

THE SAILFISH AND STRIPED MARLIN FISHERY OF THE EASTERN PACIFIC OCEAN

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Abstract: Big game fishing in the eastern Pacific is supported primarily by the Pacific sailfish and marlins. A few years ago this sport was restricted to the affluent who had the time and funds necessary to pursue the sport. In recent years, however, persons of more modest means have been able to participate in the sport as resort facilities have expanded in Mexico and transportation costs have been greatly reduced.

Prior to 1963 there was little or no commercial fishery for these species along the west coast of Mexico and the sport catch was small, allowing for a high success ratio. In 1964, however, a Japanese longline fishery, centered off the tip of Baja California, brought about a decline in the sport catch. A noticeable reduction, both in the size of fish and numbers landed, indicated that over-fishing may be taking place. It is not known what the long-term effect of the Japanese longline fishery will have on the sport fishery for these species.

Bill fish angling is considered by most fishermen as the greatest of all salt water sports. The term billfish in this sense includes those fishes of the family Istiophoridae in which are the spearfish, sailfish, and marlins and also the swordfish of the family Xiphiidae. Big game fishing in the eastern Pacific is usually confined to the Pacific sailfish and the marlins. The latter include blue marlin, black marlin, and striped marlin; however, the striped marlin (Makaira audax) and the Pacific sailfish (Istiophorus greyi) are by far the most abundant of these species and provide the most fishing. These two species also are considered by many anglers as the most enjoyable of the billfishes to catch. They are terrific fighters, and almost always when hooked they will jump many times in a most spectacular and exciting manner.

Striped marlin in the eastern Pacific range from southern California to Chile, while Pacific sailfish range from Baja California to Ecuador. Sport fishermen catch these species throughout their range, but by far most of the catch is made

in Mexican waters.

A few years ago this sport was restricted mainly to those individuals who had time, funds, and an ocean-going boat to pursue these species. However, in recent years the manufacture of small, reliable relatively inexpensive boats capable of offshore operations, the development of resorts in Baja California, the popularity of small private aircraft, and low commercial airline rates, have allowed fishing for these magnificent species to be available to people of moderate means. This fishery was potentially the most ideal sport fishery in the world--it was accessible to a large segment of the population in the United States and Mexico, there were large populations of these fishes available, there was no commercial fishery, and there was a comparatively small sport catch--thereby allowing a high hook rate or catch-per-unit of effort, and the capture of large size fish.

Unfortunately, this Utopian situation was not to continue. The Japanese long-line fishery, having reduced the tuna stocks in western Pacific and Indian Oceans, gradually extended their operations across the Pacific, reaching eastern Pacific waters (east of 130° west longitude) in 1956 (fig. 1). During the first few years of their operations, fishing was confined mostly to 10° latitude north and south of the Equator (Suda and Schaefer, 1965). In 1963, however, their efforts extended north of 10° north latitude and in this area they obtained a high-catch-per-unit of effort. The catch was predominately yellow-fin tuna and striped marlin--about half each in numbers (Kume and Schaefer, 1966).

In the meantime, sport fishermen (mostly in the United States), because of new facilities and opportunities, were flocking to the tip of Baja California and western Mexican mainland to partake of some of the most spectacular game fishing in the world. Many of the fishermen, while enjoying the sport of catching these fish, did not relish the idea of killing them and offered to tag and release some of the fish caught.

Since very little was known about the life history of these species, it was hypothesized that a tagging program would determine the limits of the populations inhabiting southern California and Mexican waters, determine their migrations, and perhaps give some indication of size of populations. Subsequently a cooperative game fish tagging program was initiated in 1963 by the Tiburon Marine Laboratory, Woods Hole Oceanographic Institution, the International Game Fish Association, and the Mexican Department of Fisheries. The Tiburon Marine Laboratory coordinates the Pacific tagging efforts by furnishing tags and equipment, and maintaining the records. This has worked quite well, and sport fishermen have tagged between 1000 and 2000 big game fishes each year in southern California and Mexican waters. Because of the large populations of game fish involved, the relatively small number of fish being tagged, and the small sport fish catch (estimated at about 25,000 fish in 1963), the expected percentage of tag returns was in doubt.

In 1964, however, the Japanese longline fleet again moved northward, found excellent striped marlin fishing, and concentrated part of their operations

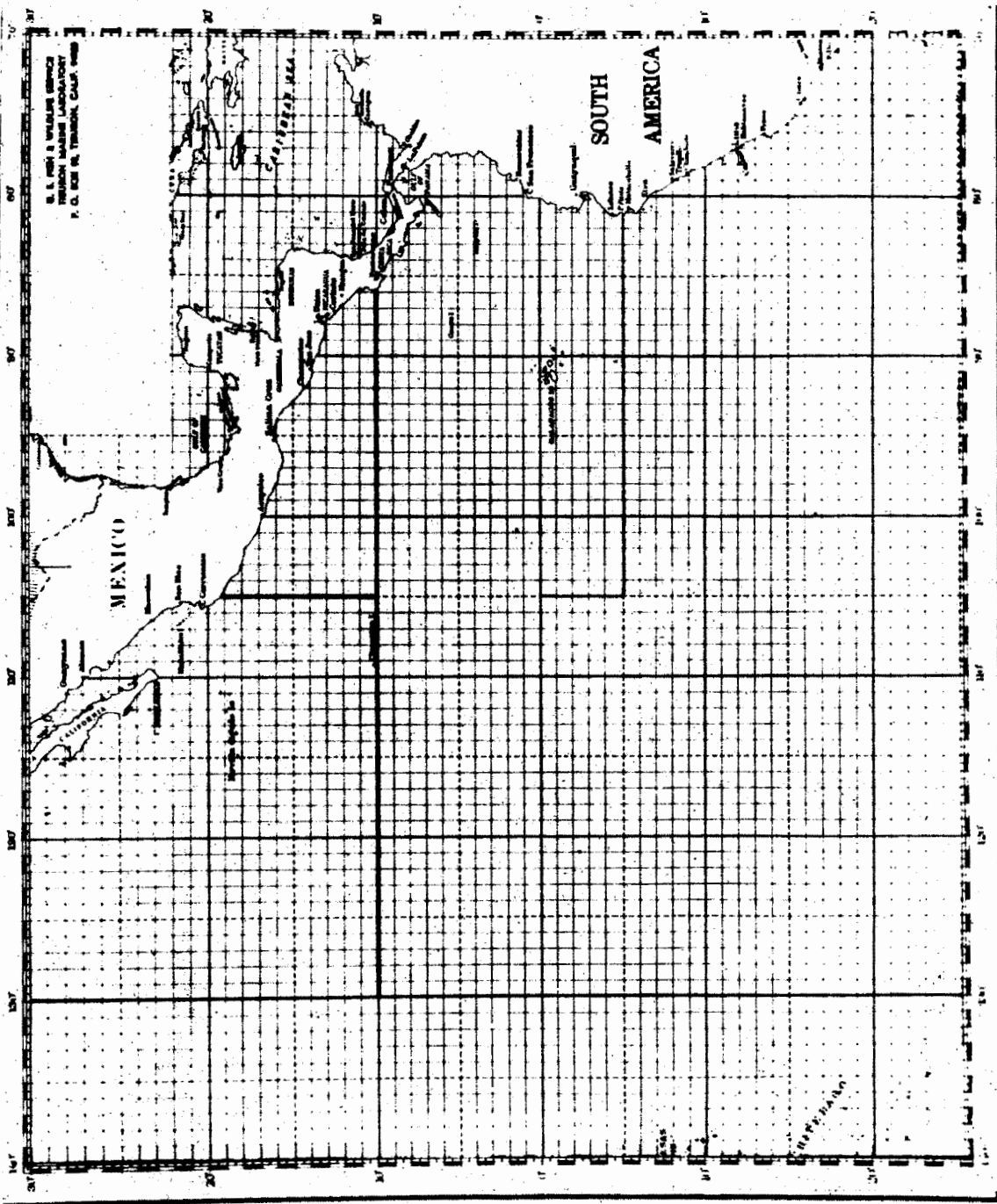


Fig. 1. Eastern Pacific Ocean where Japanese longliners have operated since 1956.

in a major sport fishery area around the tip of Baja California and off Mazatlan. Needless to say, the sport fishermen were antagonistic to the commercial fishery, and many acts of piracy were carried out on the high seas such as sinking longlines by shooting at glass floats, and stealing lines and lighted buoys. The Governments of the United States, Mexico, and Japan were concerned. At a Conference of Plenipotentiaries on the Conservation of Atlantic Tunas held in Rio de Janeiro in 1966, an informal discussion between representatives of sport fishing interests in the United States and commercial fishing interests in Japan led to an agreement by the Japanese to recommend to their fishermen that they operate as much as possible away from major sport fishing ports. Apparently this has occurred to some degree and complaints from both fisheries have diminished somewhat.

Striped marlin brings the highest price of all fish landed by the Japanese; therefore, they specifically fish in areas where these fish are most plentiful. Their large catches have been the source of most of the returns received from the tagging program. Long distance migration since the beginning of the program is shown in the upper chart of figure 2, while returns in 1968 are shown in the lower chart. Most of the tag recoveries for previous years showed a migration northward along the coast in the spring and summer, and a southward migration in fall and winter. A rather puzzling deviation from this pattern was an increase each year in the number of recoveries made in summer months to the southwest of the tip of Baja California in the area of the Revilla Gigedo Islands. We learned later from Japanese fishermen that striped marlin apparently congregate in this area during the summer months to spawn. When this was discovered by the Japanese fishermen they began to converge on this area, thereby increasing their catches and incidently recovering more of our tags in that area and less elsewhere.

Since marlin was a preferred commercial species, and with experience the commercial fishery learned where they could best be captured, catches increased each year. (Data on Japanese longline fishing are from Kume and Schaefer, 1966; Kume and Joseph, 1969; and Suda and Schaefer, 1965). Figure 3 shows the catches of striped marlin in the eastern Pacific each year from 1956 to 1966, the last year data are available. Also shown is the number of hooks fished, and the hook rate expressed as catch per hundred hooks. Operations on this species reached their peak in 1964, and since then it appears that overfishing may be taking place. In 1966 the increase in fishing effort over 1965 produced a lower catch and lower catch-per-unit effort. Data for another year or two should confirm or disprove this hypothesis.

Figure 4 shows the same data for the area north of the Equator only. These are plotted on a logarithmic scale so as to include the catches in this area in the early years when they were small.

Peak catch and effort occurred in 1964 as it did for the whole eastern Pacific Ocean. During this year about 30 million hooks were fished north of the Equator which is about half of that for the whole area. The catch, however, was 188,000 striped marlin which is about 70 percent of the catch for the whole

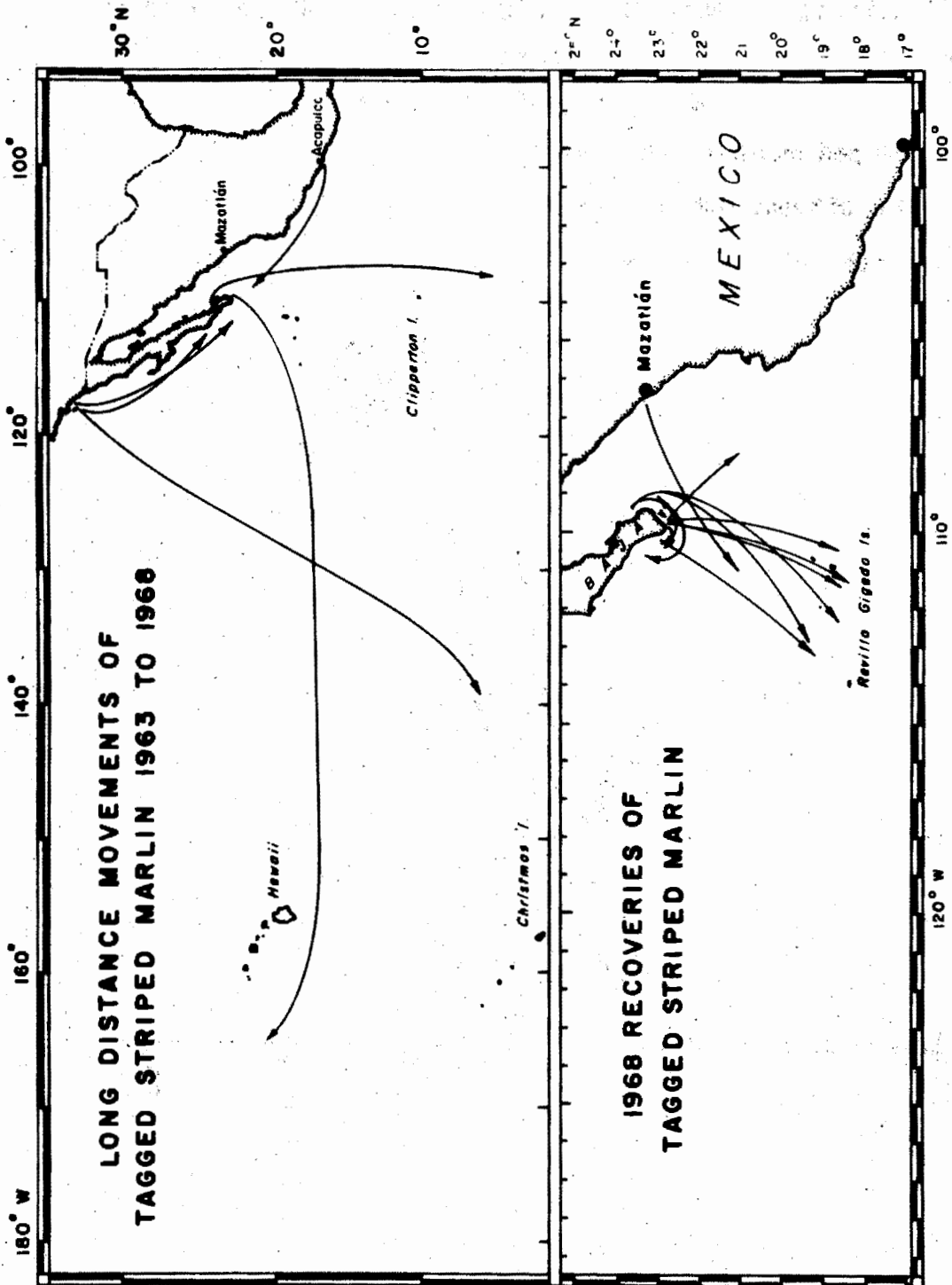


Fig. 2. Long distance tag returns of striped marlin tagged from 1963 to 1968 and all 1968 recoveries.

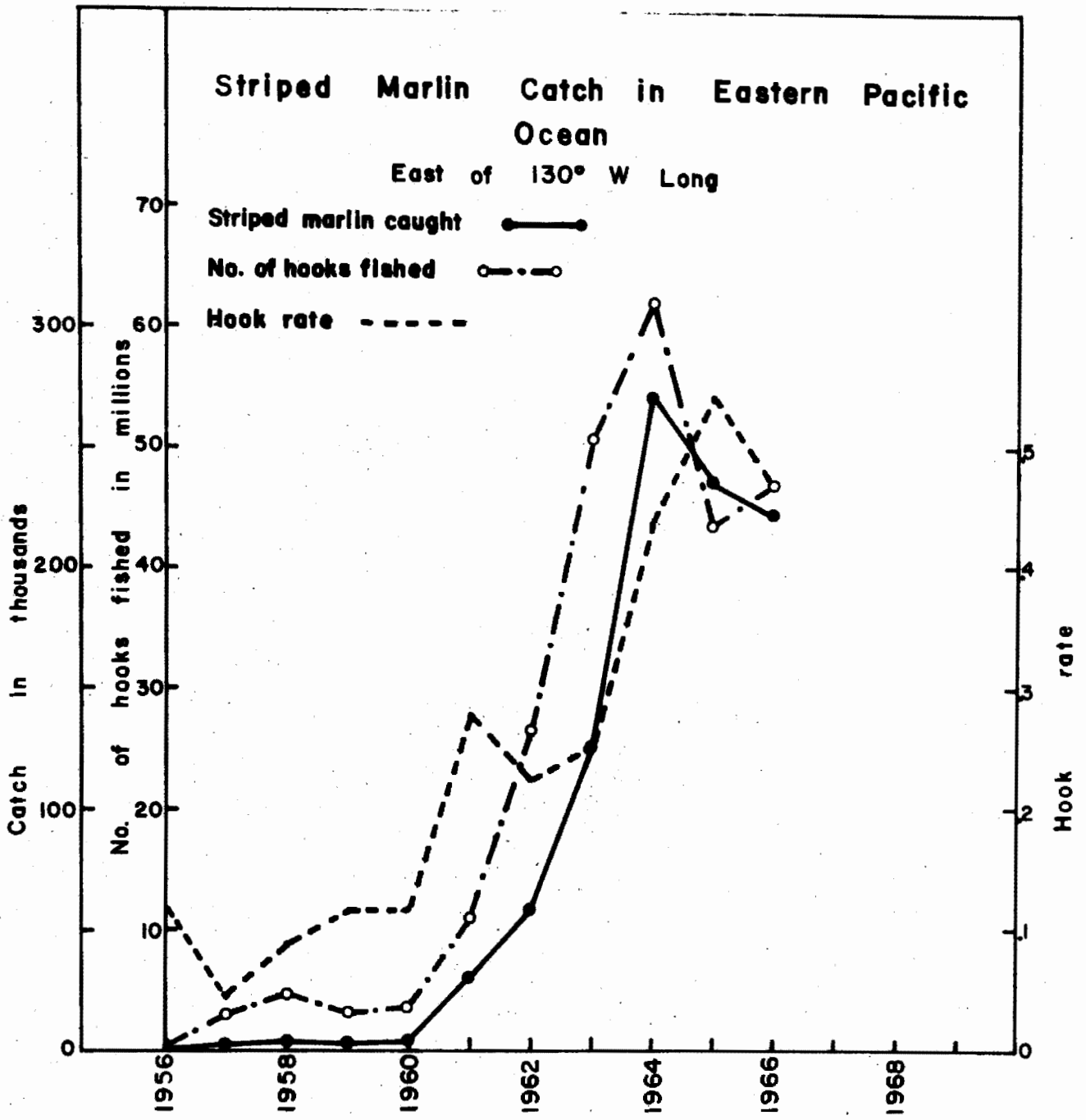


Fig. 3. Catch of striped marlin, number of hooks fished, and hook rate expressed as catch per hundred hooks in the eastern Pacific Ocean from 1956 through 1966.

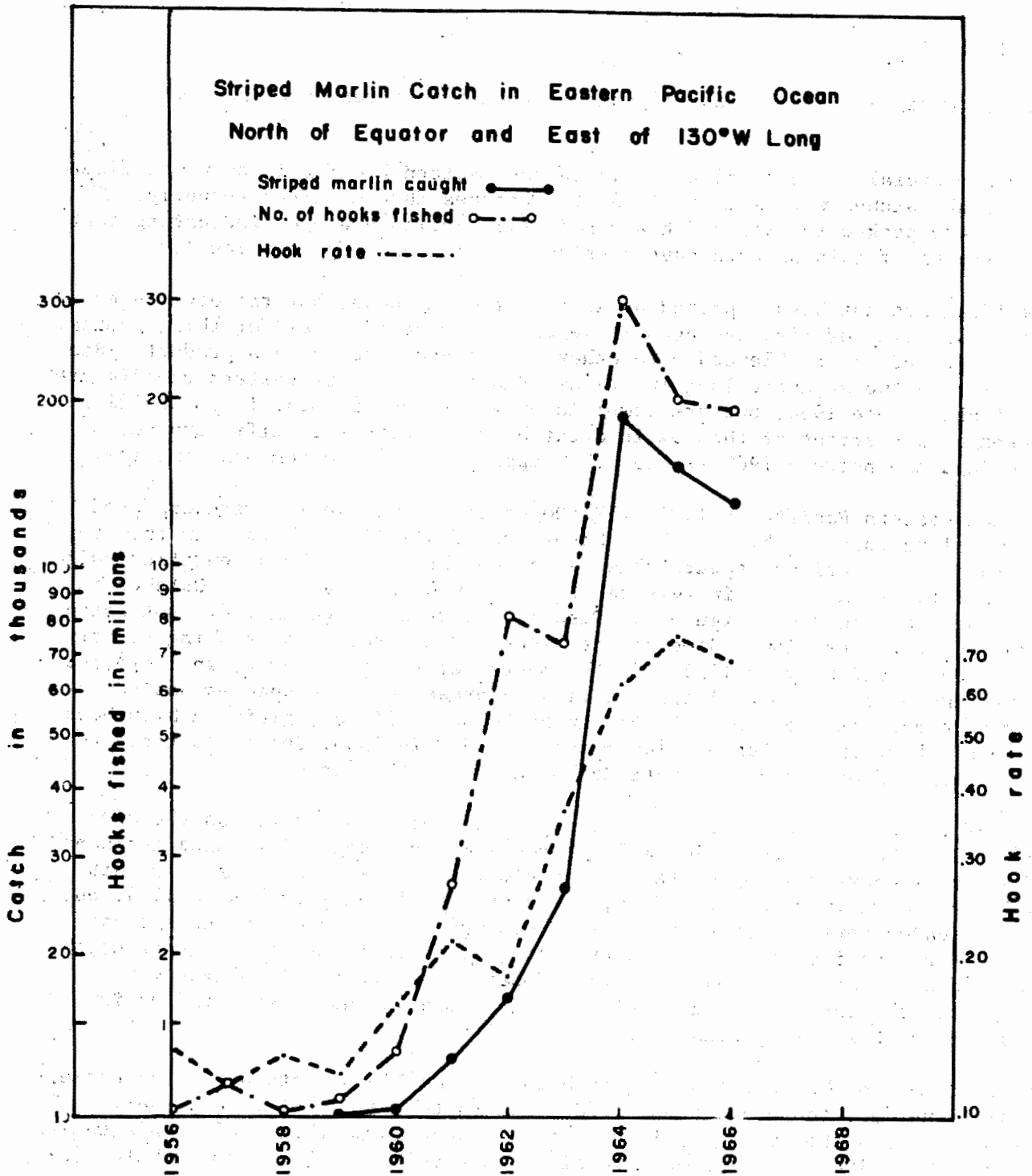


Fig. 4. Catch of striped marlin, number of hooks fished, and hook rate expressed as catch per hundred hooks for the eastern Pacific Ocean north of the Equator from 1956 through 1966.

area. Here, too, the catch and catch-per-unit of effort declined slightly in 1966.

The commercial catch of blue marlin in the eastern Pacific is shown in figure 5. Peak catches were made in 1963, but catches then declined abruptly. The hook rate peaked in 1959 and has continually declined since, indicating that the stocks of this species have been over-fished and are at a low level.

Sailfish are not highly prized as food by the Japanese, but the development and popularity of fish sausages in Japan have created a use for this species. It is ground up and blended with other fishes and used in this product. Statistics on the Japanese longline catch of sailfish in the eastern Pacific are available since 1964, but are combined with catches of spearfish. Sailfish averaged 92 percent of the combined catch during nine scientific cruises by the Japanese between 1962 and 1967, so apparently is the dominant species.

In the eastern Pacific in 1965, 422,500 of these two species were captured by the longliners. This is about one-third of all fish landed. In the area north of 10°N latitude spearfish were not caught during the scientific cruises so that all fish listed in this category are probably sailfish. Catches in this area are shown in figure 6. Fishing effort was high in 1964, but catch and hook rate were low. Some of the fleet did not return so fishing effort was reduced slightly in 1965. Of the boats returning, however, an increased number moved to the more lucrative fishing areas for this species and the catch reached its peak of a little over 300,000 sailfish, giving a high hook rate of about three fish per 100 hooks fished. In 1966, despite a reduction in fishing effort, the hook rate declined as did the catch.

One of the best fishing areas for sailfish during these years was the area bounded by 10°N latitude, 105°W longitude and the coast. This area includes the famous sport-fishing center of Acapulco. Catches of sailfish for this area are shown in figure 7. Here, there was low fishing effort in 1964, but a high catch-per-unit of effort. In 1965, because of good fishing success the effort was increased in this area, resulting in a very much larger catch, but the hook rate declined. Fishing effort was reduced only slightly in 1966, but the catch dropped considerably, as did the hook rate, indicating a drastic reduction in population.

In addition to the reduction in catch rate of marlin by both sport and commercial fishermen, there has been a reduction in the weight of fish caught. Figure 8 shows the average weight of fish caught in southern California waters from 1952 to 1968, the Japanese longline conversion weights from 1959 to 1967, and the Mexican sport fish average weights for 1967 and 1968.

The average weight for the southern California sport fishery averaged about 150 pounds from 1952 to 1958, then dropped to an average of about 140 pounds through 1965, and since then has averaged about 130 pounds. The Japanese average weight was obtained by a scientific cruise in 1959. The marlin in that year averaged 143 pounds. This weight was used in their statistics for converting numbers of fish to weight of fish captured through 1963. In 1964

Blue Marlin Catch in Eastern Pacific Ocean

East of 130° W. Long

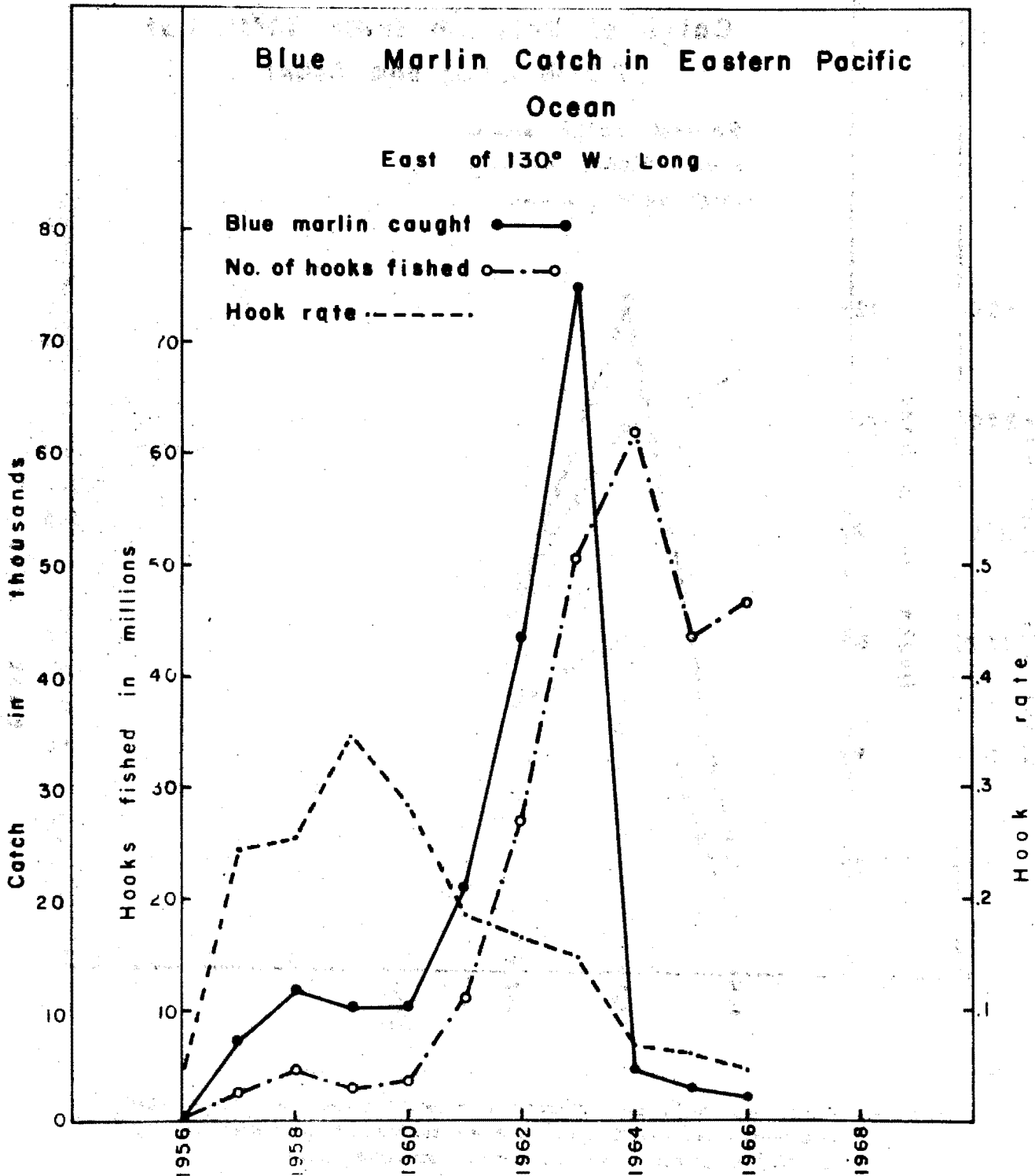


Fig. 5. Catch of blue marlin, number of hooks fished, and hook rate expressed as catch per hundred hooks for the eastern Pacific Ocean, 1964 through 1966.

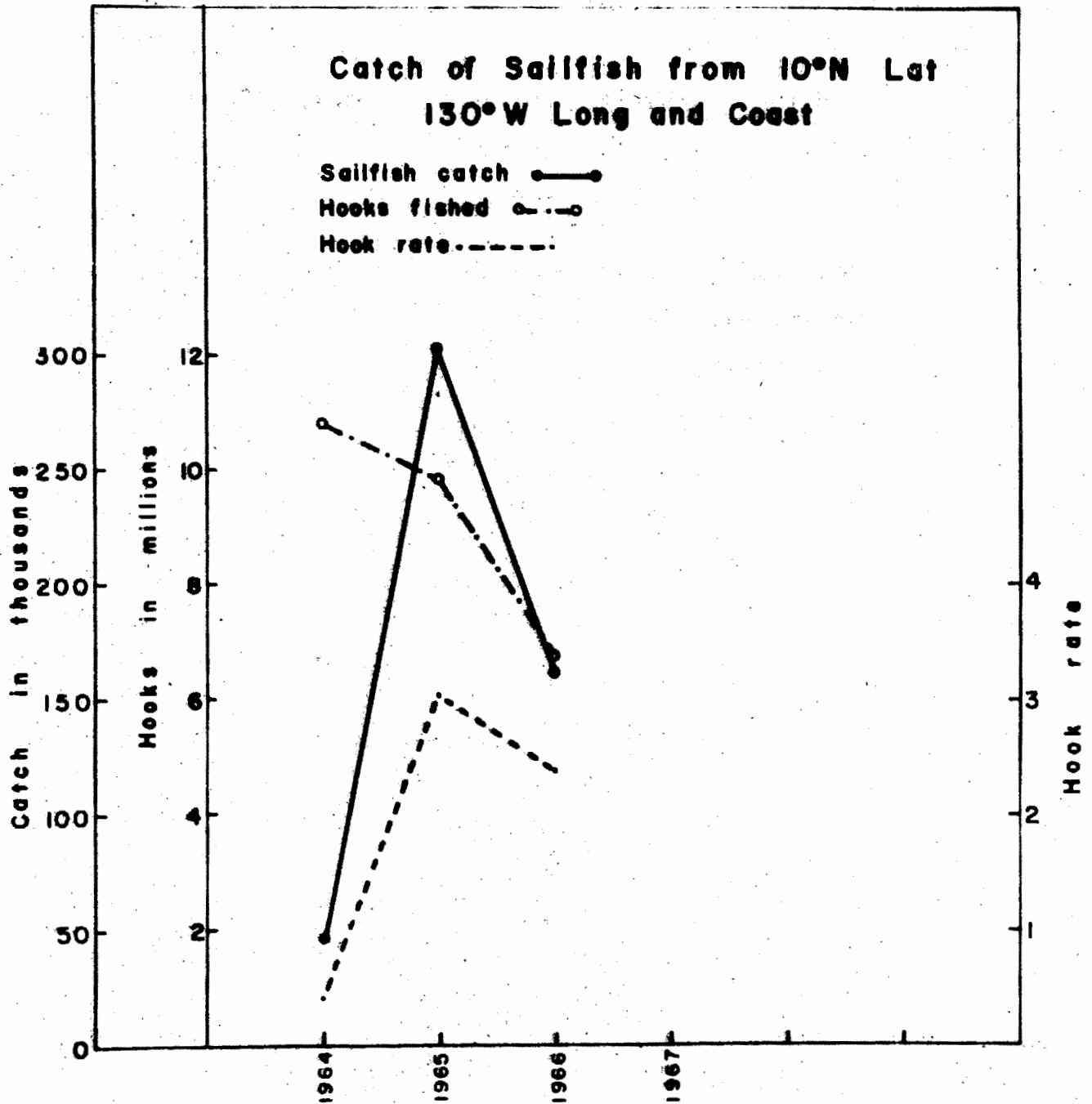


Fig. 6. Catch of sailfish, number of hooks fished, and hook rate expressed as catch per hundred hooks for the area bounded by 10° N. Lat., 130° W. Long., and the coast.

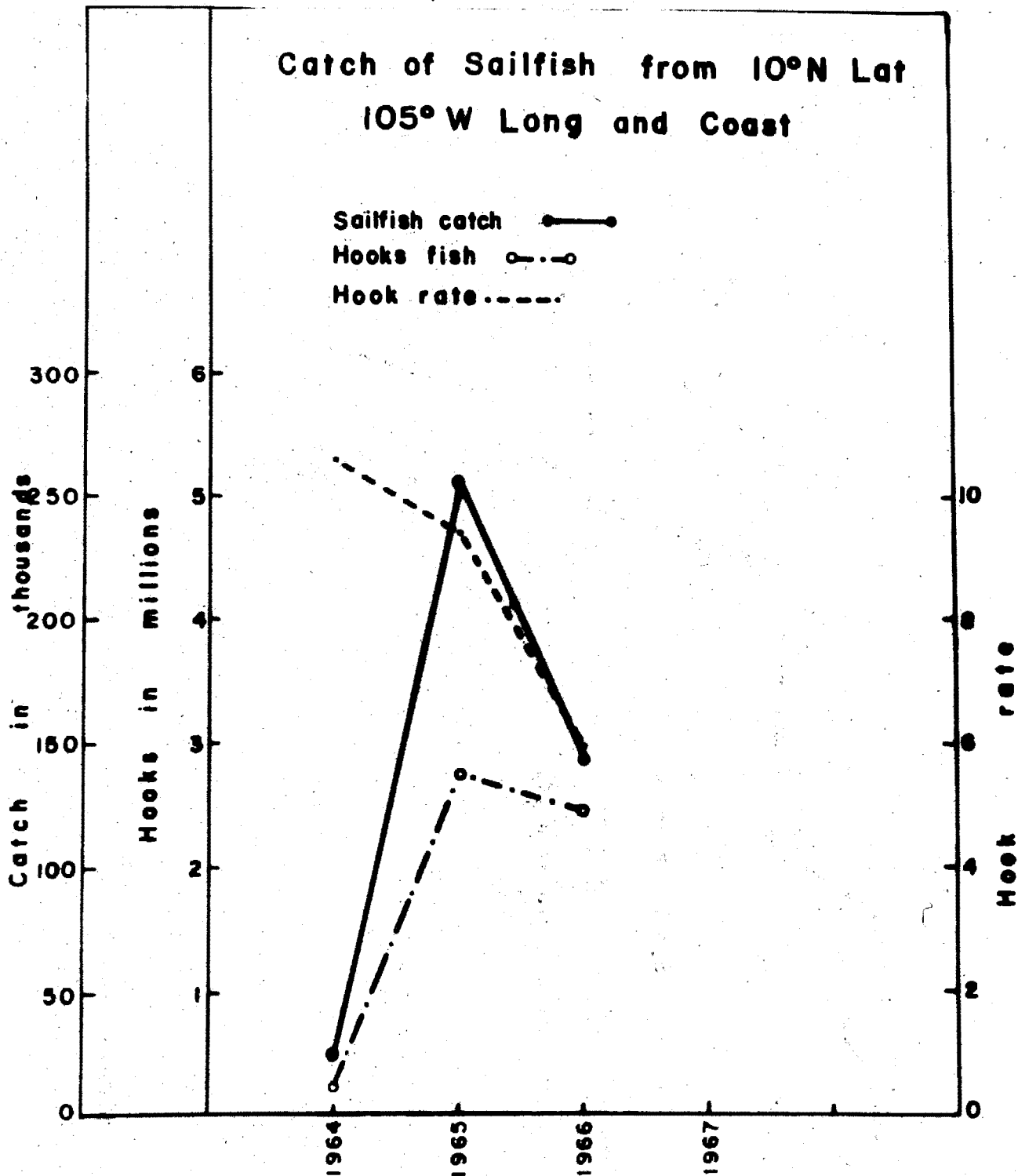


Fig. 7. Catch of sailfish, number of hooks fished, and hook rate expressed as catch per hundred hooks for the area bounded by 10° N. Lat., 105° W. Long., and the coast.

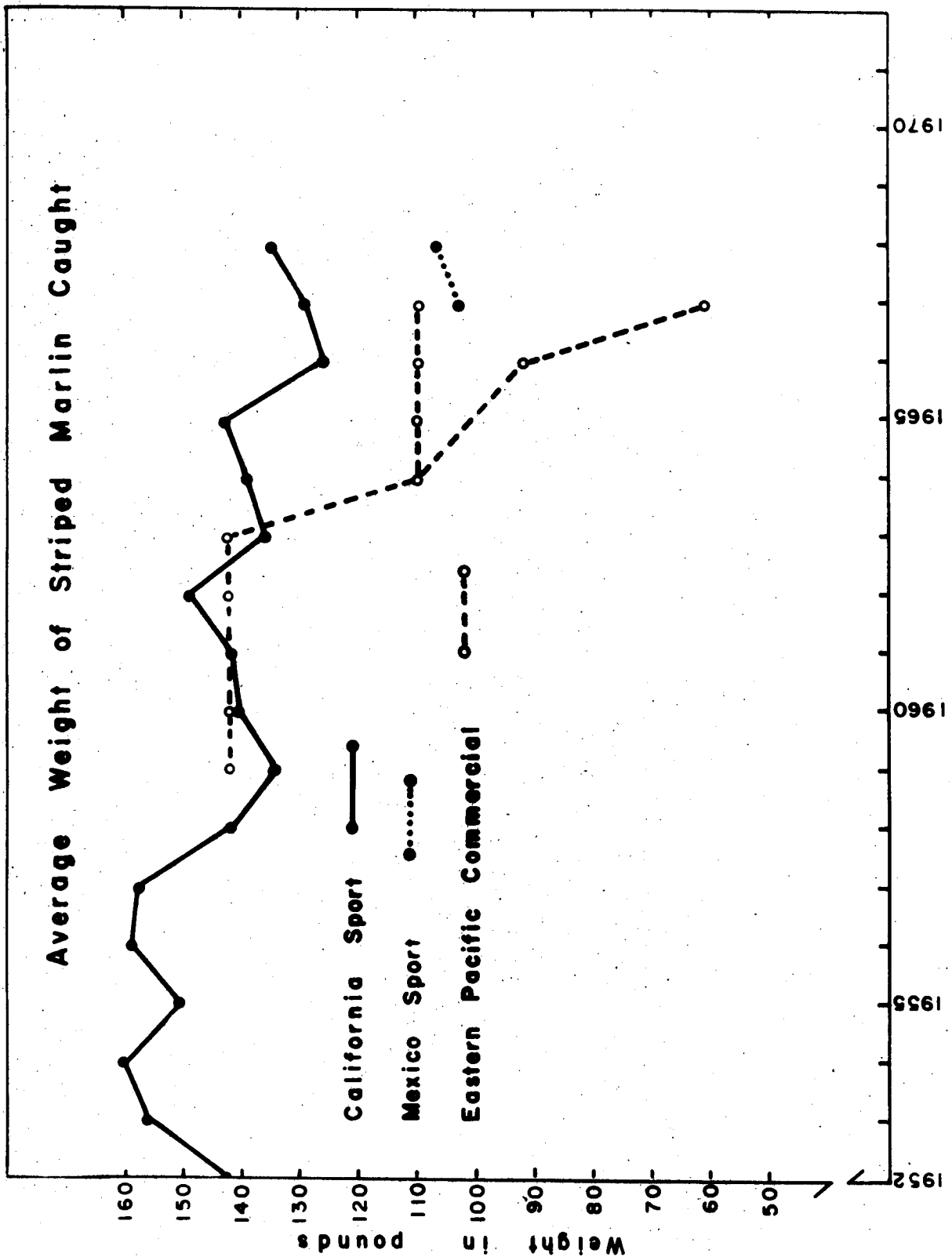


Fig. 8. Average weight of striped marlin caught in the California sport fishery, the Mexican sport fishery, and the Japanese commercial fishery for various years.

another scientific survey disclosed that the weight had been reduced to 110 pounds and this conversion factor has been used through 1967. The Japanese Tuna Fishing Society, however, reported an average weight of 92 pounds in 1966 and 61 pounds in 1967 (Shohara, 1968). It seems probable that these last two figures may represent marlin that are dressed and perhaps with heads removed. So far, this point has not been affirmed. The Mexican sport fishery catch of marlin averaged 103 pounds per fish at Mazatlan in 1967, and 107 pounds in 1968.

The considerable decline in size of fish is indicative of a high fishing rate and reduction in population size of this species. Of further consideration is the fact that the southern California catch did not decline in weight nearly as much as the Mexican fishery. This indicates that at least part of the population fished off southern California may be of stocks not fished by the Japanese longliners in Mexican waters. There is some indication of this from morphological measurements, but no conclusions can be made with the data as yet available.

It is not known what the long-term effects of the Japanese longline fleet will have on the sport fishery for these species. At present levels the populations support a sport fishery much less spectacular than before, but still better than most billfishing areas. A further reduction in these species, however, will severely restrict sport fishing in Mexican and United States waters. This would be a minor tragedy in lower Baja California since sport fishing is a major industry in this area. On the west coast of Mexico, the loss of the marlin-sailfish sport fishery would also be a tragedy since it is a major factor in the Mexican tourist industry. American sport fishermen would also lose valuable recreation opportunities if this fishery were lost. One ray of hope lies in the fact that smaller size marlin bring lower prices in Japan. This, coupled with a low hook rate and a long haul home, may reduce the fishing rate to a level where both fisheries can survive profitably. If this does not occur, some international cooperation should certainly be undertaken to keep populations of these species at a level where they will be profitable to sport and commercial fisheries.

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