

Glossary

Cross references are given in italic type.

adult: mature.

alevin: salmon hatchling, with a large yolk sac for nourishment (Quinn 2005).
See also *fry*.

anadromous species: fish species that migrate from salt water to spawn in fresh water (dictionary.com).

anthropogenic: caused or produced by humans (dictionary.com).

aquaculture: the managed production of fish, shellfish, and aquatic plants.

benthic habitat: ecological region at the lowest level of a lake or ocean. See also *fish habitat*; *pelagic habitat*.

closed containment facilities: *aquaculture* facilities that physically separate fish from the external environment. See also *open-pen salmon farms*.

conservation: the protection of species, their habitats, and *ecosystems* from excessive rates of extinction (Wikipedia). See also *benthic habitat*; *fish habitat*; *pelagic habitat*.

DFO: Department of Fisheries and Oceans / Fisheries and Oceans Canada; the federal agency responsible for managing *Pacific salmon* and their habitats (Labelle 2009).

DIDSON system: Dual-frequency IDentification SONar, which provides high-definition sonar images.

dip net: a major fishing technique used in the Fraser Canyon to catch large numbers of chinook and sockeye salmon. While standing above the current in the river narrows, the fisher dips a large net attached to the end of a pole into the water, traps fish inside, and hauls them out (SFU Virtual Museum website).

diversion rate: percentage of sockeye which migrate through the northern route (Johnstone Strait) as opposed to the southern route (Strait of Juan de Fuca).

Early Stuart run: the first Fraser River sockeye stock to migrate upriver in the summer. This run, which consists of 32 stocks and spawns in the Stuart River, undertakes the longest migration of all Fraser River salmon and reaches its

spawning beds (in streams tributary to south Takla Lake and Middle River) in the first half of August (Schubert 1998; Kiessling et al. 2004). See also *Early Summer*, *Summer*, and *Late* runs.

Early Summer run: This run, consisting of 34 sockeye stocks from Pitt River and the North and South Thompson rivers, spawns throughout the Fraser River system. The fish migrate through the Lower Fraser River from mid-July to mid-August and spawn from late August to mid-September (Schubert 1998; Labelle 2009). See also *Early Stuart*, *Summer*, and *Late* runs.

ecosystem: a complex system consisting of all the organisms that live in a particular area, as well as all the non-living, physical components of the environment with which the organisms interact (Wikipedia).

enhancement: manufactured alterations to natural habitats; or the application of artificial culture techniques to increase the abundance of juvenile salmon (e.g., spawning channels, hatcheries, and fertilization) (Labelle 2009).

escapement: the number of fish that escape from a fishery (Labelle 2009).

exploitation rate: the portion of all *adult* fish returning to their natal streams which are captured in a fishery (Labelle 2009).

finfish: in Canadian *aquaculture*, finfish are fish (primarily *salmonids*) raised in captivity for harvesting (finfish aquaculture includes Atlantic salmon, chinook salmon, coho salmon, steelhead, rainbow trout, brook trout, Arctic char, and tilapia).

fish habitat: places that supply fish with their life-cycle requirements for food, shelter, reproduction, and movement (DFO website). See also *riparian habitat*.

fisheries: activities involving the capture of wild fish which lead to harvesting. Canada has three types of fisheries: Aboriginal, commercial, and *recreational* (or sport) (DFO website, FAO website). See also *food, social, and ceremonial (FSC) fishery*; *gear*.

food, social, and ceremonial (FSC) fishery: First Nations' fishery for food, social, and ceremonial use. The Aboriginal right to fish for these three purposes has priority over all other uses of the fishery and is second only to *conservation* requirements (DFO website). See also *fisheries*.

fry: When the *alevin* has used up its yolk sac and is ready to feed on its own, it wriggles up through the gravel and emerges into the stream or lake as a fry (Quinn 2005).

gear: Commercial salmon licences are issued for three gear types: *purse-seine*, *gillnet*, and *troll*.

gillnet: a rectangular net that hangs in the water and is set from the stern or bow of a fishing vessel. When fish swim headfirst into the net, their gills get entangled in the mesh (DFO website).

harvest management: the management of the different *fisheries* of *Pacific salmon*.

harvest rate: the percentage of fish in a fishing area (defined by *gear*, location, and timing) that is killed in the fishery; also, the percentage of a single age class of fish that are harvested by all *fisheries* (Labelle 2009).

hydroacoustic: active sound in water (sonar) that is used to study fish. Acoustic echosounders transmit pulses of acoustic energy into the water; when an acoustic pulse encounters an object, it is reflected back to the transducer. This process is used to evaluate fish biomass and spatial distributions, as well as to count passing fish (HTI website).

infectious hematopoietic necrosis (IHN) disease: a viral disease that generally affects *adults* returning to spawn or *fry* at emergence. Of the *Pacific salmon* species, sockeye is the most susceptible (Warren 1983; Amos et al. 1989; Traxler et al. 1993).

in-season management: During the season, run sizes are determined through science-based procedures and other sources such as test fisheries, counting devices, and fish wheels. These in-season run sizes are used to determine the opening dates for the *fisheries* (DFO website).

Late run: consists of 52 sockeye stocks that migrate through the Lower Fraser River from August to mid-October and spawn from late September to late November. Late-run sockeye tend to hold at the mouth of the Fraser River for three to six weeks before moving upstream. These stocks spawn in the Lower Fraser, Harrison-Lillooet, Thompson, and Seton-Anderson systems and include the Cultus Lake and Harrison River stocks (Schubert 1998; Labelle 2009). See also *Early Stuart*, *Early Summer*, and *Summer* runs.

Lower Fraser River: from the mouth of the Fraser River in the Strait of Georgia to below Hope, BC.

mainstem: the principal channel in a drainage basin which carries the greater part of the river flow. All the tributary streams in a drainage basin flow into the mainstem (Wikipedia).

mariculture: the cultivation, management, and harvesting of marine organisms in their natural habitat or in specially constructed rearing units. The end product is cultivated in seawater (FAO website). See also *aquaculture*.

mature: See *adult*.

Native fishery guardian program: Aboriginal communities select candidates for training as fisheries' guardians; these candidates are trained to monitor fisheries, collect harvest data, conduct patrols with DFO staff over the area of the fishery, and report on all Aboriginal and non-Aboriginal fishery activities. The guardians then receive limited enforcement powers under the *Fisheries Act* and are employed by their communities to monitor and control fishing and to conduct other fishery management activities (DFO website).

non-point source: water pollution that comes from many diffuse potential sources (e.g., agriculture, urban runoff, mines, septic systems). When rainfall or snowmelt moves over and through the ground, it picks up and carries away pollutants that get deposited in lakes, rivers, wetlands, and coastal waters (Wikipedia; United States Environmental Protection Agency website).

open-pen salmon farms: circular or square net cages that are open to the environment. See also *closed containment facilities*.

overflights: flights that take place during the fishing season. There are usually two flights per week (one on the weekend, one during the week) that survey the entire study area, count the number of rods actively fishing, and record the results by fishing site and technique (DFO Fraser River stock assessment report).

Pacific salmon: includes fish in the genus *Oncorhynchus* – sockeye / kokanee, coho, chinook, pink and chum salmon, rainbow / steelhead trout, and cutthroat trout (Quinn 2005).

pelagic habitat: ecological region in the water column of coastal, ocean, or lake waters (Wikipedia). See also *benthic habitat*; *fish habitat*.

pilot sales programs (Aboriginal fishery): allows certain First Nations to sell all or part of the fish they catch using their communal fishing licences (DFO website).

population: a localized interbreeding group of fish that is largely isolated from other groups. *Pacific salmon* populations have local adaptations to their natal stream environment because of their homing migration (Labelle 2009).

precautionary principle: erring on the side of caution and conservation (Labelle 2009). “[R]isks to the environment or human health should be managed despite the lack of scientific proof that damage has occurred or will occur” (Leggatt 2001).

purse-seine fisheries: Using a small skiff, fishers set their nets in a circle around a group of fish, then draw the bottom edges together to form a “purse” and prevent the fish from escaping.

re-anadromization project: an attempt to turn salmonids with a non-anadromous life cycle (due to a barrier preventing access to saltwater) back into fish with an oceangoing life history – for example, freshwater resident kokanee back into anadromous sockeye salmon. Examples include the Pelton Round Butte Project and projects at Alouette and Coquitlam reservoirs and at Lake Toro, Japan. See also *anadromous species*; *salmonid*.

recreational or sport fishing: harvesting fish for personal use, fun, or challenge. This sector does not include sale barter or trade of all or part of the catch (FAO website). All recreational fishers must possess a valid sport fishing licence, but there is no limit on entry into this fishery (DFO website).

recruitment: the number of young fish that enter adulthood / maturity (as compared to the number of spawning fish that produced them four years previously) (FAO website). See also *adult*.

resource management: the management of natural resources, such as *fisheries*, with a focus on sustainable development to conserve and preserve natural resources (Wikipedia); departmental actions, policies, and programs that directly or indirectly affect wild *Pacific salmon* through their habitats and *ecosystems* (DFO website). See also *conservation*.

riparian habitat: the areas of vegetation bordering on streams, lakes, and wetlands which link water to land. These areas directly influence and provide *fish habitat* (BC Ministry of Environment website).

run size: one or more stocks of the same species that survive natural mortality agents and return to a given freshwater system in a given year (DFO website; Quinn 2005).

salmonid: ray-finned fish in the family Salmonidae. It includes salmon, trout, chars, freshwater whitefish, and grayling (DFO website).

sector: the three different fisheries (Aboriginal, commercial, and recreational), and the subdivisions within them (e.g., commercial: *gillnet*, *purse-seine*, *troll*).

selective fishing: the harvest of surplus target species while minimizing the catch of other species (especially species or stocks of *conservation* concern) (DFO and FAO websites).

smolt: a juvenile salmon that has completed its freshwater rearing and migrates to the marine environment; in this transitional stage, the fish becomes physiologically

capable of balancing salt and water in the marine environment (DFO website; Quinn 2005). See also *alevin*; *fry*.

spawning escapement: the number of salmon that escape all *fisheries* and other mortality and return to the spawning grounds (DFO website).

stewardship: acting responsibly to conserve fish and their habitat for present and future generations (DFO website). See also *conservation*; *fish habitat*.

sub-adult: immature.

Summer run: consists of 33 sockeye stocks that spawn in the Chilcotin, Quesnel, Nechako, and Stuart systems. These fish migrate through the Lower Fraser River from mid-July to early September and spawn from early September to early October (Schubert 1998). See also *Early Stuart*, *Early Summer*, and *Late* runs.

tagging program: includes coded-wire tags (small metal tags with encoded information indicating the origin and year of release of the fish) and mark-recapture studies (a stock assessment program in which salmon are captured and marked, and then an attempt is made to recapture both tagged and untagged fish in order to generate an estimate of the total population).

telemetry studies: where an animal is fitted with a small radio transmitter and released; the unique radio signal from this transmitter can be monitored to provide a study of animal movements and survival (Pollock et al. 1989).

thermistor chains: sensors that collect temperature data.

total allowable catch (TAC): the total catch that may be harvested from a stock. This number is determined by analytical procedures in order to achieve management objectives (DFO website).

troll: a type of fishing that uses hooks and lines suspended from large poles which extend from the fishing vessel as it moves through the water (DFO website).

two-sea-winter fish: fish that spent two summers and two winters in the ocean before returning to spawn (Burgner 1991).

wild salmon: salmon that have spent their entire life cycle in the wild and are the offspring of naturally spawning fish that also lived continuously in the wild (DFO website; Labelle 2009).

zero-base review: a review in which all costs or activities must be considered and justified, and not simply factored in because they figure in current or previous plans (CIPFA website).

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