Human Chemical Impacts to Streams

When we think of river restoration, often we think of restoring rural streams. However, urban streams are often the most damaged and the hardest to fix. There are several unique challenges to urban stream environments that must be considered during restoration. Stream Buffers play an essential role in keeping streams clean and healthy. There are both human physical and chemical impacts to streams that must also be considered.

The increased storm runoff also brings in more nutrients to the streams in urban areas from roads, lawns, and landfills. The high loads of Nitrogen and Phosphorus cause eutrophication in the streams – a large increase in plant and animal life resulting in an overall decrease in oxygen content. The changes in the food chain due to the increase in available nutrients can cause issues in the traits of animals within the food chain including changes in the foraging behavior, habitat use, brood size, offspring size, interbrood interval, and morphology of species.

While rural environments often can have high loads of nutrients from farming or ranching operations, these high loads don't make it into the stream as easily as in urban settings. The higher amounts of paved surfaces in urban environments vs. rural environments means more of the nutrient heavy runoff reaching streams. Farming and ranching operations are also more regulated than homeowners and business owners.

A strain on streams that is almost exclusively unique to urban environments is high loads of contaminants. Contaminants such as road salt, heavy metals, and pesticides easily can make their way into streams. Like with nutrient loading, rural environments often have various filters that stop the contamination from reaching the streams.

"Pharmaceuticals such as sterols, caffeine, antidepressants, antibiotics, environmental estrogens, and in some cases cocaine compounds have all been reported in urban streams". One of the most documented of these urban specific contaminants is estrogen. Studies have shown how estrogen in streams alters the sex of fish. Antibiotics can change the microbiome of the stream. These factors must be considered when looking to improve the health of an urban stream.

Possible Paths for Chemical Contaminates to Enter Ducan Creek