



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Gail Moraru; Anna Winsemius	Project Number S1419
Project Title Like Water off a Duck's Back	
Abstract Objectives/Goals The purpose of this experiment was to observe the affects of crude oil on bird feathers, and then to wash the feathers, making a comparison between the effectiveness of a soap and a detergent for cleaning. Our hypothesis was that the crude oil would ruin the feathers hydrophobic properties, and that detergent would clean the feathers better than soap. Methods/Materials We collected feathers from the beach, pairing each feather with one of the same size and weight. We then applied oil to the pairs, observing the affects it had on the feathers. Then we cleaned one feather from each pair with soap, and the other with detergent in a series of tubs containing pre-determined ratios of the cleaning agent and water. Results Crude oil separated the barbs and barbules of the feathers, destroying the feathers' hydrophobic characteristics. Detergent cleaned the feathers more effectively. Conclusions/Discussion Our hypothesis was correct. Detergent is more effective for this procedure. Oil spills affect birds everywhere, with devastating results. Procedures to clean the birds must be taken in order to preserve their lives.	
Summary Statement We observed the affects of crude oil on bird feathers, and compared the effectiveness of soaps and detergents for cleaning the oiled feathers.	
Help Received Crude oil recieved from Uncle	