

Hoosic River Watershed Association

Devoted to the Restoration, Conservation, and Enjoyment of the Hoosic

2010 Watershed Report Card

Hoosic River Watershed Association (HooRWA), founded in 1986, is a private, non-profit 501(c)3 organization devoted to the restoration, conservation, and enjoyment of the Hoosic. Over the years, we've realized remarkable achievements, including establishing the Mahican-Mohawk trail, conducting stream assessments, and working on the Ashtuwillticook Trail, two boat launch sites in Massachusetts, and Linear Park in Pownal, VT. We've promoted awareness and appreciation for the watershed through organizing hikes, free raft rides, lectures, workshops, river cleanups, festivals and conferences, and we've implemented environmental education programs in many schools.

HooRWA has a long-standing water quality monitoring program designed to enhance public awareness of water quality and augment existing data for the Massachusetts Department of Environmental Protection and the Vermont and New York Departments of Environmental Conservation. The information collected through this program assists state and local officials with water supply planning, watershed protection, recreational resources, and habitat protection. It also provides information on the water quality conditions for streams and rivers that have not been previously or recently assessed within MA, NY, and VT. The data also supports stream segment designated use classification upgrades.

Evaluation of stream biological communities has been widely implemented as a useful, cost-effective method of providing information on the degree of water quality. Stream community population attributes (such as number of unique taxa, tolerance to pollutants, and similarity to a regional reference stream) are used to detect or infer the water quality condition. Although a variety of biological communities may be used in stream assessments, the use of benthic macroinvertebrate (stream insect) communities is advantageous. Benthic macroinvertebrates are abundant in most streams, relatively easy and inexpensive to sample, and sensitive to a wide range of environmental stressors. Also, benthic communities serve as indicators of overall, integrated water quality, including effects of intermittent discharges and lapses in treatment, synergistic effects, sediment pollution, impacts from upstream land use, and non-chemical impacts to surrounding habitat.

The structure of a macroinvertebrate community within a waterbody determines the water quality category. In Massachusetts, the non- and slightly impacted water quality category is considered supportive of the waterbody's expected aquatic life, whereas the moderately and severely impacted category is not, and is considered "impaired." New York State slightly impacted water quality category is significantly altered from the pristine state; and while usually not limiting to fish survival, may be limiting to fish propagation.

The purpose of this publication is to communicate the project results and to enhance public awareness of regional water quality. Sixteen stations were sampled in 2010 following each of the states' protocols in benthic macroinvertebrate collection, habitat assessment, and laboratory sample processing. The overall water quality of the Hoosic River, based on stream insect communities, indicated slightly impacted conditions; comparison with historical MA DEP and NYS DEC data suggest water quality conditions have not changed appreciably since 1997. The most likely sources of impact are nonpoint source nutrient and organic inputs. This report provides a summary of the water quality conditions for 8 of the stations within the Hoosic River mainstem, based on the resident benthic macroinvertebrates collected at each station (see back page) and a map depicting the station locations (inside pages). The remaining 8 stations are part of two ongoing dam removal monitoring projects in MA; the results from these studies will be published upon completion of the projects.

Please consider becoming a member of HooRWA to help support this work.

For additional information regarding biomonitoring, biological indicators, field and laboratory methods for Massachusetts Department of Environmental Protection and NYS Department of Environmental Conservation and visit <u>www.mass.gov/dep/water/resources/biomon.htm</u> and <u>www.dec.ny.gov/chemical/23847.html</u>



East Branch Green River (GE01)



Hoosic River (HOOS09)



Hoosic River (HR07)

Stream Name (Station/State) Water quality	2010 Stream Community Assessments
East Branch Green River (GE01/MA) Reference	Station GE01 is located approximately 200 m above Roys Road and is the 2010 reference station for the MA Hoosic River stations; the surrounding land use is predominately forested with some agriculture. Benthic community metrics had characteristics of non-impacted conditions: high number of sensitive, unique taxa, balanced community composition, and low number of tolerant taxa. The sample had slightly higher (28%) than expected (<20%) dominance by a single taxa. The habitat assessment indicated optimal conditions.
Hoosic River (HR07B/MA) Slightly impacted	Station HR07B is located above the Lime Street bridge in Adams, MA; and above the Adams Sewage Treatment Plant and Specialty Minerals. The surrounding land cover is residential, agriculture, and some forest. The habitat indicated suboptimal conditions, including reduced instream habitat, bank stability, bank vegetative cover, and riparian width, and increased sediment deposition. Benthic community metrics indicated slightly impacted condition, 75% similar to the reference. High numbers of tolerant taxa, moderately high percent dominance, and a less balanced community composition affected the score. In 1997 and 2002 the station was assessed as slightly impacted by MA DEP.
Hoosic River (HR07/MA) Slightly impacted	Station HR07 is located approximately 350 m downstream of the Adams Sewage Treatment Plant and Specialty Minerals in Adams, MA. The surrounding land cover is industrial, mining, waste disposal, agriculture, and low intensity residential. The habitat assessment indicated suboptimal conditions. Benthic community metrics indicated slightly impacted conditions, 75% similar to the reference. Low number of sensitive taxa, unbalanced community composition, and a greater number of tolerant taxa affected the score. This station had the lowest percent of dominance among the MA Hoosic River stations. MA DEP assessed this station in 1997 and 2002 and found it to be slightly impacted.
Hoosic River (HR2/MA) Slightly impacted	Station HR2 is located above the Hodges Cross Road (Route 8) bridge; the surrounding land cover is primarily developed residential, industrial, and agriculture. The habitat assessment indicated suboptimal/poor conditions, including reduced substrate habitat diversity, instream habitat, moderate sediment deposition, channel alteration, and reduced bank stability, bank vegetative cover and riparian width. Benthic community metrics indicated slightly impacted conditions, 60% similar to the reference; this station had the lowest similarity to the reference. Low number of sensitive taxa, unbalanced community composition, greater number of tolerant taxa, and moderately high percent dominance affected the score.
Hoosic River (HR3/MA) Slightly impacted	Station HR3 is located below the Galvin Road bridge in Williamstown, MA; the surrounding land cover is a mix of developed residential, agricultural, industrial and forest. The habitat assessment indicated suboptimal conditions, including reduced instream habitat, bank stability, bank cover and riparian width, and moderate sediment deposition. Benthic community metrics indicated slightly impacted conditions, 80% similar to the reference. Low number of sensitive taxa, unbalanced community composition, and high numbers of tolerant taxa affected the score. However, this station had the best ratio of feeding groups among the MA Hoosic River stations, and higher number of unique and lower percent of dominance than the reference station.
Hoosic River (HOOS06/NY) Slightly impacted	Station HOOS06 is located below Route 346 bridge near the NY/VT border; the surrounding land cover is a mix of forest and agriculture. The habitat assessment was suboptimal/marginal, including habitat and pool diversity, moderately high sediment deposition, channel alteration, reduced bank stability, low vegetative bank cover, and less than 12 meters of riparian area. Benthic community metrics indicated slightly impacted conditions. This station had the lowest number of sensitive and unique taxa, and the lowest score among the NY Hoosic River stations. ISD results suggest nonpoint source nutrients and organic inputs as the most likely sources of impact to the community. Community results have remained in the slightly impacted category since 2004. HooRWA reported similar impact source results in 2006 as in 2010. NY DEC 2004 impact source results indicated natural conditions.
Hoosic River (HOOS07/NY) Slightly impacted	Station HOOS07 is located approximately 400 m below the Route 7 bridge, and adjacent to Route 22; the surrounding land cover is a mix of agriculture, low intensity residential, and forest. The habitat assessment was suboptimal/marginal, including: low habitat and pool diversity, moderate sediment deposition, channel modifications, reduced bank stability, vegetative cover, and riparian width. Benthic community metrics indicated slightly impacted conditions. This station had the highest number of sensitive taxa and the lowest organic pollution index among the NY Hoosic stations. Nonpoint source nutrients and organic inputs are the most likely sources of impact to the biotic community. Community results were similar to assessments performed by NY DEC in 2004 and HooRWA in 2006. Impact sources were similar to HooRWA 2006 findings; however NY DEC 2004 study results indicated natural conditions.
Hoosic River (HOOS08/NY) Slightly impacted	Station HOOS08 is located approximately 200 m below the Church Street bridge in Hoosick Falls, NY; the surrounding land cover is primarily developed residential. The habitat assessment indicated suboptimal conditions. Benthic community metrics indicated slightly impacted conditions. Siltation, organic inputs and toxins are likely sources of impact to the community. Community results from 2004 (NY DEC) and 2006 (HooRWA) were similar.
Hoosic River (HOOS09/NY) Slightly impacted	Station HOOS09 is located at the end of Markers Road; the surrounding land cover is a mix of forest and agriculture. The habitat assessment indicated suboptimal conditions, including limited pool substrate, high sediment deposition, exposed substrate, reduced vegetative protection and bank stability, and lack of habitat diversity affected the score. Benthic community metrics indicated the station to be slightly impacted (BAP = 7.19), although near the threshold of the category, 7.5. This station had the highest number of unique aquatic insects, similarity to a non-impacted community, and biotic assessment profile (BAP) score of all the NY Hoosic River stations. This station is likely impacted by nonpoint source nutrients sources. In 2006, the station was slightly impacted; 2004 NY DEC results indicated non-impacted conditions. Also, a shift from natural conditions to impacts from nonpoint source nutrient additions was observed in 2006 and 2010.

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