

DICKINSON COUNTY NATURE CENTER

GRADE 3 — “JOURNEY THROUGH LIFE CYCLES”

Core expectations

3-LS1-1 Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Activity Time

One 45-minute session

Program Alignment with Iowa Core Curriculum

Disciplinary Core Ideas

- **LS1.B Growth and Development of Organisms:** Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles.

Investigative questions

- What is a life cycle?
- Do all animals have the same life cycle?
- How long does it take an organism to complete the different stages of its life cycle?

Investigative phenomena

- The naturalist will ask students to work as a class and put five pictures of animals in order from shortest living to longest living.

Practices (SEPs)

- Students will develop models of various animals' life cycles using data presented by the naturalist.
- Students will share their models with the class and make comparisons between different life cycles.

Cross Cutting Concepts students will identify

- Students will identify patterns in different life cycles and come to the conclusion that every organism has in common birth, growth, reproduction and death.

Contact

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Supplies

All supplies brought by the nature center unless otherwise arranged.

- Timeline
- Animal cards
- Tape
- Paper
- Rulers
- Markers

Program Overview

Background

Twenty-four hours may not seem like a very long time, but for a mayfly that’s all the time it has as an adult insect. In contrast, a Greenland shark can live a long and leisurely life of up to 400 years! These variations in lifespan mean these animals also have unique and varied life cycles. A life cycle is the series of changes that an organism undergoes from birth to maturity to death.

Mammals, birds, reptiles and fish all have simple life cycles. A simple life cycle has three stages: Before birth, young and adult. When the young are born they usually resemble the adult, and they will slowly grow into adulthood to complete their life cycle. Amphibians, on the other hand, are a little different. They are born and spend their childhood underwater, using gills to breathe. To become adults they undergo metamorphosis, or changing their form, and develop lungs and spend their adult life on land.

Insects also have unique life cycles. They will also undergo metamorphosis to become an adult. Insects that undergo complete metamorphosis have four stages in their life cycle: Egg, larva, pupa and adult. The larval stage is when the insect does most of its feeding. After the larval stage, the insect will enter a pupa stage where it is inactive and usually well camouflaged. In the last stage, adult, the insect usually has wings and is ready for breeding. Some insects, about 10 percent, undergo incomplete metamorphosis, meaning they do not have a pupal stage. These insects include grasshoppers, dragonflies and cockroaches and only have three stages in their life cycle: Egg, nymph and adult.

Plants have a very different life cycle from animals. They have five stages: Seed, seedling, mature plant, flower and fruit. The cycle begins with a seed, which will sprout to produce a tiny plant, or seedling. The seedling will grow to a mature plant and from there produce a flower. The plant will reproduce through pollination of the flower and will create a fruit that has seeds for the next generation. This cycle is used by flowering plants; however, plants such as ferns and mosses have a different life cycle. Instead of producing seeds these plants produce different reproductive cells called spores.

Procedure

- 1) The naturalist will begin by showing the class pictures of five different animals and asking students to put them in order of shortest living to longest living. The naturalist will then ask students if they know what the longest living animal in the world is? Do they know the shortest living animal? Does anyone know what a life cycle is? Can anyone explain it? Does anyone have an example?
- 2) The naturalist will place the timeline on the floor and pass out pictures of different animals. The naturalist will explain that all animals have different life cycles and all animals live for different lengths of time. Can we guess what the life expectancy for each animal is? Students will place their animal on the timeline where they think it belongs.
- 3) Naturalist will go over answers with class and discuss the different life cycles of a plant, insect, fish, amphibian, reptile, bird and mammal.
- 4) Next, students will be divided into groups and assigned an animal. The group will work together to create a life cycle timeline for its animal. All timelines will look different depending on the animal, but students will notice that all the animals have in common birth, growth, reproduction and death.
- 5) At the end of class, students will take their timeline and bend them to make a circle, demonstrating that even though an individual’s life span can be demonstrated on a linear scale, a species life cycle is a never-ending process better modeled by a circle.