1ST GRADE

JUNIOR WILDLIFE SCIENTIST

TEACHER'S GUIDE

AN ALABAMA OUTDOOR CLASSROOM PROGRAM

This Teacher's Guide Belongs To:

Junior Wildlife Scientist Teacher's Guide

The Junior Wildlife Scientist (JWS) Teacher's Guide provides the framework for the Junior Wildlife Scientist program and suggestions on how to make the most of it for your students.

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JWS Nature Journal Activities' Lesson Plans Format

Each lesson plan includes:

- ☑ **Activity Goal** – the purpose of the activity
- ☑ **Activity Tips** – what time of year is best for conducting the activity, which learning station(s) in the outdoor classroom you should use to conduct the activity, and what materials you need for the students to complete the activity
- ☑ **Learning Objectives** – specific tasks and concepts students should understand after completing the activity
- ☑ **AL CoS Standards & Correlations** – specific Alabama Department of Education Course of Study Standards for math, science, social studies, and English language arts that the activity helps to teach
- ☑ **Background Information** – important educational information about the topic(s) covered in the activity and how it all relates to zoology and being a zoologist
- ☑ **Optional Educational Resources** – additional resources that can be used in conjunction with the activity including trade books, topical videos, educational sing-a-longs, and topic-specific webpages on the Alabama Wildlife Federation website called Student Exploration Links (See page 5 for more details)
- ☑ **Procedural Instructions** – step-by-step instructions for conducting the activity
- ☑ **Activity Page Answers** – answers for the questions asked on each activity page
- ☑ **Expansion Options** – additional activities and AWF Student Exploration Links relevant to the topic of the activity that can be used to expand the lesson into a full unit of activities

Alabama Department of Education Course of Study Standards

The Junior Wildlife Scientist Nature Journal activities help teach ALSDE standards for English Language Arts, Science, Social Studies and Math.

What Does a Zoologist Do?
Language Arts (2021): See ELA Chart (pg. 7): R1, R2, R3, 11, 12

Junior Wildlife Scientist Pledge
Language Arts (2021): See ELA Chart (pg. 7): R1, 30

Search for Wildlife Using Your Senses
Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, 9, 20, 40

Words of Poetry: Inspired by Nature
Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, R5, 9, 12, 15, 16, 19, 20, 22, 30, 32, 37, 40, 42

Field Investigation: Animal Features & Adaptations
Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, R4, 9, 11, 12, 17, 19, 20, 21, 22, 30, 32, 40, 42
Science (2015): 5. Design a solution to a human problem by using materials to imitate how plants and/or animals use their external parts to help them survive, grow, and meet their needs (e.g., outerwear imitating animal furs for insulation, gear mimicking tree bark or shells for protection).

Wonders of Wildlife: Carolina Wolf Spider
Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, R4, 9, 11, 12, 17, 19, 20, 21, 22, 30, 32
Mathematics (2019): 17. Order three objects by length; compare the lengths of two objects indirectly by using a third object
Digital Literacy and Computer Science (2018): R3. Assess the validity and identify the purpose of digital content.
R5. Locate and curate information from digital sources to answer research questions.
5. Differentiate between prior knowledge and ideas or thoughts gained from others.
12. Identify keywords in a search and discuss how they may be used to gather information.

Scavenger Hunt: Bird Behavior that Helps Baby Birds
Language Arts (2021): See ELA Chart (pg. 7) - R1, R3, 9, 11, 16
Science (2015): 6. Obtain information to provide evidence that parents and their offspring engage in behavior that help the offspring survive (e.g., crying of offspring indicating need for feeding, quacking or barking by parents indicating protection of young).

Seasonal Weather Observations
Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, 9, 20, 30, 32
Mathematics (2019): 19. Tell and write time to the hours and half hours using analog and digital clocks.

STEAM Activity: Design a Model of the Butterfly Life Cycle
Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, 9, 11, 12, 16, 17, 20, 30, 32
Mathematics (2019): 23. Partition circles and rectangles into two and four equal shares and describe the shares using the words *halves, fourths*, and *quarters*, and use the phrases *half of, fourth of,* and *quarter of.*
Science (2015): 7. Make observations to identify the similarities and differences of offspring to their parents and to other members of the same species (e.g., flowers from the same kind of plant being the same shape, but differing in size; dog being same breed as parent, but differing in fur color or pattern).

Field Investigation: Comparing Parents to the Their Offspring
Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, R4, 9, 11, 12, 15, 17, 19, 20, 21, 22, 30, 32, 42

Science (2015): 7. Make observations to identify the similarities and differences of offspring to their parents and to other members of the same species (e.g., flowers from the same kind of plant being the same shape, but differing in size; dog being same breed as parent, but differing in fur color or pattern).

Digital Literacy and Computer Science (2018): R3. Assess the validity and identify the purpose of digital content.

R5. Locate and curate information from digital sources to answer research questions.

5. Differentiate between prior knowledge and ideas or thoughts gained from others.

12. Identify keywords in a search and discuss how they may be used to gather information.

Dig Into Plants: Host Plants for Caterpillars

Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, R4, 9, 11, 12, 17, 19, 20, 21, 22, 42

Scavenger Hunt: Evidence of Wildlife

Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, 9, 20

Observing Leaf Characteristics

Language Arts (2021): See ELA Chart (pg. 7) - R1, R2, R3, 9, 15, 20, 32, 40

Mathematics (2019): 18. Determine the length of an object using non-standard units with no gaps or overlaps, expressing the length of the object with a whole number.

AL Ecology: Alabama's Native Plants

Language Arts (2021): See ELA Chart (pg. 7): R1, R2, R3, 9, 11, 12, 17, 20, 21, 22

Explore Outdoors: Visit a National Wildlife Refuge

Language Arts (2021): See ELA Chart (pg. 7): R1, R2, R3, 9, 20, 11

ALSDE Course of Study Standards Chart for English Language Arts

First Grade ELA Course of Study Standards Correlations for Junior Wildlife Naturalist Nature Journal Activities	What Does a Zoologist Do?	Junior Wildlife Naturalist Pledge	Search for Wildlife Using Your Senses	Words of Poetry: Inspired by Nature	Field Investigation: Animal Features and Adaptations	Wonders of Wildlife: Carolina Wolf Spider	Scavenger Hunt: Bird Behavior that Helps Baby Birds	Seasonal Weather Observations	STEAM Activity: Design a Model - Butterfly Life Cycle	Field Investigation: Comparing Adults-Offspring	Dig Into Plants: Host Plants for Caterpillars	Scavenger Hunt: Evidence of Wildlife	Observing Leaf Characteristics	Alabama Ecology: Alabamas Native Plants	Explore Outdoors: Visit a National Wildlife Refuge
R1. Utilize active listening skills during discussion & conversation in pairs, small groups, or whole-class settings, following agreed-upon rules for participation.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
R2. Use knowledge of phoneme-grapheme correspondences and word analysis skills to decode and encode words accurately.	X		X	X	X	X		X	X	X	X	X	X	X	X
R3. Expand background knowledge and build vocabulary through discussion, reading, and writing.	X		X	X	X	X	X	X	X	X	X	X	X	X	X
R4. Use digital and electronic tools appropriately, safely, and ethically for research and writing, both individually and collaboratively.					X	X				X	X				
R5. Utilize a writing process to plan, draft, revise, edit, and publish writings in various genres.				X											
9. Read grade-appropriate texts with accuracy and fluency.			X	X	X	X	X	X	X	X	X	X	X	X	X
11. Utilize new content-specific, grade-level vocabulary, make connections to previously learned words, and relate new words to background knowledge.	X				X	X	X		X	X	X			X	X
12. Ask and answer questions about unfamiliar words and phrases in discussions and/or text.	X			X	X	X			X	X	X			X	
15. Identify and explain adjectives as descriptive words and phrases in all forms of texts, including poems.				X						X			X		
16. Use grade-appropriate academic vocabulary in speaking and writing.				X			X		X						
17. Use content knowledge built during read-alouds of informational and literary texts by participating in content-specific discussions with peers and/or through drawing and writing.					X	X			X	X	X			X	
19. Identify common types of texts and their features, including literary, informational, fairy tale, and poetry.				X	X	X				X	X				
20. Use text features to find key facts or information in printed or digital text.			X	X	X	X		X	X	X	X	X	X	X	X
21. Identify the main topic and key details of literary & informational texts.					X	X				X	X			X	
22. Ask & answer questions about key details in literary & informational texts.				X	X	X				X	X			X	
30. Write legibly, using proper pencil grip.		X		X	X	X		X	X	X					
32. Write following the rules of standard English grammar, punctuation, capitalization, and spelling appropriate to grade level.				X	X	X		X	X	X			X		
37. With prompting and support, write simple poems about a chosen subject.				X											
40. Describe ideas, thoughts, and feelings, using adjectives, drawings, or other visual displays to clarify.			X	X	X								X		
42. Participate in shared research and writing projects to answer a question or describe a topic. (b. Gather information from provided sources.)				X	X					X	X				

What Does a Zoologist Do?

(JWS Nature Journal pg. 2)

Activity Goal

The purpose of this lesson is to

- Introduce students to the field of zoology
- Give students the opportunity to discuss what a zoologist does
- Get students excited about becoming a JWS zoologist

Activity Tips

- **When:** This should be the first JWS nature journal activity that you conduct with your students in August.
- **Where:** This is an indoor discussion.

Learning Objectives

- Students will be able to recognize the term zoology as the study of wildlife.
- Students will be able to explain what a zoologist is and the types of jobs a zoologist might have.

AL COS Standards & Correlations

Language Arts (2021)

See ELA Chart (pg. 7): R1, R2, R3, 11, 12

Background Information

Zoology is the study of wildlife. A zoologist is someone who studies wildlife. Zoologists can study animals' appearances, habitats, adaptations, diets, interactions, and much more! Some, but not all, zoologists work at zoos where they work hands-on with animals, in laboratories where they study animal biology, at universities where they teach others about animals, or even in the field where they capture or release animals!

Optional Educational Resources

- Use *The Variety of Life* by Nicola Davies (ISBN: 978-1444931198) to pick an interesting animal to read about to the students. Ask them if they have ever heard of this animal or if they know of an animal that has similar characteristics.
- Use the YouTube video "Zoologists and Wildlife Biologists Career Video" by CareerOneStop (1:29 min.) @ www.youtube.com/watch?v=uoyuggwziWA&t=3s&ab_channel=CareerOneStop to help introduce the concept of biology.
- Use the YouTube video "Crash Course Zoology Preview" by CrashCourse (3:36 min.) @ www.youtube.com/watch?v=ipOoEmrm4pI&ab_channel=CrashCourse to show students an example of a zoologist's career.

Zoologists and Wildlife Biologists Career

Crash Course Zoology

Procedural Instructions

Possible Questions to Start Discussion for Indoor Discussion

- Do you have a favorite animal?
- Where does this animal live?
- What does this animal need to survive?

Indoor Discussion

1. Zoologists study wildlife. Because there is such great diversity of wildlife on the planet, it is helpful for us to break them into groups (or classes) based on similar characteristics. Introduce students to this concept using the groups listed on the activity page. Ask them to what characteristics of this group are noticeable.
    - Amphibians: This group includes frogs, toads, and salamanders. These animals are generally smooth and slimy. They live part of their lives in water and the other part on land. They are vertebrates (have backbones) and are cold-blooded (cannot generate their own body heat).
    - Birds: These animals have feathers and a beak. Most of them fly. All of them lay eggs. They are vertebrates and are warm-blooded (can generate their own body heat).
    - Fish: These animals live in water, breathe through gills, are vertebrates, and have fins to help them move. They are cold-blooded.
    - Insects: These animals are invertebrates (have no backbone) that have a hard shell-like covering (exoskeleton) on the outside of their bodies. Most have antennae and wings. They are cold-blooded.
    - Mammals: These animals have fur, specialized glands to produce milk to feed young, and a complex brain. They are vertebrates and are warm-blooded.
    - Reptiles: These animals have dry skin that is covered in scales. Most lay hard-shelled eggs. They are vertebrates and are cold-blooded.
2. Review the "Did You Know" Box content.

    - **Research Scientist** (studies animals and their behaviors in the wild)
    - **Zookeeper** (cares for animals in zoos)
    - **Park Naturalist** (educates people about wildlife in parks)
    - **Wildlife Rehabilitator** (care for sick wildlife and returns them to the wild)
    - **Marine Biologist** (Studies animals that live in the water – creeks, rivers, lakes, wetlands, estuaries, and oceans)
    - **Environmental Consultant** (evaluates how environmental changes can impact local wildlife habitats)
    - **Aquarist** (cares for animals in large public aquariums)

Explain to your students that through the Junior Wildlife Scientist Program, they will become a…

- ☑ Kindergarten – JWS Biologist
- ☑ 1st Grade – JWS Zoologist
- ☑ 2nd Grade – JWS Entomologist
- ☑ 3rd Grade – JWS Herpetologist
- ☑ 4th Grade – JWS Ornithologist
- ☑ 5th Grade – JWS Ecologist

Possible Closing Discussion Questions

- Which group of animals on the journal page is the most interesting to you or your favorite?
- Do any of you know anyone that has a job in the zoology-related fields mentioned?
- In which type of zoology-related career would you be most interested?

Expansion Options

The activities in this journal serve as expansions on this topic. Each one will cover a different topic related to zoology and what a zoologist does. The background information in the Teacher's Guide for each activity will include tips for helping your students connect the dots between what they are learning and how it relates to zoology.

Field Investigation: Animal Features & Adaptations

(JWS Nature Journal pgs. 7-8)

Activity Goal

The purpose of this lesson is to

- Introduce students to some of the features scientists use when identifying organisms
- Give students the opportunity to examine the physical characteristics of a red wiggler worm
- Introduce the concept of an adaptation and highlight some of the physical and behavioral adaptations of red wiggler worms

Activity Tips

- **When:** This activity should be conducted in the fall or spring months when earthworms are most active. They are likely to be more active early in the morning, especially on humid days or before rainy weather.
- **Where:** Use any area of your outdoor classroom. Red wiggler worms spend their time under the surface of the soil. Search for them in any garden or area with a good layer of rich soil.
- **What:** Bring pencils or crayons for students to draw and write their observations.

Learning Objectives

- Students will be able to identify and describe the physical characteristics of a red wiggler worm.
- Students will be able to answer questions to explain how a red wiggler's physical characteristics help it survive.

AL COS Standards & Correlations

Language Arts (2021)

See ELA Chart (pg 7): R1, R2, R3, R4, 9, 11, 12, 17, 19, 20, 21, 22, 30, 32, 40, 42

Science (2015)

5. Design a solution to a human problem by using materials to imitate how plants and/or animals use their external parts to help them survive, grow, and meet their needs (e.g., outerwear imitating animal furs for insulation, gear mimicking tree bark or shells for protection). *

Background Information

An adaptation is any trait that an organism has that allows it to survive in its environment. Adaptations can be physical characteristics such as shape, color, size, texture, or anything that an organism has on it that helps it to survive. Specific behaviors of organisms also serve as adaptations if they help the organism survive. For example, some animals are active only during a part of the day, allowing them to escape being seen by other animals (predators). Some animals behave in certain ways to warn others that a threat is in the area, helping all of them to survive. Zoologists study animal adaptations to learn about what makes the animals successful in their environment.

Red wiggler worms have several adaptations that allow them to survive in their environment. Their reddish-brown coloration allows them to blend in to their surroundings and avoid predators. They are also able to produce a foul-smelling yellow fluid if they are disturbed. Instead of using legs to move around in the soil, they have segmented bodies and smooth skin, allowing them to easily move through the soil. Their behaviors also serve as adaptations to help them survive. They are mainly active at night or before and after rainstorms when the soil is moist and temperatures are cooler, ensuring they do not overheat or dry out in the sun.

Optional Educational Resources

- *A Worm Called Wallace: A Hero Beneath the Surface* by Jamie Rose, illustrated by Stephanie Stilwell (ISBN: 979-8490176107)
- "Explore Animal Adaptations | Smithsonian Video for Kids" by Smithsonian's National Museum of Natural History (2:20 min.) @ www.youtube.com/watch?v=iq63QW8g7jI&ab_channel=Smithsonian%27sNationalMuseumofNaturalHistory

Explore Animal Adaptations

Procedural Instructions

Possible Questions to Start Indoor Discussion

- Have you ever seen a worm? Have you ever touched a worm?
- Where do you usually find worms?
- What do worms make you think about?

Outdoor Discovery

1. Take the students to the outdoor classroom and explain that they will be looking for red wiggler worms.
2. Show them where to dig for worms (in rich soil in flower beds or bogs). If possible, provide a demonstration on how to carefully dig for worms without damaging flowers or insects while searching.
3. Allow the students to spend some time searching and digging on their own or in groups.
4. Once a worm is found, allow students to examine the worm to be able to draw a picture of it and answer the questions about its appearance on page 7 in the student journal.

* If you are not able to find a worm in the outdoor classroom, skip down to the indoor discussion section and use the information on the webpage to answer questions 1 – 4.

Indoor Discussion

5. After students have had the chance to explore, visit the AWF's Wonders of Wildlife: Red Wiggler Worm webpage (www.alabamawildlife.org/wonders-of-wildlife-red-wiggler/) so that students can answer the questions on page 8 in the student journal.

WOW: Red Wiggler Worm

Possible Closing Questions

- Did you like being able to see a worm?
- What was something new that you learned about worms?

Activity Sheet Answers

1) Drawing will vary
2) Pink & brown
3) Smooth skin
4) Zero legs
5) Zero legs
6) b.
7) a.
8) a.
9) a., b., and c.
10) Answers will vary

Expansion Options

- Have students make predictions about what weather is best for worms (ex: hot or cold, wet or dry). Take them out on different days with different types of weather to look for worms and document how many they can find on each day. Determine if their predictions were correct and discuss why worms might be found during some weather conditions more often than others.
- Have the students practice making observations about worms as they find them. These observations can be about basic physical characteristics or behaviors. Have them practice measuring the worm in terms of the length of another object (ex: describe how long the worm is in terms of how many paper clips can be lined up to measure the worm).