



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Connor T. Schademan	Project Number S2216
Project Title The Dietary Preferences of the Common Garter Snake in the Big Chico Creek Ecological Reserve	
Abstract Objectives/Goals The objective is to determine the dietary preferences of the Common Garter Snake in the Big Chico Creek Ecological Reserve by using scent testing of various prey to see if their diet might include the California newt. These newts are known to carry a potent neurotoxin that is lethal to humans in small doses. Methods/Materials I caught a total of 9 garter snakes at various times throughout the spring and fall of 2013 at the reserve. While looking for snakes, I also caught the prey animals needed for the scent tests: fish, frog, newt, slug and earthworm. The snakes were kept in a terrarium for at least 3 days prior to scent testing to habituate them to their new environment. I also habituated the snakes to the action of the scent tests. The scent animals were put in their own separate terrariums. I created prey scents by putting each of the 5 prey animals in a clean jar with 100 ml of filtered water and let them sit for 20 minutes, then removed the animals. I used a double control of cologne and water for a total of 7 scents. I then introduced the scents into the snake terrarium in a random order one at a time for 1 minute each using a Q-tip dipped in a single scent and sticking it into the snake tank. The number of tongue flicks per minute for each of the 7 scents was counted and each scent was tested on each snake 3 different times for a total of 21 tests per snake. The snakes were given a 5 minute break between each of the 3 sets. I then sexed, marked, measured, and weighed each of the snakes prior to releasing them in the same spot they were found. I released all of the scent animals after testing. Results I averaged all tongue flick data for each scent. Averages tongue flicks per minute were relatively high for fish, frogs, and newts and lower for the control and other scents tested. I then generated a bar graph to show this data. Conclusions/Discussion My conclusion is that snakes are eating fish, frogs, and newts, but not slugs or earthworms because they scored so closely to the control scents. This data suggests the snakes and newts in the reserve are likely engaged in an evolutionary arms race. This study gives us insight into the types of environments where this arms race is occurring and encourages us to preserve places like the BCCER to further such evolutionary relationships.	
Summary Statement I wanted to know if the Common Garter Snakes living on the Big Chico Creek Ecological Reserve are feeding on poisonous California Newts by testing their dietary preferences.	
Help Received Mother and father helped with driving to the reserve and formatting report ; Matt Holding with Ohio State for advice and guidance; Mr. Jeff Mott, Dir. of Big Chico Creek Ecological Reserve for permission to collect specimens and encouragement	