

ANALYSIS OF BERMUDA'S MARLIN FISHERY - CATCHES OF BLUE MARLIN (*MAKAIRA NIGRICANS*) AND WHITE MARLIN (*TETRAPTERUS ALBIDUS*) DURING THE PERIOD 1975-1995 WITH COMMENTS ON TAGGING AND TOURNAMENT FISHING EFFORT

Brian E. Luckhurst¹

SUMMARY

Catches of blue marlin and white marlin from the Bermuda fisheries statistical database are presented. The figures for these two species are for the periods 1975-95 and 1982-95 respectively. After a significant decline in 1993, blue marlin catches have increased over the past two years to previous levels. White marlin catches have oscillated in a narrow range reaching a maximum in 1995. The trend toward releasing the majority of blue marlin caught, which began in 1990 (Luckhurst, 1994), has increased in the past several years such that few blue marlin are boated in Bermuda. The Annual Billfish Tournament, a four day event at the height of the marlin season, has become virtually a release tournament. In the past four years of the tournament, only five blue marlin have been boated while 78 were released. In the period 1991-95 the catch per unit of effort in this tournament has shown only small year-to-year variations. The landing of a number of blue marlin over 1,000 lbs (454 Kg) in recent years has greatly enhanced Bermuda's reputation as a prime blue marlin fishing destination.

RÉSUMÉ

Des données sur les prises de makaire bleu et de makaire blanc provenant des bases de données statistiques des pêcheries des Bermudes sont présentées. Les chiffres pour ces deux espèces correspondent respectivement aux périodes 1975-95 et 1982-95. Après une baisse importante en 1993, les prises de makaire bleu ont dépassé les niveaux des deux dernières années pour revenir aux niveaux précédents. Les prises de makaire blanc ont oscillé à l'intérieur d'une marge étroite, atteignant un niveau maximum en 1995. La tendance à remettre à l'eau la majorité des makaires bleus capturés, qui a débutée en 1990 (Luckhurst, 1994) s'est accrue au cours des dernières années de sorte que peu de makaires bleus sont hissés à bord des bateaux dans les Bermudes. Les Championnats annuels de Poissons porte-épée, événement qui dure quatre jours au moment du point culminant de la saison du makaire, est devenu en pratique un championnat de remise à l'eau. Au cours des 4 dernières années, 5 makaires bleus seulement ont été hissés à bord pendant le championnat, alors que 78 ont été remis à l'eau. De 1991 à 1995, la capture par unité d'effort à correspondante n'a montré que des variations réduites d'une année sur l'autre. Le débarquement d'un nombre de makaires bleus supérieur à 1.000 lbs (454 kg) au cours des années récentes a énormément accru la réputation des Bermudes en tant que lieu de pêche de makaire bleu de première qualité.

RESUMEN

Se presentan datos de capturas de aguja azul y aguja blanca procedentes de la base de datos estadísticos de las pesquerías de Bermuda. Las cifras para estas dos especies corresponden a los períodos 1975-95 y 1982-95, respectivamente. Tras un importante descenso en 1993, las capturas de aguja azul han aumentado en los dos últimos años hasta alcanzar niveles anteriores. Las capturas de aguja blanca han oscilando dentro de un estrecho margen, alcanzando un máximo en 1995. La tendencia a devolver al agua la mayor parte de las agujas azules capturadas, iniciada en 1990 (Luckhurst, 1994) ha ido en aumento en los últimos años, hasta tal punto que en Bermuda se cobran pocos ejemplares de esta especie. El Campeonato Anual de Marlines, que tiene lugar durante cuatro días en el período culminante de la temporada de pesca de marlines, se ha convertido prácticamente en un campeonato de devolución a las aguas. En los cuatro últimos años del Campeonato, tan solo se han cobrado cinco ejemplares de aguja azul, habiéndose devuelto al agua 78 de ellos. En el período 1991-95 la captura por unidad de esfuerzo en este Campeonato presenta escasas variaciones de año en año. El desembarque de un cierto número de agujas azules de un peso superior a las 1.000 libras (454 kg) en años recientes, ha establecido la reputación de Bermuda como lugar de pesca de aguja azul de primera calidad.

¹ Division of Fisheries, Department of Agriculture and Fisheries, P.O. Box CR 52, Crawl CRBX, Bermuda

1. INTRODUCTION

The Bermuda fisheries statistical database is the principal source of catch and effort data for the commercial fishery including billfish. A relatively small number of commercial charter fishing vessels target blue marlin during the season while the remainder of the commercial line fishing vessels direct their effort at other pelagic species such as yellowfin and blackfin tuna, wahoo, amberjack and almaco jack. All licensed fishers are required to submit catch and effort statistics on a compulsory basis. There is presently no requirement for recreational fishers to licence their vessels or submit statistics. As Bermuda has an active and substantial recreational fishing fleet, it is necessary to obtain information and statistics on the billfishing activities of recreational vessels in order to provide a complete overview of marlin fishing on the island. This has been accomplished with some success due to the assistance and cooperation of interested fishers who maintain active records of marlin catches by all fishers during the season and provide this information to the author.

Bermuda gained notoriety for blue marlin fishing in 1984 when a specimen weighing 1,130 lbs (512 Kg) was landed (at that time the third largest blue marlin ever recorded from the Atlantic). Since that event a total of six more blue marlin over 1,000 lbs (454 Kg) have been taken in local waters. These catches have greatly enhanced Bermuda's reputation as a blue marlin fishing destination for those in pursuit of very large trophy fish. This has resulted in a number of U.S. registered sport fishing vessels coming to Bermuda during the summer season to fish specifically for blue marlin.

2. METHODS

The sources of data used in this paper are the same as those described in Luckhurst (1994). The annual catch figures have been derived from the database maintained by the Division of Fisheries. Due to the high level of tagging and release of blue and white marlin specimens, it is difficult to ascertain the level of accuracy of the catch and effort statistics submitted by commercial fishers. In the past five years, the figures presented represent the best estimates of catches not landings. The estimates of recreational marlin catches are not included in the total catch figures due to the variability of the completeness of the data from year to year. It is estimated that, on average, recreational fishing vessels catch approximately 15-20% of the blue marlin taken during the season (May to October).

The data from the Annual Billfish Tournament is provided by the organizers who obtain accurate information by interviewing captains of all participating vessels. Statistical reporting forms are also provided for each vessel. Because this is a marlin tournament held at the same time every year, it provides the best opportunity to obtain accurate data on catch per unit effort. Visiting recreational fishing vessels are also requested to provide detailed information on their billfishing activities.

3. RESULTS AND DISCUSSION

3.1 Statistical Database Catches

The reported catches of blue marlin and white marlin by licensed fishing vessels are presented in Figure 1. After reaching a high of 18.6 mt in 1992, the blue marlin catch declined significantly in 1993 to 10.9 mt. The past two years have seen catches increase again to 18.6 mt in 1995. The catches of white marlin have oscillated in a narrow range around 1 mt since 1988. There was a significant increase to 1.8 mt in 1995. It appears that the commercial fleet fishing effort for marlin has been relatively consistent over the past five years and it is therefore assumed that these differences in annual catches are most likely the result of natural variations in abundance in Bermuda's waters due to the highly migratory nature of these species and the influence of oceanographic events on their movements.

The catch figures are presented in tabular form in Table 1.

3.2 Tagging and Release of Blue and White Marlin

The majority of the charter fishing vessels carry tagging equipment on board and it is estimated that 70-75% of these vessels will normally tag a marlin specimen before it is released. Most of the vessels use the tags provided by the National Marine Fisheries Service (Cooperative Gamefish Tagging Program) but in recent years the Billfish Foundation tags have become popular for marlin. Although many of the tagging cards are sent to the Division of Fisheries before being forwarded to the tagging agency, it is still difficult to obtain an accurate assessment of the proportion of specimens tagged on an industry wide basis. The Annual Billfish Tournament provides the most accurate and complete data set for both catch and effort and number of releases. Table 2 indicates the number of blue marlin caught and released in this tournament over the past four years. The industry wide release rate is estimated to be over 80% during this same period.

3.3 Annual Billfish Tournament - Fishing Effort

As outlined in Luckhurst (1994), the Annual Billfish Tournament sponsored by the Sea Horse Anglers Club offers the best opportunity to obtain accurate data on catch and fishing effort for marlin in Bermuda. The measure of effort is vessel fishing days where a day is defined as eight daylight hours. The coordinator of the tournament is able to obtain information on the fishing activity of each vessel by interviewing the captains, often on a daily basis, for the four day duration of the tournament. The results over the past four years (Fig. 2) indicate little variation from year to year except for a slight increase in 1994. This data set now spans eight years and with the ongoing cooperation of the tournament organizers, it will be possible to continue to collect accurate data such that the measure of catch per unit of effort (CPUE) derived from this tournament can be used as one of the indices of abundance of blue marlin in the NW Atlantic.

3.4 Size of Blue Marlin Caught

Between 1984 and 1995 a total of seven blue marlin weighing over 1,000 lbs (454 Kg) have been caught in local waters. All of these trophy fish have been taken by only two local charter fishing vessels. In 1995, three of these seven specimens were caught during the period July 12 - August 7. The weights of the specimens were 1,153 lbs (524 Kg), 1,162 lbs (528 Kg) and 1,352 lbs (614.5 Kg). This latter specimen is the current Bermuda record and is the second largest blue marlin caught in the Atlantic under I.G.F.A. (International Game Fishing Association) rules. Through the cooperation of the captains, it has been possible to retain the heads of all seven of these very large specimens. The sagittal otoliths from these specimens as well as dorsal spines are being used in a study of the age and growth of blue marlin being conducted by the Coordinator for the Western Atlantic, ICCAT Enhanced Research Program for Billfish. Due to the large size of these specimens, it is now possible to address the issue of maximum longevity in this species. The results of this work will be presented in a separate publication.

3.5 Acknowledgements

I am grateful to David Pantry, president of the Sea Horse Anglers Club and organizer of the Annual Billfish Tournament for obtaining accurate, quality data year after year and making it available to me. Captains Alan Card and Allen de Silva as well as mate Dean Jones have ensured that the "grander" trophy specimens that they have landed have been made available to me for sampling. Dean Jones has also provided valuable information on marlin fishing activities from his personal records. John Barnes kindly reviewed the manuscript.

4. LITERATURE CITED

- DIVISION OF FISHERIES, 1995. Bermuda Commercial Fishery Catch and Effort Statistics (including yearly summaries). Department of Agriculture and Fisheries.
- LUCKHURST, B. 1994. Landings of Blue Marlin (*Makaira nigricans*) and White Marlin (*Tetrapterus albidus*) in Bermuda during the period 1975-1991 with an overview of recent developments in billfishing on the island. Inter. Comm. Cons. Atl. Tunas, *Coll. Vol. Sci. Pap.*; XLI, p. 218-223.

Table 1. Reported catch in metric tons of blue and white marlins from Bermuda's fishery statistical data base. White marlin have been reported as a separate species only since 1982.

Year	Blue Marlin	White marlin
1975	1.0	
1976	1.9	
1977	2.0	
1978	5.0	
1979	2.1	
1980	3.7	
1981	0.7	
1982	2.0	0.2
1983	6.6	0.6
1984	8.2	0.5
1985	8.5	0.4
1986	10.7	0.7
1987	6.1	0.7
1988	8.5	0.8
1989	14.8	1.1
1990	16.8	1.2
1991	18.4	1.1
1992	18.8	0.8
1993	10.9	0.9
1994	14.5	1.0
1995	18.6	1.8

Table 2. Number of blue marlin caught and released during the Annual Billfish Tournament over the four years

Year	N. Caught	No Released	% Released
1992	25	25	100
1993	15	12	80
1994	21	21	100
1995	22	20	90

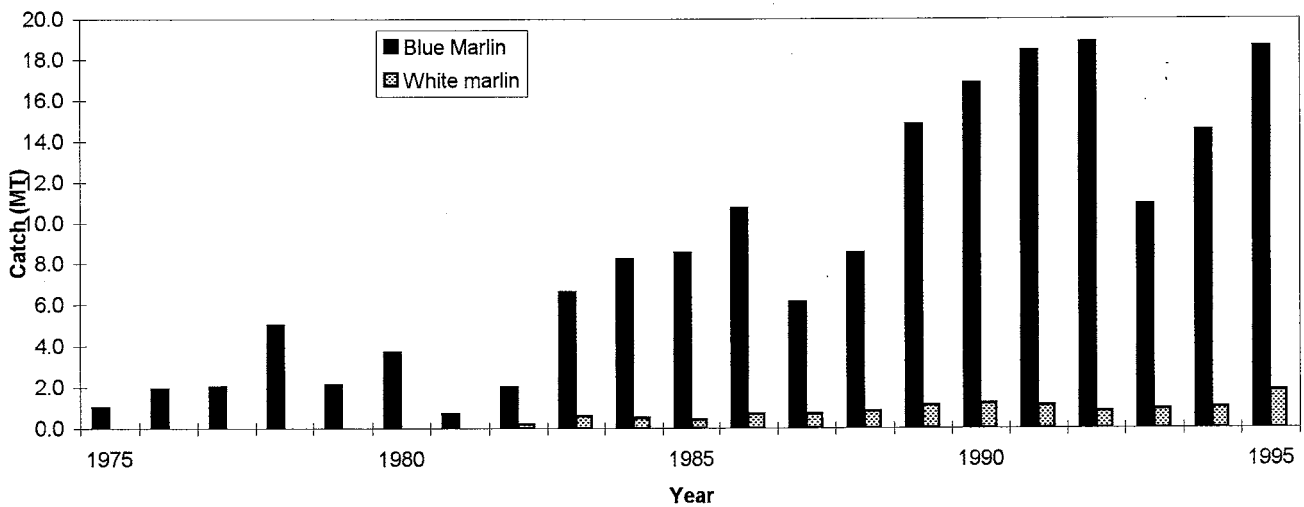


Fig. 1 Reported catch in metric tons of blue marlin and white marlin from Bermuda's fishery data base.

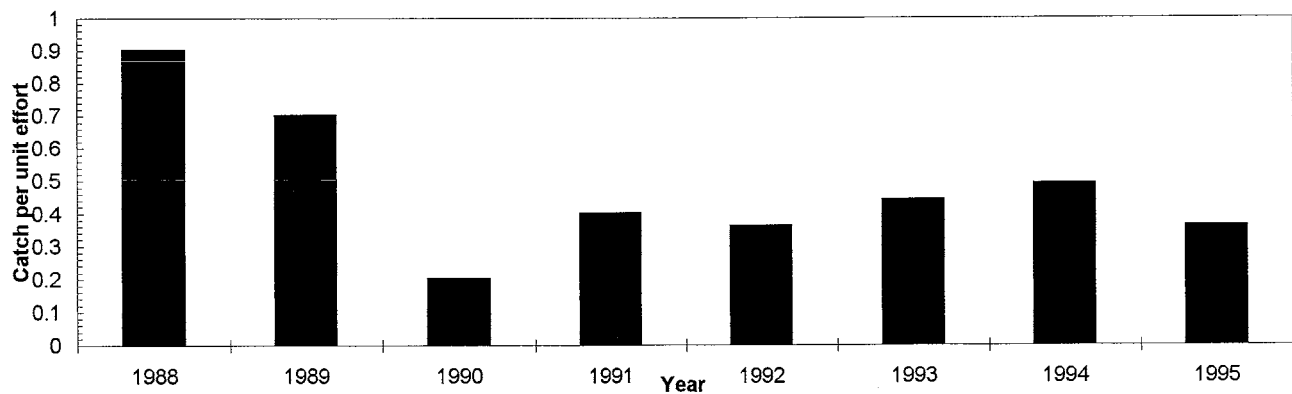


Fig. 2. Catch per unit of effort of blue marlin in Bermuda's annual Billfish tournament from 1988 to 1995.