

June 2025

# Alaska Seafood Re-Shoring Analysis:

Alaska/China/Washington  
Processing Costs Comparison



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# Executive Summary

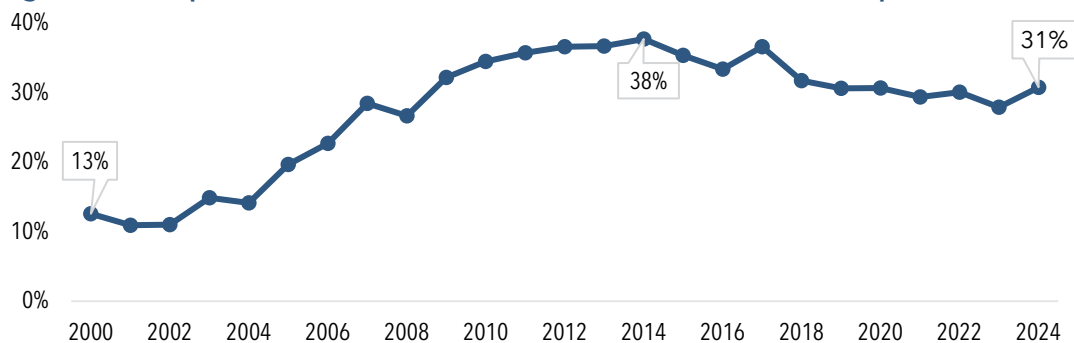
The Alaska Fisheries Development Foundation (AFDF) contracted with McKinley Research Group to produce this comparison of shoreside seafood processing operation costs in Alaska, Washington, and China.

The purpose of this report is to inform decision makers on the economic forces that make China a competitive location for processing Alaska seafood and provide data to understand the potential effectiveness of the various policy proposals that have been made to encourage re-shoring more seafood processing to plants in the United States.

## China's Role in Alaska Seafood Processing

The share of Alaska seafood exported to China rose rapidly in the early 2000s, peaking at 38% of total export volume in 2014. While China's share of Alaska seafood exports has fallen in recent years – in part because of tariffs imposed in 2018 – exports to China remain well above levels from the early 2000s.

**Figure ES1. Exports to China as a Share of Total Alaska Seafood Exports, 2000-2024**



Source: National Marine Fisheries Service, compiled by McKinley Research Group.

Much of Alaska's seafood exports to China are not intended for Chinese consumers but go to re-processing plants that thaw frozen fish, fillet it and re-freeze it. The growth of China's re-processing sector gave the Alaska seafood industry a reliable buyer for larger volumes of minimally processed seafood products and the sector's low processing costs likely helped Alaska seafood enter consumption markets it might have been priced out of if processed at higher-cost plants.

However, the industry's reliance on Chinese re-processing is detrimental to the Alaska Seafood brand and makes the industry vulnerable at time of rising tensions between the U.S. and China.

## Operating Costs Quantitative Comparison

It is widely understood that low labor costs are a key driver of off-shoring and that Alaska is an expensive place to operate because of high transportation and fuel costs. The summary table below simplifies and quantifies some of these cost advantages associated with processing seafood in China as compared to Alaska.

For purposes of simple comparison, the report compares the cost of producing one metric ton of fish fillets (an even mix of Alaska pollock and sockeye salmon) in plants with identical input requirements defined in this report's introduction.

Labor costs were found to be the key differentiating factor in the costs of processing in China as compared to the four U.S. study regions.

**Table ES1. Estimated Annual "Standard Plant" Expenses for Labor, Fish Purchase, Electricity, and Product Shipping (cost per metric ton of plant fillet output)**

| Region           | Fish Purchase* | Hourly Wages** | Product Transportation*** | Electricity Costs | All Main Cost Categories |
|------------------|----------------|----------------|---------------------------|-------------------|--------------------------|
| Bristol Bay      | \$4,525        | \$1,250        | \$775                     | \$200             | \$6,750                  |
| Southeast Alaska | \$4,525        | \$1,250        | \$225                     | \$75              | \$6,050                  |
| Southwest Alaska | \$4,525        | \$1,250        | \$500                     | \$200             | \$6,450                  |
| Washington       | \$5,725        | \$1,275        | **                        | \$50              | \$7,025                  |
| Mainland China   | \$4,725        | \$325          | \$100                     | \$50              | \$5,200                  |

Source: McKinley Research Group estimates. See report for more detailed sourcing information.

\*Cost to purchase fish at point of production. Washington and China values include shipping costs to bring fish to the plant. \*\*Hourly wages for select job titles only. Does not include worker housing, benefits, or other labor costs. \*\*\*Cost to ship processed product to U.S. West Coast port of entry. No value for Washington included because processors in this region are already in the U.S. West Coast market.

### KEY OPERATING COSTS

The following are key findings related to key factors influencing the differential in processing costs between Alaska, Washington, and China.

#### *Fish Purchase*

Chinese processing plants have access to lower-cost pollock and pink salmon than Alaska processors – despite not harvesting these species at volume – because of China's access to raw materials from Russia, where harvesting costs are lower than in Alaska.

The mix of species used in this modeled cost analysis yields higher costs in China primarily due to inclusion of sockeye salmon. Sockeye salmon purchase costs are higher for Chinese plants than for U.S. plants because relatively small percentage of China's sockeye salmon supply comes from Russia, with the majority coming from Alaska. This is in contrast to pollock, which it mostly sources from Russia at lower cost compared to Alaska-origin fish.

### ***Wages***

Seafood processing workers in China are paid the equivalent of \$4-\$6 USD per hour, or about one quarter of the \$16-\$18 paid in Alaska and Washington. The large disparity in hourly wage costs shown in the table above are magnified by additional labor costs paid by Alaska and Washington processors including reliance on overtime pay, worker housing costs, and worker transportation costs.

### ***Electricity***

Electricity costs are lowest in Washington and China, which have access to large electric grids and comparatively diversified power generation. Costs are highest in Southwest Alaska and Bristol Bay, where power grids are small and isolated and rely on diesel generations. Electricity is an important part of total operating costs, but a significantly smaller part of total costs than labor in all study regions.

### ***Product Shipping***

International shipping rates between China and the U.S. West Coast are lower than domestic shipping rates between Alaska and the U.S. West Coast. The cheaper costs of buying and operating non-Jones Act compliant vessels and the economies of scale associated with the heavily used shipping route between China and the U.S. contribute to this cost advantage.

The estimated total shipping costs of sending raw materials to China for processing (incorporated in China's fish purchase costs above) and shipping processed products back to the United State are higher than the cost of shipping processed products directly from Alaska to the Lower 48. However, this is a small difference compared to advantages Chinese processors have for labor and electricity costs.

### ***Tariffs***

U.S. tariffs on imports from China in place between 2020 and 2024 had little direct impact on the cost of re-processing of Alaska seafood in China because of exceptions and exemptions for re-processed seafood in both China and the United States.

As of June 2025, China continues to exempt U.S. seafood products bound for the re-processing sector from import tariffs. However, it is becoming more expensive to sell these re-processed U.S. origin products in the U.S because of new tariffs imposed by the U.S. in 2025 that do not exempt U.S. origin seafood.

# Introduction and Methodology

The Alaska Fisheries Development Foundation (AFDF) contracted with McKinley Research Group to produce this comparison of seafood processing costs between shoreside processing plants in Alaska, Washington, and China as part of its *Seafood Industry Modernization Initiative*.

The purpose of this work is to inform decision makers on the economic forces that make China a competitive location for processing Alaska seafood and provide data to understand the potential effectiveness of the various policy proposals that have been made to encourage re-shoring.

This work was federally funded through the Denali Commission.

## Motivation for Re-shoring Alaska Seafood Processing

Re-shoring is broadly defined as the opposite of offshoring, the process of moving a company's operations to take advantage of lower costs in foreign countries. Many U.S. industries underwent offshoring in the late 20<sup>th</sup> century and early 21<sup>st</sup> century, catalyzed by free trade agreements and low-cost international shipping. Re-shoring is the process of returning some of these operations to U.S. shores.<sup>1</sup>

A significant portion of Alaska's seafood industry relies on foreign secondary processing (often called re-processing), including some products that are processed overseas and re-imported to the U.S. for consumption.<sup>2</sup> China is the largest re-processor of Alaska seafood, but significant overseas re-processing also takes place in Southeast Asia and Europe.

Re-shoring the seafood processing sector has long been a popular Alaska policy goal based on the expectation that more value-added processing in Alaska would:

- Support domestic food security by keeping U.S.-caught fish for U.S. consumers within the country,
- Keep more of the value derived from Alaska fisheries in state,

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<sup>1</sup> While re-shoring is often the term used in Alaska, on-shoring may be the more applicable term for the Alaska seafood industry. This is because – outside of canned salmon – there is not a historical precedent for extensive value-added seafood processing in Alaska. Federal fisheries developed following the passage of the Magnuson-Stevens Fishery Conservation and Management Act in 1976 and evolved alongside today's international seafood supply chain.

<sup>2</sup> For example, in 2021 and 2022, on average, 37% of Alaska's seafood wholesale sales (by volume) was headed and gutted or whole fish, products largely exported for re-processing, according to summary data from Commercial Operators Annual Reports published by the Alaska Department of Fish & Game.

- Make the seafood supply chain less vulnerable to “shocks” such as those caused by the COVID-19 pandemic and the U.S.-China trade war,
- Protect the Alaska seafood brand from reputational harm caused by practices at Chinese re-processing plants, including forced labor and excessive use of sodium tripolyphosphate,<sup>3</sup>
- Increase in-state employment opportunities (ideally for desirable high-paying jobs),
- Maintain and expand food manufacturing technological expertise, and
- Support investment in coastal Alaska communities.

## Proposals to Encourage Re-Shoring

While it is beyond the scope of this report to evaluate policy proposals, the following list of policy proposals from government and industry leaders provides useful context for this report. These proposals generally seek to lower the cost of processing seafood in Alaska and raise the cost of processing Alaska seafood overseas by influencing expenses including labor, shipping, electricity, and import/export taxes.

- Environmental regulation reform
- Expanded access to guest worker visas (and other H-2B program reforms)
- Increased U.S. import tariffs
- Tightening enforcement of sanctions on Russia
- Investment in labor-saving processing technology
- Investment in lower-cost electricity
- Jones Act reform
- Land usage policies to encourage greater development of affordable housing in coastal Alaska and facilitate a larger domestic workforce

## Research Methods

This report used the following methods for comparing processing costs.

## Study Regions

This report compares costs across three Alaska regions, China, and Washington state.

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<sup>3</sup> See the [Outlaw Ocean Project](#) for reporting on forced labor in Chinese processing plants including of North Korea and China’s Uyghur minority. See Undercurrent News, 2017. “[China pollock sales to Brazil dive amid crackdown on chemical additives.](#)” for discussion crackdown on imports of re-processed fish fillets from China over use of sodium tri-polyphosphate, a water retention agent injected into fish fillets to keep them moist and increase weight.

## WASHINGTON

This document uses statewide data, where available, to describe the Washington seafood processing sector. Most Alaska-origin seafood processing in Washington takes place in the Puget Sound region in the northwest corner of the state.

## CHINA

This report provides some nationwide context on Chinese seafood processing but focuses primarily on the two provinces in China where most Alaska seafood is processed: Shandong and Liaoning.

## ALASKA

The three Alaska study regions were chosen as case studies due to the numerous variations between the fisheries, geography, and socioeconomic conditions in each region. They do not encompass the entirety of coastal Alaska. The Alaska study regions were defined as follows:

***Southeast Alaska:*** All Southeast Alaska boroughs and census areas south of and including Yakutat

***Bristol Bay:*** Bristol Bay Borough, Lake and Peninsula Borough, and the Dillingham Census Area, excluding the southern coast of the Alaska Peninsula.

***Southwest Alaska:*** Aleutian East Borough and the Aleutians West Census Area

## Data Sources

Interviews with seafood industry leaders and subject matter experts in worker recruitment, electric utilities, marine cargo shipping, and insurance were key to providing operating cost estimates.

Other key data sources include:

- Alaska Department of Fish and Game: Commercial Operators Annual Reports
- Bureau of Labor Statistics: Quarterly Census of Employment and Wages
- National Marine Fisheries Service: Landings and trade data
- People's Republic of China Customs Statistics

## The "Standard" Seafood Processing Plant

To facilitate comparisons between regions, this report compares input costs across four different cost categories using a modeled "standard" seafood processing plant. In practice, every region and every plant is different and all are more complex than the one modeled for this comparison.

The “standard” plant is assumed to employ about 300 workers and operate 8 months per year (a middle ground between short-season salmon-only plants and true year-round plants). The plant processes only two species of Alaska seafood for simplicity of calculations: Alaska pollock and sockeye salmon. The plant produces only one product from each type of fish: fillets. In practice, pollock and salmon plants typically produce numerous other products including pollock surimi, canned salmon, and both salmon and pollock roe.

The table below describes the standard operating inputs used in this analysis, along with cost information, to compare processing plant costs across regions.

**Table 1. Inputs of “Standard” Alaska Seafood Processing Plant  
(Used to Simplify Comparisons Across Regions)**

| Cost Category                                   | Annual Requirement   |
|-------------------------------------------------|----------------------|
| <b>Labor*</b>                                   |                      |
| Seafood processors                              | 565,000 worker-hours |
| Skilled technicians                             | 60,000 worker-hours  |
| Line supervisors                                | 30,000 worker-hours  |
| <b>Fish Purchase</b>                            |                      |
| Alaska seafood purchased                        | 30,000 metric tons   |
| <b>Electricity</b>                              |                      |
| Annual kilowatt hour energy used                | 5 million kWh        |
| <b>Product Shipping</b>                         |                      |
| Volume of fillets shipped to consumption market | 12,500 metric tons   |

Source: McKinley Research Group based on industry interviews

\*Note, this is a subset of the total workforce based on three job titles compared in this report. This does not include various higher-level management workers, quality control, packing and shipping, and plant management workers.

# Seafood Processing Regional Profiles

This section describes variations in seafood processing operations in the five study regions. Additional detail on how location, operating schedules, and product forms influence operating costs is provided in the [Regional Comparisons](#) section that follows.

## Alaska Processing Case Study Regions

The three Alaska case study regions were chosen to highlight the different types of fisheries in each region, as well as geographic constraints that influence worker availability, electricity costs, and shipping logistics:

- **Bristol Bay** – Fish processing in this region exists to process one species: sockeye salmon. Processors in this region have access to large volumes of this high-value fish, but pay particularly high costs for labor and electricity because of this region's remoteness, even as compared to other study regions. Processing in this region is highly seasonal: plants operate between June and August, with most processing taking place over three to four weeks in late June and early July.
- **Southeast Alaska** – Salmon is the most economically important product processed at plants in Southeast Alaska, but the region is home to a diverse set of fisheries including sablefish, halibut, herring, crab, and numerous small volume fisheries. Some plants in this region have access to lower electricity rates (compared to other regions in Alaska) made possible by hydroelectric power plants. The region also benefits from its geographic proximity to Washington.
- **Southwest Alaska** – Plants in this region mostly process large volume groundfish harvests from the Bering Sea, primarily Alaska pollock. In addition to pollock, plants in this region process Pacific cod, salmon, halibut, and sablefish. These plants are far from Lower 48 markets, but are well-positioned for export markets because of this region's proximity to the "Great Circle" shipping route to Asia and port infrastructure in Unalaska.

### Bristol Bay

Bristol Bay is home to the largest sockeye salmon fishery in the world. Most Bristol Bay harvest comes from the fleet of hundreds of small drift gillnet boats, which by regulation cannot be longer than 32 feet. A smaller portion of the commercial harvest comes from shore-based setnet fishermen.

Fishing takes place along five districts spanning the bay. Unlike in some salmon fisheries in other parts of the state, harvesters do not deliver salmon directly to processing plants. Instead,

harvesters deliver to larger tender boats so they can remain on the fishing grounds during the short season. Processors pay for tendering services, an added expense of operating in Bristol Bay.

Most Bristol Bay processing plants are located in two communities: Dillingham and Naknek, with smaller processors found in Togiak, Ekuk, King Salmon, and Egegik. Vessels known as floating processors also play a role in processing Bristol Bay seafood. These processors have historically produced similar products as shoreside processors, although in recent years, two companies (Northline Seafoods and Circle Seafoods) have been experimenting with a new business model of freezing salmon whole instead of heading and gutting or filleting them.

Key processing companies operating shoreside plants in Bristol Bay include Silver Bay Seafoods, OBI (partially owned by Silver Bay), Trident Seafoods, and the Canfisco Group (North Pacific, Leader Creek Fisheries, and Alaska General Seafoods).

**Figure 1. Key Seafood Processing Centers in Bristol Bay**



Source: McKinley Research Group; made with Natural Earth

## SEAFOOD PRODUCTION

Nearly all salmon caught and processed in Bristol Bay is sockeye salmon, with the other four Pacific salmon species caught in small volumes.

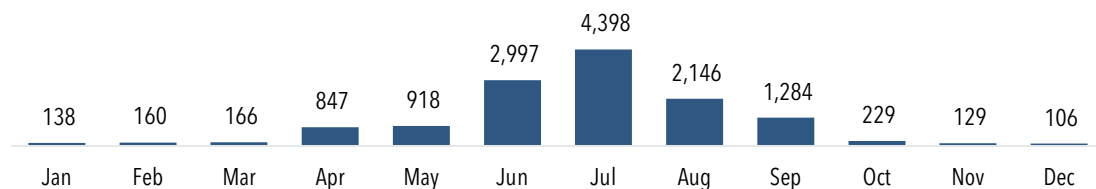
Historically, Bristol Bay processing plants produced mainly canned salmon, but frozen headed-and-gutted fish (H&G) has become the most common product form as refrigeration technologies and global cold chain logistics have improved.

**Table 2. Bristol Bay Seafood Processing Output by Species, 2023**

| Species        | Metric Tons   | \$millions   |
|----------------|---------------|--------------|
| Sockeye salmon | 70,000        | \$561        |
| Keta salmon    | 1,000         | \$5          |
| Coho salmon    | 60            | <\$1         |
| Chinook salmon | 50            | <\$1         |
| Pink salmon    | 45            | <\$1         |
| <b>Total</b>   | <b>71,000</b> | <b>\$567</b> |

SOURCE: ALASKA DEPARTMENT OF FISH AND GAMEWORKFORCE

Processing in this region is highly seasonal. Plants do not operate outside of the salmon season. Employment ramps up in the months leading to the peak of the salmon run in late June and early July.

**Figure 2. Seafood Processing Employment by Month in Bristol Bay Region, 2023**

Source: Alaska Department of Labor and Workforce Development

Among the study regions, Bristol Bay is the most reliant on non-Alaska residents. This is due to the remoteness of the region, the small resident population, and the seasonality of the fishery. The region is also the most reliant on overtime hours because of the need to surge processing labor to keep up with the fish landings at the peak of the harvest.

**Table 3. Seafood Processing Workforce Summary for Bristol Bay Region, 2023**

|                    |              |
|--------------------|--------------|
| Peak employment    | 4,398        |
| Average employment | 1,127        |
| Non-resident %     | 96%          |
| Total Wages        | \$74 million |

Source: Alaska Department of Labor and Workforce

## PRODUCT SHIPPING

Bristol Bay cannot accommodate cargo ships because of challenging tidal conditions and lack of port infrastructure. Sockeye salmon processed in Bristol Bay are generally loaded onto containers and transported by barges. These barges either take the salmon directly to Puget

Sound or to Unalaska to be re-loaded onto larger domestic or international ships. Some fresh fish is also shipped out of regional airports in King Salmon and Dillingham.

Bristol Bay shipping costs are the highest of the study regions because of the distance from markets and lack of port infrastructure.

## Southeast Alaska

In contrast to Bristol Bay, Southeast is home to a wide variety of species which are processed at plants in fifteen communities. Most processing takes place in Petersburg, Ketchikan, Sitka, Wrangell, Juneau, and Craig.

The largest processing companies operating in Southeast Alaska include: Silver Bay Seafoods, OBI (partially owned by Silver Bay), Trident Seafoods, E.C. Phillips and Co., and the Alaska General Seafoods (a Canfisco Group company).

In addition to these large processors, there are numerous small-scale processors in Southeast.

**Figure 3. Key Seafood Processing Centers in Southeast Alaska**



Source: McKinley Research Group; made with Natural Earth

## SEAFOOD PRODUCTION

The main species caught in Southeast Alaska are salmon (mostly pink salmon and keta salmon), sablefish, Pacific halibut, and herring. Because of their two-year lifecycle, pink salmon harvests fluctuate, with larger harvests on odd-numbered years.

As with Bristol Bay salmon, frozen H&G is the main product form, although canning is more common in Southeast, especially for pink salmon. Herring are largely harvested for their roe (exported to Japan) and as bait. Southeast Alaska's proximity to the Lower 48 makes it easier to

sell fresh (as opposed to frozen) fish from this region. Southeast Alaska is a hub within the state for aquaculture, in particular farm-grown oysters and kelp. Finfish aquaculture is prohibited in Alaska by law.

**Table 4. Southeast Alaska Shoreside Seafood Processing Output by Species, 2023**

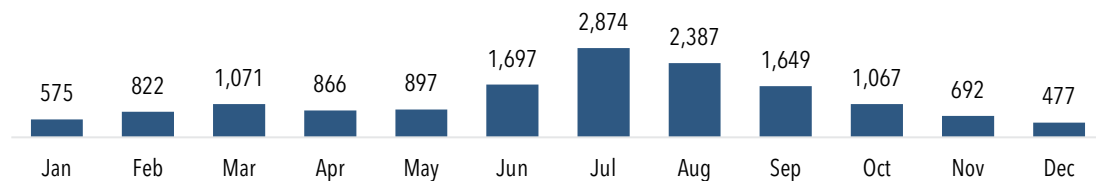
| Species         | Metric Tons    | \$millions     |
|-----------------|----------------|----------------|
| Pink salmon     | 93,361         | \$371          |
| Keta salmon     | 63,382         | \$267          |
| Herring         | 17,398         | \$27           |
| Sablefish       | 9,746          | \$82           |
| Sockeye salmon  | 9,259          | \$63           |
| Coho salmon     | 6,606          | \$50           |
| Pacific halibut | 4,114          | \$77           |
| Dungeness crab  | 1,527          | \$21           |
| Chinook salmon  | 1,478          | \$30           |
| Other species   | 2,644          | \$57           |
| <b>Total</b>    | <b>209,514</b> | <b>\$1,044</b> |

Source: Alaska Department of Fish and Game

## WORKFORCE

Southeast Alaska's seafood processing workforce spikes for the summer salmon season, but the processing work is much less seasonal than Bristol Bay because of the variety of species processed.

**Figure 4. Seafood Processing Employment by Month in the Southeast Alaska Region, 2023**



Source: Alaska Department of Labor and Workforce Development

About 20% of processing workers were Alaska residents in this region in 2023, although the local resident percentage was higher in the larger communities of Ketchikan and Juneau.

**Table 5. Seafood Processing Workforce Summary for the Southeast Alaska Region, 2023**

|                    |              |
|--------------------|--------------|
| Peak employment    | 2,874        |
| Average employment | 1,256        |
| Non-resident %     | 80%          |
| Total Wages        | \$94 million |

Source: Alaska Department of Labor and Workforce

## PRODUCT SHIPPING

Most seafood processed in this region is moved by barge to Seattle or Tacoma and then loaded onto international cargo ships for export or transported to domestic buyers by rail or road. Shipping costs in this region vary widely between communities on the main barge line and those that need to use smaller feeder barges to reach main line communities. For fresh product, Southeast Alaska also benefits from frequent Alaska Airlines jet service to Seattle.

## Southwest Alaska

Alaska pollock is the main type of species processed in Southwest Alaska, although plants in this region also process significant volumes of salmon, Pacific cod, and sablefish. Alaska's largest fisheries for snow crab and king crab (except during closures in recent years) are also in this region.

Groundfish in this region are processed in shoreside plants, catcher-processor vessels, and motherships. Most shoreside processing takes place in Unalaska and in nearby Akutan, home of the Trident Seafoods facility that is the largest seafood processing plant in Alaska. Significant plants in the region not currently in operation include the former Peter Pan plant in King Cove and Trident's crab processing plant on Saint Paul Island.

Key shoreside processing companies in Southwest Alaska include Trident Seafoods, Westward Seafoods (owned by Maruha Nichiro), Unisea (Nissui Corporation), and Silver Bay Seafoods.

**(See figure, next page)**

**Figure 5. Key Seafood Processing Centers in Southwest Alaska**



Source: McKinley Research Group; made with Natural Earth

## SEAFOOD PRODUCTION

Alaska pollock, the main species harvested in Southwest Alaska, is used to make both fillets and surimi. Pollock roe is also an economically important product, as well as fishmeal made from pollock and other species. Most crab are cooked and sold as “sections.”

**Table 6. Southwest Alaska Shoreside Processing Output by Species, 2023\***

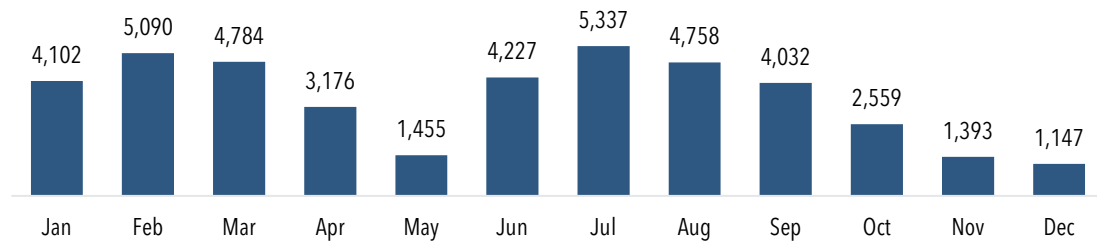
| Species          | Metric Tons | \$million |
|------------------|-------------|-----------|
| Alaska pollock   | 184,002     | \$576     |
| Pink salmon      | 20,573      | \$63      |
| Pacific cod      | 18,045      | \$124     |
| Sockeye salmon   | 10,720      | \$78      |
| Sablefish        | 3,765       | \$32      |
| Keta salmon      | 2,591       | \$12      |
| Golden king crab | 1,519       | \$49      |
| Bairdi crab      | 673         | \$8       |
| Red king crab    | 544         | \$29      |
| Other species    | 809         | \$10      |
| Total            | 243,243     | \$980     |

Source: Alaska Department of Fish and Game. \*Note, does not include catcher processors or motherships

## WORKFORCE

The seasonality of the Alaska pollock fishery dictates fluctuations in the processing workforce in Southwest Alaska. Employment spikes in January for the pollock “A” season and declines in May and June, the gap in fishing seasons during the pollock spawning season. Employment spikes again in June as both the pollock “B” season and salmon seasons begin.

**Figure 6. Seafood Processing Employment by Month in the Southwest Alaska Region, 2023**



Source: Alaska Department of Labor and Workforce Development

About 19% of Southwest Alaska processing workers were Alaska residents in 2023, similar to Southeast Alaska, and more than Bristol Bay.

**Table 7. Seafood Processing Workforce Summary for the Southwest Alaska Region, 2023**

|                    |               |
|--------------------|---------------|
| Peak employment    | 5,337         |
| Average employment | 3,505         |
| Non-resident %     | 81%           |
| Total Wages        | \$284 million |

Source: Alaska Department of Labor and Workforce

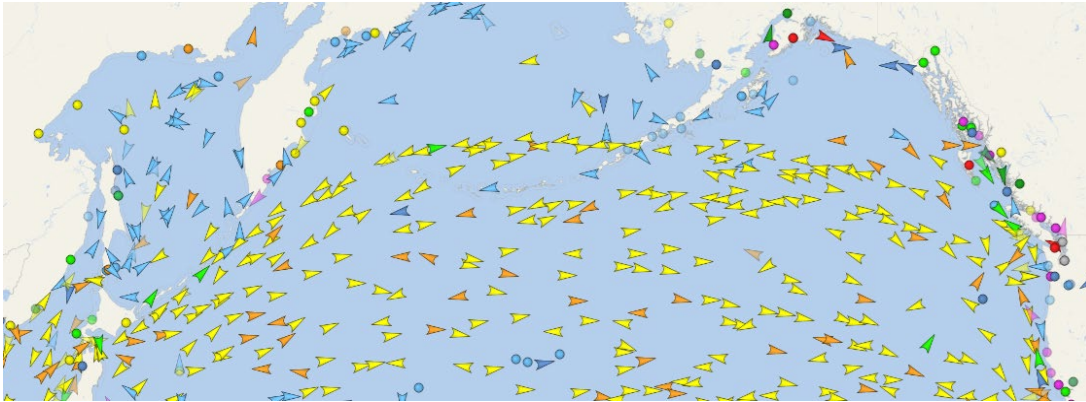
## SHIPPING METHODS AND COSTS

The Port of Dutch Harbor in Unalaska is a key logistics hub for this region. The port is used for consolidating shipments from smaller ports on domestic vessels traveling to Washington as well as international ships traveling to Asia and Europe.

As seen in the image below, Unalaska is well-positioned for seafood export because of its proximity to the route traveled by cargo ships between North America and Asia. In this image, yellow icons are cargo vessels, blue icons are fishing vessels, and orange vessels are tankers.

**(see figure, next page)**

**Figure 7. Snapshot of North Pacific Vessel Traffic, May 2025**



Source: VesselFinder.com

## Washington State

Washington is both a significant processor of value-added Alaska-origin seafood and a processor of regionally-caught seafood. Washington is also a significant producer of farmed oysters, although much of aquaculture harvest is sold live without the need for processing.

Broadly speaking, value-added processing of Alaska seafood is centered in the Puget Sound region, in communities such as Seattle, Tacoma, Anacortes, and Bellingham. Washington State commercial fishing and processing occurs in both the northwest of the state, as well as in Westport in Southwest Washington.

Key seafood processing companies operating in Washington include Ocean Beauty Seafoods (owned by Bristol Bay Economic Development Corporation), Ocean Gold (the state's largest shoreside Pacific whiting processor), Pacific Seafood, and Trident Seafoods.

**Figure 8. Key Seafood Processing Centers in Western Washington**



Source: McKinley Research Group; made with Natural Earth

## Harvest And Processed Products

While production-level seafood processing data for Washington State is not available, harvest data show that the main fish and shellfish caught in the state are Pacific whiting (also known as hake), Dungeness crab, and shrimp. Washington fishery harvest volumes are relatively small at less than 5% of Alaska's harvest volume in 2023.

**(See table, next page)**

**Table 8. U.S. Wild Capture Fishery Harvests by State (mt), 2023**

| State             | Harvest (mt)     | Main Species Harvested                                                            |
|-------------------|------------------|-----------------------------------------------------------------------------------|
| Alaska            | 2,379,136        | Alaska pollock, pink salmon, Pacific cod                                          |
| Louisiana         | 399,371          | Menhaden (forage fish used for fertilized, animal feed & bait), shrimp, blue crab |
| Virginia          | 151,942          | Menhaden, blue crab, dogfish                                                      |
| At sea*           | 140,441          | Pacific whiting                                                                   |
| Oregon            | 136,667          | Pacific whiting, shrimp, Dungeness crab                                           |
| Mississippi       | 106,228          | Menhaden, shrimp                                                                  |
| Maine             | 79,971           | Lobster, rockweed                                                                 |
| Massachusetts     | 70,620           | Sea scallop, lobster, Quahog clam                                                 |
| Washington        | 64,413           | Pacific whiting, Dungeness crab, shrimp                                           |
| California        | 50,912           | Squid, Dungeness crab, anchovy                                                    |
| All Other States  | 236,428          |                                                                                   |
| <b>All States</b> | <b>3,816,129</b> |                                                                                   |

Source: National Marine Fisheries Service, Alaska Department of Fish and Game

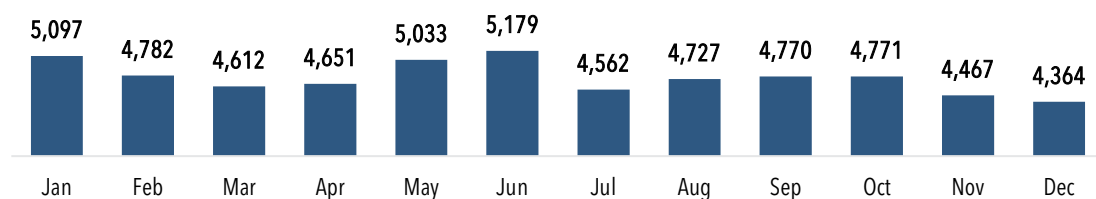
\*Does not include catcher processors in Alaska

Value-added products made from Alaska seafood in Washington include breaded Alaska pollock, smoked salmon, and various seasoned or marinated oven-ready products for both retail and foodservice markets.

## WORKFORCE

While Washington's seafood harvest is small, its seafood processing workforce is relatively large, implying that a significant volume of out-of-state seafood is processed in Washington. The 2023 peak workforce of 5,179 is similar to the peak processing workforce in Southwest Alaska, although there is less seasonal fluctuation to Washington's seafood processing workforce.

While workforce residency data for Washington are not available, industry interviews suggest that as in Alaska, foreign guest workers make up a significant share of the seafood processing workforce in Washington.

**Figure 3. Seafood Processing Employment by Month in Washington State, 2023**

Source: U.S. Bureau Of Labor Statistics, Quarterly Census of Employment and Wages, 2023

**Table 9. Seafood Processing Workforce Summary for Washington State, 2023**

|                    |               |
|--------------------|---------------|
| Peak employment    | 5,179         |
| Average employment | 4,751         |
| Total Wages        | \$440 million |

Source: U.S. Bureau Of Labor Statistics, Quarterly Census of Employment and Wages, 2023

**Product Shipping**

Seattle and Tacoma are the main ports through which Alaska seafood travels to the Lower 48. These ports are also used for consolidating Alaska seafood shipments for export and are key ports of entry for imported seafood, including Alaska-origin seafood processed overseas. The Puget Sound Region is also a hub for road and rail networks used to transport Alaska seafood around the contiguous U.S.

**Mainland China**

This section provides background on China’s role in seafood harvest and trade and describes the subset of the Chinese processing sector that processes Alaska seafood.

**Chinese Aquaculture Production and Wild Capture Fisheries**

China is the world’s largest harvester of both wild and farmed seafood, although its aquaculture sector is larger. Key Chinese aquaculture products include carp, oysters, and razor clams. China’s wild capture harvest includes fish caught in China’s exclusive economic zone and by China’s distant water fleet.

**(See table, next page)**

**Table 10. Chinese Domestic Seafood Harvest (Wild Capture and Aquaculture), by Species (mt), 2023**

| Species                              | Harvest (Live Weight, Metric Tons) |
|--------------------------------------|------------------------------------|
| Cupped oysters                       | 6,671,197                          |
| Grass carp                           | 5,941,315                          |
| Chinese razor clam                   | 4,449,106                          |
| Silver carp                          | 3,860,380                          |
| Bighead carp                         | 3,349,884                          |
| Wild caught marine fish <sup>4</sup> | 3,262,351                          |
| Red swamp crawfish                   | 3,161,022                          |
| Common carp                          | 2,873,211                          |
| All Other Species                    | 34,848,780                         |
| <b>Total Harvest</b>                 | <b>68,417,246</b>                  |

Source: FAO

Note: Excludes seaweeds

## China Seafood Trade

Chinese seafood imports have surged over the last decade to feed growing domestic consumption and the seafood re-processing sector. Products of China's re-processing sector such as pollock (mostly from Russia) and squid were among China's main seafood imports in 2024, although the largest import is fish meal for aquaculture.

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<sup>4</sup> Data on the composition of China's wild capture harvest is limited. The largest category of harvest is simply "non-specified marine fish," of which China caught more than an estimated 3.2 million metric tons in 2023, according to the Food and Agriculture Organization of the United Nations. China's harvest of these unidentified fish alone was about 30% larger than Alaska's harvest across all species in 2023.

**Table 11. Chinese Seafood Import Volume and Value by Product, 2024**

| Product                                         | Metric Tons      | \$millions      | Main Trade Partner(s)                            |
|-------------------------------------------------|------------------|-----------------|--------------------------------------------------|
| Fish meal for animal feed                       | 1,928,145        | \$3,175         | Peru, Vietnam, Russia                            |
| Other frozen shrimps and prawns, unshelled      | 893,824          | \$4,411         | Ecuador, India                                   |
| Frozen Alaska pollock                           | 523,691          | \$545           | Russia, United States, Canada                    |
| Other frozen fish                               | 348,788          | \$709           | India, Indonesia, United States                  |
| Frozen sardines, sardinella, brisling or sprats | 260,903          | \$145           | Russia, Pakistan, Indonesia                      |
| Frozen cuttle fish and squid                    | 192,459          | \$705           | Indonesia, United States, Malaysia               |
| Other frozen cuttle fish and squid              | 168,366          | \$451           | Taiwan, Argentina, Peru                          |
| Frozen scabber fish                             | 148,791          | \$292           | Indonesia, Iran, Malaysia                        |
| Frozen cod                                      | 143,822          | \$620           | Russia, United States, Norway                    |
| Frozen skipjack tuna                            | 130,004          | \$184           | Micronesia, South Korea, Indonesia               |
| All Other Products                              | 1,974,169        | \$12,110        | Russia, United States, Vietnam, Indonesia        |
| <b>All Seafood Imports</b>                      | <b>6,712,961</b> | <b>\$23,346</b> | <b>Russia, United States, Vietnam, Indonesia</b> |

Source: Trade Data Monitor HS codes: 03, 1604, 1605, 2301

China exports both domestically grown species like tilapia and re-processed products like Alaska pollock. This seafood is exported by China to numerous markets in both the developing and developed world. Total seafood exports in 2024 were smaller than imports in both volume and value.

**Table 12. Chinese Seafood Export Volume and Value by Product, 2024**

| Product                                               | Metric Tons      | \$millions      | Main Trade Partner(s)                    |
|-------------------------------------------------------|------------------|-----------------|------------------------------------------|
| Frozen mackerel                                       | 316,548          | \$444           | Indonesia, Philippines, Vietnam          |
| Tilapia                                               | 306,131          | \$1,013         | United States, Mexico, Israel            |
| Frozen cuttle fish and squid                          | 302,678          | \$1,272         | Japan, South Korea, Spain                |
| Prepared or preserved Tunas, skipjack tuna and bonito | 207,507          | \$1,053         | Thailand, Spain, Algeria                 |
| Frozen fillets of Alaska pollock                      | 194,078          | \$499           | Germany, France, South Korea             |
| Cuttle fish and squid, prepared or preserved          | 168,102          | \$1,319         | Japan, South Korea, Thailand             |
| Frozen fish, non-specified                            | 166,386          | \$634           | South Korea, United States, Philippines  |
| Frozen tilapia                                        | 137,176          | \$256           | Cote d'Ivoire, Burkina Faso, Mali        |
| Other prepared/preserved fish                         | 132,136          | \$487           | South Korea, Japan, Hong Kong            |
| Prepared/preserved mackerel, whole/pieces             | 129,938          | \$272           | Ghana, Chile, Japan                      |
| All Other Products                                    | 2,066,520        | \$12,505        | Japan, South Korea, United States        |
| <b>All Seafood Imports</b>                            | <b>4,127,201</b> | <b>\$19,753</b> | <b>Japan, South Korea, United States</b> |

Source: Trade Data Monitor HS Codes: 03, 1604, 1605, 2301

## Chinese Seafood Processing Sector

China's processing capabilities allow the country to import raw materials from around the world, process them, and then export finished or semi-finished products. This flexibility has made China a key player in the global seafood trade. Alaska seafood, particularly flatfish, Alaska pollock, pink salmon, and Pacific cod, are often headed-and-gutted in Alaska, filleted and packaged in China, and then sent back to the U.S. or other final consumer markets.

China's seafood processing sector is concentrated in coastal provinces, such as Shandong, Zhejiang, Guangdong, Fujian, and Liaoning. These regions host large-scale processing facilities that handle freezing, canning, drying, and other value-added processes. Liaoning and Shandong provinces are the main Alaska seafood processing regions.

**Figure 5. Key Seafood Re-processing Ports for Alaska Seafood in China's Liaoning and Shandong Provinces**



Source: McKinley Research Group; made with Natural Earth.

## Processing and Storage Volume

According to official Chinese government figures, there were 9,433 fish and seafood processing enterprises and 9,143 seafood product cold storage facilities in China in 2023.<sup>5</sup> Seafood processors processed 17.1 million tons of product. The leading seafood processing provinces are Shandong, Fujian, Liaoning, Zhejiang, and Guangdong. In 2023, these provinces collectively produced 15.2 million metric tons of processed seafood, representing 89% of the nation's total.

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<sup>5</sup> Ministry of Agriculture and Rural Affairs of the People's Republic of China, 2024. [渔业统计年鉴工作动态\(2024 Fisheries Statistical Yearbook\)](#).

**Table 13. Leading Chinese Provinces for Seafood Processed, Millions of Metric Tons, 2023**

| Province           | Leading Cities/Locales for Processing | Seafood Processed (million MT) |
|--------------------|---------------------------------------|--------------------------------|
| Shandong           | Qingdao, Weihai                       | 6.4                            |
| Fujian             | Fuzhou, Xiamen                        | 3.9                            |
| Liaoning           | Dalian                                | 2.2                            |
| Zhejiang           | Zhoushan                              | 1.7                            |
| Guangdong          | Zhanjiang                             | 1.1                            |
| Rest of China      |                                       | 1.9                            |
| <b>China Total</b> |                                       | <b>17.1</b>                    |

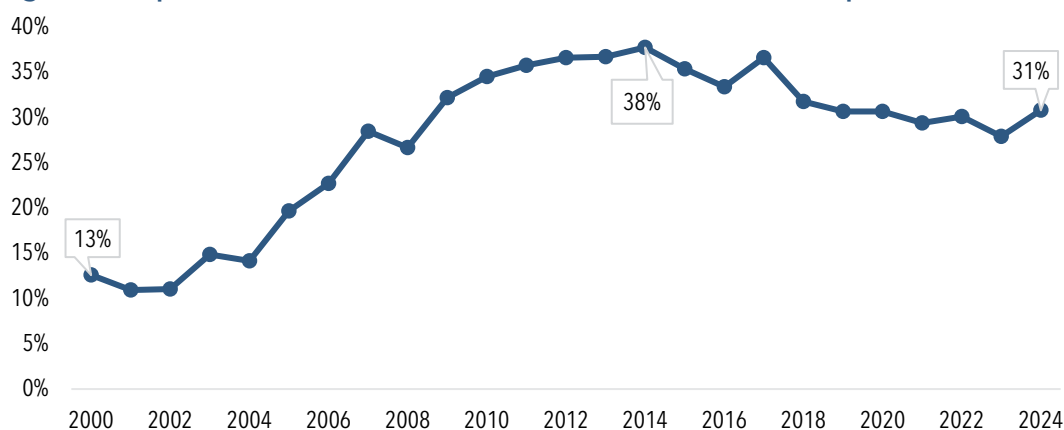
Source: Ministry of Agriculture and Rural Affairs of the People's Republic of China. 渔业统计年鉴工作动态 (2024 Fisheries Statistical Yearbook). July 5, 2024.

\*Note: numbers may not sum to total due to rounding.

## China's Role in Re-Processing Alaska Seafood

The importance of China as a re-processing hub for Alaska seafood grew rapidly after China joined the World Trade Organization in 2001, peaking in 2014. As of 2024, China is the Alaska seafood industry's largest trading partner by volume, but exports to China have declined in the last decade due to rising wages in China, tariffs, and other political tensions between the U.S. and China.

**Figure 9. Exports to China as a Share of Total Alaska Seafood Exports, 2000-2024**



Source: National Marine Fisheries Service, compiled by McKinley Research Group.

The main Alaska seafood products imported to China for re-processing are flatfish such as yellowfin sole, Alaska pollock, salmon (especially pink and keta salmon), and Pacific cod. Although the Alaska seafood industry exports a significant volume of headed-and-gutted Alaska pollock for further processing in China, the pollock fishery is unusual in Alaska because a large share of the fish is processed into fillets, surimi, roe, mince, or fishmeal within Alaska or on catcher-processor vessels.

**Table 14. Alaska Seafood Exports to China by Species/Product Group, 2023-2024 Average**

| Species Category                             | Export Volume (MT) | Export Value (\$) |
|----------------------------------------------|--------------------|-------------------|
| Fish meal*                                   | 56,140             | \$81M             |
| Sole**                                       | 37,776             | \$63M             |
| Alaska pollock                               | 31,524             | \$58M             |
| Pink salmon                                  | 26,001             | \$56M             |
| NSPF***                                      | 23,683             | \$73M             |
| Pacific cod                                  | 20,681             | \$69M             |
| Rockfish                                     | 18,397             | \$54M             |
| Keta salmon                                  | 16,274             | \$47M             |
| All other Alaska seafood exports             | 18,358             | \$64M             |
| <b>Total Alaska Seafood Exports to China</b> | <b>248,832</b>     | <b>\$566M</b>     |

Source: National Marine Fisheries Service, compiled by McKinley Research Group.

\*Fish meal is produced from various Alaska species, but primarily Alaska pollock. \*\*Primarily yellowfin sole and rock sole. \*\*\*"Not specifically provided for" includes fish roe and other by-products.

## REGIONAL HUBS

Dalian and Qingdao are the two largest hubs for Alaskan seafood processing and trade. Dalian, located in Liaoning Province, is particularly known for its seafood processing industry, handling a large volume of imported seafood from regions like Alaska, Russia, and Norway. Qingdao, in Shandong Province, is another major port city with a strong seafood processing sector, especially for products like pollock and salmon.<sup>6</sup>

## PLANT CHARACTERISTICS

Most seafood processing plants in China are located in suburban areas and generally operate eleven months per year. Workers typically receive a month-long break during the Chinese New Year, allowing non-local employees to spend extended time with their families, though the official public holiday lasts seven days.

Most seafood processing plants in China are small or medium-sized enterprises.<sup>7</sup> A typical facility employs around 200 workers—about half the size or smaller of most major Alaska plants at peak capacity. The ownership structure varies, including privately owned firms and state enterprises.

<sup>6</sup> Alaska Seafood Marketing Institute, 2025. [Supplier Directory](#). Note that most Alaska seafood suppliers are located in Dalian and Qingdao.

<sup>7</sup> China's Ministry of Industry and Information Technology (MIIT) [classified](#) SMEs into 3 categories based on the number of employees, revenue, and total assets. Employment categories include Medium-sized Enterprises: 300 to 1,000 employees; Small-sized Enterprise: 20 to 300 employees; and Micro-sized Enterprises: Fewer than 20 employees.

In Dalian and Qingdao, seafood processing plants are clustered in specific industrial or economic development zones (e.g., Jinzhou District in Dalian and Chengyang District in Qingdao), primarily near major ports to optimize logistics. However, some facilities are located inland with reliance on trucking/rail (e.g., Pulandian in Dalian for processing and Jimo District in Qingdao for value-added products). According to one interviewee contacted for this analysis, port-side plants (e.g., Dalian's Jinzhou, Qingdao's Chengyang) are preferable for U.S. exports due to logistics/transport efficiencies.

Dalian is a hub for Alaska, Russian, and Norwegian seafood (salmon) but also processes domestic species including croaker and scallops. Re-processing for export is the primary focus for these operations.

Before China entered the World Trade Organization, Dalian's processing plants focused on drying and salting domestic-caught fish. While foreign seafood processing now dominates, Dalian has some smaller legacy plants that dry and salt local catches as well as new hybrid processors that handle both domestic and imported species.<sup>8</sup>

## Labor

Estimated hourly wages for Chinese seafood processing workers in 2025 are \$4.17 and \$4.43 per hour, based on interviews, existing reports and articles, and official government data.<sup>9</sup> This estimated hourly wage in dollars does not include supplemental benefits and is based on a 40-hour work week. Skilled trades worker wages and re-processing plants in China are modeled in this report at \$8.00-\$10.00 per hour based on the ratio of processing wages to skilled trades wages in Alaska.

A discussion of Chinese wages can be found in Appendix B: Labor Costs Calculations for Mainland China.

## MIGRATION CONTROLS AND IMPACTS ON LABOR SUPPLY

China's manufacturing sector relies heavily on migrant workers, primarily from rural areas, who move to cities for employment. However, their ability to permanently settle in urban areas is

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<sup>8</sup> Ministry of Agriculture and Rural Affairs of People Republic of China, 2019. *China's Ocean Fisheries Development*. 22 October 2019. Available at: [http://www.moa.gov.cn/xw/bmdt/201910/t20191022\\_6330354.htm](http://www.moa.gov.cn/xw/bmdt/201910/t20191022_6330354.htm); Ministry of Agriculture and Rural Affairs of People Republic of China, "Dalian Jinzhou District's aquatic product processing industry has entered a stage of rapid development" (in Chinese), 10 October 2008, Available at: [http://www.yyj.moa.gov.cn/yqxx/201904/t20190428\\_6216143.htm](http://www.yyj.moa.gov.cn/yqxx/201904/t20190428_6216143.htm); Dalian Municipal Government Office, "Dalian City's work plan to promote high-quality development of the cold chain industry" (in Chinese). 19 September 2024. Available at: [https://www.dl.gov.cn/art/2024/9/19/art\\_8834\\_2355025.html](https://www.dl.gov.cn/art/2024/9/19/art_8834_2355025.html).

<sup>9</sup> Wages in Chinese yuan are converted to U.S. dollars for purposes of comparison on the 2023 average of 1:7 between U.S. dollars and Chinese yuan

restricted by China's internal migration system, known as the *hukou* (household registration) system.

The *hukou* system ties individuals to their place of birth, limiting their access to public services such as education, healthcare, and housing subsidies when they migrate to other regions for work. This system has historically created a vast, low-cost labor force for industrial hubs, as millions of rural workers moved to cities for jobs but were denied full urban residency rights.

While this system has helped sustain industrial growth by ensuring a steady labor supply, it has also led to:

- Labor segmentation, where migrant workers have fewer rights than urban-born workers
- Unstable living conditions due to limited access to housing and social services
- Restricted career mobility, making it harder for migrants to advance in their industries

In recent years, *hukou* reforms have sought to ease migration restrictions, particularly in smaller cities, yet major urban centers still impose barriers. As a result, retaining skilled migrant workers remains a challenge for many manufacturing firms.

The proportion of local and non-local workers varies by company, with non-local workers comprising anywhere from 30% to 70% of the total workforce. Over time, some migrant workers choose to settle permanently, transitioning into local workers after spending years at the same plant. To accommodate non-local employees, factories typically provide housing as part of their worker benefits.

## **BENEFITS AND WORKER HOUSING**

In China, the employment-based social benefits system is known as 五险一金 (Five Insurances and One Fund). The five insurances, which the government requires employers to provide, include pension, medical insurance, unemployment insurance, workers' compensation, and maternity leave.

The One Fund refers to a housing fund, which is optional. While plant managers have the option to provide worker housing through this fund, its implementation is at the discretion of each company. According to one industry representative interviewed for this analysis, most firms do offer worker housing to their employees.

## **LABOR-SAVING TECHNOLOGY**

The level of technology/mechanization within the seafood processing sector is similar in China and Alaska, but with more cut precision at Chinese plants due to a more experienced workforce. Most Chinese plants opt not to use automatic pin bone machines and fillet machines due to the insufficient precision of these devices relative to human workers.

## Raw Material Acquisition Costs

Chinese processing plants generally benefit from lower costs for salmon, pollock, and cod due to their access to Russian seafood products. Russian-origin products are generally less-expensive than Alaska-origin products for reasons including:

- Lower harvesting costs, lower wages, and cost of living in Russia,
- Lower harvesting costs for salmon because of the use of fish traps,
- Deflated demand for Russian-origin products because of sanctions on Russia for its invasion of Ukraine, and
- Government subsidies to the Russian seafood industry

## Electricity Costs

Chinese plants rely on public utilities. According to one interviewee, seafood processing plant electricity costs average \$0.088 per kilowatt hour. Industrial electricity rates vary by region, with higher costs in Shandong Province, compared to Liaoning. Coal has historically been the main source of power generation in China, but renewable energy (solar, wind, and hydroelectric) capacity has grown rapidly in recent years.

**Table 15. Industrial Electricity Costs per Kilowatt Hour (kWh), by Select Provinces, 2023**

| Province | Facility Size by Energy Usage | Average Cost per Kwh Peak Usage, 2023 |
|----------|-------------------------------|---------------------------------------|
| Shandong | 1-10 kV                       | \$0.14                                |
|          | 35 kV                         | \$0.14                                |
|          | 110 kV                        | \$0.14                                |
|          | ≥ 220 kV                      | \$0.14                                |
| Liaoning | 1-10 kV                       | \$0.10                                |
|          | 35 kV                         | \$0.10                                |
|          | 110 kV                        | \$0.09                                |
|          | ≥ 220 kV                      | \$0.09                                |

Source: Dezan Shira & Associates, 2024. [“The China Briefing.”](#)

## Shipping Methods and Costs

For Alaska seafood (bulk and frozen) being shipped to China, the most common route is direct from Alaska ports to Chinese ports (e.g., Qingdao, Dalian, Shanghai, Ningbo). Products are often transshipped via Seattle/Tacoma or Korean/Japanese ports (e.g., Busan, Yokohama). It is common for shipments to make one stop at Busan or Yokohama for cargo consolidation, port efficiency, and to avoid congestion at Chinese ports.

Shipping costs vary by species, volume, and container type. For 40-foot refrigerated (reefer) containers (frozen at -18°C to -25°C), costs typically range from \$3,500 to \$8,000, depending on the type of seafood. Additional fees—including fuel surcharges, port handling, and customs clearance in China—are estimated to total between \$1,150 and \$2,000.<sup>10</sup>

Alaska-origin seafood products that are processed in China typically leave for final markets in the U.S. and Europe via containerized ocean shipping. The vast majority of processed seafood is shipped in reefers to ensure product quality.

Major shipping lines include Maersk, MSC, CMA CGM, Hapag-Lloyd, and COSCO. Many small and medium-sized processors do not work directly with the shipping companies, but through an agent instead.

For processed Alaska seafood that is re-exported back to the U.S., the most common shipping route is the trans-Pacific direct route, departing from Chinese ports such as Dalian or Qingdao and arriving at major U.S. West Coast ports, including Los Angeles/Long Beach and Seattle/Tacoma.

## Insurance and Regulatory Compliance and Insurance Costs

Seafood processing companies in China must comply with a comprehensive range of national laws, industry standards, and international regulations (if exporting).<sup>11</sup> Key regulations include:

- **Food safety and hygiene regulations** on general food safety and hygiene standards for food production, safety standards for fresh and frozen seafood, levels of contaminants in food, and food additives.
- **Environmental regulations** that cover wastewater discharge standards, solid waste management, and odor release pollution control.
- **Permits and licenses:** Companies must obtain food production licenses issued by the local State Administration for Market Regulation; a hygiene license is required for workers and facilities (from the local health bureau); export registration is required for overseas sales.
- **Labeling and traceability:** Companies must adhere to the General Standard of Food Labeling. All food products imported into China must have labels in Chinese with detailed essential product information. For exported products, facilities must follow additional requirements for target markets (e.g., FDA Nutrition Facts in the U.S.)

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<sup>10</sup> Cargo from China, 2025 [“Ocean Freight FCL/LCL from China: Ports, Carriers, Transit Time, Shipping Cost and Beyond;”](#) Freightify, 2025. [“Container Shipping Rate to and from China.”](#)

<sup>11</sup> USDA Foreign Agriculture Services, 2022. [“China: Food and Agricultural Import Regulations and Standards Country Report.”](#)

- **Labor and safety compliance:** Companies must comply with China's labor laws, which include regulations on working conditions, wages, and the prohibition of forced labor. Companies must provide mandatory worker safety training, especially for machinery (e.g., deboning machines) and cold storage hazards, and personal protective equipment (PPE) (e.g., gloves, aprons, anti-slip boots). Pressure vessels (e.g., steam boilers) and refrigeration units require annual inspections.<sup>12</sup>

Insurance costs vary depending on the size and infrastructure of each plant, covering aspects such as refrigeration, exports, and shipping. According to one interviewee, these costs are relatively minor compared to other expenses. However, regulatory challenges were identified as notable concerns in the industry.

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<sup>12</sup> Law Info China, 2021 "[Work Safety Law of the People's Republic of China](#)."

# Regional Comparisons

This section describes the comparative costs of operating plants that process Alaska seafood across the following categories: labor, fish purchase, product transportation, and electricity costs.

## Study Region Production, Value, and Employment

Summary data from the five regions below show that the combined seafood production output of Shandong and Liaoning provinces was about eight times larger than total output from Alaska.

Among the Alaska seafood study regions, shoreside processors in Southwest Alaska produced the largest volume of wholesale output and employed the most workers at peak production. However, wholesale value was greatest in Southeast Alaska.

**Table 16. Estimated Seafood Processing Output and Employment by Study Region, 2023**

| Study Region                                         | Processed Seafood Produced (metric tons) | Seafood Wholesale Value (\$millions) | Peak Employment (number of workers) |
|------------------------------------------------------|------------------------------------------|--------------------------------------|-------------------------------------|
| Alaska Total (note: includes non-case study regions) | 1.1 million                              | \$4,523                              | 18,467                              |
| Bristol Bay Alaska                                   | 69,000                                   | \$567                                | 4,398                               |
| Southeast Alaska                                     | 210,000                                  | \$1,044                              | 2,874                               |
| Southwest Alaska*                                    | 243,000                                  | \$980                                | 5,337                               |
| Washington state                                     | No Data Available                        | No Data Available                    | 5,179                               |
| Shandong and Liaoning provinces (China)              | 8.6 million                              | No Data Available                    | No Data Available                   |

Source: Alaska Department of Fish and Game, U.S. Bureau of Labor Statistics, Ministry of Agriculture and Rural Affairs of the People's Republic of China, industry interviews.

\*Shoreside production only: does not include catcher processors and motherships operating in this region.

## Key Quantitative Measures

The following table summarizes a comparison of unit costs such as wages in dollars per hour and fish purchase in dollars per metric ton, as applied to “standard” seafood plant parameters defined in this report’s introduction. For simplicity of comparison, this modeled plant produces only two products in equal proportion: Alaska pollock fillets and sockeye salmon fillets.

In general, operating expenses across these categories are lowest in China, driven by average hourly wages that are less than a quarter of wages paid in Alaska and Washington. Expenses are highest in Washington, due to the expense of shipping minimally processed seafood to this region for processing.<sup>13</sup>

Operating expenses among the Alaska study regions are similar in this table because of relatively similar fish purchase prices and wages across the state, although as described in the labor section below, overtime usage and costs for worker transportation differentiate total labor costs between regions.

**Table 17. Estimated Annual “Standard Plant” Expenses for Labor, Fish Purchase, Electricity, and Product Shipping (cost per metric ton of plant fillet output)**

| Region           | Fish Purchase* | Hourly Wages** | Product Transportation*** | Electricity Costs | All Main Cost Categories |
|------------------|----------------|----------------|---------------------------|-------------------|--------------------------|
| Bristol Bay      | \$4,525        | \$1,250        | \$775                     | \$200             | <b>\$6,750</b>           |
| Southeast Alaska | \$4,525        | \$1,250        | \$225                     | \$75              | <b>\$6,050</b>           |
| Southwest Alaska | \$4,525        | \$1,250        | \$500                     | \$200             | <b>\$6,450</b>           |
| Washington       | \$5,725        | \$1,275        | **                        | \$50              | <b>\$7,025</b>           |
| Mainland China   | \$4,725        | \$325          | \$100                     | \$50              | <b>\$5,200</b>           |

Source: McKinley Research Group estimates. See sections below for more detailed sourcing information.

\*Cost to purchase fish at point of production. Washington and China values include shipping costs to bring fish to the plant. \*\*Hourly wages for select job titles only. Does not include worker housing, benefits, or other labor costs. \*\*\*Cost to ship processed product to U.S. West Coast port of entry. No value for Washington included because processors in this region are already in the U.S. West Coast market.

## Labor

Seafood processing plants hire employees for dozens of different jobs each year. These jobs have been simplified into the five categories below for the purpose of making comparisons across regions. The three main types of jobs are seafood processors, skilled technicians, and various middle management roles.

Labor needs vary between plants and regions. For example, plants with more automation generally need fewer seafood processors but more technicians and maintenance workers. Remote plants where most workers stay in company bunkhouses usually hire more housekeeping and dining hall workers than plants with more local workers. The percentage of plant workers by job in the following table provides an approximate staffing composition for use in regional comparisons.

<sup>13</sup> For the sake of comparison with other regions, Washington fish purchase prices are based on the price of acquiring minimally processed Alaska seafood. In practice, most processing of Alaska seafood in Washington is value added processing, not primary processing.

**Table 18.” Typical” Alaska Seafood Processing Plant Composition by Job Type**

| Jobs                                                       | Description                                                             | Approximate % of Plant Work Force |
|------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------|
| Seafood Processor                                          | Standard entry-level line worker position                               | 75%                               |
| Maintenance Workers and Technicians                        | Refrigeration technicians, mechanics electricians, other skilled trades | 10%                               |
| Line Leads, Production Managers, Quality Control, Shipping | Often mid-level management positions and various “other” jobs           | 7%                                |
| Housekeeping / Dining Hall                                 | Domestic services to feed and house workforce                           | 5%                                |
| Management                                                 | Site specific management, does not include corporate                    | 3%                                |

Source: McKinley Research Group based on industry interviews

## Key Occupations

To simplify hourly labor costs, this report compares 2025 hourly wages for three common job titles: seafood processors, line supervisors, and refrigeration technician. As described above, seafood processors make up approximately three-quarters of a typical plant workforce and hourly wages paid to these workers represent a large part of total labor costs.

Hourly wages for line leads are also included since these workers, who oversee the work of a production line, are also fairly numerous in plants. The line supervisor wage rates are not representative of the larger “other” category that includes mid-level managers, quality control, and shipping and receiving workers.

Finally, wages for refrigeration technicians were collected to illustrate costs associated with the broader skilled labor category, which includes mechanics, carpenters, and electricians, among others.

## Wage Rates

Within Alaska, interviews conducted for this analysis indicate that hourly wages for all three occupations fall into similar ranges across Alaska regions. However, costs related to employee housing, travel, and overtime vary greatly among Alaska regions.

The H-2B prevailing wage, described below, plays a key role in setting the wages for seafood processing workers in Alaska and Washington. Interviews indicate that while base wages are similar across Alaska regions, employers incentivize workers to travel to more remote parts of the state with the expectation of minimum numbers of hours or overtime work to maximize pay.

Labor market forces set wages in China. While these are much lower than U.S. wages, they are higher than the average urban private sector wage across all sectors in China, \$4.63 per hour nationwide and \$3.53 in Northeast China in 2024.<sup>14</sup>

**Table 19. Estimated Average Hourly Wage for Key Seafood Processing Positions, By Region, 2025**

| Region           | Seafood Processor | Line Supervisor | Refrigeration Technician |
|------------------|-------------------|-----------------|--------------------------|
| Bristol Bay      | \$16-\$18         | \$17-\$19       | \$35-\$40                |
| Southwest Alaska | \$16-\$18         | \$17-\$19       | \$35-\$40                |
| Southeast Alaska | \$16-\$18         | \$17-\$19       | \$35-\$40                |
| Washington       | \$16-\$19         | \$17-\$20       | \$35-\$40                |
| Mainland China   | \$4-\$5           | \$4-\$5         | \$8-\$10                 |

Source: Industry Interviews, U.S. Department of Labor H-2B Program, Abler Human Resources (爱博仁人力资源) and Yilan Zhiye (一览职业大全)

Note: These average rates do not account for worker housing or overtime rates and use patterns, which vary by region and are described below.

## THE H-2B PREVAILING WAGE

The H-2B Temporary Non-Agricultural Worker visa program widely used by the seafood industry plays an important role in setting seafood processor wages in both Alaska and Washington.

Each year, the U.S. Department of Labor announces a prevailing wage for occupations and regions, based on employer surveys. H-2B workers and U.S. workers working in plants that employ H-2B workers cannot be paid less than this wage, a policy designed to avoid adverse impacts on U.S. workers. Even for plants that do not employ H-2B workers and are not bound by this rate, the prevailing wage often serves as an effective minimum wage because workers know this wage is paid at plants with H-2B workers. Prevailing wages are effective from July until June of the following year.

In Alaska, H-2B wages reached a record of \$18.06 per hour in 2022/2023, and have fallen over the last two years. In 2025, Alaska seafood processing wages are between \$16 and \$18 because new workers are generally paid the current H-2B wage of \$16.85, while returning workers are paid the higher wages from previous years. All three Alaska study regions are in the non-metro Alaska Bureau of Labor Statistics Area, which includes data for all of Alaska except Anchorage and the Matanuska-Susitna Borough.

In Washington, H-2B wages have increased over the past two years. Current prevailing wages are lower in Grays Harbor County, in rural Southwest Washington, and in Anacortes in

<sup>14</sup> National Bureau of Statistics, People's Republic of China. [“2024 年城镇单位就业人员年平均工资情况” \(Average Annual Salary for Urban Workers in 2024\).](#)

northwestern Washington, compared to Alaska wages. However, wages in the Seattle-Tacoma area, where the cost of living is higher, have surpassed Alaska wages.

**Table 20. H-2B Seafood Processing Prevailing Wages**

| Period starting... | Non-Metro Alaska | Washington     |           |                     |
|--------------------|------------------|----------------|-----------|---------------------|
|                    |                  | Seattle-Tacoma | Anacortes | Grays Harbor County |
| July 2022          | \$18.06          | \$17.40        | \$14.79   | \$15.03             |
| July 2023          | \$17.15          | \$18.59        | \$16.17   | \$15.42             |
| July 2024          | \$16.85          | \$19.30        | \$17.95   | \$16.70             |

Source: U.S. Department of Labor

Note: Wage data are for occupation code 51-3022, meat, poultry, and fish cutters and trimmers. Alaska wage data only available in non-metro Alaska (outside the municipality of Anchorage and Matanuska Borough).

## Overtime Rates and Usage

In addition to much higher hourly pay rates, labor expenses for processing fish in Alaska and Washington are higher than in China because of heavy reliance on overtime work.

In general, overtime work is especially common to Alaska seafood processing plants because of the limited local workforce and the need to flex production line capacity to match the pace of fresh seafood deliveries to the dock.

Although physically demanding, overtime work and the corresponding boost in pay is often seen as a perk of the job, especially for foreign workers seeking to maximize their take-home pay during their time in the United States.

## ALASKA

Alaska overtime regulations require time-and-a-half pay when daily working hours extend beyond eight hours per day, or forty hours per week. While overtime is widely used in Alaska seafood processing plants, there are significant variations by region. In general, processing plants rely on overtime most extensively in salmon fisheries, where natural run timing dictates a faster pace of work. The Bristol Bay sockeye salmon run timing is particularly condensed, and it is not uncommon for processors to work 16-hour days during peak weeks of the season.

In Southwest Alaska, where plants primarily process seafood from groundfish fisheries, twelve-hour shifts are more common as harvesters deliver fish at a more steady, predictable cadence. Estimated average overtime use in Southeast Alaska is somewhere between Bristol Bay and Southwest Alaska.

**Table 21. Estimated Use of Overtime and Effects on Total Average Hourly Labor Costs in Alaska Seafood Processing Study Areas**

| Region      | Estimated Average Weekly Working Hours* | Estimated Average Overtime Hours | Base Pay  | Estimated Average Hourly Pay with Overtime |
|-------------|-----------------------------------------|----------------------------------|-----------|--------------------------------------------|
| Bristol Bay | 100                                     | 60                               | \$16-\$18 | \$21-\$23                                  |
| Southwest   | 84                                      | 44                               | \$16-\$18 | \$20-\$23                                  |
| Southeast   | 90                                      | 50                               | \$16-\$18 | \$20-\$23                                  |

Source: McKinley Research Group based on industry interviews

\*During peak processing seasons

## WASHINGTON

Overtime work in Washington requires time-and-a-half pay after 40 hours in a week, but not after eight hours in a day. Industry interviews indicate plants pay some overtime in Washington, but not to the extent Alaskan plants are paying overtime wages.

## CHINA

Like Alaska, Chinese labor regulations require time-and-half overtime pay for work beyond eight hours per day or 40 hours per week. Chinese regulations additionally require double pay on weekends and triple pay on public holidays including Chinese New Year (late January or early February) and National Day (October 1). Seafood plants usually close on these public holidays.

However, interviews indicate that overtime is often a less significant part of seafood processing compensation in China compared to Alaska and Washington. This is because plants have access to more workers and are therefore less likely to require more than eight hours of work.

## Worker Residency and Housing Costs

Housing and worker transportation costs can be substantial for processing plants with a high proportion of non-resident labor.

## ALASKA

Alaska's seafood processing industry relies on non-Alaska-resident workers more than any other industry in the state, especially remote seafood processing locations in Western Alaska.

The table below shows the percentage and number of non-Alaska-resident workers in each of the three study regions. In most cases, non-resident workers in the Alaska seafood-processing industry live in company-provided bunkhouses and eat at company cafeterias.

In 2023, non-Alaska residents made up more than 95% of the seafood processing workforce in the Bristol Bay region, and 80% or higher in both Southeast and Southwest Alaska. Within Alaska, the Kodiak Island Borough (not a study area for this project) is notable for the smaller share of non-resident workers in its processing plants: 53% in 2023.

**Table 22. Number and Percentage of Non-resident Seafood Processing Workers, by Alaska Study Region, 2023**

| Region           | Number of Non-Alaska-Resident Workers | Percentage of Seafood Processing Workers Who Are Non-Alaska-Residents |
|------------------|---------------------------------------|-----------------------------------------------------------------------|
| Bristol Bay      | 4,957                                 | 96%                                                                   |
| Southeast Alaska | 2,359                                 | 80%                                                                   |
| Southwest Alaska | 4,021                                 | 81%                                                                   |

Source: Alaska Department of Labor and Workforce Development

Some companies charge their employees a fee of \$15 to \$25 per day for room and board, but these fees, which are capped by legislation, do not cover the full cost to the company of providing these services, according to industry interviews.

## WASHINGTON

While Washington does not collect worker residency data that is as detailed as Alaska's, industry interviews indicate that processors in Washington also struggle to recruit workers among local residents. Washington plants also use the H-2B program and pay for worker housing in order to keep plants operating.

## CHINA

As with Alaska and Washington, non-local workers are important to the seafood processing workforce in China. As described in the Seattle and Tacoma are the main ports through which Alaska seafood travels to the Lower 48. These ports are also used for consolidating Alaska seafood shipments for export and are key ports of entry for imported seafood, including Alaska-origin seafood processed overseas. The Puget Sound Region is also a hub for road and rail networks used to transport Alaska seafood around the contiguous U.S.

Mainland China section, an estimated 40-70% of seafood processing workers are rural migrants who come to cities to work but are unable to get benefits associated with urban residency under China's place-of-birth based *hukou* (household registration) system. Interviews indicate employers provide housing for some of these non-local workers, although the costs incurred by processors are likely substantially lower than those of processors in Alaska and Washington.

## Worker Transportation Costs

Worker transportation is another significant labor cost that is especially high for Alaska-based processors. Worker transportation has long been an employer expense for Alaska processors, but employers have born a larger share of this expense in the last ten years, as the employee muster location increasingly moved from Anchorage to Seattle.

During the height of the COVID-19 pandemic and in the following years, processors increasingly turned to H-2B workers that they needed to fly in from far away cities such as Kiev, Ukraine

(before 2022) and San Salvador, El Salvador. Under the corresponding employment doctrine that governs use of the H-2B worker program, employers who used H-2B workers are required to offer the same transportation benefit to their U.S. employees, flying them to work from an airport near their home instead of requiring them to get to Seattle or Anchorage.

The airfare between Seattle and remote processing plants alone can cost well over \$1,000 per worker – not including additional airfare to get workers to Seattle. Seafood processing companies receive volume discounts from airlines for purchasing tickets for hundreds of workers, but the prices below provide some context of the magnitude of airfare costs, and the differences in airfare costs between Alaska processing regions. The range of prices is wider for Southeast Alaska because this region has more flights per week leading to greater variation in prices based on days of the week.

**Table 23. Scheduled Commercial Airline Ticket Prices from Seattle to Select Seafood Processing Locations, June and August 2025**

| From Seattle to...      | Listed Round Trip Cost | Airline(s)                                      |
|-------------------------|------------------------|-------------------------------------------------|
| <b>Bristol Bay</b>      |                        |                                                 |
| Dillingham              | \$800-\$980            | Alaska Airlines                                 |
| King Salmon*            | \$800-\$1,000          | Alaska Airlines                                 |
| <b>Southeast Alaska</b> |                        |                                                 |
| Ketchikan               | \$500-\$1,500          | Alaska Airlines                                 |
| Petersburg              | \$700-\$1,300          | Alaska Airlines                                 |
| Sitka                   | \$500-\$1,300          | Alaska Airlines                                 |
| <b>Southwest Alaska</b> |                        |                                                 |
| Akutan                  | \$2,400-\$2,600        | Alaska/Delta+ Aleutian Airways + Grant Aviation |
| Sand Point              | \$1,550-\$1,960        | Alaska/Delta+ Aleutian Airways                  |
| Unalaska                | \$2,100-\$2,300        | Alaska/Delta + Aleutian Airways                 |

Source: Alaska Airlines, Aleutian Airways, and Grant Aviation.

Note: Prices as of early April 2025, for departure flights in June 2025, returning August 2025.

\*Seafood processing occurs in Naknek, although the airport is in King Salmon.

## Worker Experience

Worker experience impacts the cost of labor because more experienced workers can work more quickly, make fewer mistakes, and recover more edible meat when filleting a fish.

While data for experience levels of workers in China were not available, China's plants have a reputation for employing an experienced workforce. Industry interviews indicated the high recovery rate from Chinese plants is one reason seafood re-processing of Alaska seafood has not moved more quickly to Southeast Asia and other emerging re-processing markets, despite risks from geopolitical tensions between the U.S. and China, and the potential for lower prevailing wages.

## Fish Purchase

Labor and fish purchase are usually the two biggest operating costs for seafood processing plants, together often making up more than half of annual expenses. A key difference between fish purchase costs for plants in the U.S. and plants in China is that Chinese plants that process Alaska seafood have access to fish from Alaska and (often lower cost) seafood from other countries. This access in China often includes a mix of seafood species caught in eastern Russia that is similar to the mix of species caught in Alaska.

The table below summarizes the estimated purchase price for processing plants for three key Alaska species.

**Table 24. Estimated Acquisition Cost (\$/whole round weight equivalent metric ton) of Whole Round Pink Salmon Sockeye Salmon, and Pollock , 2022-2023 Average**

|                | Pink Salmon | Sockeye Salmon | Pollock |
|----------------|-------------|----------------|---------|
| Alaska         | \$967       | \$2,664        | \$350   |
| Washington     | \$1,367     | \$3,064        | \$750   |
| Mainland China | \$938       | \$2,810        | \$337   |

Source: Alaska Department of Fish & Game, Trade Data Monitor, published domestic shipping rates, and McKinley Research Group estimates

### Alaska

In Alaska, the average prices paid by processors to harvesters to acquire fish is widely available and is known as the ex-vessel price. The table above uses Alaska statewide averages rather than study-region-specific prices due to data availability. In practice, there is some variability in fish purchase price across Alaska regions. Different quality associations with different harvesting methods are a key driver of this variability. For example, gillnet- and troll-caught salmon sells for a higher price than seine-caught salmon. Similarly, pot- and longline-caught sablefish sells for a higher price than trawl-caught sablefish.

### Washington

Fish purchase costs for Washington were modeled based on Alaska purchase prices plus shipping costs. In practice, much of the Alaska fish processed in Washington is not purchased in Washington but is shipped between business units of vertically integrated processors that purchase fish and conduct primary processing in Alaska and additional processing in Washington.

### China

Fish purchase costs for plants in China were modeled based on trade data described in more detail below. Chinese plants differ from Alaska plants in that their processing often begins with

thawing frozen headed-and-gutted products, while Alaska plants start with whole fish. This analysis deflates Chinese import prices of mostly H&G fish to the estimated whole fish price using data on H&G to whole round prices in Alaska.

The estimated prices (adjusted to whole round terms) are lower in Chinese plants than Alaska plants for pollock and pink salmon, likely because of the larger volumes of lower-priced Russian imports of these products available to Chinese plants. However, estimated fish purchase prices are higher for sockeye salmon, reflecting the fact that most of the sockeye salmon is sourced from Alaska and there is an added shipping cost associated with transporting this product from Alaska to China.

Chinese re-processing plant fish purchase costs do not include tariffs – including the recently increased tariffs on U.S. import – because China exempts raw materials that are being re-processed and re-exported from tariffs to protect its re-processing sector.

## RUSSIAN SEAFOOD IN CHINESE PLANTS

Import data from China provides context on the proportion of Alaska product and Russian product available to Chinese re-processing plants, and the relative prices of these products.

In 2022 and 2023, China sourced most of its pollock from Russia and most of its sockeye salmon from the U.S., while pink salmon imports were somewhat evenly split between U.S. and Russian origin. On average, China's imports from Russia were at a lower price than imports from the U.S. across all three product categories. Prices are a reflection of lower harvest costs in Russia and suppressed market demand for Russian-origin fish due to international trade sanctions placed on Russia following the country's invasion of Ukraine. However, different product forms complicate price comparisons. Alaska overwhelmingly exports headed-and-gutted seafood under the Harmonized System codes listed below, while Russia exports a mix of headed-and-gutted and whole product.

**Table 25. Chinese Imports of Pink Salmon, Sockeye Salmon, and Pollock, 2022-2023 Annual Average**

| Species        | Total Annual Imports (mt) | % from U.S. | Average U.S. Product Price \$/mt | % from Russia | Average Russian Product Price \$/mt |
|----------------|---------------------------|-------------|----------------------------------|---------------|-------------------------------------|
| Pink Salmon*   | 140,368                   | 38%         | \$3,205                          | 58%           | \$2,477                             |
| Sockeye Salmon | 4,433                     | 81%         | \$7,220                          | 13%           | \$6,868                             |
| Pollock        | 589,358                   | 4%          | \$1,645                          | 94%           | \$1,261                             |

Source: Trade Data Monitor

\*HS code 03.031200 includes all non-sockeye Pacific salmons but is mostly pink salmon.

Note: Pollock imports are under HS 03.036700 and sockeyes salmon is under HS 03.031100. U.S. and Russia percentages do not add to 100% due to omission of other trade partners.

# Electricity

Electricity costs for plants that process Alaska seafood range from less than \$0.10 per kilowatt hour (kWh) in some regions, to more than three times this cost in others. In general, costs are highest in Southwest Alaska and Bristol Bay, and lowest in Washington and China. Costs are especially variable within Southeast Alaska, where some communities have access to low-cost hydroelectric power while others do not. Costs are especially high in Southwest Alaska and Bristol Bay because these regions use diesel generators, and the diesel fuel is especially costly because of the expense of transporting it to these remote regions. Kodiak, which is not one of this report's study regions, has a unique mix of power generation sources among Alaska seafood processing ports, including a mix of hydroelectric and wind power, with battery storage and flywheels used to store intermittent wind power.

Electricity demand varies between seafood processing plants based on whether it is primarily a canning or freezing plant (the latter is more energy intensive) and the age and design of the plant.

## Self-Generated Electricity

For simplicity of comparison, the electricity costs below are taken from electric utility providers: seafood plants power their facilities with electricity from utility providers including private companies, cooperative organizations, and municipal governments.

Some of Alaska's remote seafood plants generate their own electricity or use their own generators to back up or supplement utility-provided power. Utility electricity rates in the same regions as these plants provide useful approximations of the costs of generating electricity for self-generating plants.

In general, power costs are lowest in Washington and China, which have access to more types of power generation, and are highest in Bristol Bay and Southwest Alaska, which rely on diesel generators. Southwest power costs are especially variable, likely due different economies of scale among port communities in this region.

**Table 26. Estimated Electricity Costs per Kilowatt Hour and Total Annual Electric Costs for "Standard" Seafood Processing Plant by Region, 2025**

| Region      | \$/kWh Rate   | Estimated Annual Electric Service Cost <sup>15</sup> | Main Types of Power Generation |
|-------------|---------------|------------------------------------------------------|--------------------------------|
| Bristol Bay | \$0.36-\$0.45 | \$1,800,000-\$2,250,000                              | Diesel                         |

<sup>15</sup> These annual costs are estimated kilowatt hour costs alone. A commercial customer's power utility bill consists of two components: the kilowatt hours of energy consumed, and the power surcharge, an additional fee for peak power the customer pulls from the grid during a billing cycle. However, the kilowatt hour energy charge is usually the main driver of total electricity costs.

|                  |               |                       |                                   |
|------------------|---------------|-----------------------|-----------------------------------|
| Southeast Alaska | \$0.06-\$0.27 | \$300,000-\$1,350,000 | Hydro, diesel                     |
| Southwest Alaska | \$0.15-\$0.65 | \$750,000-\$3,250,000 | Diesel                            |
| Washington       | \$0.05-\$0.12 | \$250,000-\$600,000   | Hydro, natural gas, wind          |
| Mainland China   | \$0.09-\$0.12 | \$450,000-\$600,000   | Coal, nuclear, solar, hydro, wind |

Source: Electric utility rate sheets, interviews, and Dezan Shira & Associates (China rates)

## Non-Electric Utility Costs

In addition to electricity, seafood processing plants consume freshwater and need to dispose of wastewater. Interviews indicate these are significant expenses, although lower than electricity costs. Generally, these costs follow a similar pattern to electricity and shipping, with higher costs in more remote regions.

## Product Shipping

The cost of transporting processed seafood products to market is often not a direct cost for seafood processors. Nonetheless, product shipping costs impact the relative competitiveness of seafood processing plants in different regions because buyers ultimately pay a higher price if the product has to be shipped at a higher cost.

Product shipping is among the hardest cost factors to compare because of the number of markets for Alaska seafood and different ways to transport it. For the sake of simplicity, this analysis compares the costs of two common shipping itineraries used to transport one of Alaska's largest volume seafood products (Alaska pollock fillets) to the Lower 48, the largest consumer market for Alaska seafood.

- 1) **Alaska to U.S. market direct:** The cost of shipping a metric ton of frozen Alaska pollock fillets produced at a plant in Southwest Alaska to the U.S. West Coast market via domestic marine cargo vessels.
- 2) **Alaska to U.S. market via China:** The total cost of shipping enough headed-and-gutted Alaska pollock to produce a metric ton of pollock fillets to China via international marine cargo vessels plus the cost of shipping a metric ton of pollock fillets from China to the U.S. West Coast market via international marine cargo vessels.

As seen below, the estimated total shipping costs to process fillets in Alaska and send directly to domestic markets is slightly lower than the total shipping costs associated with shipping H&G to China and shipping fillets back to the U.S. However, this is a small difference compared to cost advantages Chinese processors have for labor and electricity costs.

On a per-mile basis, direct domestic shipping to the Lower 48 is much more expensive. While total costs are similar, the domestic shipment travels about 2,000 miles, while the shipment for

re-processing in China and back to the U.S. West Coast travels about 10,000 miles. Domestic is more expensive than international shipping largely because of the Merchant Marine Act of 1920 – often known as the Jones Act – which requires cargo shipped between two U.S. ports to travel on U.S. built, flagged, and crewed vessels. This law supports the U.S. maritime industry but makes domestic shipping expensive compared to international shipping with foreign shipping companies because of the comparatively higher costs of building and crewing vessels in the United States.

For simplicity of comparison, the table below uses published shipping spot rates and current market prices for shipping services to show the cost of shipping either directly to the U.S. domestic market, or indirectly via China. In practice, much of Alaska’s seafood is shipped under long-term contracts negotiated between seafood processors and shippers. These ranges should be seen as high estimates for total shipping costs because contract rates are generally lower than spot rates.

**Table 27. Total Estimated Shipping Cost (\$/MT) of Shipping Frozen Alaska Pollock Fillet from Unalaska to the U.S. West Coast, 2025 Spot Prices**

| Market Segment                  | Alaska to China | China to U.S. West Coast | Direct Alaska to West Coast | Total Shipping Cost to West Coast USA Market |
|---------------------------------|-----------------|--------------------------|-----------------------------|----------------------------------------------|
| Alaska to U.S. market direct    | N/A             | N/A                      | \$400-\$500                 | <b>\$400-\$500</b>                           |
| Alaska to U.S. market via China | \$500-\$600*    | \$75-\$100               | N/A                         | <b>\$575-\$700</b>                           |

Source: McKinley Research Group estimates based on domestic shipping tariff books and industry interviews

Note: analysis excludes cold storage and other logistics

\*Price adjusted upward using seafood yield data to account for cost of transporting material trimmed away to produce fillet.

## Regional Logistical Considerations

There are significant costs and logistical considerations associated with shipping Alaska seafood from the different study regions. In general, the geography of Southwest Alaska and Bristol Bay facilitates seafood export because of the Aleutian Islands’ location near the Great Circle shipping route between China and the U.S. West Coast, while Southeast Alaska is more closely linked with domestic transportation networks. Seafood exported from Southeast Alaska first travels by domestic marine cargo vessels to Washington for transfer to international ships. See the [Seafood Processing Regional Profiles](#) section for more details on logistical shipping considerations unique to each study region.

Domestic spot shipping prices below show the variation in the costs of shipping products to Washington (the closest part of the U.S. West Coast market) from the three Alaska processing regions.

**Table 28. Frozen Seafood Domestic Spot Shipping Prices from Alaska Study Regions to Washington (\$/MT), 2025**

| Shipping Price From... | Spot Shipping Price Range |
|------------------------|---------------------------|
| Bristol Bay            | \$625-\$775               |
| Southeast Alaska       | \$175-\$325               |
| Southwest Alaska       | \$400-\$500               |

Source: Domestic shipping tariff books

## Insurance

Domestic seafood processing operators generally purchase several types of commercial insurance to mitigate risk. Examples include property insurance for plants, equipment, and vehicles; liability and food spoilage coverage; and workers' compensation insurance. Seafood processing is considered a relatively challenging industry to insure because of risks associated with frozen seafood thawing, the potential liability of any food product to cause illness, and the risk of property damage at remote plants.

In general, insurance premium costs represent a small part of overhead costs for seafood processors, although costs of one particular insurance product – marine cargo insurance – has risen rapidly in recent years.

Insurance premium rates are customized to the risk profiles of specific plants, making regional comparison difficult, although insurance costs are likely highest for Bristol Bay and Southwest Alaska among the study areas, as described below.

## Regulatory Requirements

Government regulations in Alaska, Washington, and China all require some form of workers' compensation insurance. While not legally required, property and liability coverage are nearly universally purchased to manage risk and ensure access to capital as lenders generally require this coverage as a condition of financing.

## Comparative Costs

**Property insurance:** Industry interviews indicate average insurance costs are particularly high in Bristol Bay and Southwest Alaska because of:

- High risks associated with earthquakes and tsunamis (although these are present in all study areas);
- Limited firefighting resources; and
- Older facilities on average

**Workers' Compensation Insurance:** Workers' compensation insurance premium rates are tailored to the individual company's risk profile including factors such as industry and level of

payroll. Premium rates are expressed as a dollar value per \$100 in the company's wages. In 2022, the median premium rate in the United States was \$1.27 per \$100 in wages. Alaska and Washington State have similar median workers' compensation insurance premium rates, near the national median for all workers and food manufacturers in particular, according to a bi-annual study conducted by the State of Oregon.<sup>16</sup>

## Fluctuations in Insurance Markets

International marine cargo premiums experienced a period of rising rates (20%-40%) between 2018 and 2024 attributed to increased re-insurance costs.<sup>17</sup> In contrast, workers' compensations insurance rates on average across the U.S. have trended down over the last three decades for reasons including lower worker injury rates and increased competition among underwriters.<sup>18</sup>

## Tariffs

Tariffs could dramatically change the feasibility of processing Alaska seafood in China. Recent U.S. tariffs imposed on imports from China (if they remain in effect) will make it significantly more costly to re-import Alaska-origin seafood processed in China back into the U.S.. However, if China continues to exempt U.S. seafood used in the re-processing and re-export sector from import tariffs, it may still be feasible for processors in China to continue using U.S. origin seafood for exports to Japan, Europe, and other markets.

One key difference between the 2025 tariffs and those imposed by the U.S. on China in 2018 is the previous tariffs largely exempted the re-processing sector for both imports into China and re-imports into the U.S.: Chinese import tariffs exempted (and continue to exempt) seafood bound for the re-processing and re-export sector. Meanwhile, the U.S. tariffs imposed in 2018 – known as Section 301 tariffs – either did not apply to seafood products or excluded imports of products made from U.S.-raw material.

As of summer 2025, Chinese import tariffs continue to exempt Alaska seafood for re-processing and re-export. However, exporting these products back to the United States has already become more costly under new tariffs described in the table below.

Most directly, U.S. imports of Chinese seafood are subject to a new 20% tariff under the International Emergency Economic Powers Act. There are currently no exceptions to this tariff for Alaska seafood. In addition, tariff exclusions for some re-processed Alaska origin seafood

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<sup>16</sup> Oregon Department of Consumer and Business Services, 2022. [“Oregon Workers’ Compensation Premium Rate Ranking.”](#) Note: Rates are similar for both Washington and Alaska for all workers as well as the food manufacturing sector in particular.

<sup>17</sup> Insurance Times, 2021. [“Lloyd’s of London ‘won’t tolerate loss-making syndicates.’”](#)

<sup>18</sup> Swiss Re, 2024. [“The State of the U.S. Workers’ Compensation Insurance Market.”](#)

products including flatfish fillets are scheduled to expire in August 2025, which would add another 25% tariff for these products. Finally, retaliatory tariffs announced with the goal of reducing the U.S. trade deficit currently add an additional 10% on imports from China, a tariff that is currently scheduled to balloon to 125% in August 2025 if an agreement is not reached. Importers are able to reduce the effective rate of this particular tariff by applying the tariff rate only to the value added by Chinese processors (subtracting out the value of the U.S.-origin raw material).

**Table 29. Summary of U.S. Import Tariffs on U.S.-Origin Seafood Re-processed in China and Re-Exported to the U.S.**

| Name of Tariff                   | Most Favored Nation Tariff Rate     | Section 301 Tariff                                                                                                                                   | IEEPA "Fentanyl Tariff"                                       | Reciprocal Tariff                                                             |
|----------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>Type of Tariff</b>            | Base rate charged to most countries | Invoked in 2018. Based on presidential authority to respond to unfair trade practices                                                                | Invoked using the International Emergency Economic Powers Act | Based on goal of reducing trade deficits                                      |
| <b>Tax Percentage</b>            | Varies by Product                   | 25%                                                                                                                                                  | 20%                                                           | 10%, increases to 125% in August                                              |
| <b>Exemptions and Exclusions</b> | N/A                                 | Most Alaska products not included. An exemption for some affected products including flatfish and haddock fillets are scheduled to expire in August. | None                                                          | Tariff only applies to value added part of Alaska seafood processed in China. |

Source: At-sea Processors Association

# Appendix A: Summary of Seafood Processing Hubs in Mainland China

This report focuses on operating costs of seafood processing sectors in the two Chinese provinces most interconnected with Alaska seafood: Shandong and Liaoning. See below for broader context about the types of processing done in other Chinese seafood processing hubs.

## Zhoushan

Located in Zhejiang Province, Zhoushan is often referred to as the "Fishery Capital of China." It is the largest fishing port in the country and plays a crucial role in both domestic and international seafood trade. Zhoushan is particularly known for its squid and mackerel processing.

## Yantai

Also in Shandong Province, Yantai is another important city for seafood processing, especially for products like scallops and shrimp. It has a well-developed cold chain logistics network, making it a key player in the export of processed seafood.'

## Guangzhou

As a major trading hub in southern China, Guangzhou is a key distribution center for seafood, both domestically and internationally. The city's proximity to Southeast Asia makes it a significant player in the trade of tropical seafood products like shrimp and crab.

## Xiamen

Located in Fujian Province, Xiamen is another important port city for seafood trade. It has a strong focus on importing and processing seafood from Southeast Asia and the Indian Ocean.

## Shanghai

As China's largest city and a global financial hub, Shanghai is also a major center for seafood trade and distribution. The city's advanced logistics infrastructure makes it a key node for both imported and domestically produced seafood.

## Beihai

In Guangxi Province, Beihai is known for its shrimp and crab processing. The city is a significant player in the seafood trade with Southeast Asia.

## Hainan

The island province of Hainan is known for its tropical seafood, including grouper, lobster, and shrimp. It is also a growing hub for aquaculture.

## Appendix B: Labor Costs Calculations for Mainland China

There is no available government statistical source on wages for the seafood industry. However, job posting and information sites, such as Abler Human Resources (爱博仁人力资源) and Yilan Zhiye (一览职业大全)—both similar to the Indeed.com—offer estimated ranges, based employer and employee surveys. Based on these sources, the average monthly salary for workers in seafood processing factories in China typically ranges between ¥3,000 to ¥6,500 CNY (\$410 to \$885 USD).<sup>19</sup> According to Yilan Zhiye, from January to July 2024, the average monthly salary for a seafood processor worker in China nationwide was ¥6,601; for Qingdao, the average monthly wage (sans benefits) was ¥7,571. The exact number can vary significantly depending on the region, the level of experience required, and the size of the operation. In coastal cities like Dalian or Qingdao, where the cost of living is higher, wages tend to be on the higher end or even exceed this range. According to survey data on job postings collected by Abler, the job category of “general workers/assistants,” which includes production-line workers, averaged approximately \$709 per month in 2024.

**Table 30. Average Monthly Wages Offered by Employers for Key Seafood Processing Positions, China (Nationwide), Based on Job Postings from Abler**

| Position                          | Monthly Salary Offered by Employer | USD Equivalent<br><small>Based on currency exchange rates on January 13, 2025</small> | USD based on 40-hour work week |
|-----------------------------------|------------------------------------|---------------------------------------------------------------------------------------|--------------------------------|
| R&D/Technology Positions          | ¥2,817                             | \$384                                                                                 | \$2.40                         |
| Quality Control/Quality Assurance | ¥5,201                             | \$709                                                                                 | \$4.43                         |
| Technology Roles                  | ¥3,251                             | \$443                                                                                 | \$2.77                         |
| General Workers/Assistants        | ¥5,201                             | \$709                                                                                 | \$4.43                         |
| Aquatic Processing Roles          | ¥3,715                             | \$507                                                                                 | \$3.17                         |

Source: Abler, 2024.

These wages are not necessarily low by Chinese standards, especially for skilled workers, who can earn about \$1,500 per month (but it varies by regional and company; \$1,500 is offered by one business we talked with, located in Liaoning Province). According to China’s National Bureau of Statistics (NBS), in 2023, the average annual salary for workers in the public sector and private sector was ¥120,698 (\$1,436/month) and ¥68,340 (\$813/month), respectively. For workers in the Agriculture, Forestry, Animal Husbandry, and Fishery industries, the average was

<sup>19</sup> Salary data from Abler Human Resources do not include insurance and benefits contributions; the numbers from 一览大全 do not specify whether they include benefits and other non-wage contributions.

¥62,592 (\$745/month). (The exchange rate is based on the 2023 average of 1:7 between U.S. dollars and Chinese yuan.) At one firm we spoke with, low-level processing workers earn on average 150-200 RMB/day (approximately \$21-\$28).

Regarding the number of long-term employees, it depends on the factory—specifically, how well they pay and treat their workers. It is common for employees to remain at certain processing plants for 10 or even 20 years

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