

## **Muddling Along Feb 21**

### **Strains of Rainbow Trout Used in Stocking Lakes in B.C. (Part 6)**

In Part 1, I gave an overview of trout stocking in B.C. and had a look at the various strains that have been used historically. There were up to a dozen or so different strains that have been used over the year for stocking, but this has been reduced to four strains (Fraser Valley, Gerrard, Pennask and Blackwater) with some work on developing a fifth strain from Carp Lake north of Prince George. In parts 2 to 5, I looked at the Fraser Valley, Pennask, Blackwater and Gerrard strains. In Part 6 we will examine the Carp Lake strain and also have a look at the terms used for stocked rainbows (AF3N, AF, triploid, etc.)

### **Carp Lake Rainbows**

The Freshwater Fisheries Society of B.C. has a Research and Development group whose staff is tasked with examining new strains of rainbow trout on an ongoing basis. They have been working in recent years with the Carp Lake trout. Carp Lake is found 2 ½ hours north of Prince George and produces trout which do very well in a competitive environment and are renowned for their fighting abilities. These fish have the added advantages of being late maturing (giving a longer window of opportunity to catch prime fish) and being able to show impressive growth in lakes which normally have very low productivity.

The results of their studies comparing Carp Lake strain with other strains in certain brood lakes in central B.C. are still preliminary. When the studies have been completed in 2016, we might see these fish showing up in suitable lakes around B.C.

### **Methods of improving the quality of stocked trout**

So what do these terms like “triploid” and “AF3n” mean, how are these fish produced, and why should we want to go to the bother?

Sexually reproducing animals (including fish) have two sets of chromosomes in most of the cells in their body . . . one set from the male parent and one set from the female. These normal animal cells are designated 2N to distinguish them from the sex cells (sperm and ova) which have only one set of chromosomes (N) which are recombined by any of many different methods of sexual reproduction (the fun part!) to produce the 2N cells of normal animals. Fish that reproduce, will necessarily spend some of their lifetime getting ready for and participating in the reproductive process (spawning!) Anyone who has caught a spawning trout knows that they are not at their best as far as fighting ability and palatability. Trout which can be made sterile will not go through the spawning cycle, so will stay in good shape for their full lifetime (and likely live longer than a normal fish). A second advantage of non-reproducing fish is that

they will not interbreed with “wild” fish already present in the lake, so can be put in the lake without altering the gene pool of a resident population of fertile trout.

If trout eggs in the early stages of maturation (shortly after fertilization) are exposed to hydrostatic pressure or heated water, this results in the creation of a third set of chromosomes from the retention of the second polar body of the cell which is normally dissolved shortly after fertilization. All cells produced by cell division after that will be “triploids” which causes sterility in both males and females. The males produced by this process (unlike the females) will still produce hormones which cause them to enter the spawning phase (although they are still sterile) but they will still waste energy in the process by migrating and interacting with wild fish. For this reason, it is common to use testosterone derivatives to develop “masculinised” females which are then bred with regular females to create a generation that is totally female. These females are then subjected to the heat or hydrostatic pressure to produce a population of all female triploid fish (AF3n). This ensures that even if some fish are missed by the sterilization procedure, they will be unable to reproduce because they are all females.

About one quarter of all trout released in stocking programs are AF3n’s of one of the four strains (Blackwater, Fraser Valley, Gerrard or Pennask).

It is interesting to note that these are not genetically modified organisms because there is no gene splicing going on from one species to another. (unlike some claims made in the social media about genetic aberrations from Diefenbaker Lake!) like the 48 pound monster in the photo below.

