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Exploring Arizona's Biotic Communities



An online exploration of the biotic communities of Arizona
with an emphasis on Language Arts and Social Studies

Provided by:



Arizona Game & Fish

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Exploring Arizona's Biotic Communities

Unit Overview

OVERVIEW

An ecosystem is defined as a community of plants and animals that interact with each other and their environment. They are determined by environmental differences such as climate, elevation, and soil. They can occur at very large scales (like continents) and very small scales (like your backyard). The state of Arizona can be divided into relatively large ecosystems called biotic communities. In this unit, students will have the opportunity to explore these communities and the plants and animals that have adapted to each one.

The unit begins with the students reading some non-fiction text from an online source. In Lesson 1, they use graphic organizers to assist with reading comprehension. Meanwhile, the second lesson focuses on the new vocabulary introduced in the text.

Once the students have a basic understanding of biotic communities, the research begins. Lesson 3 allows students to use Internet resources to study a new plant or animal. To assess their understanding, they must write a narrative essay describing a typical day for this organism. In the fourth lesson, the students add on to the information they gained to design a trading card for their animal or plant. Then, the students play a game in which they try to determine which biotic communities each belongs. In the final lesson, groups of students must use all of their knowledge (as well as conducting more research) to develop a visual display about a particular biotic community.

Although these lessons were designed as a unit, they can stand by themselves and be taught individually. However, some activities may require familiarity with concepts or skills that were taught in earlier lessons. Make sure to read through the lesson and determine what knowledge your students are expected to know before carrying it out with the students.

SUGGESTED GRADE LEVELS

- 6 – 10

TIME FRAME

- 15 – 17 days (45 minutes each day)

ENDURING UNDERSTANDINGS

After completing the activities contained in this unit, the student should understand these basic concepts:

- Ecosystems, which are based on differences in soil, climate, and human and natural disturbances, can be defined on local or global scales.
- Ecosystems change over time due to natural and human events.



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- The tremendous diversity of Arizona is caused by the variety of ecosystems.
- Plants and animals are adapted to survive in the environment in which they live.
- Maps come in various types including thematic (rainfall, population, vegetation) and topographic.
- Non-fiction authors organize information to help the reader comprehend.
- Context clues in readings can often help when encountering unfamiliar words.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

The lessons in this unit were designed to present an integrated approach to learning. Not only will the students be introduced to science concepts dealing specifically with ecosystems, but they will also use cover topics in social studies and develop reading comprehension and writing skills. Through the course of this unit, they will read nonfiction text, write an essay, develop and interpret maps, use the Internet to perform research, and create a visual presentation. Although each lesson includes the specific performance objectives achieved for each grade level, the following general concepts are covered:

Subject	Strand	Lesson				
		1	2	3	4	5
Reading	1		√			
	2					
	3	√		√	√	√
Writing	1			√	√	√
	2			√	√	
	3	√		√		
Social Studies	1					
	2					
	3					
	4	√				√
	5					



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Exploring Arizona's Biotic Communities

Lesson 1: Mapping Biotic Communities

LESSON OVERVIEW

Students read online information and take notes using graphic organizers and reading strategies to reinforce their understanding. Students learn about biotic communities and locate them on shaded relief maps.

SUGGESTED GRADE LEVELS

- 6 – 10

ENDURING UNDERSTANDINGS

- Ecosystems, which are based on differences in soil, climate, and human and natural disturbances, can be defined on local or global scales.
- Arizona has a tremendous natural diversity because of the state's variety of ecosystems.
- Maps come in various types, including thematic (rainfall, population, vegetation) and topographic.
- Nonfiction authors organize information to help the reader comprehend.

OBJECTIVES

Students will:

- Define key terms (e.g., biotic community, topography, adaptation, and others as appropriate for the grade level).
- Read, understand, and take effective notes on key concepts and terms in the selected reading.
- Recognize the main idea and supporting details.
- Locate places, elevations, and biotic communities on a map.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Reading	Writing	Social Studies
6	S3-C1-02; S3-C1-09	S3-C2-01; S3-C6-01	S4-C1-01; S4-C1-03; S4-C1-05; S4-C2-02
7	S3-C1-02; S3-C1-10	S3-C2-01; S3-C6-01	S4-C1-01; S4-C1-03; S4-C1-05; S4-C2-02; S4-C5-01
8	S3-C1-02; S3-C1-10	S3-C2-01; S3-C6-01	S4-C1-01; S4-C1-03; S4-C1-05



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9	S3-C1-01; S3-C1-08		S4-C1-01; S4-C1-02;
10	S3-C1-01; S3-C1-07; S3-C1-08		

Note: The full text of these standards can be found in Appendix A.

TIME FRAME

- 2 days (45 minutes each day)

MATERIALS

- Access to “Exploring Arizona’s Natural Resources” (Web site or CD available from azgfd.gov)
- World map
- *Reading Anticipation Guide* (one per student)
- *Biotic Communities Graphic Organizer* (one per student)
- *Map of Arizona: Student Version* (one per student)
- *Map of Arizona: Teacher Version* (one transparency)
- *Arizona Topography Map* (one per group)
- *Average Annual Precipitation Map* (one per group)
- *Mapping Biotic Communities Rubric* (one per group)
- Blank overhead transparency

TEACHER PREPARATION

- Review “Exploring Arizona’s Natural Resources” and select vocabulary specific to the grade level being taught.
- Be sure computers with Internet access are available.
- Prepare a paragraph describing your own “biotic community” to share with students as a model paragraph.
- Decide on groupings for student teams. Four is the recommended number in a group. It is best to use heterogeneous teams.
- Make copies of *Arizona Topography Map*, *Average Annual Precipitation Map* and the *Mapping Biotic Communities Rubric* for each group.
- Make copies of *Biotic Communities Graphic Organizer* and *Reading Anticipation Guide* for each student.

SUGGESTED PROCEDURES

Session 1:

1. Survey students to see where they were born.
2. Students write a short descriptive paragraph describing that place. Include terrain type (mountainous, desert, forest, plains...), temperature, rainfall, etc. (Be flexible. If a student prefers to write about a place he feels closer to, that's okay.)
3. Discuss a few of these places. Ask students to talk about temperature, rainfall, type of terrain, urban or rural setting—any features you want to emphasize. Be sure to introduce the vocabulary words appropriate to your level. Begin to introduce the term “biotic community” as a group of plants and animals living in the same area that interact with one another.



4. Using a world map, point out the polar regions. Discuss why no one was born there. Ask them what kinds of animals might live in such cold places, and how are they able to survive? Include the term "adaptation" in your discussion. Lead the students into a discussion about what is required in a habitat for humans to live there.
5. Students now add a paragraph to their papers discussing how humans have "adapted" to living in the places they described (e.g., we have developed ways to cool our homes to make them comfortable in the desert's extreme heat).
6. Students complete Part 1 of the *Reading Anticipation Guide*.
7. When completed, allow students time to read and take notes on the "Explore Arizona" section of the Web site, stopping after the section on "Development" under "Changes Over Time." Be sure to have them pull out unfamiliar vocabulary terms and list them on a separate sheet of paper. This will be particularly useful for the next lesson.
8. Using their notes, students complete Part 2 of the *Reading Anticipation Guide*.

Session 2:

1. Students hand in the *Reading Anticipation Guide*. Ask if they were surprised by anything in their reading. Discuss.
2. Model web or spider mapping on the overhead projector by reading the "Alpine Tundra" section together (see sample web).
3. Give students the opportunity to use this technique by reading and taking notes on each of the remaining biotic communities. *Alternative: assign teams of students to different communities and ask them to present their findings to the rest of the class.*
4. Briefly discuss their observations about the various communities. How are they different? Where can they be found?
5. Distribute copies of the *Map of Arizona*. Use the overhead and the teacher version of the Arizona map to help students locate key places on their maps (e.g., Grand Canyon, Salt River, Colorado River, Yuma, Page, Sunrise Ski Area, etc.). Ask students to name places they have visited in Arizona and help them locate these on the projected map. Have them place these locations on their outline maps.
6. Divide the students into their teams, and give each team the *Arizona Topography* and *Average Annual Precipitation* maps and a scoring rubric. Clarify items on the rubric if needed.
7. Working as teams, students locate the various biotic communities on the shaded relief map and then mark the locations on their outline maps. Students must use elevation, rainfall, and other information from the Web site to make their decisions. Teams should decide on a separate color to designate each biotic community and shade in the area using that color.
8. Each student independently makes a key to the map.
9. Students turn in their Biotic Communities map.

ASSESSMENT

- Informal evaluation of participation in the group activity
- Biotic Communities map using the rubric provided
- *Reading Anticipation Guide*



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EXTENSIONS

- Students may conduct a Web search to find information on the differences in the criteria used by various scientific fields to define or delineate biotic communities. For example, do plant biologists and animal biologists use the same or different criteria to designate biotic communities?



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Appendix A: Arizona Department of Education Standards – Full Text

Reading Standards

Grade	Strand	Concept	Performance Objective
6	3	1 – Expository Text	2 – Summarize the main idea and critical details of expository text, maintaining chronological or logical order 9 – Draw valid conclusions about expository text, supported by text evidence
7	3	1 – Expository Text	2 – Summarize the main idea (stated or implied) and critical details of expository text, maintaining chronological order, sequential, or logical order 10 – Make relevant inferences about expository text, supported by text evidence
8	3	1 – Expository Text	2 – Summarize the main idea (stated or implied) and critical details of expository text, maintaining chronological order, sequential, or logical order 10 – Make relevant inferences about expository text, supported by text evidence
9	3	1 – Expository Text	1 – Compare (and contrast) original text to a summary for accuracy of the main ideas, inclusion of critical details, and the extent to which it conveys the underlying meaning of the original text 8 – Support conclusions drawn from ideas and concepts in expository text
10	3	1 – Expository Text	1 – Compare (and contrast) original text to a summary for accuracy of the main ideas, inclusion of critical details, and the extent to which it conveys the underlying meaning of the original text 7 – Make relevant inferences by synthesizing concepts and ideas from a single reading selection 8 – Support conclusions drawn from ideas and concepts in expository text



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Writing Standards

Grade	Strand	Concept	Performance Objective
6	3	2 – Expository	1 – Record information (e.g. observations, notes, lists, charts, map labels and legends) related to the topic
		6 – Research	1 – Write a summary of information from sources (e.g. encyclopedias, Web sites, experts) that includes: <ul style="list-style-type: none"> a. paraphrasing to convey ideas and details from the source b. main idea(s) and relevant details
7	3	2 – Expository	1 – Record information (e.g. observations, notes, lists, charts, map labels and legends) related to the topic
		6 – Research	1 – Write a summary of information from sources (e.g. encyclopedias, Web sites, experts) that includes: <ul style="list-style-type: none"> c. paraphrasing to convey ideas and details from the source d. main idea(s) and relevant details
8	3	2 – Expository	1 – Record information (e.g. observations, notes, lists, charts, map labels and legends) related to the topic
		6 – Research	1 – Write a summary of information from sources (e.g. encyclopedias, Web sites, experts) that includes: <ul style="list-style-type: none"> e. paraphrasing to convey ideas and details from the source f. main idea(s) and relevant details

Social Studies Standards

Grade	Strand	Concept	Performance Objective
6	4	1 – The World in Spatial Terms	1 – Construct maps, charts, and graphs to display geographic information 3 – Interpret maps, charts, and geographic databases using geographic information 5 – Interpret thematic maps, charts, and databases depicting various aspects of world regions
		2 – Places and Regions	2 – Describe the factors that cause regions and places to change



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Social Studies Standards Continued

Grade	Strand	Concept	Performance Objective
7	4	1 – The World in Spatial Terms	1 – Construct maps, charts, and graphs to display geographic information 3 – Interpret maps, charts, and geographic databases using geographic information 5 – Interpret thematic maps, charts, and databases depicting various aspects of world regions
		2 – Places and Regions	2 – Explain the concept of regions and why they change
		5 – Environment and Society	1 – Identify the physical processes (e.g., conservation of natural resources, mining, water distribution in Arizona) that influence the formation and location of resources
8	4	1 – The World in Spatial Terms	1 – Construct maps, charts, and graphs to display geographic information 3 – Interpret maps, charts, and geographic databases using geographic information 5 – Interpret thematic maps, charts, and databases depicting various aspects of world regions
		1 – The World in Spatial Terms	1 – Construct maps using appropriate elements (i.e., date, orientation, grid, scale, title, index, legend, and situation) 2 – Interpret maps and images (e.g., political, physical, relief, thematic, Geographic Information Systems [GIS] and Landsat)
High School	4	2 – Places and Regions	1 – Identify the characteristics that define a region: <ul style="list-style-type: none"> a. physical processes (i.e., climate, terrain, resources) b. human processes (i.e., religion, political organization, economy, demographics)
		3 – Physical Systems	1 – Analyze how weather and climate influence the natural character of a place (e.g., the effect of heat transfer, Earth's rotation, and severe weather systems)



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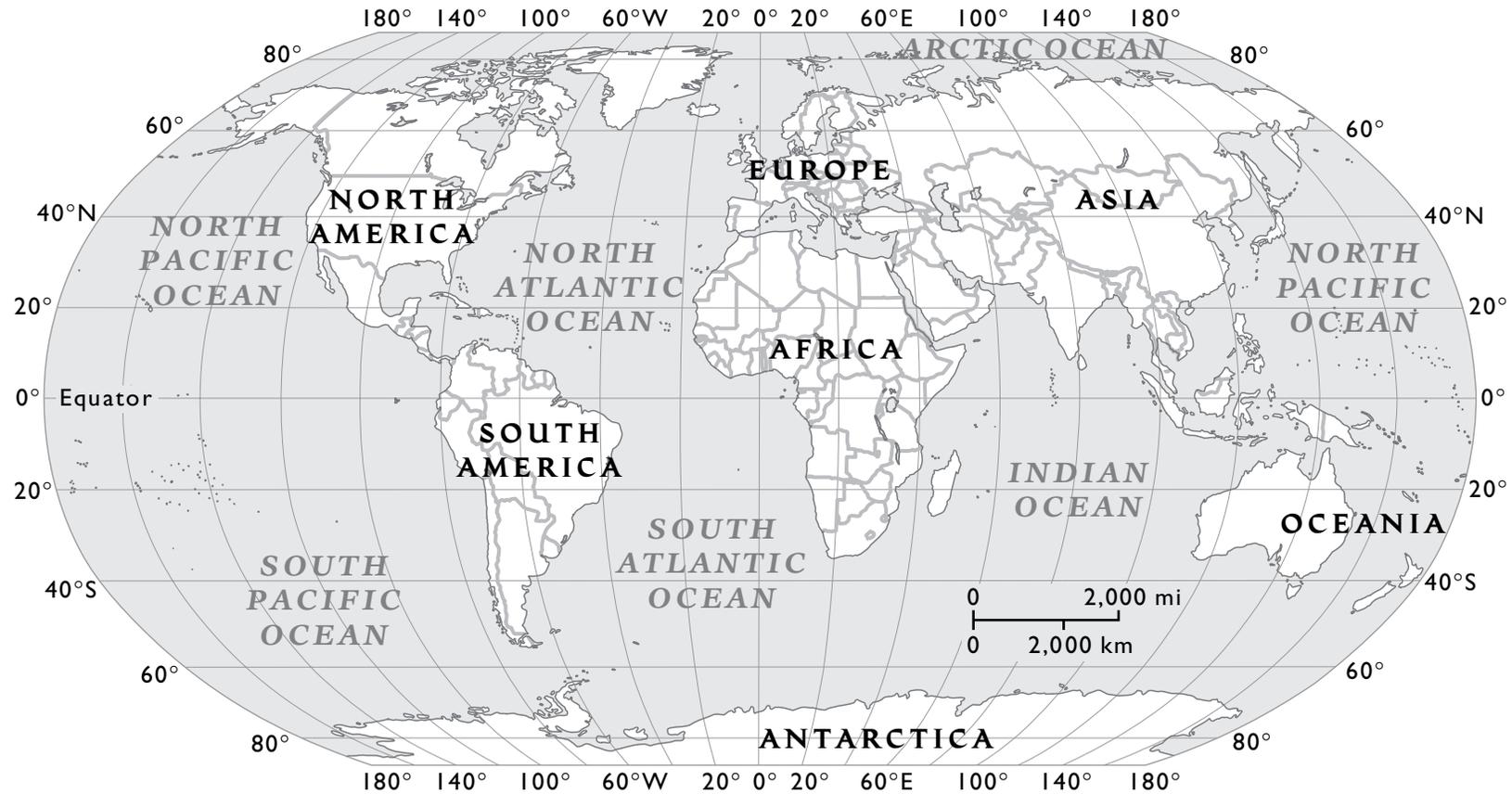
Appendix B: Worksheets and Overheads

The pages that follow contain the worksheets listed below:

- A. *World Map* – If a map is not available in the classroom, use the following world map as an overhead or student handout. (1 page)
- B. *Reading Anticipation Guide* – Worksheet for students to fill out as they read the material presented on the “Exploring Arizona’s Natural Resources” Web page (2 pages)
- C. *Graphic Organizer Sample – Alpine Tundra* – Guide your students through a sample web by using this as a key or an overhead. (1 page)
- D. *Biotic Communities Graphic Organizer* – One version of a web that your students can use as they study the biotic communities (1 page)
- E. *Map of Arizona: Student Version* – A blank map that the students can use to map the biotic communities (1 page)
- F. *Map of Arizona: Teacher Version* – The same map provided to students but with important locations labeled (1 page)
- G. *Arizona Topography Map* – A shaded relief map showing elevations throughout the state (1 page)
- H. *Average Annual Precipitation Map* – A map showing the average precipitation that areas of Arizona receive each year (1 page)
- I. *Mapping Biotic Communities Rubric* – One possible method for assessing the student-generated maps (1 page)



THE WORLD



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Reading Anticipation Guide

Explore Arizona

PART 1:

Before you read the Web assignment, read each statement in Part 1. If you believe that the statement is true, place a check in the *Agree* column. If you believe that the statement is false, place a check in the *Disagree* column. Be ready to explain your choices.

Agree Disagree

- | | | |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. Arizona is mostly desert. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. Plants and animals living in one area may not be found in other areas. |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. Elevation and latitude are important factors in determining temperature. |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. Arizona receives limited moisture. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. The rain shadow effect means that one storm is closely followed by another less severe storm. |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. Arizona's topography ranges from 137 feet above sea level to more than 12,000 feet. |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. Some of Arizona's most rugged terrain is found in the northern half of the state. |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. Plants thriving in a particular biotic community have an upper limit, the altitude where it is too wet or too cold to grow, but not a lower limit. |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. Southwest facing slopes and mountainsides tend to be drier because they are closer to the equator. |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. Most of the changes to Arizona's landscape and native plant and wildlife populations have occurred as a result of natural events. |

Now read the section titled "Explore Arizona" from the Web site. Take notes, using the statements above as a guide. In addition, write down any **vocabulary** that is new or used in an unfamiliar way.



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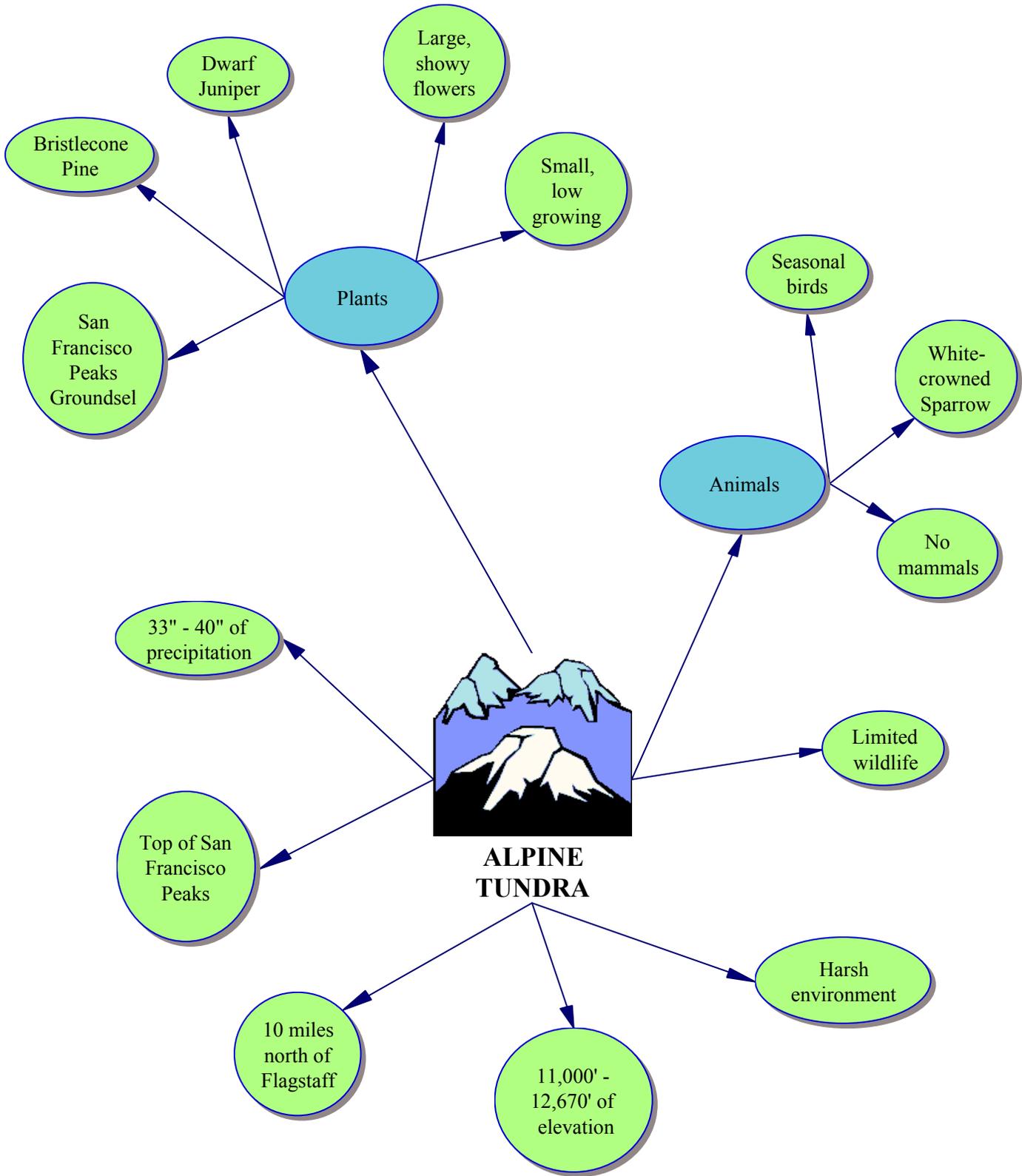
PART 2:

After you have finished reading, use your notes to review statements 1–10. If the information you read supports your choice, place a check in the *Yes* column in Part 2. Then write what the text says in your own words in the column under “*Why my choice is correct:*” If the information does NOT support your choice, place a check in the *No* column. Then write what the text says in your own words in the column under “*Why my choice is incorrect:*”

<i>Statement</i>	<i>Does the text supports my choice?</i>		<i>Why my choice is correct:</i>	<i>Why my choice is incorrect:</i>
	<i>Yes</i>	<i>No</i>		
<i>1</i>				
<i>2</i>				
<i>3</i>				
<i>4</i>				
<i>5</i>				
<i>6</i>				
<i>7</i>				
<i>8</i>				
<i>9</i>				
<i>10</i>				

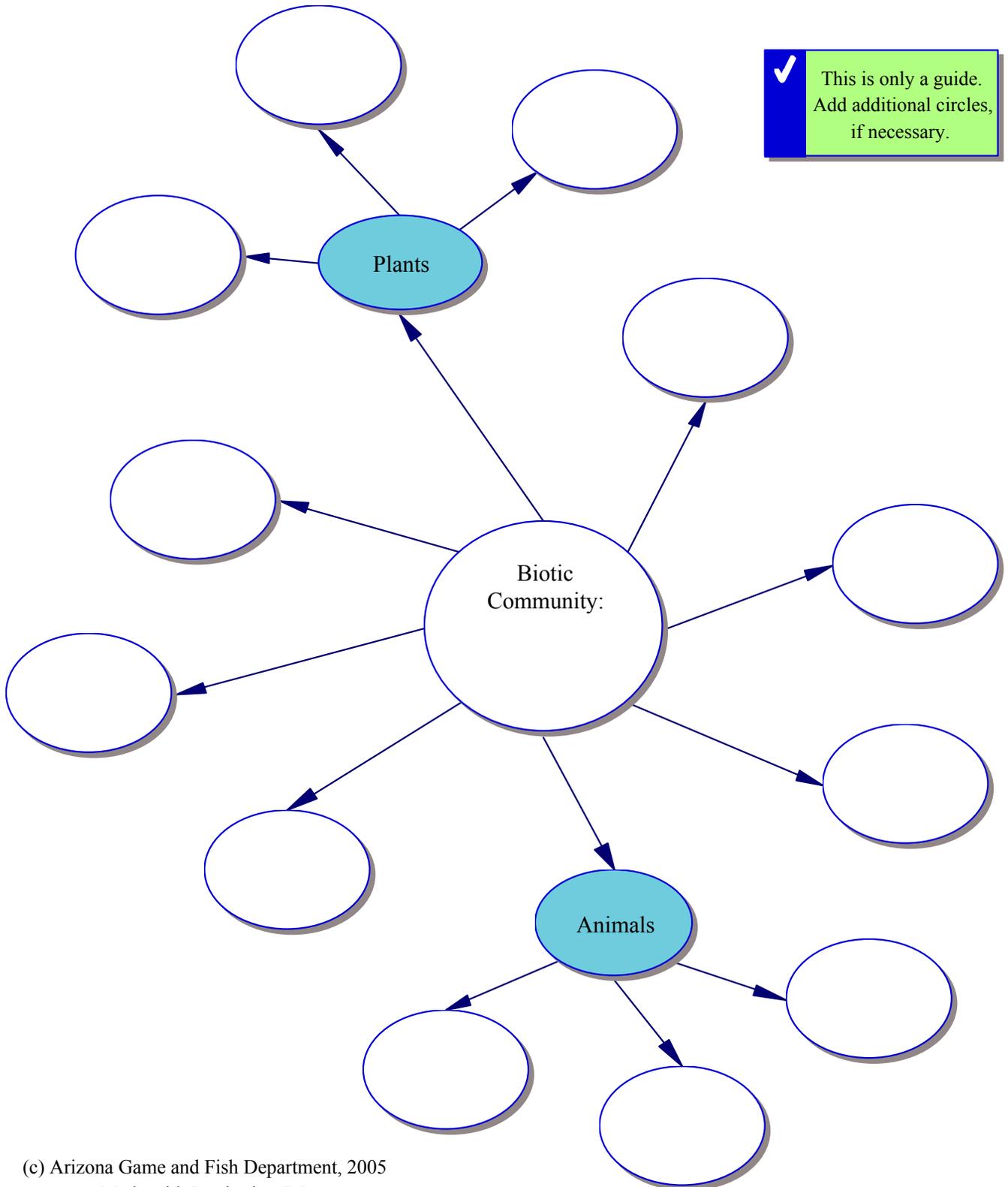


GRAPHIC ORGANIZER SAMPLE - ALPINE TUNDRA



BIOTIC COMMUNITIES GRAPHIC ORGANIZER

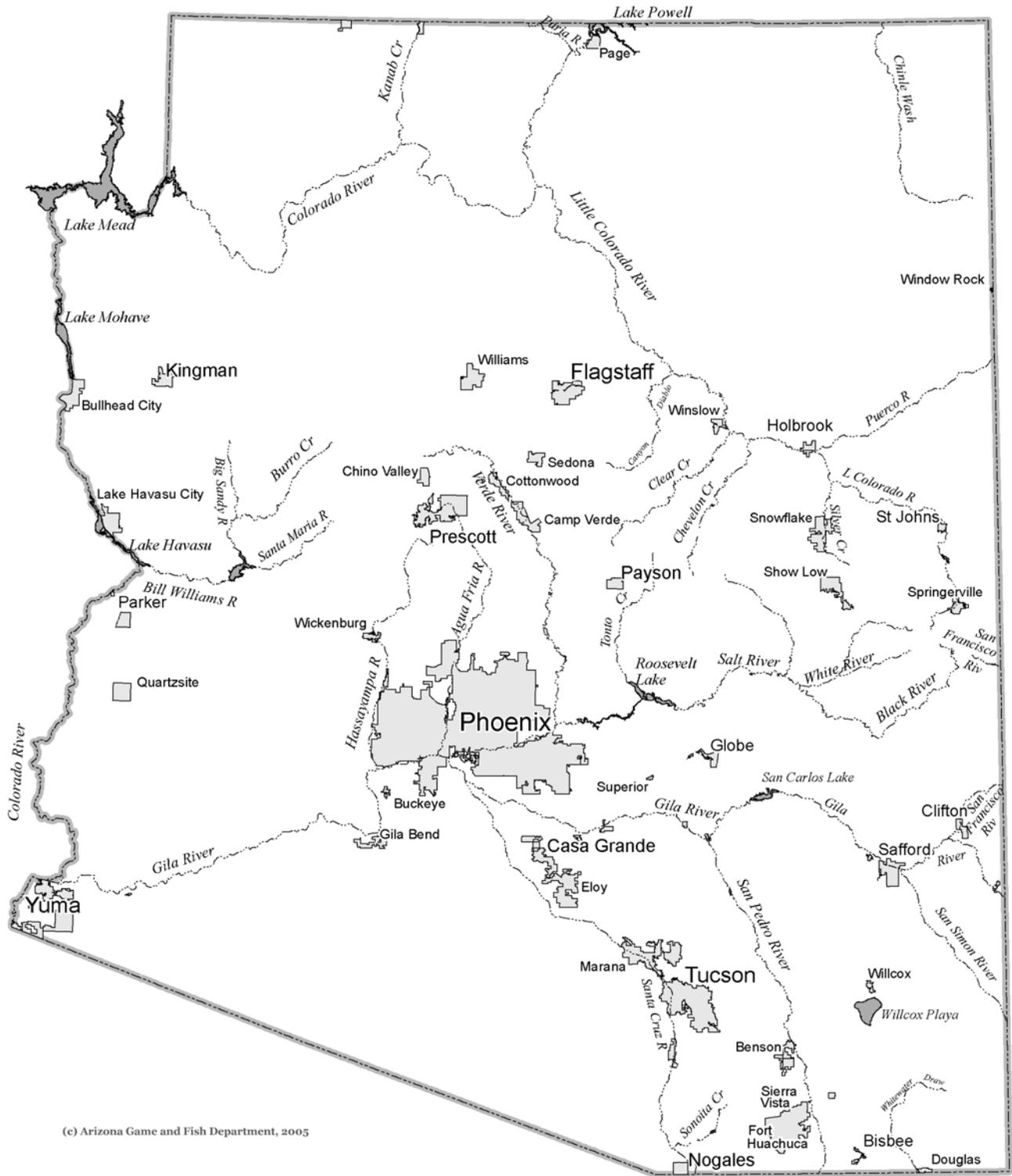
✓ This is only a guide. Add additional circles, if necessary.



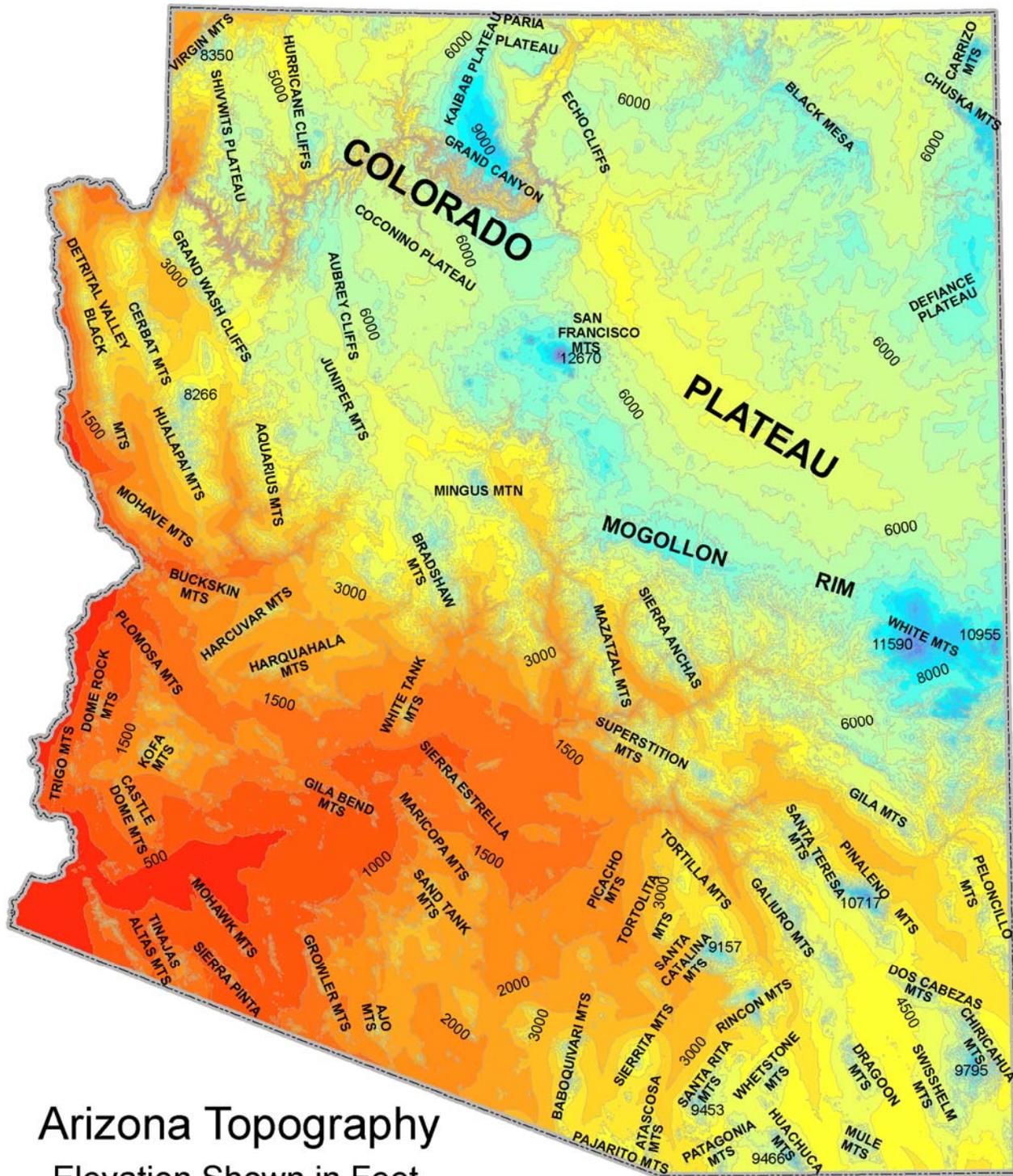
Map of Arizona: Student Version



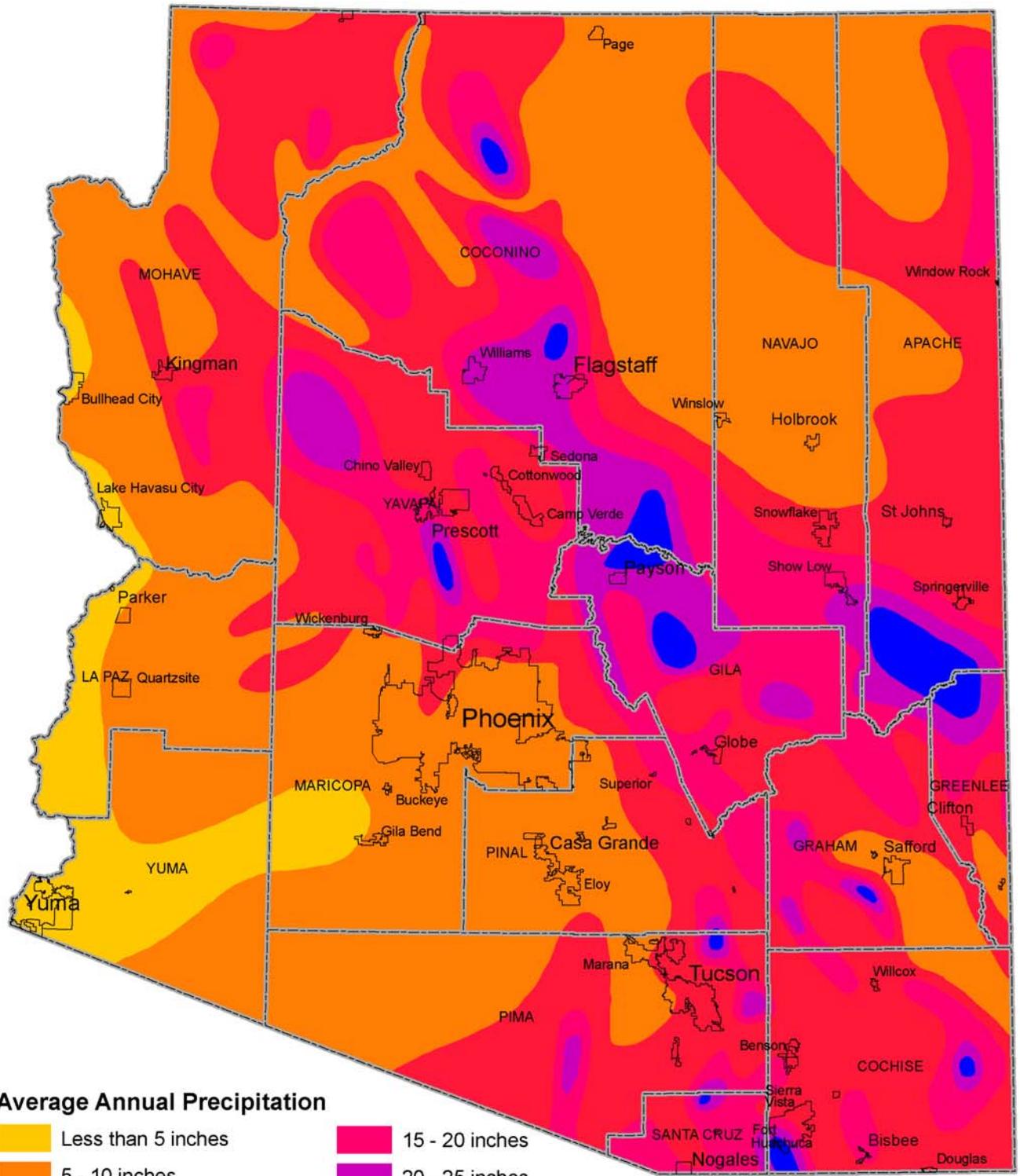
Map of Arizona: Teacher Version



(c) Arizona Game and Fish Department, 2005



(c) Arizona Game and Fish Department, 2005



Average Annual Precipitation

- | | |
|--|---|
|  Less than 5 inches |  15 - 20 inches |
|  5 - 10 inches |  20 - 25 inches |
|  10 - 15 inches |  More than 25 inches |

Mapping Biotic Communities Rubric

Use the following rubric to assist as you create your map of the biotic communities in Arizona.

CATEGORY	4	3	2	1
Labels - Accuracy	Items are labeled and located correctly.	Most items are labeled and located correctly.	Some items are labeled and located correctly.	Many items are labeled and located incorrectly.
Labels and Features - Neatness	Labels/features can be read easily and are neatly done.	Most labels/features can be read easily and are neatly done.	Labels/features may be difficult to read and/or are messy.	Labels/features are difficult to read and/or are messy.
Map Legend/Key	Legend is easy-to-find and contains a complete set of symbols, including a compass rose.	Legend contains a complete set of symbols, including a compass rose.	Legend contains an almost complete set of symbols, including a compass rose.	Legend is absent or lacks several symbols.
Spelling/ Capitalization	Words on the map are spelled and capitalized correctly.	There are few spelling or capitalization errors.	Many words are misspelled and/or are capitalized incorrectly.	Most words are misspelled and/or are capitalized incorrectly.



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Lesson 2: Biotic Communities Vocabulary

LESSON OVERVIEW

Students identify unfamiliar vocabulary, complete a word study guide, and play a vocabulary game.

SUGGESTED GRADE LEVELS

- 6 – 10

ENDURING UNDERSTANDINGS

- Context clues in readings can often help when encountering unfamiliar words.

OBJECTIVES

Students will:

- Be able to define and use vocabulary words.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Reading	Writing	Social Studies
6	S1-C4-02; S1-C4-05	None	None
7	S1-C4-02; S1-C4-05	None	None
8	S1-C4-02; S1-C4-05	None	None
9	S1-C4-02; S1-C4-05	None	None
10	S1-C4-02; S1-C4-05	None	None

Note: The full text of these standards can be found in Appendix A.

TIME FRAME

- 2 days (45 minutes each day)

MATERIALS

- “Exploring Arizona’s Natural Resources” access (Web site or CD is available at azgfd.gov)
- *Vocabulary Study Guide* (At least two per student – double-sided)
- *Biotic Communities Crossword* and *Crossword Solution* (one of each per student)
- Teacher-generated lists of vocabulary words from reading
- Dictionaries



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TEACHER PREPARATION

- Preview the “Explore Arizona” section of the “Exploring Arizona’s Natural Resources” Web site or CD, and select appropriate unfamiliar vocabulary words in the Biotic Communities readings. These will vary depending upon grade level. If you prefer, students can use the words that they encountered while reading in the previous lesson.
- Make copies of *Vocabulary Study Guide* and *Biotic Communities Crossword* for each student.
- Obtain dictionaries.

SUGGESTED PROCEDURES

1. Share the list of key vocabulary terms from the “Explore Arizona” section of the Web site or CD with your class. Students may also add any words from the previous lesson.
2. Each student identifies any unfamiliar terms on the list.
3. Students read the passage and complete the vocabulary study sheet for words they identified as unfamiliar. Be sure to indicate that an “expert” might be the dictionary, teacher, parent, or other resource.
4. Students form two-person teams and share their vocabulary study information, adding to or correcting their own with help from their partner.
5. In the same teams, students choose four of the words and create a drawing or charade that will help them remember the definitions of their words.
6. When completed, two teams join to create a group of four.
7. Without revealing what the word is, one team presents their charade or drawing. The other team must try to guess the word.
8. The team that correctly identifies the other team’s four words wins! Offer the winning team hard candy or some other small reward.
9. Students turn in their *Vocabulary Study Guide* as well as their drawings or descriptions of their charade skits.
10. Hand out crossword puzzle for further review.

ASSESSMENT

- *Vocabulary Study Guide*
- Drawings or descriptions of charade skits.
- Crossword puzzle
- Vocabulary quiz

EXTENSIONS

- Rotate students through several different groups until they have learned all of the words.
- Assign students to specific words to ensure that all words are used in the game.



Appendix A: Arizona Department of Education Standards – Full Text

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Reading Standards

Grade	Strand	Concept	Performance Objective
6	1	4 – Vocabulary	2 – Use context to identify the meaning of unfamiliar words (e.g., definition, example, restatement, synonym, contrast) 5 – Identify the meanings, pronunciations, syllabication, synonyms, antonyms, and parts of speech words, by using a variety of reference aids, including dictionaries, thesauri, glossaries, and CD-ROM and the Internet when available
7	1	4 – Vocabulary	2 – Use context to identify the meaning of unfamiliar words (e.g., definition, example, restatement, synonym, contrast) 5 – Identify the meanings, pronunciations, syllabication, synonyms, antonyms, and parts of speech words, by using a variety of reference aids, including dictionaries, thesauri, glossaries, and CD-ROM and the Internet when available
8	1	4 – Vocabulary	2 – Use context to identify the meaning of unfamiliar words (e.g., definition, example, restatement, synonym, contrast) 5 – Identify the meanings, pronunciations, syllabication, synonyms, antonyms, and parts of speech words, by using a variety of reference aids, including dictionaries, thesauri, glossaries, and CD-ROM and the Internet when available
9	1	4 – Vocabulary	2 – Infer word meanings from context (e.g. definition, example, restatement, comparison/contrast, cause/effect) 5 – Identify the meanings, pronunciations, syllabication, synonyms, antonyms, parts of speech, and correct spellings by using resources such as general and specialized dictionaries, thesauri, glossaries, and CD-ROM and the Internet when available

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Reading Standards Continued

Grade	Strand	Concept	Performance Objective
10	1	4 – Vocabulary	2 – Infer word meanings from context (e.g. definition, example, restatement, comparison/contrast, cause/effect) 5 – Identify the meanings, pronunciations, syllabication, synonyms, antonyms, parts of speech, and correct spellings by using resources such as general and specialized dictionaries, thesauri, glossaries, and CD-ROM and the Internet when available



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Appendix B: Worksheets and Overheads

The pages that follow contain the worksheets listed below:

- A. *Vocabulary Study Guide* – Worksheet for students to use as they determine the meaning of new vocabulary words presented in the reading (1 page)
- B. *Biotic Communities Crossword* – Additional method to review some of the vocabulary words (1 page)
- C. *Biotic Communities Crossword Solution* – The answers to the crossword puzzle (1 page)



Vocabulary Study Guide

Vocabulary Word: _____

1. Sentence in which the word appears in the text: _____

2. Based upon how it is used in the text, predict what the word means: _____

3. Consult an "expert" for the actual definition: _____

4. Show your understanding of the word by using it in a sentence of your own: __

Vocabulary Word: _____

1. Sentence in which the word appears in the text: _____

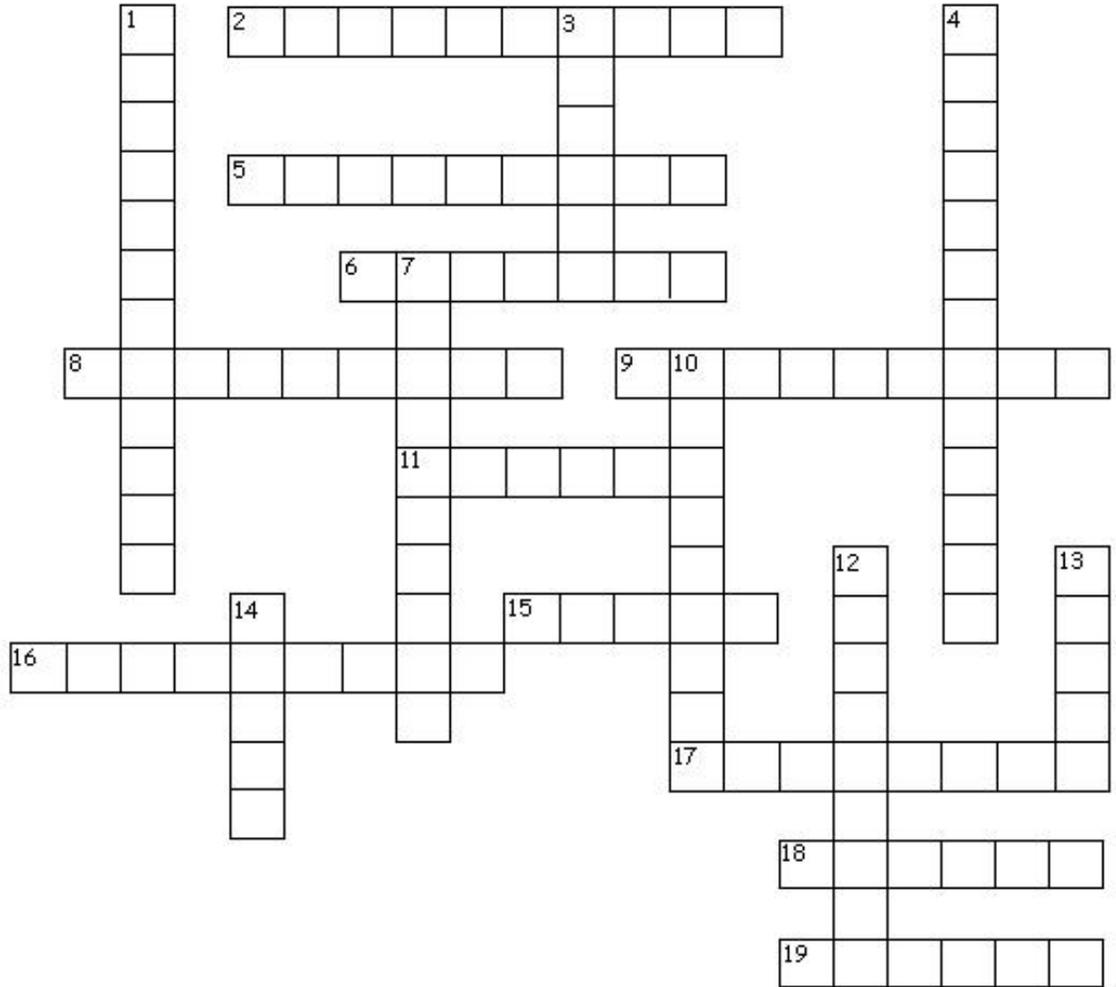
2. Based upon how it is used in the text, predict what the word means: _____

3. Consult an "expert" for the actual definition: _____

4. Show your understanding of the word by using it in a sentence of your own: __



Biotic Communities Crossword



Across

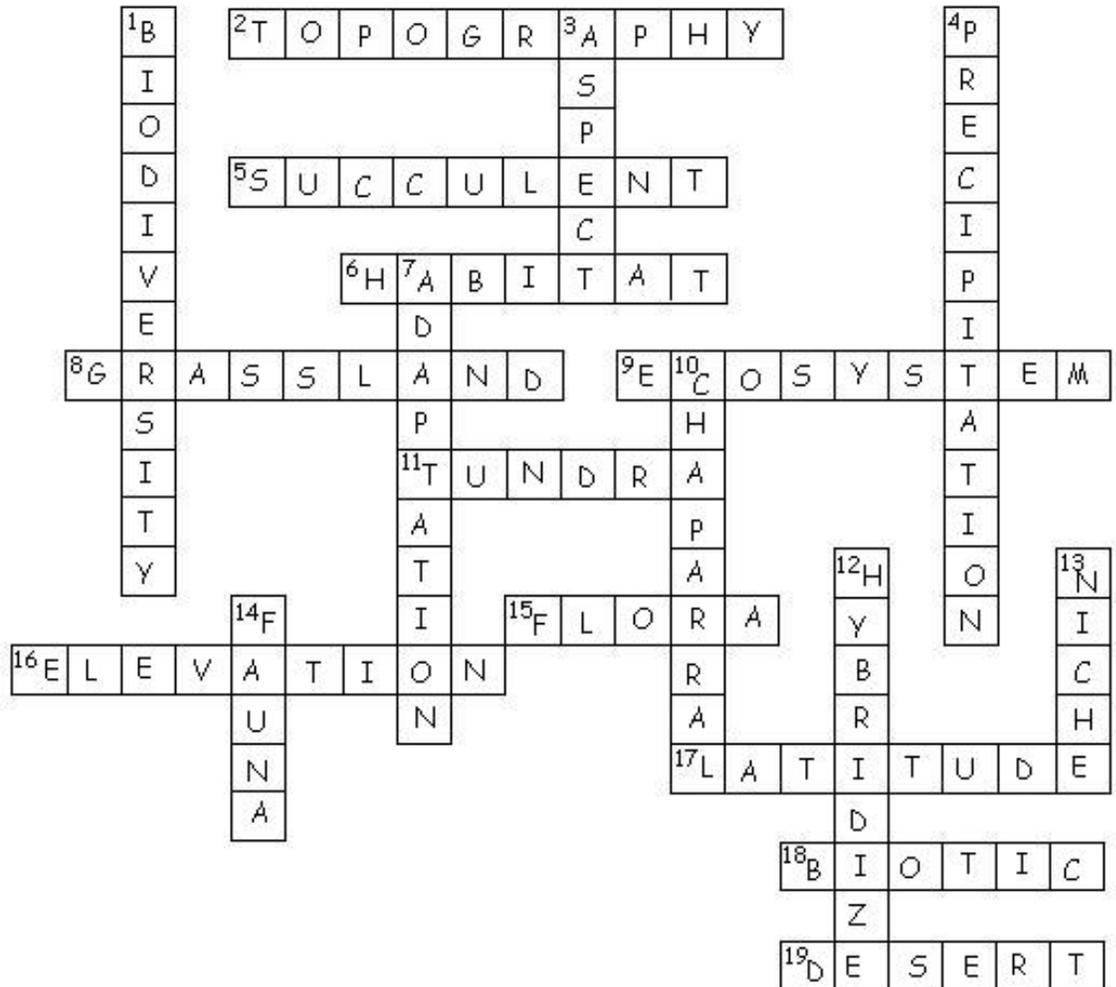
2. The arrangement of natural and artificial features of an area
5. A plant with thick, fleshy leaves or stems adapted to storing water
6. The natural home or environment of an animal, plant, or other organism
8. A large open area covered with grass
9. A community in which organisms interact with their physical environment
11. A treeless region
15. The plants of a particular region
16. A location's height above sea level
17. The angular distance of a place north or south of the equator
18. Pertaining to living organisms in the environment
19. Dry, barren area of land, characteristically desolate and waterless

Down

1. The variety of life in a particular habitat or ecosystem
3. The direction a mountain slope faces
4. Rain, snow, sleet, or hail that falls to the ground
7. A change by which an organism or species becomes better suited to its environment
10. An environment consisting mainly of tangled shrubs and thorny bushes
12. Crossbreeding of individuals of two different species or varieties
13. A position or role taken by a kind of organism within its community
14. The animals of a particular region



Biotic Communities Crossword - Solution



Across

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An online exploration
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Arizona with an
emphasis on
Language Arts and
Social Studies

Exploring Arizona's Biotic Communities

Lesson 3: A Day in the Life ...

LESSON OVERVIEW

In this lesson, students will explore Arizona's biotic communities by using online resources to research an animal or plant that might be found in a particular community. Once the research is complete, they write a narrative essay about their plant or animal.

SUGGESTED GRADE LEVELS

- 6 – 10

ENDURING UNDERSTANDINGS

- Plants and animals are adapted to survive in the environment in which they live.

OBJECTIVES

Students will:

- Research online and in texts, determining relevant information and taking accurate notes.
- Put researched information in their own words.
- Write a narrative essay.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Reading	Writing	Social Studies
6	S3-C1-06; S3-C1-09	S1-C3-01; S1-C3-07; S1-C4-04; S2-C1-01;	None
7	S3-C1-06; S3-C1-10	S2-C1-03; S2-C1-04; S2-C2-03; S2-C2-05;	None
8	S3-C1-06; S3-C1-10	S2-C3-02; S2-C3-04; S2-C4-01; S2-C4-03; S2-C5-02; S3-C1-01	None
9	S3-C1-04; S3-C1-08	S1-C3-01; S1-C3-07; S1-C4-04; S2-C1-03;	None
10	S3-C1-04; S3-C1-07; S3-C1-08	S2-C1-05; S2-C2-03; S2-C2-05; S2-C3-02; S2-C3-03; S2-C4-01; S2-C4-02; S2-C4-03; S2-C5-03	

Note: The full text of these standards can be found in Appendix A.



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TIME FRAME

- 4 days (1 day of in-class research, 3 days of individual work outside of class)

MATERIALS

- *Student Assignment Cards*
- *Life in a Biome* Newsletter/Rubric (one per student)
- *Author Self-Reflection* (one per student)
- *Peer Editing Guide* (one per student)
- Access to Internet for individual students
- Grade-level-appropriate print materials from your library
- Copies of scoring rubric (1 per student)

TEACHER PREPARATION

- Review suggested Web sites to ensure their appropriateness at the grade level being taught.
- Ask your librarian to assemble a collection of print materials for students to use in their research.
- Create heterogeneous student teams. These may be the same ones used in Lesson 1: Mapping Biotic Communities.

SUGGESTED PROCEDURES

1. Students should be familiar with the online information about Biotic Communities before this lesson. See lessons 1 and 2 for more information.
2. Assign students to a “Biotic Community” for this activity. Due to its lack of plants and animals, exclude “Alpine Tundra.” Adjust the number of groups as necessary for your class size. For example, you may need to combine all of the grasslands or all of the deserts into one category.
3. Using the prepared animal and plant “cards,” students draw a card and research that member of their biotic community. Allow students to trade cards within their group if you like. Be sure each biotic community includes at least two plants and two animals.
4. Remind students about research procedures and note-taking expectations for their grade level.
5. Hand out the *Life in a Biome* newsletter and rubric. Assign the essay topic: “A Day in the Life of _____.” Students use the information they learn while researching their plant or animal to write a narrative essay describing the climate, terrain, and other animal and plant encounters their plant or animal might have during a typical day in that biotic community.
6. Make sure the students understand the requirements outlined in the rubric.
7. Review (or introduce) formatting requirements for a bibliography in the style you prefer (MLA or APA; information on both is available online). Be sure the students understand that information must be put into their own words, not quoted from their source!



8. Allow several days research time in or out of class. You might schedule time in the library the first day to allow students to locate print information. Schedule time on the computer for Internet searches. The Web sites included are only a few of many available. You may want to pre-select others (or include a brief lesson on validity and reliability online) to ensure quality information. NOTE: If you plan on using Lesson 4 – Which Team are You On, you should alert students to be looking for photographs or drawings of their plant or animal.
9. Set a peer review day for each team to edit/critique their teammates' papers. Use a Peer Editing Guide to help students make specific suggestions for improvement. Emphasize that the author is the ONLY one who can make changes or corrections to the paper, but encourage authors to look seriously at the comments. For more information on peer editing, see Appendix B.
10. Set a due date for revised essays. Before you collect the paper, ask students to reflect on the essay by answering three questions:
 - a. What did you learn by writing this essay?
 - b. What do you like best about the paper?
 - c. What next?
11. Students should write their answers on the back of the last page or on another piece of paper they attach to their essay. Allow teammates a final double-check for completeness. The peer editing and rough draft should be turned in along with the final draft.

ASSESSMENT

- “A Day in the Life ...” essay using the rubric provided
- Self-assessment

EXTENSIONS

- Students might write a more formal research paper using endnotes and a list of works cited.
- Students could partner with another whose animal or plant is related in some way and create a skit illustrating the relationship.
- Make a class booklet with the plant and animal stories arranged in biotic communities. Include drawings or photographs of each one.
- “Adopt” another class (preferably of a younger grade level) and have the students read their stories to the children.



Appendix A: Arizona Department of Education Standards – Full Text

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Reading Standards

Grade	Strand	Concept	Performance Objective
6	3	1 – Expository Text	6 – Locate appropriate print and electronic reference sources (e.g., encyclopedia, atlas, almanac, dictionary, thesaurus, periodical, CR-ROM, Web site) for a specific purpose 9 – Draw valid conclusions about expository text, supported by text evidence
7	3	1 – Expository Text	6 – Locate appropriate print and electronic reference sources (e.g., encyclopedia, atlas, almanac, dictionary, thesaurus, periodical, CR-ROM, Web site) for a specific purpose 10 – Make relevant inferences about expository text, supported by text evidence
8	3	1 – Expository Text	6 – Locate appropriate print and electronic reference sources (e.g., encyclopedia, atlas, almanac, dictionary, thesaurus, periodical, CR-ROM, Web site) for a specific purpose 10 – Make relevant inferences about expository text, supported by text evidence
9	3	1 – Expository Text	4 – Organize information from both primary and secondary sources by taking notes, outlining ideas, paraphrasing information; and by making charts, conceptual maps, learning logs, and/or timelines 8 – Support conclusions drawn from ideas and concepts in expository text
10	3	1 – Expository Text	4 – Organize information from both primary and secondary sources by taking notes, outlining ideas, paraphrasing information; and by making charts, conceptual maps, learning logs, and/or timelines for a research document of other assigned task 7 – Make relevant inferences by synthesizing concepts and ideas from a single reading selection 8 – Support conclusions drawn from ideas and concepts in expository text



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Writing Standards

Grade	Strand	Concept	Performance Objective
6, 7, 8	1	3 – Revising	1 – Evaluate the draft for use of ideas and content, organization, voice, word choice, and sentence fluency 7 – Apply appropriate tools or strategies (e.g., peer review, checklists, rubrics) to refine the draft
		4 – Editing	4 – Apply appropriate tools or strategies (e.g., peer review, checklists, rubrics) to edit the draft
	2	1 – Ideas and Content	1 – Use clear, focused ideas and details to support the topic 3 – Develop a sufficient explanation or exploration of the topic 4 – Include ideas and details that show original perspective
		2 – Organization	3 – Place details appropriately to support the main idea 5 – Construct paragraphs by arranging sentences with an organizing principle (e.g., to develop a topic, to indicate a chronology)
		3 – Voice	2 – Convey a sense of identity through originality, sincerity, liveliness, or humor appropriate to the topic and type of writing 4 – Choose appropriate voice (e.g., formal, informal, academic discourse) for the audience and purpose
		4 – Word Choice	1 – Use accurate, specific, powerful words that effectively convey the intended message 3 – Use vocabulary that is original, varied, and natural
		5 – Sentence Fluency	2 – Create sentences that flow together and sound natural when read aloud
	3	1 – Expressive	1 – Write a narrative that includes: <ul style="list-style-type: none"> a. an engaging plot based on imagined or real ideas, observations, or memories of an event of experience b. effectively developed characters c. a clearly described setting d. dialogue, as appropriate e. figurative language, or descriptive words and phrases to enhance style and tone

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Writing Standards Continued

Grade	Strand	Concept	Performance Objective
High School	1	3 – Revising	1 – Evaluate the draft for use of ideas and content, organization, voice, word choice, and sentence fluency 7 – Apply appropriate tools or strategies (e.g., peer review, checklists, rubrics) to refine the draft
		4 – Editing	4 – Apply appropriate tools or strategies (e.g., peer review, checklists, rubrics) to edit the draft
	2	1 – Ideas and Content	3 – Provide sufficient, relevant and carefully selected details for support 5 – Include ideas and details that show original perspective and insights
		2 – Organization	3 – Place details appropriately to support the main idea 5 – Employ a variety of paragraphing strategies (e.g., topical, chronological, spatial) appropriate to application and purpose
		3 – Voice	2 – Convey a sense of identity through originality, sincerity, liveliness, or humor appropriate to the topic and type of writing 3 – Choose appropriate voice (e.g., formal, informal, academic discourse) for the application
		4 – Word Choice	1 – Use accurate, specific, powerful words and phrases that effectively convey the intended message 2 – Use vocabulary that is original, varied, and natural 3 – Use words that evoke clear images
		5 – Sentence Fluency	3 – Demonstrate a flow that is natural and powerful when read aloud



Appendix B: Peer Editing

There are a number of successful ways to conduct peer editing in your classroom. One method is described below. These procedures can be used by themselves or in conjunction with the “Peer Editing” student worksheet included.

1. Students get together in their biotic community teams. Give each teammate a different color highlighter or colored pencil to use in editing. Before you begin any peer editing, it is critical that all students understand the importance of sincere, careful editing. The idea is to improve everyone’s skills (and grade!) by offering helpful criticism.
2. Students should complete the *Author Self-Reflection* sheet or answer similar questions on a blank sheet of paper.
3. Students pass their papers to their right and read both the author’s comments and the paper. This continues until each paper is returned to the author with all the editors’ comments.
4. On the cover sheet the author has attached, each editor responds to the following prompts:
 - a. Write a sentence describing what you like about the essay.
 - b. Question the author about any area that is not clear to you.
 - c. What can the author do to improve this paper? Be specific.
 - d. Respond directly to the author’s stated concerns.
5. Finally, each editor focuses on a specific writing trait by answering the following questions:
 - a. Editor #1: Has the author described the terrain, climate, and other animals and plants in sufficient, entertaining detail? Underline (or highlight) words and sentences that do an especially good job of description.
 - b. Editor #2: Has the author described a typical “day in the life”? Underline actions that are characteristic of the plant or animal.
 - c. Editor #3: Does the author use a *voice* that is appropriate and effective for his/her plant or animal? Underline words that reveal the author’s unique voice.
6. Authors get their own paper back on the final pass. They should review each editor’s comments, clarify what is meant if they are not sure, and thank each other for their help.
7. Authors take the peer editing sheet and their rough draft home to revise. They may choose to accept or reject their editors’ suggestions.
8. When the final draft is turned in, these papers should be included.



Appendix C: Suggested Research Web Sites

Below is the list of additional plants and animals to include in each biotic community as well as some suggested Web sites that the students may use for research. It is recommended that you review the Web sites before using them with students.

FIR FOREST

Arizona Bugbane

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Cimiariz.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/cimiariz.gif

Arizona Frog Orchid

- http://www.azgfd.gov/w_c/edits/documents/Coelvivi.d.pdf
- http://www.azgfd.gov/w_c/edits/images/coelvivi.gif

Mexican Spotted Owl

- http://www.azgfd.gov/w_c/edits/documents/Strioclu.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/strioclu.gif

Hammond's Flycatcher

- http://www.azgfd.gov/w_c/edits/documents/Empihamm.d.pdf
- <http://www.bird-friends.com/BirdPage.php?name=Hammond's%20Flycatcher>

PINE FOREST

Western Fairy Slipper

- http://www.azgfd.gov/w_c/edits/documents/Calybulb.d.pdf
- http://www.azgfd.gov/w_c/edits/images/calybulb.gif

Nevin Bird's-beak

- http://www.azgfd.gov/w_c/edits/documents/Cordnevi.d.pdf
- http://www.azgfd.gov/w_c/edits/images/cordnevi.gif

Long-eared Myotis

- http://www.azgfd.gov/w_c/edits/documents/Myotevot.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/myotevot.gif

Mexican Gray Wolf

- http://www.azgfd.gov/w_c/edits/documents/Caniluba.d.pdf
- <http://www.phoenixzoo.org/zoo/animals/facts/mexicanwolf.asp>

PINYON-JUNIPER

Huachuca Milk-vetch

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Astrhypo.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/astrhypo.gif

Roaring Springs Prickly-poppy

- http://www.azgfd.gov/w_c/edits/documents/Argeariz.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/argeariz.gif

Arizona Night Lizard

- http://www.azgfd.gov/w_c/edits/documents/Xantariz.d_000.pdf
- http://www.azgfd.gov/w_c/edits/images/xantariz.gif

Narrow-headed Garter Snake

- http://www.azgfd.gov/w_c/edits/documents/Thamrufi.di_001.pdf
- http://www.azgfd.gov/w_c/edits/images/thamrufi_000.gif



OAK-PINE

Chihuahuan Stickseed

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Hackursi.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/hackursi.gif

Woodland Spurge

- http://www.azgfd.gov/w_c/edits/documents/Euphmacr.d.pdf
- http://www.azgfd.gov/w_c/edits/images/euphmacr.gif

Berylline Hummingbird

- http://www.azgfd.gov/w_c/edits/documents/Amazbery.D.pdf
- http://www.azgfd.gov/w_c/edits/images/amazbery.gif

Elegant Trogon

- http://www.azgfd.gov/w_c/edits/documents/Trogeleg.d.pdf
- http://www.azgfd.gov/w_c/edits/images/trogeleg.gif

OAK WOODLAND

Large-flowered Blue Star

- http://www.azgfd.gov/w_c/edits/documents/Amsogran.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/amsogran.gif

Chiltepin

- http://www.azgfd.gov/w_c/edits/documents/Capsangl.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/capsangl.gif

Yellow-nosed Cotton Rat

- http://www.azgfd.gov/w_c/edits/documents/Sigmochr.di.pdf
- http://www.azgfd.gov/w_c/edits/images/sigmochr.gif

Acorn Woodpecker

- <http://www.birding.com/572aw.asp>
- <http://www.bird-friends.com/BirdPage.php?name=Acorn%20Woodpecker>

CHAPARRAL

Flannel Bush

- http://www.azgfd.gov/w_c/edits/documents/Fremcali.d.pdf
- http://www.azgfd.gov/w_c/edits/images/fremcali.gif

Arizona Agave

- http://www.azgfd.gov/w_c/edits/documents/Agavariz.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/agavariz.gif

Madrean Alligator Lizard

- <http://www.reptilesfaz.com/Lizards-Subpages/h-e-kingii.html>
- <http://www.anapsid.org/gerrhont.html>

Coyote

- http://www.azgfd.gov/h_f/game_coyote.shtml
- <http://www.phoenixzoo.org/zoo/animals/facts/coyote.asp>



MOUNTAIN GRASSLAND

Kaibab Beardtongue

- http://www.azgfd.gov/w_c/edits/documents/Penspseu.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/penspseu.gif

Redflower Onion

- http://www.azgfd.gov/w_c/edits/documents/Allirhiz.d.pdf
- http://www.azgfd.gov/w_c/edits/images/allirhiz.gif

White Mountains Ground Squirrel

- http://www.azgfd.gov/w_c/edits/documents/Spertmo.d.pdf
- http://www.azgfd.gov/w_c/edits/images/spertmo.gif

New Mexican Jumping Mouse

- http://www.azgfd.gov/w_c/edits/documents/Zapuhulu.d.pdf
- http://www.azgfd.gov/w_c/edits/images/zapuhulu_000.gif

PLAINS GRASSLAND

Paper-spined Cactus

- http://www.azgfd.gov/w_c/edits/documents/Pedipapy.d_000.pdf
- http://www.azgfd.gov/w_c/edits/images/pedipapy_000.gif

Peebles Blue Star

- http://www.azgfd.gov/w_c/edits/documents/Amsopeeb.d.pdf
- http://www.azgfd.gov/w_c/edits/images/amsopeeb.gif

Black-tailed Prairie Dog

- http://www.azgfd.gov/w_c/edits/documents/Cynoludo.fi.pdf
- http://www.desertusa.com/dec96/du_pdogs.html

Milksnake

- http://www.azgfd.gov/w_c/edits/documents/Lamptria.d_001.pdf
- http://www.azgfd.gov/w_c/edits/images/lamptria_000.gif

DESERT GRASSLAND

Pima Indian Mallow

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Abutpari.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/abutpari.gif

Arid Throne Fleabane

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Erigaris.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/erigaris.gif

Mexican Hog-nosed Snake

- http://www.azgfd.gov/w_c/edits/documents/Hetenake.d_001.pdf
- http://www.azgfd.gov/w_c/edits/images/hetenake_000.gif

Masked Bobwhite

- http://www.azgfd.gov/w_c/edits/documents/Coliviri.d.pdf
- http://www.azgfd.gov/w_c/edits/images/coliviri.gif



GREAT BASIN DESERT

Fredonia Catseye

- http://www.azgfd.gov/w_c/edits/documents/Crypsemi.d_000.pdf
- http://www.azgfd.gov/w_c/edits/images/crypsemi_000.gif

Whiting Dalia

- http://www.azgfd.gov/w_c/edits/documents/PSORTHWH.fi_000.pdf
- http://www.azgfd.gov/w_c/edits/images/psorthwh_000.gif

New Mexico Banner-tailed Kangaroo Rat

- http://www.azgfd.gov/w_c/edits/documents/Dipospba.d.pdf
- http://www.desertusa.com/aug96/du_krat.html

Pygmy Rabbit

- http://www.azgfd.gov/w_c/edits/documents/Sylvidah.d.pdf
- http://www.glenoakzoo.org/pygmy_rabbit_fact.htm

MOHAVE DESERT

Grand Canyon Flaveria

- http://www.azgfd.gov/w_c/edits/documents/Flavmcdo.d.pdf
- http://www.azgfd.gov/w_c/edits/images/flavmcdo.gif

Brittlebush

- http://www.desertusa.com/april96/du_britbush.html
- <http://www.fs.fed.us/database/feis/plants/shrub/encfar/all.html>

Kit Fox

- http://www.azgfd.gov/h_f/game_foxes.shtml
- <http://www.southwestwildlife.org/factsheets/kitfox.htm>

Desert Iguana

- http://www.desertusa.com/april97/du_desiguana.html
- http://www.desertmuseum.org/books/nhsd_desert_iguana.html

SONORAN DESERT

Crucifixion Thorn

- http://www.azgfd.gov/w_c/edits/documents/Castemor.d.pdf
- http://www.desertusa.com/magdec97/dec_pap/du_cruxthorn.html

Gander's Cryptantha

- http://www.azgfd.gov/w_c/edits/documents/Crypgand.d.pdf
- http://www.azgfd.gov/w_c/edits/images/crypgand.gif

Crested Caracara

- http://www.azgfd.gov/w_c/edits/documents/Caracher.d.pdf
- http://www.azgfd.gov/w_c/edits/images/caracher.gif

Gila Monster

- http://www.azgfd.gov/w_c/edits/documents/Helosuci.d_001.pdf
- http://www.azgfd.gov/w_c/edits/images/helosuci_000.gif



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CHIHUAHUAN DESERT

Cob Corycactus

- http://www.azgfd.gov/w_c/edits/documents/Escotube.d.pdf
- http://www.azgfd.gov/w_c/edits/images/escotube.gif

Lechuguilla

- <http://www.fs.fed.us/database/feis/plants/shrub/agalec/all.html>
- <http://www.explorenm.com/plants/Agavaceae/Agave/lechuguilla/>

Greater Roadrunner

- <http://www.phoenixzoo.org/zoo/animals/facts/roadrunner.asp>
- http://www.desertmuseum.org/books/nhsd_roadrunner_new.html

Black-capped Gnatcatcher

- http://www.azgfd.gov/w_c/edits/documents/Polinigr.d.pdf
- http://www.azgfd.gov/w_c/edits/images/polinigr.gif



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Appendix D: Worksheets and Overheads

The pages that follow contain the worksheets listed below:

- A. *Student Assignment Cards* – Cards with basic information about additional plants and animals that can be given to each student as they begin their research (7 pages)
- B. *“Life in a Biome” Newsletter/Scoring Rubric* – A double-sided handout to introduce the narrative essay to the students (2 pages)
- C. *Author Self-Reflection* – One method students can use to reflect on their own writing before turning in the final draft (1 page)
- D. *Peer Editing Guide* – A tool to guide students through the peer editing process (1 page)



Student Assignment Cards

Cut out each of the cards below and give one to each student assigned to this biotic community. Cards are already arranged by the biotic community.

<p style="text-align: center;">A Day in the Life... Organism Card</p> <p>General information about the plant or animal you have been assigned:</p> <p>Common Name – Arizona Bugbane Scientific Name – <i>Cimicifuga arizonica</i> Primary Biotic Community – Fir Forest</p> <p>Websites to get you started: http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Cimiariz.fo.pdf http://www.azgfd.gov/w_c/edits/images/cimiariz.gif</p>	<p style="text-align: center;">A Day in the Life... Organism Card</p> <p>General information about the plant or animal you have been assigned:</p> <p>Common Name – Arizona Frog Orchid Scientific Name – <i>Coeloglossum viride</i> var. <i>virescens</i> Primary Biotic Community – Fir Forest</p> <p>Websites to get you started: http://www.azgfd.gov/w_c/edits/documents/Coelvivi.d.pdf http://www.azgfd.gov/w_c/edits/images/coelvivi.gif</p>
<p style="text-align: center;">A Day in the Life... Organism Card</p> <p>General information about the plant or animal you have been assigned:</p> <p>Common Name – Mexican Spotted Owl Scientific Name – <i>Strix occidentalis lucida</i> Primary Biotic Community – Fir Forest</p> <p>Websites to get you started: http://www.azgfd.gov/w_c/edits/documents/Strioclufi.pdf http://www.azgfd.gov/w_c/edits/images/strioclufi.gif</p>	<p style="text-align: center;">A Day in the Life... Organism Card</p> <p>General information about the plant or animal you have been assigned:</p> <p>Common Name – Hammond’s Flycatcher Scientific Name – <i>Empidonax hammondii</i> Primary Biotic Community – Fir Forest</p> <p>Websites to get you started: http://www.azgfd.gov/w_c/edits/documents/Empihamm.d.pdf http://www.bird-friends.com/BirdPage.php?name=Hammond's%20Flycatcher</p>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Western Fairy Slipper
Scientific Name – *Calypso bulbosa*
Primary Biotic Community – Pine Forest

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Calybulb.d.pdf
http://www.azgfd.gov/w_c/edits/images/calybulb.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Nevin Bird's-beak
Scientific Name – *Cordylanthus nevinii*
Primary Biotic Community – Pine Forest

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Cordnevi.d.pdf
http://www.azgfd.gov/w_c/edits/images/cordnevi.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Long-eared Myotis
Scientific Name – *Myotis evotis*
Primary Biotic Community – Pine Forest

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Myotevot.fi.pdf
http://www.azgfd.gov/w_c/edits/images/myotevot.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Mexican Gray Wolf
Scientific Name – *Canis lupus baileyi*
Primary Biotic Community – Pine Forest

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Caniluba.d.pdf
<http://www.phoenixzoo.org/zoo/animals/facts/mexicanwolf.asp>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Huachuca Milk-vetch
Scientific Name – *Astragalus hypoxylus*
Primary Biotic Community – Pinyon-Juniper

Websites to get you started:

http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Astrhypo.fo.pdf
http://www.azgfd.gov/w_c/edits/images/asthypo.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Roaring Springs Prickly-poppy
Scientific Name – *Argemone arizonica*
Primary Biotic Community – Pinyon-Juniper

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Argeariz.fi.pdf
http://www.azgfd.gov/w_c/edits/images/argeariz.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Arizona Night Lizard
Scientific Name – *Xantusia arizonae*
Primary Biotic Community – Pinyon-Juniper

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Xantariz.d_000.pdf
http://www.azgfd.gov/w_c/edits/images/xantariz.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Narrow-headed Garter Snake
Scientific Name – *Thamnophis rufipunctatus*
Primary Biotic Community – Pinyon-Juniper

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Thamrufi.di_001.pdf
http://www.azgfd.gov/w_c/edits/images/thamrufi_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Chihuahuan Stickseed
Scientific Name – *Hackelia ursina*
Primary Biotic Community – Oak-Pine

Websites to get you started:

http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Hackursi.fo.pdf
http://www.azgfd.gov/w_c/edits/images/hackursi.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Woodland Spurge
Scientific Name – *Euphorbia macropus*
Primary Biotic Community – Oak-Pine

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Euphmacr.d.pdf
http://www.azgfd.gov/w_c/edits/images/euphmacr.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Berylline Hummingbird
Scientific Name – *Amazilia beryllina*
Primary Biotic Community – Oak-Pine

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Amazbery.D.pdf
http://www.azgfd.gov/w_c/edits/images/amazbery.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Elegant Trogon
Scientific Name – *Trogon elegans*
Primary Biotic Community – Oak-Pine

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Trogeleg.d.pdf
http://www.azgfd.gov/w_c/edits/images/trogeleg.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Large-flowered Blue Star
Scientific Name – *Amsonia grandiflora*
Primary Biotic Community – Oak Woodland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Amsogran.fo.pdf
http://www.azgfd.gov/w_c/edits/images/amsogran.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Chiltepin
Scientific Name – *Capsicum annuum* var. *glabriusculum*
Primary Biotic Community – Oak Woodland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Capsangl.fo.pdf
http://www.azgfd.gov/w_c/edits/images/capsangl.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Yellow-nosed Cotton Rat
Scientific Name – *Sigmodon ochrognathus*
Primary Biotic Community – Oak Woodland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Sigmochr.di.pdf
http://www.azgfd.gov/w_c/edits/images/sigmochr.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Acorn Woodpecker
Scientific Name – *Melanerpes formicivorus*
Primary Biotic Community – Oak Woodland

Websites to get you started:

<http://www.birding.com/572aw.asp>
<http://www.bird-friends.com/BirdPage.php?name=Acorn%20Woodpecker>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Flannel Bush
Scientific Name – *Fremontodendron californicum*
Primary Biotic Community – Chaparral

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Fremcali.d.pdf
http://www.azgfd.gov/w_c/edits/images/fremcali.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Arizona Agave
Scientific Name – *Agave arizonica*
Primary Biotic Community – Chaparral

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Agavariz.fo.pdf
http://www.azgfd.gov/w_c/edits/images/agavariz.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Madrean Alligator Lizard
Scientific Name – *Elgaria kingii*
Primary Biotic Community – Chaparral

Websites to get you started:

<http://www.reptilesfaz.com/Lizards-Subpages/h-e-kingii.html>
<http://www.anapsid.org/gerrhont.html>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Coyote
Scientific Name – *Canis latrans*
Primary Biotic Community – Chaparral

Websites to get you started:

http://www.azgfd.gov/h_f/game_coyote.shtml
<http://www.phoenixzoo.org/zoo/animals/facts/coyote.asp>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Kaibab Beardtongue
Scientific Name – *Penstemon pseudoputus*
Primary Biotic Community – Mountain Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Penspseu.fi.pdf
http://www.azgfd.gov/w_c/edits/images/penspseu.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Redflower Onion
Scientific Name – *Allium rhizomatum*
Primary Biotic Community – Mountain Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Allirhiz.d.pdf
http://www.azgfd.gov/w_c/edits/images/allirhiz.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – White Mountains Ground Squirrel
Scientific Name – *Spermophilus tridecemlineatus monticola*
Primary Biotic Community – Mountain Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Spertmo.d.pdf
http://www.azgfd.gov/w_c/edits/images/spertmo.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – New Mexican Jumping Mouse
Scientific Name – *Zapus hudsonius luteus*
Primary Biotic Community – Mountain Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Zapuhulu.d.pdf
http://www.azgfd.gov/w_c/edits/images/zapuhulu_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Paper-spined Cactus
Scientific Name – *Pediocactus papyracanthus*
Primary Biotic Community – Plains Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Pedipapy.d_000.pdf
http://www.azgfd.gov/w_c/edits/images/pedipapy_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Peebles Blue Star
Scientific Name – *Amsonia peeblesii*
Primary Biotic Community – Plains Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Amsopeeb.d.pdf
http://www.azgfd.gov/w_c/edits/images/amsopeeb.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Black-tailed Prairie Dog
Scientific Name – *Cynomys ludovicianus*
Primary Biotic Community – Plains Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Cynoludo.fi.pdf
http://www.desertusa.com/dec96/du_pdogs.html

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Milksnake
Scientific Name – *Lampropeltis triangulum*
Primary Biotic Community – Plains Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Lamptria.d_001.pdf
http://www.azgfd.gov/w_c/edits/images/lamptria_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Pima Indian Mallow
Scientific Name – *Abutilon parishii*
Primary Biotic Community – Desert Grassland

Websites to get you started:

http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Abutpari.fo.pdf
http://www.azgfd.gov/w_c/edits/images/abutpari.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Arid Throne Fleabane
Scientific Name – *Erigeron arisolius*
Primary Biotic Community – Desert Grassland

Websites to get you started:

http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Erigaris.fo.pdf
http://www.azgfd.gov/w_c/edits/images/erigaris.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Mexican Hog-nosed Snake
Scientific Name – *Heterodon nasicus kennerlyi*
Primary Biotic Community – Desert Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Hetenake.d_001.pdf
http://www.azgfd.gov/w_c/edits/images/hetenake_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Masked Bobwhite
Scientific Name – *Colinus virginianus ridgwayi*
Primary Biotic Community – Desert Grassland

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Coliviri.d.pdf
http://www.azgfd.gov/w_c/edits/images/coliviri.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Fredonia Catseye
Scientific Name – *Cryptantha semiglabra*
Primary Biotic Community – Great Basin Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Crypsemi.d_000.pdf
http://www.azgfd.gov/w_c/edits/images/crypsemi_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Whiting Dalia
Scientific Name – *Psorothamnus thompsonae* var. *whitingii*
Primary Biotic Community – Great Basin Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/PSORTHWH.fi_000.pdf
http://www.azgfd.gov/w_c/edits/images/psorthwh_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – New Mexico Banner-tailed Kangaroo Rat
Scientific Name – *Dipodomys spectabilis baileyi*
Primary Biotic Community – Great Basin Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Dipospba.d.pdf
http://www.desertusa.com/aug96/du_krat.html

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Pygmy Rabbit
Scientific Name – *Sylvilagus idahoensis*
Primary Biotic Community – Great Basin Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Sylvidah.d.pdf
http://www.glenoakzoo.org/pygmy_rabbit_fact.htm

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Grand Canyon Flaveria
Scientific Name – *Flaveria mcdougallii*
Primary Biotic Community – Mohave Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Flavmcdo.d.pdf
http://www.azgfd.gov/w_c/edits/images/flavmcdo.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Brittlebush
Scientific Name – *Encelia farinosa*
Primary Biotic Community – Mohave Desert

Websites to get you started:

http://www.desertusa.com/april96/du_britbush.html
<http://www.fs.fed.us/database/feis/plants/shrub/encfar/all.html>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Kit Fox
Scientific Name – *Vulpes macrotis*
Primary Biotic Community – Mohave Desert

Websites to get you started:

http://www.azgfd.gov/h_f/game_foxes.shtml
<http://www.southwestwildlife.org/factsheets/kitfox.htm>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Desert Iguana
Scientific Name – *Dispsosaurus dorsalis*
Primary Biotic Community – Mohave Desert

Websites to get you started:

http://www.desertusa.com/april97/du_desiguana.html
http://www.desertmuseum.org/books/nhsd_desert_iguana.html

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Crucifixion Thorn
Scientific Name – *Castela emoryi*
Primary Biotic Community – Sonoran Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Castemor.d.pdf
http://www.desertusa.com/magdec97/dec_pap/du_cruxthorn.html

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Gander's Cryptantha
Scientific Name – *Cryptantha ganderi*
Primary Biotic Community – Sonoran Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Crypgand.d.pdf
http://www.azgfd.gov/w_c/edits/images/crypgand.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Crested Caracara
Scientific Name – *Caracara cheriway*
Primary Biotic Community – Sonoran Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Caracher.d.pdf
http://www.azgfd.gov/w_c/edits/images/caracher.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Gila Monster
Scientific Name – *Heloderma suspectum cinctum*
Primary Biotic Community – Sonoran Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Helosuci.d_001.pdf
http://www.azgfd.gov/w_c/edits/images/helosuci_000.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Cob Corycactus
Scientific Name – *Escobaria tuberculosa*
Primary Biotic Community – Chihuahuan Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Escotube.d.pdf
http://www.azgfd.gov/w_c/edits/images/escotube.gif

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Lechuguilla
Scientific Name – *Agave lechuguilla*
Primary Biotic Community – Chihuahuan Desert

Websites to get you started:

<http://www.fs.fed.us/database/feis/plants/shrub/agalec/all.html>
<http://www.explorenm.com/plants/Agavaceae/Agave/lechuguilla/>

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Greater Roadrunner
Scientific Name – *Geococcyx californiana*
Primary Biotic Community – Chihuahuan Desert

Websites to get you started:

<http://www.phoenixzoo.org/zoo/animals/facts/roadrunner.asp>
http://www.desertmuseum.org/books/nhsd_roadrunner_new.html

**A Day in the Life...
Organism Card**

General information about the plant or animal you have been assigned:

Common Name – Black-capped Gnatcatcher
Scientific Name – *Poliptila nigriceps*
Primary Biotic Community – Chihuahuan Desert

Websites to get you started:

http://www.azgfd.gov/w_c/edits/documents/Polinigr.d.pdf
http://www.azgfd.gov/w_c/edits/images/polinigr.gif

Life in a Biome: Students Transformed!

Yikes! You wake up one morning to discover that you are no longer in your comfy bed at home. Instead, a completely new environment surrounds you. Looking around carefully, you begin to recognize some of the plants and animals around you

and realize that this is one of the biotic communities you've been studying at school!

Satisfied that you know where you are, you notice that you are no longer human! You examine yourself carefully and realize that you are a _____.

What a great opportunity to really understand life in this biotic community. You decide to keep a record of everything you observe in your day so that you can write up a report.

Boy, will your teacher be impressed!

A Day in the Life ...

Include information about:

Climate

Topography

Descriptions of animals and plants around you

Interactions with other life forms in the community

What you ate (or what ate you!)

Scoring Rubric on Reverse

Refer to the rubric on the back to ensure that you have met all the requirements for this assignment. Enjoy your "Day!"

6 + 1 Trait Writing Model

CATEGORY	4	3	2	1
Accuracy of Facts (Content)	All supportive facts are reported accurately.	Almost all supportive facts are reported accurately.	Most supportive facts are reported accurately.	NO facts are reported OR most are inaccurately reported.
Adding Personality (Voice)	The writer has developed a unique and appropriate plant or animal voice. There is a strong sense of personality.	The writer has developed an appropriate plant or animal voice. There is some sense of personality, but it may be inconsistent or weak at times.	The writer occasionally develops an appropriate voice, but generally it is weak and inconsistent.	There is no sense of voice in the essay.
Sequencing (Organization)	Details are placed in a logical order and the way they are presented effectively keeps the interest of the reader.	Details are placed in a logical order, but the way in which they are presented/ introduced sometimes makes the writing less interesting.	Some details are not in a logical or expected order, and may distract or confuse the reader.	Many details are not in a logical or expected order. There is little sense that the writing is organized.
Word Choice	Writer uses vivid words and phrases that linger or draw pictures in the reader's mind, and the choice and placement of the words seems accurate, natural, and not forced.	Writer uses vivid words and phrases that linger or draw pictures in the reader's mind, but occasionally the words are used inaccurately or seem overdone.	Writer uses words that communicate clearly, but the writing lacks variety, punch, or flair.	Writer uses a limited vocabulary that does not communicate strongly or capture the reader's interest. Jargon or clichés may be present and detract from the meaning.
Flow & Rhythm (Sentence Fluency)	All sentences sound natural and are easy-on-the-ear when read aloud. Each sentence is clear and has an obvious emphasis.	Almost all sentences sound natural and are easy-on-the-ear when read aloud, but 1 or 2 are stiff, awkward or difficult to understand.	Most sentences sound natural and are easy-on-the-ear when read aloud, but several are stiff, awkward or difficult to understand.	The sentences are difficult to read aloud because they sound awkward, are distractingly repetitive, or difficult to understand.
Completeness	Required elements (climate, terrain, other plants and animals, encounters, and food) are addressed completely.	Required elements (climate, terrain, other plants and animals, encounters, and food) are included, but may only be given superficial treatment.	Some required elements (climate, terrain, other plants and animals, encounters, and food) are missing and/or not described in enough detail.	Many required elements (climate, terrain, other plants and animals, encounters, and food) are missing and/or are incomplete in detail.
Bibliography	Works consulted in researching the topic are listed correctly and in sufficient number. Web sources have been evaluated for reliability and lack of bias.	Although works listed may be sufficient in number, some are not properly formatted. Web sources appear to be reliable and unbiased.	Works listed may be insufficient in number or have some serious errors in formatting. Web sources have questionable reliability.	Most works consulted in researching the topic are listed incorrectly and too few sources are listed. Unreliable web sources are used.

Peer Editing Sheet

Editors:

1. _____
2. _____
3. _____

Please read this paper carefully and respond to the following prompts on another sheet of paper. Remember you are not to make changes or corrections on anyone else's paper, but you may suggest them:

Editor #1:

- a. Has the author described the terrain, climate, and other animals and plants in sufficient, entertaining detail? Underline (or highlight) words and sentences that do an especially good job of description.
- b. Write a sentence describing what you like about the essay.
- c. Question the author about any area that is not clear to you.
- d. What can the author do to improve this paper? Be specific!
- e. Please respond directly to the author's stated concerns.

Editor #2:

- a. Has the author described a typical "day in the life"? Underline actions that are characteristic of the plant or animal.
- b. Write a sentence describing what you like about the essay.
- c. Question the author about any area that is not clear to you.
- d. What can the author do to improve this paper? Be specific!
- e. Please respond directly to the author's stated concerns.

Editor #3:

- a. Does the author use a *voice* that is appropriate and effective for his/her plant or animal? Underline words that reveal the author's unique voice.
- b. Write a sentence describing what you like about the essay.
- c. Question the author about any area that is not clear to you.
- d. What can the author do to improve this paper? Be specific!
- e. Please respond directly to the author's stated concerns.



An online exploration
of the biotic
communities of
Arizona with an
emphasis on
Language Arts and
Social Studies

Exploring Arizona's Biotic Communities

Lesson 4: Which Team Are You On?

LESSON OVERVIEW

After reading and studying the information about Arizona's biotic communities, students design a trading card for a particular plant or animal. When the cards are completed, groups of students play a game in which they try to match up animals and plants that belong in the same biotic community.

SUGGESTED GRADE LEVELS

- 6 – 10

ENDURING UNDERSTANDINGS

- Plants and animals are adapted to the environment in which they live.

OBJECTIVES

Students will:

- Develop trading cards for a particular plant or animal.
- Use prior knowledge to decide in which biotic community various plants and animals belong.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Reading	Writing	Social Studies
6	S3-C1-01; S3-C1-09	S1-C5-03; S2-C1-02; S2-C2-01; S2-C6-10	None
7	S3-C1-01; S3-C1-10		None
8	S3-C1-01; S3-C1-10		None
9	S3-C1-08	S1-C5-02; S2-C1-03; S2-C2-01; S2-C6-09	None
10	S3-C1-07; S3-C1-08		

Note: The full text of these standards can be found in Appendix A.

TIME FRAME

- 4 – 6 days (3 – 5 days of research and creation in or out of class, 1 day in class to play the game)

MATERIALS

- A few baseball or other sport cards or game cards (Harry Potter or Pokemon would work.)
- Computers with Internet access
- Index cards to provide support for animal/plant cards
- *Card Template* (one card per student)



- Envelopes (eight per team)
- *Biotic Communities Trading Card Rubric* (one per student)

TEACHER PREPARATION

- If your class has not worked on the “Day in the Life” research project, the students will need to complete the research portion of that activity for one plant or animal in their assigned biotic community.

SUGGESTED PROCEDURES

1. Show students a few sample cards: baseball, Harry Potter, Pokemon, etc. Be sure to point out features of the card that you want them to emulate: a picture, statistics, characteristics, etc. Sample wildlife cards are provided as well.
2. Tell the students that a card manufacturer has asked them to create a card for the plant or animal they have researched. Let them know that when everyone has made a card, the class will play a game with them. Distribute the card rubric and review the requirements to make sure everyone understands them.
3. Using available software and technology, students create an information card (like a sports card) about the plant or animal they researched for their “Day in the Life” essay. The card should include a photograph or sketch and enough information to allow a classmate to determine in which biotic community the plant or animal belongs. The name of the biotic community *should not* be included. The card should describe the area where its subject is found, the subject’s size, color, habits, needed living conditions, special adaptations, and any interesting facts. For animals, include diet and whether it is a predator or prey. A card template is provided for your use.
4. Students can ask their “Day in the Life” teammates to check their drafts for accuracy and correctness.
5. Collect the cards. Review them and notify students who need to correct any obvious problems. When corrected, print out a complete pack for each team. A complete pack will include two plants and two animals from each biotic community. (You may choose to have students make multiple copies, or have them submit their cards electronically so you can make copies.) The students attach the cards to index cards for extra support.
6. On the day you’ve chosen to play the game, arrange students into teams of four. If the class completed Lesson 1: Mapping Biotic Communities, the same teams may be used.
7. Give each team a complete pack of cards.
8. Explain the rules:
 - a. One student is the dealer and deals four cards to each team member.
 - b. The remaining cards are placed in the middle.
 - c. The student to the dealer’s right picks one card from his or her own hand, lays it down face up, and announces the biotic community it belongs in.
 - d. If the team agrees on the community, the player chooses another card and play rotates to the next team member. If the team disagrees, they make suggestions, the player keeps the card until next turn, and play rotates to the next team member.
 - e. The next player can either add a plant or animal to a biotic community already represented on the table, or start another community.



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- f. Play continues until all cards have been dealt and each community has a set of four cards. This is a team goal, not an individual one, so teams that cooperate and communicate well will be rewarded.
- g. When a team believes they have a complete set, they alert the teacher who checks for correctness.
- h. The first team to gather all 8 sets wins. You may wish to provide a reward, such as hard candy.

ASSESSMENT

- Student cards using the rubric provided
- Observation as students play the game

EXTENSIONS

- Students may also use the cards to quiz themselves on the information.
- Each student could play independently with a certain number of cards (3 or 4). The rest are placed in a draw pile. The goal is again to create sets of plants and animals in a biotic community. Students draw one card on each turn. They can discard that card or another from their hand. A student who has a pair may lie those cards down or continue to hold them. Other players may discard onto sets laid down. Play ends when a student has no cards left.
- Other games may be played using the cards: A card could be put on each student's back and then students must mix and guess who they are by asking one yes or no question until they guess correctly.



Appendix A: Arizona Department of Education Standards – Full Text

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Reading Standards

Grade	Strand	Concept	Performance Objective
6	3	1 – Expository Text	1 – Restate the main idea (explicit or implicit) and supporting details in expository text 9 – Draw valid conclusions about expository text, supported by text evidence
7	3	1 – Expository Text	1 – Restate the main idea (explicit or implicit) and supporting details in expository text 10 – Make relevant inferences about expository text, supported by text evidence
8	3	1 – Expository Text	1 – Restate the main idea (explicit or implicit) and supporting details in expository text 10 – Make relevant inferences about expository text, supported by text evidence
9	3	1 – Expository Text	8 – Support conclusions drawn from ideas and concepts in expository text
10	3	1 – Expository Text	7 – Make relevant inferences by synthesizing concepts and ideas from a single reading selection 8 – Support conclusions drawn from ideas and concepts in expository text

Writing Standards

Grade	Strand	Concept	Performance Objective
6, 7, 8	1	5 – Publishing	3 – Use graphics (e.g., drawings, charts, graphs), when applicable, to enhance the final product
	2	1 – Ideas and Content	2 – Provide content and selected details that are well-suited to audience and purpose
		2 – Organization	1 – Use a structure that fits the type of writing (e.g., letter format, narrative, play, essay)
		6 – Conventions	10 – Use resources to spell correctly
High School	1	5 – Publishing	2 – Include such techniques as principles of design (e.g., margins, tabs, spacing, and columns) and graphics (e.g., drawings, charts, graphs), when applicable, to enhance the final product



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Writing Standards Continued

Grade	Strand	Concept	Performance Objective
High School	2	1 – Ideas and Content	3 – Provide sufficient, relevant and carefully selected details for support
		2 – Organization	1 – Use a structure that fits the type of writing (e.g., letter format, narrative, play, essay)
		6 – Conventions	9 – Spell words correctly



Appendix B: Suggested Research Web Sites

Below is the list of additional plants and animals to include in each biotic community as well as some suggested Web sites that the students may use for research. It is recommended that you review the Web sites before using them with students.

FIR FOREST

Arizona Bugbane

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Cimiariz.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/cimiariz.gif

Arizona Frog Orchid

- http://www.azgfd.gov/w_c/edits/documents/Coelvivi.d.pdf
- http://www.azgfd.gov/w_c/edits/images/coelvivi.gif

Mexican Spotted Owl

- http://www.azgfd.gov/w_c/edits/documents/Strioclu.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/strioclu.gif

Hammond's Flycatcher

- http://www.azgfd.gov/w_c/edits/documents/Empihamm.d.pdf
- <http://www.bird-friends.com/BirdPage.php?name=Hammond's%20Flycatcher>

PINE FOREST

Western Fairy Slipper

- http://www.azgfd.gov/w_c/edits/documents/Calybulb.d.pdf
- http://www.azgfd.gov/w_c/edits/images/calybulb.gif

Nevin Bird's-beak

- http://www.azgfd.gov/w_c/edits/documents/Cordnevi.d.pdf
- http://www.azgfd.gov/w_c/edits/images/cordnevi.gif

Long-eared Myotis

- http://www.azgfd.gov/w_c/edits/documents/Myotevot.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/myotevot.gif

Mexican Gray Wolf

- http://www.azgfd.gov/w_c/edits/documents/Caniluba.d.pdf
- <http://www.phoenixzoo.org/zoo/animals/facts/mexicanwolf.asp>

PINYON-JUNIPER

Huachuca Milk-vetch

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Astrhypo.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/astrhypo.gif

Roaring Springs Prickly-poppy

- http://www.azgfd.gov/w_c/edits/documents/Argeariz.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/argeariz.gif

Arizona Night Lizard

- http://www.azgfd.gov/w_c/edits/documents/Xantariz.d_000.pdf
- http://www.azgfd.gov/w_c/edits/images/xantariz.gif

Narrow-headed Garter Snake

- http://www.azgfd.gov/w_c/edits/documents/Thamrufi.di_001.pdf
- http://www.azgfd.gov/w_c/edits/images/thamrufi_000.gif



OAK-PINE

Chihuahuan Stickseed

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Hackursi.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/hackursi.gif

Woodland Spurge

- http://www.azgfd.gov/w_c/edits/documents/Euphmacr.d.pdf
- http://www.azgfd.gov/w_c/edits/images/euphmacr.gif

Berylline Hummingbird

- http://www.azgfd.gov/w_c/edits/documents/Amazbery.D.pdf
- http://www.azgfd.gov/w_c/edits/images/amazbery.gif

Elegant Trogon

- http://www.azgfd.gov/w_c/edits/documents/Trogeleg.d.pdf
- http://www.azgfd.gov/w_c/edits/images/trogeleg.gif

OAK WOODLAND

Large-flowered Blue Star

- http://www.azgfd.gov/w_c/edits/documents/Amsogran.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/amsogran.gif

Chiltepin

- http://www.azgfd.gov/w_c/edits/documents/Capsangl.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/capsangl.gif

Yellow-nosed Cotton Rat

- http://www.azgfd.gov/w_c/edits/documents/Sigmochr.di.pdf
- http://www.azgfd.gov/w_c/edits/images/sigmochr.gif

Acorn Woodpecker

- <http://www.birding.com/572aw.asp>
- <http://www.bird-friends.com/BirdPage.php?name=Acorn%20Woodpecker>

CHAPARRAL

Flannel Bush

- http://www.azgfd.gov/w_c/edits/documents/Fremcali.d.pdf
- http://www.azgfd.gov/w_c/edits/images/fremcali.gif

Arizona Agave

- http://www.azgfd.gov/w_c/edits/documents/Agavariz.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/agavariz.gif

Madrean Alligator Lizard

- <http://www.reptilesfaz.com/Lizards-Subpages/h-e-kingii.html>
- <http://www.anapsid.org/gerrhont.html>

Coyote

- http://www.azgfd.gov/h_f/game_coyote.shtml
- <http://www.phoenixzoo.org/zoo/animals/facts/coyote.asp>



MOUNTAIN GRASSLAND

Kaibab Beardtongue

- http://www.azgfd.gov/w_c/edits/documents/Penspseu.fi.pdf
- http://www.azgfd.gov/w_c/edits/images/penspseu.gif

Redflower Onion

- http://www.azgfd.gov/w_c/edits/documents/Allirhiz.d.pdf
- http://www.azgfd.gov/w_c/edits/images/allirhiz.gif

White Mountains Ground Squirrel

- http://www.azgfd.gov/w_c/edits/documents/Spertmo.d.pdf
- http://www.azgfd.gov/w_c/edits/images/spertmo.gif

New Mexican Jumping Mouse

- http://www.azgfd.gov/w_c/edits/documents/Zapuhulu.d.pdf
- http://www.azgfd.gov/w_c/edits/images/zapuhulu_000.gif

PLAINS GRASSLAND

Paper-spined Cactus

- http://www.azgfd.gov/w_c/edits/documents/Pedipapy.d_000.pdf
- http://www.azgfd.gov/w_c/edits/images/pedipapy_000.gif

Peebles Blue Star

- http://www.azgfd.gov/w_c/edits/documents/Amsopeeb.d.pdf
- http://www.azgfd.gov/w_c/edits/images/amsopeeb.gif

Black-tailed Prairie Dog

- http://www.azgfd.gov/w_c/edits/documents/Cynoludo.fi.pdf
- http://www.desertusa.com/dec96/du_pdogs.html

Milksnake

- http://www.azgfd.gov/w_c/edits/documents/Lamptria.d_001.pdf
- http://www.azgfd.gov/w_c/edits/images/lamptria_000.gif

DESERT GRASSLAND

Pima Indian Mallow

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Abutpari.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/abutpari.gif

Arid Throne Fleabane

- http://www.azgfd.gov/pdfs/w_c/hdms/Plants/Erigaris.fo.pdf
- http://www.azgfd.gov/w_c/edits/images/erigaris.gif

Mexican Hog-nosed Snake

- http://www.azgfd.gov/w_c/edits/documents/Hetenake.d_001.pdf
- http://www.azgfd.gov/w_c/edits/images/hetenake_000.gif

Masked Bobwhite

- http://www.azgfd.gov/w_c/edits/documents/Coliviri.d.pdf
- http://www.azgfd.gov/w_c/edits/images/coliviri.gif



GREAT BASIN DESERT

Fredonia Catseye

- http://www.azgfd.gov/w_c/edits/documents/Crypsemi.d_000.pdf
- http://www.azgfd.gov/w_c/edits/images/crypsemi_000.gif

Whiting Dalia

- http://www.azgfd.gov/w_c/edits/documents/PSORTHWH.fi_000.pdf
- http://www.azgfd.gov/w_c/edits/images/psorthwh_000.gif

New Mexico Banner-tailed Kangaroo Rat

- http://www.azgfd.gov/w_c/edits/documents/Dipospba.d.pdf
- http://www.desertusa.com/aug96/du_krat.html

Pygmy Rabbit

- http://www.azgfd.gov/w_c/edits/documents/Sylvidah.d.pdf
- http://www.glenoakzoo.org/pygmy_rabbit_fact.htm

MOHAVE DESERT

Grand Canyon Flaveria

- http://www.azgfd.gov/w_c/edits/documents/Flavmcdo.d.pdf
- http://www.azgfd.gov/w_c/edits/images/flavmcdo.gif

Brittlebush

- http://www.desertusa.com/april96/du_britbush.html
- <http://www.fs.fed.us/database/feis/plants/shrub/encfar/all.html>

Kit Fox

- http://www.azgfd.gov/h_f/game_foxes.shtml
- <http://www.southwestwildlife.org/factsheets/kitfox.htm>

Desert Iguana

- http://www.desertusa.com/april97/du_desiguana.html
- http://www.desertmuseum.org/books/nhsd_desert_iguana.html

SONORAN DESERT

Crucifixion Thorn

- http://www.azgfd.gov/w_c/edits/documents/Castemor.d.pdf
- http://www.desertusa.com/magdec97/dec_pap/du_cruxthorn.html

Gander's Cryptantha

- http://www.azgfd.gov/w_c/edits/documents/Crypgand.d.pdf
- http://www.azgfd.gov/w_c/edits/images/crypgand.gif

Crested Caracara

- http://www.azgfd.gov/w_c/edits/documents/Caracher.d.pdf
- http://www.azgfd.gov/w_c/edits/images/caracher.gif

Gila Monster

- http://www.azgfd.gov/w_c/edits/documents/Helosuci.d_001.pdf
- http://www.azgfd.gov/w_c/edits/images/helosuci_000.gif



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CHIHUAHUAN DESERT

Cob Corycactus

- http://www.azgfd.gov/w_c/edits/documents/Escotube.d.pdf
- http://www.azgfd.gov/w_c/edits/images/escotube.gif

Lechuguilla

- <http://www.fs.fed.us/database/feis/plants/shrub/agalec/all.html>
- <http://www.explorenm.com/plants/Agavaceae/Agave/lechuguilla/>

Greater Roadrunner

- <http://www.phoenixzoo.org/zoo/animals/facts/roadrunner.asp>
- http://www.desertmuseum.org/books/nhsd_roadrunner_new.html

Black-capped Gnatcatcher

- http://www.azgfd.gov/w_c/edits/documents/Polinigr.d.pdf
- http://www.azgfd.gov/w_c/edits/images/polinigr.gif



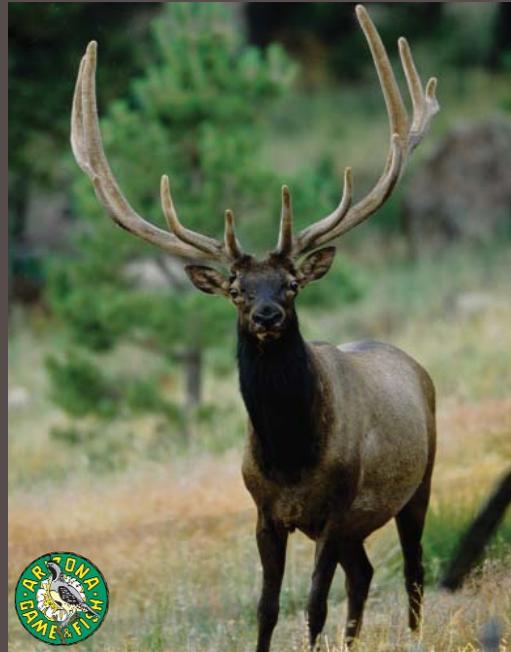
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Appendix C: Worksheets and Overheads

The pages that follow contain the worksheets listed below:

- A. *Sample Cards* – Pre-made cards containing some of the animals from the “Exploring Arizona’s Natural Resources” Web page (2 pages)
- B. *Card Template* – A template that students can use to make their own cards (2 pages)





Gray Fox

Urocyon cinereoargenteus

Description:

- ◆ Grizzled gray on top
- ◆ Reddish sides and chest
- ◆ Dark brown mane on throat
- ◆ Prominent ears

Characteristics:

- ◆ A carnivore, feeding on rodents and rabbits
- ◆ Only American canid with climbing ability
- ◆ Most active at twilight and night
- ◆ Will bark, growl, and yap
- ◆ Young ready to hunt at four months

Tidbits:

A fur-bearing animal in Arizona, this fox has few predators. Although considered a carnivore, the gray fox can be seen eating nuts, berries, fruit, and grass. Grasshoppers are an important part of its diet in summer.

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Height: 1-1.25 ft.
Weight: 7-13 lbs.
Length: 2-3.5 ft.

Desert Bighorn Sheep

Ovis canadensis

Description:

- ◆ Muscular, thick neck
- ◆ Light-colored belly
- ◆ Males - massive brown curled horns

Characteristics:

- ◆ An herbivore
- ◆ Hooves are cork-like to aid in traction
- ◆ Live where few other animals can survive
- ◆ Excellent eyesight

Tidbits:

A big game animal in Arizona. During mating season, males will butt heads at speeds up to 20 mph creating a rifle-shot sound that can be heard up to a mile away. These battles can continue for 20 hours. Lions are the primary predator of bighorn sheep.

Note: Males substantially larger/heavier than females

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Height: 2.5-3.5 ft.
Weight: 75-225 lbs.
Length: 4-4.5 ft.

Pronghorn

Antilocapra americana

Description:

- ◆ Black horns
- ◆ White rump and white tail
- ◆ Tan or orange-brown body and white belly

Characteristics:

- ◆ An herbivore
- ◆ Fastest mammal in North America: 60 mph
- ◆ Can sustain 30 mph for long distances
- ◆ Can detect movement four miles away
- ◆ Will use sharp hooves to fight off predators

Tidbits:

A big game animal in Arizona. Numbers vary depending on food supply and predation. Coyotes are the biggest threat to the young. The Sonoran pronghorn, located in southwestern Arizona, is endangered.

Note: Males substantially larger/heavier than females

Visit azgfd.gov

Height: 3-3.5 ft.
Weight: 70-140 lbs.
Length: 4-4.5 ft.

Ringtail

Bassariscus astutus

Description:

- ◆ Body resembles a cat and face of a fox
- ◆ Yellowish-gray fur above, whitish below
- ◆ Long, bushy tail with white and black rings
- ◆ Prominent dark, round eyes, rounded ears

Characteristics:

- ◆ An omnivore
- ◆ Grooms itself much like a house cat
- ◆ Most often will ambush prey
- ◆ A nocturnal animal that is rarely seen
- ◆ Likes rocky areas, such as canyons

Tidbits:

Also known as a 'miner's cat', the ringtail is the state mammal. The ringtail will feed on rodents, insects, cactus fruits and other vegetation. Part of its diet consists of snakes, scorpions, and centipedes.

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Height: 5-8 in.
Weight: 2-3 lbs.
Length: 1-1.5 ft.

Merriam's Turkey

Meleagris gallopavo

Description:

- ◆ Iridescent (rainbowlike) brown
- ◆ Fan-shaped tail
- ◆ Spurs on feet; "beard" on breast of males
- ◆ Head and neck are featherless

Characteristics:

- ◆ Eats seeds, nuts, acorns, fruit, and insects
- ◆ Gobbling calls similar to domestic turkey
- ◆ Swift runners and quite wary
- ◆ Nest concealed in grass or shrubs
- ◆ Lives in oak woodlands or pine-oak forests

Tidbits:

The largest game bird in North America. This bird is native only to North America and Mexico. The male will strut and gobble to attract a hen during courtship. The call of the wild turkey can be heard up to a mile away.

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Height: 2.5-3 ft.
Weight: 10-20 lbs.
Length: 3-4 ft.

Javelina

Tayassu tajacu

Description:

- ◆ White-yellowish ring of hair around neck
- ◆ Pig-like snout
- ◆ Large canines. Small hooves

Characteristics:

- ◆ An herbivore
- ◆ Musk gland exudes skunky odor
- ◆ Can run at 25 mph
- ◆ Will swim from danger when necessary
- ◆ Very poor eyesight

Tidbits:

A big game animal in Arizona. Resembles a pig, but is not a member of the pig family. Will feed in gardens and on fallen bird seed, which can create potential conflicts with people. Its activity is strongly related to temperature, seeking shelter during midday heat.

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Height: 1.5-2 ft.
Weight: 35-60 lbs.
Length: 2.5-3.5 ft.

Elk

Cervus elaphus

Description:

- ◆ Heavy bodied with slender legs
- ◆ Large antlers on males
- ◆ Dark brown mane on throat

Characteristics:

- ◆ An herbivore
- ◆ Can run 35-40 mph
- ◆ Very vocal, including common 'bugle' call
- ◆ Herds can be composed of up to 400 elk

Tidbits:

A big game animal in Arizona that is a member of the deer family. They are the second-largest mammal in Arizona next to the bison. Antlers can reach a length of up to 5 feet. Primary predator is the mountain lion.

Note: Males substantially larger/heavier than females

Elk photo by Joe and Marisa Cerreta

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Height: 3-5 ft.
Weight: 400-800 lbs.
Length: 5-8 ft.

Bobcat

Lynx rufus

Description:

- ◆ Short, stubby tail, known as a bobbed tail
- ◆ Tan or grayish fur
- ◆ Ears are slightly tufted
- ◆ Strong resemblance to a house cat

Characteristics:

- ◆ A carnivore
- ◆ Lives only in North America
- ◆ Fur provides excellent camouflage
- ◆ Will stalk or wait and pounce to kill prey
- ◆ Calls can sound much like a house cat

Tidbits:

A fur-bearing animal in Arizona. Although small wildlife are their primary food source, a bobcat is capable of bringing down a deer. Bobcats are North America's most common wildcat.

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Height: 1.5-2.5 ft.
Weight: 15-40 lbs.
Length: 2-3.5 ft.

Organism Name:
Scientific Name:
Physical Description: . . .
Habitat Description: . . .
Interesting Facts: . . .
Created By:

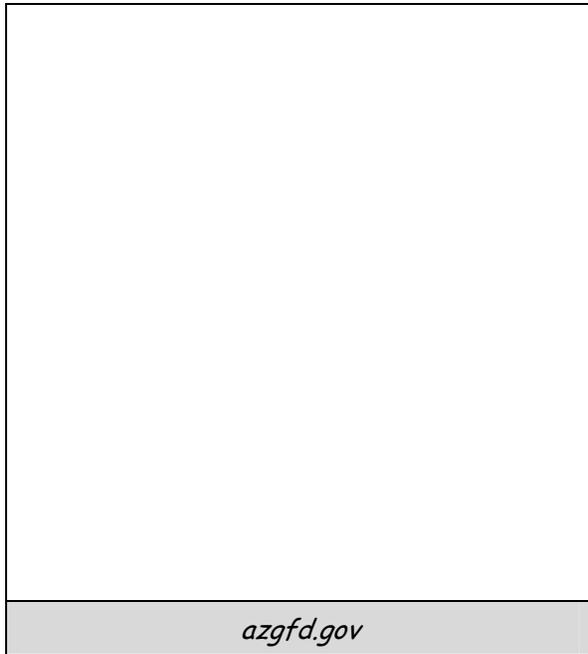
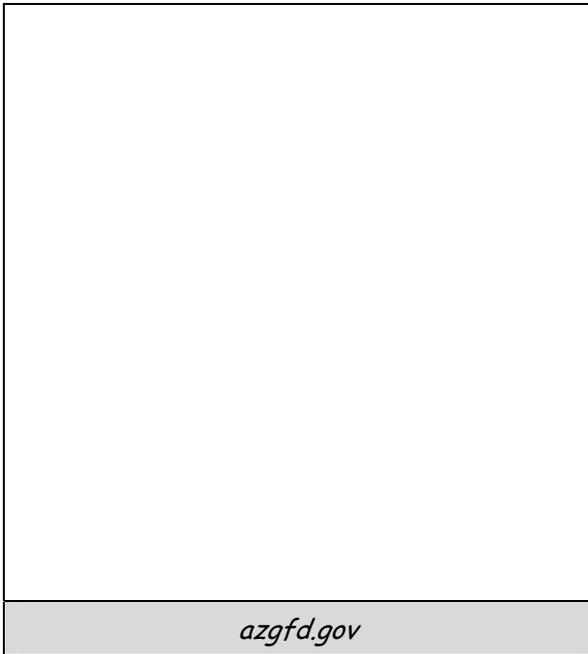
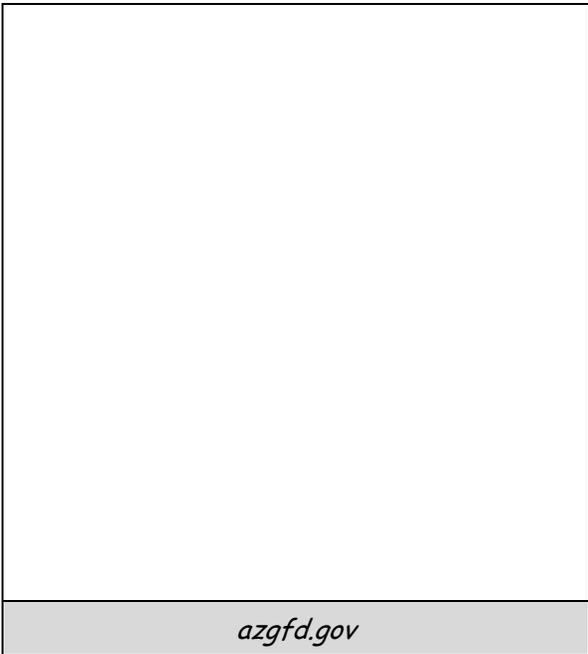
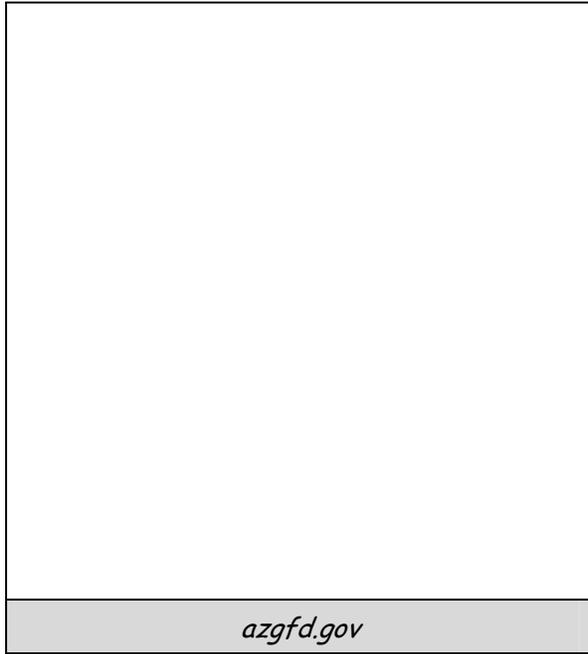
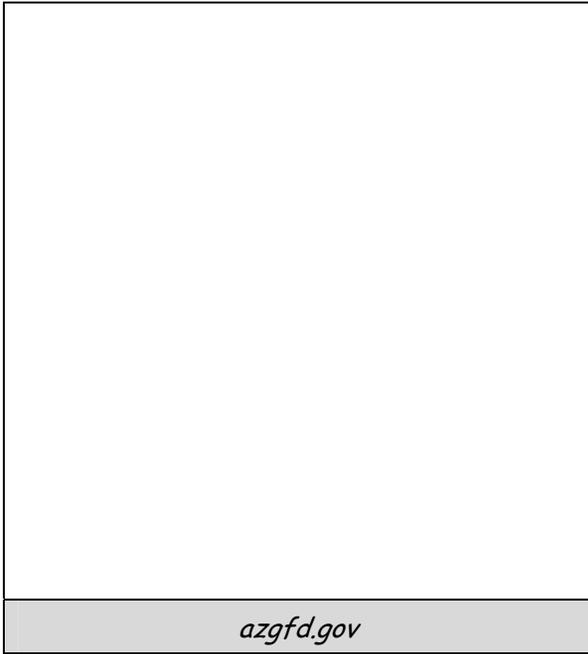
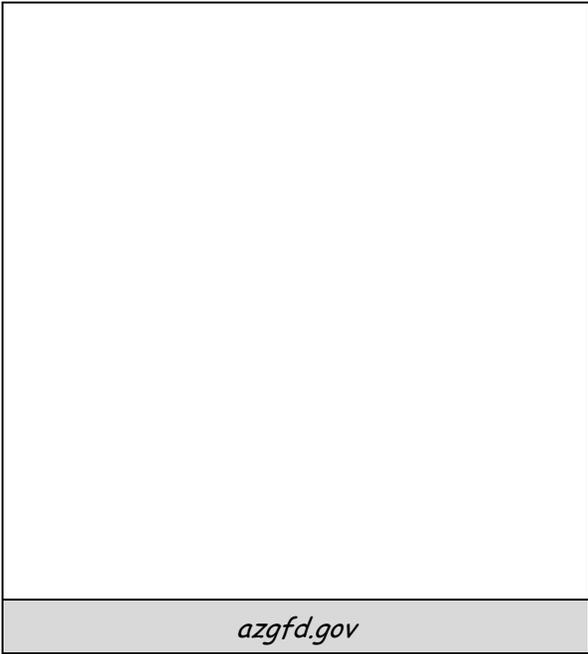
Organism Name:
Scientific Name:
Physical Description: . . .
Habitat Description: . . .
Interesting Facts: . . .
Created By:

Organism Name:
Scientific Name:
Physical Description: . . .
Habitat Description: . . .
Interesting Facts: . . .
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Organism Name:
Scientific Name:
Physical Description: . . .
Habitat Description: . . .
Interesting Facts: . . .
Created By:

Organism Name:
Scientific Name:
Physical Description: . . .
Habitat Description: . . .
Interesting Facts: . . .
Created By:

Organism Name:
Scientific Name:
Physical Description: . . .
Habitat Description: . . .
Interesting Facts: . . .
Created By:



Biotic Communities Trading Card Rubric

Use the following rubric to assist as you create your card of your assigned plant or animal.

CATEGORY	4	3	2	1
Picture	Picture shows the plant or animal clearly, is in focus, well cropped and appropriate for the card.	Picture shows the plant or animal, is in focus, but may not be well cropped.	Picture may be out of focus, poorly cropped or inappropriate for the card.	Picture is incorrect, sloppily done, or missing.
Content	Information is accurate and complete, addressing all required areas: size, color, special adaptations, habits, necessary living conditions, interesting facts, diet, predator or prey (for animals).	Information is accurate, but some required areas are not included.	Some information is inaccurate and/or many required areas are not included.	Much information is incorrect and/or most required areas are missing
Layout	Layout is attractive and neatly done. It is easy to read and visually pleasing.	Layout is neatly done, but could be more easy to read or visually pleasing.	Layout may be a little sloppy or poorly designed.	Layout is difficult to read because it is sloppy and poorly designed.
Spelling and Proofreading	No spelling or grammar errors in the final copy.	No more than 2 spelling or grammar errors in the final copy.	No more than 3 spelling or grammar errors remain in the final copy.	More than 3 spelling or grammar errors remain in the final copy.



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Exploring Arizona's Biotic Communities

Lesson 5: Group Presentations

LESSON OVERVIEW

In this lesson, students will first research an assigned biotic community and then design a visual display of their community and present it to the class.

SUGGESTED GRADE LEVELS

- 6 – 10

ENDURING UNDERSTANDINGS

- Arizona has a tremendous natural diversity because of the state's variety of ecosystems.
- Ecosystems, which are based on differences in soil, climate, and human and natural disturbances, can be defined on local or global scales.
- Plants and animals are adapted to survive in the environment in which they live.
- Ecosystems change over time due to natural and human events.

OBJECTIVES

Students will:

- Use the Internet and library to research a specific biotic community.
- Describe features of their biotic community and differentiate it from others.
- Create a visual display of their biotic community.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Reading	Writing	Social Studies
6	S3-C1-01; S3-C1-07	S1-C5-01; S1-C5-03	S4-C2-02
7	S3-C1-01; S3-C1-08		S4-C2-01; S4-C2-02; S4-C5-03
8	S3-C1-01; S3-C1-08		S4-C5-01
9	S3-C1-05; S3-C1-08	S1-C5-01; S1-C5-02	S4-C2-01; S4-C5-05
10	S3-C1-05; S3-C1-08		

Note: The full text of these standards can be found in Appendix A.

TIME FRAME

- 3 days (2 days for groups to plan presentations, 1 day for groups to share)



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MATERIALS

- *Arizona: A Land of Many Communities* Newsletter and Rubric (one per student)
- Access to Internet and color printers or copiers
- Display board (one per group)
- Markers or colored pencils (one set per group)
- Glue sticks (one per group)
- Plant and animal cards previously created

TEACHER PREPARATION

- Assign students to teams of four. Students may continue to work in the same teams they were assigned to for previous biotic community lessons.

SUGGESTED PROCEDURES

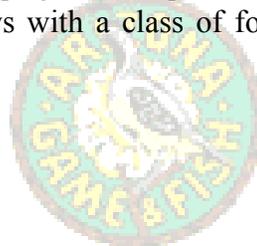
1. Give students the *Arizona: A Land of Many Communities* newsletter and rubric. Go over the requirements together.
2. Each team will prepare a visual display about their biotic community. The following should be included:
 - a. Physical Features: topography, temperature range, precipitation, and elevation
 - b. Plant life: general description of the kinds of vegetation found in the biotic community as well as detailed information about at least two specific plants
 - c. Wildlife: general description of the kinds of wildlife found in the biotic community along with detailed information about at least two animals
 - d. Changes over time: a discussion of the most critical recent changes in the area due to natural or human causes
3. Each team member will take responsibility for one of the above areas.
4. The display will include photos or sketches of the biotic community as well as the plant and animal cards made in Lesson 4 – Which Team Are You On?
5. The display will include a map of where the biotic community is located in Arizona.
6. Teams will present their displays to the class.

ASSESSMENT

- Display boards using the rubric provided
- Informal evaluation of oral presentation

EXTENSIONS

- Students could share their displays at an Open House or Parent Night.
- Students could share displays with a class of fourth graders who have been studying Arizona.



Appendix A: Arizona Department of Education Standards – Full Text

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Reading Standards

Grade	Strand	Concept	Performance Objective
6	3	1 – Expository Text	1 – Restate the main idea (explicit or implicit) and supporting details in expository text 7 – Interpret graphic features (e.g., charts, maps, diagrams, illustrations, tables, timelines, graphs) of expository text
7	3	1 – Expository Text	1 – Restate the main idea (explicit or implicit) and supporting details in expository text 8 – Interpret graphic features (e.g., charts, maps, diagrams, illustrations, tables, timelines, graphs) of expository text
8	3	1 – Expository Text	1 – Restate the main idea (explicit or implicit) and supporting details in expository text 8 – Interpret graphic features (e.g., charts, maps, diagrams, illustrations, tables, timelines, graphs) of expository text
9	3	1 – Expository Text	5 – Interpret graphic sources of information (e.g., charts, maps, diagrams, illustrations, tables, timelines, graphs) to support ideas 8 – Support conclusions drawn from ideas and concepts in expository text
10	3	1 – Expository Text	5 – Interpret graphic sources of information (e.g., charts, maps, diagrams, illustrations, tables, timelines, graphs) to support ideas 8 – Support conclusions drawn from ideas and concepts in expository text

Writing Standards

Grade	Strand	Concept	Performance Objective
6, 7, 8	1	5 – Publishing	1 – Prepare writing in a format (e.g., oral presentation, manuscript, multimedia) appropriate to audience and purpose 3 – Use graphics (e.g., drawings, charts, graphs), when applicable, to enhance the final product



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Writing Standards Continued

Grade	Strand	Concept	Performance Objective
High School	1	5 – Publishing	1 – Prepare writing that follows a format appropriate for the purpose (e.g., for display, sharing with others, or submitting to a publication). 2 – Include such techniques as principles of design (e.g., margins, tabs, spacing, and columns) and graphics (e.g., drawings, charts, graphs), when applicable, to enhance the final product

Social Studies Standards

Grade	Strand	Concept	Performance Objective
6	4	2 – Places and Regions	2 – Describe the factors that cause regions and places to change
7	4	2 – Places and Regions	1 – Describe the human and physical characteristics of places and regions 2 – Explain the concept of regions and why they change
		5 – Environment and Society	3 – Describe how humans modify environments (e.g., conservation, deforestation, dams) and adapt to the environment
8	4	5 – Environment and Society	1 – Describe how humans modify environments (e.g., deforestation and desertification)
High School	4	2 – Places and Regions	1 – Identify the characteristics that define a region: <ul style="list-style-type: none"> a. Physical processes (i.e., climate, terrain, resources) b. Human processes (i.e., religion, political organization, economy, demographics)
		5 – Environment and Society	5 – Analyze how humans impact the diversity and productivity of ecosystems (e.g., invading non-native plants and animals)



Appendix B: Worksheets and Overheads

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The pages that follow contain the worksheets listed below:

- A. *Arizona: A Land of Many Communities* Newsletter/Scoring Rubric – A double-sided handout to introduce the narrative essay to the students (2 pages)



Arizona: A Land of Many Communities

You are a member of a team of scientists that has been studying Arizona's biotic communities. You have been asked to create a visual display about one of Arizona's biotic communities for a group of middle school students who will be attending the International Science Fair. Most have never been to Arizona, and may hold many misconceptions about our area.

Your display should include images and information about:

Physical Features: topography, temperature range, precipitation, and elevation

Plant life: general description of the kinds of vegetation found in the biotic community as well as detailed information about at least two specific plants.

Wildlife: general description of the kinds of wildlife found in the biotic community along with detailed information about at least two animals.

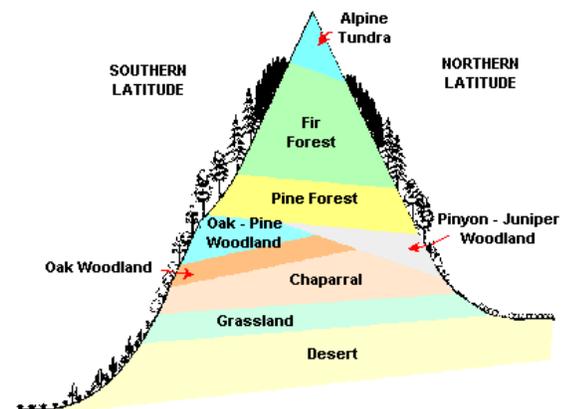
Changes over time: a discussion of the most critical recent changes in the area due to natural or human causes.

Individual Responsibilities

Each team member is responsible for one of the areas: physical features, plant life, wildlife, and changes over time.

Your display should include pictures of the biotic community and the plant and animal cards team members made.

Show your biotic community's location on a map.



Group score for display elements: labels, images, layout, and neatness.

Group Project Rubric

CATEGORY	4	3	2	1
Required Elements (INDIVIDUAL SCORE)	The report includes all required elements as well as additional information.	All required elements are included on the report.	All but 1 of the required elements are included on the report.	Several required elements were missing.
Labels (GROUP SCORE)	All items of importance are clearly labeled with labels that can be read from at least 3 ft. away.	Almost all items of importance are clearly labeled with labels that can be read from at least 3 ft. away.	Several items of importance are clearly labeled with labels that can be read from at least 3 ft. away.	Labels are too small to view OR no important items were labeled.
Attractiveness (GROUP SCORE)	The display is exceptionally attractive in terms of design, layout, and neatness.	The display is attractive in terms of design, layout and neatness.	The display is acceptably attractive though it may be a bit messy.	The display is distractingly messy or very poorly designed. It is not attractive.
Conventions (GROUP SCORE)	Spelling, grammar and punctuation are correct throughout the report.	There is 1 error in spelling, grammar or punctuation.	There are 2 errors in spelling, grammar or punctuation.	There are more than 2 errors in spelling, grammar or punctuation.