

## Gabriola Streamkeepers

**Wetland and watercourse terms:** (not always observed, Canadian)

If it's not here (or is too English-Canadian), try: <http://www.streamnet.org/glossarystream.html>.

Another resource is Appendix 3 of the [Streamkeepers Handbook](#).

The BC Ministry of the Environment maintains a useful [Instream Works Glossary](#).

For technical definitions, see [Canadian Wetland Classification System](#) (attached here in summary form). Also MacKenzie & Moran, *Wetlands of British Columbia: a guide to identification*, 2004, BC Ministry of Forests.

Also available is an atlas of [Gabriola creeks and wetlands](#); a [species list](#) including ducks, geese, and swans specifically for Coats Marsh on Gabriola; a [record of freshwater fish](#) that have been found on Gabriola, and an analysis of Gabriola [rainfall in the years](#) 1944-2021.

There is an appendix with now rarely-used or locally-used (dialect) UK-English words.

- a: year, non-SI unit of time, commonly taken to be a Julian year = 365.25 d (days). In geology, a measure of age, thus Ma means a million years old or ago.
- acidic: any water with a pH < 6.5 (more acidic than neutral); more formally: slightly acidic if pH 5.5–6.5, moderately acidic if pH 4.5–5.5, very acidic if pH < 4.5. Rich in H<sup>+</sup> ions.
- acre: non-SI unit of area = about 0.4 ha (hectares) or 4047 m<sup>2</sup> (square metres). Also = 1/640 square mile. See old [surveying units](#).
- acre-foot: non-SI unit of volume = about 1234 m<sup>3</sup> (cubic metres).
- acre-foot/hour: non-SI unit of rate of flow = about 343 L/s (litres per second).
- aerobic: environment containing oxygen. Associated with brown and sandy-coloured minerals. Also of organisms that need oxygen to survive.
- alevin: [juvenile salmon](#) that still depend on their yoke sac.
- alkaline: any water with a pH > 7.4 (more alkaline than neutral). Often rich in HCO<sub>3</sub><sup>-</sup> ions.
- alluvium: sediment ([gravel](#), [sand](#), [silt](#), [clay](#)) deposited by flowing water as it slows down or retreats.
- AMSL: (elevation) above mean sea level.
- anadromous: of migratory fish that live in the sea but spawn in freshwater. Related terms for migratory organisms are “catadromous” (live in freshwater but spawn at sea), “amphidromous” (live in freshwater but may go to sea and return), “oceanodromous” (live in the sea but away from spawning grounds), and “potamodromous” (live in rivers and migrate upstream to spawn).
- anaerobic: environment low in oxygen. Anaerobic conditions are often also [acidic](#). Associated with blue-grey and greenish-coloured minerals. Also of organisms that live without oxygen.
- ANC: acid neutralizing capacity (HCO<sub>3</sub><sup>-</sup> + 2CO<sub>3</sub><sup>2-</sup> + OH<sup>-</sup> – H<sup>+</sup>)
- anion: [ion](#) with a negative charge (carrying one or more extra electrons).
- aquarium net: see [net](#).
- aqueduct: a constructed channel used to transport water. See [flume](#).
- aquifer: source of extractable [groundwater](#).
- arid: having little or no rain.
- arm: channel that branches off from the main flow of a [river](#) and makes its own way to the sea. Also an elongated bay of a [lake](#).
- atmospheric pressure: needed in processing dissolved oxygen ([DO](#)) [measurements](#). Usually recorded for scientific work in kPa (kilopascals).
- atmospheric river: known as a “pineapple express”, a long narrow band of south-westerly warm moist air leading to an extended period of high-intensity rain on meeting the Coast Mountains.

- babble:** a mix of high- and low-pitched sounds like that made by a **brook**. Babble heard at a distance might be called a **murmur**. See **trinkle**.
- backwater:** the downstream entrance to a **slough** or seasonally dry **side-channel**. Also sometimes used to mean a shallow, less-important **channel** as in “backstreet”.
- baffle:** constructed device to restrain the flow of water. A **bulkhead gate**. Commonly with adjustable height (**flashboards** or **stoplogs**), acting as a small **weir** on a **creek**, or as part of a larger **weir** on a **river**, or as a **sluice gate**.
- bank:** left and right as seen facing downstream.
- bar:** a ridgelike accumulation of sand, gravel, or rock in a **creek** or **river**.
- bar:** derived **SI** unit of pressure usually reserved for atmospheric pressure reporting—1 bar or 1000 millibars (mbar) is close to the nominal value. Most scientific work uses pascals (**Pa**). 1 bar is 100 kPa, 0.987 standard atmospheres (atm), 750 mm of mercury (Hg), 29.53 inches of mercury, and 14.5 pounds-force per square inch (psi).
- barometer:** device for measuring **atmospheric pressure**.
- basin:** place where water collects as a result of a depression in the surface or near-surface topography. Larger, usually much larger, than a **hollow**. A basin may be described as being a **closed basin**, **linked basin**, or an **overflow basin**. Geologists’ name for a **catchment area**. See **drainage basin**.
- bay:** an indentation of a shoreline usually with a wide entrance, deeper inland than a **bight** and commonly affording shelter, larger than a **cove**. See **embayment**.
- BC:** British Columbia, a province of Canada.
- beach:** sandy or shingly shore, sometimes loosely called the **strand**.
- bed:** floor of a **watercourse** as in “streambed”.
- benthic:** relating to the bed of water bodies not including the water column (**limnic**).
- be-puddled:** to be **puddled** (obsolete).
- berm:** flat-topped **embankment** but not necessarily constructed as is a **dike**.
- bight:** indentation in the shoreline too shallow inland to be a **bay**, seldom affording shelter.
- biochemical oxygen demand:** see **biological oxygen demand**.
- biodiversity:** variety of species in a given **ecosystem** or **ecoregion**.
- biogeographical:** of an area on a global scale comprised by **ecosystems**.
- biological oxygen demand (BOD):** of treated water. Usually expressed in mg/L of oxygen consumed during 5 days of incubation at 20 °C. Used to ensure that treated water is safe to discharge. Sometimes called “biochemical oxygen demand”. See also **chemical oxygen demand**.
- bioregion:** a sub-division of a **biogeographical** area. Sometimes meaning an **ecosystem**.
- bleb:** in the wetland context, a small bubble of gas rising to the surface. Uncommon usage.
- bleed valve:** device for venting air or water to relieve pressure in hydraulic systems.
- blue list:** see **Listed**.
- BOD:** **biological oxygen demand**.
- BOD bottle:** bottle designed to seal a sample without trapping air. Used in the reagent method of measuring **dissolved oxygen**.
- bog:** nutrient-poor **wetland**, usually with little open water, that, unlike a **fen**, is **acidic**. Any trees are stunted conifers. A bog, unlike a **swamp**, rarely dries out.
- boil:** convex upwelling in a fast-flowing **creek** or **river**. A “pillow”.
- boulders:** see **gravels**.

- brackish: of water with a **salinity** between that of freshwater and the sea. Common in estuaries and **salt-marshes**.
- brackish water: see **salinity**.
- braided: of a **watercourse** over a gentle slope divided into several small, shallow **channels** or **watertracks** that criss-cross, often in a not permanent fashion.
- branch: technically an “anabranch”; a channel that leaves the main flow and rejoins it further downstream; a **side-channel**. The re-joining is “anastomosis”.
- breach: see **dam breach**.
- brine: see **salinity**.
- brood: of ducklings from the same **clutch**.
- brook: rocky and hence fairly noisy **creek**, a small fast-flowing **stream**. Not used much in southern English where it used also to mean a “water meadow” but not anymore.
- bryophyte: moss, liverwort, hornwort (a non-vascular plant).
- budget: a water budget for a lake is a calculation of inflows from creeks, **precipitation** on to the lake surface, **evapotranspiration**, **infiltration** into the bed, outflows, and changes of stored volume. See **infiltration** for groundwater budgets.
- bulkhead gate: definitions vary but one is a **baffle** or **sluice gate** that can be lifted so that water flows unimpeded beneath it, and can otherwise be lowered either to close the flow completely or, depending on its height, to provide a **spillway** to limit the upstream level.
- c (*prefix*): centi-.  $10^{-2}$ . **SI** permitted but use not encouraged.
- Ca<sup>2+</sup>: calcium **ion**, a common **cation** in water of groundwater origin.
- capillary wave: wave at the surface that is sufficiently shallow that surface tension is the dominant influence. Commonly called a **ripple**.
- cat’s paw patch of **ripples** generated by gusts of wind or downdrafts on open water.
- catch basin: component in a storm water management system used to prevent debris clogging downstream drainage channels.
- catchment (area): the area of land that is the source of all the precipitation that drains into a specific lake or creek, or into the sea over a designated stretch of coastline—the **drainage basin** of a specific **sink**. Catchments are delimited by **watersheds**. “Catchment” is often written “catchment area” when the intended meanings are identical.
- cation: **ion** with a positive charge (missing one or more electrons).
- causeway: a raised path or road across or through land liable to flooding.
- cc: cubic centimetre. SI derived unit of volume =  $\text{cm}^3 = 10^{-6} \text{ m}^3$ . The preferred SI equivalent alternative for liquids = mL (millilitre).
- CDF: Coastal Douglas-Fir; the biogeoclimatic zone of **Gabriola** in **BC**.
- Celsius: derived **SI** unit of temperature ( $^{\circ}\text{C}$ ). Equivalent to  $(^{\circ}\text{F}-32)/1.8$ ,  $^{\circ}\text{F}$  = degrees Fahrenheit.
- centigrade: older term for **Celsius** but still in use.
- cfs: cubic foot per second. Non-SI unit = 28.316847 L/s.
- channel: an umbrella term for any **watercourse**.
- channery: geological term for thin, flat, fragments of case-hardened weathered sandstone. Common in the **lag gravel** on **creek beds** on **Gabriola**.
- chemical oxygen demand (COD): **biological oxygen demand** plus the amount of oxygen used for oxidation of non-organic chemicals, usually **pollutants**, and is thus unavailable for the metabolism of living aquatic organisms.
- chute: steep incline down which water flows rapidly and smoothly.

- cistern: manufactured enclosure for water storage usually but not necessarily covered. A very large open cistern is an **impoundment**.
- Cl<sup>-</sup>: chloride **ion**, a common **anion** in water of groundwater origin often a remnant dating back to the ice age when sea level on Gabriola was much higher than it is now. Chloride ions are abundant in seawater but relatively scarce in uncontaminated fresh water.
- clay: technically anything with a grain size less than 3.9µm. Coarser material is **silt**.
- Clemson leveller: pipe for restraining the upstream water level of an obstruction, typically a beaver dam, by allowing water to flow through the obstruction whenever the upstream level becomes as high as the pipe. The upstream end of the pipe is perforated and is commonly enclosed in a wire cage to prevent access by the beavers, and the downstream end may also require such protection if it is not **perched**.
- closed basin: a **basin** with no **wet-season confined** out- or inflow. The term is also used for a basin with just no outflow, but on Gabriola wet-season evaporation is too low and **infiltration** is too hindered by **mud** for a basin with only wet-season confined inflow to be common. Such a basin on Gabriola would be more likely described as a **wetland**.
- clutch: of **duck** eggs laid at the same period of time. See **brood**.
- cm: centimetre. SI derived unit of length = 10<sup>-2</sup> m or 10 mm. Metres or millimetres rather than centimetres are the preferred **SI** units of length in scientific literature.
- CMC: Coats Marsh Creek. See the [atlas](#).
- CMP: corrugated metal pipe, commonly used as a **culvert**.
- CM-RP: Coats Marsh Regional Park on **Gabriola**.
- CO<sub>2</sub>: carbon dioxide.
- CO<sub>3</sub><sup>2-</sup>: carbonate **anion**. See **HCO<sub>3</sub><sup>-</sup>**.
- coarse fish: freshwater fish that are not salmonids or game fish (English-English usage).
- coarse particulate organic matter (CPOM): leaf and wood particles greater than 1 mm in diameter.
- cobbles: see **gravels**.
- cofferdam: temporary dam enclosing a small area of a water body that can be pumped dry to enable construction, repairs, or renovations to be made to a permanent structure.
- colorimeter: device for field analysis of the chemical nature of dissolved salts (**TDS**, **salinity**) by measuring absorbance at different wavelengths. Also a component of some **DO** meters.
- conductance: conductance is the **inverse** of electrical resistance, which is the ratio expressed in ohms (Ω) of the voltage across the sample (volts) to the current (amperes) flowing through it. Conductance depends on the temperature-dependent conductivity of the sample and the geometry of the sample, and is commonly measured in units of mho's (Ω<sup>-1</sup>), which in the **SI** system are called siemens (S). See **electrical conductivity**.
- conductivity: see **electrical conductivity** and **hydraulic conductivity**.
- confined: of a **watercourse** with a bed and banks. See **watertrack**
- confluence: where two **streams** meet.
- connate water: **groundwater** trapped underground in porous but impermeable rock and no longer part of the **water cycle**. Seldom **potable**. Sometimes identified as "fossil water".
- constructed wetland: artificial wetland whose prime purpose is to use natural systems to treat wastewater in residential areas.
- contracted weir: a **weir** in which the approach channel is greater than 4 times the width of the sill. A weir at the outlet of a lake is thus likely to be "fully contracted", the "approach channel" being the width of the lake. If the approach channel is less than 4 times the width of the sill it is "partially contracted", except that if the width of the sill exactly equals that of the approach channel, it is "suppressed" meaning contraction is absent.

- cove: a small **bay** with a relatively narrow entrance.
- CP: Community Park administered by the **RDN**.
- cradle net: see **net**.
- creek: **stream** or small stream, a **brook**. More common than “stream” in North-American English. In English-English, “creek” implies flowing directly into the sea or a lake.
- crest: see **sill**. Also normal “top of” meaning as in “crest of a weir”.
- cross-sectional area: of a stream, the area enclosed by the **wetted perimeter**, a useful parameter in the measurement of **flow rate**. Often the wetted perimeter can be estimated by measuring the width of the stream and its depth at three sample points across it as mathematical interpolation provides a smooth curve fit that approximates the true curve ([File: 551](#), *SILT* 14).
- CSP: Community Salmon Program. See **PSkF**.
- culvert: an underground (covered) **ditch**, commonly a pipe (**CMP**) or arched masonry drain beneath a road or trail for the passage of water.
- cup: in Canada, = 8 fluid ounces = 227 mL (236 mL US). Wine bottle (750 mL) = 3.3 cups (26 fluid ounces). Obsolete units though still in household usage.
- cut: **channel** cut through a hill to provide a passage for water (or vehicles).
- CWB: concrete weir baseline (the crest of the concrete weir in Coats Marsh, 97.0 m AMSL ).
- CWMP: Community Watershed Monitoring Program. See **DWWP**.
- d (*prefix*): deci-.  $10^{-1}$ . **SI** permitted but use not encouraged.
- d: day. **SI** permitted unit for 24 h (hours). See “a”.
- dam: a barrier of sufficient height to prevent water from flowing over it. When constructed or built by beavers, used to maintain the upstream water level and regulate flow. A dam that is intended to overflow should probably be called a **weir**. See **spillway**.
- dam breach: a **dam** is breached when it overflows at a place where it was not intended to overflow but is not structurally damaged. See **dam failure** and **spillway**.
- dam failure: a **dam** has failed if water is flowing through it as a direct result of structural damage. See **dam breach**.
- dam regulations: dam safety regulations are overseen by the BC Ministry of Forests.
- datum: reference level for water-level measurement.
- de-ionized water: water that has all dissolved minerals removed. Generally purer than **demineralized water** and almost as pure as **distilled water**, but uncharged molecules, including organic molecules, may remain.
- deluge: drenching rain or **flood** especially if the flow of water is swift, copious, and not seasonal.
- demineralized water: water that has all the dissolved minerals that occur in natural water removed, but not necessarily completely free of all ions, particularly **Na<sup>+</sup> ions**.
- density: of cold freshwater close to 1000 kg/m<sup>3</sup> and 1 kg/L. Seawater is 1020–1030 kg/m<sup>3</sup>.
- deposition: of **alluvium**.
- DFO: Fisheries and Oceans Canada. A federal government ministry.
- diatomaceous earth: white soil layer composed of siliceous shells of diatoms. Common in **wetlands** on **Gabriola** usually dating from before the warm-and-dry post-ice-age climate became wetter and forests began to flourish several thousand years ago.
- dib (dab): fishing technique using a live insect as bait suspended from the tip of the rod. Only practical on very narrow streams (**rills**) with well-vegetated banks to provide cover.
- DIC: dissolved inorganic carbon.

- diel: adj. of something that goes through a 24-hour cycle, usually biological, but without an implied relationship with day and night as do “diurnal” and “nocturnal”.
- dike: an **embankment**, commonly constructed with earth to prevent flooding. In US-English, a **levee**. In English-English, a “dyke”.
- dimples: formed by rain drops on a still-water surface.
- dip net: see **net**.
- discharge: **flow rate**.
- dissolved oxygen (DO): essential for aquatic life. 0-2 mg/L: not enough oxygen to support life; 2-4 mg/L: only a few fish and aquatic insects can survive; 4-7 mg/L: good for many aquatic animals; 7-11 mg/L: very good for most stream fish. In still-water wetlands and lakes, DO may vary with depth, time-of-day, weather (incl. wind), and the presence or absence of photosynthesizing aquatic vegetation and aerobic microorganisms. See **DO measurement**.
- dissolved solid: inorganic material in solution. See **TDS**.
- distilled water: pure or almost pure water, these days not necessarily produced by distillation.
- distributary: a **stream** that diverges from a larger stream and does not rejoin it further downstream.
- ditch: constructed drainage channel.
- diurnal: of happenings in the day time. See **diel**.
- divide: **watershed**.
- dm: decimetre, = 0.1 metres. Use not encouraged. Most common as  $\text{dm}^3 = \text{L}$  (litre).
- DO: **dissolved oxygen**.
- DO measurement: The direct measurement of **DO** uses chemical reagents (Winkler or modified Winkler) and is accurate but time consuming and awkward in the field. All other methods determine percentage saturation. Conversion from % saturation to mg/L involves knowing the temperature, atmospheric pressure, and salinity, though the latter effect is very small in unpolluted freshwater. Hi-end meters do this automatically.
- Drainage, Ditch, and Dike Act: BC government legislation aimed at regulating construction of dikes, dams, weirs, locks, lock gates, flood gates, breakwaters, drains, ditches, flumes, aqueducts, pumps and pumping machinery, headworks, reservoirs, pipelines, tunnels, culverts, etc. ...with the aim of reclaiming and improving land by draining and diking, the straightening, deepening, clearing or improving or the changing of the course of any artificial or natural waterway.
- drainage basin: a **catchment**. See “**watershed**”.
- drained: of soil. See **rapidly-, well-, moderately well-, imperfectly-, poorly-, and very poorly drained**.
- draw: small watercourse with a V-shaped profile; no level banks.
- drawdown: decrease in water level that exposes normally submerged substrate. Also the decrease in the height of water as it approaches a **weir** due to the acceleration of the water.
- dribble: fall in drops. In old English also “drebble” or “dripple”.
- drift net: see **net**.
- dripping: drop-by-drop, not a laminar flow.
- dry season: on **Gabriola**, summer (Apr.–Sept.) when only 22% of the annual precipitation falls.
- duck: **waterfowl** of the Anatidae family. Sometimes categorized as lake ducks (commonly dive, require open water to take off, ring-necked ducks an exception) or dabbling ducks (also called “puddle ducks” or “marsh ducks”, commonly feed on the surface or up-end, can spring off the water into flight). Wood ducks, buffleheads, and hooded mergansers are cavity-nesting ducks, although buffleheads are not known to breed on Gabriola.

duckweed:	a genus of free-floating aquatic plants ( <i>Lemna</i> sp.), most species of which are small, and which commonly are prolific enough to cover the water surface.
dugout:	constructed small <b>pond</b> , for water storage or watering livestock.
DWWP:	Drinking Water and Watershed Protection, a program of the <b>RDN</b> that surveys water quality and health of small stream systems within the RDN area using provincial protocols. On <b>Gabriola</b> , the creek monitored is Mallett Creek as part of the <b>CWMP</b> . The DWWP plan also has a <b>groundwater</b> component.
EC:	<b>electrical conductivity</b> , as opposed to <b>hydraulic conductivity</b> .
ECCC:	Environment and Climate Change Canada: oversees the federal ecological gifts program.
ecoregion:	a sub-division of a larger <b>ecosystem</b> , more local than an ecosystem.
ecosystem:	organisms, physical environment, and climate in a given, usually large, area, but smaller than a <b>biogeographical</b> realm. A sub-division of an ecosystem is an <b>ecoregion</b> .
eddy:	any circular movement of water; a “back eddy” (an etymological tautology) is where the current swirls around and runs upstream on the slack side of a bend, in a bay, or out of the main flow downstream of a constriction or obstruction.
EDI:	Environmental Dynamics Inc. Consultants for the <b>RDN</b> .
effluent:	waste water from human activities.
EIA/EIS:	Environmental Impact Assessment (Study). A review of applicability of (Canadian) federal and provincial environmental protection legislation.
EIMS:	Environmental Information Management System. An inventory based on information and reports collected by the Islands Trust. See <b>SEI</b> .
electrical conductivity:	electrical conductivity of a liquid is the measured <b>conductance</b> in mho between two plates immersed in the liquid, divided by their surface areas, and multiplied by the distance between them. It is thereby rendered independent of the geometry of the sample. Its units in the <b>SI</b> system are siemens per metre (S/m). The conductivity of water is an indication of dissolved salt content, where salt can be marine, mineral salt from rocks, or a <b>pollutant</b> . Conductivity is a function of temperature and so it is customary to standardize measurements to what the conductivity would be at 25°C and it is then known as “specific conductivity”. Most streams on <b>Gabriola</b> are sourced from rainwater and are not polluted and so specific conductivity tends to be low, < 150 µS/cm. See <b>TDS</b> .
embankment:	earthwork built to prevent flooding, keeping water out unlike a <b>dam</b> that keeps water in.
embayment:	a <b>bay</b> that has been formed by some identifiable process usually other than that responsible for the formation of the whole shoreline. Commonly simply called a “bay”.
ENSO:	El Niño/La Niña–Southern Oscillation (in oceanic-atmospheric climate). In coastal southern BC, in the fall, winter, and spring, La Niña (ENSO cool phase) traditionally leads to cooler, wetter weather, and El Niño (ENSO warm phase) to warmer, drier weather. The influence of ENSO on summer weather (mid-July to mid-September) is weaker, the weather at that time of year being strongly dependent on the latitude of the jet stream. The oscillation between phases is irregular. See <b>PDO</b> .
ephemeral	an ephemeral water body is one existing only after a particularly heavy downpour or snowfall in contrast to an <b>intermittent</b> water body that exists for a longer time during every <b>wet season</b> . Ephemeral creeks are sourced by <b>runoff</b> .
epilymnion:	layer of warmer water in a <b>lake</b> above the <b>thermocline</b> .
erosion:	see <b>weathering</b> .
estuarine:	of sites where freshwater enters the sea, ranging from rarely-flooded inland estuarine meadows, to estuarine marshes flooded in winter storms, to regularly-flooded tidal flats.
estuary:	of a river, where it meets the sea. See <b>mouth</b> .

- evaporation: locally up to 5 mm per day of open water in mid-summer becoming very low in winter. A function of wind speed, relative humidity, water-surface and air temperatures.
- evapotranspiration: the combined loss of water due to **evaporation** and plant **transpiration**.
- federal: Canadian government.
- fen: mainly-treeless **wetland** that, unlike a **bog**, is **neutral** or **alkaline**. A fen is **groundwater** fed and maintains its water level year-round, unlike a **marsh**.
- finer: **silt** and **clay** (mud) rather than **sand** and **gravel**. Undisturbed finer are not readily transported by water but remain on the **streambed**.
- fingerlings: **juvenile fish** that have just developed scales and extended fins.
- fishing: freshwater techniques using a rod and reel include fly fishing, **float** fishing, **ledgering**, **dibbing**, and spinning (lure fishing).
- fissure: see **gully**.
- flark: water-filled depression within a **bog**. Often elongated and a result of soil or peat breaking away and sliding a short distance downhill over the substratum. On **Gabriola**, the phenomenon is seen on sloping thickly-moss-covered sandstone plains, but the term “flark” is rarely used by anyone other than boreal **pedologists**.
- flashboards: stacked wooden panels of a **baffle** (bulkhead gate) used to adjust the level of the **sill**. **Stoplogs** serve the same purpose as wooden panels.
- flashy: of runoff from man-made hard surfaces that scours the channel bed. See **torpedo ditch**.
- fledge: (of a bird) to be fledging (intr. verb) is to be a young bird growing flight feathers, to be a **fledgling** (noun). To fledge (tr. verb) may also mean to be a parent taking care of a fledgling. To be fledged or be fully-fledged (adj.) means to be able now to fly as an adult, to cease to be a fledgling.
- fledgling: young bird that has left the nest but is not yet a competent flyer and requires support from its parent(s). Sometimes called a **juvenile**.
- float: part of a seine **net**. A slender quill or cork designed to keep a fishing line and bait from sinking to the bottom and to act as a “bite” alert.
- flood plain: largish level area of **alluvium** deposited during flood events, including ancient events that no longer occur.
- floods: flows of water over land that is normally dry. “Flash flooding” can occur at any time of year caused by heavy-rain storms in unsettled weather. “Seasonal flooding” (high-water) is commonly the result of melting snow every spring. “Frequent flooding” intervals are usually reckoned to be in the 2–5-year range and “occasional flooding” intervals greater than five years. “Rare flooding” usually refers to extreme historically-significant events. In technical writing, “flooding” implies by moderate- or fast-flowing water as in “flood tide”. Flooding by rising still water in such writing may be called “**inundation**”.
- flow rate: volumetric flow of streams measured in litres per second (L/s) and, of rivers, in cubic metres per second (m<sup>3</sup>/s). Not to be confused with **flow velocity**. Not easy to measure if using a bucket and stopwatch to capture the entire flow is impracticable. Creeks on **Gabriola** typically flow at one to tens of litres per second rising to several hundred litres per second during periods of heavy rain. Also called “**discharge**”. With experience, it is possible to hazard a guess as to flow rate by the noise a stream is making.
- flow velocity: velocity of the flow measured in metres per second (m/s). It varies with depth, distance from the banks, and roughness of the **streambed**. Commonly a value derived from a limited number of spot measurements and averaged in an empirical way that (hopefully) gives the **flow rate** when multiplied by the stream’s **cross-sectional area** (m<sup>2</sup>).
- flume: a constructed channel that is inclined to move water or floating objects to a lower elevation for various purposes, usually at a controlled velocity. See **aqueduct**. Flumes

- that constrict the flow in an open channel thereby raising a **hydraulic head** are also used industrially to meter flow rates. Parshall flumes are an example.
- flush: the first flows in the fall (the start of the **wet season**) of creeks that have been dry in the summer. Also to frighten birds into flying away.
- fluvial: in geology, of sediments laid down anywhere in a **flood plain**. See **riverine**.
- foam: usually a natural phenomenon caused mainly by decaying algae and vegetation (or pouring the beer too fast). Not serious.
- foot (ft. or ') Non-SI unit = 0.3048 m (metres).
- forb: herb species excepting grass-like ones.
- forested swamp: see **swamp**.
- fork: where the stream divides into two channels with roughly equal flows.
- form: depth of a stream (D) divided by its width (W), but sometimes used to mean depth of the channel divided by width of the channel irrespective of water level.
- form ratio: often **form**, but the term requires definition as it is sometimes defined and written as the depth:width ratio (D:W) and sometimes as the width:depth ratio (W:D).
- fossil water: see **connate water**.
- freshet: flood caused by rapid melting of snow and ice in the mountains at the end of winter. Usually applied to rivers.
- freshwater: see **salinity**.
- fry: **juvenile fish** including **juvenile salmon** that no longer depend on a yolk sac.
- g: gram, and acceleration of a mass due to gravity ( $9.80665 \text{ m}\cdot\text{s}^{-2}$ ,  $32.174 \text{ ft}\cdot\text{sec}^{-2}$ ).
- Gabriola: small island in the province of British Columbia (BC) off the west coast of Canada.
- GaLTT: Gabriola Land and Trails Trust.
- gallon: Non-SI units of volume. Imperial = 4.546 L; US = 3.785 L. See L and L/s.
- gate valve: sliding device for controlling the flow of water in a pipe, usually completely closed or completely open. Much smaller than a **sluice gate**.
- gauge: usually a scale for monitoring water level. A “gauge station” is a location where water level is measured continuously, sometimes accompanied by automated measurements of **flow rate** and **water quality**.
- Gee® trap: wire mesh trap (1/4 or 1/8" mesh). For catching minnow-sized creatures (“tiddlers”). See **minnow-trap**.
- GGMS: Gabriola Groundwater Management Society. Originally a group focussed on governance issues rather than **hydrogeology**. The society formally disbanded *circa* March 2020 after some years of inactivity and its assets were donated to **GaLTT**.
- Georgia Depression: the ecoprovince of Gabriola in BC. Mild wet winters, warm dry summers, wetlands not uncommon but most have been modified by human activity.
- Gerridae: family of insects called water striders and lots of other names.
- GISKA: Gabriola Island Shore Keepers Association, a volunteer group with an interest in Gabriola’s shoreline and surrounding ocean.
- glacigenic: related to ice in a geological ice age.
- gleysol: on **Gabriola**, bluish-grey soil with a high clay-mineral content formed from weathering of glacial flour (silt) left behind by meltwater at the end of the last ice age. Practically all permanent bodies of standing water on Gabriola have a bed of impermeable gleysol. Without it, water would drain away through fractures in the bedrock.
- gleyed: containing **gleysol**, usually with orange mottles or streaks.
- glide: calm stretch of shallow, smoothly flowing water.

- GPS: Global Positioning System. The precision of a recreational hand-held GPS meter is typically 0.001' (minutes of arc), which on Gabriola is about 2 metres of latitude and 1 metre of longitude, and its single-reading accuracy is usually around  $\pm 4$  metres. See **NAD83** and **UTM**.
- grab sample: sample taken in the field for further analysis.
- grade: **gradient**.
- gradient: the vertical drop divided by the horizontal distance, often expressed as a percentage, and sometimes expressed as a ratio. Somewhat confusingly, a 100% gradient is only a 45° **slope**, not a waterfall, which is why gradient is usually a measure of only gentle slopes.
- granules: see **gravel**.
- grasses: *Poaceae* some of which are regarded as **reeds**. Reed canary-grass (*Phalaris arundinacea*) is a common invasive species of grass in wetlands on **Gabriola**.
- gravel: in its precise sense, grain sizes 2 to 4 mm. It is coarser than “very coarse sand” and finer than **pebbles**. Also known as “granules”. See **gravels**. Looser usage of the term “gravel” as in “river gravel” usually excludes anything bigger than pebbles, and implies rounded and polished by water unless created artificially by crushing. Angular fragments smaller than boulders that have been transported by ice are likely to be called “glacial gravel”.
- gravels: a collective geological term for all grain sizes > 2mm, anything coarser than **sand**. Geologists subdivide gravels into **gravel** 2 to 4 mm, **pebbles** 4 to 64 mm, **cobbles** 64 to 256 mm, and “**boulders**” (anything bigger). See “**stone**” and “**rock**”, terms that sometimes appear in soil descriptions.
- grilse: see **salmon**.
- grit: noticeably coarser than average grains in **sand** and sandstone that are hard and sharp.
- ground truthing: field observations made to check inferences from aerial and satellite images.
- groundbait: bait scattered without hooks to get fish accustomed to feeding at that location.
- groundwater: water held underground in sands, gravels, porous rock, or fractures in rock. See **meteoric** and **connate**.
- GSK: Gabriola Island **Streamkeepers**, a volunteer group affiliated with the Gabriola Land and Trails Trust (**GaLTT**). GSK also has an interest in wetlands on **Gabriola**. The society has been relatively inactive in recent years, but a number of members are continuing to work on their individual interests. See also **GISKA** and **GGMS**.
- gulch: the deep part of a **gully**, when dry, a “ravine”.
- gully: narrow **channel** with especially steep sides worn or incised by water. Smaller than a “ravine”. A very narrow gully, especially if not completely natural, might be described as a fissure if as narrow as a crack, or if natural as a (geological) fracture.
- gurgle: low-pitched noise of falling water that is trapping, pumping; and releasing air; sometimes heard on Gabriola in the wet season when air is being drawn down the vortex at the flooded inlet of a **perched culvert**. A contribution to sounds made by **brooks**.
- gutter: in modern usage, a small drainage watercourse (**runnel**) dug or laid alongside a road or trail. Deep tire tracks in soft earth acting as such alongside an unpaved footpath.
- gyttja: **muck** especially rich in well-rotted peat.
- H<sup>+</sup>: hydrogen **cation**. In water, present as hydrated hydronium H<sub>3</sub>O<sup>+</sup>·(H<sub>2</sub>O)<sub>n</sub>, n=1,3, and 5?
- h (*prefix*): hecto-. 10<sup>2</sup>. **SI** permitted but use not encouraged.
- h: **SI** derived unit for an hour = 3600 s (seconds).
- ha: hectare = hm<sup>2</sup> = 10<sup>4</sup> square metres. Use restricted to agriculture and surveying.

- habitat: **wetlands** are commonly given a site classification such as **swamp** or **marsh**, but every-day usage does not always observe the technical difference, and sometimes on Gabriola a single wetland may, in any case, provide both types of habitats.
- HADD: Harmful Alteration, Disruption, or Destruction of riparian fish habitat. Term used in **RAR/RAPR**.
- HCO<sub>3</sub><sup>-</sup>: bicarbonate **ion**, a common **anion** in water of groundwater origin. Usually the concentration of carbonate anions CO<sub>3</sub><sup>2-</sup> is much less.
- H<sub>2</sub>O: chemical formula for water (H=hydrogen, O=oxygen). Weakly ionized as **H<sup>+</sup>** + OH<sup>-</sup>.
- head: **hydraulic head**.
- headwaters: the **streams** in a **catchment** that are the first to take on the characteristics of a stream as they flow downhill.
- hectare: 10<sup>4</sup> square metres. Area of a square 100 m x 100 m. **SI** permitted unit (ha).
- hollow: place, often grassy, where water collects as a result of a depression in the surface topography but smaller, usually much smaller, than a **basin**. If wooded with trees other than alder it might be called a “**dell**”. In southern English in a hillside, a “**combe**”.
- hydraulic conductivity: a measure of the permeability of water-bearing rock. Not to be confused with **electrical conductivity**.
- hydraulic head: usually the difference in surface water levels on opposite sides of a dam or obstruction.
- hydric: site that is wet or damp all year, usually due to **gleysol** in the soil. See **mesic**.
- hydrodynamics: the study of the physics of liquids in motion.
- hydrogeology: the study of the distribution and motion of **groundwater**. It is a branch of **hydrology**.
- hydrograph: instrument for making a continuous record of **flow rate**.
- hydrology: the study of all aspects of the **water cycle** on the planet including surface-water hydrology, **hydrogeology**, marine hydrology, and pertinent aspects of oceanography, meteorology, economics, ecology, and environmental science.
- hydrometer: device for measuring the relative density (specific gravity) of liquids.
- hydrometrics: the engineering aspects of **hydrometry**, particularly quantification.
- hydrometry: the monitoring of the components of the **water cycle** on the planet. A large part of **hydrology**.
- hydrophyte, hydrophytic plant: adapted to saturated soil deficient in oxygen.
- hyperlymnion: layer of colder water in a **lake** below the **thermocline**.
- hyporheic: the sedimentary watery zone beneath the bed and out beyond the banks of a waterbody through which water percolates slowly providing habitat for tiny animals and microbes. Also the vertical zone between a surface **stream** and **groundwater** where exchanges of nutrients, oxygen, and organic matter in downwellings and upwellings may occur.
- hyporheic structure: term used in stream rehabilitation for logs and rocks that create eddies and pools as exist in a natural stream thereby enhancing its **hyporheic**.
- ice fishing: practice of fishing through an opening in the ice on a frozen body of water. Common in Canada but not on Gabriola Island.
- imperfectly drained: of soil. Wet and saturated to about 0.6 m from surface during winter, subsoil moist the rest of the year, surface may be dry or even droughty during prolonged dry periods in summer. See **drained**.
- impoundment: a large open **cistern** used for industrial purposes.
- inch ("): Non-SI unit of length = 25.4 mm.

- incised stream: with a rectangular profile, widely regarded as being the unwelcome result of disturbance, but on **Gabriola** commonly a natural stream that has eroded organic-rich soil down to bedrock or lodgment till and is flowing rapidly over a level bed.
- infiltration: water absorbed into the ground and not contributing to surface flows. An important factor in the **groundwater** budgets of islands but not directly measurable. It has to be estimated as **precipitation** less **evapotranspiration** and **runoff** into the sea.
- inflow: of a **waterbody** or **wetland**, variously defined. Sometimes meaning the total measurable inflow in **streams** and through **culverts** but not including **runoff** or unseen **springs**, and sometimes meaning all input to the waterbody excepting only precipitation.
- intermittent: common technical term for a water body existing during the **wet season**, but not all year, and not being **ephemeral**. Sometimes called **seasonal**, **wet season** being implied. An intermittent creek is thus a **creek** that usually dries up every year in the **dry season**.
- inundation: see **floods**.
- ion: atom or molecule with a non-zero net electric charge as a result of having too few (**cation**) or too many (**anion**) electrons. Common cations in groundwater are  $\text{Na}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{K}^+$ , and  $\text{Mg}^{2+}$ ; common anions are  $\text{Cl}^-$ ,  $\text{HCO}_3^-$ , and  $\text{SO}_4^{2-}$ .
- iso- (*prefix*): line on a 2-D diagram, commonly a map, joining points with an attribute of equal value.
- isobath: depth of water
- isobathytherm: temperature at a certain depth of water
- iso-elevation: height above sea level (ASL), practically always called a contour
- isohyet: precipitation
- isohaline: salinity
- isotherm: temperature.
- IT: Islands Trust. LTC is the local trust committee thereof.
- JTU: Jackson turbidity unit. The lower the value the clearer the water. In scientific work the JTU has been replaced by the **NTU** (nephelometric turbidity unit) which is a metric unit that can be measured accurately with a meter. JTUs and **NTUs** are roughly the same. Clear streams have a JTU < 10; drinking water is in the range 1–5; values > 40 indicate poor quality.
- juvenile: (of fish), **fry** and **fingerlings**; (of birds), still wearing first plumage after leaving the nest, sometimes of ducks regardless of whether or not fully-**fledged**.
- juvenile salmon: see **alevin**, **fry**, **parr**, and **smolt**.
- k (*prefix*): kilo-.  $10^3$ . Commonly in kg (kilogram), km (kilometre), and kPa(kilopascal).
- $\text{K}^+$ : potassium **ion**, a common **cation** in water of groundwater origin.
- kilogram (kg): **SI** base unit of mass.  $10^3$  grams (g). 2.20 pounds (lb.). 1 milligram (mg) is ( $10^{-6}$  kg). 1000 kg is a tonne (metric ton).
- kilometre (km):  $10^3$  m. 1 land (statute) mile is 1.609 km.
- L: **litre**.
- L/s: litre per second. 13.20 Imperial gallons per minute (Imp. gpm). 15.85 US gallons per minute (US gpm).  $x$  L/s is equivalent to  $0.116/x$  days per ha·mm.
- lacustrine: of a lake or substantial pond (a permanent waterbody too large to be called **palustrine**).
- lag gravel: glacial till that has had its sand and finer material washed out.
- lake: body of permanent water, (technically) too large to be a **pond**, with an outflow stream, and deep enough for temperature stratification to develop. See **shallow-water wetland**.
- ledge: a natural underwater rock shelf, acting in a stream as would a **sill**.

ledgering:	fishing technique using a weight with line threaded through it to keep the bait on the bottom without causing a drag on the line that a fish would detect.
levee:	technically, a natural elongate mound of sand and silt running parallel to the flow of the water. In US-English, it can also mean a constructed <b>dike</b> .
LidarBC:	light detection and ranging system used by the BC government to provide 3D mapping information. Commonly used in floodplain analyses.
limnic:	relating to the water column not including the bed ( <b>benthic</b> ) or surface.
limpid:	of water, exceptionally clear and transparent.
linked basin:	a basin with both a <b>wet-season confined</b> out- and inflow.
Listed:	red, blue, yellow lists of species in the BC Wildlife Act. red = species designated as endangered, threatened, extirpated, or are candidates for such; blue = not immediately threatened but are of concern because of their sensitivity to human or natural events; yellow = apparently secure and not at risk of extinction.
litre (L):	derived SI unit of liquid volume. $10^{-3} \text{ m}^3$ ( $\text{dm}^3$ ). A litre of pure water weighs about 1 kilogram.
littoral zone:	the shallow vegetated fringes of a <b>pond, lake</b> , or the sea, but only a well-used term for the ocean and more usually called the <b>riparian</b> area for freshwater bodies.
lock:	short section of <b>waterway</b> confined by two <b>sluice gates</b> , one shut the other open, so that the static water level in the lock is that of the upstream or of the downstream <b>reach</b> . Once in the lock, a vessel can be safely raised or lowered by reversing the status of both gates.
LTC:	see IT.
LWD:	“large woody debris”; sufficiently large to create a <b>pool</b> in a stream.
M ( <i>prefix</i> ):	mega-. $10^6$ .
m:	metre. <b>SI</b> base unit of distance. 3.2808 feet (ft.)
m ( <i>prefix</i> ):	milli-. $10^{-3}$ . Commonly in mg (milligram) and mm (millimetre).
$\mu$ ( <i>prefix</i> ):	micro-. $10^{-6}$ . This Greek letter “mu” (as in <b>music</b> ) is sometimes written “mc”.
$\text{m}^2$	square metre. 1/4047 acres (ac). 1 hectare (ha) is $10^4 \text{ m}^2$ .
$\text{m}^3$ :	cubic metre. = $10^3$ litres (L) = 35.315 cubic feet = 1/1233.5 acre.feet.
m/s:	metre per second. 3.2808 feet per second (fps). 1.944 knots (kn).
$\text{m}^3/\text{s}$ :	cubic metre per second. 35.315 cubic feet per second (cfs). In US-English “cms”.
MADRONE:	Madrone Environmental Services. Consultants for the <b>RDN</b> .
marsh:	poorly-drained <b>wetland meadow</b> dominated by <b>reeds</b> . A similar wetland dominated by trees or tall shrubs is a <b>swamp</b> (but see <b>habitat</b> ). Marshes are usually neutral or alkaline. Late-season <b>drawdown</b> is more common in a marsh than a <b>fen</b> , and there is less flow than in a swamp.
marshland:	region dominated by <b>marshes</b> .
mbar:	millibar. $10^{-3}$ bar.
mc- ( <i>prefix</i> ):	used for the prefix $\mu$ (micro) when the Greek letter is not available or might not be understood by the reader; “mcg” is a microgram ( $\mu\text{g}$ ) for example.
meadow (mead):	grassland that tends to be muddy or flooded, but only for a few weeks in the <b>wet season</b> ; occasionally used as hay fields. Fields grazed by livestock are pastures.
meander:	a loop in a winding <b>river</b> or <b>stream</b> flowing slowly over almost flat country covered with easily-eroded fine-grained sedimentary soil (such as <b>alluvium</b> or loess). See <b>oxbow lake</b> .
meander cut--off:	an <b>oxbow lake</b> .
meltwater (pond, lake, swamp):	see <b>gleysol</b> .
mesic:	of habitat, moderately moist. Between <b>xeric</b> (dry) and <b>hydric</b> (wet).

- meteoric water: water derived from precipitation including both surface water and **groundwater** that is not **connate**. Most groundwater is meteoric.
- Mg<sup>2+</sup>: magnesium **ion**, a common **cation** in water of groundwater origin.
- mho: older non-SI term for a siemen (S) but still in use.
- micron: micrometre ( $\mu\text{m} = 10^{-6}$  m). A thousand nanometres ( $1 \text{ nm} = 10^{-9}$  m). Non-SI unit.
- min: **SI** permitted unit for a minute of time = 60 s (seconds).
- minnow-trap: can be made by knocking a hole in the top of the cone-shaped recess at the bottom of a wine bottle (the “marble” of the “kick-up”). See **Gee® trap**.
- mire: low-lying **wetland** of deep, soft soil, or mud, often covered with algae.
- mm: millimetre ( $10^{-3}$  m). 1 inch ( " ) is 25.4 mm.
- moderately well drained: of soil. Moist to wet during the winter months but droughty after prolonged dry periods in summer. See **drained**.
- monotypic: of habitat or stands, so dominated by a single species as to virtually exclude all others. Reed canary-grass meadows are local examples of monotypic habitats.
- morass: any waterlogged area difficult or impossible to traverse.
- mouth: of a river, where it meets the sea (also known as an “**estuary**”) or where it meets a lake.
- muck: a mix of **silt**, **clay**, and decaying organic material.
- mud: waterlogged earth containing no coarser material than silt.
- mudrock: sedimentary **rock** whose parent material was **mud**, which may contain some **silt** in addition to **clay**-sized particles. The term includes siltstone, **mudstone**, and shale.
- mudstone: a slightly more technically-precise term for **mudrock** used if all the grains are finer than **silt** and this is significant. Claystone is similar without connotations of mud.
- murmur: see **babble**
- muskeg: a **bog** of a type with only very slowly rotting vegetation usually found in areas of high rainfall and cooler summers than currently prevail on **Gabriola**. North-American English.
- Na<sup>+</sup>: sodium **ion**, a common **cation** in water of groundwater origin. Sodium ions are also abundant in seawater.
- NAD83: The current North American Datum for horizontal geographic positions (lat./long.). The current global datum is the world geodetic system WGS84. NAD83 and WGS84 typically differ by less than one metre.
- nappe: see **sill**. Also has unrelated structural-geological meaning.
- N-channel: Nye channels are trough-like depressions that were worn into the sandstone bedrock by high-pressure fast-moving meltwater flows beneath glaciers in the ice age. There are examples on **Gabriola** and they form long elongated **puddles** in winter.
- net: many kinds. Mesh sizes used by streamkeepers are usually in the range 0.4–19 mm (1/64–3/4”), the smallest size being for invertebrates. A “dip net” is a net held open by a hoop with a long handle. “Aquarium nets” and “tank nets” usually have rectangular or D-shaped hoops. “Cradle nets” for big fish are nets slung between two poles. “Seine nets” are long nets supported by floats along the top edge and with weights along the bottom edge which sometimes can be drawn together to form a “purse seine net”. “Drift nets” are similar. A “gill net” is similar to a seine net but with a larger mesh size which is carefully chosen to entangle only the target fish by the gills. Some “sampling nets” have strong hoops designed to be pushed into the **streambed** to capture anything disturbed.
- neutral: water with a **pH** in the range 6.5–7.4 is usually regarded as being neutral, neither **acidic** nor **alkaline**.
- NHC: Northwest Hydraulic Consultants (nhc). Consultants for the **RDN**.
- Niño/Niña: see **ENSO**.

- nocturnal: of happenings during the night. See **diel**.
- NTBC: Nature Trust of **BC**. Formerly using the initialism TNT (The Nature Trust). Co-owners with the **RDN** of the Coats Marsh Regional Park (**CM-RP**).
- NTU: nephelometric turbidity unit, a measure of the scattering of light by suspended particles. Similar but older and less accurate **JTUs** are a measure of the opacity of a water column.
- OH<sup>-</sup>: hydroxyl **anion**. See H<sub>2</sub>O.
- order: of streams. There are various methods of ranking the order of streams but the most straightforward is Strahler's method. Fingertip tributaries at the head of a stream system are all 1st-order. A **confluence** of streams consisting of two or more streams of the same order creates a stream that is one order higher (1+1=2, 2+2=3, 3+3=4); otherwise, the stream created retains the highest order of its tributaries (1+2=2, 1+3=3, 2+3=3). Fourth- and higher order streams requiring at least eight 1st-order tributaries are usually approaching the size of a river.
- ORP: oxidation-reduction potential in millivolts (mV). Naturally variable but a useful parameter if abrupt change in **water quality** is observed for an uncertain reason.
- outflow: of a **waterbody** or **wetland**, variously defined. Sometimes meaning the total measurable outflow in **streams** and through **culverts** but not including **infiltration** into the ground, and sometimes meaning all output from the waterbody excepting only **evapotranspiration**.
- outflow, outlet, or overflow pipe: a culvert being used as a **pond leveller**.
- overflow basin: a basin with a **wet-season confined** outflow but no wet-season confined inflow.
- oxbow lake: an abandoned **meander** of a river that is flowing slowly across a flat or prairie-like terrain. Also known as a meander cut-off. Locally rare in our hilly and mountainous country. See **oxbow wetland**.
- oxbow wetland: an old **oxbow lake** that has become silted up and now hosts abundant aquatic vegetation. Usually a type of **shallow-water wetland**.
- Pa: pascal: **SI** unit of pressure.
- palustrine: of a basin, depression, or small waterbody (too small to be called **lacustrine**) with a continually high, **water table** and poor drainage.
- parafluvial area: an area (or zone) that is the inner part of a **riparian area** that seasonally floods. The equivalent of the intertidal zone on the seashore.
- parr: **juvenile salmon** in freshwater.
- pasture: see **meadow**.
- peat: partially-decayed, waterlogged vegetation, a term often only used when this is moss, though other species are technically not excluded.
- PDO: Pacific decadal oscillation (in oceanic-atmospheric climate). Similar to **ENSO** except that the PDO occurs at northern latitudes in the Pacific and oscillates relatively slowly (20–30 years), while ENSO occurs in equatorial waters and oscillates relatively rapidly (6–18 months). Like ENSO, the PDO has a warm-dry and cool-wet phase. Recent research has shown that it is likely that the PDO and ENSO are related.
- peatland: **acidic** and **anaerobic wetland** usually dominated by sphagnum moss. Once common on **Gabriola** when the climate was drier than now, but more likely to be a **bog**, **mire**, or **swamp** these days.
- pebbles: see **gravels**.
- pedology: branch of geology concerned with soil.
- penstock: a **sluice gate** usually in a piped channel.

- perched: (of a culvert) with an outlet higher than the level of the water immediately downstream. (Of an aquifer), **groundwater** prevented from sinking down to the regional **water table** by an impermeable layer of soil or rock.
- perennial creek: one that runs year-round, as distinct from an **intermittent creek**.
- pH: a measure of acidity, a number below 7.0 indicating more **acidic** than pure water. Most streams have a pH in the range 6.5–8.5. It is difficult to measure the pH of pure water because it can easily be varied by slight variations in its dissolved CO<sub>2</sub> content.
- pineapple express: see **atmospheric river**.
- pollutants: added to streams and groundwater by humans. They include agricultural pollutants (excrement, fertilizers); urban pollutants (hydrocarbons in runoff from roads, heavy metals leached from or in the ash of treated wood); wastewater pollutants (sewage, pharmaceuticals); and sediment (road & housing construction, lot clearing). Indicators of common agricultural pollution are nitrogen (nitrate, nitrite), phosphorus (phosphate), and various pesticides and pathogens.
- pond: body of water (technically) too small to be a **lake** usually with no inlet and no **perennial** outflow stream, often a large **dugout**. Usually an established feature of the landscape.
- pond leveller: culvert-sized pipe installed to limit water level rise in the **wet season** by draining off excess water, as does a **spillway**. See **Clemson leveller**.
- ponded: to have discontinuous **pools** and **puddles** in the bed of a **stream** as it transitions from either being a flowing **watercourse** to one that is not flowing, or it transitions from being all or mostly dry to one that is flowing. (not in dictionaries)
- pool: small body of water, deeper and less ephemeral than a **puddle** but too small to be a **pond**. A section of a **creek** that is relatively deep and slow moving; often alternating with **riffles**. Pools can be of a liquid other than rainwater (tidepools, mineral springs).
- poorly-defined: of a **watercourse** or stretch of a watercourse that flows without banks, often in multiple shallow **watertracks** with little or no **hydrophytic** vegetation or other **wetland** characteristics. Difficult to identify when dry. See **sheet flow**.
- poorly drained: of soil. Very wet and saturated most of the year, **water table** may be at surface in winter but drop below 0.6 m in summer allowing the surface to become dry. See **drained**.
- potable: drinkable.
- ppm: parts per million. Most often by mass (mg/kg) or approximate weight (mg/L) but other metric ratios are possible.
- ppt: parts per thousand (‰). Most often by mass (g/kg, 0.1%) but other metric ratios are possible.
- precipitation: rainfall including the rainfall equivalent of snow, sleet, and hail, but technically excluding dew, fog, frost, and mist though tiny amounts of these may be collected in rain-gauges and counted nevertheless. Gabriola Streamkeepers often record snow on the day it melts, not when it usually is when it falls. Precipitation at the Environment Canada site for **Gabriola** is probably less than that at other sites on the island.
- precipitation trend: on Gabriola (coastal southern BC), long-term multi-decade average annual precipitation appears not to be changing significantly, but seasonal precipitation shows some non-zero trends, albeit very small ones. We have had an increasing amount of precipitation both in the fall (Sep–Nov) and in the spring (Mar–May), a decreasing amount in summer (Jun–Aug), and hardly any change in mid-winter (Nov–Feb). Long-term trends however are very weak compared to year-to-year variations in weather. File [698](#). See **ENSO** and **PDO**.

- PSF: Pacific Salmon Foundation. A federally incorporated non-profit charitable organization, conserves and restores wild Pacific salmon and their habitats in BC & the Yukon. It runs the Community Salmon Program (CSP).
- PSkF: Pacific Streamkeepers Federation. A non-profit society committed to supporting community groups involved in **streamkeeper** activities in BC & the Yukon.
- puddle: short-lived accumulation of rainwater shallow enough for kids wearing wellies to splash through.
- puddled: having been rained upon sufficiently heavily to create numerous **puddles** on an uneven surface but not sufficiently enough to create a flow between puddles. (not in dictionaries).
- pudgy: muddy and full of puddles. Sadly, no longer in most English dictionaries unless being used, sometimes unkindly, to describe a chubby child.
- pumpkinseed: species of fish (*Lepomis gibbosus*) introduced into BC where they are considered a nuisance species that compete with native fish, and negatively impact native communities. Found on **Gabriola**.
- purl: to flow with ripples, eddies, and babbling sounds as in a **riffle** and as does a **brook**. Rarely used in modern English.
- purse seine net: see **net**.
- quagmire: **mire, morass**.
- QEP: Qualified Environmental Professional (under **RAR/RAPR**).
- race: a **rapid** downstream of an artificial obstruction.
- rain: the most common but not only kind of **precipitation**. Synonyms and phrases for raining that I grew up with include it's spotting (no wind), spitting (strong wind), drizzling, showery, a bit damp (mizzling), chucking it down, pouring, pelting, bucketing, raining cats and dogs, teeming, and rain's set-in for the day.
- rapid: section of a flow of a **river** where the **gradient** is sufficiently high to form **whitewater**. Called a **riffle** in a **creek**, and a **race** if artificially created.
- RAPA: Riparian Areas Protection Act (of the BC government). Directive to local governments to enact **RAR/RAPR** to protect riparian habitat.
- rapidly drained: of soil. Moist during the winter months but very droughty and dry from late spring to late fall. See **drained**.
- RAR/RAPR: **Riparian Areas** Regulation (RAR). Updated in 2019 to Riparian Areas Protection Regulation (RAPR). See **RAPA** and **stream** (legal).
- RDN: Regional District of Nanaimo.
- reach: a homogeneous stretch of river or stream with physical end points. End points are often river bends, but other, on-the-spot, demarcations are commonly made in stream surveys. On a navigable river or canal, a reach may mean the waterway between **locks**.
- recharge: **infiltration** into an **aquifer**.
- red list: see **Listed**.
- redd: nest in a gravel **streambed** where **salmonids** lay eggs.
- reeds: various wetland grass and grass-like plants with a tall firm stem including **grasses, rushes,** and **sedges**.
- reservoir: any waterbody, natural or constructed, used to collect and store water for human use.
- riffle: section of a **creek** where the water is relatively shallow and flows rapidly and turbulently; often alternating with **pools**.
- rill: gutter-sized channel eroded into fine sediment by surface runoff. Also more generally, a tiny **stream** (old fashioned English-English usage).

- riparian area: a riparian area (or zone) is the strip of vegetation along a **stream** or **lake**, not including the stream or lake itself but including the **parafluvial area**, that has a different composition and density from the vegetation on the adjoining **upland**. Roughly equivalent to the **littoral zone** on the seashore. See **SPEA** and **RAPA**.
- ripple: common name for a **capillary wave**.
- riprap: rocks assembled to protect from erosion.
- river: substantial perennial **stream** flowing for some distance with **tributaries**.
- riverine: of a **river** and its banks. In geology, not including the **flood plain**. See **fluvial**.
- riverlet: a small **river**. An ill-defined and rarely used term. Also **rivulet**.
- rivulet: most commonly a very small seasonal **stream**; however, occasionally a writer uses it to mean **riverlet**, a seasonal flow that is stronger than a stream, but not quite that of a **river**.
- rock: technical geological term for a named type of aggregate of one or more types of mineral grain plus a few grainless glass-like types. Also in common usage in North-American English for a fragment of any type of rock larger than a grain of **sand**. Smaller (microscopic) fragments of more than one mineral are called “lithic fragments”. See **gravels** and **stone**.
- roller gate: definitions vary widely among manufacturers of large **sluice gates**.
- RP: Regional Park administered by the **RDN**.
- run: flow, usually meaning natural flow, of a **river** or **stream**. Also a migration of fish especially to spawn.
- runlet: civil engineering term for a small **stream**.
- runnel: like a **rill** but straighter. A natural **gutter**.
- runoff: (sometimes “run-off”) surface flow after heavy rain, including unconfined flow. Also used to mean the total flow of freshwater from an island’s surface into the sea.
- rushes: wetland plants (*Juncaceae*) resembling grasses, commonly regarded as **reeds**.
- s: **SI** base unit for time. One second.
- S: siemen, the **SI** unit of **conductance**. A siemen (S) is a mho (1 ampere per volt,  $\Omega^{-1}$ ).
- S/m: siemens per metre. Derived **SI** unit of **electrical conductivity** of a liquid. Often quoted in units of  $\mu\text{S}/\text{cm}$  where  $1 \mu\text{S}/\text{cm} = 100 \mu\text{S}/\text{m} ( 10^{-4} \text{ S}/\text{m} )$ .
- saddle dam: subsidiary **dam** built across the low point (saddle) in the perimeter of a reservoir. Functionally like a constructed **berm**.
- saddle point: the lowest point of a **watershed** between two peaks or summits of higher ground.
- saline water: see **salinity**.
- salinity: concentration of salts. Often estimated with a conductivity meter in parts per thousand (**ppt**) by weight. **Freshwater** salinity is  $< 0.5$  ppt; **brackish water** 0.5–30 ppt; **saline water** 30–50 ppt; **brine**  $> 50$  ppt. Sea water has an average concentration of about 35 ppt. On-site analysis of the salts can be made with a **colorimeter**.
- salmon: Pacific species in BC are:  
chinook also called “spring”, known as “king” in US, a “tyee” is  $> 13.5$  kg (30 lb) , *Oncorhynchus tshawytscha*;  
chum also called “dog”, *Oncorhynchus keta*;  
coho also known as “blueback”, known as “silver” in US, *Oncorhynchus kisutch*;  
pink mature males known as “humpies”, *Oncorhynchus gorbuscha*, and;  
sockeye known as red salmon in Alaska, *Oncorhynchus nerka*.  
 A “grilse” is strictly an east-coast term (from Scotland) for an Atlantic salmon (*Salmo salar*) that is returning from the sea after only one year. On the west coast, the term is occasionally (mis)used for any subadult salmon weighing only a pound or two. See

- juvenile salmon.** Mature salmon at sea are “adult” salmon and they become “spawners” on reaching **estuaries** with the intent of moving up the river or creek
- salmonids: **salmon** and **trout** species. **Coarse fish** is any species other than a salmonid.
- salt-marsh: a marsh containing brackish water that is occasionally inundated by the sea. **sand**: technically with a grain size between 62.5µm and 2mm. Coarser material is **gravel** and finer material is **silt**. Sands are sub-divided by geologists into “very-fine sand” (< 125 µm), “fine sand” (< 0.25 mm), “medium sand” (< 0.5 mm), “coarse sand” (< 1 mm), and “very-coarse sand” (< 2 mm). See **grit**.
- sampling net: see **net**.
- seasonal: **intermittent** when used in reference to a water body.
- sedges: wetland plants (*Cyperaceae*) superficially resembling grasses, often regarded as **reeds**.
- sediment: **alluvium**.
- seepage: **groundwater** seepage from minor fractures or bedding planes in cliffs and bluffs.
- SEI: Sensitive Ecosystem Inventory. Supported by federal and provincial governments. Based on interpretation of aerial photographs with limited ground truthing.
- seine net: see **net**.
- settleable solids: material of any size that does not remain suspended in still water. It excludes **TDS** and **TSS**.
- shallow-water wetland: a technical classification for a wetland that is transitional between a **marsh** and a **lake**, seldom drying out in summer, and without a year-round outflow stream. Common perception is that shallow **waterbodies** (<1 m deep) do not develop stratification, but recent research as demonstrated that this might be an error, and that **temperature**, **pH**, **dissolved oxygen**, and water chemistry of surface water and bottom water when aquatic vegetation is present may show significant **diel** variations.
- sheet flow: homogeneous flow over a flat surface with no perceptible **watertracks**.
- shingle: mass of rounded pebbles well-sorted by water, commonly on beaches.
- shoal: area of shallow water.
- SI: International System of Units, the metric system. Used in nearly all scientific work.
- SI *prefixes*: Important to note that they share any exponent of the unit. For example, km<sup>2</sup> (square kilometres) means (km)<sup>2</sup> = 10<sup>6</sup> m<sup>2</sup>, NOT k(m<sup>2</sup>) (thousand square metres) = 10<sup>3</sup> m<sup>2</sup>. Compound prefixes are not allowed, for example, a millicentimetre has to be 10 µm. Prefixes that are multiples of three orders are preferred usage in scientific work unless other multiples are in widespread usage in specific applications.
- side-channel: a **branch**, possibly seasonally dry like a **slough** but being bone-dry rather than marshy.
- sieve sizes: in North America expressed in inches above 1/4” and in mesh numbers below. Mesh numbers are the number of meshes per inch. Example sizes and apertures for woven wire sieves are #5 (4 mm), #10 (2 mm), #18 (1 mm), #35 (0.5 mm), #60 (0.25 mm), #120 (125 µm), #230 (63 µm).
- sill: a wide horizontal obstruction over which water flows freely, commonly constructed. In regional English, the sill can mean the water that is flowing over the crest of a **weir**, known also by engineers as the “nappe”.
- silt: technically with a grain size between 3.9µm and 62.5µm. Coarser material is **sand** and finer material is **clay**. Sub-divided by geologists into “very fine silt” (< 7.8 µm), “fine silt” (< 15.6 µm), “medium silt” (< 31.3 µm), and “coarse silt” (< 62.5 µm).
- siltation: becoming filled in or clogged with **finest**.

- sink: a place where water is absorbed and its flow no longer observable, examples are an extensive **marsh**, an extensive **swamp**, a **swallet**, a hole in the ground, a very large lake, and the sea.
- siphon: usually a hose but sometimes a pipe in an inverted-U shape, not connected to a pump, through which water flows just so long as the level of the water in which the inlet is submerged is higher than the outlet or, if the outlet is also submerged, the level of the water in which the outlet is submerged. A siphon is primed by completely filling it before positioning and then opening its outlet. Submerging the outlet hinders the ingress of air but is not essential. How siphons work frequently debated.
- slide gate: practically identical in function to a cast-iron **sluice gate** but lighter, cheaper, fitted with a seal with a limited lifetime, and usually only used if the gate is either fully open or fully closed in a relatively benign environment.
- slope: arctangent in degrees of the **gradient** when not expressed as a percentage. It is also the arcsine in degrees of the the vertical drop divided by the distance over the sloping surface which is somewhat greater than the horizontal distance. Also called an incline.
- slough: a **branch** that has been blocked, or is only open when the river is in flood, so as to become reedy and muddy. Sometimes historical usage for any **marsh** or **mire** in the form of a channel, but with little or no flow-through—in obsolete English-English it could even mean a muddy cart rut. On the Pacific coast of North America (only), a slough sometimes means a mucky ocean inlet that is exposed at low tide.
- sluice: a constructed channel with means for controlling the flow, such as a **sluice gate**, at its head. Sluice boxes are sluices with riffles used by gold miners. Much larger than a **gate valve** used for the same purpose in a pipe. See also **baffle**.
- sluice gate: commonly part of a **sluice**. Typically a robust **baffle** that can be slid up and down across an opening to restrict how much water can flow through the opening. See **slide gate**.
- smolt: **juvenile salmon** in **brackish** water preparing to go to sea. Smolts are said by some to be in the process of “silvering”.
- snag: dead tree. At Coats Marsh, as a consequence of a rise in water level caused by a beaver.
- SO<sub>4</sub><sup>2-</sup>: sulphate **ion**, a common **anion** in water of groundwater origin.
- socked-in: of weather, all around low cloud, foggy, adverse weather with little sign of change.
- sound: measure depth using a weighted line (plumb), pole (rod), or electronic depth sounder.
- SPEA: Streamside Protection and Enhancement Area. First defined in Streamside Protection Regulations of the provincial Fish Protection Act (1997). Term adopted for a **riparian area** under **RAR/RAPR** where it only applies to fish-bearing streams, streams that are tributary to fish-bearing streams, and streams that would be potentially fish-bearing if introduced obstructions were removed or made passable.
- species pairs: two very rare species of freshwater sticklebacks that have evolved from a common marine ancestor since the end of the last ice age when sea level dropped and isolated them in freshwater. One of the two species, which are commonly found living together, has been found in Hoggan Lake on **Gabriola**.
- spillway: a channel releasing water from a **lake** or **reservoir** to prevent a massive, and possibly damaging, overflow. Also an integral part of the design of a **dam** that must allow some flow-through even in non-flood conditions. Also a natural overflow channel across a raised path or a **berm** that lacks a **culvert**.
- spring: the usual meaning is an artesian flow of **groundwater** to the surface but historically on **Gabriola** it may mean a **swamp** in a depression; the emergence of a shallow **subsurface flow**; or **seepage** from a cliff.

- squirt: nowadays a small jet of water, but formerly any small thing that moved quickly like a young grandchild.
- SRM Projects: Sustainable Resource Management. Consultants for the RDN.
- steelhead: **anadromous** (sea-going) rainbow **trout**.
- stone: a type of **rock** identified either by its grain size alone (sandstone, siltstone, **mudstone**, claystone), or by some other conspicuous attribute (limestone, greenstone, gemstone, pudding stone). In English-English also a non-technical term for a fragment of any type of rock that is easy to pick up and hold in the hand. Larger fragments are called **rocks**, which in North-American English includes stones. See **gravels**.
- stoplogs: elements of a **baffle**. See **flashboards**.
- strand: sandy shore of a lake, river, or the sea, sometimes meaning only the dry fringe on or below any high-water mark as opposed to the whole **beach**.
- strand-line: line of floating debris left on a **beach** by high water (along the ocean by the tide).
- stream: flowing water confined by a bed and banks, smaller than a **river** but usually bigger than a small **creek** or **brook**. More common than “creek” in English-English. An umbrella term for flowing water in scientific literature.
- stream (legal): “stream” is also defined differently in various legal documents. For example:  
—the BC government’s Riparian Areas Protection Regulation (**RAPR**) defines a *stream* as “any watercourse providing fish habitat, natural or human-made that contains water on a perennial or seasonal basis and is scoured by water or contains observable deposits of mineral alluvium; or has a continuous channel bed including a watercourse that is obscured by overhanging or bridging vegetation or soil mats. A stream may not be currently inhabited by fish, but may provide water, food and nutrients to other streams that do support fish. Side channels, intermittent streams, seasonally wetted contiguous areas are included by the definition of a stream which includes active floodplains and wetlands connected to streams”.  
—the BC government’s Water Sustainability Act (**WSA**) defines a *stream* as “a natural watercourse, including a natural glacier course, or a natural body of water, whether or not the stream channel of the stream has been modified, or a natural source of water supply, including, without limitation, a lake, pond, river, creek, spring, ravine, gulch, wetland or glacier, whether or not usually containing water, including ice, but does not include an aquifer”.  
—the BC government’s **Water Act** defines a *stream* as “a natural watercourse or source of water supply, whether usually containing water or not, groundwater, and a lake, river, creek, spring, ravine, swamp and gulch”.
- streambed: see **bed**.
- streamlet: a small **stream**, a **rill**. An ill-defined and rarely used term. Also **rivulet**.
- stream load: the total amount of sediment carried, often in units of kilograms per day past a given point. It includes **TDS**, **TSS**, **settleable solids**, and “bed load”, which is any heavy material such as **cobbles** being moved slowly downstream along the bed of the stream.
- Streamkeepers: groups of volunteers in BC who help maintain and enhance local rivers and streams. Some groups are charitable organizations and are members of the **PSKF**.
- Streamkeepers Handbook: published by Fisheries and Oceans Canada (DFO); Environment Canada; and the BC Ministry of the Environment, Lands and Parks. See **Wetlandkeepers Handbook**.
- substrate: inorganic material forming the **streambed**.
- subsurface flow: a flow of water only a few metres or less below the surface, commonly over the surface of sandstone bedrock or a clay-rich soil layer, or through horizontal fractures in the

- bedrock. Often identified as **runoff** on Gabriola and distinguished from deeper **groundwater** flow through **aquifers**.
- surveying units (old): based on a mile (1.609 km). Square mile = Section (259 ha). ¼ Section = 160 **acres** (about 0.8 km<sup>2</sup>). Chain = 1/80 mile (20.1168 m). Chain = 4 rods, rod = 25 links. Acre = 10 chain<sup>2</sup>. Mile = 1760 yards, yard = 3 feet, foot = 12 inches, inch = 25.4 mm.
- swale: shallow, trough-like depression in otherwise level ground.
- swallet: where surface water goes underground (common in karst topography, but rare on **Gabriola** because the island has no limestone bedrock).
- swamp: **wetland** with some flooding by shallow water, usually with significant water flow. Trees are present, unlike in a **marsh** (but see **habitat**), and the trees may be deciduous, unlike in a **bog**. **Forested swamps** have large mature trees usually conifers; **treed swamps** have smaller and wetland species like alder and willows; and **tall-shrub swamps** have thickets. Swamps are usually **neutral** or **acidic**.
- SWE: snow water equivalent. Factor used to convert depth of fresh snow to equivalent rainfall. Meteorologists commonly use a factor of 0.1 in precipitation records.
- swim: area of a slow-moving **river** that a seated angler can reach with his **coarse-fish** fishing tackle. Sometimes pre-cleared of weeds and **groundbaited**.
- syphon: **siphon**. Siphon is the less old-fashioned spelling.
- t: **SI** permitted unit equal to a “metric ton” or “tonne” = 10<sup>3</sup> kg.
- tall-shrub swamp: see **swamp**.
- tank net: see **net**.
- TDS: total dissolved solids. “Dissolved” includes anything that passes through a 2µm filter and generally measured in milligram per litre (mg/L, ppm). TDS can be approximately estimated from **electrical conductivity** (µS/cm) but the conversion depends on the species of ions present. Many methods assume a TDS/EC ratio of 0.64 which is between that for seawater (0.7) and clean natural freshwater that is not groundwater (0.5). See **TSS** and **settleable solids**.
- temperature: apart from being needed for recording other **water-quality** parameters, temperature is important in high summer when shallow water may become too warm for some aquatic life. On Gabriola, freezing at depth is often mitigated by insulating surface ice and snow.
- thalweg the course of the deepest point of a **stream** or **river**, literally “the way to the valley”.
- thermocline: water level in a **lake** where there is a sharp change in water temperature.
- tides: negligible in freshwater waterbodies, even those the size of the Great Lakes. Spring tides occur around the time of new and full moon; neap tides at first and third quarters, In US-English, perigean spring tides are known as king tides.
- TNT: see **NTBC**.
- torpedo ditch: **ditch** that is deep and narrow and funnels water too rapidly to provide good habitat. The flow is **flashy**.
- transients: birds, especially **waterbirds**, making a brief stop on Gabriola while on migration and otherwise absent.
- transpiration: water lost to the atmosphere by land plants, usually considered along with **evaporation** and known together as **evapotranspiration**. Although in times of drought, evaporation from the soil is increased, transpiration is reduced by the reduction of availability of soil moisture to the roots. See **unavailable water**.
- treed swamp: see **swamp**.
- tributary: a **stream** or **river** that flows into a larger stream or river. In scientific literature sometimes called an “affluent”.

- trickle: very light flow, usually meaning more than drop-by-drop but less than 1 L/s.
- trinkle: to flow drop by drop, but also informally the sound, or to make the sound, made by otherwise slow and silently-moving water in a small **stream** or **watertrack** as it cascades over a minor obstruction or descends down a slight incline. Lacking heavy bass notes, quiet, and not sourced from multiple disparate locations as is **babble** or the sound of a **riffle**.
- trout: on Gabriola, introduced cutthroat (*Oncorhynchus clarkii*) and rainbow (*Oncorhynchus mykiss*) live in Hoggan Lake. Steelheads (*Oncorhynchus mykiss irideus*) are an anadromous trout species.
- TSS: total suspended solids. “Suspended” includes anything that cannot pass through a 2µm filter; yet remains suspended in still water. See **TDS** and **settleable solids**.
- turbidity: see **NTU** and **JTU**.
- turlough: the Irish name for “lakes” that fill and empty seasonally. Over there due to slow drainage into fractures in limestone during months when precipitation is low, but here on Gabriola similarly due to fractures in the sandstone when the fractures are not completely sealed with clay-rich sediment.
- unavailable water: water bound to particles of soil so tightly that it is unavailable to the roots of plants.
- underflow: movement of water below the **bed** of a **stream** in the same direction as the stream. See also **hyporheic**.
- upland: general term for the land beyond the upper boundary of a **riparian** area.
- US: United States of America.
- U-shaped valley: a substantial flat-bottomed **valley** that has been carved by glacial erosion.
- UTM: Universal Transverse Mercator. A system of global positioning that divides the earth into zones within which the curvature of the earth can be neglected and, unlike in the latitude/longitude system, distances in the E-W and N-S directions are both in metres. Gabriola is in Zone 10U (sometimes written “10”, a northern hemisphere being assumed) and locations are (Easting, Northing) with Eastings between 436000-451000 m (moving east increases the value) and Northings between 5441000-5451000 m (moving north increases the value). For example 49°9.124’N, 123°48.902’W is 10U 440568 5444680.
- valley, vale: on **Gabriola**, usually formed by tectonic forces in the Eocene and sculpted by ice during the Pleistocene. “Vale” is seldom used in technical literature.
- vernal wetland: **wetland** flooded in spring when snow melts or the soil is saturated near the end of the wet season and usually drying out in the summer.
- very poorly drained: of soil. Very wet and saturated, **water table** at or close to surface all year. See **drained**.
- V-shaped valley: a **valley** with evenly sloping sides formed by fluvial erosion of unconsolidated soil and regolith. Rare on **Gabriola** as undisturbed soil is commonly thin and contains cohesive **finer** and organic matter which results in a more **incised stream** profile.
- waders: waterproof boots extending to varying heights of the body beyond the knees.
- wading staff: a pole acting as a "third leg" when wading through fast currents, and used to find rocks and steep drop-offs in murky water. Also called a “wading stick”.
- wash: term used in US-English for an **ephemeral** stream in areas of low rainfall. A wash is also used for a specific geographical area regularly flooded by a river, vessels’ wake, or especially high tides.
- Water Act: BC government legislation controlling licencing of water usage including groundwater.

- waterbirds: term for all birds that use the water in wetlands, streams, and lakes. Includes waterfowl plus others like loons, grebes, herons, rails (incl. coots), and various shorebirds (waders) like yellowlegs.
- waterbody: usually a geographical surface-water feature like a **river**, **lake**, or the sea, but sometimes extended to include smaller features often with little flow-through like **pools** and **ponds**.
- watercourse: any channel with a seasonal or permanent flow of water.
- water cycle: the global cycle of water including evaporation, transpiration, condensation, **precipitation**, **runoff**, **infiltration**, **subsurface flow**, and **groundwater** flow; eventually leading back to evaporation. It excludes water that is locked up for relatively long periods of time, in ice caps for example.
- waterfowl: ducks, geese, and swans. The more inclusive term is **waterbirds**.
- Water Protection Act : BC government legislation reconfirming the province's ownership of surface and groundwater, clearly defining limits for bulk water removal, and prohibiting the large-scale diversion of water between major provincial watersheds and/or to locations outside of the province.
- WQ: **water quality**.
- water quality: assessments typically including at least **pH**, **dissolved oxygen**, **turbidity**, **temperature**, and **electrical conductivity**. Sometimes also including **ORP**.
- watershed: a boundary in high land that separates one **catchment** from another; a “divide”. The term is also (mis)used in US-English to mean a **catchment area**.
- watershed area: depreciated term for **catchment area** when interpretation of the term **watershed** is unclear.
- Water Sustainability Act (WSA): BC government legislation aimed at regulating activities that make changes to the beds and banks of streams in order to maintain water flows and water quality, prevent flooding, and protect downstream water users.
- water table: upper surface of saturated soil. On Gabriola, not always meaningful in its conventional sense because the soil is thin and the bedrock is fractured sometimes with poor horizontal connectivity resulting in varying subsurface water levels over short distances. See also **perched**.
- watertrack: general term for **watercourse**, usually **ephemeral**, that has the character of a small **stream** but with no confining banks, the flow being down a gentle slope where its direction may be dictated by vegetation that is not **hydrophytic** or by the accumulation of sediment. Sometimes component of a **braided** watercourse or **poorly-defined** watercourse.
- waterway: a navigable **waterbody**.
- weathering: decomposition of rock into, for example, soil by various agents, not to be confused with **erosion**, which is the process of transporting decomposition products away from their source.
- weir: constructed barrier across the width of a watercourse allowing water to flow freely over it unlike a **dam**. Constructed to maintain the upstream water level and regulate flow. A weir on a river may include a **baffle** for additional flow-control, and a **lock** for traffic. See **contracted weir** and **sill** for some type-of-weir terminology.
- weirpool: **pool** created by a **weir**. It can be upstream (backed-up water), or downstream (basin scoured out by the falling water). Usage varies. Often written weir-pool.
- well drained: of soil. Moist during the winter months but quickly becoming droughty in dry periods during the summer. See **drained**.
- Wellington boots: rubber waterproof boots, in England sometimes called “wellies”.
- wet season: on **Gabriola**, winter (Oct.–Mar.) when 78% of the annual precipitation falls.

- wetland: any area of seasonally or permanently saturated soil that may include some shallow open water. No or little flow-through. Dominated by **hydrophytic** plant species. Commonly a **vernal wetland** in our area.
- Wetlandkeepers: groups of volunteers in BC who help maintain and enhance local wetlands. The umbrella organization is the BC Wildlife Federation (BCWF).
- Wetlandkeepers Handbook: modelled after the **Streamkeepers Handbook** and published by Fisheries and Oceans Canada (DFO); Habitat and Enhancement Branch Province of BC; BC Ministry of the Environment, Lands and Parks; and the BC Wildlife Federation.
- wetted perimeter: a term used in stream morphometry. The cross-sectional outline of the water actually in a channel as opposed to the cross-sectional outline of the channel itself.
- WHA: **Wildlife Habitat Area.**
- whitewater: turbulent or wind-swept water with breaking waves (“whitehorses”, “whitecaps”).
- Wildlife Act: establishing BC-government ownership of all wildlife in the province and its right to regulate its management (mostly invertebrates and threatened/endangered species).
- Wildlife Habitat Area: a habitat management tool used only on BC government-managed Crown land (mostly forests). It is not applicable to any kind of park or to privately-owned land.
- Winkler: see **DO measurement.**
- WSA: **Water Sustainability Act.**
- xeric: of a habitat, dry or arid; of plants and animals, adapted to using little moisture. See **mesic.**
- yellow list: see **Listed.**

Additional terms for which there are no examples of usage locally

—sinuous and wandering river; soakway; cascade; wriggling channel; oxbow and related terms.

Scottish, Welsh, and northern English:

- ackered: of the surface of a **lake** or large **pond**, with a mirror surface disturbed only by gentle localised gusts and downdrafts of air with varying intensity and direction insufficient to create **ripples** in serrated ranks. Also rarely used to refer to similar ruffles caused by the movement of fish and other aquatic creatures below the surface when there is no wind. See **cat's paw**.
- battock: grassy area between **streams** or a tussock surrounded by water on flooded land.
- beck: small upland **stream**.
- burn: **stream** (same origin as the southern English "bourne").
- carr: **fen** overgrown with alders and willows.
- dale: **valley** in hilly country; more open and wider than a **glen** but less so than a broad flat-bottomed river valley (a "strath"). A "cwm" in Wales.
- glen: a steep-sided mountain **valley** commonly carrying a **brook**; more confined than a **dale**.
- tarn: small **lake** in the uplands.

English and southern English:

- beck: small **stream** (more common in northern English).
- bourne & winterbourne: **intermittent stream**.
- broad: **lake** in a sluggish **river**.
- chalkstream: very clear, fast-flowing **stream** from chalk hills ("downs").
- clappers: shallows in a substantial slow-moving **river** where water runs uncharacteristically fast and noisily. Frequently bridged in modern times. Rarely used.
- dell: wooded **hollow** or vale of no great extent, often seasonally waterlogged. An especially deep dell (cleft) might be called a "dingle". Not used much in North-American English.
- dew pond: circular **dugout**.
- dimsel: stagnant water larger than a **pond** but smaller than a **lake**.
- drindle: diminutive flow, especially one that is diminishing and will probably stop soon.
- drock: old word for a **culvert** when they were commonly made with hollow trees. Rarely used.
- eyot: islet in a substantial **river**.
- fleet: **channel** often navigable through **marshland**.
- gill (ghyll): deep wooded cleft. Sometimes a narrow stream in the cleft. Rarely used.
- mere: a wide, shallow **lake**.
- rise: fishing term for when a fish takes an insect on the surface. Also in old English now rarely used, a mist rising from the surface of a **waterbody**.
- sock: patch of **poorly drained** boggy land (a soak). East Anglia.

### Definitions used in the Canadian Wetland Classification System (NWWG 1988)

#### **Bog Wetland Class (Wb)**

Bogs are shrubby or treed, nutrient-poor peatlands with distinctive communities of ericaceous shrubs and hummock-forming sphagnum species adapted to highly acid and oxygen-poor soil conditions. Bogs develop in basins where peat accumulation has raised the wetland surface above groundwater flow, or, less commonly, where groundwater is very low in dissolved nutrients (e.g., flows from granitic parent material).

#### **Fen Wetland Class (Wf)**

Fens are peatlands where groundwater inflow maintains relatively high mineral content within the rooting zone. These sites are characterized by non-ericaceous shrubs, sedges, grasses, reeds, and brown mosses. Fens develop in basins, lake margins, river floodplains, and seepage slopes, where the watertable is usually at or just below the peat surface for most of the growing season.

#### **Marsh Wetland Class (Wm)**

A marsh is a shallowly flooded mineral wetland dominated by emergent grass-like vegetation. A fluctuating watertable is typical in marshes, with early-season high watertables dropping through the growing season. Exposure of the substrate in late season or during dry years is common. The substrate is usually mineral, but may have a well-decomposed organic veneer derived primarily from marsh emergents. Nutrient availability is high (eutrophic to hyper-eutrophic) due to circumneutral pH, water movement, and aeration of the substrate.

#### **Swamp Wetland Class (Ws)**

A swamp is a forested, treed, or tall-shrub, mineral wetland dominated by trees and broadleaf shrubs on sites with a flowing or fluctuating, semipermanent, near-surface watertable. Tall-shrub swamps are dense thickets, while forested swamps have large trees occurring on elevated microsites and lower cover of tall deciduous shrubs. Both types of swamps have abundant available nutrients from groundwater and often have surface standing water. Swamps may be underlain with peat but this is well decomposed, woody, and dark.

#### **Shallow Water Wetland Class (Ww)**

Aquatic wetlands are shallow waters dominated by rooted, submerged and floating aquatic plants. These communities are always associated with permanent still or slow-moving waterbodies such as shallow potholes or deeper ponds and lakes. Shallow-water sites are usually permanently flooded; rarely they may become exposed during extreme drought years. Shallow-water communities most commonly occur where standing water is less than 2 m deep in midsummer. Aquatic plants may root in mineral soils or in well-humified sedimentary peat.

#### **Alkaline/Saline Meadow Class (Ga)**

Alkaline/saline meadows are graminoid- or halophyte-dominated sites that occur in shallow, closed basins of dry inland climates where evaporation of standing waters leads to the progressive accumulation of salts. These conditions occur only in the driest climates of British Columbia. Interannual variation in hydrology is typical for these closed basin systems. But generally, after a brief period of inundation, a surface water table drops below the rooting zone for the growing season, resulting in a well-aerated rooting medium. This class was previously described and coded as Saline meadow Transition Class (Gs) in MacKenzie and Moran (2004). A halophyte subclass dominated by succulent species such as *Suaeda* spp. or *Salicornia* spp. is recognized.

#### **Low bench Flood Class (Fl)**

Low bench ecosystems occur on sites that are flooded for moderate periods (< 40 days) of the growing

season, conditions that limit the canopy to tall shrubs, especially willows and alders. Annual erosion and deposition of sediment generally limit understorey and humus development.

#### **Middle bench Flood Class (Fm)**

Middle bench ecosystems occur on sites briefly flooded (10-25 days) during freshet, allowing tree growth but limiting tree species to only flood-tolerant broadleaf species such as black cottonwood and red alder.

#### **High bench Flood Class (Fh)**

High bench ecosystems occur where flooding rivers produce lengthy subsurface flow in the rooting zone but only periodic, brief inundation. Surface flooding may occur from as frequently as several times annually to only during extreme flood years. These periods of flooding are generally not restrictive of plant species; plant communities are similar to adjacent upland forests on seepage sites. High bench Site Series are described in BEC field guides and are not presented in the Wetlands of British Columbia guide.

#### **Estuarine Marsh Class (Em)**

An estuarine marsh is an intertidal ecosystem that is flooded diurnally and has simple communities dominated by salt-tolerant emergent graminoids and succulents. These marshes occur in the middle to upper tidal zones of estuaries where saltwater influences predominate.

#### **Estuarine meadow Class (Ed)**

Estuarine meadows occur in the high intertidal and supratidal zones of estuaries, where tidal flooding occurs less frequently than daily and is tempered by freshwater mixing. Species composition is relatively diverse, typically with a mix of graminoids and forbs.

#### **Shrub-Carr Transition Class (Sc)**

A shrub-carr is a shrub-dominated ecosystem that develops on frostprone sites with moist or very moist soils. These sites are seasonally saturated but rarely inundated (see flood ecosystems) and may have watertables perched at depth. Shrub-carrs frequently border wetlands or occur in frost-prone hollows in cold and dry climatic regions. A strongly mounded soil surface is typical, and shrubs of 1-2 m occur mainly on these elevated microsites. These ecosystems are part of a Shrubland Group of terrestrial ecosystems.

#### **Alpine Wetland Class (Wa)**

Wet, high-elevation, high-latitude ecosystems occur that do not clearly fit any of the wetland classes of the Canadian Wetland Classification System (NWWG 1988). These ecosystems occur on seeps and saturated flats that have site characteristics similar to lower-elevation swamps, but because of the constraints of cold climate, they support low-stature vegetation dominated by dwarf willows, forbs, and/or mosses. Sites may be underlain with mineral or very thin organic horizons; peat formation is limited because of low rates of accumulation. Permafrost may occur in some cases. ◇