



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Shane M. Finley	Project Number J0210
Project Title Pellets Count	
Objectives/Goals My project was to determine which size pellets in a shotgun shell would have the most concentration of pellets within a 30-inch diameter circle when shot at 40 yards away. I believe that the BB size pellets contained in a shotgun shell casing will have the highest concentration of pellets.	
Abstract I collected two of each of twelve different types of shells to represent the common types of shells that I could choose for duck hunting with my dad. I cut open the casing to count and record the number of pellets in each type. I then drew a 30 inch diameter circle on 12 different pieces of 4ft 8in X 3ft 8in cardboard and labeled each with a different shell type. I put a target on the target stand at the 40-yard marker and cleared the shooting area of people and animals. I used a gun rest for accurate aim and fired at the center of the target with a Remington 1100 12 gauge with modified choke barrel. After each time the gun was fired, I replaced the target. I counted the number of pellet holes inside each target circle and compared the data using a bar graph. For safety I wore goggles and earplugs. Additionally, I calculated the percentage of pellets that hit inside the target area by dividing the number inside the circle by the total number of pellets in the original shell casing count to determine if efficiency was related to concentration.	
Methods/Materials I collected two of each of twelve different types of shells to represent the common types of shells that I could choose for duck hunting with my dad. I cut open the casing to count and record the number of pellets in each type. I then drew a 30 inch diameter circle on 12 different pieces of 4ft 8in X 3ft 8in cardboard and labeled each with a different shell type. I put a target on the target stand at the 40-yard marker and cleared the shooting area of people and animals. I used a gun rest for accurate aim and fired at the center of the target with a Remington 1100 12 gauge with modified choke barrel. After each time the gun was fired, I replaced the target. I counted the number of pellet holes inside each target circle and compared the data using a bar graph. For safety I wore goggles and earplugs. Additionally, I calculated the percentage of pellets that hit inside the target area by dividing the number inside the circle by the total number of pellets in the original shell casing count to determine if efficiency was related to concentration.	
Results Some of the pellets cleared the cardboard completely. In each of the 12 experiments, the number of pellets inside the circle was different. The #4 Nitro steel 3 inch mag 1 3/8 oz. Remington shell had 159 pellets hit inside the target which was the highest number of pellet holes inside the 30-inch circle. At 43 pellets, The BB sized Fed steel 1 1/4 oz. 3 inch shell had the least number of pellets hit within the same circle.	
Conclusions/Discussion My hypothesis was wrong because the shell with the BB size pellets had the least number of pellets hit within the 30-inch circle. The #4 Nitro steel 3# mag 1 3/8 oz. Remington shell outperformed the other shells. I will probably use it when I duck hunt with my father. If I had unlimited funds, I would repeat this experiment to make sure the results are accurate. However, my results raise several questions about how pellet size effects scatter efficiency and expense of each type of shell as well as how the construction and material makeup of the shell casing may effect shell performance.	
Summary Statement My project was to find the shell that works in my gun and will kill a duck the best.	
Help Received Dyllan Forbes, John McBeth, Dick Baigi and my dad donated shells. Ronnie Beauchamp let me use his gun rest and his dad let me use his land. Brian Nunn gave me cardboard. My father helped me set up the targets and complete the actual shooting and my mother helped me with some typing and editing.	