/cm)		99		1354		1				-	
pH (s.u.)			6.8			2		and an	10			
Water Clarity		sl	ightly turbid									
Habitat Assessment	Scores ((max)						S E	C. Star	a de		8 1 B
Channel Modification	(15)		15			1	a star		5	PACK S		a the second second
Instream Habitat (20)			15			-						EALAN AND AND AND AND AND AND AND AND AND A
Bottom Substrate (15))		13		100	1	-	Aller .		Sec. 4		Karen I
Pool Variety (10)			8									And the company of
Left Bank Stability (10))		9									And the second s
Right Bank Stability (1	10)		9					the second				and the second second
Light Penetration (10))		7					1.2.		-	a sure	
Left Riparian Score (5	5)		5		T- of		1.15			and the		a man n
Right Riparian Score	(5)		5			-						
Total Habitat Score ((100)		86		Substra	ite	10% E	Boulder,	10% rubb	ole, 20% Gr	avel, 5	0% sand, 10% silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/29/07	10228	95	27	5.2	4.0	Good
08/05/02	8899	86	23	5.6	4.2	Good
8/15/1997*	7449	85	23	5.3	4.1	Good
9/10/1992*	5948	64	18	5.6	4.8	Good-Fair
7/14/1988*	4599	89	24	5.3	3.8	Good

Taxonomic Analysis

A diverse and healthy benthic community resides in this lower reach of Little Fishing Creek. Pollution intolerant taxa dominate the taxa list for this site and include: the mayflies *Serratella serratoides, Leucrocuta,* and *Stenacron pallidum*; the caddisfly *Triaenodes perna/helo*; and the stoneflies Pteronarcys dorsata and Paragnetina fumosa. Ten Mollusk taxa were reported from this site in 2007 including the rare *Lioplax subcarinata*. Another rare taxon collected here in 2007 was the water beetle, *Lioporeus pilatei*. This taxon was also collected here in 2002. The hemipteran, *Hydrometra,* that has only been found at 13 locations in North Carolina, was collected here in 2007.

Data Analysis

Water quality in the lower reaches of Little Fishing Creek has remained stable since sampling began in 1988. Though this site lies just inside the Coastal Plain, its watershed is Piedmont, indicated by species such as the rock case caddisfly *Neophylax fuscus*. This species is found in this upper region of the Tar River watershed but not downstream in more Coastal A waters. Medoc Mountain State Park lies upstream of this location and likely contributes to the high water quality at SR 1343.

*Note: prior to 2002, Little Fishing Creek was sampled at SR 1338, approximately 3 miles upstream of SR 1343.

Waterbody			Location		Date	Station ID) E	Bioclassificatio	n	
REEDY CR		S	SR 1511		04/12/07	OF34		Good		
		digit HUC	Latitude	Long		AU Number	1	Level IV Ecoreg		
WARREN	4	03020102	36.35	-78.018	333333	28-79-25.5	Nor	thern Outer Pie	dmont	
Stream Classification	Drainage	e Area (mi2)	Elevatio	on (ft)	Stream W	idth (m)	Average Depth	(m) Ref	erence Site	
C;NSW	1	19.7	270)	12		0.4		Yes	
	Foreste	d/Wetland	Url	ban	A	griculture	C	Other (describe	e)	
Visible Landuse (%)		100	(0		0		0	,	
-										
Upstream NPDES Discharge	ers (>1MGD		nd within 1 mile	e)		NPDES N	umber	Volume	(MGD)	
		None							-	
Water Quality Parameters						Site	Photograph			
Temperature (°C)		13.1	111	the sta	1		NOTE I	LINE H	A A A	
Dissolved Oxygen (mg/L)		9.3			北方大学	新新学习 (1)		XI IV	- Cont	
Specific Conductance (µS/cm	ı)	63	N.K.		to the series	ALC: ALC: ALC: ALC: ALC: ALC: ALC: ALC:	Eur l		450	
pH (s.u.)		6.5	1 1 1		11137月18			CTAR SA	125	
•					ALC: NO	M CANA		SLEN, DUI	Te Val B	
Water Clarity	Slight	tly turbid	1 A A		- Stanley and	1 Canal		AND	120	
Habitat Assessment Scores	(max)		Street of		H +			SUV:	A AL	
Channel Modification (5)		5	-		and the second second		4 412	Contraction of the second	THAS AN	
Instream Habitat (20)		18	State of		State of the second second	The second	1 C 1	1000	din	
Bottom Substrate (15)		6	No. 1		Sale and the second	ALCON THE REAL OF	A STATE	and the first of	the states	
Pool Variety (10)		9	/	a the	- Andrew Barry Hill		-	The subject	and the	
Riffle Habitat (16)		3	Same and	23	A State State State State		ST LE	私外で	A Cast	
Left Bank Stability (7)		6	7.0	States and	1-1-1		200 1 3	214		
Right Bank Stability (7)		6	5.6		Sales And				1000	
Light Penetration (10)		10	Alter B	ALL LIN	A CONTRACTOR				- State 1	
Left Riparian Score (5)		5	A CONTRACT	the second	May the	and the second	a partie	and the		
Right Riparian Score (5)		5								
Total Habitat Score (100)		73	Sub	strate	gravel, sand					
Sample Date		Sample I	D	Spe	cies Total	N	ICIBI	Bioclass	ification	
04/12/07		2007-16			16		48	Go	bd	
04/11/02		2002-12			17		52	Go	bd	
Most Abundant Species	В	uehead Chub			Exotic Spe	cies Gr	een Sunfish			
Species Change Since Last	Cycle						egill, and Swallow Jumprock, and Ci		ses Yellow	

Data Analysis

Watershed -- a tributary to Little Fishing Creek located about 8 miles above its confluence; drains part of central Warren County. Habitat -- primarily runs with side snags, good roots, and coarse woody debris; good riparian forest. 2007 -- a fairly diverse fish community in 2007, with relatively stable metric scores, notwithstanding a slightly lower total abundance and the loss of the intolerant Roanoke Darter. 2002 - 2007 -- there are 22 fish species that are known from this site including 2 species of suckers, 8 species of minnows, and 3 species of darters. Water quality in this catchment remains good with no apparent issues.

Waterbody		L	ocation		Date	e	Station ID		Bioclassification			
BEAR SWP)	N	IC 561		05/07	07/07 OF2			Go	od		
County Su	bbasin	8 digit HUC	Latitude	Long	gitude		AU Number		Level IV	Ecoregion		
HALIFAX	4	03020102	36.2779312	-77.88	341524		28-79-25-7		Northern Ou	uter Piedmont		
					-							
Stream Classification	Drai	nage Area (mi2)	Elevatio		Strea		dth (m)	Avera	age Depth (m)	Reference Site		
C;NSW		42.8	200			8			0.4	No		
	For	ested/Wetland	Urk	ban		Aq	riculture		Other (d	escribe)		
Visible Landuse (%)		100	()			0		(
Upstream NPDES Discha	rgers (>1		and within 1 r	nile)			NPDES Nu	mber	V	olume (MGD)		
		None										
Water Quality Parameters	5						Site F	hotog	graph			
Temperature (°C)		15.4	-	and the	AS			2		A Carlos		
Dissolved Oxygen (mg/L)		7.5	1	-	and we will be	Part and		14				
Specific Conductance (µS/	cm)	83	151		1000			1	一下,"五八			
pH (s.u.)		6.5		122.00	6.2.43		ST SAL	著橋				
				1 A	die en	-	C. C		- 1	A CONTRACTOR OF		
Water Clarity	Clear,	tannin stained		Sec.	- And	34		Sec.				
				22	-				- Hereite			
Habitat Assessment Sco	es (max))	22	P	1		A CONTRACTOR		1.1.1			
Channel Modification (5)		5			-	-	-	and the		Contraction of the local division of the loc		
Instream Habitat (20)		18	e dit.	100	- INA		the second s		Stads-			
Bottom Substrate (15)		6		Alt a			412					
Pool Variety (10)		6 5	100	-			15 - 15 - 2		2.			
Riffle Habitat (16) Left Bank Stability (7)		6	19 A. S.	2	Contraction of the local division of the loc		200 2000					
Right Bank Stability (7)		6		10	1		- market					
Light Penetration (10)		10	Jac 1		a mart		- State					
Left Riparian Score (5)		5	and the second									
Right Riparian Score (5)		5										
Total Habitat Score (100)		72	Sub	strate	Sand, gra	avel, c	obble, and silt					
Samula Data		Complet		S m	aioo Toto				B			
Sample Date 05/07/07		2007-40		She	ecies Tota 25	1		2	ы	Good		
04/11/02		2007-40			20		5			Good		
					-							
Most Abundant Species		Redbreast Sunfis	sh and America	n Eel	Exotic	Spec	ies Gree	en Sur	nfish			
			Colden Shine	· White S	lucker Not	chlin F	Pedborse and B	lueaill	. Gains Satinfin	Shiper Northern		
Species Change Since La	ast Cycle									Green Sunfish, and		
	-	Glassy Da	arter.									
Data Analysis												
Watershed tributary to L												
headwaters; borders the R 0.28 MGD). Habitat Fis	-											
2007 4 species each of c												
diverse piedmont and coast	tal plain f	auna, 29 species	present includi	ng 7 spec	cies of mini	nows,	6 species of suc	kers,	5 species of sunfis	sh, 4 species of		
darters, and 3 intolerant sp Piedmont and the Coastal												
i loumont and the Coastal	nan, ue				porcenta	goord		10165	and a high percer	lage of piscivoles.		

Waterbody		Locatio	n	Stat	ion ID	Da	ate	Bioclassification
ROCKY SWP)	SR 10	02	OB	8104	06/2	8/07	Good
County Su	obasin	8 digit HUC	Latitude	Longitu	Ide AU N	Number	Lev	el IV Ecoregion
HALIFAX	4	03020102	361335	77483	5 28-79	-28-(0.7)	Northe	ern Outer Piedmont
Stream Classification	[Drainage Area (mi2)	Elev	vation (ft)	Strea	am Width (m))	Stream Depth (m)
WS-IV		19.6		130		6	-	0.2
	Foi	rested/Wetland	Urban		Agricul	ture	Ot	her (describe)
Visible Landuse (%)		75	0		25			0
Upstream NPDES D	ischarge	ers (>1MGD or <1M0	GD and withir	n 1 mile)	NF	DES Numbe	er	Volume (MGD)
		None						
Water Quality Parameters						Site Photog	Iraph	
Temperature (°C) Dissolved Oxygen (mg/L) Specific Conductance (µS/c pH (s.u.) Water Clarity Habitat Assessment Score		24.7 4.9 70 6.7 clear						
Channel Modification (5) Instream Habitat (20) Bottom Substrate (15) Pool Variety (10) Riffle Habitat (16) Left Bank Stability (7) Right Bank Stability (7) Light Penetration (10) Left Riparian Score (5) Right Riparian Score (5)		15 13 7 10 0 10 10 10 4 4 83	Substra	ate 8	0% sand, 20	% silt, traces	of bedrock, be	bulder rubble and gravel

 Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/28/07	10227	81	20	6.0	5.1	Good
08/18/97	7450	39	13	5.6	4.6	Good-Fair

Taxonomic Analysis

The taxa composition was typical of that found in sandy substrates. The psammophilic midge, *Cryptochironomus*, dominated the chironomid community. The burrowing mayfly, *Hexagenia*, was abundant here, as were Isonychia, Maccaffertium modestum, and Caenis. Abundant caddisflies included Cheumatopsyche, Triaenodes ignitus, and Oecetis persimilis. An uncommonly collected beetle, *Helophorus*, was found here. This is only the third collection of this taxon in the Tar River Basin. Like most Tar River sites, gastropod taxa were well represented at Rocky Swamp (seven taxa), however, no live mussels were observed (just their shells). It is unclear why only one chironomid taxa was collected in 1997 whereas 19 were found in 2007. Beetles were well represented in 2007 (10 taxa) but scarce in 1997 (3 taxa).

Data Analysis

Rocky Swamp at SR 1002 appears to be a transitional reach from Piedmont to Coastal A. The majority of the watershed upstream of SR 1002 is Piedmont, however, the previous sampling effort (1997) used CA criteria for assigning a bioclassification. For consistency the same was done in 2007 resulting in a Good bioclassification. Regardless of the methodology used, the 1997 effort would have resulted in a Good-Fair. This site was not sampled in 2002 due to a lack of flow in July and August.

Waterboo	ły			Location		Date		Station	ID	Bio	classifi	cation
ROCKY S	SWP		S	SR 1002		05/07/	07	OF3	5		Goo	d
County	Subb	basin	8 digit HUC	Latitude	Long	itude		AU Numbe	er	Lev	el IV E	coregion
HALIFAX	2	4	03020102	36.22638889	-77.809		2	28-79-28-(0	.7)		orthern Outer Piedmont	
									_			
Stream Classificat	tion	Draii	nage Area (mi2)		. /	Stream	n Wid 7	lth (m)	Ave	erage Depth (n	n)	Reference Site
WS-IV;NSW			19.5	145	1		1			0.4		Yes
		For	ested/Wetland	Urk	ban		Agr	riculture		Oth	ner (des	scribe)
Visible Landuse ((%)		60	()			35		5 (uti	lity right	-of-way)
Upstream NPDES Dis	scharg	ers (>1		D and within 1 n	nile)			NPDES	Numbe	r	Vo	lume (MGD)
			None									
Water Quality Param	eters							S	ite Phot	ograph		
Temperature (°C)			16.7	and the second	6. S	the start				And the second s	1.17	A ACTION .
Dissolved Oxygen (mg	g/L)		7.3	200		and a star	14	1-112		Con Cale		
Specific Conductance	(µS/cn	n)	97		4			100				
pH (s.u.)			6.8		-			No and a			- 14	1
					-			1 PES				and the second second
Water Clarity		Slightly	/ tannin stained		and the second	1	100			See an		AND THE REAL
						12	1		1			
Habitat Assessment	Scores	s (max)		Sid	an a		-		1	and the second	1	
Channel Modification ((5)		5		ALC: NO	105 N		and the second	an i	1	1. 1	an
Instream Habitat (20)			16		The second	A A				200		A State
Bottom Substrate (15)			5					- 2	~		Pro La	A Contraction
Pool Variety (10)			6	- 250				1	ge t		2	
Riffle Habitat (16)			2	201 20		1. 18		1	2	A second second	- Ale	
Left Bank Stability (7)	•		6			1		A STREET	and some	the second	-	
Right Bank Stability (7)		6	6283				States and		and the second		
Light Penetration (10)	`		7			Decision in the					-	to which
Left Riparian Score (5) Right Riparian Score (2	1250		1000			
Total Habitat Score (5 63	Suba	strate	Sand gray		bble, bedro	ick and	boulder		
i otal Habitat Score (100)		03	305		Canu, yrav	/ci, cu	bble, beuit	ion, anu			
Sample Date	•		Sample	ID	Spe	cies Total			NCIBI		Biod	lassification

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification		
05/07/07	2007-41	07-41 19 48		2007-41 19 48		Good
04/12/02	2002-13	19 50		Good		
04/03/97	97-11	14		Not Rated		
02/03/93	93-01	15		Not Rated		
Most Abundant Species	White Shiner and Tessellated D	Darter Exotic Spec	Green Sunfish			
	Lesses Margined Mar	dtom Bodfin Dickorol (ron	resented only by young of year)	and Swamp Dartar Cain		

Species Change Since Last Cycle

Losses -- Margined Madtom, Redfin Pickerel (represented only by young-of-year), and Swamp Darter. Gains -Mud Sunfish, Pumpkinseed, and Bluegill.

Data Analysis

Watershed -- tributary to Fishing Creek; drains rural north-central Warren County; a transitional area between the Northern Outer Piedmont and the Rolling Coastal Plain. Habitat -- sandy runs; good snags, roots, and deadfalls; open canopy at two utility right-of-ways; total habitat score using coastal plain criteria = 82. 2007 -- 7 species of sunfish, most species ever, Bluegill and Mud Sunfish collected for the first time; only 1 species of darter, sucker, and intolerant species collected. 1993 - 2007 -- 28 species known from the site, including 8 species of sunfish and 7 species of minnows; Least Brook Lamprey, Bowfin, Mimic Shiner, and Chainback Darter have not been collected since 1993; similar to other streams in the transitional zone between the Piedmont and the Coastal Plain, the trophic structure is skewed with a very low percentage of omnivores+herbivores and a high percentage of piscivores.

Waterbo	Locatio	Location Stat						Date	Bioclassification			
BEECH	SWP		SR 100	03		C)B94	1	02	2/05/07	7	Moderate
County	Subb	asin	8 digit HUC	Lat	itude	Longi	tude	AUN	lumber	-		el IV Ecoregion
HALIFAX	4		03020102	36	0847	7733	326	28-	79-30		Rolli	ng Coastal Plain
Stream Classification Drainage			rainage Area (mi2)		Elev	vation (ft))	Strea	am Width	(m)		Stream Depth (m)
C;SW;NSW						85			10			0.4
		For	ested/Wetland		Urban Agriculture					Ot	her (describe)	
Visible Landuse	e (%)		100		0			0				0
Upstream NP	rs (>1MGD or <1MG	BD ar	nd withiı	ו 1 mile)		NF	DES Nur	nber		Volume (MGD)		
		None										
Water Quality Param	neters								Site Pho	tograph		
Temperature (°C)			1.9					12	1 mail	I III	Alla	
Dissolved Oxygen (m	g/L)		16.2							THA		PELPAN UN
Specific Conductance	∋ (μS/cm)		63		Bart	Re h	10 10			L AN		
pH (s.u.)			6.1				情報			14 mil		
Water Clarity			clear				Y					
Habitat Assessment	Scores	(max)				1		- La Call				KINALE //
Channel Modification	(15)		15		1					1 I.	計	TANK
Instream Habitat (20)			17		4 7		EN.	WIE	6 (d)			A CONTRACTOR
Bottom Substrate (15)		7			WT	A		- 14 14	Linkin	and the	
Pool Variety (10)			10		AL	A		1 m l		力用作作		Ball Million and
Left Bank Stability (10))		10			1			R. N	ALC: NO		Called Hand H
Right Bank Stability (10)		10		TA.		100	3	1.1		1	
Light Penetration (10)			10		7	ale .	1	-		at an an	28	
Left Riparian Score (5			5		1	The second				1. And	1	
Right Riparian Score			5		and a	N.	14	11	del - C	1000		6 1
Total Habitat Score	(100)		89			i						

	Substrate Nearly all sand										
Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification					
02/05/07	10131	35	3	7.4	6.9	Moderate					
02/15/02	8677	37	2	7.2	7.8	Moderate					

Taxonomic Analysis

Two new mayfly species were added to the species list for SR 1003 in 2007; these included *Maccaffertium modestum* and *Pseudocloeon frondale*. Overall, the taxa diversity (ST) and the number of EPT remained relatively constant between the 2002 and 2007 sampling events. This study site is dominated by pollution tolerant macroinvertebrate species, and midges and crustaceans were the most abundant and diverse groups.

Data Analysis

There are no upstream NPDES dischargers above this study site. The habitat at this site rated high in 2007 because of the presence of a relatively natural stream channel with good (i.e. suitable for colonization) instream habitat and a healthy and intact riparian zone. The only negative aspect of the habitat at SR 1003 was the homogeneous streambed substrate composed almost entirely of sand. This study location was given a bioclassification of Moderate during both 2002 and 2007 sampling events. This bioclassification implies that there is moderate environmental stress at this study site.

Waterboo	dy		I	ocation		Date	S	tation ID	В	ioclassif	ication
MARSHS	SWP		S	R 1210		05/08/0	7	OF49	I	Not Ra	ated
County	Subbas		it HUC	Latitude	Long						
HALIFAX	4	0302	20102	36.379309	-77.72	28805	28-7	79-30-1	Ro	olling Coa	astal Plain
Stream Classifica	tion	Drainage A	rea (mi2)	Elevatio	on (ft)	Stream	Width (n	n) A	verage Depth	(m)	Reference Site
C,Sw,NSW		6.5		190			5	,	0.4	`´	Yes
			-		-		-				
		Forested/	Wetland	Url	ban		Agricult	ure	0	ther (de	scribe)
Visible Landuse	(%)	10	0		0		0			0	
Upstream NPDES Di	scharger	s (>1MGD (or <1MGD	and within 1 r	mile)		N	IPDES Numl	ber	Vo	lume (MGD)
			one								
									of o group b		
Water Quality Param	neters			-	1.000	1.1.1	No. of Lot	Site Ph	otograph	1000	
Temperature (°C)			16.0		V-S	Ernar	01-10			100	and the second
Dissolved Oxygen (me	g/L)		6.8			Harry		The BILL		1000	- Att
Specific Conductance	e (µS/cm)		97	205 B	P. N. Pr	1-mail			A STATE	Later.	THE REAL
pH (s.u.)			6.8	100	1 1		200		and the second	and a second	La Carte
					and a		a me	and the second second			
Water Clarity	В	ackwater			3		-	A REAL	AT	± 40	Charles and
				Stores	- Pro-	5			a spin	- 15	and the second
Habitat Assessment		nax)				1			F.		
Channel Modification	· · ·		15		Permit		25	N.		CONTENT A	
Instream Habitat (20)			20	and the second se	and the state		-	Par a	· Anna and and a		A-8.000
Bottom Substrate (15))		15		- Real	24-2	and the second		1. 200		and farments
Pool Variety (10)			10		- Aler	100		050	201		-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0
Left Bank Stability (10			10	and the second	1	2.25			1	Vat	and the second
Right Bank Stability (1	10)		10	1.1				marine 1	and the second	Sec. st.	
Light Penetration (10)			10		- 97	Al -					The second second
Left Riparian Score (5	5)		5	Sec. and	S and				States and	2 - 2	
Right Riparian Score			5	_	1						
Total Habitat Score ((100)		100	Sub	strate	Cobble, bou	lder, grav	vel, sticks, ar	nd logs		
Sample Date	9		Sample	D	Spe	cies Total		NCIB	1		classification
05/08/07			2007-42	2		16					Not Rated
Most Abundant Spe	ecies	Ameri		sh, Highfin Shir reek Chubsuck		Exotic S	pecies	Green	Sunfish		
Species Change Sin	ce Last C	ycle	N/A								
Data Analysis											

This is the first fish community sample collected at this site. **Watershed** -- tributary to Beech Swamp; drains rural northern Halifax County; on the Fall Line, in a transitional area between the Northern Outer Piedmont and the Rolling Coastal Plain. **Habitat** -- a perfect score using coastal plain criteria (95 using Piedmont criteria); natural channel, boulder bluff on the left; boulders in the stream; riffles, runs, deep and shallow pools, undercuts, roots, and spage; low

Piedmont criteria); natural channel, boulder bluff on the left; boulders in the stream; riffles, runs, deep and shallow pools, undercuts, roots, and snags; low specific conductance for a coastal plain stream. **2007** -- sparse (n = 92 fish), coastal plain fauna and very low productivity, but not low pH; diverse fauna for a small stream, including six species of sunfish and one intolerant species (Sawcheek Darter). This site is not rated because the appropriate NCIBI metrics and criteria have yet to be developed for coastal plain streams.

Waterbody Location Date Station ID Bioclassification												
MILL S	ΝP		S	SR 1615		04/13	/07	OF7	3	I	Not R	ated
County	Subbas		digit HUC	Latitude	Long			AU Numb		-		Ecoregion
HALIFAX	4		03020102	36.34398	-77.7	0671	2	28-79-30-1-	0.5	R	olling Co	astal Plain
Stream Classifica	tion	Draina	ge Area (mi2)	Elevatio	n (ft)	Strop	m Wie	dth (m)	A 1/	erage Depth	(m)	Reference Site
C; SW, NSW		Diaina	11	147		Silea	6	aun (nn)	AV	0.5	(11)	Yes
0, 300, 10300			11	147			0			0.5		163
		Fores	ted/Wetland	Url	ban		Ag	riculture		C)ther (de	escribe)
Visible Landuse	(%)		100		0			0			0	
Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile) NPDES Number Volume (MGD)												
Upstream NPDES Di	scharger	s (>1M		D and within 1 i	nile)			NPDE	5 Numb	er	VC	olume (MGD)
Water Quality Parameters Site Photograph												
Temperature (°C)			18.0	1.0	AND A	47		Sola.		1 PRAV		
Dissolved Oxygen (mg	g/L)		9.0	2. 2		新教任			1.15	中國副會	0.05	
Specific Conductance	e (µS/cm)		76	S Sala			2.3				A STA	
pH (s.u.)			5.8		Straff -	1 50			100		1.1	
	_		-			12				De Tri		1111111
Water Clarity		Tan	nin stained	1124		1.10				L AB	A.	I THUR ST
				Core a	315	1						制限信 行(2.4)
Habitat Assessment	Scores (I	nax)		1155	5 a 1			-	104	5.000		
Channel Modification	(15)		15			Nonether .	rik.	and the second		and the second s	- Ares	and the second second
Instream Habitat (20)			18			E REAL	t-des	-	-	and a subscription		and the second
Bottom Substrate (15))		13	Constant in		No. of Company			-			
Pool Variety (10)			10							the state		77
Left Bank Stability (10			10	1000						and the		STATE OF STREET
Right Bank Stability (1			10									a a first and
Light Penetration (10)			9	1000							ALC: N	
Left Riparian Score (5			5		Walt -		100	Sec. 1		STRUCT	A REAL	200 D 2 3
Right Riparian Score			5	Cub	strate	aand arou		hhla				
Total Habitat Score ((100)		95	Sub	Slidle	sand, grav	vei, cc	BIDDIE				
Sample Date	;		Sample	ID	Spe	cies Total			NCIBI		Bio	classification
04/13/07			2007-2	:1		8						Not Rated
Most Abundant Spe	ecies	в	luegill			Exotic	Spec	ies	None			
Species Change Sine	Species Change Since Last Cycle N/A											
Data Analysis												
This is the first fish community sample collected at this site. Watershed a tributary to Marsh Swamp, Beech Swamp, and ultimately Fishing Creek; Irains the western edge of the Rolling Coastal Plain ecoregion in central Halifax County; located to the north of the Beaverdam Swamp and Burnt Coat												
arains the western ed	ge of the l	Kolling	Coastal Plain	ecoregion in cei	ntral Halifa	x County;	locate	a to the noi	τη of the	e Beaverdam	Swamp a	and Burnt Coat

drains the western edge of the Rolling Coastal Plain ecoregion in central Halifax County; located to the north of the Beaverdam Swamp and Burnt Coat Swamp watersheds; site is about 1 mile above Bradley Lake. **Habitat** -- a natural meandering channel with good flow; runs with submerged logs, and macrophytes; extensive riparian zone widths; 2nd lowest pH for all Tar basin sites. **2007** -- low abundance (n = 47) and diversity of the fish community (fewest number of species for all Tar sites), typical for a low pH coastal plain stream; fish community is dominated by sunfish; no crayfish collected; this site is not rated because the appropriate NCIBI metrics have yet to be developed for coastal plain streams; although not rateable, there are no apparent water quality issues in this watershed.

Waterboo	dy			Lo	cation		Date	е	Station	ID	В	ioclassi	fication
BURNT COA	AT SV	٧P		SR	1216		04/13	8/07	OF7	0	I	Not R	ated
County	Subb		8 digit HUC	-	Latitude		gitude						-
HALIFAX	4		03020102		36.25521	-77.7	75957	28-79-30-2 Rolling Coastal Plain					astal Plain
Stream Classifica	tion	Drai	naga Araa (n	a;2)	Elovatio	n (ft)	Strop		dth (m)	٨٠	rage Denth	(m)	Reference Site
C: SW, NSW		Drail	nage Area (n 6.3	mz)	Elevatio		Silea	4	dth (m)	Ave	0.4	(11)	No
0. 300, N300			0.5		147			4			0.4		INU
		For	ested/Wetla	nd	Url	ban		Ag	riculture		0	ther (de	scribe)
Visible Landuse	(%)		100			0			0			0	
	_												
Upstream NPDES Dis	scharge	ers (>1		IGD a	nd within 1 ı	nile)			NPDES	S Numbe	er	Vo	olume (MGD)
			None										
Water Quality Param	eters								s	ite Phot	ograph		
Temperature (°C)			11	.7	3			152					
Dissolved Oxygen (mg	a/L)		8			FIA A	1. 齐平		4 T 1	1000	Park	12	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Specific Conductance)	9	6	XX		A41	Control of	E PAR	1.50		a getter	1.15
pH (s.u.)			6	.4		1		1	2.5. 1	stat		1 40-	States In the second
	-				X		33			N. LA			CONTRACTOR OF
Water Clarity		Slight	tly tannin stai	ined		KT)	5150	25	A A	1		1.14	PH SA
Habitat Assessment	L	(max)			1		a fair and a	20	Aler	La L	C. YY	199	
		(max)		_				-	At an			See.	Contraction of the second
Channel Modification	(15)			5	12 - 1 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -				Ster 24			100	
Instream Habitat (20)				5		27		C. C. S.			1. 1		The State of the
Bottom Substrate (15))			3	45 /	1		100			1 Ann		
Pool Variety (10)				9	1	211		1912	A start		1 All		and the second
Left Bank Stability (10			())	d./	ac .					1		
Right Bank Stability (1 Light Penetration (10)				9 0		1.5.2	100				and the second	10	
Left Riparian Score (5				5	- 福田		Terro				Ref. P		
Right Riparian Score (5	12 12 2	1000	Constant State		and the second				
Total Habitat Score (0	Sub	strate	sand, cla	V					
·								-					
Sample Date)			ple ID		Spe	ecies Tota	l		NCIBI		Bio	classification
04/13/07			200)7-18			11						Not Rated
Most Abundant Spe	ecies		Redfin Picke	erel			Exotic	: Spec	ies	None			
Species Change Sind	ce Last	Cycle	N/A										
Data Analysis													
This is the first fish co													
County. Habitat sha	allow me	eander	ing runs with	side s	snags, and co	parse woo	dy debris i	in the c	channel, cre	eating sor	me "stick riffle	es"; good	flow; natural

County. **Habitat** -- shallow meandering runs with side snags, and coarse woody debris in the channel, creating some "stick riffles"; good flow; natural channel; good riparian zone widths. **2007** -- fairly typical coastal plain fish community present with moderate to low diversity and abundance; includes 1 species of sucker, 2 species of sunfish, 2 species of minnows, and no darters; this site is not rateable because the appropriate NCIBI metrics have yet to be developed for rating coastal plain streams; although not rateable, there are no apparent water quality issues in this watershed.

Waterbody			Location		Date	Station ID	Bioclassification				
JACKET SWI	D	S	R 1216		04/13/07	OF71		Not Rated			
	obasin	8 digit HUC	Latitude	Long		AU Number		evel IV Ecoregion			
HALIFAX	4	03020102	36.2280903	-77.77	08477	28-79-30-2-1	9-30-2-1 Rolling Coastal Plain				
Stream Classification	Drai	nage Area (mi2)	Elevatio	n (ft)	Stream Wie	dth (m)	Average Depth	(m) Reference Site			
C; SW, NSW		3.3	147		3		0.4	Yes			
	For	ested/Wetland	Urb	ban	Ag	riculture	0	other (describe)			
Visible Landuse (%)		100	()	0 0						
Upstream NPDES Dischar	gers (>1	MGD or <1MGD	and within 1 n	nile)		NPDES Nur	nber	Volume (MGD)			
		None									
Water Quality Parameters						Site P	hotograph				
Temperature (°C)		13.6	15.18	X	Constant of the	1.1.2	The week				
Dissolved Oxygen (mg/L)		6.8		如卡	State /	A AN	- Hin	AN CHERRY WITH			
Specific Conductance (µS/c	;m)	102		1.1	王氏不是		一一下面的	SARA DEVEL			
pH (s.u.)		6.7	114.25			he al	A PARTICIPALITY				
			Sec. 1	1 an				THE ALL AND			
Water Clarity	5	Slightly turbid			and the second	the man	Contraction of the second				
				al Sale		D Allen	the second				
Habitat Assessment Score	es (max))			M.	A Dente					
Channel Modification (15)		15						Carlos and and the loss			
Instream Habitat (20)		18	1. 1 A A				a series of				
Bottom Substrate (15)		8						- Carrow do the			
Pool Variety (10)		9				100	-	AND STORES			
Left Bank Stability (10)		9	a com								
Right Bank Stability (10)		9									
Light Penetration (10)		6						135 M. S. S.			
Left Riparian Score (5)		5	Service								
Right Riparian Score (5)		5									
Total Habitat Score (100)		84	Subs	strate	sand, clay						
Sample Date		Sample	ID	Spe	cies Total	NC	BI	Bioclassification			
04/13/07		2007-19	9		15			Not Rated			
Most Abundant Species		Bluespotted Sur	fish		Exotic Spec	ies None)				
Species Change Since La	st Cycle	N/A									
Data Analysis											

This is the first fish community sample collected at this site. **Watershed** -- a small tributary to (and just south of) Burnt Coat Swamp; drains part of central Halifax County. **Habitat** -- runs with macrophytes, deadfalls, and snags; natural channel; the upper 1/3 of the sample reach is more open and sunlit due to an old logging operation. **2007** -- good diversity and abundance for a coastal plain stream, except that there were no minnows collected; the 2007 sample included 1 species of sucker, 6 species of sunfish, and 2 species of darters; this site is not rated because the appropriate NCIBI metrics have yet to be developed for coastal streams; although not ratable, there are no apparent water quality issues in this watershed.

Waterbody		Location		Date		Station ID	E	Bioclassif	ication		
BREECHES SWP		SR 1002		04/13/0	07	OF72		Not Ra	ated		
County Subbas		Latitude	Long	itude		AU Number	-		coregion		
HALIFAX 4	03020102	36.2066781	-77.73	00272	2	28-79-30-2-1-2	R	olling Coa	astal Plain		
Stream Cleasification				Ctracer		14h (m)		(Deference Cite		
	Drainage Area (mi2) 4.2	Elevatio	n (ft)	Stream	4	1tn (m) 7	Verage Depth 0.4	(m)	Reference Site No		
C; SW, NSW	4.2	90			4		0.4		NU		
	Forested/Wetland	Urb	ban		Agı	riculture	(Other (de	scribe)		
Visible Landuse (%)	100	()			0		0			
Unstreen NDDES Dischargere (; 4MCD er 4MCD and within 4 mile)											
Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile) NPDES Number Volume (MGD) None											
	None										
Water Quality Parameters Site Photograph											
Temperature (°C)	14.9		44	1	1	A CAR	221	- X			
Dissolved Oxygen (mg/L)	5.6	Cont.	1 I K	1	1.0		CAN AND		A Han		
Specific Conductance (µS/cm)	90	1 1 24.0		AT QUE				Part Je	计 书字 私		
pH (s.u.)	5.6		취 같은	R. N		JOSE L		1.10			
_			1. 3	States /		and the second			and the second		
Water Clarity	Tannin stained							and the second			
		-					11 -	· Police	an weet		
Habitat Assessment Scores (r	nax)			10.00		Martin Lab		12	Anna In		
Channel Modification (15)	15		Contra Car	-		ter all		41	and the star		
Instream Habitat (20)	18		10 cas			Station restored	and a	319	2100 650		
Bottom Substrate (15)	10	100		P. Ray			A State	1			
Pool Variety (10)	10							YAR			
Left Bank Stability (10)	10 10	10 - 10	140						BALL & KAN		
Right Bank Stability (10) Light Penetration (10)	10	100	100	252					for the set		
Left Riparian Score (5)	5	The second second	-						A CONTRACT		
Right Riparian Score (5)	5						and the second second				
Total Habitat Score (100)	93	Subs	strate	sand, white	e grav	/el					
Sample Date	Sampla		Sno	cies Total		NCI		Pie	classification		
Sample Date 04/13/07	Sample 2007-2		Spe	8		NCI	וכ		Not Rated		
04/15/01	2001-2	0		0					Not Nated		
Most Abundant Species	Bluespotted Su	nfish and Golder	Shiner	Exotic S	Sneci	i es None					
Species Change Since Last C	ycle N/A										
Data Analysis											
-	This is the first fish community sample at this site. Watershed a small tributary to Jacket Swamp and ultimately Burnt Coat Swamp; drains part of south central Halifax County, immediately south of the Jacket Swamp watershed. Habitat meandering run through bottomland forest with good flow and a										

central Halifax County, immediately south of the Jacket Swamp watershed. **Habitat** -- meandering run through bottomland forest with good flow and a natural channel; lowest pH among all Tar basin sites. **2007** -- low abundance (n = 41, lowest among all Tar basin sites) and diversity of the fish community, typical for a low pH black water coastal plain system; no darters and only one sunfish species collected; this site is not rated because the appropriate NCIBI metrics have yet to be developed for coastal plain streams; although not ratable, there are no apparent water quality issues in this watershed.

DEEP CR SR 1100 OB96 02/05/07 Moderate County Subbasin 8 digit HUC Latitude Longitude AU Number Level IV Ecoregion HALIFAX 4 03020102 360426 772625 28-79-32-(0.5) Rolling Coastal Plain Stream Classification Drainage Area (mi2) Elevation (ft) Stream Width (m) Stream Depth (m) WS-IV:NSW 41.4 49 5 0.8 Visible Landuse (%) 100 0 0 0 Upstream NPDES Dischargers (>IMGD or <imgd 1="" and="" mile)<="" td="" within=""> NPDES Number Volume (MGD) Visible Landuse (%) 14.7 90 56 Water Quality Parameters Site Pholograph 5 60 Temperature (*C) 3.1 14.7 90 56 Water Clarity clear/tannic Site Pholograph 5 60 Habitat Assessment Scores (max) 15 15 15 16 Not virity (10) 10 10 10 10 Left Bank Stability (10)</imgd>	Waterbo	Locatio	ion Station ID					Date			Bioclassification			
HALIFAX 4 03020102 360426 772525 28-79-32-(0.5) Rolling Coastal Plain Stream Classification Drainage Area (mi2) Elevation (ft) Stream Width (m) Stream Depth (m) WS-IV;NSW 41.4 49 5 0.8 Forested/Wetland Urban Agriculture Other (describe) Visible Landuse (%) 100 0 0 0 Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	DEEP	CR		SR 110	00		C)B96	5	02	2/05/07	7	Moderate	
Stream Classification Drainage Area (mi2) Elevation (ft) Stream Width (m) Stream Depth (m) WS-IV;NSW 41.4 49 5 0.8 Visible Landuse (%) 100 0 0 0 Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)		Subb	asin	8 digit HUC			Longi	tude	AU N	lumber				
WS-IV:NSW 41.4 49 5 0.8 Forested/Wetland Urban Agriculture Other (describe) Visible Landuse (%) 100 0 0 0 0 Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile) NPDES Number Volume (MGD) None Water Quality Parameters Site Photograph Temperature (°C) 3.1 14.7.7 90 pH (s.u.) 5.6 Water Clarity clear/tannic Habitat Assessment Scores (max) 15 15 Channel Modification (15) 15 15 Bottom Substrate (15) 4 Left Bank Stability (10) 10 10 10 10	HALIFAX 4 03020102				36	0426	7726	625	28-79	32-(0.5)		Rolling Coastal Plain		
Forested/Wetland Urban Agriculture Other (describe) Visible Landuse (%) 100 0 0 0 Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	Stream Classifica	rainage Area (mi2)		Elev	vation (ft)	Strea	m Width	(m)		Stream Depth (m)			
Visible Landuse (%) 100 0 0 0 Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile) NPDES Number Volume (MGD) None Water Quality Parameters Site Photograph Temperature (°C) 3.1 14.7 90 Dissolved Oxygen (mg/L) 44.7 90 Water Clarity clear/tannic 90 Habitat Assessment Scores (max) 15 15 15 15 15 15 Instream Habitat (20) 15 4 Pool Variety (10) 8 10 10 10 Left Bank Stability (10) 10 10 10 10 10 10	WS-IV;NSW			41.4			49			5			0.8	
Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile) NPDES Number Volume (MGD) None Water Quality Parameters Temperature (°C) 3.1 Dissolved Oxygen (mg/L) 3.1 Specific Conductance (µS/cm) 90 pH (s.u.) 5.6 Water Clarity clear/tannic Habitat Assessment Scores (max) 15 Channel Modification (15) 15 Instream Habitat (20) 15 Bottom Substrate (15) 4 Pool Variety (10) 8 Left Bank Stability (10) 10 Right Bank Stability (10) 10			For)		-	ure		Ot		
None Water Quality Parameters Site Photograph Temperature (°C) 3.1 14.7 Dissolved Oxygen (mg/L) 90 5.6 Water Clarity clear/tannic Image: Clear/tannic Habitat Assessment Scores (max) 15 15 Channel Modification (15) 15 15 Instream Habitat (20) 15 4 Pool Variety (10) 8 4 Left Bank Stability (10) 10 10 Right Bank Stability (10) 10 10	Visible Landuse	(%)		100		0			0				0	
Water Quality Parameters Site Photograph Temperature (°C) 3.1 Dissolved Oxygen (mg/L) 14.7 Specific Conductance (µS/cm) 90 pH (s.u.) 5.6 Water Clarity Clear/tannic Habitat Assessment Scores (max) 15 Channel Modification (15) 15 Instream Habitat (20) 15 Bottom Substrate (15) 4 Pool Variety (10) 8 Left Bank Stability (10) 10 Right Bank Stability (10) 10	Upstream NPDES Dischargers (>1MGD or <1					nd withiı	n 1 mile)		NP	DES Nun	nber		Volume (MGD)	
Temperature (°C)3.1Dissolved Oxygen (mg/L)14.7Specific Conductance (µS/cm)90pH (s.u.)5.6Water ClarityClear/tannicHabitat Assessment Scores (max)Channel Modification (15)15Instream Habitat (20)15Bottom Substrate (15)4Pool Variety (10)8Left Bank Stability (10)10Right Bank Stability (10)10				None										
Dissolved Oxygen (mg/L) 14.7 Specific Conductance (µS/cm) 90 pH (s.u.) 5.6 Water Clarity clear/tannic Habitat Assessment Scores (max) 15 Channel Modification (15) 15 Instream Habitat (20) 15 Bottom Substrate (15) 4 Pool Variety (10) 8 Left Bank Stability (10) 10	Water Quality Param	eters								Site Pho	tograph			
Left Riparian Score (5) 5 Right Riparian Score (5) 5	Dissolved Oxygen (mg Specific Conductance pH (s.u.) Water Clarity Habitat Assessment Channel Modification Instream Habitat (20) Bottom Substrate (15) Pool Variety (10) Left Bank Stability (10) Right Bank Stability (11) Light Penetration (10) Left Riparian Score (5)	 (µS/cm) Scores ((15)) (10) (10) 		14.7 90 5.6 clear/tannic 15 15 4 8 10 10 10 5										

	Substrate Nearly all detritus									
Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification				
02/05/07	10132	34	0	7.9	0.0	Moderate				
02/15/02	8678	33	2	8.1	8.8	Moderate				

Taxonomic Analysis

No mayflies, stoneflies, or caddisflies (EPT taxa) were collected during the current basinwide sampling of SR 1100. However, the absence of these insect groups was only a slight change from the 2002, during which only 2 taxa were collected. The majority (53%) of the invertebrates collected in 2007 were chironomids (midges) and crustaceans, but additional taxa included the Hemiteran *Belostoma* sp.; and the Coleopterans *Dlneutus* sp., *Hydrocanthus* sp., *Neoporus* sp., and *Peltodytes* sp..

Data Analysis

There are no registered NPDES dischargers upstream of the study site. The habitat score was high during the current sampling in part because of the presence of a natural channel and a healthy riparian zone. The only two factors substantially detracting from this habitat rating were the lack of substrates conducive to macroinvertebrate colonization and a homogeneous streambed of detritus. This study location has been given a bioclassification of moderate during both the 2002 and 2007 sampling events. This bioclassification implies that there is moderate environmental stress at this study site.

Waterbody Location Date Station ID Bioclassification											
DEEP C	CR		S	R 1506		05/11/07	OF58	3	Ν	lot R	ated
County	Subb	asin	8 digit HUC	Latitude	Long	itude	AU Number	r	Le	vel IV E	coregion
EDGECOMBE	4	ŀ	03020102	35.973719	-77.45		28-79-32-(1.	5)	SE Floodplains & Low Terraces		
			·				· · · ·				
Stream Classifica	tion	Drair	nage Area (mi2)	Elevatio	n (ft)	Stream Wi	dth (m)	Aver	age Depth ((m)	Reference Site
WS-IV,NSW			78.5	35		6			0.4		No
		For	ested/Wetland	Urb	an	Ad	griculture		Of	ther (de	scribe)
Visible Landuse (%) 90			90	()	,	10			0	
Upstream NPDES Di	echara	ore (51		and within 1 n	nilo)		NPDES	Number		Ve	olume (MGD)
	scharg	ci 5 (>1	None		iiie)		NI DE3			v	
			None				C i4	ba Dhata			
Water Quality Param	eters			13 - S. 14	A (26)		51	te Photo	grapn	10	
Temperature (°C)			19.3				$\leq l^{\prime} \leq l^{\prime}$	T. G.A.			10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dissolved Oxygen (mo			5.1			dailes.	4.4	and a			
Specific Conductance	e (µS/cm	1)	115					1			N. A.V.
pH (s.u.)			6.4		-1/	A altr	No. Los		He's A	Sec.	
Water Clarity		Blackw	vater			C W	best -			,	
Habitat Assessment	Scores	(max)		State.	1	4 *		*	2 /4 /		
Channel Modification	(15)		7			Contraction of the		(CAN)	1		
Instream Habitat (20)	(-)		11		-			1.14	1 28	T	
Bottom Substrate (15))		4						1	100 C	- Ja
Pool Variety (10)			8		100			-			
Left Bank Stability (10))		9	244		A CONTRACT			1.1		
Right Bank Stability (1	0)		9	***		-	and the second second	1	and the		-
Light Penetration (10)			10	200		and the Re	THE PART		-		
Left Riparian Score (5	i)		5		e	The second	2	-	-		
Right Riparian Score ((5)		5					-	The second se		
Total Habitat Score (100)		68	Subs	strate	Hard, slippery	clay				
Sample Date	•		Sample	ID	Spe	cies Total		NCIBI		Bio	classification
05/11/07			2007-55	5		19					Not Rated
Most Abundant Spe	ecies		Eastern Mosquit	ofish		Exotic Spec	cies N	lone			
Species Change Sind	ce Last	Cycle	N/A								

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- large tributary to Fishing Creek; drains southeastern Halifax and northeast Edgecombe counties; one small municipality (the Town of Scotland Neck) within the watershed. **Habitat** -- very old chanellization with a mature tree canopy; stable banks with wide riparian zones; long run/pool with some side snags; below the bridge, the levee is maintained by the U.S. Army COE; very low flow; second lowest dissolved oxygen measurement and saturation. **2007** -- a diverse coastal plain community, but 10 of the 19 species represented by only 1-3 fish/species; most fish (n = 1,165) and the greatest catch rate (CPUE = 36.2fish/100 seconds shocking time) at any site in 2007; 85 percent (n = 994) of all the fish were Eastern Mosquitofish, a tolerant species; the greatest percentage of tolerant fish at any site in 2007. This site is not rated because the appropriate NCIBI metrics and criteria have yet to be developed for coastal plain streams.