

Salmon Lake Herbicide Treatment Kozy Cove Herbicide Treatment
FAQ: September 18, 2009

Maine Department of Environmental Protection's Invasive Aquatic Species Program (IASP) contracted with Aquatic Control Technology, Inc. of Sutton, MA to apply the herbicide 2, 4-D to the outlet cove of Salmon Lake (referred to here as Kozy Cove) on September 10, 2009 to control Eurasian water milfoil (scientific name *Myriophyllum spicatum*, abbreviated here as EWM).

Please look under "Current response" at this web address http://www.maine.gov/dep/blwq/topic/invasives/topics/salmon_lake/index.htm for information on the project, including the General Permit and Notice of Intent under which the IASP is operating.

Since the treatment, DEP's IASP has received a number of questions. Following are those questions with responses from the IASP. Additional updates, including herbicide concentration data, will be posted on the website as the information becomes available. Please email milfoil@maine.gov if you have questions.

Questions forwarded to us:

1. I'm in North Bay of Great Pond and I don't expect to see much effect from the application, but I have dogs who usually drink from the lake. Because dogs have a lower tolerance to 2, 4-D than other species I'm concerned, and are giving them bottled water now and until when?

First, we do not expect the herbicide to reach North Bay since the distances are very great, so it is unlikely that your dogs will consume 2, 4-D by drinking water there. But your question is a good one as it invites an explanation of how we determine risk.

In any situation involving discharge of a pesticide, one important consideration is risk to people and pets.

Risk is determined by a simple formula: the material's toxicity (both short and long term) times the degree of exposure (risk=toxicity x exposure).

Here are two quick examples: Plutonium is highly toxic, but it's not something you're ever likely to encounter, so expect low risk. Then take radon: low in toxicity, but if inhaled all day, everyday, you can face a substantial risk (cancer).

Multiplying the low toxicity of the 2,4-D we applied in Kozy Cove times (x) the low rate we applied, how quickly it breaks down, and how much it's diluted by the time it arrives at Great Pond—all determinants of exposure—we can assess risk.

Our monitoring station is about 100 feet from the outlet in Hatch Cove. If, as we expect, the concentrations we find there are very low, or even non-detectable, we can assume

with confidence that exposure, and therefore risk, is infinitesimal to your dogs, and people as well.

That said--for your peace of mind--give your dogs bottled or well water until concentrations in the treatment area begin to decline. We will report herbicide results on our website, the first results being posted September 18, 2009.

2. When I drove down Rt. 8 Thursday afternoon after the treatment, and looked at the outlet stream dam at Kozy Cove, it appeared that the flow was down to a trickle: - Did you purposely close the dam for the application?

We reduced outflow but didn't close the dam gate entirely. We provided about 0.4 cubic feet per second (cfs) rather than the usual minimum of 1 cfs. Since then we have inspected portions of the stream on three occasions. Stream flow is indeed low but much of the area continues to be wet and well shaded. Water is flowing throughout the stream, which will maintain oxygen levels needed for aquatic life. While some of the gravel shoal in the stream is 2-4 inches above water, much of this area remains very damp (even wet). We do not expect much negative effect on insect life or the like, since a lot of bottom remains well watered despite the low flow.

In addition, we have seen minnows, crayfish, and water striders (insects) in large numbers in the stream just below Salmon Lake since the treatment (plus a muskrat and snapping turtle). The fresh water sponges in the stream do not show signs of distress. There is also a beaver dam not far downstream and this serves to moderate-maintain flow downstream and keep a deeper pool available for aquatic species.

- If so, how long will it remain closed?

We will probably increase the flow (back to approximately 1 cfs) early in the week of September 21. Given the good condition of the stream and relatively moderate, cooler temperatures, it is unlikely that this period of reduced flow will cause any damage to the stream. Note also that we observed significantly higher flow at the Great Pond end of the stream which indicates a combination of groundwater input and some current hatchery pipe flow is adding to stream volume and diluting the outlet flow.

- Did you go with one of the other "outlet plans" (i.e., alternate method of getting water from Salmon Pond into the outlet stream into Hatch Cove), e.g., pumping from Salmon Pond "above" Kozy Cove, using existing pipes, using one or more wells, or some combination of the above?

On discussion with a landowner, we determined that using his well water was not going to offer enough flow to significantly reduce the amount of water we would need to let out of the dam to keep wetted conditions in the stream. However, since we determined that a reduced flow was feasible without harm to the stream, we have achieved a reduced outflow of herbicide in general during this time. Other alternatives (including tapping into the buried hatchery pipe and pumping from the lake around the dam) had several disadvantages, not the least of which was the degree of uncertainty in being able to get these online in time and the excessive cost. We balanced these against the very low

expected effects of 2, 4-D discharged down the stream and concluded that these measures were not a good use of resources.

3. Do you already have a baseline level of 2, 4-D in the stream? Hatch Cove? other parts of Great Pond?

We tested Kozy Cove (i.e., area to be treated) before the treatment to see if there was a measureable amount of 2, 4-D pre-treatment. The result of the Kozy Cove pre-treatment sample was below the detection limit of the test, i.e., no measurable amount. No other pre-treatment sampling was warranted since we have this pre-treatment benchmark with which to compare.

In addition to Kozy Cove, we are testing in Salmon Lake and Great Pond, at the dam outflow, and in the outlet stream just before it reaches Great Pond.

- How soon will we have new test results on concentrations of 2, 4-D in these areas?

Samples are being analyzed by the State Health and Environmental Testing Lab in Augusta. The lab has revised its schedule and will give us results in about 72 hours after sampling depending on when they get the samples. This is faster response time than other labs we contacted. When we get the results they will be posted and sent to interested parties as well.

We received the first official results (for samples taken on Friday, September 11) on Thursday, September 17. Please see separate documents with sampling locations and results. As we receive results from the lab we will post them on the website.

- How far from where the outlet stream enters Hatch Cove will you be testing for 2, 4-D concentrations? I would guess the testing will keep radiating out to the point where no or little effect is seen - is that correct?

We are sampling approximately 100 feet out from Kozy Cove in Salmon Lake, and the same distance from the stream mouth in Hatch Cove (Great Pond). These samples are “composites” in which we collect multiple individual samples and combine them to get a truly representative concentration in the sampled area. This will tell us if meaningful concentrations of 2, 4-D are showing up in the lakes.

- Please remind me about 2, 4-D: does it float or sink?

The Navigate pellets sink, but the active ingredient, 2, 4-D goes into solution and mixes with the surrounding water as well..

If so, are my dogs at less risk in North Bay since the flow should be from Hatch Cove toward the Belgrade Lakes Stream and in North Bay the flow should be southward from the Stream from East Pond toward the Belgrade Lakes Stream. Is that correct?

Even if 2, 4-D concentrations are detectable in Hatch Cove, there is no reason to believe any 2, 4-D will end up in North Bay. The sheer dilution, coupled with the half life of the

chemical (approximately 7.5 days in a lake, approximately 15 days in laboratory), make meaningful concentrations unlikely even in Hatch Cove, let alone North Bay.

- Are there counter currents (at depth or on the surface) that you know of that could bring the 2, 4-D into North Bay?

- Could surface/wind currents (e.g., prevailing southwesterly winds) bring the 2, 4-D into North Bay?

There is no information to our knowledge concerning water flow or hydrology. However, if you consider the huge water mass and distance, not to mention the lake shape and placement of Horse Point, there is no reason to believe that substantial transport of 2, 4-D to North Bay is possible.

- Would the 2, 4-D have to float on the surface for that to happen?

Even if pellets floated (they sink), our experience and understanding of lakes is that concentrated flow that maintains a cohesive current and avoids mixing is unlikely in this situation.

4. I believe you were telling people not to swim or use the lake water for several days after the application. Is that correct? How far out?

The recommendation was for no swimming three days after the treatment in the affected area and the “buffer zone” around it in both lakes (1000 feet into Salmon Lake and 500 feet into Great Pond). We felt that given the way water flows and the dilutions involved, even in these buffer areas swimming should not pose a significant risk, but to be cautious, we included them.

We had no significant basis for expanding the proposed one-day swimming restriction that may be on the EPA label next year other than we felt it was wise to be overly cautious given people’s concerns about exposure. This is a conservative measure. One thing to note is that these label restrictions are in themselves conservative and build in large safety factors over any known possible effects from exposure.

5. When will you know for certain, if that is possible, that the treatment was successful? Some people are posturing that herbicide treatment will need to be conducted each year. Is that possible?

We will have a good idea this fall how effective the treatment is and have better evaluations in the late spring when aquatic plants begin to grow in earnest. It is highly unlikely, though not impossible, that we would do a follow-up treatment. The whole purpose, and the design, of the treatment is to avoid need for repeated use of herbicides.

This infestation is the first opportunity we have had to try to hand suppress Eurasian water milfoil with divers. We have learned a lot this season. Our divers feel they can get good control of the remaining milfoil population if we reduce the sheer mass of the vigorous plants we were faced with this year. In addition, the team has discussed new tactics for diver survey and plant control that promise to increase our effectiveness next season.

6. Although Great Pond has been inspected and no plants were found, isn't it probable that some fragments have passed downstream?

We know that some fragments went downstream before we set the barrier screen in place last year. Installation of the nets, along with the hand removal we did earlier this year, reduced the probability of plant fragments escaping down stream.

The best thing you can do is learn to identify suspicious plants and keep an eye out. Early detection goes hand in hand with preventing spread. Encourage the Belgrade Lakes Association to maintain a consistent plant patrol program in your area and help them spark that effort.

7. When will we know the results of the herbicide? Also, how is this measured?

The herbicide is analyzed using an EPA-approved test at a certified lab, in this case, the Maine DHHS Health and Environmental Testing Laboratory in Augusta. Concentrations should be reported to us within about 72 hours after sampling. Sampling started the day after treatment and will continue until no detectable material is found. Results of the treatment w/r/to Eurasian water milfoil suppression will be assessed this fall and more completely in early–mid summer next season when plants begin new growth for the season. We did plant surveys in the cove with enough detail to distinguish the overall effects of the treatment.