

lost money last year. However, the high catches in the key months of May and June indicated a bright outlook for the remainder of the year. A reasonably conservative guess was that Ecuador would export at least 8 million pounds of shrimp in 1975 and possibly as much as 10 million pounds, thereby exceeding the record 9 million pounds of 1969, as shown in the table below.

Ecuadorian shrimp exports in millions of pounds, 1969-75.

Year	Exports
1969 (record year)	9.0
1973	8.2
1974 (unofficial)	5.9
1975 (projected)	8-10

Hatcheries and pond growers have also entered into the Ecuadorean shrimp picture for the first time in numbers. They were expected to produce 250,000 pounds in 1975. The impact of these hatcheries on total production will remain small for the foreseeable future. Their expansion, however, has caused a stir among the large, traditional shrimpers who claim that ponds prevent the shrimp from migrating back into the ocean where an important part of the reproduction process takes place and thereby will eventually destroy shrimp fishing along the coast where they are located. But these experiments in controlled production have strong backing and it remains to be seen if the Government will do anything about them.

Iraq, USSR Establish Joint Fishing Group

Iraq and the Soviet Union have formed a joint fishing company in accordance with a fisheries cooperation protocol which Iraq ratified on 1 July 1975. The company will be known as Ar-Rafidayn Fish Company, Limited, the Iraqi News Agency reported.

Soviet-Iraq fisheries cooperation began in 1969 with an agreement signed in Moscow. The USSR promised to: 1) supply Iraq with fishing vessels, processing and storage facilities, technical aid; 2) help develop Iraqi ports; and 3) train Iraqi fishermen and technicians. A Joint Commission was also formed.

The agreement, signed at the close of the Second Session of the Joint Com-

mission in September 1973, provided for the establishment of the joint fishing company. Iraq may also join the Persian Gulf Regional Center, a fisheries technology training center to be established in Kuwait in accordance with an agreement signed on 17 June 1975 by Kuwait, Saudi Arabia, Qatar, the United Arab Emirates, and Iran.

Mexico's 1975 Shrimp Landings Show Increase

Mexican fishermen landed 14,433 metric tons of shrimp in the first 5 months (January-May) of 1975, almost 9 percent more than the 13,242 metric tons landed during the comparable

Table 1.—Mexican monthly shrimp landings in 1975, actual and projected, in metric tons.

Actual landings ¹		Projected landings	
January	4,403	July	1,400
February	2,940	August	1,500
March	2,472	September	4,500
April	2,318	October	10,000
May	2,300	November	6,500
June	1,617	December	6,000
Total	16,050	Total	29,900

¹Preliminary data.

period in 1974, according to the U.S. Embassy in Mexico City. The total Mexican shrimp landings for 1975 were projected at nearly 46,000 metric tons (Table 1). About 80 percent of all Mexican shrimp landings are exported to the United States.

Fishery Notes

Salmon Side-Scanning Sonar Counter Tested

A new type of sonar salmon counter was recently tested by the Alaska Department of Fish and Game, Division of Commercial Fisheries, in conjunction with Bendix Corporation of California.¹ Tom Namtvedt, commercial fisheries research biologist, reported that tests were conducted over a 3-day period in the Kenai River near Soldotna where salmon counting is complicated by heavy glacial silt. Namtvedt stated that the counter was initially devised to determine the horizontal distribution of sockeye salmon smolt in streams. Initial tests with the prototype during 1974 in the Kenai River and at Kodiak indicated that the unit was also usable for counting adult salmon.

The new counter, known as the side scanner, employs one narrow-beam, horizontal-looking transducer which sends a sound through the water and "listens" for the echos made by passing fish. The echos can be recorded on magnetic tape and the image printed out on paper tape for additional analysis. The side scanner was installed in the Kenai River near the 30-transducer adult salmon counter that has been used for several years to count sockeye salmon escapement. In three 2-hour tests, a 96 percent correlation between the two independent systems was ob-

served, giving verification to the counts made with the standard adult system. Spot checking was continued, Namtvedt said, to maintain a measure of count accuracy during the sockeye migration.

Use of the side scanner to count or verify counts of adult salmon escapement over a much wider range of situations than previously possible will enable the department to better evaluate the annual spawning population in Cook Inlet. Accurate escapement enumeration is essential to fisheries management, but before the development of sonar counters, it was not possible in large muddy rivers of the type encountered in Cook Inlet and elsewhere in Alaska.

The original 30-transducer counter is limited in its application to certain stream types and fish migration characteristics. The side scanner promises to be more adaptable and if not replacing the original sonar array will at least expand counting capability to many new river systems.

Escapement information is used in managing the fisheries to achieve the proper balance between catch and escapement to insure the productivity of future runs while giving maximum allowable benefit to the fishermen. Escapement information may also be used to forecast the size of future returns. The side-scanning unit is also being

¹Mention of trade names does not imply endorsement of commercial products by the National Marine Fisheries Service, NOAA.

considered to replace test fishing at the mouths of rivers in Cook Inlet to more precisely regulate fisheries during the season.

The side scanner was designed and developed by Al Menin of Bendix Corporation under contract to Commercial Fisheries Division of the Alaska Department of Fish and Game. It is the product of the most recent advances in

electronic technology. The usefulness of this unit has led the department to order another side scanner for application in Cook Inlet and elsewhere in the state. This unit would probably be used to evaluate smolt migrations in Bristol Bay early in the year and subsequently would be brought to Cook Inlet for use in counting adult salmon escapements. Based on this season's experience cer-

tain modifications will be built into the new counter. It will have a variable-beam width transducer and 10 individual counters. Each counter will cover 10 percent of the horizontal range of the beam. The new version will be particularly useful in streams where high water velocity or debris content precludes the use of the original 30-transducer system.

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