

# CSI: Critter Scene Investigators

Participants will be introduced to basic techniques scientists use to identify and track animals. Participants will also learn about clues/objects animals leave and how scientists use these for identification.

## K – 2<sup>nd</sup> grade:

If the program IS done for this age group, it will be very basic concepts of what animal evidence can be found (such as scat) and how scientists use the evidence for identification.

- ✓ SC00-S1C1-01: Observe common objects using multiple senses
- ✓ SC00-S1C1-02: Ask questions based on experiences with objects, organisms, and events in the environment
- ✓ SC00-S4C1-01: Distinguish between living and non-living things
- ✓ SC00-S4C1-02: Name human body parts
- ✓ SC00-S4C1-03: Identify the 5 senses and their corresponding body part (touch - skin, smell - nose, taste - tongue, hearing - ears, sight - eyes)
- ✓ SC00-S4C3-01: Identify some plants and animals that exist in the local environment
- ✓ SC00-S4C3-02: Identify that plants and animals need the following to survive - food, water, air, and space
- ✓ SC00-S5C1-01: Identify the following observable properties of objects using the senses - shape, texture, size, color
- ✓ SC00-S5C1-02: Compare objects by the following observable properties - size, color, type of material
- ✓ SC00-S6C1-01 Identify rocks, soil, and water as basic Earth materials
- ✓ SS00 - 3SS-R1: Demonstrate understanding of the concept of location, with emphasis on:
  - 01: determining the relative location of objects using the terms near/far, behind/in front, over/under
  
- ✓ SC01-S1C1-02: Ask questions based on experiences with objects, organisms, and events in the environment
- ✓ SC01-S3C2-01 Identify various technologies (e.g., automobiles, radios, refrigerators) that people use
- ✓ SC01-S3C2-02 Describe how suitable tools (e.g., magnifiers, thermometers) help make better observations and measurements
- ✓ SC01-S4C1-01: Identify characteristics of living things
- ✓ SC01-S4C1-02: Compare observable features of living things - movement (legs, wings), protection (skin, feathers, tree bark), respiration (lungs, gills)
- ✓ SC01-S4C1-03: Identify similarities/differences between/among different groups of animals (#of legs, body coverings, size)
- ✓ SC01-S4C3-01: Identify some plants and animals that exist in the local environment
- ✓ SC01-S4C3-02: Compare habitats in which animals live (desert, prairie, forest, water, underground)
- ✓ SC01-S4C3-03: Describe how plants and animals within a habitat are dependant on each other
- ✓ SC01-S5C1-01: Classify objects by the following observable properties - shape, texture, size, color, weight
- ✓ SC01-S5C2-01: Demonstrate the various ways that objects can move (straight line, zigzag, back-and-forth, round-and-round, fast, slow)

- ✓ SC01-S6C1-05: Identify ways to conserve natural resources (reduce, reuse, recycle, find alternatives)
- ✓ SC02-S1C1-02: Formulate relevant questions about the properties of objects, organisms, and events in the environment
- ✓ SC02-S1C1-02: Predict the results of an investigation ( in animal life cycles, phases of matter, the water cycle)
- ✓ SC02-S2C1-02: Identify science related career opportunities
- ✓ SC02-S4C1-01: Identify animal structures that serve different functions (sensory, defense, locomotion)
- ✓ SC02-S4C1-03: Describe basic functions of systems (digestive - breakdown and absorption of food, disposal of waste, respiratory - exchange of oxygen and carbon dioxide, circulatory - transportation of nutrients and oxygen throughout the body)
- ✓ SC02-S4C2-01: Describe the life cycle of various insects
- ✓ SC02-S4C2-03: Compare the life cycles of various organisms
- ✓ SC02-S5C1-01: Describe objects in terms of measurable properties - length, weight, temperature

### **3<sup>rd</sup> – 4<sup>th</sup> Grade:**

Discuss concepts of what animal evidence can be found (such as scat) and how scientists use the evidence for identification. Discuss the food web and how scientists can identify what type of animal based on scat and why.

- ✓ SC03-S1C1-01: Formulate relevant questions about the properties of objects, organisms, and events in the environment using observations and prior knowledge
- ✓ SC03-S4C2-02: Explain how growth, death, and decay are part of the plant life cycle
- ✓ SC03-S4C3-01: Identify the living and non living components of an ecosystem
- ✓ SC03-S4C3-03: Explain the inter-relationships among plants and animals in different environments - consumers, producers, and decomposers
- ✓ SC03-S4C4-01: Identify adaptations of plants and animals that allow them to live in specific environments
- ✓ SC03-S2C1-02: Describe science related career opportunities
- ✓ SC03-S3C1-01: Describe the beneficial and harmful impacts of natural events and human activities on the environment (forest fires, flooding, pesticides)
- ✓ SC04-S4C1-02: Classify animals by identifiable group characteristics - vertebrates (mammals, birds, fish, reptiles, amphibians) and invertebrates (insects and arachnids)
- ✓ SC04-S4C4-02: Give examples of adaptations that allow plants and animals to survive - camouflage (horned lizards, coyotes), mimicry (Monarch and Viceroy butterflies), physical (cactus spines), mutualism (species of acacia that harbor ants which repel other harmful insects)
- ✓ SC04-S2C1-02: Describe science related career opportunities

### **5<sup>th</sup> – 6<sup>th</sup> Grade:**

Discuss concepts mentioned above. Discuss animal behavior and how it determines where evidence is left. Briefly discuss environmental hazards that could disrupt typical animal behavior and affect the ecosystem. Discuss techniques scientists use to track and identify animals. Discuss the food web and how scientists can identify what type of animal based on scat and why.

- ✓ SC05-S4C1-01: Skeletal System
- ✓ SC05-S4C1-02: Muscular system
- ✓ SC05-S3C1-02: Propose a solution, resource, or product that addresses a specific human, animal, or habitat need

- ✓ SC06-S4C1-01: Explain the importance of water to organisms
- ✓ SC06-S4C3-02: Describe how environmental conditions affect the quality of life - water quality, smog, climate, and population density

### 7<sup>th</sup> Grade and up:

Discuss concepts mentioned above. Discuss the environmental risks caused by human interaction and the environmental benefits resulting from human interaction. Discuss the food web and how scientists can identify what type of animal based on scat and why.

- ✓ SC07-S4C3-01: Compare food chains in a specified ecosystem and their corresponding food web
- ✓ SC07-S4C3-02: Explain how organisms obtain and use resources to develop and thrive in - niches, predator/prey relationships
- ✓ SC07-S4C3-03: Analyze the interactions of living organisms with their ecosystems - limiting factors, carrying capacity
- ✓ SC07-S3C1-01: Analyze environmental risks (pollution, habitat destruction) caused by human interaction with biological or geological systems
- ✓ SC07-S3C1-02: Analyze environmental benefits of the following human interactions with biological or geological systems - reforestation, habitat restoration, dam construction
  
- ✓ SC08-S4C4-01: Explain how an organism's behavior allows it to survive in an environment
- ✓ SC08-S4C4-02: Describe how an organism can maintain a stable internal environment while living in a constantly changing external environment
- ✓ SC08-S4C4-03: Determine characteristics of organisms that could change over several generations
- ✓ SC08-S4C4-04: Compare symbiotic and competitive relationships in organisms within an ecosystem (lichen, mistletoe/tree, clownfish/sea anemone, native/non-native species)
- ✓ SC08-S4C4-05: Analyze the following behavioral cycles of organisms: hibernation, migration, dormancy (plants)
- ✓ SC08-S4C4-06: Describe the following factors that allow for the survival of living organisms - beak design, pollination, seed dispersal, protective coloration
- ✓ SC08-S2C1-04: Evaluate career opportunities related to life and physical science
  
- ✓ SCHS-S4C3-01: Identify the relationships among organisms within populations, communities, ecosystems, and biomes
- ✓ SCHS-S4C3-02: Describe how organisms are influenced by a particular combination of biotic (living) and abiotic (nonliving) factors in an environment
- ✓ SCHS-S3C1-01: Evaluate how the processes of natural ecosystems affect, and are affected by, humans
- ✓ SCHS-S3C1-03 Assess how human activities (clear cutting, water management, tree thinning) can affect the potential for hazards
- ✓ SCHS-S3C1-03: Evaluate how urban development affects the quality of the environment
- ✓ SCHS-S3C1-04: Evaluate the effectiveness of conservation practices and preservation techniques on environmental quality and biodiversity
- ✓ SCHS-S3C2-04: Analyze the use of renewable and nonrenewable resources in Arizona - water, land, soil, minerals, air