



Salmon's Journey Home

Presentation by Christine Elder; biological illustrator & educator
(Find a copy of this handout on my website: www.ChristineElder.com)

Summary of Presentation

Salmon species of the Pacific Coast: Chinook, Chum, Coho, Pink, Sockeye, Steelhead.

Life cycle: spawning, eggs, alevin, fry, juveniles (parr), smolts, adults, life in the river, life in the ocean, return to river to spawn.

Threats (The five "H"s): habitat loss, hydroelectric dams, hatcheries, hybridization, harvesting.

Books on Salmon

- *Salmon Without Rivers* by Jim Lichatowich.
- *King of Fish: The Thousand-Year Run of Salmon* by David Montgomery.
- *The Behavior and Ecology of Pacific Salmon and Trout* by Thomas P. Quinn.
- *Salmon Stream* (Sharing Nature with Children Book) by Carol Reed-Jones with lovely illustrations by Michael S. Maydak

Recent Films— beautiful, inspiring, and calls to action from the perspective of natives/conservationists/flyfisherman

- *Salmon: Running the Gauntlet* - A PBS Nature Film
- *Eastern Rises* by Felt Soul Media (about the incredible Kamchatka region, an environmental film festivals winner)

Organizations

- Monterey Bay Aquarium's Seafood Watch Program: <http://www.montereybayaquarium.org/cr/seafoodwatch.aspx> (best choice is Wild Alaskan, my favorite is Wild Alaskan Copper River Sockeye Salmon, yum!)
- Save Our Wild Salmon: <http://www.wildsalmon.org/> (Everything you need to know about threats and restoration).

Resources for sketching and illustrating salmon and other fishes.

- GNSI Guild Handbook of Science Illustration – of course!

Sources for salmon art and stock photography / illustration inspiration!

- Jeff Rich –photographer and naturalist
- Thomas Dunklin – photographer, videographer and naturalist
- Joseph Tomelleri – author and illustrator
- Ray Troll –humorous fish cartoon art



Sketching a Salmon/Trout with Kids

Activity developed by Christine Elder
www.ChristineElder.com

In this activity for kids, the children follow along as I demonstrate my drawing technique. I discuss each anatomical structure as we draw it, and its role in helping the fish to migrate, feed, spawn and avoid predators. Media may be simply a pencil or may be further developed with paints, pastels, colored pencils, etc. as time permits.

- 1. Overall shape** – torpedo shaped for reducing drag since water is many times denser than air.
Water has different physical properties than air – higher density, more buoyancy, less oxygen (depending upon temperature and aeration) and it absorbs light with increasing depth.
- 2. Mouth and teeth** – gulp water to move oxygenated water over gills. Teeth for grasping slippery prey. Get larger and hooked in spawning males. Chinook salmon have black gums.
- 3. Eyes**-excellent underwater vision, close and long distance, and for low light conditions. See in color. See predators from above Pupil oval.
- 4. Nostrils**-on each side of head leads directly to brain, not connected to gills. Can sense smell of their natal river to guide them home even after years at sea. Each stream has unique mineral ‘signature’.
- 5. Hearing** – no external ear. Otolith ear bone. Can tell age of fish.
- 6. Operculum**-covers the gills– the fish’s lungs, which must be more efficient than lungs since water has less oxygen than air, depending upon amount of aeration and the water’s temperature. Branchiostegal rays – membranous support for opercular membrane.
- 7. Fins** –dorsal, adipose, caudal, pair of pectoral, pair of pelvic, anal fin. Dorsal and anal stabilize against rolling. Pectoral and pelvic help in going up or down, turning sharply and stopping quickly. Caudal fin is strongest and used for forward momentum and also used by the female to dig her nest (red) in the gravel of a stream. Vent is the common opening for the digestive and reproductive tracts and is in front of the anal fin. Fins are strengthened with Fin Rays, some of which branch and rebranch at the ends. Pelvic fin has a unique short spiny axillary process. Fins only have soft rays, no spines. Adipose fin is present in all salmonids but few other families, function unknown.
- 8. Lateral line** – (sense of distant touch) serves to help them ‘feel’ their surrounds including predators, prey and physical objects in the water. Senses pressure from water currents, predators, prey, esp. useful at night.
- 9. Scales** – shape differs in different species of fish. Hard, fingernail material, overlaps like roof shingles, salmonids have cycloid scales. Slimy mucus layer-over scales, which protects from bacterial and fungal infections and reduces drag. Scales are small on salmon. Scales also show growth rings like a tree and can be used to age a fish.
- 10. Coloration**- (counter coloration) for camouflage from both predators and prey
Dorsal surface mottled green to match bottom of river as viewed from above
Ventral surface bluish white to match sky color as viewed from below. Spots vary in size and location.

Spawning male attributes – large teeth, hooked snout, enhanced coloration, often reddish..

Special characteristics of the salmon species we have chosen to sketch today (ie Chinook attributes – black gums, large speckles on all fins and dorsal surface, forked tail and which is fully spotted, anal fin long and shallow (15-19 rays)

