Principles of Ecology

How much do you know about the environment and the organisms that you share?

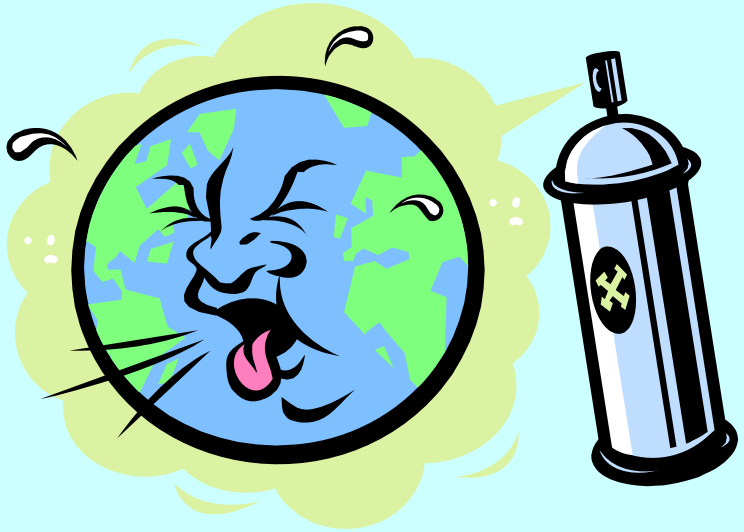
Define Natural History

- Study of plants and animals
- Where they live and grow
- What they eat and who eats them

Natural History

- How is understanding **Natural History** important to you and your environment?

- This research allows scientists to **evaluate** the **health** of our world.



What is ecology

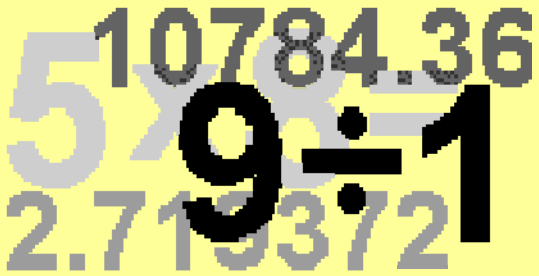
- Ecology is the study of **<u>interactions</u>** that take place between organisms and their environment.

Common Research Methods

- Name **<u>2</u> types** of **common research methods** used by ecologists.

1.) Descriptive method

2.) Quantitative method



What is a biosphere?

- Biosphere is a portion of Earth that supports living things.

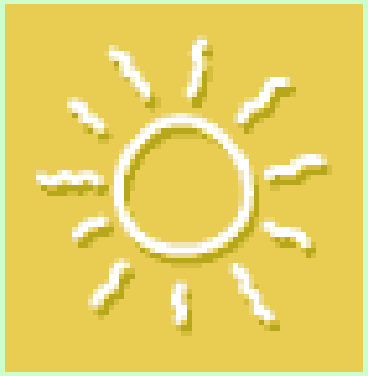
- Need to understand that it extend from **high** in the atmosphere to the **bottom** of the ocean.

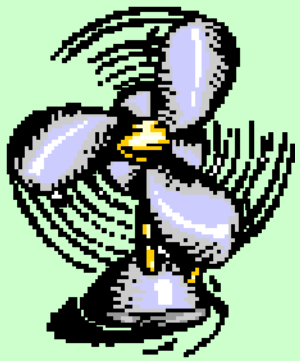
- Analogy: An apple peel

What are abiotic factors?

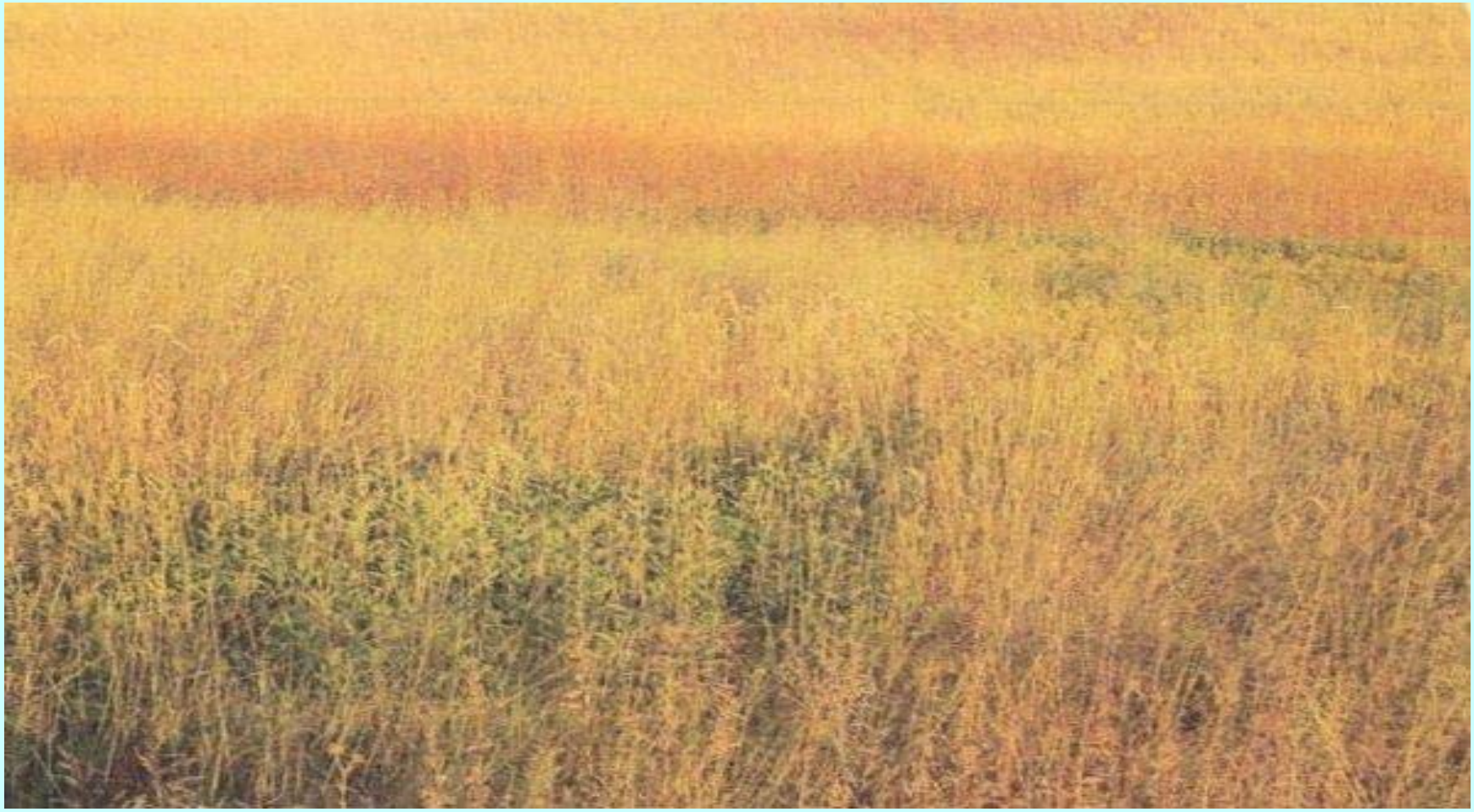
- Abiotic factors are the **<u>nonliving</u>** parts of an organism's environment.

- Examples include air currents, temperatures, moisture, light, and soil.





What changes in a grassland might result from a drought?



Grassland Drought

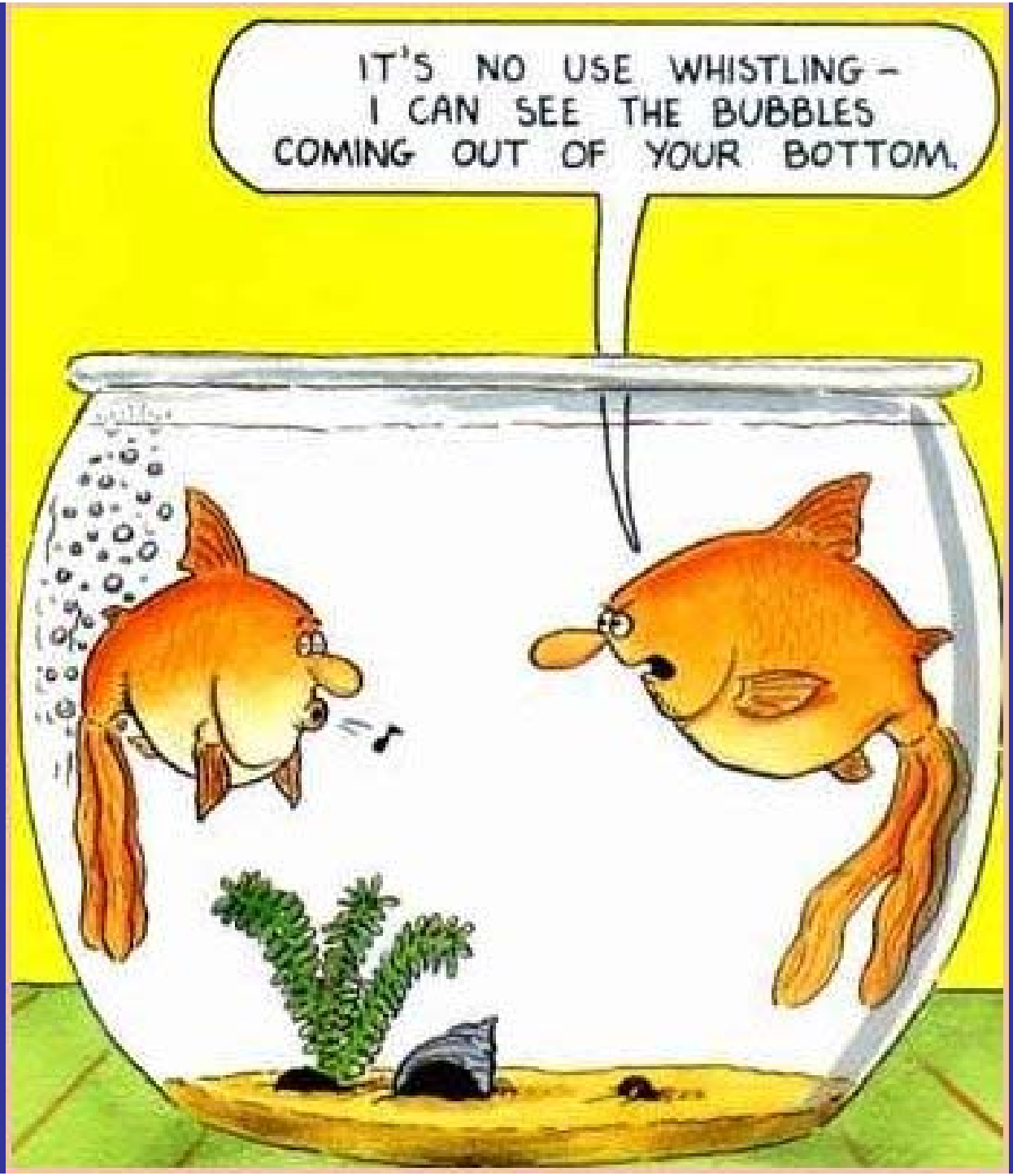
- Grasses grow slower
- Produce fewer seeds
- Animals that depends on these seeds would find it harder to survive
- Find another food source
- Migrate to new area
- Die

Take home message

- Need to understand that **<u>abiotic</u> factors** have obvious effects on living things and often determines which species survives in a particular environment.

What are biotic factors?

- Biotic factors are **all** the **living** organisms that inhabit an environment.


IT'S NO USE WHISTLING –
I CAN SEE THE BUBBLES
COMING OUT OF YOUR BOTTOM.

Goldfish

- Depend on other living things for food
- Food for other organisms
- Same species to reproduce

Take Home Message

- All organisms depend on others **directly** or **indirectly** for **food**, **shelter**, or **protection**.

Levels of Organization

- Organisms (at top of pyramid)
- An **individual** living thing that is made up of cells
- Uses energy
- Grows
- Reproduces

Levels of Organization

- Populations
- Group of organisms all of the **same species** which **interbreed** and **live** in the **same area** at the **same time**.

- Examples: humans, deer, frogs
- Competition: yes
- **Lower** competition through **adaptation**

Levels of Organization

- Biological Community
- Consist up of interacting **different** populations in a certain area at a certain time.
- A **change** in **one** population will cause **changes** in **another** population

Levels of Organization

- Ecosystem (bottom of the pyramid)
- Interaction among **different** populations in a community and the community's abiotic factors.
- Abiotic factors **changes** populations **changes** community **changes** ecosystems

Terrestrial Ecosystem: Land

Aquatic Ecosystem: Water

What is a habitat?

- A habitat is the **place** where an organism lives out its life.
- Examples include a lawn, stream, maple forest
- Habitats can **change** due to both **natural** and **human** causes

What is a niche?

- A niche is **all** the **strategies** and **adaptations** a species uses in its environment.
- In other words, its **specific role** or **job**.
- Responsible for food, shelter, reproductions, or defense.

- **<u>Unique</u> adaptations** and **structures** are important to a species' niche because they **<u>reduce</u> competition**.

What is symbiosis?

- Symbiosis is a close and permanent association between organisms of **different** species.
- Living **close** together.
- Mutualism, Commensalism, Parasitism

Mutualism

- Mutualism is when **both** different species **benefit** from each other.

- Ant provides defense

- Acacia tree provides home and nectar

Commensalism

- Commensalism is when **only one** species benefit and the other species is neither **harmed** or **killed**.

- Spanish moss hangs on larger trees to collect nutrients.

Parasitism

- Parasitism is when one species **derives** benefit at the **expense** of another species.

- Parasites harm but **do not** kill their host.

Tapeworms
Roundworms
Bacteria
Tics

What is a predator versus prey?

- **Predator** is an organisms that **does** the **hunting**.

- A **prey** is an organism that is **being hunted.**