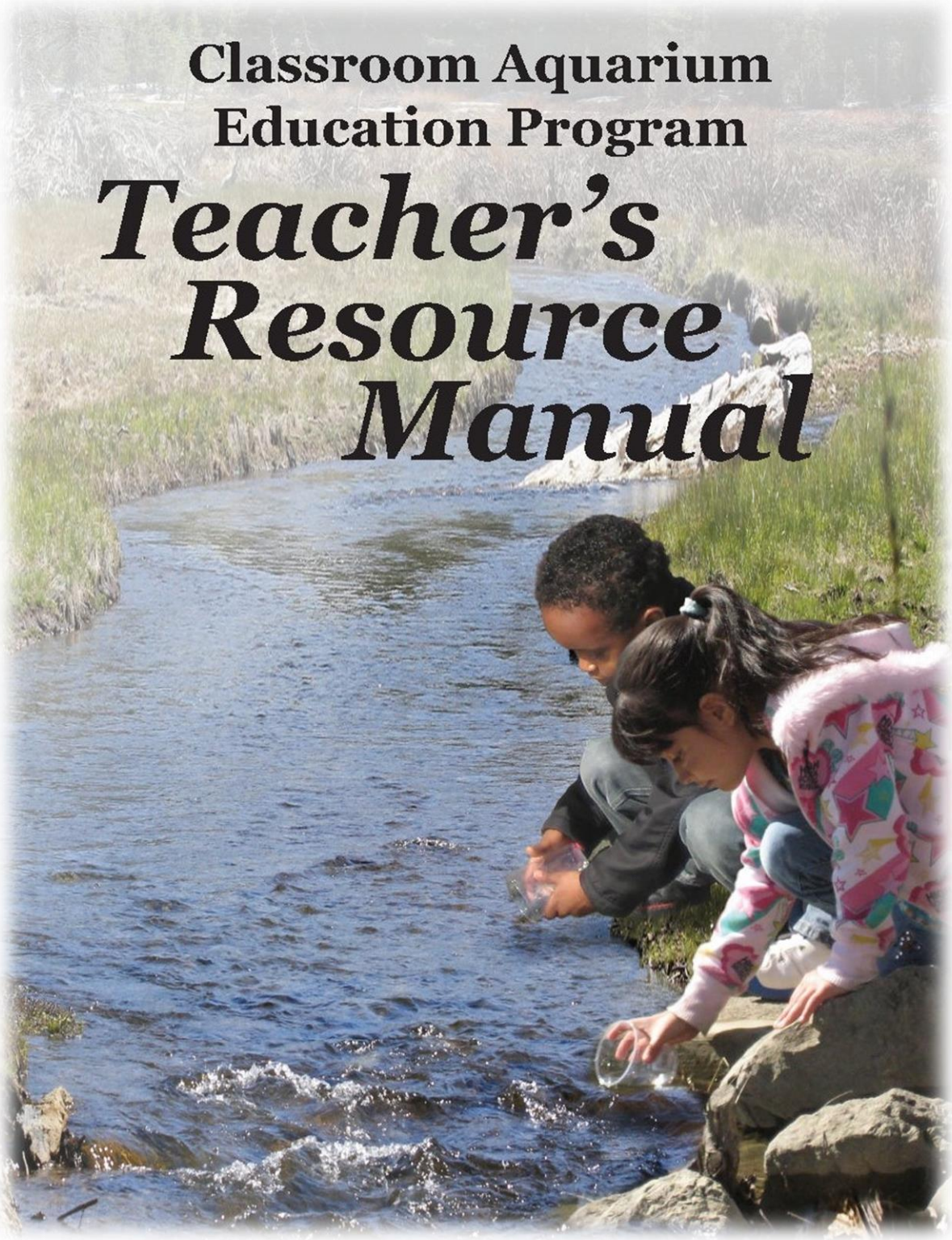
Classroom Aquarium Education Program

Teacher's Resource Manual



California Department of Fish and Wildlife

www.wildlife.ca.gov

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Mission of the CAEP Program

The Classroom Aquarium Education Program (CAEP) will improve teacher and student understanding, appreciation, and stewardship of fishes and their watersheds, while creating an awareness of the aquatic environment through the use of classroom aquaria. This is accomplished by the California Department of Fish and Wildlife (CDFW) working with and supporting the efforts of locally based groups (referred to as community partners) who provide the teacher training and support necessary to make this program a reality.

Program Overview

An educational experience: The CDFW will work with and provide support to community partners working to enhance classroom educational experiences through the hatching and raising of fish to the fry stage. These experiences will be directly linked to state educational guidelines and standards. This program is not intended to supplement existing stocking programs, raise exotic species, raise fish for personal use, or raise fish for sale. It is intended as a hands-on educational experience.

Operating under the CDFW form 772 permit: The program is regulated through CDFW to ensure fish are only released into appropriate bodies of water to reduce spread of disease or mixing of genetic strains. The CDFW form 772 authorization permits are required for participation. **Form 772 can be found at: https://www.wildlife.ca.gov/CAEP/Guidelines**

Statewide program: Statewide, all programs operate under the umbrella name of “Classroom Aquarium Education Program” or CAEP. Locally the programs go by a variety of names including “Trout in the Classroom”, “Salmonids in the Classroom” and others.

Species vary: This program is currently offered in many parts of the state. The species of fish varies around the state.

Fish species commonly raised in the program are Rainbow Trout, Lahontan Cutthroat Trout, Steelhead, and Chinook Salmon. They are determined by the species that maintains a desired ecological balance in the local water body.

Information on the history of the program can be found at https://wildlife.ca.gov/CAEP/Overview

Program Logistics and Timeline

	Local timing	
Workshop/training		All new teachers must attend a workshop. Subsequent attendance is recommended as a refresher course.
Submit 772 form (application for eggs)	Local Due date: To whom:	Submit a completed 772 form to CDFW or sponsor, depending on regional requirement.
Obtain equipment (aquarium, chiller, etc.)		Teachers may obtain their own or work with a partnering organization to borrow equipment.
Clean and set up aquarium Approximately 2 weeks prior to egg delivery		Clean and set up your tank to troubleshoot and establish beneficial bacteria in tank.
Egg delivery	Local delivery timing:	Delivery date is dependent on species and region. See regional page for timing in your area.
Egg hatching and fish rearing Approximately 4-8 weeks		Fish must be released within 8 weeks of egg delivery date. (In some areas fish may be marked prior to release).
Fish release & field trip Approximately 6-8 weeks after egg delivery		Fish must be released by date indicated on 772 permit.
Return 772 form		Completed 772 form must be returned to CDFW within 14 days of the fry release.
Clean tank **Store or return to sponsor**		See tank cleaning guidelines.

What YOU can raise in YOUR classroom

Due to the high level of biodiversity in California what species is available to raise in your classroom varies from county to county. Depending on where your school is located, and the approved release sites in your area, you will be raising one of the following fish: Chinook Salmon, Rainbow Trout, Cutthroat Trout or Steelhead Trout.

Chinook Salmon - artwork by Kyle Hailey, CDFW

Lahontan Cutthroat Trout - artwork by Kyle Hailey, CDFW

Rainbow Trout - artwork by Kyle Hailey, CDFW

Steelhead Trout - artwork by Kyle Hailey, CDFW

Additional valuable and detailed fisheries information on species identification, threats, distribution range, and angling can be found at https://www.wildlife.ca.gov/Conservation/Fishes

General Salmonids Background

Fish species commonly raised in the program are Rainbow Trout, Lahontan Cutthroat Trout, Steelhead, and Chinook Salmon. They are determined by the species that maintains a desired ecological balance in the local water body.

Salmonidae is a family of ray-finned fish that include a variety of salmon and trout species. Members of the Salmonidae family are called salmonids. Pacific Salmon, Rainbow Trout, Steelhead and Cutthroat Trout are all in the genus *Oncorhynchus*. *Oncorhynchus* is from the Greek words for hook and nose.

Anadromous fish eggs hatch in fresh water, migrate to salt water where they live the majority of their life then migrate back to freshwater to spawn. Anadromous salmonids include Chinook Salmon, Coho Salmon, Steelhead Trout, and Coastal Cutthroat Trout. An anadromous lifestyle has several advantages. As the ocean has a vast amount of resources, anadromous fish grow much larger than salmonids that remain only in freshwater streams and therefore have a higher likelihood of claiming better spawning areas. Also, it is safer for eggs and young fish in rivers than it is in the ocean.

Anadromous salmonids, such as salmon and steelhead trout, have very similar life cycles to resident trout. Anadromous salmonids migrate towards the ocean (downstream) as smolts. During this time, smolting, or physiological changes that help juvenile salmonid fish adapt from living in freshwater to seawater, occur. Anadromous salmonid fish will spend years in the ocean and grow large, due to plentiful food. Once ready to spawn, they swim upstream and return to where they hatched. After spawning, Pacific Salmon will die, while Steelhead can live to spawn again.

Chinook Salmon, also known as King salmon, are the largest of any salmon species and the most common salmon in California. Rainbow Trout are the most common trout in the state. Rainbow Trout and Steelhead Trout are the same species. The difference is that Steelhead live an anadromous life. When the bodies of Rainbow Trout change to live in salty water, they lose their rainbow colors and become a silvery steel color. The scientific name is *Oncorhynchus mykiss* (*O. mykiss*). Generally speaking, *O. mykiss* found in land-locked freshwater with no access to the ocean is a Rainbow Trout. Steelhead Trout are *O. mykiss* fish found in anadromous waters (waters that connect to the ocean).

Fun Fact: Pacific Salmon are semelparous, meaning they die after they spawn. Atlantic Salmon and Steelhead Trout can spawn and return to the ocean multiple times.

Life history of inland fish can be found at https://wildlife.ca.gov/Fishing/Inland

Salmonids Life Cycle

Eggs - Salmonid eggs are laid in loose gravel beds called redds in clear, cold, free-flowing rivers or streams. A typical adult lays from 1,000 to 8,000 eggs. This will vary by species. The eggs are deposited in the gravel and lightly covered with gravel to hide them from predators, protect them from strong light and hold them in place. It is very important that they receive highly oxygenated water throughout their development. Silt or debris that settles on the eggs may suffocate them.

Alevin - The eggs hatch in about 21 to 30 days after fertilization, depending upon the water temperature. Colder temperatures will lengthen the time required to hatch. The newly hatched fish are called alevin and still have their yolk sac attached. This is a unique adaptation and the small fish depend upon this sac for their nutrition for the next 2 or 3 weeks.

Fry/Parr - Once the alevins yolk sac is absorbed (called “buttoned-up”), the young fish “swim up” and become free swimming. They are now called “fry”. They will soon start looking for food. The fry develops a series of markings down their sides called “parr” marks. For this reason, fry are also called “parr”. This coloration helps them blend in to their surroundings.

Smolts - After a varying amount of time in freshwater, the young salmon or steelhead migrate to sea. To do this, they must alter many aspects of their bodies: color, shape, osmoregulatory physiology (salt balance), energy storage, patterns of drinking, urination, and behavior. The fish in this transitional stage are called smolts and the change is called smoltification. Smolts are the teenagers of the salmonid’s world. Smoltification must be complete before they can live in the ocean. Estuaries that are rich in food helps smolts prepare for living in the ocean.

Juvenile - In nature, it takes about 1 year for these small fish to reach the juvenile life stage and reach a length of about 6 or 7 inches. The parr marks fade as the fish matures.

Adult/Spawners - At about 2 to 3 years of age they have grown to around 18 to 30 inches in length and become mature adults ready to reproduce. The adult life stage is when spawning occurs. A spawning female will create a “nest” called a redd in the gravel of a streambed with her tail. She lays her eggs in the nest. The male will fertilize eggs by releasing milt. The female then covers them back up with the gravel to protect the eggs while they are hatching.

Salmon spawner vs. Trout spawner – Pacific Salmon will die after spawning, this distributes an abundance of nutrients into the watershed. Trout do not die automatically and can live to spawn again.

Environmental Needs of Salmonids

Eggs and alevins need:

- cold water flowing between the rocks to bring oxygen
- high level of dissolved oxygen in the water
- tiny open spaces between gravel rocks without sand and silt; small spaces keep them from bouncing against the rocks too much
- no movement of the gravel so they don't get crushed

Fry need:

- Food - river floodplains are good places for fry to find food
- water that is flowing slowly or only moderately fast because the fry are not strong swimmers yet
- cool water; water that is slightly warmer than what they hatched in will allow them to develop a little quicker to avoid some predators and will help their prey grow faster
- places to hide from predators

Smolts need:

- Food
- places to hide during the day on their journey to the ocean because they tend to travel at night
- No old mining pits and other dead-end ponds and channels off the main river.
- Consistent water quality and temperature- during the journey to the ocean their bodies are transforming to be able to process saltwater when they get to the sea. This is a stressful time for them, making them more susceptible to ill health caused by poor habitat conditions.

Adults need:

- consistent food supply for 3-4 years between their home (natal) stream or river and Alaska (and possibly further north)
- enough water flowing from their home river so they can recognize it
- good water quality in their home river- some biologists believe fish will not leave the ocean and enter the river if their native river conditions are not good enough

Returning adults need:

- access to migrate upstream
- river water flows high enough to allow them to find their home (natal) stream or river and then to swim to spawning habitat
- frequently spaced holding habitats (deep pools with dense cover that the fish can use for resting and refuge)
- moderately fast flowing water- not too fast or too slow because too much force will make it harder for them to swim and they need to conserve their energy for spawning

Spawning adults need:

- access to spawning grounds
- gravel that is loose and not cemented together with sediments
- the gravel size of choice for the species (trout like gravel that is smaller than the size chinook salmon tend to choose)
- a flow of water strong enough to help the female move rocks to build the redd

How the Aquarium Imitates Nature

In nature, the environment provides the physical and chemical conditions eggs and fish need to develop and survive. Features of your aquarium will simulate natural conditions. The following table shows the conditions necessary for a trout, how it exists in nature, and how the classroom aquarium mimics those conditions. Regardless of which salmonid species you raise, it requires the same conditions to survive.

Salmonid Need	In Nature	In the Classroom
Limited light (during eggs and alevin stages)	Eggs are buried in gravel in a redd.	Aquariums are covered to protect from UV and fluorescent light and placed away from direct sunlight. *No flash photography.*
Cold water (Ideal range 48°F -54°F)	Snow melt and shade trees cool water in nature.	Chillers are used to maintain appropriate temperatures.
Oxygen (7-12 ppm)	Water tumbling over rocks and logs provide oxygen. Cold water holds lots of oxygen.	Aeration units (i.e. air stone, powerhead) add and circulate oxygen in the water.
Clean Water pH (6.5-7.5)	Snow melt provides a clean water source.	Tap water (dechlorinated) or Spring water (not distilled)
Food	Fry feed on insects, zooplankton, and other small fish.	No food needed during egg and alevin stage; fry can be fed briefly before release

Caring for Eggs and Fish

Before your eggs arrive

Use a cover (or insulated cover) to keep your eggs in the dark. Your aquarium should be set up at least two weeks in advance. We recommend bottled spring water or tap water that has set out in an open container for 24 hours to dechlorinate. Check with local water provider to ensure chloramines have not been used to treat tap water, water that has been treated with chloramines shall not be used. The temperature should stay consistent around 50°F. If the water gets above 54°F it will stress the fish and may cause death. You may want to prepare for power outages, especially if you live in an area that is prone to power outages including planned outages by PG&E for wildfire prevention. Insulate your aquarium if needed. Have one or more battery-operated aerators and a supply of batteries.

When your eggs arrive

Keep your aquarium protected so that the temperature does not fluctuate, and the eggs are protected from light. It is okay for students to look inside for periods of time such as doing observations. Excessive exposure to UV and fluorescent light, may cause mutations and death.

As your eggs develop

Even under the best conditions, some of your eggs might die. Healthy eggs are light pink or orange, but dead eggs are white or milky colored. Dead eggs should be removed with a turkey baster as soon as possible. Disease, fungus, etc. can spread if you leave them in.
The eggs will start hatching once they have accumulated enough heat energy (measured in thermal units). You may notice white foam on the surface during hatching time. The foam is caused by an enzyme that dissolves the eggshell and will not harm your fish. This is the *only* time that foam in your aquarium is okay. Your fish may hatch quickly, or they may take a couple of days. After they have hatched, you can remove any remaining eggshells to prevent fungus growth.

Trout alevin - Photo Credit: SFTU Trout in the Classroom

After your eggs hatch
Continue to check on your alevins and remove any that have died as soon as possible. Disease, fungus, etc. can spread if you leave them in. Keep alevins protected from light. They will burrow down into the gravel and you might not see them very well.

After 2-3 weeks, the alevins will “button-up” and become free swimmers. They will begin to search for food.

Once your fish are up and swimming, they are ready for release.

Now is the time to release the fish or start feeding them if necessary.

Feeding
It is recommended that you feed them a small pinch once a day. Try to feed them only enough so that all the food gets eaten before landing on the bottom of the aquarium. Most importantly, DO NOT OVERFEED YOUR FISH. Rotting food can build up and contaminate the water and possibly kill your fish. You can try turning the power head off the first few times that you feed them but turn it back on after a few minutes. They can survive a two-day weekend without being fed, but arrangements should be made to feed them during longer breaks. Note: the longer you keep your fish the higher chance of mortality due to feeding and deteriorating water quality in a closed aquarium.

Water quality
It is important to keep an eye on the water quality, especially after you begin feeding the fish. The water should always be clear, not cloudy or foul smelling. Monitoring the ammonia and nitrite levels can alert you to a problem that could kill all of your fish.
You can perform a partial water change to improve quality. Remove about one quarter of the tank water (either with a gravel vacuum or with a clean cup or scoop) and replace it with fresh, de-chlorinated water that is the same temperature (within 5°F). Siphon all water from a gravel vacuum into a bucket so that you can collect any fish that you may have accidentally sucked up. Using water that is a different temperature can shock or possibly kill your fish. Try to do water changes quickly because it can be stressful to the fish.

Fish health
Once they are free swimming and eating on their own, your fish are strong enough to be transported to a release location. Don’t keep the fish too long. We recommend that you release them about two weeks after they have buttoned up. The longer you keep them, the more diligent you must be about checking the water quality.

If your fish do not look healthy, have two heads, swim in circles, etc.… please contact your CDFW coordinator or local sponsor for advice.

Preparing for fish release
It is best if you do not feed your fish on the day of the release. Give yourself about an hour to catch all of your fish before you leave for your field trip. Make sure your hands are clean and

free from soap, lotion, and hand sanitizer before putting them into the tank. You can transport your fish in a clean bucket that has cold water from your tank. Carefully catch and add the fish to the bucket. Remove all rocks, under gravel filters and water from your tank before leaving; this will ensure no fish are left behind. Monitor the temperature in the bucket. If it gets too warm, place some ice in a plastic bag and let it float on top. Adding ice directly to the water can add chlorine from the ice cubes to your fishes' water. During transport you can aerate the bucket with a portable battery-operated bubbler or by scooping up water in a cup and pouring it back in from about six inches or more above.

Fish release

Fish need to be acclimated to the lake or river temperature slowly. You will need to take the temperature of the water body and add water slowly to the bucket until water is within 5°F before releasing. A good release location should be near some vegetation that will provide good hiding places for your fry. Taking a photo of the fish in the bucket is an easy way to accurately count your fish prior to release.

Survival Tips

As you are raising your fish, it is normal to have a little die off at each life stage. The following are tips for increasing their survival rates.

1. **Set up equipment 2 weeks prior to egg delivery**- *Adequate lead-time will allow the tanks to stabilize reducing the risk of stress to the eggs and fry.*
2. **Carefully select the proper location for the tank**- *It should be out of any direct sun, away from heating (or cooling) vents.*
3. **Use a temperature controller with the chiller**- *The controllers allow the chiller to maintain a more consistent temperature.*
4. **Maintain a consistent temperature in the tank**- *Tank temperatures should be between 48 -54 degrees. Fifty-six degrees can be lethal to salmon, they are not as tolerant of heat as rainbow trout. Colder temperatures will slow development and higher temperatures can damage or kill the fish.*
5. **Handle the eggs gently**- *Avoid all unnecessary jarring or smashing of eggs.*
6. **Release the fry sooner than later**- *The longer the fish are in your tank, the greater the risk of mortality. Once all the fish have "buttoned-up" (completely absorbed the yolk sac), they are ready for release. It is tricky to predict when this will happen as it depends on temperature fluctuations in your tank. Planning a field trip 5 weeks after egg delivery is usually timely.*
7. **Feed the fish appropriately (if at all)**- *If a teacher opts to feed the fish, they should wait until at least 50% have "buttoned up" and use a very small amount of food. Salmonids are not bottom feeders. If the food reaches the bottom of the aquarium before it is eaten, it will rot there and adversely affect the water quality. Fry can go a week without food. Extra food in the tank and resulting fecal matter greatly increases the risk of mortality. Feeding too early can be lethal for alevins.*
8. **Tank water** - If you notice fish are dying, remove any dead fish, stop feeding for one day, and do a partial ¼ - ⅓ tank water change.
9. **Keep your expectations realistic**- *Not all the eggs will turn into releasable fry. The survival rate in classroom aquariums is much higher than in nature. If half your eggs make it to releasable fry, you are doing well.*
10. **Keep your sponsor/CDFW staff contact information handy**- *They are here to help you. Keep contact info readily available and call or email if you have questions that are not addressed in the teacher's manual or on the website.*

Fish Release Tips

AT SCHOOL

- Double check your 772 permits for your approved release location. You must release in one of the approved sites. These have been determined as acceptable for your fish based on biological and prestocking environmental review.
- **Determine if your release site requires reservations. Contact your sponsor for field trip support.**
- **Refer to the Fry Release and Field Trip Guide available at https://wildlife.ca.gov/CAEP/Curriculum-Aids**
- **Don't forget the fish, net and thermometer!**
- **Do not release deformed or diseased looking fish.**
- **Allow time - Collecting the fish can take a very long time - possibly an hour.** It helps to take out all rocks/gravel and check beneath the under-gravel filter, so no fry is left behind. During transport check the temperature a few times. If the temperature begins rising, add a few ice cubes in a plastic bag to keep the water cool.
- **Some sort of aeration is a good idea.** Gently pouring water from a cup into the bucket should be sufficient, or you can use a battery-operated aerator that can be attached to the side of the bucket. Placing the bucket in an ice chest with some ice in the bottom is a good way to maintain temperature and catch any water that may splash.
- **Make sure to keep your 772 permit with the fish during transport and release.** After the fish are released, complete the bottom section and return the signed permit to your CAEP coordinator or sponsor organization ASAP.
- Review the rules of the field trip with the students. If you are running stations, divide your students into groups before you arrive on site to save time.

AT FIELD TRIP SITE

- **Make sure your fish are acclimated for release.** Set the bucket in a shallow area of river or lake water and allow the temperature to slowly even out. You can add a cup of river or lake water every few minutes to help the process along. When the water in your bucket is within **five-degrees of water body temperature** you're ready to release your fry. This can take some time ~20 minutes, but if you rush it you can shock or kill the fish.
- **While you're waiting for the water temperature to adjust,** have students observe the natural features of the river or lake and take the opportunity to discuss your fishes' new home with your students. Rivers and lakes are complex systems with many parts, each of which play a part in the salmonid life cycle. See the 'Parts of the River' in the Fry Release Guide available online at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=91752&inline for information on river features and discuss their importance with your class.

Take time to explore the area. A good idea is to devote at least 20 minutes to a nature walk or other activity that encourages students to interact with the environment. Divide the class into small groups (each led by a chaperone) and let them discover nature for themselves.

Aquarium Troubleshooting

Milky white = dead egg

Trout eggs

Photo Credit: USFWS National Digital Library

It is natural to have some die off at each life stage (see survival rates graphic on the next page). Look for dead eggs/alevin/fish daily and remove them from the tank as soon as possible. If you notice fish are dying after feeding, stop feeding for one day and do a partial water change.

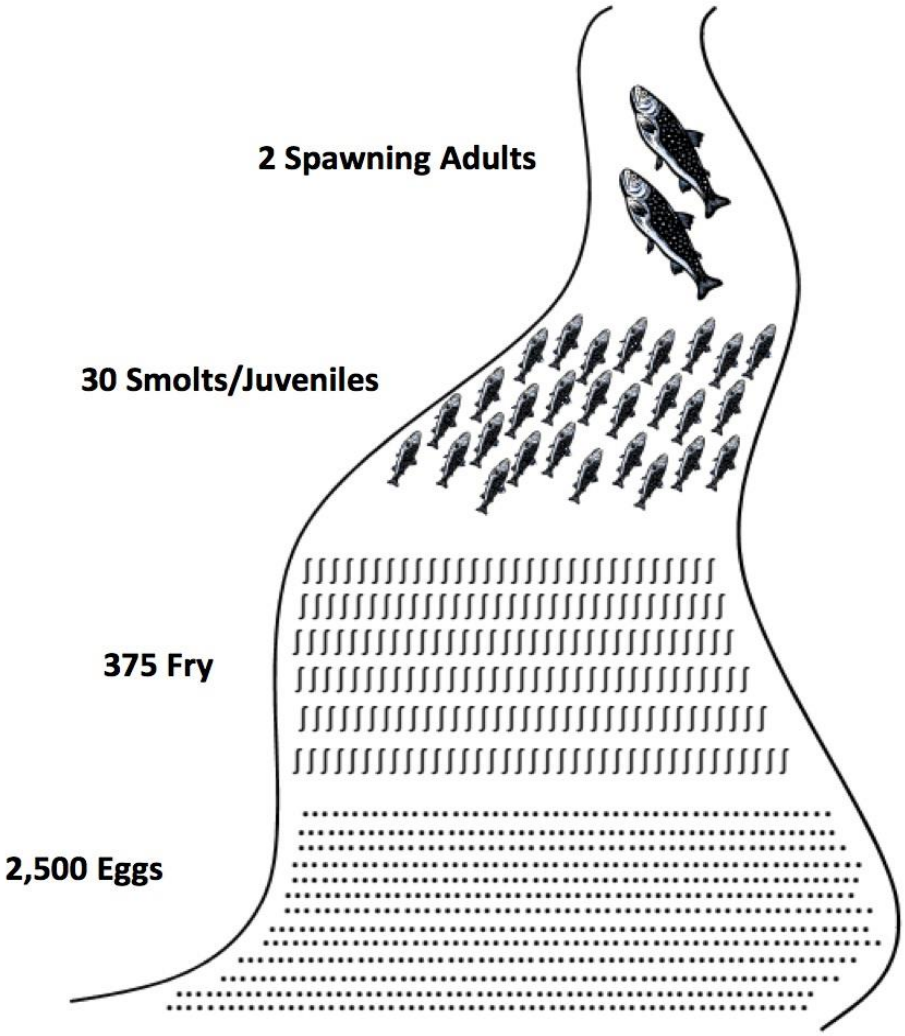
Salmonids must have cold, clean, highly oxygenated water to survive. Common reasons for sudden fish loss include:

- Power outages (depleting oxygen levels and increasing water temperature)
- Unplugged or broken chiller (increasing/too high or a water temperature)
- Unplugged or broken pump/powerhead (depleting oxygen levels)
- Introduction of outside chemicals (contaminating the water)
- Changes in water quality (possibly decaying fish that have not been removed or overfeeding)
- Improperly assembled equipment (fish get drawn into pump or burrow under the undergravel filter)
- Chiller/probe/powerhead are not deep enough due to water evaporation (add more water).

The exact reason for fish die-off cannot always be pinpointed. Use the experience as a teaching tool, a mystery the kids can learn valuable lessons from trying to solve. See educational write up https://www.wildlife.ca.gov/CAEP/Curriculum-Aids "What if all my fish die".

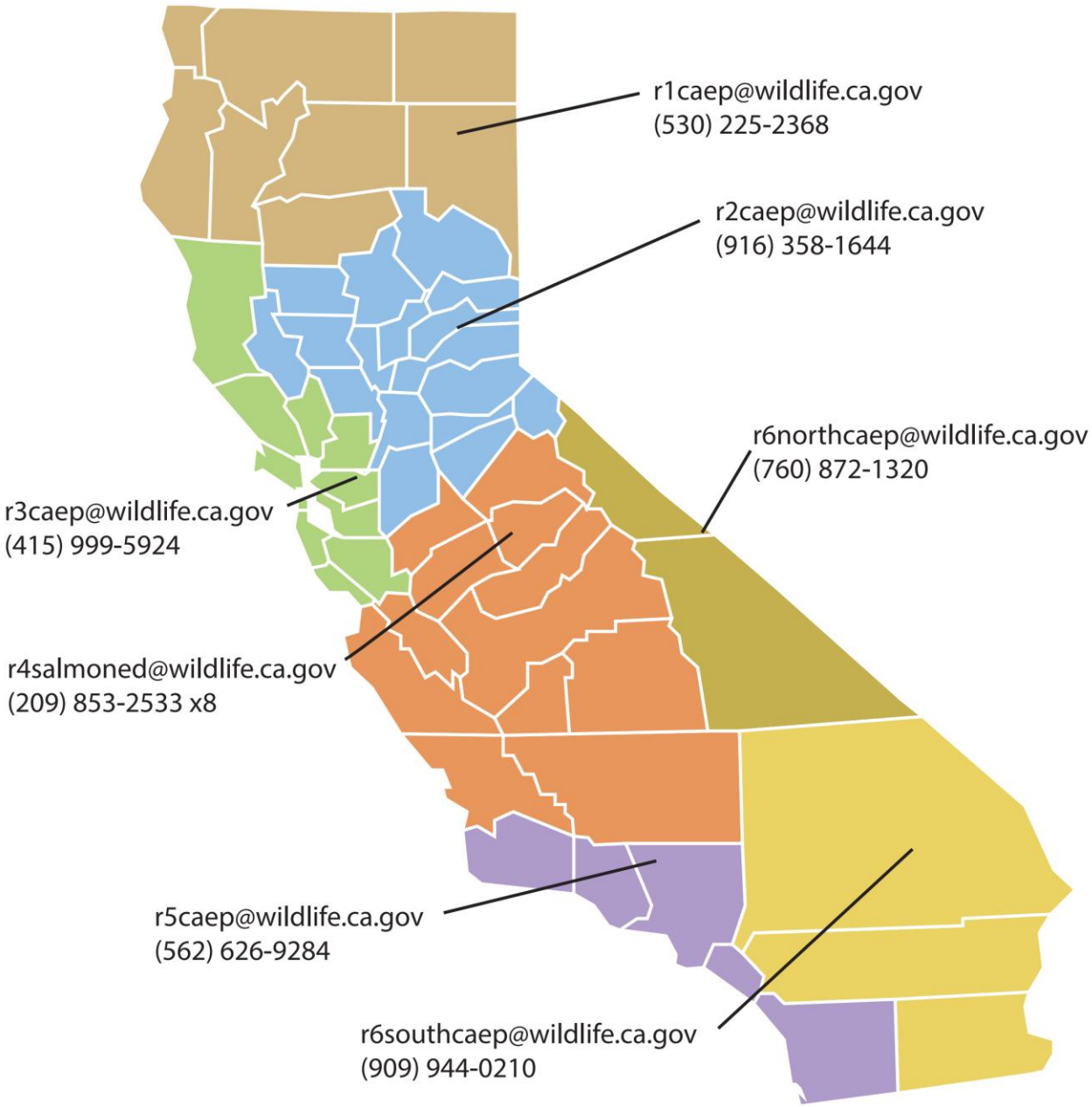
The following graphic shows approximate survival rates at each life stage for salmonid species that migrate to the ocean and return to their natal stream to spawn. Numbers will vary between species, watershed, and environmental fluctuations such as droughts or wet years.

Approximate Natural Survival Rate of Anadromous Salmonid Species

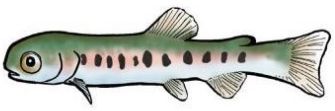


Numbers reflect the *approximat*e survival rates at each life cycle stage for salmonid species that migrate to the ocean and return to their natal stream to spawn. Numbers will vary between species, watersheds and environmental fluctuations such as droughts or wet years.

Statewide Contact Information



Biological Conditions of program

Aquarium - Use a sterilized aquarium dedicated for CAEP fish. No other animals or plants allowed in aquarium at any time. This includes prior to receiving eggs and while eggs and fish are in the aquarium.		
Rocks - Use uncoated gravel sanitized according to CDFW protocol of prior boiling for 10-20 minutes.		
Water - Use non-chlorinated water. Do not use distilled water, stream or lake water. Do not use Aquafina water as it is too close to being distilled.		
Do not add chemicals or medication.		
Do not use sticks, plants or other substrate from a stream or lake.		
Eggs and fish – eggs and fish shall remain the property of the State and decisions on final disposition remain solely with CDFW. Do NOT release deformed or diseased fish, please contact CDFW coordinator for instructions.		

Aquarium Setup – equipment used for the program differs by county and sponsoring organization. Basic tank set up includes an aquarium, a chilling unit, and a pump (because the fish need cold, clean, oxygenated water). Please refer to your regional coordinator or your sponsoring organization for aquarium set up details.

Cleaning your Aquarium

Disinfecting aquariums and equipment for the Classroom Aquarium Education Program

It is important to reduce the amount of potential pathogens in the aquarium as much as is practical. This will help protect the eggs and fish against disease causing bacteria and fungus. The aquarium, thermometers, pumps, filters and other related equipment that will be touching the aquarium water will need to be cleaned.

- **Rinse dirt off of aquarium, equipment, and rocks.**
  Rinse as much dirt/organic matter off of it as possible with plain water. Do not use soap or chemicals. Organic "dirt" such as fish poop and rotting fish food can drastically reduce the germicidal effectiveness of the bleach you will use on the equipment.
- **Boil rocks and dry.**
  Boiling the gravel and rocks for 10-20 minutes in tap water. **CAUTION**—rocks stay hot for a long time. Let them cool before you handle them. Spread them on a clean surface in the sun and dry completely before storing.
- **Bleach equipment, make a bleach solution.** Sodium hypochlorite (NaOCl) is the active ingredient in household or chlorine bleach. Generally, bleach stored at room temperature has a shelf life of one year. Use bleach with a label indicating it has 5.25-8.25% sodium hypochlorite.
  - Do NOT use bleach that has lost its bleach smell.
  - Do NOT use thickened, "splash-less", or scented bleaches as these types of bleaches may have a lower levels of sodium hypochlorite.

Water	**Bleach Strength 8.25% sodium hypochlorite**	**Bleach Strength 5.25-6.25% sodium hypochlorite**
1 quart	½ teaspoon	1 teaspoon
1 gallon	2 teaspoons	4 teaspoons

- **Temperature** - The hotter the bleach solution, the more active the chlorine will be on pathogens, use the warmest water you can comfortably work with.
- **Time** - we recommend soaking equipment for one hour.
- **Rinse** - Triple rinse with tap water. **The bleach solution is toxic to fish and should be rinsed off very thoroughly before using or storing the equipment.**
- **Dry** - let equipment dry thoroughly before storing.

More detailed information on tank cleaning: https://wildlife.ca.gov/CAEP/Curriculum-Aids

Training, permitting and guidelines

1. Teacher Training - new teachers must become certified by attending a CDFW training.
2. Teacher Permitting - teachers must submit a form 772 and follow the conditions of the permit.
3. Failure to comply - Participants who fail to follow the conditions of the 772 permit, or fail to report release summary information, may have their certification revoked and not renewed.
4. Visit https://wildlife.ca.gov/CAEP/Guidelines for a complete summary of guidelines.

Partners - Roles and Guidelines

The program relies heavily on volunteers and partnering organizations. Roles and Guidelines for Partners can be found at https://wildlife.ca.gov/CAEP/Guidelines - Parameters for Partners

Curriculum & Activities

Many teaching tools, curriculum, activities, posters, worksheets, handouts and more are available at CDFW's website https://wildlife.ca.gov/CAEP/Curriculum-Aids.

Correlations

Correlations to California Content Standards and Next Generation Science Standards can be found at https://wildlife.ca.gov/CAEP/Curriculum-Aids

Thermal Units Activity

The amount of time it takes for your eggs to hatch is temperature dependent. The Thermal Units Activity is a worksheet that gets your students thinking about the factors that contribute to hatching eggs in the classroom. Link: When Will They Hatch? worksheet (PDF)

The end ~ Happy hatching!