

conditions of these streams should be monitored for future violations. Furthermore, the source of these pollutants should be identified. State water quality standards vary across state lines, and problems may arise when the source of these pollutants is located in an adjacent state.

CONCLUSIONS

Nineteen (41.3 percent) of the 46 interstate streams sites at which macroinvertebrate samples were collected contained nonimpaired biological communities. Biological conditions at another 21 sites (45.7 percent) were slightly impaired, while six sites (13.0 percent) were moderately impaired. No sites were designated severely impaired. Seven sites (SUSQ 10.0, SUSQ 44.5, SUSQ 289.1, COWN 2.2, COWN 1.0, TIOG, and CHEM) were not sampled using RBP III techniques and, thus, were not averaged into the final scores. Thirty-five sites (76.1 percent) had excellent habitats. Nine sites (19.6 percent) had supporting habitats, and two sites (4.3 percent) had partially supporting habitats.

Overall, 99 observations (9.9 percent) of water chemistry parameters exceeded state standards, which is a dramatic increase from the previous year. Total iron exceeded standards most frequently with 46 violations (46.5 percent). Total and dissolved iron appears to be naturally high in some of these watersheds. Tioga River is the only stream that has documented abandoned mine discharge, indicated by high metals and high acidity. Elevated aluminum and depressed alkalinity may be due to acid precipitation, especially in the New York-Pennsylvania border streams. Total dissolved solids, nitrate plus nitrite, and dissolved oxygen are all indicators of organic pollution.

Of the New York-Pennsylvania border streams, the biological community of six (42.9 percent) of these streams was nonimpaired, and eight sites (57.1 percent) were slightly impaired. Nine sites had excellent habitats (64.3 percent), and five sites (35.7 percent) had supporting habitats. Overall, biological conditions degraded at seven stations, while they improved at three sites. High metal concentrations, particularly total

iron and total aluminum, appeared to be the most common sources of water quality degradation in this region. The parameters that exceeded New York and Pennsylvania state standards were total and dissolved iron, total aluminum, total chlorine, pH, and alkalinity. Iron standards were exceeded at Apalachin Creek, Bentley Creek, Cascade Creek, Cayuta Creek, Little Snake Creek, North Fork Cowanesque River, Seeley Creek, South Creek, and Troups Creek. Aluminum standards were exceeded at Bentley Creek, Cascade Creek, Cayuta Creek, Little Snake Creek, Seeley Creek, and Troups Creek. Total chlorine was exceeded at Cayuta Creek; pH was exceeded at Cascade Creek and Troups Creek, while Cascade Creek, Little Snake Creek, and Trowbridge Creek exceeded alkalinity standards. In fiscal year 2004, high flows may have impacted the water quality and biological conditions at the New York-Pennsylvania border streams.

Nonimpaired biological conditions existed at four (44.4 percent) of the nine Pennsylvania-Maryland interstate streams. Two sites (22.2 percent) were slightly impaired, and three (33.3 percent) were moderately impaired. Seven (77.8 percent) of the Pennsylvania-Maryland border sites had excellent habitats, and two (22.2 percent) had supporting habitats. Biological conditions at Pennsylvania-Maryland sites appeared to improve during fiscal year 2004, with the exception of Ebaughs Creek, which continued to degrade. Water quality at several sites exceeded Pennsylvania and Maryland water quality standards, including: nitrite plus nitrate, total iron, and turbidity at CNWG 4.4; total chlorine at EBAU 1.5; total iron at OCTO 6.6; and alkalinity at BBDC 4.1 and FBDC 4.1. The Pennsylvania-Maryland border streams are located in a heavily agricultural region, and many of the parameters that exceeded the 90th percentile at these sites were nutrients. Also, streambank erosion and sedimentation created instream habitat problems in this region.

River sites consisted of nine stations located on the Susquehanna River, Chemung River, Cowanesque River, and Tioga River. One station (SUSQ 10.0) is never sampled for macroinvertebrates due to a lack of riffle habitat at the site, while six stations were not sampled for

macroinvertebrates during fiscal year 2004 due to high river flows throughout the summer sampling period. The remaining sites (SUSQ 340.0 and SUSQ 365.0) were compared to Snake Creek, the reference station for the New York-Pennsylvania stations. The biological communities of both sites (100 percent) were nonimpaired and had excellent habitats. Water quality parameters that exceeded state standards were total iron and total aluminum. Standards were exceeded at CHEM 12.0, COWN 2.2, COWN 1.0, SUSQ 365.0, SUSQ 340.0, SUSQ 289.1, and TIOG 10.8. The two river sites sampled remained the same in biological condition from previous years. Water quality appeared to degrade with an increased number of state water quality standard violations.

Of the 21 Group 3 sites, seven stations (33.3 percent) were considered nonimpaired. Eleven sites (52.4 percent) had slightly impaired biological communities, and three stations (14.3 percent) had moderately impaired conditions.

Seventeen (81.0 percent) of the 21 stations sampled had excellent habitat conditions, while two each (9.5 percent) had supporting and partially supporting habitats. Most of the Group 3 streams remained the same as previous years or improved slightly; however, the biological conditions in Biscuit Hollow improved greatly from moderately impaired to nonimpaired.

The current and historical data contained in this report provide a database that enables SRBC staff and others to better manage water quality, water quantity, and biological resources of interstate streams in the Susquehanna River Basin. The data can be used by SRBC's member states and local interest groups to gain a better understanding of water quality in upstream and downstream areas outside of their jurisdiction. Information in this report also can serve as a starting point for more detailed assessments and remediation efforts that may be planned on these streams.