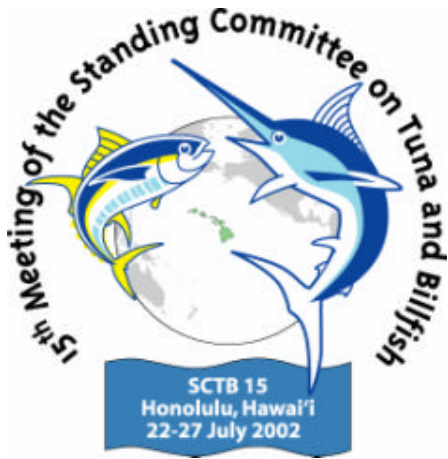
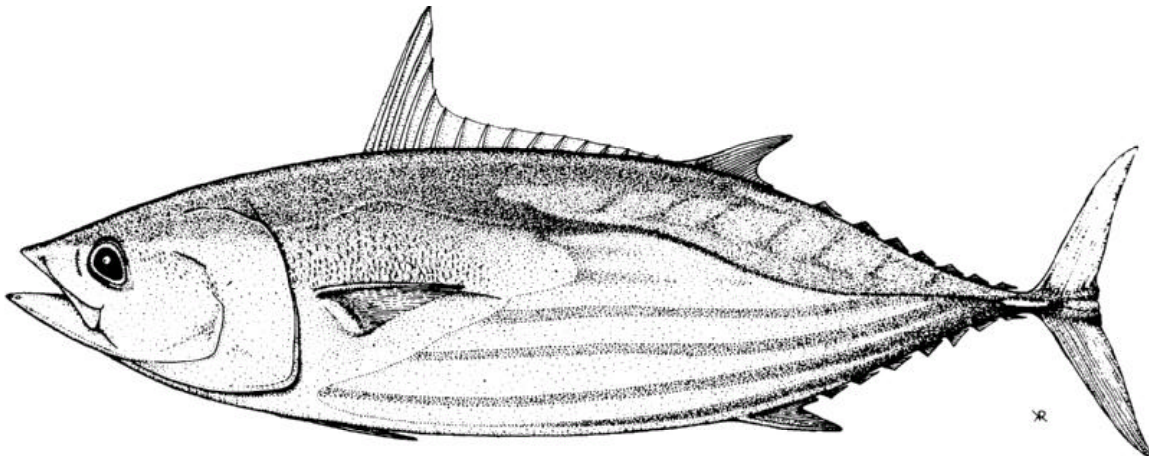


SCTB15 Working Paper

NFR- 2



**National Tuna Fishery Report – Tuna and Billfish Fisheries
of the Eastern Australian Fishing Zone**



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Fisheries and Marine Science
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Canberra, Australia

WORKING PAPER



National Tuna Fishery Report
TUNA AND BILLFISH FISHERIES OF THE EASTERN
AUSTRALIAN FISHING ZONE

by
James Findlay and Don Bromhead

*Working paper presented at the fifteenth meeting of the Standing Committee on Tuna and Billfish
(22-27 July, 2002, Honolulu, Hawaii)*

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SUMMARY

In 2001, domestic longline catches of bigeye tuna, yellowfin tuna and striped marlin in the eastern Australian fishing zone (AFZ) were the highest on record. These high catches were assisted by improved weather conditions following poor conditions in most areas throughout 2000. However, general trends in nominal CPUE show that catch rates for all target species (except striped marlin) have continued to decline or persisted at low levels over the last five years. Longline vessels targeting swordfish continue to move further offshore apparently in order to maintain catch rates.

Japanese and domestic fishery data collected for more than twenty years show that the abundance of tuna and billfish in the eastern AFZ varies considerably year-to-year. Annual catches of tuna and billfish in the eastern AFZ range between 3000 and 11 000 metric tonnes (t), averaging about 7500 t a year.

Following rapid expansion in the period 1996 to 1998 (when effort more than doubled), expansion of Australia's longline fishery in the eastern AFZ slowed in 1999 and has apparently stabilised at around 10 million hooks in 2001. Following several poor years in 1999 and 2000, domestic landings of yellowfin in 2001 were a new high at 2193t but nominal CPUE remains relatively low compared to the mid-1980s and early to mid-1990s. The domestic bigeye catch was also a new high at 1050t, up from the previous high of 1031t taken in 1998. In 2001, landings of swordfish and striped marlin were 1396t and 527t, from 1699t and 506t, respectively in 2000.

The Eastern Tuna and Billfish Fishery Statutory Management Plan (including individual allocation of fishing rights in the form of hook-sets) is nearing completion and will be released for stakeholder comments in the next few months.

Catches of skipjack by purse seine and pole-and-line in the eastern AFZ were around 500t in 2001. Skipjack catch in the area peaked at over 6000 t in 1992 then fell to 1000 t in 1998. About 4000 t were landed in the 2000 season. The Eden cannery closed in mid-1999, resulting in significant reductions in the skipjack fishery (the cannery took all of the pole-and-line catch and most of the purse seine catch). The cessation of supply contracts held by east coast skipjack fishers and their diversification into other fishing ventures seems to explain the lack of catch as spotter planes reported large numbers of skipjack in the south-eastern AFZ during spotting flights for blue mackerel along the continental shelf.

Striped marlin continued to feature in recreational and charter gamefish reports in 2001 but in lesser numbers than in recent years (1998-2000). Reports of yellowfin tuna catches by recreational and charter vessels continued the poor trend of the late 1990s and very few fish over 50kg were taken on the traditional grounds off the south-east coast.

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INTRODUCTION

This paper was prepared for the fifteenth meeting of the Standing Committee on Tuna and Billfish (SCTB15, 22-27 August, 2002, Honolulu). It describes the tuna and billfish fisheries of the eastern Australian Fishing Zone (AFZ) including trends in catches and information on data collection, research and management.

AUSTRALIAN LONGLINE

The weather in 2001 was an improvement on the rough conditions experienced in many areas during 2000 especially over peak catches periods. Nominal longline effort has remained relatively stable at around 10 million hooks since 1999 following the rapid increases from 1995 to 1998 when effort more than doubled.

The domestic longline catch of yellowfin in 2001 (2193 t¹) and bigeye (1050 t) were up on the previous year's catch of 1492 t for yellowfin and 666 t for bigeye (Figure 1, Table 1). Domestic catches in 2001 are record highs for both these species. This followed declines in 1999 and 2000 following the previous peak year catches of 1846 t and 1031 t, respectively for yellowfin and bigeye in 1998.

After rapid expansion in 1996 and 1997, the domestic swordfish catch continued to rise, reaching 1884 t in 1999. In 2000 the catch of swordfish declined to 1699t and this decline has continued in 2001 to 1396t. A shift in targeting from swordfish to tuna may partially explain both tuna and swordfish catch totals in 2001 however offshore expansion continues in pursuit of 'new' grounds and localised depletion of more inshore grounds is indicated. Longline catches of striped marlin showed a small increase again in 2001 to 527t up from 506t in 2000 and 490t in 1999.

The Gross Value of Production for the commercial fishery continued to rise in 2001 due mostly due increases in landings of yellowfin and bigeye (which more than compensated for the decline in swordfish landings).

Fishing Craft and Operations

The number of 'full-time'² longliners doubled, from 66 in 1997 to 112 in 1999 but since that time the number of full-time operators has increased slowly and the nature of operations across the fleet have remained relatively stable. Many operators continue to fish for tuna and billfish as part of diversified operations targeting a range of species. This is especially true in the more southerly areas of the fishery.

The total number of longline permits remains capped (181 permits plus 56 permits for Tasmanian waters). Some operators have continued to invest in the fishery especially in replacement of smaller (15–20 m) longliners with larger longliners able to operate under a wider range of weather conditions and further offshore.

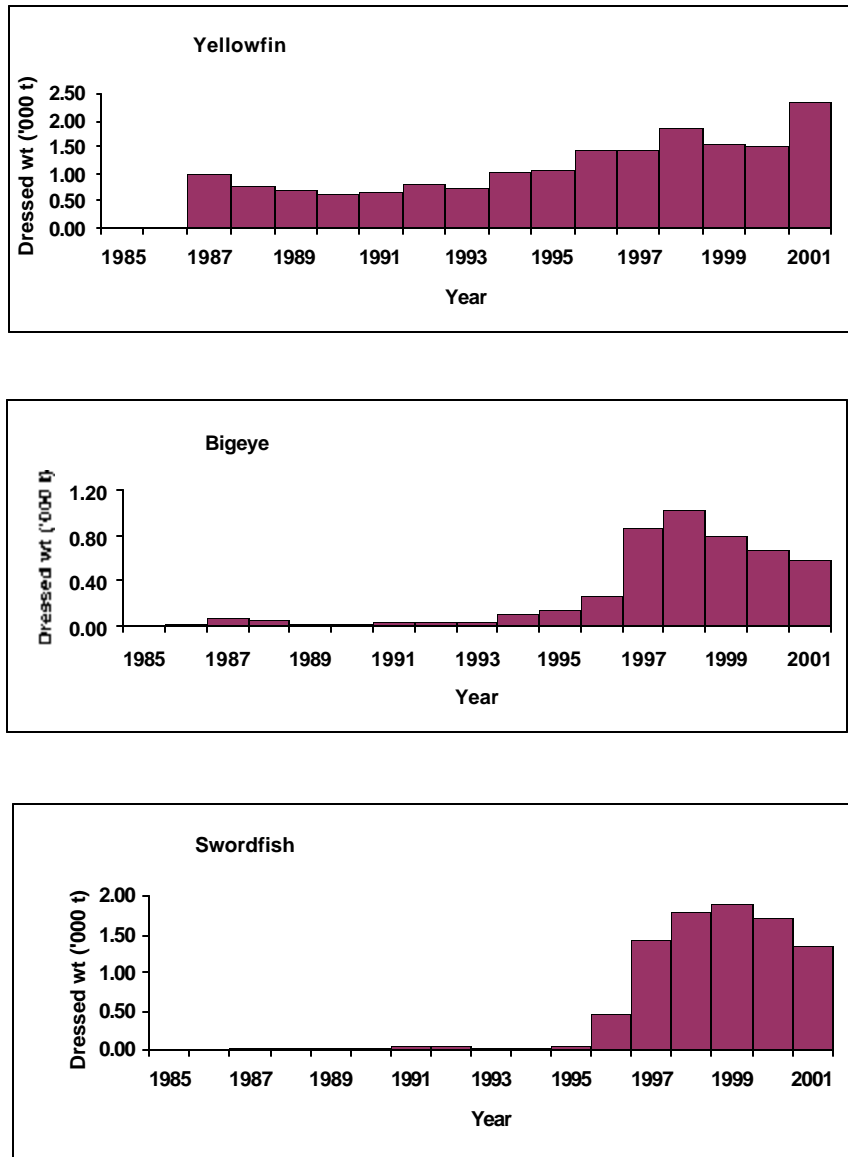
In the eastern AFZ and adjacent high seas areas, the longline techniques vary considerably with season and target species. On average Australia's longliners set about 900 hooks each day. The use of live bait has is common among fishers targeting tuna. Catches are stored on ice, and trips are usually one week in duration, although longer trips (e.g. 10 sets) are common among longliners targeting swordfish. About 70-90% of the tuna are air-freighted to Japan, with the remainder sold at sashimi markets in Australia. Most of the swordfish

¹ All weights reported here are processed or 'dressed' weights. For sashimi tuna and marlin the weights are for the carcass after the fins, viscera and gills have been removed. Domestic longliners usually report the trunk weight of swordfish (after removal of the fins, viscera, gills and head). Japan's longliners reported a mixture of trunk weights and fillet weights of swordfish.

² 'Full-time' operators are arbitrarily defined as vessels that reported 40 or more fishing days per year.

are air-freighted to the US west coast although sales into Japan are increasing. The domestic consumption of tuna and billfish continues to increase slowly.

Figure 1 Eastern Tuna and Billfish Fishery annual catches (processed weight) of yellowfin, bigeye and swordfish reported in logbooks.



History

After the declaration of the Exclusive Economic and Australian Fishing Zones in 1979 Japanese longliners operated in the eastern AFZ under bilateral access agreements. Under these bilateral access agreements, Japanese effort peaked at over 16 000 000 hooks in 1989 (Figure 2). These bilateral agreements persisted in various forms until 1997. In 1997, Australia ceased granting bilateral access to Japanese vessels following an ongoing dispute over cooperative management of southern bluefin tuna.

The domestic longline fishery commenced in the eastern AFZ in 1954 but was relatively small until 1984 when fishers first exported yellowfin and bigeye to the fresh-chilled sashimi markets of Japan (Figure 1 and Table 1). During the later part of the 1980s, Australia's longliners targeted premium quality yellowfin and bigeye in cool waters south of 34°S in late summer. Those activities sometimes extended to southern bluefin tuna during winter. Longlining commenced in early summer off northern New South Wales, spreading northwards to Brisbane (27°S).

During the early 1990s, a second region for Australia's longliners developed, in tropical waters near Cairns (16°S, 148°E). Vessels in this area reported high catch rates of bigeye and yellowfin. These 'Coral Sea' longliners occasionally experimented with deep longline sets (up to 400 m deep) to target bigeye. However, deep sets for bigeye are rare in the north-eastern AFZ compared with longline activities in equatorial waters of the Western and Central Pacific.

A third region of longline activity emerged in 1996. In August 1996, several longliners moved to the port of Mooloolaba and fished 40–120 nautical miles off the southern Queensland coastline (24–28°S, 153–156°E) predominantly catching swordfish, but also yellowfin and bigeye. Based in Mooloolaba, longliners concentrated on small 'hotspots', sometimes over deep-sea canyons and seamounts where depths vary between 200 and 4000 m. Light sticks and squid baits were a feature of swordfish sets. By October 1996, more than 20 longliners were based in Mooloolaba with this number rising to around 45 by 2000. Since 1998, longliners have regularly ventured out to Lord Howe Island, Norfolk Island and adjacent international waters.

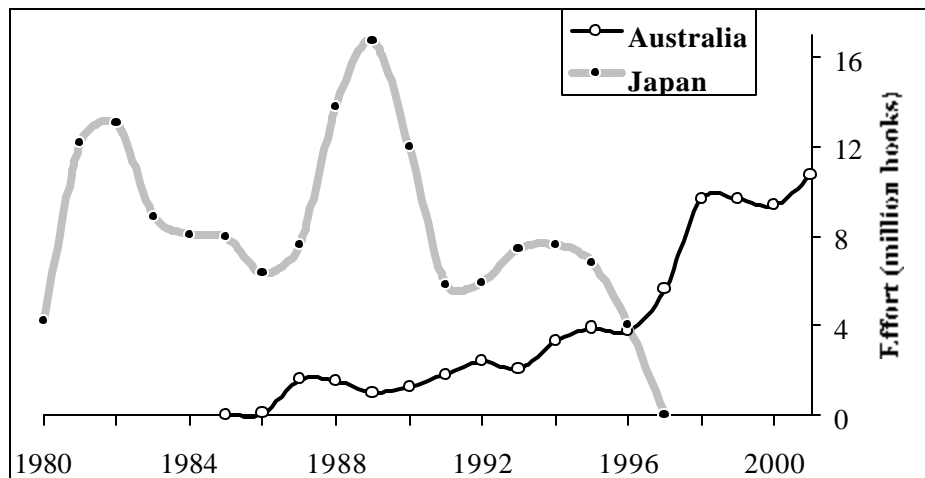


Figure 2 Annual nominal longline effort reported by Australia's longliners (black line) in the eastern AFZ and adjacent high seas and Japan's longliners (grey line) in the eastern AFZ

Research and Monitoring

The Commonwealth Government introduced a logbook for Japanese longliners in 1979, and Australian observers were placed on Japan's longliners in the AFZ to verify catch reporting and collect biological and fisheries data. The longline logbook, radio and observer data from Japanese vessels continues to provide a valuable source of information for fishery assessments and management decision making.

The Commonwealth introduced a logbook for domestic longliners in 1986. The logbook has been revised on several occasions. The latest (AL05), which is designed to also collect information required for a seabird threat abatement plan (TAP), was distributed in 2000. Return of logbooks by Australian longliners improved when it became a condition of fishing permits and has been virtually 100% in recent years.

While observers have been deployed in the fleet in 2001 these observers are part of data collection program to test the effectiveness of seabird mitigation devices and other measures. There is no 'routine' at-sea observer program, nor independent verification, of logbook catch and effort data. Consequently, the quality of Australian logbook data remains uncertain.

The Australian Government and fishing industry spend a considerable amount of money on fishery research and monitoring each year. In addition to the logbook program, key areas of recent and/or ongoing research and monitoring include:

- investigation of the origin of yellowfin recruits to the eastern AFZ;
- review of turtle interactions in the longline fishery and possible mitigation approaches;
- archival and conventional tagging of bigeye;
- hard part collection and archive for tuna and billfish;
- population genetics, reproduction, age and growth of swordfish in the southwestern Pacific;
- mitigation measures to reduce longline interaction with seabirds;
- conventional tagging of small swordfish by longliners;
- size monitoring of landings;
- development of an operational model, performance indicators and harvest strategy for target species using swordfish as a case study; and
- review of striped marlin biology and fisheries including examining commercial and recreational interaction in the eastern AFZ.

POLE-AND-LINE AND PURSE SEINE

Catches of skipjack by purse seine and pole-and-line in the eastern AFZ were around 500t in 2001. Skipjack catch in the area peaked at over 6000 t in 1992 then fell to 1000 t in 1998. About 4000 t were landed in the 2000 season. The Eden cannery closed in mid-1999, resulting in significant reductions in the local demand. The cessation of supply contracts held by east coast skipjack fishers in 2000 and their diversification into other fishing ventures seems to explain the lack of catch in 2001. Spotter planes recorded large numbers of skipjack in the south-eastern AFZ during spotting flights for blue mackerel along the continental shelf.

History

Pole-and-line and purse seine vessels fish for skipjack tuna off the far south coast of New South Wales (35-38°S). Skipjack are poled and purse seined in late spring and summer. The fishery expanded in the late 1980s, with a peak catch of over 6 158 t in 1992³ (Figure 3).

³Catches reported in logbooks were a poor estimate of catches in the pole-and-line and purse seine fishery during 1986-92. Consequently, annual landings reported by canneries for that period were substituted.

Yellowfin are a bycatch of the pole-and-line and purse seine fishery. Regulations restrict their yellowfin bycatch to less than 50% of the total catch in any trip and less than 2% of each vessel's annual catch. The bycatch of yellowfin is usually quite small, amounting to less than 1% in most years.

In 2001, 19 Australian operators had purse seine permits and 99 had pole-and-line permits to operate in the eastern AFZ. The 1997/98 catch was one of the poorest skipjack seasons on record. In contrast, the 1998/99 season was productive, with the total catch almost reaching 5000 t. This was restricted by lack of freezer and cannery capacity rather than by skipjack availability. The reduced capacity was linked to the decision to close the Eden Cannery (New South Wales) in July 1999. The remaining operators supply a cannery in Port Lincoln (South Australia).

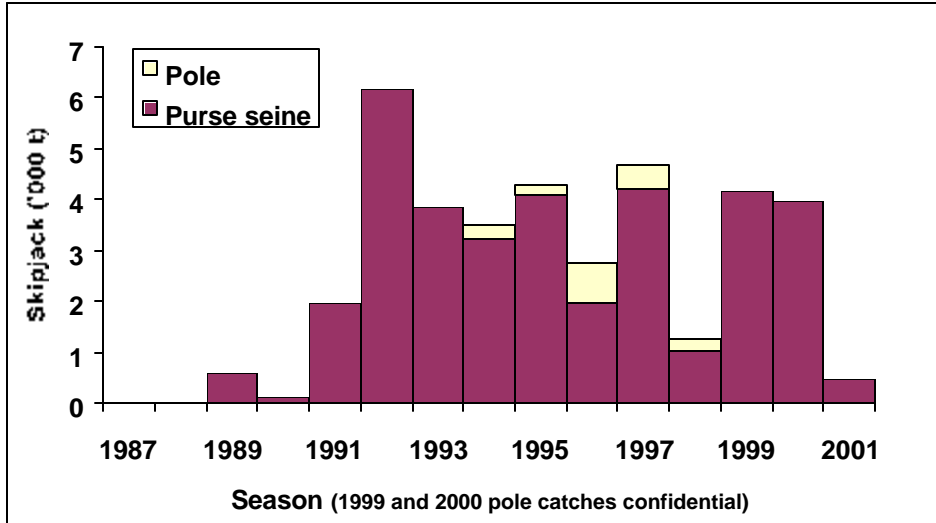


Figure 3 Eastern Tuna and Billfish Fishery annual skipjack catch reported by Australian purse seine and pole-and-line vessels (1999 and 2000 pole-and-line data is confidential).

OTHER COMMERCIAL OPERATIONS

Commercial fishers take tuna and billfish by using a variety of other methods, including trolling, handlining and droplining. Catches in these 'minor line' fisheries vary markedly according to the inshore availability of yellowfin in particular but catches are generally a small proportion of the longline catch. Catches in 2001 were very low with no yellowfin being reported by Commonwealth managed vessels. The performance of the minor line fishery is closely aligned with the experiences of the recreational sector as the two groups use similar methods and often fish in close association.

RECREATIONAL ANGLING

In 2001, striped marlin continued to be a central focus of recreational and charter activities but strike rates were lower than the previous few years (1998-2000) and the fish seemed to be more scattered throughout the fishing area. Juvenile black marlin did not appear in large numbers and it has been several years since the east coast has seen a large influx of small blacks. The abundance of large black marlin on the Cairns grounds was much improved in 2001 compared to the previous few seasons but terrorist attacks in the US reportedly resulted in the cancellation of many overseas charters and so overall charter effort on these grounds was reduced.

Reported recreational and charter catch rates of yellowfin tuna continued to be low especially for larger fish over 50kg whole weight. The near absence of larger fish on the 'traditional' fishing areas on the continental shelf along the south-east Australian coast has persisted for five years. This fact, combined with the increasing take of striped marlin by longliners and direct conflicts on inshore live bait collection grounds, has combined to result in considerable animosity between the recreational/charter fishers and commercial fishers. This animosity has resulted in calls for striped marlin to join black and blue marlin as marlin species that may not be retained by commercial fishers. Closures of inshore bait grounds to longliners have also been suggested.

Reports from tournaments held early in 2002 suggested an increased prevalence of blue marlin compared to recent years.

History

Recreational and charter anglers have taken tuna and billfish off eastern Australia since the early 1900s. During the 1970s boats capable of ranging beyond 20 nm became available at reasonable prices and angling for tuna and billfish grew in popularity. The popularity of angling for large pelagic species is also related to the ease of access to fishing grounds. The continental shelf is less than 8 nm wide in some places along the south-east coast, and anglers catch tuna and billfish from the shore at several locations.

Recent Research and Monitoring

Many anglers who target tuna and billfish voluntarily tag and release under the New South Wales Cooperative Gamefish Tagging Program, which was established in 1973. The data indicate the general distribution of recreational angling activities and trends in catches, masked by changes in effort levels, targeting, reporting of releases and the popularity of tagging. The number of tuna and billfish tagged under Gamefish Tagging Program varies year-to-year particularly within a given species⁴ (Table 2).

A National Recreational Fishing Survey has just been completed although no results have been released at the time of writing. New South Wales Fisheries has monitored catch and effort data from gamefishing tournaments over the past years and a report summarising their observations is due to be released shortly. In addition, catch and effort logbooks have been introduced for charter operators in both Queensland and New South Wales. These logbooks may provide a valuable data series in the future.

Campbell *et al.* (1999) analysed charter boat records for black marlin strike rates off northern Queensland. They concluded that strike rates had declined since 1970. However, they could not determine whether the decline was due to interaction with longliners (operating both inside the AFZ and in the wider western Pacific region) or whether it was due to other factors. A similar but more expansive study is currently underway conducted for striped marlin. BRS is due to release the report of this study in January 2003.

MANAGEMENT

Commercial Fishery

The Eastern Tuna and Billfish Fishery (ET&BF) is managed by the Commonwealth Government of Australia under an Offshore Constitutional Settlement between the Commonwealth and relevant States/Territories. The Australian Fisheries Management Authority (AFMA) manages Australian vessels engaged in commercial operations taking

⁴Most of the tuna and billfish tagged under the New South Wales Gamefish Tagging Program are released in NSW or Queensland. However, the numbers quoted here are based on data provided by Dr Mike Lowry (NSW Fisheries) that includes small numbers of fish released with NSW Gamefish Program tags in other States and in other countries, such as Papua New Guinea and Fiji.

tuna and billfish in the 200-nautical mile Australian Fishing Zone (AFZ) and high seas. Key management arrangements in the ETBF at present include limited entry, limits on byproduct and bycatch, VMS and seabird mitigation.

Management arrangements to reduce the incidental take of seabirds by longliners were introduced including night setting requirements and regulations on offal discharge south of 30°S. Trials are continuing into the effectiveness of underwater chutes and line-weighting to reduce seabird interactions during line setting. If successful these mitigation measures will provide an alternative to night setting.

The Eastern Tuna and Billfish Fishery Statutory Management Plan (including individual allocation of fishing rights in the form of hook-sets) is nearing completion and will be released for stakeholder and public comment in the next few months. Under the management plan the number of longline hooks able to be set in the fishery will be regulated. Key elements of ensuring the integrity of the statutory fishing right and the broader management arrangements will include the use of ICVMS and linked longline drum monitoring equipment. Fishing rights will be fully transferable.

Recreational Fishery

The recreational and charter fisheries for tuna and billfish are principally managed by the States and Territories. In addition to limited entry arrangements for charter boats in some States, bag limits apply in most States limiting the daily landing of some tuna and most billfish to between two and five fish dependant on State, species and size.

The question of resource sharing between these sectors is an issue being raised by both stakeholder groups and will be the subject of considerable attention over the next year.

REFERENCES

- Campbell, R., Pepperell, J., & Davis, D. 1999. Analysis of historical charter boat data to assess black marlin strikes rates in the recreational fishery off northern Queensland, Australia. Background paper presented at the twelfth meeting of the Standing Committee on Tuna and Billfish, 16–23 June, 1999, Tahiti. Secretariat of the Pacific Community, Nouméa, New Caledonia.

Table 1. Summary of catch and effort reported by Australia's longliners operating the eastern Australian fishing and adjacent high seas aggregated by calendar year. All catches are metric tonnes (t) processed weight. Pre-1997 data have been raised for logbook coverage. 'Vessels' shows the number of longliners returning logbooks.

Year	No. of vessels	Hooks ('000s)	Yellowfin (t)	SBT (t)	Albacore (t)	Bigeye (t)	Swordfish (t)	Black marlin (t)	Striped marlin (t)	Blue marlin (t)	Sailfish (t)	Spearfish (t)	Other (t)	Total (t)
1986	32	61	11	10	0	1	0	0	0	0	0	0	21	43
1987	133	1 588	998	12	129	57	21	9	42	27	3	3	1 223	2 524
1988	134	1 514	791	23	107	38	19	7	39	18	3	6	83	1 134
1989	124	1 008	714	3	93	17	13	2	7	0	0	0	49	899
1990	117	1 274	674	7	124	21	18	11	55	16	2	2	52	982
1991	111	1 822	692	103	158	24	44	10	28	1	1	1	71	1 133
1992	124	2 393	872	152	214	30	37	6	20	2	2	1	104	1 441
1993	109	2 065	670	245	186	22	25	0	27	0	0	1	59	1 235
1994	110	3 274	1 047	346	357	109	32	2	49	4	4	4	117	2 071
1995	109	3 898	1 126	244	438	152	49	2	84	4	3	4	174	2 280
1996	119	4 220	1 424	161	408	259	456	<1	135	9	<1	<1	246	3 098
1997	137	5 606	1 441	318	302	869	1 394	<1	194	<1	<1	2	561	4 779
1998	156	8 776	1 846	427	460	1 031	1 770	^a <1	447	^a <1	2	<1	492	6 476
1999	145	9 661	1 577	86	359	791	1 884	0	490	0	<1	<1	588	5 776
2000	140	9 355	1 492	90	381	666	1 699	0	506	0	<1	<1	504	5 337
2001	197	10 711	2 193	62	570	1 050	1 396	0	527	0	3	7	683	6491

^aLegislation introduced in 1997 requires longliners to release all blue and black marlin, thus restricting the weight data available for those species

Table 2. Summary of the number of tunas and billfishes tagged and released and reported by anglers to the NSW Gamefish Tagging Program.

Common name	1973-80	1980-90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	1990-00	Total
Black Marlin	1 927	10 700	2 838	1 671	2 417	1 179	583	1 290	4 268	1 838	3304	1373	20761	33388
Blue Marlin	2	379	117	126	92	140	168	145	172	252	421	337	1970	2351
Striped Marlin	5	461	190	180	220	345	427	1 017	1 172	1 116	1551	1846	8064	8530
Sailfish	240	4 837	878	1 252	950	1 188	937	845	1 007	1 984	1519	1097	11657	16734
Spearfish, Shortbill	0	9	2	8	16	12	32	10	1	17	17	9	124	133
Swordfish, Broadbill	0	11	4	2	12	3	4	9	1	5	-	-	40	51
Total billfishes	2 174	16 397	4 029	3 239	3 707	2 867	2 151	3 316	6 621	5 212			31 142	49 713
Albacore	26	1 911	555	1 179	319	1 486	453	2 732	1 125	992	-	-	8 841	10 778
Bonito, Australian	128	7 308	839	971	944	510	581	509	94	60	-	-	4 508	11 944
Bonito, Leaping	2	619	133	79	140	151	244	37	0	0	-	-	784	1 405
Tuna, Bigeye	1	37	0	1	7	0	15	4	1	1	-	-	29	67
Tuna, Dogtooth	6	195	47	13	46	17	6	8	22	7	-	-	166	367
Tuna, Longtail	462	1 358	321	155	303	140	223	144	83	98	-	-	1 467	3 287
Tuna, Mackerel (KawaKawa)	313	6 627	546	761	931	662	498	610	366	514	-	-	4 888	11 828
Tuna, Skipjack	1 939	7 952	839	380	508	518	731	379	239	245	-	-	3 839	13 730
Tuna, Southern Bluefin	20	385	161	184	218	73	18	137	73	336	-	-	1 200	1 605
Tuna, Yellowfin	521	7 043	1 104	1 761	2 011	1 261	1 825	3 717	1 659	513	-	-	13 851	21 415
Total tunas	3 418	33 435	4 545	5 484	5 427	4 818	4 594	8 277	3 662	2 766			39 573	76 426
Total tunas & billfishes	5 592	49 832	8 574	8 723	9 134	7 685	6 745	11 593	10 283	7 978			70 715	126 139