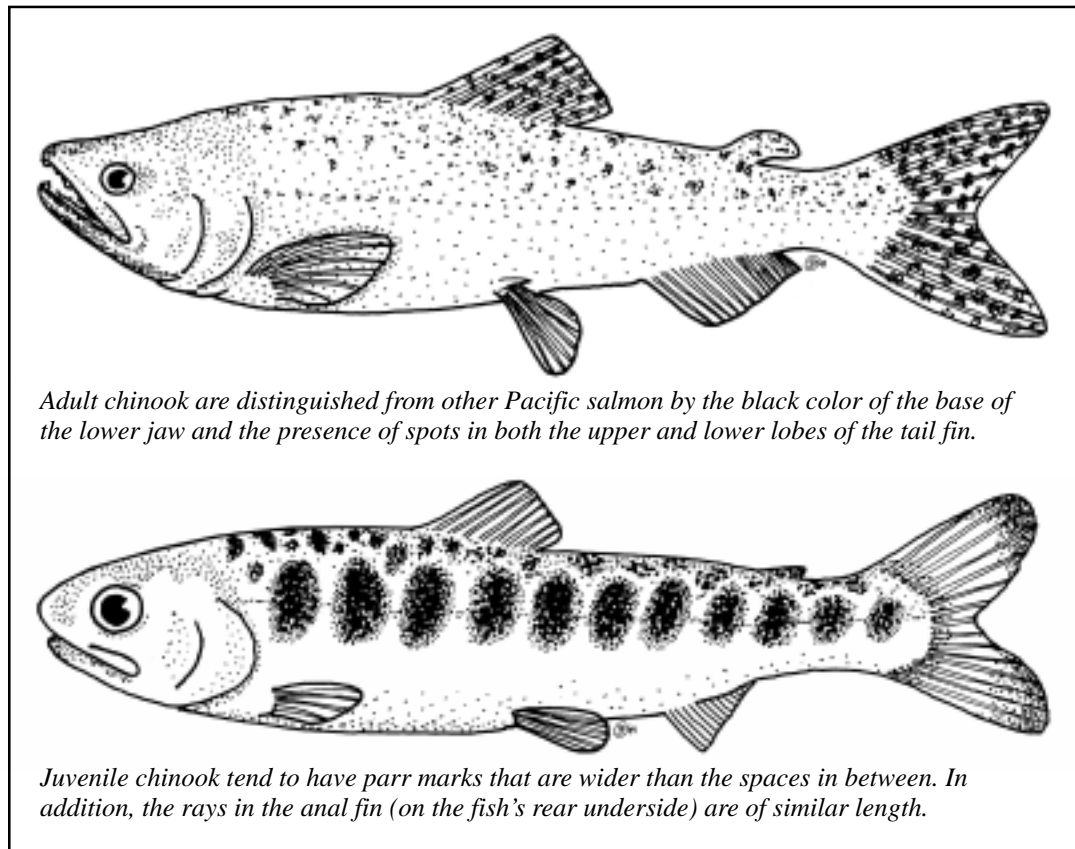


CHINOOK SALMON: LIFE IN THE WATERSHED

Chinook salmon are the largest of any of the salmon in Oregon. Mature fish range from less than 2 pounds to more than 70 pounds. In the late 1800s, chinook salmon were almost the only species taken for canning in the Columbia River, with production peaking at 43 million pounds in 1883. By the 1880s, chinook salmon population declines were already a cause of concern. Historically, the range of chinook salmon included all coastal streams below natural barriers. On the coast, in 1900, there were approximately 500,000 chinook salmon. Today, this number has declined by 30 percent to 50 percent.

Efforts to restore salmon must focus on improving the fish's habitat in the watersheds where it lives. At the same time, we must address other factors of its decline, such as harvest and hatchery effects on the species.

Coastal residents have a critical role to play in improving fish habitat in watersheds. Improving watersheds will help prevent the extinction of species and provide benefits to individuals and communities in the form of enhanced water quality and quantity.



This publication is designed to help readers understand how, where, and when chinook salmon live in watersheds and what people can do to help conserve and restore their runs.

What makes a chinook salmon a chinook salmon? People have long distinguished chinook salmon by the timing of the adult migration. Fall, spring, and even summer chinook are

known to return to Oregon waters. At least a few adult fish probably enter some Oregon rivers every month of the year. Like other salmon, chinook juveniles migrate from freshwater to the ocean and then return to freshwater as adults to spawn and die. However, chinook differ from other salmon in the many different tactics (termed "life history strategies") they employ for carrying out this

life cycle. Scientists distinguish two major forms of chinook salmon: a stream type that as juveniles spend over a year in freshwater before migrating to the ocean (spring or summer chinook) and an ocean type that migrates to the ocean within months of hatching (fall chinook).

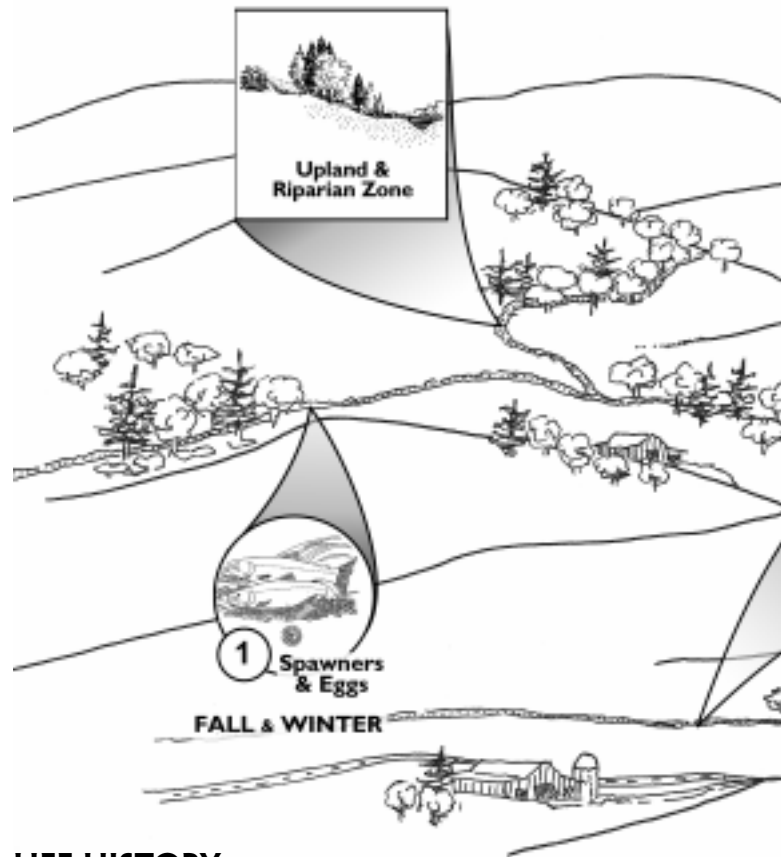
Watersheds are the circulatory system of the landscape, draining the ridgetops through streams

and then rivers and finally to a single point, such as a lake or the ocean (rain and snow recycle the water to the ridgetops). Chinook make use of different parts of the watershed, depending on their stage of development and their life history strategy. Fire, landslides, erosion, and flooding are normal parts of a stream's existence, helping to create and maintain the habitats in which salmon and other species have evolved over time. For example, chinook salmon eggs rely on strong water flow through the gravel nests in which they are laid to provide enough oxygen to grow and develop. The creation of this habitat depends on the periodic disturbances that naturally occur within a

watershed. Human activities sometimes modify the watershed too drastically or too frequently, exaggerating the natural disturbances to a stream with consequences detrimental to fish survival.

Functioning watersheds are important to us and to fish. We've come to depend on them for timber, suitable land for farming and grazing, and drinking and irrigation water. The land areas that people manage provide large wood, boulders, gravel, shade, and food that build healthy stream habitats for salmon. It's a fact: we all live in the watershed. We need to care for watersheds, not only for our own uses but also for the survival of many life forms.

WE LIVE IN WATERSHEDS . . .



LIFE HISTORY

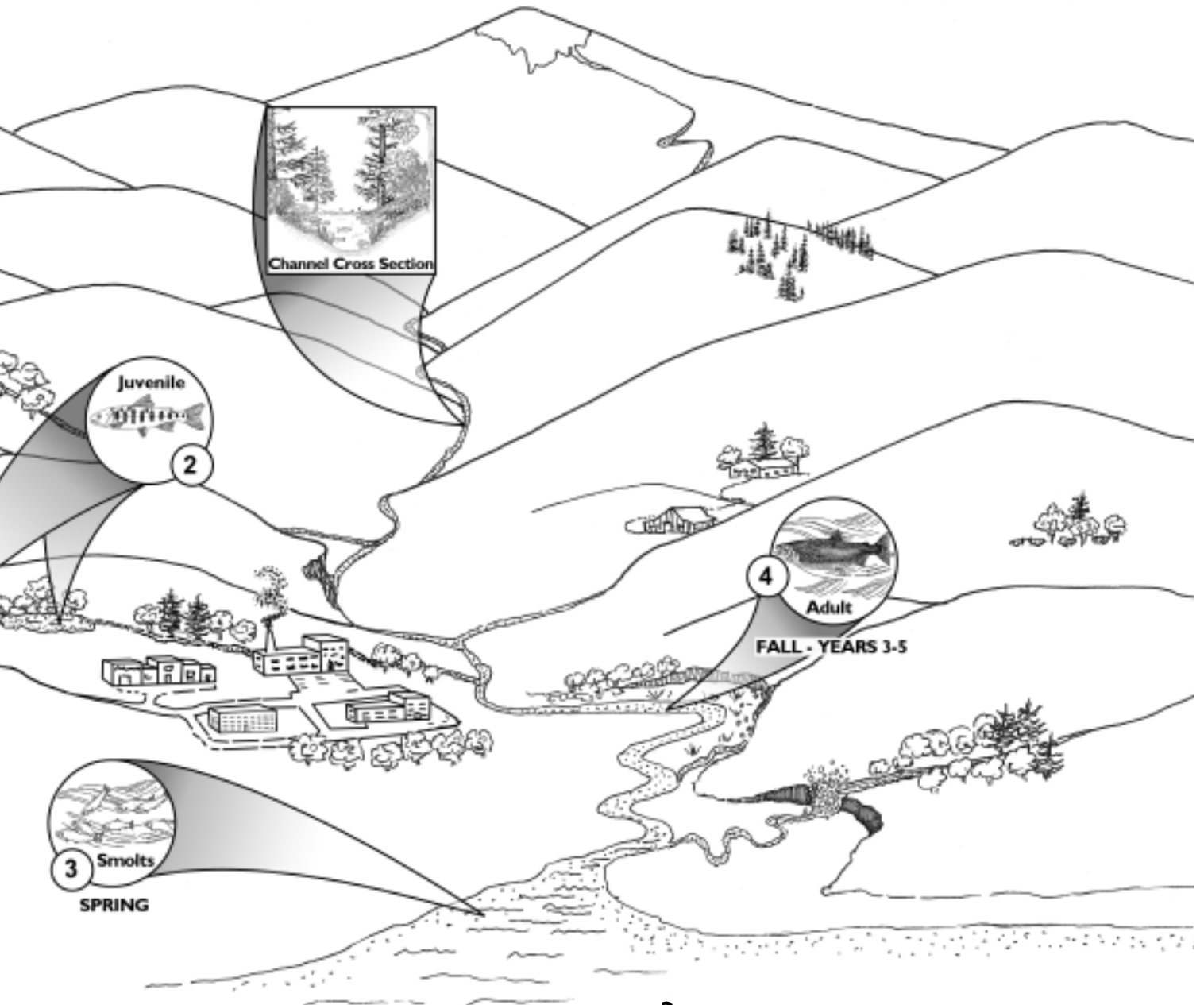
1 Adult spring and summer chinook migrate into freshwater from late winter to early summer, usually to the streams in which they hatched (natal streams), and spawn in late summer or early fall. Spawners can be two to six years old (some males mature as one-year-olds). Spring and summer chinook tend to spawn in the headwaters of streams and rivers.

Adult fall chinook return to freshwater from late summer to early fall, usually to their natal streams a few days or weeks before they spawn. Spawners can be of mixed age. Fall chinook tend to spawn in the downstream portions of streams and rivers although some populations are capable of considerable migration.

The eggs hatch in 30 to 50 days, depending on water temperature.

2 Juvenile spring and summer chinook emerge as fry in the winter and migrate to the lower reaches of streams and rivers, where they spend the following spring, summer, and winter in freshwater.

AND CHINOOK SALMON LIVE IN WATERSHEDS



Juvenile fall chinook emerge as fry in the winter and migrate to the ocean the next spring, undergoing the change from a freshwater parr to a smolt capable of living in seawater.

When an estuary is available, juvenile fall chinook can spend anywhere from two to four months in the estuary before they migrate to the ocean as smolts.

For successful production, juvenile chinook depend on the presence of streambank vegetation and abundant instream structure created by logs and root wads.

3 In the spring, after a year of rearing in freshwater, juvenile spring and summer chinook migrate to the ocean. Smolts enter the ocean, where they usually find abundant food and thus grow rapidly.

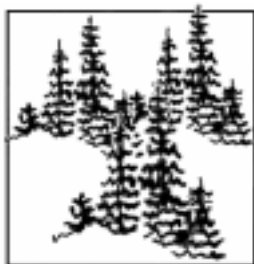
4 Some Oregon chinook salmon spend their time growing in the oceans off southern Oregon and northern California; others migrate northward to the waters off British Columbia or southeastern Alaska. Chinook may remain in the ocean for two to five years. After spawning, chinook die and provide nutrients to other animals as well as to the next generation of salmon.

YOU CAN HELP SALMON

Oregon's coastal chinook—and coho, steelhead, and cutthroat trout—can be saved! Land owners and managers play an important part in this effort. Whether your land covers hundreds of acres or a residential lot in town, you can help.

The first way is by simply being aware of your place in the watershed and of your local fish runs.

The second way is to help provide the habitat conditions the fish need. Here are a few helpful tips for different kinds of landowners.

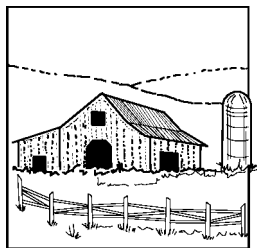


FOREST OPERATIONS

- Protect streamside trees and other vegetation at least consistent with the Oregon

Forest Practices Act requirements.

- Leave good natural features, such as a beaver pond or natural side channel, alone. These are important rearing areas for fish.
- Check areas where your roads cross streams. If your culverts have a drop or are above the stream channel, they could be barriers to fish passage. Consider redesigning problem culverts or replacing them completely with a bridge structure.

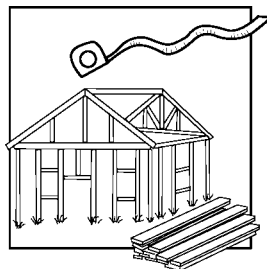


AGRICULTURAL BUSINESSES

- Create streamside (riparian) pastures that can be managed for grazing during times when livestock will prefer pasture grasses over riparian trees and

shrubs. Provide a trough or watering tank away from the stream.

- Plant willows, cottonwood, poplar, or other shrubs and trees along your waterways. They help stabilize the banks, filter out sediments from runoff, and provide cooling shade.
- If riparian pastures are not viable options for your operation, consider using fencing to keep animals away from the water's edge.
- Protect wetlands, rivers, and estuaries through careful animal waste management and from the effects of poor fertilizer or herbicide application.



LAND DEVELOPERS, HOMEOWNERS, BUSINESSES

- While state and federal law may allow filling wetlands or estuaries (with

the proper review and permits), loss of such habitat can harm fish. Consider options that preserve these habitats.

- Construction can cause serious sediment problems, even well away from a waterway, if storm-water runoff is not properly contained. Although smaller operations may not need permits, they still can have significant impacts. Check with the state Department of Environmental Quality or local construction companies about responsible runoff management at your site.

• If possible, homeowners and businesses should connect to a sewage treatment and disposal facility. Poorly performing septic tanks can contaminate groundwater and nearby streams, lakes, and bays. If you must use a septic tank, be certain it is properly designed, located, and maintained.

- Dispose of household chemicals such as used motor oil, antifreeze, pesticides, and paints at approved collection facilities in your area.

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