

This lab will introduce you to the study of animal behavior and its quantification. You will be collecting behavioral data from animals in the wild to provide practice in accurate observation and description of animal behavior, as well as in naming and measuring the duration of various activities. Carefully read through the following methods before selecting an organism or subject to study.

Important Reminders:

Be sure to take a watch or timer, one that is capable of measuring time in seconds, with you to make your observations

Objectives:

Upon completion of this exercise, you should be able to:

1. Show improved observational skills for studying animal behavior.
2. Name and describe, in objective terms, several behaviors observed in social vertebrates.
3. Construct histograms showing behavioral time budgets of two members of a social vertebrate group.
4. Use an ethogram to compare, contrast, and speculate on the reasons why behavior differs between members of a group of social vertebrates.

The Ethogram:

As part of this exercise you are asked to construct an ethogram for members of one group of vertebrate in your local community. An ethogram is a fundamental technique in the study of vertebrate behavior, and it consists of a behavioral profile of—or a catalogue of the behavior patterns observed in—a particular species. Essentially it is an inventory of all a species' activities throughout its lifetime, organized into categories, and often incorporating a time budget of the distribution of these activities. The ethogram is the cornerstone of behavioral studies, because it singles out the uniquely important aspects of a species' behavior against the backdrop of the remainder of its other activities, thus it serves as a foundation for all subsequent behavioral work on any vertebrate.

Comparisons of detailed ethograms of related species also allow a behavioral ecologist to test hypotheses about the evolution of behavior. Ideally, ethograms should be constructed by following free-living animals around their natural habitats; in practice, however, most ethograms are obtained from captive animals.

One of the most important, and difficult, steps in constructing an ethogram is naming and defining behavior patterns. Each category of behavior must be given a descriptive name without any implication of its possible cause or motivation, and without any anthropomorphic comparisons. "Grooming", "feeding", "running", "resting", and "socializing" are all descriptive references, whereas "aggressive behavior" denotes motivation. The very designation of a category with a functional or motivational name often colors the observer's opinion about what that behavior plays in the study animals' lives.

This ethogram study should take you about 2 hours. After selecting an animal or exhibit for observation, simply sit and carefully watch the animals for 20–30 minutes, during which time you should jot down the various categories of behavior in which you see the animals engaged.

Next, assign names to these categories, according to the guidelines mentioned above (i.e., try to make the names neutral, descriptive terms rather than those that are anthropomorphic or loaded with motivational significance, etc.). Write out a clear definition of each behavior category you plan to use. You should have at least 5–6 distinct behavior categories.

At the top of your General Observations data sheet, record the species (genus & species to the best of your ability) of the animals you are studying. Record the number of animals, divided on the basis of age (juveniles vs. adults), as well as total number. Also make notes as to the conditions at the time you begin the study (e.g., weather, whether the animals are inside or outside, whether there is currently food available for animals to eat, etc.). Now select a single individual in the enclosure for intensive study. Next, fill in the category columns on your Behavior Check Sheet. Also fill in the first time slot with the current time, then label each subsequent slot with consecutive minutes. For example, if you begin your formal observations at 2:07, then fill in the first slot with 2:07 PM, and the next 29 slots with 2:08, 2:09, 2:10, 2:11, etc. You should have 30 minutes accounted for in the records for this animal's behavior. Now carefully watch the chosen animal for 30 minutes, placing a checkmark in the appropriate category for every minute in which the animal engages in that behavior pattern. Your study animal may engage in several behaviors during any given minute, these should all be recorded. You may find it difficult to keep track of your animal's whereabouts, particularly in a large group. Just keep a sharp eye on that one individual, and don't allow yourself to be distracted by other events. If your animal goes out of view for more than a few seconds, then you should note "time out" across the category spaces for that minute, and carry on at the end for as many extra minutes as needed to compensate for the time the subject was out of sight.

When this portion of the study has is completed, select a second (i.e., different) individual from those available in the group for intensive study. This new individual should be a representative from a different age or sex group than the first study individual. For example, if you selected an adult female for the first set of observations, now choose either a juvenile or an adult male. Next fill in the behavior check sheet with behavior category names and the times, then record the behavior of the second individual for 30 minutes, following the guidelines listed above.

Lab Report

Write a report—text no more than two, double-spaced, typewritten pages—for this lab. The report should begin with a paragraph describing your animal subjects, group size and composition, and the general conditions under which your observations were made. Next name and define the behavior categories used in your study: these category names and definitions should be given as a list rather than embedded in a paragraph of text. Then identify the age- and sex-class of each individual whose behavior you recorded.

Next, summarize the ethograms using two histograms. For each animal, the histogram should represent the percent of the total observation time (30 minutes) during which the animal engaged in each categorized behavior. For example, if an adult male lemur fed during 14 of the 30 minutes you watched him, then he fed 46.7% of the total time observed. [This is calculated as $(14 \div 30) \times 100 = 46.7\%$.] And if he groomed himself during 5 of the 30 minutes, then he groomed 16.7% of the total observation time.

Note: Carefully count the number of observation minutes you made to ensure you are using the correct denominator in the equation. If the number does not equal 30, then divide by the correct number to generate proportions of total time observed. Each histogram should have behavior categories listed along the horizontal axis and percent of total observation time along its vertical axis. Computer-generated histograms are fairly easy to produce with excel or other online generators.

Finally, conclude with a paragraph or so comparing the behavioral time budgets for the two animal subjects. In what respects are their behavioral time budgets similar, and how do they differ? For any behavior that clearly differs between your subjects, suggest at least one hypothesis that might account for difference.

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