

# the **LODE STAR**

Charting the course of fisheries development today.

Alaska Fisheries

Development Foundation, Inc.

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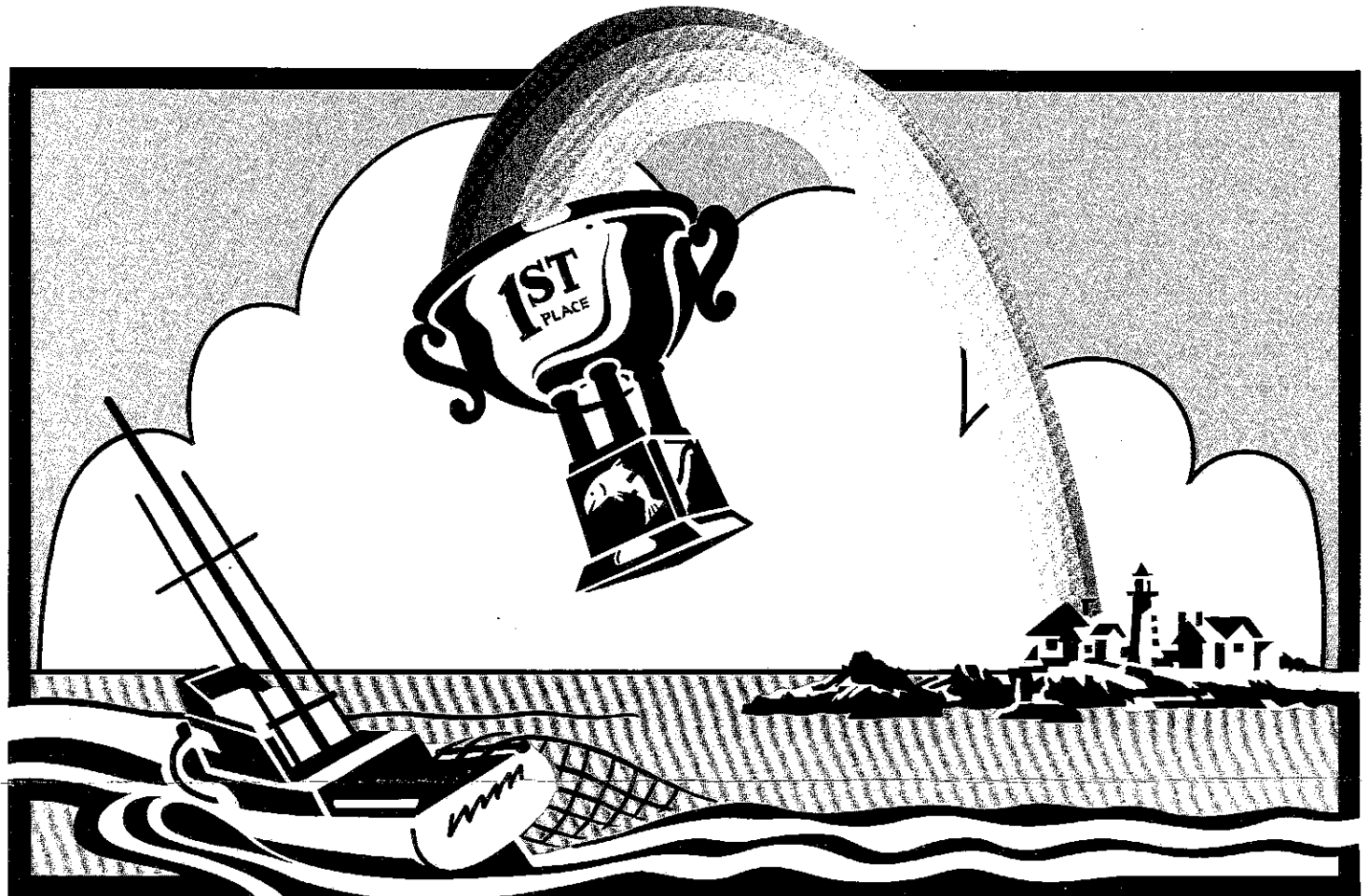
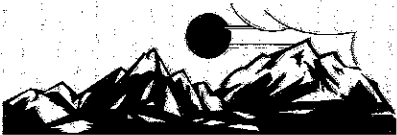
## News to Use

Maybe it's the 20 hours of summer daylight that infuses Alaska's seasonal energy, maybe it's the buckets of rain we've had that's driven us indoors to apply our pineal energy to new industry development projects. Whatever it is, it's working; AFDF fairly vibrated this summer with new project proposals, new industry contacts, new members, new ideas, new energy.

We start by announcing the winners of AFDF's popular prototype product development contest, **at right**. After little notice, a May request for proposals to house a pilot-scale surimi and analogue line gained more attention this month, convincing AFDF to re-issue the RFP (see **page 5**.) August also saw the beginning of AFDF's flatfish utilization project which received full funding by National Marine Fisheries Service by re-allocating some of AFDF's previously unused funds. A request for proposals for flatfish processing has been issued; submission deadline is Sept. 21 (see **page 5**.)

AFDF submitted its project proposals for 1987-88 Saltonstall-Kennedy grants and now joins the other foundations and industry groups in waiting through the funding deliberations. Get a glimpse of what AFDF hopes to be doing next year: exploring new uses for so-called seafood waste products (**page 4**) and opening new opportunities for pink and chum salmon producers (**page 4**).

**Membership news:** PPF Norda has changed its name to Quest International, but the New Jersey-based company retains its address, phone numbers and (top-notch, we might add) personnel. American High Seas Fisheries applied for membership in AFDF this summer. Read more about what our members are doing in our new section, **Members Only**, **page 2**.



## And the winners are....

By Krys Holmes

Maybe even within a year, you'll see some new products coming out of Alaska that are still so new they're still a secret.

The products will be the result of AFDF's new product development contest, which ended this month with five winners who will now see their products through to commercial production.

"If even one of these products reaches commercial production as a result of our contest, it could dramatically increase the market opportunities for Alaska's seafood resources," said Mel Mosen, AFDF executive director.

The foundation sponsored the new product contest this summer to trigger development of new uses for Alaskan surimi, salmon and pollock, and to invite food engineers already testing these materials to participate in AFDF's ongoing effort to expand the applications for Alaska's seafood resources. The foundation also wanted to give creative people, who may or may not have adequate facilities and a development background, a chance to test and demonstrate their new product ideas.

One winner was chosen from each of five product categories: surimi, salmon, surimi/salmon combination, surimi/meat combination, and pollock mince from frames and trimmings. Each product submitted was judged by a panel of five industry experts (see box, page 2) according to the following criteria: How well the entry promised to broaden product diversity; its originality and market potential; the volume of Alaskan fish resources that would be used in commercial production, and the product's potential in increasing landed value of those resources;

and how well each entry demonstrated the basic attributes and functionality of the raw materials.

### Category 1: Surimi

Bay-loni, a luncheon meat using surimi as its primary ingredient, scored the highest rating of all the products submitted to the contest. "It could be a winner," one evaluator wrote of Bay-loni. "They need marketing help, as in all projects, but this could be the clincher for success." Bay-loni was submitted by Richard Rhoda of Ocean Foods Hawaii.

### Category 2: Surimi/salmon

The winner here is a most intriguing idea that combines salmon and surimi into a product that could be used as an entree or side dish in volume food service operations. It uses low-grade surimi as a binder, and in limited market tests has been well received. It was submitted by retired chef Eric Benson and Dr. Lucina Lampila of Oregon State University (OSU). Evaluators said, "There is every reason to expect strong markets for (this) quality product." The product and its production methods are proprietary information protected for the entrants.

### Category 3: Salmon

The winner, submitted by Arctic Seas Development, is also protected under the contest's confidentiality rules, but this healthful snack food item garnered much notice among evaluators. "This product is very interesting. The concept has potential...If successful, it would enhance the use of seafood quite a lot," evaluators said about the product submitted by AFDF's former marketing director, Michael Broilli, and his two partners Lynn Gabriel and Raymond Bennis.

Continued next page...

**Category 4: Surimi/meat**

A restructured meat product won this category for Dr. John Carpenter of the University of Georgia. Evaluators said, "This concept may be a gem of a product once the (entrants) complete their study. There may be many (food industry) opportunities based on their development work." The panel also pointed out that Carpenter's product concept would help open a new niche for surimi in whole muscle products.

**Category 5: Pollock mince**

Benson and Lampila won also in this category with a frozen soup/chili type product that contains 30-50% seafood. This product enticed evaluators for its uniqueness, nutrition and expected economic production costs. "This is unique enough, but also acceptable enough to be worth someone's attention, if not someone's money," wrote one evaluator.

AFDF will award between \$15,000 and \$25,000 to each winner, depending on each project's financial need and stage of concept development. The money will be applied to aid the winners in perfecting formulations and



Flour plus imagination equals bread." —Frank Kawana

conducting market tests or pilot production of their products. AFDF hopes to see the products enter commercial production. Contracts are expected to be drafted by September.

All contributors may receive copies of their product evaluations by contacting Loretta Lure, AFDF assistant project manager.

Eighteen people submitted 36 entries to the contest, which was directed by Lure. "We were extremely pleased with the volume of entries, and with the overall high quality of the concepts submitted," Lure said. "Our contest stimulated some innovation in seafood products and attracted a lot of attention, and we think the final products will demonstrate the tremendous potential Alaska's seafood materials present to the food industry."

The foundation sponsored the new product development contest this summer as part of its continuing work to increase the value of Alaska's fisheries resources and to widen the range of market opportunities open to Alaskan seafood processors and thereby help the industry strengthen its competitiveness on the world market.

Thanks

to our panel of experts

Many thanks to the five discerning evaluators who contributed their time and thoughtfulness to AFDF's prototype product development contest. None received financial compensation for participating, and AFDF is in their debt.

**Dr. Joyce Nettleton**

Dr. Nettleton, author of the popular new book *Seafood and Health*, is a nutrition consultant and lecturer at the Frances Stern Nutrition Center at Tufts University in Boston. The author and broadcaster has long been involved in nutrition education programs in supermarkets, and is a recognized seafood expert.

**Felix Germino**

Germino is president of F. Germino and Associates in Chicago, a management consulting firm in technical marketing and new product identification and development. He is the former vice president of human foods for the Quaker Oats Company, and currently runs the annual Gorman Conference on New Products, which will be held this October in Ft. Lauderdale, Fla.

**Robert McMath**

McMath is founder and chairman of Marketing Intelligence Services Ltd. of Canandaigua, NY. He is widely noted for his expertise on historical new consumer product introductions and new product trends, and he writes for AdWeek, Food and Beverage Marketing, and Progressive Grocer. He is also a contributing writer for Time, Newsweek, Business Week and Food Week in Australia.

**Paul Peyton**

Peyton is director of the Office of Commercial Fisheries Development, a division of the Alaska Department of Commerce. Peyton is a chemist and a commercial fisherman, and has spearheaded the state's pink salmon product and market development efforts since 1984.

**Dr. Donald Kramer**

Dr. Kramer is a noted seafood technology specialist currently serving as chairman of the University of Alaska's Marine Advisory Program. He has done research in the U.S. and Japan, and is frequently called upon to direct research, advise industry projects, and contribute to conferences and publications. He has been widely published in books and journals for many years.

One of the best reasons to join AFDF is to gain from its network of experts in nearly every phase of the food and seafood industries. With this issue we are launching a new section, *Members Only*, where AFDF members can spread the word about new products, new projects, new technologies and new business concerns that are of interest to the industry. — KH

**Henningsen Foods offers dehydrated egg whites for seafood analogues**

Henningsen Foods, Inc. has developed special dehydrated egg white products for use in surimi-based seafood analogues. Egg white traditionally has been used in *kamaboko* and other surimi-based analogues to improve texture, firmness and glossy appearance.

Henningsen now is working with at least one analogue producer, and is interested in working with other analogue producers as well. John Toney, director of technical services, said their dehydrated egg whites, which are specially suited for analogues and exhibit functional and flavor characteristics comparable to fresh egg white, offer significant advantages over frozen egg white.

The cost of dehydrated egg white is generally comparable to frozen when

based on solids content; cost benefits from dehydrated egg whites are expected to come in handling, storage, transportation and convenience. "We also think the user will see benefits in finished product quality and reduced usage levels with dehydrated egg white," Toney said.

Henningsen manufactures about 25 different dehydrated egg products for various food applications. For more information contact Toney at 14334 Industrial Road, Omaha, Neb. 68144; (402)330-2500.

**New East Coast surimi plant planned**

Freehold Fishing Ltd., a subsidiary of Forbes and Co., plans to build a \$5.8 million surimi plant in New Bedford, Mass. that would produce surimi from silver and red hake and whiting, and would produce crab analogues for sale in the U.S. and on the export market, according to Freehold officer Tom Moore. Freehold will operate its own fleet of three catcher boats and expects to employ 100 people within three years. Moore said in news reports the company hopes to become a leading surimi exporter, and emphasized

that the plant will be the first all-American surimi plant.

**Pfizer tests sodium citrate in surimi**

Sodium citrate may add tensile strength to surimi, giving it a smoother texture in analogues. Results aren't in yet, but Pfizer Chemical Corp. and Oregon State University are testing the idea. "We're not through researching it yet," said Dr. Lucina E. Lampila at OSU after the first day of tests was completed. Pfizer sells sodium citrate to cheese manufacturers and other industries, and is curious about its potential in surimi.

For more information contact Bob Campbell at Pfizer's chemical division, 16700 Red Hill Ave., Irvine, Calif. 92714; (714) 250-3260

**Sea Resources Engineering: New rheological data on surimi**

Sea Resources Engineering of Seattle, Wash. is researching the rheology, or flow characteristics, of surimi during extrusion. "We're studying the engineering aspects of surimi, which is a very viscous material," said George Pigott, president of Sea Resources.

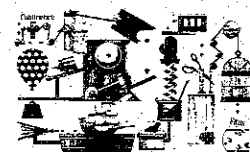
"We're looking at the possibility of heating the surimi at the same time we're extruding it, so we can create the gel at the same time we're making products." Pigott said he is also testing surimi made with different cryoprotectants to see how they might influence the viscosity, and other characteristics, of raw surimi.

For more information, contact Sea Resources Engineering at 275992nd Ave N.E., Bellevue, WA 98004; (206) 453-1546.

**Paul Taylor forms new company**

Paul Taylor, formerly with BK-Ladenburg, has formed a new company, Evergreen Food Ingredients and Equipment of Olympia, Wash., which now supplies ingredients, process and handling systems and laboratory

Through Evergreen, Taylor will continue to represent the BK-Ladenburg line of food-grade phosphates. He will also represent about 15 other ingredients, process and equipment companies. For more information, contact Paul Taylor at P.O. Box 10038, Olympia, WA 98502; (206)866-1775.



# Pollock and the PLO

## Searching for uses for pollock liver oil

Results are back from a chemical analysis of pollock liver oil, and they show that, with some improvements to quality control and extraction technology, pollock liver oil could be a strong candidate in the lucrative fish oil market.

With these test results and a market study, AFDF is exploring the potential profitability of pollock liver oil. General estimates show there are about 24,000 metric tons of pollock liver oil in Alaska's waters, a figure that would increase or decrease seasonally.

AFDF is also looking at how well pollock oil might compete in the flavored cod liver oil market, and the possibility of distilling pollock liver oil for use in margarine and shortening. But a new report from Eagle Fisheries, AFDF's contractor in the pollock liver oil project, suggests the most attractive potential market for the oil is as a nutritional boost to the growing number of Americans who are schooling up behind the fish oil fad.

Sharon Gwinn of First Alaska Surimi, who evaluated the test data for Eagle Fisheries, said the most significant result the study demonstrated was the importance of careful handling of the raw material before oil collection. "We've learned that oil is very sensitive to process conditions," she said. "We can tell from the ranges of results on peroxide and free fatty acids that small changes in raw material handling produce significant changes in the quality of the product. This tells us

fatty acids, and a significant discrepancy between the EPA values in non-spawning fish and fish in spawn — oil from spawning fish was considerably lower in EPA. EPA and DHA are the omega-3 fatty acids that have gained attention in the medical community as possible arms against cholesterol and heart disease. To the initiated, they are fatty acids 20:5w3, eicosapentaenoic acid and 22:6w3, docosahexaenoic acid, respectively.

"The most attractive potential market for pollock liver oil is as a nutritional boost to the growing number of Americans who are schooling up behind the fish oil fad."

"It's likely that we'll find that liver oil in spawning fish is not worth extracting," Gwinn said, "but I'm willing to be surprised. There might be someone out there who wants natural liver oil with low EPA. Who knows? Maybe someone wants a lot of inexpensive oil, and this might turn out to be just as important an opportunity as a small customer base buying high-EPA oils."

Results from the sample tests are reproduced here (see box), along with a chart comparing some of pollock liver oil's constituents with those of other fish oils. A brief explanation of each test follows:

**Fatty acid composition** is one of the most significant factors in evaluating fats and oils for human consumption.

A daily five-gram dose of fish oil would provide about 20 mg of cholesterol, less than 10% of the accepted maximum daily allowance. Therefore these cholesterol levels are acceptable, but the oil may face market competition from products from which cholesterol has been removed.

**Water content** influences the quality and stability of an oil because moisture is the medium in which bacteria, molds and deteriorative enzymes

operate.

**Protein content** in the oil indicates decomposition, which causes offensive odors. There also appears to be a relationship between the protein and the polyunsaturated fatty acids, which contribute to the oxidation of the oil.

**Iodine** is a measure of the amount of unsaturation of the oil. Iodine value is defined as the number of grams of iodine that can be absorbed by 100 grams of oil when the oil is reacted with an iodine compound. Ideally, one molecule of iodine will be absorbed at each double bond in the oil sample.

**Free fatty acids** are a nuisance in fish oil because they tend to oxidize (lose their unsaturation) more easily than triglycerides, and the polyunsaturated fatty acids in their free state may cause fishy odor in the oil. Free fatty acids are removed by refining, and a high presence of free fatty acids would cause a yield loss in the oil refiner.

**Saponification value** is defined as the number of milligrams of potassium hydroxide required to react completely with all the reactive groups in 1 gram of oil. Saponification value indicates the average molecular weight of the triglycerides. In other words, if the oil contains a large proportion of long-chain, high molecular-weight fatty acids, it will take fewer molecules of potassium per gram of oil to complete the saponification. Saponification and iodine values are companions to the fatty acid composition, and should show consistent measurements.

Pollock liver oil apparently has an average molecular weight similar to that of halibut liver oil and higher than that of cod liver oil.

**Peroxides** are the first sign of oxidation, or the development of rancidity, in fats and oils; thus, peroxide values indicate the extent of irreversible oxidation in the oil. Peroxides have no flavor or odor, but they can decompose into other constituents that do have undesirable flavors and odors.

**Vitamin content** is of particular interest in fish liver oils because the oils traditionally are sold on the basis of their levels of vitamins A and D. However, vitamin A can be toxic in too-high doses and products with more

than 10,000 international units (I.U.) intended as a daily dose are only sold by prescription in the U.S.

Vitamin A levels were more varied among the samples than any other constituent. Low vitamin A levels may be an advantage if fish oil dosages are recommended at 3 to 10 grams of oil per day. If vitamin A levels were any higher, toxicity could be a danger.

Next, Eagle Fisheries will research the U.S. market for fish oils and evaluate how competitive pollock liver oil might be in that market. Samples of spawn and non-spawn pollock liver oil will be distributed to potential oil users, and results from all these efforts will be published by AFDF this fall.



SAMPLE #	1	2	3	4
Water %	0.20	0.12	0.31	0.60
Protein %	0.13	?	0.02	0.02
Iodine Value	137	134	166	148
Saponif. Value	172	171	171	168
Free Fatty Acids	0.8	0.6	7.0	7.2
Peroxide Value	8.0	11.4	5.2	5.6
Vitamin A IU/gm	230	340	850	930
Color (photometric)	16.9	1.0	12.8	25.9

**Figure 1. Chemical analyses of pollock liver oil** The protein value of sample #2 was unavailable at press time.

Oil	Iodine Value	Vit. A IU/G	Vit. D IU/G
Cod liver	160-175	800-1,500	60-120
Saithe liver	160-175	800-2,500	80-200
Ling liver	135-160	2,000-5,000	100-200
Haddock liver	110-145	1,000-2,000	10-30
Porbeagle liver	170-190	1,000-1,500	50-100
Halibut liver	150-165	20,000-200,000	1,000-2,000

**Figure 2. Some chemical values for other fish oils**

that we need a strict code of handling to maximize the profitability of the oil. And it doesn't take expensive equipment — just careful attention to handling and processing controls."

Gwinn said another important thing learned from the study is that "our pollock livers are as good as anyone else's," a fact that may have been expected but had not previously been proven.

AFDF and Eagle studied several samples of liver oil from pollock taken from Shelikof Straits during spawning season.

By comparing the fatty acid composition in oils from spawning and non-spawning pollock, a reasonable estimate can be made of the quality and characteristics of pollock liver oil available at various times of the year.

What AFDF discovered was a high vitamin A content, varied levels of

Nutritionists and physicians are paying increasing attention to the fatty acid composition of various nutritional supplements. Most important of the fatty acids are EPA and DHA. Fish oil buyers also use fatty acid composition to help determine the functional properties and stability of an oil.

The samples analyzed showed fairly consistent fatty acid compositions, though the sample of oil from non-spawning fish had far higher EPA levels.

**Cholesterol content** is important for the same reasons as fatty acid composition. It is measured by saponifying the oil triglyceride, and then separating the unsaponifiable fraction of the oil. (See saponification, below.) Cholesterol, which is a component of the unsaponifiable fraction, is identified and measured by colorimetry or gas-liquid chromatography.

### Alaska Fisheries Development Foundation

conducts research and development that encourages growth of the Alaskan seafood industry. Contact our staff anytime with your questions, contributions or ideas.

**Nikki Delaney - Secretary**

**Loretta Lure - Asst. Project Manager**

**Peter Moore - Project Manager**

**Barbara Culver - Controller**

**Mel Monsen - Executive Director**

### The Lodestar

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**Krys Holmes - Editor**



# New project roll call

## *Pink & chum salmon project draws interest*

The foundation has designed a new project that, if funded, would benefit small-boat fishermen, create new opportunities for small and large processors, and could have a broad impact on two of Alaska's most underdeveloped fisheries: pink and chum salmon.

"There were almost 90 million pink and chum salmon harvested last year," said Mel Monsen, AFDF executive director. "Right now they represent relatively small profits for salmon fishermen and processors. Most of the pink and chum resource is canned, and markets for canned salmon are diminishing rapidly. Our goal is to increase the ex-vessel value of pink and chums by expanding applications of pink and chum salmon the products on the market."

AFDF has submitted to the National Marine Fisheries Service a proposal to test new processing technologies for pinks and chums, to demonstrate new value-added product opportunities for processors, and to collect and disseminate data on microbiological and nutritional properties of pink and chum salmon. It may be AFDF's most popular project of the year.

"We received more input on our pink and chum salmon project than any other project proposal we've drafted this year," said AFDF executive director Mel Monsen. "I think it's for two reasons. First, AFDF has a track record for successful technology

development. Because of the success of the surimi project, people have faith in our projects that helps balance the skepticism they might feel about the potential of pink salmon. And second, this project is based on the momentum gained by the Alaska Office of Commercial Fisheries Development, which has been working with value-added pink salmon products for the past two years and has laid some very strong groundwork for our project."

If the plan is funded, AFDF will contract with a salmon plant to custom process pinks and chums into fillets, mince, or fillet/mince combination products and into sausages, blocks and other intermediate products for further processing. Product samples will be distributed to companies interested in product development using pink or chum in the new forms.

AFDF's contracting processor will also try out new processing technologies to increase yields, improve storage stability, improve microbiological quality of the products, increase basic knowledge of custom processing for specific applications, and try new packaging forms for potential buyers.

Another important part of the project will be a study of the microbiological, nutritional and functional properties of pink and chum salmon. AFDF hopes to collect the information that mainstream food processors require before launching product development efforts of their own, said assistant project manager Loretta Lure.

Lure said that AFDF's project will focus on data collection, and on communicating information to the industry. "We have talked to several large food companies who have said they'd be very interested in using a variety of pink or chum products if they had

more technological, microbiological and nutritional information about the products," she said. "There may be a vast potential for pinks and chums, but it hasn't developed yet because the industry lacks the information and demonstrated success. Our project will provide the information the industry needs, and will demonstrate new opportunities open to processors."

If funded by National Marine Fisheries Service, the pink/chum salmon projects will begin in December, when AFDF plans to issue a request for proposals from Alaskan salmon processors for custom production of various value-added products for evaluation, analyses and test marketing.

"The state's project was discontinued at a critical time," Lure said. "With this project, we hope to salvage their good efforts and to initiate new interest in an effort that definitely will make a difference to the industry."

## *Making The Seafood Industry User-Friendly*

What would be the long-term benefits of accepting deliveries of sablefish at your plant? Should you invest in a new line to handle salmon fillets? Should you install an automatic batter on your vessel, or would it not pay out in the long run? How can you really judge the economic impact of a project that raises the price of sockeye salmon two cents?

Fifteen people got together in July to talk about the industry's need for a computer-based economic assessment

model that could help fishermen, processors, community planners and other organizations analyze the changing economic conditions in the North Pacific fisheries. Out of that meeting and numerous other discussions with the industry, AFDF forged a new project that would create an interactive computer model to analyze changing conditions in Alaska's fisheries.

"Our seafood industry is very diverse and complex, and each sector interacts in a specific way with other sectors of the industry," said Loretta Lure, assistant project manager for AFDF. "But we currently have no way of measuring how changes in one phase of a fishery affect related fisheries or the communities that support them. An interactive computer model would help fishermen, processors and industry organizations determine the current values of fisheries and the impact they have on their own operations."

At the July meeting, people from Sea Grant, the Department of Fish and Game, the North Pacific Fishery Management Council, Minerals Management Service, the Institute of Social and Economic Research and other groups specified their needs for an economic assessment model and outlined what information the model must include to be meaningful to their organization.

"Fish and Game was interested in impact assessment and policy questions," Lure said, "and the Council needs to assess the immediate impact of a change in landings of fish. Sea Grant was primarily interested in learning how management changes affect communities. And AFDF is primarily interested in providing the industry with a way to evaluate the

## MAXIMUM UTILIZATION: Getting 110% from

Just when you thought you'd seen everything there was to make from seafood waste (meal, oil, some trendy fish skin leather), an East Coast company comes along with a high-purity liquid gelatin used for dichromated coatings in holograms. And it's extracted from cold-water fish skins.

"It just goes to show that there are probably a lot of markets for Alaska's seafood by-products that we aren't even aware of," said AFDF's Mel Monsen.

People from a variety of industries have begun poking around in the seafood by-product world recently, and some Alaskan fish processors have responded with the willingness to provide raw materials and curiosity over how many things can be done with them. "But there is a problem," Monsen said. "Most of the potential users of fish by-products have very specific needs, and right now the seafood processors don't have the technology to turn their millions of pounds of waste materials into the product

forms that are needed by the market."

Enter AFDF, with a new project proposal to develop usable products from the material that's now being thrown away during fish processing. The project has three goals: to generally improve the efficiency of current Alaskan fish by-product processing technology; to pursue the possibility of using salmon head oil in food and nutritional supplements; and to help develop new finfish aquaculture feeds using fish processing wastes. The project came about when the foundation saw potential markets for Alaska's by-products, but development activity was hampered by lack of technological efficiency on the processing side, and lack of information among potential users about how much by-product is available in Alaska and what it can be used for.

AFDF is hoping for the project to be funded through the Saltonstall-Kennedy program. Meanwhile several private companies and public agencies, some of them newly encouraged by

AFDF's project, are already engaged in work that will either compose or complement part of AFDF's project.

### **Fish meal for fish meals**

The point man for by-product development on the west coast is Dr. Ron Hardy, supervisory research chemist with the National Marine Fisheries Service's utilization lab and project leader for the Western Region Aquaculture Consortium, which is researching new kinds of fish feeds. Hardy is analyzing the beneficial components of fish oils, testing the usefulness of waste materials as fish feed in aquaculture, studying how to stabilize the waste for better storage, studying what causes pigmentation in fish, and trying to determine the nutritional needs of a fish. ("Fish require some of the same vitamins as do you and I," Hardy said in a Fishermen's News article. "But until a fish rolls over and dies, we don't know if he's healthy or not.")

Hardy's expertise will be enlisted to help AFDF as it studies how salmon,

halibut and groundfish wastes might be turned into feed for the growing Pacific aquaculture industry.

### **Improving technology**

Finding markets for the by-products now being produced in Alaska is a tough job but Kodiak Reduction, Inc. (KRI) made headway this summer. KRI manager Dan James said they have begun selling meal into the Taiwanese market for chicken feed, maybe not the most lucrative of meal markets but a good start until AFDF can help KRI upgrade its drying technology and thereby demonstrate how future by-product processors can improve their products. KRI has also sold several vanloads of salmon meal and white fish meal to Marubeni for the Japanese market, and nine containers of white fish meal to a U.S. broker.

AFDF's project would help KRI upgrade its technology while demonstrating to the industry the potential costs and benefits of turning by-products into marketable products.

economic impact of any change in the industry, and how it will directly affect them."

The group agreed that probably no single input/output model could provide all the information that every organization seeks, but that all groups participating should coordinate data collection efforts and any models created should be used to support each other.

If AFDF's project is funded, the project will build on previous input/output models created by Hans Radtke for the West Coast fisheries, and within a year would help the industry not only evaluate short-term affects and long-term consequences of changes in the industry, but also define the economic importance of the North Pacific fisheries to the economy of Alaska and the U.S.

AFDF and the Alaska Sea Grant/Marine Advisory Program will co-sponsor a second meeting about economic assessment models in November. The meeting will be open to industry members and the public. For more information, contact Loretta Lure at AFDF.

*Surimi report due out next month*

AFDF is compiling an important new report compiling data about the quality and shelf-life of shore-produced surimi. It will be finished in September, and will be available from AFDF.

The report summarizes three years of study by AFDF and the University of Alaska's Fishery Industrial Tech-

nology Center on the quality and functionality of shore-made surimi, and of the factors that influence the quality and shelf-life of surimi. The study included significant sample testing on various lots of surimi produced at Alaska Pacific Seafoods in Kodiak; comparison of the decanter centrifuge with screens in protein recoveries from washed minced flesh solids; studies on factors affecting water holding capacity of surimi; and experimental analogue production to judge functionality of different surimi qualities in secondary processing.

"High quality surimi can be produced from Alaskan pollock at shore and we have identified the factors and conditions that would contribute to the production of desired surimi," the report concludes.

In closing, the surimi quality and report recommends that a pilot surimi and analogue line be provided to the industry for further tests in a controlled atmosphere where all process parameters can be easily adjusted for more comprehensive tests (see box).

Much of the information gained during the project — on microbiology of surimi, botulism in analogues, water-holding capacity, protein recoveries and the use of Alaskan shore-made surimi in analogues, has been published in previous issues of *The Lodestar*. However, the quality and shelf-life study provides a clear overview of all the research included, and presents the entire project in a cohesive manner.

Roemhildt said they sold pink salmon skins to Umi Leather, which tans the skins for use in salmon leather wallets, belts and novelty items. "They're only interested in pinks," Roemhildt said. "Pink salmon has small scales and the pattern is very tight and looks nice like snake skin."



### Targeting salmon head oil

Red salmon contain six times as much head oil as pinks do, eight times as much as chums, and a far higher percentage of omega-3 fatty acids than any other salmon species. AFDF has targeted red salmon head oil as a potential nutritional supplement and ingredient in margarine, cooking oil and baby food, and has garnered support from North Pacific Processors (NPP) in Cordova. "We did some salmon head oil samples ourselves this spring and production turned out very well," said NPP manager Ken Roemhildt. "But with the equipment we have now we're not able to handle all the heads we can generate from our processing operation." NPP hopes to participate in AFDF's demonstration project with equipment that could make profits from heads of the four million pounds of red salmon NPP processes yearly.

NPP also participates in Alaska's trendiest seafood industry of the year, the popular salmon leather business.

## Flatfish project needs a processor

By this time next year some Alaskan processor will have pioneered new flatfish production technology, produced and test marketed several new value-added products, and paved the way for shore processors and small-boat fishermen to make more money from bottomfish by-catch.

On August 10, AFDF issued a request for proposals to processors for a year-long flatfish production contract that includes testing equipment, experimenting with value-added products and entering those products in the food distribution chain.

"We're looking for a processor who wants to be the first to test technology that will make flatfish production more efficient and more profitable, and to explore opportunities for arrowtooth flounder and yellowfin sole," said Mel Mosen, AFDF executive director.

The RFP calls for a 12-month production commitment in a plant accessible to AFDF and its industry associates. The plant that is chosen for the project must pay for operational costs and insurance, and must arrange with small-boat (65 feet and under) and large-boat harvesters for flatfish deliveries. The project also requires a plan to work with AFDF and harvesters to develop an on-board handling and quality assurance program, and with food industry buyers on product development.

AFDF, cooperating with Baader North America, will provide \$180,000 worth of state-of-the-art flatfish heading, gutting and filleting equipment. The foundation will also pay for the services of an equipment technician for three months, after which the contractor is responsible for equipment maintenance.

Each proposal will be judged according to how well it addresses AFDF's five project objectives, which are: 1) to develop optimum handling and processing methods for flatfish species; 2) to increase opportunities for small vessels in the Alaskan trawl fisheries; 3) to develop new, profitable flatfish products and open markets to those products; 4) to document the seasonal flesh quality variation in flatfish; and ultimately, 5) to achieve full utilization of the entire flatfish by-catch from pollock and cod deliveries.

AFDF will also base the selection on how much flatfish each proposer promises to produce, how much financial incentive is required, the thoroughness of the quality control program, how the processor will involve the local boat fleet, and on the proposed timeline.

The project is designed to close the gap between Alaska's flatfish resource and profitable opportunities in the world market. It is part of AFDF's long-term goal of developing a year-round, multi-species seafood processing industry that will render for processors and harvesters more industry stability and bigger profits.

Proposals for the flatfish production project must be received at AFDF's offices by September 21. AFDF will announce the successful bidder on September 30, and equipment will be installed in October. For more information or for a copy of the RFP, contact Mosen at AFDF.

## Free surimi, analogue line awaits a home

A spate of last-minute interest in AFDF's pilot surimi and crab analogue line convinced AFDF to re-issue a request for proposals to house the line. AFDF first issued the RFP in May but received only one response, which was more costly than the project allows. The new deadline for submitting a plan for the line is September 10; the pilot line will be installed and operating by the first of October.

The pilot line is a small-scale version of a commercial-size plant and produces 100 lbs. of surimi and 100 lbs. of crab analogues per hour. AFDF will contract with the winner of the bid package to house and maintain the pilot line. The equipment will then be available to food and seafood producers interested in testing new methodologies, ingredients or processes for either surimi or analogues.

"More and more processors have told us they'd like to bid to get the line in their plant later in the summer," said AFDF's Peter Moore. "Quite a few companies who use surimi, or who make ingredients for surimi or analogues, are already eager to test out their products in different formulations as soon as we're set up. This will be the first opportunity for most of them to conduct their own hands-on tests in a pilot plant situation."

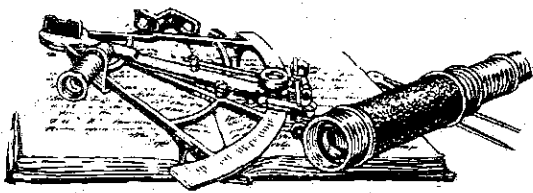
Users of the pilot line will be able to experiment with different process controls in a more controlled environment than a commercial-scale plant could provide. Test production in a pilot line is less expensive than in a full-scale line, and adjustments in process controls produce results faster than in a full-scale plant where thousands of pounds of product could be processed before line adjustments are manifested in product changes.

The analogue equipment was donated by Rymer Meat Co. of Chicago. The surimi equipment came from AFDF and from the National Marine Fisheries Service lab in Kodiak.

For more information, or to schedule test time at the pilot line, contact AFDF.

Opinions

# director's log



By Mel Mosen  
AFDF Executive Director

To anyone not intimately involved with the Foundation, our efforts to expand opportunities for Alaskan surimi producers by developing new applications in the meat industry may seem confusing. I must admit they have been somewhat perplexing to me as a newcomer to the Foundation faced with numerous opinions on what should be done and who should do it.

To clarify this situation, I offer some information on the background, present situation, and future plans for the Foundation's surimi/meat development project.

One of our major goals is the full utilization of the Alaska pollock catch. We have helped bring about the now-thriving surimi processing industry and the production of thousands of tons of surimi each year. Because of this growing production, we must work to increase the applications for surimi in the food industry. Our research into new opportunities indicates that the U.S. processed meats industry is probably the largest long-term market opportunity for surimi.

As a result, we have contacted meat companies in order to identify regulatory restrictions, technical barriers and other resistance to this new application.

The regulatory concerns expressed by the meat industry center on whether or not they would be able to obtain federal approval for any surimi/meat product. Meat companies are not willing to spend much time and money on a product which does not have a high probability of being approved. Since surimi does not have a historical regulatory background which could define this probability, we have begun to interact with the U.S. Department of Agriculture in an attempt to demonstrate that surimi/meat products are approvable.

In addition, meat processors are not aggressively pursuing technical information about surimi. They perceive surimi as an expensive protein, partly due to inexperience with its functional value, cost structure, and market benefit. AFDF is working to provide the meat industry with information

that will eliminate these attitudinal barriers in order to obtain their serious consideration of surimi as an ingredient.

To encourage involvement of food processors in developing new applications for surimi in processed meats, we have acted on behalf of the Alaska surimi industry to clear the obstacles to the use of surimi as an ingredient in prepared meat products. The Foundation needs to provide answers to the regulatory and technical questions which stand in the way of using surimi in meat products.

The Foundation has enlisted the support of a contractor in this effort to smooth the way for surimi into the meat industry. Our joint efforts will concentrate on developing the microbiological information necessary to ensure a safe product at both the surimi and the surimi/meat level, and introducing the meat industry to surimi.

We plan to continue our industry directed approach with active input from experts in microbiology and regu-

latory issues. Our effort has benefited from active participation by two surimi producers, Alaska Pacific Seafoods and Greatland Seafoods. Also, we continue to rely on the microbiological expertise of the National Marine Fisheries Service, Fishery Industrial Technology Center, University of Washington, the USDA and the Food and Drug Administration.

The Foundation intends, with this cooperative effort of enlightened industry representatives, microbiological experts, and regulatory agencies, to bring about an expanded opportunity for surimi in the food industry.

## We win food processing award

AFDF won a Food Processing Magazine award for development of an Americanized surimi processing system in the magazine's 1987 Processing Systems Awards honoring outstanding developments in the food industry.

T C Swafford nominated the foundation for its work in developing new surimi production technology like the in-line washer, decanter centrifuge, and other improvements to the traditional surimi process that helped increase protein recoveries and profitability in surimi processing. Pacific Fishery Products, Inc. shared the award with AFDF.

Food Processing Awards are bestowed biannually by the Putman Publishing Co. magazine, and are judged by panels of experts from all segments of the food industry. Entries were judged on their innovative qualities and their breadth of application in the food industry.



## The editor's turn

# Off the Cuff



"Fishery development is widely practiced yet ill defined," writes William Royce in his new book, *Fishery Development*, and so it is. Royce braves an excellent attempt of his own, defining fishery development — though not in so many words — as the process of attaining maximum economic, technological, social and nutritional benefit from the world's seafood resources. "The goals of fishery development are enticingly simple: more food, recreation, employment and income, especially for poor people."

How are we doing, at AFDF and in the industry, in our striving toward the goals Royce has outlined? Our surimi project resulted in some major technological breakthroughs; our current projects with surimi, salmon and seafood wastes focus on attaining optimum nutritional value from our resources. Benefits from technological and nutritional developments will enhance economic growth in the industry, as long as we strive to make these benefits available to small and large companies alike. And when everyone benefits from an industry change, then we have achieved social value from fishery development.

Fishery development won't be achieved just by granting a year's worth of money to a production demonstration project or a resource assessment study. How are we to make sure that Alaska's growing technological, economic and social strength can be used to equally benefit the Yukon River fisherman, the processor in Southeast, the small Kodiak trawler and the shore-based processor in Dutch Harbor? And that the technological developments create long-term employment and don't replace it?

*Fishery Development*, by William F. Royce, 248 pp. Academic Press, Inc., Orlando, Florida 32887. \$25.

Here and around the world, fishery development means insight development, ingenuity development, and development of our principles and priorities. It takes commitment, not just equipment. It requires fortitude, not just funds. And it means applying not only our brains, our technology and our S-K grants, but also our convictions and our deepest thoughtfulness.

One of AFDF's board members told me recently, "You can't just go into business to make money. You'll fail, and no one will even care that you failed. You have to help people, you have to make a commitment to the next generation, you have to try to make the world a better place. And when you do that, the world will be behind you."

Royce warns about the dangers of short-sighted industry development: "More fishing, better equipment, and more employment lead only briefly to more production and disrupt the livelihoods of traditional fishers," he writes. "Then the fishing becomes a business with too little employment, too much debt, too little income, and need for government help. The government helps with subsidies and compounds the trouble. The fishing becomes an economic drain and a social disaster."

As Royce illustrates so well, successful fisheries development will take the industry where it hasn't been before. If that path is marked by sound principles, profits will grow apace.

Kryz Holmes

LETTER TO THE EDITOR:

# Young relays position on reflagging

Dear Editor:

I recently reviewed the Industry News section of the Spring, 1987 edition of The Lodestar. On doing so, I discovered that your writers have ceased to report news and instead have been composing fantasy in regard to the issue of fishing industry vessel reflagging.

To begin with, the headline is incorrect. I have stated on the record on numerous occasions that I introduced legislation banning reflagging to bring the issue before Congress and allow all parties to be heard. The normal legislative process involves introduction of bills, public hearings and comment, and then modification of those bills based on the comments received. That is exactly what has occurred in regard to this issue and to suggest that I, or anyone else, have changed our minds simply because final legislation does not look like the original is ridiculous.

Second, my original bill, H.R. 438, banned reflagging as of November 1, 1986, not January 1, 1987. Your writer obviously did not take time to read the legislation.

Third, I am unaware of any statement being made, either publicly or privately that reflagging "would make a mockery of Americanization." I assume this was your writer's interpretation of some unidentified statement. Since your writer never bothered to check with me or my staff before writing the article, I can only guess that this is the case.

Fourth, neither I nor my staff have ever contemplated legislation that

would allow reflagging for five years. This was a proposal made by one witness at the House Merchant Marine and Fisheries Committee hearing on the reflagging issue. This proposal has never been acceptable to me or — to the best of my knowledge — any other member of the Committee.

I have enclosed a complete chronology of the reflagging issue as it has played out before the House of Representatives. The only addition to this chronology is that the Committee markup scheduled for July 9, 1987, was postponed to July 28, 1987, due to concerns expressed by a Committee member from the East Coast over an amendment that was to be offered by a member from Michigan. As of this writing, it appears that the markup will be held on this date with amendments offered affecting ownership, conversion of vessels in foreign yards, and establishing an effective date for the legislation.

I have always supported the Alaska Fisheries Development Foundation and, in fact, was responsible for obtaining the grant that got the Foun-

dation started. You perform an important job for the Alaskan fishing industry. At the same time, as a recipient of public funds you have an obligation to ensure that the public is presented with facts, not fiction. Your writer showed a high degree of irresponsibility in not obtaining the facts on this issue and not bothering to check with me to determine whether her statements were correct as they dealt with my views. I suggest that you and your Board of Directors establish appropriate guidelines to ensure that this sort of mistake which borders on willfully malicious reporting does not recur.

I ask that you print both this letter and the chronology in their entirety so that the public can look at the facts surrounding the issue.

Congressman Don Young

*The Foundation apologizes for any misunderstanding caused by the Spring 1987 Lodestar Industry News. We obtained our information from an article in The Anchorage Daily News of May 31, 1987. The Foundation's reporter did verify with the Daily News the accuracy of the information before publication. The Daily News stands behind its story.*

—Mel Monsen

# Young's chronology of reflagging

*The following is a background paper and statement on fishing industry vessel reflagging, submitted by the office of Congressman Don Young.*

On October 7, 1986, at the request of various fishing and community interests in Alaska, Congressman Don Young introduced HR 5662, a bill to require U.S. construction and ownership of fishing industry vessels. On the same day, similar bills were introduced by Senator Frank Murkowski (R-AK) (S 2910) and Congressmen Mike Lowry (D-WA) and John Miller (R-WA) (HR 5658).

In his introductory statement, Congressman Young said: "I want to make clear that I recognize that the bill is controversial and needs careful analysis and hearings before it is enacted. It is my hope that the appropriate committee in the House will conduct such hearings in the next Congress. Only after we have heard from all interested parties should the legislation be considered."

Due to the lateness of the session, the three bills died. However, Congressman Young re-introduced his bill as HR 438 on January 7, 1987. Similar legislation was again introduced on January 22, 1987 by Senators Stevens (R-AK) and Murkowski (S 377), and on April 6, 1987 by Congressmen Lowry and Miller (HR 1956).

On April 29, 1987, House hearings were held at the request of Congressman Young by the Subcommittees on Fisheries and

Wildlife Conservation and the Environment; Merchant Marine; and Coast Guard and Navigation. Witnesses were invited who had positions on all sides of the issue, including two Alaskans (one who supported HR 438 and one who supported only parts of HR 438).

In his opening remarks at the hearing, Congressman Young said: "Our purpose here today — and the reason I introduced HR 438 — is to determine whether those exceptions (regarding construction, manning, and ownership of fishing industry vessels) should be continued, changed or eliminated. In answering this question, I ask that the witnesses provide us with facts, not emotions. I realize that this is a controversial issue, but this committee must make its decisions based on data, not vague fears."

The hearing lasted most of the afternoon, and follow-up questions were sent to most of the witnesses, with a request that answers be supplied by May 15, 1987.

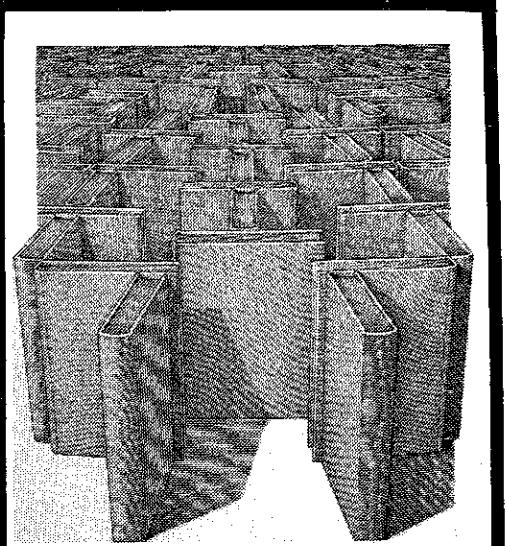
After reviewing the testimony and the additional information received, including written comments supplied by individuals and groups that did not have an opportunity to testify, Congressman Young and his staff began working with the members and staff from the state of Washington who were on the Merchant Marine and Fisheries Committee to see if legislation could be drawn covering the varied points of view presented. After extensive discussions, Reps. Young, Lowry, Miller and Bonker

introduced a new bill (HR 2598) on June 4, 1987 and asked that it be considered immediately by the Committee on Merchant Marine and Fisheries.

Unfortunately, two Congressmen from the East Coast objected to discharging the subcommittees from further action, so the bill was not considered at the full committee session on June 9, 1987. It is now scheduled for committee action on July 9, 1987 and could be considered by the full House the following week.

To recapitulate:

- 1) The reflagging issue has been identified from the start as controversial;
- 2) All bills were clearly identified as starting points;
- 3) Congressman Young has done everything possible to keep the issue and appropriate legislation before the House;
- 4) The latest bill introduced represents a consensus of all four members of the Pacific Northwest delegation of the Merchant Marine and Fisheries Committee in terms of what can and should be done.



## Lodestar Library

### Surimi: It's American Now

Called the "Alaskan bible for surimi industry" by Seafood International, AFDF's compilation of surimi-related information is selling fast to a worldwide readership of potential surimi producers, equipment suppliers, ingredients companies and research libraries in the nooks and crannies of mega-companies. It's available for \$50 (plus postage for overseas orders) from AFDF.

### Atka Mackerel: Alaska's Invisible Fishery

A 102-page assessment of the Atka mackerel resource, its uses, processing technology and markets including those in Japan and the USSR. This report is going like hot cakes and is yours for only \$10 from AFDF.

### Surimi Symposium 86

Proceedings from the Surimi conference held December 11-12, 1986 in Wellington, NZ. The 190-page bound book includes comments from our industry's brightest, including Chris Mitchell, Koru North America; Frank Kawana, JAC Creative Foods; and A. Rae McFarland representing Elraco and McFarland. Cost: NZ \$220 (about US\$123) from New Zealand Fishing Industry Board.





# Industry News

## Surimi adds protein to pasta

Food researchers at the University of Georgia are testing surimi as an ingredient in pasta, according to news wire reports. Yaowen Huang, a U of G seafood specialist, has made pasta using various levels of surimi and said it can increase the pasta's protein content by 40 percent without altering the flavor or texture.

## Mexico gets first surimi plant

Hake and other species will be processed into surimi at a new plant in the city of Guaymas operated by INOMAR with technical assistance from the Technological Institute of Monterrey. The plant reportedly opened in June, and produces 350 tons of surimi per year. INOMAR may also produce surimi-based crab sticks in the future. (Source: NOAA Foreign Fisheries Analysis Branch)

## Fungus potato chips?

Food engineers are at it again, experimenting with meatless meat pies made of single-cell proteins that can be shaped and flavored to imitate beef,

chicken, even potato chips. Provesteen, a proteinacious fermented yeast, is being used in meal-supplement bars that are now being test marketed in Oklahoma. And a USDA chemist is perfecting a "fluffy cellulose" — made from straw, citrus pulp or sugar beets — that could turn a Dum-Dum into a high-fiber, low-calorie food.

Such food products are far from commercial stages, but may demonstrate the verve and creativity with which the nation's food engineers are creating the foods of tomorrow. How will surimi and other marine proteins fit in?

## Irish surimi ship sails

The 5,000 ton *Elida Pirate*, owned by Norway-based NoFiTro, is producing surimi from blue whiting on the west coast of Ireland. Operating with a part-Norwegian, part-Irish crew, the ship will produce high-quality surimi made for use in seafood analogues and in other new products being developed in Norway. The *Elida Pirate* was formerly a ferry; a Norwegian oil rig supply ship also is being converted into a surimi trawler by Sea Truck A/S. (Source: Fishing News)

## High crab prices hurt analogues

High opilio crab and near unavailability of bairdi have put a crimp on analogue producers who use some real crab in their formulations. Near future may bring higher prices for analogues as Seattle prices for snow crab hit \$8.75/lb., Korean price pushes \$7. (Source: Seafood Trend)

## FishEx connects buyers, sellers

U.S. seafood consumption might rise to 30 lbs. per person by 1990. Who will buy it, and from whom? A San Francisco company hopes most brokers will buy and sell through Fish Exchange, a computer-based matching service between seafood buyers and sellers. Started in July, FishEx owners hope to sign 100 users by year end. Introductory cost: \$1 per listing, \$1 to browse, \$10 for each confirmed sale, and no cost to join. (415) 442-0244.

## Feminism in the Faroes

The Faroe Islands factory trawler *Radhamar*, built to catch blue whiting and process surimi in the North Sea, has been outfitted with accommodations for women workers. News

reports say more women will enter the at-sea processing field in the Faroes, and in the future most ships will be built to accommodate women. (Source: Fishing News International)

## New surimi sausages from Alaska

Mt. McKinley Meat and Sausage Company of Palmer, Alaska has produced and begun test marketing two sausage products made with 36% surimi. Plant manager Jon Olsen said he processed a preliminary run of Italian smoked sausage using surimi and pork, and also some Polish sausage made with beef, pork and surimi.

"The product looks really good," Olsen said. "The surimi mixed splendidly in the formulation, and the bind was excellent. We also had very good color in both of the sausages." He said he planned to decrease the amount of surimi to 30% in future formulations.

Mt. McKinley is a unique business. It employs inmates from Alaskan minimum-security prisons, and supplies meat and sausage products to prisons, youth centers and other institutions throughout Alaska. It is the only slaughterhouse in the Matanuska-Susitna valley, Alaska's agricultural center.

# the LODESTAR

Charting the course of fisheries development today

Volume V, No. 3 Summer 1987

Alaska Fisheries Development Foundation

"Man walks upon the moon but his soul remains riveted to earth. Once upon a time it was the opposite."

—Elie Wiesel

"Insight never comes hit or miss,  
but in the pattern  
of our own commitment."

--Rollo May

AFDF is committed to helping the industry grow from its own insights. The Lodestar is one way we do it. To subscribe, please send \$20 (\$30 for foreign) to Alaska Fisheries Development Foundation.



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