



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

Name(s) Nathan R. Fennacy	Project Number J1108
Project Title Plastic: Productive or Destructive	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In the ocean there are slow rotating whirlpools called gyres that with the help of wind, currents, and the earth's gravitational pull have become a trap for billions of pieces and particles of plastic. In the North Pacific Gyre alone, there is about two-times the size-of-the-United-States-worth of plastic. Very little research has been conducted on whether the plastic affects water in terms of pH and bacteria growth. Both of these key factors of water quality are extremely important to the aquatic ecosystem. My project examines whether plastic affects pH and bacteria growth in water, and if so, it considers which of the common Plastic Route Numbers will impact water quality the most.</p> <p>Methods/Materials My hypothesis was that plastic would have an adverse effect on water and that Plastic Route Number 6, being the most regenerated type having been broken down several times, would leach the most chemicals and have the most negative impact. I collected 30 grams of each common plastic Route Numbers 1, 2, 3, 5, and 6 and placed 5 grams of each into individual bottles of water (six bottles for each route number for a total of 30 bottles containing plastics). Additionally I also had six bottles of just water to be used as my control tests. A set of the bottles representing each route number and a control bottle were then placed into different environments: lighted and non-lighted sections of a refrigerator, an incubator, and a room-temperature shelf. (In other words, there were six bottles each in six different environments, with 36 bottles tested in all.) Readings for pH and bacteria were taken at various time intervals over 30 days, 720 hours.</p> <p>Results Plastic would have an adverse effect on water and that Plastic Route Number 6, being the most regenerated type having been broken down several times, would leach). The results supported my hypothesis in that plastic in water over a long period of time does have a negative effect on key life-supporting water quality factors. And while Plastic Route Number 6 did cause the most reduction in bacteria within water, Plastic Route Number 5 resulted in water having higher acidity.</p> <p>Conclusions/Discussion The results are important not only as they raise concern for water ecosystems polluted by plastics, but also, this raises the question about the quality of water and other liquid products consumed by humans that are contained or stored with plastic.</p>	
Summary Statement My project is testing whether or not plastic affects pH and bacteria.	
Help Received Father helped it out foam core, Moer helped edit errors, used school equipment under the supervision of Ms. Kendia Herrington.	