UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
P. O. BOX 271
LA JOLLA, CALIFORNIA 92038

1978 NEWSLETTER

1977 COMBINED REPORT OF THE

COOPERATIVE MARINE GAME FISH TAGGING PROGRAM - 1977 RESULTS

PACIFIC BILLFISH ANGLER SURVEY - 1977 RESULTS

NOAA, National Marine Fisheries Service in cooperation with International Game Fish Association, the countries of the Pacific and their billfish anglers.

MARCH 1978

TO ALL PARTICIPANTS in the two programs and to others interested in conservation of billfish resources in the Pacific, this newsletter is presented so that you may be informed, on the progress of some of the research programs, and on the status of billfish resources in the Pacific as they relate to the "success" of billfishing.

In 1977 we combined the reports of the Cooperative Marine Game Fish Tagging Program and the Pacific Billfish Angler Survey because both reports contain information of interest to all billfishermen, and to reduce expense we will continue to combine these two reports into one publication. This report is in two parts: Part I, the results of the Cooperative Marine Game Fish Tagging Program, and Part II lists the results of the 1976 annual angler catch and effort survey for Pacific billfishing, the Pacific Billfish Angler Survey.

SOUTHWEST FISHERIES CENTER
ADMINISTRATIVE REPORT NO. LJ-78-4

PART I - COOPERATIVE MARINE GAME FISH TAGGING PROGRAM

1977 RESULTS

A major change in the tagging program operation occurred in 1977 with the increased participation of the State of New South Wales Fisheries (NSWF), Australia in support of the program for tagging and releasing black marlin off Cairns, Australia. A limited number of tags furnished by NSWF had been used in past years. In 1977 the NSWF tagging program under the direction of Dr. Julian Pepperell has taken over the support of the Australian tagging, and NSWF tags, the same type as furnished by National Marine Fisheries Service, have been used for about 60% of the black marlin tagged in 1977. We expect this percentage to grow as the current supply of NMFS tags in the Cairns area are used. The participation of Australia in support of the cooperative billfish tagging program will provide increased knowledge of the important sport and commercial black marlin resource in the southwest Pacific. As noted in previous reports the New Zealand Ministry of Agriculture and Fisheries is part of this cooperative program and tagging efforts in New Zealand are being handled by biologist, Mr. Peter Saul, located in Whangarei, New Zealand.

Another development is an increased interest in tagging and releasing of blue marlin off the Kona coast of Hawaii. Through the interest of some charterboat captains, the number of tagged blue marlin totaled 52 in 1977. This is a severalfold increase in the number of blue's ever tagged in previous years. To Mr. Haakon Nordaas who tagged and released 29 blue marlin and to Captain Bobby Brown and other captains in the Kona area, we wish to express our appreciation of your efforts.

The determination of billfish migration patterns and rates are largely dependent on tagging and to do this a large number of billfish must be tagged. For some species this presents no great problem, for they may be caught in large quantities with nets or other types of entrapment gear. Not so for the billfishes for they appear not to be available in dense concentration for seining or trapping at any one phase of their life history. If longline gear were used in a manner that would provide taggable fish, the tagging rate would be low and the cost high. The cooperation of marine anglers was requested to assist in solving a problem, and their response is a matter of record.

To all anglers and captains participating in the program in 1977 we wish to acknowledge our appreciation for your efforts in assisting us in developing information on the migratory rates and patterns of billfish in the Pacific so ultimately international management based on facts concerning the billfish resources can be a reality for these highly migratory species.

A number of anglers have requested comments about statements such as: 1) "tagging helps the longliners catch fish," 2) "why should I tag fish for the foreign longliners to catch," and 3) "all the fish die after tagging."

In answering item No. 1, fishery exploration and experiences over a long period of time by longliners has determined the seasonal timing for fishing in certain areas for the various billfish species. These fishing patterns are also related to associated catches of other highly migratory species such as the tunas. So the return of a billfish tag, for which the fisherman might obtain the location data of tagging some 6 to 12 months later, cannot determine day-to-day fishing strategy. It may ultimately add to the fisherman's general knowledge, as it does our own, regarding general migratory patterns and rate of migration but only after several years of recovery data have been analysed and findings published. For item No. 2, we are interested in determining migration patterns and rates, and the commercial longline fleet operates through the Pacific, over the entire geographical range of billfish distribution thereby providing a greater opportunity for recovery at locations not normally fished by the game fish angler. They catch many times the number of billfish than does the sportfishery, therefore, the commercial longline fishery will be the major source of tag returns, and they will catch them, tagged or not. No. 3, all billfish do not die after tagging and releasing. Recent studies in the Atlantic tend to refute this charge. Certainly, the mortality rate due to hooking is substantial, but it is believed that tagging would add little to this rate. On tag cards we have noted comments for striped marlin "stomach out of mouth" and black marlin with the note "condition poor," yet these tagged fish were recaptured later. Questions concerning the tagging program can be answered, and we must evaluate the purpose and objectives of the program and its relation to the need for knowledge about the international billfish resources that are valuable to both the commercial and sportfisheries. One conclusion is evident, if we need to have a better understanding of the migration patterns and rates for management purposes, the only positive, direct, method is to apply tags and observe and evaluate the results.

In 1977 the number of billfish reported tagged by having tag cards received by the Southwest Fisheries Center, La Jolla, California by December 31, 1977 was 927, considerably less than reported tagged in 1976 (1,341). However, a number of tag cards for black marlin are known to be in Australia. Based on information supplied by Mrs. D. Nielsen of the Queensland Game Fishing Association, an estimate of about 250 cards for black marlin may be received later, boosting the 927 total and the total of black marlin tagged off Queensland, Australia. The number of fish tagged by the program in 1977, including the 927 billfish, plus roosterfish, dolphinfish, yellowtail and other species such as sharks, wahoo and sturgeon, totalled 1,122. Cards and recoveries received after January 1, 1978 will be reported next year.

Of the total number of billfish tagged by cooperating marine anglers, striped marlin (Tetrapturus audax) accounted for 417 or 45% of the total billfish tagging. Black marlin (Makaira indica) with 339 being tagged accounted for 37%. Sailfish (Istiophorus platypterus) accounted for 108 for 12% of the tagging total and 62 blue marlin (Makaira nigricans) for 7% and 1 shortbill spearfish (Tetrapturus augustirostris).

A breakdown of billfish and other species tagged by geographic area in 1977 compared to records in the areas having tagging recorded in 1976, is as follows:

	1976	1977	Gain/ (Decrease)
Striped marlin			
Southern California, USA	58	48	(10)
Baja California, Mexico	568	359	(209)
Black marlin			
Queensland, Australia	516	339	(177*)
Baja California, Mexico	2	0	(2)
Panama	2	0	(2)
Blue marlin			
Baja California, Mexico	23	10	(13)
Hawaiian Islands, USA	2	52	50
Sailfish			
Baja California, Mexico	23	61	38
Manzanillo, Mexico	4	5	1
Guaymas, Kino area	9	15	6
Mazatlan, Mexico	12	3	(9)
Acapulco, Mexico	3	9	6
Panama	2	0	(2)
Queensland, Australia	11	9	(2)
Shortbilled spearfish			
Hawaiian Islands, USA	-	1	-

Other species tagged by general area:

Eastern Pacific:	Black seabass, thresher shark, blue shark, California halibut, white sturgeon, yellowtail, grouper, roosterfish (29), dolphinfish (34), wahoo and yellowfin tuna.
Central Pacific:	Mako shark.
Southwest Pacific:	Mako shark (N.Z., 52), blue shark, hammerhead shark, thresher shark, bonito (skipjack tuna), N. bluefin tuna, dogtooth tuna, cod (brownspot), bronze whaler shark and bottlenose dolphin.

* Number of tag cards still in Australia, see note in text.

RECOVERIES

Recoveries received or reported to the Southwest Fisheries Center in 1976 (January 1 to December 31, 1976) totalled 19 fish.

From tagging off Queensland, Australia 11 black marlin were recovered; in addition, 3 black marlin recoveries obtained through cooperative tagging by the New South Wales Fisheries not previously listed in the tagging report are given, and this boosts the recoveries of black marlin to 14 reported in 1977. In the eastern Pacific, recoveries included two striped marlin and 1 wahoo tagged off Baja California, Mexico. Off New Zealand a mako shark and a yellowtail kingfish (Seriola grandis) were recaptured.

A tabular list of recoveries by species is given in Table 1.

GARDINER FOUNDATION AWARD PROGRAM

This program is sponsored by the Gardiner Foundation, Oakland, California with the cooperation of the National Marine Fisheries Service's Southwest Fisheries Center, La Jolla, California. Mr. Thomas Gardiner was an active sportfisherman and conservationist in the San Francisco/Oakland area and his estate has provided funds for the conduct of the award program and other activities concerning the study and conservation of sportfishery resources.

Awards are made to Mexican sportfishing boat captains who tag and release the most billfish (marlin or sailfish) during the calendar year. The awards are based on a tabulation of Mexican captains' names as they appear on the tag cards received at the SWFC, for the period January 1, 1977 to December 31, 1977. Some of the tag cards do not have the names of the captain, and therefore cannot count in the award program. The contest award area, the lower peninsula of Baja, covers from La Paz to Cabo San Lucas.

Awards for each area consists of a cash award: 1st-$100.00 U.S., 2nd-$80.00 U.S. and 3rd-$60.00 U.S., and 4th through 6th-$40.00 U.S. plus an engraved plaque to the first six winners. The fishing resort having the winning captain receives an engraved plaque.

Winners of the 1977 Gardiner Foundation Awards are:

Resort Winner - Hotel Rancho Buena Vista

Captain:	1st	-	Jesus Araiza Ruiz:	Billfish tagged	46
				Striped marlin	42
				Blue marlin	1
				Sailfish	3
	2nd	-	Manual Araiz Cota:	Billfish tagged	29
				Striped marlin	29

3rd - Lino Perez Cota: Billfish tagged 23
Striped marlin 17
Sailfish 6

4th - Jose Ortiz Ruiz: 22

5th - Gilberto Castro Collins: 17

6th - Antonio Vargas: 12

A total of 42 individual captains were credited with tagged and released fish in 1977.

PART II - PACIFIC BILLFISH ANGLER SURVEY

Conducted in cooperation with the International Game Fish Association and billfish anglers throughout the Pacific.

Since 1969, the National Marine Fisheries Service has conducted, in cooperation with big-game angling clubs throughout the Pacific, an annual angler catch-effort survey of billfishing. This survey provides a rough measure of fishing success in different sportfishery areas of the Pacific.

In 1975, the billfish angler survey program in the Pacific became an annual cooperative survey with the International Game Fish Association. Marine game fish anglers who had fished in the Pacific for billfish were asked to complete a postcard form which requested information of the number of days the angler engaged in billfishing, and the catch of billfish that he/she made. Both the effort (days fishing) and catch (numbers caught by species) data has been requested by quarter, since 1975.

Records on the trend of the catch rate for marine game species are few in number. However, the commercial catches of billfish in the Pacific, taken principally by longline fishing gear, are reasonably well documented over the years by species, area caught, days of fishing, and number of hooks fished. These worldwide longline fishery records showed that the world's billfish catch rose rapidly in the early 1960's to a peak of about 80,000 MT in 1965. The catches declined and in the 1970's the catches are about the 50,000 MT level. The commercial catch composition worldwide for billfish is approximately 50% striped marlin, 30% sailfish with the remaining 20% composed of blue and black marlin and spearfish. The proportion of billfishes caught in the Pacific tuna/billfish longline fishery is about 15%. The longline fishery is not the only type of fishing gear used to capture billfish. In the western Pacific. harpoons, set trap nets, and drift nets are used commercially for the taking of billfishes.

Location	Angler days	No. of billfish	Fish/Day	Days/Fish	Percent Major	Species
So. California, USA	2,848	275	.096	10.36	SM	96%
Baja Calif. (tip) Mex.	1,785	1,144	.640	1.56	SM	78%
Puerto Penasco, Son. Mex.	2	0	--	--		--
Kiño Son., Mexico	39	28	.717	1.39	SF	100%
Guaymas, Son., Mex.	59	14	.237	4.21	SF	64%
Mazatlán, Jal., Mexico	150	140	.93	1.07	SF	84%
San Blas, Nyt., Mexico	35	0	--	--		--
Puerto Vallarta, Nyt., Mex.	4	4	1.00	1.00	SF	75%
Manzanillo, Col., Mexico	88	41	.46	2.14	SF	97%
Acapulco, Gor., Mexico	96	50	.57	1.92	SF	97%
Costa Rica	78	100	1.28	.78	SF	100%
Panama	293	235	.80	1.25	SF	79%
Ecuador	217	179	.83	1.21	SF	81%
Tahati	48	12	.25	4.00	BLM	100%
Hawaii	1,826	201	.11	9.08	BLM	76%
Guam	70	8	.11	8.75	BLM	100%
Fiji Islands	63	3	.05	21.0	SF	100%
New Guinea	61	19	.31	3.21	SF	100%
New Zealand	48	12	.25	4.00	SM	75%
Australia	689	419	.61	1.64	BKM	92%
Thailand	15	4	.27	3.75	BKM	100%
Overall Totals	8,532	3,119	.365	2.77		

SM = striped marlin; BKM = black marlin; BLM = blue marlin; SF = sailfish.

One of the major problems in evaluating the impact of fishing, both sport and commercial, on the resources of the various billfish species is a reliable estimate of the total number of fish taken each year by sport anglers in the Pacific. This basic bit of information is one that should be compiled for the Pacific. The billfish sportfishery in the northeastern Pacific off Mexico and the United States is reported to capture at least 10,000 fish each year, however, no accurate totals for sport-caught billfishes in the eastern Pacific are available. Some approximation of the black marlin catch off Queensland, Australia would indicate totals of 500 and 1,000 fish or more per year are taken. The sport billfish catch in the Hawaiian Islands is reported to total up to 5,000 fish per year. The number of billfishes taken by the sportfishery is a fraction of that landed by the commercial fishery. However, the economic value of the sportfishery resulting from the expenditure for goods and services by the thousands of billfish anglers in the pursuit of the sport is probably substantial.

Analysis of 1976 billfish angler survey catch and effort data shows an increased total effort of 8,532 angler days catching 3,119 billfish. This is an overall catch rate of 0.36 fish per day or 2.7 days fishing per fish. The 1976 data are nearly comparable to those observed in 1975 when the catch rate was 0.38 fish per day or 2.6 days fishing per fish. However, this rate continues to be well below the 1969-1972 average of 0.55 fish per day, or 1.80 days per billfish. The amount of fishing effort recorded by the survey in 1976 was up from that recorded in 1975--8,532 angler days (1976) compared to 7,303 angler days reported in 1975.

Angler responses were received for billfishing in not only the major fisheries but in many locations not normally associated with billfishing by most billfish anglers. Numerous inquiries have been received concerning the results from areas other than these major fishing areas listed in the past. The following is the survey results received in 1976 for all locations.

PACIFIC BILLFISH ANGLER SURVEY - 1976

Breakdown of survey response, by location, reported: This is an average data over the total season, therefore the rates given are not necessarily the catch rates observed during the major season of billfishing. Some areas may not be adequately represented as the sample may be small and fishing reported was not during the "best" months of the year. During the current year we are attempting to increase the sample size and your cooperation is needed to see that all billfish anglers fishing in 1977 complete a survey form.

TRENDS IN CATCH-PER-UNIT-EFFORT

A graphic presentation of the catch-per-angler-day data for the major billfishing areas, 1969 through 1976, is given for striped marlin (Tetrapturus audax) in Figure 1; for sailfish (Istiophorus platypterus) in Figure 2; and for black marlin (Makaira indica) in Figure 3. The number of angler days represented in the points are given on the graphs.

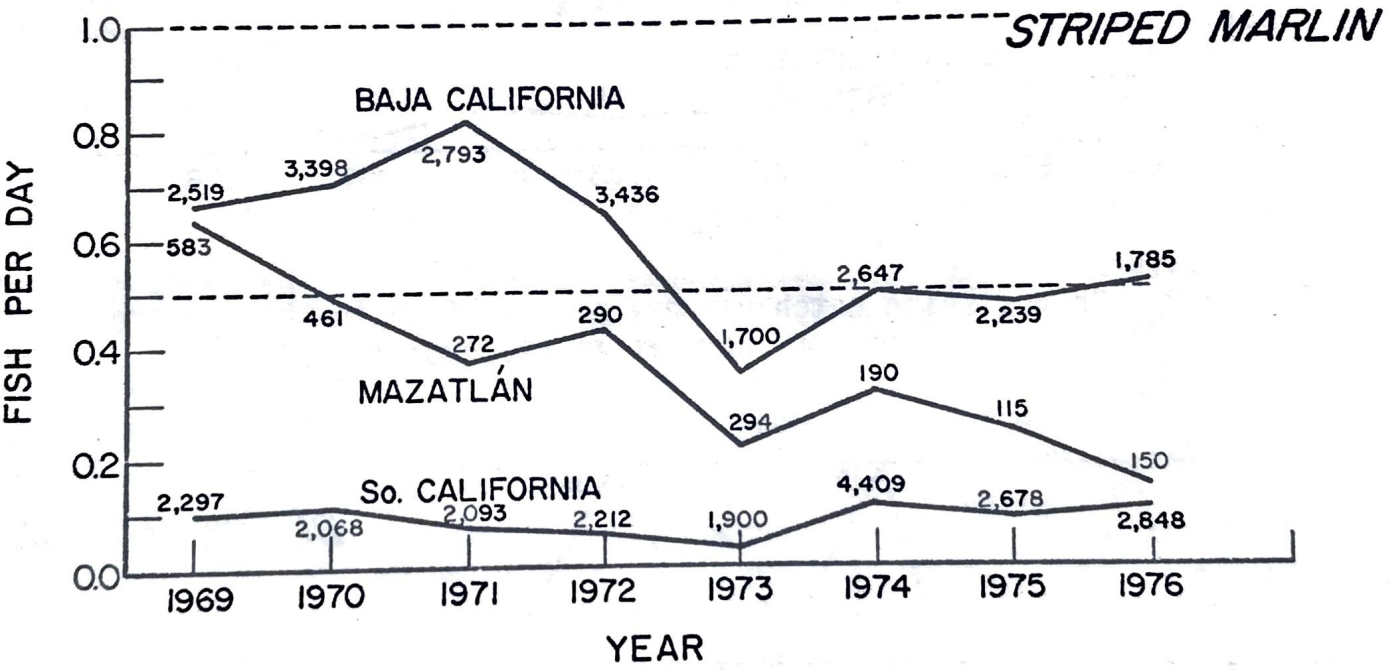

Figure 1. Sportfishing catch per day for striped marlin in the eastern Pacific. Numbers on graph represent angler days.

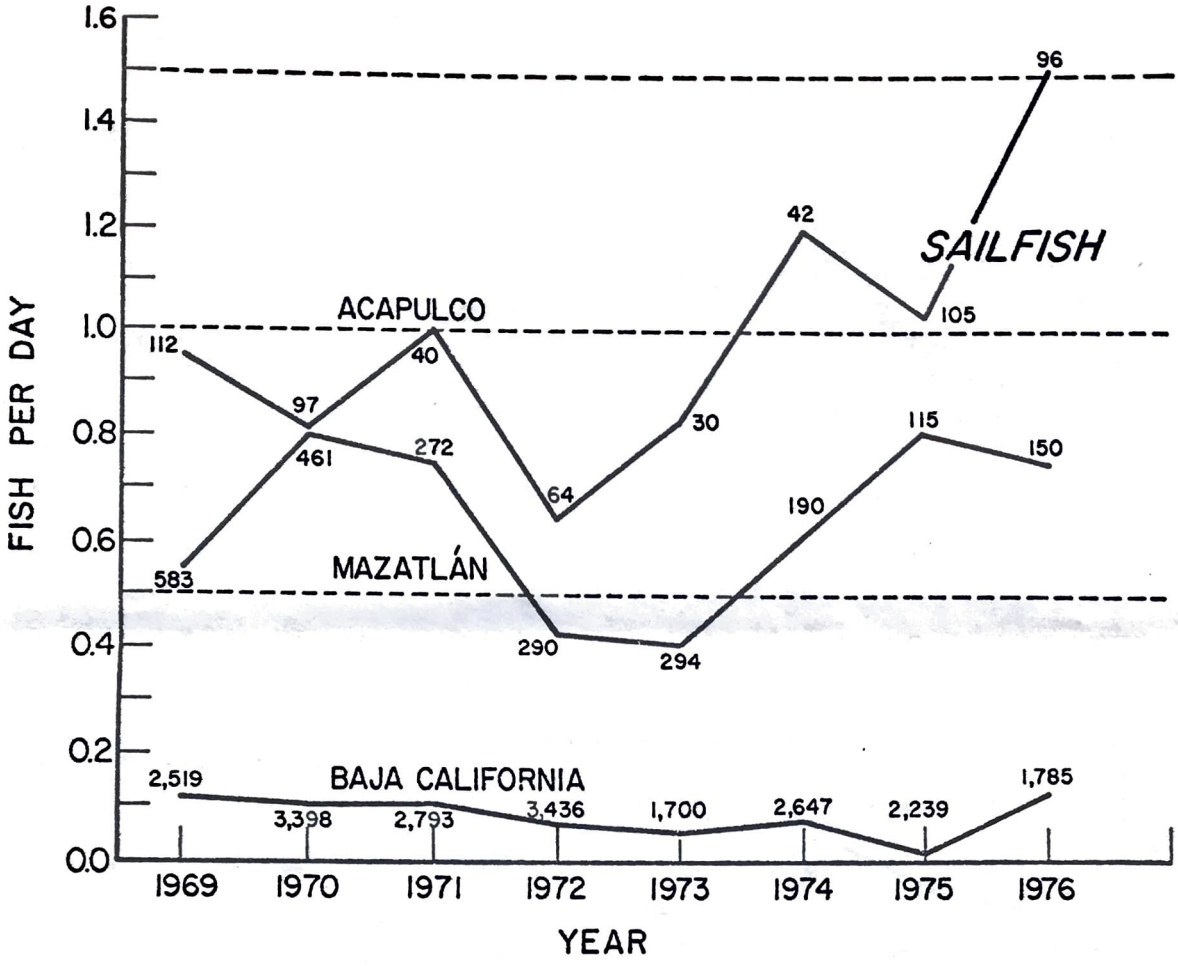

Figure 3. Sportfishing catch per day for sailfish in the eastern Pacific. Numbers on graph represent angler days.

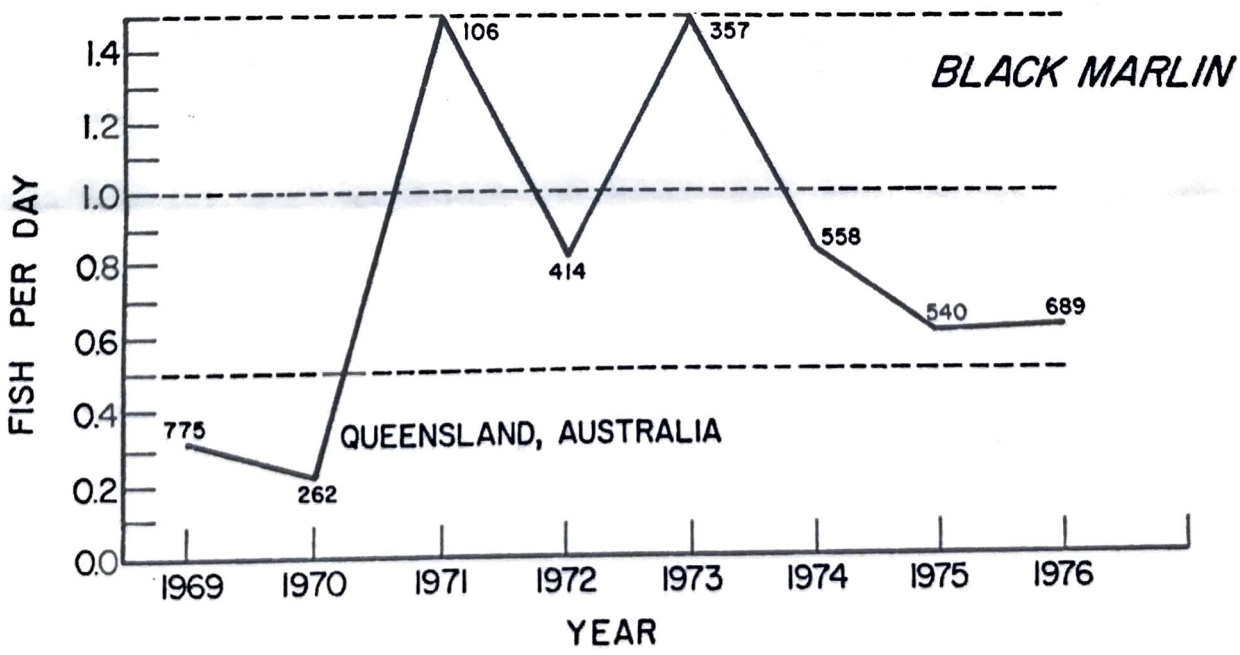

Figure 4. Sportfishing catch per day for black marlin off Queensland, Australia. Numbers on graph represent angler days.

SUMMARY FOR THE MAJOR SPECIES

Striped Marlin - Eastern Pacific

Catch and effort results for striped marlin fishing off southern California has remained relatively constant throughout the survey years. The rate appears to vary about the 0.1 fish-per-day level, or about 10 angler days of fishing per fish. Though the southern California trend shows visually less of a slope for 1969 to 1973 than the Baja California, Mexico trend, the rate of decline is near 60% (0.10 to 0.04), and is comparable to that observed in the Baja fishery where the decline was from 0.67 to 0.35 or a 52% decline in catch per angler day. The lowest rate was observed in 1973, increasing sharply in 1974, and the 1976 rate is one of the highest, 0.96 fish per angler day. One possible explanation of the southern California recovery is that it may recruit a portion of its catch from the west, or from central north Pacific stocks which probably were subjected to less concentrated fishing effort specifically for striped marlin during the period of late 1960's and early 1970's as were the major stocks in the eastern Pacific.

Angler catch rates, at Mazatlán have shown a consistent decline since 1969, from a high level of about 0.64 fish per angler day in 1969 to about 0.14 in 1976, a lower level than was observed in 1973, a "poor year" of fishing for all striped marlin fishing areas in the northeast Pacific.

Fishing about the southern tip of Baja California, Mexico, a fishing location nearer the center of distribution of striped marlin in the northeastern Pacific than any other popular fishing area, showed an increase in catch rate 1969 through 1971. After 1971 a sharp decline in catch per angler day is evident through 1973. Declining from a high of over 0.80 fish per angler day in 1971 to a low of 0.35 in 1973. This decline is equivalent to an increase in fishing time from 1.25 days per fish to 2.85 days per fish. Since 1973 the catch rate has recovered slightly from the 0.35 level to the 0.5 fish per angler day level observed in 1976. The catch curves for striped marlin appear to have a general uniformity of trend, downward from 1969 to 1973 with some recovery since 1974, with the exception of the port of Mazatlán.

Sailfish

The catch trends of sailfish show wide fluctuations for the major fishing areas of Acapulco and Mazatlán, also for the area about the lower tip of Baja California, however, the Baja area is further from the general center of stock distribution in the eastern Pacific than the mainland ports to the south. A general low period in the catch curve was evident during the years 1972 and 1973. Since then the catch rates have increased in 1976 in all three areas and to a level higher than the 1969-1976 average level at both Mazatlán and Acapulco. The catch-per-angler-day in 1976 at Acapulco was 1.52 fish per day, highest level observed during the surveys. In contrast to the size of samples obtained for

striped marlin fishing off southern California the sample size of anglers fishing from mainland Mexico and other Central American countries where sailfish are frequently taken is small. However, an upward trend of catch rates since 1973 for the major fishing areas is evident.

Black Marlin

A substantial increase in the catch per angler day was recorded off Cairns, Australia in 1971 over that observed in 1969 and 1970. Increased efficiency of the sport fleet may be a factor since the fishery for black marlin is one of recent popularity. However, for such a substantial increase, an increase in availability or stock size would be suspected. An average of about 1.2 fish per angler day was recorded for the period 1971 through 1974. Since that time the catch rate was declined to about the 0.60 level in 1975 and 1976. This represents about a 50% reduction in catch rate from the 1971-1974 level.

The black marlin resources in the southwestern Pacific are subjected to a commercial longline fishery that targets in this species in the same general area of the sportfishery. High concentrations of black marlin are present near the Barrier Reef areas in the Coral Sea and it is reported to be a spawning area and excellent catches of large fish are made by the sportfishery.

Angler catch rates have declined in recent years and it is possible both commercial and sportfisheries are impacting on the stock of black marlin, which is not large, in comparison to the biomass of other billfish species in the Pacific such as the striped marlin, blue marlin, sailfish and swordfish.

Billfish Angler Survey Form

Enclosed you will find a billfish angler survey form for the 1977 Pacific Billfish Angler Survey. Remember this survey is for billfishing only, and for the year 1977 only. I again emphasize that we would like to have an honest, accurate-as-possible response from you, for the number of days in each quarter of 1977 you went billfishing and the number of billfish caught (boated or released). The accuracy of the resulting data depends on you. This survey is not to see which area has the highest catch rate, but to obtain a truthful measure of the impact of commercial and sportfishing on the billfish anglers' success throughout the Pacific.

Please complete only one form per angler for any billfishing in 1977 only.

We are attempting to expand the statistical base of the survey for 1977 catches. If you need additional forms, or your club needs them for distribution, please write me and I will get them to you promptly.

United States Government regulations require periodic revision of our mailing list for this report. If you wish to receive the next annual report, return the Angler Survey Card with your name and mail or "zip"

Tagged			Recovered			
Species/location of tagging	Tagged by	Date (month, day/year)	Location	Recovered by	Distance recovered from point of tagging (miles)	Days at large
STRIPED MARLIN						
(247) 14 mile bank, S. of Newport, California, U.S.A.	Mr. Ed Martin Santa Ana, Ca., U.S.A. Capt. - B. King	11/11/76	Lat. 08°00'S Long. 119°25'W	Kotoshiro Maru No. 15 Capt. Setsuo Fukuda	2,520	80
(248) 6 mm E. of Rancho Buena Vista, Baja Californa Sur, Mexico	Mr. H.L. Consley Philadelphia, Pa., U.S.A. Capt. - L. Verdugo	5/31/77	Off Rancho Buena Vista, Baja California Sur, Mexico	Mr. Howard Sherman Anaheim, Ca., U.S.A. (Capt. unknown)	5	7
WAHOO						
(252) Golden Gate Bank, Baja California Sur, Mexico	Mr. Claude P. Williams Long Beach, Ca., U.S.A. Capt. - D. Brady	1/24/77	Off Cabo San Lucas, Baja Californa Sur, Mexico	Mr. James Waggoner Riverside, Ca., U.S.A. Capt.	10	21
YELLOWTAIL KINGFISH S. grandis						
(253) Cape Brett, New Zealand	Mr. D. L. Smith Remuera, New Zealand	4/30/76	Near Thames, New Zealand	Mr. A.M. Greenwood Thames, New Zealand	130	265
MAKO SHARK						
(254) Bay of Islands, New Zealand	Mr. Tony Probst Tauranga, New Zealand	6/3/76	Near Whitianga, New Zealand	Mr. T. White Whitianga, New Zealand	125	305
(217) Ninepin, Bay of Islands, New Zealand	Mrs. J.A. Mitchell * Russel, New Zealand Capt. R.M. Mitchell	6/6/76	Off Coopers Beach near Mangonui, New Zealand	Mr. A. Adams Mangonui, New Zealand	40	127

* Note-the tagger not previously reported

Tagged			Recovered			
Species/location of tagging	Tagged by	Date (month, day/year)	Location	Recovered by	Distance recovered from point of tagging (miles)	Days at large
(243) #9 Ribbon Reef, N.Q., Australia	Mr. Henry Breyer New York, New York, U.S.A. Capt. - P. Bristow	9/21/76	Lat. 16°50'S Long. 147°05'E	Kompira Maru No. 8 Mitsugi Sarto (fishing master)	140	68
(244) Euston Reef N.Q., Australia	Mr. P. Whelan Holloway Beach, N.Q., Australia Capt. - B. Pipnich	11/26/75	Lat. 13°58'E Long. 145°03'E	Kaiyo Maru Capt. Ryohei Ikeda	180	345
(245) Opal Reef, N.Q., Australia	Mr. John Pilkington Sunnybank, N.Q., Australia Capt. - N. Jackson	11/4/76	Lat. 15°38'S Long. 146°10'E	Yaksushi Maru No. 38 Capt. Shin Kasai	36	3
(246) #7 Ribbon Reef N.Q., Australia	Mr. D. Shepherdson Brisbane, Australia Capt. - P. Wright	9/15/76	Lat. 16°37'S Long. 146°40'E	Yakushi Maru No.38 Capt. Shin Kasai	98	56
(249)* Opal Reef, N.Q., Australia	Mr. J. Packer U.S.A. Capt. - F. Thompson	10/12/76	Yonge Reef near Lizard Island, N.Q., Australia	Steve Zuckerman Los Angeles, Ca., U.S.A. Capt. L. Woodridge	90.7	362
(250)* Linden Bank, N.Q., Australia	C. Bellamy Rotorua, New Zealand Capt. - F. Thompson	9/13/75	Lat. 21°10'S Long. 153°55'E	Sagami Maru Captain Mamoru Junguji	262	123
(251)* #10 Ribbon Reef, N.Q., Australia	Mr. F. Incho Coral Gables, Fla., U.S.A. Capt. -	10/5/74	40 mi. SW of Samarai, Eastern Papua	Russell W. Hay Port Moresby, New Guinea	302	43

* These tags issued by New South Wales Fisheries, Australia and were not reported in previous issues of the tagging report.

Table 1. Tag and Recovery Data - based on recovery information received at the Southwest Fisheries Center in 1977

Tagged			Recovered			
Species/location of tagging	Tagged by	Date (month, day/year)	Location	Recovered by	Distance recovered from point of tagging (miles)	Days at large
BLACK MARLIN						
(236) Agincourt Reef, N.Q., Australia	Mr. Peter D. Furnell Toorak, Victoria, Australia	9/27/74	Lat. 21°30'S Long. 155°49'E	Sagami Maru Capt. Mamoru Jinguji	665	433
(237) #10 Ribbon Reef N.Q., Australia	Ms. Denise Etheridge Virginia Beach, Va, U.S.A. Capt. - P. Wright	9/6/75	Lat. 17°58'S Long. 147°30'E	Etsuzan Maru Capt. Tetsuya Ooyagi	220	413
(238) #10 Ribbon Reef N.Q., Australia	Mr. E. J. Gould New York, N.Y., U.S.A. Capt. - G. Hallarm	10/30/75	Lat. 13°44'S Long. 144°44'E	Etsuzan Maru Capt. Tetsuya Ooyagi	90	366
(239) Opal Reef, N.Q., Australia	Mr. Sidney A. Lindsay, Jr. San Antonio, Texas, U.S.A.	11/11/74	Lat. 13°38'S Long. 145°02'E	Etsuzan Maru Capt. Tetsuya Ooyagi	162	357
(240) #10 Ribbon Reef N.Q., Australia	Mr. Jo Jo DelGuerico Ft. Lauderdale, Fla., U.S.A. Capt. - P. Bristow	10/9/75	Lat. 14°05'S Long. 145°21'E	Etsuzan Maru Capt. Tetsuya Ooyagi	49	397
(241) Opal Reef, N.Q., Australia	Mr. H.F. Samuels Cairns, Australia Capt. - D. Wallace	11/18/74	Lat. 14°05'S Long. 145°21'E	Etsuzan Maru Capt. Tetsuya Ooyagi	126	722
242) Linden Bank N.Q., Australia	Mr. A.E. Versakis (address unknown) Capt. - D. Wallace	11/12/76	Lat. 20°00'S Long. 153°44'E	Sagami Maru Capt. Mamoru Jinguji	495	38

code if applicable. If you did not billfish in 1977 and wish to continue to receive this report, indicate on the card "no billfishing," list your name and address and your name will be retained on the mailing list. Those individuals fishing and returning the survey form will be automatically retained on the mailing list.

Again, the best in billfishing.

James L. Squire, Jr.
Fishery Biologist (Research)

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