TROMSØ BUSINESS SCHOOL, UNIVERSITY OF TROMSØ

# Report

## Whitefish Consumption in China

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# 1 Introduction

Recent information given by the Chinese whitefish processing industry indicates that more and more whitefishes imported from sourcing countries (e.g., Russia, Norway, USA), which used to only be used as raw material for processing and re-exports, now begin to remain in the Chinese domestic market for local consumption. This is partly due to low demand in the main export markets for Chinese processed products, e.g. the United States (US) and the European Union (EU), but also greatly due to the development in the Chinese markets.

There are several changes happening in the Chinese market. First, with significant income growth, people demand high quality protein food. Statistics indicate that potential demand for fish is higher than its main substitutes: pork, beef and eggs. Second, domestic seafood supply cannot meet the demand for domestic consumption and export. Third, there is an increasing demand for imported high quality seafood, e.g., lobster and king crab. Fourth, Chinese usually prefer having wild fish, which is considered tastier and less polluted compared to farmed fish. However, as natural resources are greatly destroyed and the Chinese government is working hard to protect resources, supply of farmed fish overweighs wild fish in China. Fifth, with frequent happening of food safety scandals and overall problems of environmental pollution in China, a huge group of well-educated and high-income people are seeking for safe food from abroad. Finally, Increasing income, high price inflation in China and appreciation of the Chinese currency (RMB) make the imported seafood relatively cheaper than before and become affordable for some people.

The above changes suggest that there exists a huge potential demand for the Norwegian whitefish in the Chinese domestic market. This report is about Chinese domestic consumption of whitefish based on the research work done by our sub-project led by Professor Jian Gao from Shanghai Ocean University, China. The purpose of the research is to understand the relationship between Chinese economic development and seafood demand in general and the codfish (e.g., cod and pollack) in particular. According to the study results, we discussed the potentials and the problems in Chinese domestic demand for the codfish. At the end of the report, we provided the suggestions on how to expand consumption of the Norwegian cod in the Chinese market.

# 2 Methods

Both qualitative and quantitative methods are applied in this research. The macro data about Chinese economic development and seafood demand come from different sources of the official statistics, including Chinese Yearly Book of Economy, Yangtze River Delta Yearly Book, Chinese Statistics Yearly Book of Regional Economy, Yearly Book of Shanghai Economy, and Chinese Business Affairs Yearly Book.

Extensive field work on Chinese domestic demand for codfish has been done in the following four cities; Shanghai, Beijing, Hefei and Suzhou, that are illustrated in Figure 1. Since the seafood demand varies greatly in China depending on locations and income level of areas, we selected these representative cities in order to get a general picture of the Chinese domestic demand for codfish.

Shanghai is the largest city in south coastline of China, with a huge population of 23 million. It is also the commercial center of China and one of the most growing demand areas for imported high quality seafood. Beijing is the capital and the second largest city of China in terms of population, located in the north. Almost every social/economic structural changes happening in China first starts in either Shanghai or Beijing, then it is rapidly expanded to the whole nation. Hefei is a medium size city in China with a population of 4.59 million. Suzhu is a small city with a population about 1.72 million. Both Hefei and Suzhou belong to Anhui province, located in the inner land.

Consumers in Shanghai and Beijing prefer live or chilled seafood as they are close to the coastline, fresh seafood are greatly available, which in a long time, makes them form a habit of taking fresh seafood. However, the main consumed seafood products in Hefei and Suzhou are frozen. As we mentioned, these two cities are in the inner land, consumers therefore are relatively difficult to obtain fresh seafood. In recent years, with the economic development and also the growing fresh water farming, consumers there also attend to consume more fresh farmed freshwater aquatic products, mainly carps and shrimps. However, due to higher logistic costs and limited shelf time, consumption of fresh seafood is still limited compared to cities alongside the coastline.

The field works in these four cities were conducted in local seafood wholesale markets, restaurants, supermarkets, open markets, KFC, and Sushi bars or restaurants between September 2012 and June 2013. To get a more complete and reliable information, we also contacted and communicated with staffs from the organizations such as China Aquatic Products Processing and Marketing Alliance.


**Fig.1 Locations of the filed work**

Source: http://ditu.google.cn/maps

## 3 Reliability of data

There exist some caveats regarding data quality. The most serious problem is an ambiguous name or category of cod in the Chinese statistics and markets. Before 2013, in the Chinese import statistics, cod, haddock, and coalfish are clearly specified; however Alaska pollack is put together with other frozen fish. In the export statistics, processed frozen whitefish fillets are all categorized together with other species and coded as frozen fillet. Even that cod, haddock, and coalfish are clearly coded in the import statistics; we suspect existence of mislabeling. For example, in the exact same period, the export volume and value of cod from Norway to China reported by the Norwegian statistics are different from the corresponding import volume and value of cod reported by the Chinese statistics. Another example is that although England does not produce much coalfish, in the Chinese import statistics, England is the main supplier of coalfish. As we know, hoki is one of the main species harvested in England. However, there is no commodity coded as hoki in the Chinese import statistics. Thus some of hoki is likely coded as coalfish. The unclear specification of codfish and the problem of mislabeling make it impossible to know how much codfish remains in China depending on the import and export data, although we found these problems have been improved in the statistics of recent years.

In the Chinese domestic market, the name of cod is even more ambiguous. Many fishes are called cod with corresponding Chinese name “xueyu”. They include silver pout (anoplopoma fimbria), Atlantic and Pacific cod, haddock, coalfish, hoki, Alaska pollack and even Gadus macrocephalus.

Anoplopoma fimbria (figure 2) is imported from Norway, Iceland, Canada and Russia. According to the surveyed prices of the different markets listed in table 1, it is about 200 RMB per kilogram. Anoplopoma fimbria is relatively widely accepted by high-income group in China, and used either as nutrition food for children or used as quality dish in restaurants of urban areas or wedding and funeral events in developed rural areas in southeastern China. Gadus macrocephalus (figure 3) has high fat contain (about 18% to 21%). It is considered not edible in the EU and the US. A food scandal of Gadus macrocephalus happened in China in 2012. Carrefour, one of the biggest international supermarkets in China, was reported to sell Gadus macrocephalus in the name of “xueyu”. Some young children were sent to hospital after eating Gadus macrocephalus sold by Carrefour.

The codfish defined in our report include Atlantic and Pacific cod, haddock, coalfish, and Alaska pollack. We have tried our best to clarify the products showed in the markets. When we executed an interview, we have tried to confirm exact species with the interviewed persons. We found, although average customers didn’t know species exactly, the persons who were working within the market actually know species clearly. This is reasonable since the prices between species called “xueyu” vary significantly. The reason why business men would like to use a general name “xueyu” in the market is that majority of so called “xueyu” sold in the Chinese domestic market is Alaska Pollack, which is much cheaper and in lower quality than Atlantic cod or pacific cod. We found that, when Atlantic and Pacific cod were sold, it was clearly noted as cod and most often was also associated with the origin of countries.

**Fig. 2 silver pout (anoplopoma fimbria)**

Source: http://www.google.com.hk/imghp?hl=zh-CN&tab=wi

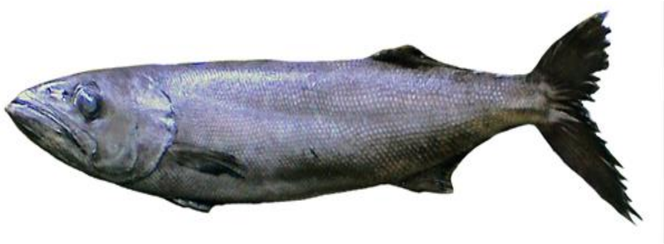

**Fig. 3 Gadus macrocephalu**

http://www.google.com.hk/imghp?hl=zh-CN&tab=wi

**Table 1 Prices of Anoplopoma fimbria and Gadus macrocephalus**

| **Name** | **Time** | **Location of market** | **Price(RMB)** |
|---|---|---|---|
| Anoplopoma fimbria | October 2012 | Shanghai | 93.28/230g |
| | April 2012 | Wenzhou | 155/ 500g |
| | April 2012 | Wenzhou | 108/500g |
| | April 2012 | Kunming | 47/500g |
| | April 2012 | Dalian | 85/500g |
| Gadus macrocephalus | October 2012 | Shanghai | 14.08/800g |
| | April 2012 | Kunming | 18.6/500g |
| | April 2012 | Dalian | 10/500g |

Source: www.baidu.com

In China currently there is no official disaggregated consumption data on basis of fish species. Thus it is impossible to get the exact domestic consumption data of codfish. As we discussed above, it is also not possible to get the domestic consumption data by deducting exported processed products from imported raw fish. Therefore, field work and/or survey are the only methods to collect consumption data. In our field work, we have selected the representative cities and covered most of the whitefish distribution channels in order to get more reliable consumption data.

# 4 Economic growth and seafood demand

As a result of the Chinese economic growth, there is a significant increase in people's disposal income, urbanized population, number of supermarkets and restaurants, and growing tourists and overseas Chinese back from abroad. Those facts have pushed demand for seafood, particularly imported seafood, and also have improved distributed channels for imported seafood like cod.

## *4.1 Effect of growing income*

The Chinese economy has been developing rapidly in recent years. Per capita income in rural areas increased from 133 RMB to 5,919 RMB between 1978 and 2010; that in urban areas increased from 343 RMB to 19,109 RMB (Figure 4). With stable increase of consumers' income, purchasing powers of consumers have grown significantly at the same time. This not only makes the total demand for seafood increase but also changes the demand structure. The demand for high-quality seafood is expected to grow faster than the demand for low-quality seafood.

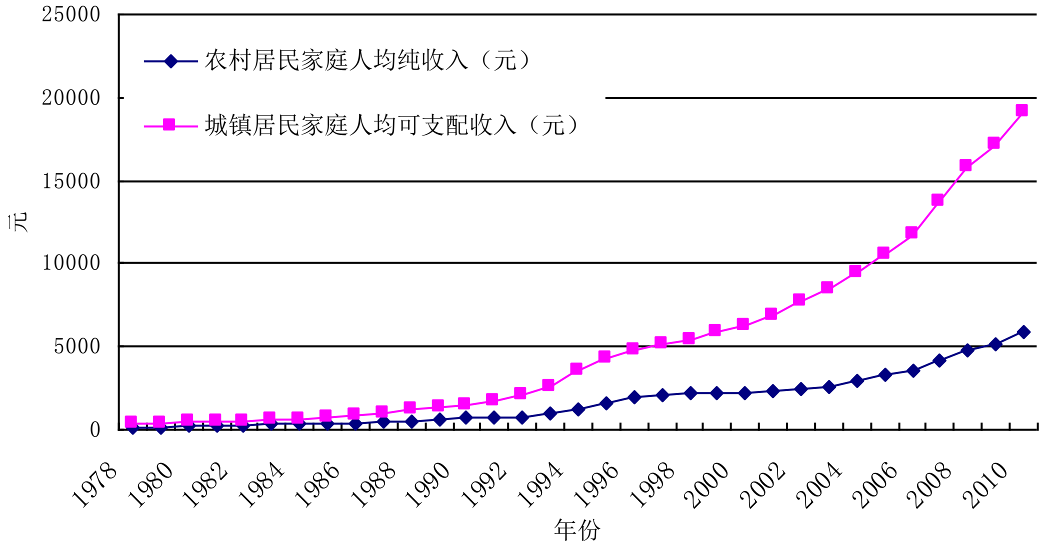


**Fig. 4 Changes of per capital income of urban and rural area**

Data source: China Statistics Yearly Book (from 1970-2010)

Table 2 presents the structure of urban residents' expenditure on main food between 1992 and 2010. From table 2, we can see that the expenditure on each good (e.g., grain, meat, egg and seafood[1]) increased significantly in the last decade. However, the share of meat expenditure decreased from 23% in 1992 to 19% in 2010; the share of egg decreased from 5% to 2%. On the contrary, the share of seafood slightly increased from 6.71% to 6.80%. The amount of seafood expenditure increased 5.53 times in 2010 compared to that in 1992. The growth rate of seafood consumption is higher than that of the other protein goods (e.g., meat and egg). This indicates that consumers tend to substitute seafood to meat and egg. We suspect this trend will grow in the future since Chinese generally think seafood is healthier than meat. Moreover, people believe that they gain less weight by eating seafood compared to by eating meat. Health and keeping fit are quite important issues according to the Chinese culture.

[1] Seafood here also includes fresh water aquatic products.

**Table 2 Per capita expenditure of main food in urban area per year**

| Year | Food | Grain | | Meat | | Egg | | Seafood | |
|---|---|---|---|---|---|---|---|---|---|
| 1992 | 884 | 104 | 12% | 207 | 23% | 40 | 5% | 59 | 7% |
| 1993 | 1058 | 130 | 12% | 250 | 24% | 47 | 4% | 71 | 7% |
| 1994 | 1422 | 202 | 14% | 335 | 24% | 58 | 4% | 96 | 7% |
| 1995 | 1766 | 261 | 15% | 416 | 24% | 70 | 4% | 121 | 7% |
| 1996 | 1905 | 272 | 14% | 439 | 23% | 79 | 4% | 132 | 7% |
| 1997 | 1943 | 238 | 12% | 460 | 24% | 74 | 4% | 141 | 7% |
| 1998 | 1927 | 227 | 12% | 431 | 22% | 67 | 3% | 142 | 7% |
| 1999 | 1932 | 215 | 11% | 409 | 21% | 66 | 3% | 144 | 7% |
| 2000 | 1958 | 189 | 10% | 411 | 21% | 57 | 3% | 144 | 7% |
| 2001 | 2014 | 188 | 9% | 414 | 21% | 57 | 3% | 152 | 8% |
| 2002 | 2272 | 190 | 8% | 455 | 20% | 59 | 3% | 170 | 7% |
| 2003 | 2417 | 194 | 8% | 473 | 20% | 61 | 3% | 170 | 7% |
| 2004 | 2710 | 239 | 9% | 527 | 19% | 68 | 3% | 178 | 7% |
| 2005 | 2914 | 242 | 8% | 565 | 19% | 71 | 2% | 189 | 6% |
| 2006 | 3112 | 246 | 8% | 546 | 18% | 68 | 2% | 203 | 7% |
| 2007 | 3628 | 278 | 8% | 703 | 19% | 84 | 2% | 244 | 7% |
| 2008 | 4260 | 328 | 8% | 897 | 21% | 92 | 2% | 280 | 7% |
| 2009 | 4479 | 334 | 7% | 867 | 19% | 93 | 2% | 301 | 7% |
| 2010 | 4805 | 386 | 8% | 914 | 19% | 98 | 2% | 327 | 7% |

Data source:： China Statistics Yearly Book (from 1970-2010)

## 4.2 Effect of urbanization

Per capita consumption of seafood was 1.64 kg and 8.61 kg in 1986 for rural and urban residents, respectively. This increased to 5.36 kg and 14.2 kg in 2010. In China, seafood consumption for urban residents is always higher than that for rural residents. Therefore, urbanization undoubtedly makes seafood demand grow. The urbanization rate in China increased from 17.92% in 1978 to 49.95% in 2010.

With growth of per capita GDP and increase of urbanization level, the demand for seafood should grow sharply in China. The most important factors to push the growing of urban residents are immigration of people from rural areas to urban areas, and urbanization of local rural areas by themselves. The real number of urban residents is higher than the reported official numbers. There are about 100 million farmers living in cities for whole year or for certain period of a year, who are, however, not registered as urban residents. Or in the other words, they have no “Hukou” in cities where they are actually living.

## 4.3 Effect of supermarket and catering

In the last ten years, the models of retail markets have changed greatly in China. Many international and local supermarkets have emerged to replace the traditional open markets or small stores. In 2010, the total number of companies running larger supermarkets was 158 in China. They operate more than 9000 supermarkets in the whole nation. The total sale of these supermarkets reached 680.48 billion RMB in 2010, compared to 570.14 billion RMB in 2009 (data from China’s Economic Yearly Book). In Shanghai, there are 11 international companies running about 100 supermarkets, which include Auchan, Carrefour, Wal-Mart, RT-Mart and others.

Besides overseas based supermarkets, there are substantial numbers of small and medium-sized supermarkets and chaining supermarkets in smaller cities of eastern and southern China and in all sizes of cities of inner land China. The expansion of supermarkets provides excellent logistic for seafood circulation and makes it much easier for high-quality seafood sold in markets.

Hotels and restaurants are still the most important channels for consumption of imported high-quality seafood. Sigmund Bjorgo, the director of China and Hongkong market from the Norwegian Seafood Council (NSC) pointed out that 50% of the Norwegian salmon sold in the Japanese type of restaurants, 25% sold in hotels and other restaurants and 15% in modern supermarkets. Sales of the Norwegian salmon in supermarkets are growing, but in almost same pace for restaurants.

The catering industry develops fast in China. The total sale value of the industry is 1800 billion RMB in China and 68 billion RMB in Shanghai. Table 6 presents the number of star-grade hotels/restaurants in China. The total number was around 14,000 between 2008 and 2010. Although the total number declined slightly in 2010, the number of high-grade restaurants increased. Except for two-star hotels, the numbers of all the other higher standard hotels were raised. For example, the number of five-star hotels increased from 432 to 595 between 2008 and 2010. Higher standard hotels are the main channels where consumers order high-quality seafood.

**Table 3 Number of star-graded hotels and restaurants in China**

| **Year** | **Total** | **Five Star** | **Four stars** | **Three stars** | **Two stars** |
|---|---|---|---|---|---|
| 2010 | 13991 | 595 | 2219 | 6268 | 4612 |
| 2009 | 14237 | 506 | 1984 | 5917 | 5375 |
| 2008 | 14099 | 432 | 1821 | 5732 | 5616 |

Data sources: Yearly Book of China Economy; Yangtze River Delta Yearly Book; China Statistic Yearly Book for Regional Economy.

Besides star-graded restaurants, chain restaurants are another important place for seafood consumption. A lot of business dinners are arranged in star-graded restaurants for dinner hosts want to win “face” and show respect to invited guests. “Face” is a kind of key word in China. An expensive dinner is to show that a company is a premier company and has capacity of earning money.

On the other hand, chain restaurant like Akasaka is often a place for family and friends gathering. Xueshen Han, running both trade business and restaurants in China, pointed out that young people born after 1980s do not know how to cook, chain restaurants are thus one of the most popular places for them to have friends gathering or even daily meals. Different from their parents, young generation would like to spend money and try something new. The popularity of Sushi bars might be a good example.

Table 4 shows that both in whole China and in Shanghai, the growth rate of chain restaurants is higher than that of star-graded restaurants. The number of chain restaurants was increased from 12,561 to 15,333 between 2008 and 2010 in the whole nation, and increased from 1,161 to 1,773 in Shanghai. We suspect chain restaurants begin to replace two-star restaurants.

**Table 4 Number and sales of chain restaurant from 2008-2010**

| | **China** | | **Shanghai** | |
|---|---|---|---|---|
| **Year** | **Number** | **Sales** (100 million RMB) | **Number** | **Sales** (100 million RMB) |
| 2010 | 15333 | 955 | 1773 | 104 |
| 2009 | 13739 | 879 | 1312 | 71 |
| 2008 | 12561 | 807 | 1167 | 68 |

Data sources: Yearly Book of China Economy; Yangtze River Delta Yearly Book; China Statistics Yearly Book for Regional Economy.

### *4.4 Effect of growing tourists and Chinese with overseas background*

Tourists are always one of the main customers in restaurants. Together with growing income, the number of tourists has been growing tremendously in China. Taking Shanghai as an example, there were 102 million tourists with expenditure of 25.3 billion RMB in restaurants, which is 67.9% of total estimated food expenditure in restaurants in Shanghai in 2010.

In the more than 30 years after Chinese Open Door policy, more and more Chinese have gone abroad to take education or run business there. China used to be lag far behind the Western countries and most of overseas Chinese would like to stay abroad after they were educated or started their business there. However, this has been changed in recent years. More and more overseas Chinese like to return to their home country as they can get similar payments or even better opportunities for their carriers. According to Chinese Yearly Book of Economy, the number of overseas Chinese who returned to China after getting education abroad was 108 thousand in 2009. This number keeps growing every year. This group of persons will promote consumption of imported seafood like cod, since they got used to taking the fish in the Western countries. Local people usually regard those overseas Chinese more cultivated, and would like to copy their habits. This will make seafood consumption increase.

# 5 Chinese domestic demand for codfish

The above analyses on Chinese economy and seafood demand suggest a huge potential demand for codfish. However, the results found by our research show that the current demand for codfish in the Chinese domestic market is quite limited and there are barriers in the markets. We present our findings in the following sections based on the field work done in the four cities named Beijing, Shanghai, Hefei and Suzhou. The reasons why we selected these cities have been discussed above.

## *5.1 Product*

The products found in the Chinese domestic markets are frozen whole fish with/without head, frozen block with/without skin, breaded piece in different packages, seasoned snack and dried fish (figure 5). Among them, frozen whole fish is the most important product sold in inner land, and breaded piece is most sold in eastern cities. Rural areas or small towns in northeastern provinces neighboring Japan and Russia, have a tradition to cook whole Alaska Pollack at home.

**Frozen without head**

**Frozen with head**

**Frozen barbecue block**

**Frozen block without skin**


**Breaded 1**


**Breaded 2**


**Seasoned snack**

**Dried whole fish**



**Alaska pollack block with skin (original foreign package)**

**Breaded 3 (original foreign package)**

**Fig.5 Products of codfish in the Chinese domestic markets**

In recent years, the modern pace of life has increased and family size has declined. It is quite common that both husband and wife in a family have to work. In cities like Beijing and Shanghai, on average everyone has to spend between 2 and 3 hours on the way between the family and the workplace. As a result of the One Child policy, a typical family in China has only 3 persons, the parents and one child. Therefore, families in big cities would like to buy prepared food in a convenient package. Breaded pieces are thus mostly sold in both Beijing and Shanghai. We found breaded pieces in most of the big supermarkets like Carrefour and Auchan, while not in small supermarkets in both Beijing and Shanghai. Managers in small supermarkets told us that they wouldn't sell these products since sales volume were too small. Seasoned snack in open markets of Shanghai and dried whole Alaska Pollack are also found in supermarkets of Beijing. Roe jam of codfish is also popular in big cities, as a result of fast expansion of Japanese Sushi bars.

When we visited KFC in Shanghai, we found price list of breaded codfish bits and sticks (figure 6). However we were told the product were not available anymore. The manager in the KFC where we visited told us that KFC in China tried these listed products two years before. Since it did not sell well, KFC have already stopped selling the product from the beginning of 2012. The main reasons of this failure are high price and bad taste. However, recently in June 2013, we found this was sold in another city called Fenghua, which is 3 hours by car from Shanghai.


**Fig.6 Products of breaded codfish listed in KFC**

In Hefei and Suzhou, we only found defrozen whole Alaska Pollack in supermarkets and open markets, but not breaded products. The degree of economic activities in Hefei and Suzhou is much lower than that in Shanghai. Life paces of people in these two cities are also much slower, and fresh seafood is less available since they are located in inner land.

We found that both frozen whole fish sold in inner land and breaded products sold in Beijing and Shanghai are mainly from Liaoning and Shandong provinces. Dalian is the capital of Liaoning; Qingdao is the capital of Shandong. As we know, these two areas are where most of codfish processed companies are located. Combining with information given by the processing industry, we believe some companies in the areas used to export processed frozen fillets to the EU and the US. When the orders from the world markets greatly decrease, they begin to explore the domestic markets.

According to our survey, the codfish sold in Chinese market is mainly Alaska pollack, and there are very few products of Pacific or Atlantic cod. Small Alaska pollack is sold as whole fish in the inner land.

## *5.2 Price*

Table 5 presents the wholesale prices of frozen products quoted online. It is noted that prices vary greatly between different species and product cuts. Regarding to the species, as we expected, Atlantic and pacific cods are most expensive and Alaska Pollack is cheapest. Regarding to the products cuts, fillets products are the most expensive, block products are in the middle and whole fish is the cheapest.

Both of the first two listed products are frozen whole Alaska pollack. However, prices of these two products are greatly different. The first one is 9.50 RMB/kg, and the second one is 2.4 RMB/kg. This indicates the sizes of two products are greatly different. We think the second one is small-size whole fish, sold as whole fish either with or without head in markets of inner land.

**Table 5 Wholesale prices of frozen codfish products**

| Product | Wholesale price (RMB/kg) | Supplier's location |
|---|---|---|
| Frozen Alaska pollack | 9.50 (≥20 t) | Jamusi, Heilongjiang |
| Frozen Alaska pollack | 2.4（≥20 t） | Dandong, Liaoning |
| Frozen Alaska pollack fillet | 28 (≥20 t) | Yantai, Shandong |
| Atlantic or Pacific cod fillet | 40（≥10 t，including freight） | Yantai, Shandong |
| Atlantic or Pacific cod block | 30（≥10 t，including freight | Yantai, Shandong |
| Frozen coalfish | 8 (≥10 t ) | Shanghai |

As we discussed above, the frozen Alaska Pollack is mainly sold in the inner land. For example, we found it was sold in Hefei and Suzhou, but not in Shanghai. However, we did find it in some supermarkets of Beijing, although not as widely as that in Hefei and Suzhou. The reason why whole Alaska pollack is sold in Beijing, not in Shanghai, we think, is that compared to Shanghai, there are more immigrants from inner land in Beijing.

Table 6 presents prices of frozen whole Alaska pollack in Beijing, Hefei and Suzhou. Lottemart, Rotus, Carrifour and Suguo are names of big supermarkets. We can see that prices in the supermarkets of the different places vary with highest in Beijing and lowest in Suzhou. As we mentioned earlier, Beijing is one of the biggest city in China, Hefei is a medium size city and Suzhou is a small city in the inner land. The reasons to explain the different prices among the cities are complex. It could be higher costs for supermarkets in the big cities, higher purchasing power of people in the big cities, or both. In the same city, prices are higher in supermarkets than in open markets. In China, if a product is to be sold in a supermarket, normally suppliers of the product have to pay an entrance fee, which is a substantial cost to suppliers; people have free access to open markets, which are traditional markets. However, consumers usually would consider qualities of the products sold in supermarkets are higher than these sold in open markets, as supermarkets give quality guarantee to the products sold.

As presented in table 6, frozen whole Alaska pollack without head in Hefei and Suzhou is almost all from Liaoning. Hefei and Suzhou have a long history of consuming Alaska pollack. During the period when China run the planned economy, Alaska pollack was sold by state-owned seafood companies. Now private companies have taken over the business. We were told that the wholesale price in Hefei and Suzhou is 8-10 RMB/kg. As presented in table 6, retail prices in the supermarkets of Hefei and Suzhou are between 15.60 RMB/kg and 15.96 RMB/kg. The price in open market of Suzhou is 12 RMB/kg. This suggests a great price margin between whole sales and retail prices in supermarkets.

**Table 6 Retail prices of frozen whole Alaska pollack**

| Market | Price (RMB/kg) | Supplier's location |
|---|---|---|
| Lottemart and Rotus (Beijing) | 19.80 | Zhejiang |
| Open market (Beijing) | 13.00 | Liaoning |
| Open market (Hefei) | 16.00 | Liaoning |
| Carrefour (Suzhou) | 15.78 | Liaoning |
| Rt-Mart (Suzhou) | 15.96 | Liaoning |
| Suguo (Suzhou) | 15.60 | Liaoning |
| Open market (Suzhou) | 12.00 | Liaoning |


**Rt-Mart in Suzhou**


**Suguo in Suzhou**

**Open market in Hefei**

**Fig.7 Frozen whole Alaska pollack in Hefei and Suzhou**

As presented in table 7 and figure 8, the product forms and prices of breaded products are quite different between the markets. Unit prices are between 1.23-7.78 RMB/100g with the lowest for the product sold in Auchan in Shanghai and the highest for the product sold in Jusco in Qingdao (figure 8).

The product sold in Qingdao is Alaska pollack, which is originally produced and packaged in Germany. Except for a small stick of label written in Chinese, all the others presented in the package are in English and/or in other foreign languages. This kind of package is to convince buyers that production of product sold origins in foreign countries and nothing happened with Chinese companies in the whole production line. As a result of food scandals frequently happening in China, consumers are very skeptical with products produced or packaged in China. Consumers doubt about food safety of product even if some of large multinational companies emphasize that products are imported but only repacked into small packages in China.

The packages of breaded products sold in Lottemart, Beijing show that the products were processed with whole piece of fish. In general, there is no clear note to show the exact ratio of wrapping power and fish meat in breaded products, which are often suspected to be made of by-products, small pieces of left meat or skin when processing company produces fish fillets or block for export.

**Table 7 Retail prices of breaded fillets and figures**

| **Market** | **Location of market** | **Price** (RMB) | **package** |
|---|---|---|---|
| Auchan | Shanghai | 1.23/100g | 40g *10 piece |
| Rt-Mart | Shanghai | 1.57/100g | 35g *10 piece |
| NGS | Shanghai | 3.40/100g | 28.57g*7 piece |
| Lottemart | Beijing | 4.65/100g | 40g*8 piece |
| Jusco | Shandong | 7.78/100g | 25g*18 pieces |
| KFC | National wide | 3.5/piece | 2 pieces |

Auchan in Shanghai

Carrefour in Shanghai


Lottemart in Beijing


Jusco in Qingdao

**Fig.8 Breaded products in different markets**

### *5.3 Estimated quantity*

As we mentioned earlier, due to the problems in the import and export data and unavailability of official consumption data, it is impossible to obtain the exact quantity consumed in the Chinese market. What we can do is to estimate the data according to the information collected from the investigation.

According to our investigation, breaded product sold in one supermarket is 6 kg per day in Shanghai, there are about 200 such kind of supermarkets in Shanghai, which means annual consumption in Shanghai is about 438 tons. According to the official statistics, the number of supermarkets in Shanghai is a little bit more than 1/9 of that in the whole nation, thus we estimate the total quantity sold by supermarkets in China is 4500 tons per year.

According to the investigation, frozen whole fish sold in a single open market or supermarket of Hefei and Suzhou is 10 kg per day. For one city, daily turnover is about 100kg. It means 36.5 tons per year. There are about 3200 such kind of cities in China. We therefore estimate the total annual consumption of frozen whole fish is 11.67 thousand tons.

Adding up volumes of breaded products and frozen whole fish, the total quantity consumed in China is estimated to be 12 thousand tons per year. The majority of them are frozen whole Alaska pollack.

## 6 The problems and suggestions

The Shanghai Orient International Fisheries Market is one of the biggest wholesale markets for frozen seafood. When we visited the market, we did not find anyone selling codfish products in the market. We then interviewed with 10 wholesalers in the market including Zhejiang Industrial Group Co., LTD and Shanghai Fishery General Corp. We were told that they used to run codfish business, but it was not successful. We also interviewed with some seafood companies in Shanghai, which include Shanghai Kechang international trade company Ltd and Shanghai Changhai trade company Ltd. We got almost the same answer. A general reason explained by the interviewed companies is that residents in Shanghai prefer fresh fish, particularly fresh fish harvested in local Eastern Chinese Sea.

Although frozen whole Alaska pollack is sold in inner land and Beijing, prices of Alaska pollack are relatively too low to make it as a target market for Norwegian cod.

China is a potential market for breaded products as a result of growing demand for convenient food and it could become target market for Norwegian cod. However, the market should be better regulated. At the moment, consumers often do not know what kind of species is used as raw materials, what the exact ratio of wrapping powder and fish meat is, and whether meat is from by-product or whole piece of fish. As presented in table 7 and figure 8, prices of the breaded products vary greatly between 1.23-7.78 RMB/100g. Definitely the first two products in lower prices are not the target of Norwegian cod. We suggest the Norwegian whitefish industry to explore the market of the last two products in figure 4. Their prices were 4.65/100g and 7.78/100g respectively. The former emphasizes that the product is produced with whole piece of fish meat; the latter emphasizes that the product was originally imported from abroad, not even repacked in China. The key idea of the latter is to ensure the safety of the product, which as we discussed, currently becomes one of the most important concerns of Chinese customers.

As we discussed earlier in the section of data reliability, cod, haddock, coalfish and Alaska Pollack, even sometimes blue whiting or Gadus macrocephalus are called codfish, or in Chinese name “xue yu”. As we know, price of cod is much higher than that of Alaska pollack and the other species. To explore the Chinese domestic market, we have to help the Chinese consumers to clarify the species.

Although frozen fish in general is not preferred by consumers in Shanghai, pangasius from Vietnam is greatly successful. Frozen pangasius fillets are widely sold in a large volume in supermarkets of Shanghai and other cities in China. Xuesen Han is a big importer and also seafood supplier for seafood in Lotus, a big supermarket near Oriental Pearl Tower in Shanghai. He mentioned that the success of frozen pangasius fillet in Shanghai is mainly due to three reasons. One is when the conventional domestic harvested seafood becomes expensive, consumers need some substitutes. Second, frozen fillet whiteout head is easy for young consumers to prepare and cook. Third, pangasius has a very good Chinese name called “dragon and lucky fish”. “Dragon and lucky” like the sign of the Chinese new year. They mean power and fortune.

General conclusions given by the researchers and the Chinese business men in our project meeting in Shanghai between June 2 and 3, 2013 are: as a result of less availability of fisheries resources, there is evidently a huge growing demand for imported fish. Demand for high-quality imported fish is extraordinary big as a huge group of growing middle class in China would like to pay premium for safe food imported. This is expected as food scandals frequently happening in China. However, to expand the Chinese demand for the Norwegian cod, we have to explore a good market strategy.

Here is a good example of target market for Norwegian cod. Yichuan Gao, CEO of a processing company in Qingdao. He is around 60 years old and started to run his processing company when he was 20-30 years old. He presented in our Shanghai meeting that he would put his main focus of the business on the Chinese domestic market in the future. He will open 40 fish shops in Qingdao on 18 July this year, and is planning to extend this number to 120 in 50 cities in the next two years. In the shops, he will only sell fish from Artic areas and emphasize five concepts of his products. They are safe and of high quality, environmental friendly, ecological, easy to prepare and give good customer service. We think these concepts will become popular in China in the near future and Norwegian cod is a perfect product to match with these concepts.

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