

Bear Creek Hatchery – Draft Plan for 2008

The discovery of whirling disease (*Myxobolus cerebralis*) at Bear Creek Hatchery in late 2006 led to the eventual closing of that facility. It has remained closed since early 2007. Many are now wondering what our plans are for Bear Creek Hatchery (BCH). Questions have ranged from, ‘Why aren’t you raising fish there now?’ to ‘Isn’t it too risky to raise fish at BCH again?’. This document provides a brief discussion of the Maryland Department of Natural Resources’ plan for the near future of BCH and explains some of the pertinent factors which were considered in its formulation.

Current Status

There are currently no aquaculture activities at BCH and there is no discharge from the facility. The entire facility was disinfected and problem raceways were resurfaced to eliminate habitat for the invertebrate host (*Tubifex tubifex*).

All *Tubifex* collected from the settling pond sediment have tested negative for presence of *Myxobolus cerebralis*; however, this sediment is being treated as if it were contaminated to be certain that is not a source of infection at the hatchery or to wild trout populations anywhere. All necessary contracts and permits have been obtained to dispose of this sediment according to the previously outlined plan and this step should be quickly brought to conclusion as soon as weather permits.

Factors Pertaining to Operation of Bear Creek Hatchery

No evidence of *Myxobolus cerebralis* has been found since late winter/early spring of 2007 despite extensive sampling through the remainder of the year in Bear Cr. mainstem, tributaries and the hatchery. Sampling included resident trout of all species, highly susceptible sentinel rainbow trout fry exposed for periods of at least two weeks, then tested using nested PCR test, and water column filtering for TAMs (the form of the organism which initially infects fish) at locations above and below the hatchery.

TAM abundance is believed to quickly peak as water temperatures climb above 50 F in the spring. Densities drop as the season progresses but TAMs can be present in the water column as long as waters remain above 50 F and there is *Tubifex* activity. This pattern of abundance makes TAM sampling possible from mid- to late-April through October at Bear Creek during average years. It is still unclear how effective TAM sampling by filtration will be at BCH. There have been case studies in the western states where TAM densities were too low for easy detection but infected fish were still found in a watershed. The low discharge rate at BCH (400-800 gpm) should increase the effectiveness of this technique. The information collected through TAM sampling will be supplemental to sampling for the parasite in adult and sentinel fish and may not be viewed as conclusive by itself in view of varying flows and the possible presence of TAMs from other non-infectious myxozoans.

Brown trout are known to be highly resistant to *Myxobolus cerebralis* and our experience bears this out. Dating back to 1995 and the discovery of whirling disease in Maryland, we have found no brown trout carrying spores using histology or the pepsin trypsin digest method of testing. We have found infected rainbow and brook trout, but brown trout collected with these infected specimens were still negative for whirling disease spores. It is possible for brown trout to carry early spore stages, or low levels of the parasite that are hard to detect and the more sensitive PCR (polymerase chain reaction) test is able to detect these stages.

Production at the Albert-Powell Hatchery and our currently open satellite facilities is not sufficient to meet production needs. In 2007 and 2008 funds which would have been used to upgrade infrastructure and equipment were redirected to purchase trout. This was the only option available to maintain even the current reduced level of trout stocking. We can't continue to operate without these facility improvements and replacements. Using BCH to augment production at our currently open facilities will reduce the need to purchase trout in order to meet production requirements.

Plan for Bear Creek's Immediate Future

February 2008

The settling pond will be cleared of all sediment accumulated during the period in which infected fish were held in the facility. The pond needs to be reconfigured or replaced with a treatment plant if we choose to return to full production. This work will not be contracted immediately in order to allow time to assess the status of *Myxobolus cerebralis* in the Bear Creek watershed. In the meantime any waters flowing through the hatchery will bypass the pond to the discharge point to further limit chance of exposure to any remaining sediment.

March 2008

Resident adult trout (brook, brown and rainbow if available) will be collected in early March from the immediate vicinity of BCH both upstream of the intake and downstream of the discharge and tested for *Myxobolus cerebralis*. If fish are all negative for the parasite, we will move 5 -10 thousand brown trout fingerlings to BCH. These are surplus fish which must be moved from our Murley Spring facility to provide room for improved growth and to prevent fish health problems. These fish would typically be stocked as fingerlings in Put & Grow fisheries but survival is often low due to their small size. Therefore, their destruction would not be a great loss of resources should they become infected. Trout at BCH will be caged to reduce the chance of predators and loss of carcasses to the stream. This precaution along with the brown trout's inherent resistance to infection should greatly reduce the risk of introducing more spores to the watershed should *Myxobolus cerebralis* be found. Brown trout will be stocked initially in upper raceways that tested negative for in 2007. If infection does reoccur in the hatchery, these would be the areas most likely to remain negative for the parasite.

April/May 2008

Once the period of high *Tubifex* activity and potential TAM presence is reached, sentinel fry testing will be performed at the hatchery water intake, at the bottom of raceway 1 and 4, and discharge points. Sentinels are highly susceptible rainbow trout fry that are exposed for a period of 2 weeks. Each cage contains 200 trout fry. At the end of the exposure period, all remaining fish are shipped to the lab, where 60 are processed for PCR testing. The remaining fish are retained for future testing, if needed. Sentinel testing will be conducted every two weeks through June and the potential peak of *Tubifex* activity. At the same time sampling for TAMs at the hatchery will be performed twice weekly. This redundancy in sampling is supplemental to the detection of *Myxobolus* in fish. Sentinel results should be available within three weeks of initial fry exposure and TAM sampling results will be immediate.

June 2008

YOY brook and brown trout will be collected in mid-June from the same locations sampled in early March. If these continue to show no evidence of the WD organism, more lots of brown trout fingerlings may be moved to BCH.

Other Considerations

Prior to movement to or from BCH, all trout will be tested using PCR, the most sensitive test for whirling disease. If *Myxobolus* is detected in the facility or the watershed all fish at Bear Creek will be quickly destroyed.

All fish at BCH will be contained in a manner to limit predator access and prevent discharge of carcasses to the stream. This will greatly reduce the potential of introducing spores to Bear Creek should there be a time lag between occurrence and detection of the organism.

In the absence of *Myxobolus cerebralis*, trout at BCH will be reared to the advanced fingerling stage and stocked in the North Branch Potomac River downstream of Jennings Randolph Lake in fall of 2008. Water used for hauling these fish will be from a whirling disease-free source.

In accordance with MDE regulation, total production at BCH will be limited to 20,000 lbs of fish until either the settling pond is reconstructed or a treatment system is installed. Total production for 2008 would be well below that level.