

CONCLUSIONS

Fourteen (29 percent) of the 48 interstate streams sites at which macroinvertebrate samples were collected during FY-07 had nonimpaired biological communities. Biological conditions at another 22 sites (46 percent) were slightly impaired, while ten sites (21 percent) were moderately impaired. Two sites (4 percent) were designated severely impaired. Five sites (SUSQ 10.0, SUSQ 44.5, TROW 1.8, SNAK 2.3, and LWAP) were not sampled using RBP III techniques due to either dry conditions or deep waters and thus, were not averaged into the final scores. Twenty-two (46 percent) sites had excellent habitats. Nineteen (40 percent) had supporting habitats, and seven sites (14 percent) were designated as having a partially supporting habitat.

Overall, 69 observations (4 percent) of water chemistry parameters exceeded state standards; this is a lower proportion of exceedance values than last year. Total aluminum exceeded standards most frequently with 28 violations (41 percent). Twenty out of the 29 sites had parameters exceeding water quality standards, with 13 of those having more than one violation. Total iron and total aluminum appear 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.

During the summer sampling event when macroinvertebrates are collected and habitat conditions are assessed, two of the New York-Pennsylvania streams were dry so no macroinvertebrate or habitat assessment could be completed. Of the remaining twelve sites, the biological community of five (42 percent) of these streams was nonimpaired. Overall, biological conditions improved at two sites, declined at two sites, and stayed the same at the other three stations (the remaining five sites were not sampled in FY-06 due to dry conditions). 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 iron, total aluminum, total chlorine, pH, dissolved oxygen, and alkalinity. Iron standards were exceeded at Apalachin Creek, Cascade Creek, Little Snake Creek, and Troups Creek. Aluminum standards were exceeded at Apalachin Creek, Bentley Creek, Cascade Creek, Cayuta Creek, Choconut Creek, North Fork Cowanesque River, Seeley Creek, and Troups Creek. Total chlorine was exceeded at Cayuta Creek, while Cascade Creek did not meet alkalinity standards. Dissolved oxygen standards were not met at South Creek, and pH standards were exceeded at Cascade Creek.

Seven of the New York-Pennsylvania sites had excellent habitats (58 percent), while another three sites (25 percent) had supporting habitat scores. Two sites had partially supporting habitat. In overall habitat ratings, two sites improved, two sites declined, and three sites remained the same as the previous year (the remaining five sites were not sampled in FY-06 due to dry conditions). The most common habitat concerns among the New York-Pennsylvania streams are lack of riparian buffer zone along the stream banks and sedimentation.

During FY-07, nine Pennsylvania-Maryland border sites were sampled. Two streams (22 percent) were designated nonimpaired using RBP III protocol designations. Six sites (67 percent) were slightly impaired, and one site (11 percent) was moderately impaired. No sites were ranked as severely impaired. Biological conditions at Pennsylvania-Maryland sites appeared to change some, with three sites showing improvement and three sites showing a decline in biological conditions.

Six (75 percent) of the Pennsylvania-Maryland border sites had excellent habitats, while two sites (25 percent) had supporting habitats. The remaining one site (11 percent) was ranked as having partially supporting habitat. Water quality at three sites exceeded Pennsylvania and Maryland water quality standards: nitrite plus nitrate at CNWG 4.4, dissolved oxygen at SCTT 3.0, and total chlorine at EBAU 1.5. 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, lack of riparian buffers, and sedimentation created instream habitat problems in this region.

River sites consisted of nine stations located on the Susquehanna, Chemung, Cowanesque, and Tioga Rivers. This year, two stations (SUSQ 10.0 and SUSQ 44.5) were not sampled for macroinvertebrates due to deep water and a lack of riffle habitat at the sites. Of the seven river sites that were sampled during FY-07, the biological community at four (57 percent) of these sites was nonimpaired. One site (14 percent) had slightly impaired biological conditions, and two sites (29 percent) were ranked as moderately impaired. Water quality parameters that exceeded state standards were total iron, total aluminum, and dissolved oxygen. Total iron standards were exceeded at COWN 2.2, COWN 1.0, SUSQ 340.0, SUSQ 289.1, TIOG 10.8, and SUSQ 44.5. 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. Additionally, dissolved oxygen exceeded water quality standards at SUSQ 289.1 and SUSQ 365. Water quality appeared to decline slightly with an increased number of state water quality standard violations. The habitat at six (86 percent) of the river sites was excellent and the other one site (14 percent) rated as having supporting habitat.

Group 3 sampling stations consisted of 21 sites on small streams located along the New York-Pennsylvania border. One site was dry during the FY-07 sampling. Three of the 20 sites sampled (15 percent) had nonimpaired biological conditions. Eleven sites (55 percent) were slightly impaired, and four sites (20 percent) were moderately impaired. The remaining two sites (Dry Brook and White Branch Cowanesque River) were ranked as severely impaired. Overall, two of the Group 3 sites demonstrated an improvement in biological condition, eight sites showed a decline, and ten remained the same. Three (15 percent) of the Group 3 sites had excellent habitat scores. Thirteen sites (65 percent) had supporting habitat conditions, while four sites (20 percent) were designated partially supporting, and no sites were nonsupporting. In overall habitat rankings, two of the Group 3 sites were improved, eight showed some degradation, and ten remained the same as the previous year. Field water chemistry parameters were all within the normal range at all Group 3 sites, except for low alkalinity at Deep Hollow Brook and Denton Creek.

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.

Future Study

Future study and remediation efforts should focus on those streams that had moderately or severely impaired macroinvertebrate communities or exceeded water quality standards. Moderately impaired biological conditions were found at Seeley Creek, Wappasening Creek, Holden Creek, Conowingo Creek, both sites on the Cowanesque River (1.0 and 2.2), Bulkley Brook, Bill Hess Creek, Denton Creek, Dry Brook, Prince Hollow Run, and White Branch Cowanesque River. Additional study of stream water chemistry, biology, and habitat at varying flows may help explain some impairment problems.

During this sampling period, a large number of streams had water quality parameters that exceeded standards. These streams included Apalachin Creek, Bentley Creek, Cascade Creek, Cayuta Creek, Choconut Creek, Little Snake Creek, Seeley Creek, Scott Creek, South Creek, Troups Creek, Conowingo Creek, Ebaughs Creek, Falling Branch Deer Creek, Long Arm Creek, Chemung River, Cowanesque River (1.0 and 2.2), Susquehanna River (10.0, 44.5, 289.1, 340, and 365), Tioga River, Deep Hollow Brook, and Denton Creek. The water quality 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.

All water quality data from interstate streams sampling from the mid-1980s to the present are available from SRBC upon request.