



Eagle Observation Log

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Address comments or questions about this lesson plan to eagles@aswp.org.

Overview: Using a cataloging tool students record eagle nesting behaviors periodically over the course of several days or weeks, then graph or further analyze the data.

Objectives

Students will be able to

- use a log to gather useful observational data from an eagle nest camera
- distinguish patterns of behavior over time nesting eagles

PA Standards Addressed

- 3.2.7.B., Apply process knowledge to make and interpret observations.
- 3.2.10.B., Apply process knowledge and organize scientific and technological phenomena in varied ways.
- 3.2.3.C., Recognize and use the elements of scientific inquiry to solve problems.

Grade Level: The log sheet as provided is suitable for Grades 5-12. The data recording system can be simplified for grades K-4.

Timeframe: Introduction and conclusion on class period each. Actual observations are taken a few minutes once or several times a day for a period of days.

Materials: Screen with access internet access to an eagle camera, such as can be found at ASWP.ORG in season (January through June); Eagle information (books, articles, websites, etc.); printed log sheets or other recording method (see plan).

Background

The nesting behavior of birds is a subject of great interest to scientists. Questions about timing of events, length of incubation, types of food, courtship behaviors, etc. can inform us about what is to be expected in nesting. This in turn can help us determine if something different is happening which may indicate a larger change, such as habitat gain or loss, disease, or human encroachment. Many bird nests are small or hidden and hard to observe. However, eagle nests are large and some have been outfitted with cameras that can stream a live view over the internet. Patterns can only be determined with regular observation that takes time and resources wildlife scientists may not have. The popularity of eagles means many people are available to share the task. With the webcam and some guidance on observation protocol, students and the public can participate in gathering this important data.

Preparation: Gather eagle information sources such as articles, websites and videos that you might want to use to get students acquainted with eagles and their story. Look over the log sheet and observation procedures and make any modifications necessary to suit your classroom needs or goals. Print the log sheets or prepare whatever recording method you have chosen. Print the descriptions of eagle behaviors so that they are handy while students make observations. Review **Additional Considerations for Watching Wildlife in Real Time** at the end of the lesson plan for important reminders about watching wildlife with live cameras.

Activity: Observing Eagles

Getting started:

Before beginning observations:

1. Research background publications, website and videos about eagle behaviors, especially about nesting and raising young. Ask each student to develop a question they would like to answer about eagles during the nesting observation.
2. Review the various behaviors that we'll be looking for. Make a prediction about how the frequency of some behaviors might change over the nesting time. (For example, will nest maintenance stop when eggs are present? How often do the nestlings eat?) Why do you think that change might happen?
3. Look at information on eagles for the expected timing of key events, such egg-laying, or how long it takes to incubate an egg. Make predictions on expected dates for these same things for the observed eagles. Do you think your eagles will be before or after, shorter or longer, etc. than the expected dates and times? Why
4. Discuss what larger questions a study of eagle behavior could address, such as health of the area ecosystem or the influence of human activities in the area. For example, the types of food brought to the nest can illustrate what other animals are in the ecosystem. In the Pittsburgh area, nests are relatively close to busy roads and buildings; how might the observations here differ compared to a site that is more remote?

Eagle Observation

Checksheet Log. These are instructions for the provided checksheet log. This log is designed to collect data consistently from many observers so that the data can be compiled for formal analysis. However that is not a requirement for this lesson; see "Alternative Logs" below for suggestions for simplification for younger students or other circumstances.

1. Choose a schedule to observe the birds. You may choose to observe them several times a day for short periods, or a few times a day for a longer period, or any combination. Regardless you should keep individual observation segment lengths as consistent as possible. (An important aspect of any experiment is to control as many variables as you can, including length of observation periods.). If you have a longer observation period available, consider breaking it up into shorter observation segments for recording. For example, you observe for 15 minutes

during science class, but 5 minutes at a time throughout the rest of the day, record your 15 minute extended observation as three five-minute observations on the log sheet, restarting the count every five minutes.

2. Fill in one square per observation period for each behavior observed, for as many behaviors are seen. (See *Description of Eagle Behaviors* section below for details about each behavior. If the behavior is observed at all, even briefly, a box is marked, but only once per behavior no matter how many birds do it or it is repeated. Examples:
 - a. The bird is standing still at first, then moves a few sticks, then resumes standing still. Mark “Standing Still” and “Nest Work” both once.
 - b. One adult is brooding while the other is standing, mark both “Standing Still” and “Brooding” once each.
 - c. Both the male and the female are present but not doing anything else observable, mark the “Standing Still” behavior once.
3. In addition, keep a written log to note weather, unusual behavior or interesting circumstances such as the visit of other birds or animals, etc. Include a time and date reference.
4. The checksheet log as completed is designed to be a graph in itself. Alternatively, students can use the data to create their own graphs.

Alternative Logs: The attached log sheet is provided as an example. It can be used as-is, or as the basis for customizing. Note that it is designed so that data can be used graphically without additional calculations, and it is recommended to keep that approach. For alternative formats, consider these:

1. Simplify the log for young age groups or for your goals. For example, replace the titles of the columns with pictures of the behavior. Or, reduce the number of behaviors tallied. Or alter the number of observation blocks to fit the time available for the activity. Or, just record behaviors without reference to time. For a simple log, the behaviors can be prelisted, or added as they are seen to occur.
2. All-class log. Draw or project a grid on a posterboard, smartboard or chalkboard.

Example of a simplified log:

Eagle Behavior Tally	
Ms. Smith’s Room, Hayes Eagle Cam	
Dates <u>2/10/15</u> to <u>2/14/15</u> Time: <u>Three times a day(9, 11:45, 1:45)</u>	
Behavior	
<i>Standing Still</i>	XXXXXXXX
<i>Eating</i>	XXX
<i>Nest Work</i>	XXXX
<i>Absent</i>	XXXXXXXX
<i>Sitting in Nest Bowl</i>	XX
Notes	<i>No eggs; heavy rain 2/12</i>

Analysis and Discussion

After completing a series of observations, analyze the collected data. Have the students prepare graphs of the data using paper or PowerPoint. Optionally, have them divide up the data by type or time and present results about their segment to the class, e.g. the “week one team, etc.” or “nestling team, adult team” or “weather report, nest status, egg status, etc.”

1. What activity was the most common? Did the most common activity change from day to day or week to week? How? Why do you think that change took place?
2. What patterns are emerging? Do certain behaviors follow others? Do certain behaviors tend to happen at certain times of the day?
3. Examine the written log of unusual or notable behaviors or events. How do events, such as weather or a human or animal disturbance in the area correlate with behaviors? Are there any repeated behaviors or patterns that are not part of the check-box log sheet that may be of interest to record more rigorously in the future?
4. Find the points where the first example of a listed behavior took place (the first evidence of brooding, hatching, etc.); we will call these *milestones*. Mark the milestones on a calendar. How many days apart were they? How does the timing of milestones compare to published time ranges?
5. Compare the activities of the adults and the activities of the parents. Was there any activity that the adults stopped doing as much when the chicks arrived? Why do you think that changed?
6. Look back at your prediction above. Did your prediction come true? To what degree? Use data from the chart to support your conclusion about the accuracy of the prediction.
7. Look back to thoughts about larger questions concerning the health of the environment, or the proximity of human activity, or other issues raised. How do the observations shed light on these things?

Please send your observation records (and feedback) to Audubon Society of Western Pennsylvania, using eagles@aswp.org for compilation and so that we can see how our activities are being used.

Taking it Further

A variety of nest cameras are available via internet streaming. Compare the behaviors and timing of one nest to another, between the same species or different species.

Additional Considerations for Watching Wildlife in Real Time

Death in Nature. Death is part of life, and very much so in an eagle nest. Prey animals and parts, some recognizable, may be visible in the camera. Moreover, it is possible for a chick or egg to die or seem to disappear during nesting, from exposure, illness, accident, predator raid, or even a fight with sibling, on- or off-camera. ***These are natural events***; nonetheless it can be upsetting, even if it happens off-camera.

Think ahead about preparing your students and parents for these possibilities. A teacher or a responsible adult should always be aware of what is happening on camera so that events that may cause concern can be dealt with appropriately.

Animals in Distress. Many times observers may want someone to do something when they see an animal in distress. The Pennsylvania Game Commission is the only authority who can allow intervention at an eagle nest in season. They usually will not interrupt unless a violation of the law is involved, such as humans harassing the nest. Eagles usually return to the same nest year after year. If they fail this year, they will likely try again next year--if the failure was caused by something natural. Sending a human to the nest to help can cause a disturbance that can lead the eagles to abandon the nest immediately and perhaps forever.

Description of Eagle Behaviors

Keep this list visible for reference while observing so that behaviors can be recorded consistently.

Select the closest approximation. Remember that multiple behaviors can be checked in one observation session, but no behavior should be marked more than once per observation session. The exception is "Present, but no other listed behavior" should be the only box checked if that is the case. The bird does not necessarily need to be actually in or on the nest for the observed behavior to count, unless specifically required (e.g., brooding). (Note that these are not the only possible behaviors we could log, but that they are the ones we have chosen to log.) Unusual behaviors can be noted in the log.

The behaviors in the provided log are not the only possible behaviors that could be recorded. After observing for a while, look through the written log for behaviors or patterns. Consider adding these to the list of behaviors directly recorded.

Adults

- *Nest Work* – Any building or maintenance such as carrying sticks to the nest or rearranging materials already present
- *Courting* - Adults interacting or displaying. Any behavior where they seem to be interacting in an extended way, e.g., facing each other with beaks open or flapping, cackling, offering food.

Adults eating – Adults eating for themselves. Offering food to chicks is noted on the Chick record sheet.

- *Brooding* – Sitting on or covering eggs or hatched young. Includes sitting in the bowl of the nest in brooding posture even if eggs or young are not known to be present.
- *Turning eggs* – turning, moving or otherwise adjusting eggs

- *Present, but no other listed behavior* – One or both adults are visible, but do not engage in any other listed behavior during the observation period. An adult sleeping, looking around, grooming, flying in or out, shuffling about with no particular intent would be listed as “Present”

Nestlings

- *Number of Chicks Visible* – Write the number in the space. If the number cannot be determined but at least one chick is clearly present (e.g., one or more are hidden by the adult) just check the box.
- *Number of Eggs Visible* – Write the number in the space. If the number cannot be determined but at least one egg is clearly present (e.g., one or more are hidden by the adult) just check the box.
- *Awake or alert but otherwise still* – The chicks are alert but no other listed behavior occurs. Includes swiveling head and looking around.
- *Eating* – Actively eating, or being fed or offered food by the adult, or food is visible in the nest. Description of the food type can be recorded in the written log (e.g., mammal, fish, small mammal, large mammal, rodent, etc. or as specific as can be reliably determined.)
- *Active* – Purposeful body movement other than eating or looking around. Would include clacking beaks, interacting with each other, flapping, walking or hopping around anywhere in or out of the nest. If the activity is outside the nest bowl, then also mark “Outside the nest bowl” Details can be added to the log.
- *Outside the nest bowl* – Mark when at least one of the chicks is outside the center of the nest, the center being the area where the eggs were laid and the chicks spent their first days after hatching. This includes any other place visible within the camera frame. If the chick is doing another listed behavior (eating, active, alert) mark that as well. Details can be added to the log.
- *Present, but no other listed behavior* – One or both adults are visible, but do not engage in any other listed behavior during the observation period. An adult sleeping, looking around, grooming, flying in or out, shuffling about with no particular intent would be listed as “Present”. For example, sleeping or hiding under adult.

Resources

USFWS Bald Eagle Monitoring Guidelines – Primarily concerned with monitoring for disturbances to the nest by human activity

<http://www.fws.gov/northflorida/BaldEagles/Documents/2007-BE-Monitoring-Guidelines-without-figures.htm>

Gross, Doug, and Dan Brauning. "Bald Eagle Nesting." *Pennsylvania Game Commission*. Commonwealth of Pennsylvania, 19 Aug. 2014. Web. 02 Feb. 2015.

<http://www.portal.state.pa.us/portal/server.pt?open=514&objID=1734521&mode=2>