

What is a Triploid Fish?

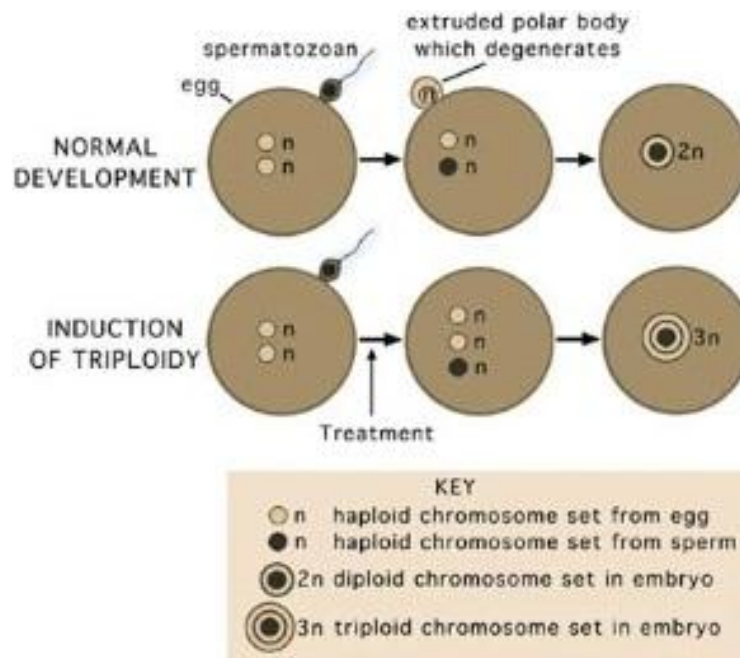
In simple terms, a triploid fish is merely a fish that is sterile. Triploid fish have three sets of chromosomes, unlike a fertile fish that have two sets of chromosomes (a diploid fish). Triploids are common in many industries; Seedless watermelons are triploids, as are bananas. Triploids are also naturally occurring.

A triploid fish is not a genetically modified organism. The genes of the fish have not been manipulated or changed in any way and do not result in the expression of any foreign or novel proteins or tissues. Triploid fish simply have 3 sets of chromosomes instead of 2 and for this reason are not able to reproduce, but are otherwise normal fish.

Recent legislation codified in the Fish and Game Code describes the rationale to use sterile fish for recreational purposes. These include the conservation of native fish genotypes (genetics) and the protection of endangered or threatened species. For these and other reasons the California Department of Fish and Wildlife is producing triploid trout eggs that hatch into fish, are raised, and ultimately result in sterilized trout released for recreational purposes.

Triploid trout are created by forcing the egg to retain a chromosome that is normally ejected during egg development. There are many ways to do this; the California Department of Fish and Wildlife uses the pressure shock treatment method.

As you can see in the graphic below, in fertilized trout eggs, normally a chromosome (N) is kicked out of the egg as a polar body at some stage of development. Using pressure treatment at a specific time in the egg development, the polar body and chromosome is retained. With 3 chromosomes the fish is sterile and cannot reproduce.



How we do it:

Eggs and Milt are collected separately from the respective sexes. The gametes are taken from the spawning building to the fertilization station in groups of approximately 60 ounces of eggs and 10ml of milt. At timed intervals, each group of eggs is fertilized, rinsed, poured into a metal cylinder, and placed into a holding tank.

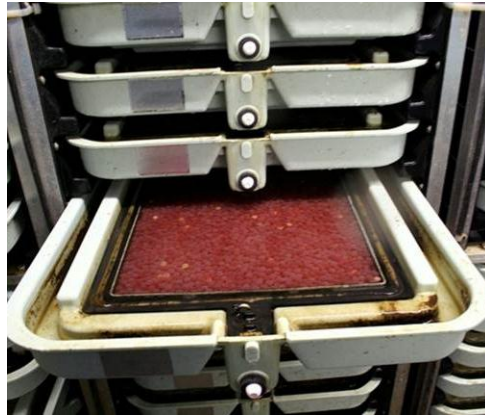
These eggs will sit in the holding tank for a period of time that is based on water temperature, called a TTU (Time Temperature Unit). This allows the egg sufficient time of development to generate the polar body, but not yet expel it. After this time, the cylinder is placed into a pressure vessel.



Once the eggs are in and the vessel lid is on, the pressure inside the vessel is increased to 10,000 psi. Eggs remain in the pressure vessel for 5 minutes. During this time, the polar body cannot be ejected due to pressure.



After pressurization eggs are put into vertical flow incubator stacks for hatching.



After the eggs hatch, they are raised like any other trout. Studies have shown that after 3 years of age, triploid trout tend to grow larger than a non-sterile trout due to less energy being expended for mating purposes.



For more information as to why we have begun stocking triploid fish please follow these links.

[Pre-stocking Evaluation](#)

[Senate Bill 1148](#)

[Environmental Impact Reports/Surveys](#)

[Are Hatcheries Producing Triploid Trout?](#)