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culvert - definition of culvert in English

5-6 minutes

noun

- A tunnel carrying a stream or open drain under a road or railway.
- *'There are also plans to dig a culvert to carry water if the drainage ditch is full but he doubted there was enough room to dig one within the width of the road.'*
- *'He directed the officials to complete the construction of culverts and link roads and ensure the proper drinking water supply.'*
- *'What appears to be the problem to us is the size of a culvert underneath the road into the ornamental pond.'*
- *'The project also required construction of a 29.5-foot fill over an old concrete box culvert.'*
- *'According to the 1996 Highway Road Humps Regulations they must not be built on or within 25 metres of bridges, subways, culverts or tunnels.'*
- *'These criminal acts will retard progress and push up costs of building the road as the demolished culverts will have to be replaced.'*
- *'The South Fork of the Elkhorn River goes under the road in a culvert.'*
- *'A nearby culvert, meant to carry away the sewage, is totally damaged.'*
- *'Earth pressure distribution around concrete box culverts has been the subject of a few studies.'*
- *'The tanks, roads, culverts and lagoon opening have all suffered through the lack of maintenance.'*
- *'Variables considered in the analysis were culvert size, location,*

and wall thickness.'

- *'Aggravating the problems is a pair of culverts through Provincial Road 205, which have been set at the wrong level.'*
- *'The figure also shows a little tensile stress at the roof center of larger culverts.'*
- *'However, the size and weight of concrete box culverts can make transportation and handling a problem.'*
- *'A culvert stabilized with snow was the first structure tested for small streams.'*
- *'They also have to cut several miles of drain, installing several large culverts along the system.'*
- *'Drivers often don't even realize when they cross streams, nor that the culverts built to carry those streams might pose problems to endangered salmon and trout species.'*
- *'It is asphalted and the gradient runs south to north up to the village temple, except near the village pond where a culvert has raised the road surface, upsetting the natural gradient.'*
- *'A culvert has also been opened up below one set of steps and all it would take is for one child to trip and fall head first into it.'*
- *'Thus, culverts stabilized with snow are not needed when the stream is already frozen solid.'*

verb

[WITH OBJECT]

- Channel (a stream or drain) through a culvert.
'we have asked for the river to be culverted'
- *'Where I grew up in Ohio, we saw crawdads, or crayfish, in the culverted, sewage-scented 'creeks' and would no sooner eat one than we would kitty litter.'*
- *'The river is now culverted beneath the largely Victorian town.'*
- *'Talking to the engineers, environmentalists and politicians responsible, I realised that here, where council engineers want to culvert more of it, we are ten years behind the times.'*

- *'Sprawl and malls are filling in the vacant lots and woodlands where we used to play; rivers and streams are culverted, channelized, and barren; and the coasts, lakesides, and mountains are spotted with trophy homes and locked gates.'*
- *'Or it might have happened later, when the creek was culverted and the woods cut down to make way for subdivisions and shopping malls.'*
- *'I have agreed details to culverting streams, adjacent to the M4 motorway, to allow the canal to be extended over these watercourses.'*
- *'But since the city wants to use water diverted from Bradford Beck - which is culverted under the city centre - experts have been working on ways of making sure the river's quality is up to scratch.'*
- *'She has happy recollections of childhood life in the area and the freedom to roam before rivers were culverted and open land was developed.'*
- *'Of course, if I got my planning permission, I'd have to divert yon beck and culvert it away from your place.'*
- *'And during the next 12 months up to six are likely to be culverted and filled in.'*
- *'The flood would not have occurred if the stream had not been culverted or if a culvert of sufficient size had been installed.'*
- *'The plans include culverting part of Willowbeck and the agency has now withdrawn its objection, saying it is satisfied the development 'will not have a significant effect on flooding in Northallerton).'*
- *'Ironically, all that culverting work bounced back in his face, literally, for when we did have a heavy storm, the overflow went the other way and flushed several thousand pounds' worth of rainbow trout into the beck.'*
- *'He made his report following a motion that the stream be culverted.'*

Origin

Late 18th century: of unknown origin.

Pronunciation

cited in USA v. State of Washington
No. 13-35474 archived on May 15, 2017

Recreational Salmon Fishing

Salmon/Steelhead Species Information

Atlantic Char / Dolly Varden / Bull Trout
Chinook (King)
Chum (Dog)
Coho (Silver)
Cutthroat Trout (Coastal)
Pink (Humpy)
Sockeye (Red)
Steelhead
How to Identify Salmon/Steelhead

How to Catch Salmon

Regulations

When & Where to Fish for Salmon

Selective Fishing Techniques and Information

Reporting Your Catch

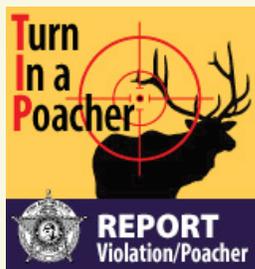
Other Fishing Resources

Using a Guide or Charter Boat

How Salmon Seasons are Set

Helpful Links

Suggested reading



Fishing Hotline
360-902-2500

Shellfish Rule Change Hotline
1-866-880-5431

More Hotline Information...

For more information on fishing, please contact the WDFW Fish Program.
360-902-2700
Fish Program District Biologists

For fishing regulation questions, e-mail us at:
fishregs@dfw.wa.gov

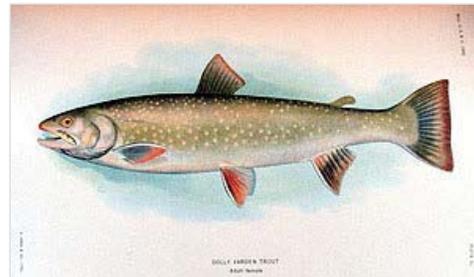
For all other questions and comments, e-mail us at:
fishpgm@dfw.wa.gov

Washington's Native Char

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In the cold, clear waters of the Pacific Northwest, some of the world's most important and beautiful fish--the trout, salmon and char--have evolved. But none of these native salmonids (the name used for members of the Salmonidae family) are as pretty or as mysterious as our native char, the Dolly Varden and bull trout.

Found in lakes and rivers, as well as small headwater streams, sometimes migrating back and forth between fresh and salt water, and sometimes not, these fish have puzzled fisheries biologists and ichthyologists (people who specialize in the study of fish) since they were first discovered. About the only thing everyone agreed on was that they were members of the char family. And they are the only char native to Washington.



Early studies described these fish as a variety of the Arctic char, while later work declared them to be a separate species. For a long time, the bull trout was considered just a localized version of the Dolly Varden. Now many fisheries scientists believe that Dolly Varden and bull trout are two distinct species that look amazingly similar. One thing is clear, though, as more of the puzzle surrounding these species unravels: these fish are reeling from a head-on collision with rampant human population growth and environmental damage, and are losing.

Historically, sport fishing regulations were liberal for bull trout and Dolly Varden. But in more recent years, as indications of fish abundance began to decline, more restrictive regulations were imposed.

Contact your local Washington Department of Fish and Wildlife regional office to find out which waters in your area are currently open to fishing for bull trout/Dolly Varden. Also consult the latest WDFW fishing [regulations pamphlet](#).

Description

Bull trout and Dolly Varden can grow quite large, with typical adults reaching two to five pounds in Washington. The state record bull trout, caught from the Tieton River, weighed 22 pounds, 8 ounces, while the record Dolly Varden, taken from the Skykomish River, weighed 10 pounds.

Although closely resembling trout in body shape, char--which includes the imported brook trout and lake trout--can be distinguished from their relatives by their very fine scales and a reverse coloration. Char have dark-colored bodies with light spots while trout (such as rainbow and cutthroat) and Pacific salmon have light-colored bodies with dark spots.

Bull trout and Dolly Varden are difficult to distinguish from each other, even for specialists. Dolly Varden tend to have a more rounded body shape while bull trout have a larger, more flattened head and a more pronounced hook on the lower jaw. Some scientists believe that one of the distinguishing characteristics of bull trout is that they do not migrate to saltwater. However, Washington biologists have recently found bull trout in Puget Sound.

Their color varies with habitat and locality, but the body is generally olive green, the back being darker than the pale sides; cream to pale yellow spots (slightly smaller than the pupil of the eye) cover the back, and red or orange spots cover the sides; and the pectoral, pelvic and anal fins have white or cream-colored margins. The male in full fall spawning dress sports a dark olive back, sometimes bordering on black, an orange-red belly, bright red spots and fluorescent white fin edges, rivaling fall's spectacular colors. Sea-run dollys are silvery and the spots may be very faint.

This unique coloration led to the common name Dolly Varden. Dolly Varden is a character in the Charles Dickens novel "Barnaby Rudge" who wears colorful clothing. This novel also led to the same name being given to a pink-spotted calico material that was popular at that time. Because the name is taken from a proper noun, Dolly Varden is one of the few species whose common name is capitalized in scientific literature.

Bull trout and Dolly Varden can be distinguished from eastern brook trout by the absence of vermiculations ("worm tracks") on their back. In addition, the eastern brook trout's red spots are surrounded by blue halos. To keep things interesting, though, bull trout and brook trout have been known to spawn together. Their hybrid offspring can have features of both parents. (Hybridization can be a serious problem in some areas, resulting in the dilution or destruction of the gene pool of the native bull trout.)

Range

Bull trout/Dolly Varden were historically found throughout the Pacific Northwest, from Northern California to the upper Yukon and Mackenzie drainages in Canada, as well as Siberia and Korea. Inland populations were found in Idaho, Montana, Utah, and Nevada. Bull trout may be extirpated in California, and have declined in numbers in much of their range.

Bull trout/Dolly Varden are found throughout Washington except the area east of the Columbia River and north of the Snake River in eastern Washington, and the extreme southwest portion of the state. The geographic ranges of bull trout and Dolly Varden overlap along the Washington coast and Puget Sound. Bull trout are found throughout the state, but Dolly Varden are found only in Western Washington. Bull trout have probably been extirpated from parts of their former range in Washington, such as Lake Chelan and the Okanogan River.

Habitat and Life History

Bull trout and Dolly Varden prefer deep pools of cold rivers, lakes, and reservoirs. Streams with abundant cover (cut banks, root wads, and other

Cited in USA v. State of Washington
 No. 13-35474, archived on May 15, 2017

woody debris) and clean gravel and cobble beds provide the best habitat. Their preferred summer water temperature is generally less than 55 degrees Fahrenheit, while temperatures less than 40 degrees Fahrenheit are tolerated. Spawning during fall usually starts when water temperatures drop to the mid- to low-40s. Cold, clear water is required for successful reproduction.

Bull trout and Dolly Varden have complex, but similar life histories. Anadromous (sea-going) and migratory resident populations (for example, lake-dwelling stocks and main-stem rearing stocks) often journey long distances in summer and fall, migrating to the small headwater streams where they hatched, to spawn. Mature adults with these characteristics are generally four to seven years old and 18 to 22 inches in length when they make their first spawning run.

The adults on their spawning runs can undergo some impressive journeys. Fish in the Skagit River system may travel more than 115 miles from the river mouth and ascend to an elevation of more than 3000 feet. The spawning area may be upstream of areas used by any other anadromous species.

Log jams, cascades and falls that are barriers to the chinook's brute strength and the steelhead's acrobatic abilities may be only minor obstacles to the cunning and guile of Dolly Varden and bull trout. While these char can jump remarkably well for fish their size, as much as seven or eight vertical feet under good conditions, they are just as likely to maneuver around a difficult spot. At a potential barrier they sometimes seem to be actively seeking alternative ways around it. Some go as far as to stick their heads out of the water to peek at the situation and find the easiest route.

Bull trout and Dolly Varden use headwater areas that typically are in pristine environments. Spawning begins in late August, peaking in September and October and ending in November. Fish in a given stream spawn over a short period of time; two weeks or less. The fish select clean, one- to three-inch gravel to construct their redds. Ideally, the female moves the smaller gravel away to expose the larger four- to eight-inch rocks below. Attended by several males, with the largest aggressively defending her and the redd, she deposits her eggs in the exposed spaces between the larger rocks and then buries the eggs with smaller gravel.

Almost immediately after spawning, adults begin to work their way back to the main-stem rivers, lakes or reservoirs to over-winter. Some of these fish stay put, others move on to salt water in the spring. Some survive the perils of the river to spawn a second or even third time. Kelts (spawned-out fish) feed aggressively to recover from the stress of spawning. This also happens to be the time when many anglers are searching the river for winter steelhead. Steelhead anglers must learn how to identify these fish and safely release them.

Newly-hatched fish emerge from the gravel the following spring. Those that migrate down to the main rivers, reservoirs and saltwater normally leave the headwater areas as two year olds. But complicating the picture even more are the resident stream populations that exhibit limited movements, living their entire lives in the same stretch of headwater stream. These fish may not mature until they are seven to eight years old, and rarely reach sizes greater than 14 inches in length. Biologists have observed these local residents spawning side-by-side with their much larger anadromous kin.

Bull trout and Dolly Varden are opportunistic feeders, eating aquatic insects, shrimp, snails, leeches, fish eggs and fish. Early beliefs that these fish are serious predators of salmon and steelhead (the state of Alaska once offered a bounty on them, believing that this would improve other salmonid populations) are generally not believed any longer. These native char are now beginning to get a reputation as highly-prized sport fish.

Population Status

While bull trout and Dolly Varden are more abundant in the north Puget Sound area, statewide their populations are low and in some cases declining. In fact, the U.S. Fish and Wildlife Service (USFWS) recently determined that bull trout are at a moderate risk of extinction in five western states, including Washington. The USFWS found that listing the bull trout as threatened was warranted under the Federal Endangered Species Act on November 1, 1999. Dolly Varden are currently not listed under the Endangered Species Act.

The American Fisheries Society (an international organization of fisheries scientists) has classified bull trout as a "Fish of Special Concern." This means that biologists believe this species may become threatened or endangered by relatively minor disturbances to their habitat, and that additional information is needed to determine their status.

Habitat loss and over-harvest have both contributed to the decline of bull trout and Dolly Varden in Washington. Protection of spawning and juvenile rearing habitat (particularly the critical cold stream temperatures and clean spawning gravel), regulating harvest and controlling poaching are required in order to maintain or increase populations. The threat of global warming is especially alarming for bull trout and Dolly Varden because of limited areas with low enough temperatures for spawning.

Siltation and stream sedimentation are extremely harmful to the char's reproductive needs. Dollies and bull trout must have very clean gravel to spawn in. Destruction of stream-side vegetation through improper logging and agricultural activities increases siltation and stream temperatures, dealing a double blow to these fragile populations.

And if this isn't enough, Dolly Varden and bull trout face another threat from their cousin, the eastern brook trout. This non-native species can hybridize with both the Dollies and bull trout, effectively eliminating them from these areas.

Management

While bull trout and Dolly Varden are currently classified as game fish in Washington, they have been red-flagged as a species of concern by the Washington Department of Fish and Wildlife (WDFW). They are a priority species under the WDFW [Priority Habitats and Species Project](#).

Maintaining stream-side vegetation is essential for controlling stream temperatures and providing cover. Since very cold water and clear gravel are required for spawning and egg incubation, protecting streams that have this habitat feature is one of the critical elements in managing bull trout.

WDFW biologists are continuing to collect the required information to better understand bull trout and Dolly Varden, and are writing a new management plan for the species. In the meantime, newly implemented, restrictive sport fishing regulations will help protect our state's only native char for this and future generations.

With their requirements for cool water and clean gravel and the use of the whole river system at some time in their life history, Dolly Varden and bull trout are good indicators of the general health of the system. A decline in the number of Dollies and bull trout is a cause for concern not only for the fish but for people as well.

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SB 167 to be closed all weekend from Sumner to Auburn

EndPlay

2-3 minutes

Updated: Aug 19, 2016 - 4:46 PM



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PACIFIC, Wash. - Drivers who use southbound SR 167 near the city of Pacific will have to find another way around during a weekend closure.

The lanes will be shut down between Sumner and Auburn.

There will be detours in place, but officials warn they will be challenging.

Between 11 p.m. Friday and 5 a.m. Monday, all southbound lanes will be closed between Ellington Road and 8th Street East. The 8th Street East off-ramp from southbound SR 167 will be closed as well.

>> **WSDOT has provided a [PDF document of the detour route.](#)**

>> **[See the South King Slowdown Calendar - August 19-22 with a map here](#)**

[>> To see maps from previous weekends, click here](#)

Over the weekend, crews plan to repave a mile of southbound SR 167, finalize the highway's permanent configuration, and install the west half of the Jovita Creek 368-foot fish-passable culvert that crosses under the southbound lanes of the freeway.

According to the News Tribune, the culvert project has to do with a court decision in a Federal lawsuit brought forward by Northwest tribes.

The News Tribune says an injunction in the case requires the Washington State Department of Transportation to rebuild poorly-designed culverts - pipes that carry water under roads-- blocking salmon and steelhead trout from reaching spawning beds.

Nearly 1,000 culverts will have to be replaced statewide by 2030.

The other project is part of widening SR 167 to add a lane in the southbound direction and extend the existing high occupancy toll lanes system south on SR 167 in the Green River Valley.

Expanding the 9-mile [SR 167 HOT lanes](#) will connect King and Pierce County communities to employment hubs in the Puget Sound area.

Extending the southbound HOT lane from its existing end point at 37th Street NW in Auburn to 8th Street East in Pacific will reduce congestion and improve traffic flow and safety on SR 167, according to WSDOT.

The work on the addition of the lane will continue into the fall.

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