



Teacher Guide



UNIT 1 LESSON 5: HOW IS REPRODUCTIVE SUCCESS MEASURED?

Themes

One way we can measure reproductive success is by measuring nesting success. We can use long-term nest monitoring data to see how specific factors may increase or decrease nest success.

Missouri Science Standards: LS2.A.1, LS1.B.2, LS2.C.2

Missouri Math Standards: 7.DSP.A.1a-c

Vocabulary

Nest Success - MRBO determines a successful nest to be a nest that has completed the full nesting cycle through the fledgling stage. Another way to state this would be to say that a successful nest is one for which at least one young bird fledges (or leaves the nest).



Data - Factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation.

Methodology - A particular procedure or set of procedures. The methodology employed in an experiment is essential to its success, and bad methodology has spoiled thousands of research projects. So, whenever a piece of research is published in a scientific or medical journal, the researchers always carefully describe their methodology; otherwise, other scientists couldn't possibly judge the quality of what they've done.

Sample Size - Sample size is a count of the individual samples or observations in any statistical setting. For example, in the MRBO nest monitoring study there is currently a sample size of 667 nests. Though a relatively straightforward concept, choice of sample size is a critical determination for a project. Too small a sample yields unreliable results, while an overly large sample demands a good deal of time and resources.

Target Species - a species or species group specifically chosen for long-term monitoring studies. The target species are chosen based on the goals of the study.

Video 1: Monitoring Nest Success

Video Description: This video is Part 1 of a two-part interview with Missouri River Bird Observatory's (MRBO) Grasslands Project Leader, Erik Ost. During Part 1 of the interview, we cover MRBO's Grassland Bird Nest Monitoring Project including what we are studying, why we are studying grassland birds, and how we gather data. The video also covers most vocabulary terms. Video is made by MRBO.

Follow- up Questions:

1. When is a nest considered successful?
2. Why is MRBO studying grassland bird nests?
3. Why is the Eastern Meadowlark nest so difficult to find?

Activity: What Does the Data Tell Us?

Activity Summary: In this activity students will examine real-life nest monitoring data from MRBO's Grassland Nest Monitoring Project. They will learn how to interpret graphs and tables as well as use this information to construct a scientific explanation for how environmental factors influence the growth of organisms.

Teacher Notes:

- Support materials include [2019 MRBO Nest Monitoring Report](#)
- Report Scavenger Hunt worksheet is also included to help the students navigate this technical report. Answer sheet available upon request: email paige.witek@mrbo.org.

Video 2: How Can We Use This Data?

Video Description: Interview Part 2 with Erik Ost, MRBO Grasslands Project Leader. In Part 2 of the interview, we cover what MRBO does with the data collected, how land managers and other entities use the data and how students can provide their own data to help birds through community-science projects.



Follow- up Questions:

1. What happens with the data after it is collected and entered?
2. True or False? Land managers can use the data that MRBO provides to be better able to manage their land to help birds.
3. Fill in the blank. Two community- science projects where students can enter bird sightings to be used in scientific research are _____ and _____.

Concluding Questions/Assessment

*Student worksheet included in packet.

1. How do you calculate nesting success rate? (Hint: Remember your calculation in the activity).
2. What are two reasons a nest might be unsuccessful?
3. What was the difference between the treatment and control units in the nest monitoring study and how might this difference affect nesting success?
4. Why is it important to study grassland bird nesting success?
5. What is something you learned this lesson that you had no idea about before? Be specific.

