

# 3<sup>rd</sup> Grade – Spring into Life Cycles

Life Cycles in No Thoroughfare Canyon

## Class Description

Students will explore the life cycles of insects, amphibians, and mammals on a hike to a seasonal pool in No Thoroughfare Canyon.

**Location:** No Thoroughfare Canyon

**Duration:** 3 - 4 hours – 3 miles round trip

## Standards Addressed:

**Science 2.1** – The duration and timing of life cycle events such as reproduction and longevity vary across organisms and species.

## Enduring Understandings/Essential Questions

All living things have a life cycle

Basic needs are common to all living things

Organisms change and develop during their life cycle

How are organisms similar and different?

What are our responsibilities to the organisms that share our environment?

## Vocabulary Addressed

Organism

Life span

Tadpole

Egg

larva

Pupa

Adult

Metamorphosis

## Theme, Etc.

### Theme

All plants and animals have adaptations that help them live in their environment. Organisms change during their life cycles, however the ways they change vary. **(needs help)**

### Major Concepts

-The desert ecosystem

-Life cycles of insects, amphibians, and mammals

-Adaptations of desert plants and animals

-How humans can help keep natural areas clean

### Objectives

-Students will be able to describe the life cycle stages of one insect, one amphibian, and one mammal.

-Students will be able to explain how an amphibian's eating habits change during its life cycle.

-Students will be able to recognize and explain 2 characteristics of a desert plant that help it survive.

-Students will be able to list 2 challenges for plants and animals living in the desert.

-Students will be able to recall how humans can help protect desert pools and 2 ways they can help keep water in their neighborhoods clean.

## Sample Class Outline

**Introduction:** We are going to hike up No Thoroughfare Canyon to a small pool (might be toads, tadpoles etc.), along the way we will be looking at desert plants and animals and talking about how they survive here. We are also going to talk about life cycles, because I hear that 3<sup>rd</sup> graders at \_\_\_\_\_(school name) are experts on life cycles.

**Transition:** *On the way to our next stop, I would like you to think of 4 things that you can't live without...*

### Stop #1 (somewhere in the wash near a juniper tree)

**Theme:** What are the basic needs of plants and animals? What are the main characteristics of a desert?

**Props:** animal needs(fr)/plant needs(back) & bighorn sheep lifecycle

**Tips:** Ask students what they think they can't live without. Then discuss/quiz what humans need to survive, relate that to all animals, we all need the same things, and our habitat helps us meet these needs... (ex; you live in a house, a lizard lives in a hole (*show them a lizard hole near the trail*), you eat a hamburger, a lizard eats a....?? ant!... Look at a nearby plant and talk about the parts of a plant that help them get what they need from their environment. Then ask why they think it might be hard to live in a desert...discuss with neighbor/as a class.

**Transition:** *Even though the desert can be a tough place to live, some trees, like the juniper (point one out) can live for over 1,000 years! Most animals have shorter lifespans, usually less than 20 years. Desert mammals like the Desert Bighorn Sheep (show photos) live for up to 15 years. During their lives, their bodies get bigger and they grow larger horns as they get older, but do not go through major changes. Most insects live for less than one year, but during their short lives, insects go through huge changes. Think of your own life, how have you changed since you were born? Do you think your life cycle is more like a Desert Bighorn Sheep or more like an insect?*

### Stop #2

**Theme:** How do insect bodies and behaviors change during their life cycle? Do all insects undergo metamorphosis?

**Props:** Moth life cycle/grasshopper & Caddisfly/water strider life cycle posters

**Tips:** Discuss how humans change, even though some things change, we still have the same basic body structure and look more or less the same throughout our lives, more like bighorn sheep. The same is true for most mammals. Insects are different though. When they are growing up, insect bodies and behaviors completely change. We call these changes metamorphosis.

Explain how a moth goes through complete metamorphosis changing from an egg to a larva, pupa, adult. Ask students what they think moths eat/do during the different stages in their life cycle. Then look at the ant life cycle to discuss how some insects (grasshoppers) go through incomplete metamorphosis, how many steps are in incomplete metamorphosis? (3) How many in complete? (4) Go over vocabulary associated with each; egg, nymph ,adult...complete: egg, larva, pupa, adult. Discuss aquatic insect examples; water strider (incomplete) & caddisfly (complete). Have students explore the area for insects caterpillars, grasshoppers, water striders, etc. if you find a plant with aphids (yucca are good for aphids) you could try to find exoskeletons shed by the growing aphids, or look for antlion burrows, cicada exoskeletons, listen for cicadas calling, etc.

**Transition** *At our next stop we'll take a break for a snack. There are lots of animals that snack on insects. On the way to our next stop, I want you to imagine what it would be like to be an insect living here.*

*Choose 3 different hiding spots along the trail that you could use to avoid getting eaten by a lizard or a toad, point out your hiding spots to your neighbor.*

### **Stop #3 (snack @ cottonwoods is a good spot)**

**Theme:** How do amphibians change during their life cycle? (bodies and behaviors)

**Props:** frog/toad life cycle diagram, frog life cycle song lyrics

**Tips:** Can play metamorphosis game (rock/paper/scissors to move through frog life cycle). Have students look at the toad life cycle diagram and decide where he lives during each stage and what he eats. Optional - Sing the frog life cycle song (at bottom of lesson plan).

**Transition:** *We are almost to the pool where we will eat lunch, and turn around, but the trail gets very rocky so make sure you are being safe as you climb through the wash.*

*At the beginning of the hike, we talked about how important water is for all living things, especially plants and animals in the desert. On our way to the pool, think of one way that we can help keep the water clean when we visit desert pools and one way you can help keep water clean or use less (conserve) water at home.*

### **Stop #4: Just Before Pool (but before it's actually in view)**

**Theme:** How can we keep water clean in parks and at home?

**Props:** frogs and toads of the Monument photos

**Tips:** Discuss how to keep water in the desert clean, have students offer their answers. Same with how to keep water clean/use less at home. Tell students that we are going to walk in "slow-motion" up to the pool, and that we are trying to find frog/toad eggs, tadpoles, and frogs or toads as well as insects in the water. (Can show photos of frogs and toads and give a brief description of each.)

### **Stop #5: @ Pool**

**Theme:** How are desert frogs and toads adapted to their environment?

**Props:** Frogs and Toads of the Monument photos, \*optional - microscopes, water testing tools

**Tips:** Let students look at pool for a while and find frogs/toads, tadpoles, etc., eat lunch, and then spend some time discussing desert frogs and toads - have shorter life cycles because their pools will dry up, talk about behaviors of spadefoot and red-spotted toads, come out when it's raining to mate, etc. What do they do all winter? Perhaps present these discussion questions to students in groups as they are finishing lunch and they can discuss in small groups and then have a class discussion on a short rest stop down the canyon.

\*Optional - Depending on group size, time at pool, etc. Could bring water testing tools or microscopes to look at organisms up close and examine the "health" of the water in the pool

## **Frog Life Cycle Song (To the tune of "Froggy went a Courtin'")**

Froggie started out as a tiny egg, Uh-huh. (x2)

He started out as a tiny egg ---  
No hands or feet or even a leg.  
Uh-huh, uh-huh, uh-huh.

A tadpole hatched from that tiny egg, Uh-huh.  
A tadpole hatched, but he wasn't a whale.  
He breathed with his gills and he swam with his tail.  
Uh-huh, uh-huh, uh-huh.

He ate and he ate and he grew so big, Uh-huh. (x2)  
When he was young all he ate was plants  
But soon he'll like the taste of flies and ants.  
Uh-huh, uh-huh, uh-huh.

Tadpole's body grew four little legs, Uh-huh. (x2)  
He had four legs and his little tail too;  
He swam around the pond as tadpoles do.  
Uh-huh, uh-huh, uh-huh.

Then one fine morning he left the pond, Uh-huh (x2)  
He had no tail, but his little lungs grew.  
He hopped around the land as froggies do.  
Uh-huh, uh-huh, uh-huh.

Froggie's getting' older day by day, Uh-huh. (x2)  
All day long he burrows underground  
Then the rain starts to fall with a pitter-patter sound.  
Uh-huh, uh-huh, uh-huh.

Then the rain stops and the boy frogs sing, Uh-huh. (x2)  
Some sing high and some sing low.  
While all the froggie girls enjoy the froggie show.  
Uh-huh, uh-huh, uh-huh.

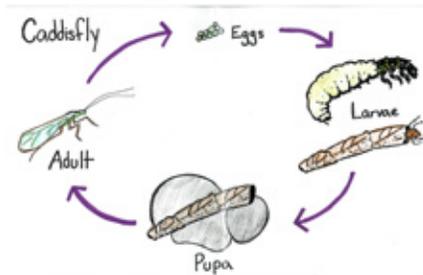
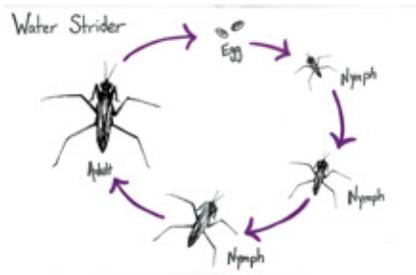
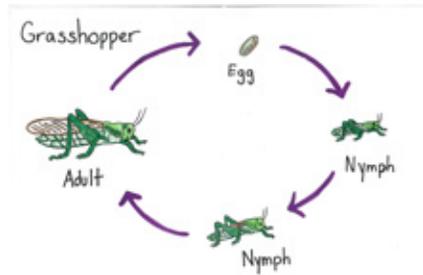
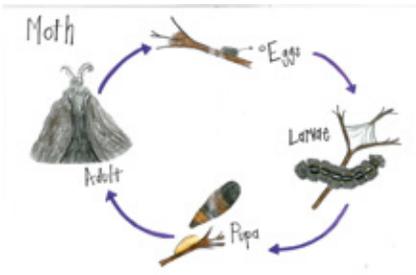
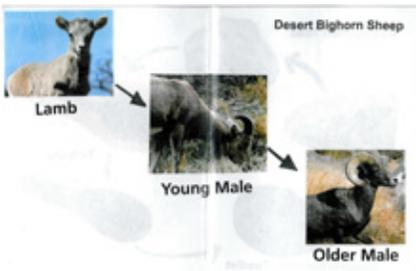
Froggie went a courtin' in a desert pool, Uh-huh (x2)  
Froggie went a courtin' in a desert pool,  
He better find a wife, while the water's still cool.  
Uh-huh, uh-huh, uh-huh



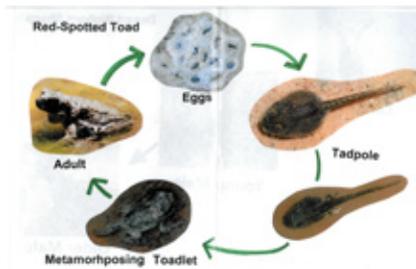
# 3rd Grade - Spring into Life Cycles Props & Stops



**Stop #1**  
In wash near a juniper tree



**Stop #2**



**Stop #3**  
(snack @ cottonwoods)



Red-spotted Toad



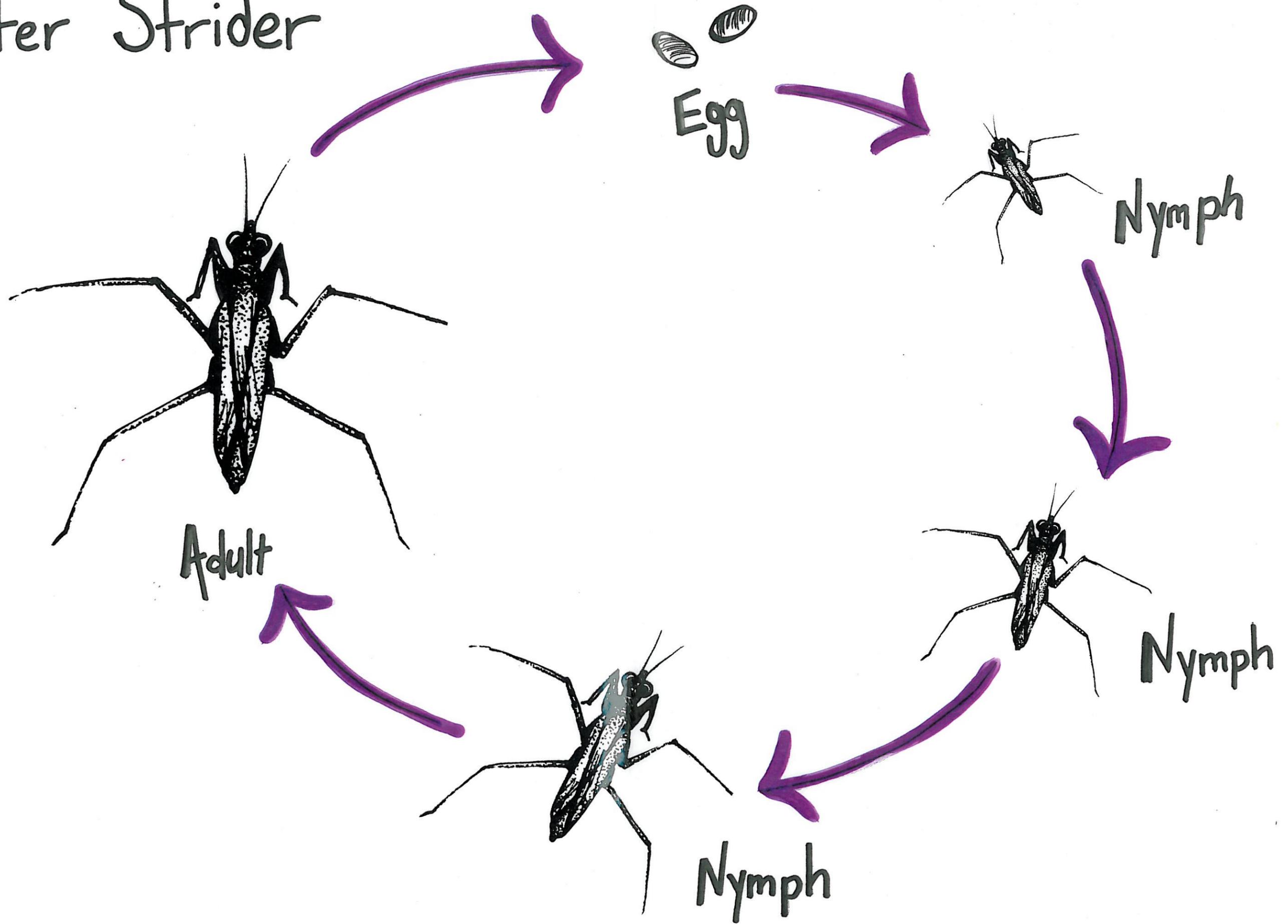
Canyon Tree Frog



Spadefoot Toad

**Stop #4 & 5**  
(Just before & at pool)

# Water Strider



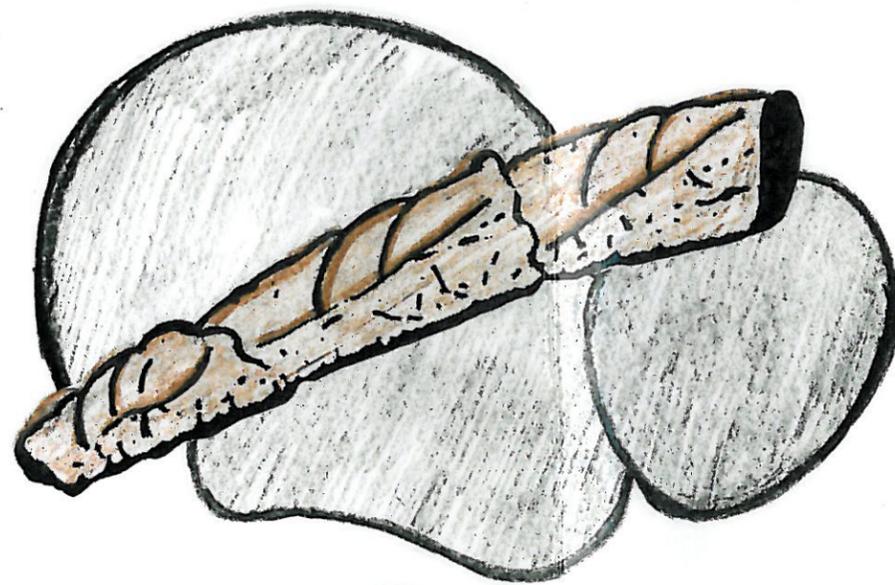
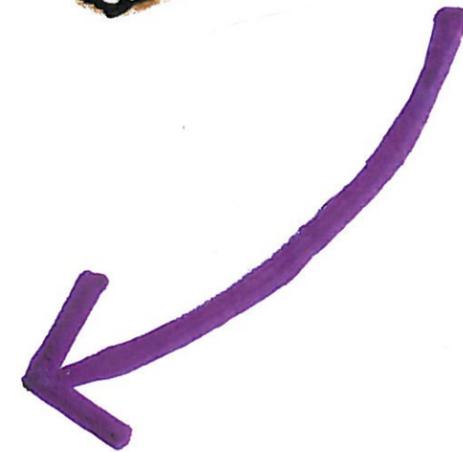
Caddisfly



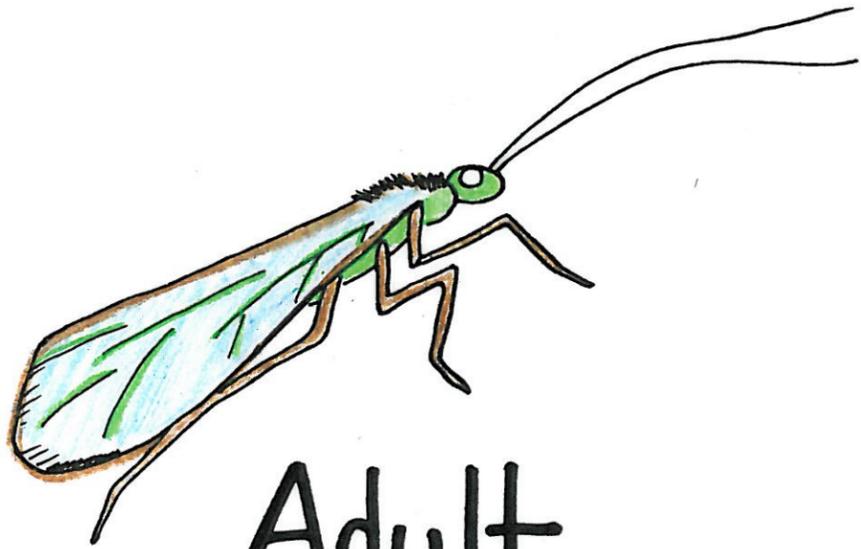
Eggs



Larvae



Pupa



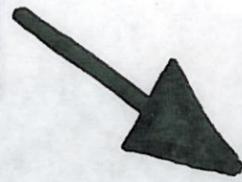
Adult



# Desert Bighorn Sheep



**Lamb**



**Young Male**

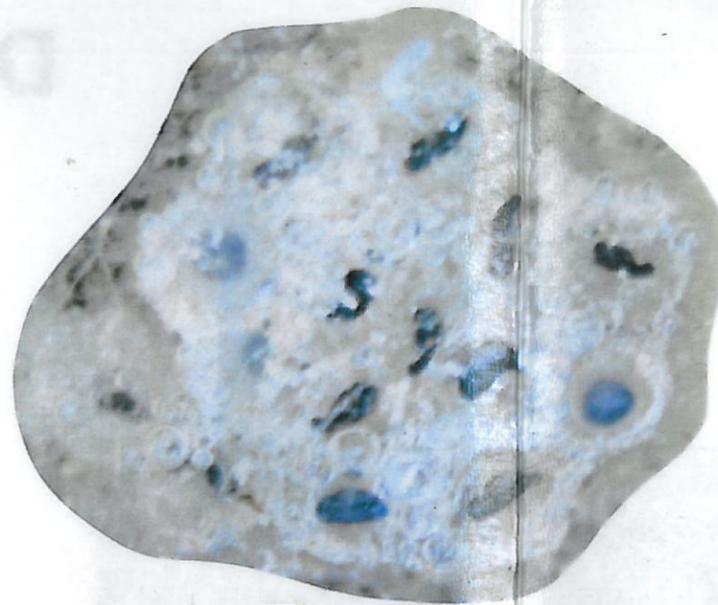


**Older Male**

# Red-Spotted Toad



Adult



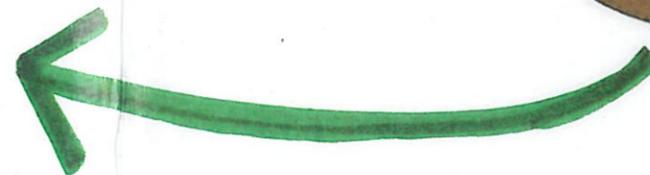
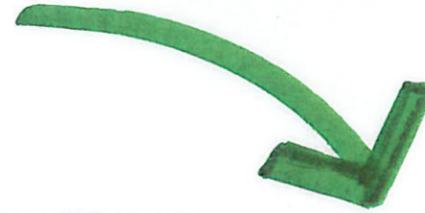
Eggs



Tadpole



Metamorphosing Toadlet



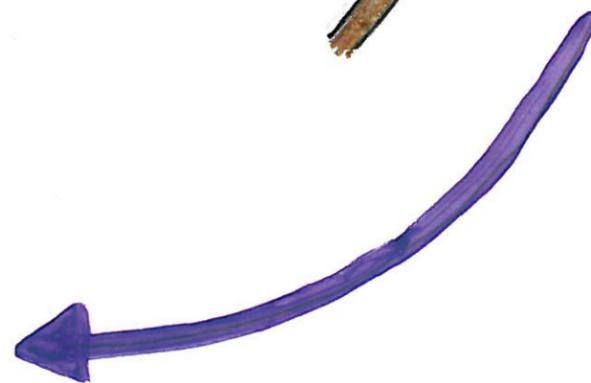
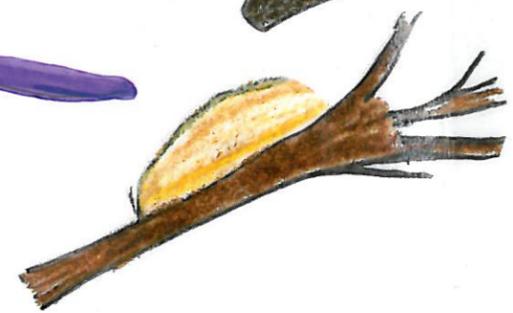
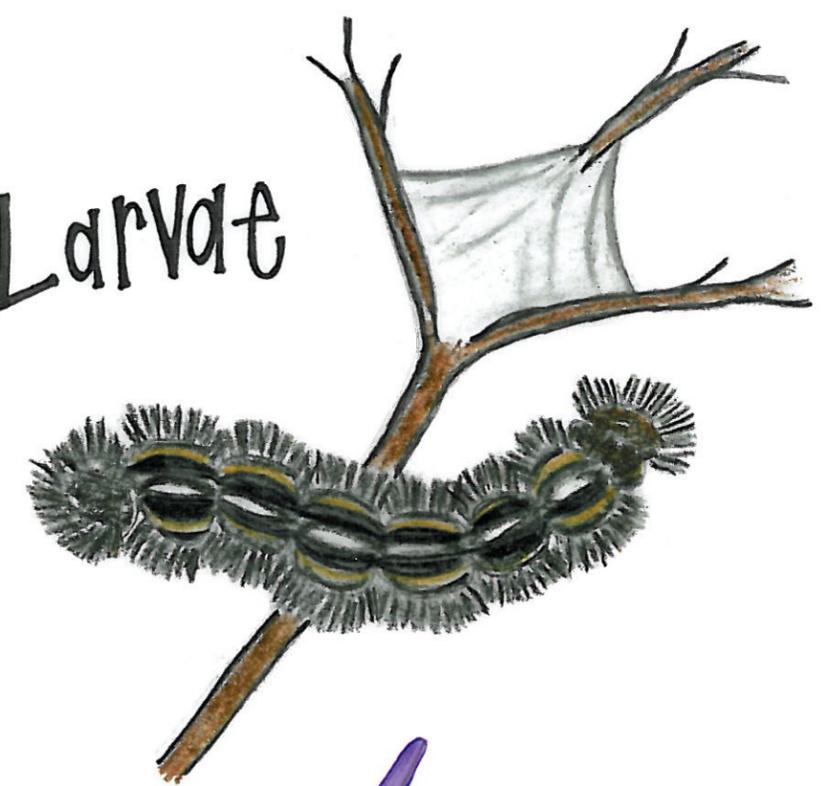
Moth

Eggs

Larvae

Pupa

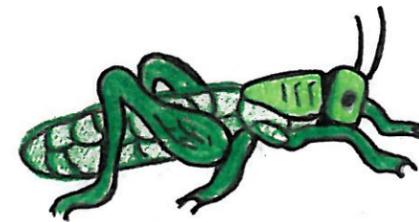
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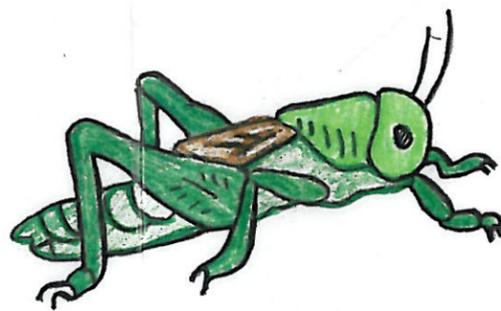
# Grasshopper



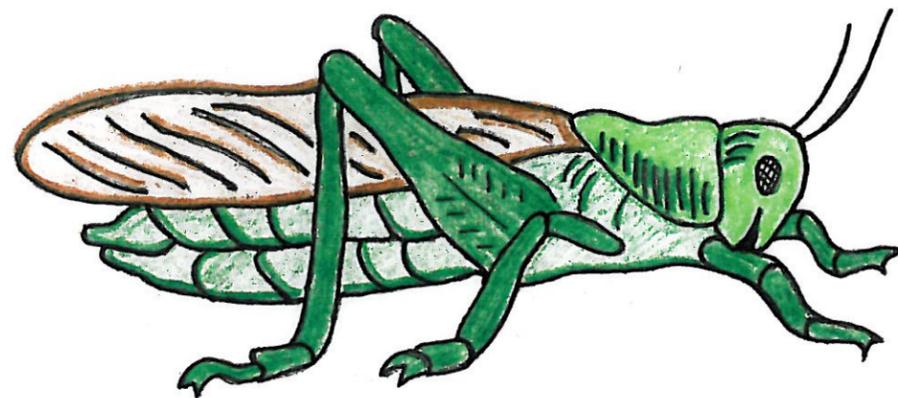
Egg



Nymph



Nymph



Adult

