

Dissolved Oxygen in Sausal Creek

Dissolved oxygen (DO) is a measure of how much gaseous oxygen is dissolved in creek water. This oxygen is then available for use by fish and invertebrates as well as for other important biogeochemical processes. Turbulence is one factor that influences DO levels because water flowing quickly over rocks becomes aerated. Photosynthesis also increases DO levels because plants and algae use carbon dioxide and sunlight to grow, producing oxygen which is released to the surrounding water.

For streams supporting fish, such as Sausal Creek's rainbow trout, DO levels should not fall below 6 milligrams per liter (mg/L), and in fact that is what we see! DO levels range between 6 and 12 mg/L, which is a pretty healthy range.

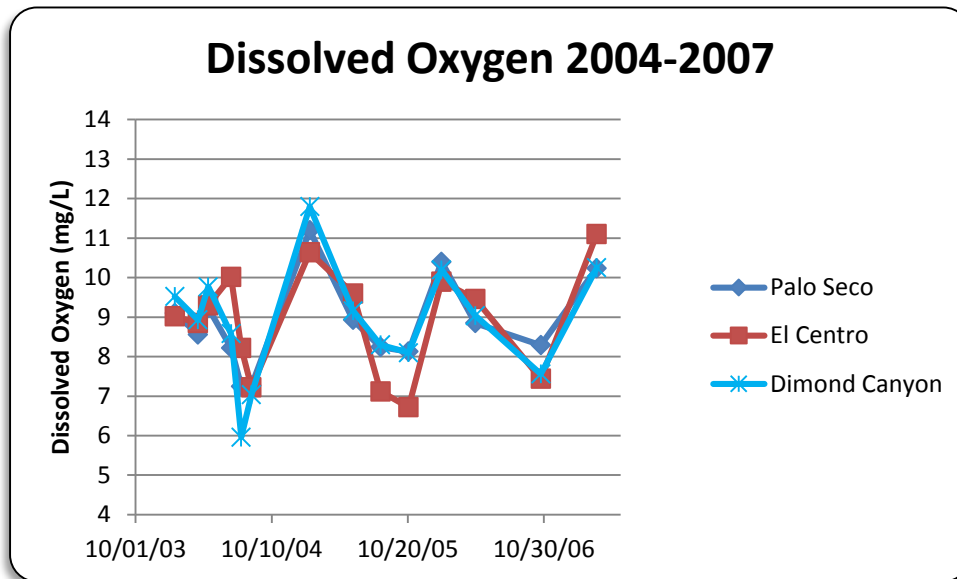


Figure 1. Dissolved oxygen measured at three sites from 2004-2007

As you can see above, there is an annual pattern in DO levels. That's because warm water can't hold as much dissolved oxygen as cold water, and so we see a decrease in DO during the summer. The molecules that make up warm water are loose and move much more freely than those that make up cold water. This is why cold water can hold more dissolved oxygen than warm water: Cold water is more rigid, which makes it harder for oxygen to escape.

In the graph below, notice that when temperature (blue) goes up, dissolved oxygen (red) goes down. Also notice that even in the summer, water temperatures remain below 16°C, making it nice and cool for our rainbow trout population. These healthy temperatures are likely due to groundwater input to the creek.

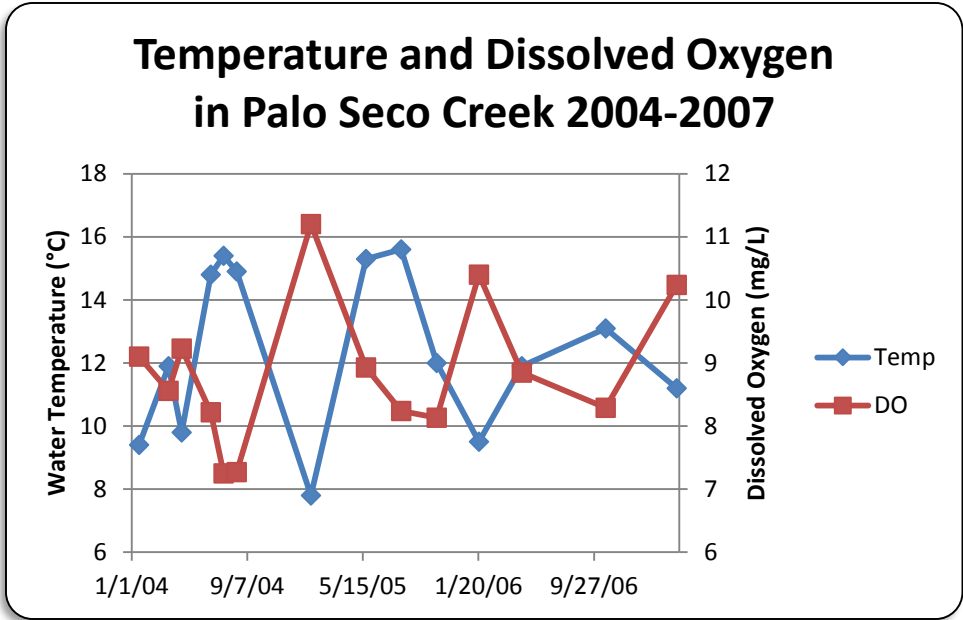


Figure 2. Temperature and dissolved oxygen in Palo Seco Creek from 2004-2007

For more information on dissolved oxygen in creek water, please see this publication from the Clean Water Team:

http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/cwt/guidance/3110en.pdf

--Helen Dickson