

## Ecological Interactions: Testing Prey Distribution Patterns

*Jane M. Beiswenger*

Department of Zoology and Physiology  
and Department of Botany  
University of Wyoming  
Laramie, Wyoming 82071  
(307) 766-3553

At the 1991 ABLE workshop/conference, Christopher Smith (Kansas State University) presented an interesting laboratory activity entitled *Testing Issues of Foraging and Flocking Behavior* in which students assume the role of predators (Smith, 1992, 1993). Smith's activity tests the effects of habitat type, repetition, exclusive use, cryptic coloration, and competition. The exercise described here is modeled after Smith's but differs in that it tests the effects of three different prey distribution patterns on foraging efficiency and is intended for use on a university campus in a 2-hour laboratory period. Uniform, random, and clumped patterns are used. The uniform pattern serves as a control because the chance of finding any one of the prey items is equal. Prior to the activity the students are asked to predict which of the other two patterns will be the most conducive to food procurement and which will be the least.

A foraging grid is set up and 50 prey items (macaroni or pinto beans) are distributed in the appropriate patterns in individual 10-foot  $\times$  10-foot foraging squares. Foragers are given a series of 30-second-long days to locate daily quotas of five food items. Each forager's goal is to survive a 9-day-long winter period of no prey renewal. The precise number and time needed will vary depending on local conditions.

Class data can be averaged, graphed, and discussed. Results to date indicate that foraging is the most efficient and survival time is the longest when the prey are clumped. Knowing the distribution pattern in advance also leads to increased efficiency and prolonged survival.

Smith, C. C. 1992. Testing issues of foraging and flocking behavior. Pages 1–17, *in* Tested studies for Laboratory Teaching. Volume 13. (C. A. Goldman, Editor). Proceedings of the 13th Workshop/Conference of the Association for Biology Laboratory Education (ABLE), 191 pages. (June 11–15, 1991, University of Wyoming, Laramie)

• *This version of Smith's exercise is written for the instructor.*

———. 1993. Testing issues of foraging and flocking behavior. Pages 111–154, *in* Experiments to teach ecology (J. M. Beiswenger, Editor). Ecological Society of America Publication, Phoenix, Arizona, 170 pages.

• *This version of Smith's exercise is written for the student.*