

scheduled to arrive in July on a 2-year assignment as Director of the Maltese fishing fleet.

According to the NMFS Office of International Fisheries, Malta has tried previously to establish a high-seas fishing fleet with both Japan and Tunisia, but has thus far been unsuccessful. Maltese fishermen have never been deep-sea fishermen. They prefer to fish close to the Maltese Islands despite poor catches. If they will adapt successfully to high-seas fishing in the Mediterranean, the Maltese Government will probably try to promote expansion into the Atlantic fishing grounds. It has also been suggested that Italy may provide one or two additional vessels.

Canada Tries Interim Fishing Vessel Subsidy

Canadian Minister of State for Fisheries Romeo LeBlanc announced last summer an interim fishing vessel subsidy. The policy, which was put into effect immediately by the Fisheries and Marine Service, is available only to full-time fishermen, and excludes those who had full-time employment outside the primary fishing industry. The policy is a short-term measure (to the end of 1975) and will eventually be replaced with a fleet development plan, which will be part of the overall program for the rehabilitation of the Canadian demersal fisheries.

Subsidies are available for vessels over 35 feet in length. New vessels added to the fishing fleet may be subsidized only if they are not used in the "limited entry" fisheries such as salmon, herring, scallop, snow crab, and lobster fisheries. However, subsidies for replacement vessels are available for vessels used in both "limited" and "non-limited entry" fisheries, provided that they qualify for licenses and that the vessel to be replaced is at least 8 years old. "The qualification that replacement vessels in the limited entry fisheries have the capability to operate in at least one of the open fisheries will encourage fishermen to diversify and expand their operational capacities," LeBlanc said. The total amount of the fishing vessel subsidy was not announced.

Source: U.S. Embassy, Ottawa.

Regional Fisheries Training School Set for Persian Gulf

Kuwait, Saudi Arabia, Qatar, the United Arab Emirates, and Iran signed a draft agreement on 17 June 1975 in Kuwait to establish a Persian Gulf Regional Center to train their citizens in commercial fisheries, the U.S. Embassy, Kuwait, reports. Oman and Iraq were also expected to sign, but it was not certain if Bahrain would do so.

The Center will be located in Kuwait and will be financed jointly by all the signatory countries. Its purpose will be to train candidates in the technology of commercial fishing (for example, the handling of gear) for such positions as ship captains, assistant captains, and mechanics. Training courses will be in English and Arabic. The Persian Gulf Regional Fisheries Training Center organizers are expected to seek some assistance from the UN Development Program to help design the program and to provide instructors. Other aspects of commercial fisheries, such as the development and management of resources, and the distribution and marketing of fishery products will be studied by the Fishery Resources Sur-

Fishery Notes

Record Alewife Harvest Hikes U.S. Great Lakes Commercial Fish Catch 16 Percent

Commercial fishermen operating in U.S. and Canadian waters of the Great Lakes last year harvested over 125 million pounds of fish, the highest total since 1967, according to *The Great Lakes News Letter*. The landed value of the catch, nearly \$19 million, exceeded the peak years of the mid-1950's. A Great Lakes Commission analysis of the 1974 catch statistics completed by NOAA's National Marine Fisheries Service in Ann Arbor and preliminary data prepared by the Ontario Ministry of Natural Resources reveal, however, that a record harvest of alewives and increasing prices were key factors in the high 1974 figures.

Of the U.S. catch totaling some 77.6 million pounds in 1974, over 45.5 million or 59 percent were alewives. This har-

vey and Development Center to be located in Doha, Qatar.

The agreement did not specify the waters in which the participating countries plan to fish, but rather referred to "regional" and "subregional" areas, thus perhaps avoiding any questions on territorial waters and fisheries jurisdictions. The agreement also makes no mention of the labor shortages which exist in oil-rich nations like Kuwait, or how will they recruit potential trainees. It has been suggested that Bahrain has not signed the agreement because its representatives realized that there would be a shortage of trainees for the program.

Norway's Fishing Fleet Declines

The registered Norwegian fishing fleet at the end of 1974 consisted of 27,800 vessels, the Norwegian Information Service reports. The fleet has decreased in size by 3,100 vessels since the end of 1972. Most of the reduction has involved undecked boats, of which only about 2,100 remain. There has also, however, been a significant drop in the number of decked craft.

vest was all in Lake Michigan, and here it accounted for about 76 percent of the total commercial catch. The previous high for this species was 41.9 million pounds landed in 1967, the year that also was marked by a massive die-off of alewives. In terms of dollar value, the 1974 U.S. production was about \$10.5 million, with the sale of alewives contributing \$643,000 or only 6 percent of the value of the total U.S. catch and 10 percent of the value for Lake Michigan.

In the Canadian Great Lakes catch, the alewife and the shad, another low-value species, for the first time in 1974 became a factor in the commercial catch statistics, as Lake Erie landings for the respective species totaled 1.3 and 1.7 million pounds and sustained the total for the Province of Ontario at 47.8

million pounds, virtually the same amount as for 1973.

The U.S. landings excluding alewives totaled 32.0 million pounds in 1974 and were some 1.7 million over the 1973 catch for species other than alewives. With respect to the individual lake basins, U.S. production increased from 1973 to 1974 in all areas except Huron. In Canadian waters, gains were made in Lakes Huron and Superior, while Lake Ontario production continued at the 1973 level and Erie's north shore catch declined about 3 percent with the important yellow perch harvest down about 30 percent from 1973.

For the eight Great Lakes states, the extent of the commercial catch in their jurisdictional waters was as follows (in thousands of pounds):

Illinois	1,130 ¹	New York	679
Indiana	217 ¹	Ohio	8,654
Michigan	15,419 ¹	Pennsylvania	473
Minnesota	2,408	Wisconsin	48,693 ¹
¹ Alewife catch: Ill. 40; Ind. 2; Mich. 5,787; Wis. 39,726			

The accompanying tables indicate the weight and dollar value of 1973 and 1974 landings by Great Lakes commercial fishermen for the U.S. and Canadian sections of each of the lakes and also present totals for the principal species caught in U.S. and Canadian waters. Some features and developments in the several lake basins are noted below.

LAKE MICHIGAN

The weight of last year's catch, excluding the record harvest of alewives, totaled 14.2 million pounds having a landed value of \$5.6 million. Both figures substantially surpass the amounts for any of the other U.S. lake areas, although falling well below the U.S.-Canadian totals for Lake Erie.

The most valuable species in the U.S. lakes commercial fishery are chubs and whitefish, and a large share of their production is in Lake Michigan. In 1974 their combined landings in this lake totaled 6.7 million pounds which was sold for \$4.7 million, the value figure representing 45 percent of the total for the U.S. catch that year. Chub landings have been decreasing since 1968 and the 1974 production was at a record low of 3.3 million pounds. To counter this situation, the chub fishery in Lake Michigan was closed around mid-1975 except for a small quota for assessment

	Pounds (× 1,000)		Value (× 1,000)	
	1973	1974	1973	1974
U.S. catch				
Lake Ontario	305	332	\$ 91	\$ 117
Lake Erie	8,352	9,849	1,481	2,087
Lake Huron	1,942	1,718	448	464
Lake Michigan	50,730	59,720	5,296	6,243
Lake Superior	5,496	6,054	1,308	1,594
Total	66,825	77,673	8,624	10,505
Canadian catch				
Lake Ontario	2,356	2,364	466	507
Lake Erie	39,829	38,607	7,038	5,627
Lake Huron	2,540	3,371	950	1,412
Lake Superior	3,161	3,512	700	802
Total	47,886	47,854	9,154	8,348
Grand total, U.S.-Canada	114,711	125,527	17,778	18,853

Leading species in U.S. and Canadian Great Lakes catch.

Leading species	Pounds (× 1,000)		Value (× 1,000)	
	1973	1974	1973	1974
United States				
Alewives	36,563	45,556	\$ 369	\$ 643
Carp	6,389	7,058	312	396
Chubs	5,915	4,887	2,666	2,837
Whitefish	4,422	4,369	2,652	3,182
Smelt	3,021	4,358	96	194
Yellow perch	3,006	3,951	1,150	1,489
White bass	2,430	2,918	455	766
Total	61,746	73,097	7,700	9,507
Canada				
Smelt	17,181	16,862	996	961
Yellow perch	19,021	13,350	5,822	4,241
White bass	1,509	2,355	303	406
Lake herring	2,322	1,709	368	341
Whitefish	1,055	1,296	591	798
Total	41,088	35,572	8,080	6,747

purposes. Whitefish production in Lake Michigan, at 3.4 million pounds in 1974, was down moderately from the previous year and marked a reversal of catch increases since 1967.

LAKE ERIE

Last year's U.S.-Canadian production of 48.5 million pounds was about the same as in 1973, with a U.S. gain of 1.5 million pounds offsetting a minor decline in the Canadian catch. The combined landings accounted for 39 percent of the Great Lakes total and the landed value of \$7.7 million was 41 percent of the 1974 total for the lakes. The principal species contributing to the U.S. gain were yellow perch, white bass, and carp. The Ontario production of 38.6 million pounds in the northern half of Lake Erie was 80 percent of last year's total for the lake and also accounted for 80 percent of the total Canadian Great Lakes catch. Smelt and yellow perch continued as the principal species landed by the north-shore

fishermen, but the two-species total of 28 million pounds (which represented 72 percent of their total catch) was a substantially lower percentage than in previous years.

LAKE HURON

The 1974 production total for the lake was 5.1 million pounds with the U.S. catch accounting for about one-third of this weight and for a quarter of the landed value of the catch. While total U.S. production was at a new low of 1.7 million pounds, the catch of whitefish, totaling 270,000 pounds, was nearly double the 1973 figure. The whitefish is the leading species caught in the Canadian waters of Huron where production approached the million-pound mark in 1974.

LAKE SUPERIOR

Moderate increases in the U.S. catch of smelt, chubs, and lake trout contributed to the half-million pound gain in

1974 landings, while the decline in lake herring production, which began in 1962 when the catch was nearly 10 million pounds, was at a new low of 575,000 pounds in 1974. Canada's commercial fishery in Superior has had a relatively stable production at 3.0-3.5 million pounds in recent years. In 1974, lake

herring landings were 1.6 million pounds, thus representing nearly half the total catch by Ontario fishermen.

LAKE ONTARIO

The 1974 production in this relatively small, stable commercial fishery was 2.7 million pounds, with the Canadian

catch providing about 88 percent of the total. The yellow and white varieties of perch combined comprise about 40 percent of the total landings in both the New York and Ontario sections of the lake, but these waters also account for most of the Great Lakes commercial catch of bullheads, eels, and rock bass.

Publications

Recent NMFS Scientific Publications

Data Report 102. Monk, Bruce H., Earl Dawley, and Kirk Beiningen. "Concentration of dissolved gases in the Willamette, Cowlitz, and Boise Rivers, 1970-72." June 1975. 19 p. on 1 microfiche. For sale by U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22131.

ABSTRACT

Data on dissolved nitrogen, dissolved oxygen, total gas pressure, and water temperatures are presented for the Willamette, Cowlitz, and Boise rivers. Water samples were taken upstream and downstream of dams and over a wide

range of river and dam discharges to obtain data on the relation between river flow and dam discharges and their effect on the total gas regime of the rivers.

NOAA Technical Report NMFS SSRF-692. Cook, Steven K. "Expendable bathythermograph observations from the NMFS/MARAD Ship of Opportunity Program for 1972." June 1975, 81 p. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

ABSTRACT

Results of the second year of operation of the NMFS/MARAD Ship of Opportunity Program are presented in the form of vertical distributions of temperature and horizontal distributions of sea surface salinity and temperature. Operational and data management procedures also are discussed.

LOS Casebook Is Published

Law of the Sea: Cases, Documents, and Readings, by H. Gary Knight, has been published by Nautilus Press, 1056 National Press Bldg., Washington, DC 20004 (\$25.00). The author is Campanile Charities Professor of Marine Resources Law at Louisiana State University and has been teaching law of the sea at LSU's Law Center for six years. The book constitutes a revision and complete updating of teaching materials developed there.

The book is meant for use by government officials and industry executives, as well as teachers and students. Punched for a three-ring binder, the publisher will provide annual supplements to the book. Almost 900 pages, the book includes most primary documents of importance to the development and continuing negotiation of the law of the sea. Annexes include the four 1958 Geneva Conventions and a number of statistics relating to the law of the sea.

ARTIFICIAL REEF VOLUME PRINTED

Proceedings of an International Conference on Artificial Reefs, edited by Laura Colunga and Richard Stone, has been published by the Texas A&M University. Cosponsored 20-22 March 1974 by Texas A&M's Center for Marine Resources, the Texas Coastal and Marine Council, and the National Marine Fisheries Service, the conference was the first devoted entirely to artificial reefs. The 33 contributions in the 152-page volume cover: Artificial reefs around the world; the scientific view; building artificial reefs; and economic and legal views.

Historic reviews of artificial reef programs in Japan, Puerto Rico, Virgin Is-

lands, France, and Australia are presented while other papers discuss reef construction in such states as North and South Carolina, Florida, California, Hawaii, Texas, Georgia, and Alabama. Use of baled tires and baled urban refuse for artificial reefs, geological considerations for reef sites, artificial reefs as experimental tools, and oil structures as artificial reefs are also described.

Legal aspects discussed include the regulatory policies of the Environmental Protection Agency, U.S. Coast Guard, Corps of Engineers, and the National Oceanic and Atmospheric Administration, as well as possible legal problems in siting artificial reefs on the continental shelf. Commercial fishing and shipping industry views are also presented.

Copies of the proceedings (publication number TAMU-SG-74-103) are available from the Center for Marine Resources, Texas A&M University, College Station, TX 77843 at \$4.00 each.

Tuna Potential Noted for Western Australia

The Department of Fisheries and Wildlife in Western Australia has recently published a report by J.P. Robins entitled **Some Aspects of Tuna and its Potential in the Oceanic Waters off Western Australia** (Report No. 17). The report briefly describes the growth of the tuna fishery in Australia, world production, utilization, price and future demand, tuna species descriptions, species occurrence around the Australian coast, and the results of two aerial surveys for tuna off the west and northwest coasts of western Australia. Requests for this publication should be sent to the Department of Fisheries and Wildlife, 108 Adelaide Terrace, Perth, Australia.