TROPIC NEWS

DEPARTMENT OF PLANNING AND NATURAL RESOURCES

DIVISION OF FISH AND WILDLIFE

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TROPHIC LEVELS

Trophic levels describe the idea that higher levels of a food chain contain fewer numbers of individuals. At lower levels, individuals tend to be smaller in size and more numerous. For example, thousands of microscopic marine plants and animals (plankton) are required to support one grouper, which is near the top of the food chain.

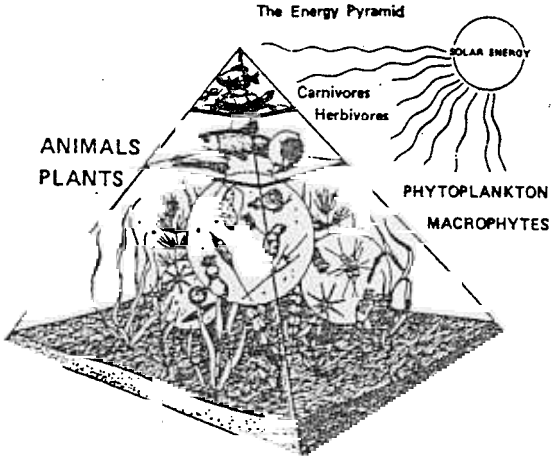
Since upper level carnivores are larger and fewer in number, more energy is needed to maintain these organisms than lower level consumers and producers. With regard to these levels, energy always flows in one direction - "up" - and is consumed in the process.

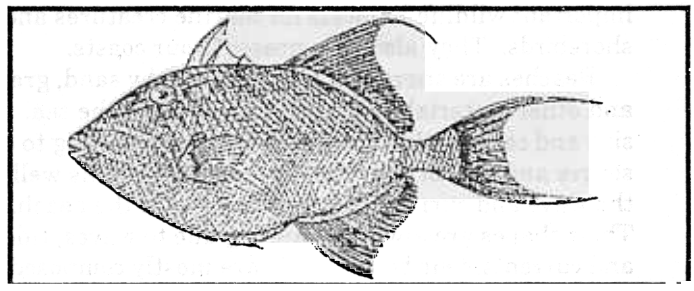
We can think of this flow in terms of an energy pyramid, with large numbers of producers forming the foundation. Fewer numbers of primary consumers fill the middle levels while even fewer numbers of secondary consumers occupy the peak. The energy pyramid depicts the transfer of energy in an ecosystem from the microscopic plants (phytoplankton) to the final consumers, the carnivores, at the peak.

It is more efficient to eat a low level producer (vegetables, fruits, and grains) than a high level consumer (fish and meats) because less energy is used.

According to John Robbins in his book "Diet For A New America", "Less than half the harvested agricultural acreage in the United States is used to grow food for people. Most of it is used to grow livestock feed....For every sixteen pounds of grain... fed to beef cattle, we get back only one pound as meat on our plates."

By eating food from the lower trophic levels we avoid unnecessary energy consumption and make better use of our limited natural resources.





The Queen Triggerfish, *Balistes vetula,* is a thin-bodied fish who gets its name from its dorsal spine, which, when erected, is locked into place by a smaller spine behind it, the "trigger". It does not have normal scales like most coral reef dwellers, but is covered with a thick, rough blue-green colored "skin". The skin was once dried and used as sandpaper. It can be seen grazing on coral reefs with its strong beak-like mouth and sharp teeth. The Queen Triggerfish is a graceful swimmer, undulating its soft dorsal and anal fins through the water. Also known to most islanders as the "Old Wife", it is a specialty at some local restaurants.

"CURSES, BATMAN!"

An old adage in wildlife research is that you need at least two and a half years to do a research project; 6 months devising a brilliant research plan, 6 months discovering the plan won't work, 6 months coming up with a new plan, and a year to actually conduct the research. The first part of that adage recently came true with a research project on fruit bats on St. Croix.

We had planned to use bat detectors to locate the roosts and feeding trees of the local fruit bats. The detectors enable the ultrasonic sounds produced by insect-eating bats to be heard by the human ear. What we didn't plan on was that the detectors don't work on fruit bats because their ultrasonic sounds are much softer than the echolocating sound of insect -eating bats.

Now it's on to "Plan B" - radio telemetry.

COMING SOON

- ROCKY SHORELINES
- ARTIFICIAL REEFS IN THE V.I.
- TERN NESTING UPDATE

BEACH HABITATS

Most everyone knows a great deal about the subject of beaches: they are the natural habitat for tourists, snorkelers, windsurfers, sun worshippers, and sand castle builders. Important components of this habitat include a bar that serves ice cold beer, a chaise lounge, and a nearby restroom.

What some people don't realize is that beaches are important wildlife habitats for marine creatures and shorebirds. They also help preserve our coasts.

Beaches are shoreline areas covered by sand, gravel, and other material from both the land and the sea. The size and composition of beaches varies according to the source and rate of supply of these materials, as well as the wave and current processes acting on the beach. Their shapes are always changing due to waves, tides, and currents. Our beach sands are mostly composed of coral fragments, broken shells, calcerous algae, and sea urchin skeletons.

Most Virgin Islands beaches are undergoing erosion at varying rates. Erosion rates are usually greatest on exposed windward coasts where there are no offshore reefs to break the wave energy. Protected beaches inside deeply indented bays are more stable.

Development along the shoreline produces serious erosion when the existing vegetation is removed. The roots of salt-tolerant plants and trees along the beach act as stabilizers for the sand, and also help filter debris and pollutants before it reaches delicate coral reefs. These include coconut palms, seagrape, bay cedar, sea purslane, and goatsfoot.

Small creatures such as crabs, clams, worms, and sand dollars can be found along the beaches. Sea turtles come ashore to lay their eggs in the sand. Some terns nest in the sand along the beaches.

We must respect these areas when we use them for recreation.

Trees were saved by printing on recycled paper

WEATHER & WILDLIFE

Someone once said "climate is what you expect, weather is what you get". Natural selection adapts fish, wildlife, and plants to the climate, but they must also be able to adjust to unusual weather. Adaptation is not always easy.

The ground-nesting Least Tern and the Memorial Day Weekend rains on St. Croix offer an example.

The Least Tern nests on dry salt pond beds and hard-packed beaches well away from any vegetation. Because the mongoose avoids such open areas, the tern has been able to nest on St. Croix where other ground-nesting seabirds cannot.

The salt pond areas normally remain dry until the end of the nesting season, in late August. The early flooding of the ponds by recent rainstorms destroyed the eggs. Some birds may try to nest again, but the only available habitats include Hess Oil facilities and the still flood-prone Long Point Bay. Many of these birds will not reproduce this year.

The Least Terns have a life expectancy of 15 years or more, so this will not have a serious affect on the nesting population. However, several years of such unusual weather could cause the local extinction of this species.

QUOTE

"We shall require a substantially new manner of thinking if mankind is to survive."

Albert Einstein

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