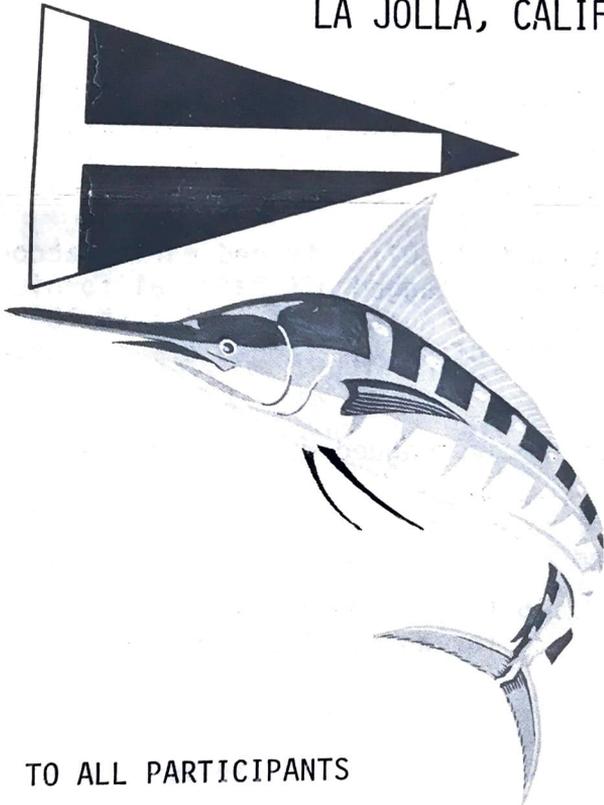


UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
P.O. BOX 271
LA JOLLA, CALIFORNIA 92038



COMBINED REPORT

PACIFIC BILLFISH ANGLER SURVEY -
1974 RESULTS

COOPERATIVE MARINE GAME FISH
TAGGING PROGRAM - 1975 RESULTS

NOAA, National Marine Fisheries Service
in cooperation with International Game
Fish Association and Billfish Anglers
throughout the Pacific.

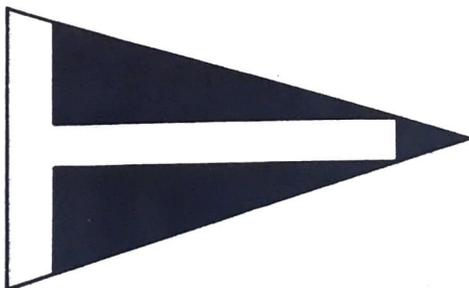
MARCH 1976

TO ALL PARTICIPANTS

In the past, the annual progress of the Cooperative Marine Game Fish Tagging Program has been reported to those individuals who have tagged fish within the past year, or to those who have participated in the tagging program in the past and have indicated an interest in remaining on the mailing list, and to those responding to a request for billfishing information in the annual Pacific Billfish Angler Survey. To reduce expense and to keep all informed on the progress of these two phases of billfish research, we are combining the annual tagging report with the annual report of the billfish angler catch/effort survey.

This report is in two Parts: Part I, the results of the Cooperative Marine Game Fish Tagging Program; Part II lists the 1974 results of the annual angler catch and effort survey for Pacific billfishing.

SOUTHWEST FISHERIES CENTER
ADMINISTRATIVE REPORT NO. LJ-76-2



PART I - COOPERATIVE MARINE GAME FISH TAGGING PROGRAM

1975 RESULTS

In 1975 the number of billfish tagged by marine anglers was slightly less than the number tagged in 1974 (1975 - 1,307 billfish; 1974 - 1,616 billfish). The total of all species tagged in 1975 was 1,486, down slightly from the 1,697 tagged in 1974.

Of the total number of billfish tagged (1,307), striped marlin accounted for 665 or 51% of the tagging (647 being tagged off Baja California, Mexico), black marlin 435 or 33% (433 off Australia), sailfish 188 or 15%, blue marlin 18 or 1%, and one swordfish was tagged off southern California, USA.

A breakdown of billfish and other species tagged during 1975 is as follows:

<u>Striped marlin</u>	<u>1975</u>
Southern California, USA	16 (73 tagged in 1974 for an all time record)
Baja California, Mexico (about the southern tip)	647
Mazatlán, Mexico	2
<u>Black marlin</u>	
Baja California, Mexico	1
Panama	1
Australia (North Queensland)	433
<u>Blue Marlin</u>	
Baja California, Mexico	16
Hawaii, USA	2

<u>Sailfish</u>	<u>1975</u>
Baja California, Mexico	87
Guaynas, Mexico	6
Mazatlán, Mexico	12
San Blas, Mexico	1
Manzanillo, Mexico	1
Acapulco, Mexico	61
Costa Rica	15
Panama	6

(Plus one broadbill swordfish tagged off southern California.)

In addition to tagging the billfish species, marine anglers have been encouraged to tag yellowtail and roosterfish in the Gulf of California and about the lower one half of Baja California, Mexico. This year 61 roosterfish were tagged. Other species reported tagged were white sturgeon (35, San Francisco Bay), skipjack tuna, queenfish, rainbow runner, bronze whaler, large scale tuna, shark (sp?), yellowtail, mako shark, turrum (jack), sand bass, and bluefin tuna.

RECOVERIES

An important step in obtaining additional tag recoveries from Japanese, Korean, and Taiwanese longline fishermen is the printing of new tag return posters in Japanese and Korean. A tag return poster is being planned for distribution in Taiwan. Since the Japanese and Korean longliners actively fish for billfish throughout the Pacific, we have arranged to have specified collection points for recovered tags in Japan, and in American Samoa, where many Korean longliners unload. We expect these new posters to increase our rate of tag recoveries in the future. We have again obtained excellent cooperation in return of recovered tags by the Far Seas Research Laboratory, Shizimu, Japan (Dr. Susume Kume) and by the Kanagawa Prefectural Experiment Station, Kanagawa Prefecture, Japan (Dr. Eiji Hanamoto).

Recoveries obtained during the calendar year of 1975 are listed in Table 1.

In the 1974 Annual Report information was given on how to obtain a copy of the "Proceedings of the International Billfish Symposium, 1972, Kona, Hawaii." I hope many of you obtained copies of this

excellent summary of billfish knowledge. For those that are particularly interested in the results of billfish tagging in the Pacific I have a quantity of reprints available on the results of the Pacific phase of the tagging program to the year 1972. The results of the eastern Pacific striped marlin tagging are summarized, and some results of black marlin tagging (to 1972) off Australia are given. However, many recoveries have been made of tagged marlin since, increasing our knowledge of the migration patterns of these giant game fish. If you wish a reprint, write me at the address listed on the last page.

Again, taggers are requested to return all completed tag cards. The tagging of a billfish is not complete unless the card is returned. The return of a tag recovery to us has little meaning, unless we can match up the tag with the tagging information. You will note on Table 1 that we have one unknown tag recovery for 1975.

GARDINER FOUNDATION AWARD PROGRAM

Each year, through the auspices of the Gardiner Foundation, Oakland, California, awards are made by NOAA/NMFS to Mexican sportfishing boat captains who tag and release the most billfish. This program of the Gardiner Foundation of providing engraved plaques and cash awards to encourage the tagging and release of billfish, for the purpose of developing information that will be of use in the management and conservation of billfish resources, has provided an increased stimulus to tagging in the southern Baja California area. The Foundation is a result of the interest of the late Mr. Tom Gardiner, Oakland, California, in game fish conservation and research. A Total of 65 sport boat captains participated in the annual Gardiner Foundation award program, tagging a total of 537 billfish. Awards are as follows for the Gardiner Foundation Awards - 1975:

Eastern Area (east coast of the tip of Baja, California, north to La Paz).

1st - Manuel Araiza Gonzalez

Rancho Buena Vista
82 striped marlin, 5 sailfish

2nd - Jesus Araiza Ruiz

Rancho Buena Vista
27 striped marlin, 17 sailfish

3rd - Gilberto Castro Collins

Rancho Buena Vista
17 striped marlin, 9 sailfish

Southern Area (south coast along the tip of Baja, California).

1st - Manuel Camacho

Hotel Pamilla
34 striped marlin

2nd - Ramon, Orozoco B.

Cape San Lucas
9 striped marlin, 19 sailfish

3rd - Pablo Ceseña Aripez

Hotel Cabo San Lucas
15 striped marlin, 5 sailfish

Fishery resort hotels having the winning captains (Hotel Rancho Buena Vista and Hotel Pamilla) also receive an engraved plaque expressing our appreciation to the fishing resort for supporting and encouraging their fishermen to participate in the program.

Table 1. Recovery data - based on recovery information received at the Southwest Fisheries Center in 1975.

Tagged			Recovered			
Species/location of tagging	Tagged by	Date (month, day/year)	Location	Recovered by	Distance recovered from point of tagging	Days at large
<u>BLACK MARLIN*</u>						
(203) #10 Ribbon Reef, near Cairns, N.Q., Australia	Mr. Denny Phipps Miami Beach, FLA, USA Captain/L. Woodbridge	9/10/74	Lat. 22°27' S Long. 154°38' E	Japanese longliner (unk) Reported by Mr. Matsukicimi Moriya	670 nm SE	108
(204) Near Cairns, N.Q., Australia	Mr. Mead Johnson Palm Beach, FLA, USA Captain/D. Wallace	9/18/72	Elizabeth Reef/Poor Knights Island, near Tutukaka, New Zealand	Mr. Ron Dazeley Whangarei, New Zealand	+ - 2,000 nm SE	913
(205) #6 Ribbon Reef, near Cairns, N.Q. Australia	Mr. Buster May Clayton, MO, USA Captain/D. Wallace	9/14/74	Lat. 15°30' S Long. 145°10' E	Etsuzan-maru (Japanese longliner)	32 nm SE	31
(206) Escape Reef near Cairns, N.Q., Australia	Mr. George G. Matthews Palm Beach, FLA, USA Captain/P. Bristow	9/19/73	Lat. 16°30' S Long. 146°45' E	Etsuzan-maru (Japanese longliner)	60 nm SE	404
(207) #10 Ribbon Reef off Cape Flattery, North Queensland, Australia	Mr. R. H. Schubot Ft. Lauderdale, FLA, USA Captain/D. Wallace	10/ 2/74	Lat. 31°03' S Long. 153°04' E Korogora Pt. north of Sidney NSW Australia	Mr. Vincent H. Jordan (mackerel netting)	1,200 nm S	144
(208) Thetford Reef, off Cairns, N.Q., Australia	Mr. R. W. Griffen Te Puke, New Zealand Captain/J. Crump	10/17/74	Lat. 34°03' S Long. 175°56' W (110 nm NE of Whangarei, New Zealand)	Lien Ho #1 (Korean longliner)	1,920 nm SE	235
*It was recently reported to me from F. J. Mather III, Woods Hole Oceanographic, that 2 additional black marlin recoveries had been obtained in 1975. Details on these recoveries will be given in the 1975 Annual Report (March 1977).						
H-20416 Phipps/Woodbridge H-45125 Tagger unknown/Bristow (possibly)						

Tagged			Recovered			
Species/location of tagging	Tagged by	Date (month, day/year)	Location	Recovered by	Distance recovered from point of tagging	Days at large
<u>ROOSTERFISH</u> (209) Near Rancho Buena Vista, Baja California Mexico	Mr. Richard K. Call Brinnon, WA, USA	4/ 5/75	5 mi N of Rancho Buena Vista Baja California, Mexico	Mr. David Koester Santa Cruz, CA, USA	5 nm	46
(210) Punta Arena, Baja California, Mexico	Mr. Tom Snyder Reseda, CA, USA Captain/J. Verdugo	7/ 4/71	Punta Perico, Baja California, Mexico	Mr. Joseph Pfister Huntington Beach, CA, USA	40 nm N	1,397
<u>YELLOWTAIL</u> (211) Alijos Rocks, Baja California, Mexico	Mr. R. G. Haverstick Santa Monica, CA, USA Captain/B. Barnes	7/ 2/72	Near Hipolito Pt, Baja, Cali- Mexico	Sportboat Holiday San Diego, CA, USA Angler unknown	155 nm NE	1,193
<u>BLACK SEA BASS</u> (212) Tagged by spearfishing Quarter Acre, Anacapa Island, CA, USA	Mr. W. G. Graham Thousand Oaks, CA, USA (GLACD)	9/ 8/74	Quarter Acre, Anacapa Island, CA, USA	Mr. Curt Bowman Central California Diving Clubs, San Jose, CA, USA	>1 nm	327
<u>STRIPED TUNA (SKIPJACK)</u> (213) Broken Bay, near Sidney, Australia	Mr. Basil Davidson Wairara, NSW, Australia. Captain/R. Dyer.	1/25/75	Long Reef, near Sidney, Australia	Mr. Tony Misfud Toongabbie, NSW, Australia	10-12 nm	14
<u>WHITE STURGEON</u> (214) Belvedere Pt. San Francisco, Bay, CA, USA	Mr. Scott Anderson Bevedere, CA, USA	1/ 6/75	Near Clarksburg, CA (Sacramento River) USA	Mr. Joe Benincasa Stockton, CA, USA	71 st. mi.	113

PART II - PACIFIC BILLFISH ANGLER SURVEY

in cooperation with the International Game Fish Association

Angler Catch Rates of Billfishes in 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. Until the 1975 survey (for 1974 catch) the mailing list of anglers participating in the Cooperative Marine Game Fish Tagging Program was used for the Pacific billfish angler survey.

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 in 1974 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 made. Both the effort (days fishing) and catch (numbers caught by species) data were requested by quarter for 1974.

In 1972 a paper, "Angler Catch Rates of Billfishes in the Pacific Ocean", was presented at the International Billfish Symposium held in Kona, Hawaii. This paper reviewed the results of the Pacific Survey 1969 through 1972. At that time, a total of 24,292 angler days had been reported with a catch of 13,495 billfishes. The average catch for all species combined for the four year period was 0.55 billfish per angler day or 1.80 days fishing per billfish.

Knowledge of the catch trends of billfish anglers in the many fishing locations throughout the Pacific is of future importance in the management of the billfish resources. The commercial catches of billfish, taken principally by longline fishing gear, are well documented over the years by species, area caught, days of fishing, and number of hooks fished. Figure 1 shows the world wide catch trend for billfish (not including broadbill swordfish) since 1965. The catch rose rapidly in the early 1960's to a peak in 1965 and has shown a steady decline since. The commercial catch composition world wide is approximately 50% striped marlin, 30% sailfish with the remaining 20% composed of blue and black marlin and spearfish, and the graph represents the commercial catch only, as reported by the United Nations, FAO.

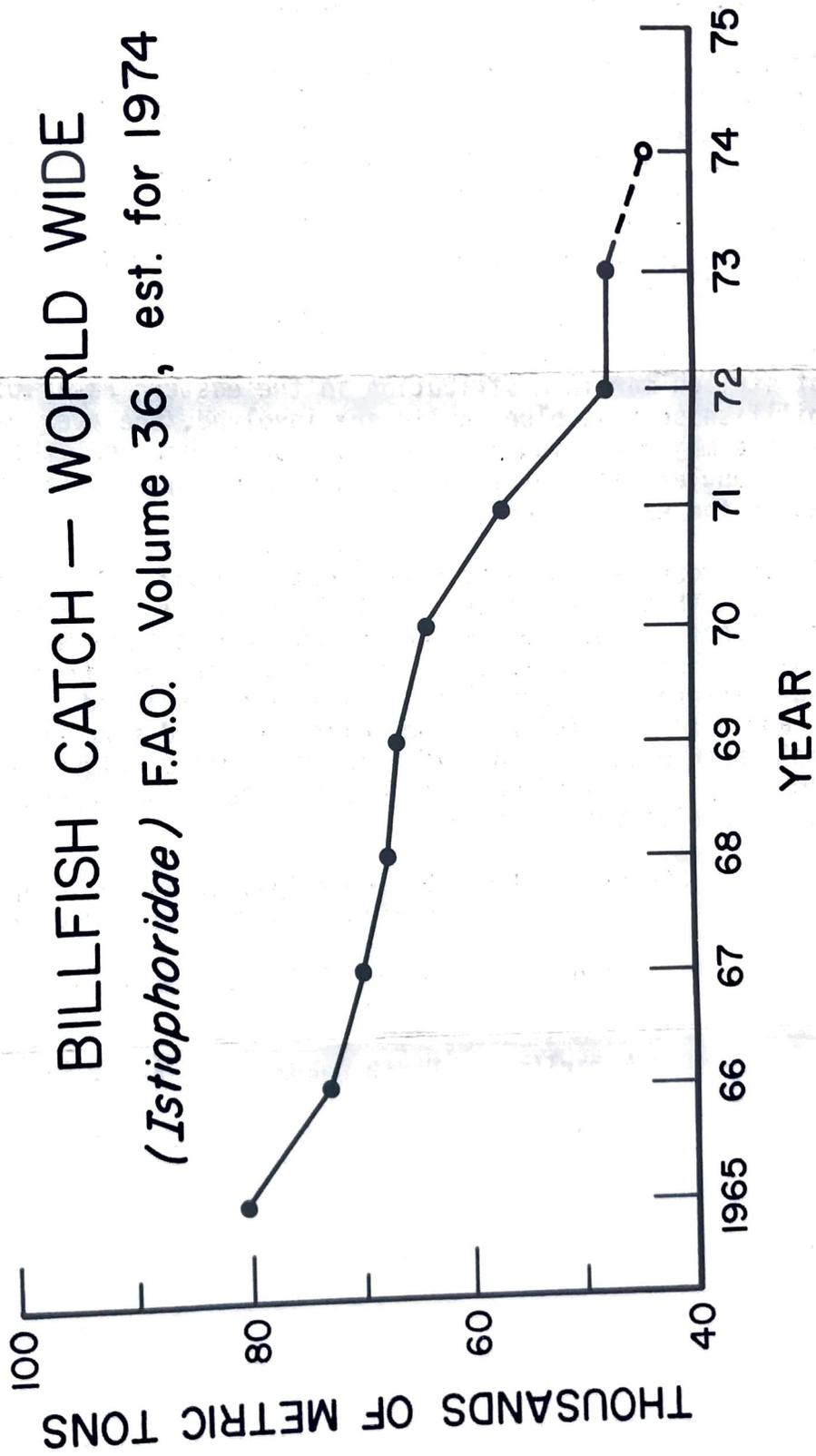


Figure 1. World billfish catch (does not include broadbill - swordfish).

Analysis of the angler catch and effort data for 1974, as reported by Pacific billfish anglers shows a total effort of 9,638 angler days, catching 3,507 billfish. This equals an overall catch effort rate for 1974 of 0.36 fish per day or 2.75 days fishing per fish, a decline in catch rate for the year when compared to the 1969-72 average of 0.55 fish per day, and 1.80 days fishing per fish.

Analysis of angler catch effort data for the many geographical fishing areas in the Pacific results in a wide range of catch per-unit effort levels (catch/day, days/fish). The catch rate is dependent in part upon the species fished, the relation of the fishing area to the center of seasonal distribution and abundance, plus many other behavior and environmental factors. For example, though striped marlin are actively sought after by a sizable number of marine anglers off southern California, USA, during the late summer and early fall, the resulting catch/effort level is low, when compared to catch rates for striped marlin about the tip of Baja California, Mexico which is nearer the center of striped marlin distribution in the eastern Pacific. If larger billfish such as blue marlin are involved, the average catch rate in the major fishing areas may be lower; however, the expert game fish angler realizes this, and the catching of a large blue may be worth the extra effort.

Angler responses were received from 11 billfishing areas in the Pacific along with some responses for the Indian Ocean. Some have a large amount of reported angler effort and catch, others have less reported; however, the responses from areas having limited angler effort have proved to be most interesting, and these data will be included in a complete report planned for the future. The major areas and species for which data have been received since 1969 are reviewed in Figure 2 (all quarters combined - total effort and catch). The major reporting areas for each species are as follows:

Striped marlin - Southern California, USA, Baja California, Mexico, and Mazatlán, Mexico.

Sailfish - Baja California, Mazatlán, and Acapulco, Mexico.

Black marlin - North Queensland, Australia.

Catch effort data (total effort and catch) for other major fishing areas derived from the 1974 survey are as follows (d/f = day per fish, f/d = fish per day):

Panama - Black marlin - 3.49 d/f, 0.29 f/d
- Sailfish - 1.23 d/f, 0.81 f/d
- Striped marlin - 21.71 d/f, 0.05 f/d

Ecuador - Striped marlin - 2.43 d/f, 0.41 f/d
- Sailfish - 4.57 d/f, 0.22 f/d

Hawaii - Blue marlin - 11.40 d/f, 0.09 f/d

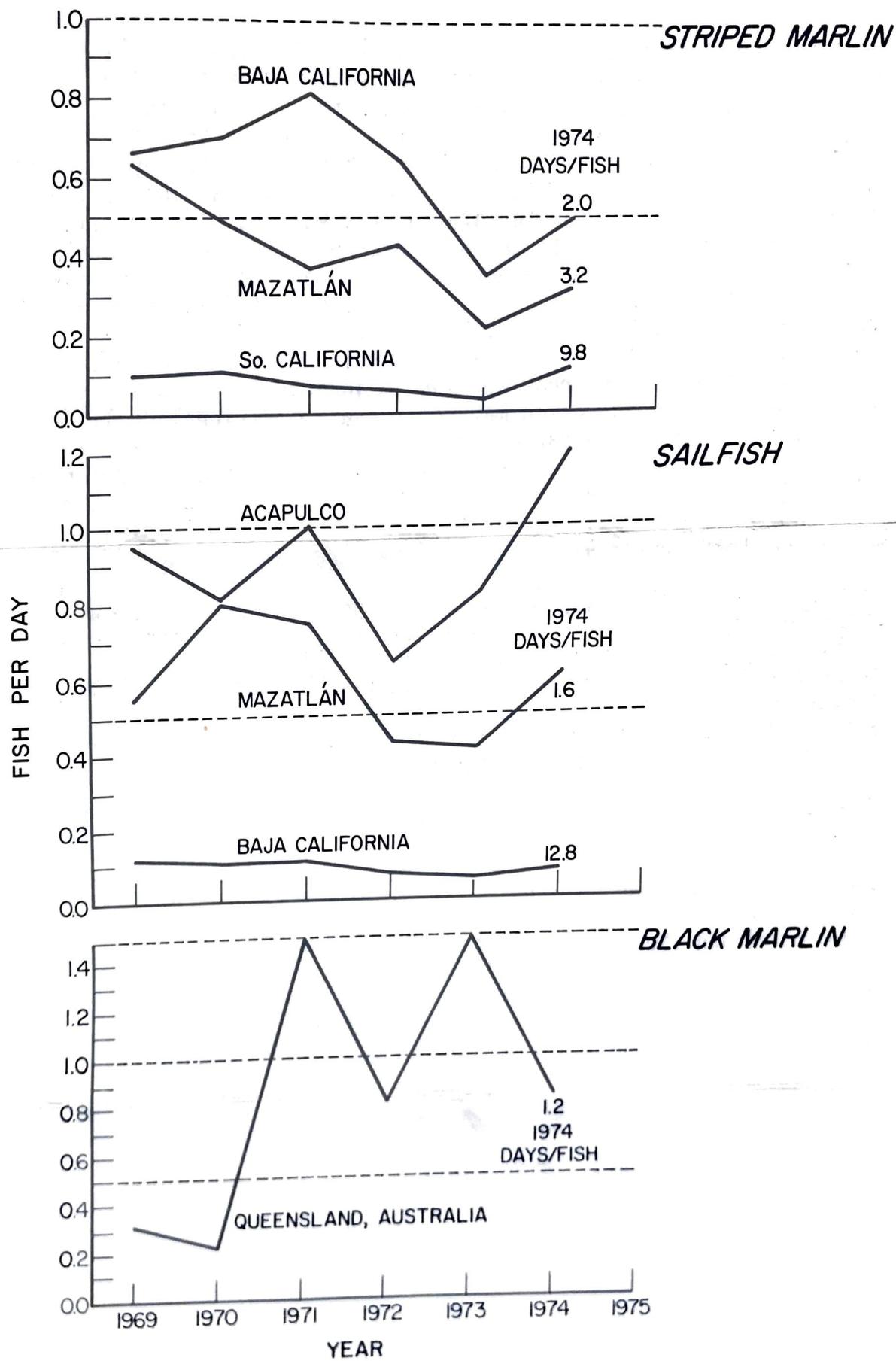


Figure 2. Angler catch-rates for 1969-74.

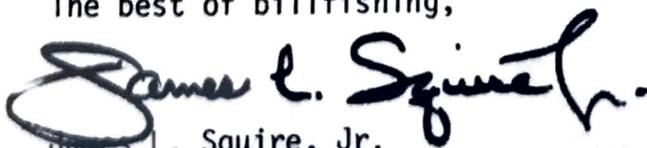
The d/f and f/d data represents the annual total reported effort and total catch. Each area has its peak season when fish are usually available in greater numbers, therefore, to obtain a better catch/effort measure and to follow the trends in Pacific billfishing, we asked in 1974 for the catch trend effort by quarters. For example the 3rd quarter in Hawaii was best with a blue marlin catch rate of 6.37 d/f; for the 4th quarter Panama, black marlin at 1.83 d/f and sailfish at 0.63 d/f; 3rd quarter, Ecuador, striped marlin 1.57 d/f, etc. Some other fishing areas reported upon but not reporting a sizable effort as those areas listed above were Manzanillo, Mexico; New Zealand; Tahiti; Guaymas, Mexico; and Thailand. As the catch effort data or angler response increases in the future for these areas we plan to include graphs showing the catch-effort trend, which may reflect any additional declines or increases in annual apparent abundance levels for Pacific billfish. The response has been gratifying and your support and interest in providing information for the 1975 survey (survey postcard enclosed) will be greatly appreciated. The 1975 form is similar to the one used for 1974.

Again, I request that we would like to have an honest, accurate-as-possible response from you, for the number of days in each quarter of 1975 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 sport fisheries on the angler success of Pacific billfishing.

Please complete only one form per angler for any billfishing in 1975 only.

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 zip code if applicable. If you did not billfish in 1975 and wish to receive the report indicate on the card "no billfishing" and your name will be retained on the list. Those individuals fishing and returning the survey form will be automatically retained on the mailing list.

The best of billfishing,



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

U.S. Department of Commerce
National Marine Fisheries Service
Southwest Fisheries Center
P.O. Box 271
La Jolla, California 92038