

TRENDS IN THE RECREATIONAL BILLFISH FISHERY IN THE U.S. VIRGIN ISLANDS

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SUMMARY

Dockside sampling of sportfishing boats since 1983 has allowed for an analysis of the trends in the recreational fishery for blue marlin in the U.S. Virgin Islands. A total of 5,729 blue marlin and 69,398 boat hours of effort were recorded between the years 1983 and 1989. The catch per boat hour (CPUE) has risen steadily despite an increase in fishing effort over time.

Approximately 97 percent of all blue marlin were captured between June and October. The CPUE for this time period was 0.105 fish per boat hour for the years 1984 to 1989 pooled.

The number of boated fish has declined since 1983. This has been accompanied by an increase in the number of tagged fish. In 1989, approximately 96 percent of all blue marlin caught were tagged and/or released. This information has substantially increased the database on Atlantic blue marlin and has identified the Virgin Islands as one of the premier locations for recreational blue marlin fishing in the world.

RESUME

Depuis 1983, l'échantillonnage à quai des bateaux de pêche sportive a permis d'analyser les tendances de la pêche de makaira bleu dans les Iles Vierges. En tout, 5.729 makaires bleus et 69.398 heures d'effort ont été enregistrés entre 1983 et 1989. La prise par heure de bateau (CPUE) s'est légèrement élevée malgré une hausse de l'effort de pêche.

Entre juin et octobre, environ 97% de l'ensemble des makaires bleus ont été capturés. De 1984 à 1989, la CPUE de cette période était de 0.105 poissons par heure de bateau.

Depuis 1983, le nombre de poissons capturés a diminué. Ceci a été accompagné d'une hausse du nombre de poissons marqués. En 1989, environ 96% de l'ensemble des makaires bleus capturés ont été marqués et/ou relâchés.

Cette information a fortement accru la base de données du makaira bleu de l'Atlantique et indique que les Iles Vierges sont le premier lieu de pêche sportive au makaira bleu du monde entier.

RESUMEN

El muestreo en el muelle de barcos deportivos desde 1983, ha permitido efectuar un análisis de las tendencias de la pesquería deportiva de aguja azul en las Islas Vírgenes (Estados Unidos). Se registró un total de 5729 ejemplares de aguja azul y 69398 horas de esfuerzo entre los años 1983 y 1989. La captura por hora de barco (CPUE) ha aumentado de forma estable a pesar del aumento en el esfuerzo de pesca.

Aproximadamente el 97% de los ejemplares de aguja azul fue capturado entre junio y octubre. La CPUE de este período de tiempo fue de 0.105 peces por hora de barco para los años 1984 a 1989 agrupados.

El número de peces embarcados ha disminuido desde 1983, y este hecho ha venido acompañado por un aumento en el número de peces marcados. En 1989, aproximadamente el 96% de los ejemplares de aguja azul capturados fue marcado y/o liberado. Esta información ha aumentado de forma importante la base de datos de la aguja azul atlántica y ha señalado a las Islas Vírgenes como uno de los lugares más importantes del mundo para la captura deportiva de aguja azul.

INTRODUCTION

St. Thomas, U.S. Virgin Islands is recognized as one of the premier locations for blue marlin (*Makaira nigricans* Lacépède) fishing in the world. The U.S. Virgin Islands presently holds four International Game Fish Association (IGFA) Atlantic blue marlin records including the all-tackle records for male (581.5 kg) and female (486.7 kg) anglers (IGFA, 1990).

The sport fishery for billfishes began in the Virgin Islands in the 1950's (Erdman, 1968). In the early 1960's, charter vessels began fishing for billfishes and other large pelagic fishes. Within a few years, several world records were established and the Virgin Islands became recognized as a major location for recreational billfish fishing.

Annually, up to 70 fishing boats travel to St. Thomas to participate in the fishery for blue marlin and other billfish species. These vessels, both private and charter, come from various ports in the southeast United States and other Caribbean countries. The recreational billfish fishery annually provided 5 to 5.5 million dollars to the local U.S. Virgin Island economy (Andy Courteau, per. comm.)

Blue marlin are caught throughout the year but are most abundant between June and October (Olsen and Wood, 1983). During this time of year most of the fishing effort occurs on the "North Drop" located approximately 30 km north of St. Thomas (Figure 1). The majority of this fishing activity takes place in the waters of the British Virgin Islands. Billfish are also caught on the "South Drop" located 13 km south of St. Thomas and the "Seamount", an underwater plateau, located south of Virgin Gorda, British Virgin Islands.

METHODS

A comprehensive port sampling program was developed by the Division of Fish and Wildlife in 1983 to collect data on the recreational fishing activities in the U.S. Virgin Islands (Brandon, 1988). With the assistance of volunteer port samplers, accurate catch and effort information for blue marlin and other species was collected throughout the year. Intensive sampling was conducted during the summer months when blue marlin aggregate locally and fishing activity was greatest. Complete monitoring of all tournaments was conducted throughout the year.

Port sampling interviews were conducted on a daily basis. Efforts were made to contact each boat in the vicinity of the East End of St. Thomas. The majority of the recreational fishing boats were based in this section of the island, thus an excellent estimate of catch and effort was obtained from this sampling strategy.

Interviews were normally conducted in the evening hours between 5:30 and 9:00 pm, seven days a week. Information on vessel name, hours fished, area, species, caught, time of capture and bait type were recorded. Weight, length and sex were obtained on species which were landed at the dock. Data acquisition was facilitated by a standardized port sampling form which could be completed by a brief personal interview.

Captured blue marlin were those which were either released, tagged and released or boated. Fishing effort was defined as total number of fishing hours per boat per day. Nominal catch per unit effort (CPUE) was derived by dividing the number of blue marlin caught by the total fishing effort. No efforts were made to standardize CPUE for season, gear type or other parameters.

RESULTS AND DISCUSSION

There were 5729 blue marlin recorded as boated, tagged or released between the years 1983 and 1989 (Table 1). A total of 1875 fishing days were sampled during this period which comprised 69,398 hours of total fishing effort. The overall annual catch per boat hour was 0.083 for all years combined. The National Marine Fisheries Service reported that an 18-year average of blue marlin catch per boat hour was 0.01 for the Southeast U.S. and the Gulf of Mexico (NMFS, 1989).

Blue marlin catch per boat hour fluctuated between 0.046 in 1985 and 0.110 in 1989 (Figure 2). Despite an increase in fishing effort over time, the CPUE has risen steadily since statistics were first collected in 1983.

Approximately 97% of all blue marlin were caught between June and October (Table 2). The blue marlin catch per boat hour was 0.105 fish per boat hour from these months when data from 1984 to 1989 were pooled (Figure 3). The majority of the fishing pressure occurs during this time of year and was directed almost exclusively towards billfishes. The highest CPUE for blue marlin was recorded in August (1.333 blue marlin/boat hour).

Many of the vessels leave St. Thomas after September causing a decline in total fleet fishing effort for the remainder of the year. The smaller number of fish caught in October was partially a result of reduced fishing effort for that month. The average number of boats fishing per day dropped from approximately 9 during the summer (June to September) to approximately 3 per day during the remainder of the year.

Catch and release information obtained on 5729 blue marlin revealed that 2913 (50.8%) were tagged and released. An additional 2177 (38.0%) were released and not tagged while 639 (11.2%) were boated. There was a steady decline in the proportion of boated fish to total catch since 1983 (Figure 4). In 1984, 21.7% of all blue marlin captured were boated, where as, in 1989 this number was 3.4%. The average weight of boated blue marlin was 129.2 kg for all years combined (Table 3). The largest boated blue marlin weighted 456.3 kg (1988) and the smallest weighted 38.6 kg (1985). The average weight of these fish have not changed significantly over time (1983-1989, Chi Square=1.8, $P < 0.05$).

St. Thomas has traditionally been the leading area for tagging blue marlin. This trend has increased since 1983 (Figure 4). In the 1989, 823 (43.6%) of the 1,887 blue marlin tagged in the Atlantic were from St. Thomas. Over 96% of all blue marlin captured off St. Thomas during 1989 were either tagged and or released. Five fish tagged off St. Thomas were recaptured in 1989 (NMFS, 1990). Two were recaptured off Gana, West Africa; one off the east coast of Florida and two off Guadeloupe.

CONCLUSIONS

The evolution of the blue marlin fishery in the Virgin Islands reflects an expansion of recreational fishing for billfish throughout the world. Increases in fishing effort as well as advances in fishing technology (i.e. electronics, rod and reel design, lure types, etc.) have resulted in a higher number of raised fish and improved catch per fishing hour.

The intensive fishing pressure and high concentration of billfish off the Virgin Islands provided an excellent opportunity to monitor changes in the abundance and CPUE of this valuable resource. The enormous tagging effort off St. Thomas has provided information on age, growth and migration patterns of blue marlin throughout the region. These data will enhance the present knowledge of local billfish abundance and seasonal trends with application to the remainder of the Atlantic.

Literature Cited

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Table 1. Blue marlin catch and effort information, 1983 to 1989.

	1983	1984	1985	1986	1987	1988	1989	Total
Tagged	161	214	248	358	764	471	697	2913
Boated	84	123	89	106	144	55	38	639
Released	282	231	126	230	560	355	393	2177
Total	527	568	463	694	1468	881	1128	5729
Hours	8297.5	8492.0	9996.5	8497.0	13935.0	9935.5	10244.8	69398.3
CPUE*	0.064	0.067	0.046	0.082	0.105	0.089	0.110	0.083

*CPUE=Catch per unit effort (Total/hours)

Table 2. Monthly catch and effort summaries, 1984 to 1989.

1984-89	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Blue Marlin	16	13	15	15	48	440	1438	2232	817	126	29	13	6202
Hours	1932.0	1806.5	2039.5	2006.0	2424.5	8197.5	15074.5	16732.3	6479.5	1669.0	1360.2	1425.3	61100.8
CPUE*	0.008	0.007	0.007	0.007	0.020	0.054	0.095	0.133	0.126	0.075	0.021	0.009	0.085
Days**	125	121	133	126	129	143	166	173	153	100	93	114	1578
Interviews	401	393	425	375	419	519	1894	2281	1119	261	245	309	8641
Hrs/day	15.5	14.9	15.3	15.9	18.8	57.3	90.8	96.7	42.3	16.7	14.6	12.5	38.8
Boats/day+	3.2	3.2	3.2	3.0	3.2	3.6	11.4	13.2	7.3	2.6	2.6	2.7	5.5

*CPUE = Blue marlin/hours

**Days = days sampled

+Boats/day = Interview/days sampled

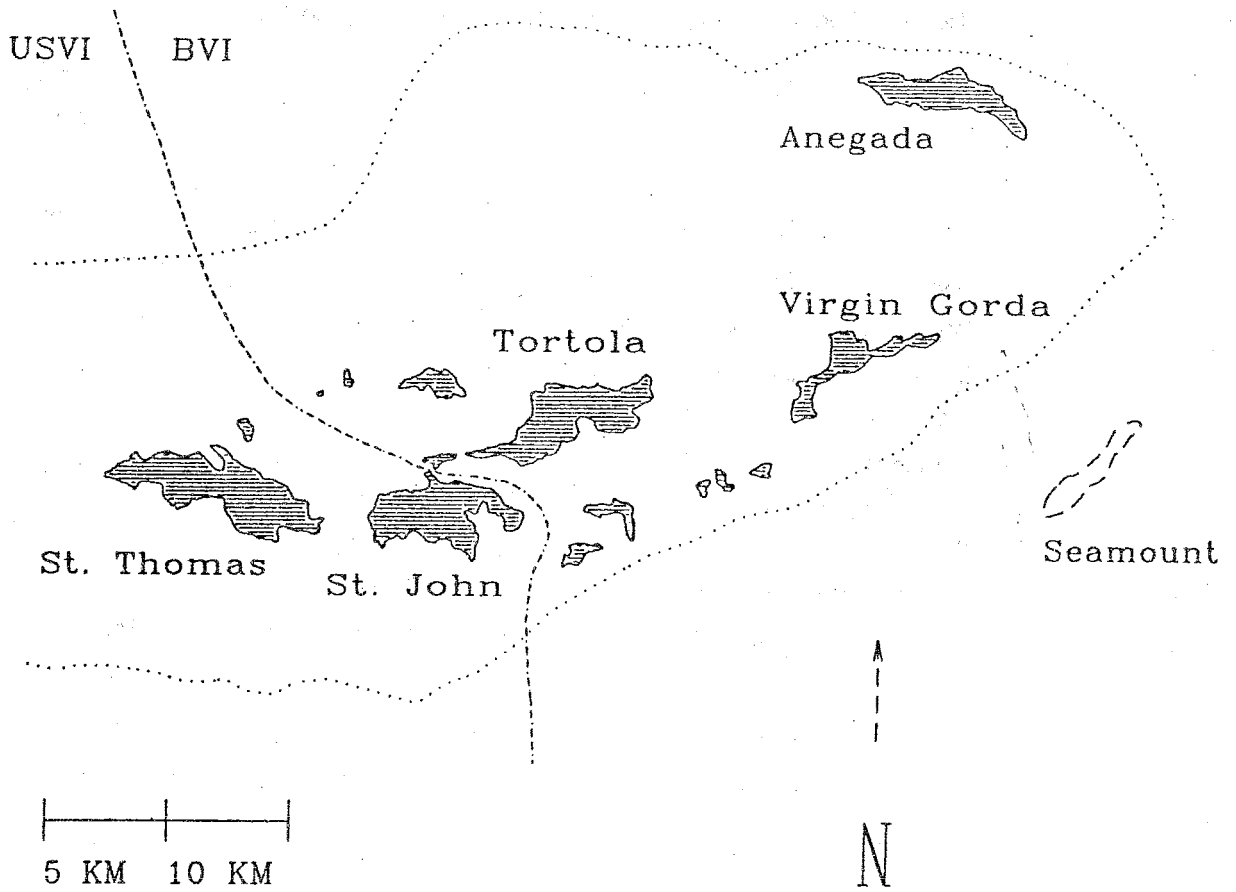
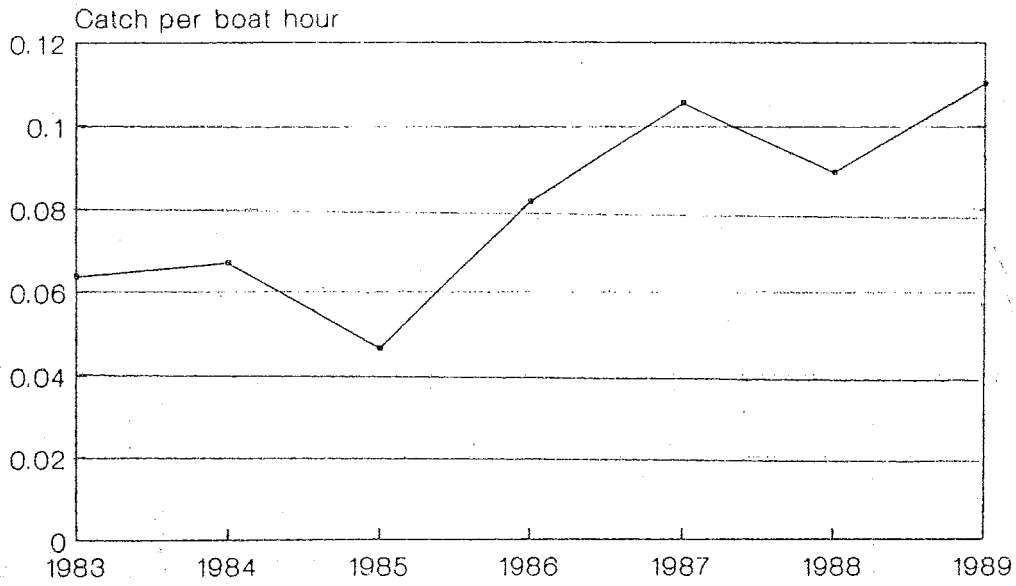


Fig 1. Chart showing U.S. Virgin Islands (USVI) and British Virgin Islands (BVI). International fisheries boundary separating the two countries runs approximately north and south.

Table 3. Weight information for landed blue marlin.

	Number Boated	Average Wt (kg)	Largest	Smallest
1983	84	126.2	322.7	40.9
1984	123	132.8	374.1	41.4
1985	89	121.0	273.6	38.6
1986	106	127.9	417.2	40.5
1987	144	126.2	316.2	40.9
1988	55	140.7	456.3	54.1
1989	38	129.9	359.5	79.5
Total	639	129.2	456.3	38.6

Fig 2. Blue marlin catch per boat hour, 1983 to 1989.



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Fig 3. Monthly blue marlin catch per boat hour. Data pooled for the years 1984 to 1989.

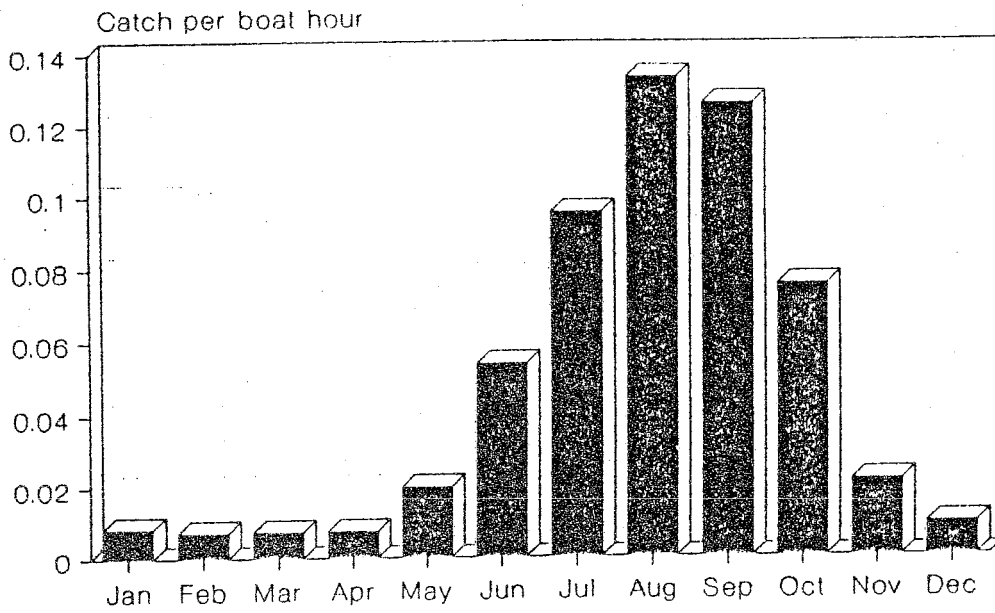


Fig 4. Proportion of tagged and boated blue marlin 1983-1989

