

Appendix 84

Glossary from the Draft Bull Trout Recovery Plan

GLOSSARY

Adaptive trait

Characteristics that improve an individual's survival and fitness.

Adfluvial bull trout

Bull trout that migrate from tributary streams to a lake or reservoir to mature (one of three bull trout life histories). Adfluvial bull trout return to a tributary to spawn.

Age at emigration

The age at which juvenile fish migrate from a tributary into a larger river or lake to complete growth into adults.

Age class

A group of individuals of a species that have the same age, *e.g.*, 1 year old, 2 year old, etc.

Aggrading stream

A stream that is actively building up its channel or floodplain by being supplied with more bedload than it is capable of transporting.

Alluvial

Pertaining to or composed of silts and clays (usually) deposited by a stream or flowing water. Alluvial deposits may occur after a flood event.

Alluvial fan

A sedimentary deposit located at a topographic break such as the base of a mountain front, escarpment, or valley side, that is composed of streamflow and/or debris flow sediments and that has the shape of a fan, either fully or partially extended.

Anadromous (fish)

A fish that is born in fresh water, migrates to the ocean to grow and live as an adult, and then returns to freshwater to spawn (reproduce).

Artificial propagation

The use of artificial procedures to spawn adult fish and raise the resulting progeny in fresh water for release into the natural environment, either directly from the hatchery or by transfer into another area.

Bedload

Sediment particles that are moved on or immediately above the stream bed, such as the larger heavier particles (gravel, boulders) rolled along the bottom; the part of the load that is not continuously in suspension.

Braided stream

A stream that forms an interlacing network of branching and recombining channels separated by islands and channel bars. Generally a sign of stream disequilibrium resulting from transportation of excessive rock and sediment from upstream areas and characteristic of an aggrading stream in a wide channel on a floodplain.

Bypass system (fish)

Structure in a dam that provides a route for fish to move through or around a dam without going through the turbines.

Canopy cover (of a stream)

Vegetation projecting over a stream, including crown cover (generally more than 1 meter (3.3 feet) above the water surface) and overhang cover (less than 1 meter (.3 feet) above the water).

Carrying capacity (fish)

Refers to the maximum average number of fish that can be sustained in a habitat over the long term.

Channel morphology

The physical dimension, shape, form, pattern, profile, and structure of a stream channel.

Channel stability

The ability of a stream, over time and in the present climate, to transport the sediment and flows produced by its watershed in such a manner that the stream maintains its dimension, pattern, and profile without either aggrading or degrading.

Channelization

The straightening and deepening of a stream channel to permit the water to move faster, to reduce flooding, or to drain wetlands.

Char

A fish belonging to the genus *Salvelinus* and related to both the trout and salmon. The bull trout, Dolly Varden trout, and the Mackinaw trout (or lake trout) are all members of the char family. Char live in the icy waters (both fresh and marine) of North America and Europe.

Complex interacting groups

Multiple local populations that may have overlapping spawning and rearing areas within a geographic area.

Core area

The combination of core habitat (*i.e.*, habitat that could supply all elements for the long-term security of bull trout) and a core population (a group of one or more local bull trout populations that exist within core habitat) constitutes the basic unit on which to gauge recovery within a recovery unit. Core areas require both habitat and bull trout to function, and the number (replication) and characteristics of local populations inhabiting a core area provide a relative indication of the core area's likelihood to persist. A core area represents the closest approximation of a biologically functioning unit for bull trout.

Core habitat

Habitat that encompasses spawning and rearing habitat (resident populations), with the addition of foraging, migrating, and overwintering habitat if the population includes migratory fish. Core habitat is defined as habitat that contains, or if restored would contain, all of the essential physical elements to provide for the security of and allow for the full expression of life history forms of one or more local populations of bull trout. Core habitat may include currently unoccupied habitat if that habitat contains essential elements for bull trout to persist or is deemed critical to recovery.

Core population

A group of one or more bull trout local populations that exist within core habitat.

Distinct population segment

The U.S. Fish and Wildlife Service has formally determined there are five bull trout distinct population segments across the species range within the coterminous United States--Klamath River, Columbia River, Jarbidge River, Coastal-Puget Sound, and St. Mary-Belly River. Each meets the tests of discreteness and significance under joint policy of the U.S. Fish and Wildlife Service and National Marine Fisheries Service (61 FR 4722), and these are the units against which recovery progress and delisting decisions will be measured. A listable entity under the Endangered Species Act that meets tests of discreteness and significant according to U.S. Fish and Wildlife Service policy.

Deposition (stream)

The settlement or accumulation of material out of the water column and onto the stream bed. Occurs when the energy of flowing water is unable to support the load of suspended sediment.

Depositional areas (stream)

Local zones within a stream where the energy of flowing water is reduced and suspended material settles out, accumulating on the streambed.

Discharge (stream)

With reference to stream flow, the quantity of water that passes a given point in a measured unit of time, such as cubic meters per second or, often, cubic feet per second.

Effective population size

The number of breeding individuals that would give rise to the same amount of random genetic drift as the actual population, if ideal conditions held.

Embeddedness

The degree to which large particles (boulders, gravel) are surrounded or covered by fine sediment, usually measured in classes according to percentage covered.

Entrainment

Process by which aquatic organisms are pulled through a diversion, turbine, spillway, or other device.

Extirpation

The elimination of a species from a particular local area.

Fine sediment (fines)

Sediment with particle sizes of 2.0 mm (.08 inch) or less, including sand, silt, and clay.

Fish ladder

A device to help fish swim around a dam.

Floodplain

Adjacent to stream channels, areas that are typified by flat ground and are periodically submerged by floodwater.

Flow regime

The quantity, frequency and seasonal nature of water flow.

Fluvial bull trout

Bull trout that migrate from tributary streams to larger rivers to mature (one of three bull trout life histories). Fluvial bull trout migrate to tributaries to spawn.

Foraging, migrating, and overwintering habitat (bull trout)

Relatively large streams and mainstem rivers, including lakes or reservoirs, estuaries, and nearshore environments, where subadult and adult migratory bull trout forage, migrate, mature, or overwinter. This habitat is typically downstream from spawning and rearing habitat and contains all the physical elements to meet critical overwintering, spawning migration, and subadult and adult rearing needs. Although use of foraging, migrating, and overwintering habitat by bull trout may be seasonal or very brief (as in some migratory corridors), it is a critical habitat component.

Functionally extirpated

Describes a species that has been extirpated from an area; though a few individuals may occasionally be found, they are not thought to constitute a viable population.

Genotype

The set of alleles (variants of a gene) possessed by an individual at a particular locus or set of loci.

Habitat connectivity (stream)

Suitable stream conditions that allow fish and other aquatic organisms to move freely upstream and downstream. Habitat linkages that connect to other habitat areas.

Headwaters

The source of a stream. Headwater streams are the small swales, creeks, and streams that are the origin of most rivers. These small streams join together to form larger streams and rivers or run directly into larger streams and lakes.

Hooking mortality

Death of a fish from stress or injury after it is hooked and reeled in, then released back to the water.

Hybridization

Any crossing of individuals of different genetic composition, typically different species, that result in hybrid offspring.

Hydraulic residence time

The average period of time required to completely renew a lake's water volume.

Hydrologic response

The response of a watershed to precipitation; usually refers to streamflow resulting from precipitation.

Hydrologic unit (code)

Watersheds that are classified into four types of units: regions, subregions, accounting units, and cataloging. The units from the smallest (cataloging units) to the largest (regions). Each unit is identified by a unique hydrologic unit code consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.

Hypolimnetic

Referring to the cold, lower-most layer of water in a thermally stratified lake or reservoir. The hypolimnion is the layer of water below the thermocline (metalimnion).

Hyporheic zone

Area of saturated sediment and gravel beneath and beside streams and rivers where groundwater and surface water mix. Water movement is mainly in a downstream direction.

Intermittent stream

A stream that flows only at certain times of the year as when it receives water from springs (or by surface water) or when water losses from evaporation or seepage exceed the available streamflow.

Interspecific competition

Competition for resources between two or more different species.

Introgression (genetic)

The spread of genes of one species into the gene pool of another by hybridization or by backcrossing (interbreeding between hybrid and parental species).

Legacy effects

Impacts from past activities (usually a land use) that continue to affect a stream or watershed in the present day.

Local population

A group of bull trout that spawn within a particular stream or portion of a stream system. Multiple local populations may exist within a core area. A local population is considered to be the smallest group of fish that is known to represent an interacting reproductive unit. For most waters where specific information is lacking, a local population may be represented by a single headwater tributary or complex of headwater tributaries. Gene flow may occur between local populations (*e.g.*, those within a core population), but is assumed to be infrequent compared with that among individuals within a local population.

Mass wasting

Loss of large amounts of material in a short period of time, *i.e.*, downward movement of land mass material or landslide.

Metapopulation

A group of semi-isolated subpopulations of bull trout that are interconnected and that probably share genetic material.

Migratory corridor (bull trout)

Stream reaches used by bull trout to move between habitats. A section of river or stream used by fish to access upstream spawning areas or downstream lake environments.

Migratory life history form (bull trout)

Bull trout that migrate from spawning and rearing habitat to lakes, reservoirs, or larger rivers to grow and mature.

Nonnative species

Species not indigenous to an area, such as brook trout in the western United States.

Peak flow (stream)

Greatest stream discharge recorded over a specified period of time, usually a year, but often a season.

Penstock

In a hydropower dam, the pipe that carries water from an upstream reservoir or pond downstream to the turbine generator in a power house.

Phenotype

Expressed physical, physiological, and behavioral characteristics of an organism that may be due to genetics, the environment, or an interaction of both.

Piscivorous

Describes fish that prey on other fish for food.

Potential local population

A local population that does not currently exist, but that could exist, if spawning and rearing habitat or connectivity were restored in that area, and contribute to recovery in a known or suspected unoccupied area.

Probability of persistence

The probability (usually expressed as a percentage) that a population or subpopulation of fish will survive and be present in a specific geographic location through some future time period, usually 100 years.

Recovery subunit (bull trout)

Portions of larger recovery units treated separately to improve management efficiency. For example, the Clark Fork Recovery Unit is divided into Upper Clark Fork, Lower Clark Fork, Priest, and Flathead recovery subunits.

Recovery team (bull trout)

A team of biologists from fish and wildlife resource agencies in Idaho, Montana, Oregon, and Washington, Native American Tribes, and the U.S. Fish and Wildlife Service responsible for providing guidance in developing the bull trout recovery plan.

Recovery unit (bull trout)

Recovery units are the major units for managing recovery efforts; each recovery unit is described in a separate chapter in the recovery plan. A distinct population segment may include one or several recovery units. Most recovery units consist of one or more major river basins. Several factors were considered in our identifying recovery units, for example, biological and genetic factors, political boundaries, and ongoing conservation efforts. In some instances, recovery unit boundaries were modified to maximize efficiency of established watershed groups, encompass areas of common threats, or accommodate other logistic concerns. Recovery units may include portions of mainstem rivers (*e.g.*, Columbia and Snake rivers) when biological evidence warrants inclusion. Biologically, recovery units are considered groupings of bull trout for which gene flow was historically or is currently possible.

Recovery unit team (bull trout)

A team of people with technical expertise in various aspects of bull trout biology from Federal and State agencies, Tribes, private industry, and interest groups responsible for assisting in developing one or more chapter(s) of the bull trout recovery plan for a given recovery unit.

Recruitment

The successful addition through birth and death of new individuals (fish) to a specific population.

Redd

A nest constructed by female fish of salmonid species in streambed gravels where eggs are deposited and fertilization occurs. Redds can usually be distinguished in the streambed gravel by a cleared depression, and an associated mound of gravel directly downstream.

Refounding

Reestablishment of a species into previously occupied habitat.

Resident life history form (bull trout)

Bull trout that do not migrate, but that reside in tributary streams their entire lives (one of three bull trout life cycles).

Riparian area

Area with distinctive soils and vegetation between a stream or other body of water and the adjacent upland. It includes wetlands and those portions of floodplains and valley bottoms that support riparian vegetation.

Salmonid

Fish of the family Salmonidae, including trout, salmon, chars, grayling, and whitefish. In general usage, the term most often refers to salmon, trout, and chars.

Scour

Concentrated erosive action by stream water, as on the outside curve of a bend; also, a place in a streambed swept clear by a swift current.

Smolt

A juvenile salmon or steelhead migrating to the ocean and undergoing physiological changes to adapt its body from a freshwater environment to a saltwater environment.

Source population

Strong subpopulations (*i.e.*, bull trout) that are within a metapopulation and that contribute to other subpopulations and reduce the risk of local extinctions.

Spawning and rearing habitat (bull trout)

Stream reaches and the associated watershed areas that provide all habitat components necessary for spawning and juvenile rearing for a local bull trout population. Spawning and rearing habitat generally supports multiple year classes of juveniles of resident or migratory fish and may also support subadults and adults from local populations of resident bull trout.

Spawning escapement

The number of adult fish from a specific population that survive spawning migrations and enter spawning grounds.

Spillway

The part of a dam that allows high water to flow (spill) over the dam.

Stochastic

The term is used to describe natural events or processes that are random. Examples include environmental conditions such as rainfall, runoff, and storms, or life-cycle events, such as survival or fecundity rates.

Stock

The fish spawning in a particular lake or stream(s) at a particular season, which to a substantial degree do not interbreed with any group spawning in a different place, or in the same place at a different season. A group of fish belonging to the same population, spawning in a particular stream in a particular season.

Storage reservoir

An artificial storage place for water, from which the water may be withdrawn for irrigation, municipal water supply, or flood control.

Subpopulation (bull trout)

A reproductively isolated group of bull trout spawning within a particular area of a river system; the basic unit of analysis used in listing bull trout, but not used extensively in the recovery plan.

Subwatershed

Topographic perimeter of the catchment area of a stream tributary.

Suspended load (washload)

The part of the total stream load that is carried for a considerable period of time in suspension, free from contact with the stream bed, it consists mainly of silt, clay, and sand.

Suspended sediment

Solids, either organic or inorganic, found in the water column of a stream or lake. Sources of suspended sediment may be either human induced, natural, or both.

Suspended yield

The amount of sediment carried in the water column of a stream and discharged past a point in the watershed during any given time period, usually expressed in kilograms per day.

Take

Activities that harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or attempt to engage in any such conduct to a listed (Endangered Species Act) species.

Thermocline

In the summer, the layer of water in a lake which exhibits the greatest unit decrease in temperature per unit increase in depth; the transitional zone between the upper, warmer layer of water (epilimnion) and the cooler, denser, lower layer (hypolimnion) of water.

Transplantation

Moving wild fish from one stream system to another without the use of artificial propagation.

Trophic status

Referring to the nourishment status or biological productivity of a water body; determined largely by nutrient concentrations (*i.e.*, phosphorous and nitrogen) and the resultant synthesis of organic compounds by green plants in the presence of these nutrients and light energy.

Water right

Any vested or appropriation right under which a person may lawfully divert and use water. It is a real property right appurtenant to and severable from the land on or in connection with which the water is used; such water right passes as an appurtenance with a conveyance of the land by deed, lease, mortgage, will, or inheritance.

Water yield (basin yield)

The quantity of water available from a stream at a given point over a specified duration of time.

Watershed

The area of land from which rainfall (and/or snow melt) drains into a stream or other water body. Watersheds are also sometimes referred to as drainage basins or drainage areas. Ridges of higher ground generally form the boundaries between watersheds. At these boundaries, rain falling on one side flows toward the low point of one watershed, while rain falling on the other side of the boundary flows toward the low point of a different watershed.

Woody debris

Woody material such as trees and shrubs; includes all parts of a tree such as root system, bowl, and limbs. Large woody debris refers to the woody material whose smallest diameter is greater than 10 centimeters, and whose length is greater than 1 meter.

Year class (cohort)

Fish in a stock born in the same year. For example, the 1987 year class of bull trout includes all bull trout born in 1987, which would be age 1 in 1988. Occasionally, a stock produces a very small or very large year class which can be pivotal in determining stock abundance in later years.