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Sharing Fisheries Resource: The Size of the Pie or the Size of the Slice?

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Sharing Fisheries Resource: The Size of the Pie or the Size of the Slice?

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There is continual pressure from parts of the recreational sector to close commercial fisheries. This pressure is based on the belief that recreational fisheries are inherently more environmentally benign and 'worth' more than commercial fisheries, and that recreational fishing benefits are maximised with sole access to fisheries resources. This pressure obscures the question of whether recreational fisheries are sustainable, and whether the structures and processes are in place to ensure continual improvement in environmental performance of this sector. In this paper, we briefly review information on the environmental and economic impacts of commercial and recreational fisheries. We conclude that recreational fishing lobbyists underestimate the environmental impacts of recreational fishing, and that most economic studies purporting that significant economic benefit will accrue from allocating sole access to the recreational fishing sector are based on incorrect notions of economic valuation. We demonstrate that the solution to putting recreational fishing on the path to sustainability is not through attempting to take fisheries resources from another sector, but is through the recreational fishing sector adopting Environ-

mental Management Systems (EMS) to continually improve environmental performance. We present briefly the appropriate economic method for valuing commercial and recreational fisheries for the purposes of resource allocation.

Introduction

Commercial fishing in Australia harvests seafood resources for domestic consumption, for export, and for use as bait by recreational fishers. Seafood demand in Australia and overseas continues to increase. Conflict for access to fisheries resources is endemic in all developed countries and is an emerging issue in some developing countries (Kearney 2002a,b; Sumaila 2002). As a response to this conflict, areas and species in Australia are increasingly being declared by governments as 'recreational only'. This has been generally done in an *ad hoc* fashion with no consideration of the cumulative effect of these changes on commercial fishers and on seafood supply. Further, these closures tend to be permanent — the principles of adaptive management are not applied. Reallocation of access to recreational fishers is purported to result in increased economic benefits to local communities, more equitable arrangements for recreational fishers, and improved environmental outcomes.

We will review information on the environmental and economic impacts of commercial and recreational fisheries. This review extends previous work by McPhee *et al.* (2002) and McPhee and Hundloe (2004). We discuss the continued central role commercial fishing in Australia will need to play in Australia's future seafood production.

The sectors

To participate in commercial fishing, an individual must have the appropriate State and/or Commonwealth licenses or permits — it is not (and nor

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should it be) an as-of-right activity. Commercial fishing in Australia is small by world standards, but is based on a very wide range of species captured using diverse fishing methods. Most Australian fishing businesses are small family businesses, rather than large industrialised ‘corporate’ businesses. Research on the social and work profile of commercial fishers across Australia generally demonstrates that commercial fishers:

- are males with a mean age of 45–55 y
- work long hours (e.g. > 60 hours per week)
- have a long history of participation in the industry often including generational links
- have limited formal education
- have a strong linkage to ‘place’
- have limited options for re-training to industries outside commercial fishing.

For example, for commercial fishers in NSW the mean age of fishers is 54 y and the normal working week is about 70 hours. On average, fishers had fished for 22 y and had resided in their current locality for about 20 y. Most fishers (69%) have not completed formal schooling to year twelve and only 3% were tertiary educated (see Dominion Consulting 2004). In terms of employment options outside of the seafood industry, in the NSW Ocean Trawl Fisheries, most participants (67%) considered that they could not get employment outside the industry as ‘fishing is all I know’. Although quantitative data from other fisheries are lacking, there is no reason to believe that similar concerns regarding the paucity of employment options outside the fishing industry is unique. Across the board, job satisfaction and social identity are also important reasons for commercial fishing (Pollnac and Poggie 1988; Gatewood and McCay 1990; Minnegal *et al.* 2003; Smith *et al.* 2003). While there is a clear tendency for commercial fishers to be male, this does not imply that females have a limited role in the business of fishing. Smith *et al.* (2003) demonstrate that within a family seafood business, males and females play interdependent roles, and this interdependency is critical for business success.

Recreational fishing is considered an as-of-right activity and it has open access. There are no practical management mechanisms to cap or reduce

total recreational fishing effort or total catch. Compared to the commercial fishing sector, the recreational fishing sector is considerably more heterogeneous. The demographics and motivations for recreational fishing are highly diverse, but there are two clear and consistent (interrelated) patterns. First, catches among recreational fishers are distributed inequitably. Most recreational fishers catch no or very few fish, while a small minority take the majority of the catch (e.g. McGlennon 1992; Ferrell and Sumpton 1998). As a rule of thumb, 10% of anglers catch 90% of the fish, and it these fishers who are generally recreational fishing lobbyists. Second, non-catch-related motivations (e.g. being outdoors, being with friends) are more important than catch-related motivations (e.g. Kearney 2000b; Vigliano *et al.* 2000; Calvert 2002).

An important consideration is that commercial fishing also provides a service to recreational fishers in the form of bait. While many keen anglers use lures or collect their own bait, most fishers rely on baits like prawns, pilchards and squid captured by commercial fishers.

Environmental issues

It is generally considered that recreational fishing is more environmentally benign than commercial fishing. However, this paradigm is increasingly being challenged. Both fishing sectors cause environmental impacts that require management, and while the impacts of an individual commercial fisher may be greater than that of an individual recreational angler, the extremely large number of recreational fishers ensures their environmental impacts are large. McPhee *et al.* (2002) recently reviewed the environmental impacts of recreational fishing and found that for many common shared species in Australia, the recreational catch is of a similar magnitude to or exceeds the commercial catch (Table 1).

Just like commercial fisheries, recreational fisheries also have by-catch. McGlennon and Lyle (1999) concluded that angling discard rates in Australia are typically 30–40% of the total catch and need to be considered in any management regime for recreational fishing.

Table 1. Comparative catches of species shared by recreational and commercial fishers in various Australian studies (modified from McPhee *et al.* 2002)

| Location | Species | Annual recreational catch (t) | Annual commercial catch (t) | Reference |
|------------------------------------|---|-------------------------------|-----------------------------|------------------------------|
| South-east Qld | Snapper (<i>Pagrus auratus</i>) | 148* | 50 | Ferrell and Sumpton (1998) |
| Metropolitan Adelaide waters (SA) | King George whiting (<i>Sillagonoides punctata</i>) | 48.5 | 13.4 | McGlennon (1992) |
| Fraser Island (Qld) | Tailor (<i>Pomatomus saltatrix</i>) | 180 | 25-55 | Pollock (1984) |
| Richmond and Clarence rivers (NSW) | Yellowfin bream (<i>Acanthopagrus australis</i>), dusky flathead (<i>Platycephalus fuscus</i>) and tailor | 70* | 54 | West and Gordon (1994) |
| Leschenault estuary (WA) | Blue swimmer crab (<i>Portunus pelagicus</i>) | 45.7 | 2.8 | Malseed <i>et al.</i> (2000) |
| Eastern Gulf of Shark Bay (WA) | Snapper | 100 | 3 | Anon. (2000) |
| Greater metropolitan Perth (WA) | Tailor | 651 | 7 | Young <i>et al.</i> (1999) |
| Port Phillip Bay (Vic) | Mixed inshore species (including snapper and King George whiting) | 469 | 482 | M. Norman, unpublished data |

Catches only from daylight angling were recorded in these studies, hence they underestimate the actual total catch.

The difference between discards in commercial and recreational fishers is that discards by commercial fishers are called by-catch, a term with negative connotations, whereas those by recreational fishers are called ‘catch and release’, a term with neutral or even positive connotations. In both cases, though, fish are affected — a fraction die on release or within days of capture, or suffer from sub-lethal impacts which may detract from growth or reproduction.

The impacts of commercial fisheries on threatened or ‘charismatic’ species such as dugong, marine turtles and dolphins are well documented. It is increasingly being realised that recreational fishers also impact on threatened species. An initial census by the Australian Seabird Rescue Group in the Richmond River (NSW) revealed that of 108 resident pelicans (*Pelecanus conspicillatus*), 37 were suffering injuries from being entangled or hooked in recreational fishing gear (McPhee *et al.* 2002). Wells *et al.* (1998) concluded that, although often overlooked, the number of deaths or serious injuries to bottlenose dolphins (*Tursiops truncatus*) in Florida from recreational fishing could exceed that from the region’s commercial net fisheries. In NSW, protected species such as eastern blue devil fish (*Paraplesiops bleekeri*) and black cod (*Epinephelus daemeli*) have been recorded in angler’s

retained catches (Steffe *et al.* 1996). What is different between the two sectors is that the impacts from commercial fishing are acknowledged and tightly managed, whereas those from the recreational sector are generally not. Specific management approaches such as area closures, the use of turtle excluder devices, acoustic alarms (‘pingers’), or other gear modifications are used to mitigate the impacts of commercial fishing on threatened species. A similar level of mitigation is not enacted for the recreational fishery.

In many freshwater areas in Australia, recreational fishing requires the continued stocking with feral species such as trout, which through predation and competition cause profound ecological effects. This is a serious environmental impact restricted to recreational fishing.

The stocking of freshwater areas with trout is known to significantly impact aquatic biodiversity; and in many instances contributes towards the threatened status of species such as the spotted tree frog (*Litoria spenceri*), various galaxiids and other native fish (e.g. Crowl *et al.* 1992; Jackson and Wager 1993; McIntosh 2000).

Economic issues

The single biggest factor in driving the allocation of fishing access from commercial to recreational fishers is a belief that it leads to significant economic benefits. An important consideration is that the benefits of recreational fishing are not dependent on the presence or absence of commercial fishing (McPhee and Hundloe 2004). Studies comparing recreational fishing expenditure with the gross value of production (GVP) from commercial fishing have been used to justify continued reallocation of access to recreational fishers (e.g. Nicholls and Young 2000). This economic approach is well recognised as being inappropriate (e.g. Edwards 1991; Hundloe 2002; MCPhee and Hundloe 2004). Recreational fishing expenditure is consumption through the use of disposable income, whereas commercial fishing GVP creates primary wealth. It is a comparison between ‘apples’ and ‘oranges’ when an ‘apples’ with ‘apples’ comparison is required (Hundloe 2002). No matter how accurately expenditure is measured, it cannot, by itself, determine how resources should be allocated between competing users to maximise economic benefits (Cauvin 1980; Edwards 1991; Li 1999; Hundloe 2002). It is simply the wrong parameter to measure, and to continue to use it to justify resource allocation decisions is at best a sign of ignorance by decision-makers of proper economic valuation methods, or at worst deliberately misleading. A more detailed analysis of conceptual and practical flaws can be found in MCPhee and Hundloe (2004).

Alternative sources of seafood

Recreational fishing lobbyists often promote the view that if commercial fishing in Australia ceased, domestic seafood demand could be replaced with domestically-produced aquaculture product, or imported wild-caught or farmed product.

Recreational fishing lobbyists and indeed governments often raise the potential for domestic aquaculture to replace commercial fishing, and also provide jobs to displaced commercial fishers. There is good community support for the concept of aquaculture, but when aquaculture projects (particularly marine projects) are proposed there is frequently strong and vociferous opposition to them (McPhee in prep.). Ironically, some of the same recreational fishing lobby groups (e.g. SUNFISH in Queensland) who oppose commercial

fishing, and put forward aquaculture as an alternative source of seafood, also oppose aquaculture developments when they are proposed. Several large-scale aquaculture projects have been held up or indeed have not proceeded due to community opposition, and this has the potential to erode investor confidence in the industry.

In addition to community opposition, several aquaculture sectors are also struggling with the cost of production and being able to produce product at a competitive price for the domestic market. The latest figures from the Queensland Department of Primary Industries and Fisheries show production value by the prawn farm industry in Queensland fell by about 11% in 2002–03. While in the long term aquaculture production in Australia will most likely increase, a belief that it can replace the diversity and total volume of wild-caught product appears exceedingly optimistic.

Imported seafood, both farmed and wild-caught, has the potential to contribute significantly to seafood supply. Recently, farmed *vanammei* prawns have been imported in very large quantities into Australia from Asia, and their importation has affected the market for Australian-farmed prawns. As well as the negative effects on Australia’s balance of trade, a considerable portion of the imported seafood (particularly farmed prawns) is produced without appropriate environmental safeguards or consideration of social inequities (for instance see Stonich and Bailey 2000). By purchasing imported farmed prawns (and some other imported seafood products), Australian consumers are inadvertently contributing to environmental degradation and/or reinforcing social inequities in developing countries.

Environmental management systems

Australian agriculture sectors can demonstrably improve environmental and social performance with Environmental Management Systems (EMS) (see Carruthers and Tinning 2003 and references therein). The commercial fishing industry, with support from the Commonwealth Government, has embarked on the development of EMS for commercial fisheries. This approach is aimed at giving commercial fishers tools with which to take greater responsibility for improving environmental and social performance of their fishery. Given the environmental impact of recreational fishing, the

recreational fishing sector should also take great responsibility for improving environmental performance. While there are initiatives aimed at improving the survival of fish discarded by recreational fishers, the recreational sector would benefit from more holistic approaches to improving environmental performance. Environmental Management Systems are just such a holistic tool and we strongly believe that the recreational sector too should embrace them.

Where to now?

We consider that continuation of commercial fishing in Australia is essential for supplying seafood to domestic consumers, and to provide this supply commercial fishers need to maintain access to resources. Jurisdictions need to move away from *ad hoc* reallocation decisions, and to develop and apply rigorous frameworks to assess resource allocation proposals. These frameworks need to be adaptive, to utilise available environmental and economic information, and to consider the seafood requirements of the general public. Where the available information does not support a net economic or environmental benefit from reallocation, or seafood supply to the public is significantly impaired, then reallocation should not occur. The commercial fishing industry needs to continue to improve environmental performance through the use of EMS, and recreational fishers need to set out on the path of continual environmental improvement.

Effective management of all fishing effort is essential, and all sectors must accept responsibility for their impacts.

The allocation debate diverts political and community attention from the real threats to fish stocks. Commercial and recreational fishers should consolidate and demand that the real threats to fisheries are addressed: poor environmental flows, habitat degradation and issues of water quality.

Commercial and recreational fishing can continue to co-exist and provide the benefits available from both activities. Benefits available from recreational fishing are not dependant on the absence of commercial fishing.

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