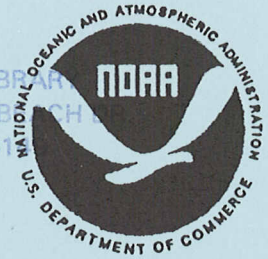




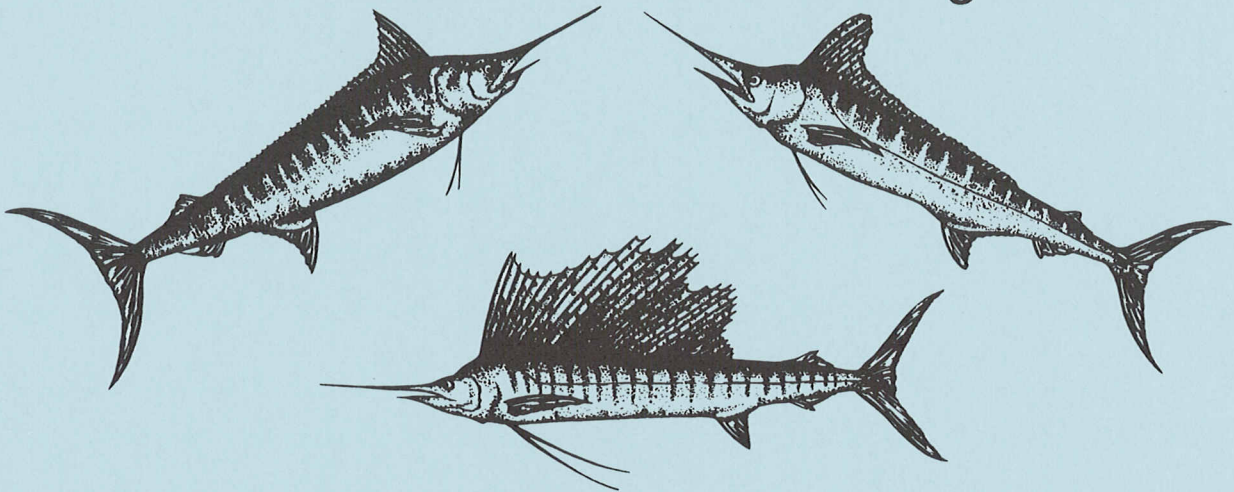
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IN NORTHERN GULF OF MEXICO
DURING 1988**

BY

Paul J. Pristas and Anna M. Avrigian



**NOAA Technical Memorandum
NMFS-SEFC-252**

Southeast


FISHERIESCENTER

April 1990



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NATIONAL MARINE FISHERIES SERVICE
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April 1990

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Acknowledgments

The recreational fishing community has extended exceptional support and cooperation to the NMFS billfish survey. Recreational fishery constituents provided both direct and indirect financial and other assistance to help supplement and insure a successful outcome of this study. Appreciation for his support is gratefully extended to those who helped (Table 5).

Port samplers conducted approximately 2,863 interviews during the 1988 season. For a job well done, I thank: Michael Denison, Port Aransas, TX; Robin Gaudet, Grand Isle, LA; Wm. "Hank" Geier, South Padre Island, TX; Richard Kersten, Destin, FL; Craig Martin, Pensacola, FL/ Mobile AL; and Joe Yurt, South Pass, LA.

Introduction

With cooperation from a majority of big game fishing clubs, many offshore fishing events (i.e. tournaments and rodeos), and numerous individuals, the National Marine Fisheries Service (NMFS) was able to complete its 18th consecutive year of a survey on recreational billfishing activities in the northern Gulf of Mexico. From the NMFS laboratory in Panama City, Florida, data collection activities at ten major billfishing locations from St. Petersburg, Florida to South Padre Island, Texas were coordinated. Port samplers at seven major billfishing ports conducted frequent checks on billfishing activities within their immediate area and occasionally traveled throughout broader assigned areas to survey major billfishing events. The three major zones (i.e., northeastern, northcentral, northwestern) of the northern Gulf, with their respective ports, are listed in summarization tables. At certain ports in the northwestern Gulf, only a few major billfishing events were surveyed. Rather than analyzing small patches of data from these few events, data collected within the three major billfishing areas along the Texas coast were combined. East Texas includes the area from the Texas-Louisiana border to Freeport, Texas; central Texas includes the area from Port O'Connor to Corpus Christi, Texas; and south Texas is the area from Port Mansfield, Texas to the Mexican border.

The cooperation of recreational fishery constituents make this report possible. Without support from the fishing community, it would not be practical to conduct a survey of this nature.

Catch and Effort

Consideration of effort in relation to catches is more of a refinement in estimating relative abundance, than if one were only to consider number of fish caught. For instance, if twice as many fish are caught this year than last year, but fishing effort this year also doubles, it is apparent that average fishing success remained the same both years. Our analyses are estimates of apparent abundances as many factors, not all of which are functions of billfish abundance, can affect effort and catches.

During the 1988 season in the northern Gulf, 25,675 hr (Table 1) of trolling effort for billfishes were recorded from late April to early December. Throughout the 18 years of this study, contact with the fishing community indicates sparse billfishing activity outside the main season. Although billfishing activity in recent years has been starting earlier and continuing later than in past years, the major activity occurs from May through October. Less than 1% of the trolling effort recorded in 1988 was reported by anglers to have occurred

before May or after October. This figure is undoubtedly slightly low due to budget restraints that only allow on-site port sampling during the main season. However, the information from our contacts and the low percentage of nonseasonal data indicate the survey likely encompasses the major seasonal activity. The 25,675 hr of trolling effort reported during the season was 1% (276 hr) less than reported in 1987. This slight decrease may have resulted from decreased fishing activity in the latter part of the season due to several tropical storms, rather than sampling variability. Although other factors (e.g., lack of angler reporting, decreased sampling effort, etc.) could account for a decrease in recorded effort, three ports (i.e. Panama City, Destin, South Pass) which have had relatively consistent sampling effort (i.e. the same port sampler) during the past several years, also, showed slight decreases in reported fishing effort. However, the total survey results for the 1988 season showed a greater amount of recorded activity than the previous 17-yr accumulative average. Compared to billfishing effort recorded over the history of this study, the amount of fishing effort reported in 1988 was 11% more than the average sampled during the previous 17 years.

Anglers continued to show an apparently increasing concern for the billfish resource by releasing a greater percentage of their catches in 1988 than they had during several previous seasons. Anglers trolling for billfishes reportedly released 51% (493 fishes) of the billfishes brought to the boat in 1988 (Tables 1 and 2), as compared to 45% in 1987; 34% in 1986; 26% in 1985; and 32% in 1984. This trend of increasing percentage of released fishes could be attributed to a greater concern for conservation by individual anglers and by tournament committees, which have been making possession rules more restrictive. Overall, 52% (199 fish) of the blue marlin, Makaira nigricans, 55% (211 fish) of the white marlin, Tetrapturus albidus, and 41% (76 fish) of the sailfish, Istiophorus platypterus, reported brought to the boat were released (Fig.1). Within each area, the northcentral Gulf had the greatest release rate: releasing 67% (138 fishes) of the catches; while 50% and 39% of their catches were released in the northeastern and northwestern Gulf, respectively. Compared to 1987, the proportion of fishes reported released increased in all three major areas: 39% (1988) vs. 30% (1987) in the northwestern Gulf; 67% (1988) vs. 60% (1987) in the northcentral Gulf; and 50% (1988) vs 46% (1987) in the northeastern Gulf. Of the total 965 billfishes reported caught (i.e. boated or released), blue marlin and white marlin each comprised 40%, while sailfish accounted for 19 percent of the catches. Catches of swordfish, Xiphias gladius, and spearfish, Tetrapturus pfluegeri, comprised the remaining 1%.

Relative Abundance

The number of fish hooked-per-hour-of-trolling (HPUE) is used as an indicator of billfish relative abundance (Fig. 2). Although such factors as weather, fish not raising to a bait, the same fish getting hooked more than once, random errors in the survey sample, etc. may affect this observation, we believe it is an indicator of the average apparent abundance of billfish. For blue marlin, the HPUE (0.025) declined after a comparatively steady (0.028-0.029) 4-year period HPUE. This approximate 12% decrease from the previous 4-year period was the first time since 1979 that the yearly HPUE was less than the cumulative yearly average HPUE. Compared to 1987, the HPUE for blue marlin in: the northeastern Gulf decreased 14%; the northcentral Gulf increased 3%; and the northwestern Gulf decreased 41% (Table 1). This season's decrease could be reflective of a normal fluctuation of the population's abundance or distribution, change in the billfishing pattern from previous years, or some other unmeasured factor. Careful monitoring of HPUE for evidence of continuing declines in relative abundance of blue marlin needs to be continued.

The results of the 1988 season showed the lowest HPUE (0.022) for white marlin recorded during the 18 years of this study (Fig. 2). The value was 15% below the 1987 level (0.026) and was 44% below the 18-year average HPUE (0.039) for this species. The northeastern Gulf was the only area that exhibited a higher HPUE than recorded during the previous season (Table 1). Compared to 1987, the HPUE for white marlin increased 7% in the northeastern Gulf, while decreasing 7% and 71% in the northcentral and northwestern Gulf areas, respectively. This was the fourth consecutive season the HPUE remained below the yearly accumulative HPUE (Fig. 2), and could be indicative of a decline in the availability of this species to anglers.

The 1988 HPUE (0.008) for sailfish was the highest since 1984 (Fig. 2), after having the lowest HPUE (0.004) on record in 1987. This doubling of the HPUE rate (Table 1) between the 1987 and 1988 seasons, was noticeable in the fishery, as anglers in all three areas remarked about an increase in sailfish hookups. However, the 0.008 HPUE in 1988 remained 50% below the 18-year average HPUE (0.016).

The catches of billfishes (i.e. marlins and sailfish) in 1988 was strongly influenced by the decrease in the apparent availability of marlins. The HPUE (0.055) for all three species combined was 7% below the HPUE (0.059) in 1987 (Fig. 2). The 1988 season was the fourth consecutive year the HPUE remained below the cumulative yearly average. Reports during the season indicated fishing success was 33% below the 18-year average HPUE (0.081). The greatest decrease in the HPUE of billfishes was in

the northwestern Gulf, where the HPUE declined from 0.095 in 1987 to 0.056 in 1988. Data from the northeastern Gulf showed a slight increase of 3% (0.061 vs. 0.059) compared to 1987, while the HPUE (0.044) in the northcentral Gulf remained unchanged (Table 1).

At times, while collecting data on the trolling effort for billfishes, we are able to record data on driftfishing (i.e. drifting dead bait at various depths), primarily for swordfish; and livebait fishing (i.e. floating live bait) for billfishes. Due to the change in fishing method, gear, and target species, these data are not included in catch-rate analyses of this report. However, in order to document the occurrence of these activities, the fishing effort and resultant catches/releases are given. A total of 389 hours of driftfishing effort was recorded during the season. During this time, six billfishes were boated and four were released. This was a considerable increase in catches compared to 1987 when three billfishes were reported caught during 376 hours of driftfishing. Livebait fishing activity increased from 53 hours reported in 1987 to 108 hours reported in 1988. As in 1987, the majority of the effort (81%) for this activity, was recorded in the northwestern Gulf. The doubling of livebait fishing effort during 1988 resulted in the same number of billfishes caught as in 1987: two.

Weight Data

Since the beginning of this survey, weight and length (lower jaw/fork length) measurements of billfishes have been recorded, when feasible, along with catch-and-effort information. When analyzed in conjunction with other pertinent data, size information may be used as an indicator of the well-being of various fishery stocks. Size data summarized in this report includes weights of billfishes caught while trolling, driftfishing, and live baiting for documentation purposes (Table 3). Figure 3 shows yearly fluctuations in the average weights of marlins and sailfish, along with the 18-yr accumulative average weight for each of these species. Many fishing events have imposed minimum size regulations in recent years. Thus, comparisons of average sizes of the landed catch before and after regulations are not reflective of the average size in the populations of billfishes. The implementation of minimum sizes under the Fishery Management Plan (FMP) for billfishes, effective October, 1988, will undoubtedly further affect size data and its analyses in future years.

Within the study area, this is the second consecutive year that the largest (876.5 lb/397.6 kg) blue marlin was recorded in the northwestern Gulf (Table 3). Even though more tournaments implemented minimum sizes in 1988 than in 1987, the average size for blue marlin decreased from 289.4 lb (131.3 kg) in 1987 to 279.1 lb (126.6 kg) in 1988 (Fig. 3). In both years, however,

the average size was considerably more than the 18-year average weight in the catch. This is likely due to the implementation of size limits.

An 89.0 lb (40.4 kg) white marlin was weighed at Panama City, Florida, for the largest of this species in the northern Gulf (Table 3). The average weight of landed white marlin increased in 1988 as it did in 1987 (Fig. 3). During the 18 years of this study, the average weight of white marlin has fluctuated between 50 lb (22.7 kg) and 57 lb (25.9 kg). For a 10-yr period (1974-1984), the average weight in the reported landings decline. However, during the last four years the average weight has been above the 18-yr average weight 53.1 lb (24.1 kg). This result may be primarily due to the recent tendency of releasing the smaller fish and only bringing the larger fish to the dock.

This season, the largest (85.0 lb/38.6 kg) sailfish reported nearly equalled the weight of the largest white marlin reported (Table 3). This fish was landed in the northwestern Gulf. In contrast to the white marlin, the average size for sailfish has been on a decreasing trend over the last three years (Fig. 3). However, the average size during the last three years still remained above or equal to the 18-yr average weight of 42.5 lb (19.3 kg). With two exceptions (1971, 1973), the yearly average weight for sailfish in the northern Gulf has not varied more than 3 lb (1 kg) from the cumulative average weight.

Bait Preference

For many years, natural, dead baits (whole, split, or stripped) were the predominately used baits for billfishes in the northern Gulf. Near the end of the 1970s, the use of artificial baits quickly evolved into prominence. Among other aspects, the use of artificial baits allowed a greater lure selection, faster trolling speeds, and larger areas of fishing coverage. In recent years, extremely slow trolling with live bait has been occasionally reported.

The relative effectiveness of these methods is examined by comparing hooking rates for effort involving these different bait types. The reported data are summarized in Table 4. Artificial baits only were used 88% of the time. Trolling natural and artificial baits simultaneously was reported 8% of the time. The use of dead baits only and live baits only accounted for 3% and 1% of the reported effort, respectively. Trolling effort and the percentage of each bait's use was nearly the same in both 1988 and 1987. The use of dead baits only resulted in the highest hook rate (0.089) for the entire northern Gulf and in two (i.e. northeastern and northwestern) of the three areas. However, when natural and artificial baits were trolled simultaneously in the northern Gulf and in both areas, the highest catch rates were on

artificial baits. Although the use of live baits only had the highest HPUE (0.125) in the northcentral Gulf, a valid bait comparison is not feasible due to the almost exclusive use (99%) of artificial baits only. Trolling with artificial baits only was also the predominant fishing method in the northeastern and the northwestern Gulf, occurring 85% and 76% of the time, respectively.

Fishing Areas

While reporting fishing information, anglers are often interested in where others fished and with what results. Reported data on fishing success are summarized in the popular "fishing charts" (Figs. 4-6) presented in this report. Ten-minute latitude and longitude blocks in which 10 hours or more of trolling activity were recorded are outlined in heavy black lines for the three areas of the northern Gulf. Billfishing off the west coast of Florida (i.e. St. Petersburg area) generally occurred in far offshore areas for which no recording charts were available. To maintain consistency with preceeding reports, indices of low, mid, and high values are given for the numbers of billfishes raised-per-hour-of-trolling. No billfishes were reported raised in blank blocks.

During the 1988 season, the area fished in the northeastern Gulf (Fig. 4) was about the size (76 blocks) as in 1987 (78 blocks). Some infrequent fishing was reported south and west of the chart's boundary (28° 30'N latitude; 88° 30'W longitude). Fishing may have been more "successful" than reports indicated. Only 20 hours of trolling effort were reported in the single high value block compared to an average of 149 hours per block for the entire area. Also, only 14% (11 blocks) of the area contained blank blocks this season, compared to 17% in 1987. Of interest, is the comparison that in 1987 the high and mid value blocks were about equally distributed west and east of 87°W longitude, whereas in 1988 only one mid value block occurred west of this longitude.

Reports from the northcentral Gulf indicate fishing occurred in a smaller area in 1988 than in 1987 (49 vs. 57 blocks, Fig. 5). The percentage of blank blocks (12%) and high value blocks (4%) was almost identical to the corresponding values in 1987. In both years, the high value blocks had much less fishing time (≤ 15 hours) than the average effort (158 hours) per block. The distribution of fishing success was similar in 1988 and 1987, with both high value blocks occurring far offshore in both years.

The expanded fishing area in the northwestern Gulf (Fig. 6) in 1988 compared to 1987 is likely due to having a full-time port sampler in south Texas (i.e. south of 27° N latitude) during the fishing season, versus an intermittent sampler in 1987. The reported south Texas fishing area in 1988 was double the area

reported in 1987. Reports from north of 27° N latitude, showed the fishing area to be almost identical in size both years. These findings indicate that between-year comparisons can be confounded by inconsistent sampling effort. Comparisons between the northern and southern areas showed about an equal percentage (17% and 19%, respectively) of areas of no fishing effort, but, nearly three times as many high value blocks in the northern than in the southern area. Although there was no discernible pattern in the data suggesting inshore-offshore concentrations of billfishes, the area southeast of Port Aransas, Texas, appeared to provide relatively good angling opportunities.

Related Observations

1. The first reported catch of a billfish this season came from the Galveston, Texas area. The crew of the "Mariner" brought in a 204.0 lb (92.5 kg) blue marlin on 3 March.

2. Several records were set this season:

A new Alabama record for blue marlin was established during the Mobile Big Game Fishing Club's Memorial Day Tournament. On 28 May, a 687.8 lb (312.0 kg) blue marlin was caught by Michael Kennedy fishing aboard the "Kwasar."

Texas had its state record for blue marlin broken on 20 August, when James Farrow fishing aboard "Defense Rests" landed a 876.5 lb (397.6 kg) blue marlin at Port Isabel, Texas.

A new tournament record was reported during the 1988 Old Salt Loop Tournament at Tierra Verde, Florida. On 6 June, the crew of the "Daisey Mae VI" brought in a 637.0 lb (288.9 kg) blue marlin.

3. "Grand Slams" (i.e. catches of a blue marlin, white marlin, and sailfish on a 1-day trip) were recorded twice this season:

On 1 July, the crew of the "Premium," fishing off Destin, Florida, landed a 33.4 lb (15.2 kg) sailfish, a 426.4 lb (193.4 kg) blue marlin, and reported tagging and releasing a white marlin.

On 30 July, fishing off Port Aransas, Texas, the crew of the "Wildcatter" reported tagging and releasing one each of all three species.

Table 1. Hours trolled and billfishes raised (R), hooked (H), and boated/released (B/R) in the northern Gulf of Mexico 1988.

	Hours trolled	Blue Marlin			White Marlin			Sailfish			Swordfish			Spearfish			All species combined		
		R	H	B/R	R	H	B/H	R	H	B/R	R	H	B/R	R	H	B/R	R	H	B/R
Northeastern Gulf	12,999	397	315	99/ 74	562	400	112/134	88	72	37/25	3	3	1/2	4	4	2/2	1,054	794	251/237
St. Petersburg	941	18	17	7/ 4	59	59	22/ 12	11	11	4/ 1	0	0	0/0	1	1	1/0	89	88	34/ 17
Panama City	1,477	55	42	9/ 8	86	68	30/ 12	18	14	10/ 3	0	0	0/0	2	2	0/2	161	126	49/ 25
Destin	3,715	150	101	40/ 23	243	122	20/ 56	30	19	5/13	0	0	0/0	0	0	0/0	423	242	65/ 92
Pensacola	4,009	96	87	23/ 32	119	110	34/ 36	22	21	14/ 5	3	3	1/2	1	1	1/0	241	222	73/ 66
Mobile	2,857	78	68	20/ 16	55	41	6/ 18	7	7	4/ 3	0	0	0/0	0	0	0/0	140	116	30/ 37
Northcentral Gulf	7,843	316	240	42/ 91	155	99	22/ 43	10	10	3/ 4	0	0	0/0	0	0	0/0	481	349	67/138
South Pass	4,821	184	146	20/ 66	100	68	11/ 38	3	3	0/ 2	0	0	0/0	0	0	0/0	287	217	31/106
Grand Isle	3,022	132	94	22/ 25	55	31	11/ 5	7	7	3/ 2	0	0	0/0	0	0	0/0	194	132	36/ 32
Northwestern Gulf	4,833	117	81	35/ 22	87	67	33/ 18	199	121	64/41	3	3	0/3	0	0	0/0	406	272	132/ 84
East Texas	598	12	10	4/ 4	14	10	6/ 11	4	4	4/ 0	0	0	0/0	0	0	0/0	30	24	14/ 5
Central Texas	2,214	61	51	26/ 9	53	41	17/ 13	122	80	41/27	0	0	0/0	0	0	0/0	236	172	84/ 49
South Texas	2,021	44	20	5/ 9	20	16	10/ 4	73	37	19/14	3	3	0/3	0	0	0/0	140	76	34/ 30
Total all areas	25,675	830	636	176/187	804	566	167/195	297	203	104/70	6	6	1/5	4	4	2/2	1,941	1,415	450/459

Table 2. Numbers of billfishes reported as boated or release (boated/released) with no accompanying data on fishing hours trolled in the northern Gulf of Mexico, 1988.

	Number					All species combined
	Blue marlin	White marlin	Sailfish	Swordfish	Spearfish	
Northeastern Gulf	9/8	7/16	3/6	0/0	0/0	19/30
St. Petersburg	0/0	0/ 0	0/0	0/0	0/0	0/ 0
Panama City	2/1	2/ 0	1/2	0/0	0/0	5/ 3
Destin	3/0	1/ 0	0/0	0/0	0/0	4/ 0
Pensacola	3/5	2/ 6	2/1	0/0	0/0	7/12
Mobile	1/2	2/10	0/3	0/0	0/0	3/15
Northcentral Gulf	0/0	0/ 0	0/0	0/0	0/0	0/ 0
South Pass	0/0	0/ 0	0/0	0/0	0/0	0/ 0
Grand Isle	0/0	0/ 0	0/0	0/0	0/0	0/ 0
Western Louisiana	0/0	0/ 0	0/0	0/0	0/0	0/ 0
Northwestern Gulf	1/4	0/ 0	2/0	0/0	0/0	3/ 4
East Texas	1/4	0/ 0	0/0	0/0	0/0	1/ 4
Central Texas	0/0	0/ 0	1/0	0/0	0/0	1/ 0
South Texas	0/0	0/ 0	1/0	0/0	0/0	1/ 0
Total all areas	10/12	7/16	5/6	0/0	0/0	22/34

Table 4. Hours trolled and numbers of billfishes hooked-per-hour-of-trolling (HPUE) with various baits fished in the northern Gulf of Mexico during the 1988 fishing season.

	<u>Dead bait only</u>		<u>Live bait only</u>		<u>Artificial bait only</u>		<u>Both simultaneously</u>		
	Hours trolled	HPUE	Hours trolled	HPUE	Hours trolled	HPUE	Hours trolled	Nat. HPUE	Art. HPUE
Northeastern Gulf	535	.093	138	.043	11,087	.056	1,229	.046	.054
Northcentral Gulf	4	0	8	.125	7,789	.045	43	.023	.023
Northwestern Gulf	393	.084	30	.067	3,670	.058	740	.011	.022
All areas	932	.089	176	.051	22,546	.052	2,012	.032	.041

Table 5. Persons and tournament organizations that actively assisted the NMFS recreational billfish survey in the northern Gulf of Mexico during the 1988 fishing season.

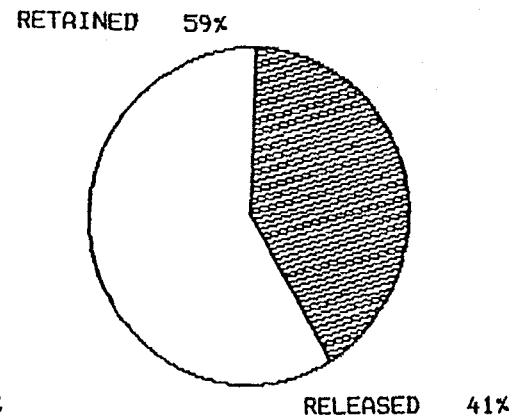
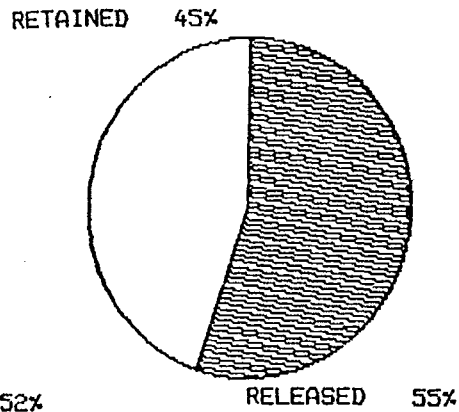
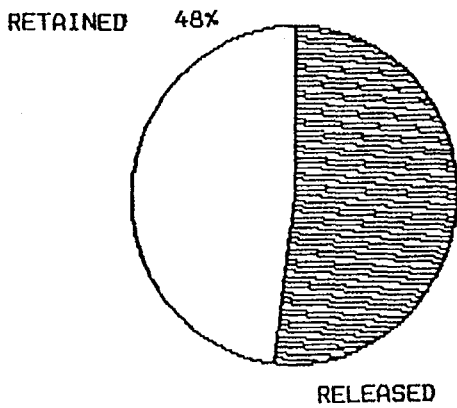
Name	Location
George Ballard	Pensacola, FL
Bay Point International Tournament	Panama City, FL
Blue Marlin Classic Tournament	Perdido Key, FL
East Pass Towers Tournament	Destin, FL
Fort Walton Beach Sailfish Club	Ft. Walton Beach, FL
Golden Meadow Big Game Fishing Club	Golden Meadow, LA
Nancy Hanna	Pensacola, FL
Jim Hubbard	Houston, TX
Chris McFarland	Port St. Joe, FL
Mobile Big Game Fishing Club	Mobile, AL
Mobile Big Game Fishing Club, Ladies	Mobile, AL
New Orleans Big Game Fishing Club	New Orleans, LA
New Orleans Big Game Fishing Club, Ladies	New Orleans, LA
Old Salt Loop Tournament	Tierra Verde, FL
Pensacola Big Game Fishing Club	Pensacola, FL
Pensacola Big Game Fishing Club, Ladies	Pensacola, FL
Poco Bueno Tournament	Port O'Connor, TX
Mary Rozier	Pensacola, FL
Teresa Rutherford	Pensacola, FL
Sportsmans Blue Marlin Tournament	Orange Beach, AL
Betty Tubbs	San Benito, TX

S P E C I E S

BLUE MARLIN

WHITE MARLIN

SAILFISH



A L L B I L L F I S H E S

ORTHWESTERN GULF

NORTHCENTRAL GULF

NORTHEASTERN GULF

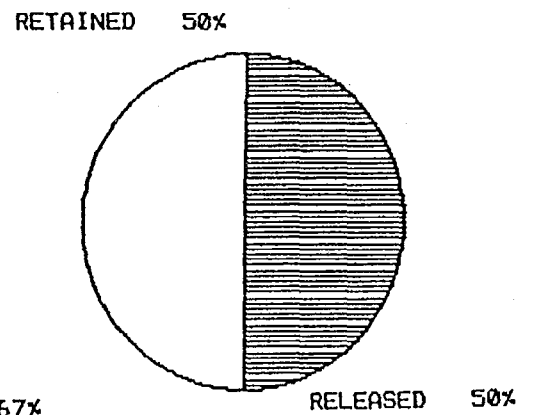
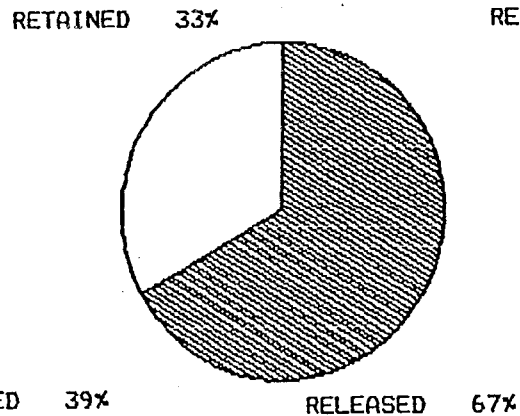
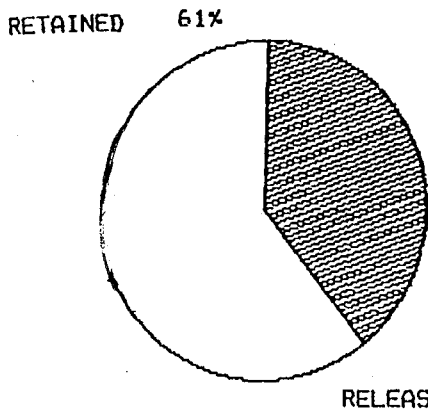


Figure 1. Percentage of billfishes released vs. retained by species and by area in the northern Gulf of Mexico, 1988.

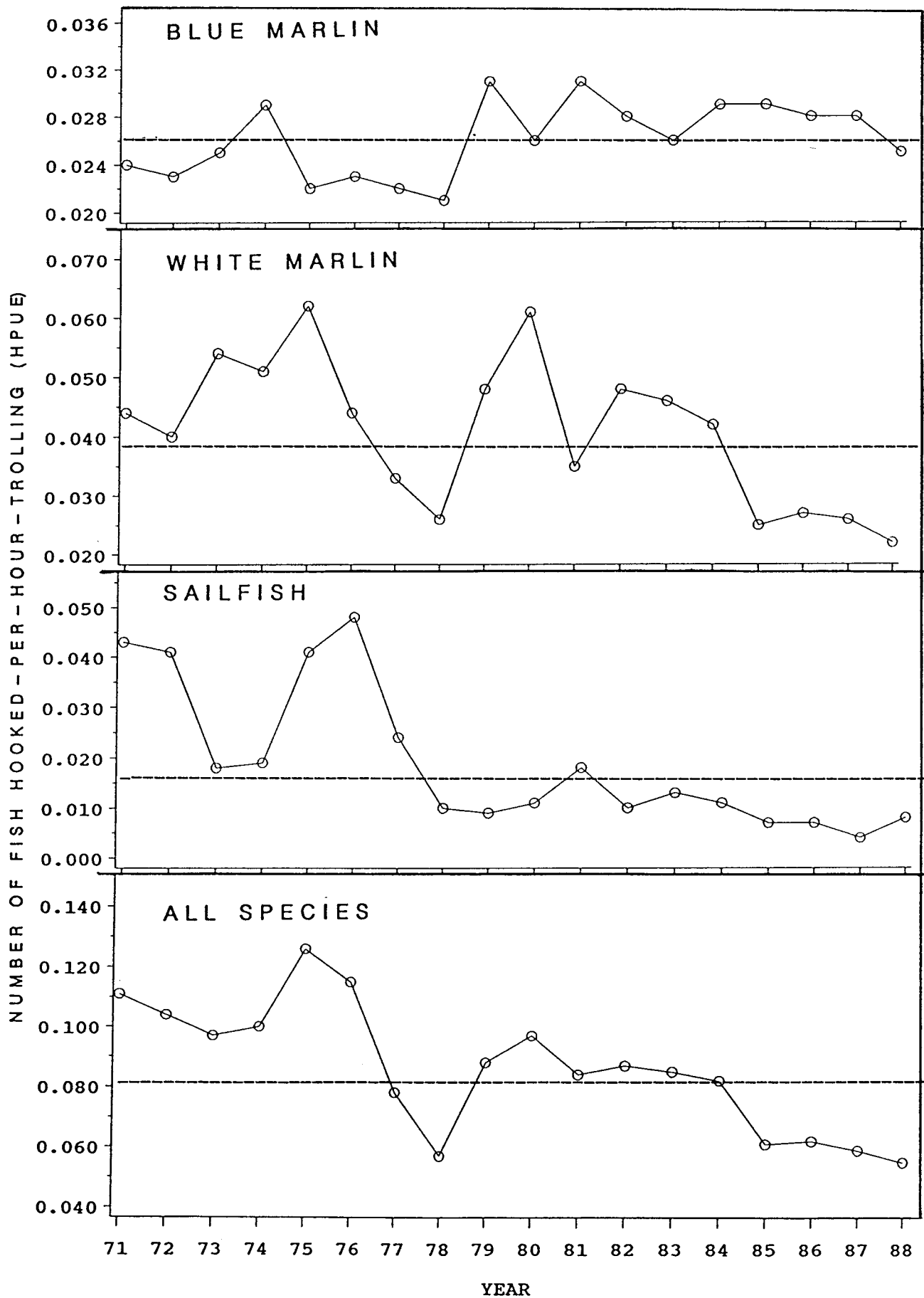


Figure 2. Numbers of billfishes hooked-per-hour-of-trolling (HPUE) in the northern Gulf of Mexico, 1971-1978. Dashed line indicates 18-year average of each category.

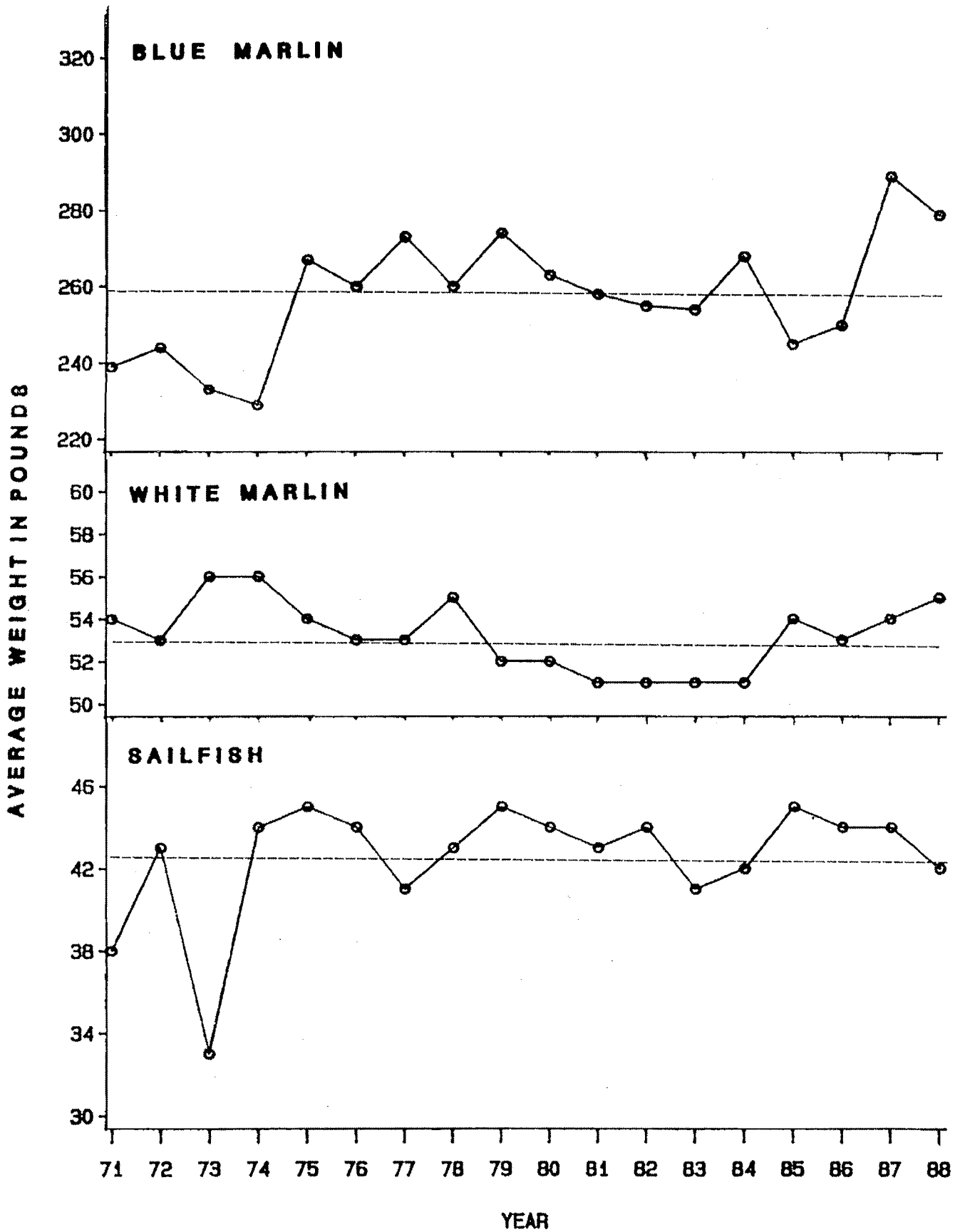


Figure 3. Average weight (lbs) of billfishes in the northern Gulf of Mexico, 1971-1988. Dashed lines indicate 18-year average for each species.

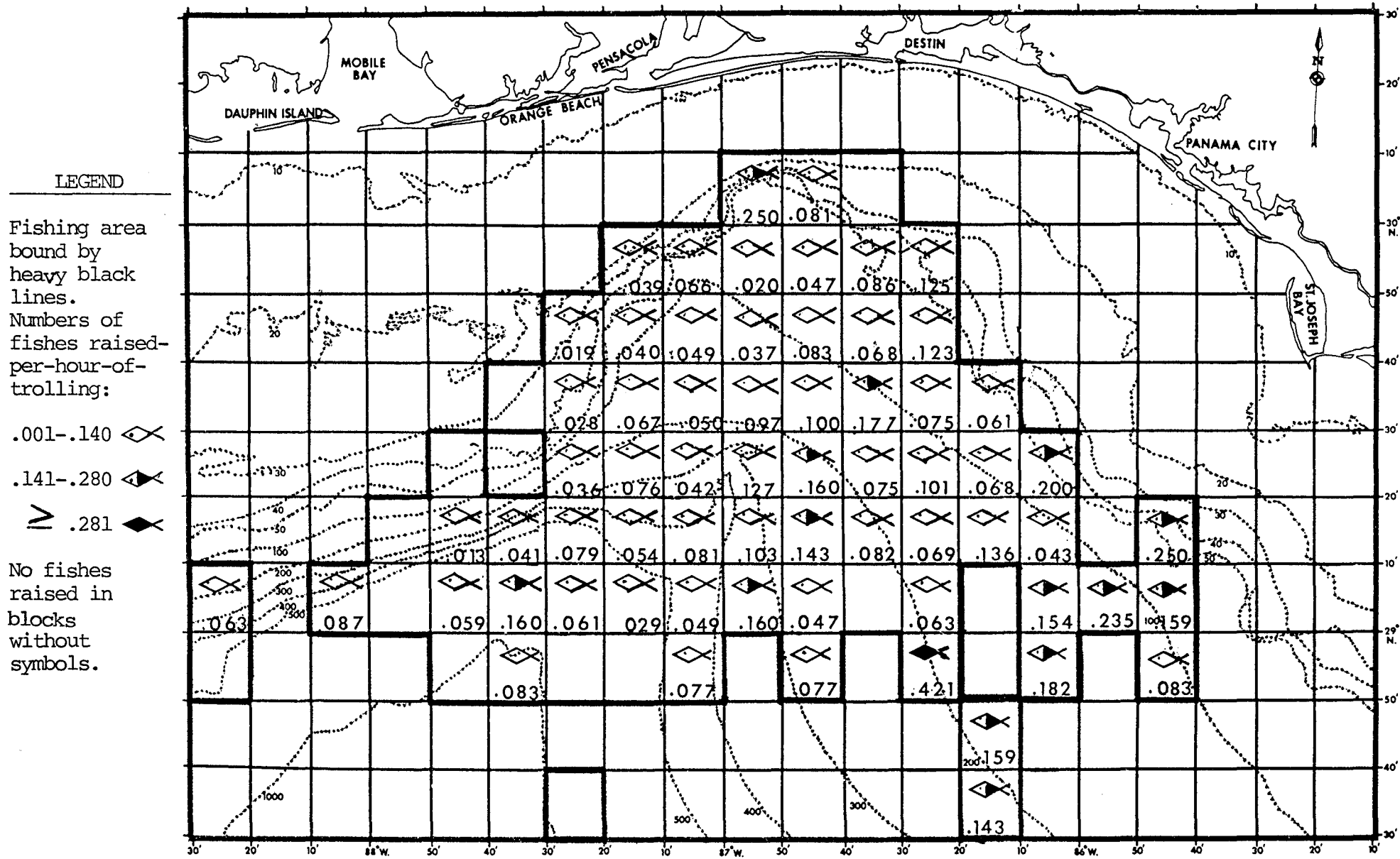


Figure 4. Numbers of billfishes raised-per-hour-of-trolling in the northeastern Gulf of Mexico by 10-min blocks, 1988.

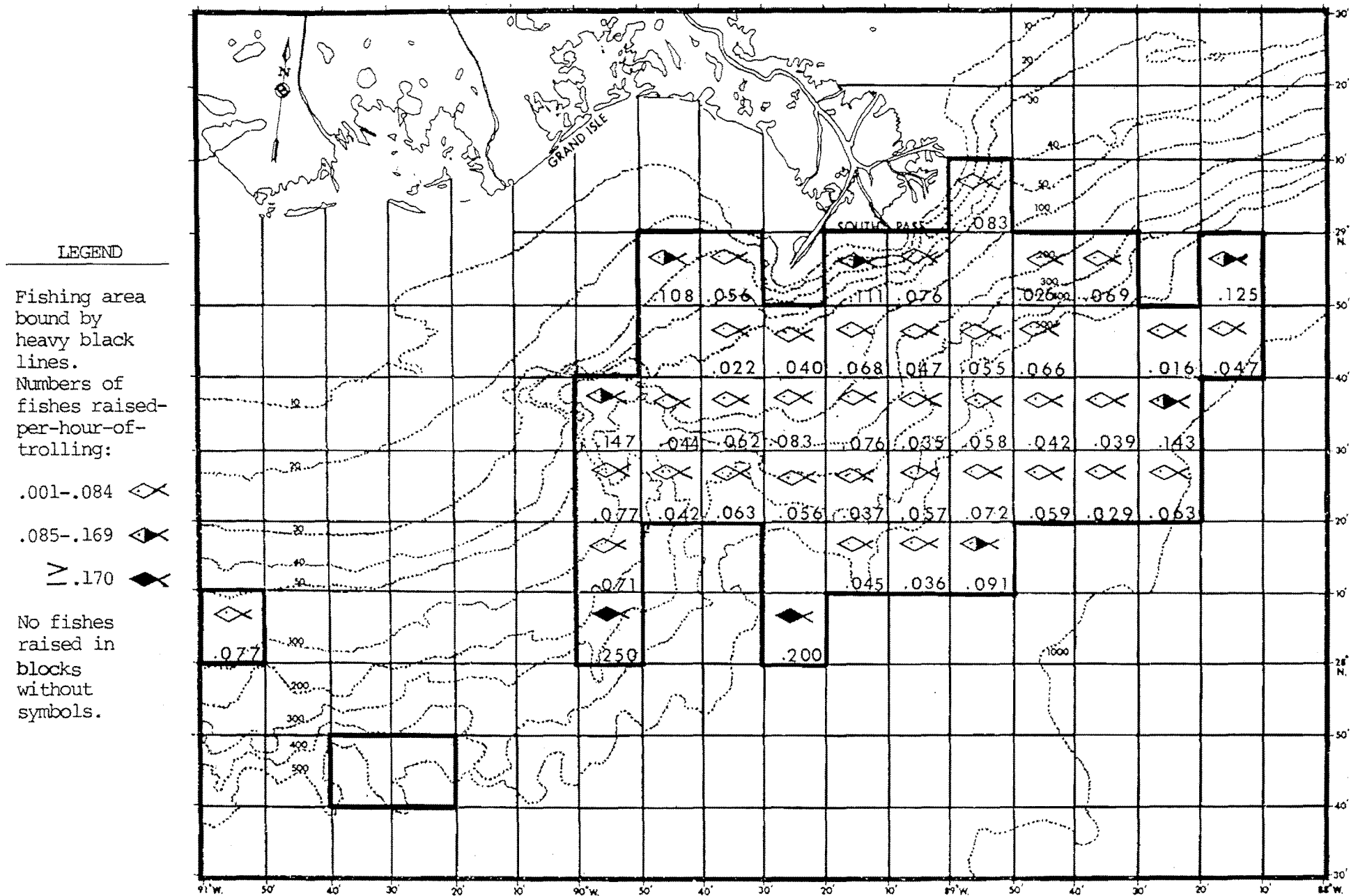
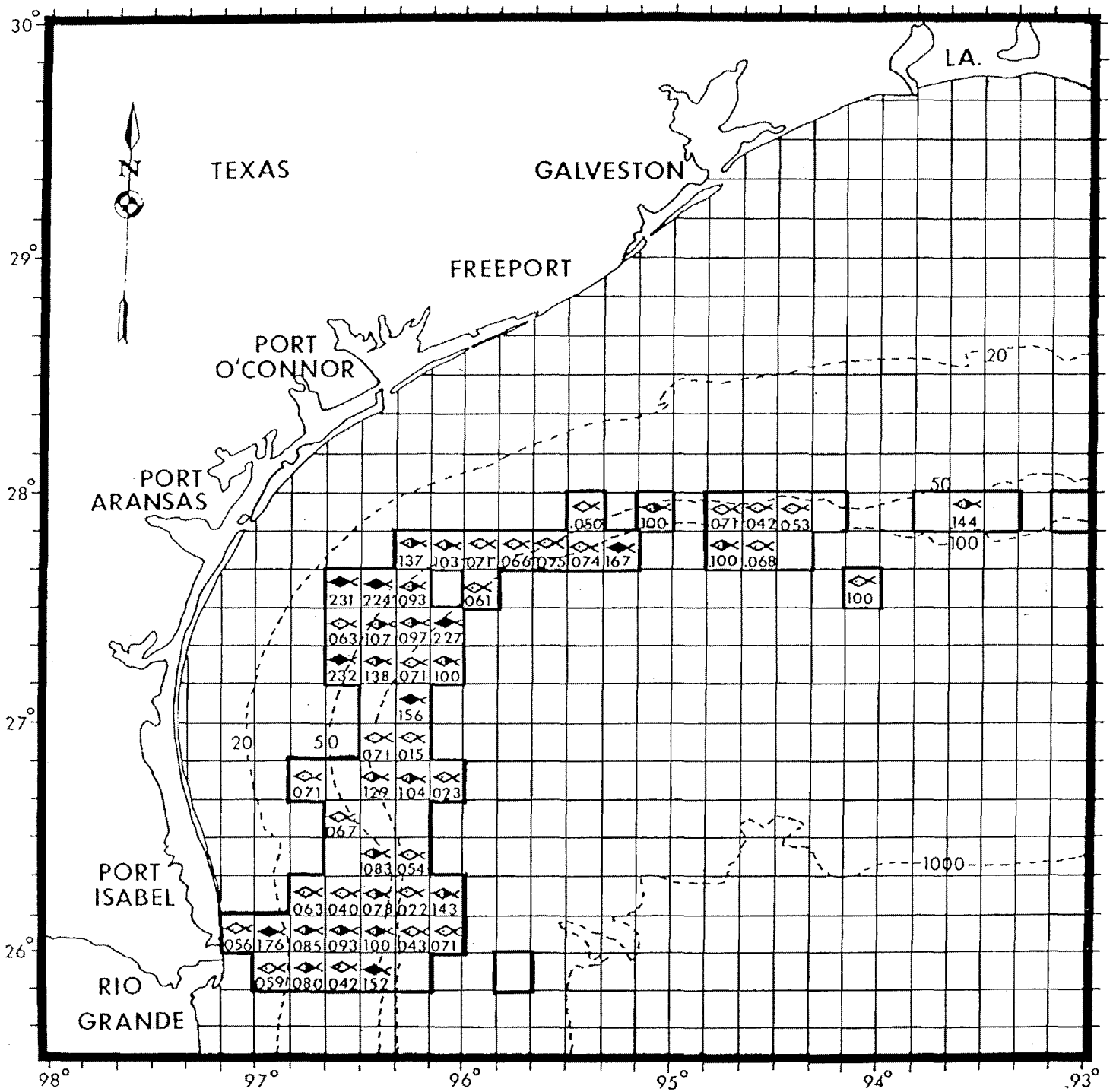


Figure 5. Numbers of billfishes raised-per-hour-of-trolling in the northcentral Gulf of Mexico by 10-min blocks, 1988.



L Fishing area bound by
E heavy black lines.
G No fishes raised in
E blocks without symbols.
N
D

☞	.001-.075	fishes raised-per-hour-of-trolling.
☞	.076-.150	fishes raised-per-hour-of-trolling.
☞	≥.151	fishes raised-per-hour-of-trolling.

Figure 6. Numbers of billfishes raised-per-hour-of-trolling in the northwestern Gulf of Mexico by 10-min blocks, 1988.