

MOODUS RESERVOIR PRESERVATION GROUP (MRPG)

INFORMATION ON THE USE OF LAKE BOTTOM BLANKETS (BENTHIC BARRIERS) TO COMBAT THE GROWTH OF INVASIVE PLANTS

I had an opportunity to meet with representatives from the “Lakes Environmental Association”, a lake management charitable organization located in the Lakes Region of Maine during the week of 8/1/15 to 8/8/15. In particular I was interested in what tools they are using to combat Variable Milfoil which has become a problem in several of the lakes there. This association has been in existence for 45 years and has members from 36 different lakes in this region of Maine. They are a large well-funded charity very actively involved in looking after the health of the lakes in their region. They have 10 to 12 full time associates most of whom are young environmentalists having recently graduated from college with environmental science degrees.

I spoke with Colin Holme who is the Assistant Director of their organization and we discussed their use of two procedures to combat the milfoil which grows to a depth of 20 ft. in Maine, primarily because their lake water is so clear. Since they have very restrictive regulations regarding the use of herbicides in Maine Lakes, they have considerable experience with Benthic Barriers (aka Lake Bottom blankets).

1. Benthic Barriers – They have been using bottom blankets for a number of years and feel that they have perfected a way to use them effectively in several lakes and rivers in their region. They originally bought the blankets from retail establishments but found them to be too expensive to use in large areas, so they made their own. They have recently focused on two types of blankets:
 - a. The first is a biodegradable blanket made of burlap. They deployed a 500 foot role of 12 foot wide burlap in the Songo River in 2013. Their staff rolled it off of a boat onto thick beds of milfoil and anchored it to the river bottom with T stakes made by students at a local high school. It took their staff of 6 people only 2 hours to lay the burlap on the river bottom where it has stayed since spring of 2013 (four on the boat and 2 scuba divers.) After one year on the river bottom they found modest or minimal regrowth of milfoil and the decomposition of the blanket was well under way. Based on this success additional burlap was placed in another area of the river in 2014. They are also communicating with researchers in Ireland who are using this technology in some of their water bodies.
 - b. The second, and one that they seem to favor for lake front residences, is a blanket made from marine shrink wrap weighed down by coated rebar woven through

slits that they have made in the wrap. They also punch holes in the shrink wrap to allow CO2 to escape from the decomposing milfoil. They build the blankets on land with the rebar woven in, roll them up, and lay them out on shore. They then decide where to place the blankets and either walk them into the water and lay them down if the water is shallow enough, or deploy them from a boat. They began with 60 ft. by 40 ft. blankets but found them too unmanageable to remove. They now use a 20 ft. by 30 ft. configuration. Since the areas where they are placing the blankets are not used by swimmers, they leave them in for 3 months before removal and claim significant success in the elimination of plants covered by the blankets. They say that the shrink wrap can be used for 2 to 3 years before being replaced. I have requested a more detailed explanation of the construction of the shrink wrap blankets which I'll share when they respond back to me. The caveat to this approach is that it is non selective. That is, all plants covered by the blanket will be eliminated, native and invasive.

2016 Update on tests of Benthic Barriers in Moodus Reservoir

Given the success of benthic barriers in Maine, MRPG initiated a test of two barriers on the Sipple Hill Estates association beach lakefront to determine their effectiveness in controlling Variable Milfoil and Fanwort. We constructed two 12 x 40 ft. blankets from 6 mil black plastic sheeting weighted down with coated rebar which was tied into the sheeting using plastic cable ties. The plastic blankets were also perforated by slicing a number of 2 inch slits in the plastic every couple of feet to allow gas from decaying vegetation trapped under the blankets to escape to the surface. The blankets were installed in the lake from the shoreline up to a depth of five and a half feet which allowed them to be extended to the full 40 ft. length of the blankets. Our research led us to the conclusion that the blankets should be moved to a new location after being installed for 6 weeks which would provide adequate time to kill the vegetation below the blanket while minimizing the amount of sediment that would settle on top of the blanket. Given the amount of peat sediment in the reservoir we were concerned that longer times installed without removal and cleaning would cause significant sediment to accumulate on top of the blankets. The blankets were originally installed in May 2016 and moved twice in 6 week intervals thereby covering an area 72 feet wide by 40 feet long.

Results from the test were very promising. Much of the vegetation in the beach area was reduced and we were left with a sandy bottom. Lots of empty clam shells were also seen on the bottom. We also noted some tearing of the plastic blanket material at the points

where it was tied to the coated rebar using the cable ties. This was likely the result of wave action causing stress on the ties and plastic.

After further research in late summer 2016 we determined that a new six ounce Geotextile fabric might prove to be more tear resistant than the six mil plastic that we used for our pilot study. We purchased a roll of the Geotextile after speaking with several vendors as to its applicability, and will create new blankets during the fall and winter to be installed in several locations in the spring of 2017.