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A BRIEF HISTORY OF PACIFIC COAST WHALING

By Nicholas J. Lee

The pursuit of whales is as old as civilization itself. In the Northern Pacific, whales were caught as long ago as 230 B C by the ancient Japanese.

Whales were caught by the Indians of the Pacific North West, utilizing special 35 foot canoes, harpoons, lines and floats, even by poison. Peoples of the Arctic - the Eskimo, Chuckchi and Koryak also hunted the whale which was much prized for its meat, oil and bone. Recent discoveries of old Eskimo whaling camps have been dated back 1000 years. These people followed much the same trends as the Indians, the boats they used were made of skin and called umiaks. In winter time they harpooned the whales from the ice when they came up to breath in the ice leads. They then pulled the whale up on the ice and sledded him back to land. A successful catch was celebrated by a ceremony called Nelakatuk.

The Japanese had developed a highly organized coastal industry in the 1600's but this had declined by the nineteenth century, possibly due to overfishing.

Whales were first mentioned on the Pacific Coast by Sebastian Vigcaino in 1602 when he referred to Bahia de Belenas or Whale Bay in Baja California and to the Bay of Monte-rey (Monterey) as being plentiful in huge sea wolves (sea-lions) and whales.

The first shore whaling on the Pacific by non-native peoples took place out of Monterey, California, in 1851, however whaling ships from Britain and the New England ports had been active since they first rounded the Horn in the 1790's. They at first concentrated on the waters off Chile and Peru but activities soon spread throughout the Pacific. Often they caught seals and sea otters for their valuable skins as supplemental income. These early whalers were largely responsible for the discovery of many of the Pacific Islands and also for the eventual acquisition of California from Mexico. The Sandwich Islands, (Hawaii) because of their proximity to the famous Off-Japan whale fishing grounds, and San Francisco, were the whalers' main operating bases in the Pacific where they refitted and took on fresh supplies.

Most of the whales caught at this time were Spermaceti or Sperm Whales. In 1835 the first Black-Right or North Pacific Right Whales were taken on the Kodiak grounds and new impetus was given to whaling. In 1843 the Bowhead Whale was discovered along the Siberian Coast, off Kamchatka, just as this species was dying out in the North-East Atlantic and the Arctic Ocean, where it had been pursued for over a 100 years as the Greenland Right Whale.

Five years later, the Bowhead was discovered above the Bering Straits and after this, whaling tended to concentrate on the Arctic, Bering and Kodiak grounds in the summer and along the coast of Lower California in the winter. Arctic whaling was a tough and dangerous business though, and in the 1870's most of the Arctic Whaling Fleet was lost in two separate disasters when they were caught by pack-ice in the Bering Straits. In 1871 33 ships and their crews, with oil and bone worth $1600000 were lost.

At its peak, in 1846, there were about 900 vessels in the whaling industry, 735 of which were American. About 500 of these operated in the Pacific. Soon after this a decline in prices occurred, caused by the opening of new petroleum oil fields. (Standard Oil, which was a principal buyer, cut its price from 50 cents to 30 cents a gallon.) This, plus the Arctic disasters, together with the fact that many of the crews deserted to try their luck in the California gold fields, was responsible for a decrease in whaling. Operations were never again to be so widespread or so numerous, although fewer ships and and stations, using modern and more efficient methods were soon to catch more and more whales.

As to the whales themselves, perhaps a brief description of some of the different kinds to be found in the Pacific might be helpful.

Whales are an old group of animals. Fossil records indicate they were already well developed in the Eoceneepoch, over 60 million years ago. They are descended from terrestial animals and exhibit the highest degree of adaptation to life in water. Maximum metabolic efficiency is such that young whales can gain 30 tons a year. They are usually weaned in 5 or 6 months and mature in 2 years. Whales have no hair or fur covering but haveal2 inches or so thick coat of blubber for protection and insulation.

Whales are of two kinds, baleen and toothed. Baleen Whales, including rays, Fin Whales and Right Whales (because they were the "right" ones to catch) .re whalebone bearing. They have innumerable frayed sheets of whalebone "baleen suspended from both sides of the upper jaw. With this apparatus they are able t strain or sieve large quantities of small marine creatures including heteropods, pteropods, copepods and shrimplike crustacea called euphausiids, (commonly known as kril.) Collectively known as whale feed, these were a valuable indication to whalers of the probable presence of whales. This whale feed enables sufficient nourishment to build a huge body with exceptional rapidity, to support high expenditures of energy and storage beneath the skin of voluminous masses of insulating, oily, blubber. Some whalebone whales make seasonal migrations from tropica calving grounds to feeding grounds in the colder waters of the Arctic and Antarct

Other whales eat small fish such as Boreal, Capelin, and young Herring. The Fin and Humpback Whales eat shark and sea fowl.

The toothed whales include those with teeth on both jaws and those with teeth on the lower jaw only. These latter usually have only rudimentary or partially formed teeh on the upper jaw. Porpoise and Dolphins have teeth on both jaws and feed on fish. The Spermaceti, or cachalot, as it is also known, and bottle nosed whales have teeth on the lower jaw and feed mainly on squid. These squid, which can reach extremely large size, live at depths of approximately half a mile under the surface. Pressure at this depth is equal to 80 atmospheres.

Whales do not have sharp vision, their eyes are protected from brine, which is painful to mammals, by a gland that sheds grease tears. They do, however have accurate hearing. A sophisticated system similar to sonar is used for locat objects around them and is also used in their navigation, as is, too, a sense of smell or taste utilized to recognize nutrient or sediment laden waters emptyin into the sea. This is of vital importance to the migratory whales as landmar in their journeys between feeding grounds and breeding grounds.

Whales, Dolphins and Porpoise may be called whales, but generally only the larger cetaceans are called whale, although this is not always the case.

Many whales are not confined to one ocean but range all the seas.

The Right Whales: Pacific, New England and others, and Bowhead Whales (Balaena glacialis) were formerly numerous but were slow moving, 2-12 knots, non-beligerant and easily caught. Since they yielded large amounts of oil used in illumination and baleen, they were much sought after. About 100,000 were killed in the 19th century. They reach a length of 60 feet but are rarely seen now although a protected species by international agreement. The Right Whale is usually black, but may show irregular white patches, especially on the underside. It has no dorsal fin or throat grooves The Pacific Right formerly ranged from the Bering Straits and Alaska to Baja California. The Bowhead is an Arctic Whale.

Five kinds of Fin Whales or Rorquals (Balaenoptera) are found in the Pacific. The Little Piked or Minke (Balaenoptera acutorostrata) only reaches 33 feet. It is gray-black above and white below, with a white band across the flippers. It is used in some countries as human and pet food.

The Sei Whale (Balaenoptera borealis) may reach 51 feet. It is gray to bluish-gray above and on the rear half of the undersurface, and white down the front of the underside which is grooved in long narrow furrows, as are most Rorquals. It is low in oil content, so not much sought after, although it did comprise 20% of the British Columbia whale take in 1959 and 9% of the California catch in 1959-1962. This whale is widely used in Japan for huma

The Blue or Sulphur bottom (Balaenoptera musculus) is the largest of all whales and indeed all living or extinct animals. It can reach 100 feet in length and a weight of over 100 tons. It is long and streamlined and bluish-gray with light blue mottling. The name Sulphur bottom refers to the film of diatoms which sometimes cover whales that have been in cold water for an extended period. There is a very small dorsal fin which is set quite far back. Only 2% of California captures are Blues. They usually produce about 120 barrels of oil each.

Similar to the Blue is the Finback or Fin Whale (Balaenoptera physalus). It is the most numerous and also the fastest of all whales. It made up 34% of the California catch in the period 1956-1952 and 40% to 70% of the British Columbia catch in 1958-1959. It is about 80 feet long and produces about 110 barrels of oil.

Members of family Ziphiidae, the Beaked or Bottle Nosed Whales, are of moderate size but rather rare off the Pacific Coast.

The Humpback (Megaptera novaeanglioe) is stockier than Balaenoptera and reaches about 52 feet. It differs from all other whales in having extremely long flippers, a quarter to a third of the total body length, which are knobbed on the leading edges. It is black on the top and the sides and white underneath. It is often to be found in coastal waters and bays. Frequently it breaches (leaps clear of the water) . 42% of the California catch (1958-1962) were Humback but only a few were taken in British Columbia. Humbacks each produce about 60 barrels of oil. Annual hunting of this whale is now restricted to three days.

The wall known Killer Whale or Orca (Orinus orcu) and the not so common False Killer Whale (Pseudorca crassidens) are not actual whales but in fact

Dolphins, as also is the Pilot Whale (Globicephala scammoni).

The male Sperm Whale (Physeter catodon), largest of the toothed whales, reaches 59 feet and weighs 52 tons. (Females only reach 39 feet). They are dark bluish-gray to black, sometimes with white on the lower jaw and belly. A large squarish head with small lower jaw distinguishes this whale from any other cetacean. The dorsal fin is rounded and set well back and is followed by a series of bumps. The spout of this whale also differs from that of other whales in that it is directed slightly forward. The Sperm was much sought after because of its high quality oil. 90 barrels could usually be obtained, 6 barrels of which came from a cavity in the head. This spermacetic oil, as it was known, was of particular value. The Sperm Whale Oil is used as a high grade lubrication for precision instruments. Sperm Whales were also the only source of ambergris, at one time much used as a base for expensive perfumes. It comes from the whale's intestine and is still in some demand although largely replaced by synthetic substitutes. At one time it sold for $40. an ounce but now fetches only between 75 cents to $3. per ounce. Sperm Whales constituted 6% of the California catch in recent years, although 15% in 1958 and 30% in 1959 in British Columbia.

The Pygmy Sperm Whale (Kogia breviceps) ranges from 9 feet to 13 feet in length. It is black above and gray-white below and is rather scarce on the West Coast.

Bairds Beaked Whale (Berardiis bairdi) is brownish gray all over with irregular white blotches sometimes present ventrally and can reach 42 feet. It is infrequently taken by whalers because of its small size.

Hubbs Beaked Whale (Mesoploodon coulhubsi) reaches only17 feet and is black all over except for a white beak.

Caviers Beaked Whale (Ziphius cavinostris) is gray or fawn throughout and lighter underneath. It may reach 37 feet in length.

The most interesting and well known Pacific Whale is the California Gray Whale. (Eschrichtius gibbosus). Gray Whales feed in summer in the Bering Sea and adjacent Arctic Ocean. There are actually two groups of Grays, which do not intermingle. One group, which is not now too large, spend the summer in the Sea of Okhotsk and the winter in Korean waters. The main group of California Grays leaves the north in September or October and travel south down the West Coast to Mexico, usually arriving December through February. In the lagoons of Baja California (Mexico), and on the east coast of the Gulf of California the females have their calves and breed.

In the spring, March through April, they start north again, reaching the feeding grounds in June. The journey is between 5000 to 7000 miles each way and takes two to three months. They can swim at 10 knots but usually swim at a steady 3-4 knots, making 60 to 80 nautical miles a day. Gray Whales are between 35 to 50 feet long, the females being the largest. This is reverse sexual dimorphism.

Formerly, many of the Grays stopped in San Diego Bay and were so numerous that it was dangerous to row across the bay because of the risk of overturning and even in the 1870's it was not uncommon to see 15 at a time. Nowadays the Gray Whales congregate off the west coast of Baja California. A few circle Cape San Lucas and cross the Gulf of California to lagoons on the eastern side but most go to Scammon's Lagoon, Black Warrior Lagoon, San Ignacio Lagoon and to the Magdalena Bay area, especially Soledad to the north.

Unfortunately, at Black Warrior Lagoon there is a salt works whose shipping activities discourage the whales. This same company has now dredged

the entrance to Scammons Lagoon, presumably with the intention of expanding their operation to Scammons.

Gray Whales were not hunted extensively until the larger whales had become scarce. Then, in 1846, lagoon whaling started. The ships anchored in or offshore of the bays of California and Lower California and let the whales come to them. The toll was formidable. In 1851 the Gray Whale population was estimated at 50,000. By 1874 only 10,000 were left, and they were scarce in the lagoons, but the exploitation still continued. By 1900 there were almost none left.

The few surviving Grays eventually multiplied enough to support a Norwegian factory ship with steam powered catchers. Several hundred were caught in the winters between 1924 and 1929 at Magdalena Bay. An American factory ship, the "California", also operated from 1932 to 1936, taking its share. Shore stations at Trinidad and Moss Landing, together with others in California, added to the toll.

In 1937 The International Whaling Commission declared the Gray Whale a totally protected species forbidding its capture by an member nation. Only native peoples of the Arctic could kill Grays and only for their own use. The number of California Grays is now estimated in excess of 5,000, but they are still in jeopardy. The use of the lagoons, so necessary for calving, is endangered by salt companies and commercial exploitation of the few remaining lagoons may soon imperil the Gray Whale. Also there have been repeated attempts to establish a shore station on the Baja coast.

There are three methods of catching Whales. The traditional picture of whaling is of course of the ships which left their home ports and stayed away several years at the whaling grounds until a full cargo of oil and whalebone was obtained. The whales were caught by small boat - the double-ended "whale boats", and then towed to the ship to be flensed or stripped of their

blubber alongside, the carcass then being cast adrift. The oil was "fryed" out and put into tanks or barrels on board ship. This method is still the most common, but a specialized fleet has now taken over from the old sailing ship and her whaleboats. The modern whaling fleet usually consists of a "factory" ship, a fleet of catcher vessels , with often a tanker and several whale "tugs".

The catchers are small vessels in the range of 850 tons with about 3,600 horsepower. They have an explosive 90 mm. harpoon gun on a platform in the bows, connected to the wheelhouse by a catwalk. The skipper is usually the gunner. When the lookout sights a school, or pod, of whales, the catcher gives chase. When several whales have been killed they are towed to the factory ship either by the catcher or, since this is time consuming, by special whale tugs.

The factory ship cuts up and renders down the whales. In 1925-1926 the first factory ship with an inclined ramp in the stern was introduced. The whales are winched up the sterm ramp and all whale cutting, etc., is accomplished on board. The whale products are then stored on board, although in some cases the oil is transferred to a subsidiary tanker by ship to ship transfer, similar to navy tactical refueling. Some of the more recent factory ships are large indeed, in the 30,000 ton range and are equipped with amphibian spotter aircraft or helicopters.

Another method now used only to a limited extent in the Arctic and in the Azores, but which was extensively used in the early days of coastal whaling, particularly in California in the 1800's, is that of a station and fry works established ashore at a likely location. Whales, caught by small boat, were then towed to the station. These boats stayed within a distance of about ten miles of the base and since whales,in earlier days,were more plentiful, quite a good living could be made.

Modern shore whaling developed from this and was similar except that steam powered or diesel powered catchers were employed. With their extended range they could go out several hundred miles scouting for whales. The catcher vessels tow the whales back to shore for flensing. These boats are usually converted from other types, especially ex-military vessels and trawlers.

The old shore stations were an interesting and little known facet of Western history. The whalers themselves were almost always Portuguese from the Azores or from the western islands of the Atlantic, both places having a long tradition of whaling.

The station itself usually consisted of a natural ramp where the whales could be drawn up by a capstan called the crab, try pots set over open furnaces, rough wooden plank vats for storage of the oil and a shack or cabin which was divided into four rooms which served as washroom, drying room, store room and coopers shop. There was also a cabin where the whalers lived and a lookout station. At the lookout was a flagpole that could be used for signalling information to boats at sea. The number of boats serving the station was usually two.

A whaling company most often included a captain, mate, cooper, two boatsteerers and 11 men. The boats, which usually had lugsails, held a crew of 6, leaving 4 men ashore to tend the try pots and to man the lookout. Usually the company worked on lays or shares, as is done in ship whaling. For safety, the two boats always went out together.

Hand thrown harpoons were used from the boats which necessitated quietly paddling up close to the quarry, the harpoon then being plunged in. A long ride followed in which the whale towed the boat until it became so tired that it could no longer swim or dive. The coupe de grace was then

administered. If the whale did not sink it could be towed back to base, often a long and tedious row. If it did sink it was buoyed, and if they were lucky, the generation of gasses within the body of the whale would raise the carcass to the surface, a process which could take anywhere from 3 to 9 days. Many were lost, however. Sometimes as many as 50%.

This primitive gear gradually gave way to more sophisticated equipment. "Greener's Harpoon Gun", a harpoon powered by a hand held gun and various explosive bomb lances such as "Pierce's Harpoon-Bomb Lance Gun" came into being in the 1850's but it was still a difficult and dangerous job.

Shore whaling became more profitable and less dangerous with the advent of small steam vessels. A bow gun fired a harpoon with an explosive grenade. After penetration, three barbs sprang open, preventing the harpoon from working out. Steam catchers equipped with harpoon guns were first used by Japan in 1899. A strong line was attached from the harpoon to a powerful winch on board which allowed recovery of the whale and prevented loss should the whale sink. Upon winching in, the whale was filled with compressed air to make certain it stayed afloat.

It is uncertain just when the shore whaling started on the West Coast (apart from that practised by the Indians and Eskimos) but it apparently began in the Monteray Bay area of California in either 1851 or 1854. A Captain John Davenport is often accredited with being the first to establish shore whaling but just where is not certain. It could have been in Monterey itself or at Davenport Landing. Other companies soon followed. At least one was self supporting. The California Register of 1857 says of the Portuguese Company of Monterey that in the preceding year they had obtained 15000 gallons of whale oil which sold for $12000 and in 1857, 23 whales produced

32000 gallons of oil worth $22,500. In addition they sent to market 2000 cords of wood, 10,000 lbs of wool, 800 hides, 1200 sacks of barley and 3000 sacks of potatoes. The first whaling companies were farmers, who manned their boats when a look-out rang a bell if heesighted whales. Later on, whalers concentrated solely on whaling.

Another early station was at Half Moon Bay. Some records show whale oil being shipped out in 1855, others show dates of 1861 to 1874. The Half Moon Bay Station was probably just to the north of Pillar Point in a natural harbour variously known as Frenchman's Cove, Balluda's Cove and Whaleman's harbour.

Half Moon Bay itself lies about 30mmiles south of San Francisco in San Mateo County. A second station in San Mateo was at Pigeon Point a further 30 miles or so south. It operated sporadically between 1862 and 1895. Pigeon Point, at that time, was a small coastal community clustering around a busy wharf. Now there are only a few houses and farms, a Coast Guard lighthouse and an oyster spot business.

There were between 15 and 20 shore stations along the California coast at one time or another. They operated when whales were available, disbanding or moving to new locations when necessary. The Bolinas Bomb-Lance Whaling Association commenced operation in 1857 at Bolinas Lagoon just up the coast from San Francisco. A station started at Carmel in 1861. This was probably the one at what is now Point Lobos State Marine Preserve. The same year also saw the start of an operation at Dead Man's Island in San Pedro Bay. whales were caught at Galeta near Santa Barbara between 1870 and 1880. And there was a station at Cojo Diego, Point Conception in the years 1879 to 1886. Whaling was also carried out from the following California locations, although dates are not known. Point Arguello, San Simeon, Crescent City, Portuguese Bend near San Pedro, Santa Cruz, Point Sur, Point Harford and Whales Point

near San Luis Obispo, Point Reyes, and two at Balladt Point which is just inside San Diego Bay where Scripps Institute of Oceanography boats now tie up. There was also one at Punta Banda in Baja California.

With the advent of the steam powered vessel, shore stations were able to move around more. Some stations stayed in one location but other companies became more mobile. Some moved up and down the west side of North and South America, setting up shore bases and moving elsewhere when the area became unprofitable.

The permanent shore stations usually consisted of a large shed constructed over a ramp. There were several around the Pacific, from the turn of the century onwards and some are still in operation.

The Pacific Steam Whaling Company at Kenai, Alaska, commenced operations in 1898 and the station operated until July 1903, when it was destroyed by fire, at which time it was operating under the Pacific Packing and Navigation Company. There were, of course, other stations in Alaska at one time or another in addition to the Eskimos whaling activities now largely concentrated at Barrow, Point Hope and Wainwright. The Eskimo catch is mainly Bowheads and Grays.

Whaling began at Coal Harbour, Port Hardy on Vancouver Island, in British Columbia in 1905. The Western Whaling Corporation still operates five catchers from a converted ex Royal Canadian Air Force Flying Boat Station. Whaling must also have been common at other locations in British Columbia judging by some of the place names, for example: Blubber Bay and Whalestown in the Straits of Georgia.

A large operation was established at Moss Landing, Monterey Bay, California. It was operated in the 1920's by California Sea Products who also worked out of an area north of Humboldt Bay, California. This station was only open for two months in 1920/ Nearby stations were also in effect

at Trinidad in 1926 and Fields Landing, near Eureka, during the period 1940 through 1951.

There was also a station at San Simeon or Cambria in California, possibly both, date unknown.

Two stations operated side by side on San Francisco Bay, actually the section called San Pablo Bay. Together they worked five catchers from their stations at Point San Pablo. The Del Monte Fishing Company opened in 1956 with two boats, adding a third the following year. In 1958 The Golden Gate Fishing Company started with one boat and added another in 1959. The companies operated until 1952 and caught just over 1000 whales in this period.

Another company, called Bioproducts Incorporated operated one ship in 1961 and 1962 out of Warrenton, Oregon. There were undoubtedly other stations in Washington and Oregon.

The San Francisco Companies, especially the Del Mont Fishing Company, were active in catching Gray Whales for research, conducted under the auspices of the Bureau of Commercial Fisheries. The whales were then rendered down and used in preparation of dog food. Only Del Monte's were operating after 1966. Whaling was halted im 1969 by the Department of the Inferior after the offshore oil leak at Santa Barbara was thought to be affecting Grays on their migration north. This proved to be unfounded and Del Montes license was renewed for 1970.

At this time, according to the U.S. Fish and Wild Life Service, there are approximately 25 shore stations around the Northern Pacific employing 77 boats. Besides the ones already mentioned, there are two stations in the Ryuku Islands, eighteen in Japan and four in the Kurile Islands; possibly same in Korea and the Bonin Islands. Whaling was also carried out from shore stations in Australia and New Zealand and at least one was operating recently in Southern Australia using aircraft as spotters. There is at least one in Chile, south of Valpaiso, and there may be others in Peru.

During World War II all whaling ceased but after the war the Soviet Union sent one factory ship to the North Pacific. Japan also commenced factory operations in 1952 with one ship and added a second in 1954. In 1962 Japan and the U.S.S.R. both sent another ship and the U.S.S.R. sent two more in 1963.

The present status of Whaling by factory ship in the Pacific is obscure.

The practise of the old time whaling ships was to strip the blubber off in one long 'blanket' piece that ran diagonally and spirally around the whale, the carcass then being cast adrift. In shore whaling and modern factory ship whaling, the whale was usually hauled up a ramp and the blubber stripped off in convenient pieces.

In the old days, whale oil was used mostly for illumination. Nowadays it is used for lubrication and is also utilized in the manufacture of paints, candles, medecine, cosmetics and soap, and in the preparation of leather and cloth. Much margarine, particularly in Europe, is made with whale oil. Vitamins are extracted from the livers. Whale meat is used for human consumption, in some places being considered a delicacy. Often it is canned. Japan consumes 100000 tons of whale meat annually. Much animal and pet food is also produced. Fertilizers are another product. Whalebone was used to make ladies' corsets, buggy whips, umbrellas, furniture and fishing rods. The teeth of the Sperm Whale and parts of the jawbone, were often carved and decorated by mariners who etched and carved the ivory pieces into what is known as Scrimshaw. Some of the sidewalks and patios were paved with whalebone in Monterey, California, where much of the earliest and busiest shore whaling occurred. Whalebone was also carbonized and used in the refining of sugar.

Every part of the whale is now used and there is a high cash value on whales caught. With modern technology, once whales are sighted, they stand a slim chance of escape. Unrestricted whaling can and does lead to depletion of whale stocks. As one species becomes scarce, other kinds are pursued. This relentless killing, plus the whale's slow rate of reproduction, has resulted in the relative scarcity of many species today.

In light of this, the League of Nations drafted an International Agreement for the Regulation of Whaling in 1931. It became effective in 1935 with 28 nations abiding by its rules. There was a second agreement in 1937. These agreements led the way for the International Whaling Convention which, in 1946, set up the International Whaling Commission.

The Whaling Convention set forth certain provisions which included the protection of Right and Gray Whales, minimum lengths for each species, the protection of females with calves, the establishment of a 3-month whaling season and closure of most oceans to whaling north of 40° south, with the exception of the North Pacific.

Unfortunately, even these provisions had little effect. Formerly, most whaling expeditions had gone to the Antarctic, but now, due to the decimation of most species there, whalers are now turning more and more to the North Pacific. 1970 marked the first time in many years that whaling operations have not taken place in the Antarctic. The Norwegian firm of A.S.Kosmos completed their Antarctic expeditions with the 1969 season.

It follows, then, that Whales, always an endangered species, will soon become almost non-existant unless rigid precautions are taken. Adequate protection can only be insured by complete international agreement. In view of the whales' long distance movements, and the large differences between the species, there must be more research and it must be co-ordinated rather than independent.

Perhaps it is not yet too late to save this magnificent creature for posterity and still manage a substantial yield for the consumer.

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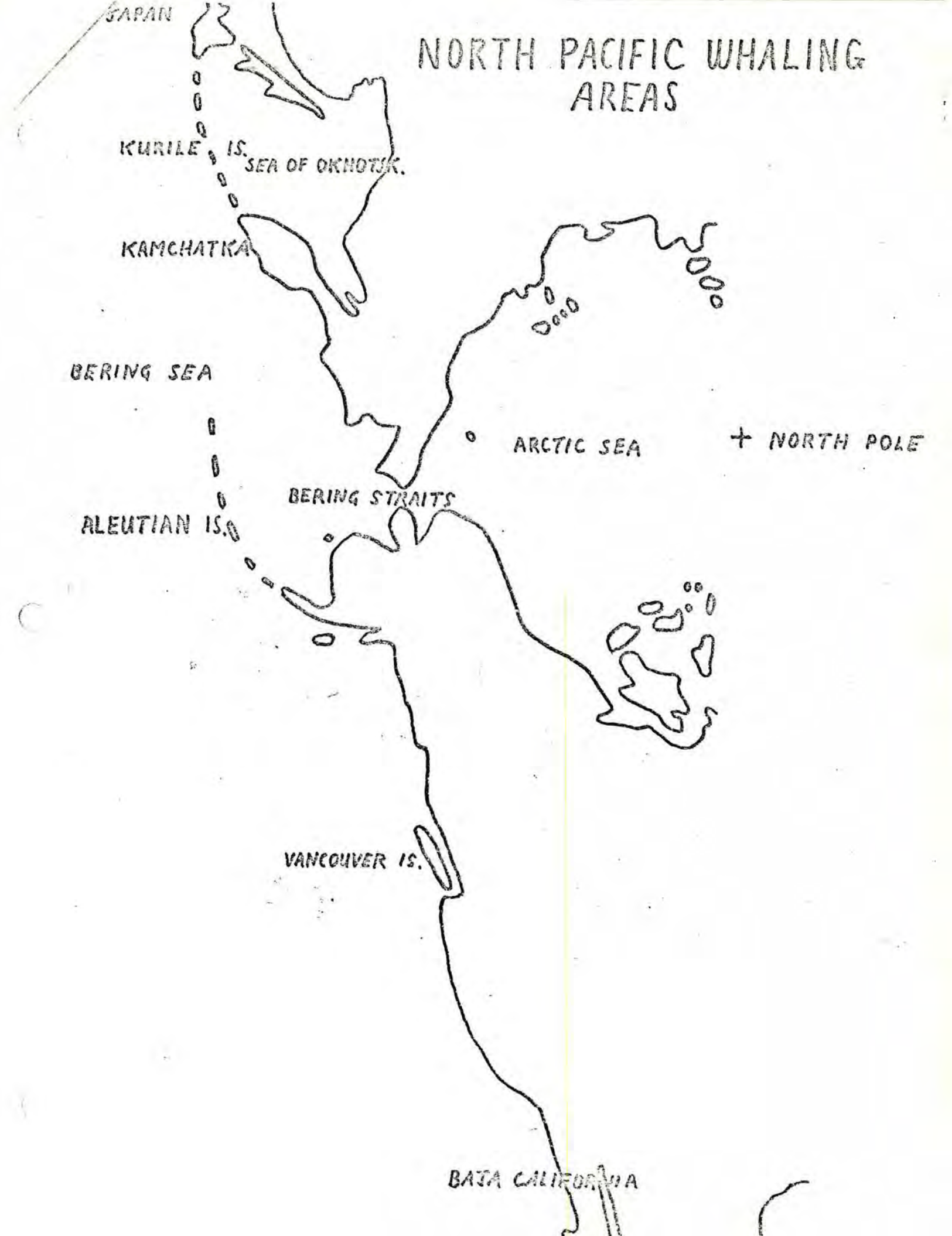
JAPAN
NORTH PACIFIC WHALING AREAS
KURILE IS.
SEA OF OKHOTSK.
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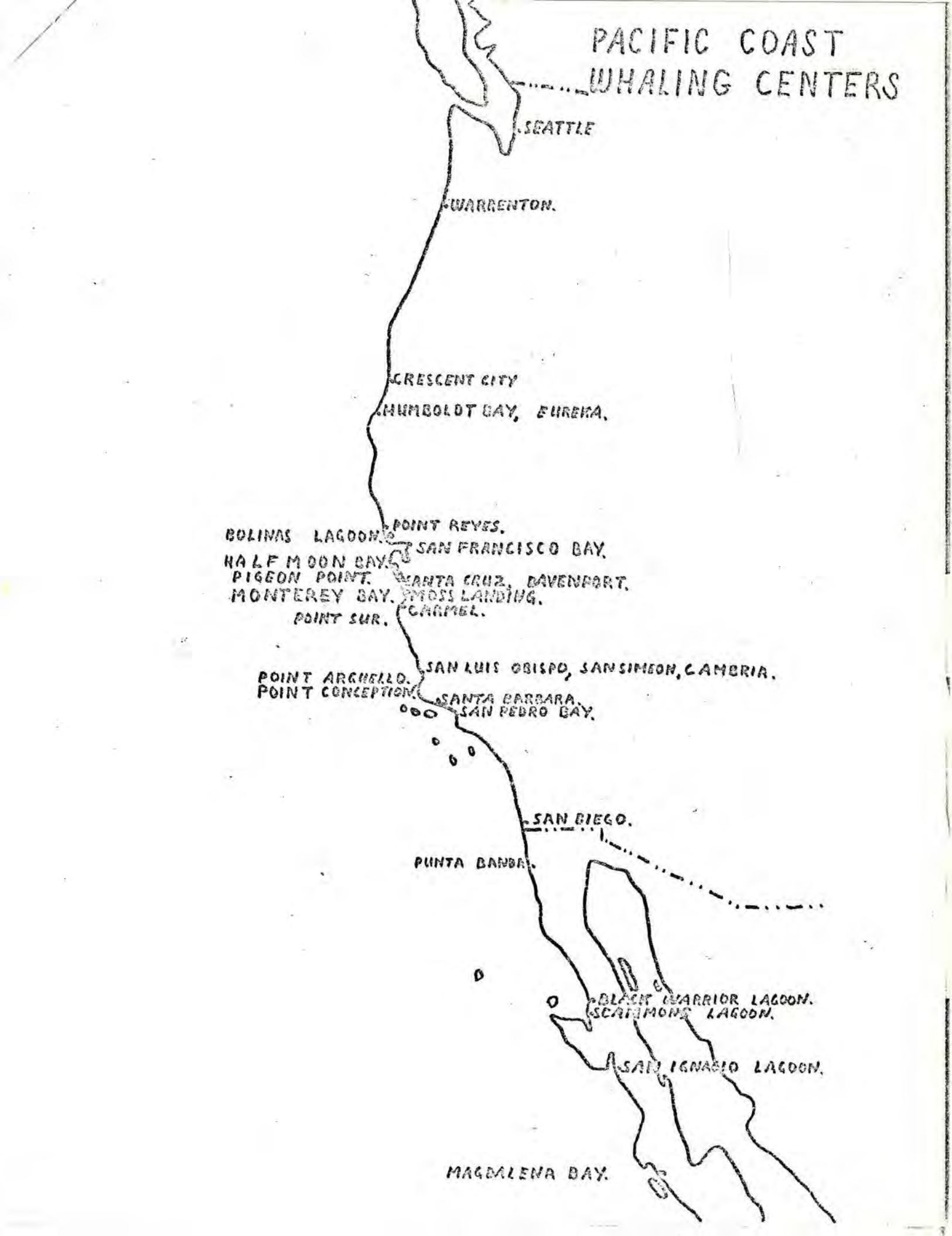
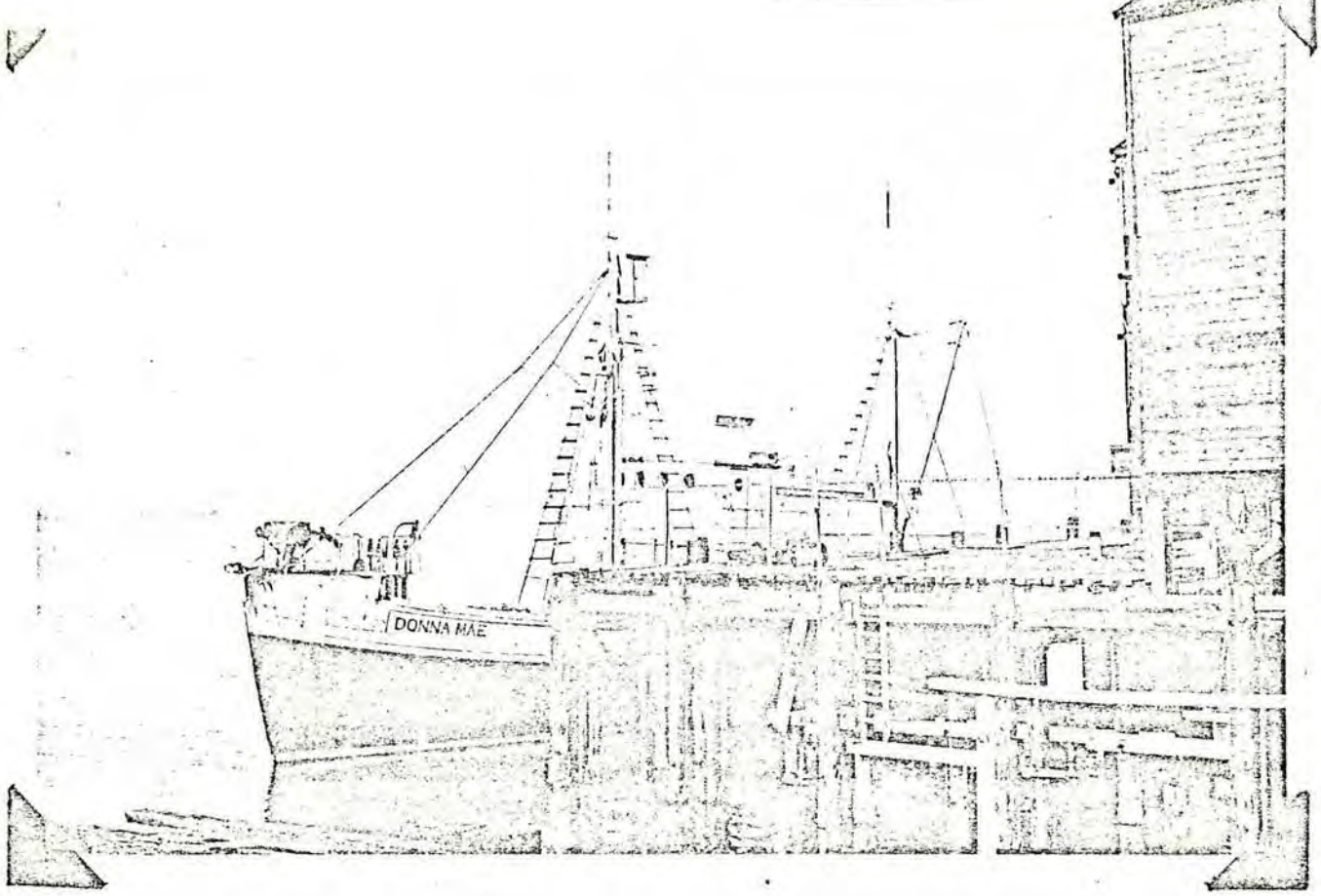
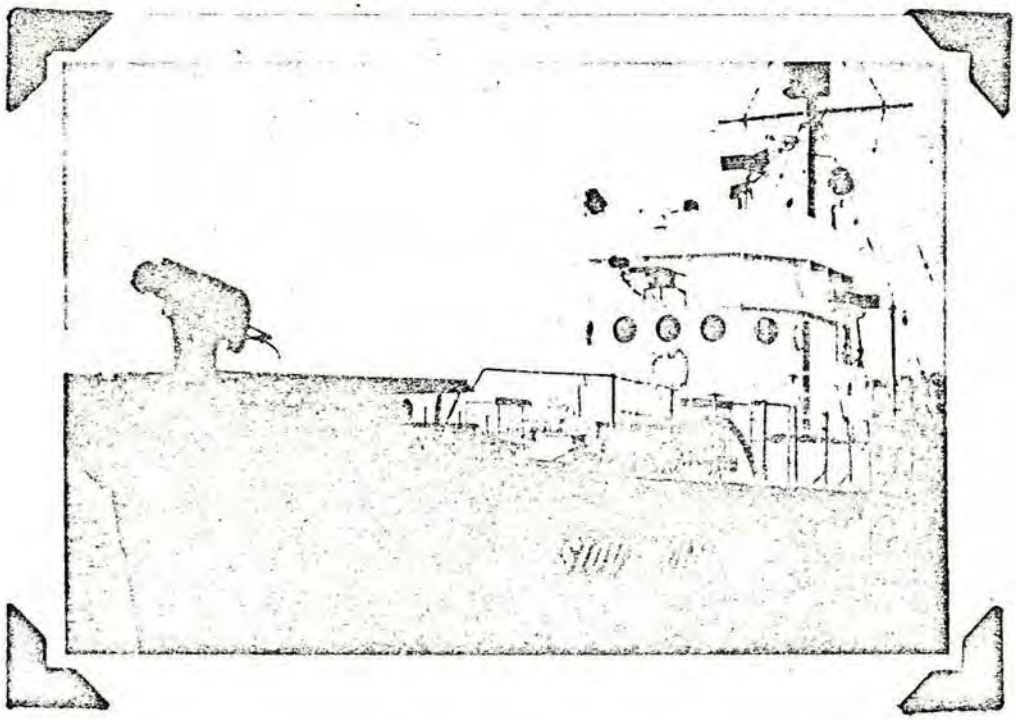

PACIFIC COAST
WHALING CENTERS
SEATTLE
WARRENTON.
CRESCENT CITY
HUMBOLDT BAY, EUREKA.
POINT REYES.
BOLINAS LAGOON.
SAN FRANCISCO BAY.
HALF MOON BAY.
PIGEON POINT.
SANTA CRUZ, DAVENPORT.
MONTEREY BAY.
MOSS LANDING.
CARMEL.
POINT SUR.
SAN LUIS OBISPO, SAN SIMEON, CAMBRIA.
POINT ARGUELLO.
POINT CONCEPTION.
SANTA BARBARA.
SAN PEDRO BAY.
SAN DIEGO.
PUNTA BANDA.
BLACK WARRIOR LAGOON.
SCAMMONS LAGOON.
SAN IGNACIO LAGOON.
MAGDALENA BAY.



One of the Del Monte Fish Company boats at Point San Pablo, San Francisco Bay.



Another coastal whale catcher. The "Sioux City" and her sister ship the "Lynn Ann" madeseveral trips to set up shore stations in Peru.