

# **Lockbox Lesson**

## **Jaguars: Mystery and Myth**

### **OVERVIEW**

The ancient symbolic power, as well as the elusive beauty of the jaguar, triggers our imagination. Jaguars once roamed across Arizona but were extirpated nearly one hundred years ago. However, these wild cats have recently been photographed on Arizona soil, starting a flurry of activity and debate. In this Lockbox Lesson, your students will get the opportunity to explore the mystery and myth associated with jaguars, and the role of a conservationist biologist.

**Game Name:**

**Jaguars: Mystery and Myth**

**Game Designer:**

Ana Parra

**Content Areas:**

Geography, Natural Science, and Social Studies

**Recommended Ages:**

3th-5th grade

**Ideal Group Size:**

Whole class or small groups

**Suggested Time:**

1 class period—reflections questions could be homework

**Materials:**

- 3-Digit Lock - 3 Numbers
- 4-Digit Lock - 4 Numbers
- ABC Lock - 4 Letters for the ABC Multilock
- Directional Lock - 4 Directions for the Directional Multilock
- Student Field Guide notes printed back to back to make a booklet
- Documents needed for information

- Wildlife Field Notes: Jaguar by William E Van Pelt
- Wanted: Information....Jaguar by AZ Game and Fish, USDA, and Defenders of Wildlife.
- Arizona Landscape Map with Jaguar Mountain Sightings
- Teotihuacan info sheet
- Jaguar stamp, stickers or images
- QR Reader with Video Capability
- If available, invisible ink and UV flash light

### SIOP Elements:

<b>Preparation</b> Adapting content <b>Linking to background</b> Linking to past learning	<b>Scaffolding</b> Modeling Guided practice <b>Independent practice</b> Comprehensible input	<b>Grouping Option</b> <b>Whole class</b> <b>Small groups</b> Partners Independent
<b>Integrating Processes</b> <b>Reading</b> <b>Writing</b> <b>Speaking</b> <b>Listening</b>	<b>Application</b> <b>Hands on</b> <b>Meaningful</b> Linked to objectives <b>Promotes engagement</b>	<b>Assessment</b> <b>Individual</b> Group <b>Written</b> Oral

### Story: (to be used in lesson instructions below)

#### SAY to set up the challenge scenario:

The latest remote-sensor camera photographs released by the U.S. Fish and Wildlife Services features a male jaguar that is called *Sombra*. He is one of three wild male jaguars that have been spotted in southern Arizona. *Sombra* has been seen in different locations more than a dozen times since 2016. These sightings show that *Sombra* has been roaming great distances in the borderlands of Arizona and Mexico.

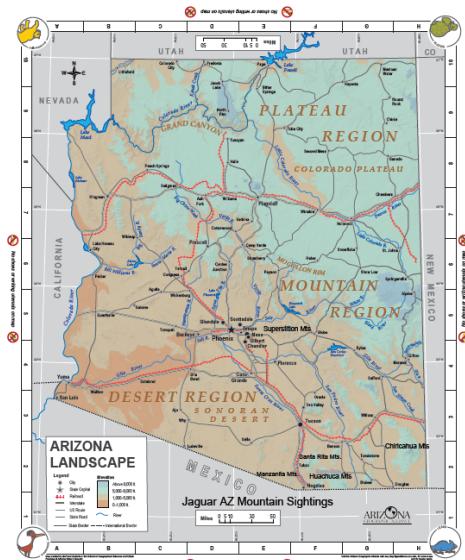
Your challenge, should you choose to accept it, is to capture an image of a jaguar. Locked away in this special Black Box is a rare image of a jaguar. Use your field notes to crack the codes to unlock the box. Are you up for the challenge? (**Application: Promotes Engagement, Hands on**)

### Lesson Instructions: Note: The locks do not have to be done in order.

<b>Prior to the Lesson</b>	<ul style="list-style-type: none"> <li>• Set up and check locks to ensure the correct code/answer is used. (See Answer Key below.)</li> <li>• Set up each lock clue station with materials from the Student Files.</li> <li>• Lock a “Rare Jaguar Image” in the box and add all locks to outside of box.</li> <li>• Print student copies of Field Notes for data collection.</li> <li>• Divide students into groups of 2-5 or do the tasks as a whole class.</li> </ul>
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	<ul style="list-style-type: none"> <li>• For ease of use, copy jaguar resources so multiple groups can read and use at the same time. Laminating pages will assure longer usage.</li> </ul>
	<p><b>ASK:</b>  -What is a <b>conservationist biologist</b>?  Answer: <b>Conservation biologists</b> are concerned with the protection and sustainability of natural resources like air, water, land and wildlife.  -What tool would a scientist use to study rare animals in the wild?  Describe remote-sensor cameras (game camera) used to capture images of wildlife. <a href="https://en.wikipedia.org/wiki/Remote_camera">https://en.wikipedia.org/wiki/Remote_camera</a></p> <p><b>SAY:</b>  As a conservationist biologist you will research the physical characteristics, natural habitats and cultural significance of jaguars. Your goal is to find facts/evidence about jaguars to help preserve the species. Jaguars have a mythical/mystical background and wild jaguars are still a mystery to biologists.  <b>(Preparation: Linking to background)</b></p>
<b>SET UP</b>	Position around the room the 4 resources- one for each clue. Explain to the class the details of where they will find materials/clues/resources in the room and review behavior expectations. Distribute the student Field Notes to each student or group of students. Place the Lockbox in the center to the room so groups have access to the locks. (Don't forget to hide jaguars (stamps, stickers or pictures) for the groups to find when they open the box.) Or, provide each group with its own Lockbox. Remind students that they need to write in their Field Notes before trying a lock. <b>(Integrating processes: Listening)</b>
<b>3 digit number lock</b>  <b>5-0-0</b>	<p><b>Small group or whole class:</b></p> <p style="text-align: right;">   <b>WILDLIFE FIELD NOTES</b> By WILLIAM E. VAN PELT  <b>JAGUAR</b>  </p> <p>Have groups read Wildlife Field Notes by William Van Pelt. Assign a section for each group member to read. Members will take a turn retelling what they read.  <b>(Scaffolding: Independent practice)</b> Remind students to write their answers to the following questions in the Field Notes:  What is the scientific name of the jaguar and what does it mean?  <i>Answer: Panthera Onca</i>  <i>Pantera: Greek for hunter</i>  <i>Onca: Greek for hook, referring to a jaguar's claw</i>  List 3 interesting facts about jaguars. <i>Answers will vary.</i>  <i>What is the range of a jaguar? Jaguars have a 500 mile range.</i>  <b>(Integrating processes: Listening, reading, writing; Grouping Option: Small group or whole class).</b>  *Resource with Permission from AZ Game and Fish</p>

	<a href="https://drive.google.com/file/d/0B_iOF_14IONBamYwWEI2S004eXM/view">https://drive.google.com/file/d/0B_iOF_14IONBamYwWEI2S004eXM/view</a>				
<p><b>4-digit number lock</b> <b>1-9-9-7</b></p>	<p><b>Small group or whole class:</b></p> <p>Have students read “Wanted: Information leading to the protection and conservation of jaguars along the Arizona-New Mexico borderlands” and complete the following assignments.</p> <p>Sketch the foot track of a jaguar and a puma (mountain lion). Can you tell the difference?</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Jaguar Track</th> <th style="text-align: center; padding: 5px;">Puma Track</th> </tr> </thead> <tbody> <tr> <td style="height: 150px; vertical-align: top; padding: 5px;"></td> <td style="height: 150px; vertical-align: top; padding: 5px;"></td> </tr> </tbody> </table> <p>Once there was enough evidence to prove that Arizona and New Mexico were part of the jaguar’s habitat. Jaguars were finally considered endangered <b>in</b> the US. When did jaguars receive protection in the US? <b>Answer: 1997</b></p> <p><b>(Integrating processes: Listening, reading, writing; Grouping Option: Small group or whole class)</b></p> <p>*Resource with permission from AZ Game and Fish  <a href="http://azmemory.azlibrary.gov/digital/collection/statepubs/id/3520">http://azmemory.azlibrary.gov/digital/collection/statepubs/id/3520</a></p>	Jaguar Track	Puma Track		
Jaguar Track	Puma Track				
<p><b>4-digit word lock</b> <b>M-O-O-N</b></p>	<p><b>One group or whole class:</b></p> <p>Have students read the article and listen to the 2 short videos:</p> <p style="text-align: center;"><b>TEOTIHUACAN</b>  <b>(the city of the gods)</b></p> <p>Teotihuacan is an ancient pre-Aztec civilization in what is now central Mexico. Teotihuacan rulers demanded huge projects, ancient building date back to 400 BCE. Teotihuacan has three pyramids; the Pyramid of the Sun is the third-largest ancient pyramid in the world. Archaeologists know very little about the people who built Teotihuacan, it remains a mystery. The pyramids and surviving structures have art painted on the walls that tell stories of mythological gods. <i>Physical evidence such as jaguar skeletons exists in one particular pyramid.</i> Jaguars were part of the culture of Teotihuacan. Ancient people believed that jaguars could move between the earth and the spirit realm. Jaguars are mysterious creatures that are part of ancient legends. For your clue scan the code and listen to an ASU archaeologist on site at Teotihuacan.</p>				

	<p>ASU: Jaguar Tablero at Teotihuacan  <a href="https://tinyurl.com/y5cozynu">https://tinyurl.com/y5cozynu</a>  In which pyramid were the jaguars honored? <b>Answer: moon</b>  (4 letter word lockbox clue)</p> <p>Do you want to see pyramids? Go to: <a href="https://tinyurl.com/y46lr47c">https://tinyurl.com/y46lr47c</a></p>														
<p><b>Directional Arrow lock</b></p> <p><b>S-N-S-N</b></p> <p>Super Mts to Manzanita would be S</p> <p>Manzanita to Santa Rita would be N</p> <p>Santa Rita to Huachuca Mts would be S</p> <p>Huachuca to Chiricahua Mts would be N</p>	<p><b>One group or whole class:</b>  Have students use the following map to locate the sightings.</p> <p></p> <p><b>Jaguar Records for Arizona</b></p> <p>Map out in chronological order (1-5) from the oldest to the most recent sightings of Arizona's jaguars. Your first location (1) will be the Superstitions Mountains where a trapper recorded seeing a jaguar in Arizona in August 1900. Write the number (1) on the map. Look below and figure out what sighting would be number 2. Write number 2 on the map at that location. Do numbers 3-5. Now figure out what direction you would go to get from #1 to #2. (north or south only) Then what direction you would go to get from #2 to #3. (north or south only) Keep doing this until you get to #5. Move the arrows (1-5) on the directional lock to show north or south to unlock the lock.</p> <table border="1" data-bbox="399 1457 1313 1626"> <tbody> <tr> <td>5. Sombra Male</td> <td>4. Yo'oko Male</td> <td>3. El Jefe Male</td> <td>2. Macho B Male</td> </tr> <tr> <td>Chiricahua Mts Cochise County</td> <td>Huachuca Mts Cochise County</td> <td>Santa Rita, Mts Santa Cruz County</td> <td>Manzanita Mts. Santa Cruz County</td> </tr> <tr> <td>July 26, 2017</td> <td>June 14, 2017</td> <td>September 15, 2015</td> <td>March 3, 2009</td> </tr> </tbody> </table> <p><b>(Integrating processes: Listening, reading, writing; Grouping Option: Small group or whole class)</b></p> <p>*If black lights and pens are available, you can make on the map the directions for students to find.  *Resource: Map Adapted from AZGA</p>	5. Sombra Male	4. Yo'oko Male	3. El Jefe Male	2. Macho B Male	Chiricahua Mts Cochise County	Huachuca Mts Cochise County	Santa Rita, Mts Santa Cruz County	Manzanita Mts. Santa Cruz County	July 26, 2017	June 14, 2017	September 15, 2015	March 3, 2009	<p>When all of the locks are opened by the various groups and the jaguars are released, hold a follow-up discussion: <b>(Assessment: Written, individual; Application: Meaningful)</b></p>	
5. Sombra Male	4. Yo'oko Male	3. El Jefe Male	2. Macho B Male												
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**Reflection Questions:**

1	<i>How can a conservationist biologist use their "Field Notes" to help jaguars?</i>
2	<i>Do you think efforts need be made to preserve jaguars? Why or Why not?</i>
3	<i>How can you share with others what you have learned about jaguars?</i>
4	<i>What is one question you would like answered about jaguars?</i>
5	<i>Watch a video of Sombra captured by a remote sensor camera. What does this video make you think of?</i> <a href="https://www.biologicaldiversity.org/news/press_releases/2017/jaguar-09-14-2017.php">https://www.biologicaldiversity.org/news/press_releases/2017/jaguar-09-14-2017.php</a> <b>(Assessment: Written, individual; Application: Meaningful)</b>

**Does your game align to any standards?****Arizona Social Science Standards 2018****DISCIPLINARY SKILLS AND PROCESSES**

3-6.SP1.1 Create and use a chronological sequence of related events to compare developments that happened at the same time.

3.SP3.1 Develop questions about Arizona history, geography, government, and economics.

3-6.SP3.2 Distinguish between primary and secondary sources.

3.SP3.3 Identify and use evidence that draws information from multiple sources to answer compelling questions about Arizona.

3.SP3.4 Compare information provided by various sources about Arizona.

**GEOGRAPHY**

**The use of geographic representations and tools helps individuals understand their world.**

3.G1.1 Use and construct maps and graphs to represent changes in Arizona over time.

4.G1.1 Use and construct maps and graphs to represent changes in the Americas over time.

3.G4.1 Describe how Arizona has changed over time.

4.G2.1 Compare the diverse ways people or groups of people have impacted, modified, or adapted to the environment of the Americas

5.G1.1 Use and construct maps and graphs to represent changes in the United States.

**ELA****Reading**

3.RI.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

3.RI.2 Determine the main idea of a text; recount and paraphrase the key details and explain how they support the main idea.

3.RI.3 Describe the relationship between a series of historical events, scientific ideas or

- concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- 3.RI.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur)
- 3.RI.9 Compare and contrast the most important points and key details presented in two texts on the same topic.
- 4.RI.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- 4.RI.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- 4.RI.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- 4.RI.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
- 4.RI.6 Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus, and the information provided.
- 4.RI.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- 4.RI.8 Explain how an author uses reasons and evidence to support particular points in a text.
- 4.RI.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

**ELP**  
**Stage IV**  
**Basic**  
**Reading**

Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas. The student will demonstrate reading comprehension by:

**B-4:** answering who, what, where, when, why, which, and how questions about text.

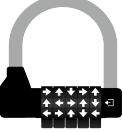
**B-7:** identifying the main idea and two-to-three details from text.

**B-24:** locating specific information from external text in nonfiction text for a specific purpose.

**Lock Combinations: Answer Key**

<b>3-Digit Lock - 3 Numbers</b>	<b>5-0-0</b>
<b>4-Digit Lock - 4 Numbers</b>	<b>1-9-9-7</b>
<b>ABC Lock - 4 Letters for the ABC Multilock</b>	<b>M-O-O-N</b>
<b>Directional Lock - 4 Directions for the Directional Multilock</b>	<b>S-N-S-N</b>

LOCK TYPE	LOCK	HOW WILL THEY KNOW THE	WHERE WILL
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	COMBINATION	COMBO?	IT LEAD?
 <b>3-Digit Lock</b>	<b>5-0-0</b>	Using text "Wildlife Field Notes" students will take notes and discover that jaguars have a 500 mile range.	To another station and unlock one of four locks to get into box
 <b>4-Digit Lock</b>	<b>1-9-9-7</b>	After reading: "Wanted: Information leading to the protection and conservation of jaguars along the Arizona-New Mexico borderlands" Students will find the year jaguars protection began IN the US.	To another station and unlock one of four locks to get into box
 <b>ABC Multilock</b>	<b>M-O-O-N</b>	After scanning a QR code students will watch a short video that shows a tablero of a jaguar at Teotihuacan, and explains physical evidence of jaguars in the Pyramid of the Moon.	To another station and unlock one of four locks to get into box
 <b>Directional Multilock</b>	<b>S-N-S-N</b>	Students will map out in chronological order the first jaguar sighting to the most recent.	To another station and unlock one of four locks to get into box