



NONPOINT SOURCE SUCCESS STORY Update

Massachusetts

Continued Nutrient-Reduction Work Leads to White Island Pond Delisting

Update Overview

This Nonpoint Source Success Story Update highlights the removal of impairments from White Island Pond. The Massachusetts Department of Environmental Protection (MassDEP) added the pond (composed of two separate basins) to the state's list of impaired waters in 1992 for non-attainment of its primary contact recreation (PCR) designated use. Water quality improvements had been noted by 2014 (for details see the May 2014 Nonpoint Source Success Story, *Reducing Nutrients from Cranberry Bogs Improves White Island Pond*). Partners have added more best management practices (BMPs) to reduce nutrient inputs. Because recent data show that the pond now supports its PCR use, MassDEP removed it from the impaired waters list in 2016.

Problem

Nutrient-related problems in the east and west basins of White Island Pond prompted MassDEP to add the pond to the state's list of impaired waters in 1992 for non-attainment of its PCR designated use. Impairments included for total phosphorus (TP), excess algal growth, low dissolved oxygen, and the presence of non-native aquatic plants.

Story Highlights

Three CWA section 319 grants (in 2001, 2009, and 2012) funded the initial watershed-based nutrient-reduction work. In 2013, the Town of Plymouth received a fourth 319 grant to apply alum to the pond during the spring of 2013 and 2014, which achieved in-lake sequestration of phosphorus in bottom sediments. These applications have led to improved water quality conditions as evidenced by increased water transparency and decreased incidence of toxic algae blooms.

Results

Reducing the amount of phosphorus fertilizer applied to bogs and diverting nutrient-laden discharge have improved water quality in White Island Pond. Data collected since 2008 have shown improved water clarity and a decline of more than 40 percent in TP concentrations (Figure 1). Cranberry-related nutrient sources were reduced by over 90 percent. The rate of decline had leveled off as available TP from sediment had been flushed out. TP in the sediment was addressed by alum treatments in April 2013 and 2014 and further reduced TP in the water column. After the treatment, the pond met all of its designated uses in 2016 and was delisted for all impairments except non-native aquatic plants.

Partners and Funding

In addition to the MassDEP Nonpoint Source Program, other contributing partners include the UMass Cranberry Experiment Station, the Cape Cod Cranberry Growers Association, and two commercial cranberry growers (A.D. Makepeace and Federal Furnace Companies). In 2001–2012, a total of \$863,861 in CWA section 319 funds supported this project. Another \$260,232 in CWA section 319 funds was awarded to the Town of Plymouth in 2013.

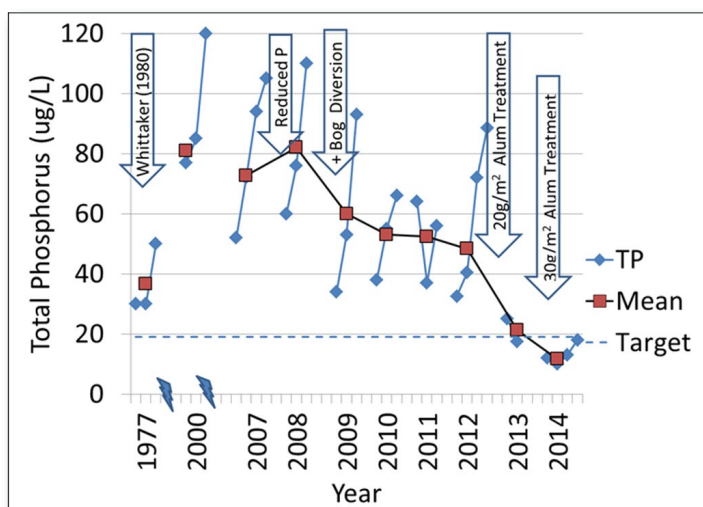


Figure 1. White Island Pond phosphorus levels have dropped.

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