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Billfish and Gamefishing in the Pacific

Oceanic Fisheries Programme
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Introduction

This paper and session is to present some of our current knowledge on billfish and gamefishing in the Pacific and to provide some information on how gamefishing can potentially develop within the Pacific region.

By far the greatest number of billfish in the Pacific are caught by commercial fishing vessels, mainly longliners, targeting tuna. Occasionally billfish, mainly broadbill and to a lesser extent striped marlin, are targeted in their own right by longliners.

Gamefishing, on the other hand, specifically targets the billfish species, especially marlin, as well as other gamefish such as wahoo, mahi mahi, and the tuna species.

While it is fairly easy to assign a value for a commercially caught fish, basically being the price it receives at the market, it is much more difficult to value a game caught fish.

The history of recreational fishing is long and varied. Bone fish-hooks over 6,000 years old have been found in Europe, and it is highly likely that wooden gorges (solid objects meant to be swallowed as bait by fish) were used for thousands of years before this (Pepperell 1995). Gamefishing is the natural development of recreational fishing from inshore species to the larger, offshore pelagics. The definition of sport and game fishing varies from place to place. For this report we have defined gamefishing as any 'blue water' fishing activity, which is not industrial or subsistence, but rather is carried out to capture pelagic species for either pleasure and/or food. This includes charter operators, private fishermen and sport and gamefishing clubs.

Ecotourism is a popular term used at the moment for a variety of tourism activities and potentially includes gamefishing, especially where 'tag and release' is carried out. One definition of ecotourism is 'tourism and recreation that is both nature based and sustainable' (Lindberg and McKercher 1997). This definition seems to encompass gamefishing. Gamefishing is definitely nature based and should be sustainable as most of the gamefish species are highly migratory and the impact of the total gamefish marlin catch on the stock should be minimal. The practice of tag and release is regarded by much of the gamefishing fraternity as supportive of conservation as it potentially releases fish back into the environment as well as providing some species movement information if recaptured.

Another, more specific definition of ecotourism is; 'purposeful travel to natural "areas" which contain, at the minimum, the following 3 main elements' (Fletcher 1999);

1. Minimising impacts of tourists on the environment.
2. Conservation.
3. Education.

Overview of billfish catches in the Pacific

According to the best data available (and this is under-represented) the present (1997) total catch of marlin (not including broadbill or shortbill spearfish) by commercial longliners, is around 27,000 tonnes p.a. (SPC database; this includes blue, black and striped marlin as well as sailfish). This is a decrease from the peak marlin catches of the mid 1980s when up to 41,000 tonnes were recorded. The estimated catches in the Pacific during 1997 for blue marlin, striped marlin, black marlin and sailfish are 13,729, 11,558, 1,086 and 876 tonnes respectively. Shortbilled spearfish historically have not been recorded on logbooks. Broadbill swordfish, while not a major gamefish species, had a total catch of around 20,677 tonnes in 1997.

Gamefishing total catch in the Pacific accounts for a small percentage of the commercial catch. Unfortunately gamefishing catch records are extremely disjointed and in many countries non-existent. Below I have, for the first time, tried to put together a table, by country, of the gamefish catches. Please note that this table is derived from various gamefish club data sets, country fishery reports, extrapolated

commercial data and personal observations. In many cases they are a complete and absolute guess. The data can only get better! It should be noted that in many cases (countries) there are additional catches of billfish (and other gamefish species) by artisanal fishermen which are never recorded or reported. The extent of this is extremely difficult to ascertain.

The results, while extremely rubbery, show that gamefishing accounts for only a small percentage of the total marlin catch within the Pacific. These results show that the main 'gamefishing' centres in the Pacific consist of Australia, NZ, Hawaii, the West Coast of America and French Polynesia and, to a lesser extent, PNG, Fiji, New Caledonia, the Marshalls and Palau. These countries, along with other Pacific Island nations, are still developing their gamefishing resources.

As can be seen by the incompleteness of the table, there is still a lot we don't know about the catch and effort being put into gamefishing in the Pacific. Various studies have been carried out, noticeably in Hawaii, Australia and New Zealand (PA Management Consultants 1984; National Recreational Fisheries working group 1994), to try and assess the level of gamefishing. There have been even fewer studies carried out on the economic value and benefits of gamefishing to country economies. One reference, for the Hawaiian charter fishery (Pooley 1993), shows that during the 1980's, when there were around 119 boats, these vessels generated 73,780 passenger trips (total catch around 1000 tonnes – all species) with a direct income of \$8.1mill. It was also estimated that these patrons spent another \$39mill directly related to charter fishing as a vacation or leisure activity.

There is a pressing need to fully assess the status of gamefishing in the Pacific. Australia is presently initiating 2 major studies on sport and gamefishing being a 'National recreational fishing survey' and a joint study to look at 'Assessment of the relative abundance of black and blue marlin in the Australian Fishing Zone and the impact of recreational fishing'.

SPC is presently trying to better identify the extent and potential of gamefishing within the wider Pacific. We are presently drafting a '**Country Guide to Gamefishing in the central and western Pacific**' and have also raised the issue at the SCTB where a draft '**Summary of knowledge on billfishes**' was constructed (SPC 1999). We are also developing a '**gamefish database**' for national gamefish data to be entered onto.

As has been evidenced in trying to write this paper, there is very little available gamefish data around. What is available is very fragmented, incomplete and inaccessible. There is a pressing need to coordinate and collate existing data and to ensure the collection of future data. This gamefish catch and effort data is essential for a number of reasons including;

- Knowledge of the resource
- Seasonal / inter - annual variation for the gamefish species
- Fisheries interactions
- Allocation of resources
- Potential for development of gamefish industry
- Stock assessments

Gamefish catch and effort data can be collected in a variety of ways. These include;

- Gamefish tournament records i.e. catch by species with weights, recording effort as either number of boat days or hours (alternatively one can record number of lines used, but this would be difficult and inaccurate). A relevant form for this has been designed but needs implementation.
- Vessel logs – particularly relevant for charter vessels. Some of these have been provided to some vessels – still being evaluated.
- Creel surveys – boat ramp, phone interviews etc – this is an expensive and time consuming technique but does provide some valuable information on usage of the resource by the population – is also an exercise in demography e.g. Guam (WPRFMC 1996).
- There are a number of other options e.g. observer programs, experimental troll surveys etc, but these are extremely expensive and time consuming.

Gamefishing development

Gamefishing is very much a tourist industry, for example in Tonga more than 95% of charters are from international tourists. Without the international tourists there would be no gamefish charter operations. Gamefishing, and charter operations in particular, are intimately linked with the tourism industry and as such should be marketed and developed in conjunction with efforts by relevant tourism organisations and governments. Fig 1 shows the relationship of charter fishing to tourism as depicted in Walker (1997).

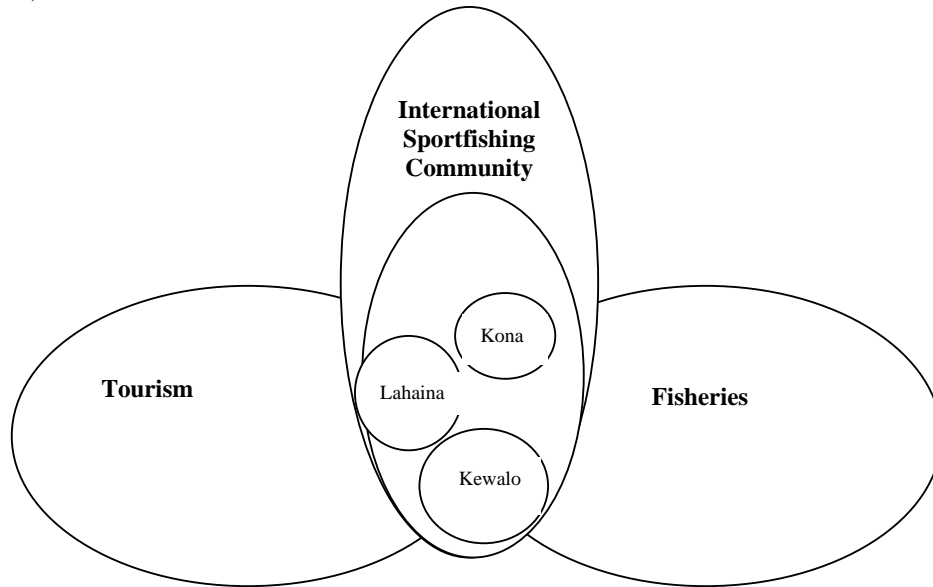


Fig. 1. The world of Hawaii charter fishing operates at the intersection of tourism and fishing systems and at the fringe of the international sportfishing community (Walker 1997).

Comments from some Hawaiian charter captains (Walker 1997), showing the relationship of 'charter fishing' to tourism include;

"the key to a successful business is showing charters a good time", "this is a show – we don't work hard here.... This is a tourist orientated service, not hard-core fishing. The right attitude is the key".

For a viable gamefish industry there needs to be a viable tourism industry. They can help each other to develop. As with most tourism industries there is a need for suitable infrastructure and facilities including accommodation, restaurants, transport and a service culture ie. trained personnel. There is also a critical need to know about the resource that is being utilised. Ideally, to develop a gamefish industry, one needs to know about the availability of gamefish species, their seasonal and annual variations, the environmental variables, especially ones such as seasonal wind strengths and directions (may limit boat size and feasibility of actually fishing). As such, like any developing business, one needs to carry out a feasibility study or business plan to fully assess the viability of the industry.

Summary

Gamefishing should be a sustainable use of the available resources, targeting pelagic fish species, with the total catch being minor compared to the commercial catch and as such should have little to no impact on the stock, though there is always the potential of some 'local' fish-down effects if effort is too concentrated.

SPC is presently producing a publication on the existing gamefishing infrastructure around the Pacific (Country Guide to Gamefishing in the Central and Western Pacific) and has also carried out a study on the 'Billfish Resources and Gamefishing Potential of Tonga' (Draft).

To develop gamefishing within a country it is advisable to fully determine the potential for the industry to develop, to have a good knowledge of the resource and to carry out the development in conjunction with the private operators, gamefishing clubs and of course government departments including tourism and fisheries.

There is an urgent need to collect and collate relevant recreational catch and effort information for both assisting the industry and to help formulate relevant fisheries management plans.

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Table 1: Best Guesstimate of Gamefish Catch by Pacific Countries

Country	Approx. No. of private 'game' boats	Approx. No. of charter boats	Ave catch Blue marlin (tonnes)	Ave catch Striped marlin (tonnes)	Ave catch Black marlin (tonnes)	Ave catch Sailfish (tonnes)	Total (tonnes)
American Samoa	10 to 20	?	2.8			0.5	3.3
Australia (east coast)	heaps	100	50	134	275	208	667
Cook Islands	60	10	4	1.5	0.5		6
FSM	~120 (mostly small)	1	3	0.5	0.5	0.3	4.3
Fiji	50	10	8.8		1.7	5.4	15.9
French Polynesia	450	10	130	0.5	1		131.5
Guam	100 plus with >500 coastal sportfishers	25	45			1	46
Hawaii	heaps	144	200				200
Kiribati	20	4	2		0.8	2.5	5.3
Marshall Islands	50	1	6				6
Nauru	?	1 to 2	4				4
New Caledonia	~100	5	10			3	13
New Zealand	Heaps	?		100			100
Niue	40	3		0.5	3	1	4.5
Northern Mariana islands	70	20	2			0.5	2.5
Palau	50-100	10 to 20 (some part time)	6.3			2	8.3
PNG	80-100	A few ?	5.2		2	3.9	11.1
Samoa	6 to 8	?					0
Solomon Islands	10-20 (different categories)	4	3	0.7	1	0.4	5.1
Tokelau	30 (outboard aluminium dinghies)		1	0.5	0.5		2
Tonga	20-30	6 to 8	32.4		4.3	3.2	39.9
Tuvalu	>100						0
Vanuatu	30-40	6	20	1	1	2.2	24.2
Wallis & Futuna	?	?					0
Total			535.5	239.2	291.3	233.9	1299.9