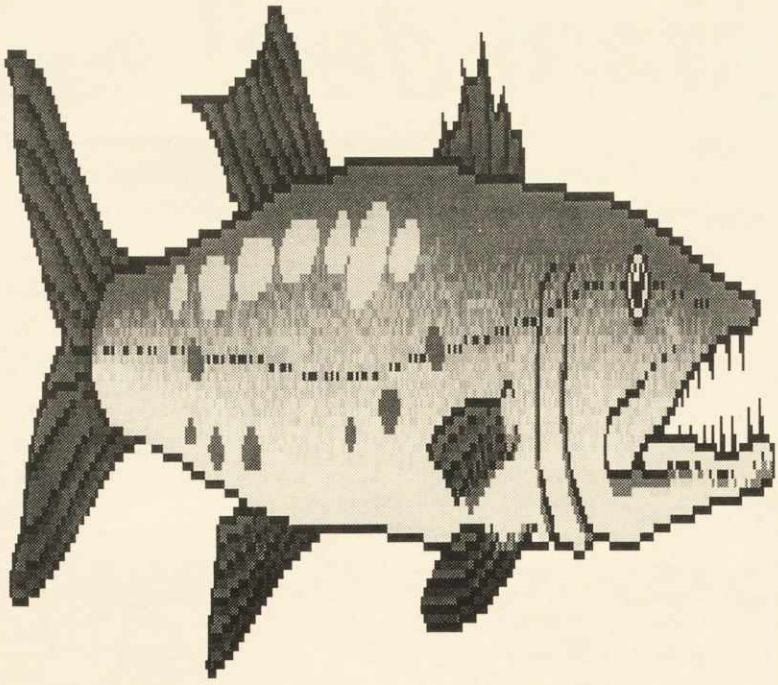


# science & environment



## The Threatened Oceans

by Wayne Groszko

The second lecture in the Dorothy J. Killam Lecture Series was last Thursday, October 13. Dr. Usha Varanasi, Director of the Northwest Fisheries Science Centre, gave a lecture entitled "The Threatened Oceans"

Dr. Varanasi has studied pollution in the oceans for several decades. She focuses specifically on pollution in coastal waters, close to the shore. This is where humankind is believed to be posing the greatest threat to the oceans, and the area nearest shore is also where people derive greatest benefit from the oceans, in terms of food from fishing and other benefits such as recreation on beaches.

Some threats to the oceans which she pointed out were overfishing, chemical pollution, and the increase in ultraviolet radiation due to the decreasing ozone layer. Her own research work has been directed mostly at the problem of chemical pollution. Chemical pollution of coastal waters is a very complex problem, because it involves thousands of different chemical compounds from many sources. Hydrocarbons, such as oil and tar, end up in coastal waters in run-off from paved city streets, in long-term leakage from dumps and oil transfer facilities, and also more suddenly from large-scale oil spills. Other kinds of chemicals which end

up in the coastal ocean include pesticides which run off from the land after being applied in agriculture or sprayed on forests, and polychlorinated biphenyls (PCBs), which can leak from old storage containers and transformers.

Dr. Varanasi mentioned that since her arrival here in the Halifax area, she had visited a lake where the fish had been found to contain excessive amounts of PCBs.

When chemical pollution such as spilled hydrocarbons enters the water, it does not dissolve, so some of it

*"overfishing is bad, but fishing itself is an important source of protein."*

sinks to the bottom where it mixes with the mud. Many organisms live in this mud and they accumulate the added chemicals when they eat. When fish eat these organisms, they accumulate some of the chemicals, and other chemicals are broken down in the liver.

Dr. Varanasi's research in Puget Sound, near Seattle, showed that fish from areas which had heavy pollution with hydrocarbons such as creosote were getting liver cancer. She found that the hydrocarbons did not build up in the fish, but the liver

in the fish had to work hard at breaking down thousands of hydrocarbon molecules. Every so often, one of these hydrocarbon molecules would not break down properly, and would get stuck in a piece of DNA instead. This affects the genetic material, and can cause a cancerous tumor.

Despite the real damage which chemical pollution causes to fish and other creatures living in the ocean, Dr. Varanasi believes that the largest threat caused by humans is overfishing, simply because of the amount of fish of many species which we remove from the oceans. She believes that in order to avoid causing more damage through all the various threats, we are going to have to try to obtain the best possible scientific information, and act on it accordingly.

A member of the audience asked if we should stop eating fish and let the ocean recover. Dr. Varanasi's reply was that over-fishing is bad, but fishing itself is an important source of protein. This reply ignores the fact that North Americans already eat, on average, more protein than is either necessary or healthy.

In response to a question on how bad Canadian waters are compared to other countries, Dr. Varanasi's reply included, "In some countries, they put raw sewage into the water without any kind of controls."

You don't have to leave Halifax to find a place like that.

### POINTLESS PONDERABLES

Answer to last week's problem: The one question that the man should ask to enable him to take the correct path is: "Where do you live?"

For a complete explanation of this solution check with the MASS (Math and Statistics Society), who came up with the idea.

This week's problem:

You're the captain of a spaceship patrolling the vast reaches of your empire. Suddenly, an enemy Thalasian ship appears (those pesky Thalosians again...) and with its

frightful inflationary ray, makes your ship 50% bigger! The crew can no longer reach their controls and the utensils are too big!

In order to restore the ship to its original size, what proportion will you reduce it by?

Solutions should be dropped off to the Gazette office at room 312 in the Student Union Building or can be emailed to [gazette@ac.dal.ca](mailto:gazette@ac.dal.ca). The first person to get the correct answer gets their name published in the paper, so hurry now!

## WHAT YOU CAN RECYCLE.

It only takes a few moments to prepare material for recycling.

Put these materials together with your newspapers:



Newspapers, Catalogues, Flyers and Glossy Magazines — Place together in a plastic bag. Keep dry.



Paper Egg Cartons — Place in a plastic bag with newspapers. Keep dry.

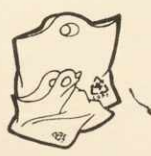


Phone Books — Place in a plastic bag with newspapers. Keep dry.



Corrugated Cardboard — Bundle into an armload. Keep dry.

Put these materials together in your Blue Bag:



Plastic Grocery Bags — Must have label showing recycling logo with words "LDPE 4". Make sure they are empty and stuff them into one grocery bag and then put in Blue Bag.



Cans — Rinse clean. Put in Blue Bag with other materials. No need to remove labels.



Glass — Remove lids and rinse clean. Put in Blue Bag with other materials. No need to remove labels.



Plastic Pop Bottles — Remove lids and rinse clean. Put in Blue Bag with other materials. No need to remove labels.



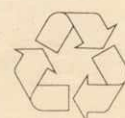
Milk Cartons — Rinse clean. Put in Blue Bag with other materials.



Just set it all out at the curb, before 7:00 a.m., on your recycling collection day, about 3 feet from your garbage (so it isn't mistakenly tossed into the garbage truck).

**Metropolitan Authority**

For recycling program information call:  
**MetroInfo 421-6600**  
(TDD 421-2545)



**METRO and HALIFAX COUNTY RECYCLING**

*Recycle. It all adds up!*