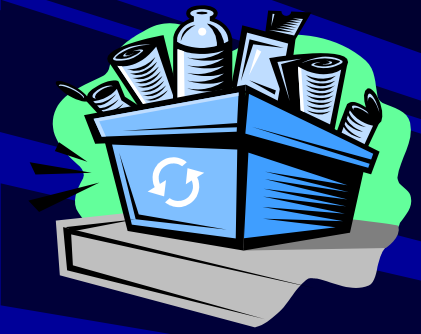
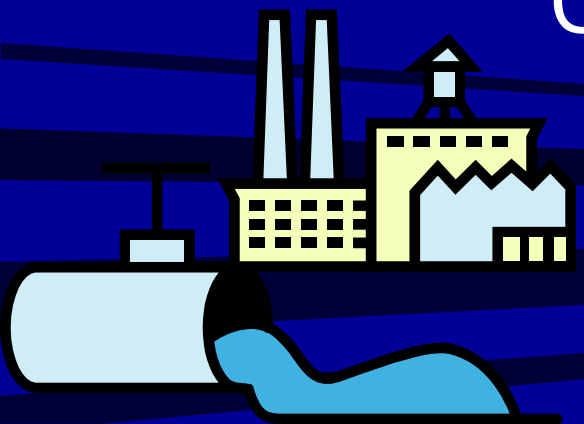


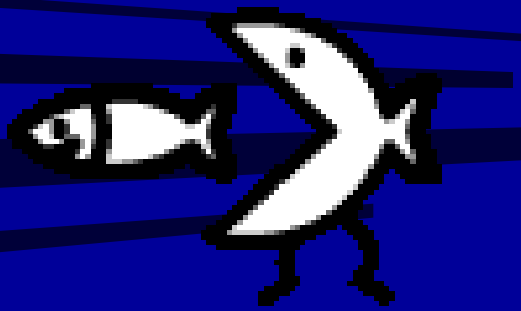
Ecology Unit

Notes to replace section assessments and Chapter reviews

Summer School

Chapters 13,14,15,16





Ecology and Relationships

Ecology is the study of interactions amongst living things, the environment and their surroundings.

Community is a group of different species interacting in the same place at the same time.

Ecosystems are a group of communities that are interacting in the same place at the same time.

Biomes are the major regions on the planet that are characterized by a fairly common climate and plant communities. We live in the Chaparral Temperate in Murrieta.

Biotic and Abiotic Factors

Biotic factors (bio= life) are the living things in an ecosystem that play specific roles in that environment.

Abiotic (A= not or no) are the non things (rocks, temperature, sunlight) in an environment affect the biotic items.

Biodiversity is the variety of organisms in the biosphere.

Keystone Species are a vital species to an environment see page 403 and draw the visual vocab.

Energy in Ecosystems

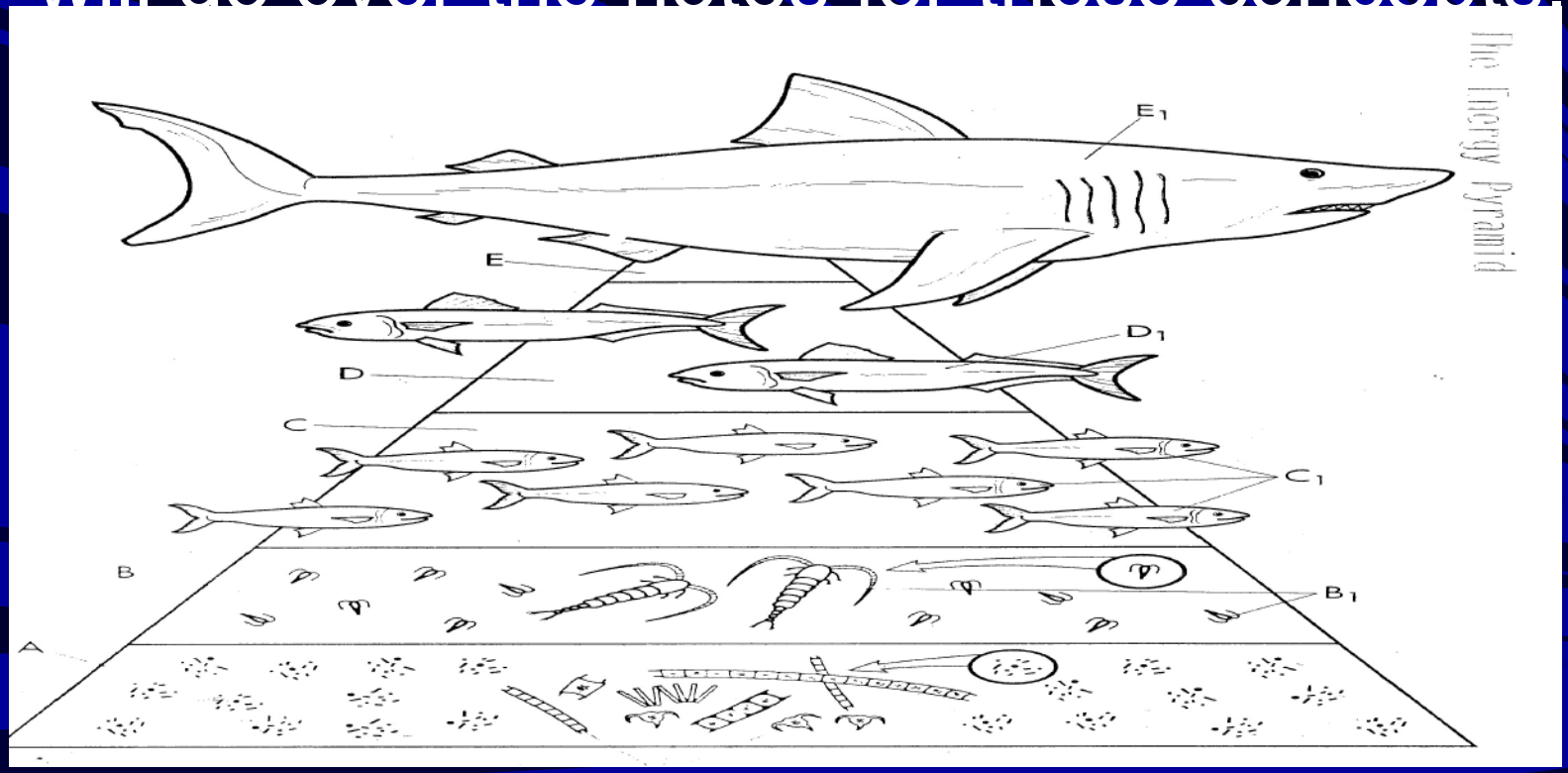
Producers are the Autotrophs (auto=self, troph= feeder) of the ecosystem. Plants and Algae.

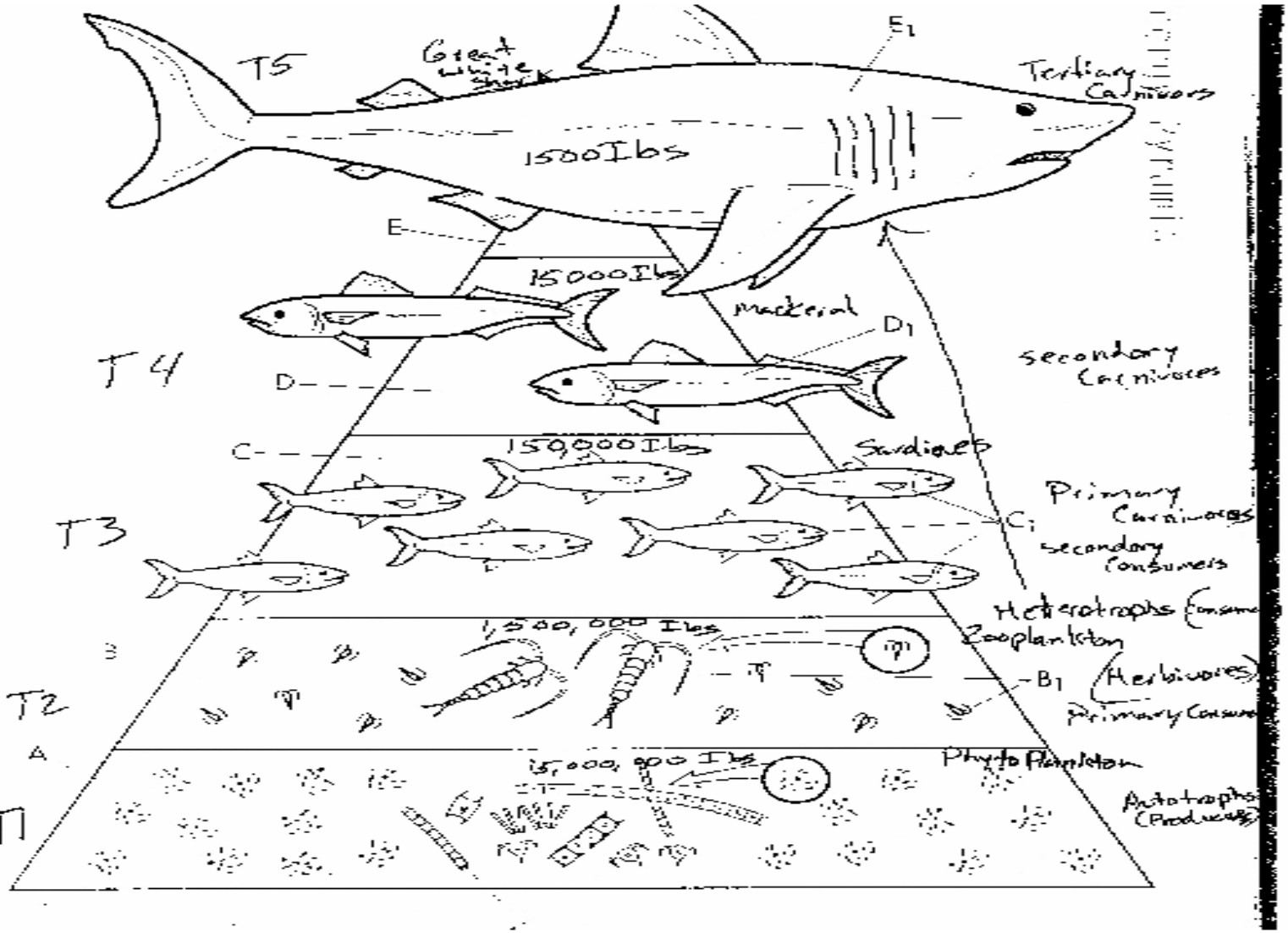
Consumers are the Heterotrophs (hetero= different troph= feeder) of the ecosystem. Animals, fungi, protists.

Chemosynthesis is the process of produc carbohydrates without the use o sunlight.

Food chains and food webs

- Using the image below draw this and we will go over the notes for these concepts.




T5
Great White Shark
1500Ibs
E
E1
Tertiary Carnivores
T4
15000Ibs
mackeral
D
D1
secondary Carnivores
T3
C
150,000Ibs
Sardines
C1
Primary Carnivores
secondary Consumers
1,500,000 Ibs
Heterotrophs (Consume
Zooplankton
T2
B1
Herbivores
Primary Consum
A
15,000,000 Ibs
Phyto Plankton
T1
Autotrophs (Producers

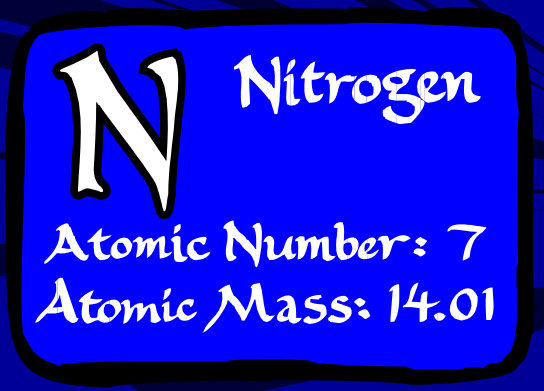
Cycling Matter

Hydrological cycle (hydro= water) Tne movement of water through the biosphere both biotically and abiotically

Biogeochemical cycle (Bio= life Geo= Earth) Carbon-

Nitrogen-

Phosphorous- One way cycle



Habitat and Niches

A Habitat involves all the biotic and Abiotic factors in an environment.

A Niche is how an organism interacts with it's environment. How it finds nourishment, and "earns a living" in it's surroundings

Competitive exclusion is when 2 species compete for the same resource and the winner pushes the other species out of the niche causing it to emigrate or go extinct

Symbiosis- Interaction between 2 different species where at least on benefits from the interaction.

Mutualism ☺ and ☺ both benefit and put energy into the interaction

Commensalism ☺ and 😐 one benefits without harming the other. Only the beneficiary puts energy into the relationship

Parasitism ☹ and ☺ Parasite puts energy into the relationship and Host puts energy into attempting to stop the interaction.

Population Density-Number of organisms living in a particular space at a particular time

See page 437

Clumped- draw visual vocab

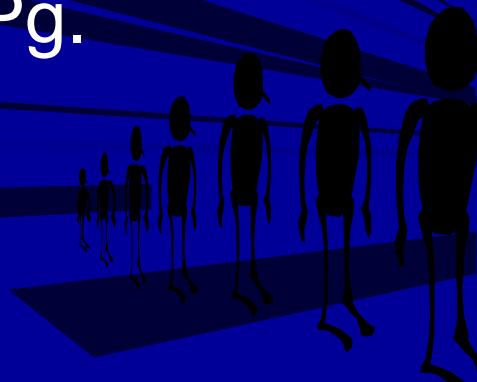
Uniform-

Random-

Survivorship curve- Number of surviving members over time from the number of measured births. Copy the figure 14.8 from page 439.

Exponential Growth Pg. 441 Draw fig. 14.9

Logistic Growth with Carrying Capacity Pg. 441Draw fig. 14.11



Limiting Factors-Anything that prevents the continued growth of a population.

Density Dependant Factors- affected by the number of individuals in a given area. Can include: Competition, Predation, Parasitism and Disease.

Density Independent Factors- aspects of the environment that limit the population growth regardless of the population size. Can include: Unusual weather, Natural disasters, and human activities

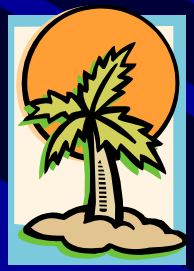
The Biosphere

The Biosphere is the part of earth where life exists and the Biota is the life that exists there.

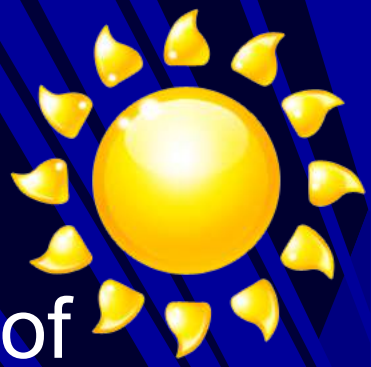
Hydrosphere is Earth's Water, Ice and Water Vapor

Atmosphere is the air blanketing the solid and liquid surface

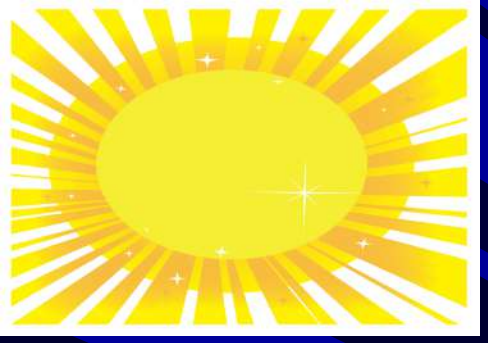
Geosphere is the solid rock such as continents and sea floor



Climate

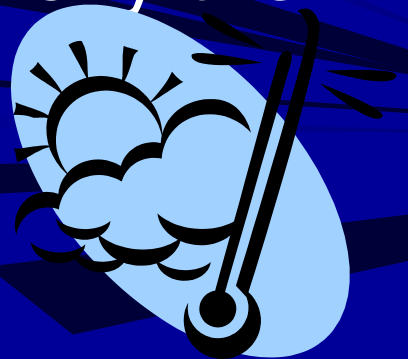


- The climate is the long term pattern of weather conditions in a region of the earth
- A microclimate is the climate of a small specific place such as a hole in a rotting log that a mushroom will grow in
- 3 types of climate zones: Polar, Tropical, and Temperate. All influenced by the suns rays and amount of sunlight.



Biomes

- 6 biomes: Tropical Rain Forest, Grasslands, Desert, Temperate Forests, Taiga (coniferous forest), and Tundra
- Biomes are directly influenced by the amount of precipitation and sunlight they receive. The more rain and sunlight the greater the plant growth and generally the more diversity of species.



Marine Ecosystems

- See Figure 15.11 on page 469 and draw the image and label the zones.
- Plankton is any organism that is too small or feeble to swim against the current. Zooplankton are animals and Phytoplankton are plant like.

Chapter 16 Human impact on Earth

Ecological Footprint-your impact on the planet. How much you contribute to waste and use of natural resources See figure 16.4 page 487

Pollution-any undesired factor to the environme Could be as simple as heated water or trash along the road

Smog and Particulates foul the air. We are getting better at this!

Global warming or enhanced greenhouse effect is occurring as a result of an increase in greenhouse gasses in the atmosphere trapping heat in the air that would otherwise escape

Biomagnification

See figure 16.11 that shows how pollutants increase as the material goes further up the food chain.

Threats to biodiversity include habitat fragmentation such as roads and other man made barriers cut organisms off from areas they need.

Invasive species can outcompete or overhunt native species. This is why it is illegal to purchase a ferret or gerbils in California. The state does not want these to become invasive in the wild and cause our native animals to reduce

Sustainable development

- These are methods that help keep resources going like using reforested lumber to build homes and buildings.
- Umbrella species like the Florida manatee are protected therefore the whole community is protected.