



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

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Project Title The Effects of Tobacco on Land Hermit Crabs	
Abstract Objectives/Goals Cigarette butts litter the beaches. Tobacco, which contains the drug nicotine, is contained in the cigarette butts. I wondered if the scavengers, land hermit crabs, were eating the tobacco found on the beaches, and if so what effect the tobacco would have on the crabs. I asked two questions: Do hermit crabs eat tobacco? and What effect does tobacco have on hermit crabs? I tested two hypotheses: Hermit crabs eat tobacco. Hermit crabs will lose weight when they eat tobacco. Methods/Materials 1. 2 aquarium tanks were set up in an identical manner except the tobacco tank contained 4 grams loose tobacco and 4 grams crab food and the control tank contained 4 grams loose crab food and 4 grams crab food. 2. 10 hermit crabs were weighed. 5 were marked with numbers and 5 with letters. The numbers group was placed in one environment and the letters group in the other. 3. The crabs in both tanks were cared for identically. 4. The crabs were weighed each week. 5. After 3 weeks the crabs in the numbers group were placed in the letters group environment and the crabs in the letters group were placed in the numbers environment. 6. The crabs were weighed each week for another 3 weeks. 7. The average weight of the crabs in each group was calculated each week. The rate of weight gain and loss for each group each week was calculated using the formula for slope of a line. Results I wanted to weigh the tobacco at the end of each week to determine if crabs were eating the tobacco. However, the crabs moved the tobacco into the water dish and mixed the tobacco into the calcium carbonate substrate. I could not weigh the tobacco and obtain reliable results. I found that when either group of crabs lived in the aquarium with tobacco, the crabs lost weight or gained weight at a slower rate than when the crabs lived in the control (tobacco-free) environment. Conclusions/Discussion I do not know if crabs eat tobacco. However, I do know that when crabs are exposed to tobacco on a daily basis, their rate of weight gain is less or their rate of weight loss is more than when crabs live in an environment without tobacco. Overtime, prolonged weight loss may result in premature death.	
Summary Statement Is tobacco, that litters our beaches, eaten by land hermit crabs, and if so, does it affect their rate of weight gain/loss, a measure of health.	
Help Received Mother purchased and handled the tobacco and proofread my report and poster board.	