Wild, Natural & Sustainable®

Handle With Care: A Retail Seafood Quality Primer
Alaska Seafood Marketing Institute

CHAPTER ONE

Introduction

Light and healthy, seafood is becoming the choice of the growing number of Americans who are counting calories, cholesterol and vitamins.

The popularity of seafood is apparent in increasing retail sales figures and the growth of full-service retail seafood counters. The Alaska Seafood Marketing Institute (ASMI) is working hard to support the seafood efforts of retail stores with advertising and promotional programs.

But, ASMI believes that long-term retail success with seafood involves more than just advertising. The key to repeat sales is consistent delivery of a variety of high quality products. That's why ASMI I developed this quality primer for Alaska seafood's most important sales representative--the person behind the counter.

These quality tips are designed to help you lure potential customers to your counter and keep them coming back after their initial purchase. Our suggestions cover receiving, storage, handling, thawing, display and sanitation.

Why Quality Is Important

Seafood must be treated differently than beef, pork, lamb, poultry and other meat products. Fish and shellfish lack the tough muscular fiber of land animals, the natural temperatures of Alaska seafood generally hover something just above freezing, and seafood is accustomed to a very moist environment.

Consequently, seafood must be handled with care while being kept cool and moist. Rough handling or improper storage can severely damage the taste, aroma, appearance and texture of seafood products.

Few foods can match the delicate texture, rich taste and pleasant aroma of seafood when it's first brought aboard a fishing vessel. Freshly caught seafood smells like a clean ocean breeze and its flesh is firm, moist and flavorful. The transportation systems and technology of the 1990s allow most Americans to enjoy fresh seafood from around the world.

That fresh-caught flavor now is successfully captured for months in frozen and canned seafood products. Indeed, today's frozen seafood often is superior in quality to fresh products; modern processing vessels can freeze a fish only hours after harvest, while it might take many days for the same fish to reach the market as "fresh."

The attitudes of all-too-many Americans toward seafood were shaped by an era preceding jet transportation, refrigeration and instant communications. Despite the growing interest in seafood, many consumers hesitate to make their first retail purchase, believing that seafood is difficult to buy and prepare.

Once you've convinced consumers to make a purchase, you want to make certain that their senses are delighted rather than assaulted. Promotion may convince someone to give seafood a try, but it's product quality that will keep customers coming back for more.

How Seafood Quality is Lost

The spoilers of seafood quality--bacteria, enzymes, dehydration, oxidation, contamination and physical damage--will strike whenever they are given an opportunity.

Bacteria and enzymes (proteins that aid in digestion) are present in all fish and shellfish, but their activity increases at higher temperatures and in areas where nutrients such as blood, slime and scales accumulate. These spoilers break down the flesh of seafood, turning firm, resilient tissue soft and mushy. This process affects taste, odor, appearance and texture.

Strong "fishy" smells are clues that bacteria and enzymes are at work in your store.

Mishandling of whole, fresh seafood ruptures blood vessels and causes bruising. Blood also can seep into the flesh of fresh, whole fish when they are picked up by the tail. The weight of the fish can separate the backbone and break major arteries which still contain blood even though the fish may be eviscerated.

While a juicy red steak may appeal to the eye of a passing customer, a blood spotted fish fillet will not. Bruised seafood flesh has a strong "fishy" taste and odor. The presence of blood in bruised seafood also speeds up the oxidative process which occurs when oxygen mixes with the fish's fats and oils. Oxidation leads to rancidity.

Seafood flesh exposed to the air will dehydrate. This loss of fluids decreases the net product weight and damages texture and color. Dehydration is most commonly recognized as "freezer burn," but the process strikes fresh and frozen products alike.

Beating the Spoilers

The formula for beating the quality spoilers is very simple: Keep seafood clean, cool, moist and moving. Handle seafood with care and pay close attention to temperatures and sanitation.

Temperatures are particularly important. A fish held at 50 F. will spoil five times faster than one held at 32 F. Even the difference of a few degrees can be critical. A good rule of thumb is that product shelf life is cut in half by every 10 F. increase in temperature.

Remember, temperature can be your friend or foe. Maximum product life can be obtained by holding fresh seafood at 30-34 F. and frozen products at - 10 F. or colder. While a particular fresh seafood product may store well at 32 F. for a week, the same fish held at 37 F. may last only 3-4 days.

Sanitation also is critical in seafood operations. Cooling fresh seafood to 32 F. only slows down the destructive activities of bacteria and enzymes. The activity of enzymes speeds up as temperatures increase, and bacteria multiply in proportion to the temperature and available food supply.

Temperature can be your friend or enemy. The optimum holding temperatures for maintaining product quality are 30 to 34 F. for fresh seafood and -10 to -20 F. for frozen seafood. Thaw frozen seafood at 32 -- 35 F. Frozen Storage Zone 0 - 20 F.

If a work table isn't thoroughly cleaned, bacteria will multiply rapidly in the accumulated blood, slime or bits of seafood flesh. The bacteria strike quickly when they come in contact with another piece of seafood. If your shop has unpleasant "fishy" odors, it usually means there's a gap in your sanitation efforts.

Follow rotational policies closely. Seafood always should be handled on a 'first in, first out' basis. This is particularly critical for fresh seafood because of shorter shelf life, but it also should be applied to frozen product display cases.

Protect fresh seafood from dehydration and airborne contamination by keeping it covered. Perforation of plastic bags and other airtight containers used for storing fresh seafood is recommended, as some fresh seafood should not be held for extended periods of time in airtight containers.

Frozen seafood should not be exposed to oxygen. Frozen products should be held in airtight containers or be shielded from oxygen by protective coverings such as water glaze or vacuum packaging.

Always view your seafood displays and merchandising efforts from the customer's perspective. Move around to the other side of the counter to evaluate your results.

Get to know as much as you can about the products you handle. The knowledge will help you give your customers the best possible seafood, while allowing you to answer with authority questions about handling and preparation.

You're the "expert" consumers will turn to when hesitating to purchase an unfamiliar product. Your degree of confidence in the products you handle is likely to make a tremendous impression on shoppers.

CHAPTER TWO

Fresh Seafood

KEEP FRESH SEAFOOD:

COOL Hold fresh seafood at 30-34 F.

CLEAN Use detergents and sanitizers to clean display cases 2-3 times a week.

MOIST Hold on ice, cover or mist seafood periodically with an atomizer of cold water.

MOVING Rotate fresh seafood in display cases on a first-in, first-out basis.

General Advice

Careful planning is important for retail seafood counters handling fresh product. If too much is ordered, product quality will suffer and some fish may have to be dumped. If too little is ordered, however, you'll run out of product to sell.

Purchasing needs to be built around anticipated sales within the shelf life--how long a product can be held--of each seafood being handled. There is no standard for maximum shelf life of fresh seafood; storage time varies according to species and a long list of other variables.

Temperature can be your enemy or friend. The quality and shelf life of fresh products is directly related to holding temperatures. A fish kept at 50 F. spoils five times faster than one held at 32 F.

The temperatures of incoming shipments of fresh seafood should be checked by inserting a thermometer into the flesh. The best temperature range to maintain during shipment is 30-34 F. If the temperature of incoming product exceeds a shipping range specified by your store when purchasing, the transporter and supplier should be notified immediately.

Fresh seafood should be examined upon arrival for quality. (See the accompanying tips for determining fresh seafood quality.) Quickly move the seafood into a cool

room kept at 30-34 F. until ready for display. A fresh fish can be held twice as long at 32 F. as it can be at 37 F.

Customers will evaluate your operation on how it looks and smells from the aisleway. Sanitation is important. Unsanitary display cases and work areas provide breeding grounds for bacteria, cause strong unpleasant odors and visually turn off customers.

Strong, consistent rotational policies for fresh seafood display cases are critical. Product should be periodically rotated, with the freshet seafood being positioned at the front of the case where shoppers stand. The first seafood into the display case should be the first taken out.

If you use wet ice in the display case, make sure meltwater isn't allowed to accumulate. Replace the ice as it melts. Remove ice discolored by blood or product fluids. To maintain a "fresh-caught" appearance in dry display cases, periodically mist the seafood with an atomizer filled with cold water.

Seafood should be carefully arranged on display trays. Whole fish should be placed in shallow pans with drain holes in the front to allow drainage of meltwater and product fluids. Steaks and fillets should be displayed in perforated trays. Shellfish can be placed in solid, deeper pans.

Customers find it easier to shop if you divide your display case into sections for whole fish, steaks and fillets, shellfish, and cooked and smoked products. Plan your display by sketching out the case and plotting product locations.

Product identification tags and price markers also aid shoppers. Spiked tags should be stuck in garnishes such as lemons rather than in the seafood. Puncture marks damage the product and allow easy access for bacteria.

Durable plastic parsley strips are useful in dividing rows of product.

Evaluate your work from the customer's perspective by moving to the other side of the display case.

How To Evaluate Fresh Fish

In evaluating fresh seafood, beauty truly is in the eye and n ose of the beholder. Let your senses be your guide to selecting high quality fresh seafood. The only instruments needed to measure quality are your eyes, hands, and nose.

These general guidelines for judging fresh seafood quality apply to most products. Base your determination of seafood quality on a combination of these factors; if a seafood passes most of the tests it probably is a good quality product.

1. Quality fresh fish should smell sea-fresh. Strong or objectionable odors signal quality problems.

2. The flesh of whole, fresh fish should feel firm and slightly springy or resilient. Some flatfishes, notably sole and arrowtooth flounder, naturally have softer flesh.

3. The gills of most finfish should be reddish in color. Gray, dull brown or white colored gills indicate quality problems.

4. The eyes should be bright and clear. Sunken or cloudy eyes may be a clue that quality has begun to deteriorate. This rule does not always apply to small-eyed fish such as salmon.

5. Whole fish should have a bright and shiny appearance, and most of the scales should be intact. The scales should adhere tightly to the skin.

6. Fillets and steaks should appear moist, firm and freshly cut. The flesh should be almost translucent so it seems as if you are looking into the flesh. There should be little evidence of bruising or reddening of the flesh from retention of blood.

7. Pre-packaged steaks and fillets should contain a minimum of liquid. Seafood stored in liquid deteriorates quickly.

Recommended Handling Practices

Receiving

Emphasize product quality when ordering fresh seafood. Buyers should specify preferred shipping temperatures to suppliers. The best shipping temperature is 30-34 F. Check the core temperature of incoming fish for compliance.

Time and temperature monitoring devices are tools to use in seafood shipments to signal potential temperature abuse.

An experienced inspector should evaluate all incoming product. Watch for damaged packaging, check core temperatures with a temperature probe, and evaluate overall product quality. I f there are quest ions about the quality, the supplier should be contacted immediately.

Incoming shipments should be moved to a cool room as quickly as possible.

Holding

There is no standard maximum shelf life for fresh seafood as it varies according to species, season, holding temperatures, handling practices from time of harvest and a

host of other factors. If you're uncertain about how long to hold a product ask your supplier for a recommendation.

A rotational plan for inventory is very important to safeguard against exceeding maximum shelf life. Proper rotation of product in and out of the cool room is simplified by pre-sorting incoming shipments according to quality.

The recommended cool room temperature is 30-32 F. Keep the temperature constant and periodically check the room temperature.

The best holding results for whole fish may be obtained through layer and belly icing. Provide drainage to prevent buildup of meltwater. If wet ice is not used, the seafood should be periodically misted by an atomizer filled with cold water.

Use flaked, shaved or crushed ice. Large pieces of ice make indentations in the fish and can bruise the flesh. Ice should be manufactured, handled, stored and used in a sanitary manner; it should not be re-used.

Check iced fish periodically and re-ice as needed. Ice prevents dehydration, rinses the flesh as it melts and keeps the seafood at a constant temperature.

I f possible, position whole, dressed fish vertically with the head lower than the tail to allow better drainage of melting ice through the abdominal cavity.

The quality of steaks and fillet s is best preserved by storing in plastic bags buried in ice. Some seafood should not be held for extended periods of time in an airtight environment; perforation of containers is advised.

Do not hold fresh seafood in meltwater or product fluids. Prolonged contact with fluids will leach color, flavor, aroma and nutrients from the flesh of seafood.

Handle seafood with care. Bruises and punctures hasten spoilage. Always use two hands when lifting fresh whole fish, steaks and fillets. Do not pick up a whole fish by the tail.

Take care to segregate cooked products from raw seafood to prevent cross-contamination.

Display

Fresh seafood should be displayed in an enclosed case that does not use a fan to circulate air. Most retail seafood display cases are cooled by gravity-fed coils; wet ice also is used in some of these cases. Other display cases are cooled exclusively with wet ice.

Fresh seafood display cases generally are equipped with drainage systems. Check the drains periodically for clear passages. If your display case does not have an automatic flushing system, you should periodically wash meltwater, product fluids and shreds of flesh down the drain.

For unrefrigerated cases, use a bottom layer of ice at least 8-10 inches deep.

Cubed ice works well for this purpose as it melts slowly. Seafood should be placed on display trays atop the bed of ice.

Fish should not be stacked for display unless ice is used. Fish stacked two or three deep in dry, refrigerated display cases will not cool evenly or maintain a stable temperature. If layer iced, fish can be stacked three deep.

Sprinkle some ice on top of the fresh seafood periodically to keep it rinsed, moist and evenly cooled. For dry cases, lightly mist the product periodically with an atomizer filled with cold water to prevent dehydration.

Stainless steel display trays and pans are preferred, although aluminum and plastic containers are acceptable. Display whole fish in shallow trays equipped with holes in the front (drill one if necessary) to allow drainage of meltwater and product fluids. Steaks and fillets should be placed in perforated trays, while shellfish can be displayed in solid pans with no drainage holes.

Do not stick spiked price tags or product identification markers into the seafood. Punctures damage the product and allow easy access for bacteria. Prices may be spiked in lemons or other garnishes used to enhance visual appeal for the display.

Display cases should be equipped with an internal thermometer allowing easy checking of display temperature. Refrigerated display cases generally maintain a temperature of 30-34 F. The refrigeration unit probably needs to be adjusted if the temperature does not fall within this range.

A strict rotational policy followed by everyone behind the counter is the best guarantee of a first-in, first-out system. I f the quality of a product is questionable, it probably should not be sold. The long-term goal of repeat sales should not be sacrificed for the short term gain.

Display cooked seafood separately from fresh products. The products should be positioned in the display case to avoid cross contamination. Cooked products may be lifted over raw seafood, but not vice versa. Wash your hands after handling each type of product.

Night and Weekend Care

Displays of fresh seafood should be stored overnight in a cool room. Do not leave any product in the display case overnight.

Display trays of steaks and fillets may be covered with a tight- fitting lid and moved to the cooler or the product may be transferred to plastic bags and buried in ice. Whole fish may be top iced on the display trays and stored in the cool room. The products should be examined for quality before being returned to the display case the next morning.

Deliveries should be planned so that the sales week starts with new product. Seafood left at the end of the week should be carefully examined for quality. Questionable products should be discarded rather than saved.

Make certain that any product kept over the weekend is thoroughly examined for quality when the store is reopened the following week. Product of questionable quality should not be returned to the display case.

CHAPTER THREE

Frozen Seafood

KEEP FROZEN SEAFOOD:

COOL Hold frozen seafood at 0 F. or colder.

CLEAN Clean and sanitize seafood handling areas daily.

MOIST Protect frozen seafood from dehydration and "freezer burn."

MOVING Follow first-in, first-out rotation. Put new product to the bottom and rear of display case.

General Advice

A key to retail success with seafood is to think QUALITY. Ignore the myths about the inferiority of frozen seafood, and sell your seafood on the basis of product quality.

Frozen seafood often is superior in quality to fresh products. Many seafood products are" flash frozen" within hours of being harvested, while it takes several days for the same fish to reach your store as "fresh."

The freezing technology and handling methods of the seafood industry in the 1980s allow the fresh-caught flavor to be captured for months, but the shelf life of fresh product is measured in days. Offer your customers a wide selection of high quality seafood products--fresh, frozen and canned--and work to make your counter the quality seafood store.

The key to preserving frozen seafood product quality is to maintain constant, very cold temperatures. Maximum shelf life is obtained by holding frozen seafood at - 10 F. or colder, although a 0 F. or colder holding temperature protects product quality.

Move incoming frozen products into the freezer as soon as possible. Plan unloading operations to pass the incoming inventory very quickly from freezer vans to your cold storage.

There should be a rotation plan for frozen display cases. Product that has spent the longest amount of time in the case should be positioned where the customer is most likely to reach--upward near the front of the display case. Product also needs to be rotated in and out of the display case on a periodic basis so the optimum shelf life of any single package is never exceeded.

Slow thawing of frozen seafood is very important. Thawing can have a tremendous effect on flavor, texture, aroma and appearance. The best results are obtained when product is thawed at 32-35 F.

Careful planning is important when thawing at these temperatures to allow enough lead time. While most fillets and steaks will thaw sufficiently overnight, whole fish may take additional thawing time. Avoid quick thawing methods as improper defrosting can seriously damage seafood quality.

During thawing operations, the seafood should be placed in drain pans or other containers that prevent the buildup of meltwater and product fluids. The quality of seafood held in water deteriorates very quickly.

Recommended Handling Practices

Receiving

Thoroughly inspect incoming seafood for carton damage and signs of temperature abuse. Boxes with water marks may indicate that the product has been allowed to partially thaw during transit.

Do not accept thawed or partially thawed products. If you have any questions about the quality of incoming product, contact your supplier immediately.

Shipping temperatures can be checked by opening at least one carton to sample product core temperatures with a thermometer. If the temperature does not fall within guidelines specified by your store during purchasing, quickly notify the carrier and supplier. Re- package the seafood sample immediately upon inspection.

Transfer incoming product from delivery vans to cold storage as quickly as possible. Do not allow frozen seafood to stand at room temperature as thawing begins very quickly.

Never re-freeze thawed fish. Shipments that are accidentally thawed should be sold immediately as "previously frozen seafood" or discarded. The taste, texture, aroma and appearance of re-frozen seafood can be seriously impaired.

Storage

Maximum product shelf life can be obtained by storage at a constant - 10 F. or colder, although a temperature of 0 F. or colder will protect product quality. Never store frozen inventory at temperatures above 0 F.

Cold storage temperatures should be checked periodically and monitoring thermometers should be calibrated on a regular basis.

Date codes should be displayed on each carton or item of frozen seafood to support a first in-first out stock rotation system.

Frozen seafood products should be protected from freezer burn or dehydration by a protective covering. This generally is done with a water glaze, vacuum packaging or moisture proof wrapping. Protect unboxed frozen product and reduce the time it is held in storage.

Cartons of frozen seafood should be stacked off the floor and away from the walls and ceilings in cold storage to encourage good circulation of cold air. Store on pallets and make sure the stacks are stable to prevent tippage.

Thawing

Thaw slowly in a cool room kept at 32-35 F. Never thaw at temperatures above 40 F. Thawing at higher temperatures causes excessive drip loss, reducing the net weight of the thawed product. Quick thawing also reduces shelf life and adversely affects taste, texture, aroma and appearance.

Avoid quick-thaw methods such as immersion in water, and forced air. These "short cuts" can severely damage product quality.

If it is imperative to shorten thawing time for small amounts of product on an emergency basis, an acceptable method is to seal the frozen seafood in a watertight plastic bag and immerse in very cold water. Never soak fish directly in water.

Immediately cool and sell the thawed product. Never re-freeze fish. Thawed seafood should be labeled so consumers are aware they are buying a processed product.

Display

Transfer frozen products from the cold store to the display case as quickly as possible to prevent partial thawing. If a product is accidentally defrosted, do not re-freeze. Sell the thawed seafood clearly labeled as a processed product or discard.

Except during defrost cycles and brief loading periods, the display case temperature should be maintained at 0 F. or colder. The best display temperature is - 10 F. or colder. Check display case temperature frequently. Service doors should be closed immediately after removing products.

Stock by rotating product upward and to the front of the display case, while placing new packages on the bottom and to the rear.

Frozen display cases also should have a rotation scheme ensuring that the shelf life of individual packages is not exceeded. Code dates help ensure proper rotation. Maximum shelf life of seafood products varies according to species and a host of other factors, but a good rule of thumb is avoid holding in the display case for longer than one month.

Do not stack above the fill line in display cases. The refrigeration system is not designed to protect product above this point.

Remove torn, discolored or otherwise damaged packages from the display. Excessive ice crystals on a package are evidence that the product probably has been thawed and re-frozen. The quality of such products is questionable.

Display cases should be packed tightly without making it difficult for customers to remove packages. This reduces the risk of thawing.

If your display case has no automatic defrost cycle, defrost at regular intervals. More frequent defrosting is required in warm climates. Shorten your rotation schedule in warmer climates to compensate for the increased defrosting cycles.

Always transfer the contents of display cases to cold storage before starting the defrosting process. The temperature of consumer packages of frozen seafood can increase by 5 F. in as quickly as 10 minutes when exposed to room temperature.

Display cases should have an indicating thermometer measuring the internal display case temperature.

Most frozen seafood display cases come equipped with recommendations from the manufacturer for correct service of equipment during power failures. Read these instructions so you can react quickly during a blackout.

CHAPTER FOUR

Sanitation

General Advice

Clean seafood counters do not have strong unpleasant odors. Nothing will turn away potential customers faster than a strong "fishy smell." If your store has a strong odor, there's a gap in your cleaning efforts that must be quickly bridged.

Sanitation programs in retail seafood stores must be thorough and regular. Think of your store's seafood handling and display areas as a kitchen where meals will be prepared for your family and friends.

Specific sanitation schedules and methods may be subject to local, state and federal health standards. Every plan should be built around those regulations.

Choose cleaning compounds and sanitizers from a list provided by the federal government and follow the recommended instructions and restrictions on use. The list may be obtained by writing for the" List of Proprietary Substances and Non-food Compounds," Miscellaneous Publication Number 1419, from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20401.

Receiving

Delivery vans and containers should be kept clean and free of odors. If sanitation problems are detected, the carrier should be notified as soon as possible.

Clean and sanitize shelves, dollies, tubs and other containers used in moving seafood daily or following each use. Keep these materials and containers in good repair.

Display

Scales, wrapping surfaces and other seafood handling areas should be cleaned and sanitized daily or more often. Equipment and surfaces must be made of a non-porous material, preferably stainless steel.

Clean and sanitize all glass surfaces daily or more frequently. Shoppers will view a dirty glass display case as a bad sign.

Display cases should be emptied, cleaned and sanitized two or three times weekly, although the best schedule would be daily. Display cases must be cleaned and sanitized at least once a week.

Display case drains should be kept clean and unobstructed.

Display trays should have holes for drainage and be constructed of a non-porous material. The best display trays or pans are stainless steel. Clean and sanitize after each use.

Floors should be cleaned and sanitized daily, walls weekly and ceilings once every three months. All surfaces in retail seafood handling, display and storage areas should be constructed of non- porous material.

Refrigerated Storage

Refrigerated seafood storage areas should not be used for storing other foods to avoid mixing noncompatible odors.

Clean and sanitize ducts, blowers, grills, condensation drip trays and overhead coils monthly.

Make ice from chlorinated, potable water. Ice should be stored in covered containers to prevent contamination. Use clean utensils to transfer ice.

Discard ice that has come in contact with seafood products or any contaminated surfaces.

Employee Practices

All seafood handlers should wear clean hats, aprons or coats. Hands should be washed and dried before and after handling seafood, and between handling raw and cooked products. Minimize hand contact with seafood whenever possible.

Seafood handlers should have a food handler's card. Employees who are ill or have open cuts and sores on their hands should not handle seafood.

There should be no smoking or drinking in seafood handling areas.

Cleaners and Sanitizers

Use approved detergents and sanitizers to clean seafood contact surfaces. Fish blood and slime may require the use of a chlorinated alkaline detergent.

Sanitizers containing phenols, such as Lysol and Pinesol, should never be used on seafood contact surfaces.

This seafood quality primer was produced by the Alaska Seafood Marketing Institute in the belief that product quality is one of the most important ingredients in the long-term success of retail seafood counters. It was written for Alaska's most important sales representative ---- the person behind the counter.