Idaho Fish & Game News

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The Science Behind Setting Salmon and Steelhead Seasons

In 2008, almost 30 miles of the upper Salmon River opened for recreational Chinook salmon fishing for the first time in 30 years.

That same year, Idaho Fish and Game opened 25 miles of the South Fork Salmon River that had not been open to recreational salmon fishing for 43 years.

Meanwhile in 2000, the South Fork Salmon River salmon fishery, which typically closes in early- to mid-July, closed on July 5 after being open only six days

The ability to have recreational salmon fisheries and the length of seasons depend on the number of salmon returning to Idaho hatcheries. Those numbers vary considerably from year to year and among hatcheries. A large hatchery return to the Snake River doesn't mean the return to every hatchery would be large.

And it's the ability to effectively and reliably mark juvenile fish before they are released from the hatchery that allows Idaho to have fishing seasons wherever hatchery raised Chinook share waters with wild salmon, which are listed as threatened under the Endangered Species Act.

Information from tagged hatchery fish allows fish managers to know how many fish to expect in which rivers, and that in turn allows managers to plan fishing seasons and the number of fish that can be harvested.

But only a portion of the hatchery salmon returning to a particular stream is available for harvest in a given year. The fish not needed to stock hatcheries, are split between tribal and nontribal anglers.

When nontribal recreational anglers have caught the limit for the fishery, the season closes, and sometimes that can happen quickly.

Recreational anglers are allowed to catch only hatchery-raised salmon. Harvest seasons are managed to protect natural fish. Natural fish in the Snake and Salmon rivers are listed.

Anglers need to be aware that salmon seasons may close on short notice. It is impossible for Fish and Game to predict the actual closing date because it depends on many things, including angler effort and success and river conditions. The fishery is monitored daily to estimate current catch and to track the progress of the fishery.

Chinook fishing season draws a crowd on the upper Salmon River *IDFG photo by N.S. Nokkentved*

Part of what makes it work is the ability to close recreational salmon seasons on short notice when the limits are reached.

With all that in mind, anglers who want to try to catch a salmon shouldn't plan their fishing trips too far into the future or they may miss an opportunity to catch one of Idaho's most incredible fish.

Inside this issue

Why Do Salmon Seasons Sometimes Close When There are Still Fish in the River

The river is full of salmon and fishing is just getting good, so why is the season closing?

Recreational salmon seasons close when a set number of fish have been caught, and that depends on the numbers of fish returning to Idaho.

Since 1978, Idaho salmon anglers have been harvesting hatchery-produced Chinook. The numbers of salmon returning to the hatcheries vary considerably among years and

Tiny PIT tags identify fish and their origin.

importantly, among hatcheries. A large return of hatchery salmon to the Snake River doesn't mean returns to every hatchery will be large.

To identify returning fish as hatchery-raised, and not protected wild fish, Fish and Game workers clip the adipose fin – a small fin between the dorsal fin and the tail – of young hatchery fish. The fin is easily clipped before the fish are released, it is permanent if done correctly, and it is easily recognizable by anglers.

Each year there are demands on the returning hatchery fish for tribal and non-tribal fisheries and for hatchery brood.

Fisheries are managed to ensure that hatcheries get enough eggs to fill their production capacity to ensure the maximum releases of ocean-bound juvenile salmon two years later.

The Rapid River Hatchery, for example, needs about 2,500 adult salmon to get enough eggs to produce 3 million young salmon, the rearing capacity of the hatchery. The McCall Fish Hatchery needs about 1,500 adult salmon, trapped in the South Fork Salmon River, to produce a million young salmon.

Before they are released, some of the juvenile fish at the hatchery are marked with a PIT tag, about a half inch long and the diameter of a mechanical pencil lead, inserted with a hypodermic needle into the body cavity. PIT tags – short for passive integrated transponder – when read by a scanner, send out a unique code number, much like a grocery store bar code. The code identifies the fish and the hatchery where it was raised.

The tags in salmon returning to Idaho can be read at the federal dams on the Snake and Columbia rivers. Data from these tags are used to estimate the numbers returning to each hatchery. When the forecast return is greater than the needs of a specific hatchery, managers consider a fishery on the remaining harvestable portion of the run.

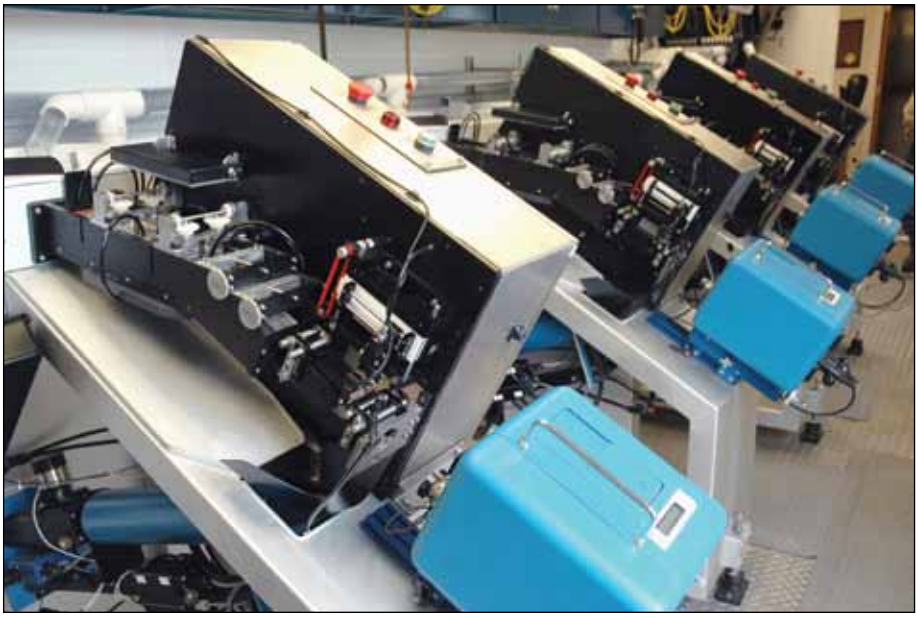
This harvestable portion is split evenly between tribal and nontribal anglers. Thus, if an estimated 10,500 salmon are bound for Rapid River, then about 8,000 would be available for harvest – 4,000 each to tribal and nontribal anglers.

During the fishing season, Fish and Game monitors the nontribal harvest to ensure quotas are not exceeded. If anglers are catching fish early or midway through the run, the season can end quickly even with lots of fish still in the river.

Fish and Game also monitors the number of wild fish caught and released in Snake River and Salmon River drainage fisheries. The wild fish in these rivers are listed as threatened under the Endangered Species Act. Federal permits limit the number of listed fish that can be caught and released annually as part of recreational fisheries for hatchery salmon.

Only rarely have Idaho anglers reached the limit on listed fish and caused a fishery to close. Fisheries typically close because anglers are successful at catching the harvestable share of hatchery fish – especially when the number of harvestable fish is small.

It may be frustrating for anglers to quit fishing with plenty of salmon still in the river, but fishing seasons end for important reasons. And those reasons help keep salmon coming back to Idaho rivers.



Automated fin-clipping machines mounted in trailers are used to mark young hatchery-raised salmon and steelhead before they are released.

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Anglers line the lower Salmon River when the salmon are running and the season opens. *IDFG photo by Evin Oneale*

Setting Idaho's Salmon Seasons is a Long Process

Setting Idaho salmon fishing seasons is a long process that begins six months before the season opens on Idaho streams. It begins with data from the previous season that help generate estimated return forecasts in December.

- **January:** Salmon destined for Idaho are still in the Pacific Ocean. The first discussion of Idaho seasons, when Fish and Game managers explain to the Idaho Fish and Game Commission how those early predictions might shape up in Idaho.
- **February:** Commercial gill netting gets under way in the lower Columbia River, and recreational seasons and rules are modified.
- **March:** Chinook have started climbing the fish ladder at Bonneville Dam, the first of eight federal dams on their way to Idaho. In late March, the commission considers potential Chinook salmon seasons for the Clearwater, Snake, lower Salmon and Little Salmon rivers.

Idaho Fish and Game Policy

Idaho wildlife management policy is set by seven volunteer commissioners. The Idaho Fish and Game Commission's policy decisions are based on research and recommendations by the professional staff of the Idaho Department of Fish and Game, and with input from the governor's office, the state Legislature, hunters, anglers and the public.

- **Late April:** Typically, more that a third of the Chinook heading for Rapid River hatchery have crossed Bonneville Dam. In recent years, Chinook seasons in Idaho have opened in late April.
- Snake River basin state and federal agencies and Indian tribes meet weekly to monitor Chinook returns and fishery activity.
- **Mid-May:** Most of the Chinook bound for the Rapid River hatchery have crossed Bonneville Dam, and about 88 percent has crossed Lower Granite Dam. About 18 percent of Chinook bound for the South Fork Salmon River has crossed Bonneville and 2 percent has crossed Lower Granite.
- **Late May:** Fish and Game commissioners consider salmon seasons on the South Fork Salmon and upper Salmon rivers.
- **Late June:** Most of the South Fork Salmon hatchery return has crossed Bonneville and about three-quarters has crossed Lower Granite. In recent years, Chinook seasons on the South Fork Salmon and upper Salmon rivers have opened in late June.
- **July/August:** The Fish and Game Commission will consider fall seasons for Chinook in the Snake and Clearwater rivers.
- **Mid-August:** fall run Chinook begin crossing Lower Granite Dam.
- **September and October:** Anglers can harvest fall Chinook salmon if a season is opened.
- **November and December:** Managers are analyzing data and preparing salmon return forecasts to start the next cycle of setting fisheries.

Pacific Northwest Hatcheries

About 365 hatchery programs in the Pacific Northwest artificially propagate the six Pacific salmon species. They are operated by Washington, Idaho, and Oregon, the U.S. Fish and Wildlife Service, and by Northwest Indian Tribes.

Hatchery programs are primarily designed to enhance harvest in commercial, recreational and tribal fisheries, or to reduce the effects of development that destroy or degrade salmon habitat or block migratory routes.

Artificial propagation of hatchery fish supports recreational harvest, but also presents potential benefits and risks to the biological status of salmon.

Hatcheries can be effective in bolstering the numbers of naturally spawning fish in the short term under certain conditions, and in conserving genetic resources and guarding against the catastrophic loss of naturally spawned populations at critically low numbers.

In recent years, however, various studies have identified some potential adverse effects of artificial propagation, including:

- Diminished fitness and survival of hatchery fish relative to naturally spawned fish.
- Genetic effects resulting from poor brood stock and rearing practices, such as inbreeding, out-breeding, domestication selection.

Idaho Fish and Game manages its hatcheries to ensure healthy fish runs with little or no effect on wild stocks.

Hatcheries Support Recreational Fishing for Chinook Salmon

How can Idaho anglers fish for Chinook salmon when they are listed as threatened on the federal endangered species list?

Before 1967 salmon anglers in Idaho fished only for wild fish.

In 1967 adult salmon began to return to Rapid River Hatchery and provided the first hatchery salmon to angler's harvest By 1977 about 37 percent of Idaho's total salmon harvest was Rapid River Hatchery fish caught in the Little Salmon River.

Salmon seasons were closed from 1978 to 1984. In the early 1990s, Chinook in the Snake River were added to the endangered species list.

Today only hatchery produced fish are harvested. Two large hatchery programs replace salmon and steelhead runs lost to construction and operation of hydropower dams on the Snake River.

The Idaho Power Co. funds hatcheries to replace salmon runs lost to construction of the Brownlee, Oxbow, and Hells Canyon dams on the Snake River on the Idaho-Oregon border.

The federal government, through the Lower Snake River Compensation Plan, funds hatchery programs in Idaho, Oregon and Washington to replaces losses caused by the Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams on the lower Snake River in Washington.

The shift in salmon fisheries from wild fish to hatchery fish has changed where salmon anglers can fish. The pristine Middle Fork Salmon River drainage and many other streams have been entirely closed to salmon anglers since 1978.

Today's salmon fisheries focus angler effort on hatchery stocks, while keeping the impact on natural stocks at a minimum.

The native wild Chinook in the Snake and Salmon rivers are listed and protected under the Endangered Species Act.

Hatchery and "naturally-produced" spring Chinook in the Clearwater River and hatchery fish produced by the Rapid River Hatchery for the Little Salmon River fishery were not listed because they were derived from non-native stocks.

Non-native stocks were used to restore salmon runs in the Clearwater because Lewiston Dam, which stood from 1927 to 1973, eliminated the wild run. The Rapid River Hatchery program was started from non-native stocks to replace salmon runs eliminated by the Hells Canyon dams. These stocks are not listed because they are not native to the drainages in which they now occur.

The continued low numbers of wild salmon and steelhead runs have forced Idaho Fish and Game and other agencies and tribes in the Snake River basin to explore the possibility of using hatchery programs to preserve or restore native runs.

Not all of the attempts were successful.

Fishery scientists have learned that wild salmon can't just be transplanted to replace runs wiped out by dams or habitat destruction. Genetics and ecological characteristics play a big role in where hatchery fish can be used safely and effectively.

Salmon have been in Idaho for at least 10,000 years. During that time, salmon runs have become locally adapted to the various environmental conditions specific to the rivers they inhabit.

The result is that salmon stocks have unique characteristics, such as spawn timing and location, migration distance, and a developmental schedule that includes hatching, growth and migration timing.

Because of the diversity of habitat in Idaho, one of the most diverse groupings of salmon in the Columbia Basin exists in Idaho. These wild native stocks are vital to recovery of salmon populations Therefore it is imperative to protect the unique characteristics of wild native fish. Mixing hatchery and wild fish can dilute the genetic character and fitness of wild stocks. It is also possible to swamp wild populations with hatchery fish.

For these reasons, using hatchery fish where wild populations are involved must be done cautiously. Hatchery salmon are being used for conservation purposes in as many areas as possible.

Hatcheries have existed in the Columbia Basin for about 100 years. In general, hatchery fish have not been successful in restoring self-sustaining, naturally-reproducing runs.

But more recently, hatchery-reared fish have been used in tightly controlled experiments to determine whether they can enhance or supplement naturally spawning populations. These supplementation experiments have been going on in Idaho for more than 10 years.

Lower Granite Dam *Photo courtesy U.S. Army Corps of Engineers*

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