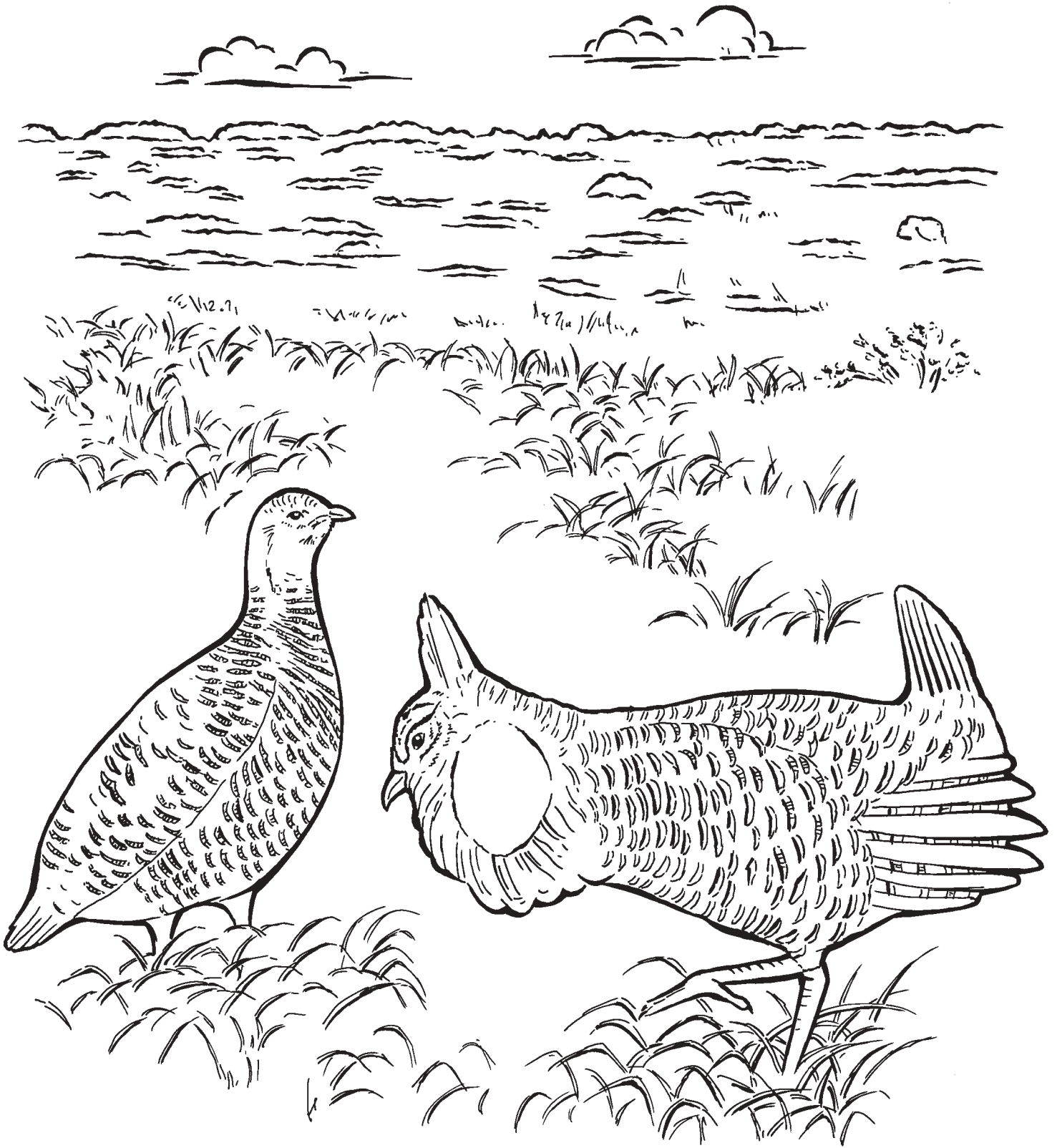


Attwater's Prairie Chicken





Attwater's Prairie Chicken and its Habitat

Attwater's Prairie Chicken

Since 1937, biologists have been tracking the number of Attwater's Prairie Chickens in the wild. They do this by counting male prairie chickens who come to display at the booming grounds and then using the number of males seen to "estimate" how many total prairie chickens there are. Numbers estimated for different populations in each county are then combined for the total population estimate. This activity shows you how many prairie chickens the biologists estimated and helps you understand why biologists are actively working to save the Attwater's Prairie Chicken.

Numbers of wild animals often go up and down from year to year. When good weather conditions produce good habitat conditions, like a good food supply of plants and insects and plenty of grass growth to shelter nests and chicks, the population tends to go up. On the other hand, sometimes dry weather can destroy the food and shelter supply or heavy rains can drown birds. In these bad weather years the population goes down. If there is plenty of habitat and prairie chickens nearby, then when the weather improves the numbers of prairie chickens can go back up again. For example, one county could have a bad flood one year, but if there are prairie chickens living in the next county then they could move back in when the flood is over. Biologists are not concerned as much about the yearly changes up and down as the long-term trend in populations.

For endangered species, however, the problem often is that so much habitat has been destroyed that many populations are "isolated" (there are no populations next door). This is the case for the Attwater's Prairie chicken. Habitat has been fragmented into small pieces separated by large distances of unsuitable habitat that prairie chickens cannot cross. For most species this results in long-term decline in population numbers, especially when the habitat fragments remaining are too small. Sometimes in a few good weather years the population can go back up, but the small isolated populations have trouble recovering from bad years and the overall trend will be downward. Once populations get very low, they are very susceptible to catastrophic events such as floods and severe drought. In addition, prairie chickens do not breed well at low population numbers because not enough birds come to the booming ground. Finally, the population gets so small that in one year all the birds could die and that population would become "extirpated." As populations in different counties slowly disappear, the whole species is in danger of extinction.

By completing the graph exercise, see if you can determine why the numbers for the Attwater's Prairie Chicken make biologists concerned that it might become extinct. Is the long-term population trend downward? Look for evidence of some "good weather years." Is there evidence of any catastrophic events in the population numbers? The questions that follow might help you with this analysis.



ATTWATER'S PRAIRIE CHICKEN MATH ACTIVITY

Table 1. Numbers of Attwater's Prairie Chickens in Texas

Year	1937	1950	1963	1967	1971	1975	1979	1983	1987	1991	1995	1996	1997	1999	2002	2005
No. of Birds	8618	4200	1335	1070	2220	2254	1718	1438	1108	482	68	42	58	46	40	40

1. The numbers in the table above are actual population estimates for Attwater's Prairie Chickens for the years shown. Construct a line graph showing the population estimates by year.
2. What is the increase or decrease in the number of Attwater's Prairie Chickens between the years 1937-1950, 1950-1971, 1971-1983, 1983-1997, and 1995-1999.
3. Which four-year period showed the greatest decrease in prairie chicken numbers? Which four-year period showed the greatest increase?
4. Of the years 1937, 1950, and 1963, which period had the greatest decrease in prairie chicken numbers?

Challenge Question:

5. If biologists and land managers are able to increase the Attwater's Prairie Chicken population by 50 birds each year, how long will it take to reach the 1971 population estimate of 2,220 birds?

Suggested for Grades 6 and 7

ANSWERS

1. x axis: 1937-1995; y axis 1000-9000
2. -4418, -1980, -782, -1370
3. decrease : 1987-1991 (626 birds); increase : 1967-1971 (1150 birds) : 1995-1999; decrease (22 birds)
4. 1937 to 1950 (loss of 4418 birds)

Challenge Question

5. 43 years

ATTWATER'S PRAIRIE CHICKEN MATH ACTIVITY

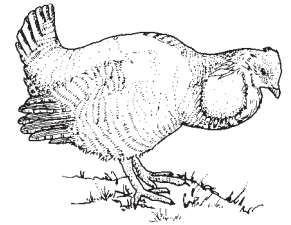


Table 1. Numbers of Attwater's Prairie Chickens in Texas

Year	1937	1950	1963	1967	1971	1973	1975	1977	1979	1981	1983	1985	1986	1987
# of Birds	8618	4200	1335	1070	2220	1782	2254	1506	1718	1438	1438	1462	874	1108

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1999	2001	2002	2005
# of Birds	926	432	470	482	456	456	158	68	42	58	46	44	40	40

1. The numbers in the table above are actual population estimates for Attwater's Prairie Chickens for the years shown. Using these census data, construct a line graph showing the population estimates by year.
2. Calculate the increase or decrease in Attwater's Prairie Chickens for each year shown from 1937-1996.
3. Which two-year period showed the greatest decrease in prairie chicken numbers? Which two-year period showed the greatest increase?
- 4a. Of all the years shown above, which consecutive period had the greatest decline in prairie chicken numbers?
- 4b. Compare the percents of decline between two 13-year periods: 1937-1950 and 1983-1996.
5. Using the table above, calculate the average change in prairie chicken numbers between 1985 & 1996.
6. If biologists and land managers are able to increase the Attwater's Prairie Chicken population by an average of 50 birds each year, how long will it take to reach the 1971 population estimate of 2,220 birds?
7. Compared to the previous year, what was the percent decline in the years 1986, 1989, 1994, 1995 and 1996?

ANSWERS

- 3. decrease : 1975-1977 (748 birds); increase : 1973-1975 (472 birds)
- 4a. 1937 to 1950 (loss of 4418 birds)
- 4b. 51% and 97%
- 5. -129 birds
- 6. 43 years
- 7a. 1986, 1989, 1994
- 7b. 1986 - 40%, 1989 - 53%, 1994 - 65%, 1995 - 57%, 1996 - 38%

"HOME, HOME ON THE RANGE"

Classroom Activity About The ATTWATER'S PRAIRIE CHICKEN HABITAT AND DISTRIBUTION



This classroom activity for grades three to six is best used after students have already become familiar with the prairie chicken's natural history (see other activities).

HABITAT is defined as the conditions necessary for a plant or animal to live. In other words, it is the arrangement of food, water, shelter or cover, and space suitable to a species needs. Examples of what's included are places to find food throughout the year, places to rest and hide from predators and places to find a mate and raise a family.

WHAT IS YOUR PERSONAL HABITAT? Ask students to define their own personal habitat by identifying what they need to live from day to day. This includes a home, clean water to drink, place to buy food, school, places for entertainment, and medical and dental offices. (The teacher may want to help students draw boundaries of a few habitats on a city or county map.)

DISTRIBUTION RANGE is defined as the geographic area in which all members of a species and their habitat are found. The amount of space is highly variable from a few inches (in the case of a bacterium) to most of the land of the planet (the human being).

WHAT IS THE DISTRIBUTION RANGE FOR YOUR SPECIES? All people belong to the species *Homo sapiens* (our scientific name). How many individuals of your species are there in the world? (5.5 billion is the estimated world population.) Even though people are often of different sizes and colors, we all belong to the same species. What is the distribution range of your species? Look at a world map and identify where the human species lives. In what areas don't humans live?

An **ENDANGERED SPECIES**, is an animal or plant that is in danger of becoming extinct. The loss of its habitat (living space) is often the reason why there aren't many individuals left.

The **ATTWATER'S PRAIRIE CHICKEN** has the scientific name *Tympanuchus cupido attwateri*. In 2005, there were only about 40 wild members of this species in the entire world. (Write and compare the numbers of humans and prairie chickens on the chalk board.) Its habitat (where it lives) is **COASTAL PRAIRIE GRASSLANDS**. Grasslands are areas that consist primarily of grasses with very few woody plants like bushes and trees. The prairie chicken's **HISTORIC DISTRIBUTION RANGE**, where they used to be found, was in the coastal prairies of Texas and Louisiana, an area that once comprised about six million acres. Today Attwater's prairie chicken is found in

the prairie grasslands of only two counties in Texas. Less than 50,000 acres of prairie currently provide Attwater's prairie chicken habitat. (See diagram of historic and present ranges). Using the diagram, have a student go to the large classroom world and state maps and outline to the class the prairie chicken's historic and present ranges. How does its present distribution range compare to that of the human species?

Within coastal prairies, what are the Attwater's prairie chicken's **HABITAT NEEDS**? Based on what you already know about the life history of the prairie chicken, what specifically does this endangered species need to survive? Ask students to make a list. The list should include: places to find food (food is green foliage, flowers, seeds and insects found in native plants); safe places in tall grasses to hide and make nests; and **LEKS** (also known as booming grounds) that are flat, short grassy areas where male prairie chickens gather to **DANCE** and display to females prior to breeding.

LOSS OF HABITAT is the most severe threat to the survival of prairie chickens. What are some of the reasons habitat is gone? Ask students to think about what kinds of human activities alter natural areas. The following are the most important threats for this species. **URBANIZATION**, or the growth of cities (such as Houston), replaces natural vegetation with buildings and roads. **LOSS OF NATIVE PLANTS** due to the planting of crops, for example, rice, and the conversion of native grasslands into pastures of introduced (not native) grasses. **UNCONTROLLED HEAVY GRAZING** by livestock can remove the tall grass cover the chickens need to hide from predators and make nests, and makes it easier for brush and trees to take over the prairie. A very important problem for the prairie chicken and for most Texas endangered species is **LACK OF AWARENESS** about their natural history and habitat needs. Many people have never heard of Attwater's prairie chicken.

PROBLEM SOLVING ACTIVITY

(This exercise should be done after students have become familiar with prairie chickens by completing other activities.)

Instructions to the Students: Now that you have completed several prairie chicken activities in this unit you are now ready to be a **PRAIRIE CHICKEN BIOLOGIST**. You understand a great deal about the natural history of prairie chickens and what they need to survive. As a biologist, you must now **MAKE RECOMMENDATIONS** to city, county and state officials about how to save this endangered species. We will now do an exercise to come up with some ideas.

Instructions to the Teacher: Break the class into groups and instruct them to spend fifteen minutes **BRAINSTORMING** ideas about how to help prairie chickens. Appoint a

recorder for each group to list the five best ideas the group has. When time is up, reassemble the class and share ideas. As the teacher you may want to lead the children's suggestions toward the following management practices that are being used today to help save prairie chickens.

PROTECT EXISTING HABITAT

Prairie grasslands are being protected in preserves such as the Attwater's Prairie Chicken National Wildlife Refuge in Eagle Lake. Biologists take action on these areas to keep predator populations low (since the prairie chicken is so endangered now). They also work to keep the grasslands healthy by setting fires (prairie plants require fire for growth and reproduction) and keeping the cattle numbers appropriate. More habitat conservation areas need to be established.

HABITAT MANAGEMENT AND RESTORATION--WORKING WITH LANDOWNERS

Some ranchers are doing a good job of protecting and restoring prairie chicken habitat. State and federal conservation managers are working with landowners to restore native vegetation where it has been removed as well as offering landowners a variety of options on how to continue farming and ranching while also providing habitat for prairie chickens. Examples include brush control, rotational grazing and determining appropriate stocking rates.

CAPTIVE BREEDING PROGRAMS

About 200 prairie chickens are currently in zoos like San Antonio Zoo. These birds are carefully bred each year to allow young birds for release on the prairie. The chicks are raised in captivity until they are old enough to take care of themselves. Then they are released back into protected areas, like the Refuge. This minimizes the loss of chicks to predators and bad weather such as heavy spring rains.

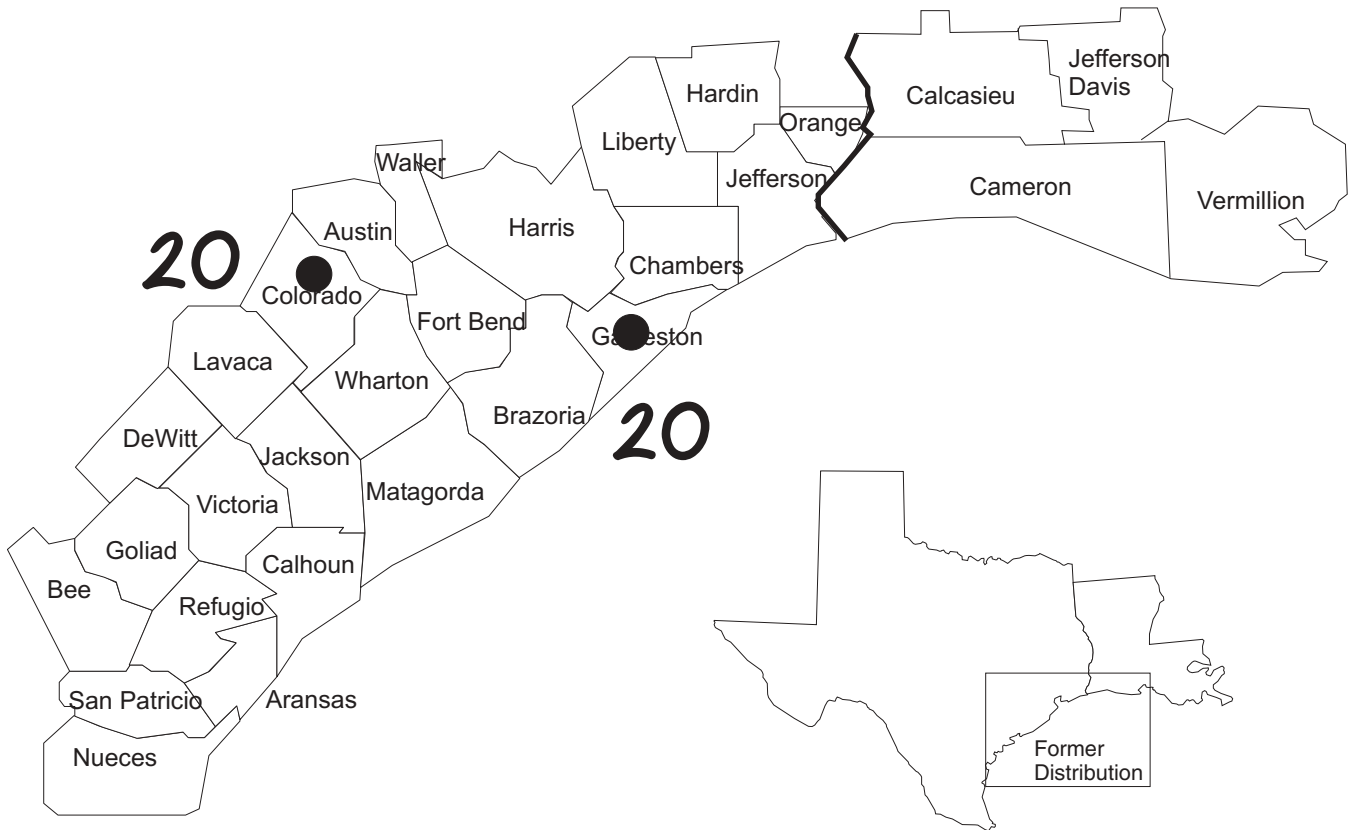
ENVIRONMENTAL EDUCATION

Everyone can help prairie chickens by learning about their natural history and conservation needs and sharing this information with others. Well informed students can teach their parents, brothers and sisters and friends all about this fascinating bird. Understanding the life history of the prairie chicken will help build support for efforts to help this endangered species survive.

Following the presentation of ideas and subsequent discussion, you may want to have the students **TAKE ACTION** and write to government officials or write a letter to the editor of the newspaper expressing their concerns for Attwater's prairie chicken along with the recommendations they have for saving this endangered species.

*Prepared by Texas Parks and Wildlife
Wildlife Diversity Program*

ATTWATER'S PRAIRIE CHICKEN CURRENT AND FORMER DISTRIBUTION

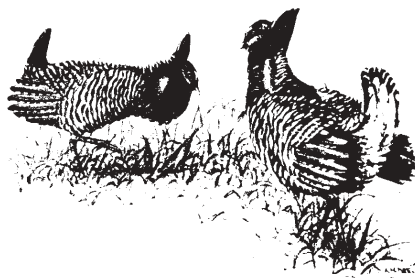


CURRENT DISTRIBUTION

20 birds, The Nature Conservancy of Texas preserve, Galveston County

20 birds, Attwater's Prairie Chicken National Wildlife Refuge

2005 census



Attwater's Prairie Chicken Wordfind

The **ATTWATER'S PRAIRIE CHICKEN**, a member of the **GROUSE** family, lives in the **COASTAL PRAIRIE** region of **TEXAS**. **GRASSLANDS** with **TALL GRASSES** such as little **BLUESTEM** and **INDIANGRASS** provide **HABITAT** for these birds.

In early March, prairie chickens gather to choose a mate in an area of bare ground or short grass called a **BOOMING GROUND** or **LEK**. The males **DANCE** and make a booming noise, produced from air sacs on their necks, to attract females. **HENS** build their **NEST** in tall grass **COVER** and the **EGGS** hatch in April or May. Sometimes, **PREDATORS** such as **SNAKES**, **SKUNKS**, or **COYOTES** eat eggs or chicks. Because the prairie is so flat, heavy **RAINS** in April and May can flood nests and destroy eggs and small chicks.

Attwater's Prairie Chickens eat a wide variety of plant parts and **INSECTS**. Adults eat mostly small green leaves and **SEEDS**, and insects when they are available. **CHICKS** eat mostly insects.

Attwater's Prairie Chickens have declined from an estimated population of one million birds in coastal Louisiana and Texas when settlers first arrived, to less than 100 birds remaining today. Loss of habitat is the reason for this decline. Prairie that used to provide a home for prairie chickens is now used as **CROPLAND** to grow **RICE** and other crops. The growth of **CITIES** has caused additional habitat loss.

WORDFIND



B O O M I N G A E R T N D R O P
L L Z X C A R A I N S U Y T E B
U Y T G F T O A M A Z I F P B U
E J G H S K U N K S P Y D L M I
Q W T A L L G R A S S E S M A T N O K J H T W A W O
R T U T M E E R T J T E X A S Y D A N C E Q Q H E L
L G O T O K L S F G E T U I L K S Z D C N Z Z N R K
A R P W D S M G F A M W Q X B N R S Y U S V V E T J
N P R A I R I E C H I C K E N T Y E C O O M B R G H
P E A T B R N D Y B N V O D E G G S R L C H I C K S
F I R E Y C D U N C S A R P S N Y P A T X N J O Y P
Z T G R H S I H G H E H K L T M I L A X D F T V J L
Y G F S J K A F B A C O A S T A L P R A I R I E R E
C R O P L A N D C I T A R Y N A V R B O E I N R F H
I O S R D F G R A S S L A N D S W E O O L W E D F G
O U V E U V R S U M E R W T I M R D F D E E T Y U C
P S M Q G R A Z I N G D A W O S H A B I T A T L A I
C E N R P I S R U M P L E S T I L T K I V M H F D T
Y G B X K C S E E D S T T E C H C O Y O T E S R U I
O D F C N E T P W D N P S N F S C R M F U T T A M E
U S R A B A S E R F G V C Y U I Q S A L S N A K E S

Directions: Read the following story to learn about the Attwater's Prairie Chicken. The words in black capital letters are hidden in the wordfind. Can you find them? Good luck!