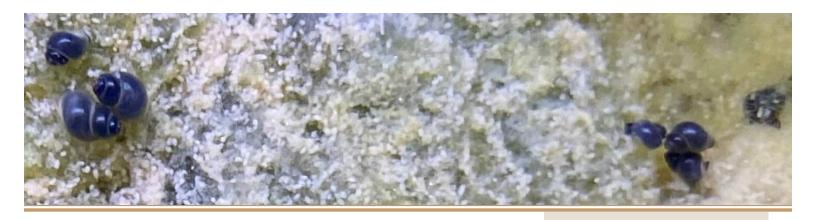
PROJECT ARIZONA WILDLIFE



Research Notebook Overview	WEEK 4
Vocabulary 4	Monitoring Methods
WEEK 1	Case Study Narrow-headed Gartersnake16
Common Challenges to Endangered Species	Activity17
Case Study	WEEK 5
Chiricahua Leopard Frogs 8	Awareness and Action Campaigns18
Brainstorm9	WEEK 6
WEEK 2	Project Work19
Successful Solutions	Brainstorm
Case Study	WEEK 7
Jaguar 11	Final Project & Presentation Planning 21
Activity12	WEEK 8
WEEK 3	Presentations
Release Methods and Considerations	WEEK 9
and Considerations13	Conservation Careers
Activity14	Personal Reflection
	Reflection Questions



## How to Use this Notebook:

- Keep track of information that inspires with the end goal of the "Save a Species Plan" final project in mind.
- Use the notes sections to collect your thoughts and prepare what you want to say before discussions.
- Blank pages are provided for designs and notes related to the learning activities.
- Expectations for your project and how you will be graded are included.

# Final Project

By the end of this project, you will create and present a Save a Species plan (as a poster, PowerPoint, video, etc.) based on the recovery of the endangered species of your choice.

The project will include the importance of that animal, common challenges the animal faces in the wild and a proposed solution which identifies the interested parties and potential partners involved. It will also include how you are planning to monitor the animal's progress and an awareness campaign or action-based element to involve the public in saving the species.

### **PROJECT TIMELINE**

### WEEK 1

Common Challenges to Endangered Species

### WEEK 2

Successful Solutions

### WEEK 3

Release Methods and Considerations

### WEEK 4

Monitoring Methods

### WEEK 5

Awareness and Action Campaigns

### WEEK 6

Project Work

### WEEK 7

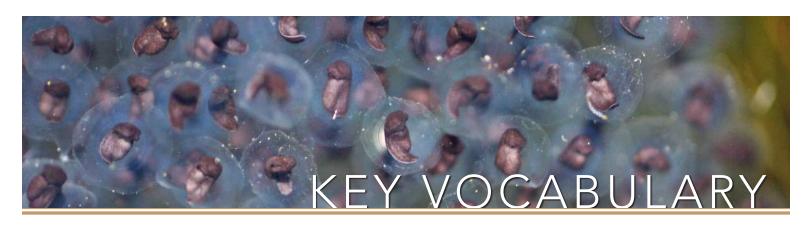
Final Project and Presentation Planning

### WEEK 8

Presentations

### WEEK 9

Conservation Careers



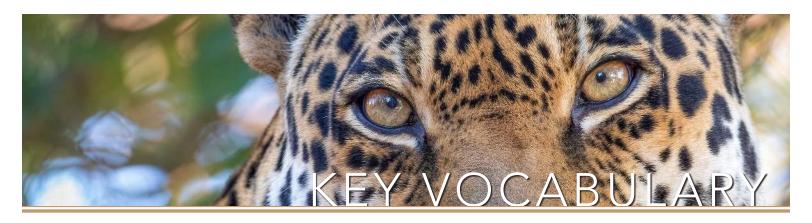
### WEEK 1

- Biodiversity: The full range of life in all its forms. This includes the habitats in which life occurs, the ways that species and habitats interact with each other, and the physical environment and the processes necessary for those interactions.
- Connectivity: The ability of organisms to move among separated patches of suitable habitat.
- Endangered: "Endangered" is an official status according to the IUCN to indicate that a species is facing a very high risk of extinction in the wild. Endangered can also be used to mean that a species is in peril or threatened
- Habitat degradation: When the condition of a habitat declines due to factors such as pollution, invasive species, and over-utilization of natural resources.

- Habitat destruction: The elimination or alteration of the conditions necessary for animals and plants to survive; The complete destruction of an area used by wildlife. Often causes the most immediate danger to wildlife.
- Habitat fragmentation: When habitat is separated into smaller patches; correlates with lower overall species richness as well as lower biodiversity of native species.
- Habitat loss: The process by which a natural habitat becomes incapable of supporting its native species. The organisms that previously inhabited the site are displaced or dead, thereby reducing biodiversity and species abundance. Habitat destruction is the leading cause of biodiversity loss.

- Habitat patch: A fragment
   of habitat with a unique size,
   shape, perimeter and core area
   used by one or more species for
   resources.
- Human-wildlife conflict: The negative interactions between humans and wild animals, with undesirable consequences both for people and their resources on the one hand, and wildlife and their habitats on the other.
- Matrix: The uninhabitable landscape or "non-habitat"; the portion of the landscape in which habitat patches and corridors are embedded.





### WEEK 2

- Continuous corridor: Large, unbroken strips of suitable corridor habitat that lead to another habitat.
- Corridor: Any space that facilitates connectivity over time among habitat patches.
- **Dispersal:** The process of individuals leaving their home territory to look for a new place to live. This behavior can occur within and between habitat patches.
- **Metapopulation:** A group of spatially separated populations of a single species which interact through dispersal or migration.
- Migration: Seasonal movements between breeding and nonbreeding animal ranges.
- Stepping-stone corridor: Small patches of habitat that are not physically connected but can facilitate dispersal or migration movements.

### WEEK 3

- **Adaptation:** The ways in which living things have adjusted to their environment through biology or behavior, thereby improving their chances of survival.
- Bottleneck effect: When a population experiences a severe change that kills off many individuals, the survivors retain only a portion of the original genetic diversity. The consequent diversity of genes and associated genetic characteristics or traits of the new population are thus limited by the effect of this "genetic bottleneck" event.
- Dominant gene: A gene that always shows its effect, or expression, in an organism, even if a corresponding recessive gene is also present.
- Gene: A piece of DNA that codes for a particular trait; the basic unit of heredity.

- **Genotype:** The set of genes that an organism carries; specifially, the two alleles an organism has inherited for a particular gene.
- Genetic diversity: Variation in the genes found in individuals within a population of a single species, and the pattern of genetic variation found within different populations of the same species.
- **Gene pool:** All the genes present in a given population at a particular time.
- **Keystone species:** A species on which other species in an ecosystem largely depend, such that if it were removed the ecosystem would change drastically.
- **Phenotype:** The detectable expression of an organism's genotype; an organism's observable characteristics.
- Recessive gene: A gene whose expression is repressed when the dominant gene is present.



### WEEK 4

- Habitat degradation: When the condition of a habitat declines due to factors such as pollution, invasive species, and overutilization of natural resources.
  - Habitat fragmentation: When habitat is separated into smaller patches; correlates with lower overall species richness as well as lower biodiversity of native species.
  - Receiver: This is the unit that translates the message from the transmitter into a signal to recieve data.
- Telemetry: A method in wildlife biology that uses radio or satellite signals from a transmitter in one location to transfer data to a receiver in another location. Depending on the equipment, signals can be received over very long distances, allowing scientists to study an animal without disturbing it once a transmitter
- disturbing it once a transmitter has been affixed.

• Transmitter: This is the unit

animal.

that is attached to the collar or

other attatchment system on the

	NOTES
VOCABULARY OR KEY POINTS	
	RESEARCH SOURCES



# From the video: What are the threats this species faces? What are conservationists at the Phoenix Zoo doing to help this species?

Based on your discussion, what will you share with the class?

### **Discuss:**

Choose some of the questions below to discuss with your group.

- What do you observe about the animal and its environment?
- What is the cause of the problem?
- Who are the key players in the situation?
- What relevant data do you have?
- What are possible solutions both short-term and long-term?
- What other information do you need or would be helpful?

### Analyze:

- What can we learn from this situation?
- What are the pros and cons of the current solution?
- What are the pros and cons of your proposed solution?
- What do you think are the next steps for the conservation community?



What are some questions and topics you want to research related to the project, endangered species, and/or the Phoenix Zoo	

VOCABULARY OR KEY POINTS	NOTES
	RESEARCH SOURCES



From the video:
What are the threats this species faces?
•
What are conservationists at the Phoenix Zoo doing to help this species?

Based on your discussion, what will you share with the class?

### **Discuss:**

Choose some of the questions below to discuss with your group.

- What do you observe about the animal and its environment?
- What is the cause of the problem?
- Who are the key players in the situation?
- What relevant data do you have?
- What are possible solutions both short-term and long-term?
- What other information do you need or would be helpful?

### Analyze:

- What can we learn from this situation?
- What are the pros and cons of the current solution?
- What are the pros and cons of your proposed solution?
- What do you think are the next steps for the conservation community?



### **Directions**

- 1. Pick a location on the map where you would like to put a corridor; you must connect at least 2 patches.
- 2. Select a type of corridor: continuous or stepping stone
- 3. Using the information about pronghorns, plan a design and draw it below. Don't forget labels!

VOCABULARY OR KEY POINTS	NOTES
	RESEARCH SOURCES



ly Side:	
Ny Role:	

VOCABULARY OR KEY POINTS	NOTES
	RESEARCH SOURCES



# From the video: What are the threats this species faces? What are conservationists at the Phoenix Zoo doing to help this species?

Based on your discussion, what will you share with the class?

### **Discuss:**

Choose some of the questions below to discuss with your group.

- What do you observe about the animal and its environment?
- What is the cause of the problem?
- Who are the key players in the situation?
- What relevant data do you have?
- What are possible solutions both short-term and long-term?
- What other information do you need or would be helpful?

### Analyze:

- What can we learn from this situation?
- What are the pros and cons of the current solution?
- What are the pros and cons of your proposed solution?
- What do you think are the next steps for the conservation community?



### **Directions**

Draw out a design for a transmitter on a Narrow-headed garter snak	e, taking into consideration size,	weight, behavior, and habitat. Adult
gartersnakes weigh on average 130 grams and can grow up to approx	mately 44 inches in length.	

VOCABULARY OR KEY POINTS	NOTES
	RESEARCH SOURCES
I	

VOCABULARY OR KEY POINTS	NOTES
	RESEARCH SOURCES



### PROJECT AND PRESENTATION RUBRIC

	<b>4</b> Exceeds	3 Proficient/Meets	<b>2</b> Approaching	<b>1</b> Falls Far Below
TEAMWORK	The team worked together well and was able to resolve any conflicts that arose successfully on their own.	The team worked together well to complete their project:  • Everyone contributed equally  • Everyone stayed on task  • Everyone spoke to one another with respect	The team worked together well for most of the project or with only a few problems that needed teacher intervention.	The team could not work together and had to be separated.
PROJECT MASTERY OF CONTENT	The final project includes all 5 elements and demonstrates a creative approach to saving an endangered species	The final project includes all 5 elements:  • endangered animal and its importance  • challenges & solutions  • release considerations  • monitoring methods  • awareness campaign	The final project is missing one element or has some inaccuracies that interfere with understanding the overall project.	The final project is missing multiple elements or has many inaccuracies that interfere with understanding the overall project.
PRESENTATION & VISUAL	The presentation clearly communicated mastery of content in all 5 elements.  The visual was creative, detailed, organized and easy to understand.	The presentation clearly communicated mastery of content in all 5 elements.  The visual was organized and easy to understand.	The presentation clearly communicated mastery of content in 4 elements.  The visual was mostly organized and easy to understand with some clarification from the group.	The presentation did not clearly communicate mastery of content and was missing multiple elements.  The visual was not organized and was difficult to understand.
SPEECH & LANGUAGE	The presenters spoke loudly and clearly enough for everyone to understand with an engaging tone of voice and body language.  The presenters used vocabulary correctly.	The presenters spoke loudly and clearly enough for everyone to understand.  The presenters used vocabulary correctly.	The presenters mostly spoke loudly and clearly enough for everyone to understand. May have needed a reminder or prompt.  The presenters used most vocabulary correctly.	The presenters did not speak loudly and clearly enough for everyone to understand despite a reminder or prompt.  The presenters used vocabulary incorrectly to the point where it interfered with understanding the topic.
RESPECT	The student showed active listening skills and had feedback for other groups.	The student showed active listening skills during the presentations and throughout the project.	The student interrupted, wasn't paying attention or spoke disrespectfully, but corrected the behavior after a reminder.	The student did not listen to other groups or spoke disrespectfully throughout the project despite a reminder of expectations.




VOCABULARY OR KEY POINTS	MY PRESENTATION NOTES
	THOUGHTS ABOUT OTHERS' PRESENTATIONS

VOCABULARY OR KEY POINTS	CASE STUDY NOTES
	DISCUSSION NOTES
	D.30033.010 NO.123



How has this project impacted you? Has this project impacted what you want to do as a future career?



What is the most exciting thing you learned from this project?			
What was your favorite part of this project?			
What was the hardest part of this project?			
What would you do differently if you could do this project again?			