

## CLASSROOM STUDIES

The following activities have been designed for use in the classroom. They cover various concepts in the biology and ecology of peregrine falcons, raptors in general, as well as exercise in math, science, geography and writing. They were designed to be adaptable to a broad range of age levels, and many of the activities or follow-up questions can easily be modified to meet specific objectives. Students can use this website, or links provided on this site, to obtain detailed information on peregrine falcons as an aid in completing the activities. Format includes an introduction followed by the activities and a series of follow-up questions.

### FOOD PYRAMID

#### Introduction

Falcons are predators that are at the top of the food chain or food pyramid. They rely on an abundance of other birds as their primary prey. The birds they feed on, in turn, rely on an abundance of insects as their food source. The insects rely on an abundance of plant life as their food source and the plants manufacture their food using the sun's energy through a process called photosynthesis. At each step, as you move up the food pyramid, a significant amount of energy is lost. Thus, there are typically fewer living organisms at each level. In simple terms, 10,000 plants might feed 1,000 insects, which feed 100 songbirds, which feed only 10 falcons.

#### Building a food pyramid

The following numbers will have to be adjusted for class size. The example is based on a class of 24 students. Separate the class into 4 groups as follows: groups of 12, 8, 3 and 1 student. Have the groups sit on the floor, one group behind the other, in order of highest number of students to lowest number. When arranged they should roughly be in the shape of a pyramid. Explain to the class that each row represents a step in the food pyramid of a peregrine falcon. The first row (12 students) is the plant life, the second row (8 students) are the insects, the third row (3 students) are the songbirds and the fourth row (1 student) is the falcon. Further explain that you are the sun, the beginning of the food pyramid. Now distribute 100 popped kernels of popcorn to the students in the first row (12 students). Ask the students in the front row to eat 50 of the kernels of popcorn (each student would eat approximately 4 kernels). Now have them pass the remaining popcorn to the 8 students in the row behind them. The kernels consumed by the front row represent the energy lost when the insects fed on the plants. Now ask the second row (insects) to eat 40 kernels (roughly 5 per student) and pass on the remaining popcorn to the next row. Explain that the 40 kernels eaten by the insect's represents the energy lost when the songbirds fed on the insects. Now ask the third row (songbirds) to eat 9 kernels (roughly 3 per student) and pass on the remaining piece of popcorn to the next row. Explain that the 9 kernels lost represents the energy lost when the falcon fed on the songbirds. Finally have the last row (falcons) eat the remaining kernel.

**Have your students answer the following:**

- How many times more energy was there at the bottom of the food pyramid than at the top?
- Why can't there be more predators than prey?
- Are falcons the only predators that feed on songbirds?
- What do you think would happen to the numbers of falcons if a disease killed off many songbirds? Why?