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# FISHERIES OF PANAMA, 1973

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ABSTRACT: The Republic of Panama had a record fisheries harvest in 1973. The herring and anchovy catches reached an all-time high 85,509 short tons, resulting in $2.8 million worth of fishmeal exports and $1.1 million worth of fish oil exports. Shrimp fishing, which appears to have reached the maximum sustainable yield, produced 12.2 million pounds, which were exported for $16.7 million. Panama's sardine cannery had a profitable year in 1973, after overcoming difficulties in previous years. Panama's fishing fleet has now been restricted, and only new replacement vessels are being built. The Panamanian Government is working to develop the artisanal fisheries, since this is the only sector of the fishing economy not yet fully explored for possible development.

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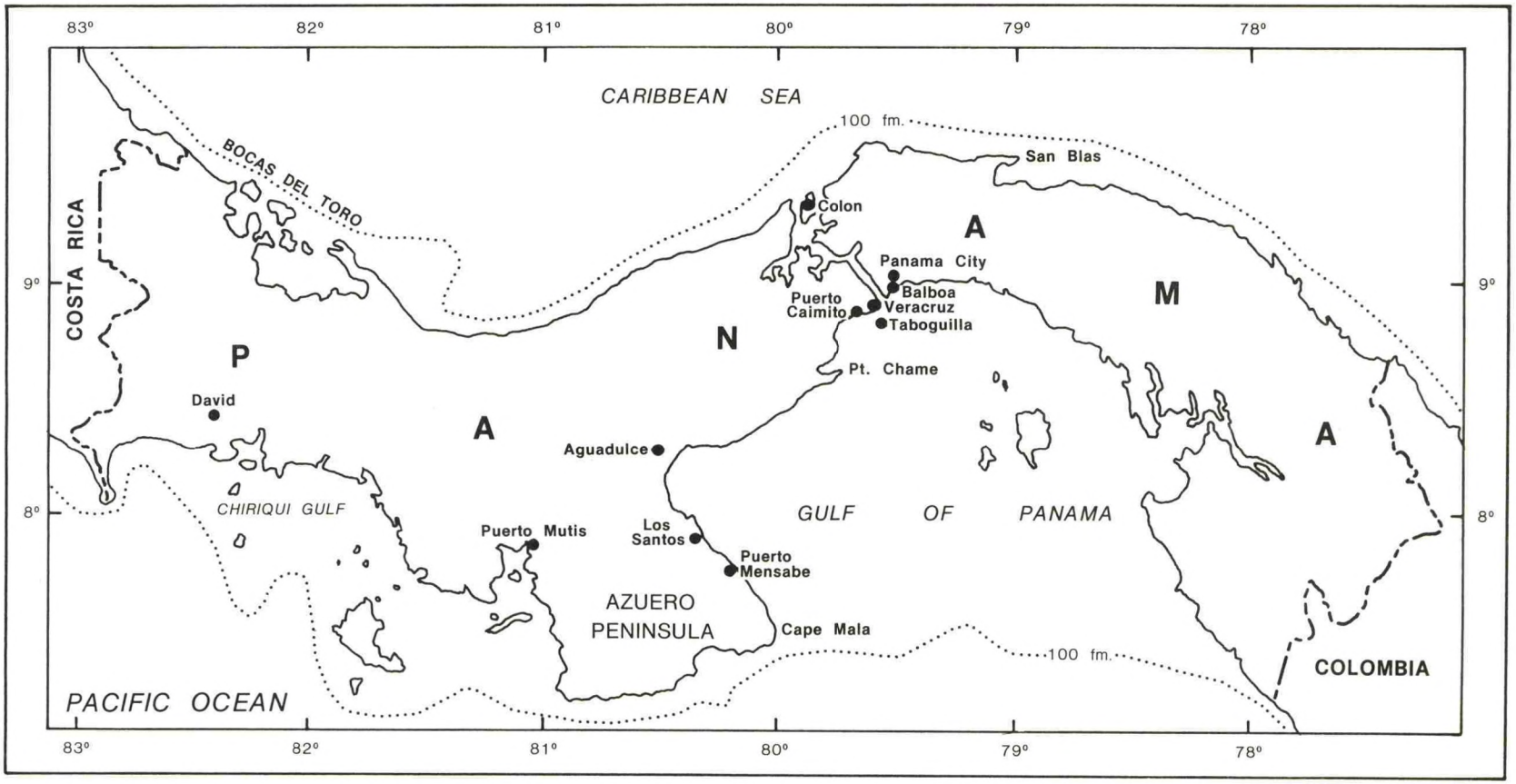


FIGURE 1.—PANAMA.

## I. ARTISANAL FISHERIES

Panama's artisanal fisheries comprise many hundreds[1/] of independent canoe fishermen, about 20 small fishing cooperatives, and a few shrimpers who retain a portion of their incidental "trashfish" catch for sale on the local fresh-fish market. The most important fish species in Panama's artisanal fishery include catfish, corvina, grouper, jacks, mullet, red snapper, snook, and Spanish mackerel. Additionally, according to the President of the National Fishing Association, artisanal fishermen caught a "substantial" amount of fish that were sold locally, without being reported to Panamanian fishery officials. In 1973, Panama's artisanal fishermen are believed to have harvested about 11 million pounds of fish (whole weight) for local consumption.

The Panamanian Government has devoted much time in establishing fishing cooperatives along the Panamanian coasts. Between 1968 and 1972 the number of cooperatives grew from 4 to 20.

In 1972, a mission from the Republic of China (Taiwan) came to Panama to study the artisanal fishing industry. One of the several cooperatives they visited was the El Chorillo Cooperative in Panama City, which was formed in 1965 and now owns a cold-storage and icemaking facility. On October 10, 1973, Panama and the Republic of China signed a technical cooperation agreement whereby the Nationalist Chinese agreed to send a technical mission to further train and advise Panamanian artisanal fishermen.

In 1973, the Government of Panama also announced plans for the installation of a fish-processing plant to serve artisanal fishermen in Puerto Mensabe on the Azuero Peninsula (fig. 1). Fishermen in this region now have no facilities to store, process, or sell their catch.

Panama's industrial fisheries sector is also becoming aware of the need to improve traditional fisheries. Discussions are taking place to arrange cooperation between the National Fishing Association and one of the fishing cooperatives at Puerto Mutis.

The International Bank for Reconstruction and Development (IBRD) and the Inter-American Development Bank (IADB) are considering loans to improve artisanal fisheries. The Food and Agriculture Organization (FAO) of the United Nations has been active in improving local fisheries for several years. (Additional details are provided in other sections of this report).

Most authorities agree that the artisanal fisheries have the best development potential in Panama. With better storage, processing, and distribution systems, local consumption of fish could be increased. Both the Atlantic and Pacific coasts have abundant supplies of fish that could be harvested.

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1/ Panama does not collect statistics on the number of its domestic fishermen.

## II. INDUSTRIAL FISHERIES

### A. Shrimp:

Panama's shrimp catch increased from 3.7 million pounds (lb) in 1954 to a peak of 15.6 million lb in 1964. The catch has since decreased, suggesting that the maximum sustainable yield (MSY) for this fishery might have been reached. In 1973, the shrimp catch was 12.3 million lb, a little higher than the 11.6 million lb landed in 1972. Table 1 and figure 2 provide statistical and graphic data on Panama's shrimp catch, by species, for the period 1954-73.

Table 1.--Panama's shrimp catch, by species, 1954-73

| Year | White | Pink | Sea bobs | Carabali | Solenocera | Fidel | Cabezon | Total |
|---|---|---|---|---|---|---|---|---|
| | Thousand pounds | | | | | | | |
| 1973 | 5,144 | 3,062 | 2,885 | 288 | 89 | 207 | 592 | 12,266 |
| 1972 | 5,120 | 2,983 | 3,133 | 219 | 189 | - | - | 11,643 |
| 1971 | 4,240 | 2,950 | 6,485 | 202 | 104 | - | - | 13,982 |
| 1970 | 4,359 | 2,568 | 8,045 | 209 | 20 | - | - | 15,200 |
| 1969 | 4,248 | 2,266 | 5,541 | 176 | 232 | - | - | 12,231 |
| 1968 | 4,346 | 4,211 | 4,357 | 286 | - | - | - | 13,200 |
| 1967 | 5,448 | 2,805 | 5,709 | 215 | - | - | - | 14,177 |
| 1966 | 5,239 | 2,499 | 4,308 | 326 | - | - | - | 12,372 |
| 1965 | 4,991 | 2,841 | 4,162 | 831 | - | - | - | 12,825 |
| 1964 | 5,034 | 2,510 | 7,119 | 893 | - | - | - | 15,556 |
| 1963 | 3,463 | 2,901 | 5,287 | 659 | - | - | - | 12,310 |
| 1962 | 4,558 | 3,402 | 4,814 | 510 | - | - | - | 13,284 |
| 1961 | 4,625 | 2,586 | 4,444 | 461 | - | - | - | 12,116 |
| 1960 | 4,068 | 1,845 | 4,365 | 324 | - | - | - | 10,602 |
| 1959 | 4,298 | 1,000 | 5,228 | 781 | - | - | - | 11,307 |
| 1958 | 3,737 | 298 | 4,952 | 319 | - | - | - | 9,306 |
| 1957 | 4,268 | 3,163 | 2,095 | 195 | - | - | - | 9,721 |
| 1956 | 4,455 | 399 | 1,286 | 69 | - | - | - | 6,209 |
| 1955 | 3,319 | 34 | 780 | 3 | - | - | - | 4,136 |
| 1954 | 3,288 | 4 | 367 | - | - | - | - | 3,659 |

Note: Total figures may not agree because of rounding.

SOURCE: Direccion General de Recursos Marinos, Ministry of Commerce and Industries, Panama.

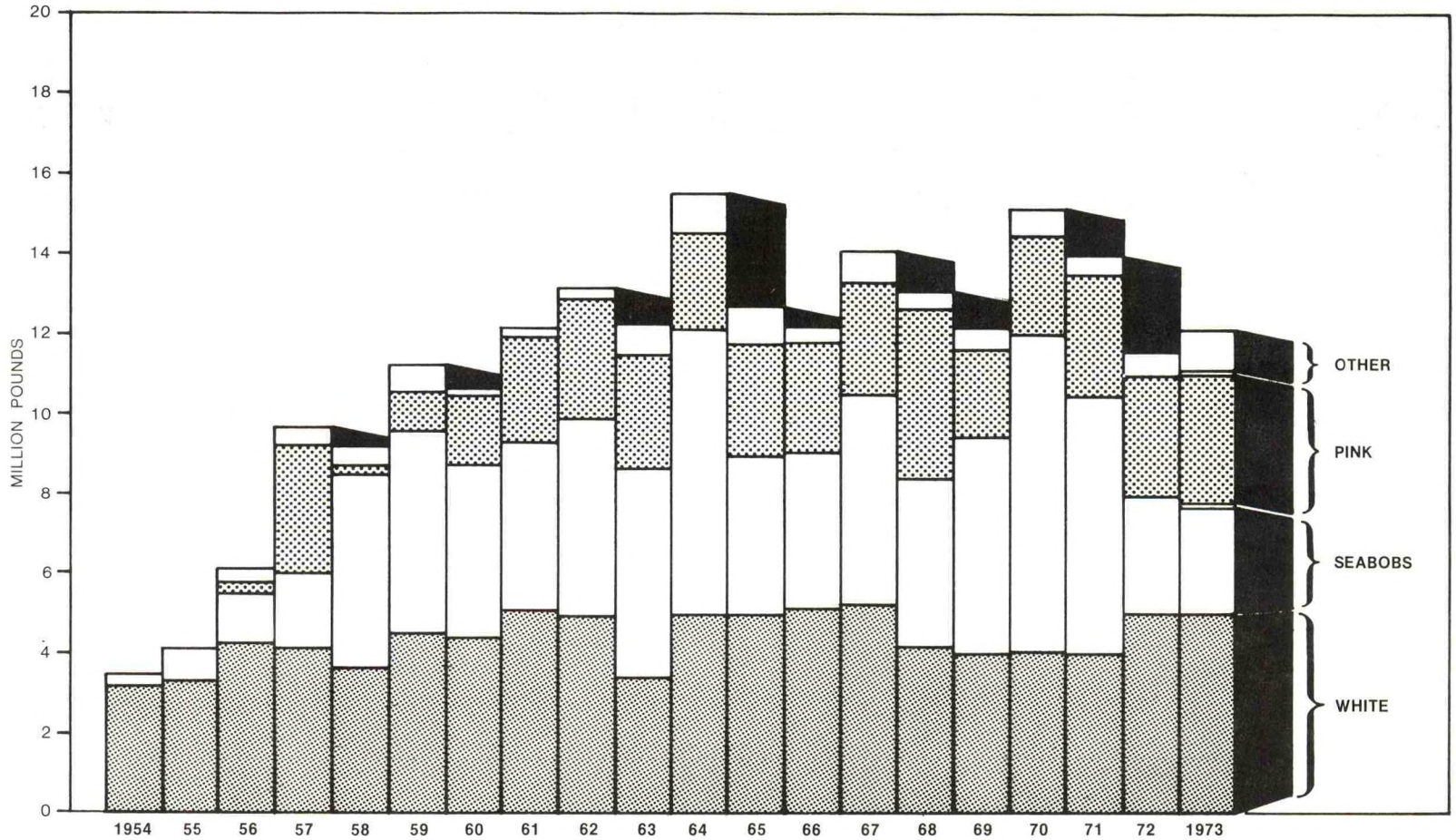


FIGURE 2.—PANAMA'S ANNUAL SHRIMP CATCH, BY SPECIES, 1954-73.

Shrimp are found along most of Panama's coastline and its many islands, but the principal fishing grounds are in the Gulf of Panama and in the Chiriqui Gulf, both on the Pacific Ocean. Some of the best shrimping takes place within sight of Panama City from May to July and October through December. Table 2 and figure 3 provide statistical and graphic data on the monthly catch, by species, for the period 1971-73.

White shrimp were Panama's most abundant species of shrimp in both 1972 and 1973; landings were 5.1 million lb for each year. These shrimp, called "blancos" or "langostinos" locally, include three different species: Penaeus occidentalis (which accounts for 85 to 90 percent of the white shrimp catch), P. stylirostris (sometimes called "blue" shrimp), and P. vannamei. Exploratory research has also indicated the presence of P. schmitti, but not in commercially important amounts.

Panama's white shrimp are found close to shore in waters 3 to 15 fathoms deep. Most of the shrimp are caught at 12 fathoms. The majority of the whites are caught from May to August and from October through December in the Gulfs of Panama and Chiriqui. This is Panama's oldest and most stable fishery, and the catch appears to be trending upwards. Because of their large size, "blancos" are more valuable than the smaller shrimp; consequently fishermen often receive higher prices for this species of shrimp.

Pink shrimp, P. brevirostris, is called "camaron rojo" (literally "red shrimp") in Panama. In 1973, the catch of pink shrimp was 3 million lb. The Panamanian fishery for this species began in the early 1950s. Pink shrimp were caught in 1953 and earlier (but in small quantities before 1953), and had soared to 3 million lb by 1957. The catch of pink shrimp continued to increase throughout the next decade; 4 million lb were harvested by 1968. The catch has since decreased ranging between 2½ to 3 million lb in the last 5 years.

The largest amounts of pink shrimp are caught from January to March and from August to September when the fishing for white shrimp is at a lower level. Fishermen catch pink shrimp in deeper water (out to 45 fathoms) than white shrimp and need more expensive fishing gear. The pink shrimp run from 26 to 50 tails per pound, although a few may reach 21-25 count.[2/] Because of their smaller size, and because they are more expensive to catch, pink shrimp are not so popular locally as the white shrimp. Scientific studies have also revealed small numbers of brown shrimp, P. duorarum, in Panamanian waters, but not in commercial quantities.

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2/ Shrimp are classified by number and size. The number of individual shrimp per pound is the "count" of shrimp. The smaller the count, the larger the shrimp. For example, 21-25 count shrimp means that there are 21 to 25 individual shrimp per pound--indicating a medium-large size; smaller sized shrimp could range from 60 to 160 count per pound.

Table 2.--Panama's monthly shrimp catch, by species, 1971-73

| Month / Species | 1971 | 1972 | 1973 |
|---|---|---|---|
| | Pounds | | |
| January: | | | |
| White..... | 246,616 | 228,118 | 233,644 |
| Pink ..... | 167,311 | 181,449 | 147,243 |
| Sea bob.... | 527,578 | 322,033 | 94,347 |
| Carabali... | 14,697 | 4,554 | 11,911 |
| Solenocera. | 12,884 | 27,110 | 6,600 |
| Fidel..... | - | - | - |
| Cabezon.... | - | - | - |
| Total.. | 969,086 | 763,264 | 493,745 |
| February: | | | |
| White..... | 266,681 | 275,651 | 178,434 |
| Pink..... | 218,247 | 238,030 | 304,724 |
| Sea bob.... | 327,586 | 182,060 | 73,063 |
| Carabali... | 11,970 | 8,049 | 9,606 |
| Solenocera. | 17,041 | 21,739 | 449 |
| Fidel..... | - | - | - |
| Cabezon.... | - | - | - |
| Total.. | 841,525 | 725,529 | 566,276 |
| March: | | | |
| White..... | 326,991 | 349,303 | 222,030 |
| Pink..... | 228,869 | 247,579 | 394,059 |
| Sea bob.... | 286,326 | 153,519 | 25,159 |
| Carabali... | 20,113 | 10,581 | 13,903 |
| Solenocera. | 1,460 | 13,725 | 754 |
| Fidel..... | - | - | - |
| Cebezon.... | - | - | - |
| Total.. | 863,759 | 774,807 | 655,905 |
| April: | | | |
| White..... | 235,260 | 334,939 | 432,729 |
| Pink..... | 243,120 | 242,698 | 109,145 |
| Sea bob.... | 163,811 | 367,980 | 155,320 |
| Carabali... | 7,703 | 16,318 | 32,068 |
| Solenocera. | 3,687 | 1,912 | 1,372 |
| Fidel..... | - | - | - |
| Cabezon.... | - | - | - |
| Total.. | 653,581 | 963,847 | 730,634 |
| May: | | | |
| White..... | 476,492 | 700,767 | 622,109 |
| Pink..... | 296,412 | 358,364 | 149,443 |
| Sea bob.... | 1,023,235 | 604,980 | 282,812 |
| Carabali... | 25,326 | 29,942 | 36,872 |
| Solenocera. | 933 | 2,872 | 18,705 |
| Fidel..... | - | - | - |
| Cabezon.... | - | - | - |
| Total.. | 1,822,398 | 1,696,925 | 1,109,941 |
| June: | | | |
| White..... | 486,827 | 528,931 | 624,798 |
| Pink..... | 249,617 | 281,000 | 146,417 |
| Sea bob.... | 952,296 | 347,646 | 285,804 |
| Carabali... | 44,352 | 50,466 | 44,778 |
| Solenocera. | 62 | 156 | 19,634 |
| Fidel..... | - | - | - |
| Cabezon.... | - | - | - |
| Total.. | 1,733,154 | 1,208,199 | 1,121,431 |

Table 2.--Panama's monthly shrimp catch, by species, 1971-73--continued

| Month / Species | 1971 | 1972 | 1973 |
|---|---|---|---|
| | Pounds | | |
| July: | | | |
| White..... | 465,591 | 648,161 | 606,334 |
| Pink..... | 273,345 | 166,155 | 157,904 |
| Sea bob..... | 675,783 | 216,855 | 174,587 |
| Carabali..... | 18,999 | 28,180 | 47,081 |
| Solenocera... | 348 | - | 9,980 |
| Fidel..... | - | - | 59,670 |
| Cabezon..... | - | - | 4,489 |
| Total.... | 1,434,066 | 1,059,351 | 1,060,045 |
| August: | | | |
| White..... | 430,476 | 538,965 | 444,155 |
| Pink..... | 210,114 | 217,301 | 675,940 |
| Sea bob..... | 430,226 | 150,298 | 91,084 |
| Carabali..... | 9,631 | 15,091 | 19,059 |
| Solenocera... | 986 | 127 | 3,911 |
| Fidel..... | - | - | 96,961 |
| Cabezon..... | - | - | 47,896 |
| Total.... | 1,081,433 | 921,782 | 1,379,006 |
| September: | | | |
| White..... | 306,724 | 394,320 | 422,323 |
| Pink..... | 335,704 | 335,536 | 399,019 |
| Sea bob..... | 326,037 | 113,517 | 169,745 |
| Carabali..... | 8,756 | 8,313 | 19,480 |
| Solenocera... | 3,400 | 38,878 | 3,910 |
| Fidel..... | - | - | 44,269 |
| Cabezon..... | - | - | 51,840 |
| Total.... | 980,621 | 890,564 | 1,110,586 |
| October: | | | |
| White..... | 320,858 | 355,050 | 432,389 |
| Pink..... | 327,286 | 294,132 | 261,132 |
| Sea bob..... | 528,466 | 259,007 | 269,984 |
| Carabali..... | 15,575 | 12,734 | 11,196 |
| Solenocera... | 9,458 | 38,876 | 14,270 |
| Fidel..... | - | - | 4,669 |
| Cabezon..... | - | - | 91,735 |
| Total.... | 1,201,643 | 959,799 | 1,085,375 |
| November: | | | |
| White..... | 309,609 | 382,049 | 431,678 |
| Pink..... | 165,664 | 225,089 | 137,694 |
| Sea bob..... | 445,127 | 239,952 | 649,862 |
| Carabali..... | 7,709 | 15,924 | 16,095 |
| Solenocera... | 18,063 | 11,931 | 2,922 |
| Fidel..... | - | - | 1,522 |
| Cabezon..... | - | - | 159,552 |
| Total.... | 946,172 | 874,945 | 1,399,325 |
| December: | | | |
| White..... | 368,082 | 383,427 | 493,227 |
| Pink..... | 234,624 | 195,898 | 179,307 |
| Sea bob..... | 798,696 | 174,817 | 613,053 |
| Carabali..... | 17,572 | 18,703 | 25,660 |
| Solenocera... | 35,816 | 31,408 | 6,318 |
| Fidel..... | - | - | - |
| Cabezon..... | - | - | 236,261 |
| Total.... | 1,454,790 | 804,253 | 1,553,826 |

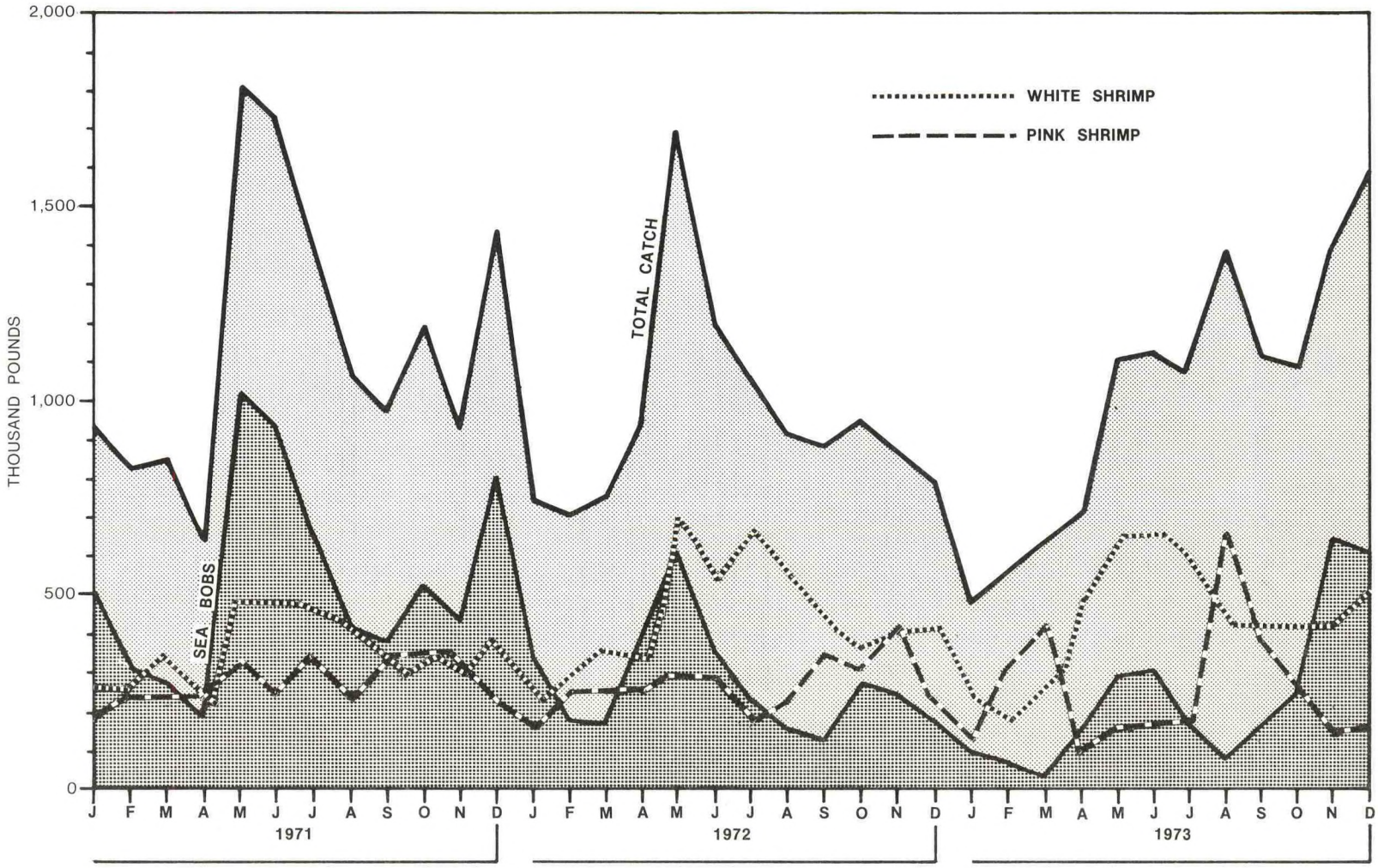


FIGURE 3.—PANAMA'S MONTHLY SHRIMP CATCH, BY SPECIES, 1970-73.

Sea bobs are another important species of shrimp caught in Panamanian waters. Since 1958, annual landings of sea bobs have often exceeded those of any other species of shrimp, but after 1971 the sea bob catch has declined. In 1970, Panama's shrimp fishermen harvested 8.4 million lb of seabobs; in 1972 only 1.2 million lb had been caught.

In Panama, seabobs are called "titi" (literally "small-small"). Two species are usually associated with sea bobs in Panama: Xiphopenaeus riveti (a purplish-brown shrimp) and Protrachypene precipua (a yellowish-orange colored shrimp). These sea bobs are caught in shallow waters near the mouths of Panama's rivers. They are easily caught by local artisanal fishermen. These sea bobs are quite small (over 60 count, headless) and are peeled and deveined (P&D) before packing.

Two other species of small shrimp, Trachypenaeus byrdi and T. faoea are also found in the shallow waters near the rivers of Panama. These two species are called a variety of names in Panama: "indio," "zebra," "tigre," and "carabali". The last name is used in Panamanian statistical reports. These shrimp are usually under 60 count and, therefore, are somewhat larger than the "titis" or sea bobs. The tigre shrimp--in their shells--have a specialized market in Miami, and a small amount are shipped shells-on.

The catch of "carabali" shrimp has never exceeded 1 million lb during the past quarter century. The peak for this fishery was in 1964 when 892,679 lb were caught. In 1973, the catch of these shrimp was 288,000 lb.

During the last 6 months of 1973, the Panamanians have landed two more species of deepwater shrimp. One of these is a royal red shrimp called "fidel." In 1973, fishermen caught 207,000 lb of "fidels". This species is probably Sicyonia florea. The other species is called "cabezon" (big head), and it has not been biologically identified. In 1973, the catch of this shrimp was 592,000 pounds. Local packers do not particularly like either species because the yield of cooked meat is poor and the meats are tough and rubbery. However, because of the world demand for shrimp these two species may be important in Panama's future shrimp fisheries.

Panamanian statistics commonly list Solenocera mebranacea as being a small contributor (89,000 lb in 1973) to the national shrimp harvest. There is little descriptive information available on the fishery for this species.

Research cruise by U.S. and United Nations scientists have revealed the presence of Penaeus californiensis, P. aztecus, and Atya scabra. Panama also has two freshwater species of shrimp, Macrobrachium alfersii and M. acanthurus. None of these shrimp are found in commercial quantitites.

The Panamanians, recognizing the limits of their shrimp resources, have taken steps to regulate this fishery; the number of fishing vessels in the shrimp fishery has been restricted to 232 vessels and each vessel's horsepower has been limited to 250. The only exceptions are for vessels built before the regulation went into effect. To protect young white shrimp stocks, the Panamanians also attempted to restrict fishing from February 10, 1973, to April 10, 1973, but officials were unable to effectively enforce the decree and the plan was abandoned.

Panama has seven shrimp-processing plants. The largest is Mariscos de las Perlas, which processes about 40 percent of the entire shrimp catch. The company operates its own fleet of vessels in addition to buying shrimp from independent fishermen. Crustacion, S.A. is the second largest shrimp-processing plant in the country, and it also operates a fleet of shrimp trawlers. Empacador Nacional is the third largest shrimp processor in Panama, and it is the only foreign-owned plant in the industry; the firm is a subsidiary of International Protein of New Jersey.3/ Frigorificos de Chiriqui, S.A., in the city of David, was formerly a subsidiary of Henderson Portion Pak, but it was sold to its workers with the assistance of the Government of Panama and other local interests reportedly because of labor problems.

The outlook for Panama's shrimp fishery is closely related to developments in the United States market. The present large inventories of shrimp in the United States, the projected heavy shrimp catches by United States Gulf fishermen, and consumer resistance to high shrimp prices have dampened the export market for Panamanian shrimp. Additionally, the Japanese are not expected to buy large volumes of shrimp at high prices in Panama and this is also expected to cause shrimp prices to decline. Furthermore, the Japanese are only occasional buyers, and only for large varieties.

B. Lobster:

Panamanian shrimpers and artisanal fishermen also take small amounts of lobster in local waters. Four species of lobster are commonly found in these waters: Pacific spiny lobster (Panulirus gracilis), Caribbean spiny lobster (P. argus), Pacific sand lobster (Evibacus princeps), and Caribbean sand lobster (Scyllarides aequinoctialis).

Spiny lobster fishing in Panama is centered along the Atlantic coast, around the Bocas del Toro Archipelago and San Blas. All artisanal fishermen take some lobster, but lobster fishing is considered a part-time endeavor. The fishermen normally dive for lobsters during low tides. The season around the Bocas del Toro Archipelago begins in February and lasts until May when the spiny lobsters enter the rocky shoals of the Chiriqui Lagoon.

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3/ In Panama, International Protein of New Jersey also operates a fishmeal plant, Pesquera Taboguilla, and a fiberglass ship building firm called Modern Fiberglass.

On the Pacific coast, spiny lobster fishing--generally with trammel nets--is practiced by an estimated 60 fishermen off San Carlos, Veracruz, and Los Santos year-round.

About 80 boats, mostly canoes and wooden sailboats, are used in Panama's lobster fisheries. The fishermen receive between US$0.68 and $1.00 per pound of live lobster. Little current information[4/] is available on the actual lobster harvest, but export statistics show that the yearly catches fluctuate widely.

C. Anchovy and herring:

Anchovy (Cetengraulis mysticetus) and four species of thread herring (Opisthonema libertate, O. bulleri, O. medirastre, and O. berlangai) are the main species used in Panama's fishmeal and fish oil reduction industries.

The fishery for these species began in the 1940s when the Gulf of Panama became a prime source for providing live bait to the U.S. tuna fleet. This bait fishery continued through the late 1950s, when the U.S. tuna fishermen began converting to purse seining. In 1962, with the decline in the live bait fishing, the Panamanians began using these fish for fishmeal and oil. In 1964, Panamanians harvested over 20,000 short tons of herring and anchovy from their waters (table 3).

Table 3.--Panama's monthly catch of anchovies and herring, 1964-73

| Month | 1973 | 1972 | 1971 | 1970 | 1969 | 1968 | 1967 | 1966 | 1965 | 1964 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Short tons | | | | | | | | | |
| January... | 282 | 687 | 1,658 | 209 | - | 2,515 | 3,242 | 4,298 | 1,678 | 882 |
| February.. | 240 | 1,302 | 1,558 | 106 | 825 | 2,626 | 1,556 | 3,266 | 2,126 | 697 |
| March..... | 7,055 | 2,614 | 2,963 | 2,153 | 1,384 | 4,710 | 3,468 | 2,763 | 2,620 | 964 |
| April..... | 15,812 | 4,066 | 1,764 | 9,458 | 3,886 | 8,338 | 8,652 | 4,884 | 1,776 | 1,407 |
| May..... | 17,874 | 11,295 | 9,589 | 7,895 | 4,463 | 12,809 | 12,362 | 7,636 | 3,284 | 2,099 |
| June..... | 14,015 | 10,766 | 14,800 | 6,671 | 2,907 | 11,043 | 8,374 | 9,153 | 2,542 | 2,957 |
| July..... | 10,141 | 7,195 | 11,961 | 4,318 | 2,238 | 9,596 | 6,257 | 11,315 | 4,302 | 3,153 |
| August.... | 6,178 | 5,207 | 9,793 | 1,667 | 1,356 | 8,030 | 8,354 | 8,722 | 4,992 | 2,235 |
| September. | 5,307 | 3,662 | 4,210 | 2,343 | 2,356 | 5,590 | 5,991 | 6,216 | 4,819 | 1,932 |
| October... | 4,466 | 3,718 | 2,809 | 2,092 | 1,271 | 3,116 | 7,291 | 5,816 | 2,515 | 1,464 |
| November.. | 4,015 | 2,733 | 2,040 | 1,647 | 1,675 | 2,031 | 3,756 | 4,137 | 2,068 | 1,045 |
| December.. | 124 | 560 | 93 | 565 | 1,519 | 1,876 | 2,739 | 4,564 | 3,610 | 1,386 |
| Total..... | 85,509 | 53,805 | 63,238 | 39,124 | 23,879 | 72,280 | 72,042 | 72,770 | 36,332 | 20,161 |

SOURCE: Direccion General de Recursos Marinos, Ministry of Commerce and Industries, Panama.

4/ In 1962-63, the research vessel Pelican surveyed Panama's spiny lobster resource. The findings were written up by Johnny A. Butler and Norman L. Pease, as Spiny Lobster Explorations in the Pacific and Caribbean Waters of the Republic of Panama, U.S. Fish and Wildlife Service, Special Scientific Report--Fisheries, No. 505, 1965. Copies of this report are out of print.

In 1965, the catch almost doubled to 36,000 tons. Panama's anchovy and herring catch next surged to 73,000 tons, and it remained at that level for the next 2 years. In 1969, however, the catch decreased sharply to 24,000 tons. The decline was attributed to changes in ocean currents and climate conditions. During the next 4 years the catch again increased. In 1973, a strong upwelling of cold water in the Gulf of Panama produced ideal conditions for anchovy and herring stocks. This climatic event and the use of more modern vessels enabled the Panamanians to harvest a record 85,509 tons of fish. Table 3 and figure 4 provide statistical and graphic information on both the monthly and yearly catch of anchovy and herring in Panma since 1964.

The wide fluctuations in the monthly catch of anchovies and herring can be attributed to biological conditions. In October and November, anchovies are more difficult to catch because of their behavior, which is associated with the approaching spawning season. Spawning usually occurs in November and December of each year, when anchovy fishing is generally quite poor. Before 1968, the appearance of stocks of herring during the year-end months allowed the fishermen to operate year-round. However, since the 1968-69 fishery, the herring have apparently not appeared in large numbers, and the period December to February is used for plant and vessel maintenance while some vessels convert to fishing for red snapper (Lutjanus guttatus).

In April and May, the new anchovy year class reaches a harvestable size and becomes the main source of supply for the fishery. During this period, the young anchovies school together so that fish caught in a single haul tend to be almost uniform in size and age. Later in the season mixed age groups are commonly caught together. By July of each year the peak fishing has passed and the catch begins to decline.

The catch is processed by two fishmeal plants, Pesquera Taboguilla and Promarina, S.A., both in the Gulf of Panama. The two factories are required to supply half of the local fishmeal needs and must maintain a monthly inventory of 150 tons (to meet any local shortages) before they can begin exporting. The Panamanian Price Commission sets the local price for fishmeal, and the companies have indicated that the domestic price is below the actual cost of production.

International Protein, Inc. of New Jersey purchased Pesquera Taboguilla in 1970. The company reportedly spent a half a million dollars on plant modernization. The firm now has a fleet of 15 seiners and a small shipbuilding yard called Modern Fiberglass. The shipyard, adjacent to the fishmeal plant, is building 77-ft fiberglass shrimp boats to replace older vessels.

Promarina, S.A., which was established in late 1963, has 10 seiners. Its fishmeal plant is at Puerto Caimito, 18 miles west of Panama City (fig. 1).

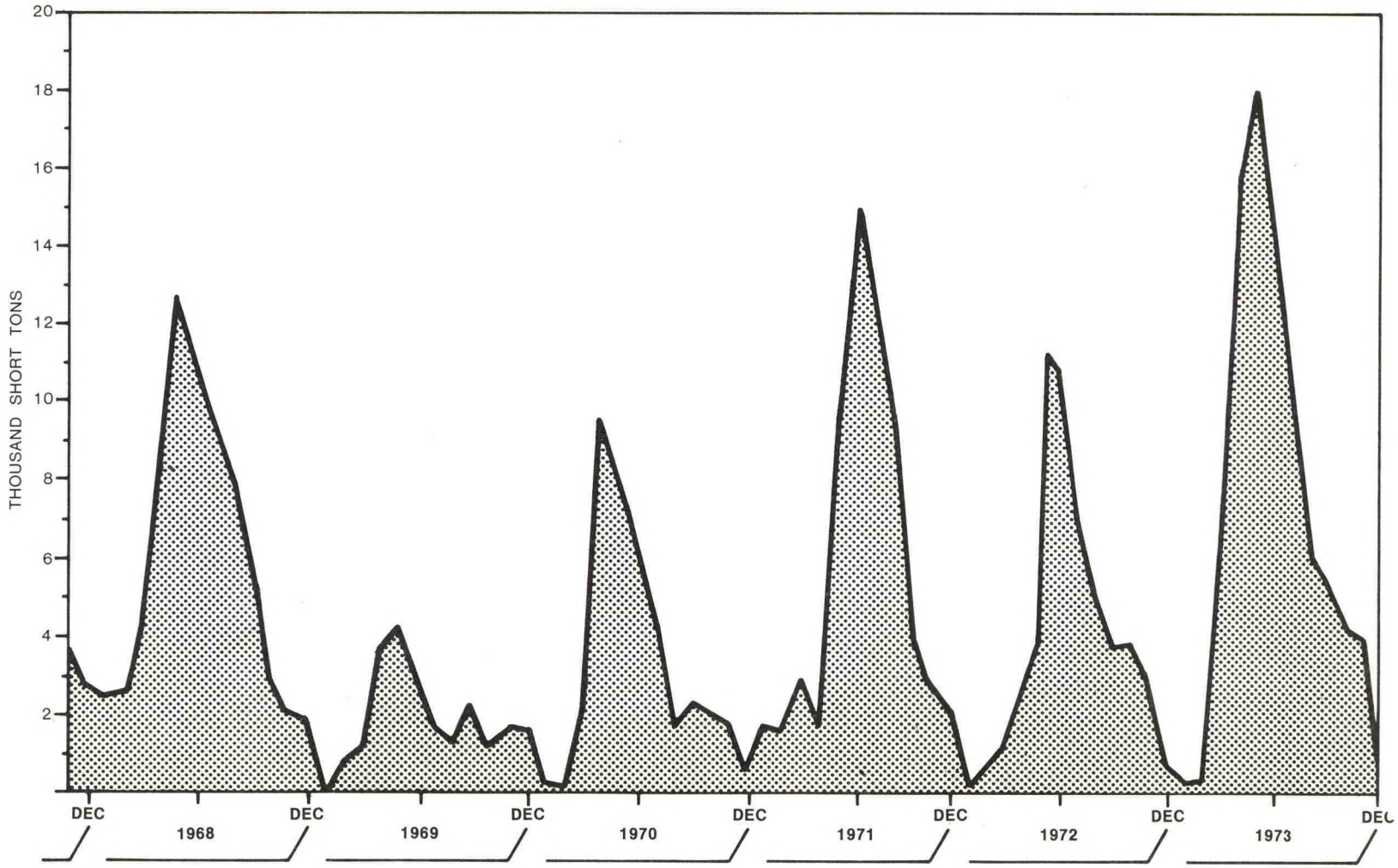


FIGURE 4.—PANAMA'S MONTHLY LANDINGS OF ANCHOVY AND HERRING, 1968-73.

D. Sardines:

Panama's "sardine" fishery is actually based on the anchovy fishery, although there may be some use of small stocks of Spanish sardines (Sardinella anchovia) found in local waters.

Conservas del Mar, S.A. is Panama's only sardine-canning operation. The firm is owned by the major stockholders of the fishmeal company Promarina. The cannery, which is also in Puerto Caimito, is thus assured of adequate supplies of fresh anchovies for canning. Conservas del Mar, S.A., began operating in 1971, with 146 people, and packed large-sized anchovies in tomato sauce for the local market. In 1972, the company nearly went out of business because of competition from imported sardines and because of the meager local demand for its products. The Panamanian Government reacted by authorizing an import and price quota for canned sardines in September 1972. Since then the company has nearly succeeded in supplying the country's demand for sardines and has begun exporting to the countries in the Central American Common Market, with El Salvador as a major purchasing country.

E. Scallops:

Panama's scallop fishery can be traced to the exploratory voyage of the R/V Pelican in the Gulf of Panama in 1963. The vessel, while surveying lobster stocks, caught 4 bushels of bay scallops (Aequipecten circularis) during a drag in 6 fathoms of water. This information was passed on to the local fishing community; four shrimp trawlers were immediately sent to the area and, using only shrimp trawls, caught more than 23,000 lb (including shells) of scallops. Within a few weeks more than 15 trawlers were working the beds; within 2 months more than 658,000 lb of scallops were recovered.

In 1972, Panama exported $2 million worth of scallops to the United States; however, this was considered a disappointing return. Compared to other varieties sold in the United States, Panamanian scallops are small and have not been overwhelmingly accepted by the United States consumer. Panamanians are now receiving about $1.00/lb for scallops, but require over $1.50/lb for a profitable production. One of Panama's three scallop producers, which is also in the shrimp-processing business, recently indicated that Panamanian scallops would have to be promoted in the United States if this fishery were to be fully developed.

## III. INDUSTRY DEVELOPMENTS

The Panamanian Government has recognized the importance of the fishing industry, which employs some 4,500 people. The Government has shown every indication of acting to protect the local industry if needed; the move to protect the sardine fishery is but one example. During 1973, the Panamanian Government was active in several areas of the nation's fisheries economy.

Taxes: The shrimp industry, the Nation's most lucrative fishery, has never been subjected to corporate or export taxes, or to any restrictions on foreign owership. There are, however, signs that the Government is not entirely satisfied with this arrangement, but thus far has refrained from changing the industry's tax exempt status, except to tax local sales.

Wages: The minimum wage for boat crews and captains is set at $4.00/day. Above this minimum, boat crews are paid 18 percent of the value of the catch minus the cost of diesel fuel. This gives an able captain a possible monthly income of $1,000. Recent policy on wages, however, has driven up the cost of labor considerably. The Ministry of Labor, which oversees working conditions and enforces labor regulations, has made it quite difficult for companies to discharge workers. At the same time there is a shortage of skilled workers, especially electricians.

National Fishing Commission: The National Fishing Commisiion is an advisory body with representatives of private industry, traditional fishermen, and with the Minister of Commerce and Industry as its president. The Commission was recently revived and will serve to keep the Government aware of feelings and problems within the fishing industry.

Fish consumption: With the assistance of FAO, the Panamanian Government continued its campaign to promote the local consumption of fish, which is still quite low, and to replace imported fish with domestic varieties. Experiments are being carried out to find ways of preparing such fish as shark and other under-utilized species. To allow for better development of local marine resources, an FAO export is now preparing a complete revision of the legislation regulating Panama's fisheries.

## IV. FISHERIES TRADE

Exports: Panama's most valuable fishery export is shrimp. In 1973, Panama exported 4,404 metric tons (t) of shrimp valued at $16.7 million. By quantity, this is slightly less than the 4,512 t exported in 1972, but in terms of value it is an increase of $2.1 million over the $14.6 million worth of shrimp sold in 1972. Virtually all of Panama's shrimp is exported to the United States. Table 4 and figure 5 show the trend towards smaller quantities of shrimp exported at higher prices for the period 1971-73.

Table 4.--Panama's monthly shrimp exports, by quantity and value, 1971-73

| Month | 1971 | | 1972 | | 1973 | |
|---|---|---|---|---|---|---|
| | Quantity | Value | Quantity | Value | Quantity | Value |
| | Metric t | US$1,000 | Metric t | US$1,000 | Metric t | US$1,000 |
| January.... | 324 | 631 | 290 | 789 | 230 | 729 |
| February... | 284 | 541 | 318 | 951 | 280 | 865 |
| March..... | 372 | 803 | 329 | 1,048 | 272 | 910 |
| April..... | 332 | 777 | 345 | 1,019 | 270 | 1,023 |
| May..... | 571 | 1,224 | 590 | 1,944 | 393 | 1,477 |
| June..... | 603 | 1,350 | 537 | 1,768 | 342 | 1,320 |
| July..... | 537 | 1,323 | 510 | 1,776 | 555 | 2,155 |
| August..... | 413 | 1,212 | 290 | 1,048 | 535 | 2,205 |
| September.. | 304 | 898 | 304 | 1,038 | 324 | 1,256 |
| October.... | 364 | 974 | 393 | 1,273 | 419 | 1,790 |
| November... | 353 | 867 | 348 | 1,113 | 389 | 1,530 |
| December... | 520 | 1,352 | 259 | 864 | 295 | 1,446 |
| Total..... | 4,976 | 11,953 | 4,512 | 14,631 | 4,404 | 16,707 |

SOURCE: Direccion General de Recursos Marinos, Ministry of Commerce and Industries, Panama.

Fishmeal and fish oil are Panama's second most valuable fishery export. In 1973, Panama exported 7,237 t of fishmeal worth $2.8 million (table 5). Because of the extremely limited production of fishmeal in Peru, these Panamanian exports were sold at a much higher price on world markets than they did in 1972 ($196 per t as compared to $395/t in 1973).

Table 5 also provides data on the growth of Panama's sardine cannery. The firm began operations in 1970 against stiff competition from foreign imports of canned sardines (table 6). By 1973, however, exports of canned sardines had increased considerably, followed by a sharp decline in sardine imports.

Panama also has a small export industry for lobsters, along with a small-scale fisheries for the export of dried, salted, or fresh fish. These exports account for only a fraction of the country's total exports of fish.

Imports: Cod has replaced canned sardines as Panama's largest import commodity. The cod is imported under the name "bacalao." Tuna is another significant import. Small amounts of other types of fish are also imported. Total imports, as shown in table 6, are considerably below Panama's fishery exports. The cost of imported equipment for Panamanian fishing operations is equal to about 50 percent of Panama's export revenue for fishery products.

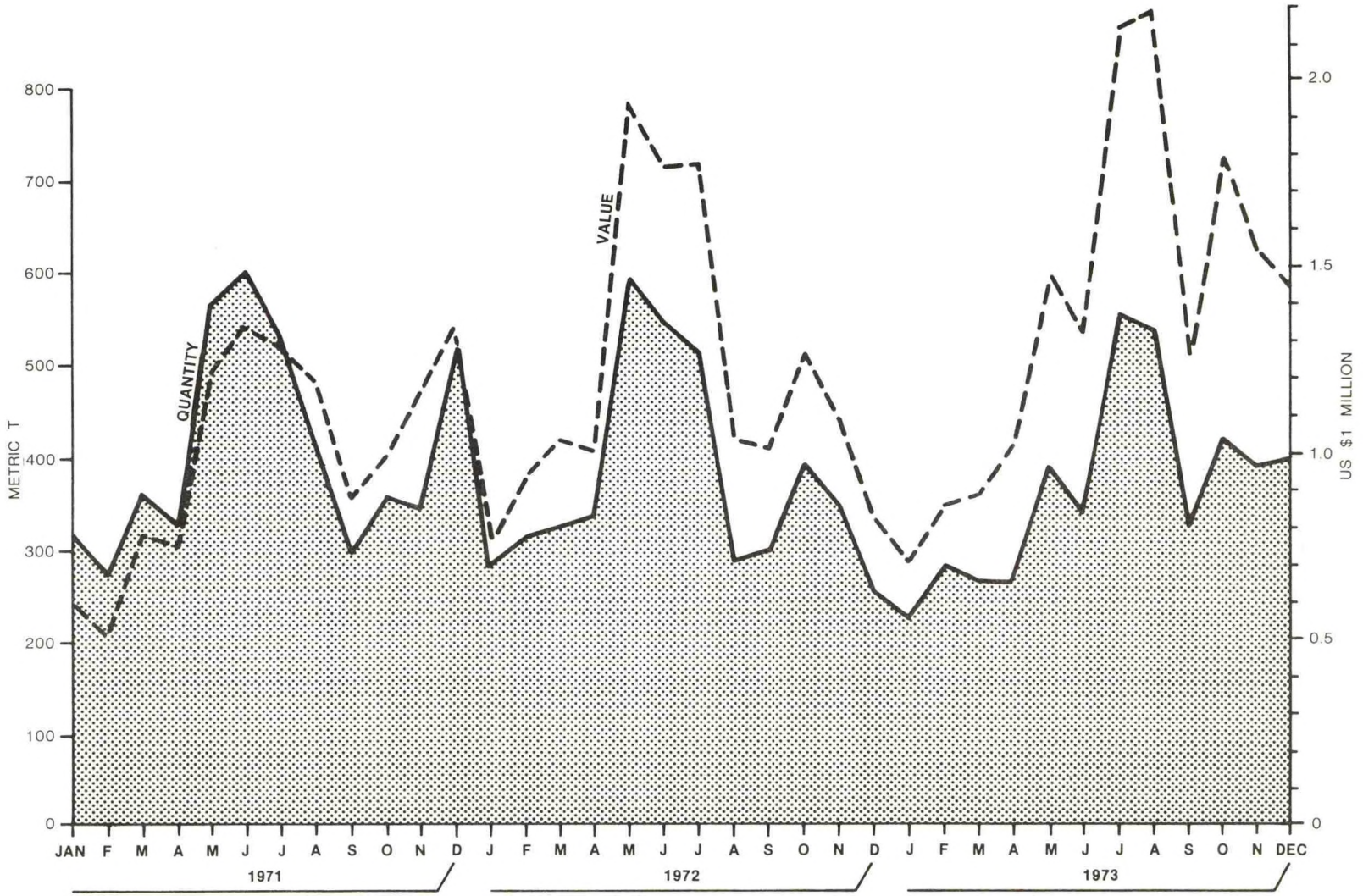


FIGURE 5.—THE QUANTITY AND VALUE OF PANAMA'S SHRIMP EXPORTS, BY MONTH, 1971-73.

Table 5.--Panama's fishery exports, by quantity and value, 1969-73

| Commodity / Year | Quantity | Value |
|---|---|---|
| | Metric t | US$1,000 |
| **Fish:** | | |
| Sardines: | | |
| 1973 | 273 * | 229 * |
| 1972 | 173 | 145 |
| 1971 | 58 | 48 |
| 1970 | - | - |
| 1969 | - | - |
| Other fish: | | |
| 1973 | 16 * | 22 * |
| 1972 | 10 | 13 |
| 1971 | 5 | 5 |
| 1970 | ** | ** |
| 1969 | ** | ** |
| **Crustaceans:** | | |
| Shrimp: | | |
| 1973 | 4,404 | 16,707 |
| 1972 | 4,512 | 14,631 |
| 1971 | 4,976 | 11,953 |
| 1970 | 5,047 | 10,168 |
| 1969 | 4,411 | 9,741 |
| Lobster: | | |
| 1973 | 4 * | 27 * |
| 1972 | 21 | 151 |
| 1971 | 3 | 19 |
| 1970 | 1 | 2 |
| 1969 | 15 | 62 |
| **Other products:** | | |
| Fishmeal: | | |
| 1973 | 7,237 | 2,860 |
| 1972 | 7,314 | 1,432 |
| 1971 | 5,839 | 982 |
| 1970 | 4,626 | 789 |
| 1969 | 2,032 | 276 |
| Fish oil: | | |
| 1973 | 4,458 | 1,110 |
| 1972 | 1,883 | 270 |
| 1971 | 1,391 | 248 |
| 1970 | - | - |
| 1969 | 300 | 54 |

*Data for the period January-September 1973.

**Fractional amounts exported.

Table 6.--Panama's fishery imports, by quantity and value, 1969-73

| Commodity / Year | Quantity | Value |
|---|---|---|
| | Metric t | US$1,000 |
| Cod: | | |
| 1973 | 784 | 745 |
| 1972 | 893 | 685 |
| 1971 | 915 | 653 |
| 1970 | 929 | 504 |
| 1969 | 832 | 398 |
| Sardines: | | |
| 1973 | 76 | 101 |
| 1972 | 635 | 379 |
| 1971 | 1,113 | 552 |
| 1970 | 717 | 365 |
| 1969 | 1,491 | 708 |
| Tuna: | | |
| 1973 | 542 | 661 |
| 1972 | 463 | 499 |
| 1971 | 546 | 555 |
| 1970 | 581 | 523 |
| 1969 | 461 | 383 |
| Other fish: | | |
| 1973 | 97 | 209 |
| 1972 | 124 | 212 |
| 1971 | 126 | 212 |
| 1970 | 118 | 194 |
| 1969 | 130 | 191 |
| Total imports: | | |
| 1973 | 1,499 | 1,716 |
| 1972 | 2,115 | 1,775 |
| 1971 | 2,700 | 1,972 |
| 1970 | 2,345 | 1,586 |
| 1969 | 2,914 | 1,680 |

(*) Data for the period January-September 1973.

## V. VESSEL CONSTRUCTION

On October 25, 1971, Cabinet Decree No. 219 was announced. The decree imposed a 15-percent tax on foreign-built fishing vessels imported into Panama and was designed to assist local shipbuilding. In 1971, there was only one public shipyard, Pan American Shipbuilding and Drydock, which subsequently went bankrupt. Its assets were purchased by Construcciones Navales de Panama in 1972.

This firm built 11 shrimp trawlers during 1972. The shipyard next won a contract for 10 steel-hulled shrimp vessels against unusually stiff competition as this contract was specifically exempted from the provisions of Cabinet Decree No. 219. Brazilian and Mexican shipyards were major competitors for the contract. The contract was part of a $3.2 million International Bank for Reconstruction and Development (IBRD) loan to Panama that was originally intended for the construction of 40 steel-hulled shrimp trawlers to replace older, wooden vessels. Because of skyrocketing construction and labor costs, the project was amended to provide for the construction of only 23 vessels[5/]. Each vessel will be 68ft long and have a 250-hp engine. Three of these trawlers are to be delivered in September 1974; one additional vessel is to be launched every 3 weeks thereafter. The Construcciones Navales de Panama has a technical assistance agreement with Rockport Yacht and Supply Company of Rockport, Tex., and reportedly has modern shipbuilding equipment.

Modern Fiberglass, a company established in 1972 or 1973, apparently went into bankruptcy in 1973 and was taken over by Empacadora Nacional, the subsidiary of International Protein. Empacadora Nacional had a contract for the construction of 12 vessels (believed to be shrimp trawlers). They will have 360-hp engines. This is permitted because the vessels were being built when the law limiting horsepower went into effect. After fulfilling its contract, Empacadora Nacional plans to relinquish its control over Modern Fiberglass Co.

Panama's fishmeal industry contracted to build a total of 11 new purse seiners in 1964, all of which were launched in 1972.

The Panamanian Government also operates Astilleros de Chiriqui near the city of David. This shipyard is managed by the Frontir Development Corporation and builds 16- to 18-ft fiberglass vessels.

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5/ The first 10 vessels cost $146,000 each, the second 10 will cost $175,000 each, and the cost for the last 3 is estimated at $180,000 each.

## VI. INVESTMENTS IN FISHERIES

The U.S. Agency for International Development (US/AID) has been working with Auburn University to develop aquaculture projects suitable for Panamanian farmers. Research is concentrated on raising tilapia and freshwater shrimp. The program will increase the earnings of farm workers while providing a source of protein in isolated rural areas of Panama.

The Ralston Purina Company is exploring the possibility of a $2 million shrimp culture facility in Aguadulce some 200 km (125 miles) west of Panama City. The operation is expected to include 4,500 hectares (11,120 acres) of ponds.

IBRD-financed feasibility study on the construction of a fishing port was completed on March 21, 1974. According to the final report, the first stage would be to improve the existing port facilities in Panama. In the second stage, facilities to service the world tuna fleets would be built at Punta Vacamonte near Panama City. The project is expected to cost $24.7 million and take about 3 years to complete.

## VII. INTERNATIONAL FISHERIES RELATIONS

In November 1973, a special fisheries mission from Peru visited Panama to discuss the possibilities of joint exploration for marine resources and to jointly produce fishmeal and fish oil. On January 26, 1974, an agreement in principle was reached between the two countries. Both nations agreed to conduct exploratory fishing for anchovy, tuna, and other fish stocks. An agreement was also reached concerning the production of fishmeal and oil. Local fishmeal producers have questioned this second agreement because they have not reached full production capacity themselves. There is some feeling among private industry in Panama that the Government may decide to enter the fishmeal business in the future, although there are no definite indications yet.

In 1972, Panama and the Republic of China signed a technical cooperation agreement to promote Panamanian artisanal fisheries (page 2, paragraph 3).

On April 17, 1974, the United States tuna vessel Rafaella was seized by the Panamanian National Guard near Punta Mala on the Pacific coast for fishing without a license in local waters[6/]. The vessel was fined a total of $57,200, and its catch was seized. Shortly thereafter the Consular and Maritime Administration of the Ministry of Finance and Treasury requested that all foreign fishing vessels entering Panamanian waters comply with the following:

1. Obtain a navigation permit.
2. Obtain a fishing license.
3. Inform port captains and inspectors of any activities within Panamanian waters with enough time for them to prepare the necessary instructions or permits.
4. Hoist the flag of Panama (in addition to flying the flag of country of registry) while in Panamanian waters.

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6/ Panamanian waters extend outwards for 200 miles, and this area includes both the territorial sea and Panama's claimed fisheries jurisdiction.

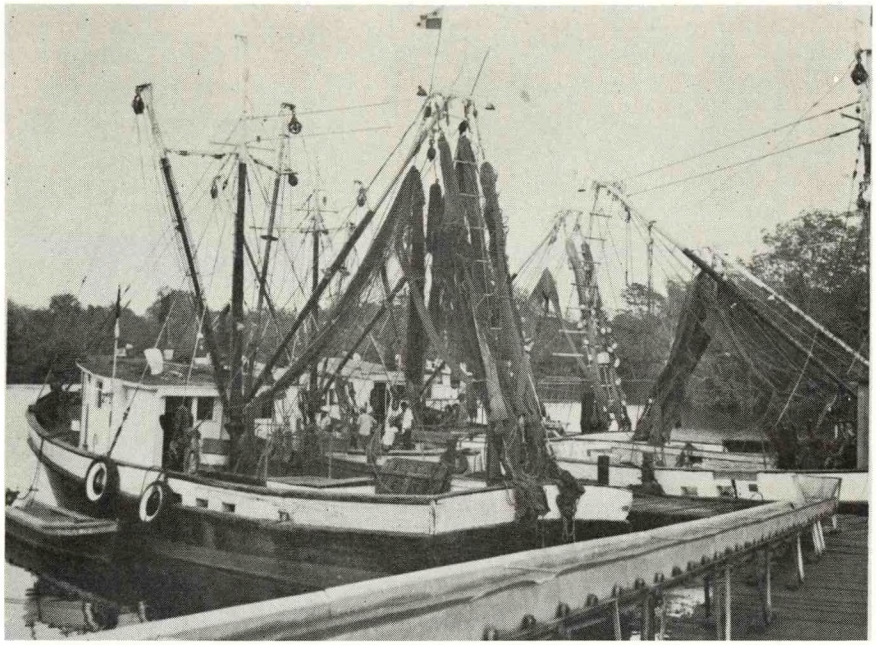

Figure 7. Shrimp trawlers anchored in a Panamanian fishing village near David in Chiriqui Province.

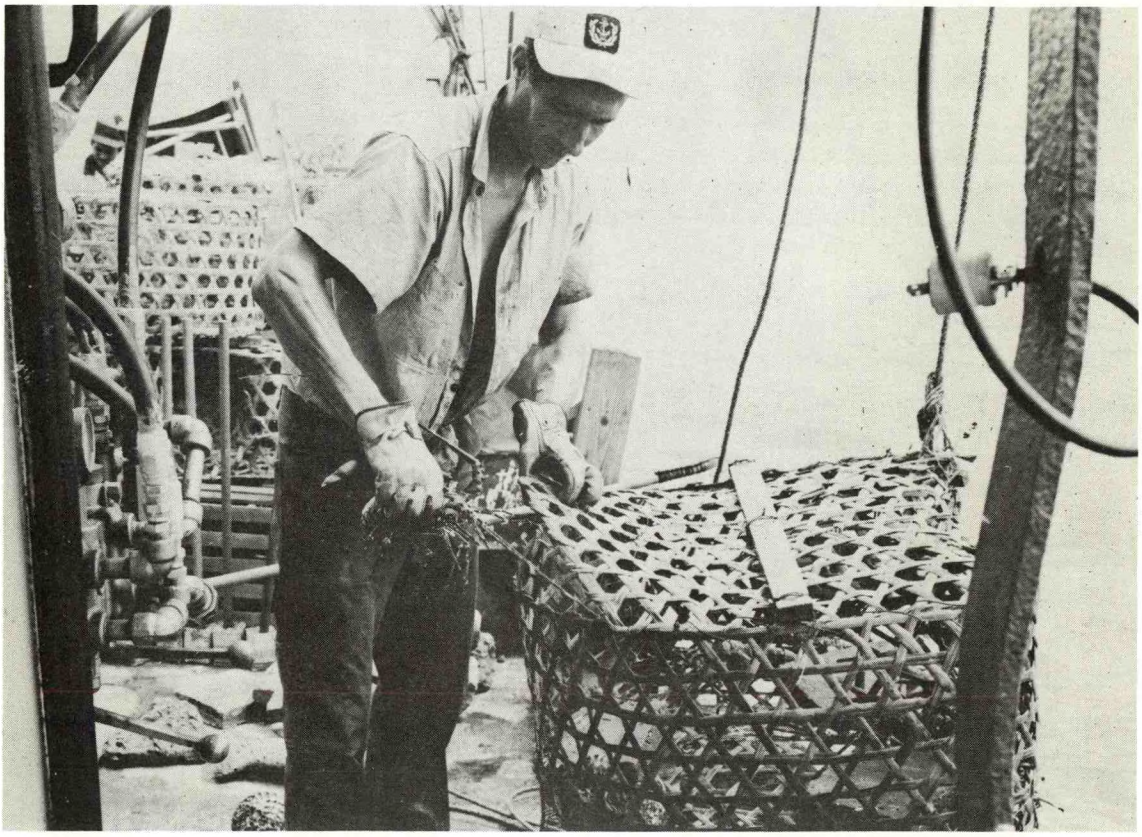

Figure 8. A Panamanian fisherman removing a spiny lobster from his lobster trap made out of reeds.