BUSSERON CREEK

Sullivan County

2008 Fish Management Report

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2010

EXECUTIVE SUMMARY

- Busseron Creek originates in the southeast corner of Vigo County, north of State Road 246 and east of Farmersburg, Indiana. The creek flows south/southwest through Sullivan County approximately 36 mi to its confluence with the Wabash River, near the Sullivan-Knox County line.

- Historically, the Busseron Creek watershed has been highly disturbed and continues to be a source of sediment and nutrient loading into the Wabash River (IDEM 2008).

- A general stream survey was conducted on September 8, 9, and 10, 2008. In-stream habitat, water quality, and fish assemblages were documented at river mile (RM) 0.25, 17.9, and 22.0. Fish habitat data was collected at each station using the Qualitative Habitat Evaluation Index (QHEI) developed by Ohio EPA (Rankin 1989).

- The lowest habitat score was 37 at RM 0.25. River mile 17.9 had a habitat score of 51 and RM 22.0 had a habitat score of 50.

- A total of 813 fish was collected that weighed 324 lbs. Thirty nine species representing 14 families and two hybrids were collected. Riverene species assemblages were typical of those tolerant of watershed disturbance and associated water quality issues.

- The highest numbers and quality of game fish species collected was at RM 0.25 near Busseron Creek's confluence with the Wabash.

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INTRODUCTION

Busseron Creek watershed is approximately 26 square miles and includes Vigo, Clay, Greene, and Sullivan Counties. Busseron Creek originates in the southeast corner of Vigo County, north of State Road 246 and east of Farmersburg, Indiana. The creek flows south/southwest through Sullivan County approximately 36 miles to its confluence with the Wabash River, near the Sullivan-Knox County line. Historically, the Busseron Creek watershed has been drastically altered by human activities, primarily from mining and agriculture. Coal mine properties range from 'active to reclaimed' and large tracts of non-reclaimed spoil grounds persist. Water quality monitoring is currently being conducted within the watershed by the Busseron Creek Watershed Partnership (BCWP 2009).

The focus of the Busseron Creek stream survey was to document water quality, stream habitat, and fish assemblages. A standard stream survey of Busseron Creek had not previously been conducted by Indiana Division of Fish and Wildlife (IDFW) and little historic data was available. Indiana Division of Fish and Wildlife was also interested in whether muskie from the Dugger Unit stocking program, initiated in 1997, were entering the Busseron Creek watershed via Buttermilk Creek. Buttermilk Creek joins Busseron Creek at RM 14.9. The IDFW also wanted to determine if Asian carp were traversing the Busseron Creek watershed from the Wabash River. In 2007, silver carp were documented at Goose Pit on the Minnehaha Fish and Wildlife property (Kittaka, 2008). Goose Pit drains directly into Kettle Creek which joins Busseron Creek at RM 21.4.

METHODS

A general stream survey was conducted on September 8, 9, and 10, 2008. In-stream habitat, water quality, and fish assemblages were documented at RM 0.25, 17.9, and 22.0 (Figure 1). Water chemistry parameters were measured according to standard survey guidelines (IDFW 2001). Fish habitat was documented at each station using the Qualitative Habitat Evaluation Index (QHEI) developed by Ohio EPA (Rankin 1989).

Fish were collected at RM 0.25 using a DC electrofishing boat with two dippers. Stations at RM 17.9 and 22.0 were sampled using a DC electrofishing barge with a crew of two dippers and one barge operator. Fish sampling effort included approximately 1.0 h of electrofishing at each station. All fish were identified to the species level. Game species were measured to the

nearest 0.1 in and weighed to the nearest 0.01 lb. Scale samples were taken from game fish for age and growth analysis. The silver carp age was determined by sectioning the postcleithrum (Johal 2000). Non-game species were counted and bulk weighed. Species length range was documented. Voucher specimens were put into 10% formalin and later identified at the office.

RESULTS

Fish habitat and water chemistry

The water temperature ranged from 67 to 78°F. The dissolved oxygen ranged from 9.6 to 10.5 ppm. The Secchi disk ranged from 13 to 30 in. The pH ranged from 7.5 to 7.6. The conductivity ranged from 600 to 1400 μS, indicating leachate from or disturbance in the watershed. The alkalinity ranged from 85 to 102mg/l.

QHEI data from sample sites reflect a low quality stream, typical of highly modified streams that no longer follow the natural stream bed. The lowest QHEI habitat score was 37 at RM 0.25. River mile 17.9 had a habitat score of 51 and RM 22.0 had a habitat score of 50. Overall, there was little to no sinuosity observed and the pool/glide quality was poor. The primary substrate type was muck and silt at all three sample sites and heavy silt cover was documented at RM 0.25 and 17.9. There were no riffles at any of the sample sites and the riparian zone at the RM 0.25 station was exceptionally poor. In-stream cover was generally poor and when present consisted of deep pools, root wads, and logs/woody debris. The gradient ranged from a 1.0 to 2.3 ft drop in elevation per mile of stream. Typical features of a low gradient stream, such as oxbows and aquatic macrophytes, were not present.

Fish survey data

A total of 813 fish was collected that weighed 324 lbs. Thirty nine species representing 14 families and two hybrids were collected (Appendix).

Longear sunfish was the most abundant by number (19%), followed by gizzard shad (15%), and spotted bass (10%). Common carp was most abundant by weight (31%), followed by freshwater drum (10%), and channel catfish (9%). A total of 20 species and two hybrids were collected at RM 0.25, 23 species and one hybrid were collected at RM 17.9, and 21 species and one hybrid were collected at RM 22.0.

Multiple abnormalities were documented on fish at the RM 0.25 sample station. Abnormalities were also noted on channel catfish, spotted bass, largemouth bass, and longear sunfish.

Sunfish Family (Centrarchidae)

Nine species of sunfish were collected, comprising 41% of the total catch by number and 13% by weight. Longear sunfish made up 48% of the sunfish collected, followed by spotted bass (24%), and bluegill (18%).

A total of 81 spotted bass was collected that weighed 18 lbs and ranged from 2.3 to 15.6 in. Growth was good for ages 1 and 2. The mean length of age-1 spotted bass was 7.0 in, ranging from 5.0 to 9.5 in. Age-2 spotted bass averaged 9.4 in.

A total of 58 bluegill was collected that weighed 2 lbs and ranged in length from 1.8 to 6.1 in.

A total of 11 white crappie was collected that weighed 5 lbs and ranged in length from 5.4 to 13.9 in.

A total of 10 largemouth bass was collected that weighed 10 lbs and ranged in length from 2.9 to 17.7 in.

A total of 7 black crappie was collected that weighed 4 lbs and ranged in length from 8.4 to 11.9 in.

Other species collected included green sunfish, orangespotted sunfish, and warmouth.

Minnow Family (Cyprinidae)

Nine species of minnow were collected, comprising 26% of the total catch by number and 31% by weight. Spotfin shiner made up 32% of the minnows collected, followed by common carp (30%), and emerald shiner (18%). Other species collected were bluntnose minnow, sand shiner, goldfish, mirror carp, and silverjaw minnow. One 8.6 in age-1 silver carp was collected at RM 17.9.

Herring Family (Clupeidae)

Gizzard shad was the only member of the herring family collected. They were

present at all three sample sites. A total of 120 shad was collected ranging in length from 5.1 to 12.6 in. They made up 15% of the total catch by number and 9% by weight.

Perch Family (Percidae)

The perch family comprised 6% of the total catch by number and 3% by weight. Dusky darter made up 67% of the perch family, followed by hybrid walleye (23%), johnny darter (6%), and logperch (4%).

A total of 11 hybrid walleye was collected from all three stations that weighed 9.0 lbs and ranged from 10.0 to 17.5 in. Ages 1 through 4 were collected.

Sucker Family (Catostomidae)

Five species of the sucker family were collected, comprising 3% of the total catch by number and 6% by weight. Quillback made up 46% of the sucker family, followed by black redhorse (33%), and river carpsucker (8%). Smallmouth buffalo and shorthead redhorse were also collected. This family was not present at RM 0.25.

Catfish Family (Ictaluridae)

The catfish family was represented by two species. Channel catfish were present at all three reaches of Busseron Creek.

There were 23 channel catfish collected that weighed at total of 30 lbs and ranged in length from 6.8 to 22.6 in.

One 7.5 in black bullhead was collected at RM 17.9.

Drum Family (Sciaenidae)

A total of 19 freshwater drum was collected that ranged in length from 7.8 to 25.4 in and weighed 31 lbs. They comprised 2% of the total catch by number and 10% by weight. Drum were collected from sample stations at RM 0.25 and RM 17.9. Interestingly, two of the larger drum collected (16.9 in and 24.5 in) were verified by otolith sectioning to be age 19 and 23, respectively.

Bowfin Family (Amiidae)

Six bowfin, ranging in length from 20.1 to 25.8 in, were collected at RM 0.25. Bowfin made up less than 1% of the total catch by number and 9% by weight.

Gar Family (Lepisosteidae)

Two species of the gar family were collected that comprised less than 1% of the sample by number and 8% by weight. Four shortnose gar, ranging in length from 21.0 to 24.9 in, were collected at RM 0.25. One 14.7 in spotted gar was collected at RM 22.0.

Silverside Family (Atherinidae)

Five brook silversides were collected that ranged in length from 2.5 to 2.9 in and comprised less than 1% of the total catch by number and weight. They were all collected at RM 22.0.

White Bass Family (Moronidae)

Members of the white bass family were collected at RM 0.25, comprising less than 1% of the total catch and 24% by weight.

Two striped bass were collected (25.5 in (age 4) and 30.1 in (not aged)), weighing 7.0 and 12.5 lbs respectively.

Two yellow bass were collected at 4.9 in and 5.3 in, weighing 0.05 lb.

A single 20.7 in, age-3, hybrid striped bass was collected, weighing 4.03 lbs.

Livebearer Family (Poeciliidae)

Western mosquitofish were the only species collected in this family. Four were collected at RM 22.0.

Pirate Perch Family (Aphredoderidae)

Pirate perch were the only species collected in this family. Nine were collected at RM 17.9.

Pike Family (Esocidae)

Redfin pickerel was the only species collected in this family. Two were collected at RM 17.9. Their lengths were 6.0 in and 6.6 in respectively.

DISCUSSION

Recent data from Indiana Department of Environmental Management (IDEM) estimates that the 236 square mile Busseron Creek watershed contains 34 square miles of abandoned mine lands, 36 square miles of underground mines, and 153 square miles of agriculture (IDEM 2008). At the time of sampling, a sediment plume was visible at Busseron Creek's confluence with the Wabash River. Busseron Creek and several Busseron Creek tributaries have repeatedly been listed on the U. S. Environmental Protection Agency's 303(d) List of Impaired Waters, primarily for total dissolved solids (TDS) and sulfates (USEPA-IW 2008).

The Busseron Creek watershed has been so drastically altered from past mining activities and stream channelization that it no longer follows the original stream bed in substantial portions of the creek. The Busseron Creek Watershed Partnership's (BCWP) stream monitoring program has documented very high conductivity levels on some tributaries in the watershed from 2008 to 2009 (BCWP 2009). High conductivity is not uncommon in areas with disturbed grounds and varies with water level and the buffering capacity of the stream bed. Without the natural meanderings, the creek is much more susceptible to high water flashes and mining sludge washouts from abandoned mine lands. Sediments and nutrients are then more rapidly moved out of the watershed.

Busseron Creek is not known for having a quality game fishery. Overall, game fish numbers were low and the condition of several of the fish collected was poor. The highest number of game fish species collected was at RM 0.25 near Busseron Creek's confluence with the Wabash and the fish assemblage resembled that of a big river. The sanders species collected in this survey were the hybrid walleye (S. vitreum X S. canadense). Hybrid walleye fingerlings are stocked annually at Sullivan Lake at a rate of 50 per acre. Morrison Creek drains Sullivan Lake and enters Busseron Creek just below the RM 17.9 sample station (Hoggatt 1975). No muskie were documented in this survey. Four lakes within the Dugger Unit of the Greene-Sullivan State Forest are stocked annually with muskie. The Dugger unit drains into Buttermilk Creek which joins Busseron Creek at RM 14.9.

Since first documented in the Wabash River in 1995, bighead and silver carp species have become well established and it's not surprising that a silver carp was collected in Busseron Creek at RM 17.9 (U.S.EPA-NAS 2008). Both species of Asian carp prefer to use slow-flowing tributaries, oxbows, backwaters, and deep holes behind wing dikes (Kolar et. al. 2007). However, high water events, like the one experienced in June 2008, can trigger upstream movement and the spawning behavior of both species. Silver carp were documented in Goose Pit at the Minnehaha Fish and Wildlife Area in 2008 (Kittaka 2008). Annual flooding could very easily have created the corridor necessary for the upstream migration of this species into Goose Pit. Goose Pit is drained by Kettle Creek and joins Busseron Creek at RM 21.4.

Access in the lower section of Busseron Creek from the Wabash River is limited. The nearest public access ramp is on the Wabash River, 12 mi downstream at Russelville, IL. The next nearest access point is 13 mi upstream on the Wabash River at Merom, Indiana. Shore fishing is limited to occasional bridge crossings and permission from private owners would be necessary.

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Date: February 11, 2010

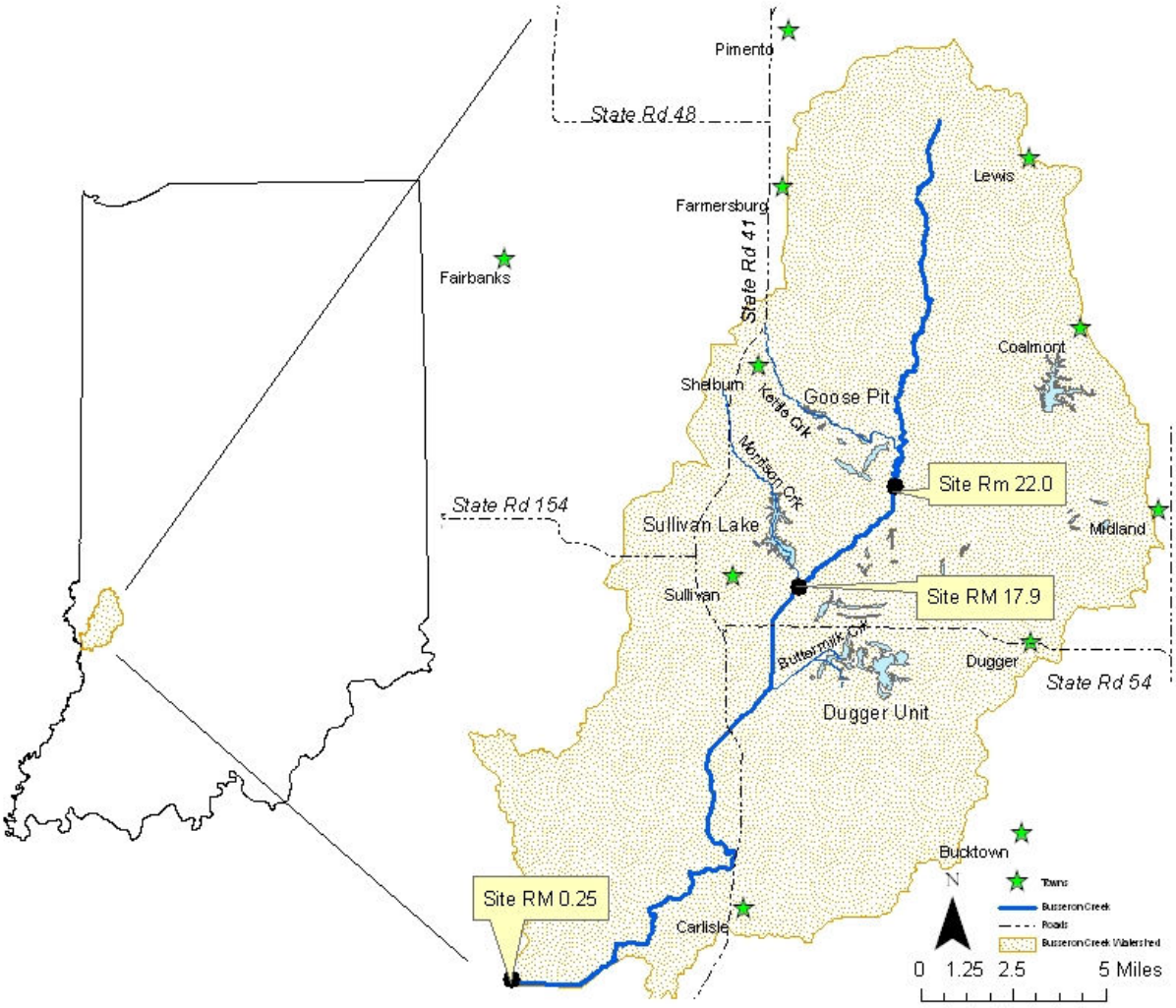

Figure 1. Busseron Creek watershed and stream sample sites, 2008.

Appendix 1

Overall name, number, percentage, size, weight, and occurrence index of fishes collected, Busseron Creek, 2008.
Stream habitat evaluation form by station
QHEI form by station
Name, number, percentage, size, and weight of fish collected by station
Fish length and age data

Overall name, number, percentage, size, weight and occurrence index of fishes collected, Busseron Creek, 2008.

COMMON NAME	SCIENTIFIC NAME	NUMBER	%	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)	%
Longear sunfish	*Lepomis megalotis*	158	19.4	1.8 - 5.6	3.74	1.2
Gizzard shad	*Dorosoma cepedianum*	120	14.8	5.1-12.6	29.85	9.2
Spotted bass	*Micropterus punctulatus*	81	10.0	2.3 - 15.6	18.19	5.6
Spotfin shiner	*Cyprinella lutrensis*	67	8.2	1.3 - 3.5	0.36	0.1
Bluegill	*Lepomis macrochirus*	58	7.1	1.8 - 6.1	1.95	0.6
Common carp	*Cyprinus carpio*	63	7.7	6.3 - 28.5	100.28	30.9
Emerald shiner	*Notropis atherinoides*	37	4.6	3.3-4.5	0.27	0.1
Dusky darter	*Percina sciera*	32	3.9	2.3 - 3.8	0.29	0.1
Bluntnose minnow	*Pimephales notatus*	26	3.2	2.2 - 3.1	0.18	0.1
Channel catfish	*Ictalurus punctatus*	23	2.8	6.8 - 22.6	30.41	9.4
Freshwater drum	*Aplodinotus grunniens*	19	2.3	7.8 - 25.4	30.94	9.5
Quillback	*Carpiodes cyprinus*	11	1.4	7.2 - 13.6	10.75	3.3
Sand shiner	*Notropis stramineus*	11	1.4	2.7 - 3.3	0.07	<0.1
Walleye X sauger hybrid	*Sander spp.*	11	1.4	10 - 17.5	9.02	2.8
White crappie	*Pomoxis annularis*	11	1.4	5.4 - 13.9	4.50	1.4
Largemouth bass	*Micropterus salmoides*	10	1.2	2.9 - 17.7	9.55	2.9
Pirate perch	*Aphredoderus sayanus*	9	1.1	1.3 - 2.3	0.04	<0.1
Black redhorse	*Moxostoma duquesnei*	8	1.0	7.6 - 14.7	3.26	1.0
Black crappie	*Pomoxis nigromaculatus*	7	0.9	8.4 - 11.9	4.07	1.3
Bowfin	*Amia calva*	6	0.7	20.1 - 25.8	27.75	8.6
Brook silverside	*Labidesthes sicculus*	5	0.6	2.5 - 2.9	0.02	<0.1
Green sunfish	*Lepomis cyanellus*	4	0.5	2.2 - 4.0	0.01	<0.1
Mosquitofish	*Gambusia affinis*	4	0.5	1.7 - 1.8	0.01	<0.1
Shortnose gar	*Lepisosteus platostomus*	4	0.5	21.0 - 24.9	7.45	2.3
Goldfish	*Carassius auratus*	3	0.4	5.9 - 6.3	0.33	0.1
Johnny darter	*Etheostoma nigrum*	3	0.4	2.1 - 2.5	0.01	<0.1
Redfin pickerel	*Esox americanus*	2	0.2	6.0 - 6.6	0.07	<0.1
Logperch	*Percina caprodes*	2	0.2	4.3 - 4.8	0.09	<0.1
Orangespotted sunfish	*Lepomis humilis*	2	0.2	2.5	0.01	<0.1
River carpsucker	*Carpiodes carpio*	2	0.2	12.8	0.98	0.3
Smallmouth buffalo	*Ictiobus bubalus*	2	0.2	13.8 - 19.3	4.67	1.4
Striped bass	*Morone saxatilis*	2	0.2	25.5 - 30.1	19.50	6.0
Yellow bass	*Morone mississippiensis*	2	0.2	4.9 - 5.3	0.05	<0.1
Black bullhead	*Ameiurus melas*	1	0.1	7.5	0.22	0.1
Hybrid striped bass	*M. saxatilis X M. chrysops*	1	0.1	20.7	4.03	1.2
Mirror carp	*Cyprinus carpio L.*	1	0.1	6.7	0.13	<0.1
Silver carp	*Hypophthalmichthys molitrix*	1	0.1	8.6	0.24	0.1
Shorthead redhorse	*Moxostoma macrolepidotum*	1	0.1	9	0.25	0.1
Silverjaw minnow	*Notropis buccatus*	1	0.1	2.5	0.01	<0.1
Spotted gar	*Lepisosteus oculatus*	1	0.1	14.7	0.76	0.2
Warmouth	*Lepomis gulosus*	1	0.1	3.2	0.01	<0.1
Total - 39 Species + 2 hybrids		813			324.32	

INDIANA DIVISION OF FISH AND WILDLIFE

STREAM HABITAT EVALUATION FORM

STREAM: Busseron Creek RIVER MILE: 0.25

NEAREST TOWN: Sullivan COUNTY: Sullivan

QUADRANGLE: Heathsville TWP: 6N RNG: 10W SEC: 27

LATITUDE: 38.93524 LONGITUDE: 87.51582

LATITUDE: 38.93503 LONGITUDE: 87.51604

U.S.G.S. GAUGING STATION LOCATION: #03342500 on St Rd 58 west of Carlisle, IN AVG. DISCHARGE (cfs): 228

IS REACH REPRESENTATIVE OF STREAM (**Y**/N) Y IF NOT, WHY?

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Launched at a private ramp approximately 80 yds from confluence of Wabash River and adjacent to Abe Rodgers Creek (ie. Nine Mile Ridge). Electrofishing station was upstream of the ramp, approximately 0.25 mi from the confluence with the Wabash River.

COLLECTION SUMMARY

DATE: 9/8/2008 GEAR: Boat/ DC electrofishing EFFORT: 0.49 h

CREW: Kittaka, King, Ball, Grzych, Donithan

OTHER GEAR/EFFORT: WATER STAGE: normal

CANOPY (%OPEN): 80 PHOTOS (Y/N): Y SECCHI DISK (inches): 16

AIR TEMP (°F): 80 WATER TEMP (°F): 68.7 D.O. (ppm): 9.6

CONDUCTIVITY: 850 μS pH: 7.5 ALKALINITY: 85 mg/l

TDS: 410 g/L

STREAM MEASUREMENTS AVG. WIDTH: 60.6 ft AVG. DEPTH: 27.2 in MAX DEPTH: 34.0 in

STATION LENGTH: (1st date) approximately 0.5 mi (2nd date)

WIDTH (ft)	DEPTH (in)		
54	24	30	28
57	20	28	20
60	28	28	28
63	31	30	29
69	22	34	28

SUBJECTIVE RATING (1-10)

AESTHETIC RATING (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: The Busseron and Abe Rodgers Creek combined discharge into the Wabash River was brown to greenish brown laden with sediments and nutrients. There is a stark contrast in color at the confluence with the Wabash that can be seen from aerial views.

INDIANA DIVISION OF FISH AND WILDLIFE

STREAM HABITAT EVALUATION FORM

STREAM: Busseron Creek RIVER MILE: 17.9

NEAREST TOWN: Sullivan COUNTY: Sullivan

QUADRANGLE: Dugger TWP: 8N RNG: 9W SEC: 36

LATITUDE: 39.09112 LONGITUDE: 87.37301

LATITUDE: 39.09361 LONGITUDE: 87.36897

U.S.G.S. GAUGING STATION LOCATION: AVG. DISCHARGE (cfs): 135

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY?

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Access from SE side of bridge off CR 50 N. Lots of debris/ trash below bridge. Station began 94 yds downstream of the bridge, and continued upstream 142 yds for a total station length of approximately 236 yds.

COLLECTION SUMMARY

DATE: 9/9/2008 GEAR: Barge EFFORT: 1.0 h

CREW: Kittaka, King, Kolaks, Terry, Grzych

OTHER GEAR/EFFORT: WATER STAGE: normal

CANOPY (%OPEN): 5 PHOTOS (Y/N): Y SECCHI DISK (inches): 30

AIR TEMP (°F): WATER TEMP (°F): 67.0 D.O. (ppm): not taken

CONDUCTIVITY: 1400 μS pH: 7.6 ALKALINITY: 102 mg/l

TDS: 0.72 g/L

STREAM MEASUREMENTS AVG. WIDTH: 45.6 ft AVG. DEPTH: 20.0 in MAX DEPTH: 43.0 in

STATION LENGTH: (1st date) 708 ft (2nd date)

WIDTH (ft)	DEPTH (in)		
45	15	16	23
45	37	31	34
45	30	36	23
48	12	7	8
45	13	15	0

SUBJECTIVE RATING (1-10)

AESTHETIC RATING (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: This sample location was in a highly modified area of the streambed. A large amount of human refuse was located under and downstream of the bridge.

INDIANA DIVISION OF FISH AND WILDLIFE

STREAM HABITAT EVALUATION FORM

STREAM: Busseron Creek RIVER MILE: 22.0

NEAREST TOWN: Sullivan COUNTY: Sullivan

QUADRANGLE: Hymera TWP: 8N RNG: 8W SEC: 17

LATITUDE: 39.1304 LONGITUDE: 87.31921

LATITUDE: 39.12822 LONGITUDE: 87.31795

U.S.G.S. GAUGING STATION LOCATION: AVG. DISCHARGE (cfs): 113

IS REACH REPRESENTATIVE OF STREAM (Y/N) Y IF NOT, WHY?

DESCRIPTION OF SAMPLE SITE (Access, length, direction sampled): Lowered equipment over the south west bank of CR 300N under the small bridge east of Sullivan and moved upstream away from bridge and old pilings. This would mark the downstream end of the station.

COLLECTION SUMMARY

DATE: 9/10/2008 GEAR: Barge EFFORT: 1.0 h

CREW: Kittaka, King, Grzych

OTHER GEAR/EFFORT: WATER STAGE: normal

CANOPY (%OPEN): 80 PHOTOS (Y/N): Y SECCHI DISK (inches): 13

AIR TEMP (°F): 70 WATER TEMP (°F): 77.9 D.O. (ppm): 10.5

CONDUCTIVITY: 600 μS pH: 7.6 ALKALINITY: 88 mg/l

TDS: 0.29 g/L

STREAM MEASUREMENTS AVG. WIDTH: 36.6 ft AVG. DEPTH: 13.8 in MAX DEPTH: 38.0 in

STATION LENGTH: (1st date) 708 ft (2nd date)

WIDTH (ft)	DEPTH (in)		
45	12	15	11
45	11	12	10
45	26	18	18
24	14	24	4
24	15	12	5

SUBJECTIVE RATING (1-10)

AESTHETIC RATING (1-10)

ADDITIONAL COMMENTS/POLLUTION IMPACTS: Stream does not follow natural stream bed in this area -old reclaimed mining area according to maps.

STREAM: Busseron Creek RIVER MILE 0.25 DATE: 9/8/2008 QHEI SCORE 37

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 5

TYPE			POOL	RIFFLE				POOL	RIFFLE
		BLDER/SLAB(10)					GRAVEL(7)		
		BOULDER(9)			X	X	SAND(6)	X	X
		COBBLE(8)					BEDROCK(5)		
		HARDPAN(4)					DETRITUS(3)		
X	X	MUCK/SILT(2)	X	X			ARTIFIC(0)	X	X

TOTAL NUMBER OF SUBSTRATE TYPES: [ ] >4(2) [X] <4(0)

SUBSTRATE ORIGIN (all)
- [ ] LIMESTONE(1)
- [ ] RIP/RAP(0)
- [ ] HARDPAN(0)
- [X] TILLS(1)
- [ ] SANDSTONE(0)
- [ ] SHALE(-1)
- [ ] COAL FINES(-2)

SILT COVER (one)
- [X] SILT-HEAVY(-2)
- [ ] SILT-MOD(-1)
- [ ] SILT-NORM(0)
- [ ] SILT-FREE(1)

Extent of Embeddedness (check one)
- [X] EXTENSIVE(-2)
- [ ] MODERATE(-1)
- [ ] LOW(0)
- [ ] NONE(1)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS:

2) INSTREAM COVER: (20) COVER SCORE 9

TYPE(Check all that apply)
- [ ] UNDERCUT BANKS(1)
- [ ] OVERHANGING VEGETATION(1)
- [ ] SHALLOWS (IN SLOW WATER)(1)
- [ ] DEEP POOLS(2)
- [X] ROOTWADS(1)
- [ ] BOULDERS(1)
- [ ] OXBOWS(1)
- [ ] AQUATIC MACROPHYTES(1)
- [X] LOGS OR WOODY DEBRIS(1)

AMOUNT (Check only one or Check 2 and AVERAGE)
- [ ] EXTENSIVE >75%(11)
- [X] MODERATE 25-75%(7)
- [ ] SPARSE 5-25%(3)
- [ ] NEARLY ABSENT <5%(1)

COMMENTS:

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) 6

SINUOSITY
- [ ] HIGH(4)
- [ ] MODERATE(3)
- [ ] LOW(2)
- [X] NONE(1)

DEVELOPMENT
- [ ] EXCELLENT(7)
- [ ] GOOD(5)
- [ ] FAIR(3)
- [X] POOR(1)

CHANNELIZATION
- [ ] NONE(6)
- [ ] RECOVERED(4)
- [ ] RECOVERING(3)
- [X] RECENT OR NO RECOVERY(1)

STABILITY
- [X] HIGH(3)
- [ ] MODERATE(2)
- [ ] LOW(1)

MODIFICATION/OTHER
- [ ] SNAGGING
- [ ] RELOCATION
- [X] CANOPY REMOVAL
- [X] DREDGING
- [ ] ONE SIDE CHANNEL MODIFICATION
- [ ] IMPOUND
- [ ] ISLAND
- [X] LEVEED
- [X] BANK SHAPING

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE 4.3

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R	(per bank)
	X	WIDE>150ft.(4)
		MODERATE 30-150 ft.(3)
X		NARROW 15-30 ft.(2)
		VERY NARROW 3-15 ft.(1)
		NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R	(most predominant per bank)	L	R	(per bank)
X	X	FOREST, SWAMP(3)			URBAN OR INDUSTRIAL(0)
X	X	OPEN PASTURE/ROW CROP(0)			SHURB OR OLD FIELD(2)
		RESID.,PARK,NEW FIELD(1)			CONSERV. TILLAGE(1)
		FENCED PASTURE(1)			MINING/CONSTRUCTION(0)

BANK EROSION

L	R	(per bank)
		NONE OR LITTLE(3)
X	X	MODERATE(2)
		HEAVY OR SEVERE(1)

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE 7

MAX. DEPTH (Check 1)
- [ ] >4 ft.(6)
- [X] 2.4-4 ft.(4)
- [ ] 1.2-2.4 ft.(2)
- [ ] <1.2 ft.(1)
- [ ] <0.6 ft.(Pool=0)(0)

MORPHOLOGY (Check 1)
- [X] POOL WIDTH>RIFFLE WIDTH(2)
- [ ] POOL WIDTH=RIFFLE WIDTH(1)
- [ ] POOL WIDTH<RIFFLE WIDTH(0)

POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)
- [ ] TORRENTIAL(-1)
- [ ] FAST(1)
- [ ] MODERATE(1)
- [X] SLOW(1)
- [ ] EDDIES(1)
- [ ] INTERSTITIAL(-1)
- [ ] INTERMITTENT(-2)

COMMENTS:

RIFFLE SCORE 0

RIFFLE/RUN DEPTH
- [ ] GENERALLY >4 in. MAX.>20 in.(4)
- [ ] GENERALLY >4 in. MAX.<20 in.(3)
- [ ] GENERALLY 2-4 in.(1)
- [ ] GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE
- [ ] STABLE (e.g., Cobble,Boulder)(2)
- [ ] MOD. STABLE (e.g., Pea Gravel)(1)
- [ ] UNSTABLE (Gravel, Sand)(0)
- [X] NO RIFFLE(0)

RIFFLE/RUN EMBEDDEDNESS
- [ ] EXTENSIVE(-1)
- [ ] MODERATE(0)
- [ ] LOW(1)
- [ ] NONE(2)
- [X] NO RIFFLE(0)

COMMENTS:

6) GRADIENT (FEET/MILE)(10) 1.0 % POOL 20 % RIFFLE 0 % RUN 80 GRADIENT SCORE 6

STREAM: Busseron Creek RIVER MILE 17.9 DATE: 9/9/2008 QHEI SCORE 51

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 9

TYPE			POOL	Run				POOL	RIFFLE
		BLDER/SLAB(10)					GRAVEL(7)		
		BOULDER(9)			X	X	SAND(6)	X	X
		COBBLE(8)					BEDROCK(5)		
		HARDPAN(4)					DETRITUS(3)		
		MUCK/SILT(2)	X	X			ARTIFIC(0)		X

TOTAL NUMBER OF SUBSTRATE TYPES: [ ] >4(2) [X] <4(0)

SUBSTRATE ORIGIN (all)
- [ ] LIMESTONE(1)
- [ ] RIP/RAP(0)
- [X] TILLS(1)
- [ ] HARDPAN(0)
- [ ] SANDSTONE(0)
- [ ] SHALE(-1)
- [ ] COAL FINES(-2)

SILT COVER (one)
- [X] SILT-HEAVY(-2)
- [ ] SILT-MOD(-1)
- [ ] SILT-NORM(0)
- [ ] SILT-FREE(1)

Extent of Embeddedness (check one)
- [X] EXTENSIVE(-2)
- [ ] MODERATE(-1)
- [ ] LOW(0)
- [ ] NONE(1)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS:

2) INSTREAM COVER: (20) COVER SCORE 11

TYPE(Check all that apply)
- [ ] UNDERCUT BANKS(1)
- [X] DEEP POOLS(2)
- [ ] OXBOWS(1)
- [ ] OVERHANGING VEGETATION(1)
- [X] ROOTWADS(1)
- [ ] AQUATIC MACROPHYTES(1)
- [ ] SHALLOWS (IN SLOW WATER)(1)
- [ ] BOULDERS(1)
- [X] LOGS OR WOODY DEBRIS(1)

AMOUNT (Check only one or Check 2 and AVERAGE)
- [ ] EXTENSIVE >75%(11)
- [X] MODERATE 25-75%(7)
- [ ] SPARSE 5-25%(3)
- [ ] NEARLY ABSENT <5%(1)

COMMENTS:

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) 6

SINUOSITY
- [ ] HIGH(4)
- [ ] MODERATE(3)
- [ ] LOW(2)
- [X] NONE(1)

DEVELOPMENT
- [ ] EXCELLENT(7)
- [ ] GOOD(5)
- [ ] FAIR(3)
- [X] POOR(1)

CHANNELIZATION
- [ ] NONE(6)
- [ ] RECOVERED(4)
- [ ] RECOVERING(3)
- [X] RECENT OR NO RECOVERY(1)

STABILITY
- [X] HIGH(3)
- [ ] MODERATE(2)
- [ ] LOW(1)

MODIFICATION/OTHER
- [ ] SNAGGING
- [ ] IMPOUND
- [X] RELOCATION
- [ ] ISLAND
- [X] CANOPY REMOVAL
- [X] LEVEED
- [X] DREDGING
- [X] BANK SHAPING
- [ ] ONE SIDE CHANNEL MODIFICATION

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE 10

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R	(per bank)
		WIDE>150ft.(4)
X		MODERATE 30-150 ft.(3)
	X	NARROW 15-30 ft.(2)
		VERY NARROW 3-15 ft.(1)
		NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R	(most predominant per bank)	L	R	(per bank)
X	X	FOREST, SWAMP(3)			URBAN OR INDUSTRIAL(0)
X	X	OPEN PASTURE/ROW CROP(0)			SHURB OR OLD FIELD(2)
		RESID.,PARK,NEW FIELD(1)			CONSERV. TILLAGE(1)
		FENCED PASTURE(1)			MINING/CONSTRUCTION(0)

BANK EROSION

L	R	(per bank)
		NONE OR LITTLE(3)
X	X	MODERATE(2)
		HEAVY OR SEVERE(1)

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE 7

MAX. DEPTH (Check 1)
- [ ] >4 ft.(6)
- [X] 2.4-4 ft.(4)
- [ ] 1.2-2.4 ft.(2)
- [ ] <1.2 ft.(1)
- [ ] <0.6 ft.(Pool=0)(0)

MORPHOLOGY (Check 1)
- [X] POOL WIDTH>RIFFLE WIDTH(2)
- [ ] POOL WIDTH=RIFFLE WIDTH(1)
- [ ] POOL WIDTH<RIFFLE WIDTH(0)

POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)
- [ ] TORRENTIAL(-1)
- [ ] EDDIES(1)
- [ ] FAST(1)
- [ ] INTERSTITIAL(-1)
- [ ] MODERATE(1)
- [ ] INTERMITTENT(-2)
- [X] SLOW(1)

COMMENTS:

RIFFLE SCORE 0

RIFFLE/RUN DEPTH
- [ ] GENERALLY >4 in. MAX.>20 in.(4)
- [ ] GENERALLY >4 in. MAX.<20 in.(3)
- [ ] GENERALLY 2-4 in.(1)
- [X] GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE
- [ ] STABLE (e.g., Cobble,Boulder)(2)
- [ ] MOD. STABLE (e.g., Pea Gravel)(1)
- [ ] UNSTABLE (Gravel, Sand)(0)
- [X] NO RIFFLE(0)

RIFFLE/RUN EMBEDDEDNESS
- [ ] EXTENSIVE(-1)
- [ ] NONE(2)
- [ ] MODERATE(0)
- [X] NO RIFFLE(0)
- [ ] LOW(1)

COMMENTS:

6) GRADIENT (FEET/MILE)(10) 2.3 % POOL 50 % RIFFLE 0 % RUN 50 GRADIENT SCORE 8

STREAM: Busseron Creek RIVER MILE 22.0 DATE: 9/10/2008 QHEI SCORE 50

1) SUBSTRATE: (Check ONLY Two Substrate Type Boxes: Check all types present)(20) SUBSTRATE SCORE 10

TYPE			POOL	Run				POOL	RIFFLE
		BLDER/SLAB(10)					GRAVEL(7)	X	X
		BOULDER(9)			X	X	SAND(6)		
		COBBLE(8)					BEDROCK(5)		
		HARDPAN(4)					DETRITUS(3)		
X	X	MUCK/SILT(2)					ARTIFIC(0)		

TOTAL NUMBER OF SUBSTRATE TYPES: [ ] >4(2) [X] <4(0)

SUBSTRATE ORIGIN (all)
- [ ] LIMESTONE(1)
- [ ] RIP/RAP(0)
- [X] TILLS(1)
- [ ] HARDPAN(0)
- [ ] SANDSTONE(0)
- [ ] SHALE(-1)
- [ ] COAL FINES(-2)

SILT COVER (one)
- [ ] SILT-HEAVY(-2)
- [ ] SILT-MOD(-1)
- [X] SILT-NORM(0)
- [ ] SILT-FREE(1)

Extent of Embeddedness (check one)
- [ ] EXTENSIVE(-2)
- [ ] MODERATE(-1)
- [X] LOW(0)
- [ ] NONE(1)

NOTE: (Ignore sludge that originates from point sources: score is based on natural substrates)

COMMENTS:

2) INSTREAM COVER: (20) COVER SCORE 6

TYPE(Check all that apply)
- [ ] UNDERCUT BANKS(1)
- [X] DEEP POOLS(2)
- [ ] OXBOWS(1)
- [ ] OVERHANGING VEGETATION(1)
- [ ] ROOTWADS(1)
- [ ] AQUATIC MACROPHYTES(1)
- [ ] SHALLOWS (IN SLOW WATER)(1)
- [ ] BOULDERS(1)
- [X] LOGS OR WOODY DEBRIS(1)

AMOUNT (Check only one or Check 2 and AVERAGE)
- [ ] EXTENSIVE >75%(11)
- [ ] MODERATE 25-75%(7)
- [X] SPARSE 5-25%(3)
- [ ] NEARLY ABSENT <5%(1)

COMMENTS:

3) CHANNEL MORPHOLOGY: (Check ONLY ONE per Category or Check 2 and AVERAGE)(20) 7.5

SINUOSITY
- [ ] HIGH(4)
- [X] MODERATE(3)
- [X] LOW(2)
- [ ] NONE(1)

DEVELOPMENT
- [ ] EXCELLENT(7)
- [ ] GOOD(5)
- [ ] FAIR(3)
- [X] POOR(1)

CHANNELIZATION
- [ ] NONE(6)
- [ ] RECOVERED(4)
- [ ] RECOVERING(3)
- [X] RECENT OR NO RECOVERY(1)

STABILITY
- [X] HIGH(3)
- [ ] MODERATE(2)
- [ ] LOW(1)

MODIFICATION/OTHER
- [ ] SNAGGING
- [ ] IMPOUND
- [X] RELOCATION
- [ ] ISLAND
- [ ] CANOPY REMOVAL
- [X] LEVEED
- [X] DREDGING
- [ ] BANK SHAPING
- [ ] ONE SIDE CHANNEL MODIFICATION

COMMENTS:

4) RIPARIAN ZONE AND BANK EROSION: (Check ONE box or Check 2 and AVERAGE per bank) (10) RIPARIAN SCORE 10

River Right Looking Downstream

RIPARIAN WIDTH (per bank)

L	R	(per bank)
X	X	WIDE>150ft.(4)
		MODERATE 30-150 ft.(3)
		NARROW 15-30 ft.(2)
		VERY NARROW 3-15 ft.(1)
		NONE(0)

EROSION/RUNOFF-FLOODPLAIN QUALITY

L	R	(most predominant per bank)	L	R	(per bank)
X	X	FOREST, SWAMP(3)			URBAN OR INDUSTRIAL(0)
		OPEN PASTURE/ROW CROP(0)			SHURB OR OLD FIELD(2)
		RESID.,PARK,NEW FIELD(1)			CONSERV. TILLAGE(1)
		FENCED PASTURE(1)			MINING/CONSTRUCTION(0)

BANK EROSION

L	R	(per bank)
		NONE OR LITTLE(3)
X	X	MODERATE(2)
		HEAVY OR SEVERE(1)

COMMENTS:

5) POOL/GLIDE AND RIFFLE/RUN QUALITY (12) **NO POOL = 0** POOL SCORE 8

MAX. DEPTH (Check 1)
- [ ] >4 ft.(6)
- [X] 2.4-4 ft.(4)
- [ ] 1.2-2.4 ft.(2)
- [ ] <1.2 ft.(1)
- [ ] <0.6 ft.(Pool=0)(0)

MORPHOLOGY (Check 1)
- [X] POOL WIDTH>RIFFLE WIDTH(2)
- [ ] POOL WIDTH=RIFFLE WIDTH(1)
- [ ] POOL WIDTH<RIFFLE WIDTH(0)

POOL/RUN/RIFFLE CURRENT VELOCITY (Check all that Apply)
- [ ] TORRENTIAL(-1)
- [ ] EDDIES(1)
- [ ] FAST(1)
- [ ] INTERSTITIAL(-1)
- [X] MODERATE(1)
- [ ] INTERMITTENT(-2)
- [X] SLOW(1)

COMMENTS:

RIFFLE SCORE 0

RIFFLE/RUN DEPTH
- [ ] GENERALLY >4 in. MAX.>20 in.(4)
- [ ] GENERALLY >4 in. MAX.<20 in.(3)
- [ ] GENERALLY 2-4 in.(1)
- [X] GENERALLY <2 in.(Riffle=0)(0)

RIFFLE/RUN SUBSTRATE
- [ ] STABLE (e.g., Cobble,Boulder)(2)
- [ ] MOD. STABLE (e.g., Pea Gravel)(1)
- [ ] UNSTABLE (Gravel, Sand)(0)
- [X] NO RIFFLE(0)

RIFFLE/RUN EMBEDDEDNESS
- [ ] EXTENSIVE(-1)
- [ ] NONE(2)
- [ ] MODERATE(0)
- [X] NO RIFFLE(0)
- [ ] LOW(1)

COMMENTS:

6) GRADIENT (FEET/MILE)(10) 2.0 % POOL 20 % RIFFLE 0 % RUN 80 GRADIENT SCORE 4

DATE: 9/8/2008

STATION: RM 0.25

NAME OF STREAM: Busseron Creek

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENT	SIZE RANGE (in)	TOTAL WEIGHT (lbs)	PERCENT
Spotted bass	21	15.1	2.3 - 15.6	9.17	4.2
Channel catfish	20	14.4	6.8 - 22.6	26.41	12.1
Gizzard shad	20	14.4	4.5 - 9.2	4.06	1.9
Common carp	9	6.5	20.0 - 28.5	77.25	35.4
Freshwater drum	8	5.8	13.2 - 25.4	19.15	8.8
Longear sunfish	8	5.8	2.5 - 4.2	0.19	0.1
Hybrid walleye	8	5.8	10.3 - 17.5	5.69	2.6
Black crappie	7	5.0	8.4 - 11.9	4.07	1.9
Largemouth bass	7	5.0	9.7 - 17.7	9.43	4.3
Bowfin	6	4.3	20.1 - 25.8	27.75	12.7
White crappie	6	4.3	6.8 - 13.9	3.88	1.8
Shortnose gar	4	2.9	21.0 - 24.9	7.45	3.4
Bluegill	3	2.2	28 - 4.4	0.06	<0.1
Orangespotted sunfish	2	1.4	2.5	0.02	<0.1
Striped bass	2	1.4	25.5 - 30.1	19.50	8.9
Yellow bass	2	1.4	4.9 - 5.3	0.05	<0.1
Bluntnose minnow	1	0.7	2.3	<0.01	<0.1
Emerald shiner	1	0.7	2.4	<0.01	<0.1
Hybrid striped bass	1	0.7	20.7	4.03	1.8
Sand shiner	1	0.7	3.3	0.01	<0.1
Spotfin shiner	1	0.7	1.4	<0.01	<0.1
Warmouth	1	0.7	3.2	0.01	<0.1
Total - 20 Species + 2 hybrids	139			218.18	

DATE:9/9/2008 STATION: RM 17.9

NAME OF STREAM: Busseron Creek

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENT	SIZE RANGE (in)	TOTAL WEIGHT (lbs)	PERCENT
Longear sunfish	65	22.0	2.1 - 5.6	2.30	3.1
Common carp	44	14.9	6.7 - 19.4	22.47	30.3
Spotted bass	36	12.2	3.1 - 13.9	6.02	8.1
Bluegill	33	11.2	1.8 - 6.1	1.39	1.9
Gizzard shad	29	9.8	5.7 - 12.2	10.02	13.5
Dusky darter	20	6.8	2.4 - 3.8	0.19	0.3
Freshwater drum	11	3.7	7.8 - 22.7	11.79	15.9
Pirate perch	9	3.1	1.3 - 2.3	0.04	0.1
Quillback	9	3.1	7.2 - 13.3	8.50	11.4
Spotfin shiner	8	2.7	1.3 - 2.4	0.03	<0.1
Black redhorse	5	1.7	7.6 -14.7	2.50	3.4
Green sunfish	4	1.4	2.2 - 4.0	0.10	0.1
White crappie	4	1.4	5.4 - 8.1	0.53	0.7
Goldfish	3	1.0	5.9 - 6.3	0.33	0.4
Channel catfish	2	0.7	10.2 - 10.5	0.60	0.8
Redfin pickeral	2	0.7	6.0 - 6.6	0.07	0.1
Logperch	2	0.7	4.3 - 4.8	0.09	0.1
Hybrid walleye	2	0.7	10.0 - 16.8	1.76	2.4
Smallmouth buffalo	2	0.7	13.8 - 19.3	4.67	6.3
Black bullhead	1	0.3	7.5	0.22	0.3
Largemouth bass	1	0.3	2.9	0.01	<0.1
Mirror carp	1	0.3	6.7	0.13	0.2
Shorthead redhorse	1	0.3	9.0	0.25	0.3
Silver carp	1	0.3	8.6	0.24	0.3
Total - 23 Species & 1 Hybrid	295			74.25	

DATE: 9/10/2008 STATION: RM 22.0

NAME OF STREAM: Busseron Creek

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENT	SIZE RANGE (in)	TOTAL WEIGHT (lbs)	PERCENT
Gizzard shad	71	19.0	3.4 - 10.1	15.50	37
Spotfin shiner	58	15.5	2.1 - 3.5	0.33	0.8
Longear sunfish	86	23.1	1.8 - 5.2	1.25	3.0
Emerald shiner	36	9.7	2.1 - 3.6	0.27	0.6
Bluntnose minnow	25	6.7	2.2 - 3.0	0.18	0.4
Spotted bass	24	6.4	2.4 - 10.4	13.00	31.2
Bluegill	22	5.9	2.5 - 4.5	0.50	1.2
Dusky darter	12	3.2	2.3 - 3.5	0.10	0.2
Sand shiner	10	2.7	2.7 - 3.2	0.06	0.1
Brook silverside	5	1.3	2.5 - 2.9	0.02	<0.1
Western mosquitofish	4	1.1	1.7 - 1.8	0.01	<0.1
Black redhorse	3	0.8	7.7 - 8.6	0.76	1.8
Johnny darter	3	0.8	2.1 - 2.5	0.01	<0.1
Common carp	3	0.8	6.3 - 7.8	0.56	1.3
Quillback	2	0.5	12.7 - 13.6	2.25	5.4
Largemouth bass	2	0.5	4.9 - 5.0	0.11	0.3
River carpsucker	2	0.5	12.8	0.98	2.3
Silverjaw minnow	1	0.3	2.5	0.01	<0.1
Hybrid walleye	1	0.3	17.4	1.57	3.8
White crappie	1	0.3	6.4	0.08	0.2
Channel catfish	1	0.3	21.1	3.40	8.2
Spotted gar	1	0.3	14.7	0.76	1.8
Total - 21 Species & 1 Hybrid	373			41.71	

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF SPOTTED BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0	2	2.5	0.01	1	20.0				
2.5	6	7.4	0.01	1	20.5				
3.0	12	14.8	0.01	1	21.0				
3.5	15	18.5	0.02	1	21.5				
4.0	3	3.7	0.03	1	22.0				
4.5					22.5				
5.0	4	4.9	0.06	1	23.0				
5.5	3	3.7	0.07	1	23.5				
6.0	8	9.9	0.11	1	24.0				
6.5	2	2.5	0.15	1	24.5				
7.0	4	4.9	0.18	1	25.0				
7.5	5	6.2	0.22	1	25.5				
8.0	4	4.9	0.24	1,2	26.0				
8.5					TOTAL	81			
9.0	4	4.9	0.35	1,2					
9.5	1	1.2	0.45	1					
10.0	2	2.5	0.52	2,3					
10.5	1	1.2	0.55	2					
11.0									
11.5									
12.0									
12.5									
13.0	1		1.23	3					
13.5	1		1.30	5					
14.0	1		1.49	3					
14.5	1		1.80	4					
15.0									
15.5	1		2.24	5					
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	27.0/h	GILL NET CATCH	N/A	TRAP NET CATCH	N/A

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF HYBRID WALLEYE									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0					22.0				
4.5					22.5				
5.0					23.0				
5.5					23.5				
6.0					24.0				
6.5					24.5				
7.0					25.0				
7.5					25.5				
8.0					26.0				
8.5					TOTAL	11			
9.0									
9.5									
10.0	2	18.2	0.36	1					
10.5									
11.0									
11.5	5	45.5	0.42	1					
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5	1	9.1	1.48	1,3					
17.0	1	9.1	1.51	4					
17.5	2	18.2	1.70	4					
18.0									
18.5									

ELECTROFISHING CATCH	4.0/h	GILL NET CATCH	N/A	TRAP NET CATCH	N/A

Lake: Busseron Creek
Date: 9/8/2008 to 9/10/2008
Species: Spotted bass

Length group (in)	Total # number	Sub-sample	Age 1	2	3	4	5	6
1.0								
1.5								
2.0	2							
2.5	6							
3.0	12							
3.5	15							
4.0	3							
4.5								
5.0	4	4	4					
5.5	3	3	3					
6.0	8	8	8					
6.5	2	2	2					
7.0	4	4	4					
7.5	5	5	5					
8.0	4	4	2	2				
8.5								
9.0	4	4	3	1				
9.5	1	1	1					
10.0	2	2		1	1			
10.5	1	1		1				
11.0								
11.5								
12.0								
12.5								
13.0	1	1			1			
13.5	1	1					1	
14.0	1	1			1			
14.5	1	1				1		
15.0								
15.5	1	1					1	
16.0								
Total	81	43	32	5	3	1	2	0

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1	32	7.0	1.63	0.23	6.5	7.4
2	5	9.4	1.30	0.51	8.3	10.4
3	3	12.6	4.33	1.20	10.2	15.0
4	1	14.8				
5	2	14.8	2.00	1.00	12.8	16.8

Lake: Busseron Creek
Date: 9/8/2008 to 9/10/2008
Species: Hybrid walleye

Length group (in)	Total # number	Sub-sample	Age 1	2	3	4	5
10.0	2	2	1				
10.5							
11.0							
11.5	5	4	1				
12.0							
12.5							
13.0							
13.5							
14.0							
14.5							
15.0							
15.5							
16.0							
16.5	1	1	1		1		
17.0	2	1				2	
17.5	1	1				1	
Total	11	9	3	0	1	3	0

Age	Number	Mean TL	Var	SE	Lo 95%CI	Up 95%CI
1	3	12.8	10.44	1.79	9.2	16.4
2	0					
3	1	16.8				
4	3	17.4	0.08	0.17	17.1	17.8