



The Living State Symbols of Arizona

A program for 4th grade students provided by the Arizona Game and Fish Department



The Living State Symbols of Arizona

Curriculum Map

| Overview | 5-day Forecast | Standards | Resources needed |
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| <p>Selecting a Class Symbol</p> <p>Elect a class symbol, modeling the election process.</p> | <p>Lesson 1: Introduce (living) state symbols of Arizona; create class teams; select individual research topic</p> <p>Lesson 2: Individual research (homework)</p> <p>Lesson 3: Group presentation and selection of wildlife candidates to nominate</p> <p>Lesson 4: Develop campaign materials, strategy and five “talking points”</p> <p>Lesson 5: Class debate and election of class symbols</p> | <p>SS2-E7 Explain the obligations and responsibilities of citizenship, with emphasis on... PO 2 involvement in political decision-making, including voting, petitioning public officials, and analyzing issues</p> <p>SC4-S1C1-04 Classify animals by identifiable group characteristics: vertebrates – mammals, birds, fish, reptiles, amphibians and invertebrates – insects, arachnids</p> <p>SC4-S1C4-01 Communicate verbally or in writing the results of an inquiry</p> <p>SC4-S1C4-03 Communicate with other groups or individuals to compare the results of a common investigation</p> <p>AV1-E1-01 Create artwork using the most appropriate media to communicate ideas and experiences</p> <p>AV1-E5-01 Identify the issues to be addressed within one’s own artwork</p> <p>AV2-E1-01 Identify cultural and historical symbols for one’s own meaning, past and present</p> <p>AV2-E1-02 Apply subjects, themes or symbols from various cultural or historical contexts to one’s own artwork that will communicate their intended meanings</p> <p>AV3-E6-01 Identify images used to influence messages used by business, industry, and politics</p> | <p>State Symbols PowerPoint</p> <p>Arizona Game and Fish poster: “Arizona’s State Symbols”</p> <p>“Critters of Arizona” pocket guide (one per student)*</p> <p>Student worksheets:</p> <p>“Who lives in Arizona?” student handout</p> <p>Student performance task sheet</p> <p>Student planning sheet</p> <p>Ballot form</p> <p>Art supplies</p> <p>Research materials</p> <p>*One free copy of this publication will be provided to every 4th grade student whose classroom teacher registers with the education branch of the Arizona Game and Fish Department: azgfd.gov</p> |

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| | | AV3-E6-02 Describe the persuasive power of the images to influence messages used by business, industry and politics | |
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| <p>Legislative</p> <p>Learn about our current state symbols and how they were chosen. Investigate our legislative process and learn how citizens can create a bill that becomes a law. Research an animal or plant native to Arizona and present a case for making it a state symbol. In a mock legislative session, take it through the steps required to become law.</p> | <p>Lesson 1: Participate in a general overview of the state symbols</p> <p>Lesson 2: Investigate native animals/plants</p> <p>Lesson 3: Discover how bills become law</p> <p>Lesson 4: Model a legislative session and select new state symbols</p> <p>Lesson 5: Final assessment of understandings; celebrate new learning</p> | <p>SS2-E6 Describe the structure, functions, and powers of the Arizona state and local governments and their relationship to the federal government, with emphasis on...</p> <p>PO 6 the roles and relationships of different levels of government, including federal, state, county, city/town and tribal</p> <p>SS2-E7 Explain the obligations and responsibilities of citizenship, with emphasis on...</p> <p>PO 2 involvement in political decision-making, including voting, petitioning public officials, and analyzing issues</p> <p><i>The following may be touched upon, too:</i></p> <p>SS3-E1 Demonstrate understanding of the physical and human features that define places and regions in Arizona, including the use of geographic tools to collect, analyze and interpret data, with emphasis on...</p> <p>PO 2 explaining and using map titles, symbols, scale, cardinal and intermediate directions, and elevation on maps of Arizona.</p> <p>PO 3 locating and comparing the three landform regions of Arizona—the plateau, mountains, and desert regions—according to their physical features, plants and animals</p> <p>SS3-E3 Describe and locate the major natural and human features that define places and regions in the United States, with emphasis on...</p> | <p>State Symbols PowerPoint</p> <p>State Symbols quiz</p> <p>Vocabulary list and quiz</p> <p>List of selected native animals and plants</p> <p>Arizona Game and Fish poster: “Arizona’s State Symbols”</p> <p>“Critters of Arizona” pocket guide (AZ Game & Fish)*</p> <p>“How a Bill Becomes Law” (PDF) available at: http://www.azleg.state.az.us/</p> <p>California law game: http://www.assembly.ca.gov/acs/acsframeset16text.asp</p> <p>*One free copy of this publication will be provided to every 4th grade student whose classroom teacher registers with the education branch of the Arizona Game and Fish Department: azgfd.gov</p> |

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| | | <p>PO 2 interpreting information from a variety of maps and globes, including contour, population, natural resource and historical maps</p> <p>R1-4-01 Use knowledge of root words and affixes to determine the meaning of unknown words</p> <p>R1-4-02 Use context to determine the relevant meaning of a word</p> <p>R1-6-03 Generate clarifying question in order to comprehend text</p> <p>R3-1-05 Identify appropriate print and electronic reference sources needed for a specific purpose</p> <p>R3-2-01 Locate specific information for functional text</p> <p>R3-2-02 Interpret details from functional text for a specific purpose</p> <p>W1-1-04 Use organizational strategies to plan writing</p> <p>W1-2-01 Use a prewriting plan to develop a draft with main idea(s) and supporting details</p> <p>W1-2-02 Organize writing into a logical sequence that is clear to the audience</p> <p>W1-4-01 Identify punctuation, spelling, and grammar usage errors in the draft</p> <p>W1-4-02 Use resources to correct conventions</p> <p>W1-5-01 Prepare writing in a format appropriate to audience and purpose</p> <p>W1-5-02 Share the writing with the</p> | |
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| | | <p>intended audience</p> <p>W1-5-03 Use margins and spacing to enhance the final product</p> <p>W1-5-04 Write legibly</p> <p>W2-1-01 Express ideas that are clear and directly related to the topic</p> <p>W2-1-02 Provide content and selected details that are well-suited to audience and purpose</p> <p>W2-1-03 Use relevant details to provide adequate support for the ideas</p> <p>W3-6-01 Paraphrase information from a variety of sources</p> <p>W3-6-02 Organize notes in a meaningful sequence</p> <p>W3-6-03 Write an informational report that includes main idea(s) and relevant details</p> <p>SC1-1-02 Formulate a relevant question through observations that can be tested by an investigation</p> <p>SC1-1-04 Locate information related to an investigation</p> <p>SC1-4-01 Communicate verbally or in writing the results of an inquiry</p> <p>SC1-4-02 Choose an appropriate graphic representation for collected data:</p> <ul style="list-style-type: none">○ Bar graph○ Line graph○ Venn diagram○ Model <p>SC4-1-02 Classify animals by identifiable group characteristics:</p> | |
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| | | <ul style="list-style-type: none">○ Vertebrates – mammals, birds, fish, reptiles, amphibians○ Invertebrates – insects, arachnids <p>SC4-3-01 Describe ways various resources are utilized to meet the needs of a population</p> <p>SC4-3-02 Differentiate renewable resources from nonrenewable resources</p> | |
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| <p>Seal of Approval</p> <p>Learn about the Great Seal of the State of Arizona and the significance of its respective parts. Design a new state seal that represents Arizona in the 21st century.</p> | <p>Lesson 1: Identify Arizona's living state symbols</p> <p>Lesson 2: Review the meaning of the Great Seal of Arizona and the 5 C's of Arizona</p> <p>Lesson 3: Brainstorm possible components of a modern state seal and begin design</p> <p>Lesson 4: Students complete draft and present final seal to class</p> <p>Lesson 5: Assessment</p> | <p>AV1-E4-02 Demonstrate the use of different arts media and techniques</p> <p>AV1-P3-01 State reasons for making artistic decisions</p> <p>AV1-E2-01 Demonstrate technical ability and skill to complete visual arts assignments</p> <p>AV2-E1-01 Identify cultural and historical symbols for one's own meaning, past and present</p> <p>AV2-E1-02 Apply subjects, themes or symbols from various cultural or historical contexts to one's own artwork that will communicate their intended meanings</p> | <p>State Symbols PowerPoint</p> <p>Arizona Game and Fish poster: "Arizona's State Symbols"</p> <p>Colored Pencils</p> <p>Rulers</p> <p>Colored Markers</p> |

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| <p>Become a Wildlife Detective</p> <p>Set up and conduct a field research project, which looks at birds that visit your school or community.</p> | <p>Lesson 1: Identify Arizona’s living state symbols</p> <p>Lesson 2: Learn field research skills such as observation and data collection</p> <p>Lesson 3: Develop a field research project for your schoolyard or community; gather and practice using the tools of your new trade (research equipment, field guides, data collection sheets)</p> <p>Lesson 4: Field observations</p> <p>Lesson 5: Share your data with others; celebrate new learning</p> | <p>T5-E1-01 Identify electronic research resources</p> <p>T5-E1-02 Define subject searching and devise a strategy to locate information using available electronic research resources</p> <p>5T-E1-05 Identify the author, copyright date and publisher of information located in electronic resources, including Internet resources</p> <p>SC4-S1C1-01 Differentiate inferences from observations</p> <p>SC4-S1C1-02 Formulate a relevant question through observations that can be tested by an investigation</p> <p>SC4-S1C2-02 Plan a simple investigation that identifies the variables to be controlled</p> <p>SC4-S1C2-03 Conduct controlled investigations in life sciences</p> <p>SC4-S1C2-05 Record data in an organized and appropriate format (e.g., t-chart, table, list, written log)</p> <p>SC4-S1C3-01 Analyze data obtained in a scientific study to identify trends.</p> <p>SC4-S1C3-03 Determine that data collected is consistent with the formulated question</p> <p>SC4-S1C3-04 Determine whether the data supports the prediction for an investigation</p> | <p>State Symbols PowerPoint</p> <p>Arizona Game and Fish poster: “Arizona’s State Symbols”</p> <p>Graphic organizer (one per student or team) – see samples/examples</p> <p>Variety of 10 small classroom/household items</p> <p>Tray</p> <p>Small sheet or towel</p> <p>Binoculars (recommended – one per team)</p> <p>Pencils</p> <p>Thermometer (to record daily temperature)</p> <p>Clock (to record time of day)</p> <p>Clipboard (one per team)</p> <p>Field guides for Arizona or Western birds (one or more per team)</p> <p>“Critters of Arizona” pocket guide (one per student)*</p> <p>*One free copy of this publication will be provided to every 4th grade student whose classroom teacher registers with the education branch of the Arizona Game and Fish Department: azgfd.gov</p> |

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| | | <p>SC4-S1C3-05 Develop new questions and predictions based upon the data collected in the investigation</p> <p>SC4-S1C4-01 Communicate verbally or in writing the results of an inquiry</p> <p>SC4-S1C4-02 Choose an appropriate graphic representation for collected data: bar graph, line graph, Venn diagram, model. (See M04-S2C1-02)</p> <p>SC4-S1C4-03 Communicate with other groups or individuals to compare the results of a common investigation.</p> <p>M04-S2C1-02 Construct a single-bar graph, line graph or two-set Venn diagram with appropriate labels and title from organized data.</p> | |
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Living State Symbols Background

Symbol Adoption Information

In 1901, the saguaro flower was selected as the first state symbol (and we were actually only a territory at the time!). It was not until March 16, 1931, that the Arizona State Legislature passed a bill making it our state flower. That same Legislature made the cactus wren our state bird.

More than 20 years later, the palo verde was adopted as the state tree. It would be another 30 years before another effort would be underway to select the rest of our state symbols. However, this effort would be different from those in previous years. In 1985, the Arizona Game and Fish Department decided to celebrate Arizona Wildlife Month by asking more than 120,000 students to vote on which animals they thought would best represent Arizona. These would join the saguaro flower, cactus wren, and palo verde as our state symbols.

Finally, in 2001, the two-tailed swallowtail became the state butterfly after gardening clubs throughout Arizona promoted an “election” and asked citizens, including schoolchildren, to vote for their favorite butterfly.

Discussion Questions

Below are questions that appear on the “What Do You Think?” slides of the State Symbols PowerPoint and possible answers to those questions.

Some words in the following paragraphs may be new to you or your students. The first time these words are used, they are written in capital letters. The capitalized words may be found in the glossary at the end of this lesson.

Also, beneath each question are some possible student answers, which are underlined, and some background information. Use these to help reinforce correct student responses and redirect incorrect ones.

SAGUARO BLOSSOM

Question: Why does this flower bloom at night and close the next day?

Possible Answers:

- Bat Pollination - Nectar-feeding bats, like the lesser long-nosed bat, account for some POLLINATION of these flowers. However, many animals visit the blossoms during the day. In fact, it is likely that the saguaro can survive quite well without the assistance of bats.⁵
- To take advantage of other NOCTURNAL pollinators (e.g., moths) - It is believed that moths and other nocturnal animals may assist in the pollination of the saguaro blossom. However, bats have been found to be the primary night pollinator for the saguaro blossom.



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- Lower Temperatures - Plants can easily lose water through their **STOMATA**. However, the stomata need to be open in order for **PHOTOSYNTHESIS** to occur. Cacti, like the saguaro, have adapted to open their stomata during the night, when temperatures are lower, so they will not lose as much water to evaporation. However, the stomata are found in the green skin of the cacti and not in the flowers. Therefore, the water loss is minimal from the blossom itself.

Question: What animals might use pollen and nectar from this flower?

Possible Answers:

- Bats - The flowers seem to be the perfect match for bats, particularly the lesser long-nosed bat. Flowers open at night, are high above the ground, and produce large amounts of nectar. However, it has been found that most of the pollination occurs from other animals during the day. Also, bats rarely go north of Tucson even though the saguaro is found well north of Phoenix, and bats have been found to prefer other cacti, like organ pipe.⁸
- Bees - The honeybee is the largest pollinator of the saguaro blossom, flying from one flower to another and dispersing the pollen to each one.⁸
- Birds - Many birds, including the white-winged dove, are particularly fond of the nectar produced by the flower. In fact, they rely on it for their liquid refreshment as they continue their migration. By sticking their beak deep into the flower to retrieve nectar, some pollen sticks to their head. At the next flower, this pollen brushes off and pollinates the plant.⁷
- Small mammals - Although they would likely be attracted to the melon-like smell of the flower, most small mammals, like rodents and rabbits, cannot reach them because they are too high.

Question: What does the flower get in return?

Possible Answers:

- Pollination - The blossoms are not capable of pollinating themselves. As a result, they do require another species to transfer the pollen to other nearby flowers. By attracting various animals to the flower, the animals will unintentionally pick up some of the sticky pollen. When the animals visit another flower, the sticky pollen will fall off and possibly pollinate this flower.⁸



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- The spread of seeds - The fruit of the saguaro, created after pollination, is a favorite of many animals. When they eat the fruit, they inadvertently transfer the seeds, through their FECES, to other parts of the desert. This is particularly significant with birds, which tend to land on tree branches and "plant" the seeds in the shade of the tree. This tree then becomes a nurse plant for the cactus.⁸

Question: Why might this flower be large and grow in clusters?

Possible Answer:

- Easier to see at night - White is a contrasting color to the night sky. As a result, it stands out much more than other colors, like red. In addition, since the flowers are large and grow in clusters, the amount of white is increased. Night pollinators can more easily see the flower.

CACTUS WREN

Question: Why is it called the cactus wren?

Possible Answer:

- It lives in cacti - Although many wrens will build a nest on a cactus or other thorny plant, they have also been known to take over the abandoned homes of Gila woodpeckers that are actually carved into the cactus itself.⁷

Question: How can the cactus wren survive without drinking water?

Possible Answers:

- It gets water from the food it eats, like cacti - The cactus wren is considered an OMNIVORE. Even though it is known to eat the pulp from cactus fruit, it will also eat insects and seeds.⁸
- It gets water from the air - Because the nest is partially closed, moisture accumulates in the nest. The high humidity allows the baby birds to survive on the small amount of water they get from the insects that their parents feed them.⁷

Question: Why do cactus wrens choose cholla cactus or thorny trees for nest locations?

Possible Answers:

- Protection from predators - By building deep within the spines of these plants, it is very difficult for predators to gain access to the nests.⁷



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- Protection from heat – It has been discovered that the large amount of thorns on cacti and similar plants actually serve as shade to cool off the plant. Since cactus wrens tend to nest late in the spring when the temperature has started to increase, the birds use this shade to cool their nests as well.⁷

Question: What makes a cactus wren's nest unusual?

Possible Answers:

- The size and shape - The cactus wren's nest is similar in size and shape to a football. Unlike many other birds' nests, which resemble a bed, the wren's nest is more like a room with an opening at the end.⁸
- The material it is made from – The nest of a cactus wren is constructed from grass and lined with feathers. Many desert birds, including roadrunners, use twigs instead of grass.
- The birds construct more than one nest – In some cases, the cactus wren is known to create dummy or fake nests, presumably to fool predators. In addition, the birds will actually use more than one nest at a time. After the first brood has hatched, the male will construct a new nest that the female will use to lay and incubate new eggs. In the meantime, the male will watch over the first brood while constructing another nest.⁸

PALO VERDE

Question: Why are the bark and branches of this tree green?

Possible Answer:

- For photosynthesis/making food - CHLOROPHYLL is the ORGANELLE in plant cells responsible for photosynthesis. Normally, this is found in the leaves of plants. However, in some desert plants, like the palo verde, the green tissue in the bark also contains chlorophyll. As a result, the tree can get enough energy despite the fact that it has very small leaves.⁵

Question: Why are the leaves and flowers so small?

Possible Answers:

- Not enough water for them to develop - Although water is certainly an issue in the desert, most desert plants, including the palo verde, have developed numerous ADAPTATIONS that ensure they get enough water, even during droughts.
- To save water - Because small leaves have less surface area exposed to the sun, there is less water that can evaporate from the leaves.⁹



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Question: What do this tree and the saguaro have in common?

Possible Answers:

- Both are green - Both the saguaro and the palo verde are primarily green. This is a desert adaptation to ensure the plant can still carry out photosynthesis without leaves.
- Both contain thorns or spines - Thorns or spines are a very common adaptation in desert plants. Since there are typically not as many plants for herbivores (animals that eat plants) to feed on, the plants that are around will be eaten more often. As a result, the plants have developed thorns to keep many of the animals from eating them.⁹

Question: How has the palo verde adapted to the lack of water in the desert?

Possible Answers:

- It does not keep its leaves year-round - Since photosynthesis can occur in the bark of the tree, the plant can drop its leaves during hot months in order to conserve water and still be able to carry out this necessary life function.⁸
- It has very deep roots - The deep roots of the palo verde allow it to tap into ground water and survive during times of drought.

ARIZONA TREEFROG

Question: What adaptations help the Arizona treefrog survive?

Possible Answers:

- It hibernates during the dry seasons - Many of the frogs in Arizona spend much of the year in a DORMANT phase. The Arizona treefrog is no exception. It is unknown where the frogs spend this time, but they do come out of their inactive state just before the rainy season.⁴
- It has special feet to help it climb trees - These frogs have small disc-like pads on the tips of their toes, which give them a better grip on trees and other climbing surfaces.⁴

Question: What does it mean to be “insectivorous”?

Possible Answer:

- The animal eats insects - The Arizona treefrog does eat insects and other small INVERTEBRATES, primarily beetles, spiders, earthworms and flies.³

Question: What is the purpose of the male’s vocalization?

Possible Answers:



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- To attract a female - The summer rains always trigger the breeding season. At this time, the frogs come out of dormancy. Only the males can vocalize. This chorus of songs will only last about two days, after which the frogs will leave the breeding grounds.³
- To scare away predators or other male frogs - Although there is no specific information about this behavior, most scientists agree that the vocalizations are used for breeding purposes since they always coincide with the brief breeding season. In addition, the frogs are primarily found in temporary water sources that were created from the storms. As a result, they encounter very few aquatic predators.³

Question: In what part of our state would you find the Arizona treefrog?

Possible Answer:

- Any place that has water - The Arizona treefrog is an amphibian that requires water. However, its range is much smaller. Primarily, it is found in the mountains along the Mogollon Rim in central Arizona. In addition, a small, isolated population is found in the Huachuca Mountains in the southeastern part of the state.⁴

APACHE TROUT

Question: Why do you think this species nearly became extinct?

Possible Answers:

- Overfishing - Although this is often a cause of endangerment and extinction for marine animals, this is not the primary cause for the Apache trout's decline. However, for a while, streams with Apache trout were closed to fishing to ensure no further reduction of the species.²
- Habitat loss - The Apache trout has certainly seen a significant decline in its available habitat. Some estimates claim the fish may have lost up to 95% of its original habitat. This loss is due to a number of factors, including habitat degradation from cattle grazing, logging, damming and irrigation, as well as takeovers by competing species of fish that have been introduced.²
- Non-native species introduction - Although the Apache trout has lost a significant part of its original range and habitat, the largest threat to the existence of the fish is the introduction of non-native species of fish, particularly the brown and brook trout. Not only do these other fish compete for the limited space and food resources, but also they HYBRIDIZE, which lowers the amount of pure Apache trout. In addition, since these non-native species of



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trout spawn earlier in the year, they actually eat the eggs and young of Apache trout.²

Question: How have humans helped this species to recover?

Possible Answers:

- Removal of competing species - *Chemicals have been added to many streams to remove the non-native species. In addition, barriers have been established on many streams to prevent these fish from entering again.²*
- Habitat restoration - *Many of the original streams are being studied to see if external factors such as erosion and drought have affected the water. Management of these waterways is being designed and implemented to bring them back to their historic levels.²*
- Reintroduction of Apache trout - *A large-scale Apache trout hatchery has been established to ensure that a constant supply of the PUREBRED fish can be reintroduced into the preserved waters. In addition, hatchery programs have been developed to ensure that sport fish, like rainbow trout, can remain at levels so that people do not have to fish for Apache trout.²*

Question: In what part(s) of Arizona would you find this species?

Possible Answer:

- In the streams and rivers of Arizona - *Many of the streams and rivers in Arizona do not have the right conditions for this fish to survive. In fact, the Apache trout is found primarily in the lakes and rivers located in the White Mountains. Many other types of trout, including the Gila trout, can be found in other waterways throughout Arizona.²*

RIDGENOSED RATTLESNAKE

Question: Why does it have a rattle?

Possible Answers:

- To protect itself - *The sound of the rattle is intended to be a message that the snake sends to potential predators, or even large animals, like humans, that otherwise might not see it and could ultimately step on it.⁵*
- To help it capture its prey - *The rattlesnake uses its nose and tongue during the day, or its heat-sensitive pits if it is hunting at night, to pick up the scents of potential food. By lying in wait and striking at lightning-fast speeds, the snake relies on silence and surprise to catch its prey. The rattle is not used in hunting. In fact, it would more than likely scare away any rodents and small birds.⁵*



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Question: How does this rattlesnake fit into the cycle of life in our desert?

Possible Answer:

- *It eats animals that we consider pests* - Rattlesnakes are the natural predators of mice and rats. These animals can cause severe damage to plants and may carry diseases that can spread to other animals. The snakes keep the populations of these rodents under control.⁸

Question: This is a *protected* species. What does that mean?

Possible Answers:

- *We are not allowed to kill the animal* - In fact, protection means more than just not killing an animal. If an animal is protected in Arizona, then it is illegal to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect it.
- *There are not many of them left in the wild* - Although this animal is not considered endangered or even threatened, it is widely thought that there are less of these snakes than there were 25 years ago. As a result, certain measures have been put in place to ensure that further habitat destruction and loss -- from recreation, mining and logging -- does not push the animal into decline.¹

RINGTAIL

Question: Why do some people call the ringtail a miner's cat or ringtail cat?

Possible Answer:

- *Because they were used by miners to see in dark caves* - Although they are timid at first, ringtails quickly lose their fear of humans. The creatures like to explore dark caves created by miners. People used to DOMESTICATE the ringtail by providing food and shelter. In exchange, the ringtail would rid the miners' cabins of mice and other rodents.⁷

Question: How is it different from a cat?

Possible Answers:

- *It eats different types of food* - Ringtails are known as omnivores, which means they will eat just about anything, whether it is animal or vegetable. In fact, they will eat anything they can get their claws on, including rodents, birds, snakes, lizards, insects and fruit.⁸
- *It doesn't hunt its food* - As the miners of early Arizona discovered, ringtails make excellent "mousers." They are good at finding mice and other rodents, pouncing on them, and killing them.⁸



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- It does not have retractable claws - The claws of ringtails are unique. Like cats, they have SEMI-RETRACTABLE claws. However, they are actually capable of rotating their hind feet 180°. This gives them a better grip as they descend down steep cliffs face-first.⁸
- It emits a smell - Unlike cats, ringtails have scent glands from which they can emit an odor when they are frightened.⁸
- It only comes out at night - Ringtails are purely nocturnal animals. Their large eyes and ears make them particularly suited for hunting at night.⁸

Question: How has the ringtail adapted to its habitat?

Possible Answers:

- Large eyes and ears make it good at surviving at night - Most animals that are nocturnal have these common characteristics. The large eyes make them better able to pick up movement with less light. In addition, the larger ears magnify sounds and allow them to focus in on the precise locations of sounds.⁸
- It comes out when the temperatures are cooler - Many desert animals have developed this adaptation. Since it is most active at night, the ringtail is able to avoid the hot temperatures that are associated with daylight in the desert. As a result, the animal does not need as much water and can remain active for a longer period of time.

Question: Why might the ringtail have such a long tail?

Possible Answers:

- Balance - The ringtail is commonly found near canyons. The long tail improves its balance and allows it to move easily and swiftly from canyon walls and trees.⁸
- Holding on to tree branches - Unlike monkeys, the ringtail does not have a PREHENSILE tail. As a result, it cannot be used like a hand to grab on to objects like branches.

TWO-TAILED SWALLOWTAIL BUTTERFLY

Question: Does this butterfly really have two tails?

Possible Answer:

- No - In reality, the tails are actually extensions of the hind wings. This butterfly derives its name because each hind wing has two "tails." Tail-like extensions are common in many species of butterflies and may be used to trick predators into thinking that they are antennae. When it comes down to bite the head, the butterfly can then fly off in the opposite direction.⁶



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Question: How many different species of swallowtail butterflies live in Arizona?

Possible Answer:

- Arizona is a desert, so there can't be a lot of butterflies here - Although exact numbers can sometimes be difficult to determine, about 14 species of swallowtail butterfly are believed to live in Arizona. This state is very active for butterfly species. Well over 200 butterfly species can be seen throughout Arizona.⁶

Question: Of all the butterflies in Arizona, why was this selected as the state butterfly?

Possible Answer:

- There was an election, and the people chose - Gardening clubs throughout Arizona promoted an "election" and asked citizens, including schoolchildren, to vote for their favorite butterfly. This species was selected through that process.

Glossary

ADAPTATIONS – changes in an organism that make it better suited to survive in its environment

CHLOROPHYLL – a green chemical found in plants that helps make food for the plant

DOMESTICATE – to remove from the wild and make tame

DORMANT – a time in which all normal activity is suspended (i.e. hibernation)

FECES – solid waste from an animal

HYBRIDIZE – to breed animals of different species; crossbreed

INVERTEBRATES – animals without backbones

NOCTURNAL – primarily active at night

OMNIVORE – an animal that eats both plants and meat

ORGANELLE – a small structure located inside a cell that performs a specific function

PHOTOSYNTHESIS – the process in which a plant uses sunlight to make food

POLLINATION – fertilization of a plant by the transfer of pollen from the male part to the female part

PREHENSILE – able to grip

PUREBRED – containing no genetic material from other species of animal

SEMI-RETRACTABLE – claws that can be partially pulled in when not in use

STOMATA – tiny openings on the surface of leaves that allow water to enter and exit

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State Symbols Graphic Organizer

Write the name of the animal or plant symbol under its appropriate category and three facts about each one.

Mammal

Name:

Facts:

Amphibian

Name:

Facts:

Butterfly

Name:

Facts:

Reptile

Name:

Facts:



Flower

Name:

Facts:

Fish

Name:

Facts:

Bird

Name:

Facts:

Tree

Name:

Facts:

JOURNAL ENTRY: _____

Living State Symbols Quiz

Your Name: _____

1. Name Arizona's State Symbols.

- Amphibian: _____
- Bird: _____
- Butterfly: _____
- Fish: _____
- Flower: _____
- Mammal: _____
- Reptile: _____
- Tree: _____

2. What is another name for the State Mammal? _____

3. What color is the State Flower? _____

4. What does the State Bird eat? _____

5. Give one reason the State Fish nearly went extinct. _____

6. What color is the bark of the State Tree? _____

7. What does the State Amphibian have to help it climb trees? _____

8. How was the State Butterfly chosen? _____

9. Why is the State Reptile important? _____

10. Define adaptation. _____

11. Give an example of an adaptation that one of the State Symbols has. _____

12. Which State Symbol was selected first? _____

13. Which State Symbol was selected last? _____

Score: ____/20



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Selecting A Class Symbol

5 DAY FORECAST



Day One:

Lesson 1: Introduce (living) state symbols of Arizona; create class teams; select individual research topic

Day Two:

Lesson 2: Individual research (homework)

Day Three:

Lesson 3: Group presentation and selection of wildlife candidates to nominate

Day Four:

Lesson 4: Develop campaign materials, strategy and five “talking points”

Day Five:

Lesson 5: Class debate and election of class symbols



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Enduring Understandings:

1. Wildlife is a product of its habitat.
2. The diversity of wildlife in Arizona is unique and should be celebrated, respected and conserved.
3. All residents of Arizona interact directly and indirectly with wildlife.

Core Questions:

- What process did the State of Arizona use to select our state symbols?
- What are the state symbols of Arizona?
- How are animals classified, and why are they grouped?
- Name one animal from each classification that is native to Arizona.

Overview:

Elect a class symbol, modeling the election process.

Objectives:

1. Identify Arizona’s state wildlife and plant symbols and learn when and how they were selected
2. Recognize how (vertebrate) animals are classified
3. Consider criteria for selection of a species for a class symbol
4. Practice appropriate techniques for researching information
5. Gather data and prepare an argument for promoting a species to become your class symbol
6. Develop a campaign strategy to promote a species for class symbol
7. Create “talking points” for each species being discussed
8. Compare and contrast candidate qualifications for a position.
9. Elect a new set of class symbols

Resources:

- State Symbols PowerPoint
- Arizona Game and Fish Poster: “Arizona’s State Symbols”
- “Critters of Arizona” (1 per student)*
- “Reptiles and Amphibians of Arizona” Booklet **
- “Arizona’s Native Fish” Booklet
- Animal Classification Page
- Student Worksheets:
 - “Who lives in Arizona?”
 - Student Performance Task Sheet
 - Student Planning Sheet
- Ballot Form
- Art Supplies
- Research Materials

Vocabulary

The following words will be defined at the end of the lesson:

BALLOT
CAMPAIGN
CANDIDATE
CLASSIFICATION
DEBATE
ELECTION
PRIMARY
SLOGAN
VERTEBRATE

- Arizona Game and Fish Poster: “Arizona’s Native Fish” (optional)
- Arizona Game and Fish Poster: “Rattlesnakes of Arizona” (optional)

Lesson 1: “Arizona’s State Symbols”

Goal: Recognize diversity in Arizona’s wildlife

Objective: Identify Arizona’s state wildlife and plant symbols and learn when and how they were selected

Activity:

1. Present the media production available via the Arizona Game and Fish Web site at azgfd.gov (or CD available free from the Arizona Game and Fish Department education branch).
2. Students complete accompanying worksheets during and/or following this presentation.
3. Discuss how animals, specifically vertebrates, are classified (i.e., what makes a mammal a mammal?). **NOTE:** This activity focuses on five of the seven classes in the subphylum Vertebrate - fish, amphibians, reptiles, birds and mammals. (See attached animal classification reference sheet.)
4. Ask the students: If you could change one of these symbols, which would it be and why? They should write a short answer in their journals. Have students share their responses if time allows.

Lesson 2: “The Proposal”

Goal: Research wildlife species in Arizona

Objective: Consider criteria for selection of a species for a class symbol

Activity:

1. Divide the class into five groups. Tell each group they are going to propose a new classroom symbol. Each group will research one of the classes of vertebrates:
 - Mammal – The “Critters of Arizona” pocket guide has 25 mammals.
 - Fish – Refer to the “Arizona’s Native Fish” poster or booklet.
 - Amphibian – Refer to “Reptiles and Amphibians of Arizona” booklets.
 - Reptile – Refer to “Reptiles and Amphibians of Arizona” booklets and “Rattlesnakes of Arizona” poster.
 - Bird – “Critters of Arizona” pocket guide has 25 birds.
 - *Teachers’ option:* You can expand into eight groups and add a classroom symbol for the flower, tree and invertebrate (butterfly).
2. Discuss these simple rules for selecting the class symbol:
 - Must be native to Arizona
 - Must be a species of wildlife (not domestic animals or pets)
 - Must fit the category (only birds in the birds group)
 - Cannot already be a symbol of Arizona
3. Give your groups the list of species native to Arizona (see student handout “Who lives in Arizona?”). Also hand out the Student Performance Task Sheet.
4. Each group identifies resources to use for researching their assigned species.



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Lesson 3: “The Research”

Goal: Use a variety of resources to gather information

Objectives:

1. Practice appropriate techniques for researching information
2. Gather data and prepare an argument for promoting a species to become your class symbol

Activity:

1. Each student will select one animal from his or her “class” (i.e., mammal) to research. They will need to use at least three different types of reference sources in completing the Student Planning Sheet. At least one should be Internet-based; others may include a trade book, an Arizona Game and Fish Department or other wildlife agency publication, and/or other school library references.
2. Each student should complete the “Classroom Symbols” worksheet. Make sure that they do not forget to write a short descriptive paragraph about their species.
3. Following the research and written description, each student will present his/her animal to his small group. Each group will vote for two of the animals to be placed onto the ballot. (This is considered to be the election **primaries**.)

Lesson 4: “The Campaign”

Goal: Promote an idea, using rational and logical techniques

Objectives:

1. Develop a campaign strategy to promote a species for class symbol
2. Create “talking points” for each species being discussed

Activity:

1. Divide each group into two smaller groups that will develop a “campaign” for these two animals. Each group will work on a different animal. They will need to work on the visual promotions – banners, posters and signs – as well as the campaign speeches. Encourage the students to consider:
 - a creative slogan
 - campaign materials, such as posters for the classroom and/or bumper stickers (If you have the time and resources, this is a perfect way to use technology. Have students work on campaign ads or Web sites to promote the selection of the animals.)
2. While working on the campaign, the students are asked to consider:
 - What do you like about the animal? Why might others agree?
 - What traits does the animal have that can be compared to those of the class? (for example: free-tailed bats are active at night, so this is not a good selling point because class is in session during the day)
 - What is the best way to promote the animal?
 - What makes this animal special?
3. Groups must also prepare for a class debate. Each animal will have **one** representative to speak for it in the debate. In the students’ small groups, they should generate five “talking points” that will highlight the strengths or unique traits of the animal.

Lesson 5: “And the Winner Is...”

Goal: Model the election process in determining a set of class symbols

Objectives:

1. Compare and contrast candidate qualifications for a position
2. Elect a new set of class symbols



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Activity:

1. Stage a debate between the candidates. Each group will present its two candidates that won in the primaries. The Mammal group will have its candidates present their speeches and talk about why each candidate should be elected, then the Fish group should go, etc.
2. After all the debates are over, pass out the “secret” ballots to the class. You can create a voting box or area. When all ballots are cast, select a group of “election officials” to tally votes. (Those officials can be teachers, parents or a small group of students. This is a perfect time to discuss the challenges with the United States election process.)
3. When election results are completed, present the class with its new slate of classroom symbols!

Assessments

- Completion of State Symbols Graphic Organizer
- Student Planning Sheet with Research Paragraph and Picture
- Selecting a Class Symbol Quiz

Vocabulary

| | |
|-----------------|---|
| Ballot: | a paper listing the choices in a vote |
| Campaign: | a series of actions performed to try to win an election |
| Candidate: | a person who is running for political office |
| Classification: | grouping objects based on similarities |
| Debate: | a formal discussion of two or more opposing views or people |
| Election: | a process in which people vote on an issue or candidate |
| Primary: | an election to decide who the candidates will be for the general election |
| Slogan: | a memorable phrase |
| Vertebrate: | an animal that has a backbone |

* One free copy of this publication will be provided to every 4th grade student whose classroom teacher registers with the education branch of the Arizona Game and Fish Department. Visit <http://www.azgfd.gov> for more details.

** Can be downloaded from the Arizona Game and Fish Web site Resources section



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Selecting A Class Symbol Quiz

Your Name: _____

1. How do scientists classify animals? _____

2. How were the State Symbols for Arizona selected? _____

3. Name two Arizona animals from each group below:

Amphibian a. _____ b. _____

Bird a. _____ b. _____

Fish a. _____ b. _____

Mammal a. _____ b. _____

Reptile a. _____ b. _____

4. What is an invertebrate? _____

5. Give an example of an invertebrate. _____

6. Describe how a primary election is different from a general election. __

7. What is the purpose of a slogan? _____



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Selecting A Class
Symbol Quiz

Animal Classification

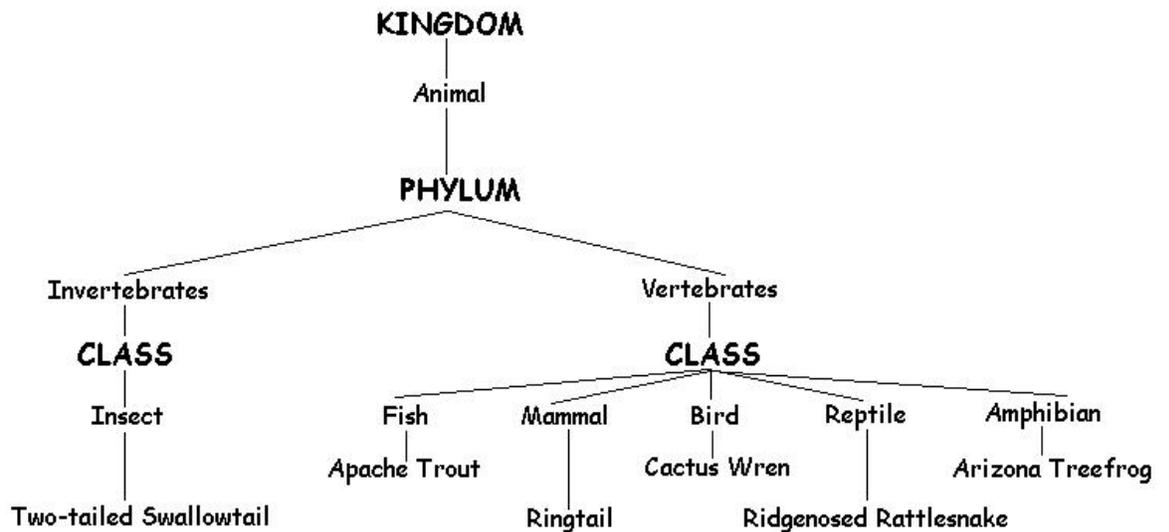
(Note to teacher: Most science textbooks have a detailed chart on animal classification. This is intended to be a supplement to that resource. Suggested vocabulary words are italicized.)

This is general information on the *classification* of animals. Animals are grouped according to characteristics they have in common and separated on the basis of their differences.

Biologists - scientists who study living things - classify living things into Kingdoms, two of which are the Plant Kingdom and the Animal Kingdom. The study of plants is called *botany*, and those who study plants are called botanists. The study of animals is called *zoology*, and those who study animals are known as zoologists. *Zoologists* use a classification system that divides the Animal Kingdom into smaller groups, called Phyla, based on similarities. Each phylum is divided further into Classes. These groups continue to be divided into smaller and smaller sections until only one animal, the species, is left by itself.

For simplification purposes, we are going to divide the Animal Kingdom into two different groups, Vertebrates and Invertebrates. *Vertebrates* are animals that have a backbone. *Invertebrates* don't have backbones. In reality, there are actually many more phyla than these two and even some smaller groups called subphyla, but you will learn about these later.

To make classification easier, we sometimes make a classification tree. This is a visual model of this process of breaking down the Kingdom into smaller groups. The classification of the animals used as Arizona's State Symbols would look something like this:



Notice that, in order to be included in a particular *Class*, the animal must meet all the requirements from the top of every group above it, *Kingdom* and *Phylum*.



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Who Lives in Arizona?

Below is a partial list of the different types of animals and plants that can be found in Arizona. Use the list to select a species to research.

AMPHIBIAN

Arizona toad
Canyon treefrog
Chiricahua leopard frog
Couch's spadefoot toad
Lowland burrowing treefrog
Lowland leopard frog
Ramsey Canyon leopard frog
Sonoran Desert toad
Sonoran tiger salamander
Western barking frog

FISH

Bonytail chub
Desert pupfish
Gila chub
Gila topminnow
Gila trout
Longfin dace
Razorback sucker
Speckled dace
Yaqui catfish
Yaqui chub

REPTILE

Chuckwalla
Coral snake
Desert iguana
Desert tortoise
Gila monster
Mojave rattlesnake
Rosy boa
Sonoran mountain kingsnake
Sonoran mud turtle
Western banded gecko

FLOWER

Brittlebush
Coulter's lupine
Creosote bush
Fairy duster
Filaree
Globe mallow
Hedgehog cactus blossom
Mexican gold poppy
Perry's penstemon
Wild heliotrope

BIRD

American kestrel
Anna's hummingbird
California condor
Gila woodpecker
Great blue heron
Great-horned owl
Mourning dove
Peregrine falcon
Red-tailed hawk
Turkey vulture

MAMMAL

Bighorn sheep
Black-footed ferret
Black-tailed jackrabbit
Coyote
Desert kangaroo rat
Javelina
Mexican gray wolf
Mountain lion
Pallid bat
Pronghorn

INVERTEBRATE

Ant lion
Bark scorpion
Black widow spider
Giant desert centipede
Jerusalem cricket
Pinacate beetle
Tarantula
Tarantula hawk
Trapdoor spider
Vinegaroon

TREE

Acacia
Alligator juniper
Apache pine
Arizona cypress
Arizona sycamore
Arizona white oak
Desert ironwood
Desert willow
Mesquite
Ponderosa pine



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Classroom Symbols

As a group, review the list of animals native to Arizona. Select one animal for each group member to research. Complete this sheet. On the back, write a short descriptive paragraph about your animal and attach a drawing or picture of the animal.

Your name: _____

Name of animal/plant: _____

Answer the following questions. Use these answers in your short report.

1. Name of animal _____
2. Any other names it might have _____
3. What it eats _____
4. Where it lives _____
5. What are its babies are called _____
6. On the map, draw or shade in the range where it is found.
7. Three other cool facts about the animal:
 - a. _____
 - b. _____
 - c. _____



8. Write down all important information about the sources you used:
 - _____
 - _____
 - _____

Checklist:

- ____ I have finished all questions on this paper.
- ____ I have found a picture or created a drawing of my animal/plant.
- ____ I have marked my animal/plant's range on the map.
- ____ I have researched my animal/plant. – Name all three sources.
- ____ *I have written a paragraph, including my details (from above) and explaining why my animal should be chosen.*
- ____ I have proofread my paragraph for clarity and correctness.

Student Performance Task Sheet

Electing Class Symbols

Performance Task

Your class is going to select animals that will become your official class symbols.

You will participate in a small group assigned to explore potential animal candidates. Your group will be assigned one of the classes in the Animal Kingdom. For example, you may be in the Fish Group. As a group, you will review a list of native Arizona wildlife and select one for each of you (as an individual) to investigate.

The Research

Once you have determined which animal you will research – it is time to get busy! You must use three sources for your investigation: One can be from the computer, and one must be from a book. Your third reference can be anything you would like. Follow the planning sheet and complete a paragraph about each animal.

Selecting the Candidates (The Primaries)

Once you have completed your research, it is time to share the information about your animal with your small group. After each of member of your group shares the information, it is time to choose two animals to promote to the whole class. In your group, vote on which **two** animals would be the best “candidates” to run in the election.

Campaign

Now you must divide into two smaller groups. Each group will launch a “campaign” for one of the two animals. Ideas for the campaign may include posters, bumper stickers, banners and signs. Each animal must have its own slogan. For example: “Vote for mole. He will really dig in for you.” In addition, you must prepare a speech that you can present in front of the whole class. Your speech should include five “talking points.” These should highlight the strengths or unique characteristics of your animal.

Here’s an example. A desert tortoise may have these points:

- Slow and steady – doesn’t make rash decisions
- Has a hard shell – to protect it
- Eats plants – so is a friend to all animals



Things to consider when campaigning for your animal:

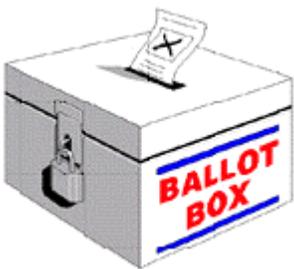
1. What is the best way to promote the animal?
2. What traits does the animal have that can be compared to those of the class? (For example: Free-tailed bats are active at night. This is not a good selling point because class is in session during the day.)
3. What do you like about the animal? Why might others agree?
4. What makes this animal special?

Debate

The campaign period will culminate in a debate. Pick one team member to speak on behalf of each animal. The entire class will watch the debate.

The Election:

Now your teacher will distribute the official ballot on which you will vote for your class symbols. Remember, just like the official *state* symbols of Arizona, you will select a *class* bird, reptile, amphibian, fish and mammal.



Your Responsibilities

In order to be successful with this activity, you have a number of responsibilities. These responsibilities include those that you as an individual need to do and those that your team, as a whole, will need to complete.

Individual Responsibilities

- Select and research an animal in your assigned category.
- Use the planning sheet to write a paragraph detailing why this should be the nominee for a class symbol. Include at least five specific details!
- Present your animal candidate to others in your small group.
- Work with your team to develop “campaign” materials and debate talking points.
- Serve as an audience member or presenter during the debates.



Team Responsibilities

- Offer team members constructive comments on their research.
- With other members of your focus group, choose two animals to nominate to the class as your class symbols. Explain your choice in a short paragraph.
- Develop a campaign, including speeches and promotional material, for two animals to run against each other in the class election.

Ballot to Elect Classroom Symbols

Please mark an X in the box next to the name of the animal you are voting for to become your class symbol.

Mammals:

1. _____

2. _____

Fish:

1. _____

2. _____

Birds:

1. _____

2. _____

Reptiles:

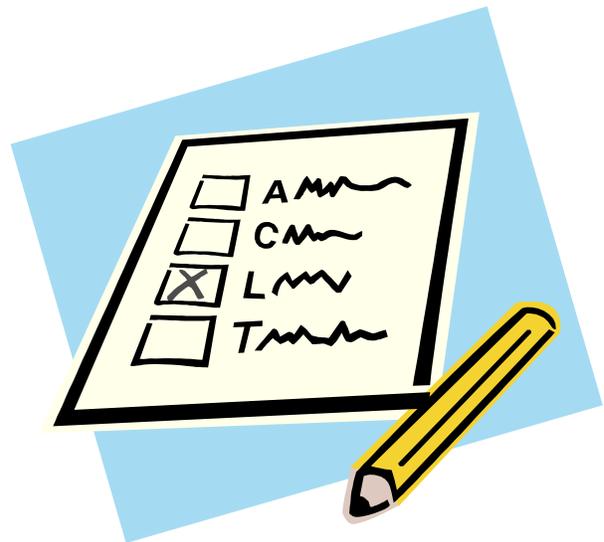
1. _____

2. _____

Amphibians:

1. _____

2. _____



Legislative

5 DAY FORECAST



Day One:

Lesson 1: Participate in a general overview of the state symbols

Day Two:

Lesson 2: Investigate native animals/plants

Day Three:

Lesson 3: Discover how bills become law

Day Four:

Lesson 4: Model a legislative session and select new state symbols

Day Five:

Lesson 5: Final assessment of understandings; celebrate new learning



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Enduring Understandings:

1. There is great diversity of life in Arizona.
2. Plants and animals adapt to their environments.
3. Wildlife has many values to humans and should be respected and conserved.
4. Laws can be made or changed by concerned citizens.
5. Our government consists of multiple branches with specialized roles.

Core Questions:

- What causes the diversity of life we find in Arizona?
- What are some ways plants and animals adapt?
- What is the value of wildlife to humans?
- How can an ordinary citizen create/change laws?
- How does our state government work?
- How does a bill become law?

Overview:

Learn about our current state symbols and how they were chosen. Investigate our legislative process and learn how citizens can create a bill that becomes a law. Research an animal or plant native to Arizona and present a case for making it a state symbol. In a mock legislative session, take it through the steps required to become law.

Objectives:

1. Identify Arizona's state wildlife and plant symbols and learn when and how they were selected
2. Recognize that a variety of wildlife and plants inhabit Arizona
3. Research a native species of Arizona
4. Become familiar with basic legislative vocabulary terms
5. Recognize the basic legislative process, including the branches of Arizona government
6. Describe how a bill becomes law
7. Compare and contrast the merits of different proposals
8. Follow the step-by-step procedure for a citizen's idea to become law
9. Create a graphic representation
10. Read a graphic representation

Resources:

- State Symbols PowerPoint
- Arizona Game and Fish Poster: "Arizona's State Symbols"
- State Symbols Graphic Organizer (1 per student)
- "Critters of Arizona" (1 per student)*
- "Who Lives in Arizona?" Student Handout (1 per student or group)
- Student Assignment Handout (1 per student)
- Legislative Proposal Form (1 per student)

Vocabulary

The following words will be defined at the end of the lesson:

BILL

LAW

LEGISLATURE

NOMINATION

SYMBOL

- “How a Bill Becomes Law” (PDF) available at: <http://www.azleg.state.az.us/>
- California law game: <http://www.assembly.ca.gov/acs/acsframeset16text.asp>
- Legislative Quiz (1 per student)

Lesson 1: “Arizona State Symbols”

Goal: Recognize diversity in Arizona’s wildlife

Objective: Identify Arizona’s state wildlife and plant symbols and learn when and how they were selected

Activity:

1. Present the media production available via the Arizona Game and Fish Web site at azgfd.gov (or CD available free from the Arizona Game and Fish Department education branch).
2. Students complete State Symbols Graphic Organizer worksheet during and/or following this presentation.
3. Discuss the importance of symbols and the reason we choose symbols to represent various parts of our society.
4. Ask the students: If you could change one of these symbols, which would it be and why? They should write a short answer in their journals. Have students share their responses if time allows.

Lesson 2: “What Lives Here and Why Might It Be Symbolic?”

Goal: Investigate native animals/plants

Objectives:

1. Recognize that a variety of wildlife and plants inhabit Arizona
2. Research a native species of Arizona

Activity:

1. Provide students with the “Who Lives in Arizona?” worksheet. [Alternate: Use the computer to research a list of animals and plants native to Arizona. You may find these at azgfd.gov. Click on “Wildlife and Conservation,” and then scroll down to “Arizona’s Natural Heritage Program (HDMS)” for a listing of many native plants and animals.]
2. Brainstorm criteria for selecting a plant or animal as a state symbol. (e.g. Should it be a species unique to Arizona? Should it be found throughout most of the state?) Class should agree on a set of two or three of these criteria that all students will use to select an animal or plant.
3. Divide the class into eight teams of students and assign each team one category of symbols (bird, mammal, fish, reptile, amphibian, butterfly or insect, tree, flower). Give teams their performance task assignment.
4. Performance task assignment: Individuals begin to research an animal or plant (Make sure each one is different!) and write a paragraph explaining why it would be a good choice for a state symbol. Include a graphic illustrating the range of the plant or animal.

Lesson 3: “How Does My Idea Become a Law?”

Goal: Discover how bills become law



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Objectives:

1. Become familiar with basic legislative vocabulary terms
2. Recognize the basic legislative process, including the branches of Arizona government
3. Describe how a bill becomes law
4. Compare and contrast the merits of different proposals

Activity:

1. Brief discussion of laws: Why do we have laws? What laws would you like to see enacted? How does an idea become a new law?
 - Provide information on Arizona government, including the handout on how a bill becomes law. Find this information at <http://www.azleg.state.az.us/alisPDFs/hbillaw.pdf>.
 - If you have access to the Schoolhouse Rock program, “I’m Just a Bill” is a great way to illustrate how a bill becomes law.
2. Visit the following California Web site, which goes through the steps of proposing a new bill: <http://www.assembly.ca.gov/acs/acsframeset16text.asp>. As a class, using one of the student’s ideas, create a bill to take through the process. This can be done individually if preferred.
3. Teams meet, peer edit essays within their teams, and select their nominee for state symbol by filling out the Legislative Proposal Form and attaching their essays.
4. Groups send their nomination (and all other essays) to a “committee” (another team) for approval. The committee may:
 - accept and pass along the bill
 - reject it
 - modify it by selecting a different candidate from the enclosed essays.
5. Assign the final draft of their paragraph as homework.

Lesson 4: “What Happens at the Arizona State Legislature?”

Goal: Model a legislative session and select new state symbols

Objective:

1. Compare and contrast the merits of different proposals
2. Follow the step-by-step procedure for a citizen’s idea to become law

Activity:

1. Present all eight team nominations to the whole class. Lead a discussion to highlight the diversity of life and various adaptations of species to environmental conditions.
2. Divide the class into members of the House and Senate. (Two-thirds of the class should be members of the House, one-third members of the Senate, to optimally mimic our state legislature.) Each branch will review four of the eight proposed symbols, rejecting, passing or sending them back to committee for revision. Those that pass will be sent on to the other branch for approval.
3. Once a bill is passed by both houses, it is sent to the “governor” (the teacher, the principal, a parent or student) who may pass it, send it back or ignore it. Discuss what will happen to the bill in each of these circumstances.



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Lesson 5: “Celebrate new learning”

This day should be used for final assessments and the posting of pictures and essays of the new symbols. As an alternative, send your new state symbols to the education branch of the Arizona Game and Fish Department. We will post your results to our Web site.

Assessments

- Completion of State Symbols Graphic Organizer
- Student Planning Sheet, including a paragraph explaining the symbol choice
- Performance task: Create a bill and take it through the legislative process

Extensions

1. Create a class booklet of Arizona plants and animals by binding together the essays and information the students gather in their individual projects.
2. Create a class map showing the location and distribution of each species.
3. Prepare a PowerPoint presentation or create a Web site about your animal/plant.

Resources

- “I’m Just a Bill” video (if available) from Schoolhouse Rock
- Other useful Web sites:
 1. <http://www.lawforkids.org/index.cfm>
 2. <http://www.uen.org/Lessonplan/preview?Lpid=538> (Utah lesson plan)

Vocabulary

| | |
|--------------|---|
| Bill: | a proposed law |
| Law: | a rule that controls what we can and cannot do |
| Legislature: | a group of people who make the laws |
| Nomination: | a person or item that has been selected for an honor or task |
| Symbol: | an image, figure or object that represents an idea or quality |

- * One free copy of this publication will be provided to every 4th grade student whose classroom teacher registers with the education branch of the Arizona Game and Fish Department. Visit <http://www.azgfd.gov> for more details.



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Legislative Quiz

Your Name: _____

1. What is the difference between a bill and a law? _____

2. What happens if a bill passes both houses, but the governor does not sign it? _____

3. Who is responsible for making laws? _____

4. Write the names of the actual State Symbols for Arizona in the spaces provided:

a. Mammal _____

b. Bird _____

c. Fish _____

d. Reptile _____

5. What is the purpose of State Symbols? _____



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Who Lives in Arizona?

Below is a partial list of the different types of animals and plants that can be found in Arizona. Use the list to select a species to research.

AMPHIBIAN

Arizona toad
Canyon treefrog
Chiricahua leopard frog
Couch's spadefoot toad
Lowland burrowing treefrog
Lowland leopard frog
Ramsey Canyon leopard frog
Sonoran Desert toad
Sonoran tiger salamander
Western barking frog

FISH

Bonytail chub
Desert pupfish
Gila chub
Gila topminnow
Gila trout
Longfin dace
Razorback sucker
Speckled dace
Yaqui catfish
Yaqui chub

REPTILE

Chuckwalla
Coral snake
Desert iguana
Desert tortoise
Gila monster
Mojave rattlesnake
Rosy boa
Sonoran mountain kingsnake
Sonoran mud turtle
Western banded gecko

FLOWER

Brittlebush
Coulter's lupine
Creosote bush
Fairy duster
Filaree
Globe mallow
Hedgehog cactus blossom
Mexican gold poppy
Perry's penstemon
Wild heliotrope

BIRD

American kestrel
Anna's hummingbird
California condor
Gila woodpecker
Great blue heron
Great-horned owl
Mourning dove
Peregrine falcon
Red-tailed hawk
Turkey vulture

MAMMAL

Bighorn sheep
Black-footed ferret
Black-tailed jackrabbit
Coyote
Desert kangaroo rat
Javelina
Mexican gray wolf
Mountain lion
Pallid bat
Pronghorn

INVERTEBRATE

Ant lion
Bark scorpion
Black widow spider
Giant desert centipede
Jerusalem cricket
Pinacate beetle
Tarantula
Tarantula hawk
Trap-door spider
Vinegaroon

TREE

Acacia
Alligator juniper
Apache pine
Arizona cypress
Arizona sycamore
Arizona white oak
Desert ironwood
Desert willow
Mesquite
Ponderosa pine



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Student Assignment: Legislative

Performance Task

You are a pioneer living in Arizona in 1915, are proud of your state, and want the nation to appreciate its beauty and diversity. Other states have named state symbols. Arizona had already selected a symbolic flower back when it was a territory. You organize a group of concerned citizens to convince the state legislature to name _____ as the state _____.

Each of you will be part of a special “focus group” assigned to investigate possible nominees for one of these categories. Each student in your group must submit one animal/plant to be considered along with a paragraph explaining why it is the best choice for a state symbol of its kind. Please discuss at least five specific details in support of your nominee. Also include a picture or drawing of your selection, describe its habitat and include a map showing its range and distribution within our state.

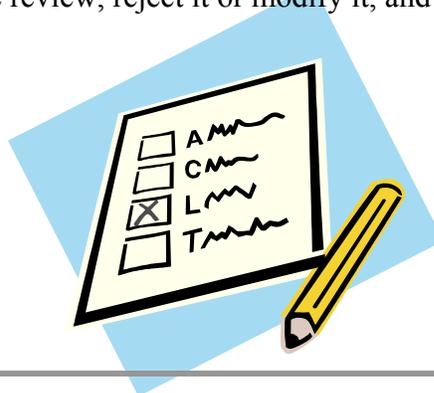
Your “focus group” will meet, review each of the nominations, and select one to propose to the “House” or “Senate” for approval. Please use the form provided to submit your nominee. Attach all of your essays, pictures and maps to the proposal along with a paragraph explaining why you rejected the other nominees.

Individual Responsibilities

- _____ Select and research an animal/plant in your assigned category.
- _____ Use the planning sheet to write a paragraph detailing why this should be the nominee for a new state symbol. Include at least five specific details!
- _____ Create a graphic illustrating your nominee’s distribution in the state.
- _____ Present your nominee to your focus group.
- _____ With a partner from your team, peer edit your paragraph.
- _____ Using your peer editor’s review and input from your team, write a final draft of your paragraph.
- _____ Serve as a member of the larger House or Senate, deciding on which symbols to adopt.

Team Responsibilities

- _____ Offer team members constructive comments on their paragraphs.
- _____ With other members of your focus group, choose one animal/plant and use the nominating form to write a proposal to present to another “committee” (team) for approval. Explain your choice in a short paragraph.
- _____ Sitting as a “committee,” your team will review another team’s nomination for a state symbol and decide whether to pass it on to a full house review, reject it or modify it, and (if necessary) send it back to them for revisions.



Legislative Proposal Form



Answer the following questions. On the back, write a short paragraph explaining why your animal or plant should be chosen as the new state symbol.

Name of animal/plant:

Found in (part of state):

Reasons to name it as Arizona's state _____ (reptile, fish, mammal, etc.)

1. _____
2. _____
3. _____
4. _____
5. _____

Checklist:

_____ I have found a picture or created a drawing of my animal/plant.

_____ I have marked my animal/plant's habitat on the map.

_____ I have researched my animal/plant.

_____ I have written a paragraph including my five concrete details (from above) and explaining why my nominee should be chosen.

_____ I have proofread my paragraph for clarity and correctness.

Seal of Approval

5 DAY FORECAST



Day One:

Lesson 1: Identify Arizona's living state symbols

Day Two:

Lesson 2: Review the meaning of the Great Seal of Arizona and the five C's of Arizona

Day Three:

Lesson 3: Brainstorm possible components of a modern state seal and begin design

Day Four:

Lesson 4: Students complete draft and present final seal to class

Day Five:

Lesson 5: Assessment



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Enduring Understandings

- There is great diversity of life in Arizona.
- Much of the natural and manmade history of Arizona has been captured in the Great Seal of the State of Arizona.
- The native plants and wildlife of Arizona should be respected and conserved.

Core Questions

- What is the significance of each part of the state seal?
- What are the five C's of the state seal?
- What living symbols represent Arizona, and how might they be incorporated into a new design for a state seal?

Overview

Learn about the Great Seal of the State of Arizona and the significance of its respective parts. Design a new state seal that represents Arizona in the 21st century.

Objectives

1. Identify Arizona's state wildlife and plant symbols and learn when and how they were selected
2. Identify the five C's of Arizona
3. Identify the parts of the seal and state the meaning of each
4. Apply knowledge of Arizona to create a state seal that represents Arizona in the 21st century

Resources

- State Symbols PowerPoint
- Arizona Game and Fish Poster: "Arizona's State Symbols"
- State Symbols Graphic Organizer (1 per student)
- "Seal of Approval" Reading and Worksheet (1 per student)
- "Create-A-State Seal" Worksheet (1 per student or team)
- Colored Pencils
- Rulers
- Colored Markers

Lesson 1: "Arizona's State Symbols"

Goal: Recognize diversity in Arizona's wildlife

Objective: Identify Arizona's state wildlife and plant symbols and learn when and how they were selected.

Vocabulary:

The following words will be defined at the end of the lesson:

MOTTO

SEAL

SYMBOL

Activity:

1. Present the media production available via the Arizona Game and Fish Department Web site at azgfd.gov (or CD available free from the Arizona Game and Fish education branch).
2. Students complete the State Symbols Graphic Organizer during and/or following this presentation.
3. Discuss the importance of symbols and the reasons we choose symbols to represent various parts of our society. Ask students to write a journal entry in which they describe some symbols in their own lives and how they are important to them.

Lesson 2: “The Great Seal of the State of Arizona”

Goal: Identify components of the state seal

Objectives:

1. Identify the parts of the seal and state the meaning of each.
2. Identify the five C’s of Arizona

Activity:

1. Begin with a discussion about the meaning of *symbol* and ask students to identify any other symbols with which they might be familiar – e.g., bald eagle (USA), “swoosh” (Nike brand), red octagonal sign (STOP), etc.
2. Have the students read the article “Seal of Approval” and answer the questions.
3. Focusing on the various parts of the seal and their meanings, review the parts of the seal with the class as well as the five C’s of Arizona (Cotton, Copper, Cattle, Citrus, Climate).

Lesson 3: “That Was Then – This Is Now!”

Goal: Identify various aspects of Arizona today that could be used in a new seal

Objective: Apply knowledge of Arizona to adopt a state seal that represents Arizona in the 21st century

Activity:

1. Begin class by asking students what symbolizes Arizona today. Have the students brainstorm ideas of what represents Arizona. Write down their ideas.
2. Inform students that they will be designing a state seal for present-day Arizona. (This activity can be done small groups of 3-5 students or as individuals.) Students should include at least three state symbols in their seal. Allow students to work on their seals for the rest of the time.

Lesson 4: Independent/Small Group Work

Students will use the allotted time to work on and complete their seals. The seal should include a state motto. Visit the Web site <http://cdsjcl.f2g.net/translate.html> to use an English to Latin Translator to translate their state motto into Latin.



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Lesson 5: Sharing the Designs

Students present their new state seals to the class and explain why they chose the items they selected to represent Arizona. Symbols can be posted throughout the classroom after completion. As an alternative, have your class vote on the best seal to represent your class, and send the winner to the education branch of the Arizona Game and Fish Department. We will post the seals that we receive to our Web site.

Assessments

- Completion of State Symbols Graphic Organizer
- “Seal of Approval” Worksheet
- “Create-A-State Seal” Worksheet

Vocabulary

- Motto: a word or phrase that expresses a guiding principle or thought
- Seal: an image adopted by a corporation or government to represent official and legal actions
- Symbol: an image, figure, or object that represents an idea or quality



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SEAL OF APPROVAL

Read the following article and answer the questions that follow.

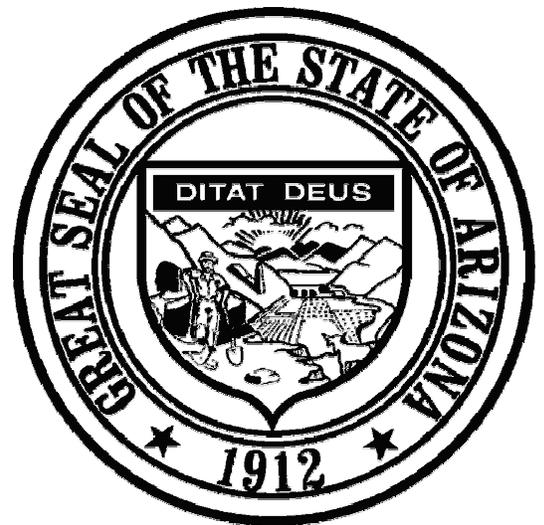
Symbols, representing important parts of the state, are used to show people the unique characteristics of Arizona. You have already been introduced to the living symbols of Arizona, but there are many more state symbols. Each of these symbols was passed into law by the state legislature and holds a special importance to the land and the people. Let's take a look at some of the other symbols of the state.

Million of years ago, swamps covered most of Arizona. When trees would die and fall into the swamps, they would become buried under layers of sand and dirt. The trees would be preserved for years because of the lack of air. Over time, the wood in these trees gradually changed into quartz and became a brightly colored replica of the original living plant. Petrified wood, as these are now called, can be found in parts of northern Arizona and is the official state fossil.

For centuries, Native Americans of the Southwest used a blue-green stone found throughout the state to make jewelry. In fact, turquoise is still quite popular. As a result, it is Arizona's state gemstone.

Perhaps the most well-known symbol is the flag. The state flag of Arizona is divided into two parts separated by a copper star. The star represents the fact that Arizona is the largest producer of copper in the nation. The top half of the flag consists of 13 red and yellow rays, symbolizing a western sunset. The number represents the original American colonies. The bottom half of the flag is a solid blue, the same color found on the United States flag.

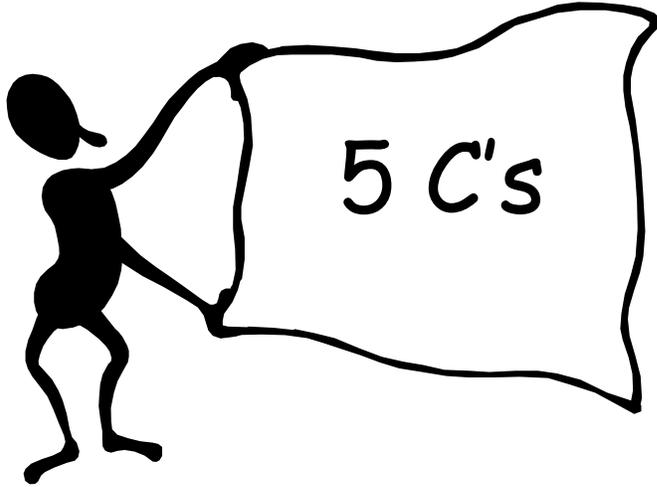
The Great Seal of Arizona, shown to the right, is used for official state business. Shown on the seal are many symbols representing what has been called "The five C's of Arizona's Economy" - copper, cattle, cotton, citrus, and climate. To the left, a miner, with a pick and shovel, stands in front of the entrance to a mine. In the front, there are fields of cotton and citrus that are being supplied with water from the dam in the distance. Grazing on these fields is a cow. Like the flag, there is a grand sunset in the background. Included in the seal is the Latin version of Arizona's state motto - God enriches - and the year that Arizona became a state.



All information for this article was provided by the Arizona Capitol Museum Web site at <http://www.lib.az.us/museum/symbols.cfm>.

SEAL OF APPROVAL

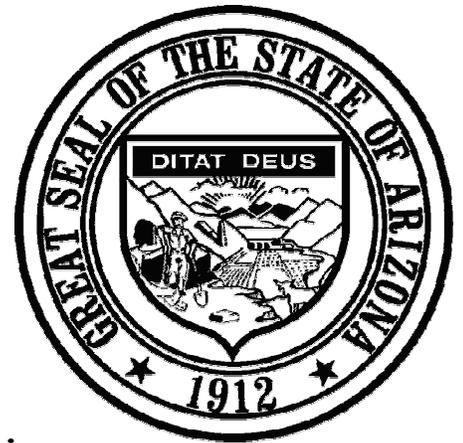
What are the 5 C's of Arizona?



C _____
C _____
C _____
C _____
C _____

What do the parts of the seal represent?

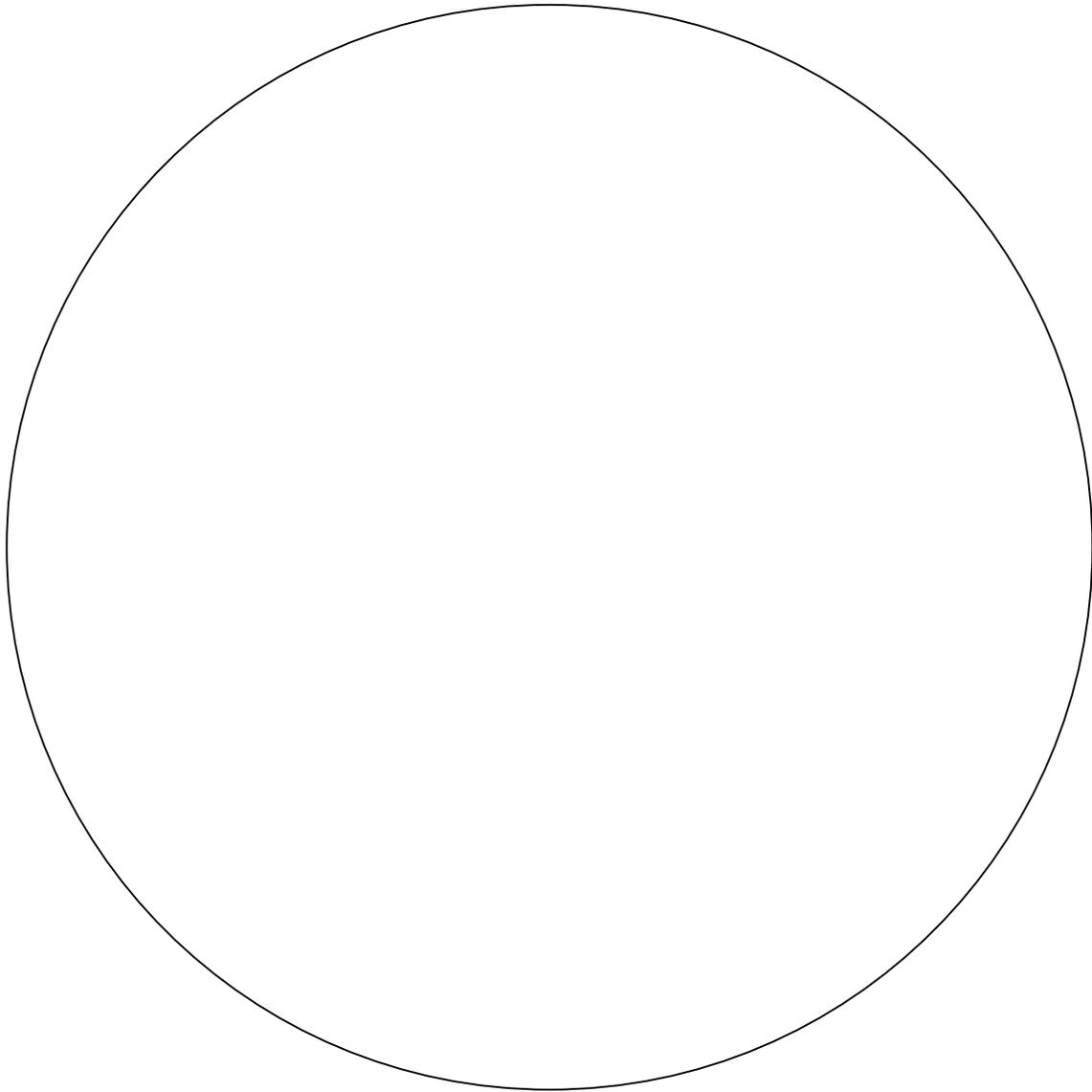
1. Ditat Deus means _____.
2. Sunset represents _____.
3. The cow represents _____.
4. The fields represent _____ & _____.
5. The miner represents the importance of _____.



What are the following state symbols of Arizona?

| | | |
|---------------|----------------|------------------|
| Mammal: _____ | Tree: _____ | Amphibian: _____ |
| Fish: _____ | Flower: _____ | Butterfly: _____ |
| Bird: _____ | Reptile: _____ | Gem: _____ |

Create-A-State Seal



Requirements:

- 3 State Symbols
- New State Motto
- Fully Colored
- 6 Items That Represent Arizona



Become A Wildlife Detective

5 DAY FORECAST



Day One:

Lesson 1: Identify Arizona's living state symbols

Day Two:

Lesson 2: Learn field research skills such as observation and data collection

Day Three:

Lesson 3: Develop a field research project for your schoolyard or community; gather and practice using the tools of your new trade (research equipment, field guides, data collection sheets)

Day Four:

Lesson 4: Field observations

Day Five:

Lesson 5: Share your data; celebrate new learning



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Enduring Understandings:

- There is great diversity of life in Arizona.
- The essentials of wildlife habitat are food, water, shelter, and space, all in a suitable arrangement.
- Wildlife responds to its environment through physiological or behavioral adaptation.
- Wildlife has many values to humans and should be respected and conserved.

Core Questions:

- What skills does a wildlife researcher (detective) need?
- How does a researcher set up a field experiment (research project)?
- What tools does a researcher use?
- Why is safety important during field research?
- What does a researcher do with his/her data?
- How do others use the results of a researcher's data and report?

Overview:

Set up and conduct a field research project, which looks at birds that visit your school community

Objectives:

1. Identify Arizona's state wildlife and plant symbols and learn when and how they were selected
2. Classify data according to identifiable characteristics
3. Formulate questions to answer during a scientific inquiry
4. Itemize safety procedures to follow while conducting an outdoor investigation
5. Select appropriate procedures for collecting data
6. Determine equipment to be used during the inquiry and practice appropriate use of each item
7. Demonstrate safe procedures during an inquiry
8. Record data in an appropriate format
9. Create a visual representation of data and share results with classmates

Resources:

- State Symbols PowerPoint
- Arizona Game and Fish Poster: "Arizona's State Symbols"
- State Symbols Graphic Organizer (1 per student)
- "Critters of Arizona" (1 per student)*
- Variety of 10 Small Classroom/Household Items
- Tray
- Small Sheet or Towel
- Pencils
- Birds on My School Grounds Data Table (1 per team)
- Binoculars (recommended – 1 per team)

Vocabulary

The following words will be defined at the end of the lesson:

DATA
FIELD GUIDE
FIELD MARKS
RESEARCH
WILDLIFE

- Thermometer (to record daily temperature)
- Clock (to record time of day)
- Clipboard (1 per team)
- Field Guides for Arizona or Western Birds (recommended – 1 or more per team)
- Various Photos of Native Birds (5 or 6 per class)
- Art Paper (poster board, construction paper, newspaper or other large paper)
- Markers or Colored Pencils
- Become a Wildlife Detective Quiz (1 per student)

Lesson 1: “Arizona State Symbols”

Goal: Recognize diversity in Arizona’s wildlife

Objective: Identify Arizona’s state wildlife and plant symbols and learn when and how they were selected

Activity:

1. Present the media production available via the Arizona Game and Fish Web site at azgfd.gov (or CD available free from the Arizona Game and Fish Department education branch).
2. Students complete the State Symbols Graphic Organizer during and/or following this presentation.
3. Discuss the value of wildlife to humans. Ask students to write a journal entry describing any encounter they’ve had with wildlife and how it affected them. Have students share their responses if time allows.

Lesson 2: “Looking for Clues in all the Right Places”

Goal: Learn basic field research skills such as observation and data collection

Objective: Classify data according to identifiable characteristics

Skills: observation, data collection, classification

Activity 1: Recollection of items

1. Gather 10 small items and arrange randomly on a tray. Keep hidden from students until you are ready to have them observe these items.
2. Show tray to students and ask them to study what they see on the tray. Allow 30 seconds for students to observe the items on the tray, without talking to others.
3. Remove tray and cover with small sheet or towel. Ask each student to each write down as many of the 10 items as he/she remembers.
4. When all students have completed their lists, have them compare their lists with other classmates.
5. Bring the tray back and uncover.
6. Discuss: Which items were most often remembered? Missed? Why might some items have been remembered while others were not? What tools might researchers use to help them accurately remember their field observations? Why is it important for a researcher to accurately record data, and what might happen if (s)he does not?



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Activity 2: Comparison of eye color

1. Ask students to group themselves according to their own eye color. (Allow up to 5 minutes – You may need to offer some suggestions as to what to do with students who have eye colors that are not readily identifiable as brown or blue or green.)
2. Discuss: How would you record this data? As a class, develop a simple method to display this data – e.g., Venn diagram, bar graph, pie chart. How might others use this visual representation? Is one method better than another? How might you select the “ideal” display for your data? How important is it to make sure that every piece of data is accurately recorded? If you need to round numbers to the nearest whole number (e.g., when using percentages in a pie chart), does that make any difference in how you represent your data?

Activity 3: Classification of shoes

(**Note:** Once you have demonstrated classification using Activity 2, this activity lends itself well to independent or group/team learning as students model the process used in the previous activity.)

1. Divide class into groups of 8-10 and have each group gather in a circle on the floor.
2. Within each group, ask each student to remove one shoe, placing it in the center.
3. One by one, each student should pick out a shoe (not his/her own) and describe the physical characteristics of that shoe - e.g., size, color(s), number of eyelet holes, Velcro closure, type of tread.
4. As each one finishes describing a shoe, the group should give suggestions as to how they think these shoes should be grouped - e.g., by color? by size? by tread? by shoelaces vs. Velcro closure? How many different methods might you use to group these shoes?
5. As a class, discuss different classification possibilities and the pros and cons of each. Why do scientists use classification when studying nature? (Refer to the “Animal Classification” section in the “Selecting a Class Symbol” section for basic information on how they classify animals.)

Lesson 3: “The Nuts and Bolts of Research”

Goals: Develop and prepare to launch a field research project

Objectives:

1. Formulate questions to answer during a scientific inquiry
2. Itemize safety procedures to follow while conducting an outdoor investigation
3. Select appropriate procedures for collecting data
4. Determine equipment to be used during the inquiry and practice appropriate use of each item

Skills: identify a research question to be explored, formulate predictions, practice field observation skills, develop and practice safety procedures, record data, organize equipment and resources

Special note: Because birds are found in every ecosystem of Arizona, the focus of our attention will center around birds – specifically the cactus wren – in relationship to other species found within an area. If no cactus wrens live in your geographic region, substitute another bird species readily found in your area, to create a basis for comparison.



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Activity 1: Classroom preparation for fieldwork

1. Ask the question: How can I identify different birds like the cactus wren? Solicit responses from the students.
2. Display a photo of a cactus wren and discuss major identifying field marks.
3. Using field guides or the “Critters of Arizona” book and a variety of bird photos provided in the resources section, compare field marks. (Alternate: If the birds included are not commonly found in your area, substitute with pictures of local birds.)
4. Using a field guide to bird identification and a photo of an unidentified bird, practice your skills in observing field marks to determine what kind of bird it is. (Alternate: Tape pictures of birds around the room and have students practice using binoculars to identify the species.)
5. Ask the students what safety rules they need to consider in order to prevent harm to themselves, other students, and the plants and animals. Some procedures that should be emphasized:
 - a. Watch where you walk. (The desert can be a spiny place.)
 - b. Leave the desert alone. (That rock does not need to be picked up.)
 - c. Use appropriate behavior. (Look at the animals; don’t act like them.)
 - d. Use common sense. (If it sounds wrong, it probably is.)
6. Develop a question to answer during a field research project on your school grounds - e.g., “Do cactus wrens live on my school grounds?” – OR – “Do cactus wrens migrate through my schoolyard?” – OR – “Are cactus wrens the most frequently-seen bird on my school grounds?” (More advanced students may decide to set up a research project that incorporates observation of bird behavior or type of food eaten.)
7. Ask the students what type of data they need to collect in order to answer the following question: What equipment is needed for your research? How can we easily record the information so that we can use it later?
8. Based upon the answers to those questions, develop a sheet to use when collecting data. (A sample data sheet has been included.)

Activity 2: Outdoor site preparation

1. Identify potential study sites on your school grounds where you think you might find cactus wrens. (**HINT:** Use a field guide to identify the kind of habitat these birds prefer. Do you find any of that habitat on your school grounds?)
2. Set up student teams. Define site boundaries for each team and make sure each team understands the boundaries of its assigned site.
3. Discuss potential safety hazards in each one.
4. Discuss who will record an observation of any bird that might be seen on the boundary between two study areas. (If both teams collect data on the same bird, how might that skew the final tally/results?)

Activity 3: Classroom follow-up

1. Teams list all equipment they will need when collecting data, assemble what they will need, and organize it so it is ready to take into the field. Remind them to have adequate data collection sheets in their research bags or packs.
2. If necessary, students should practice using any equipment that may be new to them *before* they use it in the field.

Lesson 4: “Into the field...”

Goal: Conduct basic field research within a limited study site



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Objectives:

1. Demonstrate safe procedures during an inquiry
2. Record data in an appropriate format

Skills: observation, individual/team participation, data collection

Special note: This part of the project can be extended as long as necessary. As with any research project, the key to reliable data lies partly within the number of data points gathered across the year and seasons.

Activity:

1. Students make field observations, collecting data and practicing safe procedures, for an established length of time.
2. If collecting data over several days, weeks or months, remind students that, for the most accurate and reliable data possible, they need to be consistent with data collection – i.e., they need to collect their data at the same time each day, use the same people to collect data (to ensure consistency), record observations in the same manner each time, etc.

Lesson 5: “Delightful Data”

Goal: Share results of this field research project with others

Objective: Create a visual representation of data and share results with classmates

Skills: organization, analysis, synthesis, formulating predictions

Activity:

1. Each team should create a visual representation of the data it has collected.
2. Share each visual with the class. Compare and contrast the similarities and differences of: methods of presentation, data collected among groups, and changes in data over time (if this has been a long-term project).
3. Draw conclusions about the reliability of data collection, presentation, and interpretation.
4. Discuss: What additional questions might be answered through continuing your field research? What is the purpose of this kind of research? How do biologists learn about wildlife, and how do they share their information with others? How can the results of one investigation lead to a second? How might data from this classroom compare to that from a school located in a different geographic region from yours – e.g., a low desert, Colorado plateau, grasslands, or mountain setting?

Assessments

- Completion of State Symbols Graphic Organizer
- Adherence to safety procedures while collecting data
- Data corroboration (compared to that of other students/teams)
- Creation of visual representation of data
- Become a Wildlife Detective Quiz

Extensions

The Arizona Game and Fish Department is conducting a long-term tracking project on several bald eagles, our national symbol. To find out the movements of these birds, visit http://www.usbr.gov/lc/Phoenix/SWBEMC/migrationmaps/migrate_map.html and select one or more birds to follow.



Vocabulary

- Data: factual information, especially information organized for analysis or to make decisions
- Field guide: reference book or brochure which identifies species or items found within a certain area and which uses a classification system (e.g., “Field Guide to the Birds of North America”)
- Field marks: specific features that are used to classify an individual (e.g., shape of a bird beak)
- Research: careful investigation or study, especially of a scholarly or scientific manner
- Wildlife: any animal that is not tamed or domesticated

*** One free copy of this publication will be provided to every 4th grade student whose classroom teacher registers with the education branch of the Arizona Game and Fish Department. Visit <http://www.azgfd.gov> for more details.**



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Become A Wildlife Detective Quiz

Your Name: _____

1. Look at the animals below. Divide them into two groups. Write the names of the animals in the spaces below each group.



BAT



SKUNK



RABBIT



OWL



WOLF



HAWK

Group 1

Group 2

2. How did you group the animals? _____
3. What is the purpose of a field guide? _____
4. What are two safety considerations when performing research?
- a. _____
- b. _____
5. How does a scientist keep his or her research organized? _____



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Wildlife Detective Quiz

