

How Many Frogs Can Live In This Pond?

an adaptation to the Project WILD activity
How Many Bears Can Live In This Forest?

OBJECTIVES

Participants will be able to : 1) define major components of habitat: and 2) identify limiting factors including those influenced by people.

METHODS

Participants become "frogs" looking for food within a model of frog habitat.

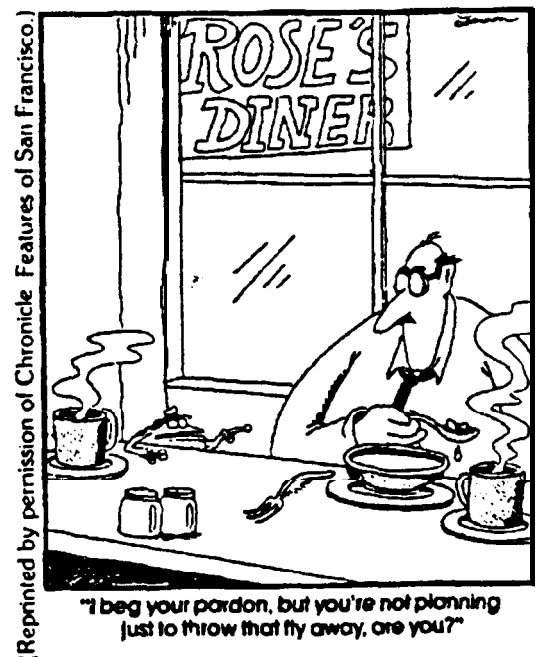
BACKGROUND

In this activity, frogs searching for food are the focus in order to illustrate the importance of suitable habitat for wildlife. One or more components of habitat (food, water, shelter and space in a suitable arrangement) are emphasized as a way to convey the concept of "limiting factors ."

Frog habitat limits frog populations, especially through the influences of shelter, food supply, predators and other hazards, both people created and natural.

Almost any small animal that moves-insects, earthworms, fish and even an occasional bird, snake, turtle, or mouse - are fair game if a frog can catch them. But unlike other amphibians, most frogs don't start out as meat eaters. Before they undergo metamorphosis, they eat mainly bacteria and algae. (A frog's intestines "shrink" to as little as 15% of their original length as the tadpole undergoes metamorphosis. The adult's shorter intestines are adapted to digesting animal food rather than the plant food the frog ate when it was a tadpole.) The prey is captured with the frogs' hinged tongue and swallowed whole.

The availability of food and success in food gathering is influenced by factors such as the quality of the ecosystem; competition, the physical condition of the frog and climatic fluctuations.



In addition, biocides or other unnatural hazards may be present in the ecosystem as the result of accident or misuse. Hazardous chemicals may enter the food chain and have an impact on frog survival. (See Deadly Links, Project WILD)

All possible conditions are not covered in this activity. However, with this simplified illustration, it is possible for participants to grasp the essential nature of the concept of limiting factors.

The major purpose of this activity is for participants to recognize the importance of suitable habitat. Inadequate food or shelter, predators and other hazards are examples of limiting factors-something which affects the survival of an animal or population of animals.

MATERIALS

- cut out drawings of flies, dragonflies and other frog prey
- one party "blowout" for each participant
- Velcro and loop fabric strips cut into small pieces (available as "dots" at craft stores)
- yarn or string
- marking pens
- one paper plate for each participant

PROCEDURE

1. Cut out small (approx. 3" X 3") pictures of flies and other frog prey. Pictures should be copied onto or glued to stiff paper. The number of pictures will be determined by the number of participants.. Plan on about six "flies" per participant. Stick a small piece of Velcro to each fly.
2. On the back side of some of the flies (about one-sixth) affix a mark coded to an illustrative limiting factor. Here are some examples:
 - a. flies with pesticide residue
 - b. fly with a fish hook
 - c. fly that represents a drought
 - d. fly that represents a road kill accident

Other limiting factors that might be introduced include: acid rain, polluted water, disease, water temperature, water levels, introduction of diseased captive animals, introduction of non-native animals, collecting for the pet trade, etc.

3. Place the cut out flies around the activity area. Hang some of the flies from the ceiling or room fixtures or from tree limbs with string or yarn.

Note: We must assume that for a given time period, a certain required amount of food is necessary for each frog to survive. For this activity we suggest that frogs must gather three to five uncontaminated food tokens in order to have survived.

4. Provide each participant with a party blowout on which a Velcro strip has been attached.

5. Provide each participant with a paper plate “lily pad” to use as their home base.

6. Have the participants assemble in a starting area, distribute the blowouts, and paraphrase the following instructions: “You are now all frogs. The blowouts mimic a frog’s tongue and will be used to capture flies and other insects. You are not all alike. Among you is a frog who recently lost his leg in a close call with a snake and must try to capture food with a leg missing. (Assign one person to participate by hopping on one leg). One of you had a collision with a thorn and must seek your prey blinded in one eye. (Assign one participant to wear a patch over one eye).

Frogs do not use their forelegs to capture prey so you may not use your hands. Grasp your hands behind your back as you capture food. Use your sticky tongue to capture the food spread about the playing field. You may use your hands to remove the food item from your “tongue” once you have been successful. After each insect is captured on your tongue, you must take your prey back to your lily pad and leave it there. Then return to the playing field and continue catching insects.

7. Do not tell participants what the codes on the back of the food tokens represent. Tell them only that gathering sufficient food is necessary for survival.

8. When all the food tokens have been captured, the activity is over.

9. Explain what the different codes on the back of the captured flies represent. Determine how many frogs survived by gathering enough uncontaminated food, how many inadvertently encountered a lethal hazard and many were unsuccessful and the problems they encountered.

10. Discuss how these simulated and contrived limiting factors compare to what is actually known and understood about local frogs and their biology.

