



## Using Color to Survive in Nature

**Subject:** Biology

**Grade Level:** 10<sup>th</sup>

**Rational or Purpose:** To observe how protective coloration helps some animals to survive in nature.

**TEKS:**

112.43. Biology  
(c) (7A) (7B)

**Materials:**

250 toothpicks (50 reds, 50 green, 50 blue, 50 yellow, 50 yellow painted with wide red stripes)  
Plastic cups  
Pen or pencil

**Procedure:**

- A. On a piece of notebook paper, write the "LAB TITLE" and "PURPOSE".
- B. Copy the DATA TABLE that your teacher has written on the chalkboard (or displayed on the overhead). You must draw the lines with a ruler or straight-edge.
- C. You are going to be a "bird" feeding on "insects" to survive, with toothpicks representing insects. When instructed to begin, you will "feed" on at least five "insects" in the feeding area (10 X 10 meters) in the allotted time. If you do not capture at least 5 "insects", you "die" of starvation and have to sit out for the remaining rounds. After several rounds, only one "Super Predator" will survive. Here are the rules:
  1. You must use your "beak" (forefinger and thumb) of one hand only.
  2. You may "eat" only one "insect" at a time.
  3. You must place the "insect" in your "crop" (your other hand) before you can reach for another insect.
  4. You must stop feeding when told to do so. If you are reaching for an insect and the teacher has called time, do NOT finish reaching for it and stand up straight.
  5. Red "insects" taste bad and will upset your stomach. If you accidentally pick up a red "insect," you will have to stop feeding.
- D. After time is called for each round, put all captured insects (whether you "died" or not) into the plastic cup labeled, "ROUND 1". The "dead" birds will then sit in a designated area. All the surviving birds will feed again in "ROUND 2", with each

bird again eating at least 5 “insects”. The eaten “insects” for Round 2 will go in the cup labeled, “ROUND 2”. The class will do as many rounds as are necessary to weed down the population to one surviving bird, the “Super Predator”.

- E. When there is only one “Super Predator” left, return to the room and total up all the colors eaten for each round.
- F. Put the class data in your data table, filling in the chart with the “insects” that everyone “ate.” Give a specific reason in “Explanation” to explain why you and the class collected the particular insects that you did (complete sentences are NOT required). For example, specific reasons might be that you prefer a particular color that the insects were nearest to you, etc... Do not state reasons that are not factual; for example, do not say that the insects tasted good. Since you are not actually eating them, they cannot taste good.
- G. Answer the conclusion questions on a separate sheet of paper, answering them in complete sentences.

**Conclusions:** Answer each question using the class totals. Answer each question on a separate sheet of paper on your write-up.

1. Which color “insect” was “eaten” more than any other color?
2. If this simulation is similar to what occurs in nature, then what survival strategy is most effective in avoiding predation? [In other words, why was that color insect selected least?
3. Why didn’t the “birds” eat red “insects”?
4. Why didn’t the “birds” eat yellow-and-red-striped “insects”?
5. Which color “insect” (besides red and yellow-and-red-striped) survived the most?
6. Give a reason to explain why that insect (answer to #5 above) survived well.
7. List two other factors, besides color, which may determine whether an insect is preyed upon in large numbers.
8. Explain how the color of an insect may determine whether it will be preyed upon. [Use complete sentences.]
9. Explain how predators help to “select” which animals will survive in nature. [Use complete sentences.]
10. Which color(s) of insect is an example of camouflage?
11. Which color of insect is an example of mimicry?