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Question

How has pH, Dissolved Oxygen, Temperature, and Turbidity of Tumalo creek changed since 2009 at our Tumalo Valley Study Site?

Background Rationale

pH is the measure of acidity or alkaline/basic the water is. It is on a scale from 1-14, 1 being basic and 14 being acidic. The optimal range for salmonids is 6.5-8 but 7 is the best because it is neutral. pH can be effected by the rainfall and what the rainfall goes over like the soil, rocks, and pine needles. It is important because if it is to high or to low the fish will die. Dissolved Oxygen or DO is the measure of Oxygen measured in mg/l. This is important because fish need Oxygen to live and grow. The optimal range is 11 mg/l for eggs and 6 mg/l for fish. The cooler the temperature the more DO there is and it is effected by riparian vegetation because the plants put Oxygen into the air and then the plants shade the water. Temperature is the temperature of the water, it is important because fish are the same temperature as the temp of the water that they are in. If the water is too hot it feels like a constant fever. The optimal range is 40-66 degrees Fahrenheit. It can be effected by the weather, current, water level, and shade. Turbidity is how cloudy the water is. The less cloudy the water is it basically means that it is cleaner. If the water is clear the fish can see better but if it is to clear they might have a harder time hiding from predators. If the water is more clear that also allows more sun to shine on underwater plants so they grow mor and that gives the salmonids more places to hide. The optimal range is 0-20 NTU which stands for Nephelometric Turbidity Units.

Hypothesis

My hypothesis is that since 2009 the Water Quality has gotten better because in the Bridge Creek fire the water was damaged along with the land. So I think that the water quality has improved over the years since 2009.

Procedure

First you have to get the Vernier probe or Lab Quest unit and plug in the necessary probe for your water quality factor so it can warm up. There is a different probe for each water quality factor. There is a Temperature probe and pH probe that warms up for four minutes and a Dissolved Oxygen probe and Turbidity probe that warms up for five minutes. After the probe has warmed up you dip it into the water but not too far so you don't damage the tools and stir it around. Once the numbers on the Lab Quest unit have completely stopped that is the measurement of your water quality factor. To test the others repeat the same process.

Variables and Constants

Dependent Variable: Water Quality factors since 2009 (pH, Dissolved Oxygen, Temperature, and Turbidity).

Independent Variable: Where you are at the river in the Tumalo Valley Study Site.

Constants and Controls: The time of year you collect the data.

Possible Unwanted Variables: Weather and rainfall amounts.