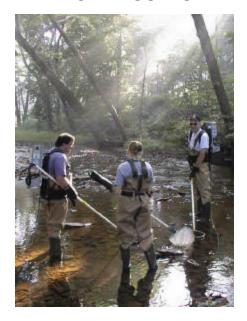


SUMMARY OF RESULTS – FIBI021



Rockaway River 1. Stream Name: 06/07/2001 2. Sampling Date: Knoll Rd. (40 53 31N; 74 22 30W) 3. Sampling Location: Parsippany-Troy Hills Twp. 4. Municipality Morris 5. County: 6. Watershed Management Area: 7. Contributing Drainage Area (Sq. Mi.): 121.2 FW2-NT 8. Stream Water Quality Class: 9. FIBI Rating: Fair (34) (See Appendix 3) Optimal (163) (See Appendix 3) 10. Habitat Assessment Rating: Yes 11. Fishable Species Present: 12. Relevant AMNET¹ Station Data:

Proximity of FIBI station to AMNET station: 1993-Moderately Impaired; 1998-Moderately Impaired AMNET Rating:

13. Stream Chemistries:

Dissolved Oxygen (mg/l) 7.5 19.3 Temperature ⁰C. pН 6.4 296 Conductivity (µmhos/cm)

14. Number of Fish With Anomalies: 150 meters (492 feet) 15. Length of Stream Segment Sampled

16. Water Clarity: Clear 17. Average Forest Open Canopy: Partly Open 18. Discharge (ft.³/sec.): 207.0

30% Gravel/Sand, 70% Cobble 19. Substrate: (qualitative) 0% Riffle, 80% Run, 20% Pool 20. Habitat Type: (qualitative)

N/A 21. Other observations: 22. Number of Fish Species Identified: (see next page) 179 23. Total Number of Fish Collected:

1.46 mi.downstream of AN0251

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.



| FIBI021 - Rockaway River @ Knoll Rd Date Sampled - 6/07/2001 | Excellent Good | Fair | Poor |
|---|-------------------------------|-------------|------|
| | | Score | |
| # of Fish Species | | 3 | |
| # of Benthic Insectivorous Species (BI) | | 3 |] |
| # of Trout and Centrarchid Species (trout, ba | ss, sunfish, crappie) | 3 | |
| # of Intolerant Species (IS) | | 1 | |
| Proportion of Individuals as White Suckers | | 5 | |
| Proportion of Individuals as Generalists (carp, | creek chub, banded killifish, | 5 | |
| goldfish, fathead minnow, green sunfish) | | | - |
| Proportion of Individuals as Insectivorous Cy | prinids (I and BI) | 5 | |
| Proportion of Individuals as Trout OR | *whichever gives better score | | |
| Proportion of Individuals as Pisciviores (Exclu | uding American Eel)* | 1 | |
| Number of Individuals in Sample | | 3 | |
| Proportion of Individuals w/disease/anomalie | s (excluding blackspot) | 5 | |
| Total | | 34 | |

Stream Rating

45-50 Excellent37-44 Good29-36 Fair10-28 Poor

HABITAT ASSESSMENT FOR *HIGH* GRADIENT STREAMS Rockaway River (FIBI021) – 6/7/01

| | 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 not new fall and not 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 <mark>16</mark> | 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 17 | 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 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 18 | 20 19 <mark>18</mark> 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 16 | 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 13 | 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. | | |
| SCORE10 (LB) | Left Bank 10 9 Right Bank 10 9 | 8 7 6 8 7 6 | 5 4 3 5 4 3 | 2 1 0 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. | | |
| SCORE9 (LB) SCORE10 (RB) | Left Bank 10 9 Right Bank 10 9 | 8 7 6 8 7 6 | 5 4 3 5 4 3 | 2 1 0 2 1 0 | | |
| SCORE10 (RB) | Width of riparian zone >18 | Width of riparian zone 12-18 | Width of riparian zone 6-12 | Width of riparian zone <6 meters: | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) SCORE 4 (LB) | meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. Left Bank 10 9 | meters; human activities have impacted zone only minimally. | meters; human activities have impacted zone a great deal. | little or no riparian vegetation due to human activities. | | |

HABITAT SCORE

163

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

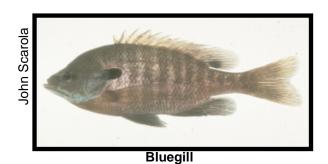
FIBIO21 06/07/01 ROCKAWAY RIVER

LISTED IN ORDER OF ABUNDANCE FOUND

| COMMON NAME | SCIENTIFIC NAME | # FOUND | SIZE RANGE (INCHES) |
|-------------------|-------------------------|---------|------------------------|
| Spottail Shiner | Notropis hudsonius | 106 | |
| Blacknose Dace | Rhinichthys atratulus | 29 | |
| Creek Chub | Semotilus atromaculatus | 18 | |
| White Sucker* | Catostomus commersoni | 13 | |
| Tesselated Darter | Etheostoma olmstedi | 8 | |
| Satinfin Shiner | Cyprinella analostana | 2 | |
| Bluegill* | Lepomis macrochirus | 1 | 1.0 |
| Green Sunfish* | Lepomis cyanellus | 1 | 4.0 |
| Pumpkinseed* | Lepomis gibbosus | 1 | 1.0 |

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

FIGURE 1.1 (Not To Scale) Species Identified at Rockaway River (FIBI021)

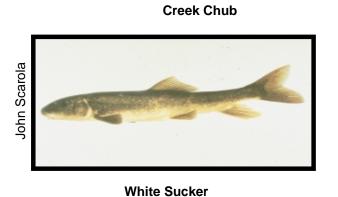


John Scarola

Tesselated Darter

Konrad Schmidt

John Scarola





Blacknose Dace

Spotfin Shiner

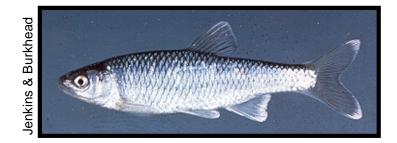
FIGURE 1.1 (Not To Scale) Species Identified at Rockaway River (FIBI021)



Pumpkinseed



Green Sunfish



Satinfin Shiner