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# Putting Sustainability into Practice – the Queensland Fisheries Management Debate

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*According to the Australian Bureau of Agricultural and Resource Economics, a staggering 87 per cent of Australia's total value of fisheries production is exported yet 60 per cent of seafood consumed within Australia is imported. Although the gross value of Australian fisheries production has increased by 13 per cent in 1999-2000, statistics show there is a significant decline in the total tonnage of fish being caught. Alarming, Queensland's volume of wild caught species fell by 5,000 tonnes in 1999-2000 resulting in a 20 per cent reduction in the gross value of production despite an increase in aquaculture production and premium prices for exported seafood. With declining fish stocks, conflict between competing stakeholders is inevitable. The debate over the management of Queensland's fisheries resource has been the recent focus of much media attention. Is the indisputable economic contribution to the community of commercial fishing activities so great that fishery managers should ignore the principles of ecologically sustainable development (ESD)? This article considers the Queensland Fisheries debate and questions whether the State's fisheries' managers are in fact putting sustainability into practice rather than merely paying lip service to the achievement of ESD enshrined in the Fisheries Act 1994 (Qld).*

## Introduction

In vol 17 no 4, August 2000 EPLJ, an article, "Australian Fisheries Management and ESD – The One That Got Away?", by Messrs Nicholls and Young, reviewed legislation concerning fisheries management at both State and Commonwealth levels and concluded that while the legislation is adequate to achieve sustainable fisheries management, the practical application of that legislation by governments is lacking.

The author published summaries of the paper in a number of legal and industry periodicals and journals.<sup>1</sup> The article and subsequent summaries

have received a considerable amount of media attention.<sup>2</sup> The findings of the article were even mentioned in the Commonwealth parliament earlier this year.<sup>3</sup>

The primary purpose of the Nicholls/Young article and subsequent published summaries was to generate and focus debate on the practical application of the principles of ecologically sustainable development (ESD) enshrined in the Fisheries Act 1994<sup>4</sup> (Act) to fisheries management and resource allocation among resource

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<sup>1</sup> "Is the Marine Environment Being Short-Changed", *Queensland Fishing Monthly*, September 2000, p 61; "Money Talks", *Marine Industry News*, December 2000, Vol 11 No 12, p 14; "Money Talks", *Fishing Industry News*, Summer 2000, p 10; "Money Talks – a 'fishy' Bottom Line", *Proctor*, Vol 21, No 1 January/February 2001, pp 26-27.

<sup>2</sup> "Money Talks", *Fishing World*, October 2000, p 5; "How much is enough?", *Marine Industry News*, December 2000, Vol 11, No 12; "Fight for your rights", *Fishing World*, January 2001, p 7; "What price a fish?", *Courier Mail*, 19 January 2001; "An Issues Update", *Australian Fisherman and Boating*, May 2001, No 65, p 72; "Credit where Credit's Due", *Fishing World*, June 2001, p 7.

<sup>3</sup> Hansard Extract, statement by Joanna Gash, MP Gilmore, dated 8 March 2001, p 21951.

<sup>4</sup> See s 3 *Fisheries Act* 1994.

stakeholders by the Queensland government.

The commercial sector, despite causing greater environmental harm to the marine environment than other stakeholders, points to its substantial contribution to the economy to justify and maintain its disproportionate exploitation of the fisheries resource. The Nicholls/Young article questioned whether the indisputable economic contribution to the community that flows from commercial fishing is so great that fisheries managers should ignore environmental and social issues and sustain the commercial fishing industry's high level of access to our fisheries in preference to the interests of other existing and future stakeholders. To that end, the Nicholls/Young article provided a comparison, based on Queensland government statistics, of the financial contribution of the commercial and recreational sectors to Queensland's economy from their respective harvesting of the resource.

The financial analysis contained in the Nicholls/Young article and subsequent summaries however, have drawn trenchant criticism from the commercial fishing industry.<sup>5</sup>

The purpose of this present article is twofold; first, to answer these criticisms; and second, to examine whether the practice of fisheries management in Queensland complies with the principles of ESD.

### “A Recreational Bias”?

Critics correctly point out that the author is a keen recreational angler and acknowledge the author's “love for the marine environment”.<sup>6</sup> Unfortunately, those critics attempt to marginalise the conclusions of the Nicholls/Young article, charging bias towards recreational fishing. More

particularly, the critics reprove the author for advocating greater access to our fisheries by recreational anglers in preference to the interests of the commercial sector in a “winner take all approach”.<sup>7</sup> In fact, this is a red herring, as the Nicholls/Young article states that their analysis of governmental statistical data **should not** be used by the recreational fishing sector to claim greater access rights to our fisheries resource, but rather that it be used by that sector to convince the government to closely scrutinise the commercial sector's impact on a very lucrative resource to ensure it is developed in an ecologically sustainable way.<sup>8</sup> What inhibits the practical application of legislative ESD principles to fisheries management “is a lack of detailed independent scientific and economic data on exploitation of our fisheries”.<sup>9</sup> Allegations that the author wishes to ban commercial fishing<sup>10</sup> is both ill founded and just plain silly – sustainable management is the key.

### What is ESD? – the triple bottom line

The objects of the Act<sup>11</sup> establish that the fundamentals of fisheries management in Queensland include:

- ensuring fisheries resources are used in an ecologically sustainable way;
- achieving the optimum community, economic and other benefits obtainable from fisheries; and
- ensuring access to fisheries resources is fair.<sup>12</sup>

The objects represent a simplified definition of the term “ecologically sustainable development” (ESD) embraced by the National Strategy for Ecologically Sustainable Development (National

<sup>5</sup> Of particular interest are the articles “Responsible Fishing” by lawyers Mrs English and Mr Gore, members of law firms which regularly act for commercial fishing interests, appearing in the May 2001 issue of the Queensland Law Society's monthly legal journal, *Proctor* and “Taken – Hook, Line and Sinker” by the academics Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter appearing the June 2001 edition of *Proctor*, both of which criticised the findings and conclusions of the author's article “Money Talks – a ‘fishy’ bottom line” which appeared in the January/February 2001 edition of *Proctor*. The arguments put by these critics, represent, collectively, the traditional position taken by the commercial fishing industry when lobbying governments to maintain access to our fisheries.

<sup>6</sup> Dr DP McPhee, Professor TJ Hundloe, Dr GA Skilleter, “Taken – Hook, Line and Sinker”, (2001) 5 *Proctor* 26.

<sup>7</sup> See Mrs English and Mr Gore, “Responsible Fishing”, (2001) 4 *Proctor* 3.

<sup>8</sup> See Nicholls/Young, “Australian Fisheries Management and ESD – The One That Got Away”, (2000) 17 *Environmental and Planning Law Journal* 272 at 290

<sup>9</sup> See T Young, “Money Talks – a ‘Fishy’ Bottom Line”, (2001) 1 *Proctor* 26.

<sup>10</sup> See Mrs English and Mr Gore, “Responsible Fishing”, (2001) 4 *Proctor* 3.

<sup>11</sup> See *Fisheries Act* 1994 – Reprint No 3 – as in force 1 June 2001

<sup>12</sup> See Sections 3(1)(a), (b) and (c) *Fisheries Act* 1994; see also *Queensland Rocky Reef Fish Fishery – Discussion Paper No 7*, Queensland Fisheries Management Authority, October 1998; see also Nicholls/Young, “Australian Fisheries Management and ESD – The One That Got Away”, (2000) 17 *Environmental and Planning Law Journal* 272-280.

Strategy)<sup>13</sup> and the Intergovernmental Agreement on the Environment, 1992 (IGAE), an agreement between the States and Commonwealth.

The National Strategy's definition of ESD means "using, conserving and enhancing the community's resources so that ecological processes on which life depends, are maintained, and the total quality of life, now and in the future, can be increased".

The ESD principles of the IGAE include:

- the precautionary principle;<sup>14</sup>
- intergenerational equity;
- conservation of biological diversity and ecological integrity; and
- improved valuation, pricing and incentive mechanisms including the polluter-pays principle and the user-pays principle.<sup>15</sup>

In addition to these principles, the National Strategy requires that the decision-making process should effectively integrate both long term and short term economic environmental, social and equity considerations.<sup>16</sup>

The principles of ESD require a balancing and integration of social, environmental and economic principles to achieve the "triple bottom line"<sup>17</sup> so that no single principle predominates over the others.<sup>18</sup>

This imposes a duty on the Chief Executive to ensure and achieve ESD. Failure by the Chief Executive to do so opens the way for judicial review of the decision-making process.<sup>19</sup>

Environmental groups and recreational anglers have difficulty in, respectively, challenging or justifying access to the resource on economic grounds because there is a lack of independent, scientific and economic data on the exploitation of our fisheries. A perception of inequity exists among non-commercial fishing stakeholders because those stakeholders are unable to fund the costs of producing the necessary scientific and economic data to justify their claims. It is politically safer for a government to apportion access rights based on the most profitable use of the resource, but that favours the "economic bottom line" over the others.

Certainly, some representatives of commercial fishermen seem to favour the "economic bottom line" above the others. They argue that because anglers are willing to spend as much money as they do in pursuit of their pastime their use of the resource is four times less efficient than commercial fishers.<sup>20</sup> But that ignores, on the one hand, the collateral social pleasures recreational anglers are prepared to pay for in the course of catching a fish, and, on the other, the environmental cost of the commercial industry's "efficient" extraction of the resource.

Over-emphasis on the "economic efficiency" of commercial fishing can lead to devastating practical effects on the environment, the commercial fishing industry itself and the social well-being of a community. The commercial cod fishery on the Grand Banks of Newfoundland and off Massachusetts collapsed through over-fishing in the early 1990s as a direct consequence of improved technology and larger and more efficient harvesting vessels. The 40,000 people out of work as a result of the shutdown of just the Canadian fishery are unlikely to be singing the praises of "economic efficiency".<sup>21</sup> Hopefully, Queensland's next generation of commercial fishermen will not suffer the same fate.

Queensland's commercial fishing industry is undoubtedly efficient in its extraction of the

<sup>13</sup> Canberra: AGPF, 1992.

<sup>14</sup> See definition of "precautionary principle" in s 3.5.1 of IGAE "Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation" and see also The Honourable Justice Paul L Stein, AM, "Are Decision Makers Too Cautious with the Precautionary Principle?", (2000), 17 *Environmental and Planning Law Journal* 3.

<sup>15</sup> DE Fisher and MG Walton, *Environmental Law Queensland*, (LBC Information Services, 1996), p 151; para 20.30.

<sup>16</sup> See Professor Douglas Fisher, "ESD – The Principle, its Implementation and Enforcement", Putting Sustainability into Practice, QELA Conference 2001.

<sup>17</sup> See John Elkington, *Cannibals with Forks: the Triple Bottom Line of 21<sup>st</sup> Century Business*, (Gabriola Island, BC, Canada, New Society Publishers, 1998).

<sup>18</sup> For a useful summary of the historical implementation of ESD principles into Australian legislation see Philipa England, *Integrated Planning in Queensland* (The Federation Press 2000), pp 17-20.

<sup>19</sup> See Professor Douglas Fisher, "ESD – The Principle, its

Implementation and Enforcement", Putting Sustainability into Practice, QELA Conference 2001.

<sup>20</sup> See Mrs English and Mr Gore, "Responsible Fishing", (2001) 4 *Proctor* 3.

<sup>21</sup> See Nicholls/Young, "Australian Fisheries Management and ESD – The One That Got Away", (2000) 17 *Environmental and Planning Law Journal* 272; see also Mark Kurlansky, *Cod, a Biography of the Fish that Changed the World*, 1997.

resource. The question that requires an answer is whether this “efficient” extraction is sustainable? The latest figures issued by the Australian Bureau of Agricultural Resource Economics (ABARE) in “Australian Fisheries Statistics” (ABARE Statistics)<sup>22</sup> suggest that this is not the case. The value of Queensland’s fisheries production has fallen by 20 per cent (\$44 million) in contrast to all other States, which have recorded an increase. Queensland harvesting from the wild-caught sector dropped from \$221 million from 1999 to \$177 million in 2000. This represents a 5,000 tonne reduction. The value of the wild-caught prawn catch fell by 32 per cent to \$75 million, with the value of fish, scallops and bug landings also falling in 1999-2000. The ABARE Statistics show that for the Commonwealth’s “Northern Prawn Trawl Fishery” landings have declined for the third successive year.

These figures send a clear message to the Queensland government that its fisheries resource is on the decline.

In light of these statistics, the Queensland government must re-evaluate its current practices and attempt to achieve the “triple bottom line” in the management of the fisheries resource. There are economic, social and environmental benefits in getting the balance right.

### *Fish for everyone? – the social bottom line*

A large proportion of the Queensland population, more than 900,000 people annually, engage in recreational fishing.<sup>23</sup> Recreational fishing affords people with a high quality of life as a result of the ancillary and incidental benefits which flow from a piscatorial pursuit, such as enjoying the marine environment, relaxing on the water, socialising with friends, spending time with the family or keenly competing in fishing tournaments.<sup>24</sup> The pastime of fishing has been the source of thousands of novels, instructional handbooks and texts, travel books and guides, periodicals and magazines. Television

documentaries, videos, radio segments, computer games and even toys all themed on recreational fishing evidence its significant importance in our culture.

For an angler father, there is no greater social joy than passing on his knowledge and love of recreational fishing to his son. For many recreational anglers, cooking up a meal of freshly caught fish for the family is an inexplicably satisfying experience that may have its source in our “hunter-gatherer” ancestry. However, the continued over-harvesting of our fisheries resource by both the recreational and commercial sectors ignores the inter-generational equity that should be afforded to this very popular social pastime that has become part of the fabric of our culture.

Based on research conducted in Canada, the United States and Australia, claims that declining fish stocks do not dramatically affect the activities of anglers – because motivations for amateur fishing are varied<sup>25</sup> – cannot be substantiated.<sup>26</sup> Such assertions defy logic. Golfers play golf for a myriad of diverse reasons including socialising with friends, meeting prospective business partners, relaxing outdoors or competing professionally in golf tournaments. If you take away the golf ball there is no reason to be on the golf course. When there is no snow, skiers don’t go. Similarly, if you take away the fish from recreational fishing there will be no pastime to inspire the books, television programs, videos or, for many, the very reason to be on the water.

If anglers do not go fishing primarily to catch a fish, then how does one explain Queensland’s \$65 million tackle industry?<sup>27</sup>

It has been argued that Queensland’s commercial fishing industry confers high social benefits as it “produces fish for the public”.<sup>28</sup> It is acknowledged that most members of the public do not participate in recreational fishing but still want to eat seafood. It is further acknowledged that over 90 per cent of

<sup>22</sup> ABARE 2001, Australian Fisheries Statistics 2000, Canberra, 2001.

<sup>23</sup> Draft – Final Report of the Fisheries Regulation Review Committee of the *Queensland Fisheries Act 1994* – a legislative review in accordance with the national competition policy – May 2000.

<sup>24</sup> “Perhaps fishing is, for me, only an excuse to be near rivers. If so, I’m glad I thought of it”, see Roderick L Haig-Brown, “A River Never Sleeps” (1946), in Nick Lyons, *The Quotable Fisherman*, 1998, p 131.

<sup>25</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, “Taken – Hook, Line and Sinker”, (2001) 5 *Proctor* 26.

<sup>26</sup> See for instance Gordon Gislason, Edna Lam, Julie Paul and Ellen Battle, *The Economic Value of Salmon* (Canada Department of Fisheries and Oceans, February 1996).

<sup>27</sup> Queensland Fisheries Resources: Conditions and Trends 1998-1995. Fish web Queensland Fisheries.

<sup>28</sup> Mrs English and Mr Gore, “Responsible Fishing”, (2001) 4 *Proctor* 3.

Australia's population eat seafood at least once a year. (Australians are not large consumers of seafood by world standards.)

Despite Australia's relatively low consumption of seafood, 60 per cent of seafood consumed in Australia is in fact imported from countries such as Africa, Asia, South America and Cuba.<sup>29</sup> The fish that is served at restaurants, local pubs and clubs are mostly frozen imports, while the fillets served in fish-and-chip shops around the country – often under other names – consist, by and large, of frozen imported Hake, Hoki and Nile Perch.<sup>30</sup> Australia imports from Vietnamese, Burmese, Indonesian and Thai Barramundi farms up to three times the tonnage of Barramundi caught in the wild in this country. A staggering 87 per cent of Australia's total fish catch value – or \$1.99 billion worth – is exported every year.<sup>31</sup>

Why? The answer is simple. Australians simply cannot afford to pay the premium prices commanded overseas by the top quality fish and crustaceans that the commercial sector harvests from our resource. High export earnings are great for the economy but the commercial sector cannot be said to be providing a social benefit to the community by ensuring it is supplied with quality fresh fish. It has been further argued that research from James Cook University establishes that consuming fresh seafood caught by the local commercial fishing industry is an important tourism drawcard.<sup>32</sup> This 1993 research paper may require review in light of the recent ABARE Statistics. These days, if a Queenslander wishes to enjoy the pleasure of eating fresh locally caught seafood then he or she would do best to befriend a recreational angler.

Criticisms that the author's *Proctor* article offered no suggestion for diversification, reduction, compensation strategies or alternative lifestyles for employees, families and support industries

dependent on the commercial fishing sector<sup>33</sup> are addressed in the Nicholls/Young article.<sup>34</sup> While the Nicholls/Young article suggests the "buy-back" of non-viable commercial licences funded by the imposition of fees for recreational licences (a precedent for which has already been set in New South Wales and Victoria), it did not address whether compensation should be paid to the employees of the fishing tackle industry and support industries that are adversely financially impacted by declining fish stocks. Clearly this is an area which requires investigation by the government if access to the resource is to be fair.

*How big are the commercial and recreational fishing sectors' environmental feet? – the environmental bottom line*

Critics have correctly asserted that to ensure global sustainability ecological footprints must be minimised.<sup>35</sup> Professor Hundloe, in a paper he co-authored with Deputy Vice-Chancellor Paul Greenfield, "The Environmental Bottom Line"<sup>36</sup> (Hundloe paper) employs the concept of an "ecological footprint" to measure man's impact on the world environment and refers to research that "indicates that the average Australian requires six hectares of ecological productive land to support his/her lifestyle", whereas the global average is "1.8 hectares per person".

These same critics argue "angling is voracious and an inefficient consumer of resources".<sup>37</sup> Indeed, based on the Hundloe paper, so is any Australian pastime such as motor racing, water skiing, travelling or golf. While measuring the footprint of the western middle-class life-style is intellectually stimulating, it is irrelevant to determining the direct impact of each of the fishing sectors on the marine

<sup>29</sup> ABARE Statistics.

<sup>30</sup> See Marcus Cassey and Kylie Lang "Here's the Catch – Just how Australian is our Seafood?", *The Courier Mail*, Wednesday, 13 June 2001 pp 37 and 39; see also David Bentley and Kylie "Something Fishy" *The Courier Mail*, Wednesday, 8 March 2000.

<sup>31</sup> ABARE Statistics.

<sup>32</sup> See "Investing for Tomorrow's Future—The FRDC's Research and Development Plan, 2000-2005". Fisheries Research and Development Corporation, Canberra 2000.

<sup>33</sup> Mrs English and Mr Gore, "Responsible Fishing", (2001) 4 *Proctor* 3.

<sup>34</sup> See Nicholls/Young, "Australian Fisheries Management and ESD – The One That Got Away", (2000) 17 *Environmental and Planning Law Journal* 272 at 289,292-293.

<sup>35</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, "Taken – Hook, Line and Sinker", (2001) 5 *Proctor* 26.

<sup>36</sup> See Paul Greenfield and Tor Hundloe "The Environmental Bottom Line— A Key Note Addressed to the QELA Conference", Sustainability – the Triple Bottom Line, QELA Conference 2000.

<sup>37</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, "Taken – Hook, Line and Sinker", (2001) 5 *Proctor* 26.

environment.

Department of Primary Industries estimates indicate that the recreational sector harvests less than one third of the value of the fisheries resource that the commercial sector harvests.<sup>38</sup>

Professor Hundloe has argued that by-catch ratios for angling are estimated at between 30 and 50 per cent of fish landed,<sup>39</sup> evidencing the substantial impact of recreational activities on the environment.<sup>40</sup>

A recent Queensland government report investigated the magnitude of the fish catch made by 882,200 Queensland residents who were estimated to have fished recreationally in the previous 12 months. The survey found that of the 46 million fish caught, more than half (24.5 million) were released, not harvested.<sup>41</sup>

Government research indicates that while most fish caught by recreational fishermen are released alive there is little information on the survival rate of released fish. Clearly this is an area that requires research.

Further research is also required on the recreational sector's impact on the environment as a result of accessing a fishery (for example, tramping through mangroves), and by discarded litter (including fishing lines and hooks), to ensure that through education those impacts can be managed in a sustainable way and the current level of environmental harm caused by anglers is substantially reduced.

In support of the claim that the "ecological footprint" of recreational angling is large, it has been pointed out that the recreational catch of

Snapper actually exceeds the commercial catch and that statistics show the estimated annual daylight catch of Snapper by Queensland anglers is 180 tonnes whereas the total commercial catch is only 50 tonnes a year. Further, many of the Snapper taken by recreational fishermen are under the minimum legal size.<sup>42</sup> A government discussion paper, "Queensland Rocky Reef Fish Fishery",<sup>43</sup> discloses that about 70 per cent of the Snapper kept by recreational fishermen in the whole of the Moreton Bay area are in fact undersized. Environmentally this is an appalling statistic. However, even worse is the statistic contained in the same paper that between 60,000 and one million juvenile Snapper form part of the non-target by-catch caught each year by trawlers operating within just the southern areas of Moreton Bay. Using the Queensland government's minimum by-catch estimate of 60,000 snapper, each weighing an average 600 grams, there is a total potential loss of 36 tonnes<sup>44</sup> from a comparatively small area. This equates to 72 per cent of the entire total annual tonnage of commercially caught Snapper throughout Queensland.

How many juvenile Snapper end up as discarded dead by-catch from the results of trawling in the entire Moreton Bay Fishery or the entire Queensland fishery? Just how big is the "ecological footprint" of the commercial trawl fishery? What is the environmental cost of this harm? No one knows. Unless the government is prepared to apply the precautionary principle, it urgently requires independent scientific and economic data to provide the answers necessary to ensure the Snapper fishery can be managed sustainably.

To further highlight the significant detrimental impact of anglers on the environment it has been contended that the taking, in the name of sport, of magnificent game fish such as Marlin, is viewed by some as an "unwarranted act of destruction".<sup>45</sup>

Throughout the world almost all Marlin caught by recreational anglers are tagged and released

<sup>38</sup> See Nicholls/Young, "Australian Fisheries Management and ESD – The One That Got Away?", (2000) 17 *Environmental and Planning Law Journal* 272 at 287.

<sup>39</sup> Commercial by-catch can be defined as the incidental catch of species that are of no commercial value and for which no explicit commercial fishing licence endorsements to take exist or the taking of which is prohibited. Draft – Final Report of the Fisheries Regulation Review Committee of the Queensland Fisheries Act 1994 – a legislative review in accordance with the national competition policy – May 2000, p 81. The term by-catch used by the academics when referring to recreational fishing is assumed to mean targeted fish but of less than minimum legal length.

<sup>40</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, "Taken – Hook, Line and Sinker", (2001) 5 *Proctor* 26.

<sup>41</sup> See Nicholls/Young, "Australian Fisheries Management and ESD – The One That Got Away?", (2000) 17 *Environmental and Planning Law Journal* 272 at 289.

<sup>42</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, "Taken – Hook, Line and Sinker", (2001) 5 *Proctor* 26.

<sup>43</sup> See Discussion Paper No 7: *Queensland Rocky Reef Fish Fishery*, October 1998, p 38.

<sup>44</sup> See Discussion Paper No 7: *Queensland Rocky Reef Fish Fishery*, October 1998, p 38.

<sup>45</sup> Mrs English and Mr Gore, "Responsible Fishing", (2001) 4 *Proctor* 3.

because of the specie's recognised value. In the United States, a Department of Wildlife and Fisheries Sciences research paper estimated that the value to the economy of a tournament-caught billfish was between US\$32,381-US\$42,555 and found that 89 per cent of billfish caught were released.<sup>46</sup> The Cairns Marlin sportfishing industry alone is worth \$30 million annually.<sup>47</sup>

Recent Australian research on Marlin mortality after release, using both sonic and satellite tags, is showing a very high survival rate for the species.

Commercial fishermen also catch Marlin, but they do so using hundreds of thousands of hooks attached to long-lines that are kilometres long. It is well documented that the by-catch species killed as a result of this type of commercial fishing include sharks, rays, seabirds and turtles.<sup>48</sup>

Pointedly, none of the critics claim that the commercial sector's impact on the environment is less than that of the recreational sector.

The Nicholls/Young article asked the reader to picture an underwater environment existing on land and to imagine the effect of a large weighted net dragged through the landscape to trap specific terrestrial animals. Everything in the way is scooped up, the earth is churned up, trees and plants destroyed. If this activity is constantly repeated the scars on the landscape would not heal. The number of untargeted species killed as a result of this activity would be staggering. If such an activity occurred on land it would be outlawed internationally. The Nicholls/Young article poses the question, why do governments make exceptions for the marine environment? Is it because it is out of sight and therefore out of mind?<sup>49</sup> Lawyers representing commercial fishermen argue that this scenario portrays a "misleading picture of the

effects of trawling of the seabed".<sup>50</sup>

In reliance on a \$5 million research project conducted by CSIRO's marine research division and the Queensland Department of Primary Industries, partly funded by the Great Barrier Reef Marine Park Authority,<sup>51</sup> (CSIRO Report) those lawyers contend that the environmental impact of trawling is not as adverse as previously thought.<sup>52</sup> However, they fail to mention that the same research project concluded that:

- each pass of the trawl along the seabed removed from five to 25 per cent of seabed life;
- seven trawls over the same area of seabed removed 50 per cent of seabed life;
- 13 trawls remove 72 to 90 per cent of seabed life;
- recovery rates of seabed life are poorly known, but probably range from one to 20 years depending on species;
- for every tonne of prawns harvested, about six to 10 tonnes of other species are discarded;
- research results of trawling on pristine benthic communities were compromised because of illegal trawling on protected areas;
- two-thirds of the by-catch were fish and the balance crustaceans;
- research indicates that 90 per cent of discarded fish die;
- by-catch reduction devices (BRDs) currently available can reduce by-catch by only 20 per cent; and
- BRDs will not lessen the impact on trawls on sessile animals such as sponges.

The CSIRO Report also concluded that "trawling is killing many thousands of tonnes of animals each year. In addition we do not know whether the discards include species that are particularly vulnerable to disturbance".<sup>53</sup>

Despite the specific findings of environmental harm, the CSIRO Report states that trawling is

<sup>46</sup> Mark R Fisher and Robert B Ditton, "Characteristics of Billfish Anglers in the US Atlantic Ocean", (1992) 54(1) *Marine Fisheries News*.

<sup>47</sup> See Nicholls/Young, "Australian Fisheries Management and ESD – The One That Got Away", (2000) 17 *Environmental and Planning Law Journal* 272 at 286.

<sup>48</sup> See "Investing for Tomorrow's Future" – The FRDC's Research and Development Plan, 2000-2005, (Fisheries Research and Development Corporation, 2000), p 39.

<sup>49</sup> See Nicholls/Young, "Australian Fisheries Management and ESD – The One That Got Away", (2000) 17 *Environmental and Planning Law Journal* 272 at 280; and T Young, "Money Talks – a 'fishy' Bottom Line", (2001) 1 *Proctor* 26.

<sup>50</sup> Mrs English and Mr Gore, "Responsible Fishing", (2001) 4 *Proctor* 3.

<sup>51</sup> *The Environmental Effects of Prawn Trawling in the Far-Northern Sector of the Great Barrier Reef 1991-1996* (CSIRO Division of Marine Research, Cleveland, 1998).

<sup>52</sup> Mrs English and Mr Gore, "Responsible Fishing", (2001) 4 *Proctor* 3.

<sup>53</sup> *The Environmental Effects of Prawn Trawling in the Far-Northern Sector of the Great Barrier Reef 1991-1996* (CSIRO Division of Marine Research, Cleveland, 1998).

“potentially ecologically sustainable”,<sup>54</sup> if there is appropriate management of impacts and technological advances in BRDs. This conclusion seems to fly in the face of the “precautionary principle”. Yet, as the lawyers point out, the CSIRO Report was relied on by the Queensland government to approve the Fisheries (East Coast Trawl) Plan 1999, despite submissions by the Great Barrier Reef Marine Park Authority that the plan “failed to meet Commonwealth requirements for ESD”.<sup>55</sup> The Commonwealth Government considers that the CSIRO Report clearly demonstrates “that trawling has an adverse impact on marine, particularly seabed, communities”.<sup>56</sup>

The East Coast Trawl Fishery is Queensland’s largest commercial fishery in terms of area, operator numbers, value and volume of production. The fishery targets prawns, scallops, bugs and squid, with a wide range of other species taken incidentally. Over 70 per cent of the fishery area occurs within the Great Barrier Reef Marine Park and World Heritage Area,<sup>57</sup> a clear reflection of government preference for the “economic bottom line”.

As most of the catch from the East Coast Trawl Fishery is exported, proposed amendments to schedule 4 of the *Wildlife Protection (Regulation of Imports and Exports) Act 1982* to remove the general exemption for commercial marine species from the requirement for assessment under the *Wildlife Protection (Regulation of Imports and Exports) Act 1982* may be able to be relied upon in court proceedings brought by environmentalists to ensure unsustainable trawling practices are restricted.

Critics of the findings of the Nicholls/Young

article attempt to shift blame from the commercial sector by arguing that the degradation of wetlands by urban and agricultural uses together with man-made impediments to water courses are the cause of our depleted fish stocks.<sup>58</sup>

These adverse impacts on the marine environment are undeniable, and call for an “integrated eco-system approach”<sup>59</sup> to fisheries management.

But, just as plain is the documented scientific evidence of the destruction of estuary benthic habitats including the removal of dead timber and snags impacting on fish diversity, removal of bottom sediments and adverse impacts on bottom structures and fauna caused by Beam and Otter trawling conducted by commercial fishermen.<sup>60</sup>

A recent New South Wales’, Land Environment Court decision, *Sustainable Fishing and Tourism Inc v Minister for Fisheries and Whatson* (2000) 106 LGLR 322, found that in relation to the granting of a commercial fishing licence, the activities which it purported to authorise were likely to detrimentally affect the environment.<sup>61</sup>

The exploitation of the Orange Roughy authorised by the Commonwealth government is a prime example of the size of the ecological footprint left by commercial fishing activities as a result of the government failing to apply the “precautionary principle”. The Orange Roughy lives in very deep water at the limit of Australian fishery jurisdiction, so it is a specific fishery isolated from recreational pressure and not affected to a measurable degree by the degradation of Australia’s coastline or riparian corridors. The Orange Roughy was first discovered in Australian waters in the mid-1980s. The only way commercial fishermen could effectively harvest the Orange Roughy was to wait until the species

<sup>54</sup> Draft-Final Report of the Fisheries Regulation Review Committee of the *Queensland Fisheries Act 1994* – a legislative review in accordance with the National Competition Policy – May 2000, p 80.

<sup>55</sup> Draft-Final Report of the Fisheries Regulation Review Committee of the *Queensland Fisheries Act 1994* – a legislative review in accordance with the National Competition Policy – May 2000, p 25.

<sup>56</sup> See Supplementary Explanatory Memorandum to “Environment Protection and Biodiversity Conservation Amendment (Wildlife Protection) Bill 2001”:

<http://scaleplus.law.gov.au/html/ems/-/2001/0/0642459045.htm>

<sup>57</sup> Supplementary Explanatory Memorandum to “Environment Protection and Biodiversity Conservation Amendment (Wildlife Protection) Bill 2001”:

<http://scaleplus.law.gov.au/html/ems/0/2001/0/0642459045.htm>

<sup>58</sup> Mrs English and Mr Gore, “Responsible Fishing”, (2001) 4 *Proctor* 3 and Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, “Taken – Hook, Line and Sinker”, (2001) 5 *Proctor* 26.

<sup>59</sup> See Kate Davey “The Truth About Fisheries Management in Australia”, *Turning the Tide*, Autumn 2001; Vol 2; No 1 (Australian Marine Conservation Society).

<sup>60</sup> See B Zeller *Queensland’s Fisheries Habitats – Current Conditions and Recent Trends*, (Department of Primary Industries 1989), pp 74-75.

<sup>61</sup> See a legal commentary of the decision in Nicholls/Young, “Australian Fisheries Management and ESD – The One That Got Away”, (2000) 17 *Environmental and Planning Law Journal* 272 at 280-282; see also “Big Fish Escapes Through A Quickly Made Hole in the Net” (2000) 6(1) LGLJ 3 and “Pt 5 of the EP&A Act Nets Another Big Fish” (2000) 5(4) LGLJ 230.



spawned and congregated on underwater hills. After the stock was heavily exploited for the fish finger market, scientists discovered that the Orange Roughy in fact lives for 75 years and takes 30 years to reach sexual maturity. The Tasmanian Orange Roughy fishery (South Tasmanian Rise Fishery) peaked in 1989, at 60,000 tonnes per annum. However, 10 years later the permitted catch level had fallen to 2,400 tonnes per annum owing to the dramatic decline in catches.<sup>62</sup> The very recent ABARE Statistics disclose that the total value of the fishery fell 90 per cent in 1999-2000. It is clear that the blame for the destruction of the biomass of the Orange Roughy lies with the activities of commercial fishermen, as authorised by the Australian government.

### *The economic bottom line*

The purpose of using Queensland government economic data in the Nicholls/Young article was to avoid claims of bias from various stakeholders. The Queensland government figures are estimates of gross annual financial values for both sectors. It is this financial information which assists our government in allocating the resource among competing stakeholders.

What do the recreational sector and the commercial sector claim about the financial value of their respective contributions to Queensland's economy?

The gross annual financial value of the recreational fishing industry has been estimated to be in the vicinity of \$1 billion<sup>63</sup> by Sunfish, a government-funded body representing the interests of Queensland recreational anglers. In support of this claim, Sunfish commissioned two recent economic studies: "Pumicestone Passage: Spending Habits of Recreational Fishermen and their Contribution to the Economy – 2000" and "Hervey Bay and the Great Sandy Strait: Spending Habits of Recreational Fishermen and their Contribution to the Economy – 2001". Sunfish's economic research on the Hervey Bay and Great Sandy Strait area in Queensland shows that anglers own a total of \$101,911,279 of capital equipment and spend a total

of \$38,345,904 per year to go fishing in the region. Visiting recreational fishermen are reported to spend \$102,817,400 on accommodation. This high level of gross annual revenue from the recreational sector for the Hervey Bay region reflected in Sunfish's report can be contrasted with the total gross value of \$14.8 million estimated by the Queensland government as generated from the aggregate of the commercial fishing activities operating from the fishing ports of Urangan (which includes smaller ports located within the Hervey Bay region),<sup>64</sup> Tin Can Bay<sup>65</sup> and Maryborough.<sup>66</sup>

The Queensland Seafood Industry Association's website discloses that the gross value of the Queensland commercial fishing industry based on ABARE statistics for 1997/1998 was \$360 million. By the time the product is sold at retail level, by seafood shops, restaurants or exporters, the commercial sector adds another 100 to 120 per cent to the original "wholesale" value, bringing the total to a gross annual financial value of about \$800 million.<sup>67</sup>

Critics charge that the conclusions of the Nicholls/Young article are "flawed",<sup>68</sup> arguing that the comparison made between estimated recreational expenditure and capital with the estimated gross value and capital of commercial fishing does not disclose the "net economic value" or the "net economic benefit" to the economy of either sector. The Nicholls/Young article makes no assertion that the government estimates or the comparisons made portray the "net economic value" of either sector. (It might be noted, in connection with this aspect of the debate, that the Queensland government rates tourism as Queensland's second largest industry, "generating \$9.2 billion in revenue

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<sup>62</sup> See Nicholls/Young, "Australian Fisheries Management and ESD – The One That Got Away", (2000) 17 *Environmental and Planning Law Journal* 272 at 273.

<sup>63</sup> *Sunfish*, March 1998, p 11.

<sup>64</sup> John Switala and Noel Taylor-Moore, *Queensland's Commercial Fishing Fleet – Licence Packages, Fleet Structure and Fishing Port Activities, 1996-1997*, (Department of Primary Industries, Queensland, August 1999), p 69.

<sup>65</sup> John Switala and Noel Taylor-Moore, *Queensland's Commercial Fishing Fleet – Licence Packages, Fleet Structure and Fishing Port Activities, 1996-1997*, (Department of Primary Industries, Queensland, August 1999), p 77.

<sup>66</sup> John Switala and Noel Taylor-Moore, *Queensland's Commercial Fishing Fleet – Licence Packages, Fleet Structure and Fishing Port Activities, 1996-1997*, (Department of Primary Industries, Queensland, August 1999), p 73.

<sup>67</sup> See <http://www.seafoodsite.com.au/stats/default.htm>

<sup>68</sup> Mrs English and Mr Gore, "Responsible Fishing", (2001) 4 *Proctor* 3 and Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, "Taken – Hook, Line and Sinker", (2001) 5 *Proctor* 26.

each year”,<sup>69</sup> which again is a gross financial value and not a measure of “net economic benefit”. The government, however, uses this figure to rate the economic value of the tourism industry against other Queensland industries.)

The Queensland government does not have at its disposal any economic research which reveals the “net economic benefit” made to the economy by each sector. Unfortunately, none of the critics have offered any economic data on the “net economic benefit” of either sector.

Although gross revenue value is not commensurate with “net economic benefit”, it is still a useful management tool for governments, as it discloses something about the size and relative importance of an industry.<sup>70</sup> Indeed, such economic data must be the starting point of any economic analysis seeking to ascertain the true “economic net value” of the exploitation of a resource.<sup>71</sup>

Critics have argued that, while waiting for funding to produce detailed independent scientific and economic data, “we must use available information to manage fisheries as best as possible on a precautionary basis”.

As there is at present no “net economic value” information for either sector, should the Queensland government use its own estimates of gross revenue to allocate the fisheries resource among stakeholders?

That approach, however, would be imprudent. Further economic data should be obtained so that the economic claims to the resource by the commercial sector can be objectively and properly assessed.

As an aside, it has been suggested that, applying the author’s logic, he would advocate that the 1989 Exxon Valdez oil spill in Alaska was economically

beneficial to the affected region.<sup>72</sup> The Exxon Valdez oil spill is an example used by economists highlighting the absurdity of the revenues argument when it is extended illogically.<sup>73</sup> The author is a proponent of ESD not of environmental harm.

When assessing the economic value of the recreational and commercial fishing sectors in relation to a particular fishery it is important to remember that the total value of exploitation of the resource is the aggregate of the economic value of recreational fishing and the economic value of commercial fishing. Subject to sustainability considerations, provided both sectors produce positive economic values, awarding exploitation rights, at the current level, to just one of the sectors can potentially result in a decrease in total economic value to the community. However, this is not always the case, as sometimes recreational and commercial activity may be incompatible with one another.<sup>74</sup>

In the Hervey Bay and Great Sandy Strait area for instance, the expense of an independent economic analysis may not be considered necessary given that the gross revenue estimates for the recreational sector exceed the gross value estimates for the commercial sector by many times. The economic and social benefits of recreational fishing to Hervey Bay – based on the gross value estimates – are vital for the wellbeing of this regional community. There is fierce competition between the commercial and recreational sectors over the fisheries resource in the Hervey Bay area. There may therefore be a strong case for this particular region to be a “recreational only” fishing area. But that would require the kind of tough allocation decision by the government as it took with Queensland’s Pumicestone Passage.

An example of independent economic analysis of a fishery is provided by the “Economic Value of Salmon”,<sup>75</sup> a recent study to determine the “net

<sup>69</sup> Fact Sheet, *Tourism and the Economy: Queensland Tourism*, <http://www.tq.com.au/research>

<sup>70</sup> SF Edwards, “A Critique of Three “Economic” Arguments Commonly Used to Influence Fishery Allocations”, Spring 1991 11/2 *North American Journal of Fisheries Management*, 121 at 129.

<sup>71</sup> Gordon Gislason, Edna Lam, Julie Paul and Ellen Battle, *The Economic Value of Salmon*, (Canada Department of Fisheries and Oceans, February 1996); *Bays and Inlets Scalefish Fisheries Review: Socio-economic impacts of future management options for scalefish in Victoria’s Bays and Inlets*, Kinhill Pty Ltd, prepared for the Fisheries Co-Management Council, 1 October 1997, p 5; see also *Fisheries Economic Impact Studies – Economic Impact of Recreational Fishing in Victoria*, July 1997.

<sup>72</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, “Taken – Hook, Line and Sinker”, (2001) 5 *Proctor* 26.

<sup>73</sup> SF Edwards, “A Critique of Three “Economic” Arguments Commonly Used to Influence Fishery Allocations”, Spring 1991 11/2 *North American Journal of Fisheries Management* 121, at 124

<sup>74</sup> See *Recreational Fisheries – Changing the Management Fisheries in NSW*, Dominion Consulting Pty Ltd, p 3, <http://www.fisheries.nsw.gov.au/recreational/rfa/gen-change.htm>

<sup>75</sup> Gordon Gislason, Edna Lam, Julie Paul and Ellen Battle, *The Economic Value of Salmon*, (Canada Department of Fisheries and Oceans, February 1996).

economic benefit” of the commercial and recreational sectors’ exploitation of salmon in British Columbia, prepared for that province’s government by the ARA Consulting Group in Vancouver. The study appears to meet the economic tests referred to by critics such as Hundloe by performing:

- an “economic value analysis”, which measured net benefits consumers and producers receive from fish and fishing, based on what they would be willing to spend and the actual costs to the economy by determining the marginal net benefit of allowing a single extra fish to one sector or the other; and
- an “economic impact analysis”, which measured the total economic activity generated by fishing in terms of jobs, income and other common indicators.

The study concluded that the “net economic value” of commercial fishing for Chinook and Coho salmon was CAN\$24.2 million and the comparable figure for the recreational sector was CAN\$176 million, a sevenfold “net economic” difference. The British Columbia Sportsfishing Institute used the economic findings of the analysis to argue that a recreationally caught Chinook or Coho salmon generated CAN\$671 to the economy whereas a commercially caught salmon generated only CAN\$26 to the economy.<sup>76</sup> As a result of the British Columbian economic analysis, priority access to the two species of salmon was awarded to the anglers on the grounds that “an extra salmon is worth more in the hands of anglers than commercial fishermen”.<sup>77</sup>

Only a handful of Australian studies have tried to measure the net economic benefit of recreational fishing.<sup>78</sup> A recent Western Australian study<sup>79</sup> found

that the net economic benefit of salmon caught by recreational anglers far exceeded the net economic benefit of the harvesting of salmon by the commercial sector.

Research is currently being undertaken on the aggregate value of the economic benefits of commercial and recreational fishing in Queensland.<sup>80</sup>

Further economic research is timely and welcome in light of the recent paradigm shift in fisheries management from individual wild-fish stock assessment in a particular fishery to the management of total fish stocks across State jurisdictional limits and “whole eco-system” biological processes in order to move towards ESD.<sup>81</sup>

Given that financial data are a starting point for any economic analysis, it is the economist’s role to apply economic frameworks to adjust, discount or “shadow price” the financial data to reflect true “net economic benefits”. In relation to resource sharing, an economist’s goal is to allocate the resource to maximise “net economic benefits” for society, so that it is not possible to make one type of user better off without making another type of user worse off. The commercial sector’s use of the resource is a “market use” while the recreational sector’s is a “non-market use”. As a result, economists are required to use a variety of complex economic techniques to estimate the “net economic value” of the recreational fishing experience.

While economic efficiency is an important benchmark, it is usually disregarded by governments when formulating policy because of the inherent difficulties of measuring “non-market” benefits.<sup>82</sup> There are logical reasons for governments adopting this approach.

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<sup>76</sup> See News Bulletin, Sportsfishing Institute of British Columbia, July 1997.

<sup>77</sup> Note: “priority access” did not mean the commercial sector was banned from commercially harvesting the resource, rather the commercial sector came second in priority once recreational catch limits had been reached and sustained.

<sup>78</sup> MS van Bueren, RK Lindner and PB McLeod, *An Economic Assessment of Reallocating Salmon and Herring Stocks from the Commercial Sector to the Recreational Sector in Western Australia, Developing and Sustaining World Fisheries Resources – The State of Science and Management – 2<sup>nd</sup> World Fisheries Congress*, (CSIRO, Australia 1996), pp 358-362 at 358.

<sup>79</sup> MS van Bueren, RK Lindner and PB McLeod, *An Economic Assessment of Reallocating Salmon and Herring Stocks from the Commercial Sector to the Recreational Sector in Western*

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*Australia, Developing and Sustaining World Fisheries Resources – The State of Science and Management – 2<sup>nd</sup> World Fisheries Congress*, (CSIRO, Australia 1996) pp 358-362.

<sup>80</sup> Mrs English and Mr Gore, “Responsible Fishing”, (2001) 4 *Proctor* 3.

<sup>81</sup> *Investing for Tomorrow’s Future – The FRDC Research and Development Plan 2000-2005* (Fisheries Research and Development Corporation, 2000), pp 24-25.

<sup>82</sup> MS van Bueren, RK Lindner and PB McLeod, *An Economic Assessment of Reallocating Salmon and Herring Stocks from the Commercial Sector to the Recreational Sector in Western Australia, Developing and Sustaining World Fisheries Resources – The State of Science and Management – 2<sup>nd</sup> World Fisheries Congress*, (CSIRO, Australia 1996), p 358.

The economic techniques used to value the use of the resource by anglers are generally both data intensive and analytically complex. Surveys are undertaken by economists of recreational anglers to determine how much anglers are prepared to pay for a fish by asking a series of carefully prepared questions. There are technical issues that require limitations to be placed on the results of such surveys, including poor participation levels, the truthfulness of a participant's response and the participant's ability to comprehend the questions that are put by the surveyor. As a consequence, survey results are subject to error and uncertainty.<sup>83</sup> There are also ethical issues that require addressing. Any analysis of the recreational sector that attempts to derive an individual's willingness to pay depends on the participant's ability to pay. The fisheries resource is public property and hence the issue of "fair" access is not adequately assessed in such an analysis.

Hundloe and his colleagues<sup>84</sup> argue, on the one hand, that the recreational sector's high level of expenditure and capital investment shows that "angling is a voracious and inefficient consumer of resources". On the other hand, Hundloe elsewhere contends<sup>85</sup> that this high level of expenditure and capital investment overestimates the economic value of the sport because factors such as being outdoors, camaraderie, and spending time with family<sup>86</sup> are "non-catch related motivations"<sup>87</sup> of a fishing trip and so should not form part of the economic equation. One cannot have one's "fish cake" and eat it too!

Further research is necessary to improve methods of measuring benefits from recreational angling.<sup>88</sup>

"Economic efficiency" must be considered in the context of both social and environmental constraints if fisheries management is to comply with the principles of ESD and balance the triple bottom line. While there exist economic multi-criteria frameworks to accommodate the principles of ESD, there are no independent economic data which place a monetary value on the environmental harm caused by both the recreational and commercial sectors' use of the environment.

No monetary value has been calculated for the harm caused by trawling activities on benthic communities as documented in the CSIRO Report. Estimates of the Queensland commercial harvest of fish species since 1988 are derived exclusively from compulsory logbooks completed by commercial fishermen.<sup>89</sup> But while it is compulsory for commercial fishermen to record the fish they harvest for sale at the wharf they are not required to record the levels of by-catch or environmental damage done to benthic fauna or flora as a result of that harvesting.

The National Strategy, however, specifically requires governments to consider the application of the polluter-pays principle so that the cost of damage to the environment is factored into the price of the goods and services derived from exploitation of the resource. It is within this context that the commercial sector's use of the environment might be said to be "uneconomic".

Also, to accord with the National Strategy economists must apply, in any economic analysis, the user-pays principle, requiring those sectors that benefit from a particular use or service to pay for that use or service. That principle can found an argument that governments should not subsidise a particular activity that leads to the overuse of a resource such as fish stocks. The commercial sector currently enjoys subsidies including ship-building subsidies, GST exemptions and diesel subsidies.<sup>90</sup>

<sup>83</sup> SF Edwards, "A Critique of Three 'Economic' Arguments Commonly Used to Influence Fishery Allocations", Spring 1991 11/2 *North American Journal of Fisheries Management*, p 129.

<sup>84</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, "Taken - Hook, Line and Sinker", (2001) 5 *Proctor* 26.

<sup>85</sup> See Hundloe's criticism of an economic study of expenditure and capital investment levels of Victorian anglers in *Bays and Inlets Scalefish Fisheries Review: Socio-economic impacts of future management options for scalefish in Victoria's Bays and Inlets*, Kinhill Pty Ltd, prepared for the Fisheries Co-Management Council, 1 October 1997, pp 17-18.

<sup>86</sup> SF Edwards, "A Critique of Three 'Economic' Arguments Commonly Used to Influence Fishery Allocations", Spring 1991 11/2 *North American Journal of Fisheries Management* 127.

<sup>87</sup> Dr DP McPhee, Professor TJ Hundloe and Dr GA Skilleter, "Taken - Hook, Line and Sinker", (2001) 5 *Proctor* 26.

<sup>88</sup> MS van Bueren, RK Lindner and PB McLeod, *An Economic*

*Assessment of Reallocating Salmon and Herring Stocks from the Commercial Sector to the Recreational Sector in Western Australia, Developing and Sustaining World Fisheries Resources - The State of Science and Management - 2<sup>nd</sup> World Fisheries Congress*, (CSIRO, Australia 1996), p 358.

<sup>89</sup> Jim Higgs, *Experimental Recreational Catch Estimates for Queensland Residents*, RFISH Technical Report No 2 - Results from the 1997 Diary Round, QFMA, p 7.

<sup>90</sup> *The Diesel Fuel Rebate Scheme - GST and special claiming arrangements for commercial fishing*, Australian Taxation Office:

By contrast, recreational anglers pay GST on all the equipment and fuel they buy, and in Victoria and New South Wales must pay for licences to fish. It is acknowledged that in Queensland the commercial sector, through the payment of fees for licences, authorities and permits contributes to the government's cost of management and protection of the fisheries resource. Similarly, the Queensland recreational sector contributes to the cost of fisheries management, primarily through private boat registration fees and, to a lesser extent, through freshwater fishing permits and charter-boat licence fees.<sup>91</sup> However, these financial contributions from both sectors only partly fund the government's management costs.<sup>92</sup> Further, the financial contributions do not compensate for the environmental harm each sector inflicts upon the resource. In recognition of both the polluter-pays and user-pays principles, perhaps the Queensland government should increase fees for commercial fishing licences, authorities and permits and impose a general fishing licence fee on recreational anglers, to fund the independent, scientific and economic research necessary to better manage the fisheries resource in accordance with ESD principles.

Further, to be fair, fisheries economists should explain why, when comparing the economic benefits derived from the "market use" of the fisheries resource by the commercial sector and the "non-market use" by anglers, the "economic value" of the fishing tackle industry in the region (a "market use" dependent on the level of fish stocks, and thus angler participation) is not factored into the economic equation.

One of the major difficulties in any economic analysis of the fisheries resource is that comparisons between the commercial and recreational use of the resource are based on the assumption that fish stocks are sustainable at current levels of harvesting. For most species that assumption is contrary to the scientific evidence.<sup>93</sup>

Management decisions for fisheries resources should involve a two stage decision process:

- first, setting the maximum level of catch for a given species;<sup>94</sup> and
- secondly, allocating that notional catch among competing users.

But there is little point in furiously debating the "correct" economic techniques and frameworks to be applied in the allocation exercise if, as is currently the case, the government lacks reliable scientific and economic data for determining the maximum levels of catch consistent with sustaining the resource. Unless the maximum level of catch for a species is sustainable the subsequent economic analysis is largely an "academic" exercise.

Economics is a "social science" which, lacking the objectivity of chemistry or geology, necessarily involves its practitioners in making value judgments.<sup>95</sup> "The word 'value' occurs in economics writing with high frequency, the frequency of meanings being about as great as the frequency of occurrence."<sup>96</sup>

As a consequence, in the context of ESD, there is disagreement within economists' ranks on just what it is that should be sustained; is it "development", "bio-diversity", or something else?<sup>97</sup> Fishing regulators should be sceptical of any economic research that claims to establish the "correct approach" in applying economic analysis to fisheries management and in particular resource allocation among stakeholders.

Fisheries regulators must be alert to the value judgments that are implicit in any economic analysis put forward by proponents of either sector. Failure to do so could result in poor decisions that are detrimental to the community now and in the future. Regulators must acknowledge that economic efficiency is just one element of the "economic bottom line", which in turn is just one of the

[http://www.taxreform.ato.gov.au/general/off\\_road/off\\_road.htm](http://www.taxreform.ato.gov.au/general/off_road/off_road.htm)

<sup>91</sup> Draft—inal Report of the Fisheries Regulation Review Committee of the *Queensland Fisheries Act 1994* – a legislative review in accordance with the national competition policy – May 2000, p 58.

<sup>92</sup> Draft—Final Report of the Fisheries Regulation Review Committee of the *Queensland Fisheries Act 1994* – a legislative review in accordance with the national competition policy – May 2000, p 58.

<sup>93</sup> See Nicholls/Young, "Australian Fisheries Management and

ESD – The One That Got Away", (2000) 17 *Environmental and Planning Law Journal* 272.

<sup>94</sup> Unfortunately in Queensland maximum levels of catch for most popular species have not been set by the government – there is a lack of scientific data to estimate sustainable catch levels.

<sup>95</sup> See D McTaggart, C Findlay and M Parkin, *Economics*, (Addison-Wesley Publishing Company), 1992, p 1.

<sup>96</sup> KE Boulding, "Some Contributions of Economics to the General Theory of Value" (1956) *Philosophy of Science*, Vol 23, No 1, pp 1-14 at 1.

<sup>97</sup> See Professor Clem Tisdell, *The Economic Bottom Line, Sustainability – the Triple Bottom Line*, QELA Conference 2000.

three bottom lines that must be balanced to achieve ESD. The term “optimum” which appears in the objects of the *Fisheries Act* 1994 implies the best use of the resource, not the use of the resource that generates the maximum economic benefit.<sup>98</sup>

The practical application of the principles of ESD (rather than merely paying lip service to the concept) in any economic analysis of the fisheries resource is the greatest challenge that fisheries economics has faced since its beginnings almost 50 years ago.

### **The bus trip to ESD**

An analogy was used by the Fisheries Regulation Review Committee to illustrate the issues arising from application of the principles of ESD to fisheries management. The committee said that the fisheries resource and associated habitat was akin to a bus travelling a dangerous, windy, coastal road with a precipitous drop, and if the bus were to lose direction – catastrophe! The passengers on the bus are all the “users” of Queensland fisheries (commercial, recreational, commercial charter, traditional fishing in aquaculture, as well as amenity users). The bus driver is the Queensland fisheries regulator, who has the job of steering the bus, constantly adjusting direction as new information comes in.

Given the current state of play, an apt extension of this analogy might be that the bus is currently stalled, unable to continue along the route to ESD for the lack of fuel – the independent, economic and scientific data needed to drive the process further. Under the hot sun on the coastal road with the fuel tank empty, the stakeholder-passengers are bickering about where the bus should go and who is going to pay for the petrol!

To guarantee that scientific and economic research into our fisheries is independent, it has been suggested that a National Institute of Wild Fish Research be created, separate from the primary production ministry, empowered to protect the interests of the fish and their habitat rather than the interests of those who want to harvest the resource<sup>99</sup>

– a suggestion that the author strongly endorses.

Although the *Fisheries Act* 1994 requires fisheries management in Queensland to adhere to the principles of ESD it is clear that the government has not put sustainability into practice. It has failed to apply the precautionary principle and to avail itself of the independent scientific and economic information necessary to make sound decisions on sustainability. Those failures are likely to be detrimental to all stakeholders in our fisheries resource – now and in the future.

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<sup>98</sup> Draft-Final Report of the Fisheries Regulation Review Committee of the *Queensland Fisheries Act* 1994 – a legislative review in accordance with the national competition policy, May 2000, p 29.

<sup>99</sup> See Dr David Green, “Stocks and Balances”, *Fishing World*, June 2001, p 35.