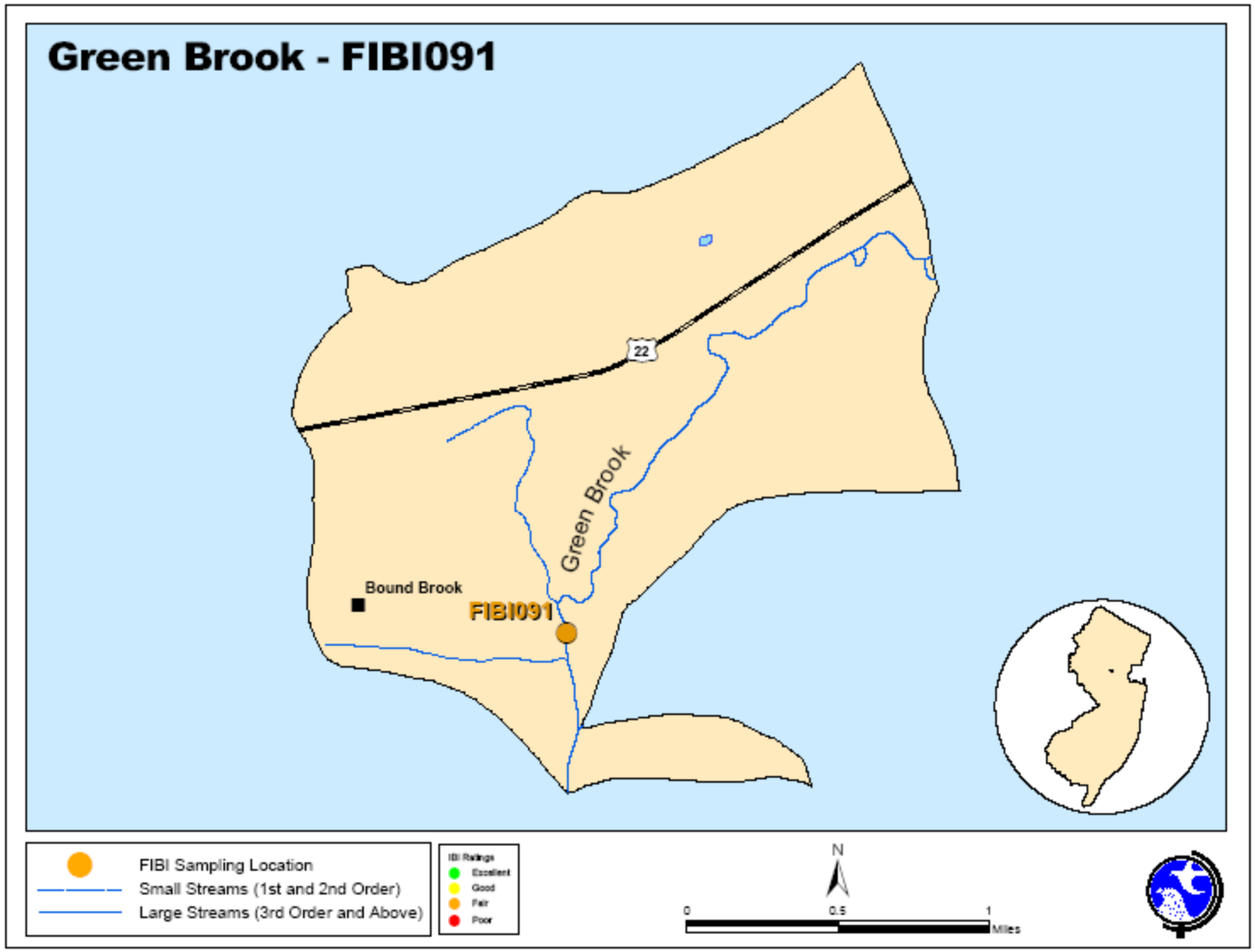

Green Brook - FIBI091
22
Green Brook
Bound Brook
FIBI091
FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Above)
IBI Ratings
Excellent
Good
Fair
Poor
N
0
0.5
1
Miles

SUMMARY OF RESULTS

FIBI091 – Green Brook

1. Stream Name:	Green Brook
2. Sampling Date:	08-26-2004
3. Sampling Location:	Union Avenue
4. Municipality	South Bound Brook
5. County:	Middlesex/Somerset
6. Watershed Management Area:	9
7. Contributing Drainage Area:	51.1 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	36 - Fair
10. Habitat Score and Rating:	152- Sub-Optimal
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data:	
Proximity of FIBI station to AMNET station:	0.34 mi. upstream AN0426
AMNET Rating:	Round 1 - Moderate Round 2 – Moderate Round 3 - Severe
13. Stream Chemistries:	
Dissolved Oxygen	7.92 mg/L
Temperature.	19.3 ^{0}C
pH	6.46
Conductivity	480 μmhos/cm
14. Number of Fish With Anomalies:	0
15. Length of Stream Segment Sampled	150 Meters
16. Water Clarity:	Turbid
17. Average Forest Open Canopy:	44.7%
18. Discharge:	104.9 ft.^{3}/sec
19. Substrate:	40% Gravel and Sand, 45% Mud, 15% Silt
20. Habitat:	25% Riffle, 15% Run, 60% Pool
21. Snags	Yes
22. Periphyton	Heavy
23. Submerged Aquatic Vegetation	Yes
24. Other observations:	
25. Number of Fish Species Identified:	16
26. Total Number of Fish Collected:	604

[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.

FIBI091
GREEN BROOK
Union Avenue
Ridgewood Township, Bergen County
Union Avenue
0
0.1
Miles
N
Legend
Start
Finish
Direction of Flow
Segment Sampled

FIBI091- @ Green Brook Excellent Good **Fair** Poor

Date Sampled - 8/26/2004

	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)	1
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 Piscivores (Excluding American Eel)*	1
Number of Individuals in Sample	5
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	36

Stream Rating

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

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS — Green Brook (FIBI091) – 8/26/04

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate /Available Cover SCORE 19	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 not new fall and not transient). 20 19 18 17 16	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). 15 14 13 12 11	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Embeddedness SCORE 11	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. 20 19 18 17 16	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. 15 14 13 12 11	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. 10 9 8 7 6	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. 5 4 3 2 1 0
3. Velocity/Depth Regimes SCORE 19	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). 20 19 18 17 16	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). 15 14 13 12 11	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). 10 9 8 7 6	Dominated by 1 velocity / depth regime (usually slow-deep). 5 4 3 2 1 0
4. Sediment Deposition SCORE 9	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. 20 19 18 17 16	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. 15 14 13 12 11	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. 10 9 8 7 6	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. 5 4 3 2 1 0
5. Channel Flow Status SCORE 16	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	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. 5 4 3 2 1 0
6. Channel Alteration SCORE 19	Channelization or dredging absent or minimal; stream with normal pattern. 20 19 18 17 16	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. 15 14 13 12 11	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. 10 9 8 7 6	Banks shored with gabion or concrete; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely. 5 4 3 2 1 0
7. Frequency of Riffles (or bends) SCORE 17	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. 20 19 18 17 16	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. 15 14 13 12 11	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. 10 9 8 7 6	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. 5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE 5 (LB)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. Left 10 9	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. 8 7 6	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. 5 4 3	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. 2 1 0
SCORE 2 (RB)	Right 10 9	8 7 6	5 4 3	2 1 0
9. Bank Vegetative Protection (score each bank) SCORE 9 (LB)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left 10 9	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. 8 7 6	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. 5 4 3	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. 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) SCORE 8 (LB)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. Left 10 9	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. 8 7 6	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. 5 4 3	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. 2 1 0
SCORE 9 (RB)	Right 10 9	8 7 6	5 4 3	2 1 0

HABITAT SCORE

152

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

FIBI091 08-26-2004

Green Brook

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
Spottail Shiner	*Notropis hudsonius*	223	
American Eel	*Anguilla rostrata*	155	
Tessellated Darter	*Etheostoma olmstedi*	82	
White Sucker	*Catostomus commersoni*	62	
Longnose Dace	*Rhinichthys cataractae*	21	
Redbreast Sunfish	*Lepomis auritus*	20	3.4 – 6.1
Fallfish	*Semotilus corporalis*	16	
Banded Killifish	*Fundulus diaphanus*	8	
Creek Chub	*Semotilus atromaculatus*	4	
Common Shiner	*Notropis cornutus*	3	
Satinfin Shiner	*Notropis analostanus*	3	
Golden Shiner	*Notemigonus crysoleucas*	2	
Green Sunfish	*Lepomis cyanellus*	2	5.1
Blacknose Dace	*Rhinichthys atratulus*	1	
Brown Bullhead	*Ameiurus nebulosus*	1	4.7
Yellow Bullhead	*Ameiurus natalis*	1	8.3

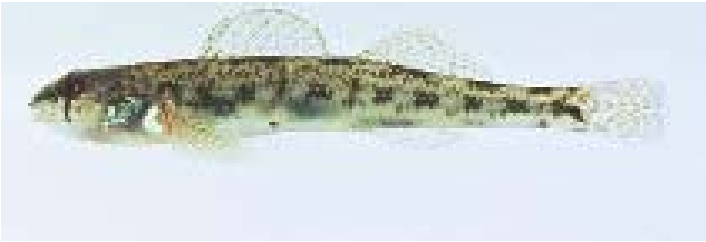
Species Identified at Green Brook (FIBI091)

(Not to Scale)

John Scarola

White Sucker

John Scarola

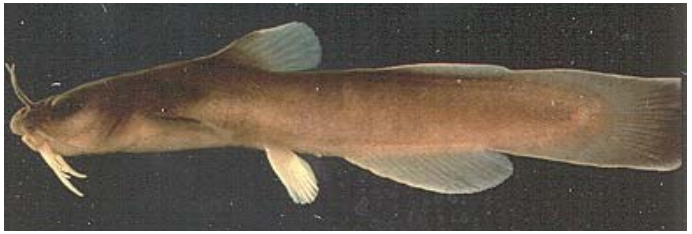


Tessellated Darter

John Scarola

Redbreast Sunfish

Shute



Margined Madtom

John Scarola

Bluegill

Jenkins, Burkhead

Cutlips Minnow

Species Identified at Green Brook (FIBI091)

(Not to Scale)

John Scarola

Yellow Bullhead

John Scarola

Yellow Perch

John Scarola

American Eel

John Scarola

Rockbass

Konrad Schmidt

Creek Chub

John Scarola

Banded Killifish

Species Identified at Green Brook (FIBI091)

(Not to Scale)

John Scarola

Blacknose Dace

John Scarola

Longnose Dace

John Scarola

Pumpkinseed

John Scarola

Smallmouth Bass

John Scarola

Chain Pickerel

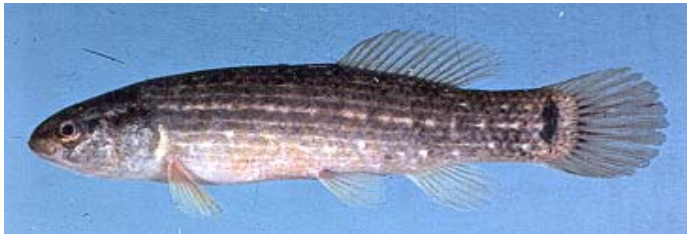
AFS

Largemouth Bass

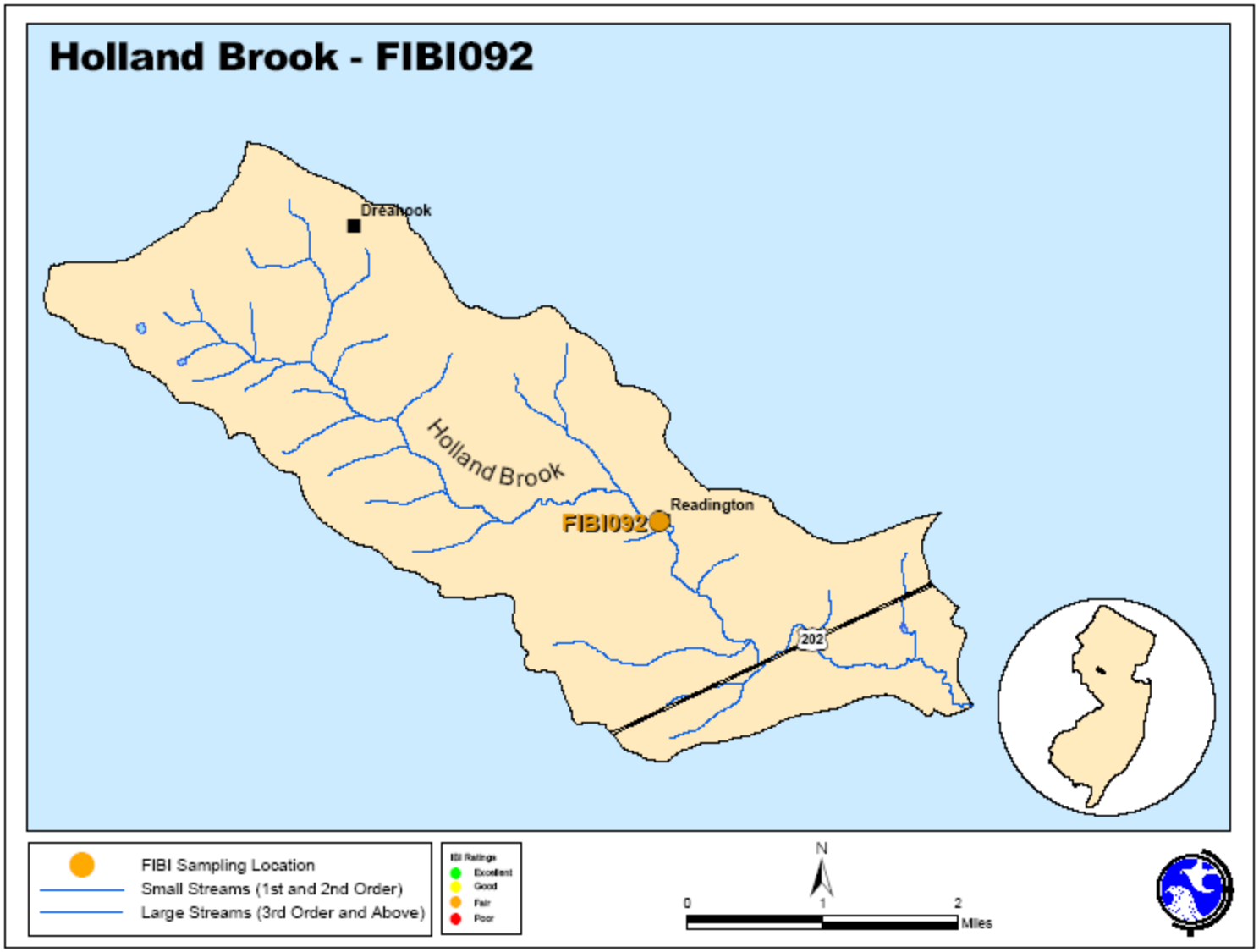
Species Identified at Green Brook (FIBI091)

(Not to Scale)

Jenkins, Burkhead



Eastern Mudminnow


Holland Brook - FIBI092
Dreahook
Holland Brook
Readington
FIBI092
202
FIBI Sampling Location
Small Streams (1st and 2nd Order)
Large Streams (3rd Order and Above)
IBI Ratings
Excellent
Good
Fair
Poor
N
0
1
2
Miles

SUMMARY OF RESULTS

FIBI092 – Holland Brook

1. Stream Name:	Holland Brook
2. Sampling Date:	07-14-2004
3. Sampling Location:	Hillcrest Road
4. Municipality	Readington
5. County:	Hunterdon
6. Watershed Management Area:	8
7. Contributing Drainage Area:	7.9 Square Miles
8. Electrofishing Gear:	2 Backpack
9. FIBI Score and Rating:	34 - Fair
10. Habitat Score and Rating:	126- Sub-Optimal
11. Fishable Species Present:	Yes
12. Relevant AMNET[1] Station Data:	
Proximity of FIBI station to AMNET station:	2.75 mi. downstream AN0342
AMNET Rating:	Round 1 - Non-impaired Round 2 – Non-impaired Round 3 – Non-impaired
13. Stream Chemistries:	
Dissolved Oxygen	8.4 mg/L
Temperature.	18.2 ^{0}C
pH	7.24
Conductivity	208 μmhos/cm
14. Number of Fish With Anomalies:	0
15. Length of Stream Segment Sampled	150 Meters
16. Water Clarity:	Slightly Turbid
17. Average Forest Open Canopy:	18.7%
18. Discharge:	31.1 ft.^{3}/sec
19. Substrate:	40% Gravel and Sand, 5% Cobble, 10% Boulder, 10% Mud, 35% Silt
20. Habitat:	3% Riffle, 95% Run, 2% Pool
21. Snags	Yes
22. Periphyton	Slight
23. Submerged Aquatic Vegetation	Yes
24. Other observations:	
25. Number of Fish Species Identified:	15
26. Total Number of Fish Collected:	196

[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.

FIBI092
HOLLAND BROOK
Hillcrest Road
Readington Township, Hunterdon County
Readington Road
Hillcrest Road
0
0.1
Miles
N
Legend
Start
Finish
Direction of Flow
Segment Sampled

FIBI092- @ Holland Brook Excellent Good **Fair** Poor

Date Sampled - 7/14/2004

	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	1
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 Piscivores (Excluding American Eel)*	3
Number of Individuals in Sample	3
Proportion of Individuals w/disease/anomalies (excluding blackspot)	5
Total	34

Stream Rating

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

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS Holland Brook (FIBI092) – 7/14/04

	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate /Available Cover SCORE 8	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 not new fall and not transient). 20 19 18 17 16	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 new fall, but not yet prepared for colonization (may rate at high end of scale). 15 14 13 12 11	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. 10 9 8 7 6	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. 5 4 3 2 1 0
2. Embeddedness SCORE 11	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. 20 19 18 17 16	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. 15 14 13 12 11	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. 10 9 8 7 6	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. 5 4 3 2 1 0
3. Velocity/Depth Regimes SCORE 12	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). 20 19 18 17 16	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). 15 14 13 12 11	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). 10 9 8 7 6	Dominated by 1 velocity / depth regime (usually slow-deep). 5 4 3 2 1 0
4. Sediment Deposition SCORE 13	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. 20 19 18 17 16	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. 15 14 13 12 11	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. 10 9 8 7 6	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. 5 4 3 2 1 0
5. Channel Flow Status SCORE 16	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. 20 19 18 17 16	Water fills >75% of the available channel; or <25% of channel substrate is exposed. 15 14 13 12 11	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. 5 4 3 2 1 0
6. Channel Alteration SCORE 17	Channelization or dredging absent or minimal; stream with normal pattern. 20 19 18 17 16	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. 15 14 13 12 11	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. 10 9 8 7 6	Banks shored with gabion or concrete; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely. 5 4 3 2 1 0
7. Frequency of Riffles (or bends) SCORE 8	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. 20 19 18 17 16	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. 15 14 13 12 11	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. 10 9 8 7 6	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25. 5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. SCORE 7 (LB) SCORE 5 (RB)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected. Left 10 9 Right 10 9	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. 8 7 6 8 7 6	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. 5 4 3 5 4 3	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. 2 1 0 2 1 0
9. Bank Vegetative Protection (score each bank) SCORE 6 (LB) SCORE 9 (RB)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. Left 10 9 Right 10 9	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. 8 7 6 8 7 6	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. 5 4 3 5 4 3	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. 2 1 0 2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE 6 (LB) SCORE 8 (RB)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. Left 10 9 Right 10 9	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. 8 7 6 8 7 6	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. 5 4 3 5 4 3	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. 2 1 0 2 1 0

HABITAT SCORE
126

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

FIBI092 07-14-2004

Holland Brook

LISTED IN ORDER OF ABUNDANCE FOUND

COMMON NAME	SCIENTIFIC NAME	# FOUND	SIZE RANGE (INCHES)
White Sucker	*Catostomus commersoni*	71	
Spottail Shiner	*Notropis hudsonius*	29	
Tessellated Darter	*Etheostoma olmstedi*	19	
Green Sunfish	*Lepomis cyanellus*	17	2.0 – 5.1
Redbreast Sunfish	*Lepomis auritus*	14	3.2 – 4.7
American Eel	*Anguilla rostrata*	12	
Rockbass	*Ambloplites rupestris*	12	3.5 – 6.5
Common Shiner	*Notropis cornutus*	6	
Largemouth Bass	*Micropterus salmoides*	5	1.6 – 1.8
Smallmouth Bass	*Micropterus dolomieu*	4	1.4 – 6.5
Chain Pickerel	*Esox niger*	2	3.7 – 4.1
Brook Trout	*Salvelinus fontinalis*	1	10.8
Golden Shiner	*Notemigonus crysoleucas*	1	
Yellow Bullhead	*Ameiurus natalis*	1	5.5
Redbreast x Green Sunfish Hybrid	*Lepomis auritus x cyanellus*	1	3.5

Species Identified at Holland Brook (FIBI092)

(Not to Scale)

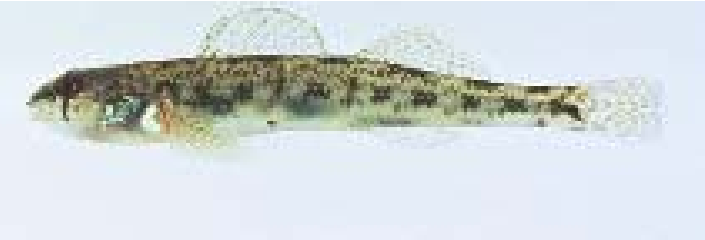
John Scarola

White Sucker

Konrad Schmidt

Spottail Shiner

John Scarola



Tessellated Darter

Konrad Schmidt

Green Sunfish

John Scarola

Redbreast Sunfish

John Scarola

American Eel

Species Identified at Holland Brook (FIBI092)

(Not to Scale)

John Scarola

Rockbass

John Scarola

Common Shiner

AFS

Largemouth Bass

John Scarola

Smallmouth Bass

John Scarola

Chain Pickerel

Dr. Don Beimborn

Brook Trout

Species Identified at Holland Brook (FIBI092)

(Not to Scale)

John Scarola

Golden Shiner

John Scarola

Yellow Bullhead

John Scarola

No Picture Available

Hybrib Redbreast X Green Sunfish