



## DAY OF THE LIVING, NON-LIVING, AND DEAD\* 2021

**Grade Level:** 4th Grade

**Setting:** Prairie Natural Area

**Theme:** The living things (biotic) in nature would not exist without the non-living (abiotic) elements.

**Description:** Students identify living/biotic and non-living/abiotic elements of nature through an investigation and game. They learn the important difference between non-living (abiotic) and dead (biotic).

**BIAS:** [Interconnection](#)

**Time-** 30-45 minutes

**Recommended Group Size:** up to 30

**FOSS Kit:** Environments

**State Standards:** Life Science 2: Students can use the full range of science and engineering practices to make sense of natural phenomena and solve problems that require understanding how individual organisms are configured and how these structures function to support life, growth, behavior and reproduction.

*Nat. Note: Explain and illustrate with examples how living systems interact with the biotic and abiotic environment. There is interaction and interdependence between and among living and nonliving components of ecosystems.*

### Materials list

- 15 flags: numbered with 1-15 written on them, extra un-numbered flags (suggestions for flags: animal holes, seed pods, bird droppings, stone walls, wood structures, animal tracks, spider webs, bird nests, puddles, mud, dew, pine needles, tree bark, found items from people, galls...)
- Prairie photo: Living...Non-Living...Dead Diagram, Biotic/Abiotic photo
- Props: water bottle, wind wheel, beehive pieces, snake-skin, rodent skull, horsehair, picture frame to use to look at whatever is chosen, pack of pictures

### ENGAGE/ INTRO:

- Welcome students, introduce self, remind them that Natural Areas are free for them to return to and keep on learning every day of the year.
- Today you are going to identify some of the living, dead, and non-living parts of this environment and discover how they interact.
- Ask: Have you studied environments in school? Do you know what the words biotic and abiotic mean? **Biotic: of or relating to life, produced by living things. This includes the "dead" (formerly living) elements. Abiotic: not biotic; non-living past, present, future.**

- If students do not know the difference, use the photos to define and give an example of each. Practice by asking for examples of the connection of biotic to living and abiotic to non-living.

BIOTIC		ABIOTIC
Living (alive now)	Dead/Not living (was alive, part of a living thing at one time)	Non- Living (never alive, never will be alive-things that cannot grow, move, breathe, or reproduce)
Living plants	Dead plant parts	Rocks (fossil-the mineralized remains or impression of a prehistoric organism preserved in petrified form in rock)
Living animals: Insects, Amphibians, Reptiles, Birds, Mammals (Incl. Humans)	Dead animal remains (skulls, hair, feathers); part of a living thing at one time (scat)	Water (bring a water bottle and place flag inside) or drought (lack of water)
	Parts of students' lunches (veggies, meat)	Temperature/ air/ wind
Living bacteria	Dead bacteria	Elevation, aspect (N/S/E/W facing slope)
	<b>Soil:</b> decayed matter from plants and animals, scat; ie., organic fertilizer	<b>Soil:</b> broken up rocks

*Nat Notes: This seems quite clear and obvious to everyone until you start trying to apply the concept. The difference between non-living and NOT living is confusing (i.e., non-living often confused to include dead-reinforce living/dead is/was something that is/was alive at some time versus non-living-never alive.*

- Discuss what distinguishes something that is alive (eat, drink, breathe) with non-living.
- Expect to have to repeat the definitions often as you go through this activity. Notice that Soil is in both (not living and non-living) categories. This is a good example of how confusing this concept can be.
- Ask: What about things that WERE alive in the past; are they Living or Non-Living?
- Ask: What about things that WILL be alive in the future; are they Living or Non-Living?
- There is another category that we call “dead” for these things. They are technically in the biotic or living category because they were alive at one time but are not alive at this moment. Give some examples of these (i.e., dead plant & animal remains, organic matter; i.e., scat).
  - Additional Exercise (If Time Allows):
    - Present the students with:
      - Fence Post: Is it Living, non-living, or dead?
      - Frosty the snowman: Is a snowman living, non-living, or dead?
      - What about extinct animals (i.e., dinosaurs)? Depends on how found, frozen skeleton vs fossil.

- What about animals thought to be extinct, but now recovering? (i.e., black-footed ferret)

**EXPLORE (Choose Only One Scenario- 1 or 2):**

- **Scenario 1**

- Pair up students
- Explain that they will be visiting several spots marked with numbered flags and must decide whether what is flagged is living, dead, or non-living. Establish a call back signal and boundaries.
- Give an example using a photo and point out the living elements, the dead elements, and the non-living elements.
- Go to an example flag and discuss with the group what it is marking. Is this something that is living, dead, or non-living?
- Show the worksheet, explain how to fill it out and give logistics of flags (they can be done in any order, only one group at a flag at a time).
- While students are working, circulate around the flags to help students and keep them on task.

**Explain:**

- Call students back to go over the worksheet and compare answers. Give the correct answers and explain “why”. The application of this concept is very important.
- Next, hand out the picture cards and ask students to look at their pictures to decide if they have a living, non-living or dead component.
  - Choose 2 students and challenge them to think of an interaction that could occur between the two elements (i.e., a fox may drink water, a mouse might eat grass).
  - Whatever category they are in they should be able to think of an interaction. This interaction factor is what makes the individual parts into an ecosystem.

*Nat. Note: The picture card component can also be done by having students randomly choose two numbers from the flagged examples and find a relationship between the two components represented by the numbers chosen. This takes less time and still illustrates the connections and interactions of an ecosystem.*

- **Scenario 2**

- Explain that everyone will be given a numbered/unnumbered flag to place next to the appropriate category (living, non-living, dead).
- Provide each student with a flag and tell them what to look for (i.e., even numbers=living; odd number=non-living; unnumbered=dead). Suggested area is by the northern loop near cabin at Coyote Ridge.

**Explain:**

- After everyone has placed their flag, lead the group to each flag to discuss why the student placed the flag where they did and whether they properly identified the category. Whatever category they are in they should be able to think of an interaction. This interaction factor is what makes the individual parts into an ecosystem.
- Discussion can be supplemented with picture cards
  - Choose 2 students and challenge them to think of an interaction that could occur between the two elements (i.e., a fox may drink water, a mouse might eat grass).

- Whatever category they are in they should be able to think of an interaction. This interaction factor is what makes the individual parts into an ecosystem.

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### **EXPLORE:**

- After a couple examples, allow the group to circulate and find as many interactions as they can.
- Challenge students to find another pair to interact with (for example grass/rabbit pair might connect with mouse/hawk pair because mouse also eats grass and hawk also eats rabbit).

### **ELABORATE:**

- In nature we have living things, and we have dead things, and we also have non-living things. Some of the non-living things, air, temperature, water, gravity etc., turn out to be very important in nature.
- Ask: How might a non-living element such as air, water, temperature, or gravity be important? (i.e., lack of water makes a place a desert or arid climate, lack of trees influence what species can live there, angle of sunlight creates seasons-which trigger plants to grow and animals to migrate, rocks crumble into the soil- etc.)

### **EVALUATE/CONCLUSION:**

- Ask: Can you explain what living, dead, and non-living things are in nature? Emphasize that although we think about the living parts of nature, more often, none of the living would exist without the non-living parts!
- This is why people are concerned about pollution in the air, water, and soil, even though these are non-living elements. They can help protect the living by protecting the non-living!