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"**Primary Productivity In Our Creek**"

Primary Productivity is the "rate at which energy from light is absorbed and utilized with carbon dioxide in the production of organic matter in photosynthesis" (Abercrombie, 246). In other words, Primary Productivity is how fast an organism can turn light into energy. Some factors that affect Primary Productivity are minerals, solar energy, water, and temperature. Here are some ways you can find the rate of Primary Productivity. On dry land you can observe plants and find their weight per area. In water you can find the photosynthesis rate by testing the dissolved oxegyn. The **gross primary productivity** is the total rate of photosynthesis, with the sugar that is almost automatically used up in plant respiration. **Net Productivity** is the rate which plants store energy or sugar not used up in the respiration.

Gross Productivity - Respiration Rate = Net Productivity

The question of our experiment was, " Are our creek producers making enough food to keep our creek healthy ?"

**We believe that if the levels of dissolved oxygen vary greatly, then our creek is healthy.**

To find out if our hypothesis was correct, we performed the following experiment numerous times. The supplies needed to do this were: glass bottles of the same size, aluminum foil, string, masking tape, dissolved oxygen kit, and old shoes to climb in the creek. I recomend that you have short shorts, or hip-waders when you get in depending on the depth of the water.

To find out an answer to our hypothesis we performed this experiment found in the book- Biology- Third Edition by Campbell

1. Take two glass bottles of the same size and wrap one completely in aluminum foil (this

will be your constant)

2. Fill the bottles with the same amount of water from the creek making sure that no air

gets inside.

3. Place the bottles inside the creek for any amount of time you wish.

4. Remove from creek and test the dissolved oxygen level. Compare.

We discovered that the levels of dissolved oxygen were not much different showing that our creek isn't as healthy as we thought it was. Here is a table of data we collected.

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| SITE | TIME/DATE | D.O. LEVEL-ALUMINUM | D.O. LEVEL-CLEAR | SPECIAL COND. |
| [1](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/one.html) | 10:00/April 25 | 8 | 8 | Shade |
| [1](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/one.html) | 2:00, May 7 | 7 | 8 |  |
| [2](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/two.html) | 10:00, April 25 | 6 | 6 | Sun |
| [2](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/two.html) | 2:00, May 7 | 7 | 8 | Shade |
| 3 | 10:00, May 1 | 7 | 6 | Left overnight |
| [4](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/seven.html) | 10:00, May 5 | 9 | 7 | Area with garbage |
| [5](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/eight.html) | 10:00, May 5 | 8 | 7 | Rapid running water |
| [6](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/ten.html) | 10:00, May 6 | 7 | 9 | Left overnight. |
| [7](http://www.pleasanton.k12.ca.us/avh_science/creek/clickme/six.html) | 10:00, May 6 | 10 | 11 | Left overnight |

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\*To see a clickable map of the creek click [**HERE**](http://www.pleasanton.k12.ca.us/avh_science/creek/clickable.html)

Our conclusion is that our creek is not healthy. We came to this conclusion because the levels of dissolved oxygen do not vary.

We believed that the creek was healthy because it does have plants and animal living in it. Now after recieving our data we ask- Why is our creek unhealthy? Could our creek support more life? Maybe if we solved the problem causing the unhealthiness, our creek would gave more plant and animal life. The next step to having a healthy creek is to find out what is causeing the problems. Maybe the problem could be from the soap spill the creek encountered during the fall. Maybe it could be the large amounts of garbage that is carelessly tossed in our creek. If I were to do this experiment again, I would give myself more time to perform the experiment. On some days when we went to the creek, we would sit for thirty minutes then at the last five minutes of class we would have to race to get it finished. I would also try to get a better grasp for the idea of Primary Productivity. At first I wasn't sure what we were doing, which made it a little difficult to perform the experiment.

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That's Amy and Sarah in the creek. It was pretty gross, but the experiment was worth it. Anything for science!

Bibliography-

Abercrombie, M. The Penguin Dictionary of Biology. Penguin Bks Lt, Harmondsworth, Middlesex, England.

Campbell, Neil. Biology-Third Edition. The Benjamin/Cummings Pubishing Company, Inc, 390 Bridge parkwayh, Redwood City, California 94065