

Great Lakes 1976 Commercial Fish Catch Nets 102 Million Pounds, \$21.1 Million

The waters of the Great Lakes provided U.S. and Canadian commercial fishermen with a catch during 1976 of some 102 million pounds having a record landed value of over \$21 million, according to a *Great Lakes News Letter* report. While the weight total was up about a million pounds or 1 percent over the previous year's figure, the dollar return increased by nearly \$2.5 million (over 13 percent) due to the sharp advance in dockside price paid for some species. Catch statistics obtained annually by the Commission from the U.S. Fish and Wildlife Service and the Ontario Ministry of Natural Resources are summarized in tables one and two.

An overall view of the vast freshwater fishery reveals substantial varia-

tion with respect to the species and size of the harvest taken from the several lake basins. In terms of fish production, Lake Michigan's 48.4 million pounds stands well above all others in accounting for 47 percent of the Great Lakes total. Lake Erie, however, continues as the most valuable commercial fishery with the 1976 Canadian-U.S. landed value amounting to \$8.7 million or 41 percent of the value of the total lakes harvest. Catch statistics, it should be noted, may provide a misleading indicator of the abundance of some species in some areas since state regulations, bans due to chemical contaminants, and market demand are among the factors which can sharply reduce the quantities harvested.

The 65.7 million pounds of fish caught by U.S. commercial fishermen during 1976 was 5 million above the previous year, with 4 million of the gain being alewives. Although this species is common in all of the lakes except Superior, the commercial catch is essentially all from Lake Michigan. The 39.2 million pounds of alewives taken from that lake in 1976 accounted for 60 percent of the total weight of the U.S. Great Lakes production but for less than 5 percent of its dollar value. For Lake Michigan, last year's alewife harvest provided 81 percent of the lake's total production. This small, low-value fish is processed into fish meal, oil, and pet food.

The whitefish was the leading income-producer in 1976 among more than two dozen species caught in significant quantities by U.S. commercial fishermen. A dockside value of more than \$4 million was a new high for this species which had three-quarters of its production come from Lake Michigan. Other important high-value species are the yellow perch and chub. Landings of the latter have decreased markedly due to the decline of this species in Lake Michigan which, in turn, has prompted the states to initiate measures to sharply

Table 1.—Total Great Lakes fish catch and value, 1976.

	Thousand pounds		Thousand dollars	
	1975	1976	1975	1976
L. Ontario				
U.S.	233	194	98	91
Canada	2,777	2,914	782	1,003
L. Erie				
U.S.	8,487	9,061	1,964	2,731
Canada	30,549	25,711	6,009	5,990
L. Huron				
U.S.	1,858	2,160	630	771
Canada	3,334	3,884	1,806	2,482
L. Superior				
U.S.	4,735	5,952	1,792	1,771
Canada	3,769	3,891	1,011	1,247
L. Michigan				
U.S.	45,348	48,370	4,562	5,057
Total				
U.S.	60,660	65,736	9,046	10,422
Canadian	40,428	36,400	9,609	10,721
Grand total	101,088	102,136	18,655	21,143

Table 2.—Great Lakes fish catch and value, 1976, by leading species.

	Thousand pounds		Thousand dollars	
	1975	1976	1975	1976
United States				
Alewives	35,216	39,212	406	476
Smelt	2,573	5,345	255	205
Whitefish	4,516	5,298	3,030	4,100
Carp	4,612	4,612	330	293
Yellow perch	3,037	3,113	1,545	2,478
Chubs	2,444	1,657	1,629	1,186
All other	6,141	6,498	1,851	1,685
Canada				
Smelt	17,333	18,243	1,202	1,355
Yellow perch	9,419	6,073	4,387	4,815
Chubs	1,249	1,540	771	1,216
Lake herring	2,205	1,380	426	289
Whitefish	1,203	1,336	811	968
White bass	2,580	1,131	709	519
All other	6,440	6,696	1,303	1,559

reduce the commercial catch of chubs.

For the Great Lakes States, last year's catch by their commercial fishermen in the lakes was as follows (in thousands of pounds):

Illinois	264	New York	518
Indiana	200 ¹	Ohio	7,783
Michigan	14,003 ¹	Pennsylvania	336
Minnesota	3,162	Wisconsin	39,471 ¹

The 1976 Canadian catch of 36.4 million pounds was the lowest total since 1964, but rising prices brought the landed value for this production to a new high of \$10.7 million. A sharp drop in the Lake Erie harvest of yellow

¹Alewife portion of catch: Indiana 2; Michigan 4,621; Wisconsin 34,590.

ADDITIONAL LORAN-C TRANSMITTERS OKAYED

The Department of Transportation has announced that three new LORAN-C transmitting stations have been authorized by the Coast Guard as part of the Southeast United States LORAN-C Chain. On approximately 1 July 1978, stations at Malone, Fla., Grangeville, La., and Raymondville, Tex., will become operational to provide navigation service in the Gulf of Mexico.

Existing LORAN-C chains are along the west coast, in the north Atlantic, the Bering Sea, north and central Pacific Ocean, and along the east coast. LORAN-C uses low-frequency signals that travel across land and water at specified speed. By measuring the time of signals from two or more stations with a special receiver, the operator can determine his location to within 0.25 of a nautical mile. By mid-1980, the final configuration of LORAN-C will be attained and the older and less accurate LORAN-A system (used widely by civilians since WWII) will be phased out completely.

perch during the last several years—from 18.0 million pounds in 1973 to 4.6 million in 1976—has been the key factor in the recent decline in Canadian landings. In response to the continuing lack of strong year classes of this species, last year's enforcement effort also was expanded in order to bring adherence to the 8-inch minimum size limit.

Yellow perch continues, however, to

hold a commanding lead as an income producer, although the rainbow smelt has held top position in terms of weight for the past 3 years. The harvest of smelt, like yellow perch, is principally from Lake Erie waters—17.2 million pounds of an 18.2 million pound total for 1976—and plays a major role in this lake accounting for 70 percent of the weight of last year's total catch by Ontario commercial fishermen.

By August, the fishery had just begun and catch rates varied between days with exceptionally large catches (300-500 fish) and those with almost no success. Fishing was concentrated in an area between Fort Bragg and Monterey, with major fishing at Guide and Davidson seamounts and the Farallon Islands. The fish were small until September, when some landings were predominated by 25- to 30-pound fish. For the most part, the schools were small fish, or mixed at best. Fishermen sometimes left these schools to look for schools of the larger albacore. A good price gave the fishermen flexibility in this regard.

Pacific Coast 1976 Albacore Catch Down

The U.S. commercial catch of North Pacific albacore has averaged 44,642,000 pounds over the past 25 years. The 1976 U.S. commercial catch is projected to be 27,810,000 pounds down 43 percent from 1975 landings, and the lowest in 20 years, according to a report in the California Marine Advisory Program *Newsletter*. North Pacific albacore make annual trans-Pacific migrations and are subject to both the Japanese and the U.S. Pacific Coast fishery. It is generally accepted that these fisheries are exploiting 6 or 7 year classes of a single stock having extremely complex and little-understood migration patterns. Estimates of the average total harvest from this stock approach 220,000,000 pounds annually and represent about one-third of the world catch of albacore.

CONDITIONS AFFECTING THE FISHERY

The sharp decrease in 1976 commercial albacore landings was due mainly to poor environmental conditions and a decrease in fishing effort along much of the coast. Off Oregon and Washington in August, upwelling was apparently weak and fish did not concentrate consistently along the few thermal fronts that developed. Stormy weather also hampered fishing during the season. In addition, many of the albacore trollers turned to salmon trolling due to record catch rates and prices for salmon.

Late season success of albacore sport boats off Washington was due to the use of live bait. Warmer-than-average

water temperatures off California during the spring and summer precipitated an early beginning to the season off Mexico, but the fish were mainly small. Good catches off northern California were not consistent and fish were also small. The southern California commercial fleet was favored early in the season with good catches and environmental conditions, a tolerant Mexican policy of extended jurisdiction, and the best market on record. From Washington to California, the price for albacore was up \$200-285 per ton, but benefits to fishermen were partially offset by higher operating costs.

THE CALIFORNIA FISHERY

For the first time in many years a good albacore fishery developed in Mexican waters. In early June, fish appeared between Guadalupe Island and the mainland and they remained until September, then moved to local banks less than 80 miles from San Diego. The catch per boat averaged between 50 and 60 fish per day, and lengths of the fish ranged from 60 to 66 cm until mid-September when the average size increased to 80 cm.

During the summer, San Diego sport boats accounted for an estimated 150,000 albacore, averaging 12 to 15 pounds on trips often less than 60 miles from port. In late July and early August, a sport fishery developed close to shore off Avila Beach and Morro Bay. The southern California fishery was the best in 20 years.

Albacore fishing in northern California had very little in common with the

By the end of September, California albacore landings were less than 14,500,000 pounds. By October, many commercial boats had left the fishery and San Diego sport landings dropped to zero. During mid-October, from 30 to 40 commercial boats continued to work off San Diego and in Mexican waters. The fish were small. The catch rate was 0.5 to 1 ton per day per boat. The total landings for California in 1976 are an estimated 16,000,000 pounds. This is a 44 percent decrease from the 25-year average, but slightly above the 1975 landings. (Source: Preliminary review compiled by Mark Pederson, Washington Department of Fisheries, for the Pacific Marine Fisheries Commission.)

SOUTH CAROLINA SURVEY LOCATES SUBTIDAL CLAMS

Concentrations of subtidal clams have been found in several areas of the South Carolina coast, according to an extensive survey of the state's clam resources reported by the South Carolina Wildlife and Marine Resources Department. The survey, begun in 1973 and 80 percent completed at the time of this report, was conducted by the state Marine Resources Division with funds provided by the National Marine Fisheries Service.

"We are somewhat disappointed not to have found more subtidal clam areas that possibly could be fished with

mechanical equipment," said shellfish biologist F. Holland Mills who was in charge of the survey. Mills explained that most of the state's clam resources are found in the intertidal zone, often in conjunction with oysters, and generally are not suitable for mechanical harvest.

The largest concentrations of subtidal clams that the survey has located are in the Santee estuary. A clam fishery, using hydraulic escalator harvesters, has evolved in that area based on the results of the survey. Seven harvesters currently are licensed to harvest clams in this area. Since 1974, about 70,000 bags of clams, valued at more than \$500,000, have been harvested from the Santee area. Mills thought that, barring any environmental changes, this area could be harvested indefinitely on a rotational basis, but he sees little chance for significant expansion of the intertidal clam fishery beyond the present level.

The other concentrations of subtidal clams that the survey has located are in much smaller areas and are not currently being fished heavily by mechanical harvesters. Clams are sampled with square meter hydraulic patent tongs mounted on a specially designed 20-foot boat. About 30,000 bottom samples have been taken with 3,350 containing clams.

The survey area includes all bays, sounds, harbors, and small creeks from Little River to Savannah and it was expected to be finished by late summer.

Sportfish Not Affected by Menhaden Fishing Say URI Researchers

Striped bass and bluefish in Narragansett Bay, R.I., do not appear to be affected by heavy commercial fishing on their principal food source, menhaden, say University of Rhode Island (URI) researchers.

Sport fishermen around the bay have long asked for restrictions on commercial menhaden fishing since they feel it reduces menhaden to the point where bluefish and striped bass are "starved" out of the bay. However, 2 years of study on the interactions between menhaden and its two predators by URI biologists suggests that this claim is probably not valid.

"We calculated that even in a year when the menhaden population is low from natural causes or from heavy commercial fishing, there are still enough menhaden in the bay to feed these important fish," stated Candace A. Oviatt, the project leader. Oviatt is a research associate at the URI Graduate School of Oceanography.

The biologists undertook the study in order to help settle the dispute between commercial and sport fishermen over whether commercial menhaden fishing affects gamefish populations. Funded by the URI Sea Grant program, they have been gathering information on menhaden, its two predators, and the

fishing pressure exerted on these fish by commercial and sport fishermen.

Menhaden is a valuable commercial fish. Its oil is used for industrial products such as paint and the remainder of the fish is processed into meal for poultry feed. The small fish usually moves into the bay in large schools to spawn during the spring and spends the summer there. In past years, approximately half a dozen menhaden fishermen, from Point Judith and out-of-state, have landed between 15 and 23 million pounds of fish. The fish are caught by purse seining. Fishermen try to avoid setting these nets around large gamefish, such as bluefish, because they will destroy the nets.

In their study, URI researchers first confirmed that menhaden is the major food of bluefish and striped bass by looking at the stomach contents of these two fish. Then Bruce A. Rogers and Deborah Westin conducted laboratory tests on adult gamefish to determine how much food the fish eat each day. They also made estimates of fish population based on sports and commercial fish landings. From these studies, the group concluded that menhaden fishing does not threaten the gamefish.

The study continued during the summer with emphasis on the size of the bluefish and striped bass caught. Oviatt explained that this information will be provided to resource managers for future use in managing the gamefish.

Escape Rings May Aid Blue Crabs, Crabbers

Escape rings built into commercial blue crab traps may prove effective for allowing small, illegal crabs to escape, and may even increase the catch of legal sized crabs. A study by the South Carolina Wildlife and Marine Resources Department has shown that when escape rings are built into the standard chicken wire crab trap used extensively by commercial crabbers, fewer crabs smaller than the 5-inch legal width are taken.

Under South Carolina law any blue

crab less than 5 inches across the shell from spine to spine must be returned to the water. These small crabs have little market value because of the small amount of available meat. Because a standard crab trap will catch virtually all sizes of crabs, commercial crabbers are forced to cull their catch from each trap. The use of escape rings will reduce the time crabbers must spend culling their catch and should benefit the crab resource, according to Peter J. Eldridge who conducted the study.

"Our preliminary study has shown that an escape ring of 1.5 inches by 2.25 inches seems to work the best," said Eldridge, who explained that the crabs move sideways through the rings. "By letting the small crabs out there seems to be more room for the big crabs," said Eldridge, "and the little crabs don't eat all the bait." Eldridge planned some further studies of escape rings, hoping to encourage some commercial crabbers to test traps equipped with escape rings.