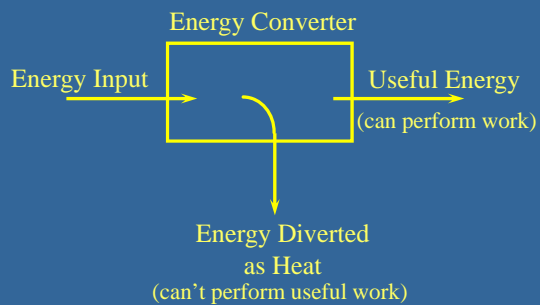


A Lesson of Ecology

Natural systems are maintained and constrained by processing energy.

True of the Earth & smaller ecosystems too!



Note: The first law of thermodynamics is met.
 $E_{\text{input}} = \text{Diverted } E + \text{Useful } E$

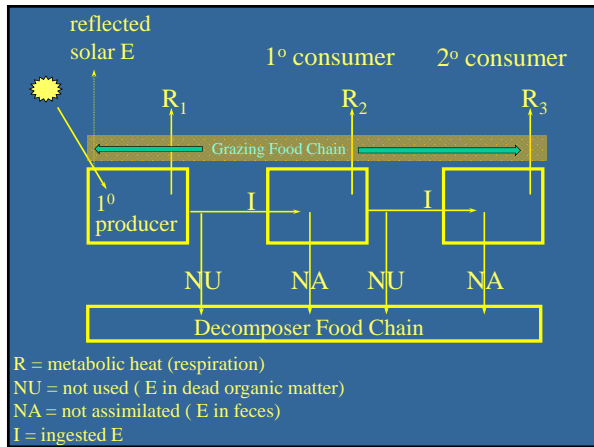
Species in an ecosystem are divided into trophic levels

- Trophic levels are determined by the main source of nutrition for a species.
- Trophic levels are given names:

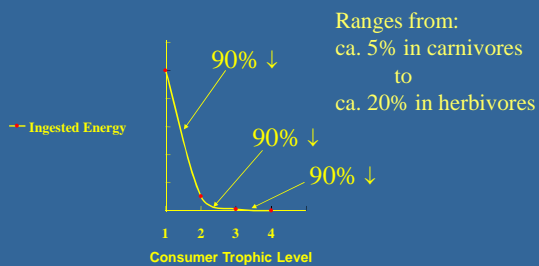
Lectures 20

Trophic levels

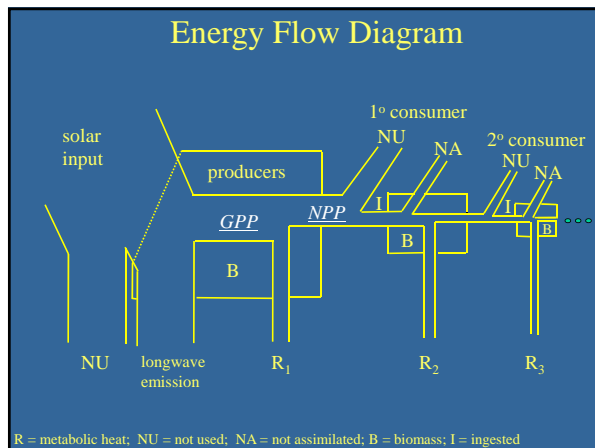
- In most terrestrial ecosystems, there are usually no more than 4 trophic levels.
- The transfer of energy as food (chemical E) from producers to higher trophic levels forms a food chain.

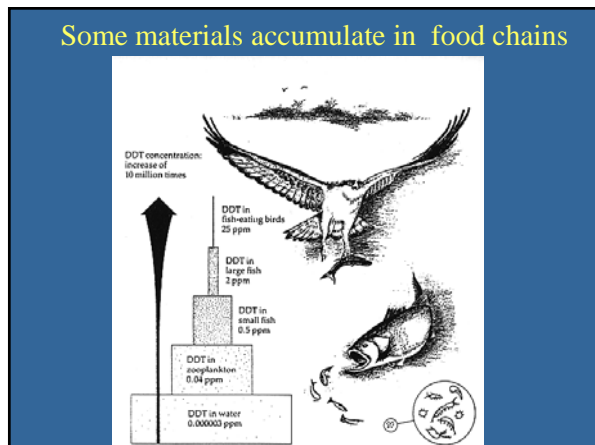


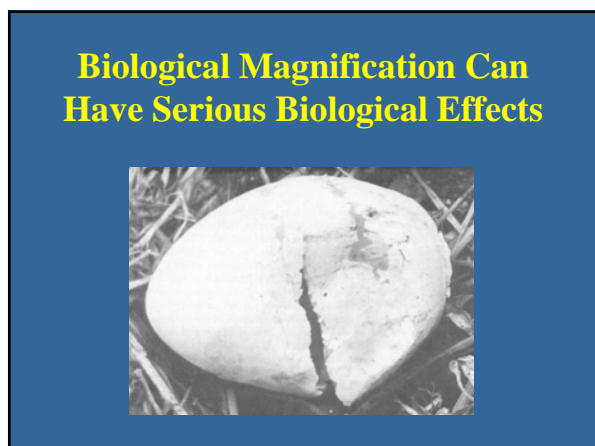
10% rule of thumb



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Lectures 20

Biological amplification may affect populations the least able to cope with high concentrations.

Two – Four eggs per year