A common definition of culture is shared learned behavior, although there are theoretical problems with this. Can there be a culture if only one person is still alive who practices it? Is this the same as a language existing if only one person speaks it?

Learned is contrasted with innate – a problem theoretically. Most comparative behavioral scientists stress the innate compounded and are "ethologists" like Konrad Lorenz. Others stress the learned approach (Skinner). Still others like Piaget are developmentalist. T.C. Schneirla on the other hand feels that the opposite of "learned" is not "innate" and so setting up these categories is problematical. Rather he sees things developing but in a different way than Piaget.

There are over 70 definitions of "culture" in the dictionary of the social sciences so you pays your money and takes your pick!

Languages have a set of rules (often called grammar) which people have in their heads, but are frequently not conscious of.

All speakers of any language know how to make up sentences in that language.

One can think of culture as a set of rules like a grammar for the way to look at the world – how it is perceived and how one should behave.

In language, we know that sounds, words, phrases and sentences have rules. You can say "The man walks the dog" and other English speakers will understand you. You cannot say "The the man dog walks" and expect to be understood.

So what then are the parts that are involved in the nature of culture?

WHAT IS THE NATURE OF CULTURE

Symbolism may be one of the main components. The nature of the symbol is x stands for y arbitrarily so different cultures may symbolize different things with the same symbol. It differs from "signs" in that signs have an actual relationship with the thing they represent. The word "dog" is a SYMBOL for the furry animal. It changes from language to language. If a dog steps in mud and leaves a foot print that is a SIGN of the furry animal. It does not vary from place to place.

Symbols however, can be abstract categories as well. Such concepts as "sacred" and "profane"; "private" and "public" are categories which cannot

be located by physical tests in the real world, so they can be thought of as "symbolic" categories.

So at a societal level, various social organizations can be found, but there is also a symbolic level. Some social scientists think of an organizational part of society (social organization) comprised of such things as family and other social, political and economic organizations and a symbolic area in "human societies"

CULTURE Cultures are often divided into 2 parts – the areas dealing with social structure – everything from the family up to complex governments; and symbolic aspects – religion, ethics, belief systems folklore and so on.

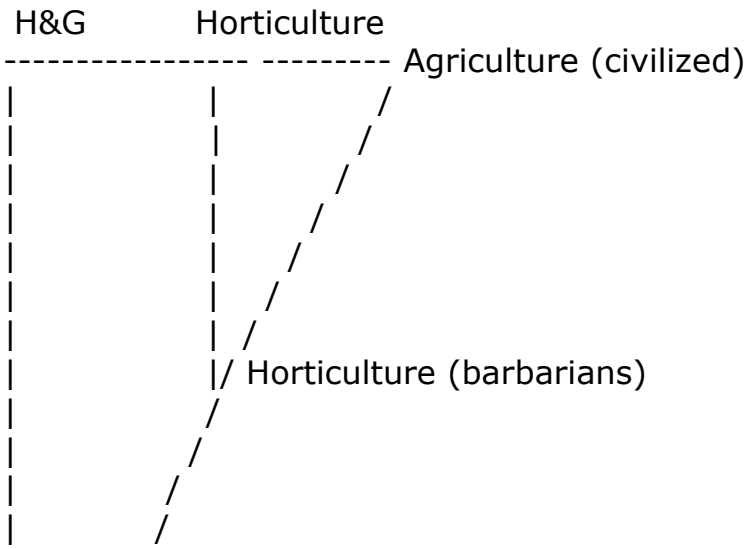
In the early days of anthropology the anthropologists were very involved with evolution – it was the "spirit of the times". Lyell had postulated geological evolution, Darwin biological evolution and early social scientists were talking about the evolution of societies. Some of that is apparent in the developmental sequences from hunting and gathering through horticulture to agriculture.

Agriculture (with plow)

Horticulture (digging stick)

Hunting and gathering (bow and arrow, spears)

It was also felt that among some peoples, this development or evolution had not happened and so there were "survivals" – things that were held onto from the past so one could make a diagram showing this:



| /
| /
| /Hunting and gathering (savagery)

In general, Europe was seen as the apex of development (even to the point of requiring an alphabetic writing system so as to rule out Asia cultures which use either characters of syllabaries.)

While the ocean is a major home for primary producer and sequester of carbon dioxide and many other things of great importance, the two most important aspects of the ocean to people in their everyday life are transportation and a source of food.

We get many foods from the ocean

Mollusks

crabs

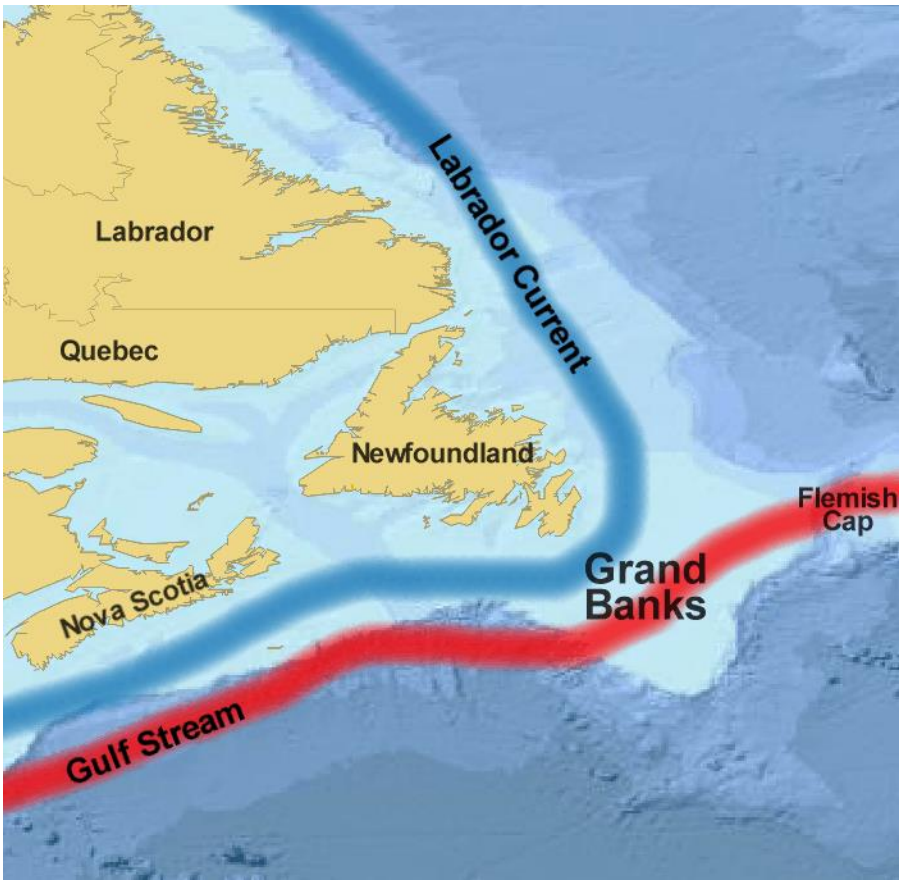
Lobster

seal

Tuna

Sperm whale

There was a time when people thought there were unlimited quantities of fish in the ocean. Not just fish, but all kinds of food items:



The Grand Banks were known for their "infinite" numbers of cod fish. People used to say they were so plentiful you could walk on their backs across the water. By 2000 they were nearly extinct.

Fishing has been practiced by humans for more than 100,000 years. It has generally been considered a "side production method" compared to the use of the land. After all people are land living animals and as a result tend to be more involved with plants and animals which are also terrestrial. The earliest humans got their food from a process called "hunting and gathering". In these cultures people act more as passive producers of food. The caught what animals appeared and gathered whatever vegetable matter was available.

After many millennia people began to become more active in food production and began to domesticate animals and plant crops. Initially this appears to have been a kind of small scale gardening done with a "digging stick". This level of food production if called "horticulture"

Following that people became more intensive in their production and began to raise animals for food and plant more extensively, using the plow. This more complex level is known as "agriculture".

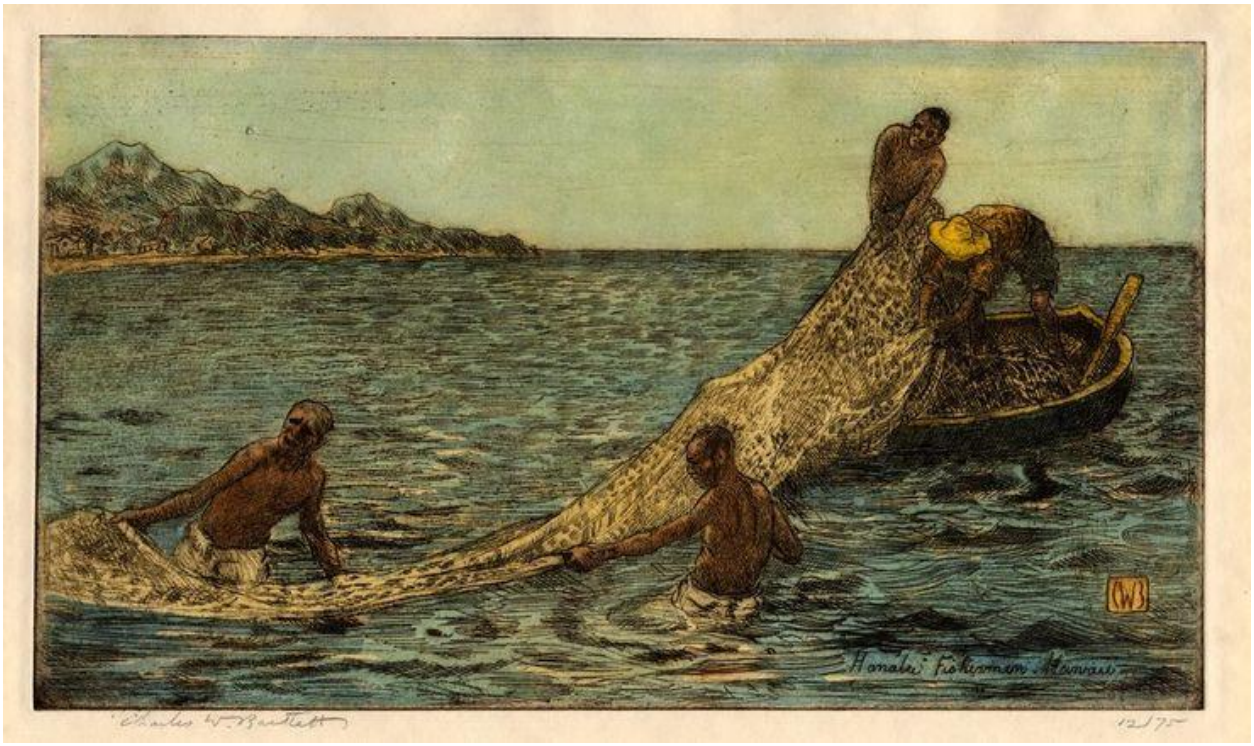
Fishing and the use or marine life as food is generally ignored since many peoples do not live by the ocean, and those who do, may not venture to far out on it. So the food from the ocean contributes only a small amount to people's diet.

Some cultures are more involved with the ocean than others. Japan, for example, has little land for grazing. It is largely mountainous and what level land there is has been used for the building of cities. Japan, like Oceania (the Pacific islands – Polynesia, Melanesia, and Micronesia) has used the ocean the way that Americans have used the Great Plains. Both the Pacific cultures and Japan are very similar in that way. While the do grow food as well, there is much more use of sea food than there is say of the Cheyenne or Arapaho who live on the Plains in the U.S.

However, there has certainly been a similar development in fishing techniques among many people that in a sense parallels that of the people who have developed more agrarian economies.

One might start with the catching of fish either by hand or with a spear or a hook. These techniques generally involve catching a single fish at a time and basically "hunting" fish and "gathering" plant life or some sessile or near sessile animals.

Later people found ways to catch many fish at a time by constructing nets or building weirs. This is perhaps akin to “horticulture”.


Hanalei Fishermen Hawaii
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Finally, there is “fish farming” in which people actual build a kind of “fish pen” in which fish can be raised and in effect “farmed”.

This last approach has developed a number of terms to describe it:

FISH FARMING:

Mariculture: Raising fish in the ocean (salt water)

Aquaculture: Raising fish in fresh water

In some cases this has been productive, but the fish are being raised in water which may be polluted in which case there can be problems with the fish. Another approach has been to raise fish in tanks where there are plants. The fish are raised in pure water with some nutrients added. The fish eat the plants which are also oxygenating the water. The fish produce carbon dioxide from breathing and excrete materials which nourish the plants. The plants photosynthesize and produce oxygen for the fish (along with food). The tanks become closed ecological systems. Fish raised in this way for food can be raised almost anywhere and as a result do not have to be transported great distances to land locked populations.

As populations of human grew and continue to grow, there is a greater need for food to feed the growing numbers of people. This has resulted in a number of changes on the ways in which people have dealt with the need for more and more food. On land there is a great deal of fertilizer used to produce more food from the same amount of ground (This parallels the problems of "efficiency" in which less human energy is needed to produce the same results, or the same amount of human energy is used to produce greater results (remember the spear, adl adl and the bow and arrow).

Earliest people did their fishing near the land. Fishing and navigation are tied together. You san sail out of sight of land and get fish, but if you cannot find your way back, it is meaningless.

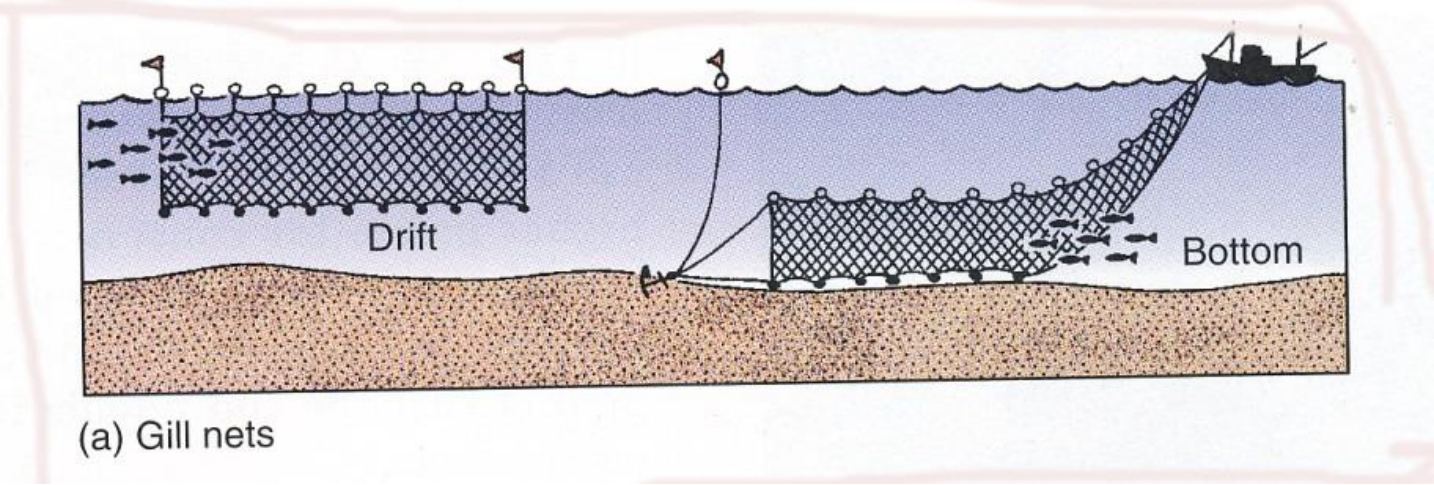
About 40,000 years ago in East Timur Indonesia there is strong indication that people were traveling into deep waters out of sight of land and fishing.

Sites show large numbers of fish bones that come from tuna, a deep ocean fish indicating that people were traveling far out into the ocean and catching large fast moving fish. The technique is not known, but the number of the bones indicates that this was not an accidental catch of one or two tuna.

East Timor and the surrounding countries. The inset shows the composing territories: the mainland (with capital Dili), the enclave of Oecussi-Ambeno, and the island of Atauro. There's still the tiny isle of Jaco, unnoticeable at these scales, but that can be imagined as a dot in the easternmost of Timor.
Across the Timor Sea, Australia is at about 450 km away, and Java 1000 km.

Moore recently a number of techniques have been used for catching large numbers of fish. These are:

Gill nets



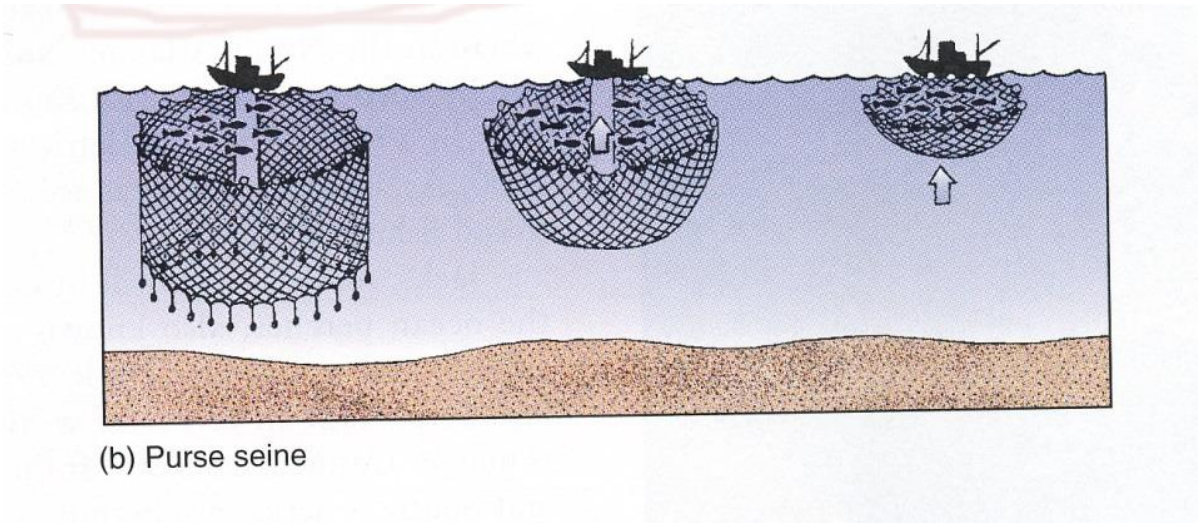
(a) Gill nets

Gill nets are not restricted to commercial fishing. They date well back to antiquity. The nets can be made with different size openings. The larger the opening, the larger the fish that is caught (that is smaller fish can swim through larger ones cannot.

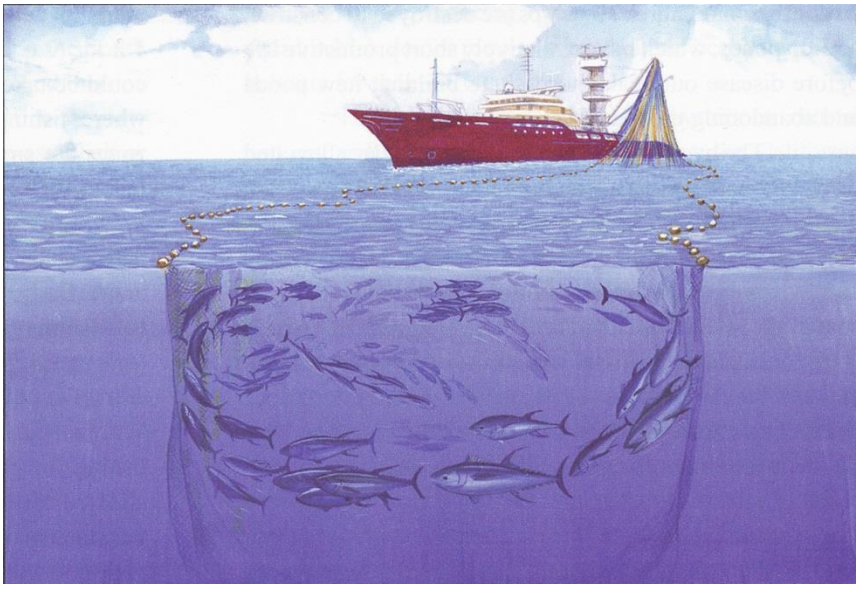
Currently the size of the openings and the strength of the netting are heavily regulated. This is done to prevent some "over fishing" (taking too many of the same kind of fish) and trying to avoid catching many kinds of fish which may not be what is wanted (by catch)

Some materials used in making nets is resistant to decay, and such equipment when it breaks loose, continue to "fish" even though there are no people to catch the fish and use them for food. This catching of fish by fishing equipment that has broken loose is known as "ghost fishing"

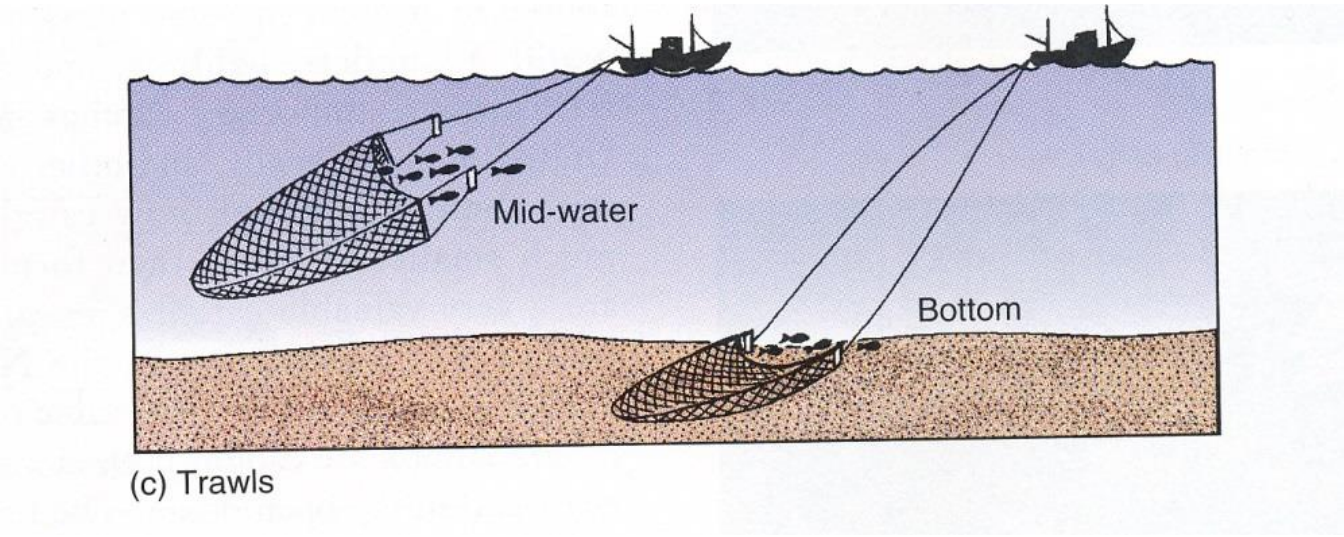
Purse seine



(b) Purse seine

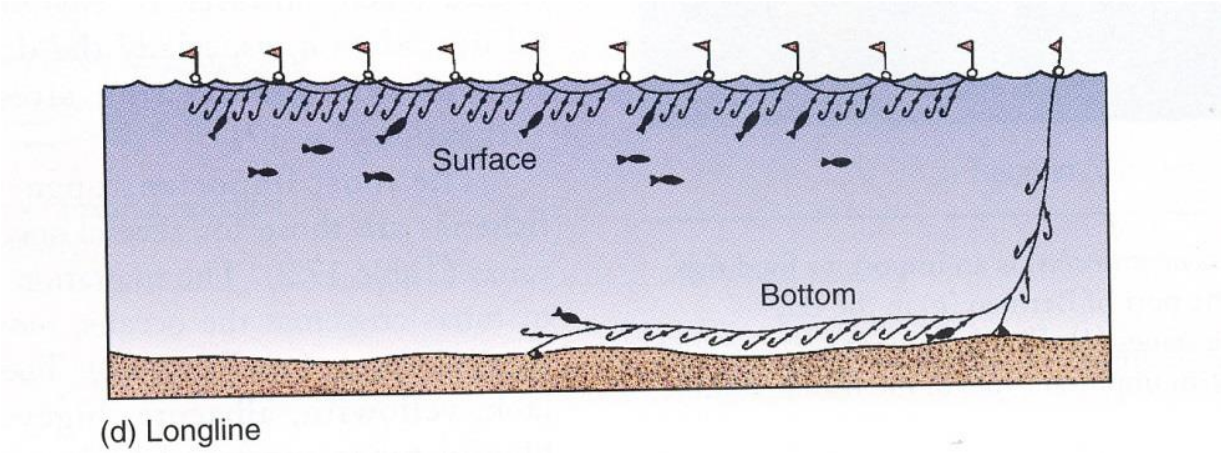


Trawls



(c) Trawls

Long line



(d) Longline

SOME PROBLEMS WITH FISHING

Who owns the oceans????

There are a number of problems with fishing in the ocean since the oceans are “free”. But with a 200 mile limit now in use, more fish fall within the different countries’ borders and foreign vessels may try to fish there despite the laws.

In America, there were a number of problems with Russian ships trawling in American waters and destroying the ocean bottom, thereby upsetting the habitats of much marine life.

Maximum sustainable yield:

The greatest catch of a species that will ensure the long term viability of the species.

Recruitment overfishing:

Recruitment overfishing occurs when the mature adult population (spawning biomass) is depleted to a level where it no

longer has the reproductive capacity to replenish itself—there are not enough adults to produce offspring. Studies show that within 15 years of a new fishery opening about 80% of the largest fish are taken.

Growth overfishing:

Growth overfishing occurs when fish are taken too small, before the fish have grown to a size that produce the maximum yield. This reduces the value of the catch since if the fish were to grow, the individual fish would weigh more and bring a higher price in the market.

Overfishing occurs when many fishermen become attracted to the same new fishing industry. As a result many people move in to take the fish. The numbers start to decline. Best option: stop fishing for that fish. Does it happen? No.

Do fishermen understand these problems?

Yes, but they have families to feed and bills to pay. Often they have taken out loans for boats and equipment.

Among the problems found with these techniques is the problem of "BY CATCH". Large fishing vessels generally go after one or two types of fish, but

While originally it was thought that the ocean had in exhaustible supply of food, it appears this is not the case. Fish supplies have been dwindling and serval species have become extinct or reached near extinction levels of population.

There is a possibility that some of these "near extinction" populations may rebound. The California Gray whale which was on the endangered species list has been removed from the list. The North Atlantic Right Whale has a very debatable future and while there are many regulations in effect concerning the whale (how close one

can come to one of them and restricting the speed of boats in the areas where they are found), there are some who feel that the species may not recover. Among the factors affecting recovery are:

1. How small has the stock become? Number of animals remaining
2. What is the age of maturation?
3. How long is the time from fertilization to birth (Gestation periods)?
4. How many offspring are there from a single mother?
5. How many times does the organism produce offspring i.e. what is the death rate relative to number of times animal mates? (salmon die after spawning)
6. What is the survival rate of offspring?
7. What factors impact mating choices?
8. What other factors affect the mating and embryology? (changes in temperature, salinity, etc. Frog eggs produce more females than males as temperature rises).
9. Consider sex ratios. # of females is more important than the # of males in terms of reproduction numbers. With humans, 1 man with 10 women can yield 10 children per year. 10 men with 1 woman can yield 1 child per year (this is why wars do not significantly impact the growth of populations in most cases since there were more male soldiers and so populations after the war were skewed in terms of more women than men. By the next generation that skewing was basically gone.

   How does this affect your ideas about things like the Loch Ness monster?

1. How large a breeding population would you need to keep it going?
2. How many are there? How many different "Nessies" have been seen?
3. How long have there been reports of the "monster"?
4. Are there answers to the first three questions asked about

   breeding population of "Nessies" in the Loch? What does that tell you?