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# **Marketing**

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# SURIMI MARKET—BOOM OR BUST

**Ron Jensen**

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In this paper, I would like to get away from academia and talk about the real experience of producing and marketing surimi.

Arctic Alaska Fisheries has pioneered the production of surimi. We were the first to produce pollock surimi aboard a U.S. vessel (in 1986 on the U.S. **Enterprise**, a surimi factory trawler). And this year, we will be the first to operate a hake surimi shore plant, here in Newport.

Producing surimi in the past has not **been easy** for us. We made our mistakes and paid for them dearly. **On** our first surimi factory trawler, we thought we knew surimi enough to do it the "American Way"; we didn't listen to our Japanese partners or their technicians. We were wrong.

Through our mistakes, we have learned a lesson and have gained experience. As far as **Pacific** whiting utilization goes, we have studied this potential for a few years now.

We have watched with keen interest, and assisted whenever we could, as dedicated scientists such as **Roy** Porter have painstakingly labored to develop methods of inhibiting the troublesome **enzyme**. We have devoured the series of informative reports prepared by the Oregon Coastal Zone Management Association. In addition, we have worked with local processors and fishermen to learn the important fundamentals of quality handling of this fragile species of fish. The dedicated work of these people and countless others (such as Ken Hilderbrand) has resulted in an information pool from which we have drawn to make the very **difficult** decision to help pioneer the shore plant surimi business in Oregon.

The people of the Arctic Alaska Fisheries Corporation are proud to be working with local contractors, fishermen, and processors in pioneering the domestic utilization of Pacific whiting on a scale only dreamed of as recently as last year.

We are installing a surimi factory which processes 350 metric tons (**MT**) of round fish per day under a joint venture agreement with Jerry and Sheryl Bates of the Depoe Bay **Fish** Company. We expect to process in excess of 40,000 MT of round fish this year.

We are building a state-of-the-art, **320-MT**-rated (incoming raw material) Atlas fish meal plant adjacent to the International terminal area on the bay front in Newport. This plant will provide a critically needed disposal site for local processors and will ensure 100% use of the raw product in Newport. The plant is currently under construction and is scheduled for completion on April 15.

We are working closely with the Oregon Department of Environmental Quality and the Oregon Department of **Fish** and Wildlife in monitoring both the water quality and the animal life forms in the estuary. We hope these ongoing studies will help promote continued positive interaction between industry and the habitat caretakers as we together continue to promote ecologically and economically sound methods of processing fish.

We also look forward to further work with scientists and private industry who continue to develop more advanced forms of the **enzyme** inhibitor that will be acceptable to all markets.

To discuss surimi business, we must **first** discuss pollock surimi, since it has been and still is a dominant force in the market.

Until the **1950s**, surimi was an exclusively Japanese-produced, Japanese-marketed product. Through the Magnuson Act, the **first** U.S. production of pollock surimi took place in 1986 on the U.S. **Enterprise**. Since then, U.S. production of surimi in the Bering Sea has grown to 140,000 MT yearly.

Until U.S. production became dominant in the past few years, the surimi market in Japan was very oligopolistic, controlled by a few Japanese fishing companies. From 1939 to 1990, because of the unknown and unproven quality of U.S.-produced surimi and the breakup of traditional Japanese distribution channels by the new U.S. producers, the market became confused and prices plummeted.

The drastic increase of surimi prices in the last six to nine months is most likely temporary, caused by a reduction of surimi production in the Bering Sea and Donut Hole last year. However, extremely high prices are discouraging the demand for pollock surimi and encouraging substitute production from less

expensive fish species, such as Pacific hake, southern blue whiting, and sea bream.

The reason pollock surimi was preferred in the past was the high gel-forming capacity of the meat and its relatively high whiteness value. Pacific whiting, used as a substitute for pollock surimi, is usually blended with pollock surimi by kamaboko makers to strengthen the gel-forming capacity. Pacific whiting surimi has a very favorable white color and thus is a very attractive alternative to pollock surimi if priced reasonably. However, as pollock surimi in Russia increases, and as other substitute surimi production occurs in Argentina and Indonesia, it faces increasing competition

We estimate the world supply of surimi in general in 1991 to be approximately 390,000 MT, of which Japan produces about 200,000 MT and the U.S. 120,000 MT. In 1992, this number could be as much as 480,000 MT, an increase of 26%. Of course the production could change in the latter part of the year, but the estimated increase of surimi mainly comes from countries such as Thailand, Argentina, Chile, and Indonesia that produce sea bream or southern blue whiting surimi. Russia also will double its pollock surimi production through joint venture this year.

Demand for surimi totals about 460,000 MT worldwide, of which Japan consumes approximately 80%, or 380,000 MT. The Japanese demand is said to be on a slight decline because of a general change in consumer taste. Demand in Korea, which consumes about 50,000 MT yearly, and Europe, 5,000 MT, is on the increase. However, these markets are still young and small compared to the Japanese market.

Considering that the world demand is relatively stable at 460,000 MT, surimi supply can easily be at surplus condition this year if we include all the surimi made out of various species. Therefore it is certain that Pacific whiting surimi must meet the challenges from the rest of the world.

Between 1980 and 1990, the price of top-grade pollock surimi in Japan was relatively

stable, ranging anywhere from ¥400 to ¥520 wholesale. This converts to roughly U.S. \$1.00 to U.S. \$1.40 FOB Alaska price after freight, cold storage, and other expenses. So you can see how unusual the last year's radical price increase was.

Potential producers of Pacific whiting surimi should be aware of the historical surimi price levels and be ready to compete with worldwide surimi production in a cost-efficient manner. The important task we have as producers of pollock and hake surimi is to try to maintain reasonable price levels for the longer health of the industry and to avoid this boom and bust nature of pricing strategy.

We also discourage gambling all the production capacity on surimi. Rather, we highly advise diversification into other products, such as fillets and blocks, to balance the impact of anticipated market fluctuation.

The quality of surimi plays a very important role in making the surimi business a success. Kamaboko producers must trust the suppliers to give them a consistent quality and supply of material to produce the analog products for consumers. "Quality" includes the market acceptance of the surimi that a particular company or vessel produces. There is no perfect surimi; the processors prefer a variety of different characteristics of surimi within the same quality parameters. In the same way, there's no perfect steak that pleases everybody. Some like T-bones, some like rib eyes. Market acceptance also takes time. When we first began producing surimi in the United States, the Japanese markets didn't trust the quality of surimi that the Americans produced. In the past five years, we have developed loyal customers who prefer the products off our vessels. The general taste of Japanese consumers also changes. We now produce specialized surimi, with all sorbitol or all salt surimi for gourmet markets.

In summary, it is the balanced combination of accepted quality, supply and demand, and right pricing that creates success for surimi producers.

# GLOBAL MARKETS FOR SURIMI-BASED PRODUCTS

Joseph Zalke  
Nichirei Corporation of America

Global markets for the production of surimi-based products grew to over 2.3 billion pounds in 1990. Long dominated by the Japanese and Korean markets, surimi-based products are starting to **find** acceptability as a protein source in many global societies.

Table 1 **illustrates** the best estimates of the global production of surimi-based products. Japan is the obvious leader in this production, representing 85% of the total, or approximately

total production, 53,500 MT, or 117.9 million pounds, were consumed domestically; the balance was exported to the countries shown in table 2.

Japanese exports of crab-style surimi seafoods to the U.S. reached their zenith in 1985, **totalling 129,000 MT**. By 1991, the annual exports decreased to slightly over 10,000 MT, representing a decrease of 93%. Appreciation of the yen, Korean production, and **expan-**

*Table 1. Global production of surimi products.*

Annual Estimates—1990		
Country	Metric Tons	Pounds
Japan	915,000	<b>2,013,000,000</b>
Korea	103,800	228360,000
U.S.	50,000	<b>110,000,000</b>
Europe	4,000	<b>8,800,000</b>
Russia	4,000	<b>8,800,000</b>
Thailand	2,000	<b>4,400,000</b>
China	1,000	<b>2,200,000</b>
Totals	<b>1,079,800</b>	<b>2,375,560,000</b>

Source: Nichirei Best Estimates

2.0 billion pounds. Surimi-based products are a staple of the Japanese consumer. A wide variety of **finfish**, including **salmon**, is used in surimi production. Kanikama products, which typify the style of products consumed in the U.S. and European markets, account for approximately 20% of the total surimi-based products processed in Japan. In 1990 Japan processed approximately 70,000 metric tons (**MT**) of kanikama, or 154.0 million pounds of crab-style surimi seafood products. From the

sion of the **production** of U.S.-based surimi seafood contributed to the steep decline.

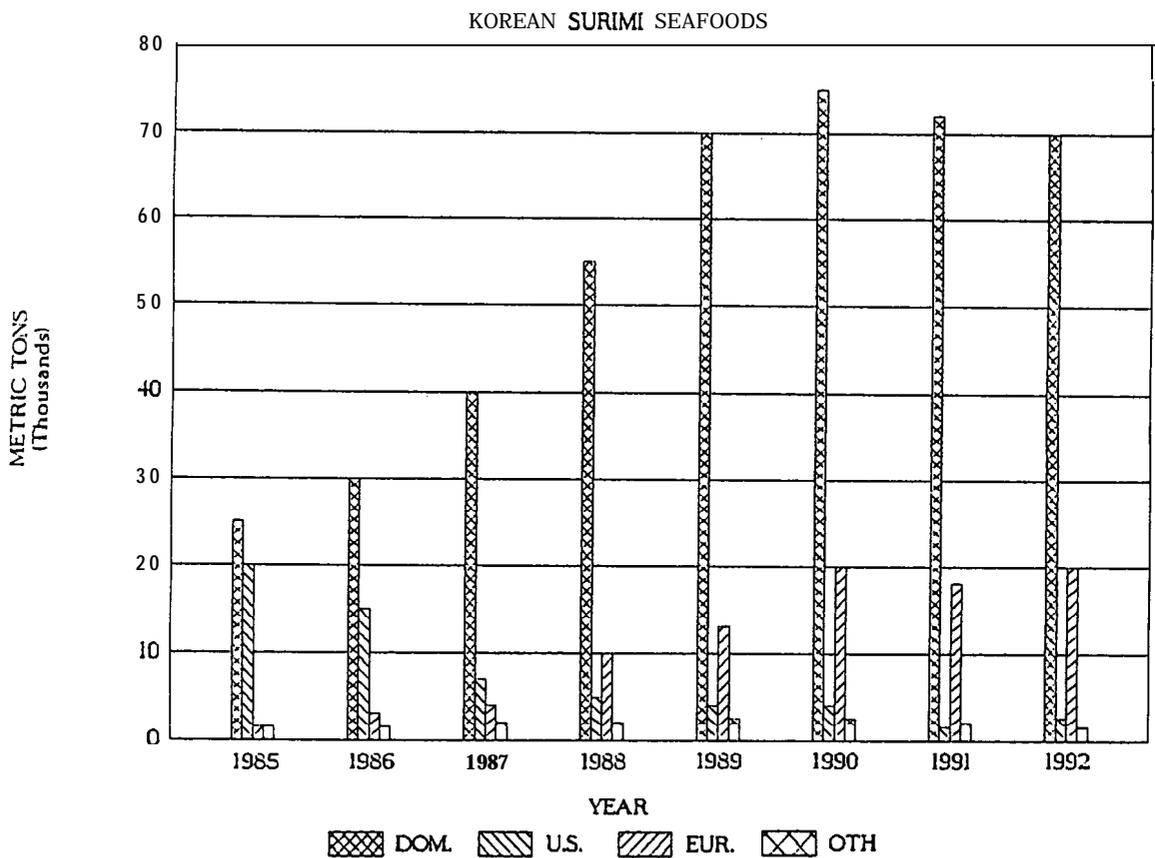
Korea's domestic consumption of **all** surimi-based products has almost tripled since 1985. In 1985 the consumption was 25,000 **MT**; in 1991 it had risen to 72,000 MT.

The actual estimated 1991 production of surimi-based products was 50% of their total capacity. The artificially supported prices of raw material resulted in plants operating at 60% **of capacity** in the latter **half** of 1991. **Be-**

**Table 2. Japanese exports of crab-style surimi seafoods.**

(Annual Estimates-1990)		
country	Metric Tons	Pounds (000 omitted)
Australia	1,680	3,696.0
Canada	453	<b>1,007.6</b>
Europe	9,215	<b>20,275.0</b>
U.S.	4,060	<b>10,120.0</b>
Others	1,300	<b>2,860.0</b>
<b>Totals</b>	<b>16,713</b>	<b>36,770.0</b>

Source: Japan Frozen Food Inspection Services



**Figure 1. Korean surimi seafoods.**

cause of the high prices of raw material, **traditional** ham and sausage users of raw surimi have switched to turkey meat as an **alternative**. The expected use of raw-material surimi in 1992 **will** decrease to 40,000 MT.

There are currently 16 major surimi seafood processing companies in Korea. Throughout

the country there are over 1,000 **small processing** companies producing the traditional fried kamaboko products.

Figure 1 **illustrates** the growth of **all** surimi-based products in Korea and exports to the U.S., Europe, and other countries.

**Table 3. European annual surimi seafood consumption**

Estimates in Thousands				
country	1990		1991	
	MT	LBS	MT	LBS
France	8,000	<b>17,600.0</b>	4,000	<b>8,800.0</b>
<b>Italy</b>	2,000	<b>4,400.0</b>	2,000	<b>4,400.0</b>
Spain	4,500	<b>9,900.0</b>	4,500	<b>9,900.0</b>
U.K	4,000	<b>8,800.0</b>	4,000	<b>8,800.0</b>
Others	2,500	<b>5,500.0</b>	2,000	<b>4,400.0</b>
Totals	21,000	<b>46,200.0</b>	6,500	<b>36,300.0</b>

Source: Nichirei's European office

Europe has replaced the U.S. market as the dominant recipient of surimi seafoods processed in Korea, with exports increasing more than tenfold in the last eight years. Europe will continue to dominate Korean exports. Demand by the EC countries for surimi products, strong markets, currency strength, and an absence of an infrastructure in EC counties for processing surimi seafood will continue to make Europe an attractive export customer.

Surimi seafood consumption in Europe is a combination of imports and an infant domestic processing industry. Table 3 is an approximation of European consumption of surimi seafoods.

Information on surimi consumption in Eastern Europe is not available at this time. However, we are aware of sales being made to countries in this region. Moreover, within the new Russian republics, surimi seafoods are now being processed at plants in four locations, operating a total of five processing lines.

At present, six surimi processing lines are operating in EC countries: U.K—one, **France—four**, and **Italy—one**. The total estimated production for 1991 was 4,000 MT, or **8,800,000 lb**.

My company, Nichirei Corporation of Tokyo, has established a new joint venture with **Angulas Aguinaga**, S.A of Spain, to create *angulas de surimi*. The product resembles the size, shape, texture, and flavor of wild angulas (baby eels).

The following is a brief profile of the EC countries.

#### **France**

- The market expanded in 1988 because the use of additives was permitted by the federal government.
- Domestic production is sold primarily **refrigerated** because the domestic producers cannot compete with Korean frozen imports.
- The retail market is larger than the food service market. The most popular style is sticks (sold in 250-g packs).
- Consumption volume declined dramatically in 1991 because of unusually high prices.

#### **Italy**

- *The* market is largely undeveloped because of federal restrictions on food additives.
- Domestic production started in 1991 as a joint venture with a Korean company.

#### **Spain**

- Spain is one of the more mature surimi markets. Sales started approximately eight years ago.
- The market is segmented into the high-price, high-quality product of Japan, and the **low-price** product of Korea.
- Retail is the primary market for surimi.

#### **U. K.**

- **Surimi sales** started ten years ago.
- The food service market is the most mature of the EC countries.
- Volume is stable at **4,000-5,000 MT** annually.

- One major Japanese surimi company has established a domestic processing plant specifically for the retail market.
- Korean imported products dominate the U.K food service market.

The German market is nonexistent because the use of phosphate in surimi seafoods is prohibited, just as it is for sausage production.

The EC has the potential to annually consume approximately 30,000 MT. There is room for expansion in the market with product form. At present, EC consumers prefer the sticks over the salad packs or flake packs.

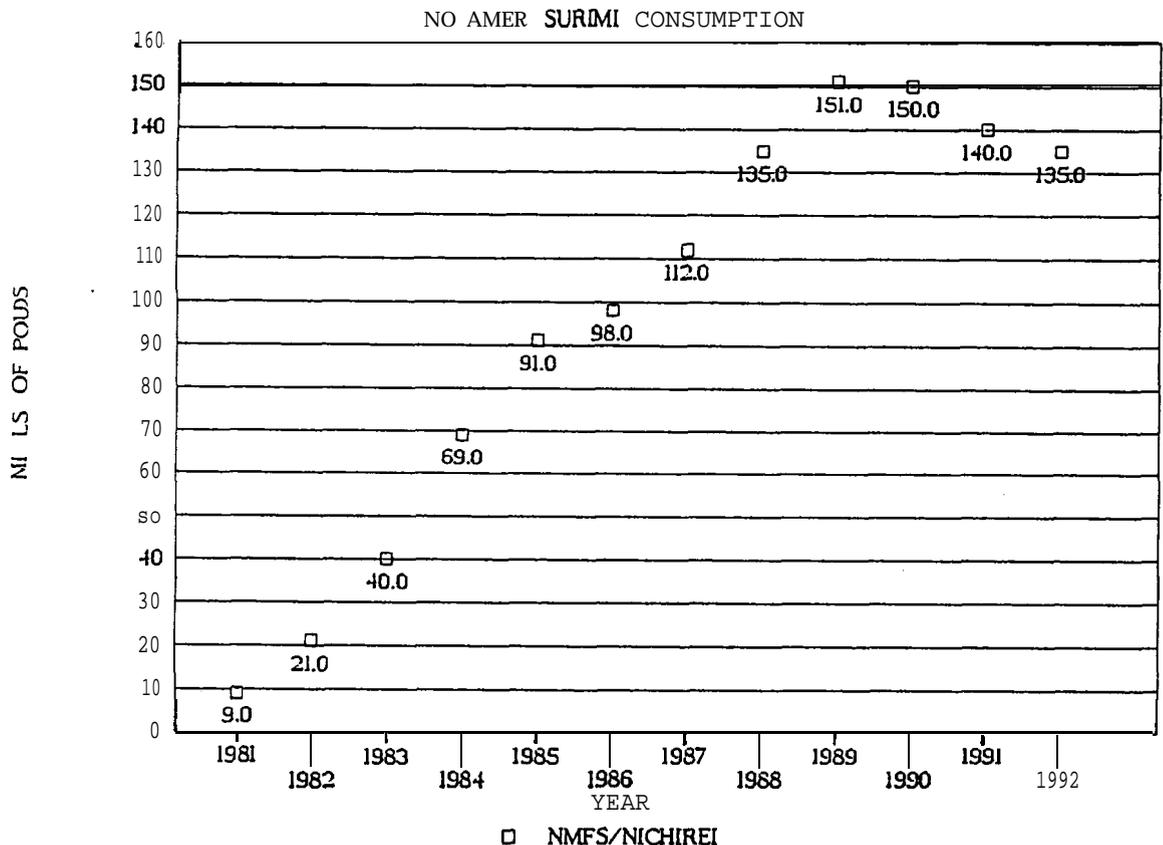
North American surimi consumption reached its pinnacle in 1990 when an estimated 150 million pounds were consumed. As we know, there is no **definitive**, quantifiable data which measures surimi consumption in North America. Any data that is accumulated is **based** on conjecture and supposition. Data gathering in this market is based on the grass roots method of multiplying the number of processing plants times the number of surimi processing lines, and multiplying this figure by the estimated number of pounds per hour. The final figure is an aggregate sum of estimated production capacity in North America.

Estimate the pounds consumed by major restaurant chains; add the purchasing volume of the **major** supermarkets and food service chain **distributors**; to this, add the volume used **by** the major salad manufacturers, and any major industrial customers plus a pinch of "blarney," common sense, and intuition, and you've just measured the size of the North American surimi market.

**Figure 2** provides a tracking device for the estimated size of the North American market. **From** its infancy in 1981 of 9.0 million pounds to its current estimated size of 140.0 million pounds, the surimi market has grown 15.5 times.

**The** production capacity in North America is estimated at 225 million pounds **from** 17 processing facilities. During the peak consumption year of 150 million pounds, 66% of the plant capacity was used. **If** the estimated 1992 consumption rate does slip to 135 million pounds, the plant capacity rate will decline to 60%.

Explaining this downward trend in surimi consumption is complicated and disconcerting. Between 1988 and 1990, we witnessed a classical thrust of several factors:



**Figure 2.** North American surimi consumption.

- market assessments that supported the additional major capital expenditures in new processing equipment,
- new processing companies coming on line, and
- a **frenzied** expansion of line capacity.

All this took place in response to the prediction that surimi consumption would reach a level in excess of 175 million pounds.

Market activities supported these management decisions:

- Major restaurant chains offered a variety of surimi products.
- Salad manufacturers expanded their distribution patterns to satisfy consumer demand for light foods. Surimi seafoods became a key ingredient in salad combinations.
- Supermarket chains expanded their merchandising of surimi products to multiple locations in the stores: deli, seafood counters (both service and self service), salad bars, and frozen food cases. Supermarket operators found a new major profit contributor in surimi to offset the decline they were experiencing in other seafood items. Last, surimi afforded the supermarket operators a profitable promotional vehicle at \$1.99 a pound.

The surimi seafood processors actively supported this demand through formulation manipulation to satisfy the requests for **lower-priced** products. As long as the raw material costs of pollock surimi remained low, this strategy was not only feasible, but profitable.

Surimi seafood consumption of 175 million pounds was a sight worth setting.

We all know what occurred in the winter of 1990. **Raw** material prices started to accelerate, and processors were faced with the inevitable fact—the price of finished goods would have to increase. The reality of the situation became apparent, not at first, but shortly after the beginning of 1991: the underpinnings of the structure of the surimi seafood industry were weak.

**Overcapitalization** became the nemesis for the industry: too many processors were chasing a market whose growth curve was maturing. Price rather than quality concerns took priority in the buying decision.

Because surimi seafood is one of a number of ingredients in most preparations, discerning quality features are often masked by other ingredients.

No one surimi seafood processor enjoys a position of leadership from which to direct the market or provide a stabilizing influence.

The symptoms of a declining, mature market heated up:

- Buyers began to perceive surimi seafood as a commodity.
- Companies tried to grab the market share through price reductions.
- Consumption stagnated or declined.
- The food service industry suffered menu burn out.
- Surimi seafood was no longer “new.”
- **The** introduction of any new product was met with limited success.

Surimi seafood will have to take on a new dimension. For it to remain a viable product category, everyone even remotely connected with this industry will have to start with repositioning the product

The stigma of **“imitation”** must be erased. In hindsight, initially positioning surimi as a “crab substitute” was an error in judgement that we are still living with. The five- to **six-**year battle with the FDA must be resolved, and “imitation” must be dropped from the descriptive nomenclature.

New market niches are being untapped by many of us and must be pursued. This will require new product forms and uses. We must retain the confidence of the current heavy consumer and encourage the casual user to consume more. There are many nonbelievers in the market. They are not convinced that engineered foods have a place in their diet; continuous exposure and trial usage will convert some of this group.

Surimi seafood as an ingredient in many products is viable. In my view this is the next important direction for surimi.

My concern for the future of surimi seafoods is the adulteration of the seafood formulas to achieve a viable, profitable product matrix. **Reducing** the percentage of raw material surimi in a product in order to compete in the market is tantamount to ordering our own destruction.

We must establish identification standards for surimi seafoods to provide a buyer’s guide. At present, the quality of surimi seafood is left to the subjectivity and discretion of the buyers.

**Pacific** whiting, as an ingredient in surimi seafood, is not a problem. As matter of fact, the **Pacific** whiting we used in test runs produced an excellent product Using this species as a blend with other species is not a problem in the market. Keep in mind that in the early days of

surimi processing, turbot was blended with Alaskan pollock. If my memory serves me correctly, Gulf croaker was one of the first **finfish** to be considered for surimi.

However, until we resolve the issue of the enzyme inhibitor, we cannot proceed further with whiting surimi. Once a **definitive** ruling is made and agreed upon by the government, we can move forward.

I am **confident** the surimi seafood industry will evolve to the next plateau. The “surimi shock of 1991” has made us realize that the elements of survival are quality, product attributes, and product benefits. We live in a world of food that offers instant, substitutable gratification. No one product is insulated from this fact. All of us who are involved in the surimi industry, whether through ingredients, packaging, boat ownership, fishing, processing, or marketing, must continually do our part to ensure that when the chefs, menu development personnel for restaurant chains, supermarket merchandisers, or consumers think of protein, surimi comes immediately to mind.

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## **Discussion**

**Q.** (Susan Hanna, OSU Department of Agriculture and Resource Economics) What is your company, and the industry in general, doing about the problem of the high levels of sodium in surimi products? Is this level of sodium necessary? Are there any alternatives?

**A.** Zalke responded that Nichirei is planning to introduce products with 42% less sodium. The company does think that this is important to consumers. Jae Park also remarked that it's an important issue, and Tyre Lanier expressed the hope that with new developments in his research, they may be able to reduce sodium levels another 25% or so from there.

**Q.** What about quality standards? Are they needed?

**A. (Zalke)** Absolutely. I would make a plea for the development of these standards, which buyers in the marketplace are asking for. Up to now, brands have not been an important way of identifying product because of the many small suppliers. As the competitiveness of the industry heats up, smaller firms will be driven out of the business, which will consolidate down to fewer, larger suppliers. As this happens, brand association will become more important

Tyre Lanier followed up with the comment that the problem is not the lack of standards but the lack of brands. Zalke replied that they are hoping for stability in the raw materials so that they can make quality more important than price in determining which raw materials to buy.

**Q.** (Gil Sylvia) When banana suppliers attempted to standardize the product to improve the overall quality of bananas delivered to consumers, they lost a lot of the variety available in the product. How can we standardize without losing variety in surimi seafoods?

**A. (Zalke)** There are two ways surimi has gone to the market: through retail brands in such products as “Sea Legs,” and through seafood menu items in restaurants. **Restaurants** began by putting the product into their menus using many different formulations; this causes a vast proliferation of surimi types and formulas. This situation made restaurant surimi users overly concerned with price and not concerned enough with quality. Gil Sylvia commented that good chefs could train consumers **to** use surimi, which would improve demand at the supermarket. Zalke replied that Nichirei has been working with some home economists and chefs, but to date there has been no **industry-wide** effort. He had worked with the surimi committee of the National Fisheries Institute (**NFI**), but it has a very small budget, which they have used mostly to work with newspaper food editors. Barry **Fisher** recommended working with the Chefs de Cuisine group of Oregon, which is committed to pushing underutilized species.

# THE SITUATION OF GLOBAL SURIMI, WITH SPECIAL EMPHASIS ON THE JAPANESE MARKET

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## THE GLOBAL SUPPLY SITUATION

According to industry estimates, the current world surimi production (1991) is 390,000 metric tons (MT), down by 130,000 MT from the 1988 peak of 520,000 MT (table 1).

current operations in Japan are not as efficient as those in the U.S. Thus, a further reduction in the number of production facilities will be expected in the foreseeable future in Japan.

		1985	1986	1987	1988	1989	1990	1991
Japan	vessel	240	240	220	240	150	80	30
	plant	180	170	170	160	150	140	140
	subtotal	420	410	390	400	300	220	170
U.S.	vessel	-			30	80	150	110
	plant	-		20	30	30	40	50
	subtotal	0	0	20	60	110	190	160
Rep Korea	vessel	20	20	30	30	30	20	10
Russia	vessel	-		-	-		-	10
Argentina	vessel					10	10	10
Thailand	plant	10	20	20	30	20	20	30
<b>Total (vessel + plant)</b>		450	<b>450</b>	460	<b>520</b>	470	460	390

\*Table 1 is based on industry estimates.

Table 1: Global Surimi Production (1000 MT).\*

Japan has significantly reduced its share from 93% (420,000 MT) in 1985 to 43% (170,000 MT) in 1991. Meanwhile, the U.S. has rapidly increased its share to 40% (160,000 MT) in 1991. In addition, the number of producing countries has expanded to six in 1991.

The major portion of Japan's production used to be made on board (57% in 1985); however, onshore plants dominate current production (82% in 1991). In contrast, U.S. production is mainly made on board (69% in 1991). Thailand is the third largest surimi producer. Thai surimi production from itoyori, or threadfin bream (*Nemipterus spp.*), is entirely made onshore, while others' production is all made on board.

During the 1987-91 period, the number of U.S. vessels and plants increased from 3 to 24 and from 3 to 7, respectively. Meanwhile, the number of Japanese vessels and plants has come down from a high of 41 in 1988 to 31 in 1991 and from a high of 40 in 1985 to 36 in 1991, respectively, as production volume came down. By comparison, it is quite obvious that

When looking into the supply demand balance in the three major players of surimi in the world-Japan, the U.S., and the Republic of Korea-we see the following facts. Japan is largely dependent on imports (81% in 1991) and hence is the largest net importer. On the other hand, most U.S. production is exported (78% in 1991). This makes the U.S. the largest supplier of surimi. As in Japan, the end product manufacturers in Korea are largely dependent on U.S. surimi supply (77% in 1991).

## THE JAPANESE MARKET

Table 2 shows the origins of surimi coming to Japan. The total supply has greatly diminished, from the 1988 peak of 447,000 MT to 324,000 MT in 1991. This is a 28% decrease in three years. Pollock surimi is mainly from U.S. vessels and plants (60,000 MT and 22,000 MT, respectively, in 1991), whereas Japanese joint-venture operations with other countries have almost terminated (only 1,000 MT from a joint venture with Russia in 1991). Furthermore,

Table 2: Japan:  
Surimi Supply by  
Source (1000  
MT).\*

On board	1986	1987	1988	1989	1990	1991
<b>Imported pollock surimi</b>						
U.S. vessels	-	3	11	43	100	60
U.S. plant	-	2	4	20	20	22
Korean vessel	10	10	6	3	-	-
Russian vessel	-	-	-	1	1	13
Subtotal	10	15	21	67	121	95
<b>Domestic pollock surimi</b>						
U.S. Gov. to Gov.	62	-	-	-	-	-
U.S. joint venture	114	125	105	32	-	-
Russian joint venture	9	15	13	8	5	1
DPR Korean joint venture	-	-	2	2	-	-
High seas operation	42	55	85	63	45	17
Subtotal	227	195	205	105	50	18
<b>Pollock surimi total</b>	<b>237</b>	<b>210</b>	<b>226</b>	<b>172</b>	<b>171</b>	<b>113</b>
<b>Other species surimi</b>	<b>10</b>	<b>20</b>	<b>36</b>	<b>48</b>	<b>40</b>	<b>43</b>
<b>Hoki surimi</b>						
New Zealand	10	19	26	25	18	10
Argentina	-	-	2	1	-	-
Subtotal	10	19	28	26	18	10
<b>Southern blue whiting surimi</b>						
New Zealand	-	-	1	2	2	1
Argentina	-	-	2	3	6	13
Subtotal	0	0	3	5	8	14
<b>Pacific whiting, etc., surimi</b>						
Argentina	-	1	1	3	-	-
U.S.	-	-	2	10	11	18
Canada	-	-	-	2	3	1
Subtotal	0	1	3	15	14	19
Flounder surimi (from U.S.)	0	0	2	2	0	0
<b>Other species surimi total</b>	<b>10</b>	<b>20</b>	<b>36</b>	<b>48</b>	<b>40</b>	<b>43</b>
<b>On-board surimi total</b>	<b>247</b>	<b>230</b>	<b>262</b>	<b>220</b>	<b>211</b>	<b>156</b>
<b>Onshore</b>						
Domestic pollock surimi	170	173	160	155	140	140
Imported itoyori surimi (from Thailand)	20	20	25	18	20	28
<b>Onshore surimi total</b>	<b>190</b>	<b>193</b>	<b>185</b>	<b>173</b>	<b>160</b>	<b>168</b>
<b>Grand total</b>	<b>437</b>	<b>423</b>	<b>447</b>	<b>393</b>	<b>371</b>	<b>324</b>

\* Table 2 is based on industry estimates.

the production from Japanese high sea operations has declined from the 1988 peak of 85,000 MT to 17,000 MT in 1991.

As for hoki (*Macruronus novaezelandidae*) surimi, New Zealand is a major supplier. However, supply to Japan has come down from the 1988 peak of 26,000 MT to 10,000 MT in 1991.

Southern blue whiting (*Micromessistius australis*) is another surimi source. The major supplier is Argentina (13,000 MT in 1991), and the market is expanding. Pacific whiting (*Merluccius productus*) is another hope. The dominant supplier is the U.S., at 18,000 MT in 1991.

	1990		1991		1992	
	Shore processed	Sea processed	Shore processed	Sea processed	Shore processed	Sea processed
January	1.8	3.5	2.1	3.6	4.1	4.5
February	1.8	3.5	2.1	3.6	4.1	4.5
March	1.7	3.3	2.1	3.6	3.9	4.3
April	1.8	3.2	2.1	3.7	3.9	4.3
May	1.8	3.2	2.1	3.6	-	
June	1.9	3.3	2.1	3.6	-	
July	1.9	3.3	3.8	4.1	-	-
<b>August</b>	1.9	3.3	3.8	4.1		
September	2.1	3.6	3.9	4.3		
October	2.2	3.8	3.9	4.3		
November	2.2	3.9	4.0	4.3		
December	2.2	3.8	4.1	4.5		

Note: Price figures on the table indicate the high side of price range.

Source: *INFOFISH Trade News*, 1990-92

Table 3: Japan: Prices of Alaska pollock surimi of domestic origin at Tokyo wholesale market (U.S. \$/kg).

Surimi supply from warmwater species such as itoyori, or **threadfin** bream, is also growing. The major supplier of this surimi is Thailand, at 28,000 MT in 1991. Surimi from other species, which are not identified in the table but which are not necessarily **insignificant**, is also growing markedly, from 10,000 MT in 1986 to 43,000 **MT** in 1991.

To sum up, the following trends in surimi supply for Japan can be safely identified:

1. Total supply is declining.
2. Pollock surimi supply is declining.
3. Other surimi supplies are **rising**.
4. Currently, species with good potential are southern blue whiting, Pacific whiting, and **threadfin** bream.

## PRICE TREND

Table 3 shows a steadily rising trend in surimi price. Prices have increased from U.S. **\$1.8/kg** for shore surimi and U.S. **\$3.5/kg** for sea surimi in January 1990 to U.S. \$4.1 and U.S. 84.5, respectively, in January 1992. These figures represent increases of 128% and 298, respectively, in just two years. In addition, the following points can be made with respect to prices:

1. Sea surimi costs more than shore surimi because of quality, but the price **difference** has been reduced **significantly**. In March 1992, it was only 10%.

2. Prices are seasonal. That is, toward the end of the year, prices tend to go up.
3. The price of pollock surimi still **influences** the price of surimi from other species because of its large **volume** and excellent quality. The price of itoyori surimi is lower than that of pollock, and the price of surimi from other white-meat **fish**, such as hoki and Pacific whiting, is presumed to be slightly lower. The only exception, which has emerged recently, is southern blue whiting surimi. Because this surimi is white, elastic, and tastes better than pollock, it fetches the highest price.
4. Manufacturers still prefer domestic surimi of higher grade to imported surimi, such as U.S. surimi, because the quality of imported surimi is not consistent. The representative of the manufacturers' association says that there are few instances in which the quality of shipped products is equal **to** that of the samples provided.

Wholesale prices of **surimi-based** products are also rising, reflecting a hike in surimi price and other production costs. For instance, wholesale prices were up by 10% between 1989 and 1990 and 7% between 1990 and 1991 when compared to February prices, which are usually the lowest prices of the year (table 4).

The hike in retail prices for the past year was more significant. Retail prices of traditional surimi products, such as kamaboko

**Table 4. Japan.- Wholesale prices of kneaded products at six largest city central wholesale markets (¥/kg).**

	1989	1990	1991
January	417	427	476
February	401	440	472
March	403	442	481
April	416	442	488
May	422	444	507
June	422	450	524
July	414	450	522
August	420	460	520
September	410	464	521
October	411	456	526
November	497	457	518
December	551	618	682

Source: Fisheries Products Marketing Statistics, Ministry of Agriculture, Forestry and Fisheries

(boiled fish paste), chikuwa (tube-shaped fish paste), and **satsumaage** (fried fish paste), were raised three times in succession, in August and November 1991, and January 1992. Last year, retail prices of some products were up by 50% over the same period in 1990. Major manufacturers are worried about the likely impact of a rapid hike in prices on consumption, saying "Because of the price rise, consumers may move away from surimi products. Consequently, surimi products may shift their position from necessary to luxury items." Currently in Japan, there are said to be 3,100 manufacturers processing consumer products worth ¥ 500 billion, or U.S. \$3.8 billion. However, the average size of the factory is small,

with only 16 employees. There are a number of giant companies; the rest are small-scale operators. The price hike of last year has hit the industry at this end especially hard. An estimated 50 small-scale companies, or double the number in the 1990, went out of business in 1991.

### PACIFIC WHITING PERSPECTIVE

Although Alaska pollock is still a major source for surimi, other coldwater white-meat fish, such as hoki, southern blue whiting, and Pacific whiting, have been claiming more and more of the Japanese market. The 1991 figures were 6% for Pacific whiting, 4% for southern blue whiting, and 3% for hoki.

The use of Pacific whiting surimi is not specified by the manufacturer, although it can be assumed that the high grade goes to the production of high-grade kamaboko whereas the low grade goes to products at the other end, such as chikuwa, satsumaage, and **hampen** (floating-type boiled fish paste). The different grades of **kanikama**, or crab leg analog, are made from various grades of surimi; thus, high-grade surimi is used in high-priced products and low-grade surimi in low-priced products.

Manufacturers usually prefer white-meat surimi to nonwhite meat since the former can be processed into various end products whereas nonwhite surimi has limited use because of its color and smell. Thus, the price of white-meat surimi is usually higher than that of nonwhite. Surimi from Pacific whiting is obviously white; thus, it can sell well at prices close to those of Alaska pollock. To sum up, we

**Table 5. Japan.- Main fish species used for surimi production.**

Market rank	Species	Comment
<b>A</b>	Alaska pollock	Commonly used for all surimi-based products
<b>A</b>	Polar cod	Best whiteness; it can produce high-quality surimi-based product.
<b>A</b>	Yellow croaker	Excellent gel strength
<b>B</b>	Pacific whiting	Started to produce in 1988; surimi has good gel strength.
<b>B</b>	Hoki	Good whiteness and gel strength
<b>B</b>	White croaker	Good gel strength and whiteness
<b>B</b>	<b>Merluccius</b> spp.	Good whiteness; quality similar to hoki and pollock.
<b>C</b>	Threadfin bream	No black membrane and tissue
<b>C</b>	Chilean mackerel ( <b>scad</b> )	Good taste, white-grey meat color

Note: A = excellent; B = good; C = fair

can say that there is good potential for Pacific whiting surimi exports to Japan, provided that (1) there are ample resources to ensure steady supply, (2) production cost, and hence price, is low enough, and (3) the quality of the surimi is as good as that of Alaska pollock surimi or at least close to it (table 5).

## FACTORS TO BE MONITORED

Although domestic demand is stagnant because of declining domestic production, more imports of nonpollock surimi, including Pacific whiting, can be expected in this decade. However, the following factors need to be closely monitored when we develop a plan for a new species like **Pacific** whiting.

1. Domestic consumption of the end product, which is currently stagnant, may decline further, for the following reasons:
  - a. Prices are high compared to those for other seafood or nonseafood products. In particular, a rapid price hike may scare consumers away from surimi products, as actually happened in 1991 when end-product manufacturers collectively raised the retail price of their products substantially twice in one year and again once in 1992.
  - b. Consumers may become a little tired of eating products that have similar looks and similar tastes. They may want more variety. Although manufacturers are trying hard to invent new products, like kanikama, they have not yet developed a product that rivals kanikama in its enormous popularity.
  - c. Today's consumers are becoming more and more health oriented. The end product from surimi contains various additives that may not be considered good for health. In addition, consumers may be developing an orientation toward natural foods, which they prefer to artificial or processed foods.
  - d. As long as end products like kanikama are analogs, they will never win over the seafoods they imitate. In short, there is a growth limit to analog consumption. This is especially so when the price difference is less and consumers' disposable income is growing. The technology of processing surimi into

kanikama has progressed to **the** extent that, according to the industry, the latest high-grade product is almost like the one it imitates in terms of looks, texture, flavor, and taste. Hence, it is easy for ordinary consumers to mistake the analog for the real thing. However, even though the species imitated by surimi analogs are getting scarcer, the imitation product will seldom gain a respectable position in the future.

2. The production cost of the end product has already become prohibitively high in Japan so that a number of Japanese manufacturers are already operating overseas as part of joint ventures. Thus, demand for surimi in Japan will further fall. This trend will continue as more countries begin processing an end product. However, other countries with a growing demand for surimi, such as the Republic of Korea, Thailand, Singapore, and Malaysia, can be the next markets for U.S. surimi.

**The Republic of Korea.** Korea is the next largest buyer of U.S. surimi with a good potential. Although Korea **itself is** trying to ensure a constant surimi supply, domestic production is likely to be stagnant, according to industry sources. A number of manufacturers, anticipating a good European market, are in full swing in their kanikama production. Thus, a scarcity of surimi is anticipated.

**Thailand.** At the moment, Thailand is known to be an exporter of surimi made from warmwater species, with insignificant amounts of surimi imports. However, we anticipate that in this decade Thailand, in joint ventures with Japanese and Korean firms, will increase production of surimi-based products, targeted for Japan, Europe, and so on. **Furthermore, itoyori** resources reportedly are quickly dwindling. In light of these two projections, the surimi industry should not be surprised to receive a substantial number of orders from Thailand in a few years.

**Other countries.** At the moment, Singapore and Malaysia, in addition to Thailand, are considered good overseas production bases by the Japanese and Korean surimi industry. In fact for the past few years several plants have

started and increased the capacity of production of kanikama products for the European as well as the Japanese markets. Since both countries have little capacity for producing surimi, they will inevitably import surimi for their kanikama products. Other countries in Asia which may follow a similar path in the near future are Indonesia, Vietnam, India, and China. In Europe, France has had three plants in operation since 1991, and Russia reportedly plans to start a plant in the near future.

3. The supply to Japan of nonpollock surimi, except for Pacific whiting, may rapidly increase to the extent that it affects the import volume and price structure of other surimi, including Pacific whiting. The probable candidates are
  - itoyori, or threadfin bream, surimi from Thailand
  - horse mackerel surimi from Chile (from 1991)
  - Indian surimi of local species (from 1992/93)
  - Malaysian and Indonesian surimi of local bream species (in a few years)
4. According to industry sources, the Central Fishery Research Institute of Japan has recently developed a pilot plant which could process 3 MT a day of sardine and mackerel into surimi with a quality as good as that of Alaska pollock. With a few additional technical problems to be solved, this will open for the industry a huge opportunity for commercial production. No other surimi could beat sardine surimi once its quality has reached the point where it is as good as that of Alaska pollock since the resources are ample and the unit material prices are among the cheapest. Furthermore, this technology will be applied to other abundant nonwhite-meat species.
5. Apparently, the global catch of Alaska pollock has a major impact on surimi price. Therefore, a change in various restrictive measures, such as catch and import and export quotas, needs to be closely monitored. In 1990 the U.S. acknowledged the de facto cartel formation of the United States Surimi Commission, which was given authority to control the volume and price of exports.
  6. Faced with a shortage of surimi, Japanese surimi buyers are not sitting idle. Rather, they are looking for alternative surimi sources. The following will be the major developments of 1992:
    - a. More purchases of southern blue whiting from Argentina (over 20,000 MT from 11,000 MT in 1991)
    - b. More itoyori and nonitoyori surimi to come from Thailand—at least over 30,000 MT. However, the resource seems limited.
    - c. More jack mackerel surimi expected from Chile (10,000 MT against 2,000 MT in 1991). This can become a major surimi source in the years to come since the annual landing of jack mackerel is over 2 million MT. However, industry sources are afraid that the **El-Niño** phenomenon may affect the catch this year.
    - d. More pollock purchased from Russia this year—nearly 140,000 MT, more than **triple** that of 1991. As long as resources are ample, the industry will be increasingly geared to this channel. Furthermore, the Russians are eager to sell.
    - e. In considering the rising price of surimi in 1991, the industry, especially small-scale makers in western Japan, is coming back to the production of surimi from local warmwater species of relative abundance. Two such species are **hairtail** and **lizardfish**. And, in case of scarcity, the industry will import these fish from neighboring countries to supplement the domestic catch.
 

In Hokkaido, in northern Japan, the federation of fisheries cooperatives has started surimi production out of fall salmon (local salmon), which seem relatively abundant. The federation expects that this will, in turn, solve the problem of the falling

price of salmon. Reportedly, the surimi has a slight salmon flavor, so it may sell well, even **if it** is priced higher than pollock. The federation has processed over 10,000 MT of fish into surimi, and major fisheries companies have also joined the production in 1991. Thus, the industry estimates that 10,000-15,000 MT of salmon surimi was produced in 1991.

7. Last, when we market Pacific whiting, we need to seriously consider two factors:

- Whether Pacific whiting should go to surimi-processing or not depends on the market prices of frozen fillet, block, or other forms. For instance, when the price of fillets are high, raw material should go to filleting, not to surimi processing.
- Supplying to a number of U.S. manufacturers is always a good alternative **to** exporting. In anticipating the increasing production capacity of surimi-based products in the U.S., we need to study this fact, as well as export markets.

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# MARKET PROMOTION OPPORTUNITIES AND CHALLENGES FOR PACIFIC WHITING

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Because of the rapid development of the Americanized Pacific whiting fishery along the coasts of California, Oregon, and Washington, a unique set of promotional opportunities as well as challenges has been served up to the fishermen and processors of whiting in these states. During the joint venture period of the west coast whiting fishery, U.S. fishermen were more often involved with the production and negotiation of price, leaving the details of marketing the whiting products to their offshore partners. I would like to explore what we feel are the significant opportunities for fishermen and processors, how they may be challenged, and what strategies they can use to develop export and domestic markets for whiting.

There are currently three major markets for Pacific whiting: (1) Japan, which imports a large percentage of Pacific whiting surimi products, (2) the EC, which is essentially a fillet and to a lesser extent a headed-and-gutted (H&G) market, and (3) the United States, which is characterized as a mature H&G market, with growing opportunities for new product categories.

An important marketing strategy for developing and expanding these markets is participation at major trade shows. These shows provide efficient access to key buyers, wholesalers, distributors, and processors in targeted market areas. However, participation in trade shows can be very expensive and requires graphic expertise. Too often, past generic or governmental efforts have been lackluster when compared to the displays of competing products. For Pacific whiting marketers, it is critical to mount a world-class effort at trade shows. To do less will result in less than hoped for results.

Another important tool for reaching importers and buyers of whiting in offshore markets is trade missions to targeted industries. In the last 12 months the Oregon Department of Agriculture has mounted three such missions to Japan alone. The purpose of these missions is to introduce suppliers and their products to prospective buyers. The missions have proven to be effective in attracting new buyers and dispelling misconceptions in the marketplace.

Last November (1991) an eight-member mission was in the seafood processing area of Ishinomaki, talking to surimi manufacturers and processors. These were very experienced Japanese seafood product managers, with a very high level of sophistication and knowledge about fish.

Midway through the presentation, they brought out for the group's examination two whole-frozen whiting that had been eviscerated. The viscera were beside the fish with evidence of a liver nematode. The Japanese processors told us they had heard of the parasite problem with Pacific whiting and asked if the liver worm was an example. The technical members of the Oregon mission relayed that while visually disturbing, the live worm was not the problem. There then ensued a long technical discussion of the "real" Pacific whiting parasite problem. This example points out the importance of face-to-face information exchange. Although expensive, technical marketing meetings of this kind are absolutely critical to any long-term market development program for Pacific whiting.

Certain product forms of Pacific whiting may lend themselves to in-store promotions. The efficacy of this tool, however, will depend greatly on the relative value of the **Pacific** whiting product to be promoted. It is unlikely that a lower-value H&G product will be able to sustain in-store promotion. Promotion of this kind of product will most likely be consigned to programs funded by the government or by trade associations. However, higher-value branded products, such as **Pacific** whiting surimi analogs, may have enough selling margin to support in-store promotion. These promotions could include such tools as **point-of-sale** materials, recipe cards, product demos or joint promotional programs with compatible product categories. All of these marketing efforts should be supported by trade-press and vernacular press publicity and editorial support. Food editors should be targeted to continue to raise the market profile and consumer awareness of the range of whiting products. Media efforts should be coordinated with **in-**

store or trade-show promotions to maximize their benefits.

A major constraint is **finding** a focused, single-purpose entity to carry forward these marketing strategies. In the last year, for instance, we have seen the demise of the National Seafood Promotion Council. More than any indicator this has demonstrated the trend towards national seafood promotion generally.

On regional or state levels, however, things are looking up. **The** Alaska Seafood Marketing Institute has secured more than \$8 million in USDA marketing dollars to promote salmon in Japan, France, and the **U.K.** California has a new, industry-supported seafood council. Oregon has attracted federal dollars for seafood promotional work in the **EC** and Japan but the money must be spent on a variety of species and is not focused solely on whiting. In the same way, the Oregon Trawl Commission does some promotion of whiting, but it must also promote the other variety of products the trawl fleet harvests. A more focused approach to developing markets for Pacific whiting should be explored by fishermen and processors working in concert

I want **to** make a few comments on branded identities and quality and grade standards for **Pacific** whiting products. When discussing these subjects, it is instructive to **analyze** one of the most successful examples of an integrated inspection, quality control, and branding program for seafood—the Norwegian farmed salmon.

The Norway example is a model for how to do it right. Because Norway is a small, **homogeneous** country with a rich socialist tradition of working together towards a common goal, the Norwegian **salmon** farmers were in an excel-

lent position to implement such a program. They instituted strict, government-controlled, quality guidelines that insured that only the finest product they produced was shipped to market. They carried this program forward with serial lot controls, pack dates, **size** and product form, and processor establishment numbers on wholesale packaging. Gill tags were placed on each fish, and point-of-sale materials supported the product with the consumer. At the peak of their promotional efforts, as much as \$25 million a year was spent by Norwegian salmon producers to maintain existing markets and develop new ones. Farmers dispatched technical representatives to work in the major wholesale markets throughout Europe and Japan to answer questions of buyers and report back to the producers with quality control information.

It was a well-thought-out program that propelled the Norwegian **salmon** industry to nearly 150,990 metric tons of production during their peak year of 1990. Since that time Norway has fallen on hard times with more than one-third of its product declaring bankruptcy in 1991. Other, larger market **forces**—such as increased harvest of wild **salmon** in Alaska and increased farm-raised fish from Chile—caused a collapse of the world salmon market and brought down with it the highly capitalized **salmon** farms of Norway.

**The** important lesson is that even with a well-thought-out and well-executed product standards program, linked perfectly with an aggressive promotional and merchandising program, the vagaries of international seafood markets can still wreak havoc. The producers of Pacific whiting can, however, profit **from** the lesson of Norway when developing standards for product inspection and branding.

# PRODUCT CHARACTERISTICS AND MARKET DEMAND FOR PACIFIC WHITING

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## INTRODUCTION

Industry, state government, and fisheries management agencies must develop fisheries-related strategies that are in their individual and collective interests. For Pacific whiting (**Pacific hake**, *Merluccius productus*), **this is** a considerable challenge because of the difficulty in controlling product quality **characteristics—** characteristics which affect product market demand. Industry and government, therefore, must determine how their behavior **affects** certain product characteristics, while also evaluating how product characteristics influence production and management decisions.

For example, fisheries management agencies must decide how their regulations ultimately affect **intrinsic** (preharvest product) characteristics and **extrinsic** product characteristics (characteristics affected by harvest and postharvest activities). In turn, fishermen must negotiate contracts with processors and develop cost-effective harvesting and handling practices consistent with these contractual arrangements. Processors must select a portfolio of product forms and develop production strategies consistent with controlling risks and reducing variation in product quality. First receivers must negotiate product quality warranties with processors and then develop sales and inventory strategies consistent with product quality limitations. State agencies must determine the degree of industry support, including promotion and market development. And the industry must collectively determine the degree **to** which it will assure product quality.

Industry and government agencies need different types of information to make these decisions. The degree to which each industry sector could **affect** and control product characteristics needs to be understood. This information would be provided by fisheries biologists, food technologists, and food engineers. Information is also needed to help evaluate the degree to which individual firms and agencies **should** control product quality. This requires analysis

by economists, marketing specialists, business managers, and policymakers.

**This** second type of information can be broken down into two categories: (1) information showing the relationship between product quality and production and management costs, and (2) market information showing the relationship between product quality and market demand. Biological, technical, and economic information can then be combined within production and policy models **to** help industry and government agencies make decisions about controlling product characteristics. These models may range from simple spreadsheets to relatively complex bioeconomic policy models.

In this paper we **summarize** the results of a survey we undertook (Sylvia and Peters 1991) that was designed to provide one of the types of information needed for making decisions about controlling product quality of **Pacific whiting—** the relationship between product characteristics and market demand. In the **first** section we review issues related to market demand and product characteristics. In the second section we summarize some of the results from the market survey. We conclude with a **brief discussion** of how industry and government sectors could use this information **to** optimally control product characteristics.

## ISSUES AFFECTING DEMAND FOR PACIFIC WHITING

Many supply and demand factors have affected the development of markets for Pacific whiting. These factors are (1) the supply of and prices for competitive whiting products and groundfish species such as Atlantic cod (*Gadus morhua*) and Alaskan pollock (*Theragra chalcogramma*), (2) **growth in** world population and national incomes, (3) improvement in seafood technologies, and (4) political and institutional changes.

The development of many whiting fisheries has occurred only during the last decade in response to rising prices for cod and cod **substi-**

tutes. These price incentives have motivated whiting industries to adopt improved seafood technologies to cost effectively improve and standardize product quality characteristics. As a result, global whiting production has increased from 2.2 million metric tons (MT) in 1982 to over 3 million MT in 1988 (Natural Resources Consultants 1990).

Individually, and as a group, whiting species (*Merluccidae*, *Merluccius* spp.) demonstrate wide variation in biological, geographical, and product quality characteristics. The wide range in characteristics is reflected by the range in prices received for different whiting stocks. For example, Antarctic queen (*Merluccius australis*), which is larger, firmer, and whiter than most other whittings, has been sold in Spain as a fresh, whole, unprocessed product for wholesale prices exceeding U.S. \$10.00 per kg (L. Gaines, personal communication). In contrast, Peruvian stocks of Chilean whiting (*Merluccius gayi peranus*), which have fewer desired characteristics, including soft flesh, small size, and an off-white color, may sell as a frozen headed and gutted (H&G) product in Europe and the United States for as little as U.S. \$0.55 per kg. Most whiting species, however, fall between these two extremes. The differences in product characteristics is one reason that the whittings are processed into a wide variety of product forms, including whole product, H&G, individual fillets, and frozen fillet and minced blocks (which may be further processed into breaded sticks or portions). Some whiting may also be processed into surimi (washed minced products).

While various factors have influenced differential development of whiting fisheries, one of the primary factors has been intrinsic product characteristics. Whiting display great inter- and intravariation in product characteristics—characteristics which may be valued to different degrees by different markets. These characteristics include, but are not limited to, such attributes as product size, texture, lipid composition, parasite infestations, and levels of protease enzymes (that is, enzymes which break down protein). For example, for most product forms, whiting between 1.5 and 3.0 pounds are more highly valued on a per unit weight basis than whiting which are smaller. This differential demand is due to size-dependent texture characteristics, size-related processing yields, and consumer portion control.

One especially important intrinsic product characteristic is product texture. Many stocks of whiting have a relatively soft texture that

decreases their value relative to groundfish, which have a firmer texture. Not only does soft texture reduce consumer enjoyment, but whiting with soft texture bruises more easily. This problem has compelled fishermen and processors to adopt techniques that reduce bruising, such as redesigning cod ends, reducing tows, and using wet pumps for off-loading.

In addition to shifts in market demand and improvements in seafood technology, the globalization of whiting markets has provided opportunities to fully exploit whiting across a wide variety of product forms. Today, processors have the option of either specializing in a single product form or diversifying risks and processing a wider variety of products. A portfolio of product forms allows processors to take advantage of changes in market conditions for alternative products or to match markets and product forms with inter- and intraseasonal variation in intrinsic product characteristics such as product size, lipid composition, and texture. This allows processors to compare market dynamics with information on supply availability and intrinsic product characteristics. Given their access to capital and their aversion to various risks, processors can then determine the optimal mix of capital equipment for producing a range of product forms.

Although information on individual firm behavior is generally not available, aggregate information shows that individual whiting stocks are used proportionately more for certain types of product forms. In general those species or stocks with excellent quality characteristics (for example, larger than two pounds; white-colored flesh; firm, flaky texture; relatively small fat layer; and few parasites) command not only the highest prices but tend to be used more as a fresh whole or fillet product for white tablecloth restaurants (especially in Europe), or for retail as a relatively expensive and specialized product. For species which have good quality characteristics, such as the Cape hakes (*Merluccius capensis*, *Merluccius paradoxus*), the products may be used in a wide variety of product forms, from fresh, whole product and fresh fillets to frozen fillet blocks. Moderate to lower-quality whittings, such as Argentine whiting and North Pacific whiting, are used for production of "commodity items," such as frozen blocks H&G or frozen fillet or minced blocks destined for further processing into battered and breaded products sold to food service, institutional, and retail sectors in Europe and the United States. Increasingly, however, improvements in food

technology have allowed these products to be processed into other product forms, including minced products (for example, surimi) and individual quick frozen fillets (IQF).

### PRODUCT CHARACTERISTICS AND MARKET DEMAND—A MARKET SURVEY

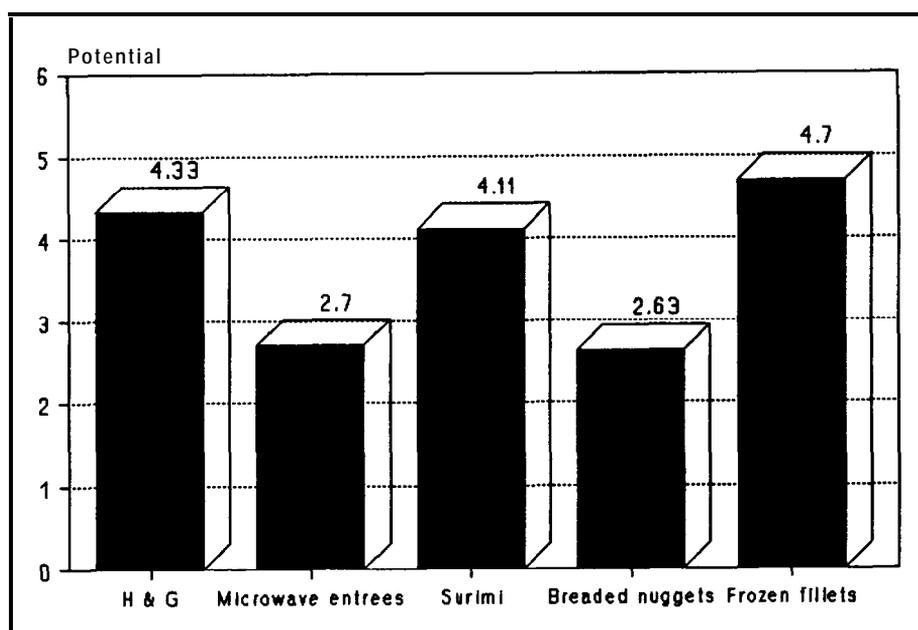
We conducted a survey of 125 domestic wholesalers and brokers of whiting products and surimi seafood producers in order to develop market information for the Oregon seafood industry (Sylvia and Peters 1991). We used various qualitative and quantitative survey methods to develop information on optimal product forms, the importance of product characteristics, market demand, and the value of

alternative contractual arrangements. The following section briefly summarizes a subset of these findings.

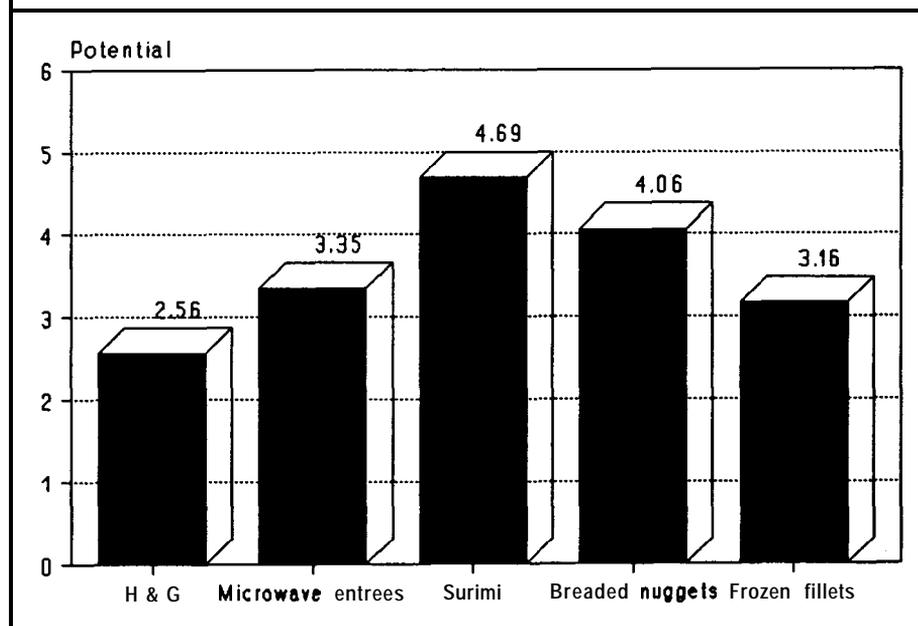
Figures 1 and 2 show the relative potential for various products as perceived by firms which predominantly handle H&G or fillet whiting products. Firms which primarily handle H&G product perceive Pacific whiting to have a moderately good potential for continued production of H&G product and even higher potential as fillets. The fillet industry, however, perceived relatively greater potential for value-added products. Both groups of firms believed that Pacific whiting had relatively high potential as a surimi product.

A significant portion of the survey focused on the relative value and importance of various

*Figure 1. Relative potential for Pacific whiting products as perceived by firms that predominantly handle H&G whiting (0 = no potential, 6 = high potential).*



*Figure 2. Relative potential of Pacific whiting products as perceived by firms that predominantly handle whiting fillets (0 = no potential, 6 = high potential).*



*Table 1. The values of various product characteristics for frozen whiting fillets for first and second receivers and small and large wholesalers (Sylvia and Peters 1991—derived from table 5.5, page 127).*

<b>First Receivers</b>			
<b>Base Attributes</b>	<b>Value</b>	<b>Improved Attributes</b>	<b>Value</b>
Base price	<b>\$.57</b>	Base price	<b>\$.57</b>
Skin-on	<b>\$.00</b>	skin-off	<b>\$.10</b>
2-4 oz fillet	<b>\$.07</b>	4-6 oz fillet	<b>\$.12</b>
2-month supply	<b>\$.02</b>	7 month supply	<b>\$.06</b>
No marketing support	<b>\$.00</b>	Marketing support	<b>\$.06</b>
<hr/>			
Total price for small first receivers	<b>\$.66</b>		<b>\$.90</b>
<hr/>			
Total price for large first receivers	<b>\$.62</b>		<b>\$.86</b>
<hr/>			
<b>Second Receivers</b>			
<b>Base Attributes</b>	<b>Value</b>	<b>Improved Attributes</b>	<b>Value</b>
Base price	<b>\$.66</b>	Base price	<b>\$.66</b>
Skin-on	<b>\$.00</b>	skin-off	<b>\$.15</b>
2-4 oz fillet	<b>\$.10</b>	4-6 oz fillet	<b>\$.16</b>
2 month supply	<b>\$.03</b>	1-month supply	<b>\$.08</b>
No marketing support	<b>\$.00</b>	Marketing support	<b>\$.09</b>
<hr/>			
Total price for small second receivers	\$.79		\$1.14
<hr/>			
Total price for large second receivers	<b>\$.73</b>		<b>\$1.08</b>

product characteristics of H&G, fillets, and surimi products. For H&G and fillets these product **quality** characteristics included price, product size, product form (fillets only), texture, species, **shelf life**, flesh color, package size, supply availability, product uniformity, product line, marketing support, and payment terms. The characteristics of surimi included water-holding capacity, gel strength, moisture content, protein content, color, flavor, contamination, source, price, supply availability, delivery volume, and product uniformity.

In general, it was found that for H&G, price was **significantly** more important than other product characteristics. Other important characteristics were texture, supply availability, product **uniformity**, and product size. For fillets, price was also the **highest-scoring** characteristic but was not statistically more important than product form, **shelf life**, product size, texture, supply availability, and product **uni-**

**formity**. For surimi, the price characteristic also scored highest but was not statistically more important than water-holding capacity, gel strength, supply **availability**, and product **uniformity**.

One example of the importance of product characteristics, contractual arrangements, and the characteristics of wholesalers is shown in table 1 (for methodological details see Sylvia and Peters 1991). This **table** shows how **break-**even prices for first and second receivers and for small firms and large firms (revenues greater than \$10 million) are **affected** by changes in characteristics of a frozen whiting fillet product with the following **fixed** characteristics: **shelf life** of 12 months, slightly **off-**white color, moderately firm texture, 95% uniformity in product attributes, "ideal" package (for example, **5-lb** frozen blocks), and terms of net 30 days.

Supplying a **4-6-oz**, skin-off fillet, seven months a year, accompanied by marketing support, increases market price by **\$.24** over the basic product. Large first receivers offer **\$.04** less than small first receivers in exchange for larger purchase volumes. Second receivers offer approximately 26% more at break-even prices than **first** receivers and not only pay a higher base price but offer a higher absolute premium for improved attributes.

The information presented in table 1 is useful for developing long-run management and marketing strategies. The information allows processing firms to compare the costs and benefits of providing various sets of product attributes. Note, however, that some of these characteristics (for example, fillet **size** and supply availability) would be controlled by not only the industry, but regulatory fisheries agencies. Note also that improvements in product characters provide greater absolute and relative value to second receivers, a result consistent with other survey findings, which showed that the further downstream the buyer, the more important product quality characteristics become. These findings raise interesting issues related to managing product quality, developing sales strategies, and increasing the profits of industry.

#### CONCLUSION

Not all hake or whiting are created equal or treated equally. As a result, market prices will show **significant** variation as a function of product characteristics. Product characteristics also **affect** industry's choice of product forms, level of capital investment, selection of quality control programs, nature of contractual ar-

rangements, and marketing and promotional strategies. The **Pacific** whiting industry must decide to what extent product quality **can be** controlled (**by** fishermen, processors, distributors, consumers, regulatory agencies) and then determine how much it **should** be controlled

The type of information presented in this paper can help the industry address this issue by showing the relationship between product characteristics and market demand. **This** information can then be combined with cost data, biological information, and information on food technology and food engineering to explore issues ranging **from** developing profit-driven, quality assurance standards to determining how fisheries regulatory policy affects market opportunities and the benefits of regional and national fisheries. Integrating market information with other elements is one important step toward improving our understanding and management of the Pacific whiting fishery.

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# PANEL DISCUSSION ON MARKETING OF PACIFIC WHITING

Session leader: *Ann Shriver*. Panel members: *Joseph Zalke, Ichiro Kano, Dalton Hobbs, Gilbert Sylvia*

**Q:** (Session leader) Please describe **what** the U.S. and global surimi seafood market will look like five years from now.

**A:** Each panel member responded separately to this question. Joseph Zalke responded that surimi is more of an ingredient in foods than a commodity in and of itself. As a commodity, surimi-based seafood has reached a peak, but there is potential for expansion in niche markets. For example, Mexican food is growing in popularity. There is potential for the use of surimi-based products in that area. Gil Sylvia added that more species would be used worldwide, reductions would be made in salt and sugar additives to answer consumer reservations about the healthfulness of surimi, and a larger variety of products and ingredients would be developed. Dalton Hobbs commented that additional segmentation of the market would probably occur, focusing on, for example, the institutional food sector and take-out and deli type of outlets. The new variety in products will support the development of these market segments. Ichiro Kano warned that surimi markets will grow at a very slow pace with some ups and downs; probably no market breakthrough will be experienced.

**Q:** What are the current labelling requirements for surimi-based products?

**A:** Chuck Herrick, another audience member, answered that you are permitted to use the term *surimi*, which must be followed in parentheses by the ingredients of the surimi, or you may simply list the ingredients of the surimi. Jae Park followed up from the audience to clarify that the use of the term *surimi* by itself is not permitted; you must list the ingredients, including the species of fish used. Zalke added that the National Fisheries Institute (NFI) is working with the U.S. Food and Drug Administration to get the nomenclature approved so that *surimi can* be used by itself. He stressed that it was important to get rid of the concept

of surimi as “imitation” food and to have it accepted in its own right Park pointed out that the U.S. is the only country where surimi is stigmatized this way. Another audience member mentioned that if you blend different species, you must give the percentage of each species used. Gil Sylvia asked why you couldn’t just list several options, as is done in labelling frozen packages of fish sticks or breaded portions.

**Q:** (Session leader) Where is the promotion dollar best spent? **NFI** says that its constituents do not support generic promotion if they have to pay for it. Is this smart?

**A:** Each panel member responded separately to this question. Zalke responded that the question is very complex and difficult to rationalize. **NFI** resembles a political organization representing many diverse factions, including regional interests, importers, domestic market producers, and shrimp, halibut, salmon and other species, among others. The “seafood” producer does not produce a homogeneous product as, for example, the poultry industry does. How do you get salmon producers to agree to support the surimi committee? This explains the limited budgets and willingness to contribute to promotional campaigns. There are also personal and business egos which want the market to be more brand oriented, so that is where the advertising dollar goes. From his perspective, however, it would be good to continue a generic “eat seafood” campaign.

Gil Sylvia added that sometimes the current average level of seafood consumption-15 pounds per person per year-is viewed as an upper bound. The seafood industry worries that one segment’s gain would be another’s loss. In fact what must be done is that the 15-pound limit must be pushed up as a whole, enlarging the pie so that all different kinds of seafood producers will have a larger share. The consumer needs to be educated that seafood is

healthy, easy to prepare, and tastes good; this also argues for more generic advertising.

Dalton Hobbs gave the Oregon perspective, mentioning that this state has a tradition of generic promotion. The same problem exists between, for example, advertising for cheese and milk as does between shrimp and **flatfish**. He agreed with Sylvia that the fundamental problem is that we do not consume enough seafood. This was seconded by Kano, who pointed out that compared to seafood consumption in Asian countries, **15 pounds** is not much. Promotion should be used to counter this limit.

From the audience, Joe Easley of the Otter Trawl Commission revealed the results of some polls the commission has undertaken in this state. The polls revealed much ignorance on the part of the public. Most of the information the consumer gets about seafood comes from the server behind the seafood counter, and these people are sometimes woefully ignorant. Training and educating handlers of seafood so that they in turn can educate the public should be a priority. **Safeway** has started a training program using a videotape out of a manual developed by Easley's organization; if you can't get to the level of the market chain which is selling to the **final** consumer, then your advertising is worthless.

**Q:** (Session leader) Does fresh surimi have market potential?

**A:** Park replied that the Japanese used surimi in that form until the **1960s**, when they began to add sugars as preservatives to extend surimi's **shelf life** and began to be able to extend frozen storage times as well. For **Pacific** whiting, the fresh form is a good idea; it can enhance quality and reduce the need for additives. Having fewer additives would make it easier to improve the percentage of protein in the final product.

Zalke demurred, **emphasizing** that the economics of a fresh product as an input to be used in large quantities would have to be studied. Sylvia mentioned that they had addressed this issue in their marketing survey. From the surimi industry's perspective, having a limited supply is a problem, and shrinkage is a problem. He asked a question of his own: Is market research on fresh surimi needed?

One audience member argued that concern over additives such as salt and sugar is not a major issue to 90% of consumers. **This** would indicate that the interest in a fresh surimi product would be very limited. Another pointed out that given the level of processing done to surimi products, **frozen** or not, they could never be **labelled "fresh,"** and therefore any marketing advantage would be lost. The increased cost of using a **nonfrozen** surimi product would not be justified in an increased price in the final product.