

Pennsylvania's Strategy for Assessing Wadeable Surface Waters – A "Census" Approach

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Biographical Sketch of Author

Tony Shaw has been a field biologist with Pennsylvania's Department of Environmental Protection for over 25 years and currently is a Biologist Supervisor in that agency's Water Quality Assessment & Monitoring Section. He has training and experience in benthic macroinvertebrate biology and has conducted many aquatic life use surveys and biological stream assessments for Pennsylvania's water quality monitoring and Antidegradation Programs. He is directly involved in the development of PA's Statewide Surface Water Assessment Program protocols and biocriteria projects and serves as a first level manager for PA's water quality monitoring programs.

Abstract

Historically, Pennsylvania's Water quality monitoring programs had focused on point sources (PS) and permit compliance actions. Non-point sources (NPS) received less emphasis. Consequently, the extent and severity of NPS impacts were not clearly defined. This overall point source monitoring emphasis reflected the lack of a comprehensive statewide assessment program in Pennsylvania. Consequently, the water quality of most of Pennsylvania's surface waters had never been assessed prior to 1997. At that time, less than 25% of the state's 83161 stream miles had ever been directly assessed. Further, many of these earlier assessments were outdated. Consequently, in order to complete a "first time ever" statewide surface water assessment, a biological screening protocol was developed to assess aquatic life use attainment, determine NPS and lesser-known PS impacts, and delineate good quality waters. The resulting Statewide Surface Water Assessment Program (SSWAP), now in its 8th season, has completed assessments of approximately 82% of Pennsylvania's surface waters. This represents over 12500 stations, 67865 stream miles – an assessment rate of about 6 miles/station. This detailed level of spatial resolution will result in a water quality "census" of all of Pennsylvania's wadeable streams upon completion of this first statewide assessment effort.

SSWAP's water quality assessments are based on land use, benthic biota, and stream habitat evaluations. Assessment results are entered into ArcView GIS and Access database formats. Advantages of this assessment approach were that impairment decisions can be made quickly and can target discrete stream segments. In 1996, prior to SSWAP implementation, 7% of the statewide total stream miles were listed as impaired by NPS sources and as 17% in 2003. Further, in 1996, 65% and 16% of the impairment totals were attributed to abandoned mine drainage and agriculture sources, respectively. In 2003, these rates were to 29% and 27%.

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