

the source of these pollutants is located in an adjacent state.

CONCLUSIONS

Seventeen (33.3 percent) of the 51 interstate macroinvertebrate sampling sites contained nonimpaired biological communities. Biological conditions at another 26 sites (51 percent) were slightly impaired, while five sites (9.8 percent) were moderately impaired. Three sites (5.9 percent), Dry Brook, White Branch Cowanesque River, and Scott Creek were designated severely impaired. Two sites (SUSQ 10.0 and CASC 1.6) were not sampled using RBP III techniques and, thus, were not averaged into the final scores. Thirty-three sites (64.7 percent) had excellent habitats. Eleven sites (21.6 percent) had supporting habitats, and five sites (9.8 percent) had partially supporting habitats. Two sites (3.9 percent) had nonsupporting habitat ratings.

Overall, interstate streams seemed to achieve their designated uses, and only 41 observations (3.5 percent) of water chemistry parameters exceeded state standards. Total iron exceeded standards most frequently with 12 violations (30 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 10 (76.9 percent) of these streams was nonimpaired, and three sites (23.1 percent) were slightly impaired. Eight sites had excellent habitats (61.5 percent), four sites (30.8 percent) had supporting habitat, and one site (7.8 percent) had partially supporting habitat. High metal concentrations, particularly total iron, appeared to be the largest source of water quality degradation in this region. The parameters that exceeded New York and Pennsylvania state standards were iron,

aluminum, dissolved oxygen, total dissolved solids, total chlorine, pH, and alkalinity. Iron standards were exceeded at Apalachin Creek, Cascade Creek, Little Snake Creek, and Troups Creek. Aluminum standards were exceeded at Cayuta and Troups Creeks. Dissolved oxygen standards were exceeded at Apalachin Creek. Total dissolved solids were exceeded at Cascade Creek, total chlorine was exceeded at Cayuta Creek, pH was exceeded at Troups Creek, and Cascade Creek and Little Snake Creek exceeded alkalinity standards. In fiscal year 2003, improved biological conditions were seen at many of the New York-Pennsylvania streams in particular, Bentley Creek, Cayuta Creek, Choconut Creek, Seeley Creek, South Creek, Trowbridge Creek, Troups Creek, and Wappasening Creek. Higher numbers of taxa were observed at many sites, which may be due to the increase to 200-count subsamples. Sediment deposition also was noted at numerous streams, which was due to reductions in flow. Cascade Creek, Holden Creek, and North Fork Cowanesque River are often dry during the July and August sampling of Group 1 and 2 streams, so it is recommended that they be sampled with the Group 3 streams in May.

Nonimpaired biological conditions existed at two (22.2 percent) of the nine Pennsylvania-Maryland interstate streams. Five sites (55.5 percent) were slightly impaired, and one (11.1 percent) each were moderately and severely impaired. Six (66.7 percent) of the Pennsylvania-Maryland border sites had excellent habitats, and one each (11.1 percent) had supporting, partially supporting and nonsupporting habitats. Biological conditions at Pennsylvania-Maryland sites appeared to be remaining the same or decreasing slightly during fiscal year 2003. The only sites that exceeded Pennsylvania and Maryland water quality standards were CNWG 4.4 for dissolved solids and nitrite plus nitrate, EBAU 1.5 for total chlorine, and DEER 44.2 for alkalinity. Only total chlorine exceeded Maryland standards for this group of streams; however, Maryland does not have standards for metals as New York does, and New York, Pennsylvania, and Maryland have yet to develop aquatic life standards for organics and nutrients. 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 were a problem in the instream habitat for this region.

River sites consisted of eight 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. The biological communities of two sites (25 percent) were nonimpaired, four sites (50 percent) were slightly impaired, and two sites (25 percent) were moderately impaired. Seven of the sites (87.5 percent) had excellent habitats, and one site (12.5 percent) had nonsupporting habitat. Water quality parameters that exceeded state standards were pH, dissolved oxygen, dissolved solids, total iron, and total aluminum. Standards were exceeded at CHEM 12.0, COWN 2.2, COWN 1.0, SUSQ 10.0, SUSQ 365.0, SUSQ 340.0, and SUSQ 289.1. The river sites remained relatively the same in biological condition from previous years, except for COWN 2.2, which appeared to improve with the presence of the organic pollution intolerant taxon *Stenonema* and an increased number of taxa. Water quality also appeared to improve with fewer exceedances of state water quality standards. Water quality at TIOG 10.8 also appeared to improve.

Of the 21 Group 3 sites, three stations (14.3 percent) were considered nonimpaired. Fourteen sites (66.7 percent) had slightly impaired biological communities, and two stations each (9.5 percent) had moderately impaired and severely impaired conditions. Twelve (57.1 percent) of the 21 stations sampled had excellent habitat conditions, six (28.6 percent) had supporting habitats, and three sites (14.3 percent) had partially supporting habitats. Most of the Group 3 streams remained relatively the same as previous years; however, PRIN improved greatly from severely impaired to slightly impaired. Biological conditions at RUSS, SMIT, and STRA also appeared to improve slightly, while WBCO continued to degrade.

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.

