

FOOD CHAIN AND FOOD WEB



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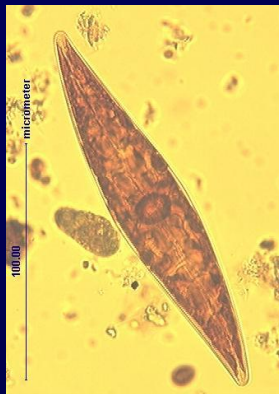
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AUTOTROPHS

- A groups of organisms that can use the energy in sunlight to convert water and carbon dioxide into **Glucose (food)**
- Autotrophs are also called **Producers** because they produce all of the food that heterotrophs use
- Without autotrophs, there would be no life on this planet
Ex. Microalgae, macro algae & Higher plants

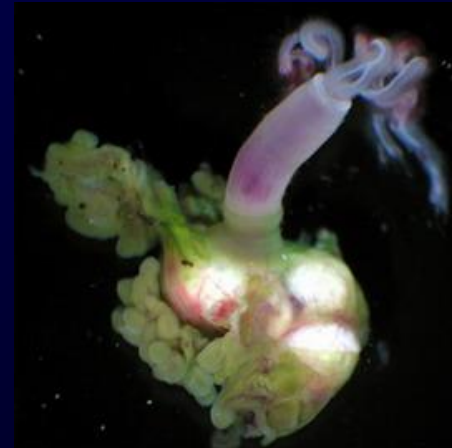
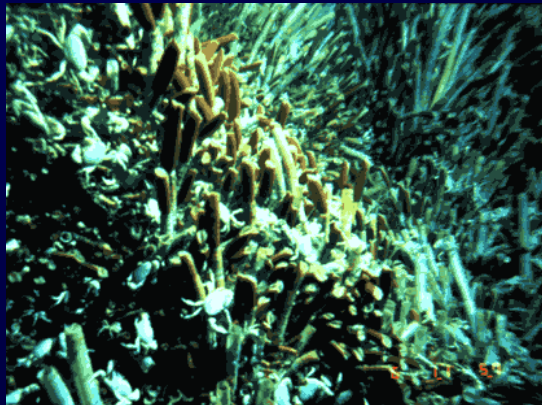


AUTOTROPHS

Chemotrophs

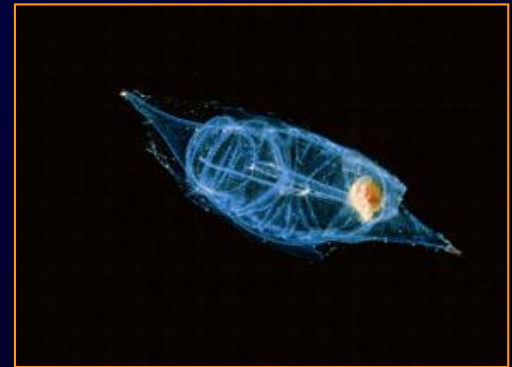
- Autotrophs that get their energy from inorganic substances, such as salt
- Live deep down in the ocean where there is no sunlight

Ex. Bacteria and Deep Sea Worms



HETEROTROPHS

- Organisms that do not make their own food
- Another term for **Heterotroph** is consumer because they consume other organisms in order to live
- Ex. Copepods, Chaetognatha, Salps



HETEROTROPHS

Consumers

- 1. **Scavengers/Detritivores**-feed on the tissue of dead organisms (both plants and animals)

Ex. Shrimp



HETEROTROPHS

Consumers

- 2. **Herbivores** – eat ONLY plants

Ex. – Sea cow (Dugong dugong)



HETEROTROPHS

Consumers

– 3. **Carnivores** – eat ONLY meat

Ex. Sharks & Polar Bears



HETEROTROPHS

Consumers

- 4. **Omnivores** – eat BOTH plants and animals

Ex. – Mullet



HETEROTROPHS

Consumers

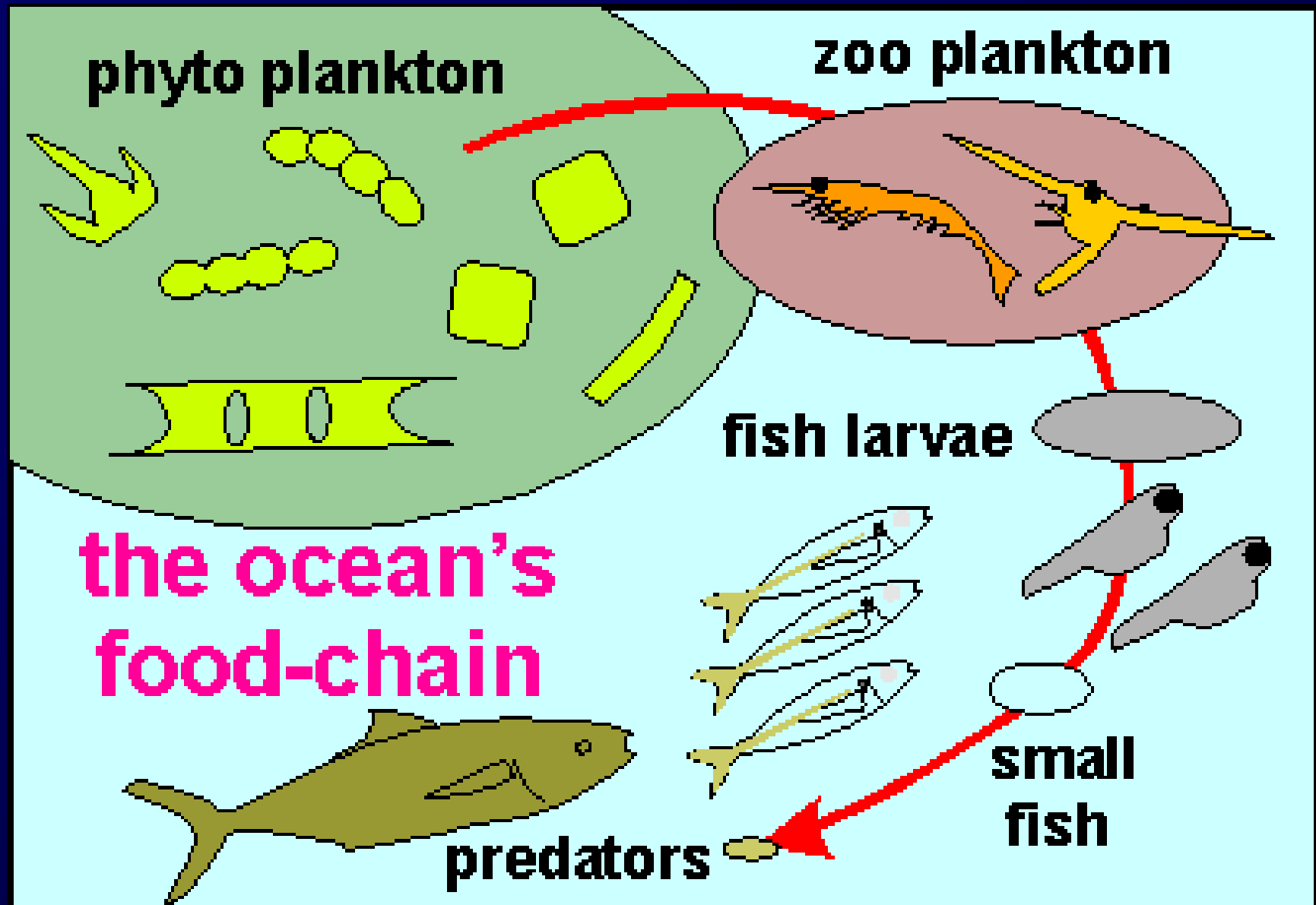
- 5. **Decomposers**-absorb any dead material and break it down into simple nutrients or fertilizers
 - Ex. Cat fish



FOOD CHAINS

- The energy flow from one trophic level to the other is known as a food chain
- A food chain is simple and direct
- It involves one organism at each trophic level
 - **Primary Consumers** – eat autotrophs (producers)
 - **Secondary Consumers** – eat the primary consumers
 - **Tertiary Consumers** – eat the secondary consumers
 - **Decomposers** – bacteria and fungi that break down dead organisms and recycle the material back into the environment

FOOD CHAIN

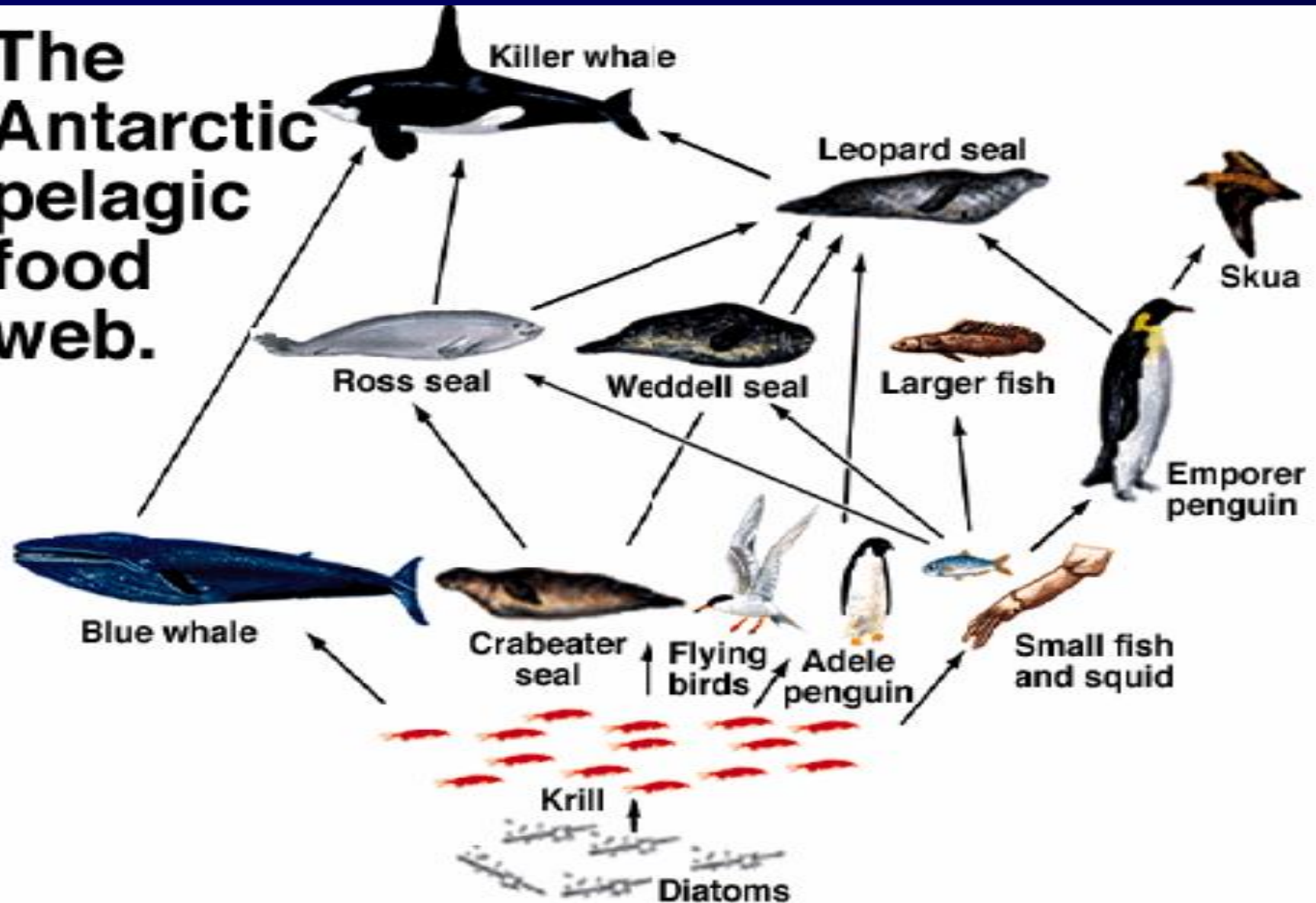


FOOD WEB

- Most organisms eat more the JUST one organism
- When more organism are involved it is know as a FOOD WEB
- Food webs are more complex and involve lots of organisms

FOOD WEB

The Antarctic pelagic food web.



BIOMASS

- The total mass of the organic matter at each trophic level is called biomass
- Biomass is just another term for potential energy-energy that is to be eaten and used.
- The transfer of energy from one level to another is very inefficient (10% Law)

Transfer of Energy

- When a copepod eats the algae, it does not obtain all of the energy the algae has (much of it is not eaten)
- When a fish eats a copepod, it does not get all of the energy from the copepod (much of it is lost as heat)

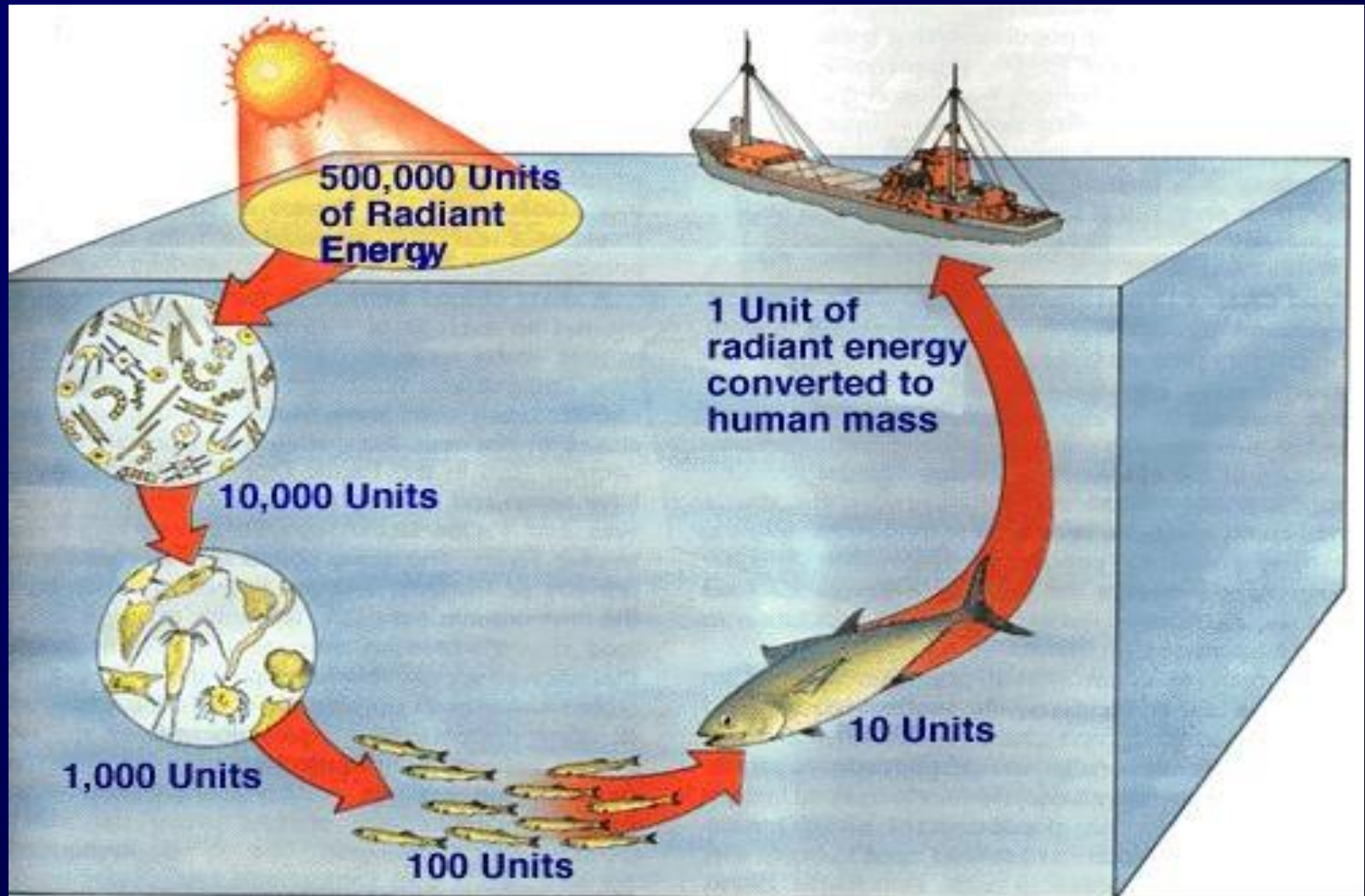
Transfer of Energy

- The two (2) previous examples of energy transfer show that no organism EVER receives all of the energy from the organism they just ate
- Only 10% of the energy from one trophic level is transferred to the next-this is called the 10% law

Transfer of Energy

- Energy moves from one organisms to another when it is eaten.
- Each step in this transfer of energy is known as a trophic level.
- The main trophic levels are producers, consumers, and decomposers.

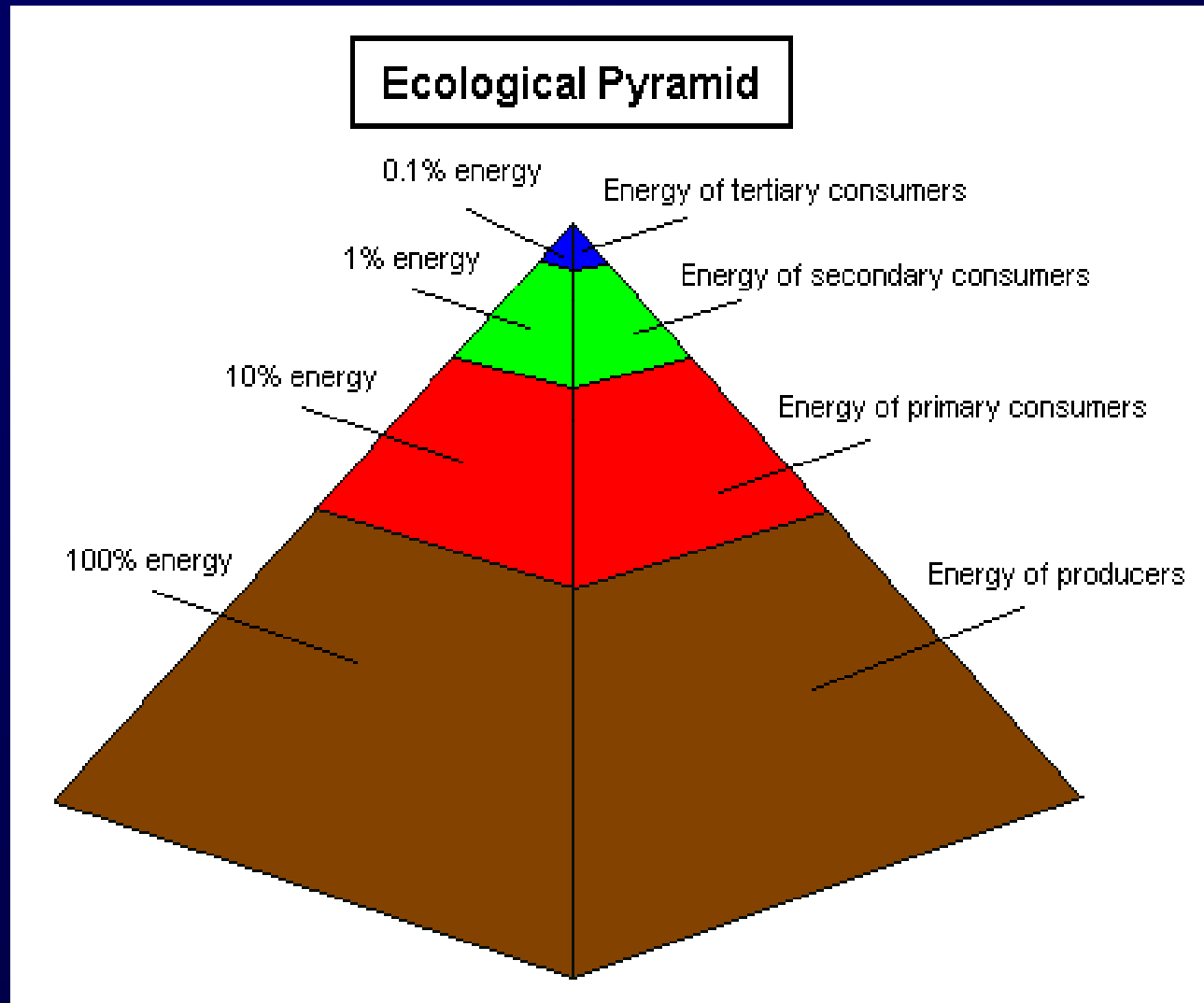
BIOMASS



ECOLOGICAL PYRAMID

- An ecological pyramid shows the relationship between consumers and producers at different trophic levels in an ecosystem
- Shows the relative amounts of energy or matter contained at each trophic level
- The Pyramid shows which level has the most energy and the highest number of organisms

ECOLOGICAL PYRAMID



SYMBIOSIS

A close and permanent association between organisms of different species

COMMENSALISM

A relationship in which one organism benefits and the other is not affected

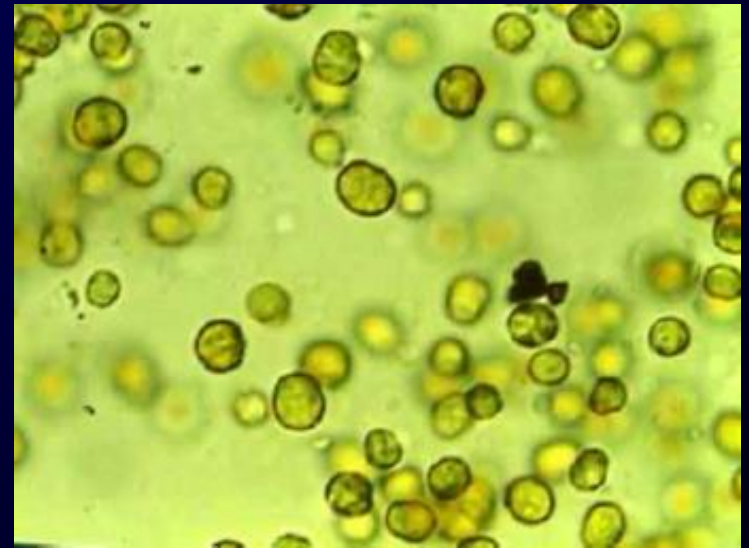
- Example: Barnacles on a whale



MUTUALISM

A relationship in which both organisms benefit from each other

- Example: Corals & *Zooxanthella*



PARASITISM

A relationship in which one organism benefits and the other is harmed

- Example: Isopod on a fish



ECOLOGICAL SUCCESSION

A change in the community in which new populations of organisms gradually replace existing ones

PRIMARY SUCCESSION

Occurs in an area where there is no existing communities and for some reason (s) a new community of organisms move into the area

SECONDARY SUCCESSION

Occurs in an area where an existing community is partially damaged

CLIMAX COMMUNITY

A community that is stable and has a great diversity of organisms