Biotic and Abiotic Factors

- **Biotic factors:** Parts of an ecosystem that are living or used to be living
- **Abiotic factors:** Parts of an ecosystem that have never been living

"opposite"

Learn Biology: Ecosystem Definition & Biotic Factors vs. Abiotic Factors

- https://www.youtube.com/watch?v=y-wpbhnom70

RECAP

- Name and describe the **ecological levels** from smallest to largest.
- Use and define the following terms: **geographic**, **climate**, **abiotic**, **biotic**

Individual: biotic

Population: same type, 1 **species** in a **geographic** area), **biotic**

Community: all the **populations** in a **geographic** area, **biotic**

Ecosystem: **community** and the physical **(abiotic)** environment, example – African Savannah

Community: all the **populations** in a **geographic** area, **biotic**

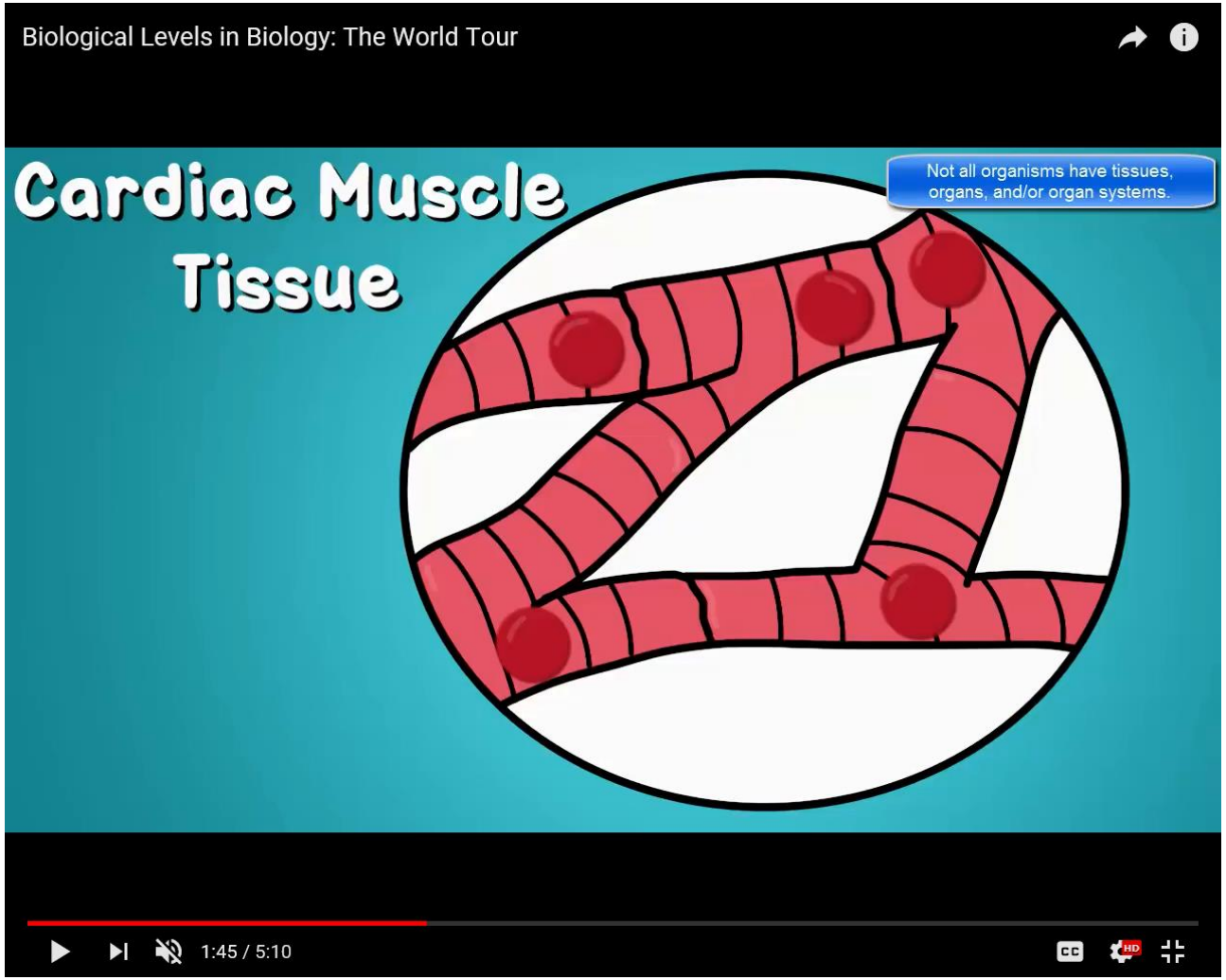
Ecosystem: community (biotic) and the physical **(abiotic)** environment, example – African Savannah

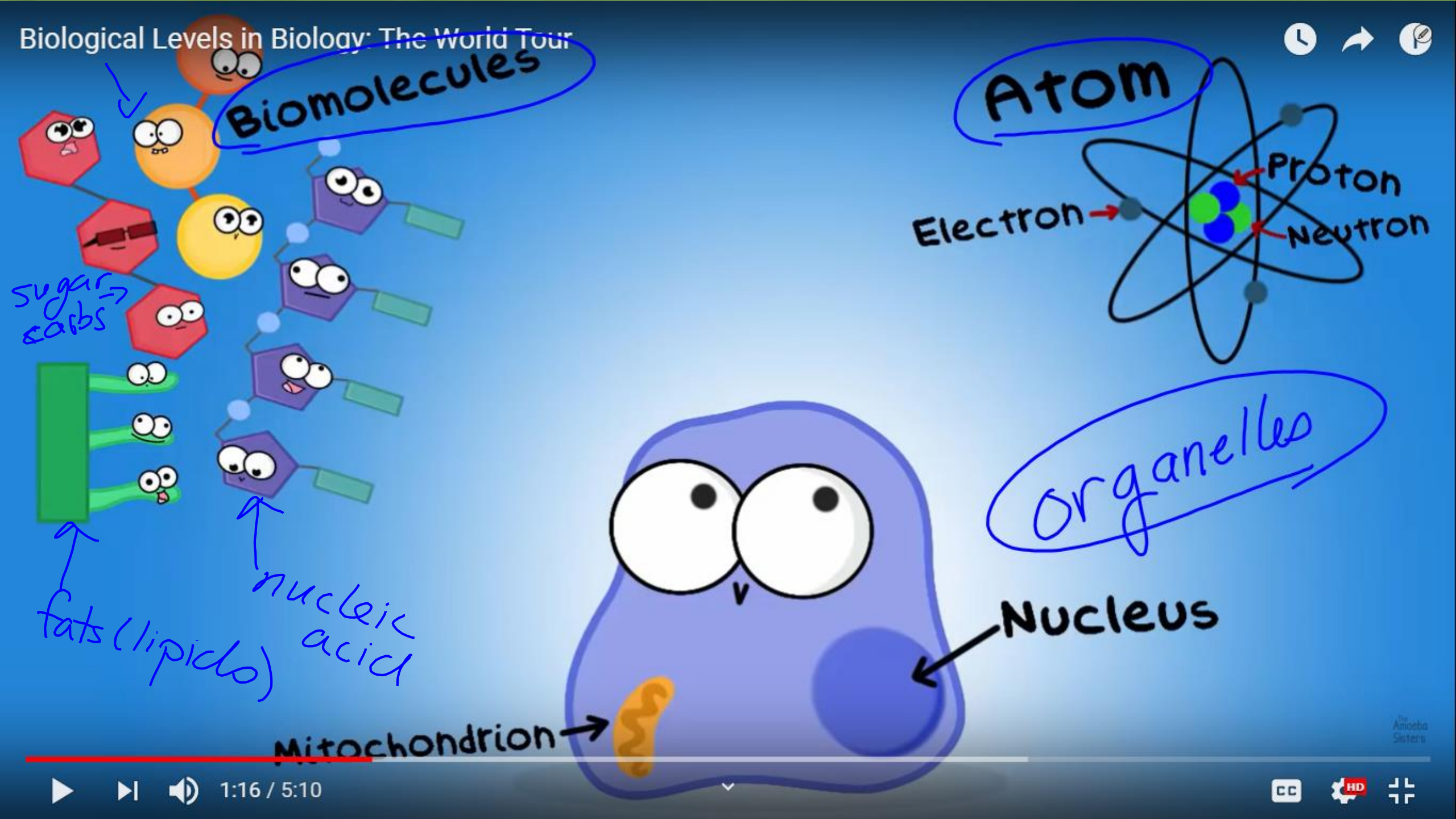
Biome: general type of environment made up of **ecosystems**, example – grasslands

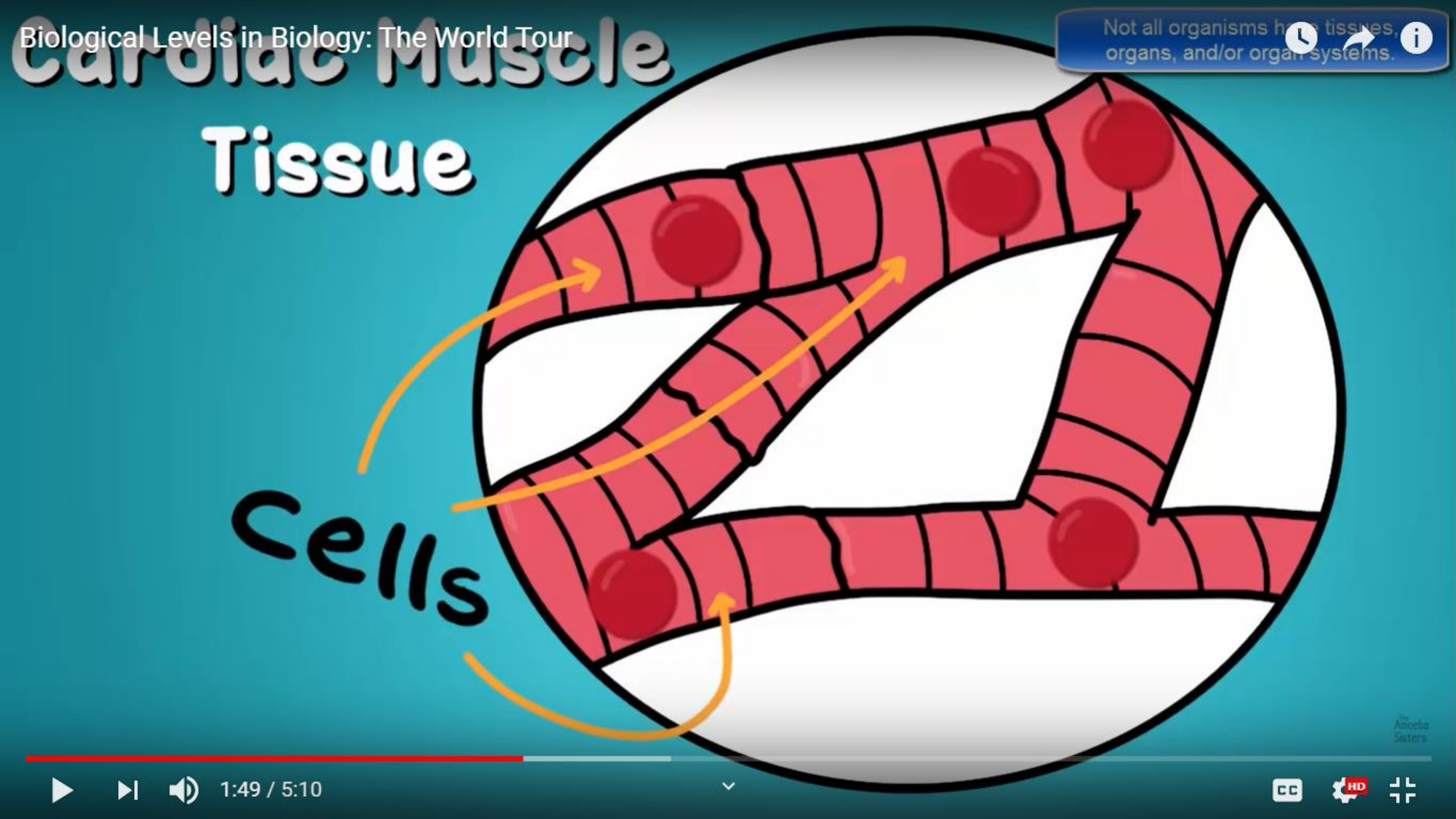
Biosphere: all the **biomes** on the earth

Amoeba Sisters Video: Biological Levels in Biology: The World Tour

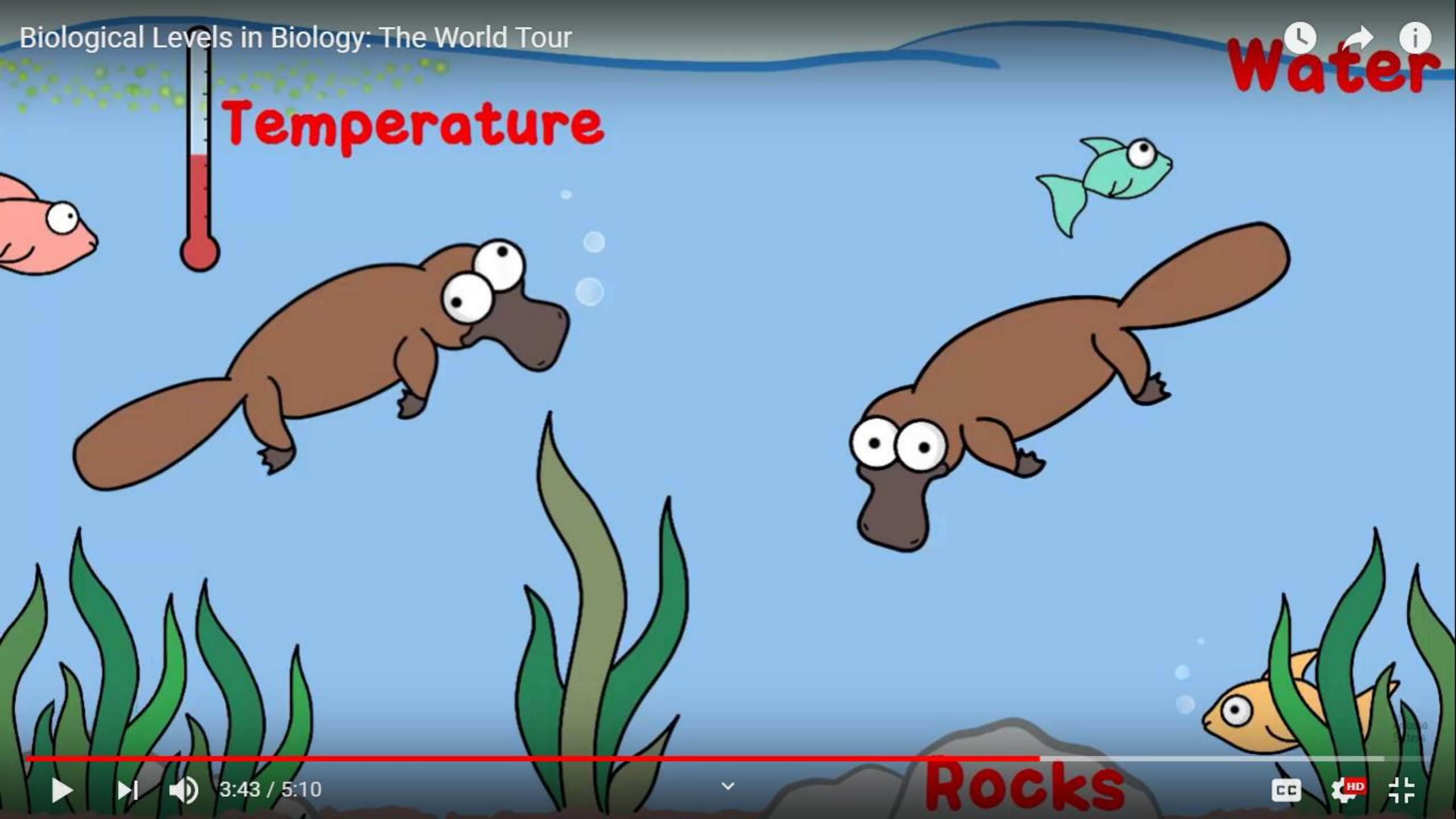
https://www.youtube.com/watch?v=EtWknf1gzKo




Biological Levels in Biology: The World Tour
Biomolecules
sugar = carbs
fats (lipids)
nucleic acid
Atom
Proton
Electron
Neutron
organelles
Nucleus
Mitochondrion
1:16 / 5:10


Cardiac Muscle
Tissue
Cells
Not all organisms have tissues, organs, and/or organ systems.
The Amoeba Sisters


Biological Levels in Biology: The World Tour
Community
3:16 / 5:10


Biological Levels in Biology: The World Tour
Temperature
Water
Rocks
3:43 / 5:10


Biological Levels in Biology: The World Tour
Desert
Rainforest
4:02 / 5:10

(Biological Levels – Amoeba Sisters)

Biological Levels: Amoeba Sisters Video Clip

Name:_____

Period:_____ Date:_____

1. Biological levels are **analyzed**. Explain the meaning of analyzed: _____

   _____.

2. Biological Levels → **1st** _____ (_____,

   _____, _____)

   → **2nd** _____ (example would be the _____)

   → **3rd** _____ (example would be _____)

   → **4th** _____ (such as the _____)

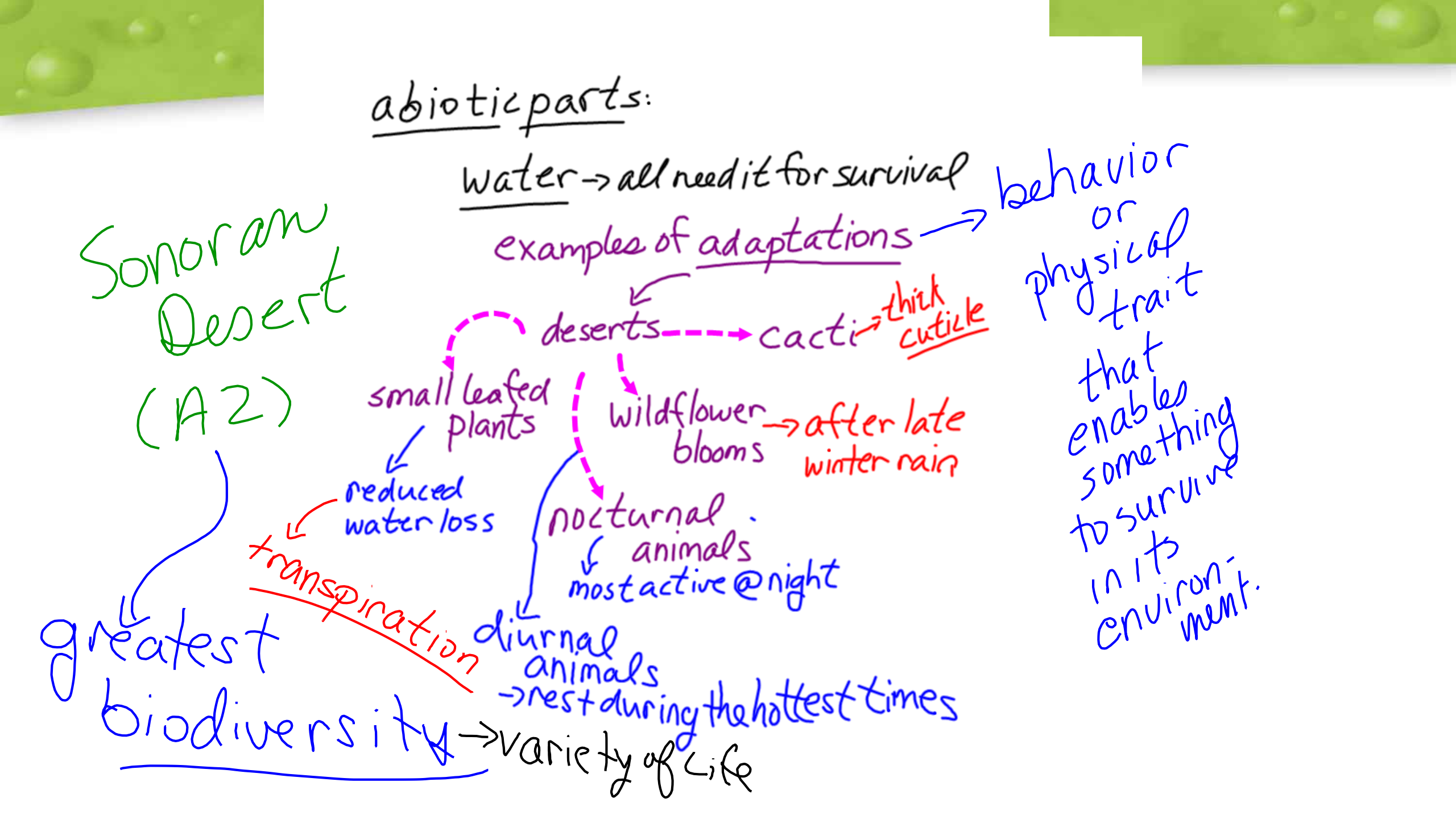
   → **5th** _____ → **6th** _____

   → **7th** _____.→ **8th** _____

   → **9th** _____ → **10th** _____

3. Communities are composed of biotic factors and are affected by abiotic factors.

4. Temperature, rocks, and _____ are abiotic factors.


abiotic parts:
water → all need it for survival
examples of adaptations → behavior or physical trait that enables something to survive in its environment.
deserts
cacti → thick cuticle
small leafed plants → reduced water loss
wildflower blooms → after late winter rain
transpiration
nocturnal animals → most active @ night
diurnal animals → rest during the hottest times
Sonoran Desert (AZ) → greatest biodiversity → variety of life

Meerkat Video

Scorpions: eaten by meerkats

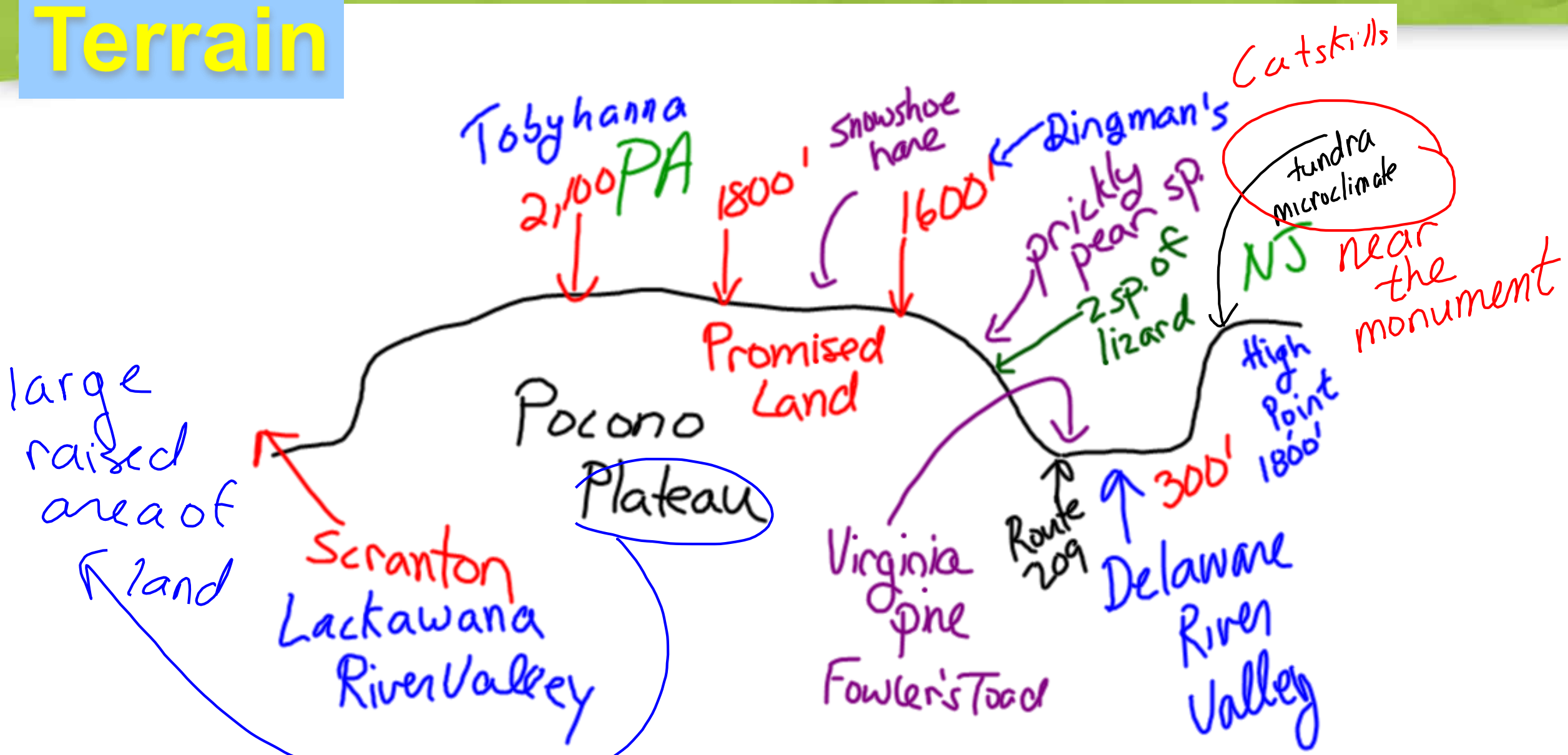
1. Hard exoskeleton: outer "shell" made of chitin (protein – known in biology as a macromolecule) that gives them *structure* and protection (the *function*)

2. Exoskeleton: prevents desiccation (loss of water)

Meerkat Adaptations

1. long claws → digging
2. close ears when digging
3. don't drink water → water needs from food.
4. dark markings around eyes → reduces glare
5. darker underneath → used to absorb heat on cool mornings.
   - most animals are lighter underneath

Terrain



https://www.youtube.com/watch?v=i9tkAa7vcZo

https://www.youtube.com/watch?v=A6-8pC8o5fw

Fowler's Toad

1. Specialist: unique or specific habitat needs
2. Habitat requirement(s): sandy soil
3. Where found: river floodplains

Virginia Pine

1. Habitat requirement(s): sandy soils, **indicator species**
2. Where found: river floodplains

Prickly Pear Cacti

1. **Habitat** requirement(s): lots of sun, dry, warm, well-drained soil
2. Where found: south facing steep slopes (cliff sides)

Five Lined Skink and Northern Fence Lizard

1. Reptiles: scales (folds in skin)
2. Legs: horizontal, extend sideways
3. **Habitat** requirements: lots of sun, dry, warm, well-drained soil
4. Where found: south facing steep slopes (cliff sides) – ectotherms

Snowshoe Hare

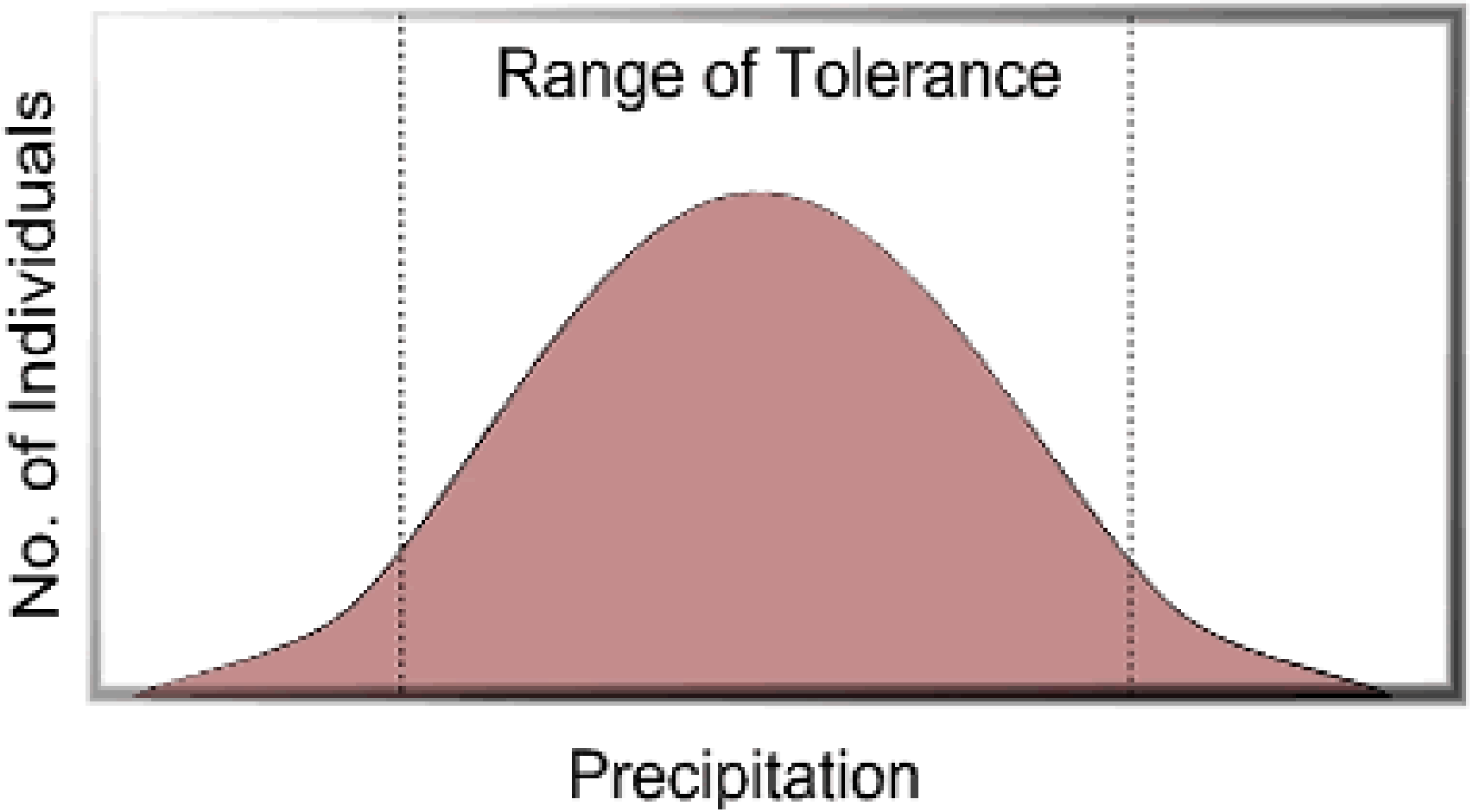
1. **Habitat** requirement(s): preferred plant foods, higher terrain/elevation
2. Where found: top of plateau

Habitat

- specific environment in which an organism lives
- provides an organism with **resources**—anything an organism needs to survive and reproduce - including food, shelter, and mates.

Tolerance

limits and conditions within which an organism can exist



Tolerance

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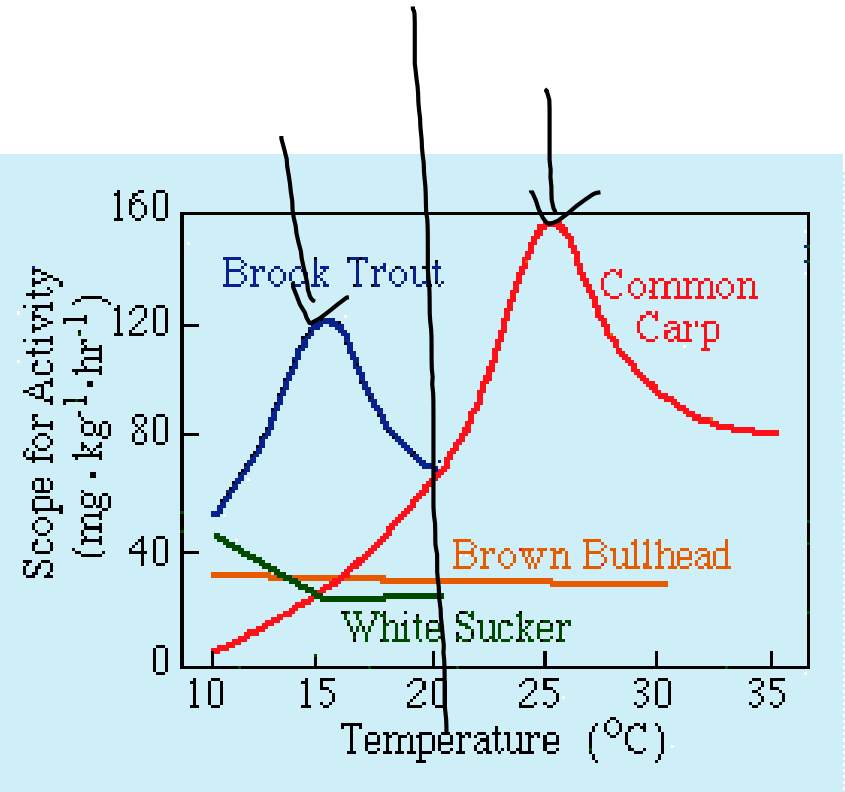
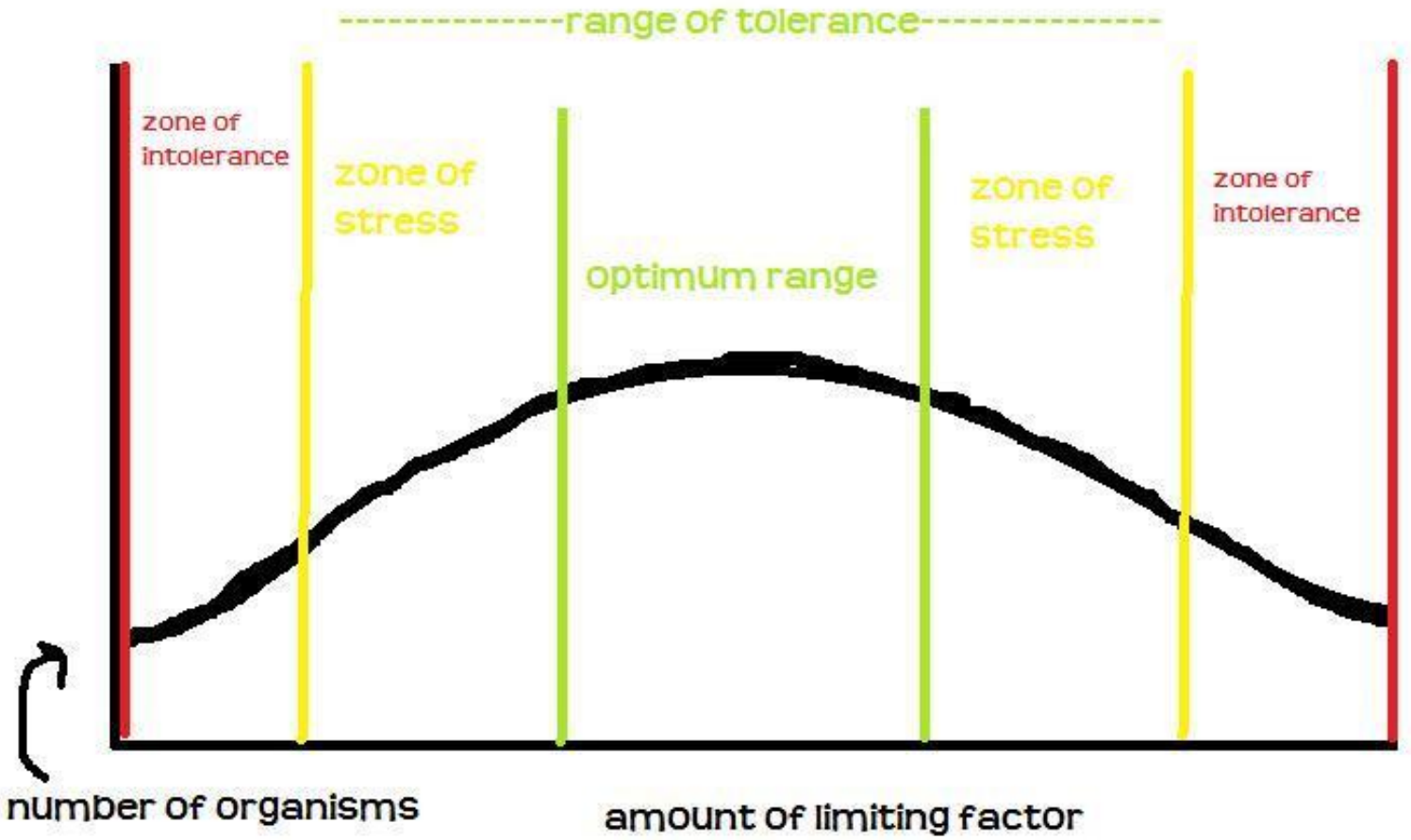




Video: Teachers Pet – Ecological Levels/Ecological Factors, Habitats/Niches…

https://www.youtube.com/watch?v=GlnFylwdYH4&t=10s

Video Recap: Teachers Pet – Ecological Levels/Ecological Factors, Habitats/Niches…

1. What is **ecology**?
2. Name 5 levels of ecological organization – from largest to smallest.
3. Explain the difference between the terms **ecosystem** and **community**.
4. Explain the difference between the terms **community** and a **population**.
5. Define the meaning of **biotic** and **abiotic**.
6. Explain the meaning of **habitat** and **niche**.
7. What is the difference between a **generalist** and **specialist?**

Video Recap: Teachers Pet – Ecological Levels/Ecological Factors, Habitats/Niches…

1. **Ecology**: study of how organisms interact
2. 5 levels of ecological organization: biosphere, ecosystems, community, population, organism
3. Difference between the terms **ecosystem** and **community**:
   community → All the living parts
   ecosystem → all the abiotic factors and biotic factors
4. Difference between the terms **community** and a **population**:
   community → all the biotic parts.
   population → single species.

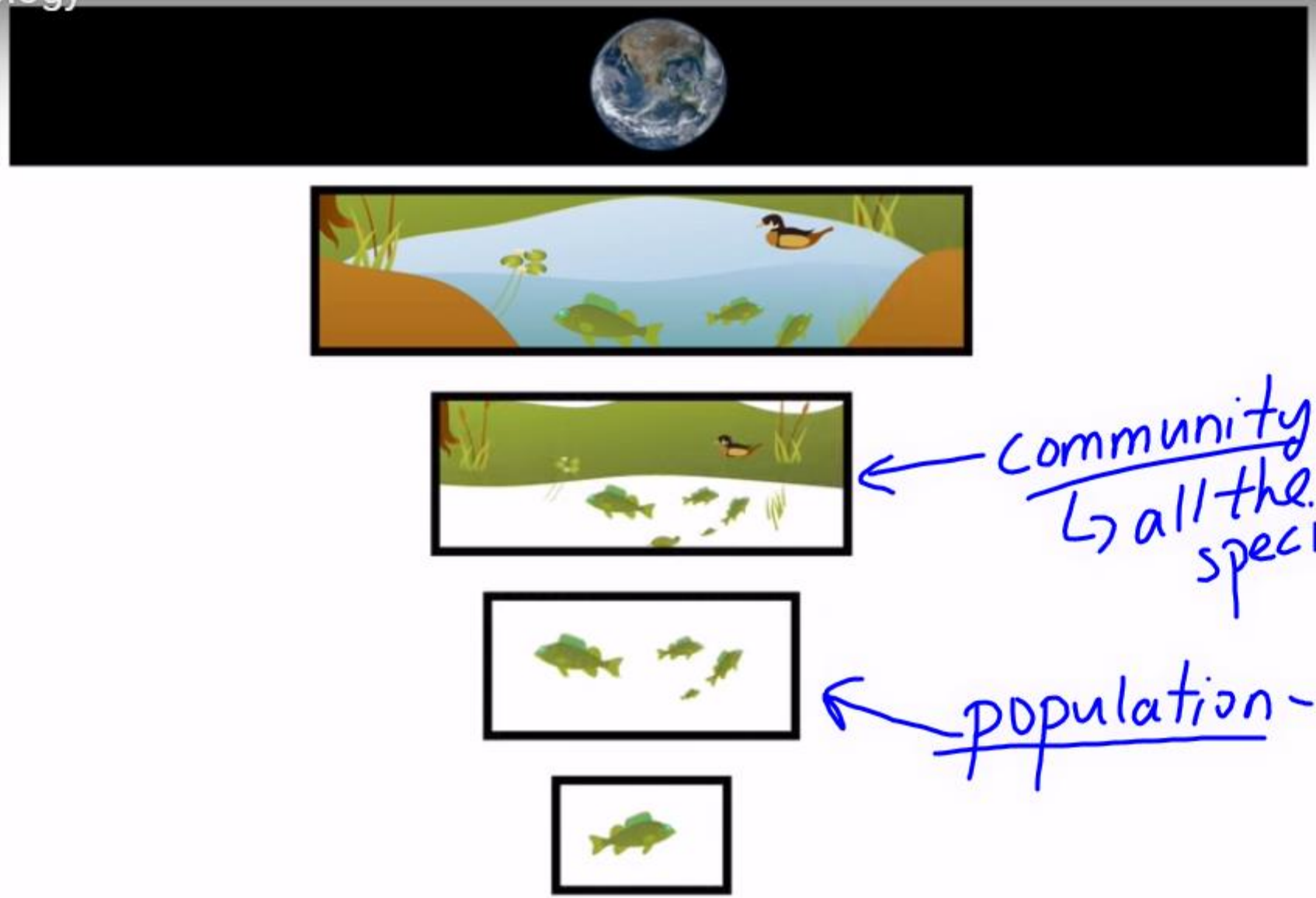
Video Recap: Teachers Pet – Ecological Levels/Ecological Factors, Habitats/Niches…

5. **biotic:** living **abiotic:** non-living
6. **habitat:** specific place → basic needs
   niche: role/job, how something survives
7. Difference between a **generalist** and **specialist:**

→ like a black bear
very adaptable
to a lot of environments/conditions.

→ like a koala bear
very specific needs, narrow range of tolerance

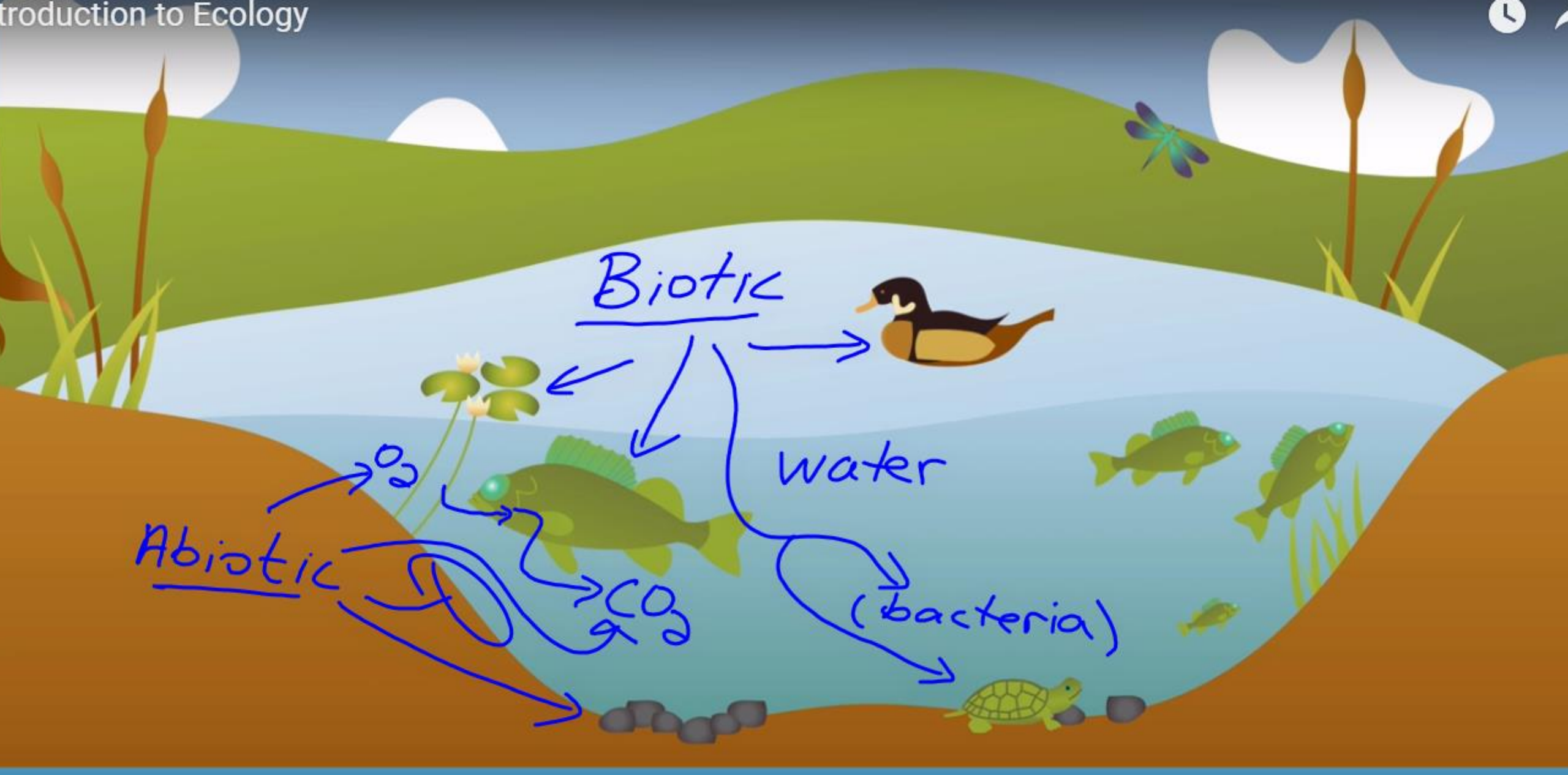
troduction to Ecology



levels of organization

2:49 / 4:46

troduction to Ecology



ecosystem

1:59 / 4:46

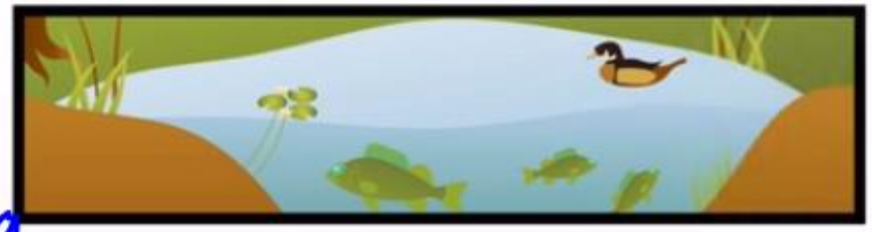
troduction to Ecology

community

2:24 / 4:46

troduction to Ecology

broad



living + non-living

ecosystem

abiotic

living (biotic)

community
↳ all the species

population
↳ 1 species

narrow

levels of organization

2:49 / 4:46