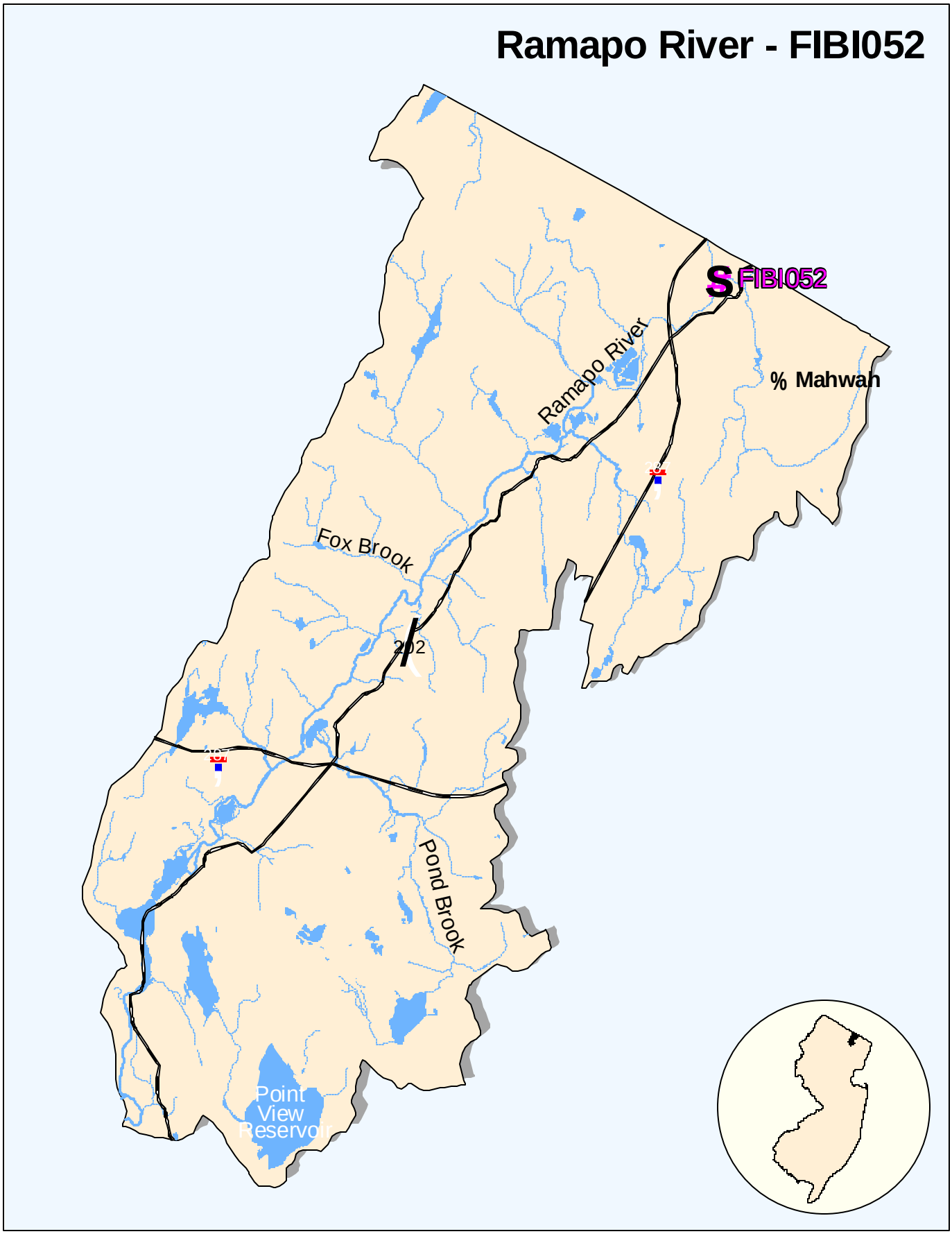
Ramapo River - FIBI052



S FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Above)

N

0 0.5 1 1.5 2 2.5 Miles


FIBI052
RAMAPO RIVER
Catherine Avenue
W. Mahwah Township, Bergen County
Long Ave.
Meadow Ave.
N. Ramapo Ave
Johnson Ave.
Catherine Ave.
Brook St.
US 202
104
0
0.1 Miles
N
LEGEND
Start
Finish
Segment Sampled
Direction of Flow

SUMMARY OF RESULTS

FIBI052 - Ramapo River

1. Stream Name:	Ramapo River
2. Sampling Date:	08-22-2002
3. Sampling Location:	End of Catherine (41 06 16.64; -74 09 22.02)
4. Municipality:	West Mahwah Twp.
5. County:	Bergen
6. Watershed Management Area:	3
7. Contributing Drainage Area:	91 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	38 - Good
10. Habitat Score and Rating:	141 - Suboptimal
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data	
Proximity of FIBI station to AMNET station:	0.72 mi upstream AN0266
AMNET Rating:	Round 1 – MODERATE; Round 2 – NONE
13. Stream Chemistries	
Dissolved Oxygen:	9.3 mg/L
Temperature:	22.3 ^{0}C
pH:	8.6
Conductivity:	604 µmhos/cm
14. Number of Fish with Anomalies:	1
15. Length of Stream Segment Sampled:	150 Meters
16. Water Clarity:	Turbid
17. Average Open Forest Canopy:	42%
18. Discharge:	63 ft.^{3}/sec
19. Substrate:	40% Gravel and Sand, 50% Cobble, 10% Boulder, 0% Clay, 0% Silt
20. Habitat:	25% Riffle, 30% Run, 45% Pool
21. Snags:	Yes
22. Periphyton:	None
23. Submerged Aquatic Vegetation:	No
24. Other Observations:	electric transfer station upstream
25. Number of Fish Species Identified:	15
26. Total Number of Fish Collected:	211

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI052 08-22-2002

Ramapo River

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Tesselated Darter	*Etheostoma olmstedi*	64	
Rock Bass*	*Ambloplites rupestris*	31	1.4-7.5
Green Sunfish*	*Lepomis cyanellus*	29	2.6-5.3
Redbreast Sunfish*	*Lepomis auritus*	21	1.2-3.7
Cutlips Minnow	*Exoglossum maxillingua*	17	
Largemouth Bass*	*Micropterus salmoides*	10	1.8-7.1
Common Shiner	*Luxilus cornutus*	9	
Spottail Shiner	*Notropis hudsonius*	7	
White Sucker*	*Catostomus commersoni*	6	
Creek Chub	*Semotilus atromaculatus*	5	
Yellow Bullhead*	*Ameiurus natalis*	5	2.2-5.9
Pumpkinseed*	*Lepomis gibbosus*	3	3.3-3.7
Smallmouth Bass*	*Micropterus dolomieu*	2	2.2-2.4
Bluegill*	*Lepomis macrochirus*	1	3.9
Yellow Perch*	*Perca flavescens*	1	5.3

* Regulated as a fishable species under current New Jersey Fish and Wildlife codes

Species Identified at Ramapo River (FIBI052)

(Not to Scale)

AFS

Largemouth Bass

John Scarola

Yellow Perch

John Scarola

White Sucker

Konrad Schmidt

Creek Chub

Jenkins & Burkhead

Cutlips Minnow

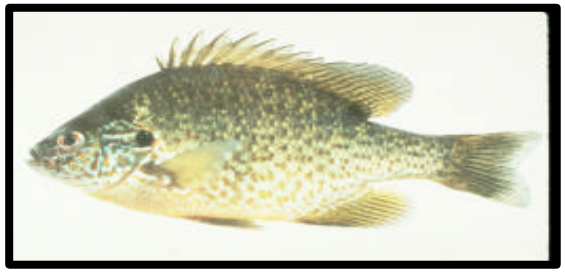
John Scarola

Bluegill

Species Identified at Ramapo River (FIBI052)

(Not to Scale)

John Scarola



Pumpkinseed

John Scarola

Redbreast Sunfish

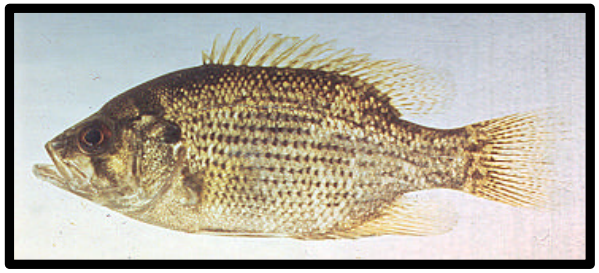
John Scarola

Tesselated Darter

Konrad Schmidt

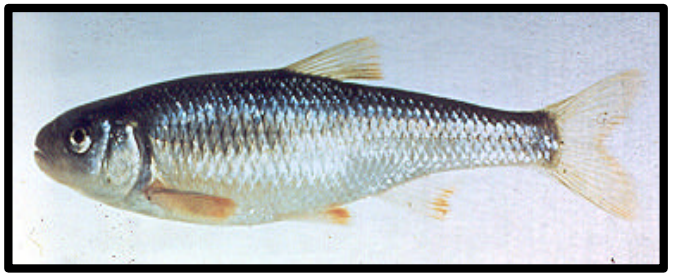
Green Sunfish

John Scarola



Rock Bass

John Scarola



Common Shiner

Species Identified at Ramapo River (FIBI052)

(Not to Scale)

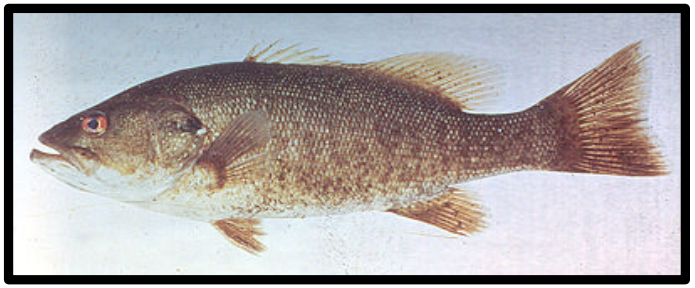
John Scarola

Yellow Bullhead

Konrad Schmidt

Spottail Shiner

John Scarola



Smallmouth Bass

FIBI052 - Ramapo River @ End of Catharine Excellent **Good** Fair Poor

Date Sampled - 8/22/2002

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI)	3
# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)	5
# of Intolerant Species (IS)	3
Proportion of Individuals as White Suckers	5
Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish)	5
Proportion of Individuals as Insectivorous **Cyprinids** (I and BI)	1
Proportion of Individuals as Trout *whichever gives better score	
OR	
Proportion of Individuals as Pisciviores (Excluding American Eel)*	3
Number of Individuals in Sample	3
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	**38**

Stream Rating

45-50	**Excellent**
37-44	**Good**
29-36	**Fair**
10-28	**Poor**

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS Ramapo River (FIBI052) – 8/22/02

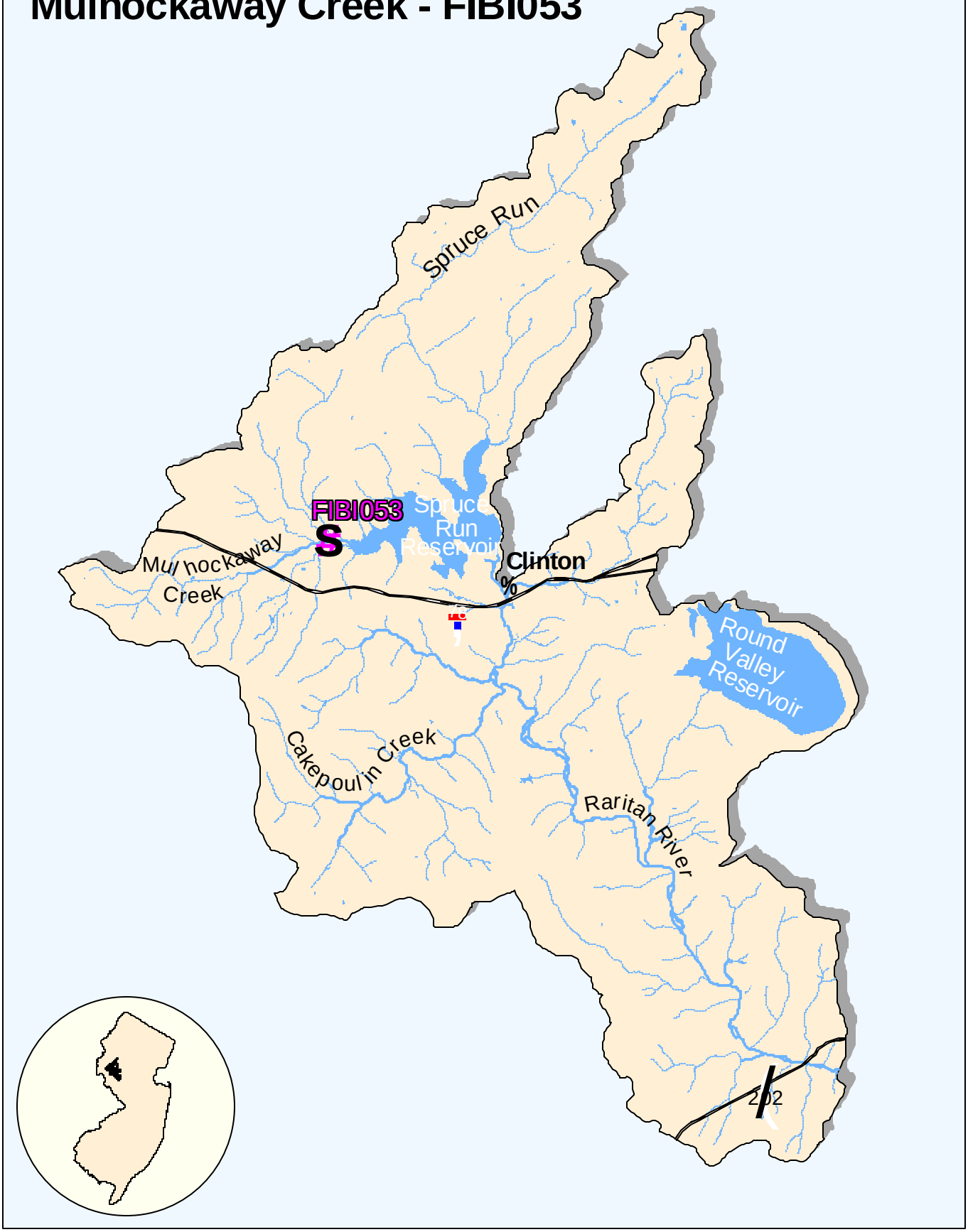
	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 17	20 19 18 **17** 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 11	20 19 18 17 16	15 14 13 12 **11**	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 11	20 **19** 18 17 16	15 14 13 **12** **11**	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 17	20 19 18 **17** 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 18	20 19 **18** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 14	20 19 18 17 16	15 **14** 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___**3**___ (LB)	Left 10 9	8 7 6	5 4 **3**	2 1 0
SCORE ___**3**___ (RB)	Right 10 9	8 7 6	5 4 **3**	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___**8**___ (LB)	Left 10 9	**8** 7 6	5 4 3	2 1 0
SCORE ___**9**___ (RB)	Right 10 **9**	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___**9**___ (LB)	Left 10 **9**	8 7 6	5 4 3	2 1 0
SCORE ___**5**___ (RB)	Right 10 9	8 7 6	**5** 4 3	2 1 0

HABITAT SCORE

141

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	**110 – 159**
MARGINAL	60 – 109
POOR	< 60

Mulhockaway Creek - FIBI053



S FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Above)

N

1 2 3 4 Miles


FIBI053
MULHOCKAWAY CREEK
County Road 635
Union Township, Hunterdon County
Van Syckles Rd.
CR 635
113
0
0.1 Miles
N
LEGEND
Start
Finish
Segment Sampled
Direction of Flow

SUMMARY OF RESULTS

FIBI053 - Mulhockaway Creek

1. Stream Name:	Mulhockaway Creek
2. Sampling Date:	08-01-2002
3. Sampling Location:	Route 635 (40 38 50.90; -74 58 07.68)
4. Municipality:	Union Twp.
5. County:	Hunterdon
6. Watershed Management Area:	8
7. Contributing Drainage Area:	11.8 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	46 - Excellent
10. Habitat Score and Rating:	141 - Suboptimal
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data	
Proximity of FIBI station to AMNET station:	AN0321
AMNET Rating:	Round 1 – NONE; Round 2 – NONE
13. Stream Chemistries	
Dissolved Oxygen:	8.6 mg/L
Temperature:	20.3 ^{0}C
pH:	7.68
Conductivity:	276 µmhos/cm
14. Number of Fish with Anomalies:	0
15. Length of Stream Segment Sampled:	150 Meters
16. Water Clarity:	Clear
17. Average Open Forest Canopy:	56.16%
18. Discharge:	NA ft.^{3}/sec
19. Substrate:	40% Gravel and Sand, 60% Cobble, 0% Boulder, 0% Clay, 0% Silt
20. Habitat:	30% Riffle, 45% Run, 25% Pool
21. Snags:	Yes
22. Periphyton:	Moderate
23. Submerged Aquatic Vegetation:	No
24. Other Observations:	
25. Number of Fish Species Identified:	15
26. Total Number of Fish Collected:	578

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI053 08-01-2002

Mulhockaway Creek

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Blacknose Dace	*Rhinichthys atratulus*	149	
Brown Trout*	*Salmo trutta*	127	2.4-12.8
White Sucker*	*Catostomus commersoni*	99	
Longnose Dace	*Rhinichthys cataractae*	60	
Largemouth Bass*	*Micropterus salmoides*	40	1.0-6.7
Tesselated Darter	*Etheostoma olmstedi*	30	
Slimy Sculpin	*Cottus cognatus*	23	
Bluegill*	*Lepomis macrochirus*	16	
Smallmouth Bass*	*Micropterus dolomieu*	15	2.2-6.7
Brook Trout*	*Salvelinus fontinalis*	7	6.5-9.4
Pumpkinseed*	*Lepomis gibbosus*	4	3.1
American Eel*	*Anguilla rostrata*	3	
Brown Bullhead*	*Ameiurus nebulosus*	3	3.1-3.9
Rainbow Trout*	*Oncorhynchus mykiss*	1	9.8
Yellow Perch*	*Perca flavescens*	1	

* Regulated as a fishable species under current New Jersey Fish and Wildlife codes

Species Identified at Mulhockaway Creek (FIBI053)

(Not to Scale)

John Scarola

Tesselated Darter

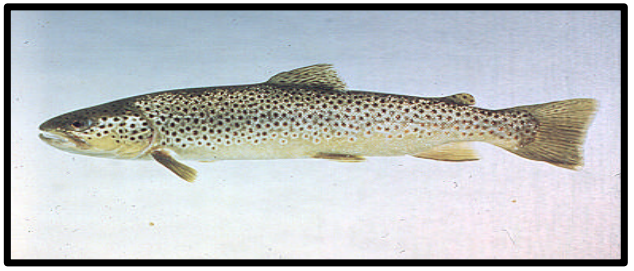
AFS

Largemouth Bass

John Scarola

Pumpkinseed

John Scarola



Brown Trout

John Scarola

White Sucker

John Scarola

Blacknose Dace

Species Identified at Mulhockaway Creek (FIBI053)

(Not to Scale)

John Scarola

Bluegill

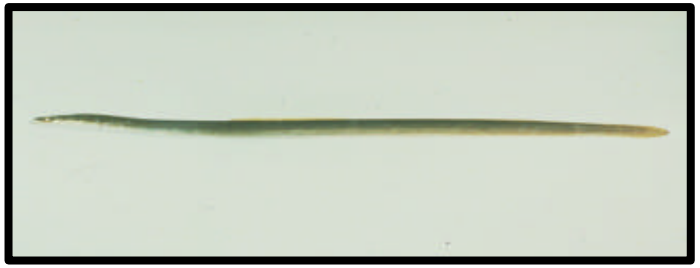
Schute

Longnose Dace

John Scarola

Smallmouth Bass

John Scarola



American Eel

John Scarola

Rainbow Trout

Don Beimborn

Brook Trout

Species Identified at Mulhockaway Creek (FIBI053)

(Not to Scale)

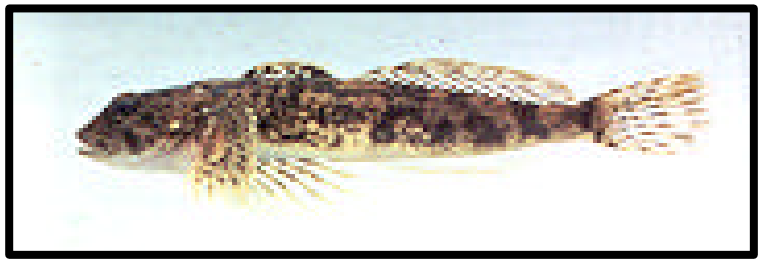
John Scarola

Yellow Perch

John Scarola

Brown Bullhead

Jenkins & Burkhead



Slimy Sculpin

FIBI053 - Mulhockaway Creek @ Route 635 **Excellent** Good Fair Poor

Date Sampled - 8/01/2002

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI)	5
# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)	5
# of Intolerant Species (IS)	5
Proportion of Individuals as White Suckers	3
Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish)	5
Proportion of Individuals as Insectivorous **Cyprinids** (I and BI)	3
Proportion of Individuals as Trout *whichever gives better score	
OR	
Proportion of Individuals as Pisciviores (Excluding American Eel)*	5
Number of Individuals in Sample	5
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	**46**

Stream Rating

45-50	**Excellent**
37-44	**Good**
29-36	**Fair**
10-28	**Poor**

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS Mulhockaway Creek (FIBI053) – 8/1/02

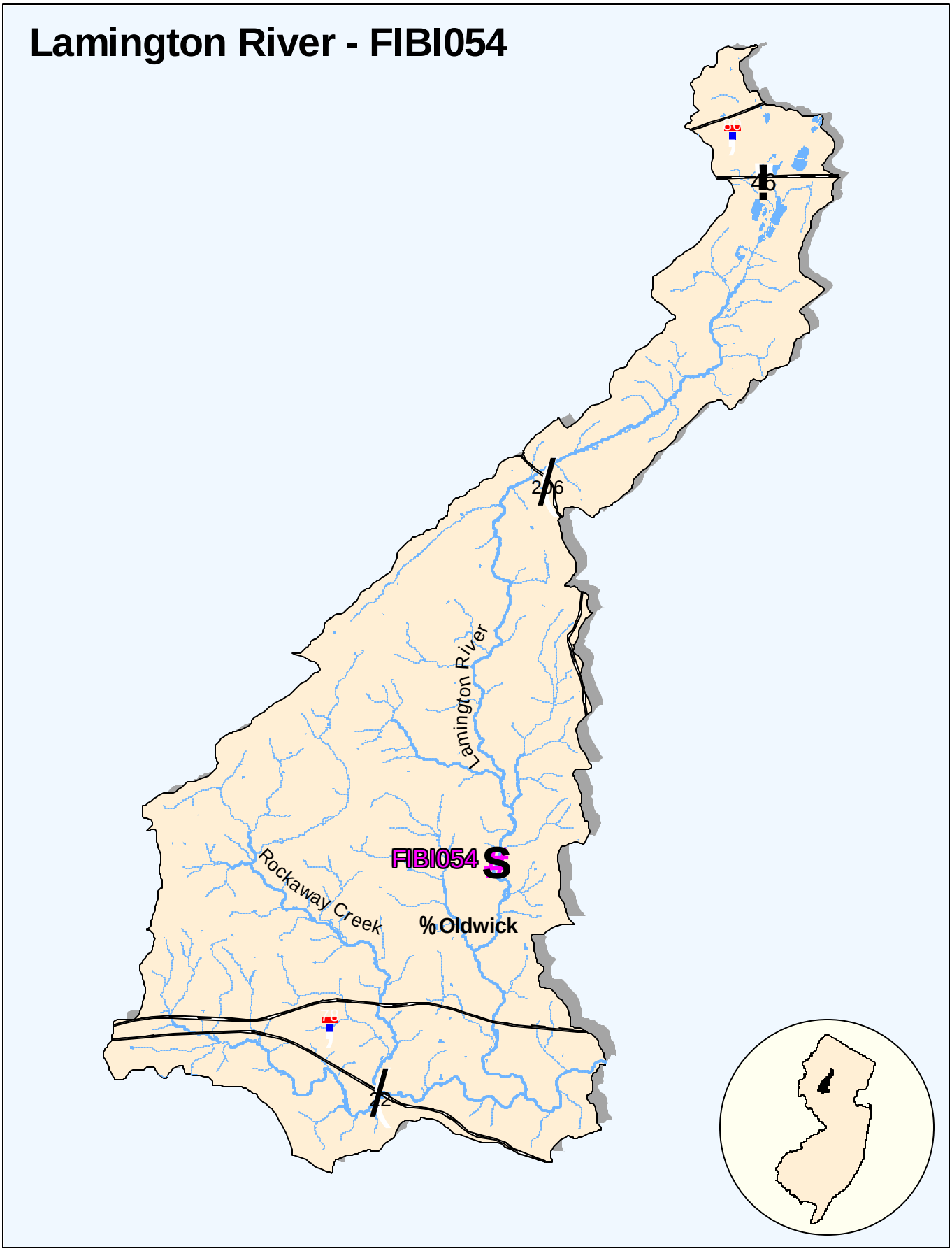
	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 15	20 19 18 17 16	**15** 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 14	20 **19** 18 17 16	15 **14** 13 **12** 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 11	20 19 18 17 16	15 14 13 12 **11**	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 18	20 19 **18** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 15	20 19 18 17 16	**15** 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___**5**___ (LB)	Left 10 9	8 7 6	**5** 4 3	2 1 0
SCORE ___**5**___ (RB)	Right 10 9	8 7 6	**5** 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___**5**___ (LB)	Left 10 9	8 7 6	**5** 4 3	2 1 0
SCORE ___**5**___ (RB)	Right 10 9	8 7 6	**5** 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___**8**___ (LB)	Left 10 9	**8** 7 6	5 4 3	2 1 0
SCORE ___**8**___ (RB)	Right 10 9	**8** 7 6	5 4 3	2 1 0

HABITAT SCORE

141

HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	**110 – 159**
MARGINAL	60 – 109
POOR	< 60

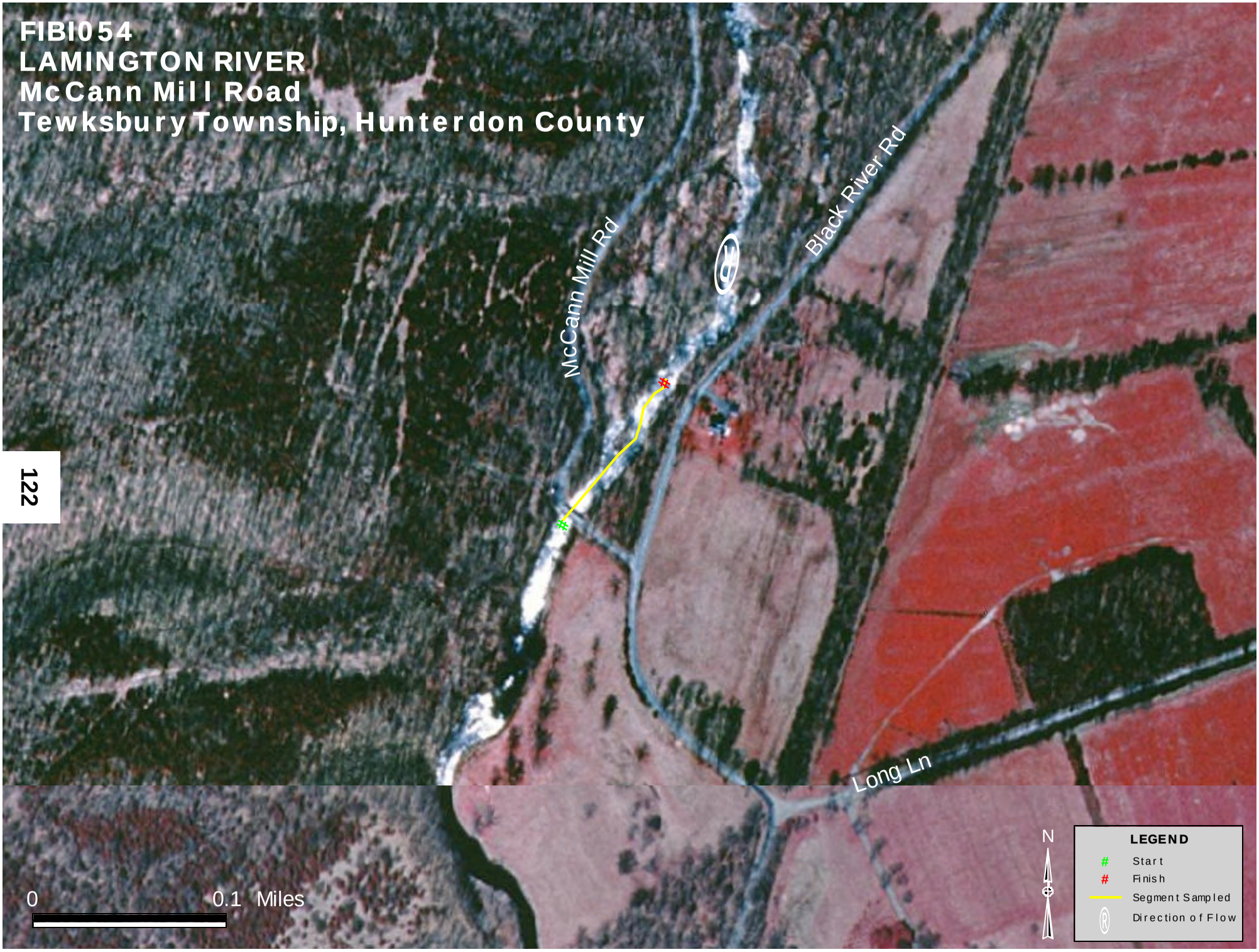
Lamington River - FIBI054



S FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Above)

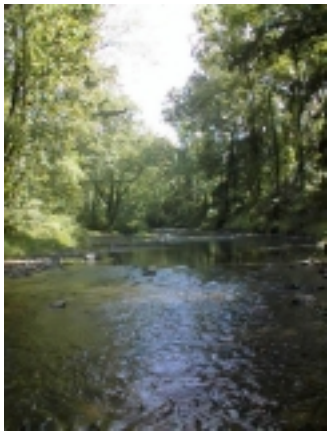
N

0 1 2 3 4 Miles


FIBI054
LAMINGTON RIVER
McCann Mill Road
Tewksbury Township, Hunterdon County
McCann Mill Rd
Black River Rd
Long Ln
122
0
0.1 Miles
N
LEGEND
Start
Finish
Segment Sampled
Direction of Flow

SUMMARY OF RESULTS

FIBI054 - Lamington River



1. Stream Name:	Lamington River
2. Sampling Date:	08-02-2002
3. Sampling Location:	McCann Mill Rd. (40 41 24.03; -74 43 21.86)
4. Municipality:	Tewksbury Twp.
5. County:	Hunterdon
6. Watershed Management Area:	8
7. Contributing Drainage Area:	32.5 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	40 - Good
10. Habitat Score and Rating:	175 - Optimal
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data	
Proximity of FIBI station to AMNET station:	2.23 mi downstream AN0360
AMNET Rating:	Round 1 – NONE; Round 2 – NONE
13. Stream Chemistries	
Dissolved Oxygen:	8.09 mg/L
Temperature:	23.6 ^{0}C
pH:	7.67
Conductivity:	284 µmhos/cm
14. Number of Fish with Anomalies:	1
15. Length of Stream Segment Sampled:	150 Meters
16. Water Clarity:	Clear
17. Average Open Forest Canopy:	47.58%
18. Discharge:	20.54 ft.^{3}/sec
19. Substrate:	20% Gravel and Sand, 75% Cobble, 5% Boulder, 0% Clay, 0% Silt
20. Habitat:	40% Riffle, 40% Run, 30% Pool
21. Snags:	Yes
22. Periphyton:	Moderate
23. Submerged Aquatic Vegetation:	Yes
24. Other observations:	
25. Number of Fish Species Identified:	17
26. Total Number of Fish Collected:	845

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality.

FIBI054 08-02-2002

Lamington River

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Blacknose Dace	*Rhinichthys atratulus*	195	
Common Shiner	*Luxilus cornutus*	148	
White Sucker*	*Catostomus commersoni*	117	
Longnose Dace	*Rhinichthys cataractae*	112	
Tesselated Darter	*Etheostoma olmstedi*	95	
Satinfin Shiner	*Cyprinella analostana*	46	
Fallfish	*Semotilus corporalis*	37	
Spottail Shiner	*Notropis hudsonius*	24	
American Eel*	*Anguilla rostrata*	22	
Brown Trout*	*Salmo trutta*	14	3.0-11.4
Redbreast Sunfish*	*Lepomis auritus*	13	2.2-5.3
American Brook Lamprey	*Lampetra appendix*	8	
Swallowtail Shiner	*Notropis procne*	7	
Redfin Pickerel*	*Esox americanus americanus*	3	4.3-4.7
Creek Chub	*Semotilus atromaculatus*	2	
Bluespotted Sunfish	*Enneacanthus gloriosus*	1	
Pumpkinseed*	*Lepomis gibbosus*	1	3.0

* Regulated as a fishable species under current New Jersey Fish and Wildlife codes

Species Identified at Lamington River (FIBI054)

(Not to Scale)

John Scarola

Tesselated Darter

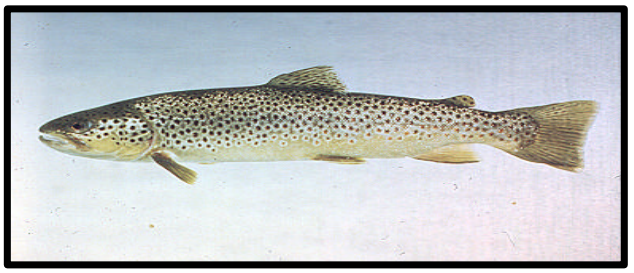
Jenkins & Burkhead

Satinfin Shiner

John Scarola

Pumpkinseed

John Scarola



Brown Trout

John Scarola

White Sucker

John Scarola

Blacknose Dace

Species Identified at Lamington River (FIBI054)

(Not to Scale)

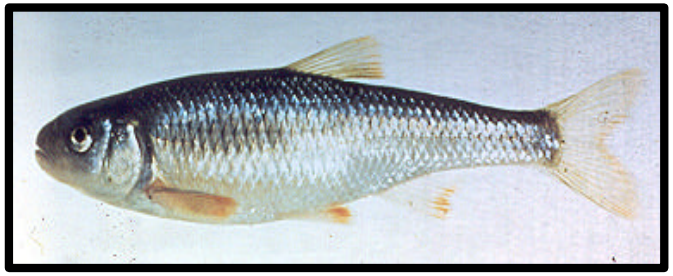
John Scarola

Redbreast Sunfish

Schute

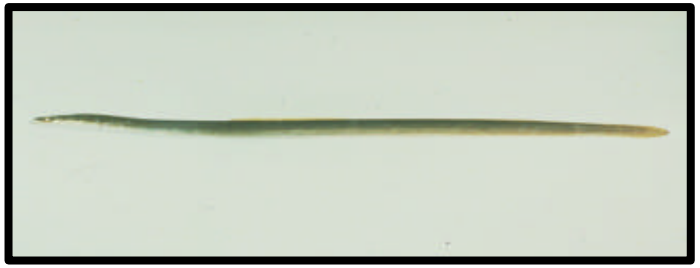
Longnose Dace

John Scarola



Common Shiner

John Scarola

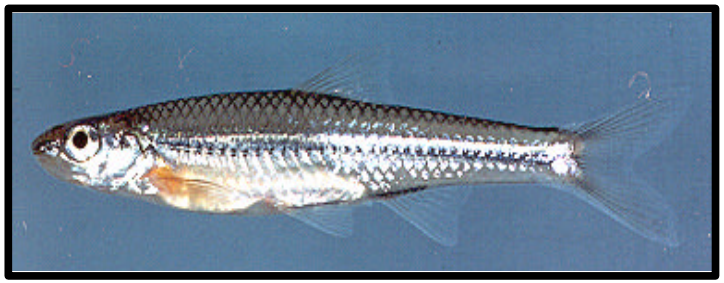


American Eel

Konrad Schmidt

Creek Chub

Jenkins & Burkhead



Swallowtail Shiner

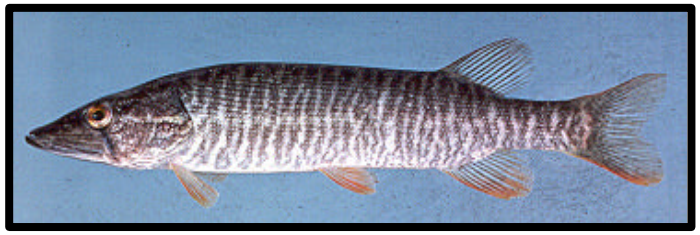
Species Identified at Lamington River (FIBI054)

(Not to Scale)

Konrad Schmidt

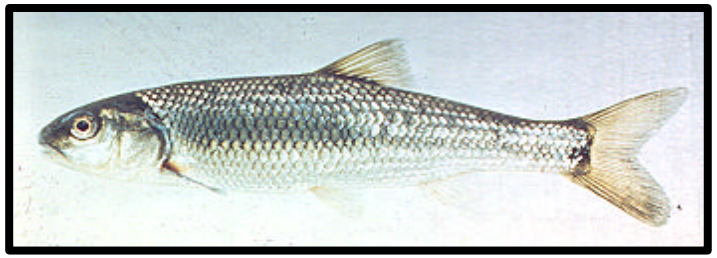
Spottail Shiner

Jenkins & Burkhead



Redfin Pickerel

John Scarola



Fallfish

Konrad Schmidt

American Brook Lamprey

Jenkins & Burkhead

Bluespotted Sunfish

FIBI054 - Lamington River @ McCann Hill Road Excellent **Good** Fair Poor

Date Sampled - 8/02/2002

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI)	5
# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)	3
# of Intolerant Species (IS)	3
Proportion of Individuals as White Suckers	3
Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish)	5
Proportion of Individuals as Insectivorous **Cyprinids** (I and BI)	5
Proportion of Individuals as Trout *whichever gives better score	
OR	
Proportion of Individuals as Pisciviores (Excluding American Eel)*	1
Number of Individuals in Sample	5
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	**40**

Stream Rating

45-50	**Excellent**
37-44	**Good**
29-36	**Fair**
10-28	**Poor**

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS Lamington River (FIBI054) – 8/2/02

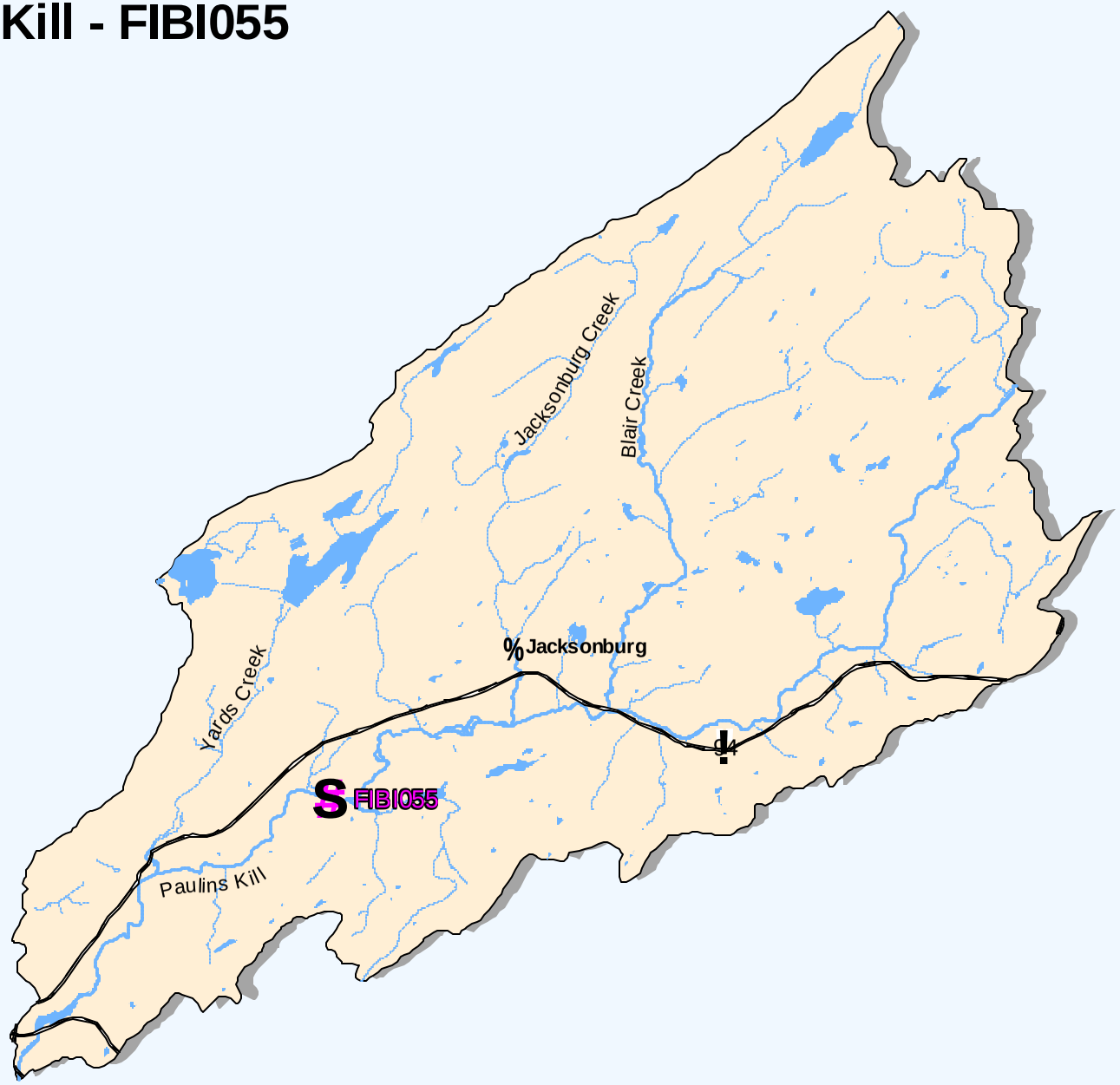
	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 19	20 **19** 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 15	20 19 18 17 16	**15** 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 17	20 19 18 **17** 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 19	20 **19** 18 17 16	15 14 13 **12** 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 16	20 19 18 17 **16**	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 18	20 19 **18** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 18	20 19 **18** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___**8**___ (LB)	Left 10 9	**8** 7 6	5 4 3	2 1 0
SCORE ___**8**___ (RB)	Right 10 9	**8** 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___**10**___ (LB)	Left **10** 9	8 7 6	5 4 3	2 1 0
SCORE ___**10**___ (RB)	Right **10** 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___**8**___ (LB)	Left 10 9	**8** 7 6	5 4 3	2 1 0
SCORE ___**9**___ (RB)	Right 10 **9**	8 7 6	5 4 3	2 1 0

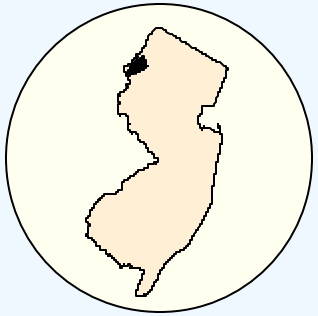
HABITAT SCORE

175

HABITAT SCORES	VALUE
OPTIMAL	**160 – 200**
SUB-OPTIMAL	110 – 159
MARGINAL	60 – 109
POOR	< 60

Paulins Kill - FIBI055

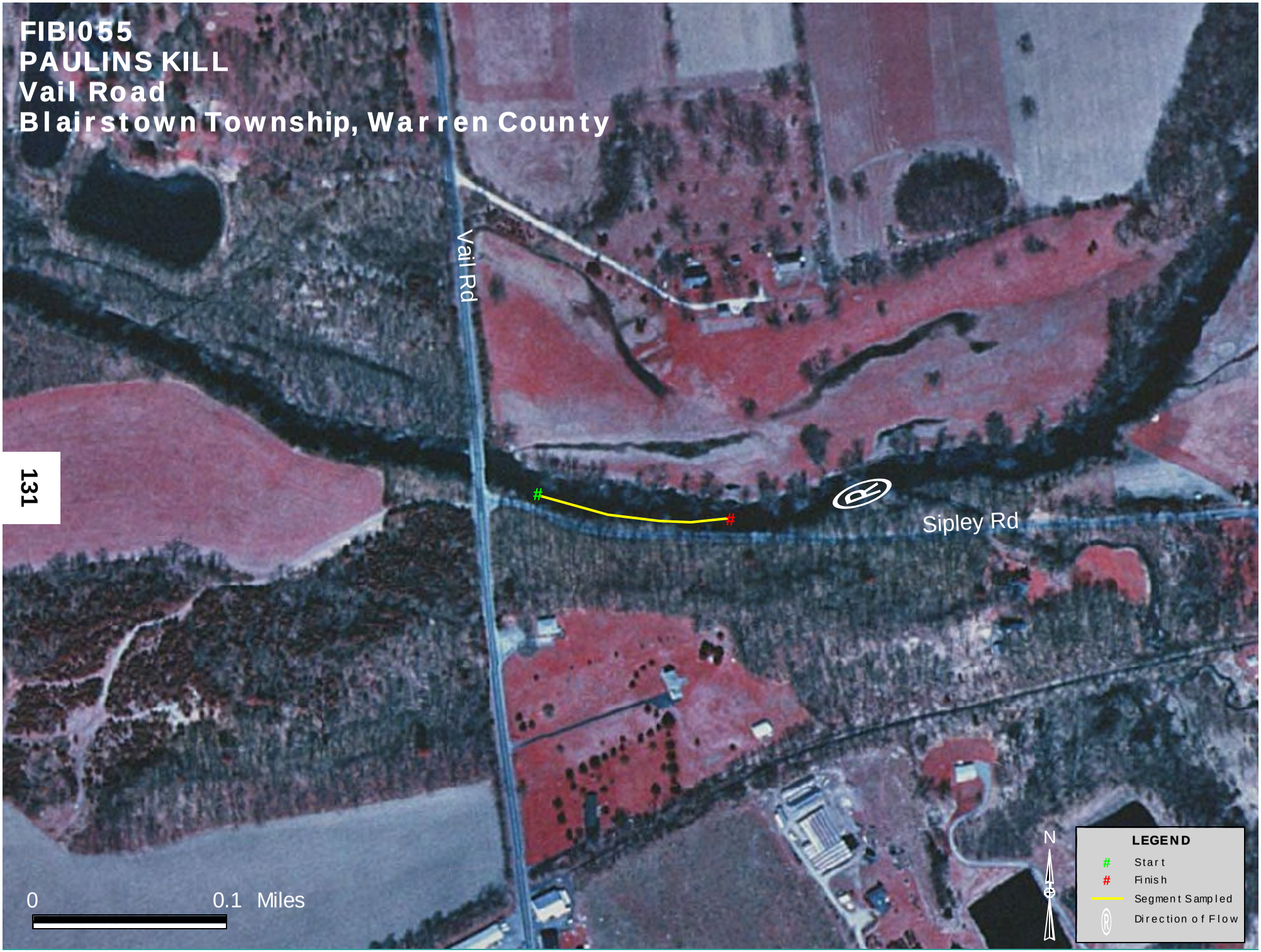




S FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Above)

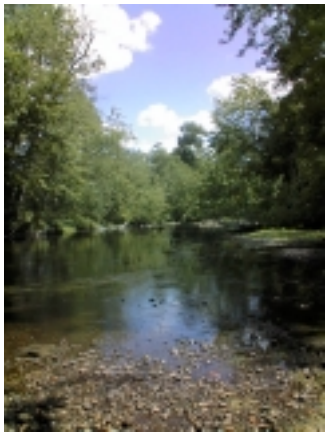
N

0 1 2 3 Miles


FIBI055
PAULINS KILL
Vail Road
Blairstown Township, Warren County
Vail Rd
Sipley Rd
131
#
#
0
0.1 Miles
N
LEGEND
Start
Finish
Segment Sampled
Direction of Flow

SUMMARY OF RESULTS

FIBI055 - Paulins Kill



1. Stream Name:	Paulins Kill
2. Sampling Date:	08-21-2002
3. Sampling Location:	Vail Rd (40 58 00.35; -75 01 13.63)
4. Municipality:	Blairstown Twp.
5. County:	Warren
6. Watershed Management Area:	1
7. Contributing Drainage Area:	160.8 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	42 - Good
10. Habitat Score and Rating:	156 - Suboptimal
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data	
Proximity of FIBI station to AMNET station:	AN0032A
AMNET Rating:	Round 1 – NA; Round 2 – NONE
13. Stream Chemistries	
Dissolved Oxygen:	9.38 mg/L
Temperature:	22.4 ^{0}C
pH:	8.77
Conductivity:	533 µmhos/cm
14. Number of Fish with Anomalies:	0
15. Length of Stream Segment Sampled:	150 Meters
16. Water Clarity:	Clear
17. Average Open Forest Canopy:	67.6%
18. Discharge:	73.8 ft.^{3}/sec
19. Substrate:	35% Gravel and Sand, 45% Cobble, 15% Boulder, 5% Clay, 0% Silt
20. Habitat:	15% Riffle, 70% Run, 15% Pool
21. Snags;	Yes
22. Periphyton:	Slight
23. Submerged Aquatic Vegetation:	Yes
24. Other observations:	
25. Number of Fish Species Identified:	21
26. Total Number of Fish Collected:	199

[1] AMNET is the acronym for the DEP's ambient benthic macroinvertebrate monitoring network – a series of 820 monitoring stations located throughout the state's waterways that collects data on the health of bottom dwelling stream fauna which in turn is used to assess general water quality

FIBI055 08-21-2002

Paulins Kill

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
White Sucker*	*Catostomus commersoni*	32	
Bluegill*	*Lepomis macrochirus*	29	1.6-5.1
American Eel*	*Anguilla rostrata*	18	
Tesselated Darter	*Etheostoma olmstedi*	18	
Redbreast Sunfish*	*Lepomis auritus*	17	1.4-6.9
Rock Bass*	*Ambloplites rupestris*	16	3.1-8.1
Common Shiner	*Luxilus cornutus*	13	
Smallmouth Bass*	*Micropterus dolomieu*	10	2.2-7.5
Cutlips Minnow	*Exoglossum maxillingua*	9	
Margined Madtom	*Noturus insignis*	8	
Largemouth Bass*	*Micropterus salmoides*	5	2.4-7.3
Satinfin Shiner	*Cyprinella analostana*	5	
Longnose Dace	*Rhinichthys cataractae*	4	
Shield Darter	*Percina peltata*	4	
Fallfish	*Semotilus corporalis*	3	
Banded Killifish	*Fundulus diaphanus*	2	
Blacknose Dace	*Rhinichthys atratulus*	2	
Brown Trout*	*Salmo trutta*	1	8.3
Chain Pickerel*	*Esox niger*	1	5.3
Golden Shiner	*Notemigonus crysoleucas*	1	
Yellow Bullhead*	*Ameiurus natalis*	1	1.6

* Regulated as a fishable species under current New Jersey Fish and Wildlife codes

Species Identified at Paulins Kill (FIBI055)

(Not to Scale)

John Scarola

Tesselated Darter

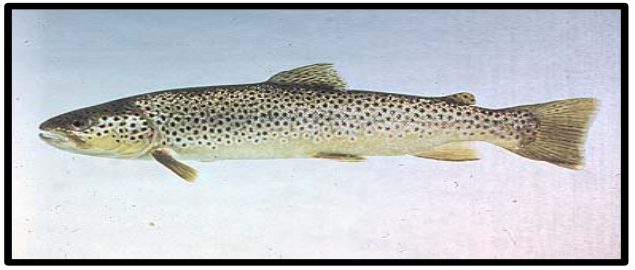
Jenkins & Burkhead

Satinfin Shiner

AFS

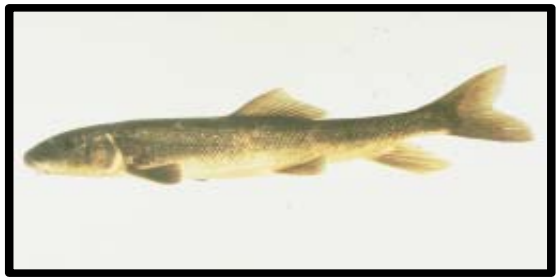
Largemouth Bass

John Scarola



Brown Trout

John Scarola



White Sucker

John Scarola

Blacknose Dace

Species Identified at Paulins Kill (FIBI055)

(Not to Scale)

John Scarola

Redbreast Sunfish

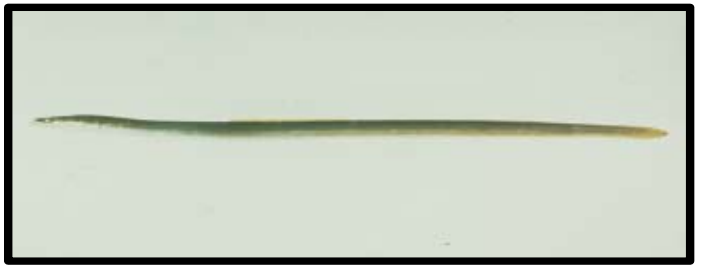
Schute

Longnose Dace

John Scarola

Common Shiner

John Scarola



American Eel

John Scarola

Bluegill

John Scarola

Smallmouth Bass

Species Identified at Paulins Kill (FIBI055)

(Not to Scale)

John Scarola

Fallfish

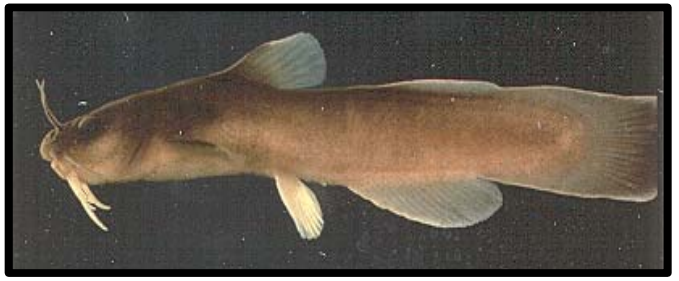
John Scarola

Yellow Bullhead

Jenkins & Burkhead

Cutlips Minnow

Schute



Margined madtom

John Scarola

Rockbass

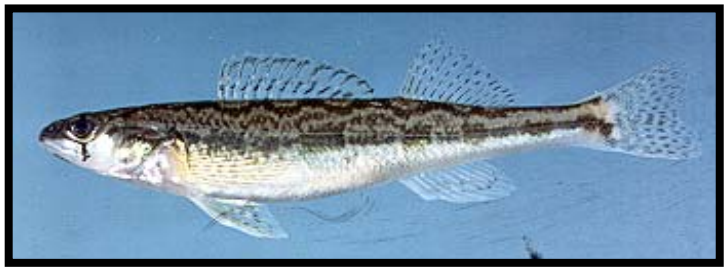
John Scarola

Golden Shiner

Species Identified at Paulins Kill (FIBI055)

(Not to Scale)

Jenkins & Burkhead



Shield Darter

John Scarola

Chain Pickerel

John Scarola

Banded Killifish

FIBI055 - Paulins Kill @ Vail Road (off Route 94) Excellent **Good** Fair Poor

Date Sampled - 8/21/2002

	Score
# of Fish Species	5
# of Benthic Insectivorous Species (BI)	5
# of Trout and Centrarchid Species (trout, bass, sunfish, crappie)	5
# of Intolerant Species (IS)	5
Proportion of Individuals as White Suckers	3
Proportion of Individuals as Generalists (carp, creek chub, banded killifish, goldfish, fathead minnow, green sunfish)	5
Proportion of Individuals as Insectivorous **Cyprinids** (I and BI)	1
Proportion of Individuals as Trout *whichever gives better score	
OR	
Proportion of Individuals as Pisciviores (Excluding American Eel)*	5
Number of Individuals in Sample	3
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	**42**

Stream Rating

45-50	**Excellent**
37-44	**Good**
29-36	**Fair**
10-28	**Poor**

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS — Paulins Kill (FIBI055) – 8/21/02

	Condition Category			
	Optimal	**Suboptimal**	**Marginal**	**Poor**
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 18	20 19 **18** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 18	20 19 **18** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regimes	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).
SCORE 18	20 19 **18** 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% (50-80% for low-gradient) of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 17	20 19 18 **17** 16	15 14 13 **12** 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 13	20 19 18 17 16	15 14 **13** 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.
SCORE 19	20 **19** 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 14	20 19 18 17 16	15 **14** 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE ___**7**___ (LB)	Left 10 9	8 **7** 6	5 4 3	2 1 0
SCORE ___**6**___ (RB)	Right 10 9	8 7 **6**	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, under story shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE ___**9**___ (LB)	Left 10 **9**	8 7 6	5 4 3	2 1 0
SCORE ___**9**___ (RB)	Right 10 **9**	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE ___**4**___ (LB)	Left 10 9	8 7 6	5 **4** 3	2 1 0
SCORE ___**4**___ (RB)	Right 10 9	8 7 6	5 **4** 3	2 1 0

HABITAT SCORE

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HABITAT SCORES	VALUE
OPTIMAL	160 – 200
SUB-OPTIMAL	**110 – 159**
MARGINAL	60 – 109
POOR	< 60