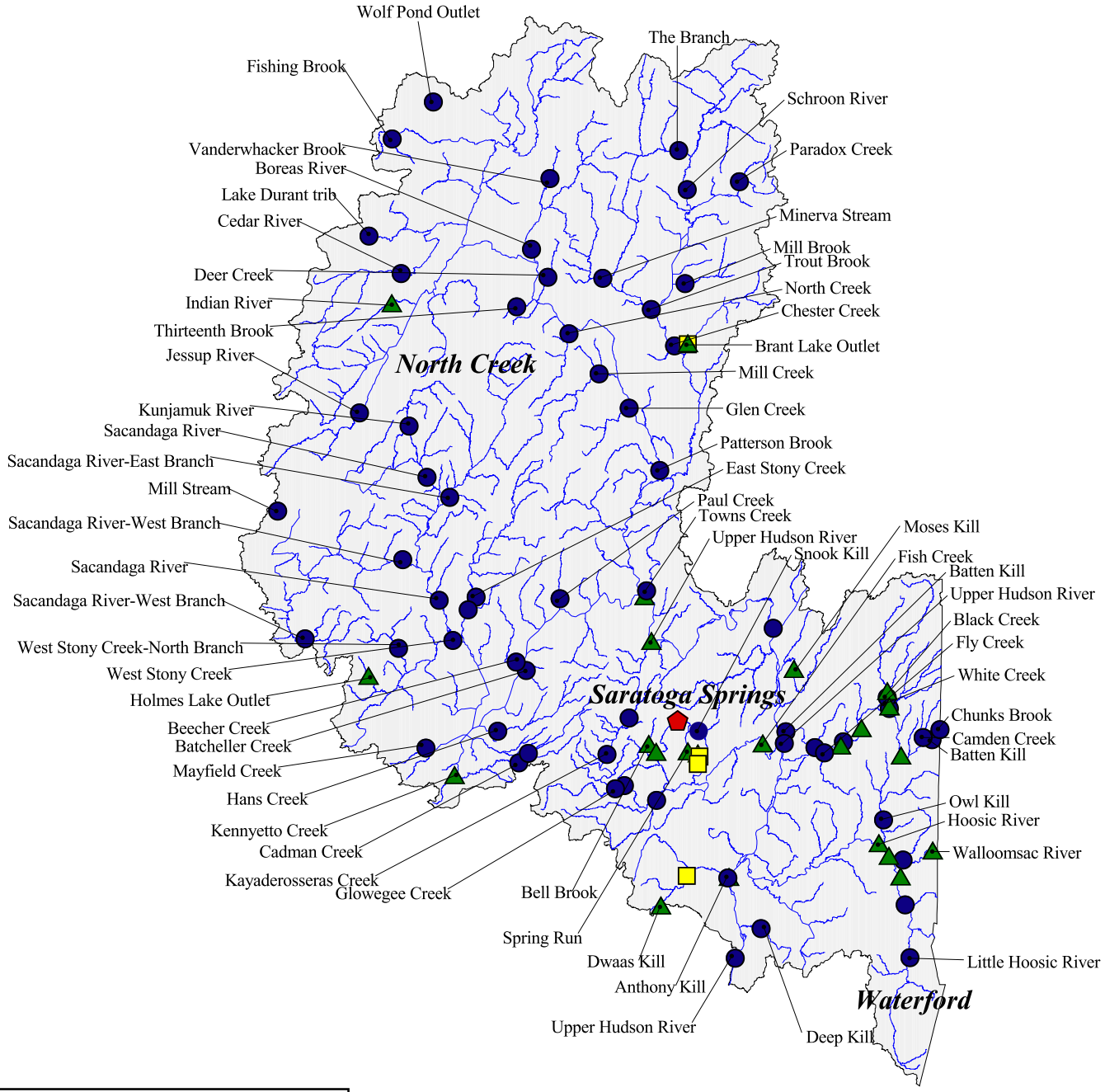
Upper Hudson River Drainage Basin

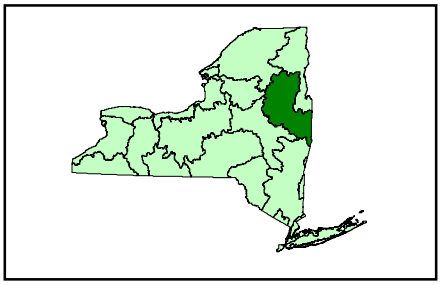


Water Quality Assessment based on Resident Macroinvertebrates

- non-impacted
- slightly impacted
- moderately impacted
- severely impacted

N
W E
S

0 6 12 18 24 30 Miles



UPPER HUDSON RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

STATION	LOCATION	YEAR SAMPLED
ANTHONY KILL (ANTH)		
01	Mechanicville, above Viall St	01 02
02	Mechanicville, below Rte 4 bridge	01
BATCHELLER CREEK (BACH)		
01	Batchellerville, above Saratoga Co Rte 7 bridge	01
BATTEN KILL (BATT)		
VT1	Manchester Center, VT, below Union St bridge	01
VT2	below Manchester, VT,off Riverbend Rd	01
VT2A	Below Manchester, VT, below Manchester STP	01
VT3	Arlington, VT, above Benedict Crossing bridge	01
AA	Vermont border, above Rt. 313 parking area	93 94 99 01
A	Above Shushan, Route 64 bridge	86 99 01
B	Below Rexleigh, below Rte 22 bridge	99 01
00	Above Battenville, 0.8 mi above bridge	84 86 88 99 01
01	Above Center Falls, Ray Road bridge	84 86
03	Below Center Falls, Route 29	84 86 99 01
08	Greenwich, Hegeman Road bridge	84 86 87 93 99
16	Clarks Mills, below bridge	84 86 99 01
BEECHER CREEK (BECH)		
01	Edinburg, off Co Rte 4	01
BELL BROOK (BELL)		
03	Below Greenfield Center, below Canty Rd. bridge	97
05	Saratoga Springs, above Locust Grove Rd. bridge	97
BLACK CREEK (BLKC)		
01	Fitch Point, above Cemetery Rd bridge	99 01
BOREAS RIVER (BORE)		
01	Minerva, Northwoods Club Road bridge	93 01
THE BRANCH (BRAN)		
01	North Hudson, Blue Ridge Rd @pull-off	01
BRANT LAKE OUTLET (BRNT)		
01	Brant Lake, below Rt. 8 bridge	01
CADMAN CREEK (CADM)		
01	Skinner Corners, below Co Rte 13 bridge	01
CAMDEN CREEK (CAMD)		
01	below Vermont border, Hickory Hill Rd bridge	99
CEDAR RIVER (CEDR)		
01	Indian Lake, Cedar River Road	93 01

UPPER HUDSON RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

STATION	LOCATION	YEAR SAMPLED
CHESTER CREEK (CHST)		
01	Starbuckville, above Schroon River Rd (Co Rte 30) bridge	01
CHUNKS BROOK (CHNK)		
01	At Vermont line, above Rte 313 bridge	99 01
CLOVER MILL BROOK (CLOV)		
01	Milton, East Galway Road	87 88
02	Milton, Route 29 bridge	87 88
DEEP KILL (DKIL)		
01	Grant Hollow, below Grant Hollow Rd	01
DEER CREEK (DERC)		
01	SW of Minerva, above culvert crossing @Co Rte 37	01
DWAAS KILL (DWAS)		
01	Clifton Park, above Vischer Ferry Rd. bridge	00
03	Ushers, below culvert @Tabor Rd	01
EAST STONY CREEK (STNC)		
E	Hope Falls, below Creek Rd bridge	93 01
FISH CREEK (FISC)		
01	Saratoga, Burgoyne Road bridge	88
03	Victory Mills, Bridge Street	87 88 94 01 02
FISHING BROOK (FISB)		
01	Near Long Lake, below Rte 28N bridge	01
FLY CREEK (FLYG)		
01	Greenwich, above Rte 372	01
GLEN CREEK (GLNC)		
01	The Glen, Glen Creek Rd @dirt road to creek	01
GLOWEGEE CREEK (GLOW)		
01	Milton Center, above Lewis Rd	01
HANS CREEK (HANC)		
01	Benedict, below Fulton Co Rte 110 bridge	01
HOLMES LAKE OUTLET (HOLO)		
01	Lindsley Corners, below Rte 125	01
HOOSIC RIVER (HOOS)		
06	North Petersburg, NY/VT border at Route 346	73 83 84 85 86 87 88 02
06B	Petersburg Junction, Route 95 bridge	83 93 94 01
07	Hoosick, Rte 22, below Rte 7 bridge	83 84 85 86 01

UPPER HUDSON RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

STATION	LOCATION	YEAR SAMPLED												
HOOSIC RIVER (HOOS) cont.														
08	Hoosick Falls, Church St bridge			84	85	86							01	
09	Below Hoosick Falls, Marker Rd		83	84	85	86							01	
10	Eagle Bridge, Route 67 bridge			84	85	86	87			93			01	
11	Johnsonville, Johnsonville bridge			84	85	86			89					
12	Below Valley Falls			84										
13	Below Schaghticoke, Knickerbocker Road				85	86								
HUDSON RIVER, UPPER (UHUD)														
X	Indian Lake, at Gooley Club house													02
Y	Above Indian Lake, @confluence w/Indian River													02
A	North River, Rte 28; above 13th Brook												01	
00	North Creek at Route 28N bridge						87	88						
01A	Riparius, Route 8 bridge									93	94			02
01	Above Corinth, River St	72	77				87	88		93	94		01	
02	Below Corinth, above Spier Falls Dam	72	77											
02A	Below Corinth, below Spier Falls Dam					86								
03	Above Glens Falls, Big Bay Rd peninsula	72												
04	Bakers Falls, above Bakers Falls	72		78		86								
04A	Below Fort Edward		77				87	88		93			01	
05	Below Fort Edward, below canal junction	72	77											
06	Above Fort Miller, Buoy 189	72	77			86								
07	Schuylerville, Buoy 148	72					87	88		93			01	
08	Below Schuylerville, Buoy 109	72												
09	Stillwater, Buoy 81	72				86								
10	Below Mechanicville, Buoy 39	72												
11	Above Waterford, Buoy 13	72	77				87	88		93	94		01	
12	Troy, above Troy lock, Buoy 85	72												
INDIAN RIVER (INDI)														
01	Indian Lake, Chain Lakes Road									93			01	02
JESSUP RIVER (JESS)														
01	Near Perkins Clearing, above Rte 30 bridge												01	
KAYADEROSSERAS CREEK (KAYD)														
01	Porter Corners, above Bockes Rd. bridge											97		
02	Middle Grove, below Rt. 21 bridge											97		
03	Milton Center, below Middle Line Rd. bridge											97	01	
03A	Ballston Spa, above Ralph St.													02
04	Ballston Spa, above Grays Crossing Rd. (Co. Rt. 45)									93		97	01	
KENNYETTO CREEK (KYET)														
00	Hagedorns Mills, above Co Rte 14 bridge												01	
01	Vail Mills, Route 30 bridge									93	94		01	

UPPER HUDSON RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

STATION	LOCATION	YEAR SAMPLED
KUNJAMUK RIVER (KUNJ)		
01	Long Level, below Elm Lake Rd bridge	01
LAKE DURANT TRIB (DURT)		
01	Blue Mountain Lake, off Rte 28/30,above bridge @L. Durant campground	01
LITTLE HOOSIC RIVER (HOOS)		
06A	North Petersburg, Route 346	83 84 85 86 94 01 02
MAYFIELD CREEK (MAYF)		
01	Riceville, above Knott Rd bridge	01
MILL BROOK (MLHD)		
01	Adirondack, near Redwing Rd/ Co Rt 15 intersection	01
MILL CREEK (MILW)		
01	Wevertown, Rte 8 @ pulloff up from Harrington Rd	01
MILL STREAM (MLLP)		
01	Piseco, T-Lake, above trail & stream junction	01
MINERVA STREAM (MIRV)		
01	Olmstedville, Trout Brook Rd @bridge	01
MOSES KILL (MOSE)		
01	Lick Springs, below Rte 46 bridge	01
NORTH CREEK (NORH)		
01	North Creek, Rte 28 bridge, @Ski Bowl Rd	01
OWL KILL (OWL)		
01	White Creek, Owl Kill Road bridge	93 01
PARADOX CREEK (PDOX)		
01	Paradox, below Letsonville Rd bridge	01
PATTERSON BROOK (PATR)		
01	Warrensburg, River Rd (up from Buyce Cross Rd)	01
PAUL CREEK (PAUL)		
01	Day Center, above North Shore Rd	01
SACANDAGA RIVER (SACN)		
A	Auger Falls, old Rt 8 bridge	01
B	Griffin, below Rte 8 bridge	02
00	Hope, 5 mi. below gage	93 01
01	Hadley, below Old Corinth Rd. bridge	94 01

UPPER HUDSON RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

STATION	LOCATION	YEAR SAMPLED
SACANDAGA RIVER, EAST BRANCH (SACN)		
E1	East Branch Sacandaga, below Griffin, pulloff on Rte 8	01
SACANDAGA RIVER, WEST BRANCH (SACN)		
W1	West Branch Sacandaga @Arietta, above Rte 10 bridge	01
W2	West Branch Sacandaga @Blackbridge, above Blackbridge Rd bridge	01
SCHROON RIVER (SCHR)		
00	Schroon Falls, under Rte 9 bridge	94 01
01A	Warrensburg, above Rt. 9 bridge	93 94 01 02
01	Warrensburg, Route 418 bridge	87 88
SNOOK KILL (SNOK)		
01	Dimmick Corners, above Dimmick Rd	01
SPRING RUN (SRUN)		
00	Saratoga Springs, Excelsior @East Ave	02
01	Saratoga Springs, above Excelsior Springs Dr	01 02
02	Saratoga Springs, above Weibel Ave	01
03	Saratoga Springs, below Gilbert Rd	01
04	Saratoga Springs, below Union Ave	01
THIRTEENTH BROOK (THIR)		
01	North River, under gap btwn Rte 28 & pulloff bridges	01
TOWNS CREEK (TWNS)		
01	Lake Luzerne, above Main St bridge	01
TROUT BROOK (TBRK)		
01	Pottersville, Rte 9 & 87 bridge; below bridge (I-87 northbound)	01
VANDERWHACKER BROOK (WACK)		
01	Aiden Lair, above Rte 28 bridge	01
WALLOOMSAC RIVER (WALL)		
01	Riverside School, Vt., below Henry Bridge	83 84 85 89 91
02	North Bennington, Vt., below WWTF	83 84 85 89 91
03	Above Walloomsac, Cottrell Rd	83 84 85 89 91 93 94
04	North Hoosick, Rte 22 bridge	83 84 85 89 91 01
WEST STONY CREEK (STNC)		
W	Benson, above West Stony Creek Rd	01
N	(North Branch) Upper Benson, below Co Rte 6 bridge	01

UPPER HUDSON RIVER DRAINAGE BASIN SAMPLING SITES, 1972-2002

STATION	LOCATION	YEAR SAMPLED	
WHITE CREEK (WHIT)			
01	Salem; Greenwich Jct, above Hanks Rd bridge	01	02
WOLF POND OUTLET (WOPO)			
01	Newcomb, Arbutus Lake Rd bridge - ESF Huntington Forest	01	

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE UPPER HUDSON RIVER DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

Site/Reach	Water Quality Assessment	Change from 1992
Anthony Kill, Mechanicville, above Viall St	non-impacted	no prior data
Anthony Kill, Mechanicville, below SR 4	non-impacted	no prior data
Batcheller Creek, Batchellerville	non-impacted	no prior data
Batten Kill, Manchester Center	non-impacted	no prior data
Batten Kill, below Manchester, off Riverbend Rd	non-impacted	no prior data
Batten Kill, below Manchester, below Manchester STP	non-impacted	no prior data
Batten Kill, Arlington	non-impacted	no prior data
Batten Kill, Vermont border	non-impacted	no prior data
Batten Kill, above Shushan	slightly impacted	**DECLINED**
Batten Kill, below Rexleigh	non-impacted	no prior data
Batten Kill, above Battenville	slightly impacted	**DECLINED**
Batten Kill, below Center Falls	slightly impacted	**DECLINED**
Batten Kill, Greenwich	non-impacted	no change
Batten Kill, Clarks Mills	slightly impacted	**DECLINED**
Beecher Creek, Edinburg	non-impacted	no prior data
Bell Brook, below Greenfield Center	slightly impacted	no prior data
Bell Brook, Saratoga Springs	slightly impacted	no prior data
Black Creek, Fitch Point	slightly impacted	no prior data
Boreas River, Minerva	non-impacted	no prior data
The Branch, North Hudson	non-impacted	no prior data
Brant Lake Outlet, Brant Lake	slightly impacted	no prior data
Cadman Creek, Skinner Corners	non-impacted	no prior data
Camden Creek, below Vermont border	non-impacted	no prior data
Cedar River, Indian Lake	non-impacted	no prior data
Chester Creek, Starbuckville	non-impacted	no prior data
Chunks Brook, at Vermont line	non-impacted	no prior data
Deep Kill, Grant Hollow	non-impacted	no prior data
Deer Creek, SW of Minerva	non-impacted	no prior data
Dwaas Kill, Clifton Park	slightly impacted	no prior data
Dwaas Kill, Ushers	moderately impacted	no prior data
East Stony Creek, Hope Falls, below Creek Rd	non-impacted	no prior data

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE UPPER HUDSON RIVER DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

Site/Reach	Water Quality Assessment	Change from 1992
Fish Creek, Victory Mills	slightly impacted	no change
Fishing Brook, near Long Lake	non-impacted	no prior data
Fly Creek, Greenwich	non-impacted	no prior data
Glen Creek, The Glen	non-impacted	no prior data
Glowegee Creek, Milton Center	non-impacted	no prior data
Hans Creek, Benedict	non-impacted	no prior data
Holmes Lake Outlet, Lindsley Corners	slightly impacted	no prior data
Hoosic River, North Petersburg	slightly impacted	no change
Hoosic River, Petersburg Junction	slightly impacted	no change
Hoosic River, Hoosick	non-impacted	**IMPROVED**
Hoosic River, Hoosick Falls	slightly impacted	no change
Hoosic River, Hoosick Junction	slightly impacted	no change
Hoosic River, Eagle Bridge	slightly impacted	no change
Hudson River, Upper, Indian Lake	non-impacted	no prior data
Hudson River, Upper, Indian Lake, @ confluence with Indian River	slightly impacted	no prior data
Hudson River, Upper, North River	non-impacted	no prior data
Hudson River, Upper, Riparius	non-impacted	no prior data
Hudson River, Upper, Corinth	slightly impacted	**IMPROVED**
Hudson River, Upper, Fort Edward	non-impacted	**IMPROVED**
Hudson River, Upper, Schuylerville	non-impacted	**IMPROVED**
Hudson River, Upper, Waterford	non-impacted	**IMPROVED**
Indian River, Indian Lake	slightly impacted	no prior data
Jessup River, near Perkins Clearing	non-impacted	no prior data
Kayaderosseras Creek, Porter Corners	non-impacted	no prior data
Kayaderosseras Creek, Middle Grove	non-impacted	no prior data
Kayaderosseras Creek, Milton Center	non-impacted	no prior data
Kayaderosseras Creek, Ballston Spa, above Ralph St.	slightly impacted	no prior data
Kayaderosseras Creek, Ballston Spa, Co. Rt. 45	non-impacted	no prior data
Kennyetto Creek, Hagedorns Mills	non-impacted	no prior data
Kennyetto Creek, Vail Mills	slightly impacted	no prior data
Kunjamuk River, Long Level	non-impacted	no prior data

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE UPPER HUDSON RIVER DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

Site/Reach	Water Quality Assessment	Change from 1992
Lake Durant trib, Blue Mountain Lake	non-impacted	no prior data
Little Hoosic River, North Petersburg	non-impacted	no change
Mayfield Creek, Riceville	non-impacted	no prior data
Mill Brook, Adirondack	non-impacted	no prior data
Mill Creek, Wevertown	non-impacted	no prior data
Mill Stream, Piseco	non-impacted	no prior data
Minerva Stream, Olmstedville	non-impacted	no prior data
Moses Kill, Lick Springs	slightly impacted	no prior data
North Creek, North Creek	non-impacted	no prior data
Owl Kill, White Creek	non-impacted	no prior data
Paradox Creek, Paradox	non-impacted	no prior data
Patterson Brook, Warrensburg	non-impacted	no prior data
Paul Creek**,** Day Center	non-impacted	no prior data
Sacandaga River, Auger Falls	non-impacted	no prior data
Sacandaga River, Griffin	non-impacted	no prior data
Sacandaga River, Hope	slightly impacted	no prior data
Sacandaga River, Hadley	slightly impacted	no prior data
Sacandaga River, East Branch, below Griffin	non-impacted	no prior data
Sacandaga River, West Branch, Arietta	non-impacted	no prior data
Sacandaga River, West Branch, Blackbridge	non-impacted	no prior data
Schroon River, Schroon Falls	slightly impacted	no prior data
Schroon River, Warrensburg	non-impacted	no prior data
Snook Kill, Dimmick Corners	non-impacted	no prior data
Spring Run, Saratoga Springs, Excelsior Ave. @ East Ave	severely impacted	no prior data
Spring Run, Saratoga Springs, above Excelsior Springs Dr.	severely impacted	no prior data
Spring Run, Saratoga Springs, above Weibel Ave	slightly impacted	no prior data
Spring Run, Saratoga Springs, below Gilbert Rd	moderately impacted	no prior data

ASSESSMENTS OF WATER QUALITY OF STREAMS IN THE UPPER HUDSON RIVER DRAINAGE BASIN, BASED ON MACROINVERTEBRATE COMMUNITIES

Site/Reach	Water Quality Assessment	Change from 1992
Spring Run, Saratoga Springs, below Union Ave	moderately impacted	no prior data
Thirteenth Brook, North River	non-impacted	no prior data
Towns Creek, Lake Luzerne	non-impacted	no prior data
Trout Brook, Pottersville	non-impacted	no prior data
Vanderwhacker Brook, Aiden Lair	non-impacted	no prior data
Walloomsac River, above Walloomsac	slightly impacted	no change
Walloomsac River, North Hoosick	non-impacted	no change
West Stony Creek, Benson	non-impacted	no prior data
West Stony Creek, North Branch, Upper Benson	non-impacted	no prior data
White Creek, Salem	non-impacted	no prior data
Wolf Pond Outlet, Newcomb	non-impacted	no prior data

REPORTS OF MACROINVERTEBRATE SURVEYS WITHIN THE UPPER HUDSON RIVER WATERSHED

STREAM	YEAR OF SURVEY	REPORT
Cataract Brook	2002	HBRW
Batten Kill	1984	DOH,1985
Batten Kill	1986	SBU,1987
Batten Kill	1999	SBU,1999
Batten Kill	2001	SBU,2002
Hamilton Co. Streams	2000	Ham. Co.
Hoosic River	1983	DOH,1983
Hoosic River	2001	SBU,2001
Kayaderosseras Creek	1997	SBU,1998
Millington Brook	2001	HBRW
Millington Brook	2002	HBRW
Spring Rum	2002	SBU,2002
Upper Hudson River	1972	DOH
Walloomsac River	1984	DOH,1985
Walloomsac River	1991	SBU,1991
White Creek	2001	HBRW
Watershed Streams	1987-1988	RIBS,1990

AVON	Avon Pollution Investigations Unit, Div. of Fish & Wildlife, NYS DEC
DOH	New York State Department of Health
Ham. Co.	Hamilton County Soil & Water Conservation District
HBRW	Hudson Basin River Watch, Rapid Watershed Assessment Program
RIBS	Rotating Intensive Basin System, Statewide Waters Assessment Section, NYS DEC
SBU	Stream Biomonitoring Unit, Division of Water, NYS DEC

Anthony Kill

Non-impacted water quality is assessed for the Anthony Kill, based on macroinvertebrate sampling at two Mechanicville sites in 2001. The fauna was dominated by clean-water mayflies. No prior data were available for the stream.

Batcheller Creek

Excellent water quality was diagnosed for this tributary of Great Sacandaga Lake, based on macroinvertebrate sampling at Batcheller in 2001. Clean-water mayflies, stoneflies, and caddisflies dominated the diverse fauna. No prior data were available for the stream

Batten Kill

Current water quality in the Batten Kill ranges between non-impacted and slightly impacted. Many sites are borderline between these two categories, depending on flow-year. In recent macroinvertebrate sampling, apparent declines in water quality were documented at Shushan, Battenville, Center Falls, and Clarks Mills, compared to 1986 conditions. Impacts appear assignable to nonpoint source nutrient enrichment. Slight increases in conductance in the river occurred since 1984 (Figure 11-1), likely related to residential and commercial development in the watershed. Further sampling is needed in the upper Batten Kill to examine the apparent trend. Crayfish collected in 1994 near the Vermont border showed endosulfan sulfate present above detection limits, and mercury present at 0.50 µg/g, exceeding the provisional level of concern of 0.20 µg/g for crayfish.

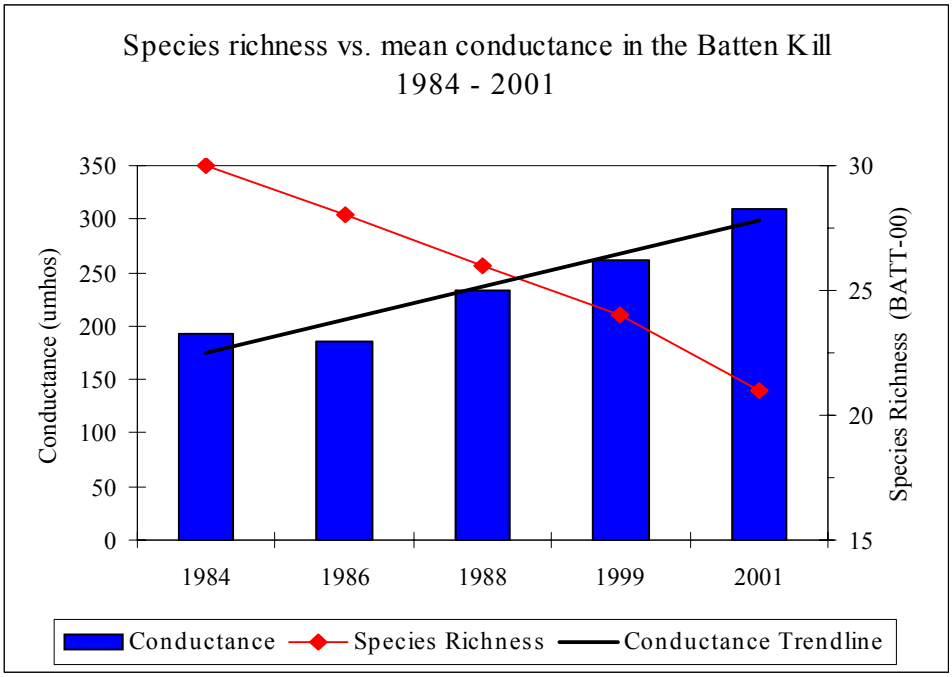


Figure 11-1. Species richness vs. mean conductance in the Batten Kill at Battenville, 1984-2001. Trendline for conductance (r=0.91) shown in black.

Beecher Creek

Excellent water quality was diagnosed for this tributary of Great Sacandaga Lake, based on macroinvertebrate sampling at Edinburg in 2001. Clean-water mayflies, stoneflies, and caddisflies dominated the diverse fauna. No prior data were available for the stream

Bell Brook

This tributary of Kayaderosseras Creek was sampled at two sites in 1997, and was assessed as slightly impacted. The fauna included some clean-water species and some species possibly indicating organic wastes.

Black Creek

Water quality in this Batten Kill tributary is assessed as slightly impacted, based on sampling at Fitch Point in 2001. ISD denoted nonpoint source nutrient enrichment as the primary stressor. This site was assessed as non-impacted in a 1999 sampling.

Boreas River

Non-impacted water quality was clearly indicated by the 1993 and 2001 macroinvertebrate samples at Minerva. Mayflies, stoneflies, and caddisflies were very numerous in the samples.

The Branch

Water quality is assessed as non-impacted for this stream. A site in North Hudson was sampled in 2001, and all metrics were within the range of the non-impacted category. Clean-water mayflies, stoneflies, and caddisflies dominated the fauna.

Brant Lake Outlet

This stream was sampled in 2001 below the Route 8 bridge, approximately one mile downstream of Brant Lake. The sample was assessed as moderately impacted, but clearly reflected impoundment effects from Brant Lake, being heavily dominated by filter-feeding caddisflies. A final corrected water quality assessment of slightly impacted is assigned to this stream, with a secondary stressor of nutrient enrichment.

Cadman Creek

Based on macroinvertebrate sampling at Skinner Corners in 2001, water quality is assessed as non-impacted for this tributary of Kennyetto Creek. The site and fauna showed minor effects of nutrient enrichment, including diatoms on stream rocks and many filter-feeding caddisflies in the sample. No prior data were available for the stream.

Camden Creek

This tributary of the Batten Kill exhibited non-impacted water quality, based on macroinvertebrate sampling at Hickory Hill Road bridge in 1999. The fauna contained many species of clean-water mayflies, stoneflies, and caddisflies.

Cedar River

Non-impacted water quality was clearly indicated by macroinvertebrate samples taken at Indian Lake in 1993 and 2001. Clean-water mayflies, stoneflies, and caddisflies were numerous.

Chester Creek

Water quality in Chester Creek is assessed as slightly impacted by nonpoint nutrient enrichment. The stream was sampled at Starbuckville, near the confluence with the Schroon River, in 2001. No prior data were available for the creek.

Chunks Brook

This tributary of the Batten Kill exhibited non-impacted water quality, based on macroinvertebrate sampling near the Vermont border in 1999. The fauna contained many species of clean-water mayflies, stoneflies, and caddisflies.

Deep Kill

Water quality was assessed as non-impacted for this Hudson River tributary, based on macroinvertebrate sampling at Grant Hollow in 2001. The stream showed evidence of nonpoint source nutrient enrichment, but faunal metrics were within the range of non-impact. No prior data were available for the stream.

Deer Creek

Non-impacted water quality is assessed for this Hudson River tributary, based on macroinvertebrate sampling near Minerva in 2001. The fauna contained many species of clean-water mayflies, stoneflies, and caddisflies. No prior data were available for the stream.

Dwaas Kill

Water quality of the Dwaas Kill in Clifton Park was assessed as slightly impacted in 2000 sampling. Nonpoint source nutrient enrichment was the primary stressor. A downstream site at Ushers was sampled in 2001, and was assessed as moderately impacted, likely reflecting additional runoff through residential and business areas.

East Stony Creek

Based on sampling at Hope Falls in 1993 and 2001, water quality was assessed as non-impacted. There was an abundance of clean-water mayflies, stoneflies, and caddisflies. No prior data were available for the stream.

Fish Creek

Monitoring of the creek has continued at the Victory Mills site. Macroinvertebrate sampling of this site in 1994 and 2001 indicated slightly impacted water quality, similar to previous findings. Nonpoint source nutrient enrichment was the primary stressor.

Fishing Brook

Water quality is assessed as non-impacted, based on sampling in 2001 east of Long Lake. Although the fauna was heavily dominated by filter-feeding caddisflies, this reflected effects of a wetland immediately upstream. The fauna included many clean-water stoneflies and mayflies. The metrics were adjusted for impoundment effects, yielding an assessment of non-impacted.

Fly Creek

Non-impacted water quality was indicated for this Batten Kill tributary by a macroinvertebrate sample taken in Greenwich in 2001. Within this category, the fauna exhibited some traits of nutrient enrichment and siltation. No prior data were available for the stream.

Glen Creek

Water quality was clearly non-impacted in this Hudson River tributary, based on sampling at The Glen in 2001. The macroinvertebrate fauna contained many species of clean-water mayflies, stoneflies, and caddisflies.

Glowegee Creek

Non-impacted water quality was indicated for this tributary of Kayaderosseras Creek by a macroinvertebrate sample taken in Milton Center in 2001. Within this category, the fauna exhibited some traits of nutrient enrichment. No prior data were available for the stream.

Hans Creek

Water quality was clearly non-impacted for this tributary of Great Sacandaga Lake. A site in Benedict was sampled in 2001, and all metrics were within the range of non-impacted conditions. The macroinvertebrate fauna contained many species of clean-water mayflies, stoneflies, and caddisflies.

Holmes Lake Outlet

Water quality was assessed as slightly impacted, based on macroinvertebrate sampling at Lindsley Corners in 2001. The primary factor affecting the fauna was the wetland area upstream. The fauna was dominated by filter-feeding caddisflies and midges. No major water quality problems were indicated.

Hoosic River

Nearly all of the Hoosic River in New York State is currently assessed as slightly impacted. A short reach at Hoosick was assessed as non-impacted in 2001 sampling, and may represent an improvement from previously documented conditions. The most upstream site at North Petersburg at the Vermont border was clearly slightly impacted by nonpoint

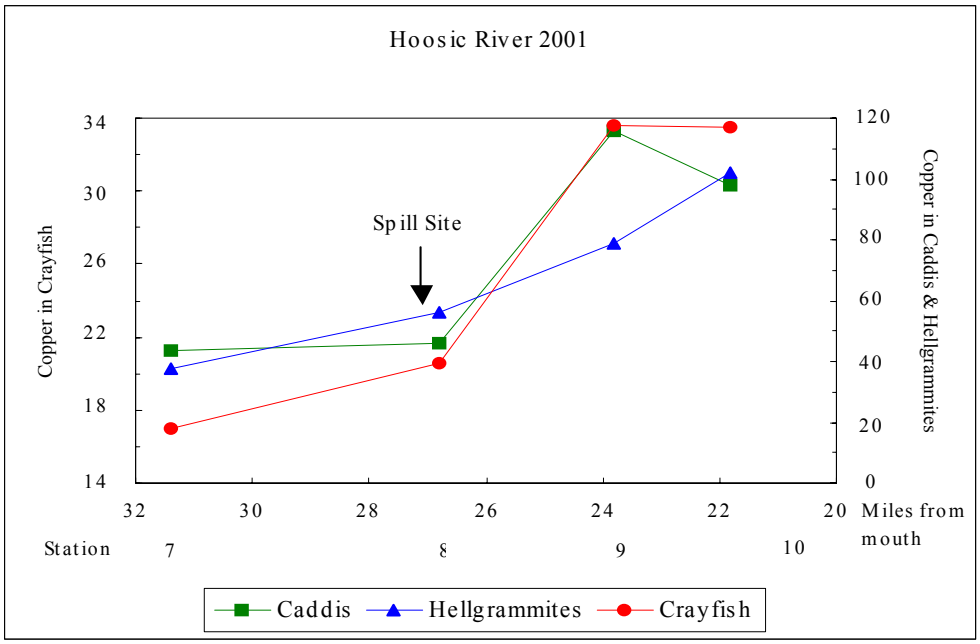


Figure 11-2. Copper levels in invertebrate tissues, Hoosic River, 2001, following a copper spill. The scale for crayfish is normalized to the scale for caddisflies and hellgrammites, based on levels of concern for each.

sources in 2002. Kick sampling at Petersburg Junction in 1993, 1994, and 2001 also indicated slightly impacted water quality. Community types suggest principal impacts were from silt and nonpoint source nutrient enrichment. Caddisflies collected in 1993 showed PCBs present at 1400 µg/kg, and caddisflies collected in 1994 also showed PCBs present at 1400 µg/kg. Crayfish collected in 1994 showed PCBs present at 520 µg/kg and four organochlorine pesticides above detection limits: 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, and endosulfan sulfate.

In 2001, a large spill of copper sulfate from the Oak Mitsui plant in Hoosick Falls was investigated to determine the extent of damage to aquatic invertebrate life. The damage to resident macroinvertebrate communities in the river appeared to be slight, but significant. Although all sites downstream of the spill maintained populations of stoneflies, caddisflies, hellgrammites, and crayfish, populations of mayflies were greatly depleted downstream of Hoosick Falls. Midge populations were also greatly reduced. The estimated recovery time for community impact was one year. Copper levels in invertebrate tissues increased an average of 85% downstream of the spill, and exceeded levels of concern (Figure 11-2). The site at Eagle Bridge was assessed as slightly impacted in the 2001 sampling. This site had been assessed as non-impacted in 1993 macroinvertebrate sampling, but was slightly impacted in samplings before then.

Hudson River, Upper

Water quality upstream of the confluence with the Indian River was assessed as non-impacted, and water quality immediately downstream of the confluence was assessed as slightly impacted, based on sampling in 2002. It was not determined how far downstream the impact extended. Sampling at North River in 2001 clearly indicated non-impacted conditions. Non-impacted water quality was also indicated at Riparius by kick sampling in 1993 and 1994. All indices from these samples were favorable, and very similar for the two years.

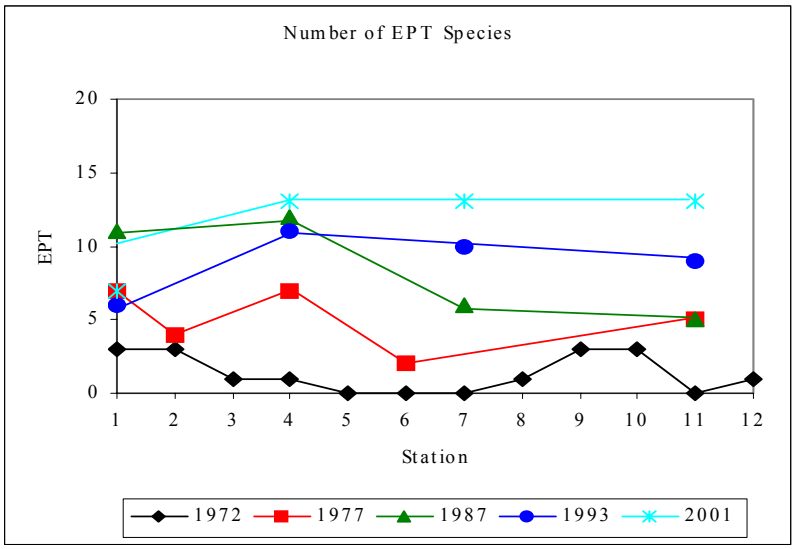


Figure 11-3. Water quality in the Upper Hudson River, Corinth to Waterford, 1972-2001, indicated by richness of clean-water mayflies, stoneflies and caddisflies (EPT).

From Corinth to Waterford, long-term improvements in the river are shown by increased EPT richness (Figure 11-3). At Corinth, water quality was assessed as slightly impacted in 1993 and 2001, representing improvement compared to previous samplings. Multiplate samples were dominated by caddisflies, with mayflies also present. Assessments of Ponar samples taken from this site in 1994 ranged from non-impacted to slightly impacted. *Brachycercus maculatus*, a member of a rare group of mayflies (Figure 11-4), was recorded for the first time from New York State in the 1994 Ponar samples from this site and the Waterford site (Burian et al., 1997). Crayfish

Figure 11-4. *Brachycercus maculatus*, a rare mayfly, was collected for the first time in New York State in the 1994 Ponar samples from Corinth and the Waterford site.

collected at the Corinth site in 1993 showed titanium at 10.4 µg/g, above the provisional level of concern of 8 µg/g. Crayfish collected in 1994 showed methoxychlor above the reportable value, and no other organochlorine pesticides or PCBs above detection limits. Non-impacted water quality was assessed for the site above Fort Edward, based on multiplate sampling in 2001. This represents an improvement compared to sampling in 1987-88. In 1993 sampling, water quality had been assessed as non-impacted to slightly impacted. Mayflies and caddisflies were numerous in these samples, and stoneflies were found in the August sample.

Water quality at Schuylerville was assessed as non-impacted, based on multiplate sampling in 1993 and 2001. Mayflies and caddisflies were numerous in these samples (Figure 11-5), and stoneflies were found in some samples. These clean-water organisms were not previously collected at this site.

Non-impacted water quality was also found at Waterford in 2001 multiplate sampling. This site had been assessed as slightly impacted in 1988, and non-impacted to slightly impacted in 1993. Mayflies and caddisflies are well-represented in recent samples. Ponar sampling in 1994 assessed water quality as non-impacted to slightly impacted. PCB levels in macroinvertebrates remain a concern in the Upper Hudson River. Caddisfly larvae collected in Waterford in1993 showed total PCBs at 6400 mcg/kg, greatly exceeding the provisional level of concern of 1000 mcg/kg. Lead and copper in caddisflies also exceeded provisional levels of concern.

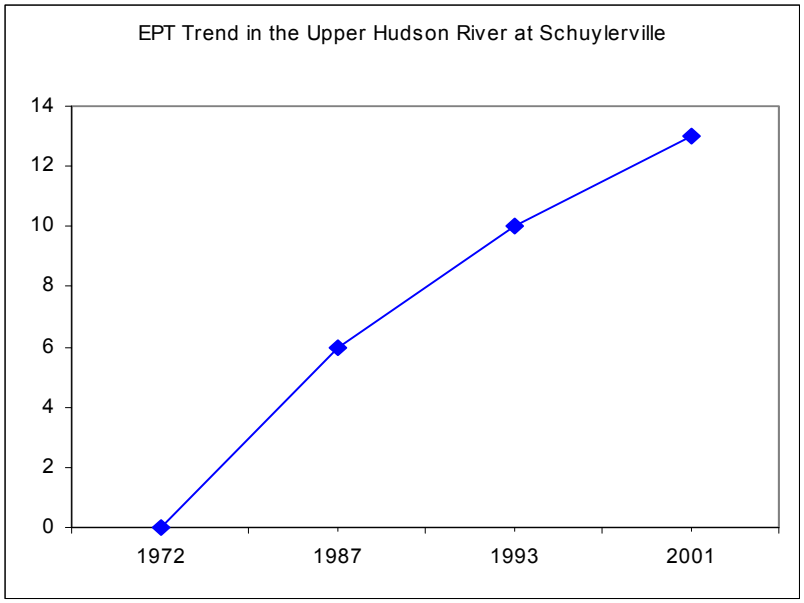


Figure 11-5. Clean-water mayflies, stoneflies, and caddisflies (EPT) in the Upper Hudson River at Schuylerville, 1972-2001.

Indian River

Water quality of the Indian River at Indian Lake was assessed as slightly impacted in 2001 and 2002, representing a decline in water quality compared to 1993, when it was assessed as non-impacted. Species richness and EPT richness illustrate this change (Figure 11-6). Present

macroinvertebrate communities are sparse, with high numbers of fingernail clams. Mid-summer rafting releases from Lake Abanakee, which began in 1997, are being investigated as a possible cause of the decline.

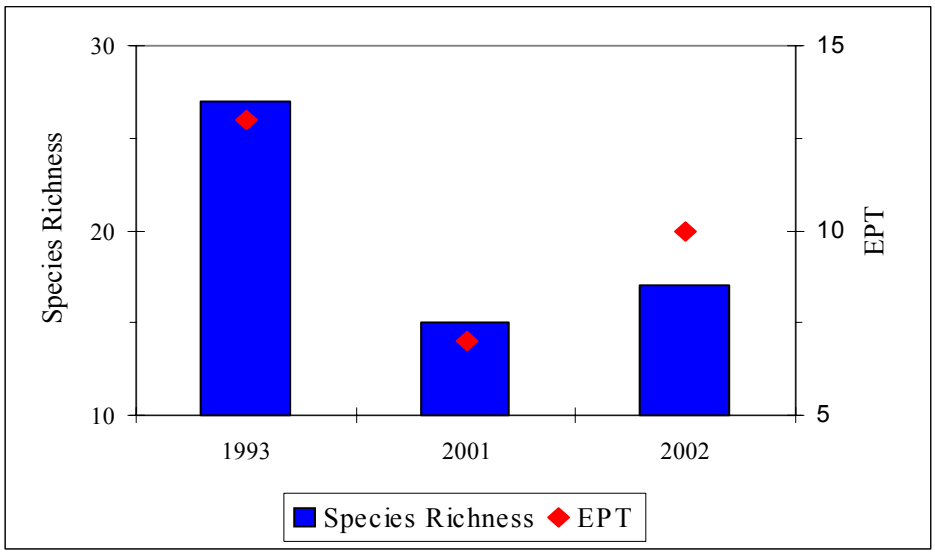


Figure 11-6. Declining species richness and EPT richness (clean-water mayflies, stoneflies, and caddisflies) in the Indian River, 1993-2001.

Jessup River

The current water quality assessment for the Jessup River is slightly impacted, although this may mostly represent effects of upstream wetlands. The fauna sampled in 2001 was dominated by filter-feeding caddisflies, but also contained mayflies and stoneflies. No prior data were available for the stream.

Kayaderosseras Creek

Current water quality in Kayaderosseras Creek is mostly assessed as non-impacted, with a small reach of slight impact. A 1997 sampling of 4 sites from Porter Corners to Ballston Spa found possible slight impacts near the headwaters and near the mouth. The headwater location at Porter Corners was determined to be due to headwater effect, and the assessment was upgraded to non-impacted. The site near the mouth at Ballston Spa was re-sampled in 2001, and was assessed as non-impacted. All four sites show some indications of nutrient enrichment, and the stream was described as being potentially vulnerable to additional nonpoint sources, as these would likely to result in substantial changes in the stream ecosystem. Sampling in 2002 at a site in Ballston Spa showed slight impact from nutrient enrichment.

Kennyetto Creek

Water quality at Vail Mills was assessed as slightly impacted in 2001 sampling. ISD showed greatest affinity to natural communities and secondary affinities to nonpoint source nutrient enrichment. Low-flow conditions in 2001 may be primarily responsible for the assessment. Previous assessments in 1993 and 1994 showed non-impacted water quality. Sampling upstream at Hagedorns Mills in 2001 indicated non-impacted water quality.

Kunjamuk River

A site on the Kunjamuk River at Long Level was sampled for macroinvertebrates in 2001. The metrics denoted slightly impacted water, although this likely reflects wetland effects in a headwater situation, and the assessment is upgraded to non-impacted. The fauna was sparse, but contained clean-water mayflies, stoneflies, and caddisflies.

Lake Durant tributary, unnamed

This stream was sampled at the Lake Durant Campground near Blue Mountain Lake. The macroinvertebrate sampled was dominated by clean-water mayflies, stoneflies, and caddisflies. The site was field-assessed as non-impacted, and the sample was not retained.

Little Hoosic River

Non-impacted water quality continues to be assessed for this tributary of the Hoosic River, based on 2002 sampling. Previous sampling in 2001 indicated slight impact from nonpoint source nutrient enrichment, although sampling in 1994 and all previous samplings showed no impact. The impact measured in 2001 may be flow-related. Continued monitoring is recommended at this site.

Mayfield Creek

Macroinvertebrate sampling at Riceville in 2001 yielded an assessment of non-impacted water quality for this tributary of Great Sacandaga Lake. The fauna was dominated by clean-water mayflies and caddisflies, and all metrics were within the range of very good water quality.

Mill Brook

This small tributary of Schroon Lake was sampled at Adirondack in 2001, and was assessed as non-impacted. Two metrics were within the range of slight impact, and the headwater correction factor was applied to these. The stream habitat of boulders was not conducive to a diverse fauna.

Mill Creek

This Hudson River tributary in Wevertown was assessed as non-impacted in 2001 macroinvertebrate sampling. The fauna was dominated by clean-water caddisflies and mayflies, and all metrics were within the range of very good water quality. No prior data were available for the stream.

Mill Stream

A remote site on this Piseco Lake tributary was sampled in the vicinity of Piseco in 2001. A very sparse fauna was found, dominated by clean-water stoneflies. The original metrics placed the assessment as slightly impacted. When these were corrected for headwater conditions, the final assessment was non-impacted.

Minerva Stream

Water quality is assessed as non-impacted for this Trout Brook tributary, based on macroinvertebrate sampling at Olmstedville in 2001. The fauna included many clean-water mayflies and stoneflies, but was dominated by filter-feeding caddisflies. No prior data were available for the stream.

Moses Kill

Water quality is assessed as slightly impacted for the Moses Kill, based on macroinvertebrate sampling near Lick Springs in 2001. The fauna was dominated by filter-feeding caddisflies, reflecting nutrient enrichment and impoundment effects. No prior data were available for the stream.

North Creek

Based on macroinvertebrate sampling in 2001, water quality is assessed as non-impacted. The fauna was dominated by mayflies and caddisflies, and all metrics were within the range of non-impacted water quality. No prior data were available for the stream.

Owl Kill

Non-impacted water quality was assessed for the Owl Kill, based on sampling at White Creek in 1993 (field-assessment only) and 2001. The fauna was diverse, and indicated light nutrient enrichment.

Paradox Creek

This small tributary of Paradox Lake was sampled for macroinvertebrates in 2001. The metrics initially indicated slightly impacted water quality, although this likely reflected headwater condition and less-than-ideal habitat. The stream was very shallow, with large rocks. Overall water quality is corrected to non-impacted.

Patterson Brook

Non-impacted water quality was indicated for this tributary of the Upper Hudson River, based on sampling at Warrensburg in 2001. The fauna was dominated by clean-water mayflies, stoneflies, and caddisflies. No prior data were available for the stream.

Paul Creek

Water quality for this tributary of Great Sacandaga Lake is assessed as non-impacted, based on macroinvertebrate sampling at Day Center in 2001. The fauna included clean-water mayflies and stoneflies, but was dominated by filter-feeding caddisflies. ISD indicated that nonpoint source nutrient enrichment was a factor. No prior data were available for the stream.

Sacandaga River

Non-impacted water quality is indicated at Auger Falls, based on a 2001 macroinvertebrate sample. At Hope, water quality was assessed as slightly impacted in 2001 sampling. Species richness was low and aquatic worms dominated the sample, indicating possible organic wastes. This site had been assessed as non-impacted in 1993. Further sampling is recommended to determine if the 2001 assessment was anomalous.

Sampling at Hadley just above the confluence with the Hudson River in 2001 yielded an assessment of slight impact. The assessment for this site in 1994 was moderately impacted. These assessments mostly reflect impoundment effects and variable reservoir releases, as the site experiences great diurnal fluctuation in flows. Daytime flows are high, while nighttime flows are negligible, with little or no water being released from the dam.

The East Branch of the Sacandaga River was assessed as non-impacted in 2001, based on macroinvertebrate sampling at Griffin. The fauna included many clean-water mayflies, stoneflies, and caddisflies.

The West Branch of the Sacandaga River was sampled upstream at Arietta and near the mouth at Blackbridge in 2001. The Arietta sample appeared to be limited by headwater conditions. Applying the correction factor resulted in an assessment of non-impacted water quality. The Blackbridge site was also assessed as non-impacted.

Schroon River

The upstream site at Schroon Falls was assessed as slightly impacted in 2001. Although the fauna contained many clean-water mayflies, stoneflies, and caddisflies, species richness was low, possibly due to the substrate of boulders embedded in sand. A similarly reduced fauna was found at the downstream Warrensburg site. Previous sampling assessed the Schroon Falls site as non-impacted in 1994. The Warrensburg site was assessed as non-impacted in 1994, slightly impacted in 1993, and non-impacted in 1987 and 1988 . Further sampling of these sites is recommended to determine if the decline is genuine.

Snook Kill

A site at Dimmick Corners was sampled for macroinvertebrates in 2001. Non-impacted water quality was assessed, although the fauna also reflected light effects of nonpoint source nutrient enrichment. The fauna included clean-water mayflies and stoneflies, but was dominated by filter-feeding caddisflies.

Spring Run

This Saratoga Springs stream was sampled at five sites in 2001 and 2002, and water quality ranged from slightly impacted to severely impacted. Severe impacts caused by sewage inputs were documented closest to the stream source. Very high conductance readings were recorded in the stream in the 2002 sampling.

Thirteenth Brook

Water quality was clearly assessed as non-impacted for this stream, based on macroinvertebrate sampling at North River in 2001. The fauna was dominated by clean-water mayflies. No prior data were available for the stream.

Towns Creek

Non-impacted water quality was assessed for Towns Creek in 2001. The site was a short distance downstream of the outlet of Lake Luzerne, and impoundment effect was the primary faunal determinant. Filter-feeding caddisflies dominated the fauna, although clean-water mayflies and stoneflies were also present. An impoundment correction factor was applied to the initial assessment of slight impact, resulting in a final assessment of non-impacted.

Trout Brook

Water quality was clearly assessed as non-impacted for this stream, based on macroinvertebrate sampling at Pottersville in 2001. The fauna was dominated by clean-water mayflies, with many species of stoneflies and caddisflies. No prior data were available for the stream.

VanderWhacker Brook

This small tributary of the Boreas River was sampled north of Aiden Lair in 2001. The macroinvertebrate sample was field-assessed as non-impacted, and was not retained. The fauna contained a diversity of clean-water species of mayflies, stoneflies, and caddisflies.

Walloomsac River

Water quality of the Walloomsac River currently ranges from non-impacted to slightly impacted, exhibiting no change compared to assessments of 1991. The downstream site at North Hoosick was assessed as non-impacted in 2001. Although the fauna indicated some effects of nutrient enrichment and siltation, all metrics were within the range of non-impacted water quality. Previous sampling at the Cottrell Road site in Walloomsac yielded assessments of slightly impacted, based on the 1993 and 1994 kick sampling. Most indices were borderline non-impacted. Community types suggested silt was the primary influence on the fauna.

West Stony Creek

Based on sampling near the confluence with the Sacandaga River at Benson in 2001, water quality was assessed as non-impacted. There was an abundance of clean-water mayflies, stoneflies, and caddisflies. The North Branch of West Stony Creek, sampled at Upper Benson in 2001, was also assessed as non-impacted.

White Creek

This tributary of the Batten Kill exhibited non-impacted water quality, based on macroinvertebrate sampling above Hanks Road bridge near Salem in 1999 and 2001. The fauna contained many species of clean-water mayflies, stoneflies, and caddisflies. An intensive study of White Creek by Hudson Basin River Watch in 2001 found elevated levels of nitrogen and fecal coliforms at most sites.

Wolf Pond Outlet

Non-impacted water quality was assessed for this stream near Newcomb, based on macroinvertebrate sampling in 2001. Although the fauna exhibited some impoundment effects, metrics placed the final assessment as non-impacted. No prior data were available for the stream.

Literature cited

Burian, S. K., M. A. Novak, R. W. Bode, and L. E. Abele. 1997. New record of *Brachycercus maculatus* Berner (Ephemeroptera: Caenidae) from New York and a key to larvae of the Northeastern species. The Great Lakes Entomologist (30(3): 85-88.

Figure 11-7. Sampling the Indian River downstream of Lake Abanakee, 2002.