



### 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 <sup>1</sup> 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 °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. <sup>3</sup> /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

<sup>1</sup> 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

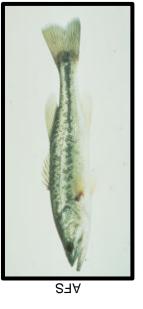
Ramapo River

### 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

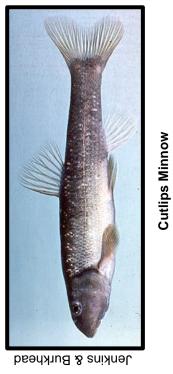
\* Regulated as a fishable species under current New Jersey Fish and Wildlife codes

## Species Identified at Ramapo River (FIBI052) (Not to Scale)



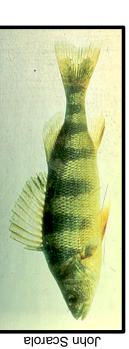
Largemouth Bass





White Sucker





Yellow Perch



**Creek Chub** 

Bluegill

Species Identified at Ramapo River (FIBI052) (Not to Scale)



John Scarola

Pumpkinseed



John Scarola





**Redbreast Sunfish** 



**Green Sunfish** 



John Scarola

**Tesselated Darter** 

**Common Shiner** 

Rock Bass

## Species Identified at Ramapo River (FIBI052) (Not to Scale)



Yellow Bullhead



Spottail Shiner



Smallmouth Bass

FIBI052 - Ramapo Date Sampled - 8/2	River @ End of Catharine 22/2002	Excellent	Good	Fair	Poor
# of Fish Species				Score 5	
# of Benthic Insectiv	vorous Species (BI)			3	
# of Trout and Cent	rarchid Species (trout, bass,	sunfish, crappie)		5	
# of Intolerant Spec	ies (IS)			3	
Proportion of Individ	duals as White Suckers			5	
Proportion of Indivio	duals as Generalists (carp, cre v. areen sunfish)	ek chub, banded killifish,		5	
	duals as Insectivorous <b>Cypri</b>	nids (I and BI)		1	
Proportion of Individ	duals as Trout *v	whichever gives bette	r score		
	duals as Pisciviores (Excludi	ng American Eel)*		3	
Number of Individua	als in Sample			3	
Proportion of Individ	duals w/disease/anomalies (	excluding blackspot)		5	
Total				38	
<u>Stream</u>	Rating				
45-50	Excellent				
37-44	Good				

29-36

10-28

Fair

Poor

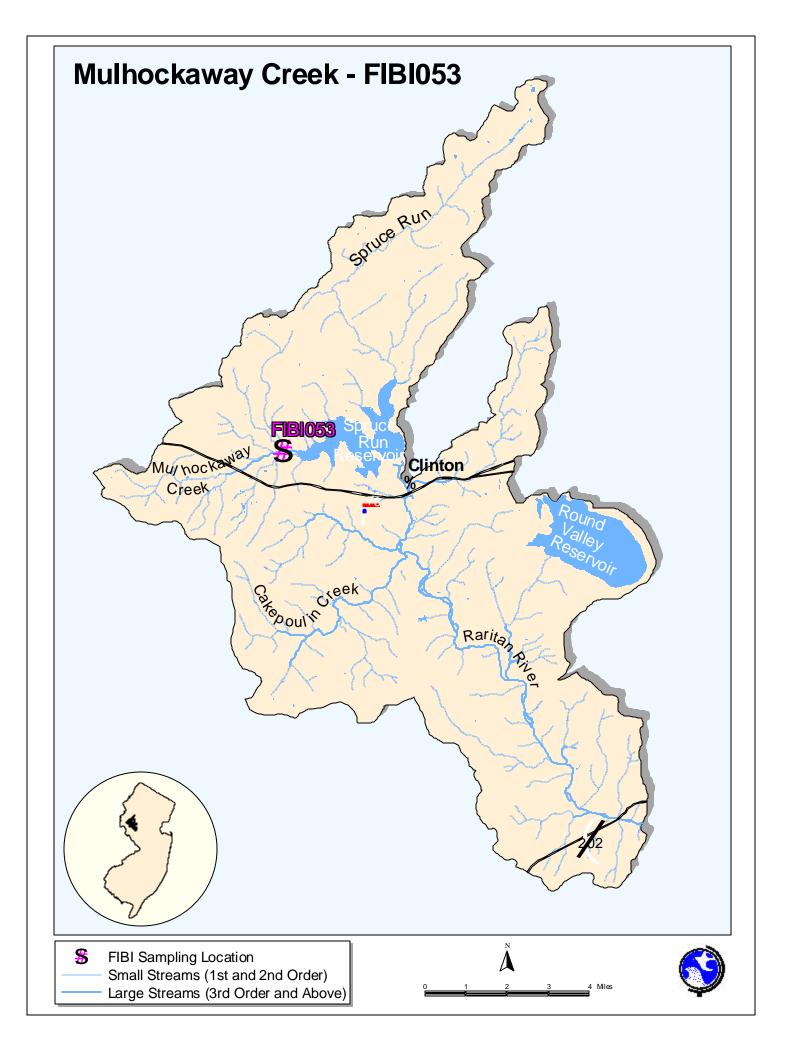
### HABITAT ASSESSMENT FOR HIGH GRADIENT STREAMS

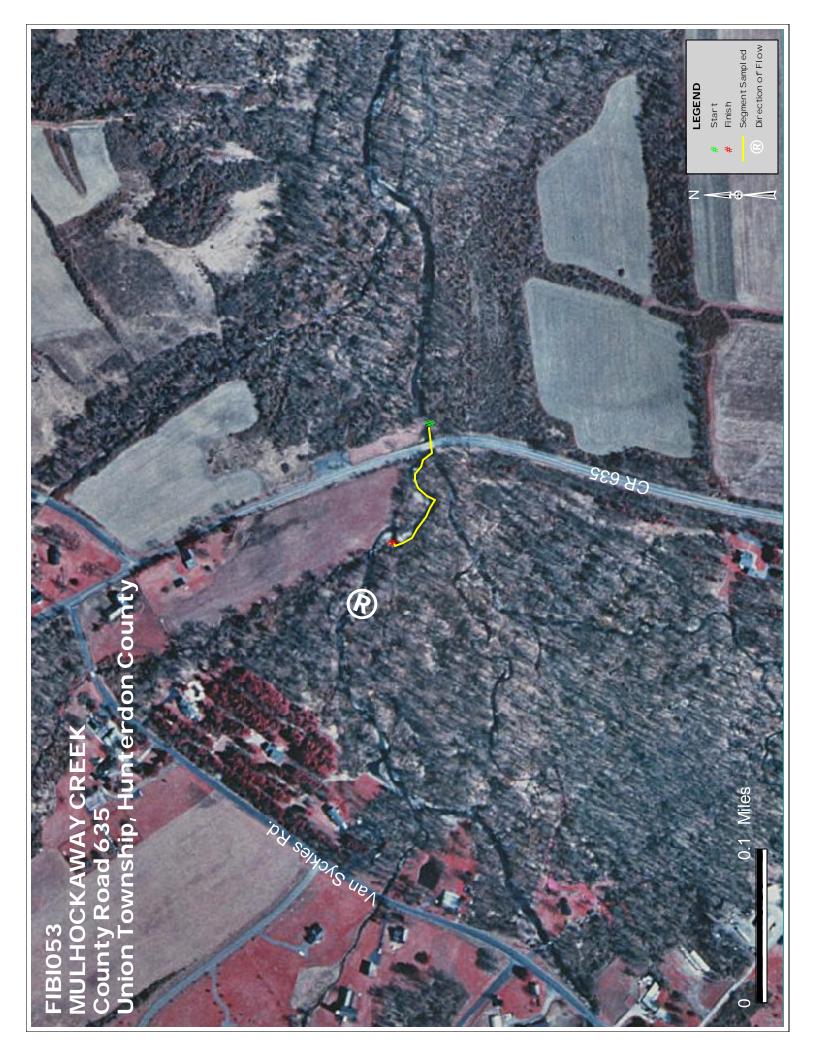
Ramapo River (FIBI052) - 8/22/02

		Condition	Category	
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate /Available Cover	Greater than 70% of substrate favorable for epifaunal colorization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colorization 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; la 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
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 <b>11</b>	10 9 8 7 6	5 4 3 2 1
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 / dept regime (usually slow-deep).
SCORE 16	20 19 18 17 <b>16</b>	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
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; mo than 50% (80% for low-gradier of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 11	20 <b>19</b> 18 17 16	15 14 13 <b>12 11</b>	10 9 8 7 6	5 4 3 2 1
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 poo
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
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 disrupte In stream habitat greatly altered or removed entirely.
SCORE 18	20 19 <b>18</b> 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
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 shall 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 <b>14</b> 13 12 11	10 9 8 7 6	5 4 3 2 1
<ol> <li>Bank Stability (score each bank) Note: determine left or right side by facing downstream.</li> </ol>	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 sco
SCORE3 (LB) SCORE3 (RB)	Left 10 9 Right 10 9	8 7 6 8 7 6	5 4 <b>3</b> 5 4 <b>3</b>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
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	8 / 0 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.	5 4 5 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.	2 1 0 Less than 50% of the streambar surfaces covered by vegetation disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE8 (LB)	naturally. Left 10 9	8 7 6	5 4 3	2 1 0
SCORE9 (RB) 10. Riparian Vegetative Zone Width (score each bank riparian zone)	Right         10         9           Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.         9	8 7 6 Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	5 4 3 Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	2 1 0 Width of riparian zone <6 mete little or no riparian vegetation o to human activities.
zone) SCORE9 (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





### 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 <sup>1</sup> 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 °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. <sup>3</sup> /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

<sup>1</sup> 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

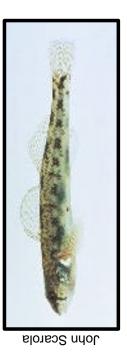
Mulhockaway Creek

### 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)



**Tesselated Darter** 



Pumpkinseed



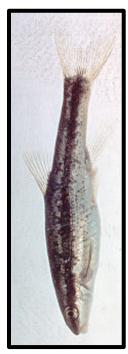
White Sucker



Largemouth Bass



**Brown Trout** 



John Scarola



**Blacknose Dace** 

# Species Identified at Mulhockaway Creek (FIBI053) (Not to Scale)



Schute

John Scarola

Bluegill

Longnose Dace



John Scarola

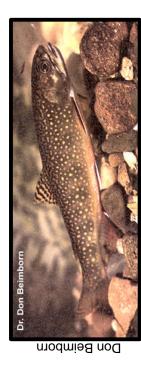
Smallmouth Bass



John Scarola



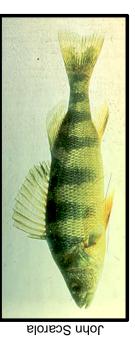




American Eel

Rainbow Trout

# Species Identified at Mulhockaway Creek (FIBI053) (Not to Scale)



Yellow Perch



Slimy Sculpin

John Scarola



**Brown Bullhead** 

FIBI053 - Mulhockav Date Sampled - 8/01	vay Creek @ Route 635 /2002		Excellent	Good	Fair	Poor
# of Fish Species					Score 5	
# of Benthic Insectivo	rous Species (BI)				5	
# of Trout and Centra	rchid Species (trout, bass	s, sunfish, c	rappie)		5	
# of Intolerant Specie	s (IS)				5	
Proportion of Individu	als as White Suckers				3	
-	als as Generalists (carp, cr	reek chub, ban	ded killifish,		5	
goldfish, fathead minnow, s Proportion of Individu	<sup>green sunfish)</sup> als as Insectivorous <b>Cypr</b>	<b>rinids</b> (I and	d BI)		3	
Proportion of Individu	als as Trout *	*whichever (	gives better	score		
OR Proportion of Individu	als as Pisciviores (Exclud	ding America	an Eel)*		5	
Number of Individuals	s in Sample				5	
Proportion of Individu	als w/disease/anomalies	(excluding b	olackspot)		5	
Total					46	
<u>Stream R</u>	ating					
45-50	Excellent					
37-44	Good					

29-36

10-28

Fair

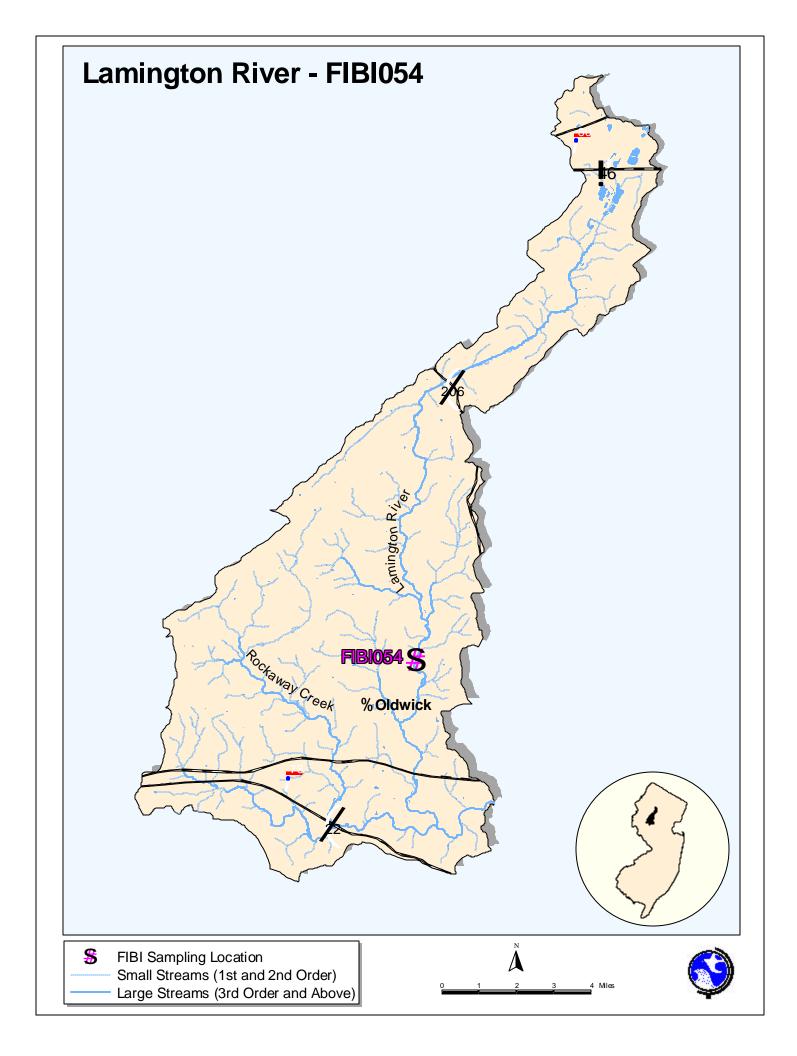
Poor

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

	Ontinual		Category Marcinal	<b>D</b>
	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>pot</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; lac 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	<b>15</b> 14 13 12 11	10 9 8 7 6	5 4 3 2 1
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; mor 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 <b>14</b> 13 <b>12</b> 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status SCORE 11	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.2019181716	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. 10 9 8 7 6	Very little water in channel and mostly present as standing pools
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
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 shallor 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	<b>15</b> 14 13 12 11	10 9 8 7 6	5 4 3 2 1
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 scan
SCORE 5 (LB)	Left 10 9 Bight 10 0	8 7 6	<b>5 4 3 5 4 3</b>	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
SCORE	Right         10         9           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.	8         7         6           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.	5     4     3       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.	2 1 0 Less than 50% of the streamban 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 <u>5</u> (LB)	Left 10 9	8 7 6	5 4 3	2 1 0
SCORE <u>5</u> (RB) 10. Riparian Vegetative Zone Width (score each bank riparian zone)	Right         10         9           Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.         9	8 7 6 Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	5 4 3 Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	2 1 0 Width of riparian zone <6 meter little or no riparian vegetation de to human activities.
SCORE8 (LB)	Left 10 9	8 7 6	5 4 3	2 1 0
SCORE8 (RB)	Right 10 9	8 7 6	5 4 3	2 1 0



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





### 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 <sup>1</sup> 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 °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. <sup>3</sup> /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

<sup>1</sup> 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

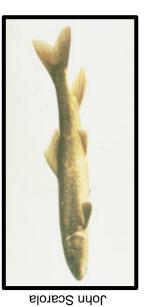
# Species Identified at Lamington River (FIBI054) (Not to Scale)



**Tesselated Darter** 



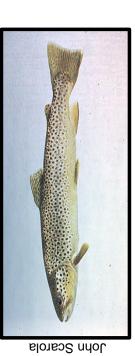
Pumpkinseed



White Sucker



Satinfin Shiner



**Brown Trout** 



John Scarola

Blacknose Dace

# Species Identified at Lamington River (FIBI054) (Not to Scale)



**Redbreast Sunfish** 

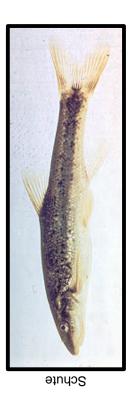


**Common Shiner** 

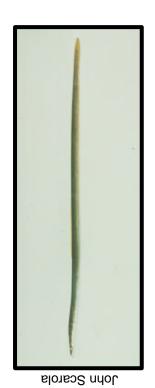


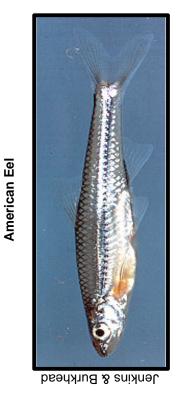
Konrad Schmidt





Longnose Dace





**Swallowtail Shiner** 

# Species Identified at Lamington River (FIBI054) (Not to Scale)



**Spottail Shiner** 



Jenkins & Burkhead



**Redfin Pickerel** 



American Brook Lamprey



**Bluespotted Sunfish** 

Fallfish

FIBI054 - Lamir Date Sampled -	-		ann Hill Roa	ad	Excellent	Good	Fair	Poor
							Score	
# of Fish Specie	S						5	
# of Benthic Inse	ectivo	rous Species (E	BI)				5	
# of Trout and C	entra	rchid Species (t	rout, bass,	sunfish,	crappie)		3	
# of Intolerant S	pecie	s (IS)					3	
Proportion of Inc	lividu	als as White Su	ckers				3	
Proportion of Inc			Sts (carp, cree	ek chub, ba	anded killifish,		5	
goldfish, fathead mir	nnow, g	green sunfish)						
Proportion of Inc	lividu	als as Insectivo	rous <b>Cyprir</b>	<b>1ids</b> (I ar	nd BI)		5	
Proportion of Inc	lividu	als as Trout	*W	hichevei	r gives bette	r score		
Proportion of Inc	lividu	als as Pisciviore	es (Excludin	ng Ameri	can Eel)*		1	
Number of Indiv	iduals	s in Sample					5	
Proportion of Inc	lividu	als w/disease/a	nomalies (e	excluding	blackspot)		5	
Total							40	
etro.	am P	ating						
<u>- 3116.</u> 45-5		Excellent						
37-4	4	Good						

Fair

Poor

29-36 10-28

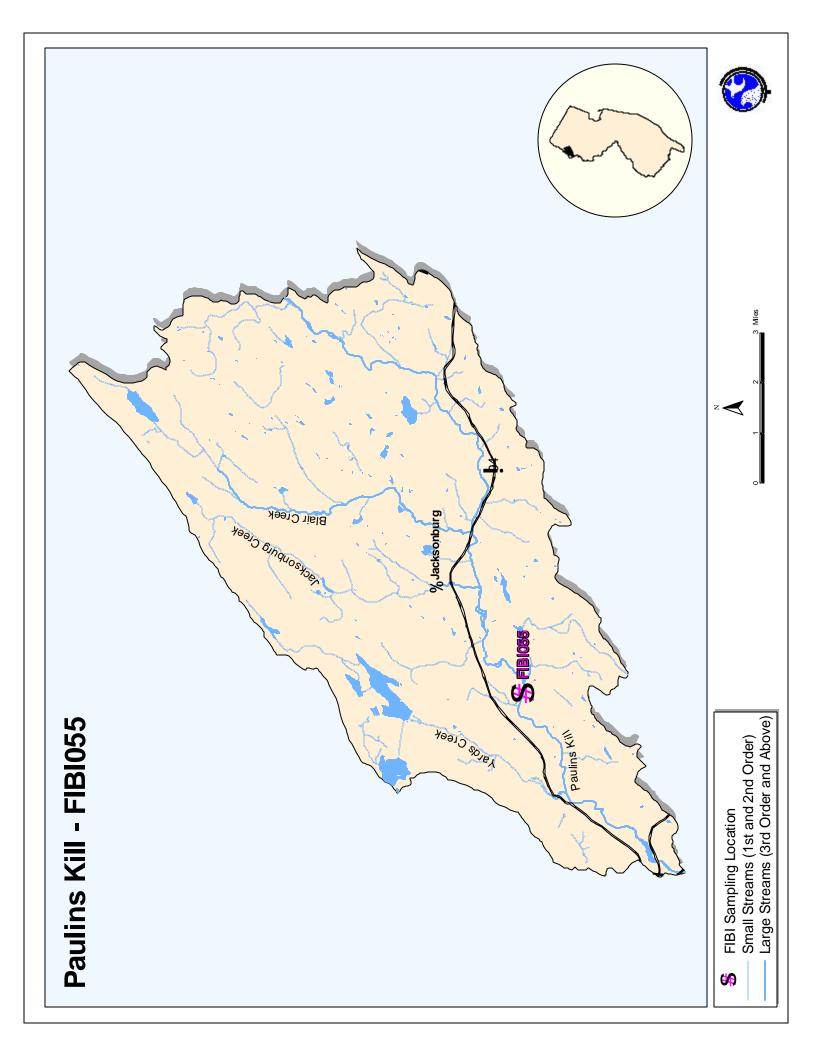
### HABITAT ASSESSMENT FOR HIGH GRADIENT STREAMS

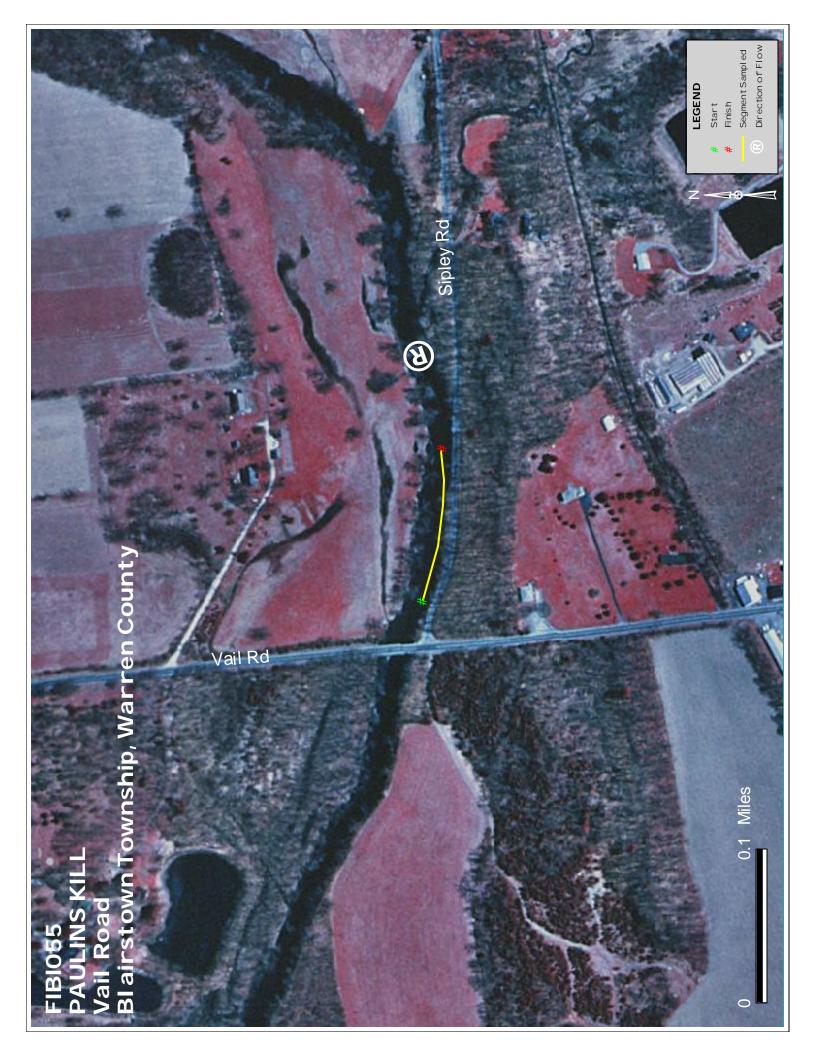
Lamington River (FIBI054) – 8/2/02

Optimal         Suboptimal         Marginal         Performance           1. Pathemal Solutine Available Cover         Grease the Wire of advance orderation of a ways to advect the propulsion.         Solutine available of a start to advect to advect to advect to advect to advect to adve		Condition Category				
I. Parameter Available CoverIn works for optimum indication and has constrained indication and has constrained ind		Optimal	Suboptimal	Marginal	Poor	
2. Raiheddeness         Group, cobbis, and builder greiches are 50.7% surraunded by fine sollineur. Layout of cobbis group de drevaty of units by fine sollineur. Layout of cobbis group de drevaty of units by fine sollineur. Layout of the sollineur.         Group, cobbis, surraunded by fine sollineur.           3. Vehedry/Depth Regime fine depth six lables/ (dow is cd3 ms, depth six lables/ busineur final relation of post- thy surface and post- surraunded by fine sollineur final depth six lables/ busine final relation of post- surraunded by fine sollineur final depth six lables/ busineur final relation of post- soll and use final depth six lables/ by sufficient depaktion.         Group, cobbis, surraunded by fine sollineur final depth six lables/ busineur final six lables/ final depth six lables/ by sufficient depaktion.         Group, cobbis, surraunded by fine sollineur final depth six lables/ final depth six lables/ fin		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	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	habitat availability less than desirable; substrate frequently	of habitat is obvious; substrate	
2. Eabeddedines         particle are 0.27% urrounded by the sediment. Layring of the society problem of the sediment.         particle are 0.27% urrounded by the sediment.	SCORE 19		15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
3. Velocity/Depth Regime     All 4 solupity/Depth Regime     All 4 solupity/Depth regimes     Outp 2 of the 4 lubits regimes     Doit 2 of the 4 lubits regimes     Doit 2 of the 4 lubits regimes       3. Velocity/Depth Regime     All 4 solupity/Depth Regimes     Doit 2 of the 4 lubits regimes     Doit 2 of the 4 lubits regimes       SCORE 17     20     19     18     17     16     15     14     12     11     10     9     8     7     6     4     2     1     0       4. Sediment Deposition     Little to no onligeneur of the solution regimes     Sone row incension but informer;     Sone row incension but informer;     Sone row incension but informer;     Sone row incension     So	2. Embeddedness	particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche	particles are 25-50% surrounded	particles are 50-75% surrounded	particles are more than 75%	
J. Velocity/Opptik Regime	SCORE 15	20 19 18 17 16	<b>15</b> 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
Sectiment Deposition       Lattle or no enlargement of shank or point basin and less thin stands is not prevent. Stands or point basin and less than a formation, mostly from prevent. S. SW, for low-gradient) of the science of the bottom affected; slight deposition of pools       Heavy deposits of fine material, mecased for development, mostly from prevent. S. SW, for low-gradient) of the bottom affected; selfent deposition of pools       Heavy deposits of fine material, fine material, slight deposits of fine material, deposition of pools       Heavy deposits of fine material, fine material, slight deposits of fine material, deposition of pools       Heavy deposits of fine material, fine material, slight deposits of fine material, deposition in pools.         SCORE 19       20       19       18       17       16       15       14       13       12       11       10       9       7       6       5       4       3       2       0         SCORE 16       20       19       18       17       16       15       14       13       12       11       0       9       7       6       5       4       3       2       0         SCORE 16       20       19       18       17       16       15       14       13       12       11       0       9       7       6       5       4       3       2       0         SCORE 18       20       19 </td <td></td> <td>present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is &lt;0.3 m/s, deep is &gt;0.5 m)</td> <td>(if fast-shallow is missing, score lower than if missing other regimes).</td> <td>present (if fast-shallow or slow- shallow are missing, score low).</td> <td>regime (usually slow-deep).</td>		present (slow-deep, slow-shallow, fast-deep, fast-shallow). (slow is <0.3 m/s, deep is >0.5 m)	(if fast-shallow is missing, score lower than if missing other regimes).	present (if fast-shallow or slow- shallow are missing, score low).	regime (usually slow-deep).	
4. Sodiment Deposition       Shands or point is and less that is remained, possible in the selfment is and or fine selfment is and or	SCORE 17					
S. Channel Flow Status backs, and minimal ansund of channel; or 23% of channel backs, and minimal ansund of channel; or 23% of channel channel; or 23% of channel sectors.     Water fills 25:75% of the available channel, and/or iffle subint is exposed.     Very litle water in channel and most present as stanling pook.       SCORE 16     0     19     18     17     16     15     14     13     12     11     10     9     8     7     6     5     4     3     2     1     0       6. Channel Alteration     Channel/alton or drefogin absent or minimal, stream with normal pattern.     Channel/alton or drefogin game     Banks Statubil gamin and 40 x 80% of stream reach channel/zation may be extensive thankiers or shallow present, bat recent channel/zation present, bat recent recent channel/zation present, bat recent recent recent channel/zation present, bat recent recent recent recent recent recent present, bat recent recent recent recent recent recent present, bat recent recent recent recent recent recent recent present recent recent recent recent recent recent recent recent recent recent present recent recen	4. Sediment Deposition	islands or point bars and less than 5% (<20% for low-gradient streams) of the bottom affected by sediment deposition.	formation, mostly from gravel, sand or fine sediment; 5-30% (20-50% for low-gradient) of the bottom affected; slight deposition in pools.	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.	increased bar development; more than 50% (80% for low-gradient) of the bottom changing frequently; pools almost absent due to substantial sediment	
S. CIME 16       banks, and minimal amount of model substrate is exposed.       and manel; or -25% of channel; or -25% of channel; or -25% of channel; or -25% of channel; or mostly exposed.       available channel; and/or rifiles       modily present as standing pook.         S. CIRE 16       20       19       18       17       16       15       14       13       12       10       9       8       7       6       5       4       3       2       1       0         6. Channel Alteration       Channelization or dredging about or minimal, stream with is mally in areas of bridge about on the stream rise in the discrete reset in the stream rise in the stream rise in the reset reset.       Channelization preset.       Chan	SCORE 19	20 <b>19</b> 18 17 16				
6. Channel Alteration       Channelization or dredging absent or minimal; stream with ormal pattern.       Some channelization present, usually in areas of bridge thannelization, i.e., dredging, greater tun pars 20 yr) may be present. but recent channelization       Channelization may be extensive embankments of shoring       Banks shord with gabon or cement; over 60% of the stream and 40 to 80% of stream reach. channelized and disrupted.         SCORE 18       20       19       18       17       16       15       14       3       12       11       0       9       6       5       4       3       2       0         Occurrence of riffles relatively frequent; ratio of distance between riffles divided by with of the stream sints       Occurrence of riffles relatively to with of the stream is between 7 to 15.       Occurrence of riffles divided by the with of the stream is between 15 to 25.       Generally all flat water or shallow riffles, poor habitat, distance between riffles divided by the with of the stream is between 15 to 25.       Banks shored with gabon or center proved mirest; variation of stream reach. riffles divided by the with of the stream is a ratio of boulders or other large, natural obusk in rote other large, natural or bouk failed potential for future problems5% of bank affected.       Moderately unstable; nate as of origin tigh expension proteinial during floods.       Moderately unstable; nate as of solows bank sologhing; 60- toorsin: tigh expension proteinial during floods.         9. Bank Vegetative reach bank); socoke = ab. bank);       Riffle to point affected in partian zone overed by native segation have do grow mowini minia		banks, and minimal amount of channel substrate is exposed.	channel; or <25% of channel substrate is exposed.	available channel, and/or riffle substrates are mostly exposed.	mostly present as standing pools.	
6. Channel Alteration       absent or minimal: stream with normal pattern.       usually in areas of bridge thannelization, i.e., dredging.       embankments evidences of past channelization, i.e., dredging.       embankments and 010 x00% of stream reach channelization       centent; over 80% of the stream and 00 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization       centent; over 80% of the stream and 010 x00% of stream reach channelization         7. Frequency of Riffles (or bends)       Occurrence of riffles relatively the width of the stream is a train of 20 the stream biblat; distance between riffles divided by the width of the stream is between 10 to 25.       centent; over 80% of the stream biblat; distance between riffles divided by the width of the stream is between 10 to 25.       centent; over 80% of the stream biblat; distance between riffles divided by the width of the stream is between 10 to 25.       centent; over 80% of the stream biblat; distance between riffles divided	SCORE 16					
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 bits stream where riffles divided by with of the stream site riffles are continuous, placement of boulders or other large, natural obstruction is important.         Occurrence of riffles relatively frequent; ratio of 7); variety of habitat is key. In streams where riffles divided by the width of the stream is between 716 to 25.         S         4         3         2         1         0           SCORE 18         20         19         18         17         16         15         14         13         12         11         10         9         8         7         6         5         4         3         2         1         0           SCORE 18         20         19         18         17         16         15         14         13         12         11         10         9         8         7         6         5         4         3         2         1         0           SCORE 28         (RB)         Reight	6. Channel Alteration	absent or minimal; stream with	usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization	embankments or shoring structures present on both banks; and 40 to 80% of stream reach	cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered	
7. Frequency of Riffles (or between riffles divided by the width of the stream is between riftles divert of the stream is bet	SCORE 18	20 19 <b>18</b> 17 16		10 9 8 7 6	5 4 3 2 1 0	
SCORE 18201918171615141312111098765432108. 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; intup to polems. <5% of bank affected.Moderately stable; infrequent, small areas of erosion.Moderately unstable; 30-60% of bank in reach has areas of erosion, light erosion potential during floods.Unstable; many eroded areas; "aw" areas frequent along straight sections and bends; obvious bank sloughing; 60- 100% of bank has erosional scars.SCORE8(LB)Left098765432109. 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 materally least allowed to grow maturally.70-90% of the streambank surfaces covered by native vegetation but not affecting full plant stubble height50-70% of the streambank surfaces covered by nearce bas in average stubble heightLess than 50% of the streambank surfaces covered by nearce disruption of vident; almost all plants allowed to grow maturally.109876543210SCORE109876543210SCORE109876<		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	distance between riffles divided by the width of the stream is	contours provide some habitat; distance between riffles divided by the width of the stream is	riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of	
8. Bank Stability (score each bank)       or bank failure absent or minimal; little potential for future probems. <5% of bank affected.	SCORE 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
SCORE8_ (LB)Left 10 9876543210SCORE8_ (RB)Right 10 98765432109. 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 of the opential loan attrally.70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption obvious: patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.50-70% of the streambank surfaces covered by vegetation; to robvious: patches of bare soil or closely cropped vegetation is not well-represented; disruption obvious: patches of the streambank surfaces covered by regetation; come-half of the potential plant stubble height remaining.50-70% of the streambank surfaces covered by vegetation; to robvious: patches of bare soil or closely cropped vegetation is ore lose in average stubble height remaining.Less than 50% of the streambank surfaces covered by native vegetation; bare networkd to scentimeters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.10987654321010. Riparian zone) score ach bank riparian zone)Left109876543210SCORE10Left109<	each bank) Note: determine left or right side by facing	or bank failure absent or minimal; little potential for future	small areas of erosion mostly healed over. 5-30% of bank in	bank in reach has areas of erosion; high erosion potential	"raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-	
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 of not evident; almost all plants allowed to grow naturally.70-90% of the streambank surfaces covered by native vegetation, to no class of plants is not well-represented; disruption or to vident; almost all plants allowed to grow naturally.50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely corpped vegetation common; less than one-half of the potential plant stubble height remaining.Less than 50% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely corpped vegetation has been removed to 5 centimeters or less in average stubble height remaining.SCORE10(LB)10987654321010. Riparian Vegetative 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 to no riparian vegetation due to human activities.SCORE8(LB)Left109876543210						
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	9. Bank Vegetative Protection (score each	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	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	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	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	
Io. Riparian Vegetative Zone Width (score each bank riparian zone)       Width of riparian zone >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 6-12 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 6-12 meters; human activities have impacted zone a great deal.       Width of riparian zone 6-12 meters; human activities.       Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.       Width of riparian zone 6-12 meters; human activities.       Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.       Width of riparian zone 6-12 meters; human activities.       Width of riparian zone 6-12 meters; human activiti	、 /	Left 10 9				
SCORE <u>8</u> (LB) Left 10 9 8 7 6 5 4 3 2 1 0	10. Riparian Vegetative Zone Width (score each bank riparian	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not	Width of riparian zone 12-18 meters; human activities have	Width of riparian zone 6-12 meters; human activities have	Width of riparian zone <6 meters: little or no riparian vegetation due	
$5CURE_7_(RD)$ [Right 10 9 8 / 0 5 4 5 2 1 0	SCORE8 (LB)	Left 10 9				
	5CUKE9 (KB)	Rigilt 10 9	8 / 6	5 4 3	2 1 0	



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





### SUMMARY OF RESULTS

### FIBI055 - Paulins Kill



1. 0	ין א
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 <sup>1</sup> 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 °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. <sup>3</sup> /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

<sup>1</sup> 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

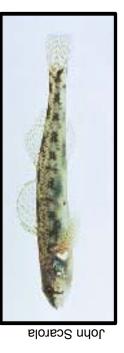
FIBI055 08-21-2002

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

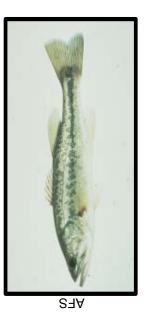
\* Regulated as a fishable species under current New Jersey Fish and Wildlife codes



Jenkins & Burkhead

**Tesselated Darter** 

Satinfin Shiner



John Scarola

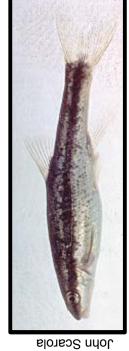
Largemouth Bass



John Scarola

White Sucker

### **Blacknose Dace**



**Brown Trout** 



**Redbreast Sunfish** 

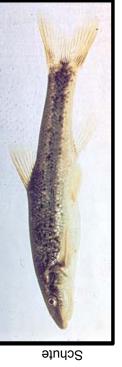


**Common Shiner** 

American Eel



Bluegill



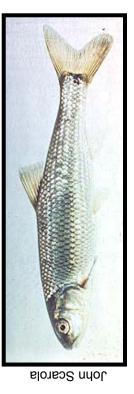
Longnose Dace





Smallmouth Bass

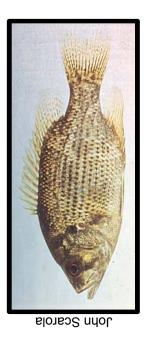
John Scarola



Fallfish



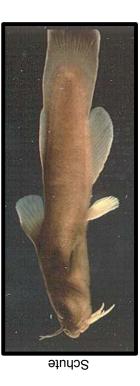
**Cutlips Minnow** 



Rockbass



Yellow Bullhead



Margined madtom



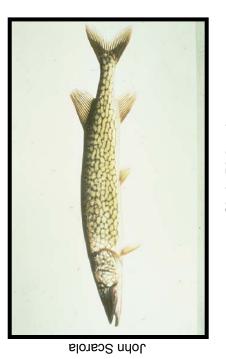
**Golden Shiner** 



Shield Darter



Banded Killifish



**Chain Pickerel** 

FIBI055 - Paulins I Date Sampled - 8/2	Kill @ Vail Road (off Route 21/2002	e 94)	Excellent	Good	Fair	Poor
					Score	
# of Fish Species					5	
# of Benthic Insectiv	vorous Species (BI)				5	
# of Trout and Cent	rarchid Species (trout, bass	s, sunfish, c	rappie)		5	
# of Intolerant Spec	ies (IS)				5	
Proportion of Individ	duals as White Suckers				3	
	duals as Generalists (carp, cre	eek chub, ban	ded killifish,		5	
goldfish, fathead minnov	v, green sunfish)					
Proportion of Individ	duals as Insectivorous <b>Cypr</b>	r <b>inids</b> (I and	d BI)		1	
Proportion of Individ	duals as Trout *	whichever o	gives better	score		
	duals as Pisciviores (Exclud	ling America	an Eel)*		5	
Number of Individua	als in Sample				3	
Proportion of Individ	duals w/disease/anomalies (	(excluding b	blackspot)		5	
Total					42	
<u>Stream</u>	Rating					
45-50	Excellent					
37-44	Good					

Fair

Poor

29-36 10-28

### 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; lac of habitat is obvious; substrate unstable or lacking.
SCORE 18	20 19 <b>18</b> 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 <b>18</b> 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 <b>18</b> 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 <b>12</b> 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 <b>13</b> 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 <b>19</b> 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 shallo 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 <b>14</b> 13 12 11	10 9 8 7 6	5 4 3 2 1
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 scar
SCORE7 (LB) SCORE6 (RB)	Left         10         9           Right         10         9	8 7 6 8 7 6	5 4 3 5 4 3	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
9. Bank Vegetative Protection (score each bank)	Right 10 9 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.	8 / 6 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	
SCORE9 (LB)	Left 10 9	8 7 6	5 4 3	2 1 0
SCORE9(RB)	Right 10 9	8 7 6	5 4 3	2 1 0
<b>10. Riparian Vegetative</b> <b>Zone Width</b> (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 meter little or no riparian vegetation du to human activities.
SCORE4(LB)	Left 10 9	8 7 6	5 4 3	2 1 0
SCORE4 (RB)	Right 10 9	8 7 6	5 4 3	2 1 0



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