Historical Review - the 30-yr Production of Crabstick in the United States

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Director, OSU Surimi School
Oregon State University
Alaska Pollock – White Gold
25 Years - Producing Surimi in the United States - from the World’s Largest Food Fishery

Annual Avg TAC ~1.2 million M/T (2011: 1.365 million M/T)
Pacific Whiting
20 Years – the second largest fisheries for Surimi in the United States

Annual Average TAC ~300,000 M/T: 2011 – 393,700 M/T
# US Surimi Manufacturers

## 1) Shore-side operation

<table>
<thead>
<tr>
<th>Location</th>
<th>Production Year</th>
<th>Parent Company</th>
<th>Produce Surimi Currently?</th>
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<tbody>
<tr>
<td>Alaska Pollock</td>
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<tr>
<td>Alaska Pacific Seafood</td>
<td>1984</td>
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<td>Excellence</td>
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<td>Star Bound</td>
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<td>Highland Light</td>
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</table>

17/30 vessels
Global Surimi Production by Country

1990

525,000 MT

2000

530,000 MT

2010

527,000 MT

The 1st Surimi Industry Forum 2001
Surimi Manufacturing Technique

• Process developed by Japanese
  – Essentially a relatively simple process adapted to an industrial scale
  – Use technology borrowed from other industries, e.g. potato and paper

• Efficiency improved by American
  – Yield increase
  – Cooperation in machinery design (scalper, Brown refiner, etc)

Draves (2009)
**Improved Yield**

- **1984 – 1995:** 12% - 15%
- **1995 – 2005:** 15% - 25%
- **2005 – 2010:** 25% - 30%

12% $\rightarrow$ 30%

It is *significant* improvement!
Improved Yield by Fish Cuts

- Skinless fillets → Skin-on fillets → Butterfly fillets

Fish cuts before Deboning
**Improved Yield by efficient washing**

- **Tighter screen** and **less water used** in washing
  - 20-25 liters water/ 1 kg surimi production early days
  - 1-2 liters/ 1 kg vs 5-10 liters/ 1 kg
Improved Yield by Decanter

- Decanter/ Centrifuge
  - Recover possibly all insoluble particulates

- The most significant role in yield increase
Improved Yield by Better Cut

- Efficient machinery for better cut
  - Scalp cuts (American Seafoods)
  - Toyo V-cuts (developed by UniSea & Toyo)
  - Scalper/chinner (DK Engineering)
  - Scalper (Kami Steel)

Draves (2009)
Cuts of Meat Used in Surimi Production

Draves & Graves
Improved Yield by:

- Byproducts recovery
  - **Skin** (used for gelatin production)
  - **Liver** for oil used in power and steam generation.
  - **Solids** from waste streams collected and added to fish meal.
  - **Stomachs** (changran)
Recovery from Alaska Pollock

We now utilize almost every part of pollock – Maximum Utilization

Cost / Benefit – Value of mince, surimi, and byproducts.
CRABSTICK
Market Development in USA

US Surimi Seafood Production

(106 Lbs)

(103 M/T)
21 Processing Plants were established in N America

- Icicle Seafoods 85
- Sugiyo USA 87
- Trans Ocean Products 85
- Kibun (HFI) 84
- Shining Ocean 85
- UniSea Foods 85
- Peter Pan 86
- Louis Kemp 86
- SeaFest 85
- Louis Kemp 85
- Nichirei Foods America 90
- Ocean Foods – Toronto 05
- Seafood Ho 85
- Aquamar 94
- Fish King
- Ono Fish Cake
- JAC Creative Foods 81
- JAC Creative Foods – Toronto 85
- LM Foods 95
- Kibun 84

21 Processing Plants were established in N America.
Big Fish Eats Small Fish!
8 Processing Plants currently in N America

- Sugiyo USA
- Shining Ocean
- UniSea Foods
- Trident Seafoods
- Trans Ocean Products
- Ocean Foods – Toronto
- LM Foods
- Aquamar

How was the US Surimi Seafood Market developed?
The largest consumption increase


The largest consumption increase was brought by a simple, but consumer friendly, product forms:
1981 – 1990 Rapid Growth

• The first crabstick plant (JAC Creative Foods) in 1981.

• Eight plants were built in 1985.

• SA or FA grade Alaska pollock surimi were used at 60-65%.

• 60 days shelf life for chilled products (4°C)

• Strict pasteurization (Cooking to 85°C internal temperature for 15 min)

• Water phase salt: 2.4%
1991: Consumption decreased!

73,000 M/T (1990) → 66,000 M/T (1992)

The first surimi price crisis (A grade pollock):

Jan 1991: $1.65/kg
July 1991: $3.50/kg
Fall 1991: $5.95/kg
1992 – 2003 Slow Growth

- Plants are consolidated.
- **Two new plants** were built in 1994-1995.

- **Surimi:** from Pollock only to Pollock and Whiting


- **1991 Crisis:** Surimi reduction from 60-65% to 35-40%.

- **90 days** shelf life for chilled products (4°C)
2008: Consumption decreased!

82,000 M/T (2007) → 73,000 M/T (2008)

The second surimi price crisis (A grade pollock):

Fall 2007: $3.85/kg
Jan 2008: $4.40/kg
July 2008: $5.72/kg
Fall 2009: $5.28/kg
2000 – 2009 Matured Market

- Consolidation: only 8 processing plants
- More Pacific whiting surimi is used.

Low Quality and Low Price Imports

“Imitation” label was removed in 2006.
Working for Consumers

• **Imitation Crabmeat** is now a history!

  *Imitation (Crabmeat) had *bad reputation*!*
  
  – Since its first importation in late 1970s
  – Negative impression
  – Approved in Nov 2006: Now it has a new name:

    **Crab-flavored seafood, made with surimi, a fully cooked fish protein**

    – NFI, GAPP, & US Industry

• **Disjunctive label**

  – The use of surimi from multiple species was the problem
  – **Fish proteins** (Alaska pollock, Pacific whiting, or cod)
Consumer Friendly

- **Health-claimed crabstick** keeps retail market strong!
  - Downturn in 2008 (due to surimi price crisis)
  - Overall market reduced by 15-20% (2007 – 2009)
  - **Retail stayed strong (up by 2%)** due to:
    - Health Claim
    - Removal of imitation label
2010 – Matured, but...

- Retail is strong with Omega-3 addition
- No “Imitation” label is positive in the market

US Surimi Seafood Consumption

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--- Celebrating the 30-yr Production of Crabstick in the United States ---
Celebrating the 30-yr Production of Crabstick in the United States -

Louis Kemp

Louis Kemp
Healthy

Garlic Herb

Crab Delights®

Crab flavored seafood, made from surimi, a fully cooked fish protein.

Always affordable
now HEALTHY

Crab Delights®

Flake Style

Crab flavored seafood, made from surimi, a fully cooked fish protein.

Trident Seafoods Corp
Seattle, WA
-- Celebrating the 30-yr Production of Crabstick in the United States --
(Omega-3 fortified)

The national branded Healthy Surimi market is growing 158% year over year. Shining Ocean has 69% market share*.

-- Celebrating the 30-yr Production of Crabstick in the United States --
-- Celebrating the 30-yr Production of Crabstick in the United States --

King & Prince Seafood
(Redmond, WA)
**SEAFOOD & CRAB**

Blend of seafood and crab mixed with light mayonnaise.

Approximately 3,000 M/T a year used by Subway
SEAFOOD & CRAB

Blend of seafood and crab mixed with light mayonnaise.

Approximately 3,000 M/T a year used by Subway

The largest usage of crabstick in the world!

-- Celebrating the 30-yr Production of Crabstick in the United States --
-- Celebrating the 30-yr Production of Crabstick in the United States --

California Rolls – It’s American!