sea grant

A Report on the Oregon State University Sea Grant College Program 1975-1976

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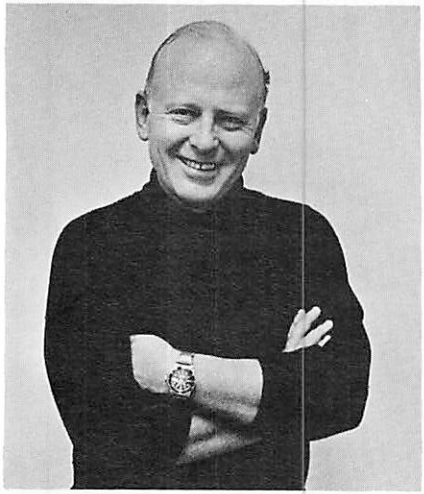


introduction

The National Sea Grant College Program is oriented toward people and their linkage with the sea. On more than 30 campuses in most coastal and Great Lakes states, Sea Grant is actively concerned with helping people to use and understand ocean resources for economic gain, recreation and aesthetics.

In Oregon, Sea Grant is particularly concerned with developing an understanding and appreciation of how to live with the ocean and how to manage the coastal zone.

Sea Grant has a mandate, within enacting federal legislation and by intent through state, local and industry support, to generate new knowledge through research, to train students through education and to put new knowledge to work for the benefit of all Oregonians who look to the sea for answers.

The ocean affects all of us in our climate, our commerce and our food. Thus, we all have a stake in how the world's oceans are used, abused, divided and conserved.

This annual report emphasizes the thoughts and perceptions about the Oregon ocean as stated by a number of citizens. Ranging in age from an elementary school student to a distinguished senior citizen and in interest from a metropolitan consumer of ocean resources to a successful ocean rancher, these are real people speaking about the ocean in their own words.

To be useful to the people of Oregon, the Sea Grant College Program must address the marine resource problems and opportunities of the northeastern Pacific Ocean and associated coastal zones. We plan with the people. This, then, is their story.

Karl Manseth: aquaculturist

Karl Manseth was probably born with a fishing pole in his hand. If he wasn't, then his father, who was a professional fisherman, put one there.

"From the time I was six or seven, I remember being in the front of a 12-foot lake boat bouncing around over the Winchester Bay bar," says Manseth.

And if he wasn't bouncing over the Winchester Bay bar, he was fishing near his home on the McKenzie River.

So it really wasn't that unusual when he—like his father—started fishing professionally.

And it really wasn't that unusual when he and a college roommate, Ron Hichens, started thinking about ocean ranching. In fact, it almost seemed like it was meant to be.

"Raising fish seemed like a good way of ranching the ocean," says Manseth. "We wondered if it was legal."

Manseth didn't waste any time. He immediately visited Oregon State University and started asking questions. He was sent over to the coast to talk to a fellow named McNeil. That was about 1970.

William McNeil, then an associate professor of fisheries at Oregon State University, had been working on a Sea Grant project to raise chum salmon at Netarts Bay since 1969.

The chum salmon fishery was the basis of an active industry in Oregon in the '30s. But logging and industrialization destroyed the natural spawning grounds for these fish. McNeil was able to construct a substitute for spawning grounds: a gravel incubator. Inexpensive to build, the incubator consists of nylon mesh to hold the eggs and a gravel bed where new fry rest and develop. When ready the fry swim from the incubator into a stream and then out to sea.

"Is ocean ranching legal?" Manseth asked McNeil.

"Not yet," said McNeil, but explained that the legislature was in the process of passing a bill to make it legal.

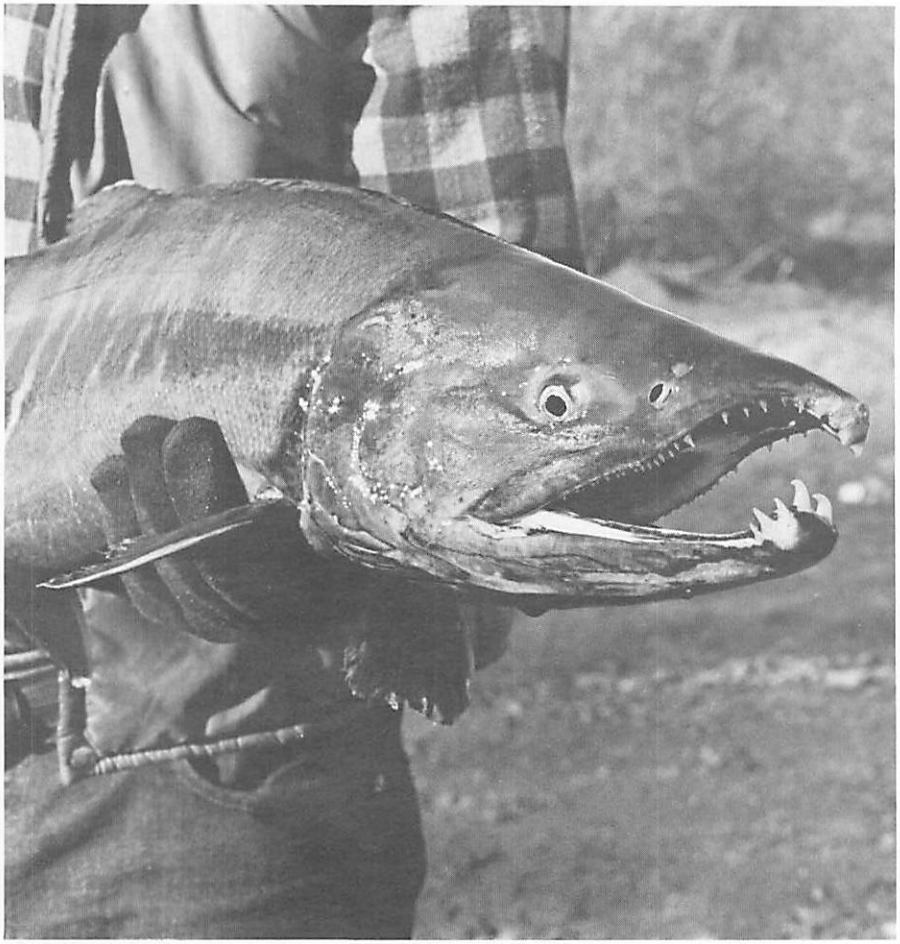
So Manseth began working toward the legalization of ocean ranching—and he also began learning about how to raise chum salmon.

In 1971, the Oregon legislature enacted laws permitting the private operation of chum salmon hatcheries.

And as soon as the bill passed, Manseth applied for a permit to raise chum. He received the second permit issued. His next step was to save money.

"I look way down the line in these things. If we can put large quantities of fish into the market place, I can see businesses starting up that will make fish hamburger and other products."

"Raising fish seemed like a good way of ranching the ocean. We wondered if it was legal."



"Ron and I set up a budget and put a hundred dollars away each month," says Manseth.

They scouted around trying to find a place to build their hatchery and found Sweet Creek and a farmer who liked the idea. The farmer leased the land and included an option to buy the land after 10 years. Because Sweet Creek runs into the Siuslaw River, they named the new operation Siuslaw Fisheries.

Manseth and Hichens then began building their hatchery—that is, after they made several trips to Netarts Bay.

"We didn't do much without checking with OSU," says Manseth.

The initial construction cost about $25,000; most of that cost was in time and mileage.

Finally, when the Netarts Bay hatchery started producing excess eggs, Manseth got in line. Because he had permit number two, he was able to get the second excess million eggs.

Siuslaw Fisheries was finally in business. Manseth put the eggs in the incubator and waited.

That first winter was rough on Manseth.

"I remember going down to the hatchery at 2 a.m. in the morning. Everything was freezing up. Fortunately, we had electricity. I took a bunch of aquarium stones with a little pump and put that into the tank; I also put a lightbulb underneath the cover to keep the ice from getting in."

A few months later, Siuslaw Fisheries released 10,000 fry into Sweet Creek. That was in 1972.

It's now 1976. Manseth spent most of his summer building a trap to catch returning 3- and 4-year-old chum salmon. Only one per cent of the total fry released is expected to return—but that's enough to make it pay.

And when they return in November, he'll be ready.

"We'll take the eggs and freeze the fish," says Manseth. "It should be a good quality smoking salmon because the fat is already used up."

Manseth hopes to get from between 50 cents to one dollar per pound for the chum salmon. He also hopes that the chum salmon industry will expand so he and other hatcheries are able to put more chum on the market.

"I look way down the line in these things," says Manseth. "If we can put large quantities of fish into the market place, I can see businesses starting up that will make fish hamburger and other products."

Manseth originally wanted to raise steelhead (a far cry from fish hamburger), but learned through Sea Grant that chum are the cheapest fish to raise because they don't have to be fed before they are released.

"I'll say one thing," says Manseth. "The Sea Grant program has been extremely helpful to us. There's just no way we could have built a hatchery without it. For example, when our fish get a disease, we can't afford to go to school and we can't afford $3,000 for a scope. And we don't have the knowledge to use it."

Siuslaw Fisheries has not had too many fish diseases. Some of the fish have suffered from cold water diseases and a fungus which collects around the dead eggs. The fungus spreads to live eggs and smothers them.

"Jim Lannan, the person who runs the Netarts hatchery now, worked up a system for a Malachite Green treatment with drip bottles," says Manseth. "Now we don't have to pick the dead eggs out."

Sea Grant has also provided ocean ranchers with a technique to treat cold water diseases in fry.

"They've come up with a system for treating cold water disease by using terramycin 50 per cent in solution in the water," says Manseth. "We just flush the fry with it."

Although Manseth has relied on OSU for most of his information, he would still like them to provide some answers to new questions.

"I want to know if it's worth it to feed the fish for a while," says Manseth. Specifically, he wants to know if keeping the fish about 30 days and feeding them until their size has doubled will increase their survival—and if their survival would be enough to make up for the use of food.

Manseth also has questions about diseases fish may contract after they leave the hatchery. He wonders if fish catch diseases in the tidal area and if there are oral vaccines to use on the fish as they leave the hatchery.

"This is why we need a university," says Manseth. "It takes the private individual a long time before he can learn these things."

But probably, when Manseth has answers to the questions he raises, he'll have new questions about new problems. And he'll probably ask OSU.

Loren Hadley: marine science student

He was three the first time it happened.

Loren Hadley was fishing with his father. He baited the hook, put the line out and waited. A little while later, there was a yank on the line. Loren began to reel it in; his father reached over and helped him play the line. It didn't take long for the father and son team to land the fish. Loren was pleased. It was a ten pound silver salmon. A real nice one.

Loren is close to his father. When his family lived in Pacific City, Oregon, he used to spend a lot of time with his father fishing on their dory.

"My father taught me everything I know about fishing," says Loren. "And there's a lot to know."

Fishing isn't luck, according to Loren. A person has to know where the reefs are, how to set tows, how to mend nets and where to fish. A person also has to know about electrical equipment, such as LORAN, and how to operate it.

"I can run most of the electrical equipment on my father's boat and I can mend net," says Loren.

Fishing isn't the only ocean-related activity that Loren likes.

"I used to live about five steps from the ocean," says Loren. "I'd go down to the tide pools, collect animals, look at them and turn them loose."

Although he turned the tide pool animals loose, he did bring home shells and floats. The floats are now displayed throughout his home; the shells are organized in a cabinet purchased especially for that purpose. In fact, he bought his cabinet from money he saved from selling Russian jars that his father found at sea.

"I clean them up and sell them," says Loren. "They're green and look like a vase."

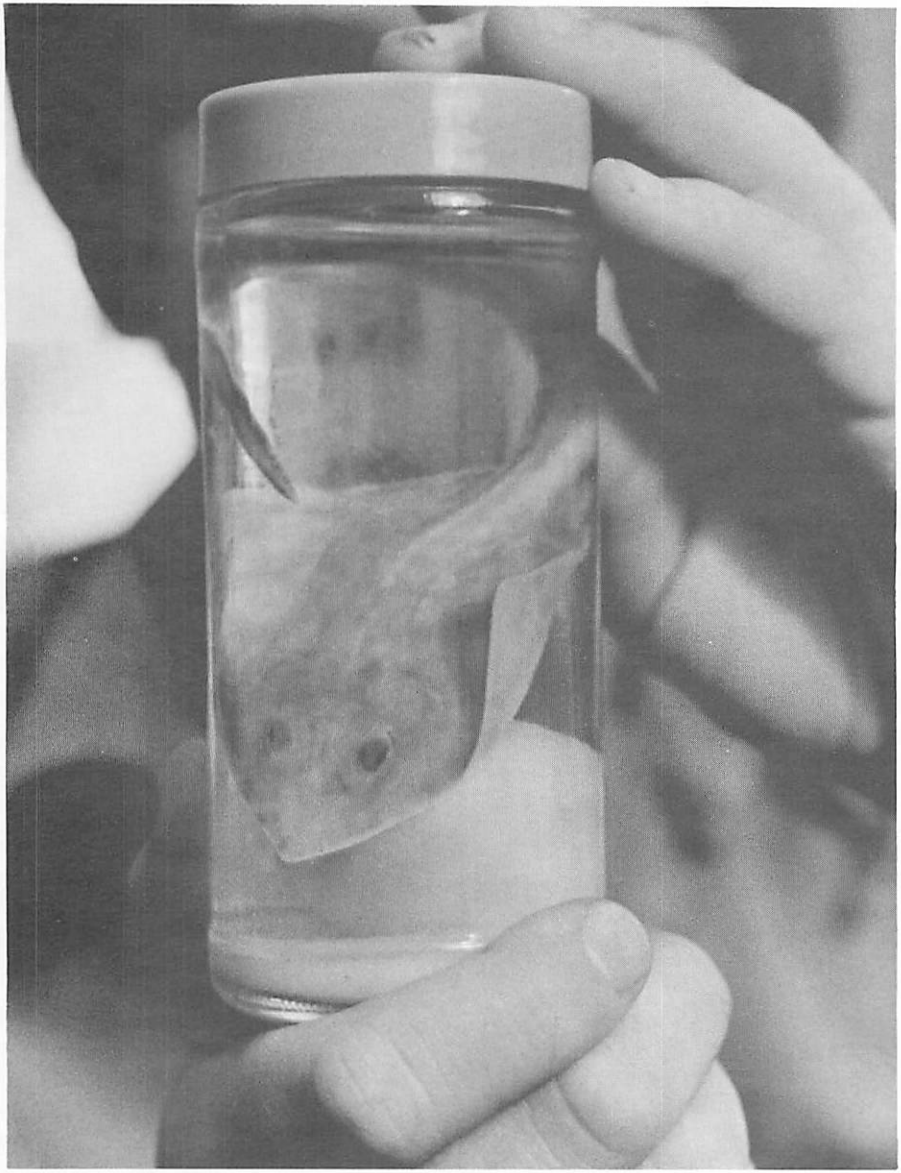
When Loren was about seven, he packed up his shells and his Marine specimens which he had preserved in alcohol, and moved to Montana with his family.

There, he was introduced to new water activities, such as ice fishing. But he was also asked to show his shells from Oregon and talk about marine science with his classmates.

"There was no course in school specifically about marine science," says Loren. "It seemed like most of the time, I was teaching it."

Loren is now 12. His family has returned to Oregon and lives in Toledo. His father returned to professional fishing, his mother teaches first grade and Loren still has an appetite for marine science.

"I used to live about five steps from the ocean. I'd go down to the tide pools, collect animals, look at them and turn them loose."



He says the schools aren't offering much in marine science. So he reads a lot and enrolls in the workshops at the Marine Science Center.

"I've taken most of the Seatauqua classes at the Marine Science Center, including marine biology, fish, estuarine ecology, photography, birds, plants and geology," says Loren. "I've also seen most of the movies."

Seatauqua is the Marine Science Center's summer program, sponsored in part by the OSU Sea Grant College Program.

Unfortunately, he finds some of the material difficult. He thinks that if marine science were easier to understand, more kids would like it.

About twice a month, Loren meets with the marine science 4-H club. A Sea Grant specialist helped organize the 4-H programs at the Marine Science Center.

"We're raising oysters," says Loren. "We have six strings at the Oregon Oyster Company on Yaquina Bay."

To complete the project, the 4-H members first had to raise money, buy the wires, beads and a sack of spat. They then knocked holes in the shell, strung it and hung it up.

Although Loren already has a head start on marine science, his ambition is to become a veterinarian. But that desire isn't going to keep him out of tide pools or off boats.

For example, he recently went on a picnic and ended up collecting pop bottles full of water. There were little shrimp in the water which he took home and looked at under a microscope.

He looks forward to being a puller on his father's boat.

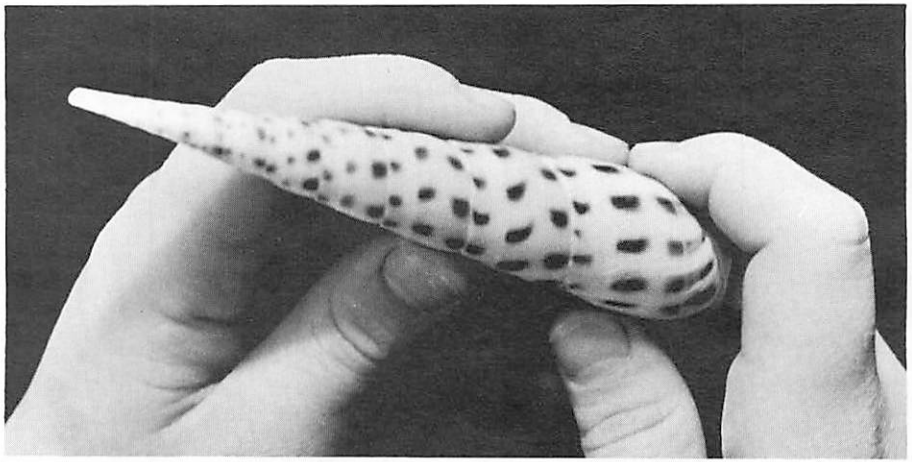
"In a couple of years, I'll be able to be a puller and will be able to go out with him," says Loren.

Until then, he'll continue to attend workshops at the Marine Science Center, participate in the marine science 4-H club, read more books on marine science and classify his shells. He plans to prepare an index card on each shell. This will help him when he makes presentations of his shell collection; it may also help him advance marine science at home.

Lisa, his 9-year-old sister is an attentive listener. When asked where she learned about marine science, she pointed to Loren.

"From him," she said.

She's probably not alone.



"There was no course in school specifically about marine science. It seemed like most of the time, I was teaching it."

Becky Steen: consumer

Steaming a bucket of mussels over a laboratory bunsen burner. Dipping them in a pound of melted butter.

That was one of the activities Becky Steen enjoyed most when she was a science student.

Mussels are a delicacy on the East Coast where Steen attended school.

The same type of mussel lives on the West Coast, but it's definitely second-fiddle to the clam fishery. That surprised Steen when she moved to Oregon a few years ago. But it didn't stop her from rounding up her family and traveling to the coast to harvest the blue-shelled, orange-bodied mussels.

Only one thing has changed over the years: her cooking technique. Instead of using a bunsen burner, she uses a burner on the top of her stove. It seems to do the job—but with a little less flair.

Usually, when Steen, her husband and their two daughters are at the coast collecting mussels, they also stop in at a seafood market and buy a whole fish. She packs the fish on ice in a Styrofoam container to make sure it stays cold in the car. At home, she cleans it, cuts it up and freezes it in meal-size proportions.

"I make sure it's airtight and wrapped up in several layers so it doesn't get dried out," says Steen. By doing that, she's able to keep seafood in her freezer for three to six months.

Steen prefers buying a whole fish from a coastal seafood market because she knows it's fresh. She knows exactly how long it takes to get that fish from the ocean to her table.

"The main thing I worry about is how long it is from the time it's caught until it's bought and the temperature it's kept at," says Steen. "I also wonder if it's kept on ice all the time."

In addition to preferring a fresh fish because it tastes better, Steen also prefers a fresh fish because its bacterial count may be lower. Her concern comes, in part, from her recent participation on a Meat Bacterial Standards Review Committee organized by Oregon's Department of Agriculture.

She has also been involved on the Consumer's Food Council for the past five years. The Consumer's Food Council consists of 12 to 15 persons in the Portland area who are trying to respond to consumer concerns. They worked in the 1975 session of the Oregon legislature trying to pass laws requiring unit pricing and open dating. Open dating passed; unit pricing did not.

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From working on the Meat Bacterial Standards Review Committee, Steen has learned that there is no such thing as an absolute good standard for meat.

"We're learning that it is not so much a matter of how many bacteria you find in meat, but rather what kind of bacteria there are," says Steen.

Meat standards are developed by the Oregon Department of Agriculture. If a meat handler continuously violates these standards, he can be fined and closed.

Some of the standards which are applied to meat include an aerobic plate count and an *Escherichia coli* count. The aerobic plate count is an indicator of how long the meat has been in a case and the temperature of that case. *Escherichia coli* is also a storage indicator; in addition, it indicates the presence of potential food pathogens.

"None of these standards is applied to seafood," says Steen. "I've often wondered about the bacterial load of seafood because I don't think it's handled as carefully as beef."

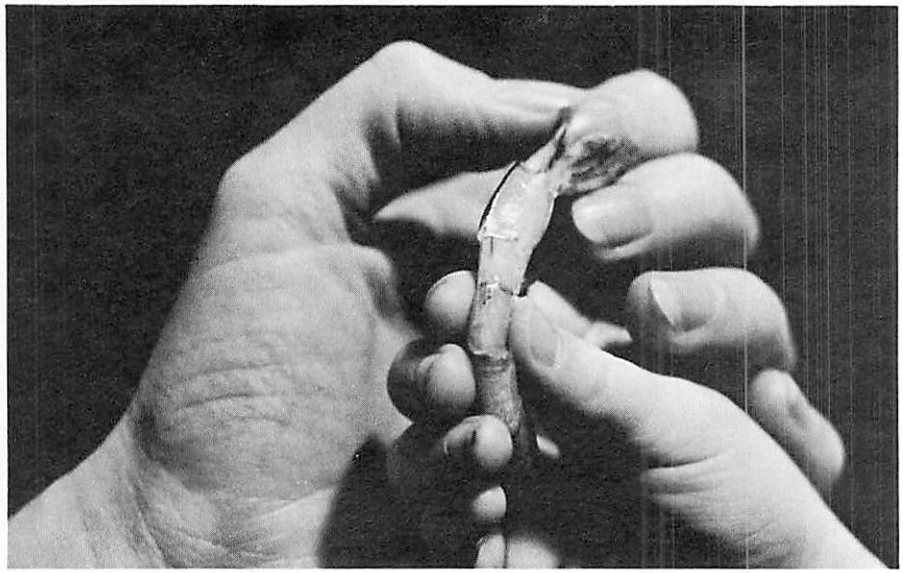
Since 1974, the OSU Sea Grant College Program has been studying how Oregon seafoods are processed. Microbiological profiles for various seafood have been established, critical points in seafood processing operations have been identified and optimum processing methods have been developed and demonstrated.

Should there be federally-enforced standards for seafood?

"I think we should investigate to determine if it is worthwhile to develop seafood standards," says Steen. "But if the standards would not produce a benefit, then I don't think we should have them."

Presently, the Food and Dairy division of the Oregon Department of Agriculture inspects all food processing and retail outlets—except for meat and poultry. Seafood, however, is subject to these inspections. Inspectors take the temperature of the seafood case and occasionally look at seafood under a microscope. But there are no "standards" which determine what kind and how many bacteria can be present on the seafood. If seafood from a certain supermarket consistently shows a high count of a certain bacteria, the Department of Agriculture may caution the store.

"The public is more willing to buy something if they know exactly what's happened to it and if they can see the process for themselves. That's one thing I learned from being on consumer committees."



But it will not close down the store or fine the manager.

The OSU Sea Grant College Program has also been involved in the discussions regarding standards for seafood. The program works with supermarket managers and meat and seafood handlers to promote sanitary practices and temperature control programs.

From her own experiences, Steen also found that many problems with red meat could be solved by educating meat handlers.

"Ninety per cent of the meat handlers follow the proper procedure once they know what it is," says Steen.

Although Steen prefers to buy a fish whole at a seafood market, she will purchase certain cuts of fish in the store, such as turbet, red snapper and flounder fillets. Fish does not compete with red meat in Steen's eyes. She enjoys fish and will pay up to $2 per pound for fish. But the higher the price of seafood, the less willing she is to buy it.

For example, she enjoys lobster, but won't pay $7 per pound for it.

"I've given up eating lobster since I came out here," says Steen. "In Maine, it used to be $1 per pound."

The Steen family prepares fish about once a week. Many of their recipes can be found in regular cookbooks. But some of her techniques for preparing seafood were learned from watching Julia Child, the ebullient French cook, on television.

"I'm very cautious when I cook seafood," says Steen. "If I'm cooking salmon, I'll put a meat thermometer in it and won't let the temperature get above 140 degrees."

Steen does not like overcooked fish or breaded fish. She also shys away from unusual species of fish, such as octopus or squid. She would be interested in trying these underutilized species, but only in privacy. Perhaps, like many other persons who have learned to like seafood, she will experiment with a new seafood dish in a restaurant.

The Portland consumer does appreciate the larger supermarkets for their efforts to interest people in new seafood.

"Many stores provide samples of seafood right at the counter," says Steen. "I think this is a good way to introduce fish to the consumer."

She also appreciates Sea Grant's efforts to introduce new seafood products to the market. Researchers at the OSU Seafoods Laboratory in Astoria have blended shrimp parts together with an underutilized species and developed "Shrimp-Bo's." The product is shaped in the form of a shrimp and breaded.

Steen's attitude about seafood is positive. She likes the taste of seafood, knows how to prepare it and knows her family will like it—even her young daughters. They enjoy it because it is soft and easy to eat.

"We check it over for bones to avoid unpleasant experiences," says Steen.

She also believes seafood is a good source of protein, a fact she picked up from cookbooks and from food charts published by the National Marine Fisheries Service and Sea Grant. Sea Grant has further investigated the nutritional quality of seafood to determine how long the nutrients last and how different methods of preparation affect the nutrients. They have also evaluated the nutritional effect of freezing and thawing and assisted the industry in the nutritional labeling of seafood.

"The public is more willing to buy something if they know exactly what's happened to it and if they can see the process for themselves," says Steen. "That's one thing I learned from being on consumer committees."

Becky Steen may not be a typical consumer. She has a background in biology which increases her awareness of microbiological problems. She buys fish whole; she eats mussels. She is also seriously concerned about overfishing our stocks and wants Sea Grant to continue its research in stock assessment.

Most of all, she differs from the typical Northwest consumer because her favorite fish is walleyed pike—not salmon.

"I'm very cautious when I cook seafood. If I'm cooking salmon, I'll put a meat thermometer in it and won't let the temperature get above 140 degrees."

Craig Cochran: professional fisherman

Monday and Thursday mornings are usually hectic for Linda Cochran. She meets her husband, Craig, over at the docks in Newport at 7 a.m. to help him unload his catch. Her job is to watch the scales.

When that's under control, she rushes home, bakes some cookies or brownies, and makes sure lunch for Craig and her two sons is on the table exactly at noon. Her sons only have about 25 minutes to grab a sandwich and return to school.

About 12:30 p.m., she can finally relax and share her thoughts with Craig. He'll probably be home for a day or so and then go out fishing again.

Craig Cochran became interested in professional fishing the same way a lot of people do; he leased a little boat and went salmon fishing.

That was in 1959.

Today Cochran drags the ocean for bottom fish and brings back a catch of about 25,000 pounds twice a week. He sells his catch for about 12 cents a pound and retains about 30-40 per cent of that as profit. He's now on his fifth boat and will soon trade it in on a sixth.

"I got an education from the school of hard knocks," says Cochran. "If I had spent more time fishing for somebody else, I probably wouldn't have made nearly the mistakes when I bought my first boat."

Cochran grew up on a farm in southern Oregon. Although his father took him sport fishing, he knew very little about the ocean. But his interest in fish prompted him to enroll at Oregon State University to study fisheries biology.

One summer after he had entered OSU, he went to work for a plywood mill near the coast; he ended up leasing that little boat and fishing for salmon.

"I liked being my own boss," says Cochran, who purchased his first boat the following year (1960) for $2200.

The first summer on his own boat he fished for albacore as well as salmon. And instead of returning to school in the fall, he got married and returned to the valley for work. Eventually, he got a job on a crab boat which enabled him to fish the winter months.

"I would suggest that anybody starting out should get a basic understanding of the business before they jump off on their own," says Cochran. "A person should try to get a job on the top boat in port and work for a couple of years as a deck hand."

"I would suggest that anybody starting out should get a basic understanding of the business before they jump off on their own. A person should try to get a job on the top boat in port and work for a couple of years as a deck hand."

Cochran estimates that it takes about four or five years to become really proficient at fishing.

"There were a number of things I learned the hard way," says Cochran. "At first, that probably cost me a little bit of money."

But anyone going out with Cochran now would learn the basics: where to fish, where not to fish, how to mend nets and take care of gear.

"There are certain things you have to do to the gear to make it produce," says Cochran. "There are so many things that make a difference in what you catch and the volume of product you catch."

There are also changes in the weather that a fisherman must learn to read. For example, there are certain times when the wind might blow 30 miles per hour and a fisherman would stay and fish. Other times, if the wind blew from a different direction, it might be time to leave.

"We didn't make any money for the first five years," says Cochran. "We just stuck with it."

But by sticking with it, Cochran, himself, has become one of the top producers in Newport. He's also been able to buy bigger and better boats and install important electrical equipment on them.

"On my boat, I have a depth recorder, an automatic pilot which will steer the boat, an automatic direction finder which I can turn to either a beacon, a shore station or another boat. This will give me the compass bearing from my boat to a particular station," says Cochran, He also has LORAN A and radar with a 32-mile range.

Although Cochran has a boat equipped to maximize his fishing success, he can't always bring in a big catch because of the limits set at the docks. The processing plants at the dock do not always employ enough workers to process the fish. Part of the reason plants don't employ more workers is because they can't sell the fish, according to Cochran. And that's frustrating to him.

"There's no point to getting bigger and better or modern equipment because we haven't been able to sell what we catch," he says.

Cochran wonders if it's possible for the OSU Sea Grant College Program to step in and help improve seafood markets. Perhaps Sea Grant could help educate people about how to prepare underutilized species of fish.

Cochran would also like Sea Grant to help establish new markets for fish wastes. Right now, plants are forced to pay to have fish wastes taken away and buried in a land fill.

Like many professional fishermen, Cochran has mixed views toward the Sea Grant program. It seems to him that Sea Grant is encouraging new fishermen to enter the market while other agencies are talking limited entry.

But the Newport fisherman has been able to get some use out of Sea Grant's programs. He's attended workshops on net mending and boat wiring. He also found Sea Grant seminars on taxes helpful.

The most important benefit from Sea Grant for Cochran is Sea Grant's marine extension agent in Newport, Bob Jacobson.

"Jake's pretty much made Sea Grant here," says Cochran.

Cochran describes Jake as "one of the fishermen," and not some "big-wig" who comes in and tells the fishermen they're doing everything wrong.

To Cochran, Jake is the kind of person-agent with whom he can discuss fishing developments from new gear to the 200-mile limit to limited entry.

Cochran will argue with any agency which tries to promote limited entry.

"I'm not in favor of limited entry. Basically, this nation was built on the idea of free enterprise and on the idea that anybody could go into any business they wished," says Cochran.

He is also not in favor of part-time fishermen.

"Craig," interrupts his wife. "Didn't you start out fishing part-time? And won't your sons start out part-time if they become fishermen?"

"Yes, that's true," says Cochran. "But by part-time, I'm thinking of the person who holds a steady job. We have a good many in the salmon industry who only work on the weekends and their vacations."

Cochran thinks a person who fishes professionally should make the bulk of his income from fishing.

For Cochran, fishing is a serious occupation and one which requires a special type of temperament.

"A person has to be independent, a self-starter and willing to work," he says. "It's a physically hard way to make a living."

The life of a fisherman requires a lot of dedication, according to Cochran, who realizes that the life of a fisherman may be harder on his family than it is on him.

"If a fellow is going to make it fishing, it takes one hundred per cent cooperation from his family," says Cochran. "There are times when my wife would like me to be home and I can't be; other times I'm probably underfoot when she'd like me to go fishing."

Linda Cochran is, in fact, one hundred per cent behind him.

"I'm real proud of him," she says. "We've tried to make fishing a complement to our lives, not a detriment."

She emphasizes the positive aspects of being a part of a fishing family. She thinks that her sons may actually have more access to their father than other boys do. They also have an opportunity to learn an occupation at an early age.

Linda Cochran is also unafraid of the dangers often reported about fishing. She is able to talk with him over a radio when he is at sea and she knows he will use good judgment when returning. Cochran, himself, does not find fishing a dangerous profession.

"You listen to weather reports and watch the weather. Then, when it gets to a certain point, you leave and go home." Cochran applies the same caution to crossing the bar: if it's bad, he stays off it. Sometimes he just waits for the tide to change so he can come in safely.

In the seventeen years Cochran has fished professionally, he's had plenty of bad seasons and he expects he could still have a bad one. Even now, he considers buying a new boat somewhat of a gamble as he may not be able to sell enough fish to pay for it.

But he's optimistic. He likes the unpredictability of being a fisherman (every day is different depending on weather and market conditions) and, most of all, he likes being his own boss.

Although he may move to a different port someday, he'll always stay with fishing. Like a lot of people, what keeps him going is the ability to look ahead—to look forward to something.

Cochran's got a lot to look forward to. A new boat, better market conditions and maybe even watching one of his sons become a professional fisherman.

"There's no point to getting bigger and better boats or modern equipment because we haven't been able to sell what we catch."

Sam Hayes: oysterman

It's 1910. A man by the name of Jesse Hayes is hunting on a strip of land known as Bayocean spit. The channel into Bayocean is being dredged to prepare for a new resort on the spit. At the dredge tailings, Hayes sees something which catches his interest. It's half of an oyster shell. Being a man of great curiosity, he wonders where the other half is. He looks and looks, but never finds it.

"He couldn't find any evidence of any oyster anywhere," says Sam Hayes, Jesse's son.

Except half of a shell. And that half was enough incentive for the Hayes family to get into the oyster business.

"People told him that if there weren't any natural oysters in the area, then oysters wouldn't grow," says Hayes.

But Sam's father didn't believe it. Around 1928, Sam and Jesse Hayes heard that the Japanese oyster was being raised successfully in Canada. So they took a trip up to Canada, bought some oysters and brought them back.

"My father went to a little island in the southwest corner of the bay between two little channels and he planted them there," says Hayes. "Everything about them improved."

So Jesse Hayes knew that he could raise oysters. The next problem was securing land on which to raise oysters.

"We went to the legislature in 1931 and asked the State to set aside lands in Tillamook Bay for the purpose of raising oysters," says Hays. "And they did."

That allowed the Hayes family and other local families to acquire land.

But there was another problem that no one had considered. Just because land was available and oysters could be raised didn't mean that anyone would buy them.

"There was no market, nobody was educated to eat them or how to handle them," says Hayes.

Some of the people who had acquired land became discouraged when no one would buy their product. The thought of raising oysters to get rich quick quickly vanished. Eventually, they sold their land to the Hayes family.

The Hayes family realized that selling oysters would be tough at first. But even they got discouraged. They couldn't even give oysters away.

"We offered to give two or three restaurants a gallon of oysters if they would just do something with them," says Hayes. "But they didn't want them for nothing."

Fortunately, the oyster business was enjoying a little more success up

"We offered to give two or three restaurants a gallon of oysters if they would just do something with them, but they didn't want them for nothing."

in Washington. An oyster company, started in Willapa Bay in the late '20s, was expanding their market to Portland and San Francisco. They had had some trouble with local oyster seed, but were able to raise Japanese oysters successfully. The Hayes family got involved in their operation and were eventually sent to San Francisco to work at the old Consolidated Oyster Company.

Hayes figured that if any city would be interested in oysters, it would be San Francisco. But he was wrong. He seldom worked a full week, but he did get some experience.

"I learned above all things, things not to do," says Hayes.

Hayes stayed in San Francisco about 11 months. When he returned to Tillamook, he again tried to sell oysters; again, no one was interested.

"We were working very hard, going very hungry and going without everything," says Hayes.

Instead of giving up, the Hayes family invested in building a modern oyster dredge, and became the owners of the first really modern dredge on the coast. They were proud of their new purchase and named it the Jesse S. after Sam's son, Jesse Samuel, who was 4-years-old at the time.

But then—as soon as the dredge was completed—a new crisis occurred. World War II broke out and the U.S. shut off their seed supply from Japan. There they were. A new dredge and a bay with no seed and very few oysters on the ground.

"I was offered the opportunity to move the equipment over to Willapa Bay where there was an abundance of wild oysters," says Hayes. He stayed there three and one-half years and helped form the Coast Oyster Company with the people from Willapa Bay.

After the war, Hayes returned to Tillamook Bay and planted oyster seed very heavily. The years passed and business began to pick up. The '40s turned into the '50s; everything seemed to be progressing.

Until November 13, 1952. Winter storms finally caused a breach in the Bayocean spit—the same general area when Jesse Hayes had found half an oyster shell 42 years before. The ocean poured over the narrow strip of land, flooding the oyster beds. In 11 days, nothing was left.

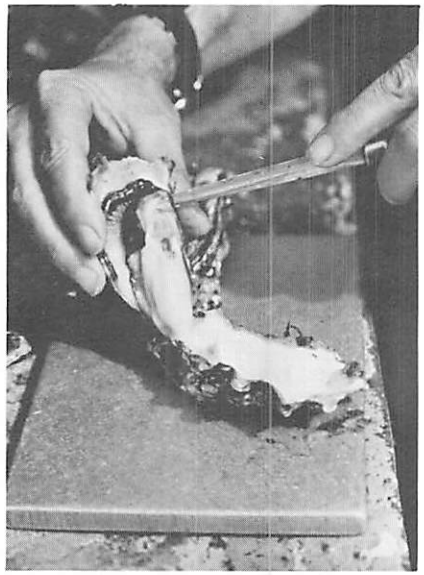
"The ocean came in on the bay and took about 9,000 feet of this peninsula," says Hayes. "In actual cash on the ground, we had $121,000 worth of seed."

With the help of the county and ports, the peninsula was repaired. And once again, Hayes began the process of growing oysters.

And again, there were more floods —this time in 1964 and 1965.

"Through all of this, it's been a learning process," says Hayes. "Now, I feel completely confident that I can raise a crop of oysters on Tillamook Bay."

Understandably, Hayes describes his worst problem as floods. But he describes his second worst problem as lack of knowledge. He literally knew nothing about oysters when he became involved with raising them at age 16. But he kept at it and got



some help from Oregon State University.

For example, OSU helped the Hayes family control ghost shrimp. Ghost shrimp are like marine moles. They burrow into the ground and keep the ground in a state of flux. They keep grass from growing and create loose, mushy sand. Oysters settle in this mush and eventually smother.

Bill Wick, now director of the OSU Sea Grant College Program, was the OSU extension agent for Tillamook County when ghost shrimp were making life rough for oyster growers. Wick was able to suggest ways to combat ghost shrimp. Wick also helped the Tillamook oyster growers get emergency loans when their oyster beds were destroyed by floods.

"If it hadn't been for the work that Bill Wick did for us originally, and the work the program has done since, there would be no way a person could raise oysters in Tillamook Bay," says Hayes.

Now that Hayes has weathered floods and subdued ghost shrimp, he's almost on top of the oyster business. Almost. The final step will be producing his own seed.

Two new techniques for producing domestic oyster seed are being developed.

A hatchery system developed by Sea Grant researchers enables larvae to be raised in tanks and fed on algae. When the larvae are ready to set, thousands of mother shell are inserted in the tank and the larvae collect on them. The mother shell are then put in cases and sent to oyster growers.

Another method enables the oyster grower to set his own larvae. Instead of being set at the hatchery, the larvae can be collected in a jar and sent to oyster growers. Oyster growers will keep the larvae in a tank with warm water until the larvae are ready to set. Within one to two weeks after setting, they can be planted in the bay.

"I can hardly believe it," says Hays. "Millions of larvae in a single jar."

Hayes hopes to set 1,000 cases of seed this year. He also hopes that this is the last year he will have to rely on seed from Japan.

Being able to produce domestic seed means a lot of things to Hayes. He can cut down on the cost of transporting heavy cases of seed. He'll be able to predict how many gallons of oysters he will be able to produce. He'll also be able to stabilize his company and attract good employes.

"I've never been more optimistic," says Hayes.

Three generations worth of effort is finally paying off for the Tillamook Bay oyster grower. In 1976, Hayes will produce 20,000 gallons of oysters. By 1977-78, he predicts that his production will triple—from 20,000 gallons up to 60,000 gallons. In the end, Hayes predicts, Tillamook Bay will produce a sustained yield of 225,000 gallons of oysters per year.

"When this happens, our bay will be the largest single area of production in the world," says Hayes.

Until then, Sam Hayes and his own son, Jesse, will keep going to work. They'll keep planting, washing, grading, packing and delivering oysters.

And Sam will keep making predictions.

"With the oysters and new salmon hatchery programs, this will also be one of the richest estuaries in the world," says Hayes. "If it's not, it's because everybody quit and didn't give a damn."

Which is unlikely. Particularly for Sam Hayes. He's always known there was another half to that oyster shell his father found.

"Through all of this, its been a learning process. Now, I feel completely confident that I can raise a crop of oysters on Tillamook Bay."


PIUTE

Sally Sharrard: recreationalist

Sally Sharrard already knew how to catch salmon, flounder, trout and Dungeness crab.

But she had never gone clam digging.

So when her father asked her if she would like to dig up some clams, she was interested. After all, it was her father who had taught her how to go fishing and crabbing.

But this experience promised to be different. Why?

Because her father didn't know anything about clam digging either.

"He ran around with this book in his hand," says Sharrard. "When it said to do something, he did it."

Apparently, the father and daughter team were successful: they are now big fans of gaper clams.

Learning from a book isn't foreign to the Sharrard family. Whenever Lloyd Sharrard gets interested in a new sport or recreation, he usually finds something to read about it and figures out how to do it himself. In fact, that's how he learned how to crab.

"My father reads up on all the Sea Grant Marine Advisory Program bulletins," says Sharrard. Those bulletins contain information on a broad range of recreational topics, including clam digging, crabbing, driftwood identification, bottom fishing and marine safety.

Sharrard has also learned sailing and boating from her father. Safety has usually been the first lesson.

"If you go out with my father, the first thing you learn is how to read a compass and how to take a bearing," says Sharrard.

Sharrard's father also shares his common sense with his boating partners. He usually carries extra food when he goes out in the ocean in case he has to drift for a while. He also stores his gasoline in a safe place and carries fire extinguishing equipment. And true to his nature, he carries a book which lists navigational signals.

Workshops held at OSU's Marine Science Center also provide information on navigation and boating safety to people who are newcomers to recreational boating.

Sally Sharrard shares some of her recreational experiences with her brother, Jerry, who lives in Newport and owns a canoe.

"We've been canoeing up the Siletz River," says Sharrard. "There's all sorts of wildlife you can sneak up on."

Of course, river running can include more than just watching wildlife.

"The thing I really enjoy when I run rivers is going through that really

"If you go out with my father, the first thing you learn is how to read a compass and how to take a bearing."

dangerous rapid," says Sharrard. "When I'm right in the rapid, I'm usually really calm. Time seems to slow down and I notice things going on in the bank and what everyone else is doing."

Sharrard explains that she has run enough rivers to know how to react "exactly right"; as a result, she doesn't pay much attention to rowing. She's also learned how to "read" rivers. She knows when she should avoid a certain kind of ripple or a log jam.

She did flip over once, but she automatically grabbed the raft and turned it back over. That kind of response was learned from practicing—over and over again—in a pool.

"I've always believed that if you practice something enough, your head automatically does it," says Sharrard.

Fishing, crabbing, clamming, sailing, boating, wildlife watching and river running. Sharrard is a well-rounded and well-seasoned recreationalist. In fact, during the winter she cross-country skiis—a sport she takes just as seriously as river running.

Sharrard has co-authored a book on ski tours and is planning two more books—another on cross-country skiing and one on river running. The book on river running should be a little different: she'd like to introduce an educational component to river running.

"A lot of people think river running is just a fun thing," says Sharrard. "But you can use river running,

kayaking, rafting, canoeing and motor boating to teach kids about their environment and about pollution."

Sharrard would like to see school systems get involved in outdoor education. For her, outdoor education is developing an awareness of the environment and how the environment is being used—and abused.

"I think kids should start receiving outdoor education in elementary schools," says Sharrard.

Sharrard bases some of her ideas on a teaching experience her brother had. He worked for a private pre-school program in Eugene, Oregon. His job was to take 4-to 6-year-old children out once a week and introduce them to an outdoor activity.

"One day he took them canoeing on the McKenzie River and he taught them about the pollution problems as they were learning to canoe," says Sharrard.

Those kids are now in fifth and sixth grade.

"They apparently have more of an interest in environmental problems, outdoor activities and an awareness of safety problems than any of the other kids in that school," says Sharrard, who explains that records were kept on the children in her brother's program.

She can find an example of that kind of learning in her own family. Her younger brother, John, 13, has grown up outdoors with his father who still takes him fishing once a week. John now wants to be a marine biologist and Sharrard encourages that by taking him to the OSU Marine Science Center.

Sharrard herself has returned to school to study geography, which she describes as the study of what people have done to their environment over the ages and what they may do to it in the future.

"I'm hoping I'll be able to study water management systems and how what we are doing now will affect the future and how things could be changed," says Sharrard.

Sharrard favors changing the environment as little as possible.

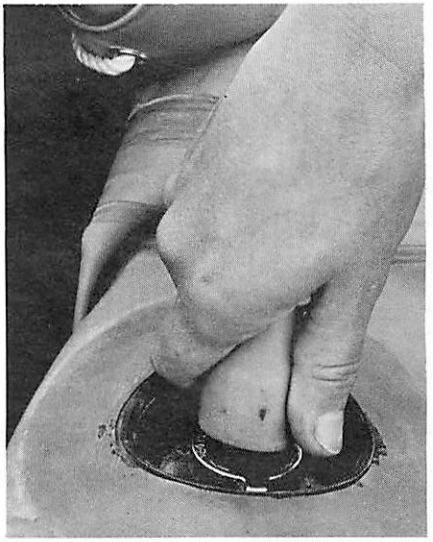
"I have this idea that in the future —in thousands of millions of years— whatever we do to any little system is going to do something else to the planet,"says Sharrard. "And if we're not careful, we could cause the planet to decay."

Sharrard is glad that Sea Grant is involved in gathering information relevant to environmental issues. For instance, Sea Grant is studying the plankton dynamics of Oregon's estuaries. Information from this study will help predict how engineering modifications will affect the marine life in estuaries.

She hopes that recreation and environmental education can be tied more closely in the future. It may be an uphill battle—but it could also be relatively simple.

"If you're going to do something outdoors, it's up to you to learn about what the limits of the outdoors are," says Sharrard.

And one thing about Sharrard. She follows her own advice.



"If you're going to do something outdoors, it's up to you to learn about what the limits of the outdoors are."

Don Johnson: fisheries manager

Don Johnson is a tall, slender, middle-aged man with a few dignified, but unmistakably boyish, expressions. His last name suggests that his ancestors were Scandinavian; his blond hair and fair complexion confirm it.

A picture of a ship hangs on the wall behind his desk, which is partly covered by stacks of paper. Through his window, he can look south toward the downtown section of Seattle. A few boats are tied up in the harbor which borders his building.

"We must maintain enough contact with the man at sea so we can understand the things that are part of his life and his livelihood," says Johnson. "These things should be a part of the mix involved in management decisions."

Management. Fisheries. Extended jurisdiction. Limited entry. Pollution. Salmon. People.

The marine problems denoted by these topics can be found mingled with the stacks of paper on Johnson's desk. They can be seen on his face when his youthful eyes narrow. They can be heard as Johnson clicks his pen and taps it on his desk.

Johnson is not in an enviable position. He is a regional director for the National Marine Fisheries Service (NMFS). That makes him a government agent: a bureaucrat. He must find a balance among biology, cultural considerations and ethics; he must enforce decisions handed down by federal representatives. If he's pinned down on an issue, he'll express the government's opinion—not his own. And that always puts him on the other guy's side.

Yet Johnson doesn't see this kind of responsibility as a burden. It's a challenge to him. In fact, he probably regards his position as enviable, or at least desirable. It enables him to make changes he hopes will be positive.

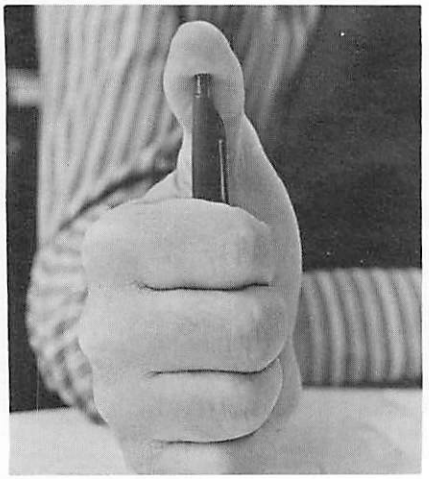
"There are many people who have a good deal of confidence in our researchers and their efforts to obtain information pertinent to the fisheries," says Johnson. "But I think the other face of government shows to people at times and they're impatient with us as a bureaucracy—as they may be with other elements of government."

Johnson is sometimes concerned by the image that the NMFS projects, but he is unshaken by negative feedback.

Why?

Because he believes in the work being done by the NMFS. Most of the research undertaken by the NMFS is oriented toward solving problems. And many of the services provided by the agency are people-oriented.

"We must maintain enough contact with the man at sea so we can understand the things that are part of his life and his livelihood. These things should be a part of the mix involved in management decisions."



"Where I live, I watched a pretty little stream get paved over for a super-market. That's been happening all through our environment."

It's easy for Johnson to talk about the program. He finds it hard to pack a brief sketch of the program into ten minutes because he's got a lot to cover. National and local projects. Research and enforcement activities. Salmon runs on the Columbia River. The Pribilof program—unique because it has nothing to do with fish. (The program is concerned with the welfare of the fur seal resource.) Financial assistance programs. Grant and aid programs. The recreational fishery. Economic studies.

NMFS is also involved in enforcing international treaties and foreign fishing regulations, according to Johnson. Within the U.S., the NMFS maintains good working relationships with other marine programs, including state agencies and Sea Grant programs.

For example, the NMFS often calls on Oregon State University's Sea Grant College Program when they need to get people together. Sea Grant's marine advisory agents, located on the coast, are trained to help people identify needs. OSU's Sea Grant program has also been helpful in getting information and materials to people.

Johnson speaks fluently on the projects within his program. But when it comes time to talk about some of the sensitive issues surrounding marine affairs, his tone changes. He's a little more cautious; a little more conscious of the way he puts his words together. He often walks a tight rope between traditional values and modern technology.

He doesn't think of himself as living in an ivory tower. He likes to go down to the docks and talk with fishermen. But he's not a fisherman; he's a manager. And being sensitive to a person's problem is only one piece of a puzzle. When he solves a puzzle, he must put all of the pieces together on a large national—and sometimes international—board.

And that's difficult.

Limited entry, fisheries management, the Northwest Indian fishing rights decision and the 200-mile limit are all heated issues on which Johnson has displayed both sensitivity and objectivity.

For example, limited entry is a concept criticized by many fishermen. They feel it is unfair for a government program to decide who can fish and who can't based on the amount of income earned from fishing.

Johnson understands their complaint, but maintains a different perspective.

"I think limited entry is a kind of management tool that probably is desirable in the West and elsewhere," says Johnson. "But I see it as a difficult tool to use and I'm not anxious to be involved."

Limited entry is the kind of program that could provide an opportunity for favoritism and might result in a loss of public trust, according to Johnson.

Other difficulties arise—and will probably always arise—over the management of fish. People complain about the high price of salmon. People complain about small fish runs on the Columbia. People

complain about fishing limits and poor market conditions.

"Puget Sound may not be producing as much fish as it used to," says Johnson. "But we must realize that there have been changes in our environment."

Many of the streams which run into rivers that provide a highway and a home for fish have been altered. Logging and industrialization have destroyed spawning grounds. And no one can turn back the clock.

"Where I live, I watched a pretty little stream get paved over for a supermarket," says Johnson. "That's been happening all through our environment."

Some of the fish losses can be offset by fish hatcheries and artificial spawning grounds. But even that could cause problems.

"We may pay some kind of price in genetic adaptation," says Johnson. "We may also run some risk of disease when we concentrate fish together."

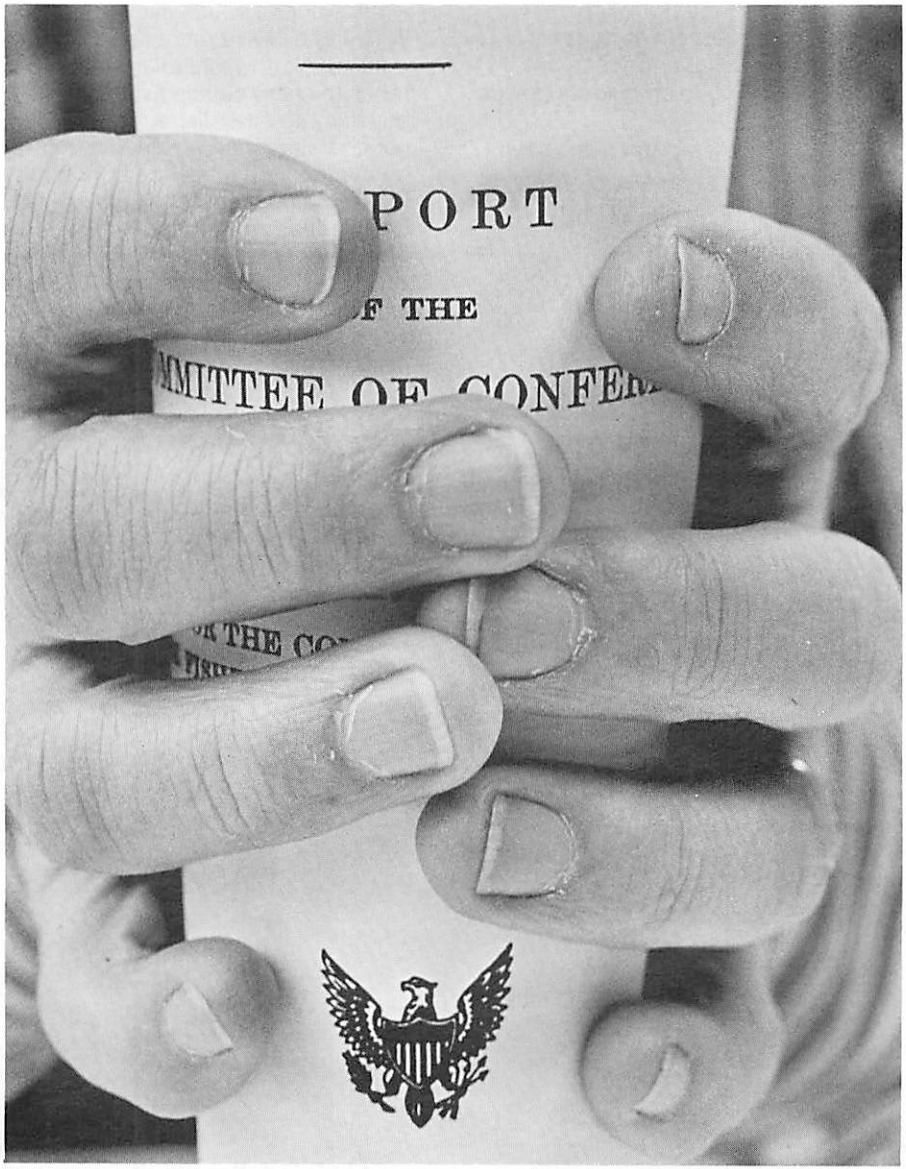
Johnson also points out conflicts in the ways the public would like the Columbia River developed.

"The public is concerned with both the production of salmon and the production of power," says Johnson. "One option is to install new power houses."

What will those power houses do to the fish?

"They will make it more difficult for the fish," says Johnson.

And if people want both fish and power, the fish will probably be raised in hatcheries and—where



possible—diverted from turbine runners in power houses at dams. There will be a higher price to pay if people are going to enjoy both power and fish.

"We go at cross-purposes," says Johnson. "That's why the government hires people like me to help with management problems."

Johnson also senses some cross-purposes with regard to the Northwest Indian fishing rights decision.

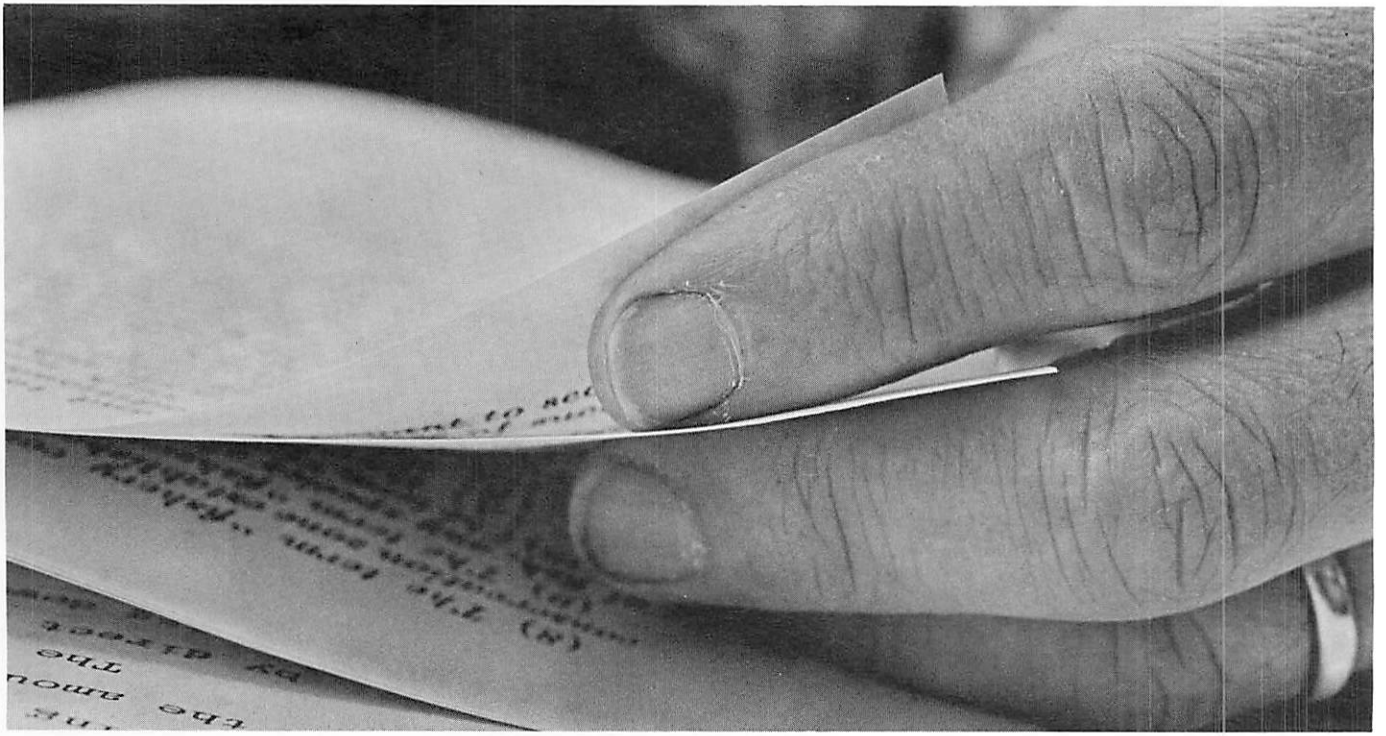
Two federal courts in Oregon and Washington have recognized the rights of Northwest Indian treaty tribes to share certain fish resources equally with other fishermen. These courts determined that Indian treaties guaranteed the tribes the opportunity to take 50 per cent of all sea-run fish destined for tribe's traditional grounds.

An OSU Sea Grant law professor is following these developments and plans to assist the development of management programs designed to implement the resource-sharing requirements.

So far, the decision has been difficult to implement.

"If you have a non-Indian group taking 95 per cent of the catch and you're going to reduce that to 50 per cent or less based on the judicial formula, you simply have to take fish away from them in some fashion," says Johnson.

Taking fish away from non-Indian groups creates economic problems as well as animosity.



"It seems inevitable that they'd resent the decision," says Johnson.

The regional director predicts that there will be problems for years.

"Here's a good example of where limited entry and an adequate buy-back program could take some of the economic stress out of this question from the standpoint of the non-Indian fisherman," says Johnson.

Johnson is in the position of looking at the problem from both a national and international perspective. He is a commissioner on the International Salmon Commission. The Commission must be responsive to both U.S. and Canadian views. Understandably, Canada does not want to get caught up in the domestic problems of the U.S.

"I feel that it is my job to be supportive of the judicial decision," says Johnson. "But as an international functionary, it seems to me that I ought to say something when the U.S. courts interfere with the operation of that commission."

The 200-mile limit, a bill claiming jurisdiction over fisheries resources out to 200 miles, is another time-consuming marine development. Johnson is helping set up the Pacific Regional Council, a four-state group including Oregon, California, Washington and Idaho. The council will develop management plans based on scientific facts. These plans should prevent stocks from being overexploited.

OSU's Sea Grant program is assisting the council by gathering some of the scientific information it will need to formulate the management plan.

"The trend on the part of the government will result in better management in the restoration of stocks of fish and of the depletion of stocks of fish," says Johnson.

He predicts that there will probably be more resources off the U.S. coast 10 years from now.

All in all, Johnson is optimistic about the U.S. fisheries, That's because he believes that good management can help shape our fisheries.

Of course, not everyone will approve of the shape it takes. But somehow, Johnson is determined to balance biology and social considerations. He will meet with marine users. He will discuss fisheries on an international level. He will call on Sea Grant programs and state agencies for input and use his own resources.

"Good managers do not exist in a vacuum," says Johnson.

If that's true, then Don Johnson must be a great manager.

"Good managers do not exist in a vacuum."


OREGON LAWS
GENERAL LAWS OF OREGON
New OREGON DIGEST
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Elizabeth Merrill: concerned citizen

There was a time when Elizabeth Merrill, Tillamook resident, knew very little about Tillamook Bay. She also knew very little about the other three bays surrounding Tillamook. After all, a bay was a bay was a bay.

Somehow, she ended up on a mailing list for estuary conferences. And eventually, she attended a conference at OSU. During the coffee break from one of those conferences, she was approached by a professor who wanted to know who she was and what she was doing there.

"I said I was just a dumb country lawyer who represents eight sewer projects and lives in an area with four estuaries," explains Merrill. "I was being asked a million questions I couldn't answer."

Today, Elizabeth Merrill is modest about the amount of information she has learned about estuaries. Perhaps she is not familiar with the technical aspects of what makes an estuary tick, but she is aware of the general characteristics of estuaries—and how each estuary has its own character.

"When you say estuary, you are not talking about a carefully defined set of facts," says Merrill. She's learned that Tillamook Bay, Netarts Bay and Nehalem Bay are all different—and different plans must be made for each of them.

"To think that the estuaries should be handled in the same way would be a mistake of monumental proportions," says Merrill. "The future of each bay must be focused on the basic character of each bay and on what people want done."

These attitudes grew out of her participation on the Tillamook Bay Task Force, a citizen's group organized to produce a report on the land and water uses of Tillamook Bay.

"The idea was to get citizen input on what some of the problems were with the bay and how the bay fit into the future—both of the county and the state as a whole," says Merrill.

The group was set up by county commissioners who tried to draw from various municipalities that had an interest in land and water uses of the bay. Representatives from three cities and two port districts were included in the group.

Why was Elizabeth Merrill asked to participate?

"Partly because they got down to the end and discovered they had all men," she says with a smile. "And partly because the bulk of my law practice is involved with various municipal corporations which deal with sewage, water and land development."

In addition to local citizens, the Task Force was supported by a

"To think that the estuaries should be handled in the same way would be a mistake of monumental proportions. The future of each bay must be focused on the basic character of each bay and on what people want done."

technical advisory group made up of people from various agencies. Their main function was to provide raw data and to present ideas and research information.

"Nobody came into the Task Force with preconceived ideas," says Merrill. "We knew we should be looking at different types of uses for different segments of the bay."

The group studied the land uses of the bay first. They went around the perimeter of the bay and discussed each area.

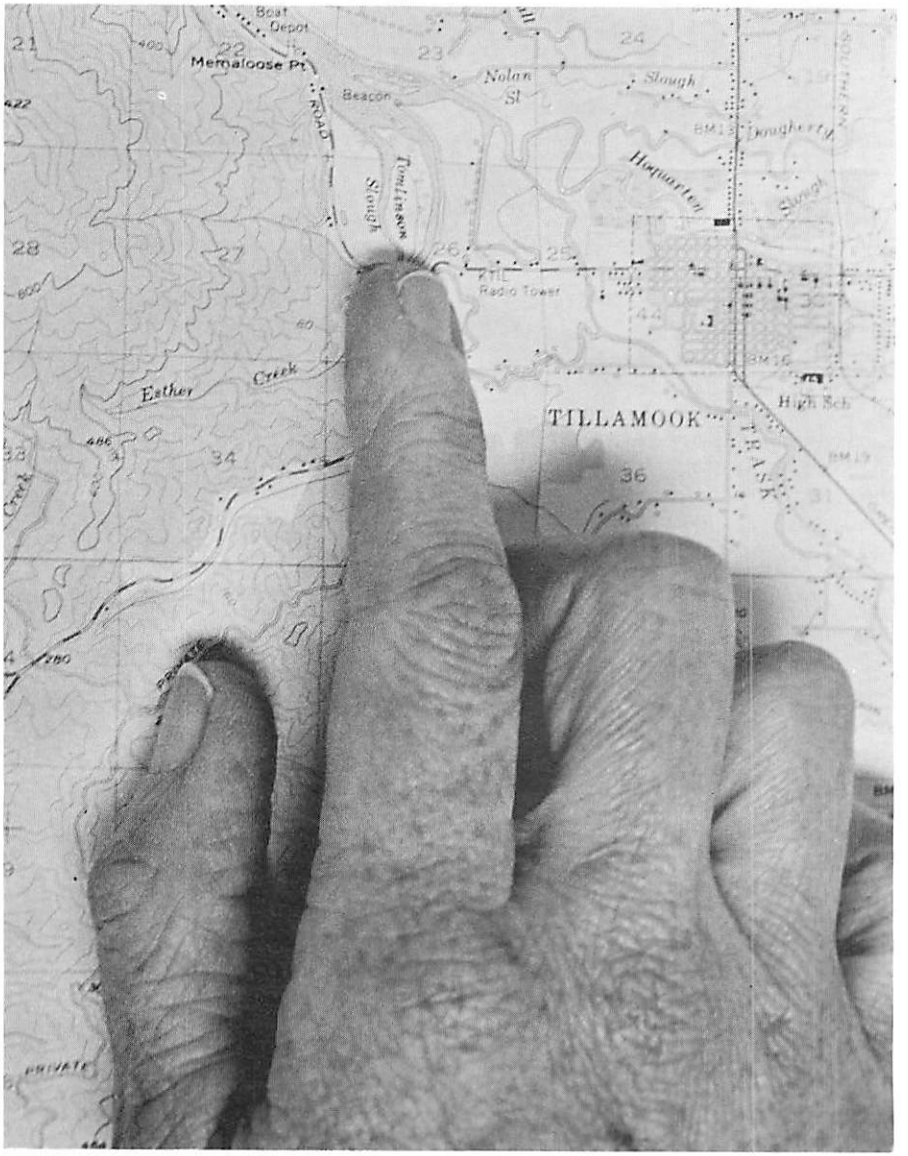
For example, in Garibaldi, there are some areas presently used as commercial fisheries or marine processing plants.

"It was felt that these commercial operations should be retained and possibly further developed," says Merrill.

In other areas of the bay, the group decided that the bay should be left in a natural state. It was also the feeling of the entire task force that there could be no justification for commercial activity or industrial activity on the waterfront which could be inland.

"You wouldn't put a shoe factory on the waterfront," says Merrill. "But arguments did occur over whether marine-complex restaurants should be constructed there."

Before any decisions were made, the group spent the early months listening to other people—people from the Department of Environmental Quality, the Oregon Department of Fish and Wildlife, federal agencies and soil conservationalists. The group



also applied for grants to conduct studies.

Some speakers were from other Oregon groups which had recently been involved in land use planning. They shared the hurdles that they had run up against.

"They said they ran into opposition from state and federal agencies when it came time to implement their plans," says Merrill. "They felt they should have involved these agencies in the decision-making process from the beginning."

The Tillamook Bay Task Force has made every attempt to involve state and federal agencies from the beginning. They also involved the OSU Sea Grant College Program.

Sea Grant's director, Bill Wick, was invited to meet with the Task Force; he, in turn, provided various technical publications which they found helpful. Wick had been an extension agent in Tillamook County and was familiar with the problems.

"Bill is balanced in his approach to problems," says Merrill. "I think his presence gave everybody the feeling that we were going to accomplish something in the long run."

What would have happened without a Tillamook Bay Task Force?

"The only thing you can do is to go on the track record," says Merrill. "The track record through the last umpteen years is one of do nothing because somehow it will work out.'

The "do nothing" attitude is very unsettling to Merrill. Because if Tillamook doesn't do something, then someone else probably will. And Merrill would rather be responsible for planning her own bay.

"If we can come up with something we can live with locally and something the agencies can live with, hopefully this will be implemented rather than something someone sitting 3,000 miles away decided," says Merrill.

Merrill believes that there is a tremendous interest from the people to decide the future of their land and water resources. She also admits that this interest is somewhat new.

"Six or eight years ago, if I had gone before any group of 25 people in Tillamook County and talked about the possibility of a water shortage, I would have been laughed out of the room," says Merrill. "Today, I don't believe that there is an intelligent thinking person in Tillamook County who does not realize that the entire county faces a serious water shortage."

"If we can come up with something we can live with locally and something the agencies can live with, hopefully this will be implemented rather than something someone sitting 3,000 miles away decided."

Merrill is optimistic about the impact of the Tillamook Bay Task Force.

"We hoped that as a result of our efforts, the rest of the bays would be looked at," says Merrill. "It shouldn't be difficult since some of the raw data has already been assembled from our study."

Although the report is completed, Elizabeth Merrill will probably not feel as though the "case" is at rest until one more step is taken: the implementation of the recommendations made in the report.

"We didn't want this to be just another document to put on a shelf," says Merrill. If everything goes well, the report will be dog-eared and underlined—and not just a dust collector.


ORIENTAL

Chuck Miller: port manager

Take the Marine Drive West Exit. Go past the expo center and under a railroad tressel. The road makes a sharp left; stay on it until you come to the sign to Terminal 6. Turn right and head for a tall, brown building.

Inside, the secretary is friendly and the atmosphere busy. A switchboard operator maintains her composure while she answers and connects dozens of calls.

Chuck Miller's office is at the end of a short hall; his desk faces rows of rectangular containers. Somewhere beyond those containers, the Columbia River is also busy bringing ships into and out of Portland.

Miller, manager of Terminal 6, often arrives at work about 6:30 a.m. to do paperwork. His phone starts ringing about 8 a.m. and he spends about half of his day talking with customers.

"I figure anyone who didn't speak up at that meeting didn't have anything to say," says Miller to someone over the phone.

Miller hangs up and dials another number. He's got three more calls to return. He also has someone waiting to see him and a luncheon engagement at 11:30 a.m.

As manager of Terminal 6, Miller has to keep on top of marine developments. Fortunately, he's been working for Portland's maritime industry for about 28 years and knows how complex it is.

And how important it is.

For example, results from a survey in 1972 indicated that the Port of Portland affected directly and indirectly as many as one in every ten jobs and nearly $300 million in payrolls. A more recent survey suggests that Portland's maritime industry affects as many as one in every five jobs.

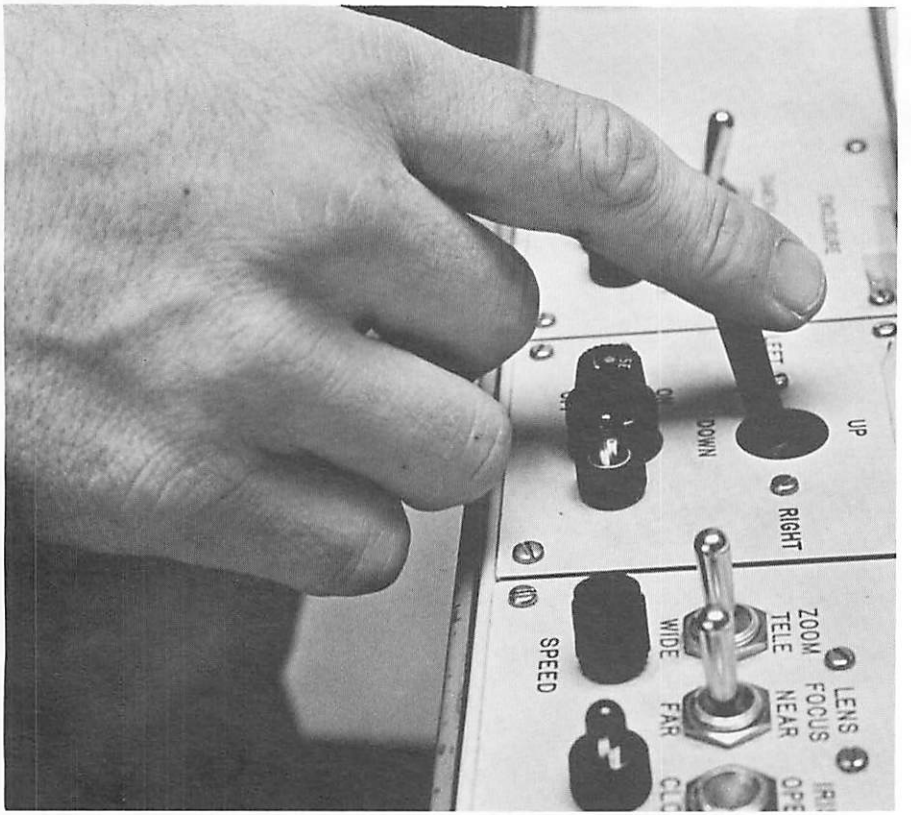
Miller's own operation employs between 80 and 100 people.

"My primary responsibility has been to organize an efficient team to operate and manage a container terminal," says Miller. "That has required opening up the container yard, the container freight station and the administration building."

Containers are metal, wood, plastic or fiberglass units which are between 8-40 feet long, according to Miller. Usually high revenue cargo, such as television sets, are transported in containers. Special ships are designed to handle these containers. Some containers have removable tops so large machinery can be stored in them and ships have special places to put them.

Terminal 6 handles primarily 20-40 feet containers.

"It's difficult to try to run a profit-making and/or pay-for-itself type of business in a fishbowl. Everyone's watching: the League of Women Voters, the commissioners and all the unions."



"Maybe Sea Grant could be an outsider looking in and they would be able to put things down on paper that the union would understand. Or maybe they could help us see things we're doing wrong."

There are five other terminals in the Port of Portland. Most of the terminals have special facilities for different types of cargo.

Terminal 4 is Portland's most flexible facility. It has automobile docks, a large steel yard, a bulk loader and discharger, a barge unloading facility, a truck loading and unloading facility and one of the largest grain elevators on the West Coast.

"Terminal 6 is located on 65 acres and handles about 30,000 tons of cargo per month from about 12 ships," says Miller. "Terminal 4, on the other hand, is on 150 acres and handles about 200,000 to 300,000 tons of cargo per month from about 30-40 ships."

Part of Miller's job, along with the other managers from other terminals, is making the Port of Portland more attractive to shippers than either Seattle or San Francisco. To a shipper, the most attractive port is the one which will get his cargo to its destination at the lowest possible price.

Miller explains that ports put together package deals. They will offer a rail car unloading rate, a handling rate across the dock, a stuffing rate into the container and a container through-put rate for the customer. Sometimes these package deals can save the shipper a dollar a ton.

"Ports can also be competitive because of their position, because of inherent economic advantages (because the cargo is there) and

because the traffic routes are shorter," says Miller.

How does the Port of Portland compare with other ports?

"The Port of Portland's shipyard and terminal operation probably almost broke even in 1975-76," says Miller. "But the Port shows a profit each year because of its diversification." In addition to the terminals and the shipyards, the Port also owns the Portland International Airport.

Unfortunately, there isn't enough revenue created or profit made for the Port to turn around and put millions back into new facilities, according to Miller. That investment will have to occur eventually to keep the Port healthy, he thinks.

"From a tonage standpoint, Portland was at one time the largest port and is now second or third," says Miller. "From a dollar standpoint, I imagine we're fourth or fifth."

Miller, of course, would like to raise the dollar value of the Port of Portland. But there are a lot of obstacles in his way.

"It's difficult to try to run a profit-making and/or a pay-for-itself type of business in a fishbowl," says Miller. "Everyone's watching: the League of Women Voters, the commissioners and all the unions."

In fact, part of his problem is lack of strong union support.

"If I were the XYZ stevedoring company and I ran this terminal, I would then probably have a stronger union agreement behind me and I would be able to take my problems to the Pacific Maritime Association (PMA)," says Miller. But Terminal 6 is its own terminal company.

Miller frequently talks with labor leaders, but history has already determined that labor and management objectives may be different.

A large warehouse sitting across from the administration building is an example. To run the warehouse efficiently, a few men—each capable of performing several skills—should be hired. Miller thinks he has enough work to keep about 20 people busy all day—if they can each perform about four different duties.

But the union has a different way of doing things. Each union member is classified for a specific skill and should perform no other skill. For example, a person hired as a crane operator is not supposed to run a conveyor belt—even if he knows how to.

Under the union system, Miller would have to hire about 80 people, even though there would not be enough work to keep all 80 people busy all day.

That would make opening a warehouse inefficient for Miller. It would, however, provide more work for union members.

Miller, who has had some involvement with the OSU Sea Grant College Program, wonders if Sea Grant could help.

"Maybe Sea Grant could be an outsider looking in and they would be able to put things down on paper that the union would understand," says Miller. "Or maybe they could help us see things we're doing

wrong." Ultimately, Miller thinks that Sea Grant could help Terminal 6 meet the union's demands in a better way.

Miller first became acquainted with Sea Grant about five years ago. Sea Grant showed up at the Portland Propeller Club and wanted to know if they would be interested in helping organize a conference for Portland's maritime industries.

"I was enthusiastic because the maritime industry in the Portland area has always had a lot of loose segments that were never really tied together," says Miller.

The conference, "The Future of Maritime Industries," was eventually organized and it was successful.

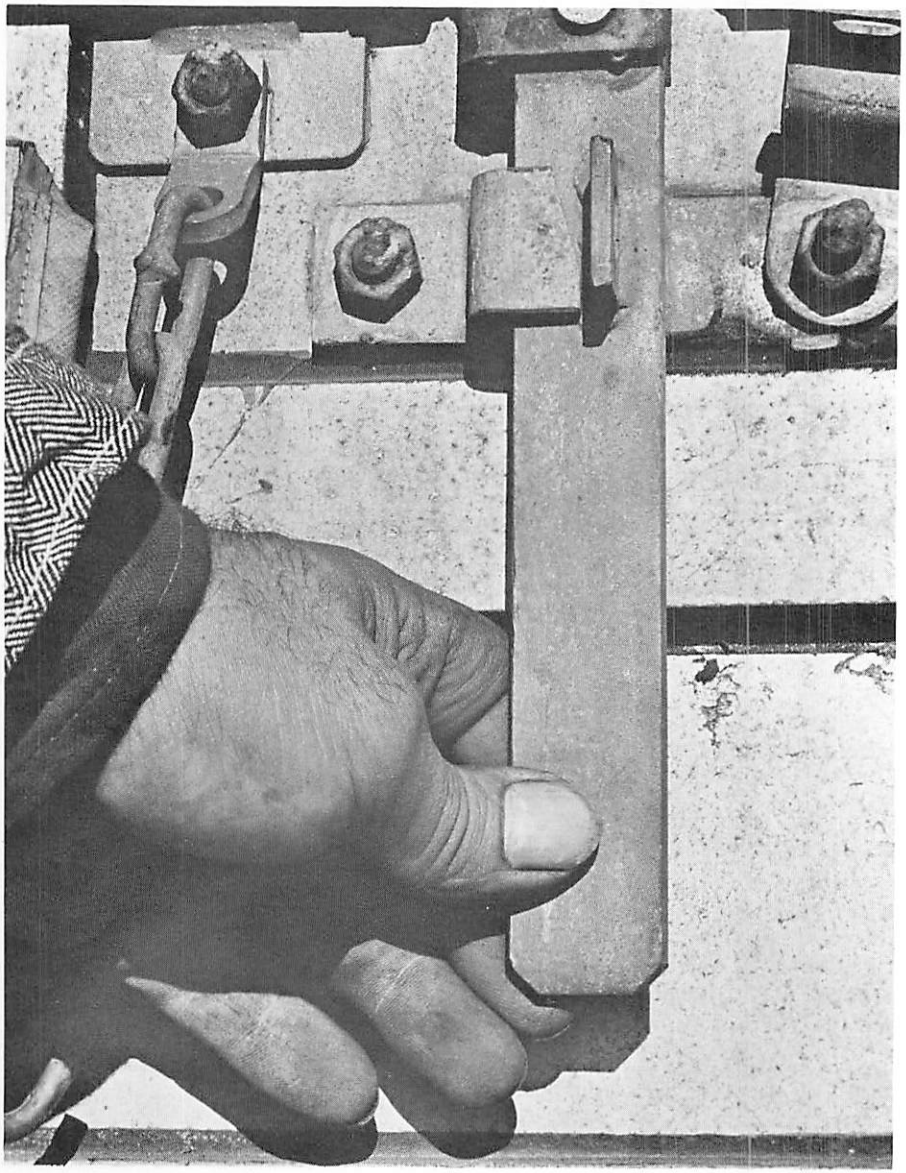
"It's not often you get the pilots, the steam ship operators, the stevedores, and the U.S. Coast Guard together in one room to talk about problems," says Miller. "Good ideas are introduced that would never be introduced if there weren't a common meeting ground."

Miller also attributes much of the success to Ed Condon, an extension oceanographer with Sea Grant's Marine Advisory Program.

"Ed can come in and get people to sit down and open up," says Miller.

There's one more area where Miller would like some Sea Grant help. Miller wants to know if cargo can be moved faster after it's unloaded.

"We sometimes think the dock is the only thing to worry about," says Miller. "But it's the back-up support area that is most important to a dock."



Miller would like to see Sea Grant become interested in how container cranes and supporting systems can be used more effectively to handle cargo faster. Sea Grant might also be able to determine if conveyor belts or other types of systems should be implemented to handle cargo. He also wants to figure out how to utilize his land better.

"If Sea Grant could get involved in those types of programs, it would be beneficial to the Port of Portland and any other port along the coast," says Miller.

Sea Grant has already helped the Port of Portland with results from the wave facility located on OSU's campus, according to Miller. Engineers have used the tank to test out new dock designs to determine how they'll react to wave conditions along the coast.

Miller's problems at Terminal 6 don't prevent him from looking into the future. He envisons the Port of Portland growing and he also envisions development along the Columbia and Snake rivers which has an impact as far east as Wyoming.

"By the year 2,000 you'll be able to draw a line from Hanford to Walla Walla to Pendleton to that little town of Boardman and back across again," says Miller. "There will be about a quarter of a million people there and industries all over."

And because the Snake River is opened up clear to Lewiston, Idaho, deep draft barges can be brought out of that area.

"That doesn't mean you tap Lewiston," says Miller. "It means you tap the Great Falls, Montana area because it's so close to Lewiston."

Miller also predicts that the Port of Astoria will grow to handle big grain ships, big tankers and large bulk carriers.

"The ports along the river will seek out their level of what they can handle and what they can attract," says Miller.

Miller's vision started a long time ago. In a sense, he's the Samuel Clemmens of the Columbia River. He's always loved the river and used to sail on tug boats as a deck hand in his teens.

And once in his teens, he happened to watch a home movie in which a man in a white uniform was having a great time. That was for him, he thought. So he enrolled in the U.S. Merchant Marine Academy in Kings Point, New York. After he graduated, he went to sea. But when he decided to marry, he returned to his old job in Portland with a tug boat firm.

That was in 1959.

Today, he's still loyal to maritime industries and still trying to make things better.

Ed Condon, who has worked with Miller for five years, describes him as a person who's always willing to help.

"If you call up Chuck and ask him to help, he'll always say 'yes'," says Condon. "And then he'll figure out how."

"We sometimes think the dock is the only thing to worry about. But it's the back-up support area that is most important to a dock:"

Peter Croes: senior citizen

Netarts is an unincorporated coastal community tucked into the northwest corner of Oregon. It's about two hours from Portland, ten minutes from Tillamook and a few steps from Netarts Bay.

There's a tavern, a restaurant, a grocery store and a gas station on the street which runs into town. On the bayfront, there's a charter boat service and another restaurant.

Many of the 300 (or so) residents of Netarts live in trailer parks; probably about half of the residents are retired.

There are no schools in Netarts.

"It's a small town," says Peter Croes, retired Netarts resident. "At night, after seven o'clock, they pull in the sidewalks."

Croes and his wife, Dorothy, have lived in Netarts for about 12 years. They discovered the quiet community through a relative who was living there. When it came time to retire, Croes thought of Netarts because he liked the coast. And so did Dorothy Croes—at the time.

"I still like the coast," says Croes. "But Mrs. Croes isn't entirely satisfied with it."

The coast is beautiful, they agree. But its beauty can't always relieve the problems which can develop from living in a somewhat isolated area without a job.

"You get into a rut," says Croes. "You get up a certain time every day, have breakfast and then have to decide how to fill your time."

Oregon's weather can also create problems for Peter and Dorothy Croes. Neither of them enjoys winters on the coast.

"By the middle or end of November, we'll get a rain that will last until March," says Croes. "That's the time we get cabin fever."

To prevent cabin fever, Peter Croes gets together with his neighbors for an occasional card party. Dorothy Croes gets together with her friends for a game of duplicate bridge.

They also take advantage of Tillamook, a larger town about six miles east of Netarts.

"Tillamook has some nice shops, a couple of clubs and some social activity," says Croes. "In fact, I belong to the Elks."

Although Croes does spend a lot of his time indoors, he doesn't ignore the coast as a source of recreation.

"You can have a garden, dig clams and go fishing," says Croes.

Croes knew how to fish before he moved to Netarts, but he had to

"It's a small town. At night, after seven o'clock, they pull in the sidewalks."

learn how to dig clams. He got his information from Bill Wick, an old friend of his who is now director of the OSU Sea Grant College Program.

"I write Bill when I have questions about the ocean," says Croes. "He'll send me reports or recreational bulletins."

Croes enjoyed clam digging enough to obtain a license to harvest clams commercially. He kept up his license for about two years, but now only digs clams to supplement his own diet.

"I like the cockles," says Croes. "You rake them out of the sand."

Gapers, on the other hand, are too much work for him.

"You're up to your elbows in mud," says Croes. "To me, it's not worth it."

Instead of mud, Croes is now up to his elbows in leather. He has a small workshop a few steps from his front door. There, he makes leather coasters, check book holders and belts. He learned leather craft from a person he met in Yuma, Arizona, where he spent several months away from Oregon's winter in 1975.

"I'm not going to get rich at it," says Croes, who sells his products to local stores. "But it's something to keep me busy."

Although Croes is not serious about making a lot of money from leather work, he is sensitive to the rising cost of housing in Netarts—and what that increase means to retired people.

"It won't be long before it will be impossible for people who retire to live on the coast," says Croes.

When Croes moved to Netarts about 12 years ago, most lots were sold for about $1,000. Some were as low as $300. Today, the price

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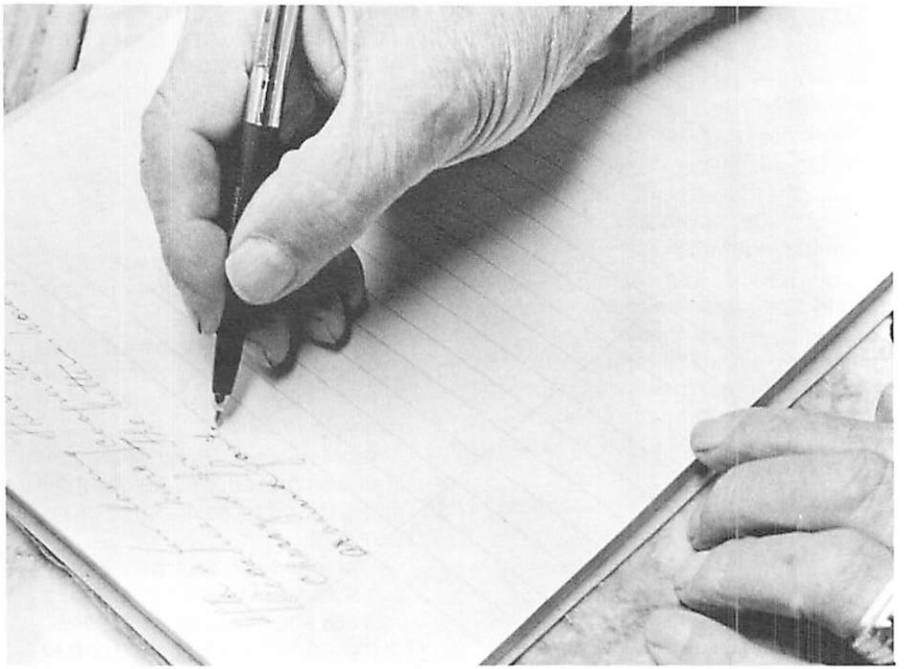

of a lot ranges from $10,000 to $20,000.

"We paid $5,000 for this place and were offered $22,000 for it a couple of years ago," says Dorothy Croes. "That's how it's gone up."

If Croes sold his home at its new value, he wouldn't really get ahead. A new house would probably cost the same or more than what he made from the sale of his house. And if he purchased a less expensive place, he would still have to pay the capital gains tax on his original home.

Croes also worries about the rising cost of living. He predicts that people with incomes of $400 to $700 a month who want to retire to the coast will have a tough time.

Croes, himself, can feel the effects of inflation.

"We're not going to starve," he says. "But we probably won't buy half a ham like we used to."

A major expense for Peter and Dorothy Croes is electricity.

"A little place like this can cost as much as $45 per month to heat," says Croes.

Croes prefers electric heat over wood heat because it's cheaper. It can be a problem, however, in a bad storm.

"If we get a terrific storm, the power is cut off for three or four days," says Croes.

When Croes is not fishing, clam digging or in his leather shop, he's probably writing his memoirs. His experiences date back to 1894.

"I write it out longhand," says Croes. "Then my wife's cousin types it."

His memoirs will include his international travel to Australia, Japan and Korea when he was a field supervisor for the Red Cross. He recently completed a chapter about a year he spent in Germany.

"I was in charge of the refugees that Hitler had in camps," says Croes.

Before he went overseas, he tried dairy farming and social work in Albany, New York. When he returned to the U.S., he worked for the Veteran's Administration and the Bureau of Indian Affairs.

Croes keeps notebooks full of photos from his travels. Awards and artwork from other countries line the walls of his workshop.

"It won't be long before it will be impossible for people who retire to live on the coast."

"I have one book done," says Croes. "But I still have a long way to go."

Croes' memoirs may someday provide a unique perspective on Croes' character and certain events in the 20th century. But right now, they serve a much simplier purpose: to keep him busy.

"You've got to have a project," says Croes. "If you sit and look out the window, you'll deteriorate mentally."

And it's not likely that anyone will catch Peter Croes gazing out a window—unless it's to study the weather or to enjoy the scenery. Which is, after all, one reason he moved to Netarts.

STATUS OF PROJECTS

FOOD FROM THE SEA

N—New, C—Continuing, R—Redirected, F—Finished

		FY 73	FY 74	FY 75	FY 76
Aquaculture					
R/AQ-6	Pilot chum salmon production		N	C	C
R/AQ-11	Protein-energy relationships and mineral requirements of rainbow trout	N	C	C	F
R/AQ-19	Selective breeding of oysters		N	C	C
R/AQ-21	Animal fats: an energy source in fish rations			N	C
R/AQ-26	Biological feasibility of intensified oyster culture				N
R/AQ-27	Feasibility of the production and marketing of seafoods reared by aquaculture				N
Fish and Shellfish Diseases					
R/FSD-1	Immunization of fish for control of *Vibrio anguillarum*, the causative agent of vibriosis			N	F
R/BR-9	Study of a neoplastic disease of bivalve mollusks in Yaquina Bay	N	C	C	F
R/FSD-3	Microsporan diseases of shrimp and crabs				N
Ocean Productivity and Fisheries Program					
R/ES-5	Cryogenic (freeze branding) and laser marking of Dungeness crab			N	C
R/ES-6	Prediction of abundance of harvestable Dungeness crab			N	F
R/OPF-1	Pleueronectid production system and its fishery				N
R/OPF-2	Fishing gear and methods development				N
R/OPF-3	Economic analysis of extended jurisdiction by the U.S. over coastal resources: fisheries from Washington to California				N
R/OPF-4	Assessment of the northern anchovy population off Oregon				N
Marine Product Development					
R/PD-10	Parameters influencing utility and fish muscle in frozen portions and further processed items	N	C	C	F

N—New, C—Continuing, R—Redirected, F—Finished

		FY 73	FY 74	FY 75	FY 76
R/PD-18	Industrial engineering system study for shrimp, crab, fillets and product-mix standards	C	C	C	F
R/PD-20	Decomposition of trimethylamine oxide in Pacific shrimp			N	F
R/PD-21	Sanitation and microbial evaluation of Oregon seafoods processing			N	C
R/PD-27(D)	Disposal of shellfish waste on agricultural lands				N/F
R/PD-24	Seafood market structure and performance				N
R/PD-25	Seafood utilization and process concept development				N
R/PD-26	Nutritional quality of seafoods				N
COASTAL ZONE ENVIRONMENT					
R/CM-2	Operational wave observing and reporting		C	C	F
R/CM-11	An economic study of the relationship between public and private outdoor recreational facilities on the Oregon Coast			N	F
R/CM-13	Public Service pricing and Oregon Coastal development			N	F
R/CM-15	Erosion of Netarts Spit, Oregon				N
R/CM-16	Applications of nonlinear random sea simulations for design of offshore structures				N
R/CM-20(D)	Characteristics of Oregon's ocean charter boat industry				N/F
R/CM-17	Design criteria for ocean and nearshore structures: phase II				N
R/PPA-1	Research and publication in ocean law	C	C	C	F
R/EM-3	Improving the performance of wooden water-front structures and boats			N	C
R/EM-5	Cellular bulkhead wharves			N	F
R/EM-8	The demand for recreational boat moorage and storage			N	F

		FY 73	FY 74	FY 75	FY 76
R/EM-9	Subtidal clam populations: ecology, distribution, abundance and management				N
R/EM-10	Hydraulic characteristics of marinas, a case study of Brookings, Oregon				N
R/EM-11	Plankton dynamics of Oregon estuaries				N
R/EM-12	Wave interaction with moored floating structures: phase II				N/F
EDUCATION					
T/T-2	Commercial fishing technician training	C	C	C	C
T/T-3	Marine technician training	C	C	C	C
E/L-1	Professional training in ocean law	C	C	C	C
E/MRM-1	Professional training in marine resource			N	C
E/LS-1(D)	Literature and the sea: a course and conference				N/F
ADVISORY					
A/G-1	Marine advisory field program	C	C	C	C
A/Ec-2	Marine economics advisory education	C	C	C	C
A/S-3	Seafood technology advisory education	C	C	C	C
A/OE-4	Oceanography and engineering advisory education	C	C	C	C
A/C-6	Marine advisory—communication	C	C	C	C
E/Ed-7	Marine science public education	C	C	C	C
A/PPA-2	Advisory services in ocean law	C	C	C	C
A/FSD-9	Detection, prevention and control of diseases in fish and shellfish				N
A/PD-10	Seafood science research result applications and information transfer				N
PROGRAM MANAGEMENT					
M/A-1	Program administration	C	C	C	C
M/A-2	Program development	C	C	C	C
M/A-4(D)	Operation of the executive office of the Oregon Estuarine Research Committee (OERC)			N	C

BUDGET SUMMARY

1975-1976

By area of activity

	NOAA GRANT FUNDS	UNIVERSITY MATCHING FUNDS
RESEARCH		
Aquaculture	$210,200	$112,100
Living Resources, other than Aquaculture	244,435	59,100
Marine Law & Socio-Economics	90,040	35,500
Ocean Engineering	86,615	80,500
Resources Recovery & Utilization	217,229	67,500
Research & Studies in Direct Support of Coastal Management Decisions	128,205	87,400
Applied Oceanography	51,292	24,800
EDUCATION		
College Level	17,713	12,400
Vocational Marine Technician Training	25,000	84,600
ADVISORY SERVICES		
Extension Programs	227,531	129,100
Other Advisory Services	118,802	85,300
PROGRAM MANAGEMENT		
Program Administration	131,596	81,300
Program Development	1,342	43,800
TOTALS	$1,550,000	$903,400

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