

Zebra Mussel (*Dreissena polymorpha*) Early Detection Project in the Housatonic River and Candlewood Lake: 2019 Monitoring

HOUSATONIC RIVER PROJECT, FERC NO. 2576

prepared for

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Zebra mussel monitoring site near the dam during the deep drawdown in January 2019.

INTRODUCTION

Zebra mussels (*Dreissena polymorpha*) were discovered in Lake Lillinonah and Lake Zoar in October 2010, and in Lake Housatonic in 2011, prompting concern about their potential presence elsewhere in the Housatonic River watershed (Biodrawversity 2011, 2012a, 2013). Zebra mussels are also established in several other waterbodies in the region, including the Hudson River in New York, East and West Twin Lakes in Connecticut, and Laurel Lake in Massachusetts. The zebra mussel population in Laurel Lake, discovered in 2009, has been shown to export veligers to the Housatonic River (Biodrawversity 2009, 2013). The Housatonic River is 149 miles long, with approximately two-thirds of its length in Connecticut. With established populations at the northern and southern ends of the Housatonic River, and numerous possible dispersal vectors between infested and other susceptible waterbodies, it was prudent to establish an early detection program for zebra mussels in the Housatonic River and Candlewood Lake.

In 2011, FirstLight Power Resources (FLPR) began a monitoring program for zebra mussels in the Housatonic River at the Falls Village, Bulls Bridge, and Rocky River hydroelectric facilities, and in Candlewood Lake (Biodrawversity 2012b). The monitoring plan was developed to gain a better understanding of (1) the presence/absence of zebra mussel adults or larvae, (2) adult population density, (3) colonization rate, and (4) habitat suitability. The plan included visual inspections and SCUBA surveys to search for adult zebra mussels, approximately biweekly collection of veliger samples at four locations from May to October, and deployment of substrate samplers at four locations.

This plan is part of FLPR's *Nuisance Species Monitoring Plan* for its Housatonic River Project (FERC Project #2576). The monitoring program was first implemented in 2011 and repeated without modification in 2012. Veliger monitoring was discontinued in 2013, and the use of artificial substrates was discontinued after the 2014 season. Adult zebra mussel surveys in the Falls Village and Bulls Bridge canals, and in the Housatonic River near



Zebra mussel monitoring sites near the dam and Lyn Deming Park during the deep drawdown in January 2019.



Two of the zebra mussel monitoring sites in Candlewood Lake in May 2019.

Boardman Bridge, were discontinued after the 2017 field season. This report describes the 2019 monitoring, which included surveys for juvenile or adult zebra mussels in Candlewood Lake during the winter drawdown, during SCUBA diving in the spring, and during routine inspection of the trashrack in the Rocky River tailrace.

METHODS

Candlewood Lake: One biologist (Ethan Nedeau) surveyed the exposed/dewatered shoreline near the dam, intake structure, and the shoreline near Lyn Deming Park on January 17 (2019) at the peak of the deep drawdown. There was no snow cover, and significant amounts of stable rocky substrates were exposed and surveyed for zebra mussels. Three biologists conducted the 2019 SCUBA surveys in Candlewood Lake; these were the same three biologists who implemented the zebra mussel monitoring in previous years (from 2011 to 2018). Fieldwork was completed over a period of three days (May 22-24, 2019). Surveys included SCUBA diving at 10 locations in Candlewood Lake (Figure 1), which included all the same locations surveyed in 2018. Biologists spent 1-4 hours per site searching all available/suitable substrate for zebra mussels.

Rocky River Tailrace: On October 16, 2019, SCUBA divers from Commercial Diving Services LLC checked the Rocky River trashracks. Nearby areas were not searched as in previous years.

RESULTS

Candlewood Lake: Consistent with the 2011 to 2018 monitoring, zebra mussels were not detected in Candlewood Lake in 2019. As in previous years, biologists detected low densities of Asian clams and native mussels (eastern elliptio and eastern floater) throughout Candlewood Lake.

Rocky River Tailrace: Zebra mussels were not found on the trashrack.

CONCLUSION

No zebra mussels were detected in Candlewood Lake, and none were found on the Rocky River trashracks. During the previous three years (2016 to 2018), adult zebra mussels were found on the concrete walls near the Rocky River tailrace, not on the trashrack, but the 2019 monitoring focused only on the trashrack.

Of all of the specific areas that FLPR monitored for zebra mussels since 2011 (described in the 2017 annual report), adult zebra mussels were found at every location except in Candlewood Lake. Prior monitoring has confirmed that adult zebra mussels are present at Rocky River Station, near the tailrace. It seems likely that pumping from the Housatonic River to Candlewood Lake could transport either eggs, sperm, veligers, juveniles, or even adults that may be unattached or that are attached to small objects (e.g., detritus, aquatic vegetation, etc.). The risk of introduction to Candlewood Lake seems likely given their profusion in the Housatonic River and other waterbodies in the region, yet none have ever been detected in Candlewood Lake. There is still uncertainty about the potential success of zebra mussels in Candlewood Lake where calcium concentrations and pH are only marginally suitable.

REPORTS CITED

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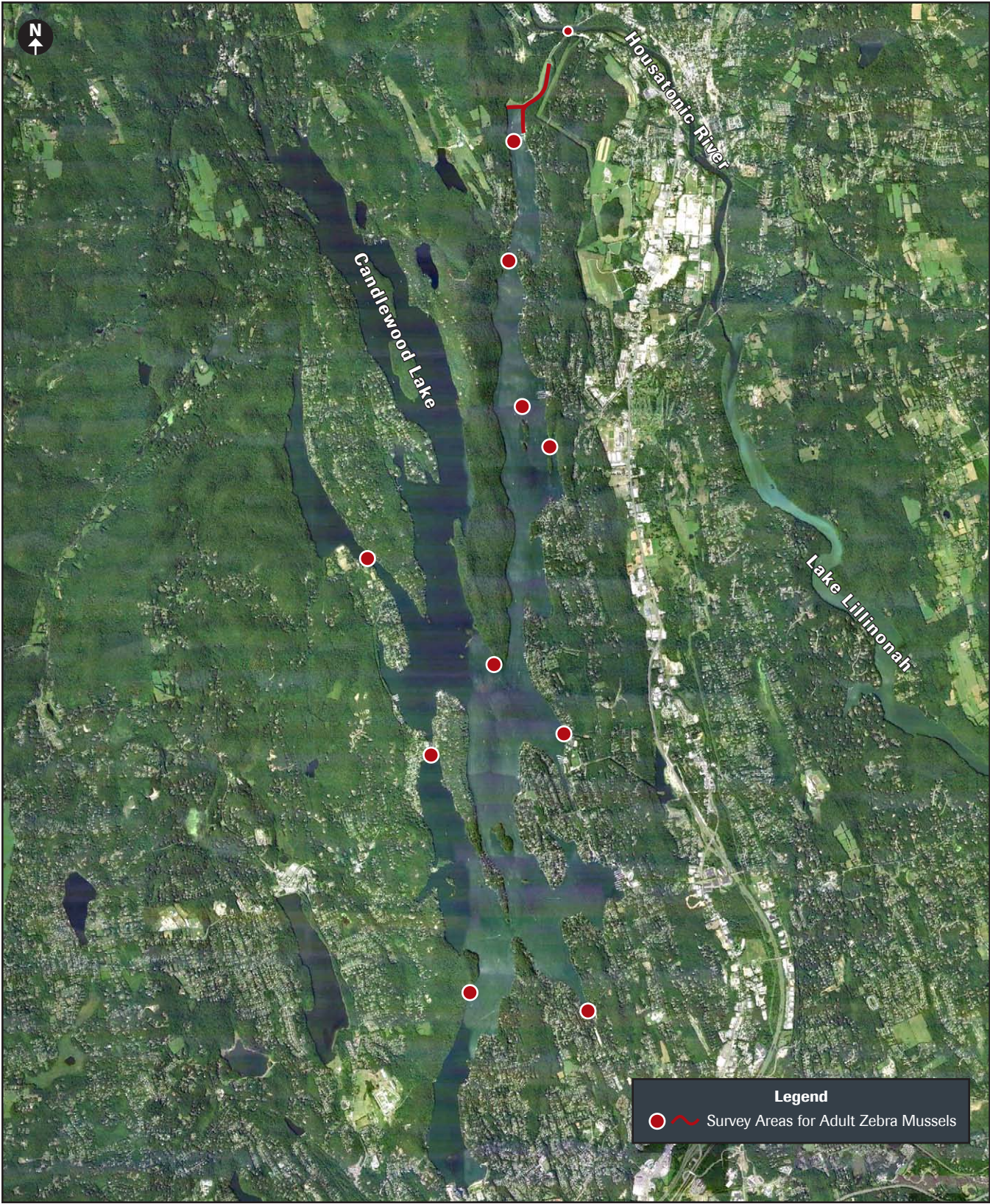


Figure 1. The 2019 zebra mussel monitoring sites in Candlewood Lake.