

2010 Fish and Water Quality Surveys of Point Creek and Fischer Creek
Steve Hogler and Steve Surendonk, DNR-Mishicot
Mary Gansberg, DNR-Green Bay

The purpose of the study described in this report was to determine the status of smallmouth bass in Point Creek and trout in Fischer Creek and assess general water quality. By quantifying the type and number of each fish species, we can calculate the Index of Biotic Integrity (IBI) and catch per effort (CPE) which will allow us to judge the current condition of the fish population in the stream and to compare the results from the current survey to those conducted in 2004 and 2005.

METHODS

The selection of survey locations on each stream were based on past surveys, management needs and professional judgment (Figure 1). Protocols for Tier 1 monitoring of Wisconsin streams were followed while surveying each stream.

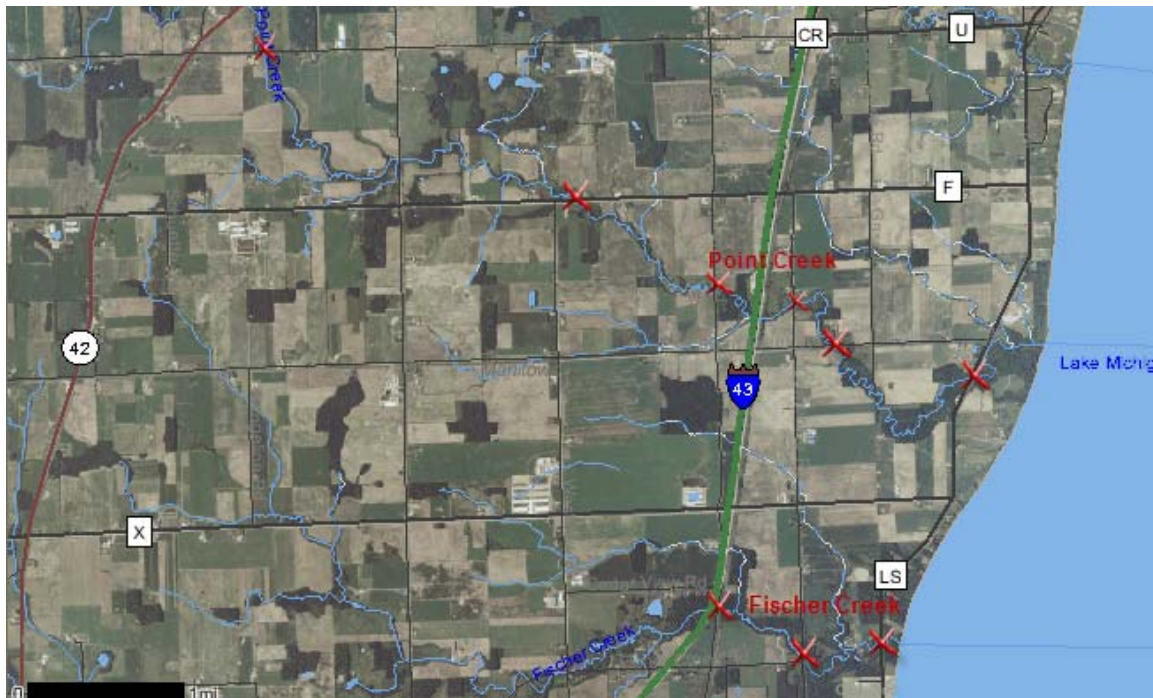


Figure 1. Site locations that were evaluated during the 2010 surveys on Point and Fischer Creeks.

Smallmouth bass sites ranged in length from 700 meters to 1,126 meters (800 meters is required by protocol) and ran from one road crossing to the next upstream crossing. Fish were collected in a single upstream pass using a stream shocker with three anodes or a backpack shocker with a single anode. All fish were netted for at least 100 meters at all stations to calculate an IBI score for the

site while gamefish were netted over the entire survey segment. CPE's for gamefish were based on the total station length while CPE for non-gamefish were based on the length of the segment length in which all fish were netted. Since station length was variable between the sites this year and to previous surveys, CPE was standardized to the number of fish per 100 meters to allow for comparisons. All netted fish were identified and counted. Gamefish and panfish were measured to the nearest millimeter.

The collection of fish during the trout survey also followed State stream sampling protocols. The survey site on Fischer Creek was 300 meters in length and was conducted using a backpack shocker with a single anode. All fish were netted, identified, counted and gamefish length was measured to the nearest millimeter over the entire length of the survey segment.

Other variables that were measured at each site included air and water temperature, dissolved oxygen, percent oxygen saturation, and flow. Continuous dissolved oxygen and temperature was recorded at one site on both Point and Fischer Creek using a Hydrolab multiprobe meter. Habitat was qualitatively rated based on stream width (Simonson et al 1994). Qualitative scores can range from 0 to 100 with scores less than 25 indicating poor habitat, 25 to 49 fair habitat, 50 to 74 good habitat and scores above 74 indicating excellent habitat. Within the scoring matrix, items that are rated included buffer width, bank erosion, pool depth, stream width to depth ratio, riffle to riffle distances, fine sediment coverage and cover for fish. Streams that score high on the rating index have diverse habitats, deep pools and no erosion. Streams that score low include those that have limited buffers, shallow water, erosion, sediment deposition and little fish habitat.

Gradient and sinuosity were determined by using GIS and map measuring tools to determine the value of these variables.

The Index of Biotic Integrity (IBI) based on the fish community at each sampling location was calculated using an excel spreadsheet for warmwater or coldwater communities (Lyons 1992). IBI scores can range from 0 (poor) to 100 (excellent). Fish communities that receive poor IBI scores have many species that are tolerant to low dissolved oxygen levels or disturbed habitat while streams with high scores have species intolerant to low DO or habitat disturbances. All sampling was conducted in August 2010.

Hilsenhoff Biotic Index (HBI) based on the macroinvertebrate community at each sampling location was calculated by the Entomology Lab at UW-Stevens Point. This index is a measure of organic and nutrient pollution, which causes lower dissolved oxygen levels, especially at night during the summer and after heavy rain. Lowered levels of dissolved oxygen in turn affect the ability of each species of arthropod to survive in a particular stream. HBI scores can range from 0

(excellent) to 10 (very poor). Macroinvertebrate samples were collected in September 2010.

RESULTS

Point Creek

Four locations were surveyed for fish on Point Creek between August 17 and August 24, 2010. The site locations included downstream of County Highway LS, upstream of Point Creek Road, upstream of CTH F, and upstream of Newton Road. Despite heavy rainfall in the watershed over the previous two months, water levels during the survey were only slightly above what is normal for August.

CTH LS

The station at this site was 762 meters in length and was located downstream of CTH LS (43.965304, -87.705982 to 43.962174, -87.70467). At this location Point Creek is a 3rd order stream and was at least 10 meters in width (Figure 2). At the time of survey the water was judged to be turbid. The gradient at this location is near zero and the water level is likely influenced by Lake Michigan. On the day of the survey the air temperature was 25 C, the water temperature was 20.1 C, and the dissolved oxygen (DO) was 111.9% saturated at 10.2 mg/l.



Figure 2. Looking downstream at Point Creek from County Highway LS.

During the electrofishing survey, all fish were netted over the course of the entire survey segment. Total electroshocking effort was 87 minutes. During the survey a total of 296 fish representing seventeen species were captured (Table 1). Johnny darter and creek chub dominated our catch. Other forage species such as mottled sculpin, white sucker, round goby and blacknose dace were captured in lower number. Gamefish, such as smallmouth and largemouth bass and bluegill were captured in substantially lower numbers. Our catch of fish yielded an IBI score of 37 indicating a fair warm water fish community. Round goby an invasive fish species was captured at this site, but was not used to calculate the IBI ranking for this station.

Smallmouth bass were the most commonly captured gamefish at this location. The fourteen smallmouth bass that we captured ranged in length from 104 mm to 193 mm and had an average length of 153 mm. Based on the size distribution of these bass, it is likely at least 2 year classes were present in our sample.

In addition to the smallmouth bass we captured at this location, we collected four largemouth bass. These bass ranged in length from 66 mm to 129 mm and had an average length of 89 mm.

We also captured five bluegill, one green sunfish and 2 black bullhead at this site. The bluegill had an average length of 72 mm and the black bullhead averaged 99 mm in length.

Table 1. The species list and the number captured for fish collected by electroshocking below CHT LS on Point Creek. CPE for each species is based on all fish being captured over the course of 762 meters.

Species	Number	CPE (Fish/ 100 meters)
Johnny Darter	104	13.65
Creek Chub	40	5.25
Mottled Sculpin	35	4.59
White Sucker	35	4.59
Blacknose Dace	17	2.23
Smallmouth Bass	14	1.84
Common Shiner	6	0.79
Bluegill	5	0.66
Bluntnose Minnow	5	0.66
Largemouth Bass	4	0.52
Black Bullhead	2	0.26
Southern Redbelly Dace	2	0.26
Alewife	1	0.13
Central Mudminnow	1	0.13
Fathead Minnow	1	0.13
Green Sunfish	1	0.13
Hornyhead Chub	1	0.13
Round Goby (not in IBI)	22	2.89
Total	296	

Following shocking, staff evaluated stream habitat using the qualitative habitat scoring sheet. At this location the river had high rankings for buffer width and pool area. It scored lower rankings for moderate erosion, low habitat diversity, extensive fine sediments and limited fish cover. Overall the stream at this location scored 55 points indicating good qualitative habitat.

Point Creek Road

The fish survey site at this location was upstream of Point Creek Road and ran for 1,146 meters (43.965305, -87.72674 to 43.9692246, -87.731211). Point Creek at this location averaged four meters in width and was a 3rd order stream (Figure 3). The gradient at this site was 3.72 meters per kilometer and the creek had a sinuosity of 2.02. The water was clear and flow was measured at 0.064 m³/second. On the date of the survey, air temperature was 20.2C, water temperature was 19.5C and stream DO was 83.2% saturated at 7.65 mg/l.



Figure 3. Looking upstream at Point Creek above Point Creek Road.

At this survey location, only gamefish were netted for the first 545 meters of the site, and for the final 601 meters of the site, all fish were netted. During the 98 minutes of shocking, 1,737 individual fish representing sixteen species were captured (Table 2).

Table 2. The numbers of captured fish by species collected by electroshocking above Point Creek Road on Point Creek. CPE for gamefish is based on the total length of the station (1,146 m) while CPE for all other species is based on the 601 meters when all fish were netted.

Species	Number	CPE (Fish/ 100 meters)
Creek Chub	408	68.69
Blacknose Dace	368	61.95
Southern Redbelly Dace	302	50.84
Common Shiner	248	41.75
Johnny Darter	198	33.33
White Sucker	100	16.84
Hornyhead Chub	40	6.73
Central Mudminnow	29	4.88
Fathead Minnow	15	2.53
Green Sunfish	8	0.70
Mottled Sculpin	7	1.18
Smallmouth Bass	6	0.52
Largemouth Bass	3	0.26
Bluegill	2	0.17
Rock Bass	2	0.17
Black Bullhead	1	0.09
Total	1,737	

Forage species such as creek chub, blacknose dace, southern redbelly dace, common shiner and johnny darter dominated our catch. Other species were captured in much lower number (Table 2). Based on our catch the IBI score for this site was 45 indicating a fair population of warmwater fish.

We captured six smallmouth bass and three largemouth bass at this site (Table 2). The smallmouth ranged in length from 161 mm to 207 mm and had an average length of 188 mm. The largemouth bass ranged in length from 70 mm to 116 mm and had an average length of 90 mm.

Low numbers of panfish including green sunfish, bluegill and rock bass were captured during shocking at this site (Table 2). The eight green sunfish averaged 68 mm in length, the two bluegill had an average length of 104 mm and the two rock bass averaged 163 mm in length.

Visual assessment of the habitat resulted in a qualitative habitat score of 53 indicating that the habitat was good. At this survey site the river habitat ranked high for the amount of riparian buffer, limited bank erosion and the lack of fine

sediments. Low habitat rankings were for over abundant pools, its width to depth ratio (too wide and shallow) and limited habitat diversity.

A continuous dissolved oxygen (DO) and water temperature meter was placed in Point Creek at Point Creek Road from July 1 to July 27, 2010 (Figure 4). Dissolved oxygen values ranged from 6.1 to 9.3 mg/l. These values are well above Wisconsin's water quality standard of 5 mg/l. Water temperature ranged from 16.8 °C (62.2°F) to 24.2°C (75.6°F) during this same time period.

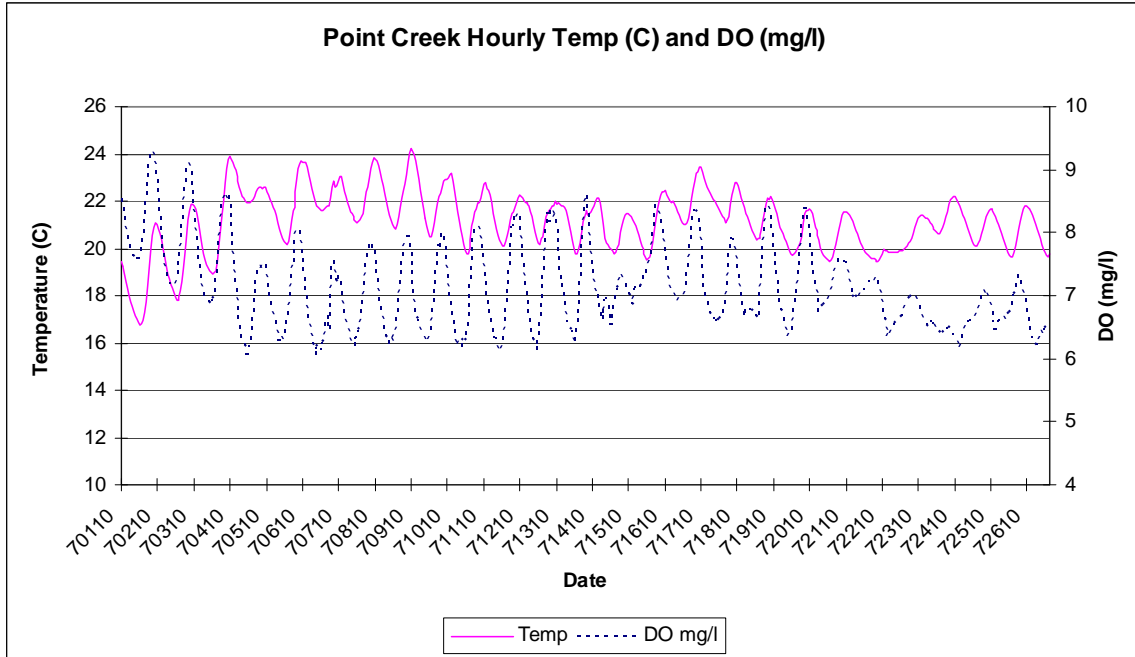


Figure 4, Point Creek temperature and dissolved oxygen values measured during July 2010.

County Highway F

The fish station at this site was 700 meters in length and was located upstream of CTH F (43.979300, -87.759032 to 43.9980827, -87.764899). At this location Point Creek was a 3rd order stream and averaged 5 meters in width (Figure 5). At the time of survey the water was judged to be clear and near normal depth. The gradient was moderately steep at 4.74 m/km and the sinuosity was 1.28:1 at this site. There was some evidence that the lower 100 meters of the station had been likely channelized at least 20 years previously. On the day of the survey the air temperature was 17 C, the water temperature was 17 C, and the dissolved oxygen (DO) was 99.8% saturated at 9.66 mg/l. Flow was measured at 0.02 m³/sec.



Figure 5. Point Creek looking upstream from CTH F. This picture shows the old channelization and grassy banks that are characteristic of the lower section of this survey site.

For the first 90 meters of this site all fish were netted to facilitate calculation of the IBI score. For the remainder of the station, only gamefish were netted. During the 80 minutes of shocking we captured 594 individual fish representing thirteen species (Table 3). Creek chub dominated the catch followed by blacknose dace, mottled sculpin and white sucker. Largemouth bass were the most commonly captured gamefish. The IBI score for this location was 34 indicating a fair population of warmwater fish.

Table 3. The number of fish captured by species captured during electroshocking above CTH F on Point Creek. CPE for gamefish is based on the total length of the station (700 m) while CPE for all other species is based on the 90 meters when all fish were netted.

Species	Number	CPE (Fish/ 100 meters)
Creek Chub	155	172.22
Blacknose Dace	126	140.00
Mottled Sculpin	70	77.78
White Sucker	70	77.78
Southern Redbelly Dace	56	62.22
Central Mudminnow	34	37.78
Johnny Darter	19	21.11
Common Shiner	18	20.00
Green Sunfish	10	1.43
Bluegill	8	1.14
Largemouth Bass	7	1.00
Brook Stickleback	6	6.67
Fathead Minnow	5	5.56
Pearl Dace	4	4.44
Hybrid Sunfish	3	0.43
Rainbow Trout	1	0.14
Black Bullhead	1	0.14
Yellow Perch	1	0.14
Total	594	

The seven largemouth bass that we captured ranged in length from 61 mm to 103 mm and had an average length of 85 mm. The single rainbow trout we captured was 160 mm in length. In addition to the gamefish, we captured ten green sunfish, eight bluegill, three hybrid sunfish and one yellow perch (Table 3). Their average lengths were 78 mm, 94 mm, 77 mm and 105 mm respectively.

Following shocking, staff evaluated stream habitat using the qualitative habitat scoring sheet. At this location the river had high rankings for buffer width, limited bank erosion and habitat diversity. It scored somewhat lower because the survey section had fine sediments that were common, a poor width to depth ratio and limited fish cover. Overall the stream at this location scored 57 points indicating good qualitative habitat.

A macroinvertebrate sample resulted in a HBI value of 5.1 indicating good water quality based on the number and species of invertebrates present.

Newton Road

The survey site at this location was upstream of Newton Road and ran for 800 meters (43.993824, -87.798513 to 43.999831, -87.798178). Point Creek at this location averaged 5.5 meters in width and was a 2nd order stream (Figure 6). The gradient was 4.01 meters per kilometer and the creek had a sinuosity of 1.29 at this location. The water was slightly stained and flow was measured at 0.006 m³/second. On the date of the survey, air temperature was 19 C, water temperature was 18.0 C and stream DO was 89.1% saturated at 8.41 mg/l.



Figure 6. Looking at Point Creek from just upstream of the bridge at Newton Road.

At this location all fish were netted over the entire length of the survey station. During the 61 minutes of shocking, we captured 217 fish representing twelve species (Table 4). Central mudminnow, brook stickleback, white sucker and creek chub dominated the catch with fewer fish of other species collected. Our catch of fish yielded an IBI score of 30 indicating a fair warmwater fish community.

The four largemouth bass we captured ranged in length from 67 mm to 75 mm and had an average length of 71 mm. The four green sunfish averaged 67 mm in length and the length of the single bluegill was 101 mm.

Visual assessment of the habitat resulted in a qualitative habitat score of 42 indicating that the habitat was fair. At this survey location, habitat ranked high for the amount of riparian buffer, diversity and for good cover for fish. Low habitat rankings were for abundant bank erosion, poor width to depth ratio and abundant fine sediment.

Table 4. The number of fish captured by species captured during electroshocking above Newton Road on Point Creek. CPE for all species is based on the total length of the station (800 m).

Species	Number	CPE (Fish/ 100 meters)
Central Mudminnow	63	7.88
Brook Stickleback	57	7.13
White Sucker	38	4.75
Creek Chub	22	2.75
Blacknose Dace	16	2.00
Johnny Darter	6	0.75
Fathead Minnow	4	0.50
Green Sunfish	4	0.50
Largemouth Bass	4	0.50
Black Bullhead	1	0.13
Bluegill	1	0.13
Southern Redbelly Dace	1	0.13
Total	217	

Center Road

A macroinvertebrate sample resulted in a HBI value of 4.4 indicating very good water quality based on the number and species of invertebrates present. A visual assessment of the habitat resulted in a habitat score of 62 indicating that the habitat was good.

Centerville Road

A macroinvertebrate sample resulted in a HBI value of 5.0 indicating good water quality based on the number and species of invertebrates present. A visual assessment of the habitat resulted in a habitat score of 57 indicating that the habitat was good.

Point Creek Fish Summary

Since the fish surveys at each location were relatively short, we combined the lengths of measured fish from all stations into a single length frequency to get a more detailed look at the size distribution of measured fish in Point Creek (Table 5).

Table 5. The length frequency of all fish that were measured from all four survey locations on Point Creek during the 2010 survey.

Length (mm)	Smallmouth Bass	Largemouth Bass	Rainbow Trout	Rock Bass	Green Sunfish	Bluegill	Yellow Perch	Black Bullhead
40					3			
50					2			
60		3			6	2		
70		6			5	3		
80		3			3	3		
90		3			1	3		1
100	1	1			2	4		3
110	1	1				1	1	
120	3	1			1			
130	1							
140	1							
150				1				1
160	2		1					
170	1			1				
180	5							
190	3							
200	2							
Total	20	18	1	2	23	16	1	5
Ave. Length	163	60	160	163	72	89	105	111
S.D.	32.66	18.49	--	13.44	19.6	15.53	--	25.08

It appears that for at least smallmouth bass two distinct size classes were sampled. Although scales were not collected, it is likely these groups are two age classes probably age 1 and age 2. For the other species such as bluegill, green sunfish and largemouth bass, it is also likely that two or more age classes are present but the normal overlap in size makes age delineation difficult.

Fischer Creek

The fish station at this site was 300 meters in length and was located upstream of Centerville Road (43.936549, -87.731464 to 43.938658, -87.733324). At this location Fischer Creek was a 3rd order stream that averaged three meters in width (Figure 7). At the time of survey the water was judged to be clear and flow was measured at 0.061 m³/sec. The gradient at this location was 4.08 m/km and the sinuosity was 1.12. On the day of the survey the air temperature was 18.3 C, the water temperature was 16.9 C, and the dissolved oxygen (DO) was 81.4% saturated at 7.88 mg/l.

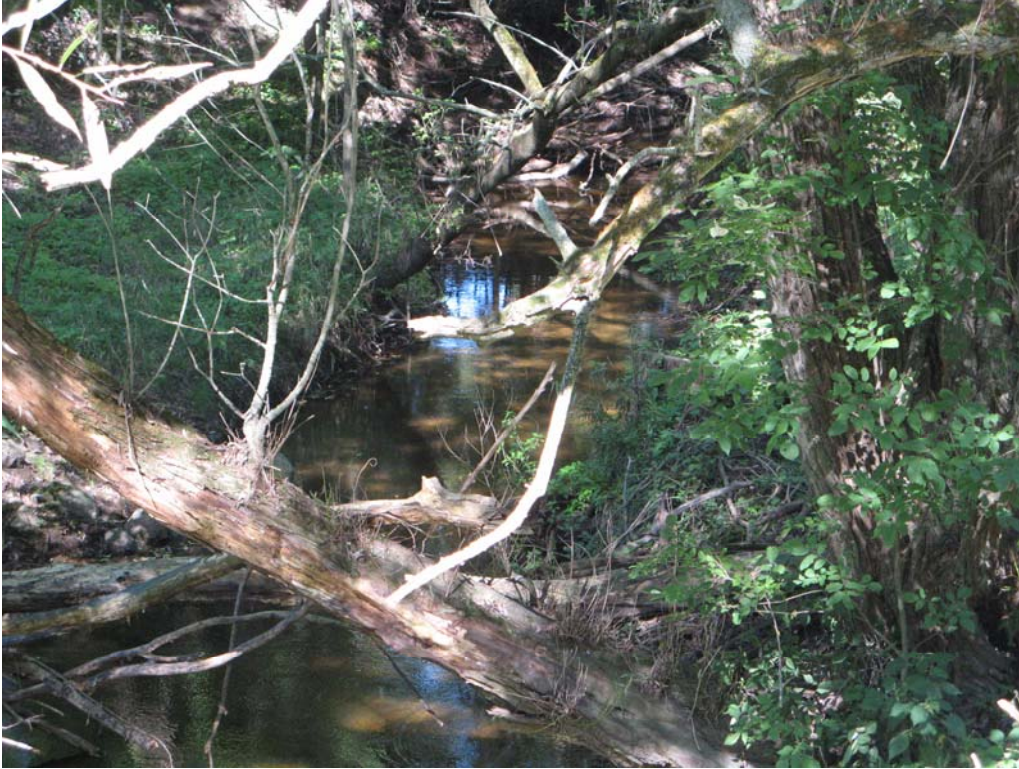


Figure 7. Fischer Creek upstream of Centerville Road averages three meters in width and is heavily wooded with downfalls very commonly encountered.

Over a period of 59 minutes we shocked the 300 meter survey site and netted all the fish that we observed. A total of 119 individual fish representing five species were captured. Mottled sculpin dominated the catch with substantially fewer brook trout and rainbow trout captured (Table 6). The IBI score for a coldwater stream was 80 indicating a good cold water fish community.

Table 6. The number and species captured during electroshocking in Fischer Creek.

Species	Number	CPE (Fish/ 100 meters)
Mottled Sculpin	86	28.67
Brook Trout	15	5.00
Rainbow Trout	15	5.00
White Sucker	2	0.67
Brook Stickleback	1	0.33
Total	119	

The fifteen brook trout that were captured ranged in length from 156 mm to 290 mm and had an average length of 234 mm (Table 7, Figure 8). Most brook trout were greater in length than 180 mm with few smaller fish captured.

Table 7. The length frequency of trout captured during the Fischer Creek survey.

Length (mm)	Brook Trout	Rainbow Trout
70		1
80		
90		1
100		
110		2
120		3
130		2
140		1
150	1	2
160	1	1
170		2
180	1	
190	1	
200	1	
210	1	
220	2	
230	1	
240	1	
250	2	
260	1	
270	1	
280		
290	1	
300		
Total	15	15
Ave. Length	224	132
S.D.	38.26	29.51



Figure 8. A picture of a large brook trout captured during electroshocking in Fischer Creek.

We also captured fifteen rainbow trout that ranged in length from 73 mm to 176 mm and had an average length of 132 mm (Table 6 and 7). All the rainbow trout were less than 180 mm in length.

A continuous dissolved oxygen (DO) and water temperature meter was placed in Fischer Creek at Centerville Road from July 1 to July 27, 2010 (Figure 9). Dissolved oxygen values ranged from 5.3 to 8.0 mg/l. These values are above Wisconsin's water quality standard of 5 mg/l. Water temperature ranged from 14.4 °C (58°F) to 22.3°C (72.1°F) during this same time period.

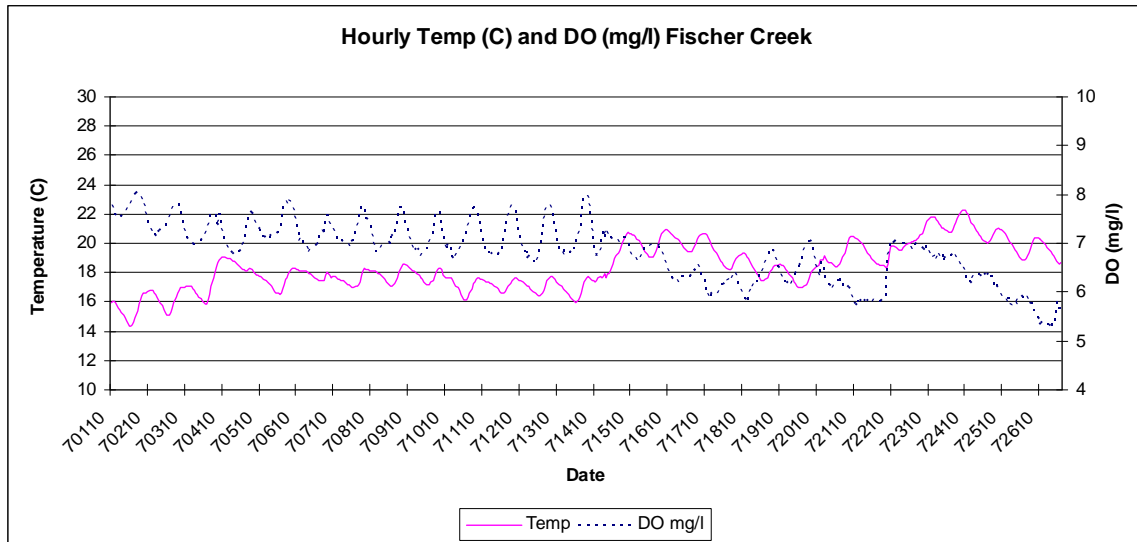


Figure 9. **Fischer Creek temperature and dissolved oxygen values measured during July 2010.**

Fisheries staff visually evaluated stream habitat using the qualitative habitat scoring sheet. At this location the river had high rankings for buffer width, pool frequency, diverse habitat, the limited amount of fine sediment in the stream and good fish cover. It scored somewhat lower because the survey section had a moderate amount of bank erosion and a moderate depth to width. Overall the stream at this location scored 62 points indicating good qualitative habitat.

A macroinvertebrate sample resulted in a HBI value of 4.3 indicating very good water quality based on the number and species of invertebrates present.

Dairyland Drive

A macroinvertebrate sample resulted in a HBI value of 4.1 indicating very good water quality based on the number and species of invertebrates present. A visual assessment of the habitat resulted in a habitat score of 68 indicating that the habitat was good.

CTH LS

A macroinvertebrate sample resulted in a HBI value of 5.3 indicating good water quality based on the number and species of invertebrates present. A visual assessment of the habitat resulted in a habitat score of 47 indicating that the habitat was fair.

DISCUSSION

Following Wisconsin sampling protocols we surveyed four sites on Point Creek to assess smallmouth bass populations and one site on Fischer Creek to assess trout populations. The work in 2010 was similar to work that was done in 2004 (Hogler, Surendonk and Gansberg 2004) and 2005 (Hogler 2005). In addition to electrofishing to assess the fish population at each site, we measured DO, flow and qualitatively assessed habitat during the 2010 survey.

Point Creek

Surveys in 2010 had a wider geographic distribution than surveys in 2004 and 2005, although several sites surveyed in 2010 were similar in location to those surveyed in previous years.

Survey results from 2010 indicate that Point Creek is slowly recovering from a large fish kill in 2001 caused by a massive release of manure. Surveys in 2004 (Hogler, Surendonk and Gansberg 2004) and 2005 (Hogler 2005) found that forage fish dominated our catch at each location. IBI scores from these surveys were in the lower fair range with about fourteen fish species and moderate numbers of individual fish captured. In 2010, although forage species still clearly dominated the catch, a mixture of gamefish such as largemouth bass, smallmouth bass and panfish; bluegill, rock bass and green fish were captured at each site (Tables 1, 2, 3, and 4). Based on 2010 results IBI scores improved to the upper ranges of fair with a greater number of species and individual fish captured.

However, although not unexpected, there was a clear gradient of fish species from the furthest upstream site at Newton Road to the most downstream site at CTH LS (Tables 1, 2, 3, 4). At Newton Road we captured the fewest number of fish representing the fewest number of species. As we moved downstream, the number of individuals we captured and the number of species increased to peak at CTH F (numbers) and CTH LS (species). We also noted a change in the species make-up of our catch as we moved from Newton Road downstream to

CTH LS. At Newton Road sixty-one percent of the species were tolerant to low DO, 36% were tolerant to habitat disturbance and seventy-seven percent of the fish species were captured were tolerant to either low DO or habitat disturbance. As we moved downstream the percent of low DO tolerant fish decreased to 8% at CTH F, 3% at Point Creek Road to 2% at CTH LS. Likewise the total percentage of species tolerant to low DO or habitat disturbances declined from 77% at Newton Road to 41% at CTH LS. Interestingly the percentage of habitat disturbance tolerant fish increased to 62% at CTH F before decreasing to 39% at CTH LS.

From these data it appears that the main stressor of the fish community at Newton Road is low DO. The low DO is likely caused by the intermittent low flow of the stream and as noted in the habitat evaluation the wide-shallow nature of the stream. Although DO was good during our visit in 2010, it is likely that in years with much lower rainfall this location has periods of low or no flow or perhaps it even dries up causing very low DO. The river at this location would also be very susceptible to runoff events because of the low volume of water that could dilute any polluted runoff. Regular occurrences of low DO caused by low flow or runoff will continue limit the fish community to those species tolerant of low DO at this location.

At the other three surveyed sites on Point Creek the data suggests the fish community is limited more by habitat disturbances than low DO. It is likely that a number of stream processes including high flow events, field and bank erosion and past dredging and straightening have influenced the fish communities found at these three locations. Recent high flow events are likely reshaping habitat in Point Creek. Since 2004 we have noted a decrease in the amount of soft sediment and sand in Point Creek and an increase the amount of rocky riffles and woody debris. We did however note the continued lack of deep pool habitat needed by fish as either a summer temperature refuge or an overwintering location. As the stream continues to shift toward higher quality fish habitat we should also note a change in the fish community from one dominated by tolerant species to one dominated by intolerant species. To a limited extent we have noted the start of this change with the increased number of gamefish and panfish that we captured and the greater distribution of mottled sculpin. However, the change toward an improved warmwater fish community is a slow process that can easily be interrupted by an event that degrades stream habitat or water quality.

The gamefish and panfish community is dominated by small, likely young fish. The smallmouth bass that we captured during the 2010 survey ranged from 104 mm to 207 mm (Table 5). Based on the size distribution of the smallmouth bass we captured it is likely they were stocked during the previous two years. At this time there is no evidence that suggests natural reproduction is occurring from adults that surveyed the 2001 fish kill. It is hoped that stocked smallmouth bass will begin to reproduce and establish an improved bass population.

The largemouth bass that we captured were also small and likely a mix of young of year and/or yearlings (Table 5). The source of these fish is unknown because largemouth bass are typically found in lakes or large slow flowing rivers not in small streams like Point Creek. Heavy rainfall and high water could have flooded nearby private ponds allowing these fish to escape into Point Creek. Future surveys should document their survival.

We did not capture any northern pike during this survey despite stocking several hundred the past two years. It is not known if survival was poor or if they in other sections of the river that we did not survey.

Similar to gamefish the panfish that were captured were small in size (Table 5). Since there appears to be several year classes of panfish in our sample, this suggests some natural reproduction is occurring in Point Creek. However, since the same high flows that may have allowed the largemouth bass to escape into Point Creek may have also allowed panfish to enter the stream, the status of these populations is unclear.

While conducting our fish surveys we also measured stream temperature, DO and stream flow. The stream temperatures and DO's that we measured in 2010 were within the normal ranges for warmwater streams in eastern Wisconsin. DO was good at all four survey locations and although it is likely diel DO sags are occurring in Point Creek, they are not limiting fish populations below our survey site at CTH F. Likewise flow increased as we moved downstream from Newton Road to Point Creek Road. Although flow in some years may impact fish populations near Newton Road, overall flow appears to be sufficient to support a diverse warm water fish community. We did not survey upstream of HWY 42, but from visual observations it appears that low flow and likely low DO the fish community would be limited to tolerant species.

Fischer Creek

All three surveys conducted in 2004 (Hogler, Surendonk and Gansberg 2004) 2005 (Hogler 2005), and 2010 surveyed the river above Centerville Road. In 2004 and 2005 the survey station length was 100 meters while in 2010 we surveyed 300 meters.

Habitat in Fischer Creek was markedly different in 2010 to habitat encountered during earlier surveys. High flow events dramatically altered the stream before our 2010 survey by moving large piles of woody debris, undercutting stream banks, removing sediment from riffles and pools and moving a section of the stream channel. The long term impact of these changes are unknown at this

time, but current habitat scores indicate good to very good habitat and it is hoped that the fish community will respond positively to the improved habitat.

The fish species that we captured also reflected the change in the stream. Gone were the warm water species such as central mudminnow and creek chub that resulted in a 2005 IBI ranking of fair for this section of Fischer Creek. Instead we found a simple community of five species that are typical of coldwater streams (Table 5). The IBI ranking for coldwater fish communities improved to good in 2010.

Like the previous survey in 2005 we captured both brook trout and rainbow trout in 2010. Unlike 2005, brook trout and rainbow trout were captured in even number in 2010 (Table 6). It was interesting to note that the brook trout were substantially larger in size than the rainbow trout in 2010 (Table 7). It is likely that the brook trout we captured in 2010 were stocked over the past three years. Since the first of the stocked trout are just reaching maturity, it was not surprising that we did not find any evidence of natural brook trout reproduction.

Based on the length frequency for rainbow trout it appears that we captured a mixture of young of year rainbow trout naturally produced in Fischer Creek and yearling trout which may be either stocked yearlings or carry over yearlings that were produced in the creek (Table 7). Certainly the high flow conditions and clean gravel from spring flooding would favor reproduction and carry over by the rainbow trout over survival of brook trout spawned last fall so it was not surprising to see small rainbow trout throughout our survey site.

We also measured stream water temperature, DO and stream flow while surveying Fischer Creek. Water temperature and DO was good and indicative of a coldwater stream in eastern Wisconsin. Stream flow was judged to be normal.

RECOMMENDATIONS

Recommendations for both streams are similar and include;

- The continued stocking of smallmouth bass and northern pike in Point creek and brook trout in Fischer Creek to rebuild those populations lost during past fish kills;
- Long-term stream monitoring in the form of fish surveys, macroinvertebrate surveys or water quality monitoring to evaluate the status of Point Creek and Fischer Creek;
- Encouragement of land owners to embrace land management practices that are protective of stream water quality and habitat.

REFERENCES

- Hilsenhoff, W. 1987. An Improved Biotic Index of Organic Stream Pollution.
- Hogler, S, S. Surendonk, M. Gansberg. 2004. Point Creek-Fischer Creek baseline Monitoring Report. Unpublished Report. Wisconsin DNR. Mishicot, WI. 26 pages.
- Hogler, S. and S. Surendonk. 2005. Point Creek-Fischer Creek Baseline Monitoring Report. Unpublished Report. Wisconsin DNR. Mishicot, WI. 6 pages.
- Lyons, J. 1992. Using the Index of Biotic Integrity (IBI) to Measure Environmental Quality in Warmwater Streams of Wisconsin. U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. General Technical Report NC-149. St. Paul, Minnesota
- Simonson T. D., J. Lyons and P.D. Kanehl. 1994. Guidelines for Evaluating Fish Habitat in Wisconsin Streams. U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station, General Technical Report NC-164.