

the **LODE STAR**

Charting the course of fisheries development today.

Alaska Fisheries

Development Foundation, Inc.

Volume VI Issue 1, Winter 1988

News to Use

Fishermen will be heading to Kodiak like harbor seals head for a crab boat from March 18 to 20 during Com-Fish '88, Kodiak's annual commercial fishing trade show. AFDF plans several events just before ComFish, and hopes for high attendance.

The **Program Development Committee** will meet at 9:30 a.m. Thursday, March 17 at the Kodiak Senior Center, and will finalize its project priorities for next year. The **AFDF Board of Directors** will meet at 1:30 that afternoon in the same room. The brief agenda includes discussions of current projects and next year's program priorities.

Friday, March 18, Eagle Fisheries will host a **flatfish processing plant tour**. Eagle currently is conducting AFDF's flatfish demonstration project.

The foundation also will sponsor a booth at ComFish '88 (it's small; look for ASMI's big "Alaska Seafood" banner; we're under it.) New products, information, and lots of literature will be available there.

For more information or to sign up for the tour, please contact Nikki Delaney at AFDF.

New AFDF members:

Voting:

Kodiak Salmon Packers
Kodiak, Alaska
Iams Company
Dayton, Ohio
Towa America
Anchorage, Alaska

Associate:

Evergreen Food Ingredients and Equipment
Olympia, Washington
Viskase Corp.
Chicago, Illinois
Palmco Pacific Corp.
Newport Beach, California
McCombs Frank Roos Assoc. Inc.
Plymouth, Minnesota



The straight talk on flatfish: Quality, consistency keys to domestic market

By Krys Holmes

The 58-foot *Buck'n Ann* eased up to the dock at Eagle Fisheries at the end of Kodiak's Cannery Row and opened its hold to unload 5,000 pounds of assorted flatfish, layer-iced, white side up.

"The best iced fish I've seen yet are off this boat," said Peter Moore, manager of AFDF's flatfish project. "Flatfish are very delicate fish, and they bruise easily. They have to be handled very carefully to produce the best product. It's boats like this that will help get this flatfish fishery off the ground."

Getting the fishery off the ground is what AFDF's new flatfish project is designed to do. The project began with a hand fillet line in January. In early February, Baader North America installed a Model 175 flatfish filleting machine and a Model 52 skinner in Eagle's newly built processing room. Eagle has been processing 3,000 to 5,000 pounds of round fish nearly every day since.

The project will help fishermen and processors learn the economic and technical aspects of large-scale commercial flatfish production. The focus, of course, is on the equipment and its ability to produce high-quality, consistent product. But machinery is only half the plant, as Eagle president Reed Wasson observed. "This project will involve quality control efforts all the way from the boat's hold to the box the fresh or frozen fish fillets leave the plant in," he said.

The inner workings

At dockside, the fish are unloaded by brailer and sorted by size and species. (Currently, female rock and flathead sole are separated for the H&G roe-in market in Japan; fish larger than 16 inches are hand-filleted.) Mostly sole is coming in—rock, flathead, rex, Dover, English and butter sole. Eagle is not yet processing yellowfin sole, nor starry or arrowtooth flounder.

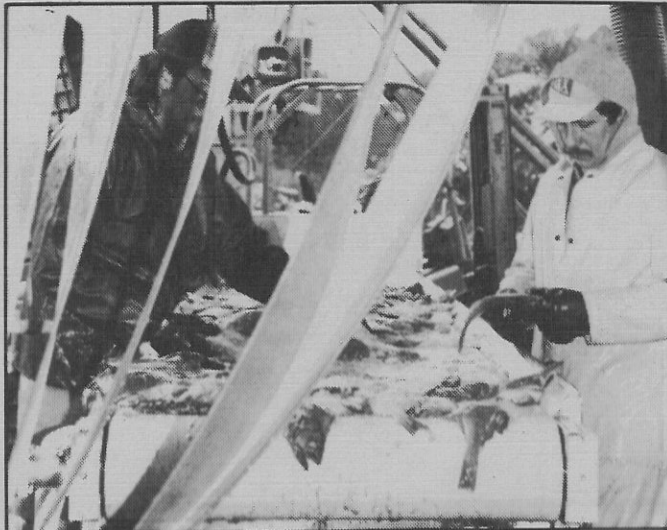
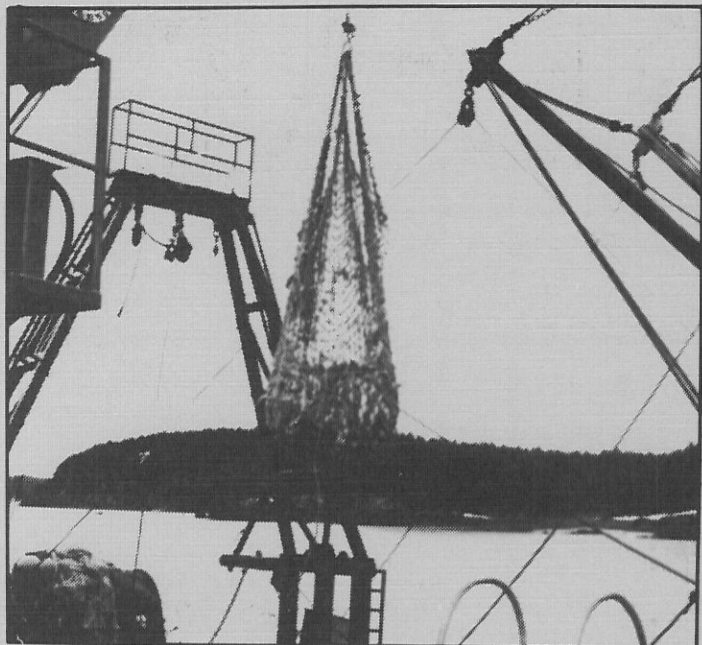
Sorted fish are conveyed to the 175 filleting machine, a two-stage, two-person machine that bobs the tail and with a two-stroke, double-knife action cleanly removes the head, gut cavity and the first interhemal spine. The fish are re-oriented for the filleting stage, where a series of circular knives and separator knives fillet each fish, leaving the feathers and the sections of meat covering the *ossa interspinalia*. The fillets emerge on two parallel conveyor strips, one skin up, one skin down, at a top speed of 80 fillets per minute.

Two more operators then feed the fillets skin down, tail first into the Baader 52 skinning machine. An oscillating blade makes a slice into the fillet between skin and flesh as a scored stainless-steel drum pulls the skin under the blade, neatly peeling the skin from the fillet. From here they go to the trim table for final trimming and inspection, and then either to the freezer or into plastic tubs for the fresh market.

The 175 accepts fish measuring between 31 and 52 cm. (12-20 in.) long, and can be adjusted for the skeletal structures of different species. Eagle is machine processing

Continued next page

Flatfish: Can Alaska make the grade?



Fish are unloaded from the *Margaret Lyn* (left) at the *Eagle Fisheries* dock. After sorting (above), the large fish go to the h&g line or to *Eagle's* star hand filleter, *Nancy Scola* (right).

Continued from page 1

fish 12-16 inches long for optimum yield. The 52 can be adjusted to accept fillets of varying thickness.

Baader donated use of the Model 175 and the Model 52 for the duration of the project; AFDF is paying for the Baader technician Dietmar Ledwig for three months' time. For its part, *Eagle* has purchased a Scanvaegt electronic size/weight grader, a sorting conveyor, tote dumper and IQF spiral freezer. The freezer is being built into a wall separating the newly-built flatfish area from the pollock area, so it is accessible to both processing lines.

On board the *Buck'n Ann*

"We've done our homework on flatfish and we know how best to handle it. It costs us a little more, but it would be worth it to us to see this fishery make it."

It costs Waters more than a little more to specially handle his flatfish by-catch. Waters and his partner, engineer Brent MacWilliams, have hired an extra crewman and devoted extra table space for handling their flatfish by-catch. They figure it costs them a 7% crew share and an extra \$5,000 for insurance. They deliver their pollock and cod to All Alaskan, but have arranged to deliver their flatfish by-catch to *Eagle* to support the plant's flatfish effort.

"The payoff will come if *Eagle* can establish a strong, high-value market for their flatfish," Waters said. "The Alaska flatfish resource is one of the greatest reserves in the world. And the quality is good, if the fish are taken care of. If *Eagle* can develop the domestic market to the point where they can bring the ex-vessel price up to a profitable level for small boats, it would be an excellent fishery for a town like Kodiak."

Waters and MacWilliams harvest their fish in short tows. The fish are then layered individually in ice, white side up. Flatfish are not as resilient to bumping and tossing about as round fish are, and so must be handled more carefully. Layer ice also holds them more delicately than refrigerated sea water. The fish are delivered to shore while in rigor for best processing through the Baader 175.

Small boats like the *Buck'n Ann* may find it more economically feasible to devote the extra effort needed to deliver high-quality product than large trawlers, because the ships over 80 feet must process high volumes of fish to cover expenses. The owners of a 130-foot boat may not be able to spend 10% more in money and deck space to

separate flatfish from the rest of the catch for special handling.

In addition, flatfish are best processed while in rigor. Flatfish produce the best fillets when they're around 48 hours out of the water. Large trawlers delivering to shore plants or motherships may be at sea for days, which is fine for pollock or cod held in refrigerated sea water, but not so great for the finicky flatfish fillet.

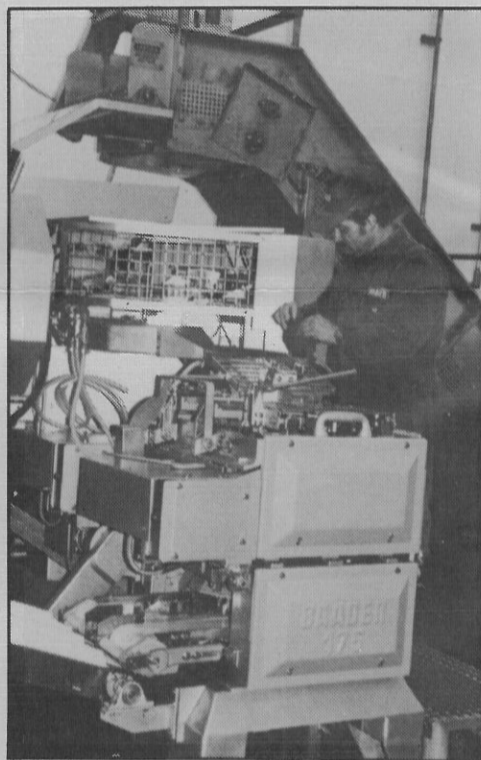
It is also easier for operators of small trawlers to experiment with short tows and other fishing techniques to minimize the harvest of young, undersized fish (12 inches and smaller).

"It costs a lot less to run our boat than it does a 100-footer," Waters said. "It costs less for us to specially handle our fish. A big boat would have to scratch a lot harder than we would to make it work. These fish are very delicate. You pack 10 or 15 tons of them into a cod end, and you're going to do a lot of damage to the fish. Whereas, we're dealing with four to five thousand pounds at a time, which is a lot easier on the fish."

"You'd think a 58-foot drag boat would be about half the size of a 100-foot drag boat," he said, "but it's really about one quarter the size. It makes a project like this a lot easier for us than it is for them."

Waters and MacWilliams are making the extra effort to deliver high quality flatfish because experience has taught them that the domestic flatfish market is potentially a lucrative one, if all the conditions are right. Waters fished flatfish for North Star Fisheries four years ago when that company tried gearing up for flatfish sales to the domestic market.

"Unfortunately North Star went out of business, but not because they weren't delivering good product," Waters said. "I learned a lot about handling flatfish from that experience."



Central to the flatfish line is the *Baader 175* (above), here being adjusted by Baader tech Dietmar Ledwig. Fillets are hand fed into the *Baader 52* skinner (far left), which can be adjusted for size of fillet and depth of cut. Left, Ledwig checks fillets after an adjustment.



Baader technology is heart of project

Baader North America Corp. provided the cornerstone of AFDF's flatfish project by donating nearly \$200,000 worth of equipment.

The German company with U.S. offices in New Bedford, Mass. and Seattle designs and manufactures seafood processing equipment for the groundfish industries worldwide.

"Baader has always been interested in giving something back to the industry," said West Coast sales manager Bob Slade. The Baader 182 pollock filleting machine was a major steppingstone toward development of Alaska's groundfish industry. Last fall, the company introduced a new Baader 147 rockfish filleting machine. With the 175 flatfish filleter, Baader again hopes to be on the forefront of a developing industry.

For more information about Baader, contact Bob Slade at 3601 Gilman Ave. West, Seattle, Wash. 98199; (206) 282-2333.



Dietmar Ledwig will spend three months fine-tuning the Baader flatfish equipment at Eagle.

Flatfish: Studying all aspects

MacWilliams, who fished in New England before coming to Kodiak, said developing a domestic market is key to a successful flatfish fishery.

"You have to target the product to a high quality market in the beginning stages," he said. "That's when the established markets are going to be comparing your product to what's out there. It's incredibly important to start out on the right foot."

MacWilliams said Kodiak's biggest problem is transportation—both the cost of it and the time it takes.

"When fish come into a northern East Coast port, they're bid on by the canneries. The fish are immediately distributed fresh throughout New York and Boston. There are virtually no transportation costs," he said. "Here, you can't even afford to fish some species because it's not worth the shipping cost."

Kodiak also suffers from the seasonal rhythms by which Alaska has always enjoyed its fisheries. MacWilliams believes processors will not capture the domestic market, either fresh or frozen, until they can get consistent, year-round supplies of fish.

"If you owned 20 Safeway stores and I called you up to sell you flatfish. I'd get my foot in the door with a dandy product, and you'd work to get your customers used to buying it," he said. "But as soon as I get off the phone I find out that all the fishermen are gearing up for salmon, and nobody will deliver flatfish. This is why we haven't attracted the domestic markets too well."

The *Buck'n Ann* will drag year-round for pollock and cod. Waters and MacWilliams have committed to delivering flatfish to Eagle as long as they can. They hope that Eagle can sell its fresh and frozen product at high enough prices to eventually increase the ex-vessel price.

"I don't know how long we'll be able to devote this extra effort at our own expense, while we're only getting 19-20 cents a pound and 25 cents for roe-in females," MacWilliams said. "But we know if things work out it will benefit all of us."

Waters said, "I'd just hate to see the flatfish fishery go somewhere else. It's an ideal small boat fishery. We hate to see a bunch of big boats come in when it could be a great opportunity for us."

Market and quality studies

Because little is known about the seasonal fluctuation in flesh quality of flatfish—or any other Alaskan species, for that matter—the project includes biochemical tests on all flatfish species handled throughout the project. Through the project, Eagle is supporting Diana Greene's work at the NMFS lab in Kodiak as she pioneers a flesh characterization study. Greene's information will help processors to objectively associate biochemical test results with the visual grade tests that Japanese buyers conduct; it will also help in drafting freshness and quality standards for domestic fillet markets.

AFDF's Peter Moore said the project is well timed. Eagle's product will end up in domestic frozen and fresh markets, just as traditional flatfish supplies from Canada,

Japan and Korea are tightening up. If transportation costs can be minimized, Alaskan product is expected to do well against foreign products in the U.S. market.

"Four years ago there was no need for big U.S. seafood buyers to come to Alaska for their flatfish," Moore said. "They were already sufficiently supplied, and Alaska wasn't producing enough flatfish to attract volume buyers. But now the Bering Sea is drying up for foreign companies, and other supplies are diminishing. This is a good time for Alaskans to look seriously at volume flatfish production, particularly since the pollock and cod markets are flat."

Alaska is fortunate, Moore said, that the world is yet unfamiliar with flatfish from this region. Processors will be able to start from scratch, and build a good reputation for its product.

"Our project will lay the foundation for other Alaskan processors to work from," he said. "If it works out well, this represents a great opportunity for Alaska."

Eagle will provide monthly reports to AFDF of production volumes, equipment operation, quality comparisons between various harvest and handling methods, and other information they learn along the way. AFDF will publish information about the project in a monthly newsletter, and will provide the industry with a final report at the end of the project.

In addition, AFDF has engaged Chris Blackburn of the Alaska Groundfish Data Bank in Kodiak to compile a series of reports on the flatfish resource, biomass data, behavior patterns and harvest records. The first of these reports will be available in March; her final report will be published by AFDF next January.

To receive AFDF's monthly flatfish newsletter, send your name and mailing address to AFDF.



Reed Wasson, president of Eagle Fisheries, inspects the final product.

MEMBERS ONLY

News from AFDF members

BSFA: New cod plants for Western Alaska

The Bering Sea Fishermen's Association (BSFA) now is developing a project to help create a near-shore cod fishery in Western Alaska. The proposed project includes four shore plants, slated for the villages of Toksook Bay, Tununak, Meko-ryuk and Quinhagak, that would employ local residents to process cod and salmon. BSFA executive director Henry Mitchell said the proposal now is before the Economic Development Administration for funding of the nearly \$1 million project. For more information, contact Mitchell at BSFA, (907) 279-6519.

MBA: Surimi/meat morsels

Pat Manning of Manning, Batson & Associates (MBA) reports that their new product, Southwest Style Golden Morsels, is "a testament to the functionality of surimi." The product combines two undervalued materials, low-grade surimi (30%) and low-grade beef trim, with only 0.2% salt.

"We wanted to find out what the worst possible scenario could be for pollock surimi, and see if it would work in a blended or a stand-alone product," Manning said. "We combined it with low-grade beef trim into a nugget-type product, added chili, cheese, paprika, onions and garlic, and battered and breaded it." MBA submitted the label to USDA in early February, and were advised that, with minor labeling changes, the product probably would be approved this spring. For more information, contact Manning at (602) 926-9499.

Mt. McKinley Meats: Ground beef/surimi mix

Mt. McKinley Meat and Sausage Co., a meat processor in Palmer, Alaska, now is producing a ground beef/surimi mix for sale to state institutions. The mixture includes 70% Alaskan beef, 30% surimi, and some citric acid to cut any fishy characteristics. "We currently have an approved label, and a recipe for sample packs," said Jon Olsen, plant manager. "We have sent samples to several state institutions, and we are planning to begin sales as soon as the approval process is complete." Because the product does not cross state lines, the product is fully approved once it passes inspection by the Alaska Department of Environmental Conservation.

FOUNDATION

Projects

KRI plant plans meal upgrade

As aquaculture activity increases around the world, sea farmers will need more and more white fish meal to feed their stocks. Some already are looking at Alaska to fill their needs.

An AFDF project that begins this year will help Alaska's processors turn their collective 1.2 million tons of fish waste into profits, and possibly capture part of the high-value meal market.

The project takes place at Kodiak Reduction, Inc. (KRI), a formerly woebegon fish waste smelter on the edge of Kodiak Island, Alaska. With much work over the last few years, KRI has become a functional reduction plant able to process 7 million pounds of fish waste per month into meal, oil and bone meal.

"We have a way to go to get our protein count up to where it needs to be," said Dan James, KRI plant manager. To that end, KRI plans a two-stage plant upgrade between now and July 1989. First, with financial assistance from AFDF, KRI will buy a steam jacketed dryer to replace the direct-flame dryer that now is the plant's biggest problem. The dryer is a contrivance made of two huge drums, one that generates the flame and the other that is attached to the end of the first and containing the meal. Inside that rotating drum, the meal is pushed from one end to the other. In the process, some of the meal is burned by the flame. Ash content of the finished material sometimes exceeds 11%, pushing down the protein percentage, and with it the value of the meal.

"The direct flame dryer runs on No. 2 diesel fuel, and imparts an odor of diesel into the meal—not exactly good for the product," James said. "It's also limited in capacity, so right now, solids recovered from the stickwater can't be added back into the meal."

The new dryer, which should be installed by mid-April, will more efficiently dry the meal. In the new process, the meal is pushed along the outer rim of the drum, and an inner drum contains the steam that dries the meal. Therefore, the meal is exposed to more surface area and dries more quickly. The higher processing capacity of the new dryer will allow KRI to add solids from the stickwater back into the dryer. Increased recovery should be from 4 1/2 to 5 percent.

Because the new dryer won't burn the meal, KRI will be able to cut the odor of fish-flavored hydrocarbons that now surrounds the plant.

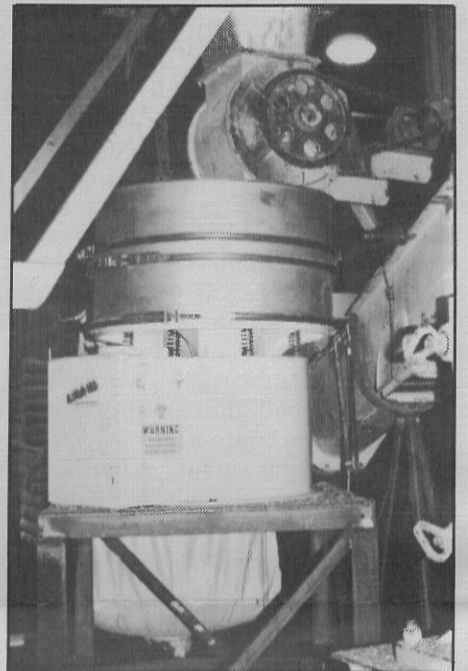
James also plans to replace the mincer at the head of the reduction line. Currently, fish waste is dumped into two twin hoppers outside the plant. The slurry is conveyed inside the plant and fed into the mincer, which grinds the heads, bones, fins and washwater into the consistency of wet hamburger. The mincer capacity is only seven short tons per hour; James hopes to replace it with an 11-ton capacity mincer.

In the meantime, James has acquired one new machine, a Gyra-vib separator, that has increased KRI's profitability nearly \$3,000 per day. The Gyra-vib is simply a series of screens that vibrate at variable speeds. The meal is poured through the screens, which separate the bone meal from the fish meal the same way a gardener sifts soil.

"By separating the bone meal from the fish meal, we can offer a purer product, which commands a higher price on the market, and we can sell bone meal to target markets as well," James said.

By June, KRI will be able to process 225 tons of waste per day. A year from then they will process 4,000 tons per day, and will be able to demonstrate the latest meal production techniques to other Alaskan producers.

"We hope to be able to recover everything that can be recovered from fish waste, and decrease by a large amount the waste that's dumped in the sea that ends up suffocating some of the sea life," James said. "And I know we can make a profit from what we produce. I could sell three times what I'm producing now. And it's just going to get more valuable."



The Gyra-vib vibrator separator helped increase KRI's profits \$3,000 a day.

AFDF drafts its 1988/89 project lineup

On Feb. 4, AFDF began the delicate task of drafting fishery development programs for fiscal year 1989. From now until the program proposal deadline (in early June, probably) AFDF and its members will outline a list of projects that meet the fishery industry's needs and also fit the National Marine Fisheries Service's priorities.

The project ideas focus on improving quality and efficiency in harvesting and processing seafood. The ideas proposed so far are briefly outlined here:

Better use and avoidance of by-catch: The most complex problem facing the industry is by-catch. Using current studies as a launching pad, AFDF would investigate the impacts of by-catch on several fisheries, and test ways to use by-catch more efficiently. The goal is to reduce accidental by-catch and end waste from all harvested species.

Groundfish parasite detection: The membership supported a proposal for development of an infrared parasite detection machine that identifies bones and parasites in seafood products after processing but

Now is the time to comment on fisheries development project ideas for FY 89.

before packaging. Such a project would investigate other methods of parasite detection, and compare existing and developing technologies.

Using seafood "waste:" AFDF hopes to further its studies on improving the quality and marketability of Alaska's fishmeal and oil. The committee also proposed sponsoring an international fish waste conference to expose Alaskan processors to the world of opportunities in fish waste processing.

Flatfish: Because of the strong response to AFDF's current flatfish project, and the potential the flatfish fishery could offer Alaska, AFDF has been strongly urged to expand its flatfish project for next year. The next phase would expand data on parasite

detection, sorting, and product forms and quality.

Fish quality: How much, and in what ways, does bottomfish quality vary with the seasons? AFDF was encouraged to conduct a flesh characterization study for the major groundfish species.

Other projects include a study of the uses of small, abundant fish like capelin in foods, feeds and pharmaceuticals; an investigation of duties and other trade barriers to Alaska seafood products; marine safety; and an ergonomic study. These projects were valued at middle to low priority by the program development committee.

There still is time to comment on or add to this list of proposed development projects. The next program development committee meeting will be held March 17 in Kodiak, the same day as the AFDF board of directors meeting.

For more information, or to comment on AFDF's FY '89 projects, contact Loretta Lure at AFDF or committee chairman Steve Smith at Kemp Pacific Seafoods in Seattle: (206) 283-3857.

Pilot line ready for takeoff

People with new ideas about surimi processing but no place to do their experiments now can use AFDF's pilot-scale surimi and analog line in Kodiak, Alaska.

AFDF has set up a small-scale surimi and crab stick line capable of producing 2,000 lbs. of analogs per day. The equipment is available for tests on new ingredients, new processes and new product ideas.

The pilot line was set up at the National Marine Fisheries Service (NMFS) Gibson Cove building, with assistance from NMFS lab director Jerry Babbitt. It is supervised by Jack Greene, electrical engineer, microwave technician and entrepreneur who, in his few months of association with AFDF, has developed as much enthusiasm as anybody for the pilot line project.

"If Alaska is going to have any industry here, it has to be a secondary

processing industry," Greene said. "Our fish industry needs it, and so do the timber, oil and other industries here. That's what interests me about the pilot analog line: it's going to help Alaska develop its secondary processing capabilities."

The pilot line also will provide a place to experiment with the production of surimi without cryoprotectant additives—the sugar, salt and tripolyphosphates which now are added to protect surimi during freezing—or using different cryoprotectants, possibly improving its marketability.

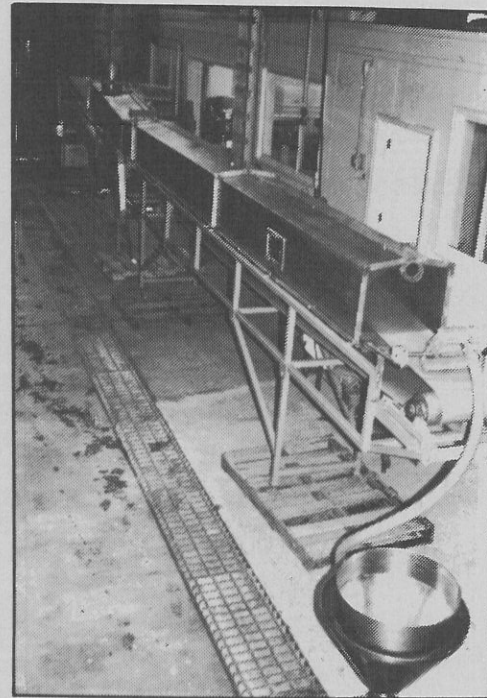
"We could probably keep the line busy full-time by ourselves," said Babbitt. He expects to experiment with making seafood analogs directly from unfrozen surimi. He also would like to test different pieces of equipment in various spots in the line. For example, the Gyra-vib, a set of vibrating screens, could be used in place of rotary screens

after the wash stage, Babbitt said.

"We now have the ability to look at different types of proteins involved in making surimi," Babbitt said. "For example, we can isolate different proteins and analyze their performance in surimi. Then we can tell the industry, 'If you process this way, you'll get these results.'"

The pilot line will be available to AFDF members for a user fee of \$500 per day, and to non-members for \$700. Arrangements for use of the line should be made at least three weeks in advance with AFDF's pilot line project manager Loretta Lure. She can also arrange for fish deliveries and some other supplies.

The pilot analog line during setup. In the foreground, a pump delivers surimi into an extruder, where sheets move through a steam cooker and radiant heat cooker into ribbon maker.



Finisher/pulper: from plums to pollock

A machine used in fig, prune, tomato, fruit juice, jam and peanut butter processing has found its way to Alaska, where it removes defects from pollock and cod mince and could replace the refiner in surimi processing.

The Model 4000 Pulper/Finisher, made by Brown International Corp. of Covina, Calif., first attracted the attention of Bob Ryan of Ryan Engineering because of its potential application in surimi processing. The Model 4000 separates materials of differing textures or particle sizes. Material is passed through a drum fitted with rotating paddles that press against a cylindrical screen. The paddles, which revolve at adjustable speeds between 270 and 900 rpm., press the material through the screens and the defects are discharged through a bottom port. Dryness or consistency of the product is determined by adjusting paddle speed, pitch or clearance. The machine is easily cleaned and costs around \$20,000.

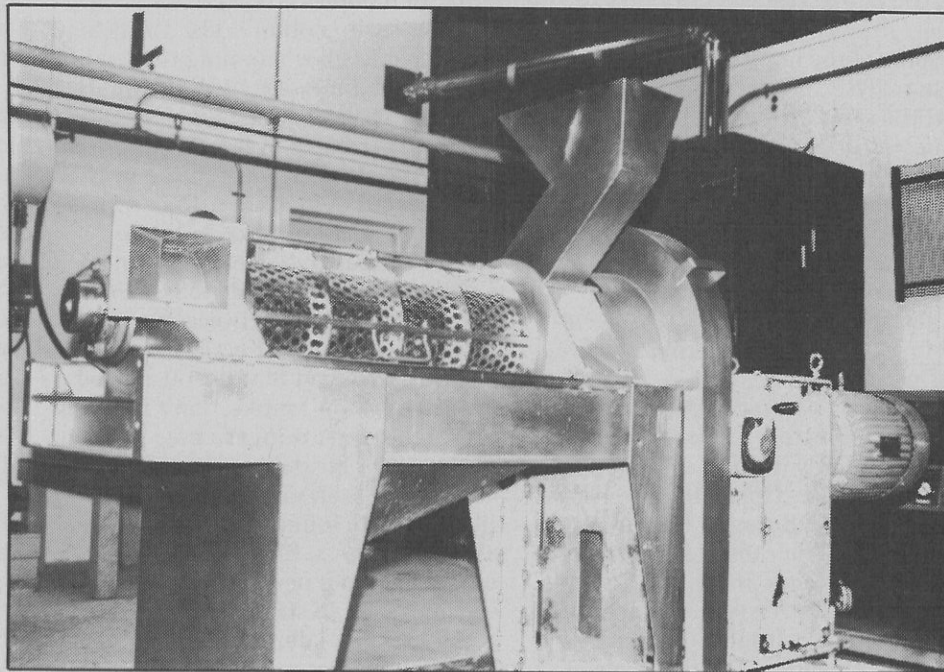
Bill Higby of Brown International said, "Bob Ryan told us about the number of American ships being out-fitted, and said that they were looking for American equipment to go in them. Everyone had been saying that only Japanese equipment could do the right job, and Ryan wanted someone to demonstrate that American equipment could do the work. He suggested Jerry Babbitt."

Higby shipped the machine to the Gibson Cove National Marine Fisheries Service (NMFS) building in Kodiak, and AFDF is leasing the machine. The Model 4000 will be studied in several different applications in surimi processing, first in place of the refiner, and also in place of rotary screens following the wash stage.

Jerry Babbitt, director of the Kodiak NMFS lab, said the Model 4000 also helps in removing parasites from minced pollock and cod.

"We tested a batch of mince that we knew contained 400 defects per 100 lbs. of product," Babbitt said. "We ran it through the Model 4000 using different screen sizes, and not one parasite came through intact." Babbitt said that the few defects that did remain were so small—less than 3/16 inch—that they were difficult to identify on a candling table.

The Model 4000 finisher/pulper has other applications, too, and already at least two Alaskan processors have purchased them for parasite removal and applications in surimi processing.



The Model 4000 finisher/pulper removes defects from mince and refines surimi.

"The thing that excites me about this is that now it's possible to make surimi without using any Japanese equipment," Babbitt said. "There could be a lot of applications for this machine in seafood processing."

For more information about the Model 4000, contact Bill Higby, Brown International Corp., (818)966-8361.

Pilot line ingredients sought

The pilot-scale surimi and analog line gives ingredients and equipment suppliers a chance to have their products tested by prospective customers. Several flavorings and ingredients have been donated to AFDF for use in the pilot line experiments. Those companies who have confirmed participation are:

T. Hawegawa: seafood flavorings
Golden Cheese Co. of California: whey proteins

Roquette Corp.: sorbitol
Evergreen Food & Ingredients: phosphate blends.

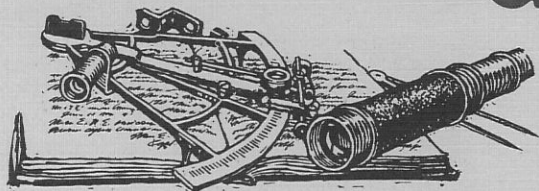
If your company produces flavorings, ingredients, or even equipment, and you would like to see your product used in the pilot line, contact Loretta Lure at AFDF.

Surimi, salmon samples free

AFDF also provides companies with product samples for product development work, usually free of charge or for the cost of shipping only.

The foundation now has limited quantities of frozen surimi, dried surimi and pink salmon fillets or mince to distribute to U.S. companies engaged in product development work. For information or to order a sample, call Barbara Culver at AFDF, (907) 276-7315.

director's log



Time for surimi industry to organize

By Mel Monsen
AFDF Executive Director

"As we move away from our leadership role, there is an increasing need for the industry to take over guidance and direction of its future."

The Foundation's effort to develop and broaden the opportunities for surimi applications is approaching its conclusion. Presently, we are administering funds which should last through the end of the year. At that time, it is expected that the use of federal Saltonstall-Kennedy funds for the surimi industry will be stopped because the fish that the industry uses, Alaska pollock, is no longer classified as underdeveloped.

On the surface, this is welcome news, a cause for celebration. It signifies the successful achievement of a Foundation goal. But realistically, there is reason for concern.

The Foundation, in fact, now is approaching an appropriate time to reduce its surimi effort. Our program has narrowed to a few specific projects to refine the process and expand the applications of surimi. However, as we move away from our leadership role, there is an increasing need for the industry to take over guidance and direction of its future. Surimi producers, ingredient suppliers and other

industry participants have not organized into a cooperative, visionary group able to assume the leadership to plan for the future—or even to protect the present. Once the Foundation is forced to limit its research and development, we could be faced with a serious lapse in industry focus.

Presently, the Foundation is working on several areas of surimi development: demonstrating and initiating efforts toward developing surimi/meat applications; designing and implementing a hazard analysis and critical control point program for surimi processing; improving control and understanding of surimi production variables; beginning work on analog manufacture experimentation; and distributing information throughout the industry. All of these tasks, with the major exception of communication, are expected to be completed by this time next year.

When that time comes, the Foundation will no longer be the sole focal point of research and development activity for the surimi industry. We will still be a major source of information and industry exchange; but the direction for tomorrow, and the

required research, will be a responsibility of industry. It will be critical that people within the industry initiate and foster the type of research and development projects they need.

Some of the problems and opportunities facing the industry at present are: stimulating stagnant sales to existing markets; broadening sales beyond analogs; establishing industry standards; overcoming regulatory restrictions; and countering public concern caused by recent negative publicity.

The only way these problems will be addressed is if a majority of surimi industry representatives cooperate in bringing about needed information. The most logical focal point for this is an industry group such as the NFI Surimi Committee or, even more directly, a new group such as a surimi industry association.

If the industry really is developed to the point that federal officials believe it is, this organization can—and must—happen soon. Time is running short. If the surimi industry does not take the initiative, and strive to perpetuate itself and grow into the future, it will be doomed to mediocrity.

The editor's turn

Off the



Cuff

"Our nature lies in movement; complete calm is death."
-Pascal

"When I rest my feet, my mind also ceases to function."
-H.G. Hamann

Further reading: "How the Best Get Better," *Business Week* Sept. 14, 1987 pp. 98-120; *The Renewal Factor: How the Best Get and Keep the Competitive Edge* by Robert H. Waterman, Jr., Bantam Books, 1987, 338 pp.; *Quality, Productivity and Competitive Position* by W. Edwards Deming, MIT Press, 1982.

Notes from the road: Keeping an eye on the far horizon

By Kryss Holmes

The best stories ever told are stories about voyages: Exodus, The Odyssey, Amundsen's quest for the South Pole, the Tales of Narnia. Travelling from one place to another is the story of mankind, from the chaparrals of Central Africa to Alaska's Iditarod Trail. We are at our best when we hit the road.

Some of the more thoughtful business analysts of our time are telling us that the same characteristics that make a successful civilization — economy, efficiency, and regular migration to new foraging grounds — make good business also. This theory has brought awareness among today's entrepreneurs along several paths. Robert Waterman, Jr., author of *The Renewal Factor*, calls it the constant process of renewal.

"There was a time in America," writes Waterman, "when if you depleted what you had, ... you moved somewhere else, tapped into a new set of resources, and started fresh. You walked away from the old structures. That doesn't work any more. There's nowhere else to run; the frontiers themselves have been exhausted — with one exception: the challenge of renewal."

Waterman's renewal theory is that, basically, successful companies must

be flexible, eager to change, hungry for new knowledge, trusting of their employees, and with their noses to the wind. He recommends change for its own sake, constant reorganization, deliberate habit-smashing. It's the only way to keep a business off its complacent center, and he calls it stability in motion.

Stability in motion is also the goal of companies now pursuing the quality management message of W. Edwards Deming, the man who taught statistical quality control to the Japanese just before they blasted a big chunk of U.S. business out of the water. Deming's is a theory of motion. Quality performance is measurable in any business, Deming believes, and there is a clear and mappable path between current performance and best performance. Deming once said that the oft-quoted adage, "If it ain't broke, don't fix it" is one of the worst things to ever happen to American businesses.

Deming, Waterman and hundreds like them are sounding some silent alarm among us, like lone arctic terns on the edge of a new season, calling for the migration to start. "Hit the trail," they're saying, "don't be left behind."

These theories might most easily be adapted in the seafood business, particularly in Alaska where the only constant is fluctuation: in weather, in sea-

sons, in resources, in economic climate — even our geology is still changing here. Fishermen and processors here could use that inherent adaptability to become more adventuresome in trying better handling techniques, as the crew of the *Buck'n Ann* are doing, or committing to fully use processing waste, or to improve ergonomic efficiency for plant workers. There's new ground ahead; we should head out.

While I disagree that we've exhausted our frontiers — twenty minutes staring at the stars would show you what I mean — anyone who lives in the unsettling rhythm of seasons knows that the renewal factor is an important power in the world we live in. A hundred years ago we kept our minds and our resources fresh by migrating to summer pastures, to fish camp, to hunting grounds. Now, physically settled, we must use those instincts to move us from complacency to courage, from safety to self-renewal.

If U.S. businesses have any advantage over our foreign competitors, it's that we are a nation of migrants, movers and adventurers. The challenge ahead is not to change our horizons, but to change our minds.

UFA seeks irradiation data, comments

Irradiation processing of foods—particularly of seafoods produced in Alaska—has become a topic of wide concern in recent weeks. Maine has become the first U.S. state to ban the sale of irradiated foods, citing potential long-term health hazards. In the Alaska legislature, two bills were introduced in February that would ban the sale of irradiated foods here.

The University of Alaska-Fairbanks is conducting a feasibility study for the state of Alaska to evaluate the potential risks and benefits associated with irradiation of Alaska's seafood and agriculture products. Readers are encouraged to learn as much as possible during the next few months about what irradiation may offer the seafood processing industry—and the risks it might represent to producers and consumers.

Public comment is encouraged; the address is below. —Ed.

By Alan C. Paulson
University of Alaska-Fairbanks

A food preservation technique called irradiation processing might enhance Alaska's share of the global seafood market by increasing the shelf-life of perishable seafoods by two or three times. Irradiation may improve the quality and safety of agricultural and seafood products as well. Irradiation preserves food using radiation energy rather like a microwave oven.

Although irradiation uses higher levels of energy than microwaves, the process is becoming more popular with consumers and processors.

A diverse interdisciplinary team at the University of Alaska-Fairbanks is conducting a feasibility study to evaluate the potential socio-economic benefits and risks that may accrue from the application of irradiation technology to Alaska's seafood and agricultural products.

Critics of irradiation technology question whether irradiation creates harmful by-products in foods and whether residual radiation remains in the products after processing. Critics also have expressed concern about environmental safety when using radioactive materials such as cobalt-60 and cesium-137 as the source of radiation energy.

The safety or wholesomeness of irradiated foods has been studied extensively over the last 40 years. Irradiation does not leave residual radiation in the food being processed any more than dental X-rays make teeth radioactive. Rather than cooking the product, gamma rays, X-rays or accelerated electrons are used to kill or sterilize potentially dangerous microorganisms, insects, parasites, molds and fungi, which can lead to food spoilage or illness in the consumer. Since the temperature of the food is increased only slightly, the food appears virtually unchanged.

Organizations such as the World Health Organization of the United Nations, the British Ministry of

Health, the Canadian government and the American Medical Association have endorsed the process of irradiation for foods. The U.S. Department of Agriculture has developed guidelines to ensure that irradiated meats are handled safely and properly during processing. All foods approved for irradiation processing must be handled according to the Food and Drug Administration's good manufacturing guidelines, and irradiated foods must be labeled as such.

The environmental safety issue is a bit more complicated. Particular concern has been raised about the environmental risk of using radionuclides as the irradiation source. In the case of cesium-137, this is becoming a "non-issue," since cesium-137 is no longer available in commercial quantities for this application. Irradiation of some foods (particularly bulk-packaged items) works best with gamma radiation, which would require the use of a radionuclide such as cobalt-60. Machine-generated X-rays can be used for processing some foods, and this would eliminate many of the environmental safety issues. It is not yet clear which source (if any) would be best for Alaska in general, or the Alaskan seafood industry in particular.

It is interesting to note that 71 food irradiation facilities worldwide use cobalt-60 as a radiation source. Furthermore, numerous Alaskan medical, industrial and research facilities currently use cobalt-60, so it can be argued that Alaska has experience handling and transporting small quantities of these materials.

What specific benefits might irradiation technology offer to the Alaskan seafood industry? Irradiation can be used to extend the refrigerated shelf-life of certain fresh finfish and shellfish such as groundfish, flatfish fillets, scallop meat and shrimp. It can sanitize frozen products (such as fish meal and fish protein isolate) to kill non-spore-forming pathogenic bacteria such as *salmonella*. Irradiation can also destroy insect eggs and larvae that

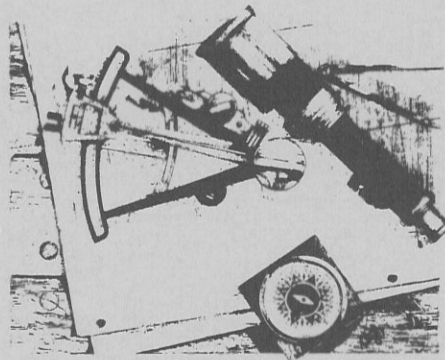
are sometimes associated with dried fish products. Finally, irradiation can be used to sterilize prepared fishery products. This process incorporates vacuum or other anoxic (no oxygen) packaging for long-term, non-refrigerated storage. This last technique has been used to preserve foods for the astronauts since the Apollo missions.

If you would like to learn more about irradiation processing, articles based on initial work in Alaska will appear in the next issues of *The Northern Engineer* and *Agroborealis*. The Agricultural and Forestry Experiment Station will produce a more detailed publication in the near future. Write to AFES at the University of Alaska Fairbanks, Fairbanks, AK 99775-0080.

A review entitled "Radiation Processing of Fishery Products" by George G. Giddings was published in Volume 38, No. 4 of *Food Technology* magazine. Your local librarian should be able to get you a copy of the article by interlibrary loan; photocopies can also be requested from AFDF.

Any written input you may have concerning the use of irradiation processing would be appreciated by the UAF research team. If you would like to comment on this issue, address your correspondence to:

Public Comment
Institute of Northern Engineering
539 Duckering
University of Alaska Fairbanks
Fairbanks, AK99775-1760.



Letter

Dear Editor:

I chuckled when I read your personal account of serving seafood dishes at the trade show (The Lodestar, Autumn 1987).

Food scientists have been working long and hard to make taste tests more objective. Among them are the 9-point hedonic scale, triangular test, and other assorted variables such as the ones we used to determine the keeping quality of sockeye salmon (see "Effectiveness of Ozone-Treated Wash Water and Ice on Keeping quality and Stability of Sockeye Salmon.")

One of the features we are planning for the Fishery Industrial Technology Center facility on Near Island in Kodiak is a test kitchen with ten tasting booths. Each taster in an isolated booth will register his/her response on color, taste, texture, flavor, etc. on a push-button board and the data will be compiled and analyzed by computer.

Unfortunately, we did not make a provision to record the puckered mouth, furrowed eyebrows, or the horizon-gazing eyes. Perhaps we should put a one-way mirror in the booth and station you there as our resident expert!

I agree with you that our body language is far more revealing than we tend to give it credit. Depending on the point of view, you have either advanced or pushed back the progress of the art of sensory evaluation by a decade.

Jong S. Lee
Director, FITC

Alaska Fisheries Development Foundation

conducts research and development projects to encourage more efficient use of Alaska's vast and valuable fisheries resources. Contact our staff any time with your questions and ideas, or to apply for membership.

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The Lodestar

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Krys Holmes - Editor

INDUSTRY *news*

Catfish slime is good stuff

Poisonous Persian Gulf catfish produce a slime that helps cuts and other wounds on humans to heal miraculously fast. Researchers at University of California at Davis report that the catfish slime contains natural antibiotics, anti-inflammatory benefits, and a coagulant that helps stop bleeding. The glue-like texture of the fish slime also helps begin the healing process within a few minutes of application. (Source: Associated Press)

Fewer analogues from Japan ...

First-draft estimates of Japan's 1987 production of secondary surimi products total 830,000 metric tons, compared to 854,568 from 1986. High surimi prices may have contributed; overall demand seems to be declining. (Source: Bill Atkinson's News Report)

... but more effort to find new surimi sources

Japan continues to focus on finding replacements for Alaska pollock as a source of surimi. Best bets: Chilean mackerel, Thai threadfin bream, New Zealand hoki. Of those, hoki shows the most promise as raw material for surimi.

Surimi/meat products get press

Food Engineering magazine in its January issue highlighted the surimi industry and several new surimi/meat products that AFDF demonstrated at the American Meat Institute trade show last fall. Those who missed the article can get reprints from AFDF.

Young asks for increased enforcement

Congressman Don Young (R-AK) asked NMFS officials to increase U.S. Coast Guard activities in the Western Bering Sea to help end illegal foreign fishing in U.S. waters. Young has requested that NMFS require foreign vessels operating in U.S. waters to be inspected before permitting; prohibit permits for vessels that have violated U.S. laws; fully analyze data from radio logs and observers; and dedicate more of its resources to fisheries enforcement.

"I realize NMFS faces budget problems, but there are some simple, cost-effective things they can do," Young said in a press release.

U.S. protests Japanese whaling

U.S. Secretary of Commerce William Verity invoked international fish trade sanctions against Japan to protest that country's annual hunt of 300

minke whales. The sanctions are to take two forms: a required cut in Japan's directed fishing by 50% (the Japanese allocation already is at zero), and an optional restriction on imports of Japanese fisheries products, imposed at the request of the President.

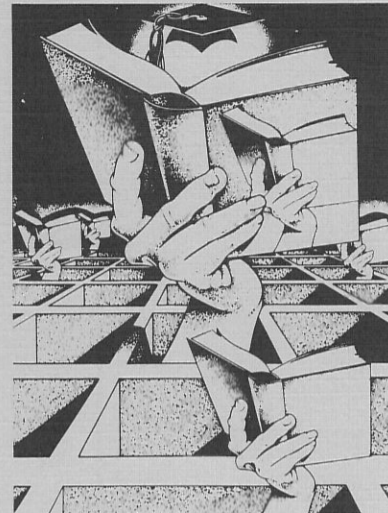
Doyle, Spinelli, Branson to retire neither will sit still afterwards

John Doyle was feted for 25 years of service with the University of Alaska Marine Advisory Program on Feb. 7; those who attended hesitated to call it a retirement party, because few believe Doyle will ever get the saltwater out of his blood. Doyle will keep an office at Marine Advisory headquarters in Anchorage to work on special projects.

John Spinelli, fish oil expert at the National Marine Fisheries Service Utilization and Research lab in Seattle, will retire in April, though many who read this hope he will continue to share his valuable knowledge and experience with those who carry on in his tracks.

Jim Branson, executive director of the North Pacific Fishery Management Council since its inception, will retire after the April council meetings. With a grand new home in Halibut Cove, some aquaculture sites to tend,

and no doubt a list of "things to do when I find time to do them," Branson is expected to forget about the trials and tribulations of the council long before any of us forget about him. Congratulations to all of you, and thank you.



Lodestar Library

Surimi quality booklet

Write or call now for your copy of AFDF's newest report, "The Quality and Preservation of Alaskan-Produced Surimi," a 120-page document on achieving and maintaining good quality in surimi processing. The booklet sells for U.S. \$10. However, if you own a copy of *Surimi: It's American Now*, you will automatically receive this information as a book update.

the LODESTAR

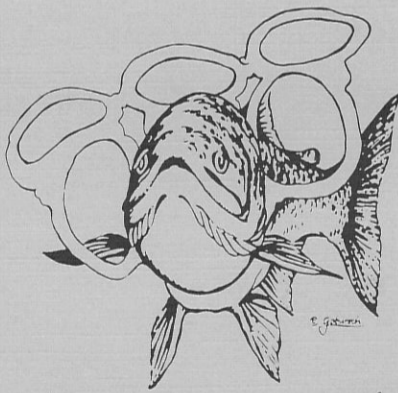
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Alaska Fisheries Development Foundation, Inc.

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"One should always be a little improbable."
—Oscar Wilde

Fishermen's discount for trash compactor



DON'T TEACH YOUR TRASH
TO SWIM!

Use of a kitchen-size trash compactor aboard fishing boats could eliminate tons of plastic that is now thrown overboard. Now Sears is offering Kenmore compactors to West Coast fishermen for \$236 FOB Seattle. They also offer delivery to Alaska; costs depend on number of units ordered. Studies show that by using a compactor, even the tightest ship is able to bring its refuse home rather than dumping it at sea. Information: call your nearest Marine Advisory Program agent, or Sears Contract and Commercial Sales, 1-800-732-1100.

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