

Rearing Salmon - Successfully! - in Your Classroom

This tipsheet originated with the general advice that B & D Aquarium in White Center gives customers getting started in fish and aquariums, augmented with information specific to rearing salmon. This advice is intended to help you succeed in your salmon project and develop the confidence to do it again, with enthusiasm! If you see ways to improve this tipsheet, let us know by contacting Friends of Fauntleroy Creek (see back).

Preparing Your Tank

1. Rinse the tank in water only. If it's really dirty, scrub it with baking soda or a strong salt solution, then rinse it thoroughly.
2. If you choose to line your tank with gravel, use fresh, natural gravel supplied or recommended by the hatchery from which you got your salmon eggs. Do not use colored or very old gravel. Rinse it well in cool (never hot) water to remove dust, pour it into the clean tank, and spread it gently with your hands.
3. Install your air pump, thermometer, and refrigeration unit, making sure the latter is set properly to maintain a steady temperature between 45° F and 50° F.
4. Fill the tank with tap water. To avoid introducing unwanted chemicals, do not use a garden hose or galvanized bucket to fill the tank.
5. Add *Aquatan* or another water conditioner to neutralize the chlorine in the tap water (which can permanently damage fish gills).

Cleaning Your Tank

- The cleaning interval depends on the number and size of fish you have, the food you're giving them, how well your filtration system works, and whether or not your tank is chemically balanced. In a chemically balanced tank, you can rely on beneficial bacteria in the water, filter, and gravel to break down harmful ammonia and nitrite; enlist your students' help to test for chemical balance daily (see next section).
- If you find you have to clean the tank more frequently than once a week, reduce the amount of food you're giving the fish or invest in better filtration.
- Do not feed salmon until they are free-swimming and have absorbed most of their yolk sac. Try to feed only as much as they will eat in one minute. Again, involve your students in making this determination.
- Use a gravel vacuum to pick up uneaten food, egg casings, and other large debris and to tumble debris out of the gravel. Section your tank into fourths or thirds and clean only one section of gravel at a time, all the way to the bottom. The next time, vacuum a different section.
- Algae won't harm your fish or water quality, so consider cleaning only the front of your tank for a clear view. To clean off algae, scrape or wipe the glass with a scraper or scrubbing pad made for fish tanks. If your tank is not glass, make sure your scraper is safe for plastic.
- Remove any dead (white) eggs daily.
- Avoid replacing **more than one third** of the water at a time. By doing so, you'll limit stress on your fish and retain the bacteria that are needed to maintain chemical balance.
- Make sure that the water you add is exactly the same temperature as the water currently in your tank.
- Add an amount of water conditioner proportionate to the amount of new water.

Maintaining Chemical Balance

- Begin daily testing of tank water for pH, ammonia, and nitrite **before your eggs hatch**. Test kits available at any aquarium shop are easy to use and provide a good learning experience for students. If you find more than a trace of ammonia or nitrite, follow the advice below to restore balance.
- Hold minerals and pH in balance by keeping a neutralizer block in your tank throughout the rearing process. This product is especially formulated to take the chemical guesswork out of maintaining a freshwater tank.
- In a balanced tank, pH should be between 7.0 and 7.4.
- Assuming your air pump is working properly, your fish will have adequate dissolved oxygen if you maintain the water temperature between 45° F and 50° F.

Troubleshooting: Ammonia

Ammonia results from the decomposition of protein found in fish waste and uneaten food. Salmon present an ammonia problem right away when their egg casings begin to decompose.

Ammonia is very caustic and readily corrodes gill and fin tissue. The higher the pH, the more poisonous ammonia becomes. Red streaks on the fins indicate high ammonia. Partial water changes will reduce it but **the only natural way to get rid of ammonia is to establish biological filtration**.

- Limit tank and filter cleanings and water changes to the recommended minimum so that beneficial bacteria have a chance to build up.
- If your ammonia situation starts to get out of hand, add *Nitravec*, *Cycle*, or *Nitrex* to your tank to complement bacterial action. *Tank-Safe* is okay to add to speed the action of these products.

Troubleshooting: Nitrite

Nitrite results when beneficial bacteria break down feces and other sources of ammonia. Nitrite impairs breathing by preventing the exchange of gases at the molecular level, primarily by inhibiting the uptake of oxygen and the release of carbon dioxide. Fish thus weakened are susceptible to infection.

Partial water changes will reduce nitrite somewhat but **the only reliable way to get rid of it is to establish biological filtration**. Follow the instructions above to rid your tank of a nitrite build-up. Be patient; beneficial bacteria will solve an ammonia problem faster than they will solve a nitrite problem.

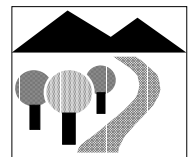
If ammonia and/or nitrite levels become severe, begin changing your water more frequently, even daily.

If none of these techniques works, find out what is interfering with production of beneficial bacteria in your tank, such as colored gravel, volcanic rocks, toxic build-ups, or inadequate cleaning after the tank was used for turtles or reptiles. If none of these factors seems to be the culprit, seek advice from a reliable aquarium shop.

B & D AQUARIUM

Telephone 206-767-0511
10402 16th Avenue S.W., Seattle 98146-1475
Bruce Donahue, Steev Ward, or Jackie Bergstrom

Telephone: 206-938-4203
E-mail: jpickens@gte.net
Judy Pickens



FAUNTLEROY
WATERSHED
COUNCIL