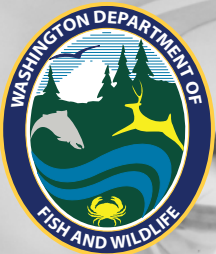


SCHOOL CO-OPERATIVE PROGRAM

PROGRAM MANUAL



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INTRODUCTION

For decades, the Washington Department of Fish and Wildlife's (WDFW) School Cooperative Program (SCP, formerly Salmon in the Classroom) has supported salmon and trout life cycle education in Washington schools. Currently, there are over 550 schools around the state enrolled in the SCP.

The SCP coordinates the provision of eggs that students rear in a classroom aquarium and later release, as fry, into a local watershed. It also issues the necessary permit that acknowledges a participant's legal right to possess, rear and release their fish.

The SCP is assisted in facilitating the program by Regional Coordinators who are comprised of non-profits, school administrators, conservation districts, federal employees and individual volunteers. More information about Regional Coordinators can be found on page 5.



Photo by Luterwood Camp

PARTICIPANT RESPONSIBILITIES

Safeguarding the resource

Participants are entrusted with the care of an important natural resource and are expected to maintain their equipment and monitor the aquatic environment and health of their fish on a regular basis to ensure a maximum survival rate.

Releasing salmon/trout fry

Participants must release their fish in the waterbody noted on their permit. Releasing fish in an unauthorized waterbody may result in revocation of your permit and future egg allocations.

Some participants may be releasing fish in waterbodies known to be infested with New Zealand Mud Snails, an invasive aquatic species. In these cases, participants must not enter the water during the release events. Any participants who happen to enter the water must follow WDFW's decontamination protocols to ensure this species is not spread to other waterbodies. Contact the SCP manager if the decontamination protocols are needed.

Most participants will release their fry from mid-April to early June. No schools should be rearing their fish beyond June, without prior authorization.

Detailed information on how to prepare for and execute your fish release can be found starting on page 13.

Reporting

Participants are required to submit a fish release record, within 90 days of the release, using the form available on the School Coops website:

https://wdfw.wa.gov/conservation/research/school_coop_program/.

Participants who submit their fish release record are automatically eligible for a permit and eggs the following school year.

Participants who do not submit a fish release record will not receive a permit or eggs the following school year.

PARTICIPANT RESPONSIBILITIES

Communication

Teachers/project leads should contact the SCP Manager, as soon as possible, if they anticipate any changes related to the project, such as:

- Electing not to participate in an upcoming school year
Circumstances may necessitate a school to sit out a year or two; however, non-participation for three consecutive years will result in removal from the program.
- Transferring the program to another school
- Changes to contact information
- Ending the program at their school

If a school is working with a Regional Coordinator, they should communicate this information to them.

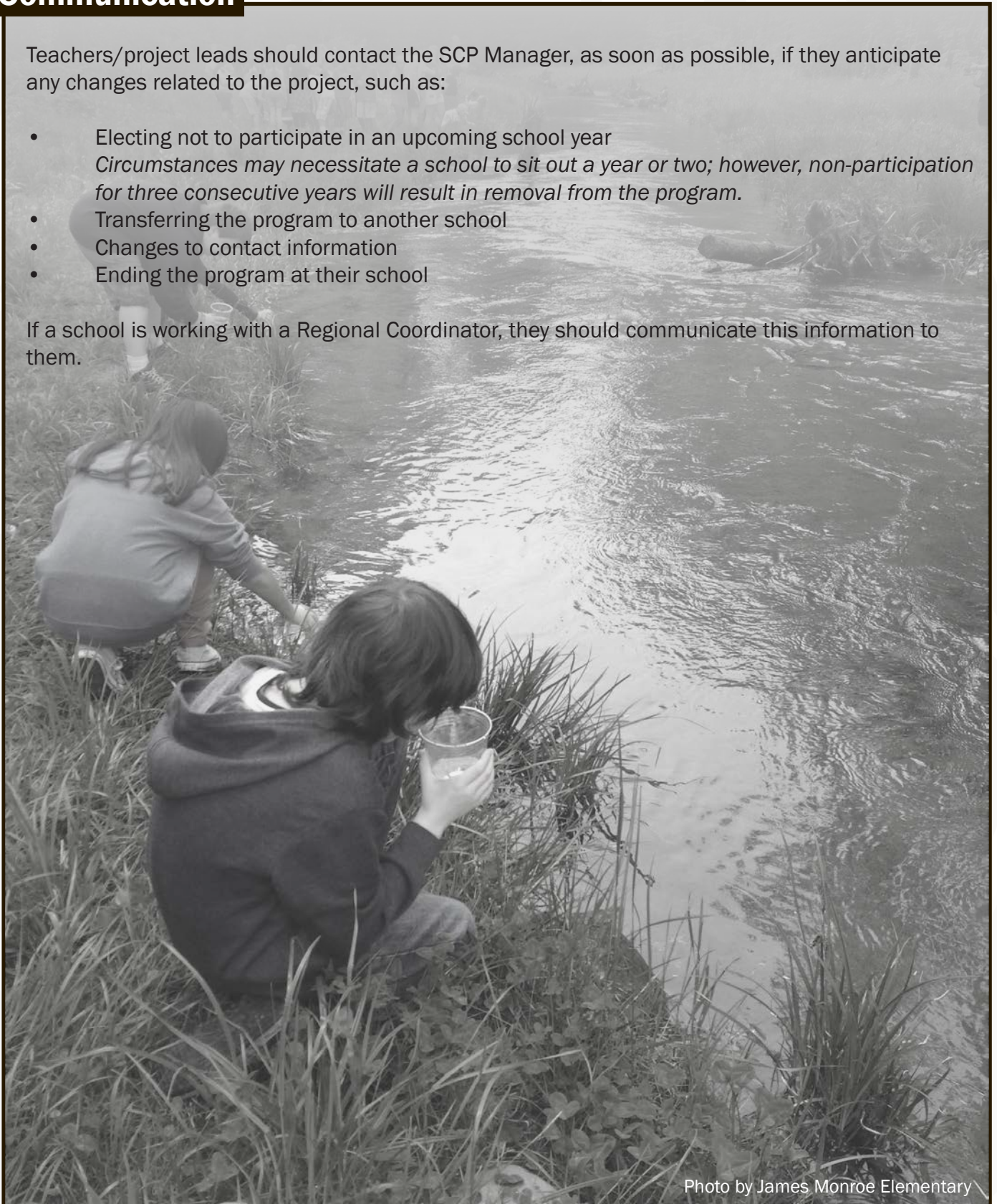


Photo by James Monroe Elementary

APPLICATION PROCESS

Before applying, ensure you have the ability to obtain the necessary equipment and supplies described on page 6,7.

How to apply

To apply for enrollment in the SCP download the application at: https://wdfw.wa.gov/conservation/research/school_coop_program/. Applications must be received by October 15 for consideration for that school year.

If an applicant is unsure about selecting an appropriate species, hatchery, release location or number of eggs, they should contact the SCP for guidance.

Application review

An application may be processed by the **standard method** or the **streamlined method**, depending on your proposed release site (waterbody fish are released into) and the species/stock of salmon or trout requested. When applying, a list of pre-approved release sites will be provided by the SCP manager.

Standard method

The standard method is followed when a release site has not been previously approved for the requested species/stock.

Steps to approval include:

1. WDFW review of the application that includes hatchery staff, the District Fish Biologist and, in some cases, Fish Health staff.
2. Co-manager (tribal, federal) pre-approval of the proposal (if applicable). Submission, review and approval of a Future Brood Document (FBD) Change Form. The FBD is WDFW's annual hatchery plan that includes approved projects. The standard method can take up to 90 days.

Streamlined method

The streamlined method can be used if an applicant requests a previously approved release site for the requested species/stock of fish.

Steps to approval include:

1. WDFW review of the application and a check to hatchery staff (regarding potential egg availability)
2. Submission of the request to our Hatchery Data Unit for inclusion into the FBD.

The streamlined method can usually be completed within ten working days.

REGIONAL COORDINATORS

WDFW partners with several organizations and dedicated volunteers that coordinate school projects for multiple schools in a geographic area. If a school is applying to join the SCP and is located within an area covered by a Regional Coordinator, the SCP manager may refer you to that specific coordinator to apply and enroll through them.

The services that Regional Coordinators provide varies, but may include: picking up and delivering eggs to the school, providing educational presentations, assistance with obtaining supplies and equipment, technical advice and coordinating release events.

Regional Coordinators also act as a liaison between the SCP and the schools with regard to issuing permits and reporting their schools release information.

Current Regional Coordinators

Asotin Conservation District
Benton Conservation District
Cascade Columbia Fisheries Enhancement Group
City of Federal Way
Clover Park School District
Columbia Springs
Foster Creek Conservation District
Franklin Conservation District
Friends of Issaquah Salmon Hatchery
Grant County Conservation District
Hood Canal Salmon Enhancement Group
Jim Siscel
Phillip Mackey-Moseley
Salmon in the Schools - Seattle
Skagit Fisheries Enhancement Group
Spokane Conservation District
Terry Thorsos
Tri-State Steelheaders
US Fish & Wildlife Service
Wendy Scherrer
Yakima Basin Environmental Education Program

EQUIPMENT & SUPPLIES

There are a variety of equipment and supplies you will need to properly rear your fish. WDFW does not provide equipment or supplies. With the exception of the refrigeration unit (chiller), you will find most of your needs met by your local aquarium or pet shop. If you don't currently have any equipment supplies, you can expect total start-up costs to range between \$1,000-\$1,500.

Equipment needed

- 50 - 55 gallon glass or acrylic aquarium. This size is appropriate for up to 250 eggs. A smaller aquarium can be used, but a smaller allocation of eggs will be necessary.
- A table or stand that can hold the weight of the aquarium with water, gravel, etc., allow ample air flow for the chiller, and enable a broken chiller to be removed while the tank is full.
- A refrigeration unit or "chiller", designed to cool your size tank down to 45-50 degrees F. Some options for 50-55 gallon tanks include the following sources: JBJ Arctica #DBA-075 1/10 HP (www.marinedepot.com), Aqua Euro model # AC25A 1/4 HP Apex Titanium Chiller (www.aquaeurousa.com), Glacier (www.glaciercorp.com), and TradeWind (www.tradewindchillers.com/drop-in-water-chiller/). Some models may require an in-tank water pump.
- A filtration system, hanging or canister type, capable of filtering your size tank
- An oxygen diffusion system (air stones/bubbler)
- A fish net with a long handle
- An aquarium thermometer (ideally with suction cups)
- A turkey baster or tongs for removing dead eggs or debris*
- A "gravel vacuum" to clean the tank
- A nearby water supply
- A potable water quality hose* (for RV) if water supply is close
- An aquarium scrubber* appropriate for a glass or acrylic tank
- A battery- operated air pump with plug and relay* that turns on automatically when the power is interrupted (essential for schools that often experience outages, can also be used during releases)
- A small ice chest/cooler to transport eggs
- Two 5-gallon buckets to use for water exchanges and transporting fry
- A plastic two-quart water pitcher to aid in exchanging water*

*optional

EQUIPMENT & SUPPLIES

Supplies/consumables needed

- 10-20 lbs. of clean aquarium gravel, natural colored and no smaller than a pebble
- API's Freshwater Master Test Kit (or similar) for monitoring water chemistry. Don't use test strips as they aren't as accurate.
- Tap-water conditioner (such as AquaSafe, Stress Coat, Nite-Out II, or Prime) help keep tank balanced and remove chlorine and metals.
- Filter media and other filter supplies, depending on the type of filtration system you have. Make sure you have mesh or other screen material on the intake tube to prevent fish from being sucked into the filter basket.
- A mineral block* to maintain proper pH and water hardness
- Fish food (a small amount may be provided by the hatchery)
- Flake-style fish food* from an aquarium store as a step-up food, such as Tetra-Min Tropical Flake, Omega One Freshwater Flake, or Sera Vipar.
- Frozen bloodworms* as a step-up food (enough for 2-3 weeks prior to release)

*optional

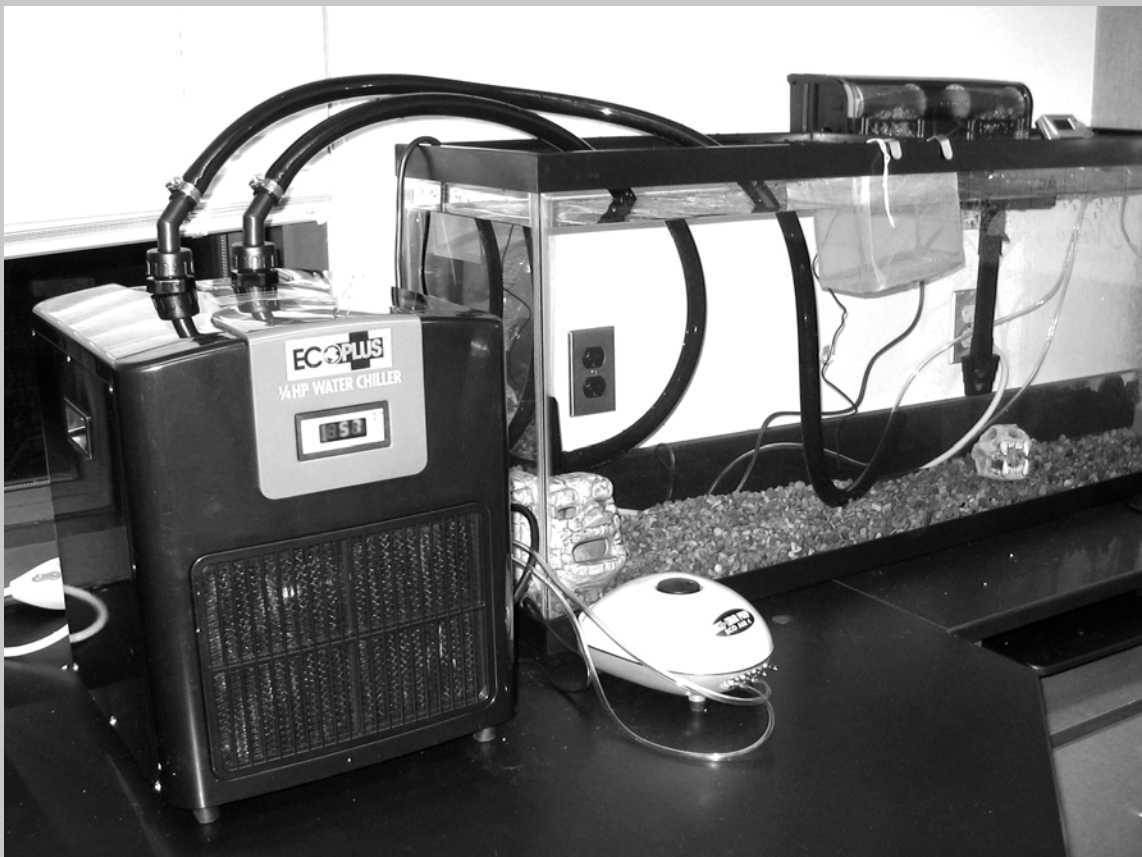


Photo by Mountainside Middle School

PREPARING FOR AND PICKING UP EGGS

Participants should have their tanks running and dialed-in two weeks prior to the expected date of receiving eggs.

Ensure that water temperature, pH, ammonia, and nitrite are within safe levels prior to receiving your eggs.

Hatchery staff may contact you to schedule pickup of your eggs; however, it is the participant's responsibility to make those arrangements. If you are unsure when your eggs will be ready, contact the hatchery that will be providing your eggs (see contact list on page 15). For a majority of SCP projects, eggs are ready in early January, after school winter break.

Bring a small cooler to transport your eggs.

Hatchery staff will provide:

- a cup and lid to hold your eggs
- your permit
- a small amount of fish food

Place your cup with eggs securely in your cooler and return directly to distribute the eggs into your tank.



Photo by Grant Street Elementary

REARING YOUR FISH

Regular monitoring of your water quality is key to rearing healthy fish. Having students track these parameters engages them in scientific data collection and helps them understand some of the life-sustaining environmental factors needed for salmon and trout. Keep a chart by the tank so students can log water quality parameters and monitor for changes.

Freshwater test kits, purchased at an aquarium shop, should be used by all participants. Avoid the cheaper test strip kits as they may not be as accurate.

Water temperature

How often to check: daily

Goal: 45-55 degrees F

Salmon and trout require cool clean water to survive and thrive. If water is too warm your fish will be stressed, may not eat and will be susceptible to disease.

pH

How often to check: at least weekly

Goal: between 7.0 and 7.6

pH expresses the acidity or alkalinity of a solution such as the water in your aquarium tank.

If you cannot keep pH between 7.0 and 7.6, consult your local aquarium shop about stabilization products. Use these products sparingly and according to directions. Avoid changing the pH more than 0.2 points within 24 hours or you may stress your fish.

Although you can purchase a pH-raising product (to make the water more basic), you can just use baking soda. If the pH is 7.0 or lower, dissolve a half teaspoon of baking soda in a ½ cup of warm water (for a 55-gallon tank) and add it to the tank near the filter so it will mix well; do it slowly, over a period of a few minutes.

REARING YOUR FISH

Ammonia

How often to check: at least weekly

Goal: 0 to no more than 0.25 ppm.

Ammonia results when not enough beneficial bacteria are present to break down egg casings, fish waste, and uneaten food. It isn't as dangerous in acidic water (pH below 7.0) but becomes very harmful when the pH approaches 8.0. It can corrode gill and fin tissue. Follow these steps to bring down ammonia:

1. Stop feeding, do a one-third water change (one-sixth in the morning and one-sixth in the afternoon) and make sure the filter is working. Retest water.
2. Next day, retest both ammonia and pH. Make sure the pH is 7.6 or below. If necessary, do another one-third water change ((one-sixth in the morning and one-sixth in the afternoon). Retest water.
3. If high ammonia levels persist, see your local aquarium shop to pick ammonia-absorbing resin and add it to your tank or filter system.

Nitrite

How often to check: at least weekly

Goal: 0 and no more than 0.5 ppm.

Nitrite results when other beneficial bacteria break down ammonia. It harms fish by inhibiting the uptake of oxygen and the release of carbon dioxide. This makes fish susceptible to infection. Re-establish biological filtration by following the instructions about ammonia. Be patient, beneficial bacteria will solve an ammonia problem faster than they will solve a nitrite problem.

If nitrite tests high (0.5 to 1 ppm), do partial water changes more frequently, even daily. If neither technique works, find out what is interfering with production of beneficial bacteria. The culprit could be colored gravel, volcanic rocks, toxic build-up, or inadequate cleaning after the tank was used for turtles or reptiles. Also, the culprit might be changing filter materials too often or changing both filter pads at the same time (you need to leave a little 'gunk' behind).

If high nitrite levels persist, see your local aquarium shop to pick nitrite-absorbing resin and add it to your tank or filter system.

REARING YOUR FISH

Dealing with sick fish

If your fish appear sick, you are experiencing excessive mortalities or have other issues with maintaining healthy fish, please contact the hatchery that provided your eggs for assistance AFTER checking and ensuring that water temperature, pH, ammonia and nitrite are all within safe levels.

Some signs that your fish aren't healthy may be:

- spotting, lesions or discolored areas on the body
- swelling on the body or gills
- loss of appetite (fully buttoned-up fish)
- fish laying on the bottom of your tank or gasping at the surface of the water
- clamped fins (not opening)
- unusual swimming patterns

Mortalities

Once mortalities are identified, remove them from your tank and dispose of them in the trash, compost pile or bury them underground away from any stream, pond or other water-body.

Keep track of your mortalities. Increasing or persistent mortality can be an indicator of water quality issues.

Feeding

A common mistake that leads to fish mortality is starting to feed too early or overfeeding!

Don't feed your fish until they have all completely absorbed their yolk sacs ("buttoned up"). You should not see even a little pink line.



Photo by Salmon in the Schools - Seattle

This is the "suture line", where the fish's yolk sac used to be. It needs to be almost completely gone ("buttoned up") before you start feeding. These chinook were first fed about a week after this photo was taken. Your fish will look very skinny at this point but that is normal.

To check: put a few fish in a clear plastic cup so you can look under them to view their bellies.

REARING YOUR FISH

Feeding

Notes on feeding

1. Fry eat only food falling through the water; they won't eat it once it hits the bottom. The more food waste and fish waste, the more frequently you will need to monitor water quality.
2. Feed only as much as your fish will eat in about one minute. If you find food on the bottom of the tank, reduce the amount. The bigger your fish grow, however, the better their chance of survival in the wild so try to feed them to capacity without overfeeding.
3. At each feeding, observe the fish for 5 minutes to make sure they are not being overfed.
4. Warn your students and the building staff about the perils of overfeeding.
5. Your fish will survive over the weekend (even a 3-day weekend) without food. Arrange for feeding over long vacations or check at pet stores for an auto feeder.

Initial feeding: Begin by “tease feeding” so they will learn to eat and so you're sure they have completely but-toned up. Sprinkle a tiny amount of hatchery food on the water a few times a day. The fish may spit it out, but after up to a week they will begin to eat normally.

Daily feeding: Use a 1/4 teaspoon measuring spoon to dip out hatchery food, then use your fingers to gently sprinkle the food over the surface of the water. Slow feeding will give small fish a chance to get their share and prevent food from reaching the bottom.

Increase the amount at each feeding if you see that they are eating it all before it reaches the bottom. Typically, you will have two feedings a day. Create a sheet for the students to record amount of food and time of their feeding sessions.

Follow this same daily feeding procedure if and when you move up to flake food and bloodworms.

At 4 weeks: If you wish, you can step up to feeding flake food. Because flakes settle slowly, your fish will have a good chance to nibble all of this food. An important function of this feeding is to nurture the biological filter so that it will be ready to handle the waste as the fry eat and defecate. Keep testing water quality frequently.

At 8 weeks: If filtration is working well, you aren't having issues with water quality and your fish are vigorously free-swimming, you can start feeding frozen bloodworms. Test water twice weekly for spikes in ammonia and nitrite as bloodworms contain extra protein.

Water changes and tank cleaning

Even if your water quality parameters are on target, it's recommended that you do a partial water change (20%) at least weekly. For a 50-55 gallon tank, a 10 gallon water change is sufficient if water quality is good. More frequent water changes may be necessary if there are water quality issues.

After you begin feeding, use a gravel vacuum weekly to remove uneaten food, egg casings and waste. Do a third of the tank floor per week, vacuuming the next section the following week.

Take care to ensure you aren't vacuuming up your fish!

PREPARING YOUR FISH FOR TRANSPORT

Do not release sick or diseased fish into Washington waters! Diseased fish can spread infections to healthy fish through shedding of pathogens into the water, by direct contact or by being cannibalized.

Allow yourself 30-60 minutes to complete the following steps (depending on experience):

1. Catch fish as close to departure time as possible so that the water in the bucket doesn't get too warm. You may use an ice pack to keep the water cool, but take it out of the bucket before transport as it can crush your fry in transit.
2. Use the same clean bucket you have used for water changes.
3. Fill your bucket about half full with water from your tank. If you have more than 150 fry, it's recommended you use two buckets.
4. Turn off all tank equipment except the aerator and remove any large rocks.
5. To facilitate catching the fry easier, remove enough water so that about 6" remains.
6. Put the bucket on a table or sturdy chair and close to the tank so that you can quickly release the fry from your net into the bucket.
7. Using a long-handled net, gently catch the fry and put them in the bucket. You may need to drain more water to catch the more vigorous fry and/or utilize a helper to herd the fish toward the net. Be sure to check the corners of the tank for stragglers!
8. If using a portable battery-operated air stone/bubbler (recommended), attach it to the rim of each bucket. This will keep the bucket water oxygenated until your fry are released.
9. If you will be doing any activities at the release site prior to release, bring zippered bags of ice and place them in the tank as needed to keep your fish cool.

Never cover your bucket tightly with a solid lid or plastic or your fish may suffocate!

RELEASING YOUR FISH

It's recommended that you start releasing as soon as possible after you arrive on site.

1. When you arrive, you may add creek water to the bucket(s) to help acclimatize the fish to their new water source.
 2. Carry the bucket(s) close to the water's edge. Leave enough room for students to line up or form small release groups.
 3. Have an adult count and tally the fish as they are released.
 4. Position an adult at the water's edge to assist students, as needed.
 5. Just prior to release, direct your students to:
 - Place their hand over their cup once fish are placed in it (to keep them from jumping out)
 - Walk carefully to the water and kneel down
 - Hold the cup at the surface of the water and gently tip it to let the fish swim out.

Never pour them from high above the water as this may stun or kill them!
 6. After all fish are released, pour the remaining water from the bucket on the ground.
- Collect your equipment and ensure you leave the area at least as clean as you found it.

EQUIPMENT CLEANING AND STORAGE

After release, clean your aquarium, filters, chiller, substrate, bubble stone and any other equipment you may be utilizing to rear your fish. Make sure the vents to your chiller are free of dust. Do not use soap or other cleaning projects on your equipment, just water.

Cleaning your equipment properly will ensure that it is safe for next year's batch of eggs.

Store your equipment so that it remains clean and dry until you are ready to rear fish again.

PROGRAM AND HATCHERY CONTACTS

If a school is affiliated with a Regional Coordinator they should contact that coordinator with any inquiries.

School Cooperative Program Manager

Josh Nicholas
360-902-2685
Josh.nicholas@dfw.wa.gov

Hatchery Facilities

CHELAN COUNTY

Eastbank Hatchery
13246 Lincoln Rock Road E, Wenatchee, WA, 98802
(509) 661-8301

CLALLAM COUNTY

Hurd Creek Hatchery
955 Fasola Road, Sequim, WA, 98382
(360) 683-1738

COLUMBIA COUNTY

Tucannon Hatchery
2303 Tucannon Road, Pomeroy, WA, 99347
(509) 843-1430

COWLITZ COUNTY

Kalama Falls Hatchery
Box 3900 Kalama River Road, Kalama, WA, 98625
(360) 673-4825

Lewis River Hatchery

4404 Old Lewis River Road, Woodland, WA, 98674
(360) 225-7413

PROGRAM AND HATCHERY CONTACTS

Hatchery Facilities

GRANT COUNTY

Columbia Basin Hatchery
6785 Road K NE #A, Moses Lake, WA, 98837
(509) 765-7714

Priest Rapids
29086 Hwy 243, Mattawa, WA, 99349
(509) 754-5075

GRAYS HARBOR COUNTY

Lake Aberdeen Hatchery
4203 Aberdeen Lake Road, Aberdeen, WA, 98520
(360) 533-1663

Mayr Brothers Hatchery
5597 Wishkah Road, Aberdeen, WA, 98520
(360) 533-5255

KING COUNTY

Issaquah Hatchery
125 W Sunset Way, Issaquah, WA, 98027
(425) 391-9094

Soos Creek Hatchery
13030 Auburn Black Diamond Road, Auburn, WA, 98092
(253) 931-3950

LEWIS COUNTY

Cowlitz Salmon Hatchery
125 Salmon Lane, Salkum, WA, 98582
(360) 985-7424

PROGRAM AND HATCHERY CONTACTS

Hatchery Facilities

MASON COUNTY

Bingham Creek Hatchery
W 3914 Fish Hatchery Road, Elma, WA, 98541
(360) 426-2369

McKernan Hatchery
W 411 Deyette Road, Shelton, WA, 98584
(360) 427-2163

PIERCE COUNTY

Minter Creek Hatchery
12710 124th Ave Ct NW, Gig Harbor, WA, 98329
(253) 857-5077

Voights Creek Hatchery
19112 Pioneer Way, Orting, WA, 98360
(360) 893-6440

SKAGIT COUNTY

Marblemount Hatchery
8319 Fish Hatchery Ln, Marblemount WA, 98267
(360) 873-4241

SKAMANIA COUNTY

Washougal Hatchery
15632 Washougal River Rd, Washougal, WA, 98671
(360) 837-3311

SNOHOMISH COUNTY

Arlington Hatchery
17619 McGovern Road, Arlington, WA, 98223
(360) 435-3206

PROGRAM AND HATCHERY CONTACTS

Hatchery Facilities

Wallace River Hatchery
14418 383rd Ave SE, Sultan WA, 98294
(360) 793-1382

SPOKANE COUNTY

Spokane Hatchery
W 2927 Waikiki Road, Spokane WA, 99208
(509) 625-5169

STEVENS COUNTY

Ford Hatchery
5343 Ford Wellpinit Rd, Wellpinit, WA, 99013
(509) 258-4269

THURSTON COUNTY

Skookumchuck Hatchery
10500 Skookumchuck Rd SE, Tenino, WA, 98589
(360) 264-2112