



## Raincoast Field School @home

### Stream Ecology Questions and Answers

**1. Why do streams form an “S” shape?**

This is called sinuosity! Most streams at lower elevations flowing over flat terrain will produce an S shaped stream channel. This all has to do with the flow! Water will take the path of least resistance. As the water forms a curve, it causes the water running against the outside bank to pick up momentum, slamming it into the opposite bank a little further downstream. This creates another curve, completing the S shape.

**2. What types of streams do salmon like?**

Salmon return to the streams in fall to carry on their life goal to reproduce. They travel up a variety of stream types ranging from raging large rivers to just small narrow streams. However, there are a few important factors of a stream for salmon to have a successful reproduction. This includes the types of substrate, ie. the material making up the base of a stream channel. Salmon need cobble and gravel to form redds, these are depression in the substrate created by a female salmon tail where she will deposit her eggs. If the sediment is too fine the eggs can become smothered and suffocate due to low levels of oxygen. Over hanging vegetation also allows for temperature regulation, streams can't be too warm or the eggs won't survive. Salmon are pretty amazing creatures that can travel far distances. However, if landslides occur salmon can encounter blockades where they cannot pass and therefore will not be able to return to their breeding grounds. As well if the stream gradient increases or large falls occur, this also will block the salmon passage.

**3. Do salmon live in streams all year round?**

Juvenile salmon can remain in stream systems and lakes for up to three years before heading out to the open ocean. They need to grow and build up their strength before they take to the high seas. Therefore, overhanging vegetation, undercut banks, large woody debris, pools, and over wintering side pools are super important features for juvenile salmon to survive in a stream. They need to find refuge from tiring heavy flows and they need cover from predators.

**4. What type of trees are the best for stream habitats?**

All types of trees that fall and enter a stream system are important! They all will provide a source of outside nutrients for the stream creatures; they also will all provide some cover. However, when a deciduous tree falls into the stream, such as an alder, its rate of decomposition is quick! It will only provide the stream with cover and nutrients for a few years until it totally breaks down. However, when a coniferous tree falls in, such as a cedar, its rate of decomposition is much slower. Therefore, coniferous trees are best to ensure healthy stream habitats for longer periods of time.

**5. What types of things can people do to make a stream habitat healthier?**

We call this stream restoration! We can help improve a stream that may have been degraded in a few ways. We can use machinery to modify the stream bed to increase the amount of cover, reduce erosion rates, and provide areas of refuge for fish. We can reduce erosion by planting more vegetation along the stream banks, as well adding riprap (large boulders and rocks) to the banks to prevent the banks from washing away. We also can add large boulders and downed logs to the river itself to create pools and steps. The steps create areas for rest as the fish migrate upstream. As well these added features create more stream complexity and areas for fish to hide.

**6. How do we classify streams?**

We have developed multiple ways to classify streams and these tend to change from region to region. However, in most cases a stream is classified based on its size. Specifically, its stream width.

**7. What happens to fish when stream temperatures increase**

A fish is impacted by a rise in stream temperature because it affects the amount of available oxygen for them to take in. Warm waters aren't able to hold as much dissolved oxygen as cold. This in turn affects a fish's metabolic rate, forcing them into their anaerobic state for too long of periods.