Commercial Net Pen Salmon Farming in Washington State



## Icicle Seafoods at a glance

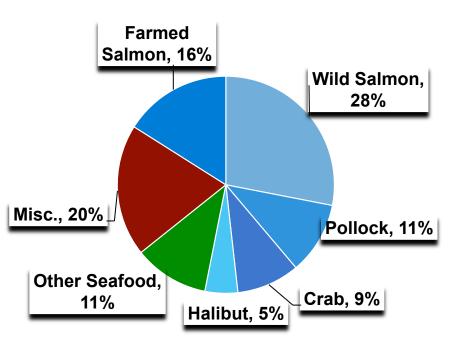
Icicle is a leading harvester, producer and processor of diversified seafood products in North America.

Annually we produce:

- 60,000 tons of wild salmon
- 75,000 tons of pollock, crab, halibut, sablefish and cod
- 20,000 tons of Atlantic salmon, coho salmon and trout farmed in the U.S. and Chile

Products are sold throughout the world to a variety of customers including industrial processors, wholesalers, food service companies and retailers

### **Revenue by segment**





## My profile







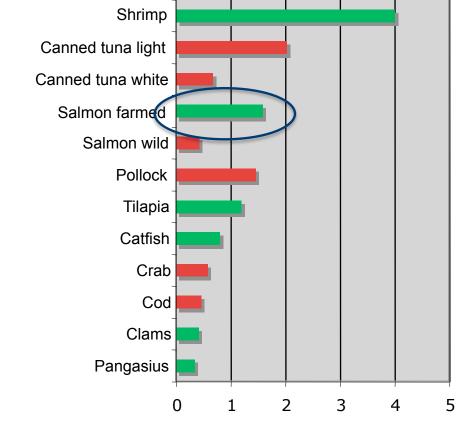
- Senior management roles in BC & NB, Chile and now WA
- 10 years prior to farming
  - Outdoor education industry Africa, Northern Canada, Eastern Canada
  - 4 years raising money for a university
- Why I pursued a career in salmon farming:
  - Sustainable industry producing a wholesome, nutritious food
  - Takes place on the water surrounded by nature's beauty
  - Offers a good living which would allow my family to live in a small coastal community



## Changing U.S. seafood consumption

#### 1991: Tuna, shrimp and cod Canned tuna light Canned tuna white Shrimp Cod Pollock Salmon wild Salmon farmed Catfish Clams Flatfish 2 1 3 n

#### 2010: Shrimp, tuna and salmon

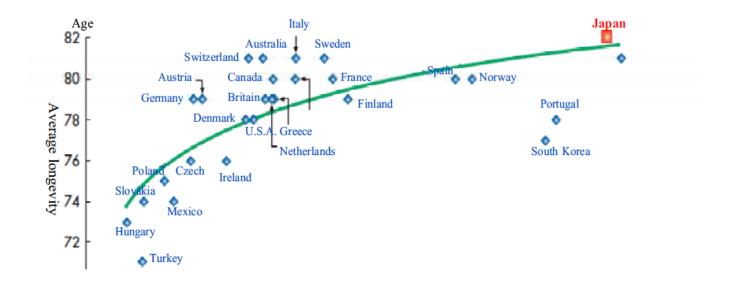


Primarily farmed species

### Health benefits of seafood

#### The more fish you eat, the longer you live....

Relationship between Per Capita Annual Fish Consumption and Average Longevity in Major Countries



Per capita annual fish consumption

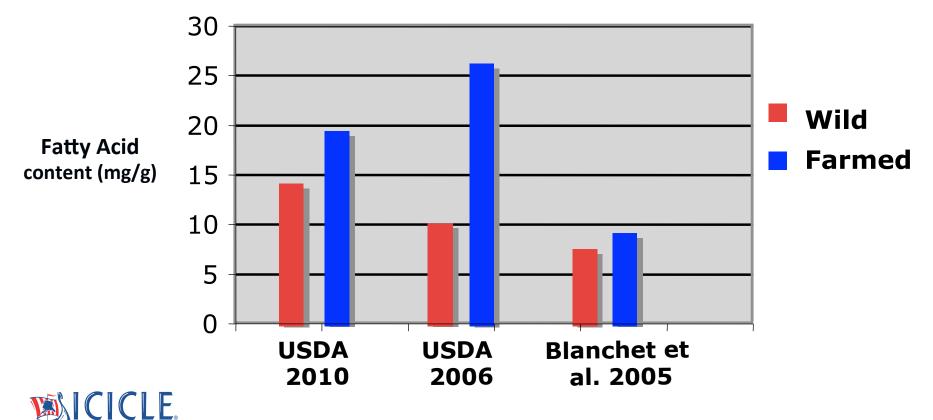
kg/person-year

Sources: "FAOSTAT," FAO; "The World Health Report 2006, WHO Note: Per capita annual fish consumption and average longevity are for 2004.



## Health benefits of farmed salmon

# Studies show farmed salmon contains comparable levels of essential fatty acids to salmon caught in the wild



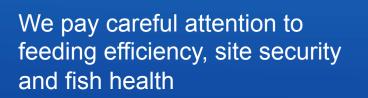
## Egg and smolt production





we grow smolts in freshwater at our Washington hatchery

## Ocean net pen farming





## Harvest and processing



salmon to the US market 52 weeks per year

## **Regulatory framework**

- Shoreline Substantial Development Permit / Conditional Use Permit (Local Counties/City Planning Departments)
- State Environmental Policy Act (SEPA) review and determination
- Joint Aquatic Resource Permit Application (JARPA) U.S. Army Corps, WDFW, WDNR, WDOE, Local Planning Dept, Tribal Agencies
- U.S. Army Corps of Engineers Section 10 Permit (requires ESA consultation with USFW/NMFS)
- Coastal Zone Management Act Certification (WA Dept. of Ecology)
- Washington Department of Fish and Wildlife (WDFW) Aquatic Farm Permit and Registration
- Aquaculture Finfish Permit (WDFW)
- Live Fish Transport/Importation Permits (WDFW)
- National Pollutant Discharge Elimination System Permit- NPDES (WA Dept. of Ecology)
- Aquatic Use Permit Application and Aquatic Lands Lease (Washington Dept. of Natural Resources)
- U.S. Coast Guard Private Aids to Navigation (PATON) Permit



## Salmon farms in Puget Sound

Atlantic salmon have been farmed safely and successfully in Puget Sound for more than 30 years

Icicle operates farms at Bainbridge Island, Cypress Island, Port Angeles and Hope Island

We employ 45 people at our net pens and 16 at our hatchery. Our fish-processing contractor employs another ~50 people

These jobs are permanent, full-time, year-round





### Water dependent use

#### Q: Why not just produce them on land?

A: There are **NO** successful land-based options for producing Atlantic salmon:

- those currently in operation are experimental and subsist on grant and research funding
- Commercial scale trials have failed
- Salmon produced in recirculated, land-based systems have problems related to off-flavors and poor growth
- Capital costs are enormous
- Energy and operating costs are high and would ensure than only wealthy US citizens could afford to eat fresh salmon
- High fish densities raise animal welfare concerns



Our salmon need to be reared at low densities in a healthy, clean marine environment – the health of Puget Sound is as important to salmon farmers as it is to all Washingtonians



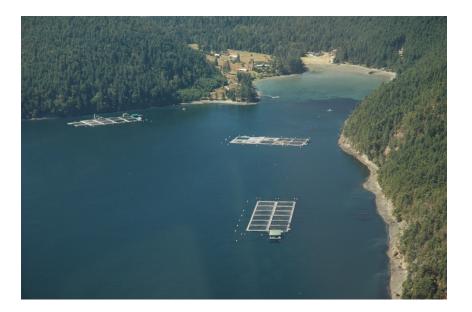
## Room to grow in Puget Sound

The total area of Puget Sound and the 50 percent of the Strait of Juan de Fuca within U.S. waters is ~1.16 million acres

Our seawater lease holdings total 184 acres - less than a third of a square mile, .02% of the available surface area

Of that leased acreage, we use 21 acres for net pens

All U.S. imports of farmed salmon from Chile could be replaced with 340 additional acres of net pens





## Jobs on the farm





## Economic impacts of salmon farming

Flying over 200 million pounds of imported fish from Chile to the U.S. costs nearly \$89 million each year (whole fish basis)

We harvest ~15 million pounds from 21 acres of pens per year

Annual payroll is \$3.4 million - \$50,000/year/person

Regional goods and services - \$4.7 million/year

Processing & packaging - \$4 million/year



Expanding US production to replace Chilean imports would add ~\$42 million in payroll, ~\$68 million for goods and services and ~\$160 million in processing – a huge potential benefit to our State economy







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