Site Results for Large River Sites

Chemung River at Chemung, N.Y. (CHEM 12.0)

Group 1

Water Quality:

Total aluminum, total iron, and temperature exceeded water quality standards.

Biological Condition:

2007	Slightly Impaired
2008	Nonimpaired

Habitat Assessment:

2007	Excellent
2008	Excellent

Trends:

Biological condition shows a downward trend with respect to biological assessment score, but was designated nonimpaired in 2008. Increased Water Quality Index values suggest that water quality declined slightly. Habitat remains excellent.

Other Notes:

The New York State Department of Environmental Conservation (NYSDEC) listed the lower section of the Chemung River as "threatened" in its publication, The 2004 Chemung River Basin Waterbody Inventory and Priority Waterbodies List (NYSDEC, 2007). According to this publication, the river is threatened by pathogens due to agricultural activities. SRBC habitat assessments revealed that frequency of riffles and channel flow status are main concerns with physical habitat at CHEM 12.0.

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
TAl	10/16/2007	242 ug/l	100 ug/l	N.Y. aquatic (chronic)
TAl	2/13/2008	1149 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	2/13/2008	1682 ug/l	300 ug/l 1500 ug/l	N.Y. aquatic (chronic) Pa. aquatic life
Temperature	7/21/2008	27.6° C	25.0° C	Pa. aquatic life
TFe	10/28/2008	310 ug/l	300 ug/l	N.Y. aquatic (chronic)

Date	**WQI**	**Parameters Exceeding 90th Percentile**						
7/31/2007	67.3	TS	TURB	TN	TCl	DO	COND	
10/16/2007	61.6	TS	TNO3	TN	TCl	COND		
2/13/2008	59.3	TSO4	TNO3	TN	TCl	COND		
5/21/2008	76.4	TS	TNO3	TN	TCl	DO	COND	TEMP
7/21/2008	64.4	TS	TNO3	TPO4	TNH3	TCl	COND	TEMP
10/28/2008	69.3	TS	TOC	TCl	COND			

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

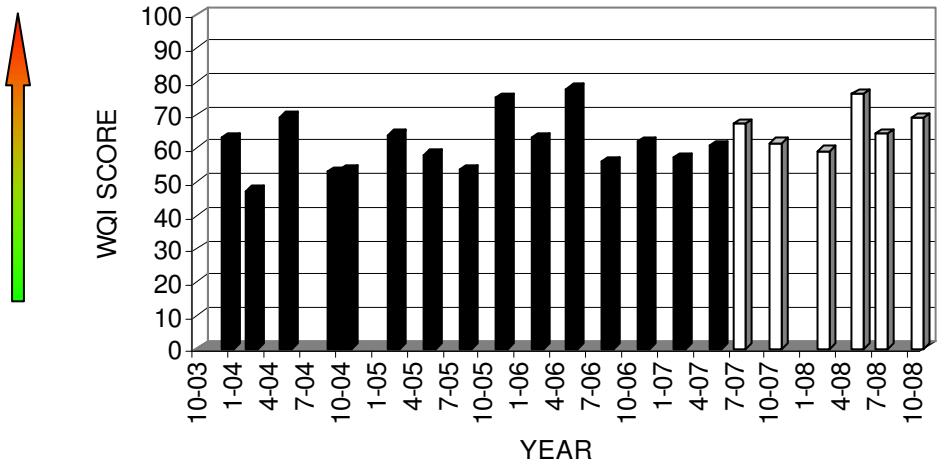
2007

Biological and Habitat Summary	
Number of Taxa	20
Diversity Index	2.30
RBP Score	30
RBP Condition	Slightly Impaired
Total Habitat Score	170
Habitat Condition Category	Excellent

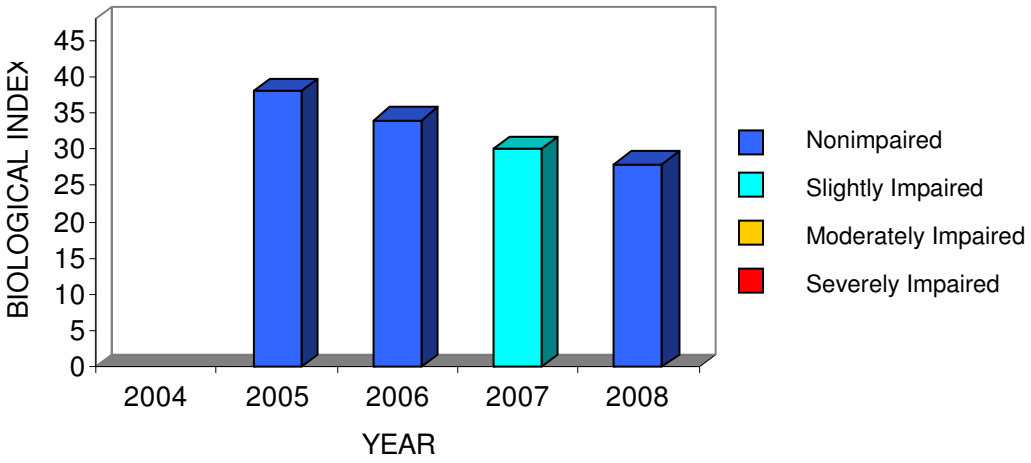
2008

Biological and Habitat Summary	
Number of Taxa	21
Diversity Index	2.14
RBP Score	28
RBP Condition	Nonimpaired
Total Habitat Score	163
Habitat Condition Category	Excellent

Water Quality Index



Biological Index



Cowanesque River at Lawrenceville, Pa. (COWN 1.0)

Group 1

Water Quality:

Temperature, total aluminum, total iron, pH, and turbidity exceeded water quality standards.

Biological Condition:

2007	Slightly Impaired
2008	Slightly Impaired

Habitat Assessment:

2007	Supporting
2008	Supporting

Trend:

After possessing a moderately impaired biological community for two consecutive years, COWN 1.0 improved to attain slightly impaired status in 2007 and 2008. However, habitat declined from its excellent rating in 2006 to supporting in 2007 and 2008. Water quality showed no perceptible change.

Other Notes:

This site is a little more than a mile downstream of the Cowanesque Lake and represents a recovery zone of the Cowanesque River, after it is impounded in a 1,085 acre reservoir.

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
Temperature	7/31/2007	28.9° C	25.0° C	Pa. aquatic life
TAl	10/17/2007	295 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	10/17/2007	304 ug/l	300 ug/l	N.Y. aquatic (chronic)
TAl	2/13/2008	4793 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	2/13/2008	8496 ug/l	300 ug/l 1500 ug/l	N.Y. aquatic (chronic) Pa. aquatic life
pH	2/13/2008	6.4	6.5-8.5	N.Y. general
TURB	2/13/2008	237.1 NTU	100 NTU	Pa. aquatic life
Temperature	7/22/2008	25.5° C	25.0° C	Pa. aquatic life
TAl	10/28/2008	248 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	10/28/2008	537 ug/l	300 ug/l	N.Y. aquatic (chronic)

Date	**WQI**	**Parameters Exceeding 90th Percentile**							
7/31/2007	46.1	TEMP							
10/17/2007	51.6	TNH3	TOC	DO	TEMP				
2/13/2008	84.3	TFe	TS	TP	TPO4	TNH3	TAl	TMn	TOC
		DO	SS						
5/21/2008	66.2	TFe	TURB	TNH3	TOC	DO	TEMP		
7/22/2008	30.2	TEMP							
10/28/2008	66.7	TAl	TNH3	DO	TFe	TMn	SS	TEMP	TURB

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

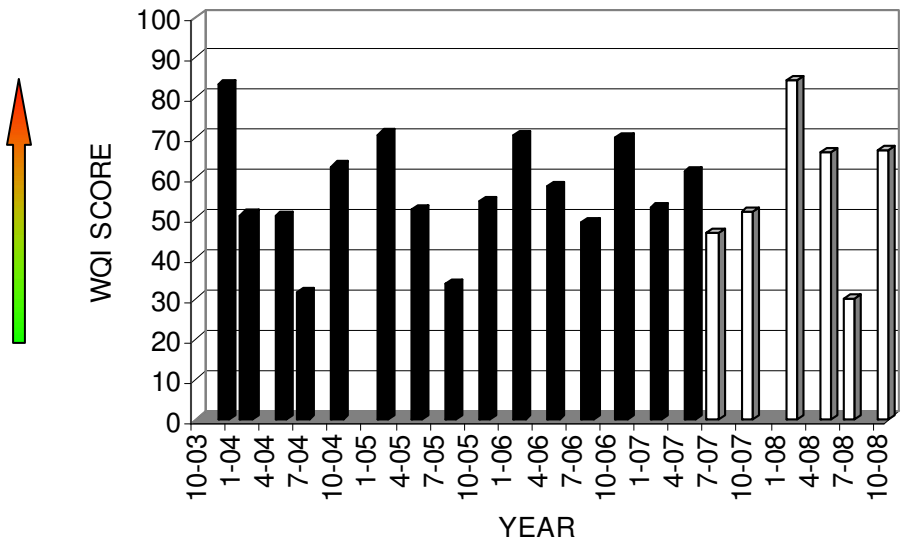
2007

Biological and Habitat Summary	
Number of Taxa	22
Diversity Index	2.34
RBP Score	26
RBP Condition	Slightly Impaired
Total Habitat Score	139
Habitat Condition Category	Supporting

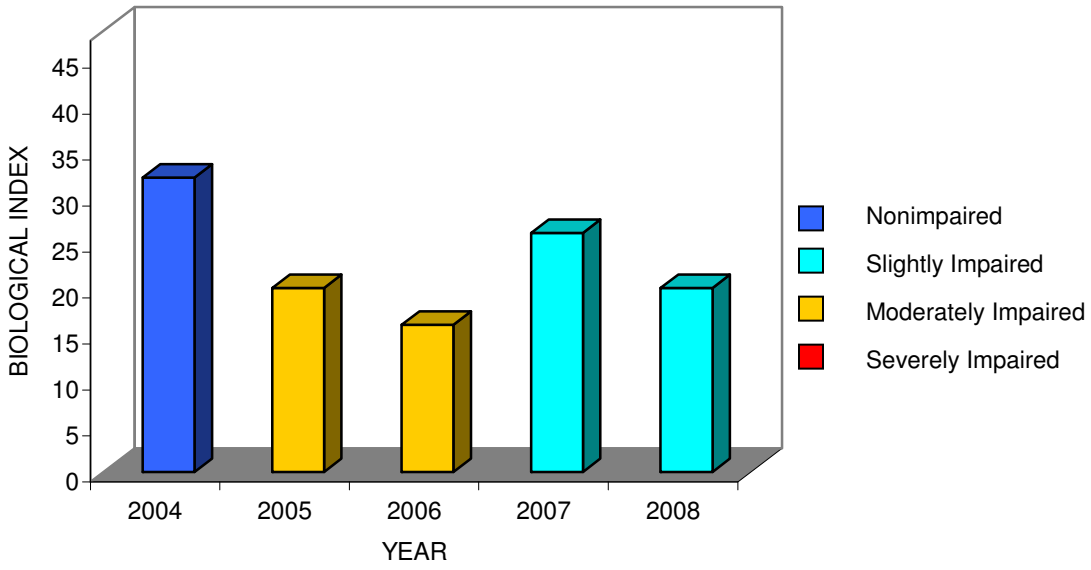
2008

Biological and Habitat Summary	
Number of Taxa	16
Diversity Index	1.90
RBP Score	20
RBP Condition	Slightly Impaired
Total Habitat Score	138
Habitat Condition Category	Supporting

Water Quality Index



Biological Index



Cowanesque River at Lawrenceville, Pa. (COWN 2.2)

Group 1

Water Quality:

Total iron, total aluminum, pH, turbidity, and temperature failed to meet water quality standards.

Biological Condition:

2007	Moderately Impaired
2008	Moderately Impaired

Habitat Assessment:

2007	Partially Supporting
2008	Supporting

Trends:

Little change was seen at COWN 2.2, as biological index remained moderately impaired, habitat conditions remained supporting in 2008 after declining to partially supporting in 2007, and water quality remained stable.

Other Notes:

This sampling site is located directly downstream of the Cowanesque Reservoir. In 2007 and 2008, COWN 2.2 possessed the worst bioassessment score and the worst macroinvertebrate metric scores of all Pennsylvania-New York Interstate streams.

Concerns with habitat at COWN 2.2 include epifaunal substrate, channel alteration, and frequency of riffles.

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
TAl	7/31/2007	217 ug/l	100 ug/l	N.Y. aquatic (chronic)
TAl	10/17/2007	458 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	10/17/2007	490 ug/l	300 ug/l	N.Y. aquatic (chronic)
TAl	2/13/2008	4883 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	2/13/2008	8436 ug/l	300 ug/l 1500 ug/l	N.Y. aquatic (chronic) Pa. aquatic life
pH	2/13/2008	6.35	6.5-8.5	N.Y. general
TURB	2/13/2008	263.6 NTU	100 NTU	Pa. aquatic life
Temperature	7/22/2008	25.1° C	25.0° C	Pa. aquatic life
TFe	10/28/2008	330 ug/l	300 ug/l	N.Y. aquatic (chronic)

Date	**WQI**	**Parameters Exceeding 90th Percentile**							
7/31/2007	50.5	TMn							
10/17/2007	58.9	TURB	TNH3	TAl	TMn	DO	TEMP		
2/13/2008	84.9	TAl	TNH3	DO	TFe	TMn	TN	TPO4	TP
		TS	TOC	TEMP	TURB				
5/21/2008	62.1	TFe	TNH3	TOC	DO	TEMP			
7/22/2008	30.6	DO							
10/28/2008	51.7	DO	TEMP						

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

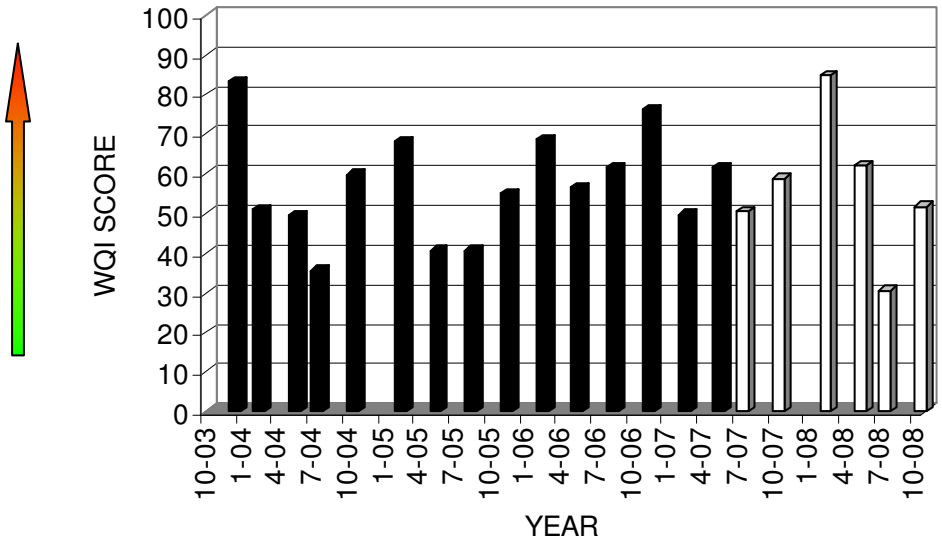
2007

Biological and Habitat Summary	
Number of Taxa	15
Diversity Index	1.24
RBP Score	10
RBP Condition	Moderately Impaired
Total Habitat Score	124
Habitat Condition Category	Partially Supporting

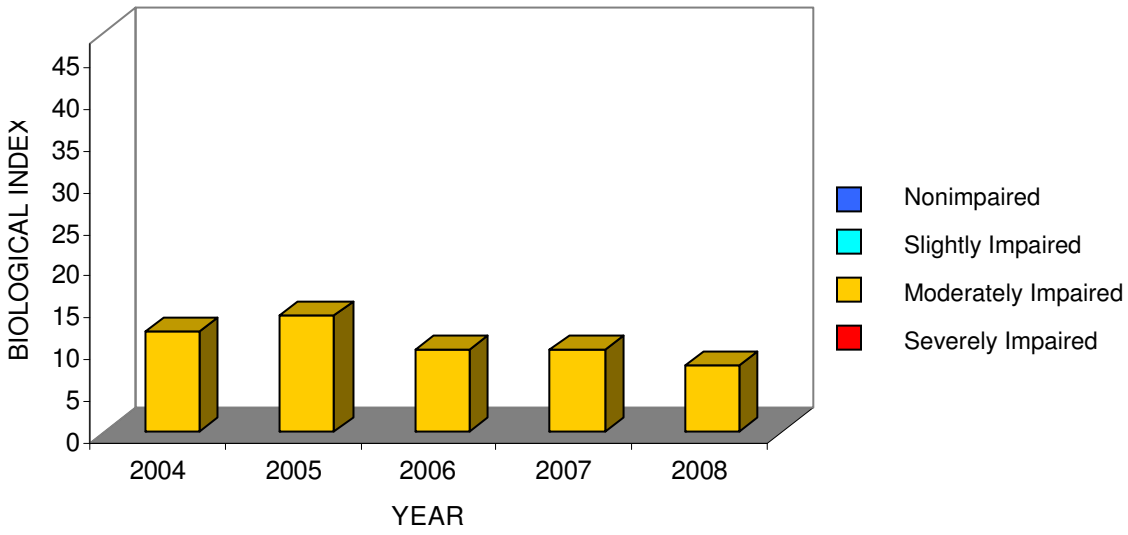
2008

Biological and Habitat Summary	
Number of Taxa	7
Diversity Index	1.16
RBP Score	8
RBP Condition	Moderately Impaired
Total Habitat Score	153
Habitat Condition Category	Supporting

Water Quality Index



Biological Index



Susquehanna River at Conowingo, Md. (SUSQ 10.0)

Group 1

Water Quality:

Temperature exceeded water quality standards in the summers of 2007 and 2008.

Biological Condition: NA

Habitat Assessment: NA

Trends:

Water quality showed no major change, but the Water Quality Index value remained consistently among the worst of all Pennsylvania-Maryland Interstate Streams.

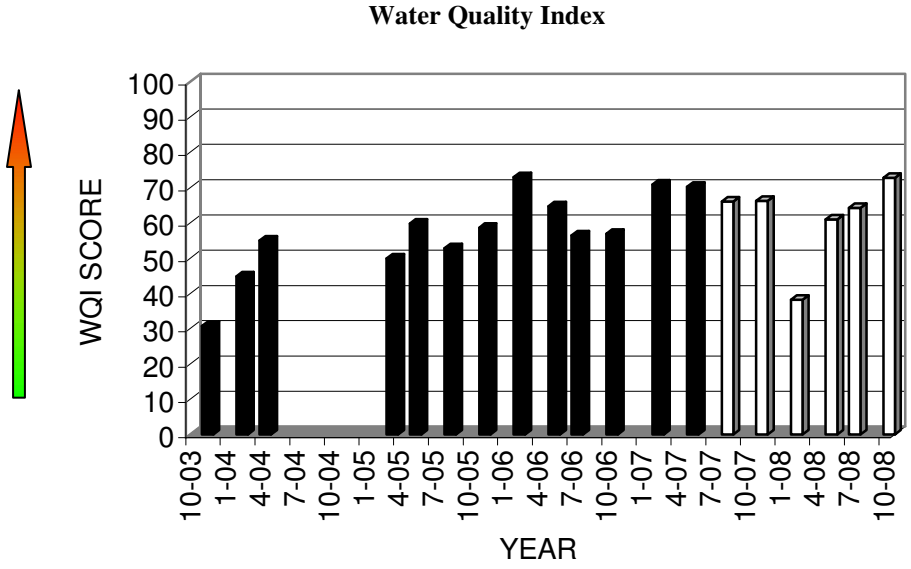
Other Notes:

Macroinvertebrate collection and habitat assessments are not performed at SUSQ 10.0 due to deep waters and lack of riffle habitat. This site is only 10 miles upstream of where the Susquehanna River empties into the Chesapeake Bay. The SUSQ 10.0 sampling site is located below the Conowingo hydroelectric dam, the last of four major power generating dams on the lower Susquehanna River.

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
Temperature	8/07/2007	30.6° C	25.0° C	Pa. aquatic life
Temperature	7/23/2008	30.7° C	25.0° C	Pa. aquatic life

Date	WQI	Parameters Exceeding 90th Percentile							
8/07/2007	66.0	TSO4	TS	TNH3	TMn	TCl	DO	COND	TEMP
11/01/2007	66.2	TSO4	TS	TURB	TNH3	DO	COND	TEMP	
2/20/2008	38.2								
5/20/2008	61.0	TSO4	TMn	DO	TEMP				
7/23/2008	64.2	TS	TNH3	TMn	DO	COND	TEMP	TNO2	
10/23/2008	72.7	TURB	TNH3	TMn	TOC	TEMP			

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.



Susquehanna River at Marietta, Pa. (SUSQ 44.5)

Water Quality:

Temperature, total iron, and dissolved oxygen did not meet water quality standards.

Biological Condition:

2007	Nonimpaired
2008	Nonimpaired

Habitat Assessment:

2007	Excellent
2008	Excellent

Trends:

Water quality has remained fairly consistent over the last five years at SUSQ 44.5. Macroinvertebrates were sampled in 2007 and 2008 for the first time since 2002, and showed nonimpaired biological conditions at this site.

Other Notes:

Macroinvertebrate sampling and habitat assessments have resumed one half of a mile upstream of SUSQ 44.5 at the Marietta (US Route 30) bridge where a large riffle extends across the river. However, assessing habitat on a river nearly a mile wide is difficult due to size. Also, macroinvertebrate sampling on a river this size may not be completely representative, due to the small portion of the river sampled. The SUSQ 44.5 sampling site is located upstream of three of the four major power generating dams on the lower Susquehanna River.

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
Temperature	8/08/2007	32.9° C	25.0° C	Pa. aquatic life
TFe	2/20/2008	1690 ug/l	1500 ug/l	Pa. aquatic life
Temperature	7/23/2008	29.1° C	25.0° C	Pa. aquatic life

Date	**WQI**	**Parameters Exceeding 90th Percentile**						
8/08/2007	53.7	TSO4	TS	TOC	TCl	COND	TEMP	
11/01/2007	67.2	TFe	TURB	TAl	TMn	SS		
2/20/2008	57.0	TFe	TURB	TAl	TMn	DO	SS	
5/22/2008	60.8	TSO4	DO	SS	TEMP			
7/23/2008	60.1	TSO4	TS	TOC	DO	COND	TEMP	
10/23/2008	51.0	TSO4	TS	COND				

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

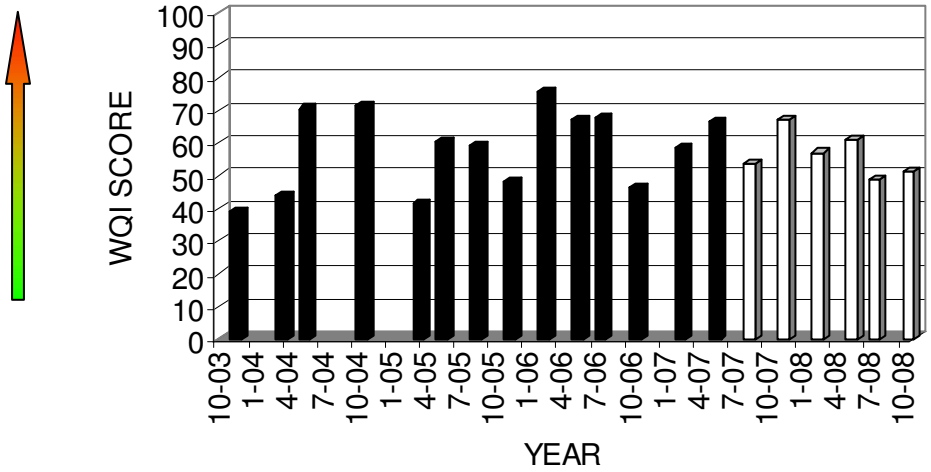
2007

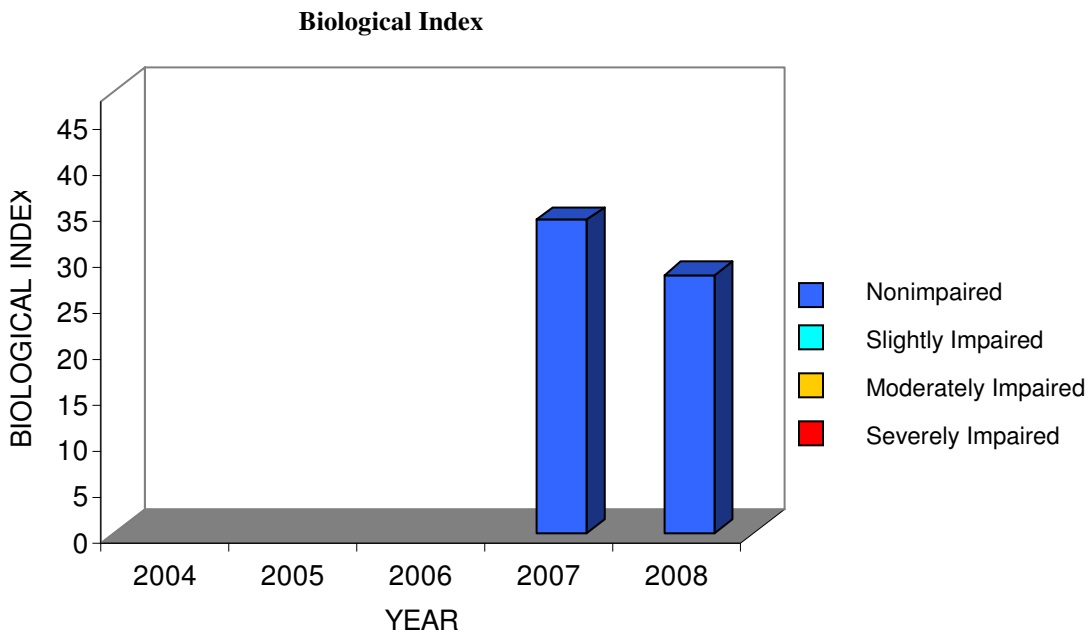
Biological and Habitat Summary	
Number of Taxa	22
Diversity Index	2.29
RBP Score	34
RBP Condition	Nonimpaired
Total Habitat Score	164
Habitat Condition Category	Excellent

2008

Biological and Habitat Summary	
Number of Taxa	22
Diversity Index	2.43
RBP Score	28
RBP Condition	Nonimpaired
Total Habitat Score	180
Habitat Condition Category	Excellent

Water Quality Index




Biological Index
BIOLOGICAL INDEX
45
40
35
30
25
20
15
10
5
0
2004
2005
2006
2007
2008
YEAR
Nonimpaired
Slightly Impaired
Moderately Impaired
Severely Impaired

Susquehanna River at Sayre, Pa. (SUSQ 289.1)

Group 1

Water Quality:

Temperature, total iron, and total aluminum failed to meet water quality standards.

Biological Condition:

2007	Reference (Nonimpaired)
2008	Nonimpaired

Habitat Assessment:

2007	Reference (Excellent)
2008	Excellent

Trends:

Biological condition remained nonimpaired and achieved reference status as the best of all Pennsylvania-New York Interstate river stations in 2007. Habitat also remained excellent, serving as the reference site in 2007.

Other Notes:

Instream cover and frequency of riffles were suboptimal at this site. Lab water quality was not assessed for the February 2008 sampling quarter.

Fish consumption in the Susquehanna River near Sayre is known to be impaired due to elevated levels of mercury. The source of mercury is not known, but atmospheric deposition is

the suspected cause. NYSDEC recommends a limit of one meal per month of walleye over 22 inches (NYSDEC, 2001).

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
Temperature	7/30/2007	26.4° C	25.0° C	Pa. aquatic life
TFe	10/16/2007	316 ug/l	300 ug/l	N.Y. aquatic (chronic)
TAl	10/16/2007	387 ug/l	100 ug/l	N.Y. aquatic (chronic)
Temperature	7/21/2008	28.0° C	25.0° C	Pa. aquatic life
TAl	7/21/2008	896 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	7/21/2008	1880 ug/l	300 ug/l 1500 ug/l	N.Y. aquatic (chronic) Pa. aquatic life
TFe	10/27/2008	345 ug/l	300 ug/l	N.Y. aquatic (chronic)

Date	**WQ I**	**Parameters Exceeding 90th Percentile**							
7/30/2007	50.9	TN							
10/16/2007	53.8	TURB	TOC						
2/12/2008	NA								
5/22/2008	63.3	TN	DO						
7/21/2008	44.0	TEMP							
10/27/2008	72.5	TNO3	TN	TEMP					

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

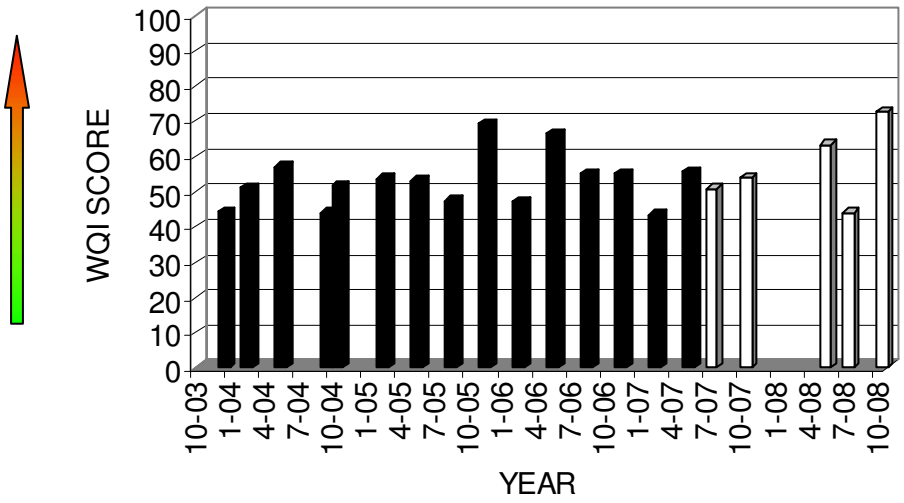
2007

Biological and Habitat Summary	
Number of Taxa	26
Diversity Index	2.42
RBP Score	38
RBP Condition	Reference (Nonimpaired)
Total Habitat Score	165
Habitat Condition Category	Reference (Excellent)

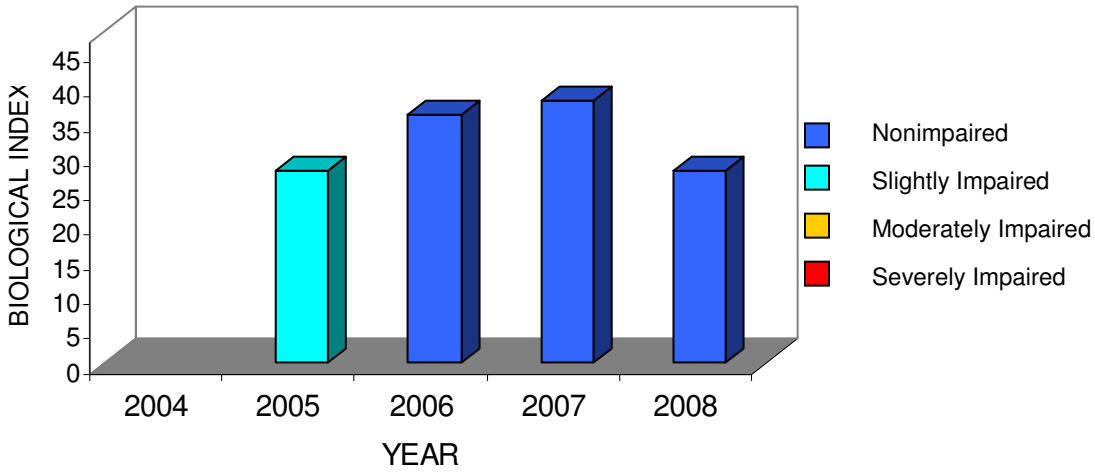
2008

Biological and Habitat Summary	
Number of Taxa	18
Diversity Index	2.19
RBP Score	28
RBP Condition	Nonimpaired
Total Habitat Score	177
Habitat Condition Category	Excellent

Water Quality Index



Biological Index



Susquehanna River at Kirkwood, N.Y. (SUSQ 340.0)

Group 1

Water Quality:

Temperature and total aluminum exceeded water quality standards.

Biological Condition:

2007	Nonimpaired
2008	Nonimpaired

Habitat Assessment:

2007	Excellent
2008	Supporting

Trends:

Water quality continues to show slight overall improvement. Biological condition remains nonimpaired, among the best of all Interstate river sites. Habitat ratings remain near the top as well.

Other Notes:

In 2007, SUSQ 340 possessed the best bioassessment score of all large river Interstate sites. However, habitat ratings were significantly surpassed by SUSQ 289.1, which precluded SUSQ 340 from retaining its reference status. Concerns with habitat at this site include sediment deposition and riparian vegetative width.

Similar to SUSQ 289.1 and SUSQ 365, fish consumption is known to be impaired at SUSQ 340, due to elevated mercury levels in large walleye in this area of the Susquehanna River. Atmospheric deposition is the suspected source of mercury. Additionally, this reach of the Susquehanna River supplies drinking water to the Binghamton area. Although no impairments to water quality have been found at SUSQ 340, the drinking water supply is threatened due to high level of use and potential impacts to the large watershed area (NYSDEC, 2001).

Lab water quality was not assessed for the February 2008 sampling quarter.

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
Temperature	8/01/2007	25.1° C	25.0° C	Pa. aquatic life
TAl	10/15/2007	344 ug/l	100 ug/l	N.Y. aquatic (chronic)
Temperature	7/21/2008	27.2° C	25.0° C	Pa. aquatic life

Date	**WQI**	**Parameters Exceeding 90th Percentile**							
8/01/2007	42.7								
10/15/2007	42.3								
2/11/2008	NA	DO							
5/22/2008	55.3	DO							
7/21/2008	31.2	TEMP							
10/27/2008	44.9								

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

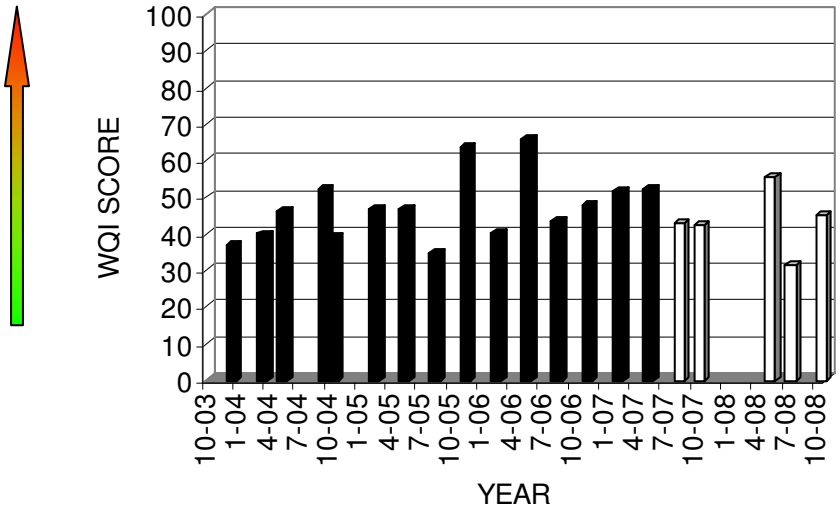
2007

Biological and Habitat Summary	
Number of Taxa	28
Diversity Index	2.74
RBP Score	40
RBP Condition	Nonimpaired
Total Habitat Score	149
Habitat Condition Category	Excellent

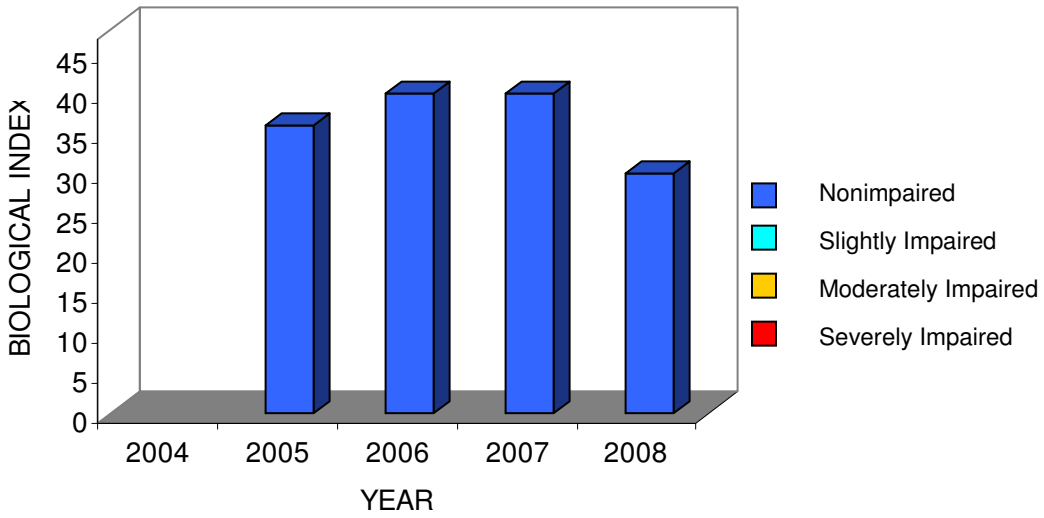
2008

Biological and Habitat Summary	
Number of Taxa	16
Diversity Index	2.31
RBP Score	30
RBP Condition	Nonimpaired
Total Habitat Score	149
Habitat Condition Category	Supporting

Water Quality Index



Biological Index



Susquehanna River at Windsor, N.Y. (SUSQ 365.0)

Group 1

Water Quality:

Total aluminum, temperature, and total iron failed to meet water quality standards.

Biological Condition:

2007	Nonimpaired
2008	Nonimpaired

Habitat Assessment:

2007	Excellent
2008	Excellent

Trends:

Water quality showed a slight overall decline, while habitat remained excellent. Biological conditions improved from slightly impaired in 2006 to nonimpaired in 2007 and 2008, falling near the top of all large river Interstate sites.

Other Notes:

No major problems were observed with habitat, but staff noted that a large gravel bar divides the channel at this site. Evidence of major bed movement from the June 2006 flooding event continues to be present at SUSQ 365. Lab water quality was not assessed in the February 2008 sampling quarter.

Fish consumption in this section of the Susquehanna River is known to be impaired due to elevated levels of mercury found in larger walleye individuals (NYSDEC, 2001).

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
TAl	10/15/2007	215 ug/l	100 ug/l	N.Y. aquatic (chronic)
Temperature	7/21/2008	25.7° C	25.0° C	Pa. aquatic life
TFe	7/21/2008	320 ug/l	300 ug/l	N.Y. aquatic (chronic)
TFe	10/27/2008	576 ug/l	300 ug/l	N.Y. aquatic (chronic)
TAl	10/27/2008	210 ug/l	100 ug/l	N.Y. aquatic (chronic)

Date	**WQI**	**Parameters Exceeding 90th Percentile**							
7/31/2007	46.2	TNH3	TN	DO					
10/15/2007	40.8								
2/11/2008	NA								
5/22/2008	58.0	TNO3	DO						
7/21/2008	38.3	TEMP							
10/27/2008	65.4	TFe							

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

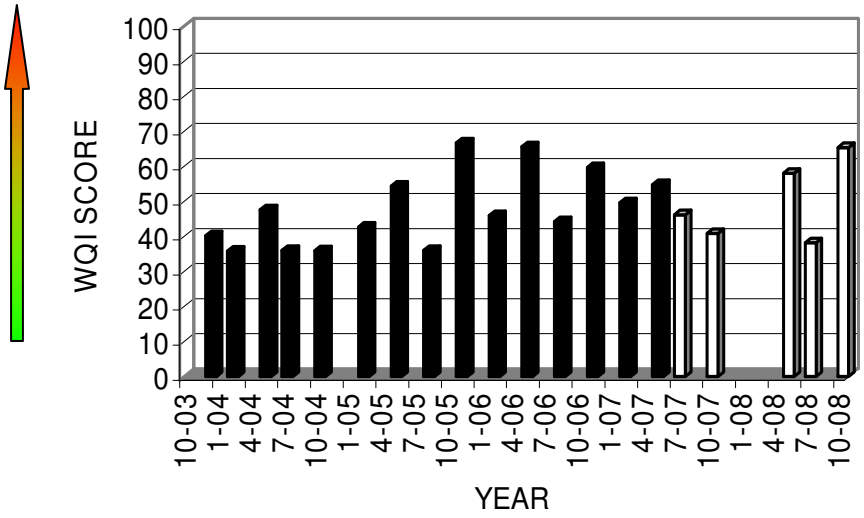
2007

Biological and Habitat Summary	
Number of Taxa	31
Diversity Index	2.53
RBP Score	34
RBP Condition	Nonimpaired
Total Habitat Score	168
Habitat Condition Category	Excellent

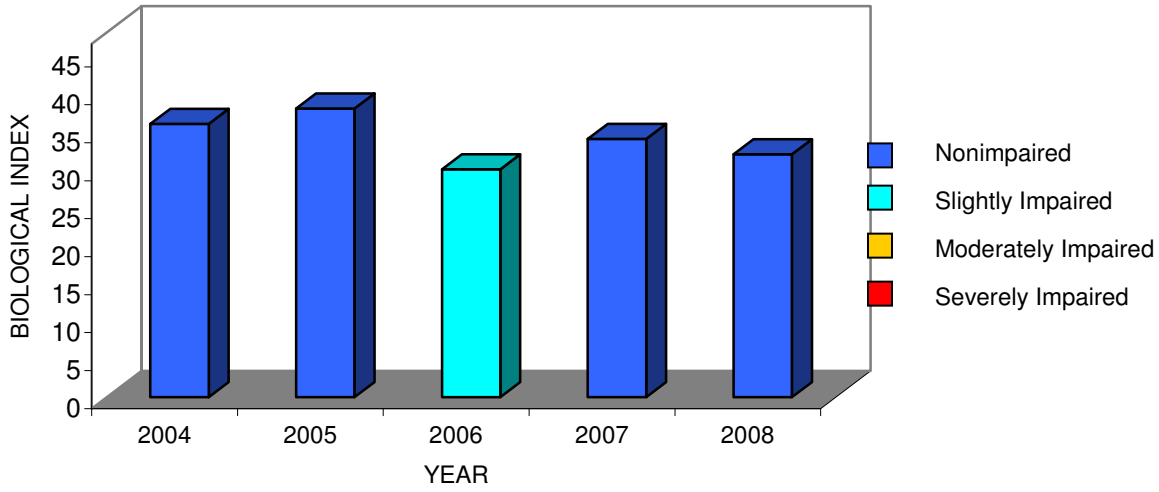
2008

Biological and Habitat Summary	
Number of Taxa	30
Diversity Index	2.69
RBP Score	32
RBP Condition	Nonimpaired
Total Habitat Score	164
Habitat Condition Category	Excellent

Water Quality Index



Biological Index



Tioga River at Lindley, N.Y. (TIOG 10.8)

Group 1

Water Quality:

Total aluminum and total iron exceeded water quality standards.

Biological Condition:

2007	Slightly Impaired
2008	Reference (Nonimpaired)

Habitat Assessment:

2007	Excellent
2008	Reference (Excellent)

Trends:

Water quality showed slight improvement, while habitat conditions remained optimal. Biological conditions declined in 2007 to slightly impaired, but rebounded in 2008 to serve as the reference site for all large river Interstate sites.

Other Notes:

The New York State Department of Conservation (NYSDEC) identified minor impacts to the Tioga River in its publication, The 2004 Chemung River Basin Waterbody Inventory and Priority Waterbodies List (NYSDEC, 2007). According to this publication, aquatic life, habitat, and hydrology of the river are suspected of being stressed. Suggested causes of stress include

siltation, modified flows due to upstream reservoir releases, and erosion in tributaries. Additionally, abandoned mine drainage near the Pennsylvania border decreases pH values, which could adversely affect aquatic life in the river.

A bridge replacement project is slated to begin in 2009, so this station will be monitored closely during the next calendar year of Interstate stream sampling.

Parameters Exceeding Standards				
Parameter	**Date**	**Value**	**Standard**	**State**
TAl	10/16/2007	247 ug/l	100 ug/l	N.Y. aquatic (chronic)
TAl	2/13/2008	2843 ug/l	100 ug/l	N.Y. aquatic (chronic)
TFe	2/13/2008	4696 ug/l	300 ug/l 1500 ug/l	N.Y. aquatic (chronic) Pa. aquatic life

Date	**WQI**	**Parameters Exceeding 90th Percentile**							
8/01/2007	55.8	TSO4	TNH3	DO	SS				
10/16/2007	44.7	TSO4	TEMP						
2/13/2008	65.8	TMn	DO						
5/21/2008	65.4	TFe	TSO4	TMn	DO	SS	TEMP		
7/22/2008	38.2	TSO4	DO						
10/28/2008	46.6	TSO4	DO						

For information on the parameter abbreviations used above and data analysis procedures, go to Methods.

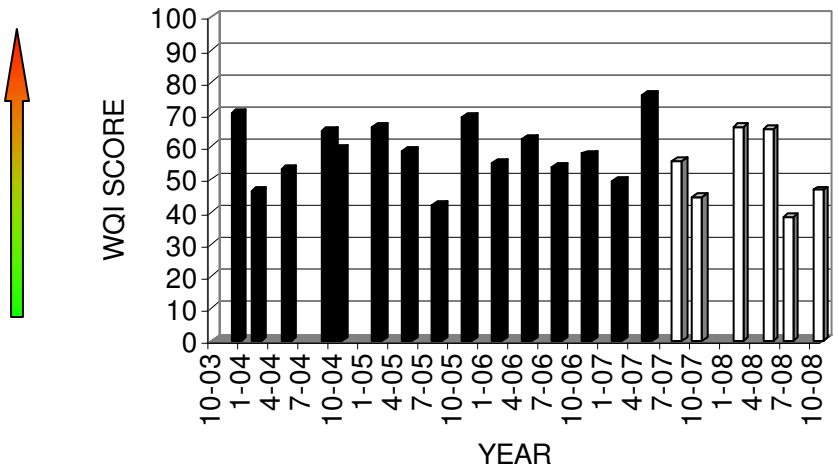
2007

Biological and Habitat Summary	
Number of Taxa	22
Diversity Index	2.27
RBP III Score	28
RBP III Condition	Slightly Impaired
Total Habitat Score	154
Habitat Condition Category	Excellent

2008

Biological and Habitat Summary	
Number of Taxa	21
Diversity Index	2.13
RBP III Score	32
RBP III Condition	Reference (Nonimpaired)
Total Habitat Score	182
Habitat Condition Category	Reference (Excellent)

Water Quality Index



Biological Index