

The Characteristics of Commercial Fisheries of the Oregon, USA

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	Abstract

I . Introduction

Oregon has a population of 3.13 million, approximate 400miles of coastline, and approximate 80 number of commercially species (aquaculture species: salmon, rainbow trout, sturgeon, pacific oysters). In 1995, Oregon was 6th among states in terms of pounds, 12th in terms of landed value of seafood.

The economic importance of Oregon's seafood industry has grown since Pacific Northwest Indians subsisted on a staple diet sun-dried salmon. Seafood harvesting and processing methods have changed dramatically over time. Since then demand for seafood has continued to increase, today, many Oregon seafoods are enjoyed by consumers worldwide.

The Oregon coastal economy depends on a strong seafood industry. Oregon's seafood industry is based on a renewable resource, with a large reproductive capacity.

This paper is to look over and introduce the general aspects of the Oregon's commercial fisheries.

II . The historical sketch of commercial fisheries

The history of Oregon's commercial fisheries has been dominated by two little-noted events with far-reaching impacts. The first, the innovation of canning salmon, changed salmon from

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subsistence fare for settlers and Indians to a commodity sold worldwide. The second, the modern trawl fisheries was developed.

These events divide the history of Oregon's commercial fisheries into three periods. Before 1866, fishing was primarily inshore to feed settlers and Native Americans. From 1866 to 1934, the salmon industry grew to worldwide importance. With the exception of trolling for salmon, fishing was still mainly inshore. In 1935, trawl fisheries reached out into the ocean to establish a major new sector of the fishing industry. Since 1935 rapid expansions and declines have taken place in the exploitation of many different offshore species.

In 1970's could be called the fourth era in the history of Oregon commercial fisheries. One such event was experiments in Oregon (and in Washington) with fish farming.

The idea of commerce, the development and trading of natural resources for sale elsewhere, was foreign to the native American. Native American inhabiting the Columbia Basin did trade their fish resources with neighbors. They did not, however, seek markets solely for personal and group economic gain. From the 1830s attempts were made to market the salmon resources of the Columbia River. Means for preservation and storage limited these attempts to only a few relatively minor salt salmon fisheries. Preservation in cans was the innovation which created the potential for marketing the Columbia River salmon runs. It reflected the dominance of the canned salmon industry on the economy of Oregon fisheries. This salmon cannery almost exclusively used Chinese workers.

Most fishermen were of foreign birth (Sweden, Finland, and Norway). Most of the fishermen were gillnetters (The gears used to harvest salmon at first were traps, weirs, baskets, spears, hook and line, and seine, set and dip nets).

In 1874, the first consolidated company developed to reduce the fierce competition in the oyster processing industry. The company would be able to afford to pay the producer a price that would be a fair compensation for his labor, and would enable them to furnish the retailer at a lower price than heretofore. The same problem facing the canned salmon industry, the salmon packers association (Columbia River Packers Association) was incorporated in 1899.

By the 1890s eastern oyster seed was being used to replace the overfished Pacific oyster stocks on an experimental basis.

A commercial shad fishery was begun in 1918. After 1928 it produced one-third to one-half the Oregon shad harvest. A 1914 coastal survey of the fishing grounds found that halibut was caught in Oregon coast (Newport). But the problem was more lack of markets than lack of will. The story of lack of markets, poor transportation and difficult fishing conditions was reported up and down the Oregon coast.

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Until 1935 salmon was the most important Oregon commercial fishery. Commercial halibut, crab, crawfish and oyster fisheries were of minor importance. The year 1935 began a new era in Oregon's commercial fisheries. The world canned salmon pack reached its peak in 1936. The salmon news after that was pretty much decline due to changes in stream habitat, dam and other obstruction, encroachment of foreign fisheries, especially off the Alaskan coast, and increased demands of sports anglers.

The quest for pilchards started the modern commercial trawl fisheries. Attempts to start trawl fisheries on groundfish were made in the 1880s. The lack of sufficient markets plagued most early attempts at a trawl fishery. A successful trawl fishery for food fish was started off in 1937(Columbia River), and were sustained in the 1950s by mink food markets.

The expansion of Oregon commercial fisheries after 1935 resulted in a number of rapidly fluctuating growth and decline cycle. As salmon fishery declined, the trawl(cod, flounder, grayfish, lingcod, perch, rockfish, sablefish, sole, etc) made growth from 1935, crab and tuna from 1940s, shrimp from 1960s. As one fishery was started and declined, the stimulus was to start another.

In the early 1900s, sail power was replaced by marine gasoline engines. The late 1930s saw introduction of the otter trawl to harvest groundfish. Fathometers were added to trawlers in the early 1940s. By the late 1940s, most of the trawl fleet had radios. Automatic pilots were another postwar innovation, along with radar and sonar. Loran was first used in 1949. Stabilizers were installed in the early 1950s. The late 1950s brought echosounders which were used to locate fish concentrations. In 1972, nearly three-fourths were under 5 net tons. This reflected the characteristics of the commercial fishermen.

There were three general types of commercial fishermen. To fishermen who fished full-time, commercial fishing was a profession. Usually they owned the larger boats and alternated between the salmon, albacore, crab and trawl fisheries. The successful professional fishermen was an expert in matching resource availability with market potential. Many fishermen holding Oregon licenses were part-timers. These were people who would like to fish full-time, but used other jobs to supplement their family income. Many part-timers were experts in a particular fishery. The third group were sport-commercial fishers. Typically this group had smaller boats. They fished mainly on weekends and vacations, and they fished predominantly for salmon.

A 1951 study of Oregon commercial fishermen showed that less than one-third earned all their family income fishing. Nearly half earned only one-quarter of their income fishing. A 1971 study reached similar conclusions. Fishers adapted by having other non-fishing

occupations and by combining the fisheries in which they engaged.

The first union was formed in 1886(Columbia River Fishermen's Union). The purpose of the union was to get better fish prices from canners and to stop and preferably eliminate the competition from fish traps, fishwheels and haul seines. Commercial fishermen organized in 1965 to meet a new challenge. Soviet trawlers appeared off the Oregon coast in that year. Rapid action by fishermen succeeded in obtaining a 12 mile fisheries zone. By 1974 the foreigners were taking Oregon fish included Soviet, Japan, North Korea, East Germany and Polish trawlers.

After World War I, Fisheries management was compounded by the expansion of recreational fisheries. Where maximum productivity is less than the requirements of recreation and commercial fishers, decisions have to be made as to what proportion of the fishing goes to each group. In addition, there were the distant water fleets and fishers over which fisheries managers had little control. This brought demands for extension of fisheries jurisdiction. In 1972 the Oregon Legislature extended its jurisdiction to 50 miles. The state, however, lacked the ability to enforce this extended jurisdiction and the law raised serious constitutional and legal questions. Federal action on the problem of distant water fleets came in 1976.

The Fishery Management and Conservation Act extended the fishery conservation zone from 12 to 200 miles. As important as the extension of fisheries jurisdiction was the development of a new management agency. Eight regional councils were designated to prepare fisheries management plans.

III. The status of commercial fisheries.

1. The kinds and landings of products

Oregon's commercial fish landings of 238,702,425 pounds(round weight)were up 110% from 1986's tonnages. The \$77 million value of the catch was up nearly 27% from 1986 year's \$61 million value, reflecting a changing mix of species landed, especially increased landings of crab, tuna and a higher average price per pound paid for all species except groundfish. Table 1 illustrates all landings of seafood of Oregon commercial fisheries for 10 years.

Aquaculture has not developed in Oregon. Table 2 illustrates the aquaculture production.

2. The type and the number of licenses and permits

There is two-step system(license and permit) for Oregon's commercial fishery. A license is

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Table 1. All landings of products of Oregon

unit : pounds(round weight), \$1,000

yr/species	salmon	crab	shrimp	tuna	groundfish	other	total
1986	13,796,997 (15,182)	4,660,672 (6,588)	33,883,577 (18,106)	2,461,004 (904)	56,152,051 (18,322)	2,400,635 (1,907)	113,354,936 (61,009)
1987	15,091,783 (27,022)	5,990,869 (8,352)	44,589,472 (30,272)	2,288,045 (1,675)	68,228,581 (25,204)	2,423,226 (2,177)	138,611,976 (94,702)
1988	17,786,004 (39,073)	9,414,002 (11,277)	41,846,202 (17,150)	3,967,120 (3,327)	71,350,799 (24,676)	3,942,195 (2,322)	148,306,322 (97,837)
1989	11,723,775 (14,266)	11,675,901 (13,564)	49,128,914 (17,906)	1,079,657 (887)	82,005,975 (26,490)	10,008,420 (4,313)	165,622,642 (77,427)
1990	5,411,543 (9,585)	9,509,817 (14,555)	31,882,770 (15,629)	2,079,312 (1,670)	78,753,336 (24,231)	11,434,860 (5,825)	139,071,638 (71,494)
1991	5,344,260 (5,833)	4,923,571 (7,462)	21,711,413 (12,069)	1,258,818 (976)	110,066,945 (31,178)	6,728,472 (4,640)	150,033,479 (62,158)
1992	2,363,937 (3,688)	11,908,102 (13,388)	48,033,256 (17,187)	3,895,618 (3,969)	183,401,454 (32,596)	7,387,043 (3,436)	256,989,410 (74,263)
1993	1,847,728 (2,426)	10,456,154 (11,798)	26,923,125 (8,912)	4,754,450 (3,881)	160,023,651 (30,671)	6,409,830 (3,172)	210,414,938 (60,861)
1994	1,285,062 (1,460)	10,638,086 (14,463)	16,386,022 (9,626)	4,697,740 (3,749)	207,294,836 (33,934)	5,430,836 (2,539)	245,732,582 (65,771)
1995	2,860,460 (3,575)	11,953,768 (20,045)	12,105,862 (8,599)	5,036,306 (3,752)	201,495,216 (38,679)	5,250,813 (2,656)	238,702,425 (77,305)

Note) parenthesis : ex-vessel values

groundfish : cod, lingcod, rockfish, sablefish, sole, flounder, halibut, hake and pacific sanddab.

other : sturgeon, shad, smelt, clams, scallops, squid, crayfish and other miscellaneous species

Source) Pounds and Values of commercially Caught Fish and Shellfish Landed in Oregon, Oregon Department of Fish and Wildlife, 1996.

required of all fishermen. It allows all fishermen to be willing to harvest anything that is legal to harvest. A permit is more restrictive than a license. A permit is required when the number of license are limited. The reason for establishing a permit may vary, such as raising funds, restricting participation, keeping track of participation, or gathering information in addition to what is required for a license.

The type and the number of licenses and permits are illustrated in Table 3.

In Table 3, there are 3,579 licensed commercial fishermen, and 2,217 commercial fishing

Table 2. Aquaculture species and value

unit: dollars

species	fish value
Private salmon hatcheries	n.a
Trout production	810,000
Other Fish production	n.a.
Oyster production	965,192

Note) oyster production: 3,433 acres and 28,388 gallons

n.a. : not available

Source) Oregon Department of Fish and wildlife
Oregon Agricultural Statistics Service

Table 3. The type and the number of licenses and permits

type	number
Licensed commercial fishermen	3,579
Commercial boat licenses	2,217
Troll salmon fishing permits	1,465
Gillnet salmon fishing permits	330
Shrimp fishing permits	195
Scallop permits	77
Albacore tuna landing licenses	129
Sea urchin harvesting permits	39
Licensed bait fishing	74
Licensed bait dealers	47
Licensed fish canners	6
Licensed shellfish canners	1
Commercial/wholesale fish dealers	109
Licensed private hatcheries	1

Source) Oregon Agricultural Statistics, 1996.

boats licenses. Among licensed fishermen and boats, permits for troll salmon are 1,465, gillnets salmon 330, shrimp fishing 195, scallop fishing 77, and sea urchin harvesting 39.

Bait fishing, bait dealer, shellfish canner, fish dealer and private hatchery require license. The number of those are as Table 3 illustrates.

IV. The types of commercial fishing gears

There are fishing types with nets, hooks and lines, pots, and dredges in Oregon. The more details about them are follows.

1. Fishing with nets

1) Trawlers

A trawler is a fishing vessel that drags a funnel-shaped net through the water to harvest fish or shrimp. The net wide at the mouth and tapers back to the narrow 'cod' end that collects the catch. Trawls can be over 100 feet across the opening and 150 feet long.

Trawl fishermen tow bottom and shrimp nets at 2 to 4 knots on or above the ocean floor. They might tow midwater nets faster to stay with the schooling fish they harvest. A large, rectangular wooden or metal "trawl" door attached to each side("wing") of the front of the net keeps the net spread open during the tow. Doors are flat, oval, or slightly V-shaped. A steel tow

cable extends from each door to a winch just behind the pilot house.

Many of the newer trawlers have square sterns with inclined ramps; they are referred to as "stern trawlers." On these, nets are hauled aboard by winching them up the ramp. Trawlers without inclined ramps haul the nets over the side.

Bottom draggers and midwater trawlers work year-round while shrimpers are restricted to a seasonal fishery from April to mid-October.

2) Gillnetters

Gillnets are allowed on certain Oregon rivers. They may not be used in the ocean. Salmon is the primary gillnet fishery, but it is permitted for only a few weeks a year. Mesh size is strictly regulated, to allow escapement of steelhead trout.

A curtain of lightweight netting, up to 1500 feet long, is payed out from the reel or by hand and allowed to drift with the tide. Salmon swim into the net and are caught by the gills. When the net is lifted, the fisherman picks out salmon as they come aboard. They are delivered in the round to buyers every few hours.

2. Fishing with hooks and lines

1) Troller

Oregon trollers fish for salmon and albacore tuna by towing a number of lures or baited hooks through the water. Fishing lines are rigged to a pair of 3-to-6-inch-diameter outriggers ("trolling poles"); when lowered to a 45° angle, they hold the fishing lines away from the boat. A wedge-shaped stabilizer ("flopper stopper") might also be attached to each outrigger; these help stabilize the boat. When not in use, outriggers are held vertically by brackets secured to a beam ("crosstree") on the masthead. The gear is designed to withstand the tremendous shock of striking fish.

2) Longlines

Blackcod, halibut, and sturgeon are caught with a line ("groundline") stretched over the bottom with leader and baited hooks attached at intervals. The groundline is anchored at each end and marked by surface buoys, poles, and flags. Hook size and spacing, soak time (fishing time), and fishing depth vary; but the basic gear operation is the same.

Onboard gear consists of bamboo poles about 17 feet long, with 12- to 14-inch red flags and 60-inch round buoys, usually stored near the pilot house. With this gear, a longliner has a distinctive appearance. A baiting tent, shed, or table on the stern, various types of line setting, and hauling and storage equipment (such as chutes, pulleys, and tubs) are also found onboard.

When used, tubs on the work deck hold the groundline with hooks placed around the rims.

A halibut groundline might cover 3 miles, with up to 800 hooks, and take 3 hours to retrieve. Blackcod hook spacing is much closer. A groundline $1\frac{1}{2}$ miles long could have 3,000 hooks.

Crews must bait hooks before they set the lines. They usually do this by hand although some automatic baiting machine are coming into use. Common baits include herring, octopus, and cod.

Halibut lines are set at 30 to 150 fathoms and soaked 6 to 12 hours before hauling. Blackcod longlines are fished at 100 to 400 fathoms and are hauled after only 4 to 6 hours because the soft mouthed blackcod tend to wriggle free or be taken by predators. Blackcod may market. Halibut are always dressed at sea.

Blackcod are fished year-round, but the halibut season is limited by quotas and may only last a few days or weeks during the summer months.

The sturgeon longline fishery takes place on the lower Columbia River. Gillnet boats are used, and groundlines are wound on the net reel. The seasons are variable but may run for 2 months in the early spring and a month or more in the summer.

3. Fishing with pots

Pot fishermen use baited traps set on the ocean floor to catch live Dungeness crab or blackcod.

Dungeness crabbing, the primary pot fishery along the Oregon coast, uses vessels that participate in a combination of other fisheries during various times of the year.

Crabbers are rigged with a large, hydraulic power block("crab block"). Mounted just behind the pilot house, it is used to haul in pots. The catch must be delivered live to the market, so vessels use a circulating seawater system in their holds to accomplish this.

Most pots are circular, 36 to 48 inches across, and weigh from 75 to 160 pounds. The skipper and crew will often build their own during the off season. The $\frac{3}{4}$ -inch welded steel frames are wrapped with strips of used inner tube to protect the steel from corrosion.

Stainless steel wire is used to weave a 3- to 4-inch-diameter mesh over the wrapped frame. Tunnels on opposite sides of the pot allow crabs to crawl in after the bait. A ring on the top or side gives undersized crabs an escape route.

The crew pushes baited pots overboard, one at a time, as the vessel follows a particular depth line in waters from 3 to 80 fathoms. A single line and cylindrical plastic buoy attached to each pot marks its position on the bottom. Buoys are marked or colored to distinguish one vessel's pots from another's. Depending on vessel size, from 100 to 1500 pots are fished.

Pots are retrieved individually by snagging the buoy line with a hooked pole, placing the line

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in the crab block, and lifting the pot to the vessel. As each pot comes up, it is emptied, the catch sorted, the pot rebaited and reset. A two-man crew can average 30 to 40 pots an hour, harvesting up to 60 crabs per pot.

Crab pots are checked every 1 to 7 days, depending on fishing conditions. Only male Dungeness crabs at least 6 $\frac{1}{4}$ inches across the shell may be harvested; the rest are returned live to the sea. The season is normally from December through August.

4. Fishing with dredges

The 1981 discovery of weathervane scallops in commercial quantities off the Oregon coast set

Table 4. The comparison of Oregon fishing vessels, crews, gear, and seasons

Vessel	Fishery	Vessel Size	Crew Size	Distinctive Gear	Season
<i>Trawler</i>					
Bottom dragger	bottom fish : perch, rockfish, cod, flounder, blackcod, sole	45-100ft	2 to 3	large mesh trawl, net reel, doors, winches, overhead boom	year-round
Shrimper	pink shrimp	45-85ft	2 to 3	<i>Single-rigged</i> : net reel, small mesh trawl, doors, winches, overhead boom <i>Double-rigged</i> : 2 small mesh trawls, 2 sets doors, winches, overhead boom, no net reel	April-October
Midwater	Pacific whiting,	7-100ft	3 to 4	1 to 3 net reels, winches, rockfish gantry, doors, stern ramp	year-round
<i>Gillnetters</i>	salmon, shad, smelt, sturgeon	20-40ft	1 to 2	roller; may or may not have net reel	intermittent
<i>Trollers</i>					
Salmon	coho, chinook	18-60ft	1 to 2	outriggers, gurdies, lead cannonball weights ; usually trolling pit	May-October
Albacore	albacore, tuna	40-70ft	2 to 3	outriggers; usually line haulers	open but fished July
<i>Longliners</i>	blackcod, halibut, sturgeon	25-70ft	3 to 4	large round buoys with poles and flag, line hauler, roller; may or may not have tubs, chutes, baiting table, or shad	blackcod; year-round halibut, sturgeon-on quotas (spring and summer)
<i>Crabbers</i>	Dungeness	35-75ft	2 to 3	powerblock, crab pots, live tank	December-August
<i>Blackcodders</i>	blackcod	50-85ft	3 to 4	powerblock, overhead boom blackcod pots; may or may not have reel, roller	year-round
<i>Scallopers</i>	scallops	45-85ft	5 to 13	2 dredges, winches, overhead boom, outrigger, shucking tables, wash boxes	non established

off a flurry of activity in developing harvesting gear and processing techniques.

Basically, a dredge consists of a metal frame box 7 to 15 feet wide, trailing a bag made of steel rings.

Runners on the bottom of the box help it move over the sea bottom. It is towed from a cable attached to an outrigger. During the tow, scallops are scooped up and deposited into the bag. Onboard shucking requires crews of 5 to 13, working in shifts around the clock. Shucked scallops are placed in bags and chilled with ice or refrigeration in the hold.

Trips last from 5 to 10 days when scallops are shucked onboard. Otherwise, unshucked scallops are delivered daily to the processing plants.

The fishery began with no season or gear regulations determined.

There is the comparison of Oregon fishing vessels, crews, gear, and seasons in Table 4.

V. The regulation of commercial fisheries

1. Follows are always unlawful :

① For a guest on board a commercial fishing vessel to assist in any way in either taking food fish or operating the boat or fishing gear unless licensed as a commercial harvester.

② To have on board a commercial fishing vessel while fishing for or landing food fish, any gear which is not legal for use in commercial fishing under Oregon law.

③ For commercial harvesters to transport their catch of food fish to a fish dealer away from the point of landing without first completing a transportation report or invoice indicating : (1) date; (2) harvester's name, commercial fishing license number; (3) name and address of the licensed fish dealer to whom food fish are being delivered; and (4) number of food fish and their estimated weight.

④ To take food fish from waters of the state or to land food fish without first procuring the necessary license and permit.

⑤ To sell catch to other than a licensed wholesale fish dealer, bait dealer, canner, or buyer, except under a Limited Fish Seller Permit.

⑥ To retain fish or shellfish taken under commercial license for private use without first selling it to a wholesale fish dealer or bait dealer, except as authorized under a Limited Fish Seller Permit. All commercially landed fish must be reported.

⑦ To kill or harass marine mammals, except commercial harvesters may obtain a permit from the National Marine Fisheries Service to kill or harass animals endangering their gear.

⑧ To wantonly waste or destroy any food fish or shellfish.

2. Area restrictions, closed to all commercial fishing :

Rogue River, Curry count Rivers, Umpqua River, Nestucca Bay, Willamette River, Columbia River.

3. Boat restrictions, commercial fishing :

There are no restrictions on the type or size of vessel which may be licensed for commercial fishing. For gear restrictions see the specific regulations relating to type of food fish or shellfish to be harvested.

4. Restricted fisheries permits :

These permits are required in addition to a Commercial Fishing Boat License to participate in the following fisheries. Permits must be renewed annually to remain valid for renewal in the next year.

Generally, permits are bought and sold by vessel owners(in case of scallop permit, the permit is transferable after 3 years of participation in the scallop fishery). Consequently, the department has no knowledge of permits available for sale, they use fisheries trade magazine, coastal newspapers and harvesters' association as possible sources for purchase information.

Prior year permit is renewable if vessel was used in prior year to land a certain catch(eg. at least 5,000 pounds for shrimp permit, 10 pounds for scallop, 500 pounds for roe-herring, 20,000 pounds for sea urchin)

5. Fish Dealer General Information

Any licensed wholesale fish dealer, canner, or buying station whose licensed premises include a receiving or docking facility for unloading the catch from a commercial fishing vessel shall be considered as the receiver and purchaser and shall have the responsibility for weighing the catch, reporting and paying fees¹⁾on such catch.

6. Fisheries Restrictions

① Coastal rivers shad fishery is unlawful to take it from 6 a.m. May 10 to 6 a.m. July 1.

1) Wholesale fish dealers, cannerys, and bait dealers pay a landing fee which is a percentage of the value of the food fish purchased from commercial harvesters : 3.15% for all salmon and steelhead, 1.09-1.25% for all other species of fish and shellfish.

In addition, there is a restoration and enhancement fee of 5 cents per pound for salmon and steelhead landed.

- ② Trawl net shall have a minimum mesh size of 4 ½ inches in the codend.
- ③ Pots or traps and longlines must not be left unattended for more than seven days.
- ④ Set net are permitted in the ocean outside State waters for groundfish taken south of latitude 38° north.
- ⑤ Clam must sold within 48 hours of harvest or leaving the digging area.
- ⑥ Female crab must be released unharmed in the fishing area.
- ⑦ Scallop is not allowed more than 2 divers operating from any one boat may be in the water at the same time and no more than 2 persons without permits on board.

7. Fish Dealer License :

1) Wholesaler Fish Dealer License

The following person are required Wholesaler Fish Dealer License.

- ① Buys food or shellfish from a commercial harvesters, regardless of its disposition.
- ② Regardless of the source from which received, sells food fish or shellfish to other wholesaler, canners, or retailers.
- ③ Processes food fish or shellfish by smoking, reduction or fresh packaging requiring freezing or refrigeration for sale through retail outlets.

Except for activities authorized under a "limited Fish Sellers License", a commercial harvester must have a wholesale license in order to sell catch to anyone other than a wholesaler or canner.

2) Fish Buyer License :

This license is required of a Wholesale Fish Dealer or Canner to purchase or receive food fish from commercial harvesters at locations other than the licensed premises of the Wholesale Fish Dealer or Canner. The fish must be weighed and a fish ticket²⁾ prepared at the buying location before the fish are transportation.

3) Limited Fish Sellers Permit

This permit authorizes licensed commercial harvesters to sell their catch of food fish and shellfish directly from their boat, but only to the ultimate consumer.

4) Fish Bait Dealer License

The fish bait dealer license is designed for the small volume dealer who sells or uses foodfish or

2) Once the fish ticket has been filled out at your business, they may then move the product elsewhere for sale. They must keep the fish ticket with the product during transportation and sale.

shellfish for bait, scientific or educational purposes, or live public display. Fish Bait Dealers are required to sell all fish and shellfish for bait and may buy from either a licensed bait harvester or commercial harvester. Sale for human consumption under this license is prohibited.

5) Retailer license

If they sell from a vehicle or stand, an OSDA³⁾ retail license is required. A food processor's license is required if they do any shoreside processing, such as cooking crabs or filleting tuna.

They must use an OSDA-approved scale for all sales. They keep their catch under 45° F at all times. Proper icing should be sufficient.

Their business location is subject to the provisions of the Retail Food Establishment Sanitation Standards. While OSDA realizes that they are unable to completely comply with the regulations, they do enforce the intent of the law. Their product must be wholesome and uncontaminated. OSDA makes spot checks.

6) Transportation license

If they transport their catch to another location whose is over 8,000lb, they obtain a license and plate from their local ODMV⁴⁾ office, and submit a trip report every month. If they plan only one trip, obtain a trip permit. For either permit, They will also pay an additional combined weigh/miles fee.

VI. The Marketing channel of seafood.

The marketing structure of seafood of Oregon can be viewed as having six divisions of activity : (1) fisherman; (2) processor; (3) broker; (4) wholesaler; (5) institutional user or retailer ; and (6) consumer. The trade channels may be structured as in Fig. 1.

1. Fisherman

The Fish Commission of Oregon is empowered to set the length of fishing season and issue licenses to those fishing in Oregon waters. The Commission levies a tax on landed fish at the rate of 0.3 cents per pound.

After landing the fishermen transfer their catch to a processors. The ex-vessel price which they receive for their catch has usually been determined beforehand. Fishermen tend to remain suppliers for a particular firm over considerable period time. Tradition and personal

3) Oregon Department of Agriculture

4) Oregon Department of Motor Vehicle

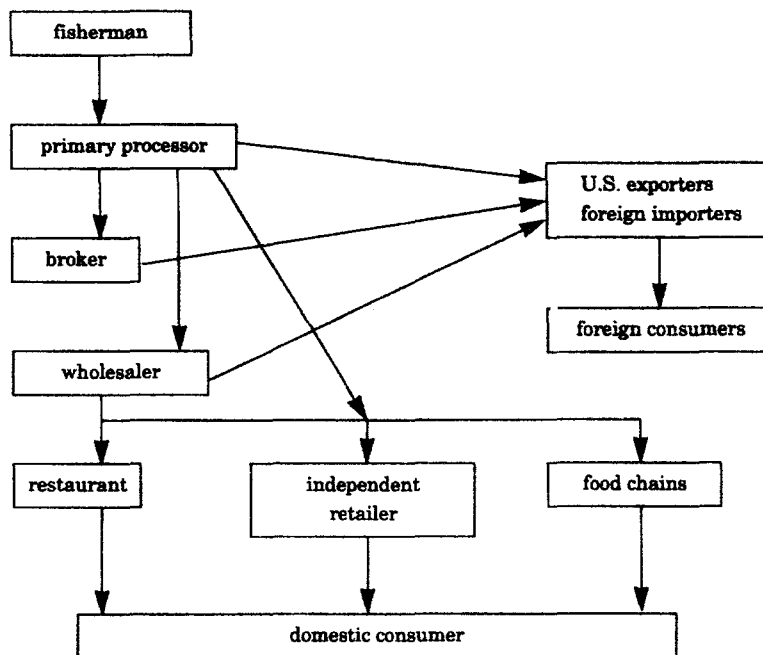


Fig.1. Marketing Channel of Seafood

ties seem to play an important role in determining which processor the fishermen supplier. There is no indication that this phenomenon is caused exclusively by processor ownership or financing of the fishing enterprise, although such arrangements may occur.

The exact determination of remuneration is subject to regional variation. In a port, the price per pound is agreed upon orally by fishermen and processors. In this region, the total payment to the fisherman is determined most often by the processor on the basis of the weight of processed product. Hence, the fisherman receives payment, following processing, for the weight of the finished product at the previously agreed upon price.

In other area, fishermen are organized into an association. The association collectively bargains with local processors annually to determine an ex-vessel price. Moreover, the quantity transferred to the processor is determined by weighing the total delivered catch, rather than by estimating the weighing from a small sample of containers.

In spite of these variation, the ex-vessel prices up and down the coast seem to be very nearly the same at any given time. In the past, when the prices have not been in line, disputes between fishermen and processors have arisen. These disputes seem to serve the function of removing price differentials.

There were three general types of commercial fishermen. To fishermen who fished full-time, commercial fishing was a profession. Usually they owned the larger boats and alternated

between the salmon, albacore, crab and trawl fisheries. The successful professional fishermen was an expert in matching resource availability with market potential. Many fishermen holding Oregon licenses were part-timers. These were people who would like to fish full-time, but used other jobs to supplement their family income. Many part-timers were experts in a particular fishery. The third group were sport-commercial fishers. Typically this group had smaller boats. They fished mainly on weekends and vacations, and they fished predominantly for salmon.

2. Processor

The major function of the processor is to convert the fisherman's catch into a finished product to be marketed by the wholesaling and, eventually, retailing sectors, and to have storage for the gap between processing and consumption.

A need for maintenance of the quality of product during transit and storage was cited by processors and wholesalers. If a wholesaler receives a shipment of product that is damaged, or even partially spoiled, he may reject the whole lot.

The processing firms are distributed geographically along the Oregon coast in a fairly even fashion. Most of firms have buying and receiving stations at ports removed from their plant facility. Raw product is purchased from fishermen at these stations, then transported to the processing plant by truck.

Processing plants can also be divided into two categories, based upon the size and financial strength of the corporations to which they belong or by which they are controlled. One category will be referred to as the "large-company operation" and the other as the "small," or family-owned and operated firm. There is good reason to hypothesize that the marketing methods and characteristics for these types of plants differ from one another.

For one thing, the large-company operation may have its own sales staffs, or may be tied directly to a brokerage operation which is owned by its larger parent corporation. The smaller firms rely on independent brokers. A second difference is that the large-company operation has more financial strength. Smaller firms may have to rely on their brokers for financial support, a situation which could affect profitability when demand for the product is not strong.

3. Broker⁵⁾

A pure broker does not speculate, nor does he buy or sell for his own account; that is, he does

5) The National Food Broker Association has defined a broker as "an independent sales agent who performs the services of negotiating the sale of food and/or grocery products for, and on account of, the seller as principal, and who is not employed or established by, nor an affiliate or subsidiary of, any trade buyer, and whose compensation is a commission or brokerage paid by the seller."

not take title to, or possession of, the products in which he deals.

Brokers may occur at any level in a market structure to facilitate the meeting of buyer and seller of a product. Primarily the brokers enter the market structure as intermediaries between the processing and wholesaling levels. Brokers may also serve to facilitate export sales. As mentioned earlier, larger firms maintain their own sales staffs to accomplish the functions of the broker.

In general, the broker is involved in the following operations : (1) If the sale arranged is FOB to the wholesaler's location, then the processor ships to a public warehouse at that location. Cost of transportation is included in the price to the wholesaler. The broker then contacts wholesaler, who pick up the product at the warehouse. This is economical, because the bulk shipment of the processor costs less to transport than if each wholesaler arranged his own smaller shipment via a common carrier. (2) If the sale is FOB at the processor's location, the broker will arrange a collective shipment for the wholesalers he serves.

Which of these alternatives occurs is influenced by the financial strength of the processor. Among processors, the smaller firms usually follow the first alternative, while at least one large firm indicated that it used the second alternative exclusively.

Few of the brokers in the fresh and frozen fish industry are "pure brokers". Most of brokers in the industry act as "jobbers" or "trading company". This means that they may also speculate, buy and sell the products with their own resources, and extend financial aid to processors. Factors which encourage these practices are several : (1) small processors may have financial problems or need to have guarantees of working capital with which to operate between the seasonal income periods; (2) because of the seasonal nature and short supply of products, coupled with strong demand, the broker is encouraged to provide these services in order to secure a stable supply from the processor.

One of the ways in which the broker develops a continuing clientele is through a performance in the financial relationships that are established. Once a broker confirms such a financial relationship, the processor may become unwilling to disrupt the agreement because the overall demand of other state market is much greater and steadier than alternative markets.

The main factors in determining the price Oregon processors receive are the current demand of the major market areas and supply from other fishing areas. The price also determined, in part, by the capacity of the broker and the needs of the processor. If the broker is dealing with a small processor, he may be able to exert considerable influence on the price he pays. The broker and larger vertically-integrated processors seem to a large role in the actual operation

of the price structure. If supplies are plentiful, the broker may take a smaller gross margin; if supplies are drying, he may raise his margin. For another example, quantity discounts can be raised and lowered as the demand and supply of the product change. It appears that this type of personalized marketing decision and some of the additional services performed by the broker, supplement the free interplay of market forces. Because of these factors, there is never a single industrywide price for the product.

4. Wholesaler

The wholesaler is the segment of the market structure that buys products in quantity, store it, and handles the distribution of the product to retailers and restaurants. Although some brokers buy the products on their own account, the wholesaler incurs most of the cost of having this seasonal product available to the consumer on a year-round basis.

The two major operations of wholesalers are those of storage and delivery. Elements of these operations will be considered in terms of how they affect different wholesaler. In general, wholesalers can be divided into two categories : (1) the wholesaler who is vertically integrated with a processor, or who is in fact or contractually integrated by virtue of established ties along the market structure; (as indicated earlier, close personal ties or a tradition of close business relationships may place a wholesaler in this category) and (2) the smaller or independent wholesaler who buys from whomever has the product to sell.

These two categories of wholesalers seem to have different buying and inventory build-up patterns. The smaller or independent wholesaler who lacks reserve "buying power" has to gradually purchase extra product as it becomes available, to build up inventory to be sold during the off-season. The larger wholesaler with established ties along the marketing structure has more flexibility in building up his inventory. Supply permitting, this type of wholesaler will buy a large portion of the products toward the end of the fishing season, to be carried over into the off-season. The inability of the less powerful wholesaler to rely on "buying power", forcing him to maintain larger inventories, is strongly reflected in the difference in storage costs between the two types of wholesaler.

Transfer cost is a major problem confronting the wholesaler. It is prohibitably expensive to use the common carrier for intrastate transfer and delivery of the product. Most of them use their own trucks to make overnight trips.

Some wholesalers offer delivery service to other customer(wholesaler or retailer). Some retailers frequently pick up fresh fish from a large primary wholesaler as they need it. Most of wholesalers offering delivery service have daily routes. However, the daily deliveries usually

are not made to all customers. Only in the large cities are daily deliveries common and then only to large accounts.

5. Retailer

There are restaurant, independent retailer(specialized seafood stores, specialty food stores, grocery stores), and food chains (chain grocery outlets)in the retailer that deal with the seafood.

Some of the retailers in the outlying areas said delivery service was available only one day a week from a local wholesaler. This necessary is so because of the small volume of business involved and because of the distance between the wholesaler and the retailer. On the other hand, in the populated areas many retailers(mostly large one)said they could get delivery service as frequently as they desired.

A relatively high percent of the supermarkets were processing and packaging fresh fish. The processing consists primarily of trimming fillets and cutting steaks. Many of the retailers prepackage fresh fish.

There is a couple of different methods in determining selling price for fresh fish. The most pricing method is to follow competition. On the other hand, they use a fixed percentage markup on all fish or individual fish items. But in case of frozen packaged fish, the most common method is a fixed percentage markup on all fish products. Some use the price suggested by the distributor. In this connection the driver-salesman or distributor representative marks the price on each package as he put the article in the display case.

Among the retailer advertising fish, newspaper is the media most frequently used. Besides, handbill, television, radio or store demonstration are used. Their advertisement consists mainly of announcing price reductions on fish and fish products. This suggests that real "demand creation" by retailers is even smaller than the overall figures indicate.

VII. Summary and discussion

The characteristics of Oregon' s fisheries management system and marketing channel of seafood could be pointed out in this chapter, comparing them with Korea' s.

1. Fisheries management system

There is a difference between Oregon' s fisheries management system and Korea' s. Oregon state, that is, has two-step system(licence and permit). A license is required of all fishermen. It

allows fishermen to harvest anything that is legal to harvest. License may be divided into different categories(resident/non-resident, adult/juvenile) and a different fee for different categories. Since all participants are required to purchase a license from the State, the license are not bought or sold between individuals.

A permit is more restrictive than a license. A permit is required - limited entry - when the number of licenses are limited (salmon, shrimp, and scallop industry in case of Oregon). The reasons for establishing a permit may vary, such as raising funds, restricting participation, keeping track of participation, or gathering information in addition to what is required for a license. When the goal is restrict the number of participants, the history of the fishery is taken into consideration. Generally, when a limited entry system is begun, there is enough permits initially for anyone presently fishing to get a permit. If that number is larger than the goal, there will be a method of reducing the number of permits, such as annual landing requirements, where a person has to make a certain amount of landing in order to renew the permit for the next season. The ideal criteria for deciding the number of permits is the amount of resource there is available for harvest.

In running of aquaculture, to get a permit for aquaculture facility on the coast, they have to apply to the authority concerned (Oregon Department of Fish and Wildlife). If they are building any structures in the ocean such as piers or pilings or netpens, they also need a permit from Army Corps of Engineers. If they are using intertidal lands, that is, the estuaries of rivers, they need a lease from the Division of State Lands. That is a reason why there is not much aquaculture going on off the coast of Oregon these days.

2. Marketing channel of seafood

First of all, the fact that there is no auction system in Oregon's marketing channel of seafood may well show a big difference comparing with Korea's.

Brokers may occur at any level in a market channel to facilitate the meeting of buyer and seller of product, while in Korea they should play their role only between Fisheries Cooperative(or Wholesale institute) and wholesaler.

All dealers of seafood must get the license or permit to deal the seafood and to report their dealing amounts so that State government can control the quantity or quality of seafood traded in the State and the amount of individuals' catch and dealing. This system could be considered to apt to Korea's seafood marketing system.

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미국 오레곤주의 水産業 特性

金 秀 寬

要 略

본 연구는 미국 오레곤주의 水産業 特性을 개괄적으로 살펴본 것이다.

먼저, 오레곤의 상업적 수산업을 역사적으로 살펴보면 2가지 주요한 契機가 있음을 알 수 있다. 첫째는 自給自足 次元에서의 연어생산을 수출품으로 변화시킨 연어통조림 생산기술의 발전이고, 둘째는 현대식 트롤어업이 도입된 점이다.

오레곤에서 주로 사용되는 어구·어법은 트롤, 채낚기, 연승, 통발, 형망 등이며, 생산어종은 연어, 게, 새우, 참치, 대구 등이다. 1995년 오레곤은 약 2억4천 파운드의 수산물을 생산하여 미국 沿岸州 중에서 6위를 차지하고 있고, 生産金額에서는 12위를 기록하였다.

한편, 養殖業은 아직 성행하지 않아 그 생산품종 및 생산량은 微微한 실정이다. 그 주된 이유 중의 하나는 양식시설을 하기 위해서는 여러 관계기관의 허가를 필요로 하는 등 행정상의 절차가 복잡하기 때문이다.

오레곤의 水産資源管理는 우리나라에 비해 암계의 어획금지, 통발 등 정치어구·어법에 대한 引網 日數의 제한, 조개류의 판매가능시간의 제한 등 몇가지 특징을 들 수 있다.

오레곤의 수산업관리제도(연안으로부터 3마일 이내)를 살펴보면, 아직 TAC제도를 도입하지 않고 있으며 生産要素投入制限方式이 채택되고 있다. 즉, 상업적으로 허용된 어종을 어획하려는 어업자는 등록절차를 필히 거쳐야 어업행위를 할 수 있으며, 登錄數를 제한할 필요가 있는 특정한 어업(연어, 새우, 가리비 등)에 대해서는 행정관청으로부터 許可를 얻고 어업행위를 해야 한다. 즉, 허가어업은 등록어업보다 더욱 제한적인 어업행위를 말하며, 許可權에 대해서는 자유로운 매매양도가 허용되어 있다.

수산물의 마케팅시스템에 대해서는 우리나라에 지배적인 형태인 競賣制度가 도입되어 있지 않다. 즉, 모든 수산물은 개인적인 거래계약에 의해서 유통된다. 다만 마케팅경로에 참여하고 있는 모든 구성원은 일정한 登錄節次를 마쳐야 하며, 州內에서 거래되는 수산물의 일관된 통제나 관리를 위해 관계기관에 거래량을 필히 申告해야 한다. 우리나라의 仲都賣人은 주로 생산지의 수협(또는 내륙지 도매법인)과 도매상의 사이에 존재하나 오레곤의 중도매인은 마케팅경로 어디에도 존재하고 있다.