

test and how it was used to assess trends in the data see Trends in Nitrogen, Phosphorus, and Suspended Sediment in the Susquehanna River Basin, 1974-93 (Edwards, 1995), LeFevre (2003), and other previous Interstate reports.

Group 2 interstate streams continued to meet designated use classes and water quality standards (Table 9, Appendix D). Twenty-two out of the 32 sites had parameters exceeding water quality standards, with 15 of those having more than one violation. The parameter that most frequently exceeded water quality standards was total iron (Table 10, Figure 5). Ninety-nine out of 1,001 possible observations (based on the number of applicable water quality standards of each state) exceeded water quality standards.

RESULTS

Water Quality

During fiscal year 2004, water quality in approximately one-third of the Group 1 and

Table 6. Summary of Metrics Used to Evaluate the Overall Biological Integrity of Stream and River Benthic Macroinvertebrate Communities

Metric	Description
1. Taxonomic Richness (a)	The total number of taxa present in the 200 organism subsample. Number decreases with increasing stress.
2. Shannon Diversity Index (b)	A measure of biological community complexity based on the number of equally or nearly equally abundant taxa in the community. Index value decreases with increasing stress.
3. Modified Hilsenhoff Biotic Index (a)	A measure of the organic pollution tolerance of a benthic macroinvertebrate community. Index value increases with increasing stress.
4. EPT Index (a)	The total number of Ephemeroptera (mayfly), Plecoptera (stonefly), and Trichoptera (caddisfly) taxa present in the 200 organism subsample. Number decreases with increasing stress.
5. Percent Ephemeroptera (a)	The percentage of Ephemeroptera in the 200 organism subsample. Ratio decreases with increasing stress.
6. Percent Dominant Taxa (a)	Percentage of the taxon with the largest number of individuals out of the total number of macroinvertebrates in the sample. Percentage increases with increasing stress.
7. Percent Chironomidae (a)	The percentage of Chironomidae in a 200 organism subsample. Ratio increases with increasing stress.

Sources: (a) Barbour and others, 1999
 (b) Klemm and others, 1990

Table 7. Summary of Criteria Used to Classify the Biological Conditions of Sample Sites

SAMPLING AND ANALYSIS				
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TOTAL BIOLOGICAL SCORE DETERMINATION				
Metric	Biological Condition Scoring Criteria			
	6	4	2	0
1. Taxonomic Richness (a)	>80 %	79 – 60 %	59 – 40 %	<40 %
2. Shannon Diversity Index (a)	>75 %	74 – 50 %	49 – 25 %	<25 %
3. Modified Hilsenhoff Biotic Index (b)	>85 %	84 – 70 %	69 – 50 %	<50 %
4. EPT Index (a)	>90 %	89 – 80 %	79 – 70 %	<70 %
5. Percent Ephemeroptera (c)	>25 %	10 – 25 %	1 – 9 %	<1 %
6. Percent Chironomidae (c)	<5 %	5 – 20 %	21 – 35 %	>36 %
7. Percent Dominant Taxa (c)	<20 %	20 – 30 %	31 – 40 %	>40 %
Total Biological Score (d)				
↓				
↓				
↓				
BIOASSESSMENT				
Percent Comparability of Study and Reference Site Total Biological Scores (e)	Biological Condition Category			
>83	Nonimpaired			
79 - 54	Slightly Impaired			
50 - 21	Moderately Impaired			
<17	Severely Impaired			

- (a) Score is study site value/reference site value X 100.
- (b) Score is reference site value/study site value X 100.
- (c) Scoring criteria evaluate actual percent contribution, not percent comparability to the reference station.
- (d) Total Biological Score = the sum of Biological Condition Scores assigned to each metric.
- (e) Values obtained that are intermediate to the indicated ranges will require subjective judgment as to the correct placement into a biological condition category.

Table 8. Summary of Criteria Used to Classify the Habitat Conditions of Sample Sites

DETERMINATION OF HABITAT ASSESSMENT SCORES				
Parameter	Habitat Parameter Scoring Criteria			
	Excellent	Good	Fair	Poor
Epifaunal Substrate	20-16	15-11	10-6	5-0
Instream Cover	20-16	15-11	10-6	5-0
Embeddedness/Pool Substrate	20-16	15-11	10-6	5-0
Velocity/Depth Regimes/Pool Variability	20-16	15-11	10-6	5-0
Sediment Deposition	20-16	15-11	10-6	5-0
Channel Flow Status	20-16	15-11	10-6	5-0
Channel Alteration	20-16	15-11	10-6	5-0
Frequency of Riffles/Channel Sinuosity	20-16	15-11	10-6	5-0
Condition of Banks (a)	20-16	15-11	10-6	5-0
Vegetative Protective Cover (a)	20-16	15-11	10-6	5-0
Riparian Vegetative Zone Width (a)	20-16	15-11	10-6	5-0
Habitat Assessment Score (b)				



HABITAT ASSESSMENT	
Percent Comparability of Study and Reference Site Habitat Assessment Scores	Habitat Condition Category
>90	Excellent (comparable to reference)
89-75	Supporting
74-60	Partially Supporting
<60	Nonsupporting

(a) Combined score of each bank

(b) Habitat Assessment Score = Sum of Habitat Parameter Scores

Table 9. Stream Classifications

Stream	Pa. Classification *	N.Y. Classification *
Apalachin Creek	CWF	C
Babcock Run	CWF	C
Beagle Hollow	WWF	C
Bentley Creek	WWF	C
Bill Hess Creek	WWF	C
Bird Creek	CWF	C
Biscuit Hollow	CWF	C
Briggs Hollow	CWF	C
Bulkley Brook	WWF	C
Camp Brook	WWF	C
Cascade Creek	CWF	C
Cayuta Creek	WWF	B
Chemung River	WWF	A
Choconut Creek	WWF	C
Cook Hollow	CWF	C
Cowanesque River	WWF	C
Deep Hollow Brook	CWF	C
Denton Creek	CWF	C
Dry Brook	WWF	C
Little Snake Creek	CWF	C
Little Wappasening Creek	WWF	C
North Fork Cowanesque River	CWF	C
Parks Creek	WWF	C
Prince Hollow Run	CWF	C
Russell Run	CWF	C
Sackett Creek	WWF	C
Seeley Creek	CWF	C (T)
Smith Creek	WWF	C
Snake Creek	CWF	C
South Creek	CWF	C
Strait Creek	WWF	C
Susquehanna River	WWF	B
Tioga River	WWF	C
Trowbridge Creek	CWF	C
Troups Creek	CWF	C
Wappasening Creek	CWF	C
White Branch Cowanesque River	WWF	C
White Hollow	WWF	C
Stream	Pa. Classification	Md. Classification *
Big Branch Deer Creek	CWF	III-P
Conowingo Creek	CWF	I-P
Deer Creek	CWF	III-P
Ebaughs Creek	CWF	III-P
Falling Branch Deer Creek	CWF	IV-P
Long Arm Creek	WWF	I-P
Octoraro Creek	WWF-MF	IV-P
Scott Creek	TSF	I-P
South Branch Conewago Creek	WWF	I-P
Susquehanna River	WWF	I-P

* See Appendix D for stream classification descriptions

Table 10. Water Quality Standard Summary

Parameter	Standard	Standard Value	Number of Observations	Number Exceeding Standards
Alkalinity	Pa. aquatic life	20 mg/l	94	8
pH	N.Y. general	6.5-8.5	94	3
Dissolved Iron	Pa. public water supply	0.3 mg/l	31	4
Total Iron	N.Y. aquatic (chronic)	300 µg/l	59	36
	Pa. aquatic life	1500 µg/l	94	10
Total Aluminum	N.Y. aquatic (chronic)	100 µg/l	59	29
Total Chlorine	N.Y. aquatic (acute)	0.019 mg/l	6	2
	Md. aquatic life	0.019 mg/l	4	4
Nitrite plus Nitrate	Pa. public water supply	10 mg/l	94	2
Turbidity	Md. aquatic life	150 NTU	35	1

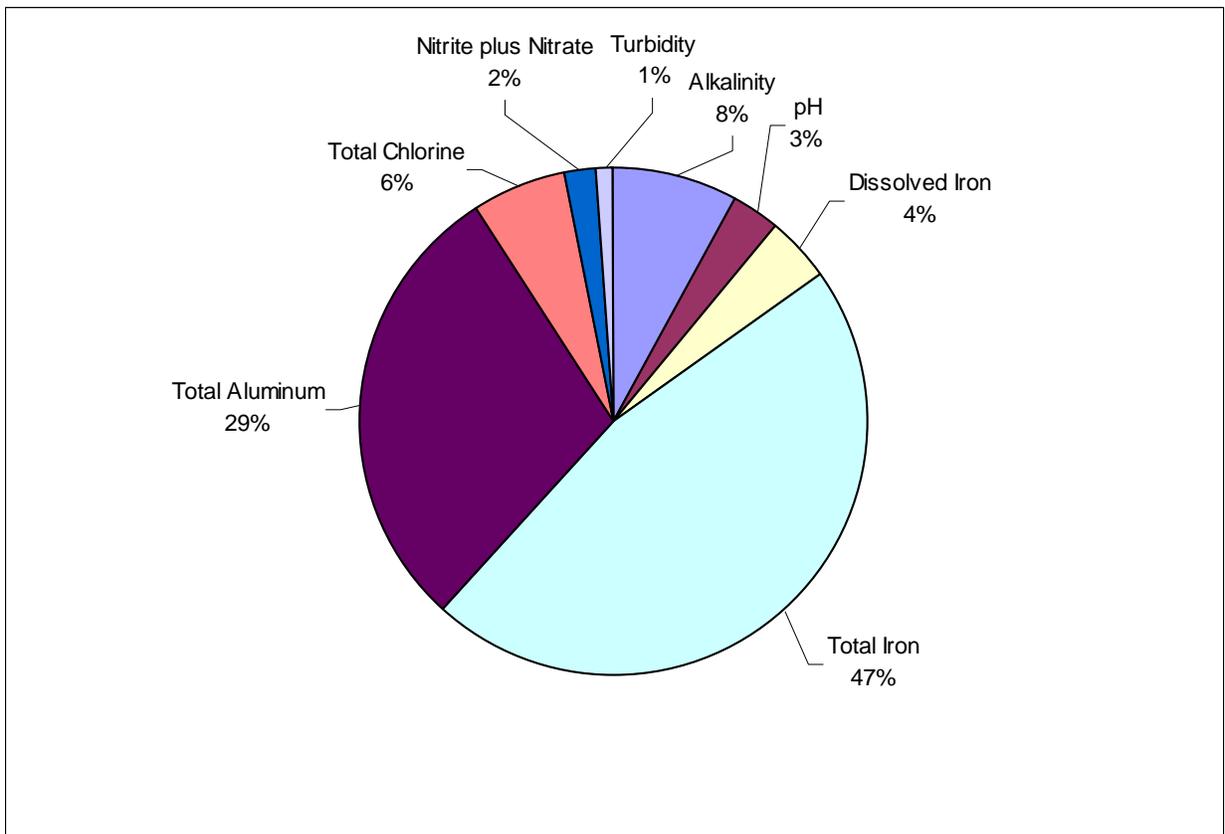


Figure 5. Parameters Exceeding Water Quality Standards

Biological Communities and Physical Habitat

RBP III biological data for New York-Pennsylvania, Pennsylvania-Maryland, river sites, and Group 3 streams are summarized in Tables 11 through 14, respectively. A high rapid bioassessment protocol score indicates a low degree of impairment and a healthy macroinvertebrate population. RBP III results for each site can be found in the “Bioassessment of Interstate Streams” section, beginning on page 35.

RBP III physical habitat data for New York-Pennsylvania, Pennsylvania-Maryland, river sites, and Group 3 streams are presented in Tables 15 through 18, respectively. A high score indicates a high-quality physical habitat. RBP III physical habitat and biological data are summarized in Figures 6 through 8.

New York-Pennsylvania streams

New York-Pennsylvania sampling stations consisted of 14 sites located near or on the New York-Pennsylvania border. The biological community of six (42.9 percent) of these streams was nonimpaired, and eight streams were slightly impaired (57.1 percent). None of the streams were moderately or severely impaired. Nine of the New York-Pennsylvania sites had excellent habitats (64.3 percent), while five sites (35.7 percent) had supporting habitats. No sites had partially supporting or nonsupporting habitat.

Pennsylvania-Maryland streams

The Pennsylvania-Maryland interstate streams included nine stations located on or near the Pennsylvania-Maryland border. Four (44.4 percent) streams were designated nonimpaired, using RBP III protocol designations. Two sites (22.2 percent) were slightly impaired, and three

(33.3 percent) of the sites were moderately impaired. Seven (77.8 percent) of the Pennsylvania-Maryland border sites had excellent habitats, while two sites (22.2 percent) had supporting habitats. Island Branch is not sampled due to its small size.

River sites

River sites consisted of nine stations located on the Susquehanna, Chemung, Cowanesque, and Tioga Rivers. One station (SUSQ 10.0) is not sampled for macroinvertebrates due to deep water and a lack of riffle habitat at the site. During fiscal year 2004, high flows precluded macroinvertebrate sampling and habitat assessment of six stations: the Susquehanna River at Sayre and Marietta, Pa.; the Chemung River; the Cowanesque River; and the Tioga River. The biological communities of the remaining stations, the Susquehanna River at Windsor and Kirkland, N.Y., were compared to Snake Creek, the reference site for the New York-Pennsylvania border streams. The biological communities of both stations were designated nonimpaired, and the habitats were rated as excellent.

Group 3 sites

Group 3 sampling stations consisted of 21 sites on small streams located along the New York-Pennsylvania border. Seven of the 21 sites sampled (33.3 percent) had nonimpaired biological conditions. Eleven sites (52.4 percent) were slightly impaired, and three sites (14.3 percent) were moderately impaired. Seventeen (81.0 percent) of the Group 3 sites had excellent habitat scores. Two sites (9.5 percent) had supporting habitat conditions, while two sites (9.5 percent) were designated partially supporting, and no sites were nonsupporting.

Table 11. Summary of New York-Pennsylvania Border RBP III Biological Data

	APAL 6.9	BNTY 0.9	CASC 1.6	CAYT 1.7	CHOC 9.1	HLDN 3.5	LSNK 7.6	NFCR 7.6	SEEL 10.3	SNAK 2.3	SOUT 7.8	TROW 1.6	TRUP 4.5	WAPP 2.6
Raw Summary														
Number of Individuals	263	193	263	311	270	220	322	222	204	377	258	288	195	224
% Shredders	0.8	0.0	5.7	0.0	0.0	0.9	0.3	18.9	0.5	0.0	0.0	0.3	0.0	0.0
% Collector-Gatherers	9.9	48.2	20.5	25.4	15.6	37.3	33.9	8.6	68.1	37.1	27.9	54.2	29.7	68.3
% Filterer-Collectors	52.5	17.1	35.4	15.8	44.8	15.5	42.2	40.1	15.7	40.1	46.5	12.5	28.2	19.6
% Scrapers	25.9	12.4	9.1	44.4	31.1	33.2	13.4	13.1	7.4	15.6	20.2	17.4	19.5	4.5
% Predators	11.0	22.3	29.3	14.5	8.5	13.2	10.2	19.4	8.3	7.2	5.4	15.6	22.6	7.6
Number of EPT Taxa	12	17	11	17	12	15	11	11	11	16	8	16	10	11
Number of EPT Individuals	160	87	119	124	144	79	183	146	115	264	122	99	162	100
Metric Scores														
Taxonomic Richness	21	26	24	30	21	28	20	20	24	23	19	25	17	19
Shannon Diversity Index	2.5	2.7	2.6	2.5	2.4	2.5	2.4	2.3	2.4	2.6	2.0	2.2	2.4	1.9
Modified Hilsenhoff Biotic Index	4.3	4.6	4.1	4.2	4.2	4.5	4.3	3.5	4.8	3.9	5.4	4.7	4.3	5.4
EPT Index	12	13	12	18	11	13	11	10	8	15	9	15	9	10
Percent Ephemeroptera	60.8	45.1	45.2	39.9	53.3	35.9	56.8	65.8	56.4	70.0	47.3	34.4	83.1	44.6
Percent Chironomidae	8.7	24.9	19.8	9.0	10.4	23.2	24.5	6.3	26.0	18.6	26.7	41.3	6.7	38.4
Percent Dominant Taxa	20.9	24.9	19.8	26.0	20.7	24.5	24.5	25.2	26.0	18.6	31.8	41.3	14.9	38.4
Percent of Reference or Percentage Score														
Taxonomic Richness	91.3	113.0	104.3	130.4	91.3	121.7	87.0	87.0	104.3	100.0	82.6	108.7	73.9	82.6
Shannon Diversity Index	93.5	101.2	100.0	95.8	90.9	94.4	91.1	87.5	90.3	100.0	76.7	82.8	91.4	71.3
Hilsenhoff Index	91.8	84.4	96.5	92.4	93.2	86.9	90.4	111.6	81.1	100.0	72.9	82.6	90.9	72.2
EPT Index	80.0	86.7	80.0	120.0	73.3	86.7	73.3	66.7	53.3	100.0	60.0	100.0	60.0	66.7
Percent Ephemeroptera	60.8	45.1	45.2	39.9	53.3	35.9	56.8	65.8	56.4	70.0	47.3	34.4	83.1	44.6
Percent Chironomidae	8.7	24.9	19.8	9.0	10.4	23.2	24.5	6.3	26.0	18.6	26.7	41.3	6.7	38.4
Percent Dominant Taxa	20.9	24.9	19.8	26.0	20.7	24.5	24.5	25.2	26.0	18.6	31.8	41.3	14.9	38.4
Biological Condition Scores														
Taxonomic Richness	6	6	6	6	6	6	6	6	6	6	6	6	4	6
Shannon Diversity Index	6	6	6	6	6	6	6	6	6	6	6	6	6	4
Hilsenhoff Index	6	4	6	6	6	6	6	6	4	6	4	4	6	4
EPT Index	4	4	4	6	2	4	2	0	0	6	0	6	0	0
Percent Ephemeroptera	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Percent Chironomidae	4	2	4	4	4	2	2	4	2	4	2	0	4	0
Percent Dominant Taxa	4	4	6	4	4	4	4	4	4	6	2	0	6	2
Total Biological Score														
Total Biological Score	36	32	38	38	34	34	32	32	28	40	26	28	32	22
Biological % of Reference	90	80	95	95	85	85	80	80	70	100	65	70	80	55

Table 12. Summary of Pennsylvania-Maryland Border RBP III Biological Data

	BBDC 4.1	CNWG 4.4	DEER 44.5	EBAU 1.5	FBDC 4.1	LNGA 2.5	OCTO 6.6	SBCC 20.4	SCTT 3.0
Raw Summary									
Number of Individuals	306	267	263	213	269	65	273	254	238
% Shredders	7.2	0.4	1.1	0.5	3.7	0.0	6.6	7.5	3.8
% Collector-Gatherers	46.4	29.6	17.1	54.9	20.4	50.8	35.2	33.5	90.8
% Filterer-Collectors	20.9	31.5	29.3	26.3	43.9	26.2	26.0	24.0	4.2
% Scrapers	14.7	36.7	43.3	17.8	6.7	12.3	30.8	19.7	0.0
% Predators	10.8	1.9	9.1	0.5	25.3	10.8	1.5	15.4	1.3
Number of EPT Taxa	12	5	11	6	10	4	7	10	5
Number of EPT Individuals	123	116	91	73	176	21	121	91	14
Metric Scores									
Taxonomic Richness	22	12	24	13	18	13	16	19	10
Shannon Diversity Index	2.2	2.0	2.5	1.7	2.2	2.0	2.1	2.2	0.5
Modified Hilsenhoff Biotic Index	4.0	5.4	4.5	5.4	3.8	5.4	5.4	4.1	5.8
EPT Index	12	5	11	6	10	4	7	10	5
Percent Ephemeroptera	40.2	43.4	34.6	34.3	65.4	32.3	44.3	35.8	5.9
Percent Chironomidae	35.9	12.0	12.5	46.9	18.2	40.0	17.2	28.3	89.1
Percent Dominant Taxa	35.9	30.7	19.0	46.9	26.0	40.0	24.5	28.3	89.1
Percent of Reference or Percentage Score									
Taxonomic Richness	91.7	50.0	100.0	54.2	75.0	54.2	66.7	79.2	41.7
Shannon Diversity Index	91.2	82.4	100.0	67.6	89.5	82.2	86.2	89.1	22.3
Hilsenhoff Index	112.1	84.5	100.0	83.7	120.2	84.0	83.1	110.5	77.9
EPT Index	109.1	45.5	100.0	54.5	90.9	36.4	63.6	90.9	45.5
Percent Ephemeroptera	40.2	43.4	34.6	34.3	65.4	32.3	44.3	35.8	5.9
Percent Chironomidae	35.9	12.0	12.5	46.9	18.2	40.0	17.2	28.3	89.1
Percent Dominant Taxa	35.9	30.7	19.0	46.9	26.0	40.0	24.5	28.3	89.1
Biological Condition Scores									
Taxonomic Richness	6	2	6	2	4	2	4	4	2
Shannon Diversity Index	6	6	6	4	6	6	6	6	0
Hilsenhoff Index	6	4	6	4	6	4	4	6	4
EPT Index	6	0	6	0	6	0	0	6	0
Percent Ephemeroptera	6	6	6	6	6	6	6	6	2
Percent Chironomidae	2	4	4	0	4	0	4	2	0
Percent Dominant Taxa	2	4	6	0	4	2	4	4	0
Total Biological Score									
Total Biological Score	34	26	40	16	36	20	28	34	8
Biological % of Reference	85	65	100	40	90	50	70	85	20

Table 13. Summary of River RBP III Biological Data

	SUSQ 340	SUSQ 365
Raw Summary		
Number of Individuals	233	299
% Shredders	1.7	0.0
% Collector-Gatherers	13.3	13.0
% Filterer-Collectors	24.5	22.1
% Scrapers	57.1	50.2
% Predators	3.4	14.7
Number of EPT Taxa	12	16
Number of EPT Individuals	96	118
Metric Scores		
Taxonomic Richness	22	27
Shannon Diversity Index	2.2	2.4
Modified Hilsenhoff Biotic Index	4.8	4.3
EPT Index	16	15
Percent Ephemeroptera	41.2	39.5
Percent Chironomidae	2.1	7.0
Percent Dominant Taxa	38.2	34.4
Percent of Reference or Percentage Score		
Taxonomic Richness	95.7	117.4
Shannon Diversity Index	82.8	91.9
Hilsenhoff Index	82.2	90.2
EPT Index	106.7	100.0
Percent Ephemeroptera	41.2	39.5
Percent Chironomidae	2.1	7.0
Percent Dominant Taxa	38.2	34.4
Biological Condition Scores		
Taxonomic Richness	6	6
Shannon Diversity Index	6	6
Hilsenhoff Index	4	6
EPT Index	6	6
Percent Ephemeroptera	6	6
Percent Chironomidae	6	4
Percent Dominant Taxa	2	2
Total Biological Score		
Total Biological Score	36	36
Biological % of Reference	90	90

Table 14. Summary of Group 3 Sites RBP III Biological Data

	BABC	BEAG	BILL	BIRD	BISC	BRIG	BULK	CAMP	COOK	DEEP	DENT
Raw Summary											
Number of Individuals	243	221	246	218	225	210	243	217	245	240	232
% Shredders	16.5	29.4	15.0	17.0	20.4	2.9	23.9	5.1	24.9	15.4	1.3
% Collector-Gatherers	42.0	38.5	61.8	62.8	44.4	67.1	48.1	88.5	46.9	44.2	49.6
% Filterer-Collectors	1.2	9.5	7.3	4.1	19.6	1.4	10.3	0.9	10.2	16.3	26.7
% Scrapers	0.8	5.0	4.5	4.6	4.0	9.0	1.2	0.5	9.0	10.4	19.8
% Predators	39.5	17.6	11.4	11.5	11.6	19.5	16.5	5.1	9.0	13.8	2.6
Number of EPT Taxa	14	15	16	17	16	13	15	13	15	19	7
Number of EPT Individuals	172	167	185	168	159	172	167	167	167	148	107
Metric Scores											
Taxonomic Richness	19	19	23	24	21	18	21	17	26	28	13
Shannon Diversity Index	2.1	2.3	2.6	2.2	2.5	1.9	2.3	2.0	2.6	2.7	1.5
Modified Hilsenhoff Biotic Index	2.8	2.2	2.4	2.0	4.0	1.5	3.1	2.2	3.4	3.7	5.2
EPT Index	14	15	16	17	16	13	15	13	15	19	7
Percent Ephemeroptera	70.8	75.6	75.2	77.1	70.7	81.9	68.7	77.0	68.2	61.7	46.1
Percent Chironomidae	24.7	22.2	14.6	18.8	16.9	14.8	26.3	21.2	20.4	25.4	49.6
Percent Dominant Taxa	29.6	22.2	22.8	36.2	18.7	44.8	26.3	25.8	20.4	25.4	49.6
Percent of Reference or Percentage Score											
Taxonomic Richness	70.4	70.4	85.2	88.9	77.8	66.7	77.8	63.0	96.3	103.7	48.1
Shannon Diversity Index	86.1	93.8	102.8	90.0	101.0	75.2	92.5	80.0	105.2	108.4	60.0
Hilsenhoff Index	94.9	118.3	109.1	130.6	66.1	168.8	83.9	117.9	76.7	70.1	50.0
EPT Index	82.4	88.2	94.1	100.0	94.1	76.5	88.2	76.5	88.2	111.8	41.2
Percent Ephemeroptera	70.8	75.6	75.2	77.1	70.7	81.9	68.7	77.0	68.2	61.7	46.1
Percent Chironomidae	24.7	22.2	14.6	18.8	16.9	14.8	26.3	21.2	20.4	25.4	49.6
Percent Dominant Taxa	29.6	22.2	22.8	36.2	18.7	44.8	26.3	25.8	20.4	25.4	49.6
Biological Condition Scores											
Taxonomic Richness	4	4	6	6	4	4	4	4	6	6	2
Shannon Diversity Index	6	6	6	6	6	6	6	6	6	6	4
Hilsenhoff Index	6	6	6	6	2	6	4	6	4	4	2
EPT Index	4	4	6	6	6	2	4	2	4	6	0
Percent Ephemeroptera	6	6	6	6	6	6	6	6	6	6	6
Percent Chironomidae	2	2	4	4	4	4	2	2	2	2	0
Percent Dominant Taxa	4	4	4	2	6	0	4	4	4	4	0
Total Biological Score											
Total Biological Score	32	32	38	36	34	28	30	30	32	34	14
Biological % of Reference	80	80	95	90	85	70	75	75	80	85	35

Table 14. Summary of Group 3 Sites RBP III Biological Data—Continued

	DRYB	LWAP	PARK	PRIN	RUSS	SACK	SMIT	STRA	WBCO	WHIT
Raw Summary										
Number of Individuals	202	215	193	104	250	216	253	233	204	212
% Shredders	2.5	5.1	11.4	1.0	6.8	2.3	32.4	0.9	0.0	15.6
% Collector-Gatherers	81.2	40.0	59.1	46.2	58.8	51.4	26.9	80.7	14.7	43.9
% Filterer-Collectors	4.0	4.7	2.1	1.0	1.6	0.9	22.1	0.9	82.4	0.0
% Scrapers	5.9	24.7	11.4	20.2	1.2	22.7	7.5	9.0	1.0	0.5
% Predators	6.4	25.6	16.1	31.7	31.6	22.7	11.1	8.6	2.0	40.1
Number of EPT Taxa	10	17	14	12	11	12	17	16	4	13
Number of EPT Individuals	38	188	188	81	195	207	198	165	170	198
Metric Scores										
Taxonomic Richness	19	21	17	17	15	15	27	22	8	16
Shannon Diversity Index	1.4	2.5	1.7	2.2	1.8	1.7	2.5	2.4	1.2	1.9
Modified Hilsenhoff Biotic Index	5.6	1.9	1.1	2.6	1.6	0.8	2.6	2.9	5.7	0.9
EPT Index	10	17	14	12	11	12	17	16	4	13
Percent Ephemeroptera	18.8	87.4	97.4	77.9	78.0	95.8	78.3	70.8	83.3	93.4
Percent Chironomidae	66.8	6.5	1.6	17.3	16.8	3.2	11.9	24.5	12.7	5.2
Percent Dominant Taxa	66.8	22.3	53.9	26.9	38.8	40.7	19.0	24.5	55.4	33.0
Percent of Reference or Percentage Score										
Taxonomic Richness	70.4	77.8	63.0	63.0	55.6	55.6	100.0	81.5	29.6	59.3
Shannon Diversity Index	56.1	100.0	69.3	90.1	73.3	67.3	100.0	97.1	47.4	76.6
Hilsenhoff Index	46.6	137.3	239.0	100.3	167.0	324.3	100.0	89.0	45.9	284.0
EPT Index	58.8	100.0	82.4	70.6	64.7	70.6	100.0	94.1	23.5	76.5
Percent Ephemeroptera	18.8	87.4	97.4	77.9	78.0	95.8	78.3	70.8	83.3	93.4
Percent Chironomidae	66.8	6.5	1.6	17.3	16.8	3.2	11.9	24.5	12.7	5.2
Percent Dominant Taxa	66.8	22.3	53.9	26.9	38.8	40.7	19.0	24.5	55.4	33.0
Biological Condition Scores										
Taxonomic Richness	4	4	4	4	2	2	6	6	0	2
Shannon Diversity Index	4	6	4	6	5	5	6	6	2	6
Hilsenhoff Index	0	6	6	6	6	6	6	6	0	6
EPT Index	0	6	4	2	0	2	6	6	0	2
Percent Ephemeroptera	4	6	6	6	6	6	6	6	6	6
Percent Chironomidae	0	4	6	4	4	6	4	2	4	4
Percent Dominant Taxa	0	4	0	4	2	0	6	4	0	2
Total Biological Score										
Total Biological Score	12	36	30	32	25	27	40	36	12	28
Biological % of Reference	30	90	75	80	62.5	67.5	100	90	30	70

Table 15. Summary of New York-Pennsylvania Sites Physical Habitat Data

	APAL 6.9	BNTY 0.9	CASC 1.6	CAYT 1.7	CHOC 9.1	HLDN 3.5	LSNK 7.6	NFCR 7.6	SEEL 10.3	SNAK 2.3	SOUT 7.8	TROW 1.6	TRUP 4.5	WAPP 2.6
Epifaunal Substrate	15	15	13	15	17	17	16	16	15	17	17	14	7	16
Instream Cover	12	11	16	13	15	16	14	15	12	16	13	14	10	15
Embeddedness/Pool Substrate	13	14	13	14	15	16	15	15	16	17	15	15	15	16
Velocity/Depth Regimes/Pool Variability	14	13	13	14	17	12	11	12	16	17	16	10	14	16
Sediment Deposition	11	11	11	13	14	15	13	14	11	17	15	16	10	14
Channel Flow Status	13	12	10	14	15	14	13	14	12	15	15	11	13	14
Channel Alteration	15	10	16	13	12	16	14	17	14	15	14	16	16	13
Frequency of Riffles/Channel Sinuosity	9	15	16	12	16	17	17	17	15	16	15	16	15	15
Condition of Banks														
Left Bank	6	8	6	7	6	6	9	6	7	8	7	5	5	8
Right Bank	5	5	6	7	7	4	8	6	8	8	6	6	5	7
Vegetative Protective Cover														
Left Bank	7	8	6	7	7	7	9	6	8	9	7	5	7	8
Right Bank	6	5	8	7	8	7	9	5	7	8	7	8	8	8
Riparian Vegetative Zone Width														
Left Bank	5	7	6	2	3	5	6	9	3	5	3	3	2	8
Right Bank	4	7	9	4	2	5	7	8	3	4	3	6	3	7
Total Habitat Score														
Total Habitat Score	135	141	149	142	154	157	161	160	150	166	153	145	130	165
Habitat Percent of Reference	81.3	84.9	89.8	85.5	92.8	94.6	97.0	96.4	90.4	100.0	92.2	87.3	78.3	99.4

Table 16. Summary of Pennsylvania-Maryland Sites Physical Habitat Data

	BBDC 4.1	CNWG 4.4	DEER 44.5	EBAU 1.5	FBDC 4.1	LNGA 2.5	OCTO 6.6	SBCC 20.4	SCTT 3.0
Epifaunal Substrate	17	17	15	15	16	10	14	17	12
Instream Cover	17	17	15	13	15	14	15	14	13
Embeddedness/Pool Substrate	15	12	15	12	12	9	16	14	11
Velocity/Depth Regimes/Pool Variability	13	17	14	11	11	11	17	14	9
Sediment Deposition	16	10	15	13	11	9	16	14	11
Channel Flow Status	17	15	15	17	16	16	16	15	12
Channel Alteration	15	17	15	15	15	16	15	16	13
Frequency of Riffles/Channel Sinuosity	16	16	15	16	15	10	17	16	14
Condition of Banks									
Left Bank	7	5	6	8	8	6	7	7	6
Right Bank	8	7	6	7	7	5	5	8	7
Vegetative Protective Cover									
Left Bank	8	8	7	9	9	5	8	8	9
Right Bank	8	8	6	8	8	5	8	8	7
Riparian Vegetative Zone Width									
Left Bank	7	7	2	6	5	5	3	7	3
Right Bank	7	5	1	6	6	4	4	7	1
Total Habitat Score									
Total Habitat Score	171	161	147	156	154	125	161	165	128
Habitat Percent of Reference	116.3	109.5	100.0	106.1	104.8	85.0	109.5	112.2	87.1

Table 17. Summary of River Sites Physical Habitat Data

	SUSQ 340	SUSQ 365
Epifaunal Substrate	16	16
Instream Cover	16	15
Embeddedness/Pool Substrate	15	14
Velocity/Depth Regimes/Pool Variability	17	16
Sediment Deposition	14	14
Channel Flow Status	15	14
Channel Alteration	17	16
Frequency of Riffles/Channel Sinuosity	9	15
Condition of Banks		
Left Bank	8	6
Right Bank	8	7
Vegetative Protective Cover		
Left Bank	9	9
Right Bank	8	8
Riparian Vegetative Zone Width		
Left Bank	5	8
Right Bank	5	7
<i>Total Habitat Score</i>		
Total Habitat Score	162	165
Habitat Percent of Reference	97.6	99.4

Table 18. Summary of Group 3 Sites Physical Habitat Data

	BABC	BEAG	BILL	BIRD	BISC	BRIG	BULK	CAMP	COOK	DEEP	DENT
Epifaunal Substrate	18	18	18	18	10	18	18	17	17	18	17
Instream Cover	17	17	18	17	9	18	18	17	18	18	16
Embeddedness/Pool Substrate	17	16	16	14	17	16	16	16	15	17	15
Velocity/Depth Regimes/Pool Variability	10	10	10	10	8	10	11	10	12	10	10
Sediment Deposition	16	16	17	16	16	15	17	16	16	16	11
Channel Flow Status	16	16	16	16	16	15	17	15	16	17	15
Channel Alteration	18	18	16	17	17	16	18	18	13	16	11
Frequency of Riffles/Channel Sinuosity	18	18	18	18	16	18	18	18	17	17	17
Condition of Banks											
Left Bank	7	9	9	7	8	7	9	9	8	7	9
Right Bank	8	8	9	8	7	8	9	9	9	9	9
Vegetative Protective Cover											
Left Bank	9	9	9	7	8	8	9	9	8	8	9
Right Bank	9	9	9	7	7	7	9	9	9	9	9
Riparian Vegetative Zone Width											
Left Bank	9	8	9	9	2	8	9	9	8	8	9
Right Bank	7	9	9	7	3	3	9	9	8	9	6
Total Habitat Score											
Total Habitat Score	163	181	183	171	144	167	169	181	158	179	163
Habitat Percent of Reference	94.2	104.6	105.8	98.8	83.2	96.5	97.7	104.6	91.3	103.5	94.2

Table 18. Summary of Group 3 Sites Physical Habitat Data – continued.

	DRYB	LWAP	PARK	PRIN	RUSS	SACK	SMIT	STRA	WBCO	WHIT
Epifaunal Substrate	10	18	18	15	17	18	16	17	15	18
Instream Cover	12	18	18	14	17	17	15	17	9	18
Embeddedness/Pool Substrate	14	17	17	17	17	16	16	16	8	17
Velocity/Depth Regimes/Pool Variability	13	11	12	13	8	12	9	10	10	12
Sediment Deposition	9	16	17	10	18	16	14	16	8	16
Channel Flow Status	16	17	16	14	12	17	16	17	16	16
Channel Alteration	7	18	18	17	18	18	18	16	10	17
Frequency of Riffles/Channel Sinuosity	16	18	18	16	18	18	18	17	16	18
Condition of Banks										
Left Bank	7	7	5	8	7	9	9	9	8	7
Right Bank	5	9	7	5	7	8	9	8	8	7
Vegetative Protective Cover										
Left Bank	3	8	8	6	8	9	9	9	3	8
Right Bank	3	9	8	3	8	8	8	8	3	8
Riparian Vegetative Zone Width										
Left Bank	1	9	9	6	9	9	9	7	1	7
Right Bank	1	9	9	2	9	9	7	6	2	9
Total Habitat Score										
Total Habitat Score	117	184	180	146	173	184	173	173	117	178
Habitat Percent of Reference	67.6	106.4	104.0	84.4	100.0	106.4	100.0	100.0	67.6	102.9

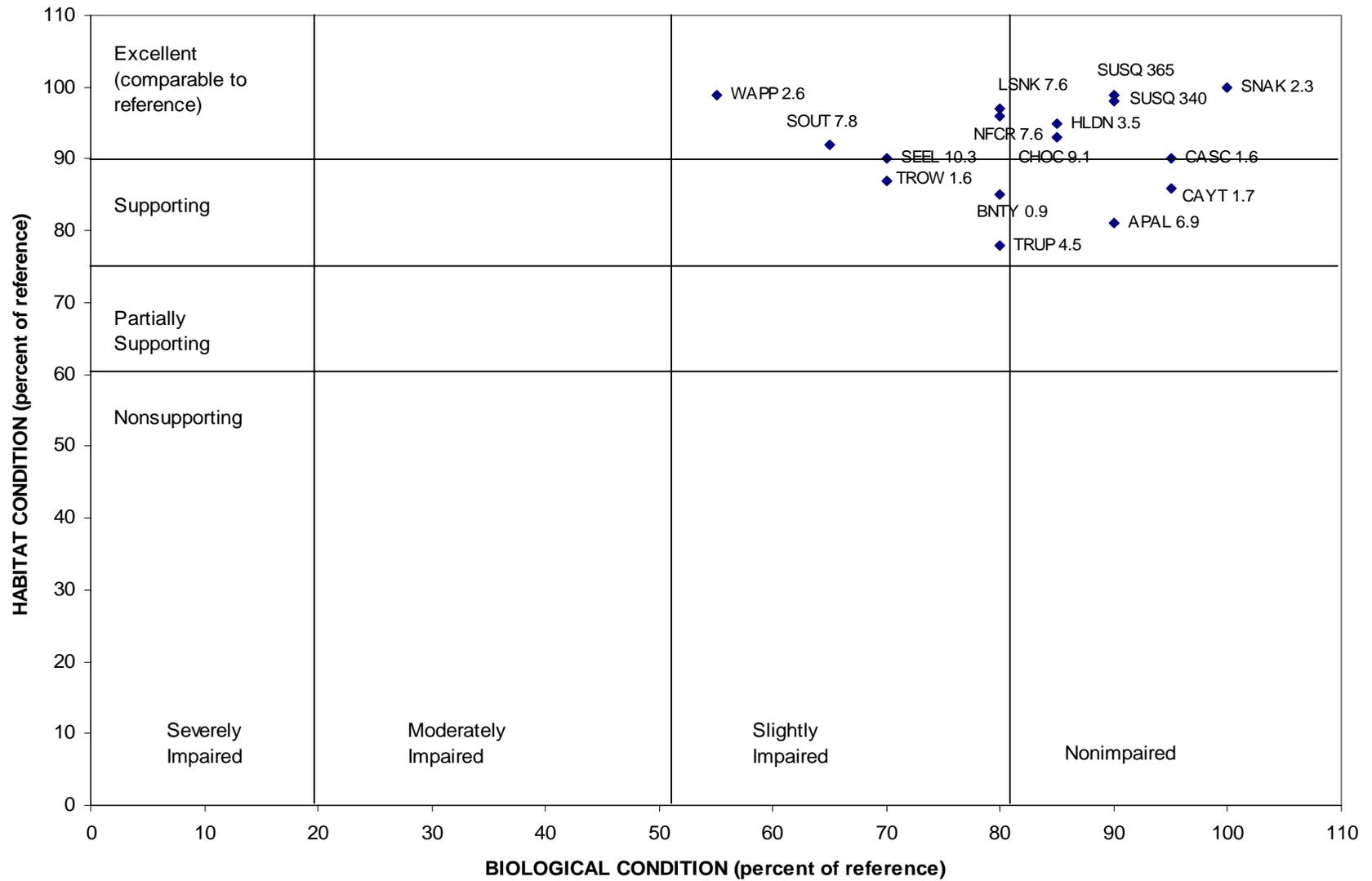


Figure 6. Summary of New York-Pennsylvania Border Streams and River Habitat and Biological Condition Scores

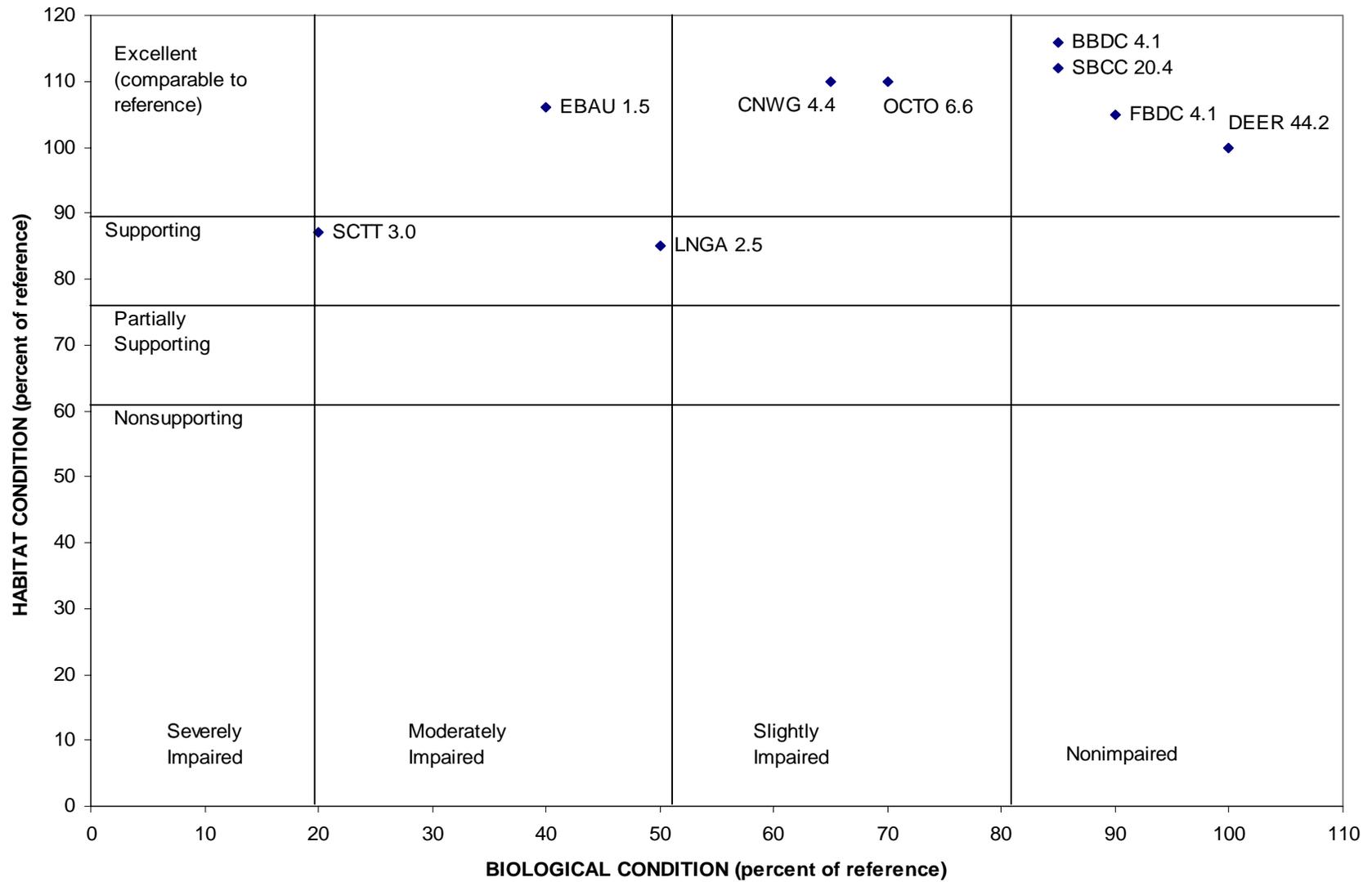


Figure 7. Summary of Pennsylvania-Maryland Border Streams Habitat and Biological Condition Scores

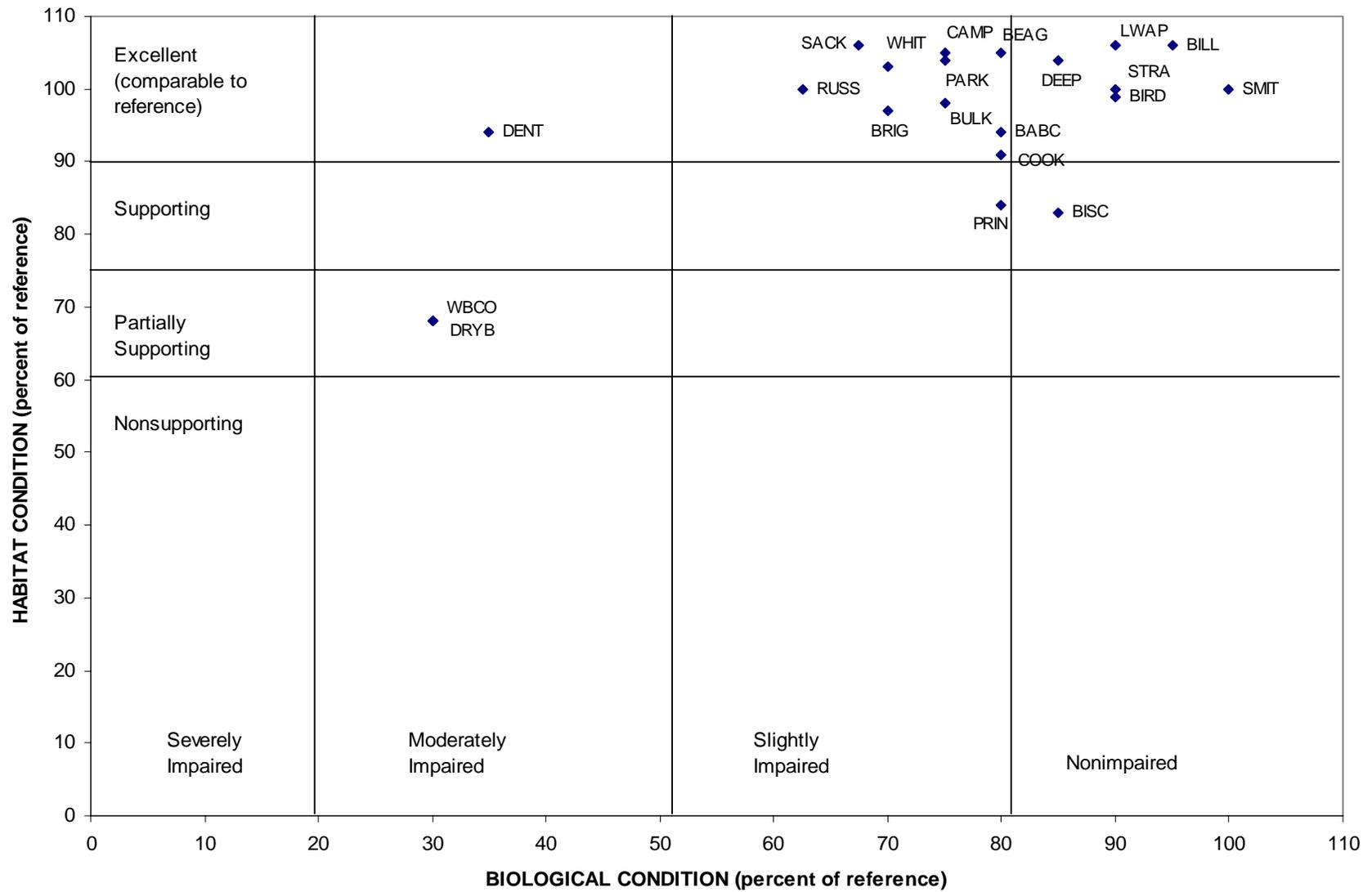


Figure 8. Summary of Group 3 Streams Habitat and Biological Condition Scores