

Interactions with Ocean Plants (Algae)

At the base of the marine ecosystem's food chain are plants, particularly the microscopic phytoplankton that drift in uncountable numbers. Most people who frequently visit BC shorelines are familiar with phytoplankton, also known as algae, which is visible in the water. In the winters, our ocean waters usually turn clear because there is not enough light for plankton to live in any numbers. In the spring, summer and fall, however, these waters generally become murkier as the plankton 'blooms' with the renewed intensity of light and the availability of abundant nutrients.

Do salmon farms cause algae blooms?

Salmon farms can be affected by algae blooms, but they are generally not the cause of them. The amount of algae-supporting nutrients generated by a salmon farm is generally negligible compared to the natural nutrient levels in BC waters (Burd, 1997). The relatively high natural nutrient levels are one important reason why BC has such a productive and rich marine environment. Nutrients added by a farm are so small in comparison that they are usually undetectable within 10 to 30 meters from the farm site. Several studies and environmental reviews have looked at the effect of salmon farms on algae blooms and have concluded that there is no evidence that farms cause harmful algae blooms (Burd, 1997).

Can algae blooms affect salmon?

There are hundreds of species of planktonic algae in our waters. Most of these are quite harmless to salmon, but some species cause infrequent but nevertheless serious problems. Some species of algae can clog and damage a salmon's gills because of their shape, while other species produce natural toxins that become harmful in sufficient concentrations. Generally, small numbers of any of these plankton are not a problem, but if the conditions become right to develop a concentrated bloom dominated by a harmful algae species, large numbers of fish may die in a short period of time.

What do farmers do to protect fish from harmful algae blooms?

Harmful algae blooms are not common, but when they do occur, they can have disastrous effects. The first line of defense against algae blooms is to investigate potential farm sites in order to choose sites that are not prone to them. Farmers also monitor algae during the problem season to provide an early warning of the development of a harmful bloom. Several farm companies participate in HAMP, the Harmful Algae Monitoring Program, that is coordinated by the University of British Columbia. Upon detection of a harmful bloom, many farmers have had success by encircling their net pens with plastic tarpaulins, and using large compressors to draw clear, cold, algae-free water up from the depths into the pens. Farmers also stop feeding their fish temporarily during a bloom in order to avoid drawing the fish up to the surface where the bloom is often most intense. Farmers have limited their salmon mortalities significantly by being prepared in this manner and by being on the alert for potential algae blooms.

Salmon are amazing, strong fish, but yet they are also very sensitive to the conditions of their environment, and salmon farmers have to be on guard for the natural conditions that can trigger a harmful algae bloom. Monitoring programs for algae blooms are becoming more sophisticated – sometimes even involving satellite imaging. Salmon

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farms will likely become less vulnerable to harmful algae blooms in the future as we learn to predict blooms more accurately and as we develop new technologies for mitigating their effects when they do occur.
