Expedition Days Online

# TIPPING THE SCALES

## Study Guide

**Student name:**_____

EXPEDITION DAYS

MCDOWELL SONORAN CONSERVANCY

# Tipping the Scales Knowledge Check

## Instructions

1. Answer the following questions. You may use a list, incomplete, or complete sentences.
2. Listen to the Discussion Corner in the presentation.
3. Revise your answer to include any new ideas. Include examples from the slides and video.

## Questions

- What is an invasive species?

- How do invasive species get into new ecosystems?

- When does a non-native species turn into an invasive species?

# Native or Non-native?

**Goals:** Identify species that are native and non-native to the Sonoran Desert.

## Part 1

1. Look at the list of species in the table below.
2. Put an “X” in the column that matches whether the species is native or non-native.
3. Go back to the presentation slides before going on to Part 2.

| Species | Native | Non-native |
|---|---|---|
| Cattle | | |
| Palm trees | | |
| Saguaro | | |
| Rattlesnakes | | |
| Mesquite trees | | |
| Peach-faced lovebirds | | |
| Orange trees | | |
| Pigeons | | |
| Palo Verde trees | | |
| Cholla | | |

## Part 2

Were there any non-native species you were surprised to find out they are not native? Which ones surprised you? Why did they surprise you?

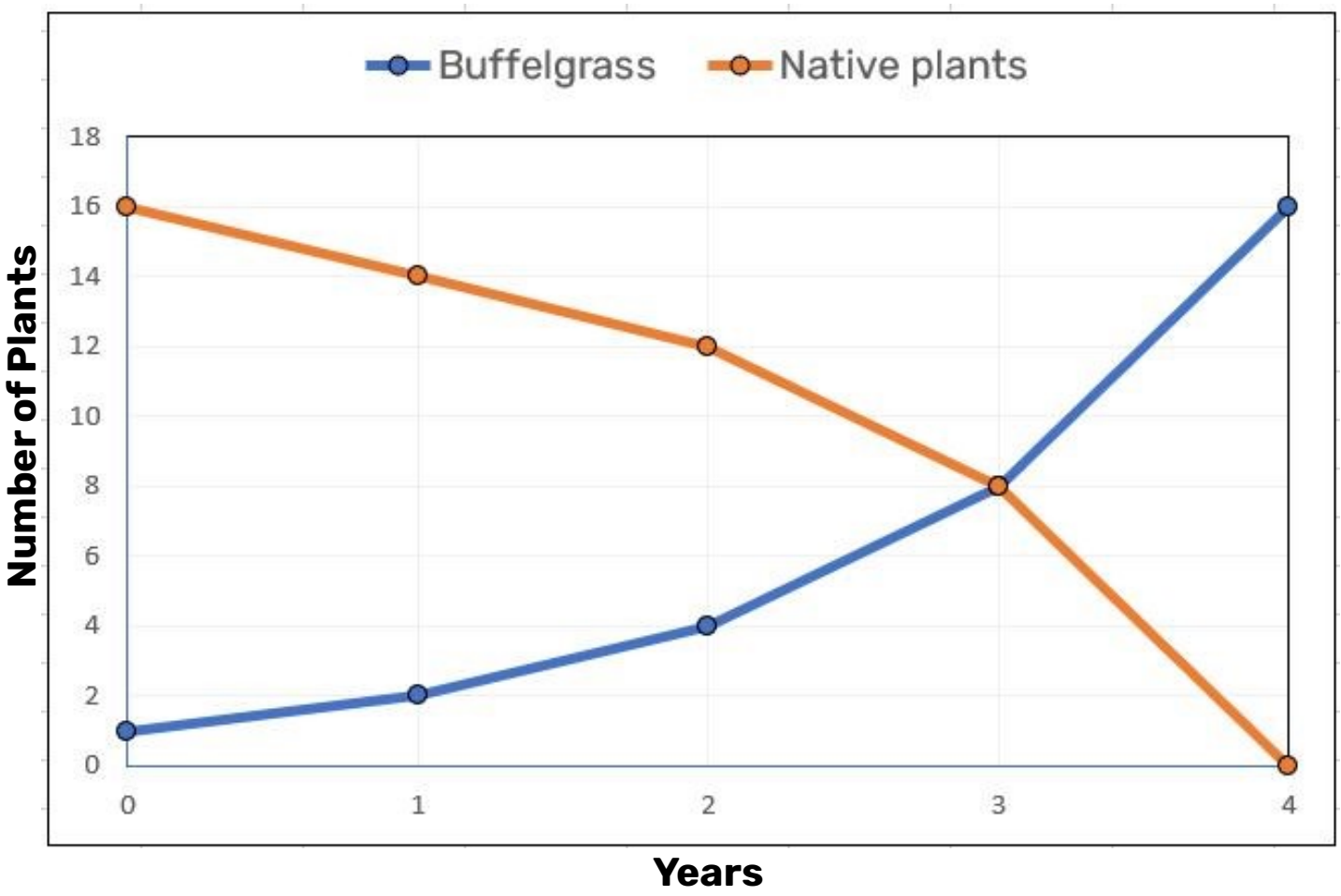
# Buffelgrass in the Desert

**Goals:** Compare the populations of buffelgrass and native desert plants over time and come up with possible answers for why we see the changes in the two populations.

## Part 1

1. Use the graph to answer the questions on the next page:

Change of Buffelgrass and Native Plants over Time




Go to the next page

1. Which colored line represents the buffelgrass population?

2. Which colored line represents the native plants population?

3. At the start there is one buffelgrass plant. How many buffelgrass plants are there in year 2? Year 3? Year 4?

4. At the start there are 16 native plants. How many native plants are there in year 2? Year 3? Year 4?

5. What is happening to the number of native plants as the number of buffelgrass plants increase?

**Part 2**

How are invasive species so harmful to an ecosystem? Use what you learned from the graph and the video.

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## Questions

- What is buffelgrass?

- How has the invasive species buffelgrass affected the Sonoran Desert ecosystem?

- What is happening to the native grasses versus the invasive buffelgrass over time?

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## Questions

- What is a keystone species?

- How do scientists use keystone species to understand the health of an ecosystem?

- What is one important keystone species in the Sonoran Desert?

- What is its relationship to other Sonoran Desert species?

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## Questions

- What can negatively affect keystone species?

- What happens to the ecosystem when the numbers of a keystone species decrease?

- Why are saguaros so heavily protected in Arizona?

# Climate or Weather?

**Goals:** Use what you know about climate and weather to decide whether each statement in the following conversation is talking about climate or weather.

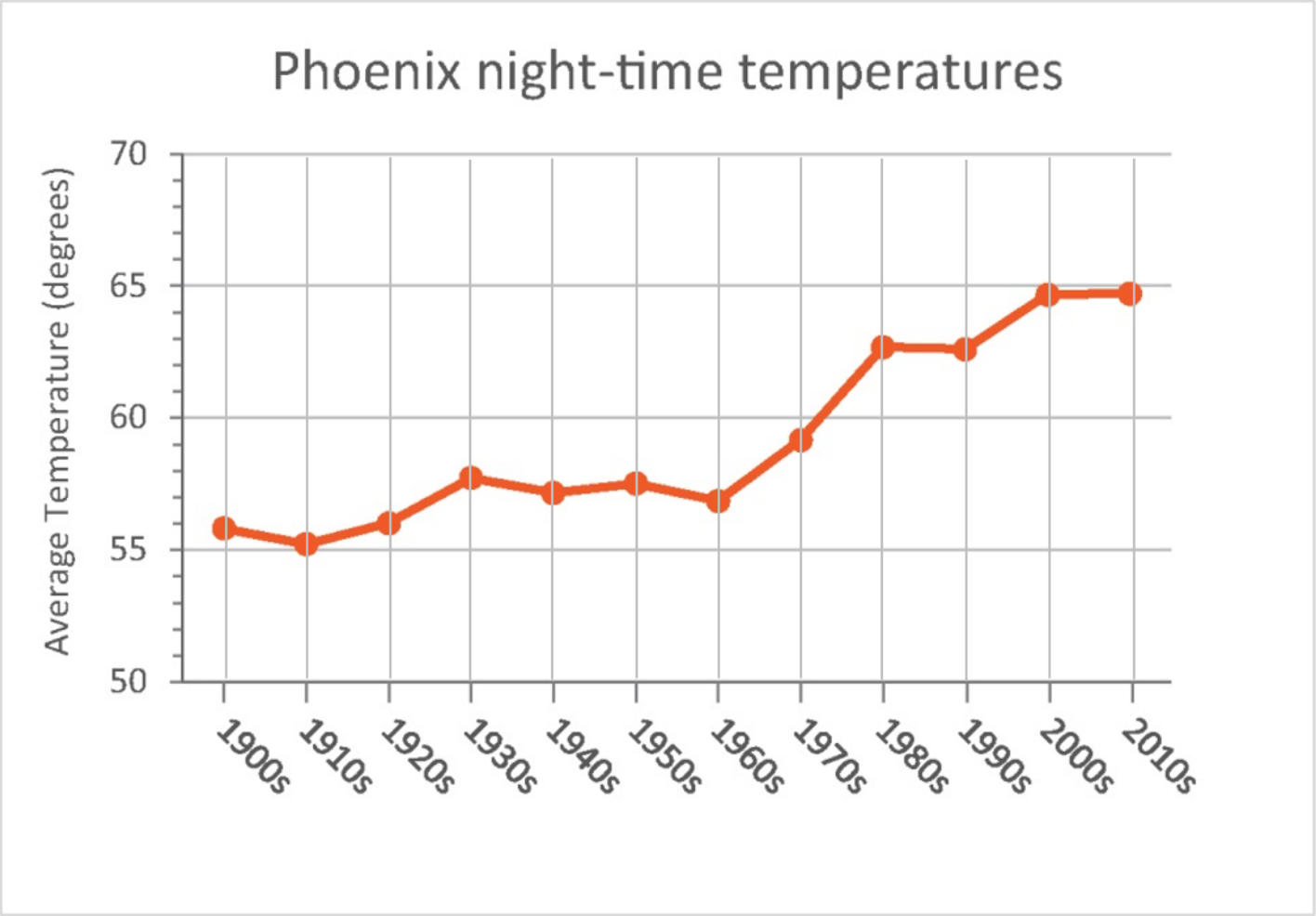
1. Read the conversation below.
2. Decide whether each statement is talking about climate or weather and write your choice next to the sentence.

| | Write whether you think the person is talking about climate or weather. |
|---|---|
| Mia: I talked to my cousin yesterday who lives in Wisconsin and she said it was only 10 degrees Fahrenheit and snowing outside! | |
| Noah: Whoa, that sounds so cold! I'm glad we live in Phoenix, Arizona where our winters usually don't get too cold. | |
| Mia: Yeah, but sometimes I think it would be nice to live somewhere where you got to play in the snow every year. | |
| Noah: We got snow in Scottsdale, Arizona that one day in February 2021, though! | |
| Mia: That was really cool! But that's not normal for the Sonoran Desert. Normally, we don't get snow here. | |
| Noah: You're right, it was pretty weird to see snow in Scottsdale. I like snow, but I still like living somewhere I don't have to deal with it every winter! | |

# Changing the Climate

**Goals:** Use the graph to come up with possible effects of human activity on climate in the Sonoran Desert.

1. Take a look at the graph below. This graph shows the Phoenix, AZ temperature data that you compared to the temperatures in Tombstone, AZ in the Urban Desert.




2. What is happening to the temperature in Phoenix, AZ over time?

Go to the next page

3. Think back to the Urban Desert. What are some reasons we see this happening to the temperature in Phoenix?

4. This temperature data covers a long period of time (110 years). Do you think the climate in Phoenix is changing or staying the same? Justify your answer.

5. Do you think humans are affecting the climate in the Sonoran Desert? Justify your answer.

# An Unbalanced Ecosystem

**Goals:** Explain how climate change affects the Sonoran Desert ecosystem, including the survival of invasive species and keystone species.

## Instructions

Invasive species, losing keystone species, and climate change all affect the health of an ecosystem. Think about the following questions:

- How does climate change impact the Sonoran Desert ecosystem, including invasive species and keystone species?
- What do you think is going to happen to Sonoran Desert plants and animals (including humans) if we do not slow climate change?

You can draw a picture, write a story or essay, build a model, write a rap song, or compose a poem. Use your imagination and illustrate your ideas about what might happen to the Sonoran Desert as our climate changes.

Use the space on the next page for your ideas.

Go to the next page