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Report to the Saltonstall-Kennedy Project

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The author and associates spent two weeks traveling to Shanghai, Qingdao, Yantian, Dalian, and Beijing - major coastline cities in northern China. In the course of this journey, we visited dry fish/shellfish plants, import companies, universities, government organizations, supermarkets, and street markets.

(1) Brief history of dried seafood in China

As early as 1,000 BC, ancient Chinese started to preserve seafood using natural sunlight drying. This and similar methods of dry preservation were very popular in the Tang Dynasty (AD 600) using methods such as sunlight drying and hot-air drying with supplemental ingredients such as salt, sugar, pepper powder, and other seasonings.

Today, the drying of seafood remains a major preservation method used in coastal cities of China.

(2) Current dried seafood industry in China

From our investigation in northern China, including Shanghai, Qingdao, Yantian, Dalian, as well as Beijing, we found that a variety of dried seafood products are well accepted and enjoyed by consumers. Attached to this report is an extensive list of dried seafood

products marketed in China. Items included in this list are major species, product forms, ingredients, drying methods, retail prices, and consumption areas.

The raw material used for the production of dried products range from finfish and shellfish to seaweed; from low-value species, such as pollock, rubberfish and others to high value species, such as pufferfish and abalone. Several imported species, such as salmon, pollock, and croaker are also used to produce dried seafoods. Dry product forms range from traditional whole dried varieties to dry fillets, including those seasoned with a large variety of spices. Product packaging ranges from bulk packing to retail bags, full-color bags, boxes, and giftpacking with inscriptions in both English and Chinese.

Since China has more than a 1,000 year history in the production and consumption of dried seafoods, there can be little doubt that dry seafood will continue to be a major seafood product in China.

(3) Current dried seafood markets in China

With the economic growth now ongoing in China, the middle class is emerging from the population of 1.2 billion. Super markets are becoming popular in the big cities such as Shanghai, Beijing, Qingdao, and Dalian. In Shanghai alone, there were over 500 supermarkets in 1996. Economic reform policies have encouraged traditional department stores and side street markets to change their sale strategy and product structure. All varieties of dried seafood products have come to have their own market niches (see attached).

The distribution of dried seafood products in China is similar to the distribution system used in the movement of other seafood items. It is a complicated and overlapping system. The private sector is becoming more and more important in this system (see attached graph).

Bringing Alaska into focus, unfortunately, it is apparent that the price of dried salmon produced in Alaska is too high for the Chinese market (note - this statement may not be true for Korea and Japan). Currently, there is a very limited market for high valued dried seafoods in China.

(4) Opportunities and constraints for Alaska dried seafood in the Chinese market

There is a tremendous opportunity for the exportation of Alaska dried seafood to China. Similar opportunities exist for the shipment of raw materials from Alaska for the processing of dried products in China. Low valued species such as pink and chum salmon, some flounder species including sole, and underutilized species such as skate, shark, and sea cucumbers as well as certain by-products such as shark fins and skate fins can be used to produce dried products for this market of 1.2 billion people.

Research to be done in the second stage in this proposal includes obtaining samples from this extensive Chinese market and, in turn, creating suitable products for exportation. Since there is existing infrastructure including processing facilities, low-cost labor, and markets, joint ventures between Alaskan producers and Chinese dried seafood plants should be considered in the future.

Several of the constraints that may effect Alaska dried seafood products exported to China include, among others, the following:

- (a) High production costs in Alaska
- (b) Relatively poor infrastructure in China
- (c) Non-efficient distribution system in China
- (d) High import tariff rate in China (45% for imported dry seafoods from USA as of 1997)

Lists and graphs of strategic information follow:

Main Dry Seafoods in China

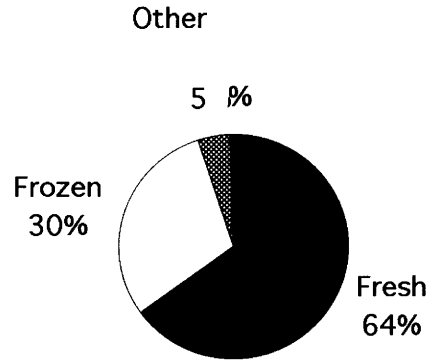
Species	Forms	Major Ingredients	Processing Method	Retail Price (US\$)	Sample(S)/ Photo(P)	Consuming Area	Note
Salmon	whole/ gut-off	salt	natural dry (sunlight, wind) hot air	\$0.8/lb		south China Northeast area	raw material imported from Russia, Japan and USA
	seasoned strip	salt, sugar, MSG	hot air	\$1.5/lb	P	North China	raw material imported from Russia, Japan and USA
	seasoned /roasted	salt, sugar, MSG	hot air	\$1.2/lb	P	North China	raw material imported from Russia, Japan and USA
Croaker	whole	salt	natural dry (sunlight, wind) hot air	\$2-5/lb	P	coastline	Price is ranged by ram material
Pollock	whole	salt	natural dry (sunlight, wind) hot air	\$0.8/lb		North China	Raw material imported from Russia
	Seasoned dry fillets	salt, sugar, MSG	hot air	\$2-4/lb	P/S	North China	Raw material imported from Russia
	Seasoned/ roasted fillets	salt, sugar, MSG	hot air	\$1.2/lb	P	North China	Raw material imported from Russia
Pacific mackerel	Whole	salt	natural dry (sunlight, wind)	\$1.5/lb	P	North China	Spanish mackerel price to high to make dry

Flounder	Whole	salt	natural dry (sunlight, wind)	\$1/lb	P	North China	small size raw material (50/100 g)
	Seasoned	salt, sugar, MSG	hot air	\$1.2/lb		North China	
Rubberfish	whole	salt or none	natural dry (sunlight, wind)	\$0.5-1/lb		Shanghai/ Zhejiang	
	dry seasoned filets	salt, sugar, MSG	hot air	\$2-4/lb	P/S	coastline	
	seasoned roasted filets	salt, sugar, MSG	hot air	\$2.5/lb	P/S	coastline	
Sharkfin	whole with pinebone-on	Salt	natural dry (sunlight, wind) hot air	\$25-35/lb	P	coastline	export to southeast China, Japan, USA, Canada
	strip	salt	hot air	\$50-70/lb	P/S	coastline	export to southeast China, Japan, USA, Canada
Shark	whole	salt	natural dry (sunlight, wind)	?		coastline	raw material size less than 10 lbs
Shark	fillet, such as lion cut	salt	natural dry (sunlight, wind)	\$1.5/lb	P	coastline	
Skate	whole and/or cutted	salt	natural dry (sunlight, wind)	?	P	North China	raw material size less than 10 lbs
Pufferfish	whole	salt	natural dry (sunlight, wind) hot air	\$10-30/lb	P	coastline	exported to Japan

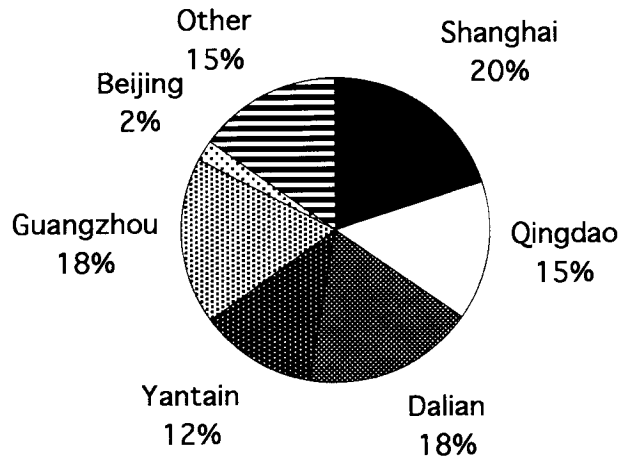
Eel	whole/gutted	salt	natural dry (sunlight, wind)	\$2-5/lb	P	south of Shanghai	Produced in the south of Shanghai
	seasoned fillet with pinebone-on	salt	hot air	\$3-7/lb	P	south of Shanghai	Produced in the south of Shanghai
Anchovy	whole	salt or none	natural dry (sunlight, wind) hot air	\$2-5/lb		coastline	1-2 inch size
Shrimp	whole	salt	natural dry (sunlight, wind) hot air	\$2-6/lb	P	coastline	
	peeled	salt or none	natural dry (sunlight, wind) hot air	\$2-10/lb	P	coastline	
Scallop	Adductor	salt or none	natural dry (sunlight, wind) hot air	\$20-50/lb	P	coastline	exported
	Seasoned adductor with mantle	salt, sugar, MSG	hot air	\$15-30/lb	P		exported to Japan
Sea cucumber	whole with gut-off	salt	hot air	\$50-150/lb	P	coastline	exported
Abalone	meat	salt	hot air	\$30-50/lb	P	coastline	exported
Mussel	shell-off	salt	natural dry (sunlight, wind) hot air	\$3-5/lb	P	coastline	
Clam	shell-off	salt	natural dry (sunlight, wind) hot air	\$3-5/lb	P	coastline	

Crab	meat	salt	hot air	\$8-20/lb		coastline	
Squid	whole	salt	natural dry (sunlight, wind)	\$3-5/lb	P	coastline	
	Seasoned strip	salt, sugar, MSG	hot air	\$3-8/lb	P/S	coastline	exported to Japan
	Seasoned ring	salt, sugar, MSG	hot air	\$3-6/lb	P	coastline	
	Seasoned mantle (ear)	salt, sugar, MSG	hot air	\$0.5-2/lb	P	coastline	Produced from by- product (mantle)
Octopus	whole/gutted	salt	natural dry (sunlight, wind)	\$3-5/lb	P	coastline	
			hot air				
Cuttlefish	whole/gutted	salt	natural dry (sunlight, wind)	\$3-5/lb		coastline	
			hot air				
Seahorse	whole	salt	hot air	\$100-250/lb		coastline	Exported used as traditional Chinese medicine
Kelp	whole	salt	natural dry (sunlight, wind)	\$0.2/lb		coastline	
Laver	whole	salt	natural dry (sunlight, wind)	\$0.3/lb		coastline	

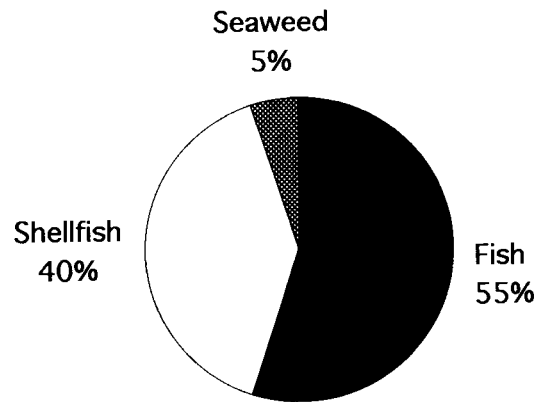
Market Share in China Seafood Industry



Dry Seafoods in China by Major Cities



Market Share of Dry Seafoods in China



Market Survey in Dalian, Yantai, Qingdao and Beijing, China

After surveying several northern Chinese cities (Dalian, Yantai, Qingdao and Beijing), we conclude that smoked & dried seafood is one of the most popular snack foods in the area. But consumption habits, species and levels of consumption are different among those cities. Beijing and Shanghai are two major markets for high value dried and smoked seafood, while other cities' markets are still growing. The following figures show the basic information on consumption and price levels in those cities.

I Dalian

A. Dalian Seafood Market

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Salmon (dried)	bulk	Heilongjiang	\$3.73/kg
Mackerel (dried)	bulk	Dalian	\$3.73/kg
Swallow Mackerel (dried)	bulk	Dalian	\$3.01/kg
Croaker (dried)	bulk	Dalian	\$7.47/kg
Tongle Fish (dried)	bulk	Dalian	\$4.22/kg
Roasted Fish Fillet	40g/pack	Dalian	\$0.36/pack
Roasted Fish Fillet	100g/pack	Dalian	\$0.75/pack
Roasted Fish Fillet	250g/pack	Dalian	\$1.99/pack
Roasted Fish Fillet	250g/box	Dalian	\$2.65/pack
Roasted Fish Fillet	500g/pack	Dalian	\$3.92/pack
Roasted Fish Fillet	bulk	Dalian	\$3.49/kg
Shredded Squid	38g/pack	Dalian	\$0.78/pack
Shredded Squid	60g/pack	Dalian	\$1.20/pack
Shredded Squid	100g/pack	Dalian	\$2.02/pack
Shredded Squid	180g/pack	Dalian	\$3.67/pack
Shredded Squid	260g/pack	Dalian	\$5.30/pack
Shredded Squid	380g/pack	Dalian	\$7.77/pack
Shredded Squid	bulk	Dalian	\$18.80/kg

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Roasted squid	bulk	Dalian	\$9.71/kg
Smoked squid	bulk	Dalian	\$13/kg
Smoked squid	30g/pack	Dalian	\$0.48/pack
Smoked squid	80g/pack	Dalian	\$0.72/pack
Squid tentacle	28g/pack	Dalian	\$0.34/pack
Squid tentacle	50/pack	Dalian	\$0.58/pack
Squid tentacle	100g/pack	Dalian	\$1.18/pack
Squid ring	30g/pack	Dalian	\$0.42/pack
Cooked dried fish	150g/pack	Changhai	\$0.76/pack
Seasoned smoked mackerel	150g/pack	Changhai	\$0.39/pack
BBQ fish	100g/pack	Changhai	\$0.42/pack
BBQ squid tentacle	30g/pack	Changhai	\$0.60/pack
BBQ flounder	100g/pack	Changhai	\$0.82/pack
Cooked dried croaker	150g/pack	Dalian	\$0.76/pack
Seasoned fried Pizi fish	150g/pack	Dalian	\$0.39/pack
Smoked fish	80g/pack	Dalian	\$0.34/pack
Smoked mackerel	150g/pack	Dalian	\$0.42/pack
Cooked dried croaker	150g/pack	Dalian	\$0.66/pack
Roasted fish steak	45g/pack	Qingdao	\$0.30/pack
Spicy fish	50g/pack	Dalian	\$0.20/pack
Spicy fish	110g/pack	Dalian	\$0.36/pack
Dried fillet	50g/pack	Dalian	\$0.25/pack

B. Dalian Rongsheng Wholesale & Retail Market

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Roasted fillet	bulk	Dalian	\$6.27/kg
Roasted fillet	bulk	Dalian	\$5.30/kg
Shredded squid	bulk	Dalian	\$7.23/kg
Shredded squid	bulk	Dalian	\$8.43/kg
Spicy bar fish	bulk	Dalian	\$2.41/kg
Roasted bar fish	bulk	Dalian	\$2.89/kg
Roasted shredded bar fish	bulk	Dalian	\$2.41/kg
Dried squid	bulk (good)	Dalian	\$8.43/kg
Dried squid	bulk (normal)	Dalian	\$3.60/kg
Dried pomfret	300g/box	Dalian	\$2.89/kg
Dried sea eel (whole)	bulk	Dalian	\$1.45/kg
Roasted fillet	250g/pack	Dalian	\$2.41/pack
Dried squid head	bulk	Lushun	\$3.62/kg
Dried skate	bulk	Lushun	\$3.60/kg
Dried sea eel (half)	bulk	Dalian	\$2.41/kg
Dried sea cucumber	bulk	Changhai	\$67-92/kg

II Yantai

A. Yantai Agricultural Business City

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Squid head (big)	500g/pack	Yantai	\$4.83/kg
Squid head (small)	500g/pack	Yantai	\$5.30/kg
Fried mabu fish	bulk	Yantai	\$4.34/kg
Marinated dried fish	40g/pack	Yantai	\$0.13/pack
Shredded squid	18g/pack	Yantai	\$0.12/pack
Shredded squid	40g/pack	Yantai	\$0.26/pack

B. Yantai Department Store

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Fried red fish	bulk	Yantai	\$6.75/kg
Roasted mackerel	bulk	Yantai	\$4.82/kg
Roasted sardine	bulk	Yantai	\$9.40/kg
Seasoned fish	bulk	Yantai	\$8.67/kg
Fish steak	bulk	Yantai	\$1.93/kg
Roasted sasong fish	bulk	Yantai	\$8.67/kg
Marinated eel	88g/pack	Yantai	\$0.87/pack
Marinated croaker	88g/pack	Yantai	\$0.66/pack
Marinated bapi fish	88g/pack	Yantai	\$0.36/pack

C. Zhongchuang Supermarket

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Fried belt fish	45g/pack	Qingdao	\$0.30/pack
Shredded pollock	38g/pack	Shanghai	\$0.61/pack
Roasted squid	30g/pack	Dalian	\$0.57/pack
Spicy marinated fish	100g/pack	Qingdao	\$0.33/pack
Fresh fish jerky	50g/pack	Beijing	\$0.54/pack
Cooked Hongniang fish	50g/pack	Beijing	\$0.54/pack
Cooked dried fish	200g/pack	Dalian	\$1.07/pack
Fresh spicy baby fish	200g/pack	Dalian	\$1.20/pack
Tomato juice sardine	150g/can	Malaysia	\$0.71/can
Hot spicy tuna	185g/can	Malaysia	\$1.54/can
Fresh crab meat	170g/can	Malaysia	\$2.06/can
Tuna in oil	185g/can	Malaysia	\$0.98/can
Smoked fish with black bean sauce	200g/can	Shanghai	\$1.35/pack
Tomato juice herring	200g/can	Dalian	\$0.54/can

III Qingdao

A. Qianchuan department store

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Fish jerky	bulk	Qingdao	\$2.89/kg
Roasted fish fillet	100g/pack	Guangdong	\$0.65/pack
Roasted fish fillet	250g/pack	Guangdong	\$1.69/pack
Roasted fish fillet	bulk	Guangdong	\$6.26/kg
Shredded squid	100g/pack	Guangdong	\$1.63/pack
Shredded squid	238g/pack	Guangdong	\$3.37/pack

B. Qingdao Jusco Supermarket

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Spicy shredded squid	bulk	Qingdao	\$14.46/kg
Shredded croaker	bulk	Qingdao	\$9.16/kg
Marinated eel	bulk	Qingdao	\$10.12/kg
Dried squid	bulk	Qingdao	\$10.84/kg
Smoked eel	bulk	Qingdao	\$9.40/kg
Shark fin (good)	bulk	Qingdao	\$212.05/kg
Shark fin (normal)	bulk	Qingdao	\$57.83/kg
Fish bladders	bulk	Qingdao	\$163.86/kg
Fish maws	bulk	Qingdao	\$65.06/kg
Shark bones	bulk	Qingdao	\$91.57/kg
Smoked mackerel	bulk	Qingdao	\$4.10/kg
Skate fin (dried)	150g/pack	Qingdao	\$1.81/pack
Shredded squid	bulk	Qingdao	\$16.87/kg
Shredded squid	50g/pack	Qingdao	\$0.84/pack
Shredded squid	250g/pack	Qingdao	\$4.24/pack
Marinated fish fillet	500g/pack	Qingdao	\$3.01/pack
Marinated fish fillet	bulk	Qingdao	\$6.51/kg
Sea cucumber	bulk	Qingdao	\$183.13/kg
Seahorse	piece	Qingdao	\$1.81/piece

IV Beijing

A. Wangfang-Xidan Supermarket

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Roasted eel	405g/pack	Chaozhou	\$3.80/pack
Roasted fish	250g/pack	Longkou	\$1.77/pack
Spicy cooked shredded fish	50g/pack	Guangzhou	\$0.75/pack
Shredded squid	36g/pack	Liaoning	\$0.81/pack
Shredded squid	50g/pack	Liaoning	\$1.08/pack
Shredded squid	100g/pack	Liaoning	\$2.17/pack
Shredded squid	240g/pack	Liaoning	\$5.42/pack
Marinated skate	40g/pack	Xiamen	\$0.78/pack
Marinated skate	80g/pack	Xiamen	\$1.28/pack

B. Sogo Plaza

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Octopus	bulk	Japan	\$28.92/kg
Shredded squid	bulk	Japan	\$28.92/kg
Spicy striped trevalla	bulk	Thai	\$22.17/kg
Sesame dressed striped trevalla	bulk	Thai	\$22.17/kg
Fresh cooked striped trevalla	bulk	Thai	\$22.17/kg
Spicy & sesame dressed trevalla	bulk	Thai	\$22.17/kg
Spicy red fish	bulk	Thai	\$23.13/kg
Dried red fish	bulk	Thai	\$23.13/kg
Spicy croaker	bulk	Thai	\$17.35/kg
Fresh cooked croaker	bulk	Thai	\$17.35/kg
Seasoned dried yellow striped trevalla	100g/pack	Thai	\$1.92/pack
Spicy trevalla	158g/pack	Thai	\$2.05/pack
Sesame dressed striped trevalla	158g/pack	Thai	\$2.05/pack
Dried red fish	158g/pack	Thai	\$2.35/pack
Dried yellow croaker	158g/pack	Thai	\$1.76/pack
Dried squid	160g/pack	Thai	\$2.06/pack
Seasoned dried purple spotted bigeye	70g/pack	Thai	\$2.36/pack
Dried cuttle-fish	50g/pack	Thai	\$2.05/pack

C. Hualian Plaza

<i>Species</i>	<i>Packaging</i>	<i>Origin</i>	<i>Price (USD)</i>
Octopus	bulk	Japan	\$28.92/kg
Shredded squid	bulk	Japan	\$28.92/kg
Spicy striped trevalla	bulk	Thai	\$22.17/kg
Sesame dressed striped trevalla	bulk	Thai	\$22.17/kg
Fresh cooked striped trevalla	bulk	Thai	\$22.17/kg
Spicy & sesame dressed trevalla	bulk	Thai	\$22.17/kg
Spicy red fish	bulk	Thai	\$23.13/kg
Dried red fish	bulk	Thai	\$23.13/kg
Spicy croaker	bulk	Thai	\$17.35/kg