CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
J1999

Project Title
Shake Ya Tail Feathers: In Dirt or Water?

Abstract

Objectives/Goals
The purpose of my experiment was to find out if bacteria samples from land fowl or water fowl would produce the most bacterial growth.

Methods/Materials
To conduct my experiment, I swabbed turkeys, chickens, a peacock, geese, ducks, and an emu, and then swabbed the surface of a sterile agar-filled petri dish. While swabbing the fowl, I used sterile swabs, gloves, and sterile techniques. On my display board, I have feathers that resulted from a natural periodic shedding process, also known as molting, and the feathers were previously but are no longer live material. I also used an incubator, set at 25 degrees Celsius, and a refrigerator set at about 1 degree Celsius. I placed the petri dishes in the incubator and observed the growth for one week or until there were two or three consecutive days of no new growth in any petri dishes. I checked for new growth twice daily, once at 6:30 AM and once at 6:30 PM.

Results
Throughout all of the trials that I conducted, the bacteria samples collected from the land fowl generated more bacterial growth in the petri dishes than the samples taken from the water fowl.

Conclusions/Discussion
The conclusion that I have drawn from conducting this experiment is that land fowl have more bacteria and germs on the surface of their feathers than water fowl. The water fowl were so clean due to their preen gland, which, when stimulated, produces an oil. This oil gets rolled onto the surface of the feathers with the bird's bill and creates a waterproof seal over the feathers. This seal serves as a barrier to germs and bacteria, and any bacteria that stuck to the surface of the feathers got washed away when they bathed. The land fowl, on the other hand, do not have a preen gland, and to bathe, they roll around in the dirt, which in this case, made them dirtier. The peacock, which is officially classified as water fowl, has a preen gland. The peacock used in my experiment does not come in contact with water besides the water that it drinks from. When the peacock preens and rolls the oil all over its feathers, it decides to take a dust bath. The dirt and germs stuck to the oil and to their feathers, thus making the peacock the dirtiest bird out of both the land fowl and the water fowl.

Summary Statement
My project is about finding the difference in bacterial growth of bacteria samples taken from land fowl (3 turkeys, 7 chickens, and 1 peacock) and water fowl (3 geese, 7 ducks, and 1 emu) to determine if land or water fowl are dirtier.

Help Received
My mom helped make the agar used in the petri dishes, catch fowl, and sterilize petri dishes after use; my dad bought all materials and helped catch fowl; my sister took pictures and helped with a few graphs; a family friend gave advice on how to start the petri dishes.