

Riparian Areas and Fish

The Elbow River watershed is home to 17 fish species (14 native, 3 non-native) whose life cycle requirements reflect the diverse habitats found throughout the watershed. These fish communities range from warmer-water generalists like the Brook Stickleback to the cold-water specialist (and provincial fish) the Bull Trout. All of the Elbow River's fish species rely heavily on the ecosystem services that riparian areas provide in order to complete their life cycle.

As plants age, senesce, or die along a watercourse, pieces of them inevitably fall into the water in the form of sticks and leaves. This dead plant material forms the foundation of the aquatic food chain and is consumed by invertebrates and other microorganisms living along the stream bottom. Together, these small creatures form the prey base for larger animals living in and along the stream. Mountain Whitefish, for example, are highly specialized to feed on these small animals, with a specialized snout that they use to flip over rocks in search of tasty morsels. Higher up the food chain, piscivorous predators such as Bull Trout, Burbot and Northern Pike prey on these smaller, less predatory fish.

Plant material—branches, sticks and entire trees—makes its way into the stream with help from beavers, floods, wind, etc. When it does, it provides roughness and results in more complex habitat. This material is known as “woody debris.” Woody debris helps create complex aquatic habitats by breaking up the flow of water, creating in-stream and overhanging shelter for fish.



A healthy riparian area along Quirk Creek Photo by Trout Unlimited Canada

Many species of fish will spawn directly under or close to large woody debris, using the cover as a resting place where they are protected from predators. Similarly, fish will use tangled collections of woody debris as nursery or holding habitats where they can feed and grow out of reach of larger fish. Often the water flow is slower in these areas, so fish require less energy to hold their position or establish a point from which to ambush their prey.

During floods, as river flows spill out of the channel on to the floodplain, riparian areas become refuges where fish can find much slower flows amongst submerged riparian vegetation. As the floodplain is filled with turbid river waters, sediments are deposited and water is absorbed by the floodplain soils and vegetation, helping to reduce the severity of the flood peak and creating fertile riparian forests and meadows.

Riparian vegetation forms the “bumpers” of the river channel, helping to confine the stream to its channel. The ability of riparian vegetation to control the flow of the stream is largely dependent on the gradient of the stream, the underlying geology, and the climate and stream flow variation throughout the year. Alterations to riparian plant communities can have a serious impact on the shape and nature of the stream and may subsequently influence the type of fish that can live there.

For example, a loss or reduction of deep-rooted plants along the stream can increase stream bank erosion, triggering changes in the shape of the stream and impacting water quality. Too much sediment can fill in the spaces between river bottom gravels and cobbles, reducing the available habitats for bottom-dwelling species like Longnose Dace and Spoonhead Sculpin and filling in spawning gravels used by trout and whitefish.

Riparian areas are essential to the health of the waterbodies they surround, and we would do well to consider them as part of the same ecosystem when looking at land use and development in or near these sensitive areas. What’s good for fish is often what’s good for people.

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