SALMON QUALITY
Quality

- A **consistent** seafood product acceptable to the **customer**
Why Quality is Important?

• Economics – Value of #1 fish
• International sources of salmon
• Consumer expectations
• Meeting Competition
Why Quality is Important

• Successful direct marketers – Copper River, Chignik and Kodiak

• Focusing on fillets, but also traditional dressed/headed fish

• Aiming for as much fresh fish as possible
Causes of Quality Loss or How Good Fish Go Bad
Bacterial Spoilage
• Most important factor in quality problems

• Present everywhere and found on the skin, gills, gut

• After death, bacteria invade flesh and start to digest it
Bacteria on Fresh Fish

- **fish** bacteria/g
- Cod 10,000 - 3,000,000
- King Salmon 16,000 - 1,300,000
- Rockfish 22,000 - 1,100,000
- Halibut 110,000 - 9,500,000
- Hamburger 250,000 - 10,000,000
Bacteria, Quality and Shelf Life

• Quality is often a battle against bacteria

• Very potent spoilers that can be controlled by careful handling and chilling
Shelf Life

• Time from catch to consumption - can be as long as 10 to 14 days depending on species

• Depends on handling, bacterial load and temperature control
### Bacterial Growth

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Doubling Time</th>
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<tbody>
<tr>
<td>91°F</td>
<td>30 minutes</td>
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<tr>
<td>71°F</td>
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<td>50°F</td>
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Enzyme Activity
(Bellyburn)
• Enzymes are biochemicals that fish uses for digestion, movement, energy

• Results in bellyburn and soft flesh, can happen in as little as 30 to 45 minutes

• Keeping fish cool slows enzymes
Bad

Good
Rigor Mortis
• Stiffening of the salmon muscle shortly after death

• May last several hours to days depending on temperature

• Don't process/handle fish in rigor

• Gaping, Drip Loss and Toughness
Gaping
Physical Damage
PHYSICAL DAMAGE
• Results from poor handling

• Bruising and softness are the major defects

• Overfilled brailer/cargo nets

• Handling fish by the tail, shaking fish from net
Softness
Gaping
Contamination
• Potentially the most serious problem

• Fuel, chemicals, bird/rodent droppings and insects
The Three Things That You Must Control to Produce High Quality Seafood
Maintaining Quality
• Once quality is lost, no processing can restore it

• Solution - Prevent Quality Loss Before It Occurs

• Target - Reduce Bruising and Chill
Basic Rules
• Keep Salmon Cool
• Handle Carefully
• Deliver and Process Quickly
Good Handling Practices
• Salmon are going to be handled many times before it is processed maybe as many as 4 or 5 times - minimize this

• Each time they are becoming more fragile
• Handle fish gently because that is the key to reduced bruising

• Pick fish by head, not tail, fewer broken backs, less bruising
• Shorter drifts, fewer dead fish, bleeding still effective

• Bring aboard and stow carefully, use totes
Chilling
Chilling quickly is the other key to maintaining salmon quality.

Getting to 32F slows bacteria, enzymes, firms flesh.

Use ice/CSW/RSW and know limitations.
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Other Quality Ideas

• Bleeding and Dressing
• Gear Options
• Vessel Design/Beach Operations
• Cleaning and Sanitation
REMEMBER: Fish is Food
Final Thoughts
KEEP IT COLD

Low temperature slows bacterial spoilage
KEEP IT MOVING

Quick processing makes for better quality
KEEP IT CLEAN

Avoid contamination from
dirt and bacteria