

# Population Analysis: Greater Prairie Chicken

## Estimated Time

(2) 45-minute class periods (or homework)

## Objectives

Students will be able to:

1. Understand the history of the Greater Prairie Chicken population
2. Identify which factors contributed to the decline of the Greater Prairie Chicken
3. Discuss what factors have affected the Greater Prairie Chicken population from the 1400s to present day
4. Explain how genetic homogeneity may cause a population to be more susceptible to extinction.
5. Describe how resource managers are using translocation to increase genetic variation in Missouri's greater prairie- chicken populations.

Note: To meet objectives 3 and 5 students must work collaboratively.

## Teacher Preparation

This activity may be done during class time or used as a homework assignment. This also could be a small group activity. The teacher can differentiate as needed with more advanced students completing the 'Extension' activity at the end of the lesson

## Materials

Web Resources: (requires internet access)

- 1.) <http://lastdanceoftheprairiechicken.com>
- 2.) [http://www.allaboutbirds.org/guide/Greater\\_Prairie-Chicken/id](http://www.allaboutbirds.org/guide/Greater_Prairie-Chicken/id)
- 3.) Ecology in Action – Greater Prairie-Chicken Translocation, p. 23 of MDC's Nature Unbound textbook available here: <http://mdc.mo.gov/sites/default/files/resources/2011/06/3.pdf>

# Procedure

*Optional Activity:* Design a 'Webquest' by identifying key facts or background information to want students to identify before beginning the lesson

1. Have students come to class already having visited website 'Last Dance of the Prairie Chicken' (Web Resource #1)
2. Using 'The History of North American Prairie Chickens' (<http://lastdanceoftheprairiechicken.com/CP.aspx?pg=12>) have students create a timeline by selecting key events. Students can be broken into groups (5 recommended, one for each time period on website) Each group will use a time period to identify key events that affected the population during each time period.

Time Periods:

- |          |   |
|----------|---|
| Group 1: | 1400-1700 (The First encounter: Heath Hen link) |
| Group 2: | 1800-1900 Midwest Settlement                    |
| Group 3: | 1900: Market hunting                            |
| Group 4: | 1900: Expansion and Explosion                   |
| Group 5: | 2000: A new millennium                          |

(Teacher's note: You may create flexible groups, or have student groups research more than one time period if you have a smaller class or differentiate by having students create their own timeline)

3. Bring groups together to discuss their time period, or have each group give a short oral presentation summarizing main events
4. Have students read Nature Unbound p. 23 'Greater Prairie chicken Translocation' (Web Resource #3)

Discussion Questions:

Did translocation work in restoring the Missouri population?

(Teacher's note: ask students to research current population numbers in Missouri)

What is the most critical time period for the entire population of Prairie Chickens? Why?

How did market hunting impact this species?

What other species went through a similar demise? (Passenger pigeon)

What is translocation? Is it effective?

What future conservation measures could be taken to restore Prairie Chickens to their historic range?

## Assessment

1. To assess verbal presentations refer to Appendix 3: Scoring Guide for Oral Presentation on page 215 of the teacher guide of Nature Unbound Book, available from Missouri Department of Conservation
2. Put students in a role where they are responsible for a for an imaginary Greater Prairie Chicken population. Have students describe what factors they would consider in managing the population. Questions to consider: Should they be hunted? Is translocation necessary? Write about the rationale for your decision making.

## Extension Activities

1. Have students research local species in your state and identify their reproductive success or lack of reproductive success. What biotic/abiotic factors affect the survival of this species? (Teacher's note: You may want to prepare a list of common and endangered/threatened species for students to choose from in advance)
2. Explain to students that although Prairie Chicken populations are declining, hunting is still allowed in some states. Have students visit <http://ksoutdoors.com/Hunting/Upland-Birds/Greater-and-Lesser-Prairie-Chicken> and analyze the data from recent Prairie Chicken surveys from areas of Kansas. Students can graph population trends, and compare and contrast different areas of the state. Students can do deeper with questions about what abiotic (non-living) factors in the habitat allows populations to thrive in certain areas, while not in others. (Soil composition, rainfall, temperature, etc.)