



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Christine Haas	Project Number S1415
Project Title The Effects of Aesculus californica on Mosquitoes and the Characterization of Its Larvicidal Compounds	
Abstract Objectives/Goals Identify parts of the California Buckeye (<i>Aesculus californica</i>) that are effective as a mosquito larvicide and attempt to pinpoint chemical(s) or compound(s) that are behaving as such. Methods/Materials a) Create Buckeye toxins from the blossoms, leaves, and stems. b) Test each toxin on <i>Culex</i> mosquito larvae in their second instar. c) Test most effective solution at varying concentrations to determine an LC-50. d) Centrifuge samples to remove particulate matter of the most effective solution and test on <i>Culex</i> mosquito larvae. e) Run a centrifuged sample of the most effective solution through the HP-LC and collect fractions at five minute intervals. f) Test of fractions on <i>Culex</i> mosquito larvae to determine if there is a specific chemical or compound that is behaving as a larvicide. Results Experimentation revealed that the California Buckeye blossoms have the most toxic effect at 15% concentration on <i>Culex pipiens quinquefasciatus</i> larvae compared to the buckeye leaves and stems. Further studies showed that concentrations down to 3% seemed to have effects on the mosquito larvae. The Buckeye fractions taken from the HP-LC could not be accurately tested on the mosquito larvae due to the presence of the toxic buffers in all samples that could not be removed using a centrifugal concentrator. Conclusions/Discussion This research shows that the blossoms are the most toxic part of the California Buckeye during the spring season, taking one more step forward towards controlling the numbers of disease vectors around the world. More research must be done to identify the toxic substance(s) in the California Buckeye that is affecting the mosquito larvae.	
Summary Statement The testing of California Buckeye blossoms, leaves, and stems on mosquito larvae and the attempt to isolate the chemical compound(s) responsible for causing the toxicity.	
Help Received Conducted "Further Investigations, Year VII" during the Young Scholar's Program at UC Davis; received training on the lab equipment from Tania Morgan while under the supervision of Dr. Walter S. Leal.	