



**CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY**

Name(s) Aidan T. Byrnes	Project Number J0305
Project Title Avian Dangers: Developing Devices for the Prevention of Bird Strike	
Abstract Objectives/Goals I am very interested in aviation, and I know from past research that bird strikes are a danger to air travelers. I decided to try to test devices I developed to find the most effective method of preventing bird strike in the hope of reducing these dangers. I hypothesized that a device I constructed intended to deflect birds would be the most effective and that a device intended to destroy birds would be least effective. Methods/Materials I tested using simulated "birds" which were chunks of potato fired from a potato gun which I built. For each test, I loaded the potato gun, aligned the potato gun with the fan, which was mounted in a special device which I built, turned the fan on, and fired the potato gun. After 20 tests for each device, I tested another one and repeated the process. Results I tested over 70 times in total, in the process of testing three devices I developed which were a mesh cone as the deflection device, a flat sheet of mesh as the blocking device, several blades of steel as the destruction device, and a control. I found that the device I constructed intended to block birds was most effective at protecting from bird strikes, followed by the deflection device, followed by the destruction device. The blocking device prevented any damage to the fan, but sustained a great deal of damage to the device itself. The average device damage rating for the blocking device was 1.8, meaning that the damage on average to the device was minor, and the average device damage rating for the deflection device was 1.3, meaning that the damage was even more minimal. According to my rating scale, this was a difference in damage ratings of 29% between the two devices. The deflection device sustained damage to the engine in several tests, however, making the deflection device second place on the effectiveness scale. Conclusions/Discussion My findings in this project might be used to help design future bird strike prevention devices, in which finding an inexpensive and effective design would be crucial. My findings might also be used to design new bird-strike preventative shock cone intakes for ramjet engines.	
Summary Statement I am very interested in aviation, and the goal of my project was to develop and test devices to prevent bird strikes in the future.	
Help Received My mother, Karen Byrnes, drove me to stores so that I could acquire necessary materials and supervised my project for safety reasons. My science teacher, Roxanne Hunker, helped me to refine my project and loaned me several pieces of equipment which I required.	