Diversifying Petersburg’s Economy: 
Assuring Resiliency against a Potential China Market Crash

Petersburg Municipal Harbor. Photo Credit: Kelsa Sperl

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Abstract

The total proportion of Petersburg’s population that fished was 25.8% in 2013. Moreover, the estimated earnings related to fisheries in 2013 was $65.7 million. Given the importance of the seafood industry and Petersburg’s connection to the world market, we decided to look at what might happen to Petersburg if China’s market were to crash and could no longer buy our fish. Without the seafood industry, Petersburg would not have a secondary industry to support itself. This paper is an investigation of the secondary options Petersburg would have available and as well as a brief overview of our plan for resiliency. We proposed plans for value addition through diversification of our fish resource into fertilizer, health supplements, salmon-leather wallets, and selecting top quality (grade A) fish for top-dollar niche markets. Another possible solution would be exporting to new and promising countries such as Germany, India and improve relations with Russia for further options. Additionally, we could explore the lumber and mining industries as a way to step away from fishing industry and to export to new and more countries. Overall, a market crash in China could devastate small fishing towns but through proper planning and diversification we could decrease economic hardship in Petersburg.
Introduction

The seafood industry is one of Alaska’s key economic drivers, particularly in rural coastal areas (McDowell Group 2013). Without the seafood industry, Petersburg could not thrive. The community was founded by the Norwegian, Peter Buschmann, due to the availability of ice from a tidewater glacier for shipping and storing fish (“Velkommen til Petersburg” 2015). The main fish processing plant in town was purchased by locals in the 1960s that grew into Icicle Seafoods. The success of that company and the success of our community are linked (L. Cabrera pers. comm. 2015, McDowell Group 2013).

According to the United Fishermen of Alaska (2013), in 2013 there was a total of 1,034 permit holders in Petersburg. The total amount of skippers and crew who fished in 2013 was 764. The total proportion of Petersburg’s population that fished was 25.8% in 2013. The estimated 2013 ex-vessel income from Petersburg-based fishermen was $65.7 million (UFA 2013). As we can see, this is a large amount of money for a small town with a population of this size. The fishing fleet of Petersburg is impressive, but not nearly as impressive as the 65.7 million dollars ex-vessel value in Petersburg (UFA 2013). This money affects the town in numerous ways. “Virtually every business in the Petersburg community benefits from commercial fishing dollars” (UFA 2013). For example, there was 1,155 seafood processing jobs in Petersburg, and the total processing wages were $12.2 million (UFA 2013).

Part of Petersburg’s fishing industry success depends on China. China is important to the world economy as a growing superpower and heavily focused on industry. “Seafood Market Bulletin” (2015) reported that China imported 204,000 MT of wild salmon in 2009. Russia and Alaska accounted for 75% of that amount. Alaska seafood accounts for 9% to 12% of China’s seafood import volume annually. From Alaska’s point of view, China is Alaska’s largest trading
partner by volume, and second in value. In 2010, a third of Alaska’s seafood that was exported went to China. China is also a large-scale secondary processor. The U.S is China’s largest market for exported seafood products (“Seafood Market Bulletin” 2015).

Pollock accounted for 35 percent of all Alaska seafood exports in the calendar year 2013, and salmon was the second largest export from Alaska (“Seafood Market Bulletin” 2015). The Alaska seafood industry creates more labor income and employs more workers in Alaska than the visitor and mining industries combined (McDowell Group 2013). Fishing is also the biggest industry in terms of exports (McDowell Group 2013). Roughly 75,000 MT (million tons) of flatfish per year is exported from Alaska to China (“Seafood Market Bulletin” 2015). Alaska (as of 2009 and 2010) sent between 204,400 and 243,900 metric tons of seafood to China (“Seafood Market Bulletin” 2015).

Potential Decrease In Petersburg Fisheries Market

Petersburg was in the top 50 ports, rating 16th in 2014 (“Seafood Market Bulletin” 2015). In this paper, we study the possible effects of China no longer purchasing as much of Petersburg’s fish. With China being one of the largest re-processors of Alaskan seafood, Petersburg could directly be affected by any changes in China’s market related to seafood. China’s importance for the world economy and the rapid growth of its financial system, mean there are widespread concerns that a financial crisis in China would also turn into a global crisis (“What to Fear if China Crashes” 2015). Alternatively, diplomatic issues could create the problem: China boycotting U.S seafood, or the U.S refusing to trade with China.

Because of Petersburg’s relation with China’s market, we are susceptible to any market crash they may have. Geoducks and sea cucumbers are two species for which the Chinese market is important: (ADF&G 2015). In 2014, Southeast Alaska held 267 permits of geoducks (69) and
Data from Alaska Department of Fish and Game (2014) and Commercial Fisheries Entry Commission (CFEC) (2015) were used to calculate that our town holds 41 of these permits - six geoduck and 35 sea cucumber, or approximately 15% (CFEC 2015). This brings $19,289,565.12 into Petersburg (Table 1). One of the main buyers of geoduck and sea cucumber is China. If China’s market were to crash this is a significant loss of potential income.

Table 1: Permits to Value Ratio Between Petersburg and Southeast Alaska

<table>
<thead>
<tr>
<th></th>
<th>Southeast Alaska</th>
<th>Petersburg Alaska</th>
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<tbody>
<tr>
<td><strong>Permits</strong></td>
<td><strong>Value</strong></td>
<td><strong>Permits</strong></td>
</tr>
<tr>
<td>Sea Cucumber</td>
<td>169</td>
<td>$35,135,993.41</td>
</tr>
<tr>
<td>Geoduck</td>
<td>69</td>
<td>$140,404,557.80</td>
</tr>
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**New markets and product forms**

While we are vulnerable to a change in the Chinese market, we could increase our resiliency by using our fish in alternative products, adding to its value, or finding other places to export our seafood. To prepare for a possible downturn in the market for our fisheries, we need to work at developing alternative markets for our fish. Fish leather wallets, supplements, and improving the quality of fish fillets.

The use for the leftover fish can be in cosmetics or as supplements. Some supplements help lower the chance of heart disease and provide a large amount of protein. The nutritional supplements have also been reported to help with diet and exercise, and lower blood pressure (Ruxton et al 2004). Fish leather wallets is also a standing thing. Many of the wallets are made fully of salmon skin source and is multi-colored, bumpy and shiny. To create the wallets a 24
step process that dries it out into a leather-like skin. Then the leathers are shipped to Kodiak to be put together and then shipped to a tannery in Washington (Jenkins 2015).

Catching and preparing higher-grade fish can allow much more income than previously believed. Higher-grade fish is much more desired in other countries due to the fact that it can be used in sushi and other delicacies. According to NOAA (1997), grades of fish fillets can vary from one another depending on many factors. Some factors are, color, smell, bruising and if the fish were refrigerated or on ice during transportation. Another factor is if it has been deboned or not. All of these are factors in the grade and quality of fillets. Grade A fish fillets is the highest grade of fish fillet and is grade thoroughly, and as such. “(1) Possess good flavor and odor characteristic of the species; and (2) Comply with the limits for defects for U.S. Grade A quality as outlined in Grade Determination.” Any fillets that are not in the standards of Grade A, is then graded as Grade B. If the fish fillet still doesn’t match up to Grade B, then the fillet is graded as Grade C. Then even further down is Grade D, after that the fish is then deemed inedible (NOAA 1997).

In addition to increasing the value added to our products we could try to improve our relations with other countries through international diplomacy. The United States could work to lift Russia’s trade ban with the U.S. on seafood, as Russia’s import of seafood from the United States has decreased by 44% since 2013 (Gray 2014). The United States could also focus more on developing other markets such as in Japan, South Korea, or Germany to sell to. While Japan is also dependent on China’s market, almost all markets are interconnected in a world market. Germany is most likely our most promising exporting partner seeing that they are our 5th largest exporting partner, and fish fillets are 2% of their animal product imports.

Non-fishing economic alternatives
Rather than focusing solely on seafood, we could diversify our economy by increasing tourism, mining or logging. While all are valid options, we will analyze logging in brief and mining in depth because of the availability of resources in the area.

As one alternative, Petersburg could create niche markets for wood products by increasing the value. KFSK (Jenkins 2015) reported that a local mill operator is finding new uses for young-growth Sitka spruce not considered to have commercial value. A Petersburg local is adding value to wood by milling and processing the smaller diameter trees for sale to artists. Large-scale mills cannot do this though because they have to produce a certain amount of lumber in a certain amount of time as opposed to the small-scale mills that don’t have large contracts to create timber. Not just Sitka spruce but other tree species such as red or yellow cedar can be revalued as high-quality woods drastically increasing the worth of the wood (Jenkins, 2015).

As a less sustainable option, mining could be a short-term solution for Petersburg. According to Kaye (2010), gold prospecting may start up on Woewodski Island just south of Mitkof Island. The mine, if one is to be built, would be near Harvey Lake. The Bravo Gold Corporation has prospected the island and its results came back inconclusive. However, this does not mean there is no gold on Woewodski. At one point during their prospecting, they found upwards of 12 oz per ton of dirt. The average ounces per ton of dirt is around ½ oz, which according to the Bravo Gold Corporation, is still very economical (Kaye 2010). Many mines run on much less gold intake than that. Developing a new mine would create jobs for locals that pay upwards of a $70,000 annual salary plus benefits (K. Criddle, pers, comm. November 10, 2015).

If an underground mine is to be built on Woewodski Island, two phases would have to be put in place. First, a construction phase which would bring engineers, heavy machinery operators, and construction workers to Petersburg to build roads in addition to developing the
mine. This may include jobs for Petersburg residents. The second phase would be the operation phase of the mine. This phase would require technicians, miners, engineers and electricians to name a few. This workforce would be smaller than the construction phases workforce because modern mines are becoming more automated requiring fewer humans in the mines (Layton 2015).

There are two major kinds of underground mines, shaft mines and slope mines. Shaft mines (Figure 1) are used when the ore is too far underground to reach with a surface mine (“Shaft Mine” Nd). A slope mine is most commonly used for coal and uses either a conveyor system or a track system (Figure 1) opposed to a shaft mine which uses a skip (“Slope mine” Nd). A skip is like an elevator but is used for the haulage of rock and ore to the surface in shaft mines (“Shaft Mine” Nd). A slope mine is also considerably closer to the surface than a shaft mine (“Slope mine” Nd).

If a surface mine is to be built on Woewodski then the initial building phase would again require engineers, construction workers and heavy machinery operators. The building phase would create jobs for construction workers of Petersburg. During the operation phase, a much larger workforce would be required to run a surface mine than an underground mine (K. Criddle, pers. comm. November 10, 2015). A surface mine would create a much larger impact on the environment and cause the possible runoff from the mine, if not contained, could negatively impact much of the nearby plants and wildlife (Underwood, 2000). A surface mine also creates
considerably more noise pollution than an underground mine (Underwood, 2000). A surface mine would also decimate the terrain (i.e., a massive hole in the ground).

Each mine has environmental drawbacks, but by far the surface mine is the most destructive. The techniques used to extract the gold from the rubble created by mines are harmful and consist of heap leaching which is where cyanide is sprayed on the crushed ore (“Dirty Gold Mining Methods” 2015). The cyanide bonds with gold creating a slurry at the bottom. Then the slurry is brought to a building where chemicals are used to separate the gold from the cyanide. This process leaves behind large amounts of toxic waste. In fact, a .333 oz gold ring will create 20 tons of toxic waste (“Dirty Gold Mining Methods” 2015).
This could impose a large threat to the environment of Petersburg if this process is going to take place on Woewoedski Island. There are 759 operating underground mines in the U.S.A. and 13,000 operating surface mines in the U.S.A. as of 2013. (“Statistics: All Mining” 2015) If an underground mine is built and is unproductive then they can be filled with a swelling clay and left not threatening the environment (Kaye 2010). If the mining were to occur, development would have to be conducted in a safe and environmentally sound way as to not negatively affect the environment.

Conclusion

Petersburg is a town vulnerable to large changes in world markets. Salmon brought into the Petersburg dock are exported and many go to China for reprocessing. Geoduck and sea cucumbers are sent alive, to markets in China. Because of this relationship, any market problems in China could have an effect on Petersburg’s fishing industry. We are proposing that fish-based supplements, fertilizer, and producing higher quality fish for niche markets could help mitigate the market crash. In addition to adding value to the fish, we need to work on diversifying markets. This would include exporting to new and more areas as well international diplomacy with Russia. Mining and logging would provide a large temporary income for Petersburg until the world market stabilizes. Overall, a market crash in China could devastate small fishing towns, but through proper planning and diversification we could decrease economic hardship in Petersburg.
Bibliography


<http://www.alaskaseafood.org/fishingprocessing/seafoodweb_may11/china.html>


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“Southeast Alaska Salmon, Alaska Department Of Fish and Game.” *Southeast Alaska Salmon, Alaska Department of Fish and Game*. Web. 28 Nov. 2015. 


<http://www.ci.petersburg.ak.us/>


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