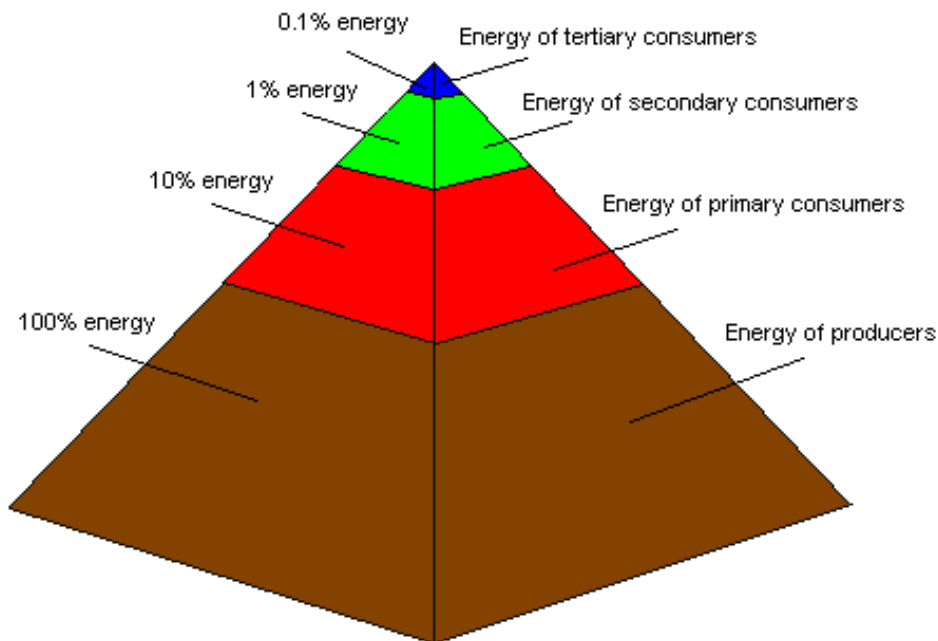
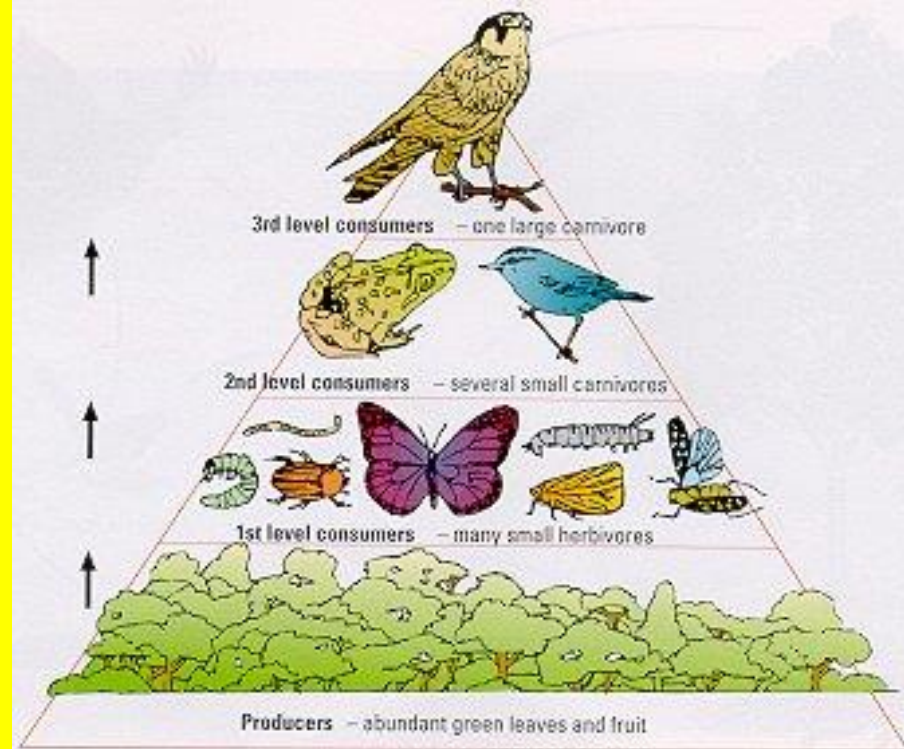


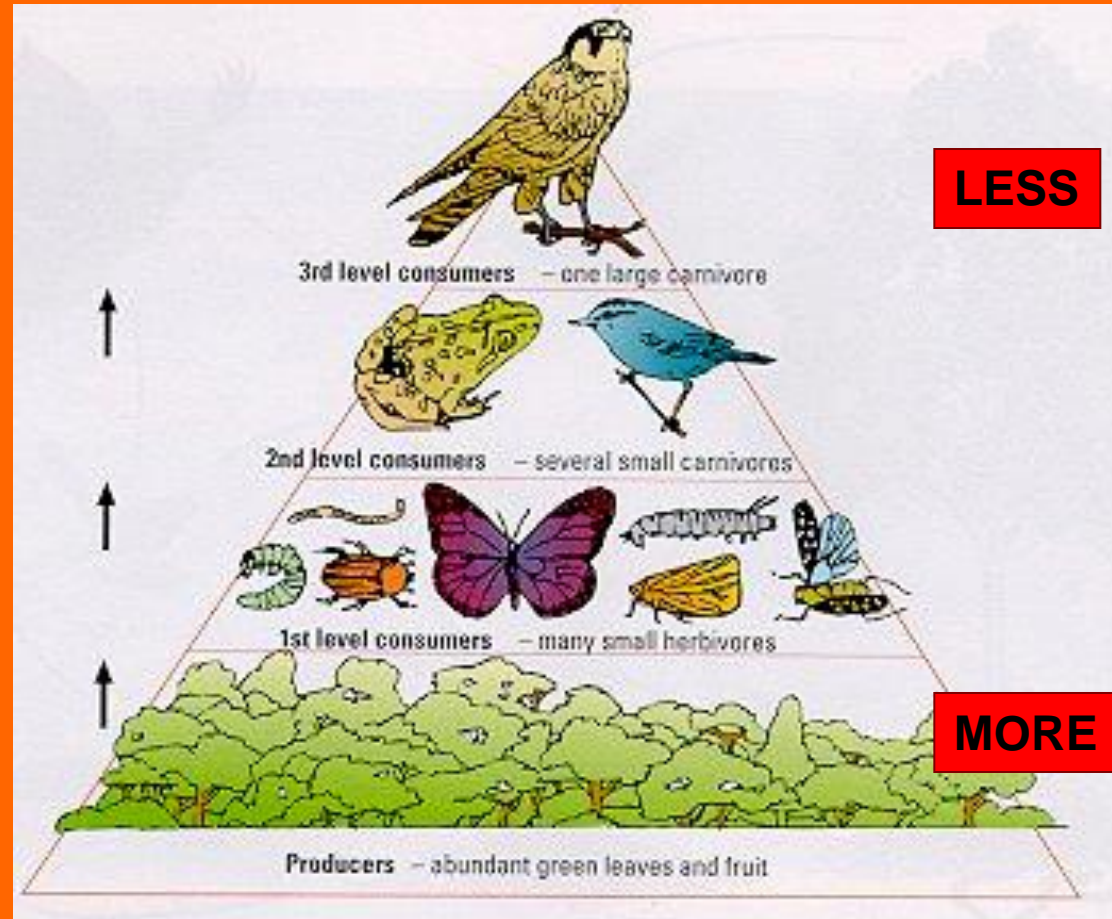
# Unit 3 Part 2



Food  
Pyramids  
p. 95-100

# Define Food Pyramid

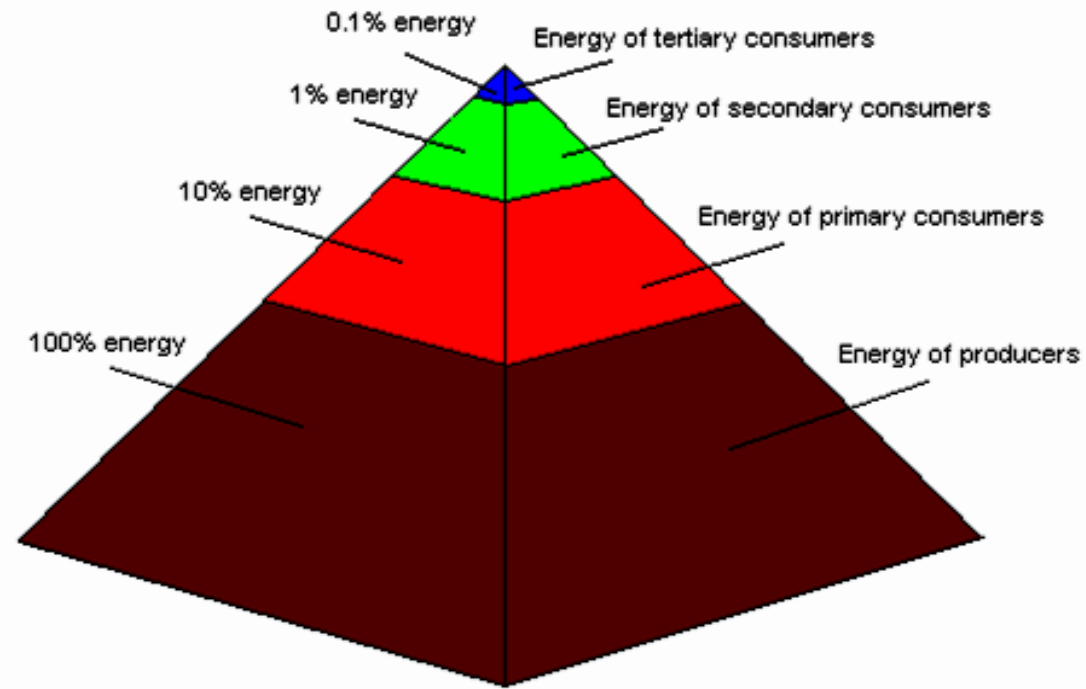
- **Diagram showing each trophic level as a horizontal bar.**
- **Producers are located on bottom**
- **Higher consumers are placed on top of each other.**
- **Each bar is drawn in proportion to the mass of organisms**
- **More mass at the lower levels, less at the top...hence the triangular shape!**



# Why are there fewer organisms at each trophic level?

P. 97

If humans became primary consumers only, then more of the human population could be supported.

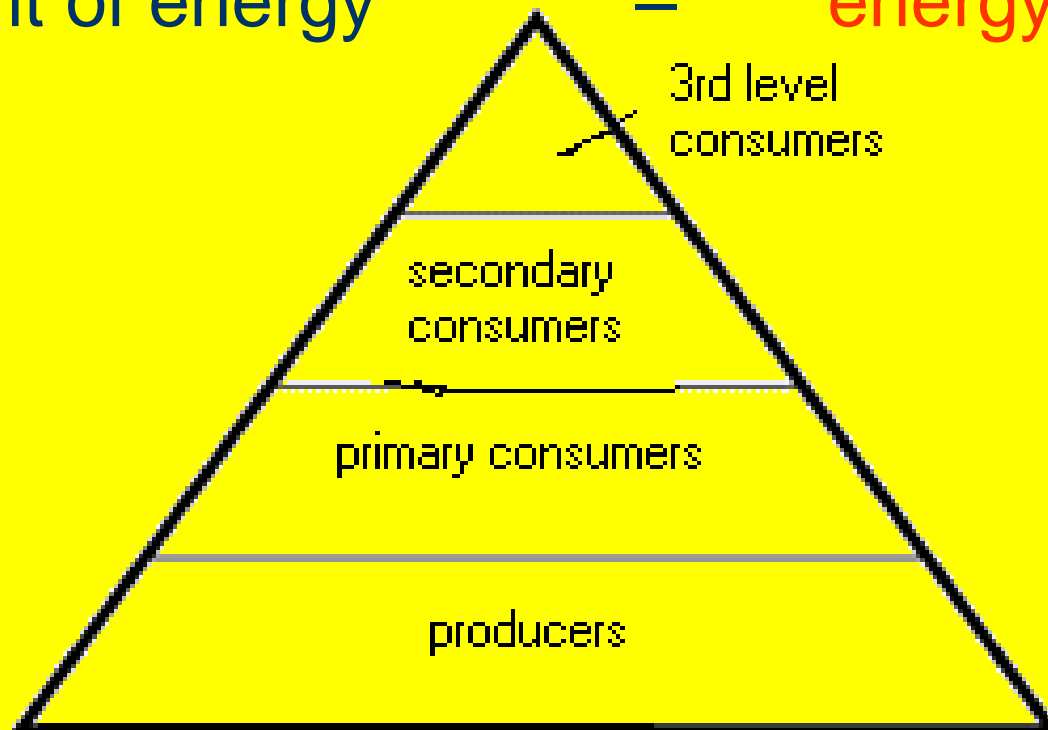


- As you go up the food chain, less energy is available at each higher level.
- **(1/10<sup>th</sup> of lower level). Remember 90% is used up!**
- Organisms higher up have to eat MORE food from lower levels to survive.
- Therefore, fewer organisms can obtain energy to live = fewer organisms are at each higher level.

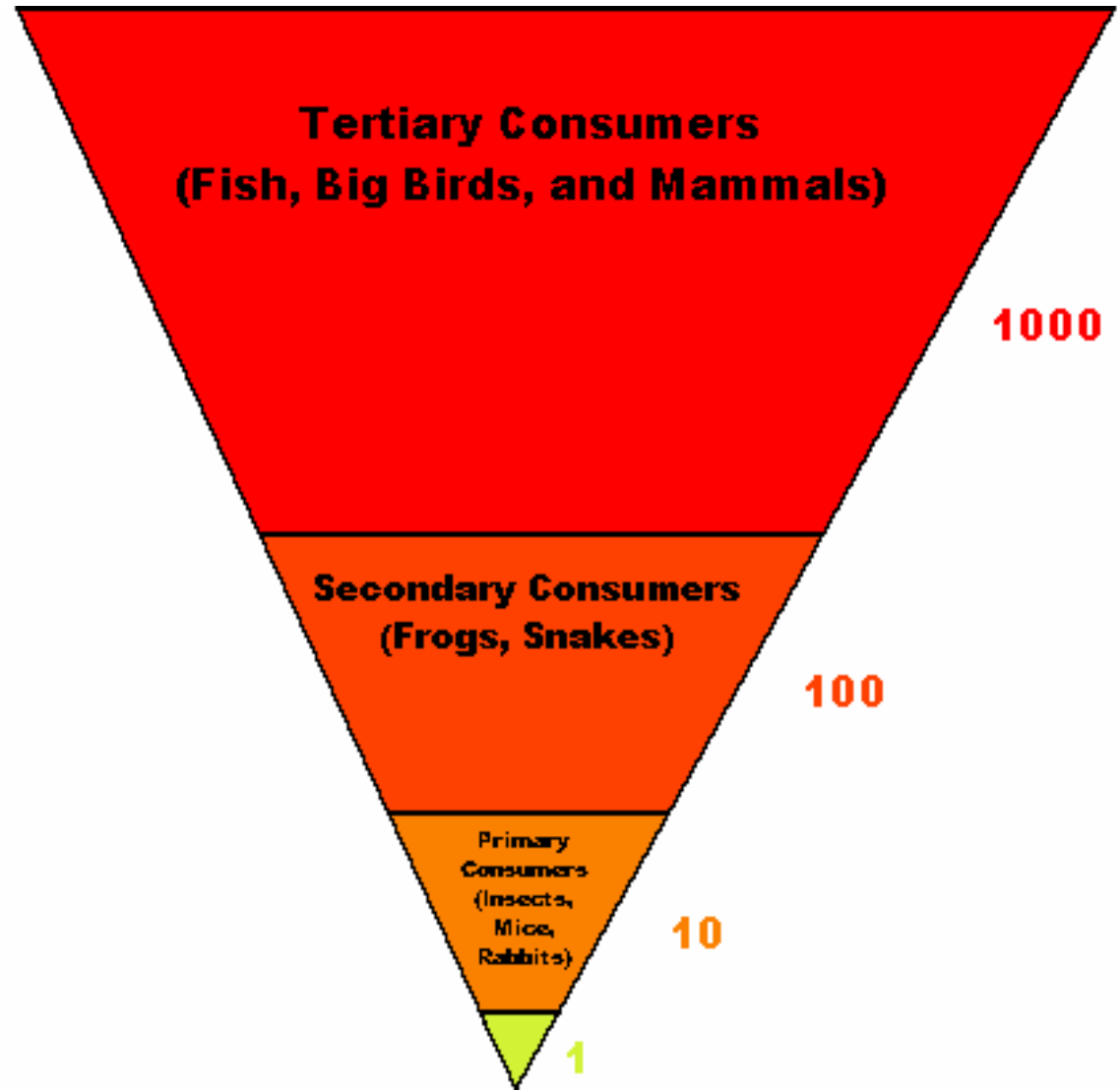
# Higher means Less!

The higher up you go, there is less:

- a. Mass of organisms — food pyramid
- b. Number of organisms — pyramid of numbers
- c. Amount of energy — energy pyramid

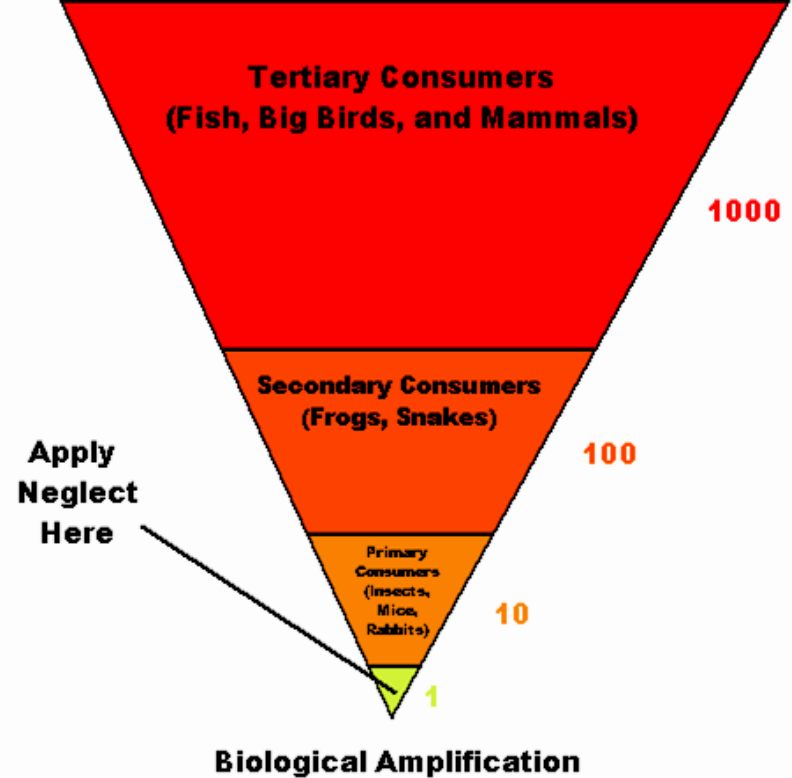


# Why is this pyramid upside down?



***Biological  
Amplification***

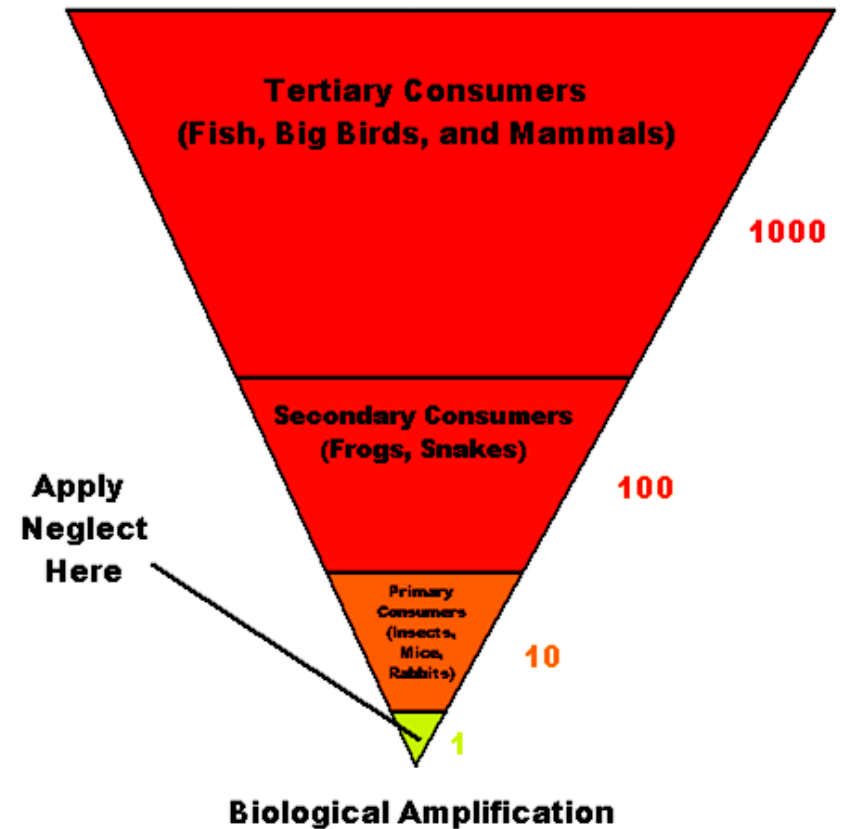
# ***Biological Amplification***



- Biological Amplification is the tendency of pollutants/toxins to become more concentrated in higher trophic levels.
- Often, this is to the detriment of the higher order organisms in which these materials concentrate, since the pollutants are often toxic.
- Also referred to as Biological magnification

# Biological Amplification – simplified!

- **FACT!** - Some toxins (DDT & mercury) are stored in fat and are **NOT** water soluble or excreted.
- Plants/organisms at lower levels take in toxins.
- **Animals higher up eat MANY of these lower organisms to obtain enough energy.**
- Taking in **MORE** toxins as well = build up of toxins is much higher in these higher up consumers.



**Consumer- eats 3 fox**

**Coyote**

**= 300 units of toxins  
built up**



**Consumer- eats 5  
rabbits**

**Fox**

**= 100 units of toxins  
built up**



**Consumer- eats 20  
shrubs**

**Rabbit**

**= 20 units of toxins  
built up**



**Producer**

**Shrub**

**= 1 unit of toxin**



# How do food pyramids help explain DDT amplification? P. 97 (Handout!!)

- DDT was a particularly dangerous toxin because it is fat soluble and stays in an animal's fat. *(Some poisons are water soluble and can be excreted from the system.)*
- Lower order organisms ingest some poison which is store in their fat.
- Higher order organisms eat large numbers of lower order organisms. *(Ex. A small amount in a frog becomes large in a hawk that eats 100 frogs.)*

# Introduction of new species?

- What could be the probable impact that:
  - the recent arrival of coyotes on the island of Newfoundland may have on the local ecosystem?
  - the introduction of snowshoe hare or even the moose to the island of Newfoundland?
  - the introduction of chinch bugs when it arrived through sods imported from mainland Canada?

# Possible Effects ???

- Elimination/disruption of their food sources/species.
- Competition for food sources may cause decline or endanger other native species that eat same food source.
- Diseases or DANGER may be introduced causing decline or disruption.
- May cause interruption or decline in economic activity related to lost/declining species. (ex. Moose & Caribou)
- Financial cost to subsequently control new species.
- May cause the CREATION OF NEW BUSINESSES... to control the species, tourism etc..
- The new plant/animal could be a FOOD SOURCE for the local ecosystem.