



CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

Name(s) Ryan C. Thomas	Project Number J1230
Project Title Water Quality of Little River, Moonstone Beach as Reflected in Bacterial Counts	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My science project was designed to determine if swimming in Little River, Moonstone Beach, poses a health risk due to bacterial contents.</p> <p>Methods/Materials Using sterile sample jars (100ml), I took eleven samples of river water at varying times, weather, and locations. Eight samples were taken at the Moonstone site near the mouth of the river. One sample was taken approximately two miles upstream in the open forest. Two samples were taken mid-way between the other two sites near a cattle ranch. At Moonstone, six samples were collected after rainstorms; two in sunny conditions. Two of those samples were taken at a deeper level; the rest at surface level. In addition, I ran two control tests; one of pure rainwater and the other from my toilet. All tests were run under the supervision of North Coast Laboratories where I measured total coliform and e.coli levels using quanti-trays and a black light.</p> <p>Results My results indicate that the upstream site had cleaner water with a total coliform count of 648 MPN/100ml and E. coli at 12.0 MPN/100ml. As the water traveled downstream, bacteria levels rose. At the ranch location the E. coli had risen to 43.7 MPN/100ml with total coliform at over 2419.6 MPN/100ml. Finally, at the mouth of the river there was a mean E. coli level of 227.4 MPN/100ml with mean coliform of 2179.7 MPN/100ml. These results demonstrate that the bacterial content is influenced by pastureland and residential run-off after rainstorms. Waterfowl, pets and human usage also influence the counts at the mouth of the river. Here, at the mouth, bacterial levels were at their highest of the samples, with one test exceeding state standards. Predictably, the rainwater and toilet bowl samples showed less than 1.0 MPN/ml E. coli.</p> <p>Conclusions/Discussion Bacterial levels at Little River, Moonstone Beach, were consistently high, at one point testing over state standards. Swimmers should exercise caution before any recreational use especially after rainy weather. Continued monitoring of the bacterial levels there seems important in preventing a future health hazard and ensuring the well-being of our community.</p>	
Summary Statement My project was to determine if bacterial content of Little River, Moonstone Beach, poses a health risk for recreational use.	
Help Received North Coast labs taught me how to test using quanti-trays. Humboldt County Health suggested how to get started. Green Diamond took me upstream to test. Humboldt Baykeepers shared their findings.	