

Title: Bird Behavior

Abstract: In the first part of this activity, students develop an ethogram of bird species' behavior at a ground feeding station. In the second part of the activity, students choose two behaviors from this ethogram and conduct a behavioral study to determine if the rate of these feeding behaviors changes over the course of the school year.

Author/Adapted from: Jornada Basin LTER and Chihuahuan Desert Nature Park's Schoolyard Desert Discovery Project

Time: 45 minutes - 1 hour (for ethogram development)
1 - 1.5 hours for behavior study

Grade Level: 5th - 12th

Background: The first thing an ethologist (a scientist who studies animal behavior) must do is create an *ethogram*, a list of behaviors with a description or definition of each one. For example:

<u>Behavior</u>	<u>Description</u>
Drinking from a cup	A cup is lifted from a surface to the mouth, liquid is drained into the mouth and swallowed, and then the cup is returned to the surface.

This inventory of the species' behavior is the starting point. From this list, ethologists can form hypotheses about the causes and rates of a particular behavior.

Behaviors can be divided into two groups: *states* are ongoing behaviors that can be timed, and *events* are behaviors that happen so fast that they would be hard to time. We count the number of times an event occurs. For example, reading a book is a state and we could time how long someone spends reading a book; sneezing is an event, and we could count how many times a person sneezes.

Objectives; Students will:

Record and describe the feeding behaviors of a common bird species.

Identify and record behavior states and events of birds at bird feeders.

Draw conclusions about the behavior patterns of a species during the year.

Advance Preparation:

Bait the bird feeding area(s) to acclimate the birds to the new food source (see procedures).

Materials:

- Stopwatches
- Binoculars
- Bird identification books
- Meter tape
- Bird seed

Tips for Entire Class Participation:

- During the creation of the ethogram, have each student carefully observe the chosen bird species and record the behaviors they see on the Bird Ethogram.
- During the study of bird behavior using two behaviors from the ethogram, students work in groups of five (tasks for each student are explained in the procedures that follow). Install as many feeding stations as necessary to accommodate the size of your class.

Procedures:*Family Eating Ethogram*

- 1) Explain ethograms to students and have them complete the Family Eating Ethogram during a meal. All directions are listed on the student page for the Family Eating Ethogram. During the next class period, discuss the results of the Family Eating Ethogram.

Creating An Ethogram for Feeding Birds

- 2) Tell students that they will now develop an ethogram for birds visiting a bird feeder. The Bird Identification Activity or the Bird Feeding Activity would be good activities to complete before this activity so students can learn to identify the most common birds.
- 3) Each student will choose one bird species to watch carefully for 5 minutes. Have students record the species of the bird on the Bird Ethogram.
- 4) In the schoolyard, select an area that birds frequent and mark out a three meter circle as the feeding area. Set up as many feeding areas as needed to accommodate your class size. Three days before the study, bait each feeding area with bird seed (approximately 3 cups of seeds). This will acclimate the birds to a new food source.
- 5) During the five-minute observation, students will name and describe all of the behaviors of their bird on the Bird Ethogram.
- 6) As a class, list all the behaviors that were observed and recorded. Ask students if one ethogram can be created for all species of birds or if a different ethogram needs to be created for each species. After the class ethogram is complete, identify which behaviors were states (s) and which were events (e).

Conducting the Bird Behavior Study

- 7) Make sure the ethogram created above contains “feeding” and that the class has a precise definition for this behavior (e.g. seed in beak, head down with beak in seeds, etc.).
- 8) Have the class choose one other behavior to study.
- 9) Have the class choose one bird species to study. Be sure to choose a species that is common in your schoolyard.

- 10) Students work in groups of five to make observations with the following tasks:
 - a) Timer: watches the stopwatch and say “now” every 20 seconds.
 - b) Recorder: records data from each observer on the Bird Behavior Data Sheet.
 - c) *Total birds present* observer: makes an instantaneous count of the number of birds of the chosen species at the moment the timer says “now.”
 - d) *Feeding* behavior observer: makes an instantaneous count of the number of birds of the chosen species *feeding* at the moment the timer says “now.”
 - e) *Class-chosen behavior* observer: makes an instantaneous count of the number of birds of the chosen species *doing the class-chosen behavior* at the moment the timer says “now.”
- 11) Use the same feeding set up as described previously.
- 12) Observations of feeding and the class-chosen behavior will be done for 5 minutes once a month, at the same time each day. Morning is the best time to observe.
- 13) After the observations, calculate the total number of birds present, the total number of birds performing the feeding behavior, and the total number of birds performing the class-chosen behavior on the Bird Behavior Data Sheet.
- 14) Calculate the percentage of birds feeding and the percentage performing the class-chosen behavior on the Bird Behavior Data Sheet.
- 15) Use data from each month to fill out the Monthly Behavior Data Sheet.
- 16) Graph the monthly percentages.

Evaluations: Allow students to draw conclusions from their graphs.

Does the percentage of birds feeding vary during the school year?

Does the percentage performing the class-chosen behavior vary during the school year?

What other factors might influence bird behavior at a feeder?

Bird Ethogram - SAMPLE

Species: Mourning dove

Date: September 13, 2005

Remember: It is important to not move or talk above a whisper.

The BEHAVIOR name will take only one line, but the DESCRIPTION may take more than one line.

BEHAVIOR	DESCRIPTION	State (s) or Event (e)
Ground peck	The dove bends over and rapidly pecks the ground while not walking.	e
Rapid walking	The dove walks rapidly from one spot to another while looking around.	s
Drinking	The dove bends forward and dips its bill into the water and then lifts its head and moves its bill.	s
Peck-walk	The dove slowly walks while pecking and looking at the ground.	s

Bird Behavior Data Sheet - SAMPLE

Species: Mourning dove

Date: September 13, 2005

Class Chosen Behavior: Peck-walk

Time	Number of Birds Feeding	Number of Birds Performing Class-Chosen Behavior	Total Number of Birds
20 sec	0	0	0
40 sec	0	0	0
1 minute	3	0	5
1 minute 20 sec	8	0	8
1 minute 40 sec	3	1	6
2 minutes	7	1	8
2 minutes 20 sec	7	0	7
2 minutes 40 sec	5	0	8
3 minutes	4	2	9
3 minutes 20 sec	8	0	8
3 minutes 40 sec	1	3	7
4 minutes	4	3	7
4 minutes 20 sec	5	0	7
4 minutes 40 sec	2	2	9
5 minutes	7	0	7
Total	64	12	76
Average	4.3	0.8	5.1
Average Percentage	84.3 %	15.7 %	

Avg. % of Birds Feeding = (Avg. Number Feeding / Avg. Total Number of Birds) x 100

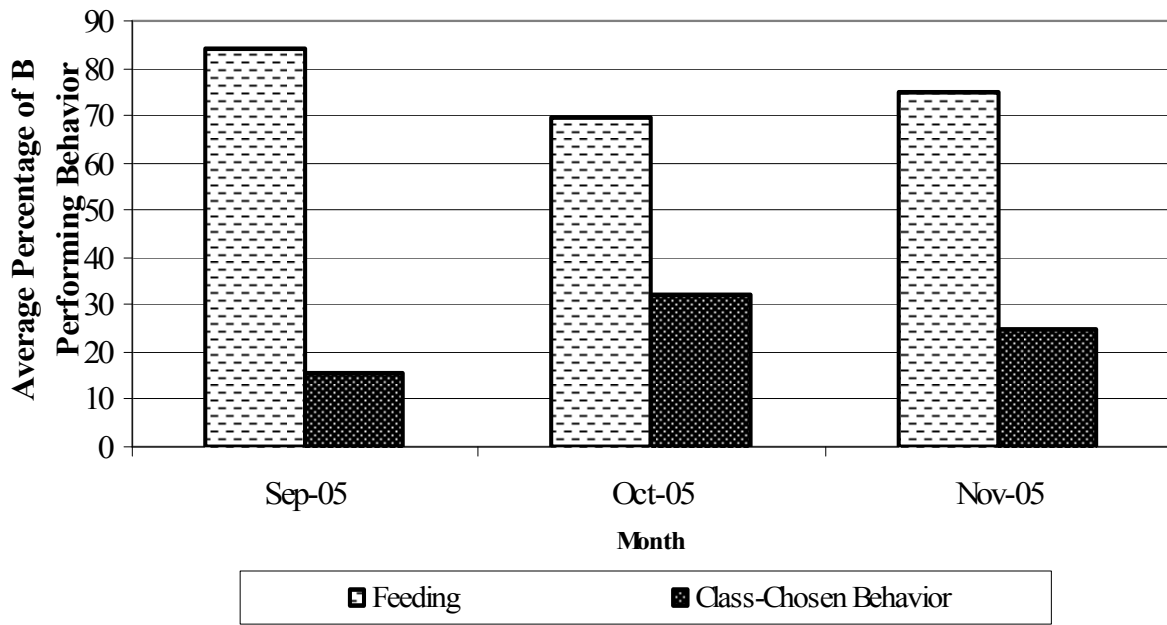
Avg. % of Birds Performing Class-Chosen Behavior =
 (Avg. Number Performing Class-Chosen Behavior / Avg. Total Number of Birds) x 100

Monthly Behavior Data Sheet & Graph - SAMPLE

Species: Mourning dove

Month	Average Percent of Birds Feeding	Average Percent of Birds Performing Class-Chosen Behavior
September 2005	84.3 %	15.7 %
October 2005	69.4 %	31.9 %
November 2005	75.1 %	25.0 %

Bird Behavior



Family Eating Ethogram

Question: What behaviors occur while your family is eating?

Materials:

- Watch or clock

My Hypothesis: _____

Procedures:

- 1) **States** are ongoing behaviors that can be timed. For example, reading a book is a state, and we could time how long someone spends reading a book. **Events** are behaviors that happen so fast that they would be hard to time. We count the number of times an event occurs. For example, sneezing is an event, and we could count how many times a person sneezes.
- 2) For five minutes, record and describe the behaviors that occur when one or more members of your family eat on the Family Eating Behavior Data Sheet. Dinner time would be a perfect time to try this activity.
- 3) After you have finished your observations, identify which behaviors were states and which were events. Mark the states with an "s" and mark the events with an "e".
- 4) Bring the Family Eating Behavior form to school for a discussion of ethograms.

Results: See your chart.

Conclusions:

Student's Name _____

Family Eating Behavior Data Sheet

Date: _____

Start time: _____ End time: _____

Names of Family Members Observed: _____

(The BEHAVIOR name will take only one line,
but the DESCRIPTION may take more than one line.)

Behavior	Description of Behavior	State (s) or Event (e)
Drinking from a cup	A cup is lifted from a surface to the mouth, a liquid is drained into the mouth and swallowed and then the cup is returned to the surface.	s

Ethogram: Comiendo por la Familia

Pregunta: ¿Cuáles son los comportamientos mientras tu familia come?

Materiales:

- Reloj

Mi Hipótesis: _____

Métodos:

- 1) Los **estados** son comportamientos en proceso que pueden ser cronometrados. Por ejemplo, leer un libro es un estado, y podemos cronometrar por cuanto tiempo alguien lee un libro. Los **eventos** son comportamientos que ocurren tan rápido que sería difícil de cronometrar. Contamos cuantas veces un evento ocurre. Por ejemplo, estornudar es un evento, y podríamos contar cuantas veces una persona estornuda.
- 2) Por cinco minutos, anota y describe los comportamientos que ocurren cuando un miembro o más de tu familia come en la Hoja de Datos:
Comportamientos Mientras Comer. La hora de la cena será una hora perfecta para tratar de hacer esta actividad.
- 3) Después de terminar con tus observaciones, identifica cuales comportamientos eran estados y cuáles eran eventos. Marca los estados con un "s," y marca los eventos con un "e."
- 4) Trae la Tabla de Comportamientos Mientras Comer a la escuela por una discusión de los "ethograms."

Resultados: Ve tu tabla.

Conclusiones:

Bird Behavior

Question: What behaviors do birds exhibit while they are feeding?

Materials:

- Stopwatch
- Binoculars
- Bird identification books
- Meter tape
- Bird seed
- Colored pencils

My Hypothesis: _____

Procedures:

Family Eating Ethogram

- 1) Complete the Family Eating Ethogram during a meal. Discuss the results with your class.

Creating An Ethogram of Birds Feeding

- 2) You will now develop an ethogram for birds visiting a feeding area.
- 3) Choose one bird species to watch carefully for 5 minutes. Record the species of the bird on the Bird Ethogram.
- 4) In the schoolyard, select an area that birds frequent and mark out a three meter circle as the feeding area. Set up as many feeding areas as needed to accommodate your class size. Three days before the study, bait each feeding area with bird seed (approximately 3 cups of seeds). This will acclimate the birds to a new food source.
- 5) During the 5-minute observation, name and describe all of the behaviors of your bird on the Bird Ethogram.

- 6) Work with your classmates to list all the behaviors that were observed and recorded. After the class ethogram is complete, identify which behaviors were states (s) and which were events (e).

Conducting the Bird Behavior Study

- 7) Now you will use your ethogram to conduct a real behavior study of birds. Choose one behavior that was observed during the 5 minutes. This behavior and "feeding" will now be studied more closely.
- 8) As a class, choose one bird species to study. Be sure to choose a species that is common in your schoolyard.
- 9) Work in groups of five to do the behavioral observations with the following tasks:
 - a) Timer: times with the stopwatch and says "now" every 20 seconds.
 - b) Recorder: records data from each observer on the Bird Behavior Chart.
 - c) *Total birds present* observer: Makes an instantaneous count of the number of birds of the chosen species at the moment the timer says "now."
 - d) *Feeding* behavior observer: Makes an instantaneous count of the number of birds of the chosen species *feeding* at the moment the timer says "now."
 - e) *Class-chosen behavior* observer: Makes an instantaneous count of the number of birds of the chosen species *doing the class-chosen behavior* at the moment the timer says "now."
- 10) Use the same feeding set-up as previously described.
- 11) Observations of feeding and the class-chosen behavior will be done for 5 minutes every month, at the same time each day.
- 12) After the observations, calculate the total number of birds present, the total number of birds performing the feeding behavior, and the total number of birds performing the class-chosen behavior on the Bird Behavior Data Sheet.
- 13) Calculate the percentage of birds feeding and the percentage performing the class-chosen behavior on the Bird Behavior Data Sheet.
- 14) Use data from each month to fill out the Monthly Behavior Data Sheet.

15) Graph the monthly percentages.

Results: See your graph.

Conclusions:

Comportamiento de los Pájaros

Pregunta: ¿Cuáles comportamientos ocurren en una estación para pájaros mientras comen?

Materiales:

- Cronómetros
- Binoculares
- Libros para identificar los pájaros
- Cinta métrica
- Semillas de comida de pájaros
- Lápices a colores

Mi Hipótesis: _____

Métodos:

Ethogram de Comer por la Familia

1) Complete el Ethogram: Comiendo durante una cena. Discute los resultados con tu clase.

Crear un Ethogram: Los Pájaros Comen

2) Ahora vas a desarrollar un ethogram para los pájaros visitando una estación de comida.

3) Elige un especie de pájaros para observar con cuidado por 5 minutos. Anota el especie del pájaro en el Ethogram: Pájaros.

4) En el terreno de la escuela, elige un área donde los pájaros se conjuntan mucho y marca un círculo de tres metros como el área de comer. Establece tantas estaciones de comida como es necesario para acomodar tu clase. Tres días antes del estudio, pon como 3 copas de semillas en cada área. Ésto les aclimará los pájaros a un fuente nuevo de comida.

5) Durante la observación de cinco minutos, nombra y describe todos los comportamientos de los pájaros en el Ethogram: Pájaros.

- 6) Como una clase, haz una lista de todos los comportamientos que se fueron observados y anotados. Identifica cuales comportamientos eran estados (s) y cuáles eran eventos. (e).

Conducir el Estudio del Comportamiento de los Pájaros

- 7) Ahora vas a usar tu ethogram para conducir un estudio verdadero de los pájaros. Elige un comportamiento que fue observado durante los 5 minutos. Este comportamiento y "comiendo" ahora se estudiarán más atentamente.
- 8) Como clase, elige un especie de pájaros para estudiar. Asegúrate de elegir un especie muy común en el terreno de tu escuela.
- 9) Trabaja en grupos de cinco para hacer las observaciones de comportamiento con las tareas siguientes:
 - a) "El Reloj": estudiante usará el cronómetro y dirá "ahora" cada 20 segundos.
 - b) "El Anotador": estudiante anotará los datos de cada observador en la Tabla de Comportamientos de los Pájaros.
 - c) Observador del *total de los pájaros presentes*: estudiante hace un cuento instantáneo del número de pájaros del especie elegido en el momento en que "el reloj" dice "ahora."
 - d) Observador del comportamiento mientras *comer*: estudiante hace un cuento instantáneo del número de pájaros del especie elegido *comiendo* en el momento en que "el reloj" dice "ahora."
 - e) Observador del *comportamiento elegido por la clase*: este estudiante hace un cuento instantáneo del número de pájaros del especie elegido *haciendo el comportamiento elegido por la clase* en el momento en que "el reloj" dice "ahora."
- 10) Usa la misma organización como antes para dar comida como descrita antes.
- 11) Las observaciones de comiendo y comportamiento estará hecho por 5 minutos cada mes, a la misma hora del día.
- 12) Después de las observaciones, calcula el número total de los pájaros presentes, el número total de los pájaros haciendo el comportamiento de comer, y el número total de pájaros haciendo el comportamiento elegido por la clase en la Hoja de Datos: Comportamiento de Pájaros.

- 13) Calcula el porcentaje comiendo y el porcentaje haciendo el comportamiento elegido por la clase en la Hoja de Datos: Comportamiento de Pájaros.
- 14) Usa los datos desde cada mes para llenar la Hoja de Datos: Comportamiento Mensual.
- 15) Pon en forma gráfica los porcentajes mensuales.

Resultados: Ve la tabla.

Conclusiones:

Student's Name _____

Bird Behavior Data Sheet

Species: _____

Date: _____

Class-chosen Behavior: _____

Time	Number of Birds Feeding	Number of Birds Performing Class-chosen Behavior	Total Number of Birds
20 sec			
40 sec			
1 minute			
1 minute 20 sec			
1 minute 40 sec			
2 minutes			
2 minutes 20 sec			
2 minutes 40 sec			
3 minutes			
3 minutes 20 sec			
3 minutes 40 sec			
4 minutes			
4 minutes 20 sec			
4 minutes 40 sec			
5 minutes			
Total			
Average			
Average Percentage			

Avg. % of Birds Feeding = (Avg. Number Feeding / Avg. Total Number of Birds) x 100

Avg. % of Birds Performing Class-Chosen Behavior =

(Avg. Number Performing Class-Chosen Behavior / Avg. Total Number of Birds) x 100

