

# UH group investigating ocean toxins

The marine scientists want to know why there are more female fishes

BY HELEN ALTONN  
*Star-Bulletin*

University of Hawaii marine scientists are trying to identify chemical pollutants in Hawaii's environment and determine if they're affecting sea life.

They're concerned about endocrine disrupting chemicals — called EDCs — interfering with the hormonal system.

The scientists include E. Gordon Grau, interim director of the Hawaii Institute of Marine Biology, institute researcher Harold Richman, and Milton Stetson, a University of Delaware professor who spends about seven months a year at the Coconut Island laboratory.

Partners in the project are Dr. Richard Littenberg and his wife, Barbara, who use their Medical Foundation boat, *Searcher*, to collect fish, water and sediments for analysis.

Grau, who directs the Laboratory of Fish Endocrinology and Environmental Physiology, said certain strains of fish in Japan and Britain have more females than normal because exposure to chemicals when they were young caused a sex reversal.

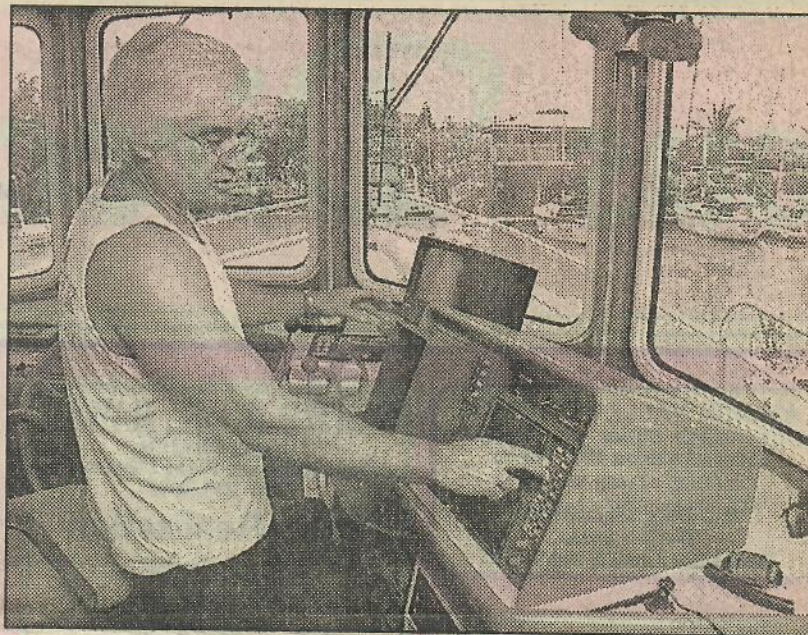
He said certain industrial chemicals, herbicides, pesticides and detergents "have hormone-like actions. In particular, they have a strong ability to mimic estrogens, so this has become a big issue."

## Estrogen everywhere

There also is some concern that estrogens used in birth control pills and post-menopausal treatment may be entering sewage systems, he said.

There are well-documented cases of pesticide spills in the United States having profound effects, for example, on reproduction of alligators and some birds, Grau said. There are also examples of it affecting thyroid gland production, he said.

Grau said Hawaii Institute of Marine Biology researcher Shannon Atkinson has found that



BY CRAIG T. KOJIMA, *Star-Bulletin*

*Dr. Richard Littenberg shows the sonar that will be used in research.*

corals release estrogen-like compounds into the water as part of their normal reproductive activity.

"So it appears that estrogens may serve to synchronize spawning in corals," Grau said.

"Since many man-made chemicals may also be estrogens, the worry is that it may interfere with the biology of corals," he said.

## Turtles affected too?

Grau said his group is working with Atkinson to try to determine if tumors found on many turtles could be related to a compromised immune system induced by substances in the environment.

He said he and Atkinson, who studies Hawaiian monk seals and reproductive biology of marine mammals, also are collaborating on a project with the U.S. Fish and Wildlife Service.

Besides trying to learn what chemicals may be where around the Hawaiian Islands, Grau said they have Sea Grant Program funding to study the effects on fish development.

Scuba divers from the *Searcher* have mapped outfalls around the islands and they're collecting fish and sediment samples for the project, Littenberg said.

"A lot of worldwide data is coming in that shows marine life is affected by this (endocrine disrupters)," he said. "They're found in the Great Lakes and also in the ocean."

Littenberg, president and chief executive officer of the Honolulu Medical Group, began looking into endocrine disrupters several years ago.

He said his preliminary research, before hooking up with the institute, shows chemicals seem to be washing up off the West Coast from Mexico and Central America that have strong endocrine disrupting effects. They're believed to be from the pesticide DDT and other U.S.-banned chemicals still in use in those countries for agriculture, he said.

Dioxins and industrial products such as polychlorinated biphenyls are among other known hormone disrupters. They persist for long periods in the environment and can be carried by wind or water currents, ending up in distant food chains and water supplies.

## Disrupters are disturbing

Littenberg said he found chemical disrupters in huge trash lines associated with a lot of fish in the mid-Pacific.

"Whether the chemicals are dumped off ships or cruise ships are dumping tanks with human estrogen products is unclear," he said. "But we found high concentrations of EDCs, which gets you kind of nervous."

Grau said the Hawaii Institute of Marine Biology and Littenberg are planning a workshop of scientists from around the United States next spring to focus on environmental interactions, the endocrine and immune systems and resistance to disease.

"This is a new area," Grau said, "an area that's becoming increasingly apparent that it's important. This workshop really will be, as far as I know, the first step toward defining this area of research."