

Energy movement in ecosystems 1.11 cont.

Energy flow from the sun must obey the laws of thermodynamics. *heat*

1<sup>st</sup> Law: Energy can be converted in its form but cannot be created or destroyed.

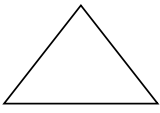
2<sup>nd</sup> Law: As energy is transformed some of it is *lost*. In a food chain the amount of energy available decreases as you move up the chain.

This energy is lost *90%*

1. In the *waste produced (feces, urine)*
2. In providing *energy to run cells*
3. In *maintaining body temp.*

*90% of available*

ECOLOGICAL PYRAMIDS are used to help visualize the energy flow through a food chain or web. See fig. 6



A Pyramid of *numbers* is drawn by counting the actual number of organisms that exist at each level. The number of organisms generally *decrease* as you move up to higher trophic levels, but may increase from producer to primary consumer in some cases.

For example:

There may be hundreds of insects such as aphids feeding off a single tree.

A pyramid of *biomass* shows the DRY mass (with water removed) of material at each level. See fig 9

May 22-3:29 PM