**Outfoxed: Niches and Adaptation**

1. Use the eMammal Virginia Camera Trap Field Guide to complete Table 1 below. (<http://www.inaturalist.org/guides/3098>)

**TABLE 1**

|  |  |  |
| --- | --- | --- |
|  | **Red Fox** | **Gray Fox** |
| Length |  |  |
| Weight |  |  |
| Diet |  |  |
| Habitat |  |  |
| Active at what time of day? |  |  |
| Fun Fact(s) |  |  |

1. Based on the information you recorded in Table 1, compare and contrast the niches of red and gray foxes. How are their niches similar? Do you see any differences?
2. Take a look at the diet and habitat of the red and gray fox and circle the term below that best fits each species for their diet and the term that best fits their habitat preferences.

**Red Fox Gray Fox**

 Diet: Generalist or Specialist? Generalist or Specialist?

 Habitat: Generalist or Specialist? Generalist or Specialist?

1. Based on what you’ve learned about red and gray foxes, develop predictions about where we might photograph each of these species. Remember our habitat options are *urban*, *suburban*, *exurban*, *rural*, and *wild*. To do so, answer the following questions in complete sentences:
2. Do you expect to find more red or gray foxes in the Urban to Wild study? Why?
3. Do you expect red or gray foxes to be found in a wider variety of human densities? Why?
4. In which human density category would you expect to find the most red foxes? Why?
5. In which human density category would you expect to find the most gray foxes? Why?
6. Your teacher will distribute sheets with fox photos from the Urban to Wild Project. Using the knowledge you’ve acquired on red and gray foxes, identify the foxes in your assigned pictures and tally the number of fox PHOTOS in the space below. ***If there are multiple foxes in a photo, that photo should be counted as one fox photo.***

**Sheet Name Gray Foxes Red Foxes**

(e.g. Rural 1)

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Once all groups in your class have tallied their fox photos, enter the class data in the table below. NOTE: The Urban to Wild Project found a LOT of red foxes, but counting them all would take longer than we have in class today. To get numbers that are accurate to the real data set, multiply your red fox numbers by 4 and enter this number in the last column below.

 **TABLE 2: Count Data**

|  |  |  |  |
| --- | --- | --- | --- |
| **Density** | **Gray Foxes** | **Red Foxes** | **Red Foxes x4** |
| Urban |  |  |  |
| Suburban |  |  |  |
| Exurban |  |  |  |
| Rural |  |  |  |
| Wild |  |  |  |
| **TOTAL** |  |  |  |

1. Enter your data (red foxes x4 and gray foxes) in an Excel spreadsheet and graph them as a bar graph using the instructions your teacher has provided. Have your teacher check your graph.
2. Once you have graphed your data, revisit your predictions in Question 4, and circle whether your prediction was correct or incorrect.

Prediction (i): More red or gray foxes? Correct or Incorrect

Prediction (ii): Habitat variety? Correct or Incorrect

Prediction (iii): Red fox habitat? Correct or Incorrect

Prediction (iv): Gray fox habitat? Correct or Incorrect

Use the space below to explain any predictions that were incorrect. Why might the pattern have been different than you originally predicted?

1. What adaptations might make red and gray foxes good at catching and eating the food they do?
2. Given their habitat preferences, what adaptations might a gray fox need that a red fox doesn’t?

HOMEWORK: In a short essay, reflect on this lesson and the following question: Red and gray foxes are closely related and have a lot in common, and yet they are able to coexist in many U.S. states. How is this possible?