

Category: Zoology

Table Number: H1209

Student Name: Preston Sharp

Team Members (if any):

Project Title: Canine Audiology

Abstract: Question- What breed of dog can hear the mosquito ringtone the best? Hypothesis- I believe that the ideal dog to hear the mosquito ringtone would be a smaller breed, dark colored, young, and male. Method- I played the mosquito ringtone for 20 dogs. I recorded their age, color, gender, and breed. And I judged their reactions on a level from 1-4. Results- The best dog to hear it would be a bigger breed, like a lab or Munster Lander, that age didnt matter with dogs, and that color didnt really matter either, but that females heard it better than males. So as long as its a female Lab or something, it can pretty much can hear it better than the others. Although it does differ occasionally.

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Table Number: H1208

Student Name: Hayley Parkinson

Team Members (if any):

Project Title: The Ants Go Marching On

Abstract: As I am out in the desert in Arizona, I noticed that almost all the ant hills and the area around them are void of vegetation. I wondered why this is. As science fair time came, I decided to see if I can determine the reason why. My hypothesis is: Plants do not grow on or around red ant hills because formic acid, produced by the ants (*Formica Rufa*), acts as an herbicide and thus the seeds planted in the soil samples taken from the ant hills will not sprout. All the test plants sprouted, making my hypothesis incorrect. This failed experiment left me with more questions than when I started, e.g. What roll does formic acid play for ants? What roll do ants have in our environment? And then back to my original question, "Why is the area on and around ants' hills void of vegetation?"

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Table Number: H1207

Student Name: Walter Findlay

Team Members (if any):

Project Title: Honey Mite Infestations in Utah County

Abstract: Question: I have questioned whether parasitic mites on bees have anything to do with Colony Collapse Disorder (CCD). Two mite species that have detrimental effects on honey bees are the honey bee tracheal mite Hypothesis: Varroa mites are easily seen by the naked eye. Tracheal mites are microscopic and their identification requires dissection and microscopic examination of the trachea within individual bees. This microscopic examination of bees has not been accomplished for Utah bee colonies until now. Three hypotheses were tested during this study. 1. I hypothesized that both varroa and tracheal mites have infested similar numbers of honey bee colonies kept in Utah County, Utah. 2. I also hypothesized that an acid vapor treatment would reduce the presence of both mite species. 3. I also hypothesized that colonies transported to California would have higher levels of mite infestation and higher percentages of die off, either from the mites themselves or CCD. Methods: At each of the ten beekeepers apiaries, I randomly selected 5 hives. Twenty bees were then randomly collected from the entrance of each of these hives for a total of 100 bees for a grand total of 1000 bees. The legs and head of each bee were removed and placed under a dissecting microscope. The number of tracheal and varroa mites was recorded on data sheets. Results: Interestingly, no tracheal mites were found in any of the 1,000 bees sampled. Varroa mites were indentified and photographed. I had expected to find both species of mites.

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Table Number: H1205

Student Name: Anum Ibrahim

Team Members (if any):

Project Title: Pigeon Flight and Weather

Abstract: Question: Does the weather affect the length of a pigeon's journey from a point to their home?
Hypothesis: I think that the pigeons will take more time coming home in cloudy weather because I think it might be hard for them to see. Procedure: I took 3 pigeons, to 3 different spots a mile away from their home. I then recorded the time it took for each pigeon to fly home, 3 times in sunny weather and 3 times in cloudy conditions. Results: In my hypothesis I thought that cloudy weather would affect my pigeon's flight. I was wrong and my hypothesis was incorrect. The journey the pigeons took in cloudy weather was shorter maybe because of these factors: They were anxious to come home because of the lack of light, they were hungry, it was cold, and/or have a fear of storms. They did not come home right away when it was sunny because they were at ease, and took their time.

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Table Number: H1201

Student Name: Katie Maxwell

Team Members (if any):

Project Title: The effects of calcium carbonate on fish breathing rates

Abstract: This experiment was a test to see if calcium carbonate enriched water or food aids in calming fish during the transition from fish store to home tank. This was executed by preparing three fish bowls; one control with regular tap water, one with added calcium carbonate in the water, and one with a predetermined amount of food enriched with calcium carbonate in the water. The breathing rates of each fish were taken by breaths per minute for the next hour. After experimentation, it was determined that the fish in the calcium carbonate enriched water made the easiest transition and calmed the fastest. The fish with calcium carbonate enriched food adjusted more quickly than the control, but not extremely significantly.

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Table Number: H1210

Student Name: Kaylee Wood

Team Members (if any):

Project Title: Drosophila

Abstract: For my project I tested different mutations of drosophila to see if different eye color affected the color of light they drosophila was attracted to. I used wild type, white eye, and sepia eye drosophila. I predicted that the wild type would be drawn to the yellow light, the white eye would be drawn to the red light, and the sepia eye would go to the yellow. My first step to carry out this experiment was to cut 3 holes on the backside of a box. I connected a black tunnel to each hole and on the end of the tunnel was a chamber. Each chamber had a different colored light: red, purple, or yellow. I inserted a vile of wild type drosophila into the entrance of the box and let the drosophila fly around for thirty minutes. I counted the number of flies that were in each chamber and recorded my information. I repeated these steps with each mutation of drosophila. The majority of the wild type were attracted to the yellow light. The majority of the white eye were also attracted to the yellow light. The majority of the sepia eye were attracted to the purple light. Overall, eye color did have an affect on the color they were drawn to. None of the mutation groups had a majority in red. This proves that flies really do have a limited color spectrum. It is true that the photoreceptors of drosophila do not absorb the color red very well.

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Table Number: H1203

Student Name: Maurhy Meneses

Team Members (if any):

Project Title: The Effects of Lead on Fruit Flies

Abstract: In my project I wanted to see what would happen to fruit flies (*Drosophila melanogaster*) when they are exposed to lead. So what I did was I made a concentration of 1g of lead nitrate with distilled water. Then I diluted it to .001g, having now four graduated cylinders. After that I made the *Drosophila* medium in the vials, three for each of the concentrations. Then I used the wild fruit flies and I put two males and two females. After a period of four days that is usually when larvae start showing up, I dispose of the old pair to avoid confusion. I took out some of the new flies from each of the vials, looked at them under a dissecting microscope, and took pictures of them. Another thing that I did look at was how many larvae were being reproduced. The results that I ended up finding was that when I put the flies in the 1g vial, within two days they have died. The same happened in all of them but the .001g vial; they lived and reproduced. So with one of the effects was that the concentrations were too strong for the flies to even survive in. Another thing that caught my attention was that concentrations it seemed to have decreased the amount of larvae reproduced.

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Table Number: H1206

Student Name: Calyn Waterlyn

Team Members (if any):

Project Title: X Marks The Spot

Abstract: The question for the project is: In correlation with tortoiseshell cats are X-chromosomes inactivated in a random manner or in a predetermined manner? The hypothesis states: If there are no consistent patterns in all cat's faces, then the data shows that X-inactivation is not orange gene allele dependent, but is random and independent. By dividing the cat's face in 12 regions, then recording the fur color in that region, i was able to conclude that X-inactivation is allele independent(random), and not orange allele dependent.

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Table Number: H1204

Student Name: Ashley Arnold

Team Members (if any):

Project Title: The Inch Per Gallon Rule

Abstract: While observing aquariums in classrooms and medical offices, I noticed that some tanks sustained numerous fish, while others only included a few fish. I wondered how many more fish they could put in their tanks before the water reached toxic levels. I came upon the Inch per Gallon Rule in my research. Many aquarium enthusiasts recommended that for every inch of fish in a tank, a gallon of water should be present to sustain the fish. I wanted to know if the rule could accurately measure how many fish could be stocked in a tank. I thought that more water would be needed for larger fish like Oscars because they produce more waste, even though they are the same length as smaller fish. To determine the truth or falsehood of my hypothesis, I placed goldfish in tanks with the amount of water proportional to the Inch per Gallon Rule. I tested the levels of ammonia, nitrite, and nitrate in the water with liquid test kits that change color according to the amount of chemical present. I performed the same tests with Rainbows and Oscars. I placed plants in one tank to observe their effects on the nitrate cycle. The Rainbows and the Oscars were approximately the same size, but they did not produce the same amount of waste. After eleven days with the Rainbows, the tank with plants (tank #1) measured at 1ppm ammonia, .25ppm nitrite, and 5ppm nitrate. Tank #2 measured at .5ppm ammonia, 0ppm nitrite, and 5ppm nitrate. After 5 days with the Oscars during Run #1, the ammonia level in tank #1 reached 4ppm. Ammonia levels over 1ppm is a toxic level. Tank #2 experienced a level of 8ppm. Overall, I found the Inch per Gallon Rule is a general guideline and cannot be used for every tank. With the three species of fish I tested, only one (the goldfish) maintained safe levels according to the rule. The other two species experienced an increase in toxic ammonia quite quickly, which demonstrates that the rule does not always work.

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Table Number: H1202

Student Name: Spencer Richards

Team Members (if any):

Project Title: UVB ray's effects on the planarian eyespot

Abstract: By using the species, *Dugesia Tigrina*, or commonly named, brown planaria, I was able to find if and how ultraviolet light affects the eye. Because the planaria can sense light intensity like a human, their eyes can be used to compare with the human eye. A normal planaria was compared to planaria that were exposed to UV light for five, seven, ten, and twenty minutes. During each time trial, two planaria were tested, placed in the middle of a drop of water in a petri dish. I was able to view the effects of the UV light on the planaria using a laser scanning microscope, and a light microscope. I hypothesized that the planaria with longer exposure time would have more damage done to the eye. I sliced the planaria, and placed them on slides, which were dyed and viewed in the microscope. I viewed pockets of cell death, where past cells were destroyed. In humans, eye exposure to UVB light may cause cataracts to form on the surface of the cornea. If passed through the eye laterally, pterygium, and pinguecula formation may strike the conjunctiva. If passed into the macula, forms of macular degeneration may occur. Because of these dangers forming from ultraviolet rays, sunglasses or protective layers must be worn when being exposed to UVB rays. By performing this experiment, I hope to raise awareness for eye care and eye protection.