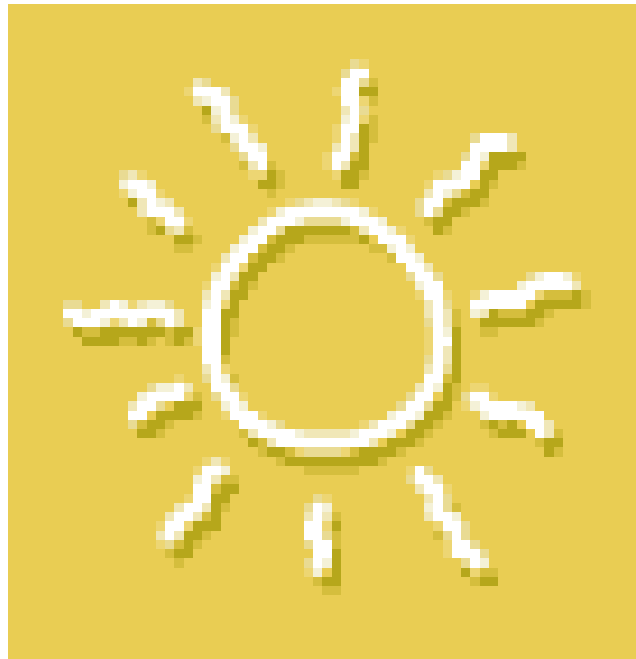


4.3

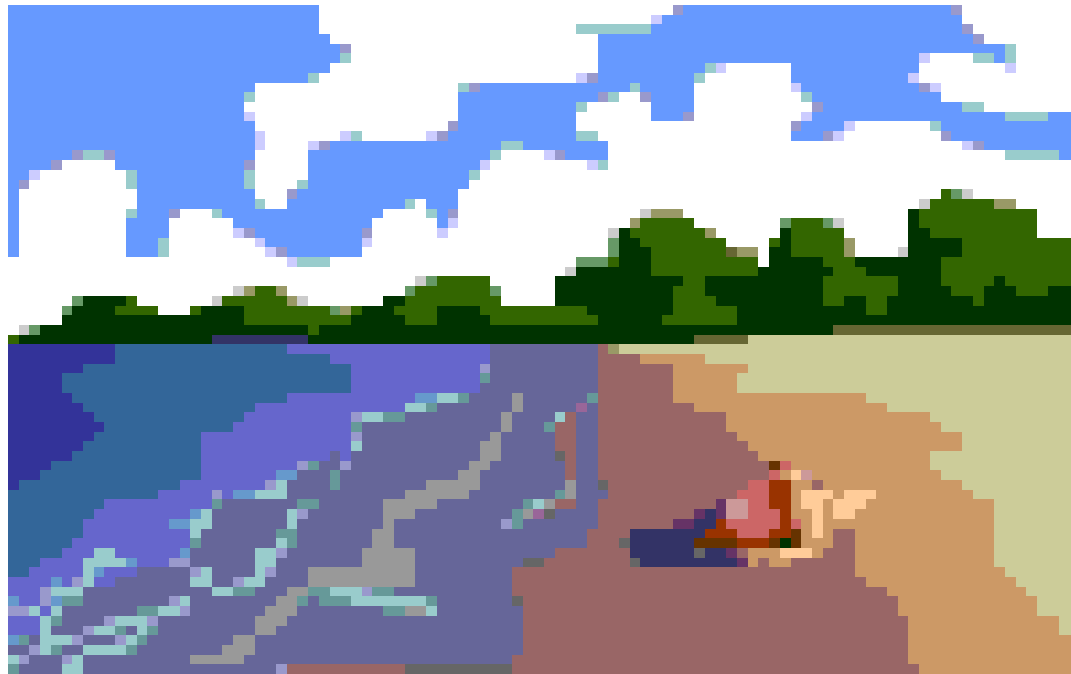
Energy in the Ecosystem

What do producers need to make organic matter through photosynthesis?



- ▶ The limited amount of energy available affects the structure and function of the food web.

How does energy from the sun
travel to the earth?



Waves

Where does this energy go?

- ▶ Some is immediately reflected back into space.
- ▶ Some is absorbed by Earth's surface or atmosphere.

What percent of energy that reaches Earth from the sun do plants receive?

- ▶ Less than 1%
- ▶ Of this energy, less than 30% is stored in organic form

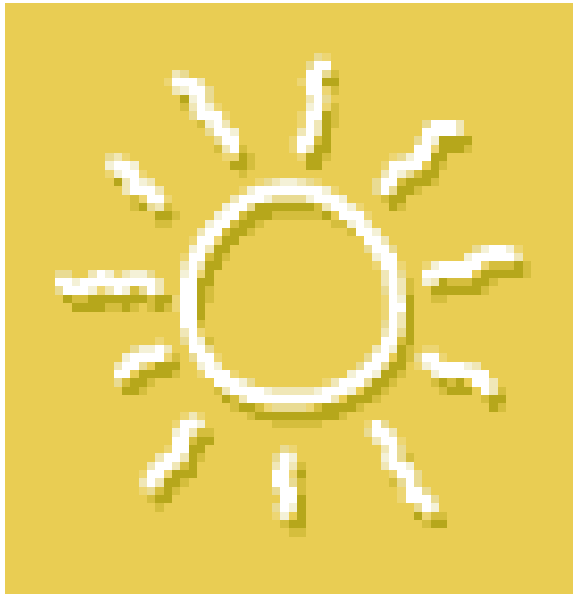
- ▶ This is enough energy for plants to make about 170 billion tons of organic matter each year.

What is biomass?

- ▶ The total amount of organic matter present in a trophic level.
- ▶ Another words food for the next trophic level.

Why do scientist measure biomass?

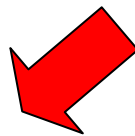
- ▶ To follow the transfer of



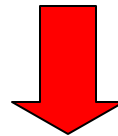
from one trophic level to the next.

- ▶ Only part of energy transferred to one trophic level gets passed on to the next level.

Why?

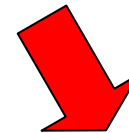


Motion



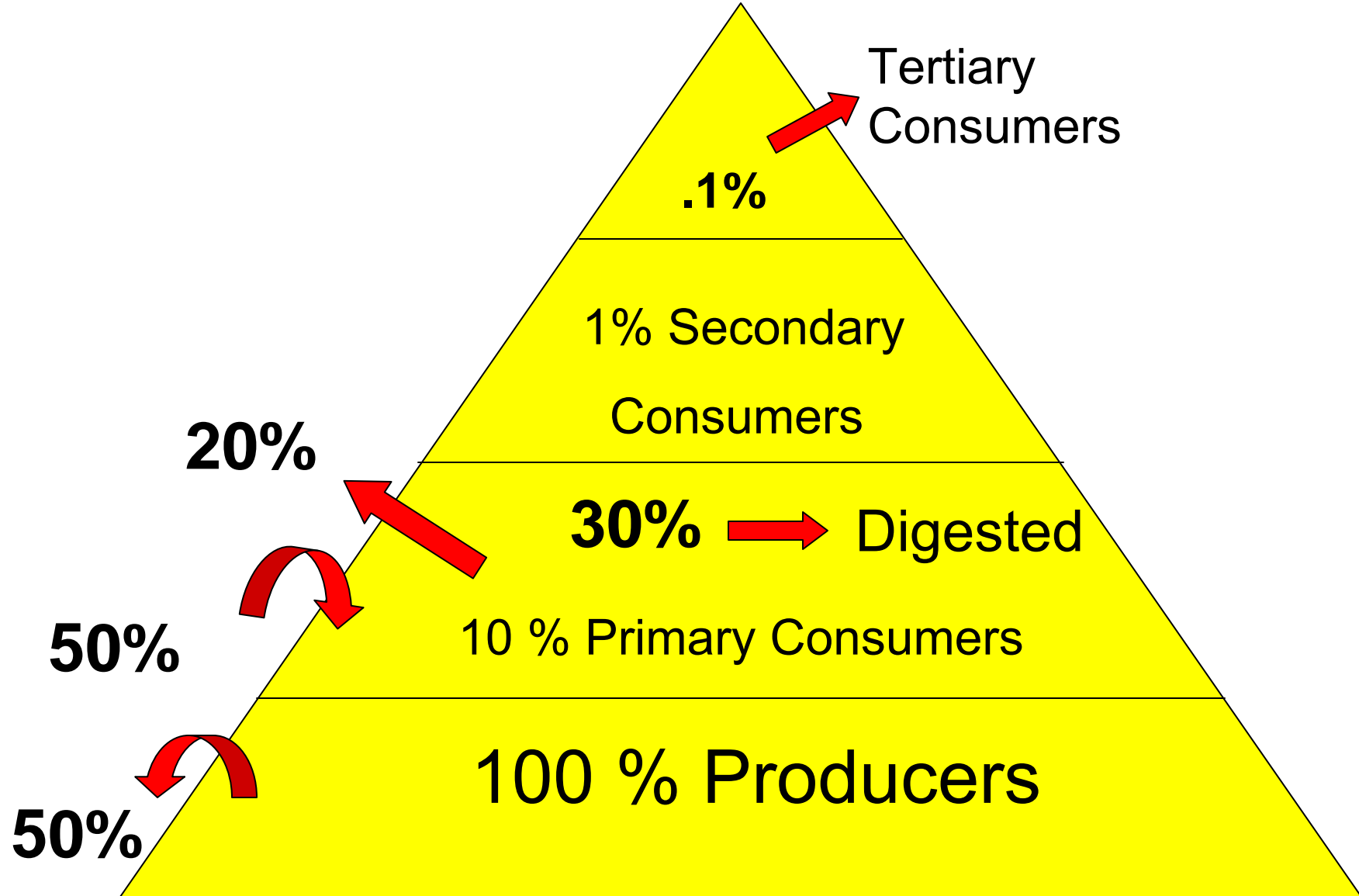
Generating

Heat



Other life

Processes



What is an ecological pyramid?

- ▶ A diagram that shows relative amounts of energy in different trophic levels in an ecosystem.

- ▶ An ecological pyramid can show energy, biomass, or the number of organisms in a food web.

What form does energy move between the trophic levels?

- ▶ In the form of food
- ▶ Carbon, Hydrogen, nitrogen, oxygen are the four main elements where the energy is stored in food
- ▶ Without these main elements, food cannot be produced

Therefore

The growth of producers in most ecosystems is limited by one of these 4 main elements and not by energy from the sun.