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Abstract
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Keywords
trawl, bycatch, fisheries, legislating, turtle, exclusion, devices, reduction, enforcing

Disciplines
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Enforcing bycatch reduction in trawl fisheries: legislating for the use of turtle exclusion devices

Warwick Gullett*

The mandatory use of bycatch reduction devices (BRDs) in prawn trawl fisheries is now commonplace in Australia. BRDs are designed to allow unwanted or juvenile species to escape fishing nets with consequent benefits for the abundance of such species, species which prey on them, and general ecosystem integrity. In the Queensland East Coast Trawl Fishery, as well as in a handful of other Australian prawn trawl fisheries, specific turtle excluder devices (TEDs) are required to prevent turtles from entering the codend section of trawl nets. This article reviews international and Australian legal measures to protect turtles from prawn trawl fishing activities. It focuses on the difficult task fisheries officers in Queensland were presented with in 2002 when they attempted to prosecute two fishers for alleged non-compliance with their licence requirement to use a device which enables turtles to escape "immediately" after being taken in the net. A review is presented of this case which highlights the difficult task of securing convictions for alleged non-compliance with fisheries regulations where scientific uncertainty compounds the establishment of the required evidentiary burden of proof. The decision in the case exposes the challenge drafters of legislation face when they attempt to translate sound fisheries management objectives into effective and enforceable law.

INTRODUCTION

The reduction of bycatch[1] in commercial fishing operations is a core objective of fisheries management. Australian and international commercial fishing practices are becoming increasingly regulated in order to minimise the take of unwanted or juvenile species, so as to reduce the impact of this take on the species that are caught and on species which are dependent on them, as well as to maintain marine biodiversity and ecosystem function. Trawl fishing gear is particularly prone to regulation because the large open nets used in trawl operations are not highly selective in catching the species of fish or prawns that are targeted. By comparison, other fishing methods, such as purse seining, tend to be more selective. Fishing gear which is notoriously unselective, such as driftnets and

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[1] Remarkably, "bycatch" is not defined in any of Australia's fisheries legislation or in the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**) or in *Australia's Oceans Policy* (1998). Nonetheless, Environment Australia has offered the following expansive definition of "bycatch" in its *Guidelines for the Ecologically Sustainable Management of Fisheries* (2001) p 10, to be used when fulfilling its responsibility to conduct strategic assessments of Commonwealth managed fisheries under Pt 10 of the EPBC Act: "species that are discarded from the catch or retained for scientific purposes, and that part of the 'catch' that is not landed but is killed as a result of interaction with fishing gear. This includes discards of commercially valuable species."

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gillnets, are often prohibited outright[2] or are severely regulated.[3] Trawl gear lends itself to a variety of forms of modification to increase its selectivity because fish are captured in the net alive and unwanted species can be given the opportunity to escape while the net is in the water. Unwanted species excluded in this manner typically have higher rates of survival than fish which are discarded after the net has been hauled onto the fishing vessel.[4] Most prawn trawl fisheries in Australia now require the use of mitigation measures, particularly bycatch reduction devices (**BRDs**). BRDs are defined broadly as any modification to fishing gear designed to reduce the capture of bycatch. Nets may be fitted with active devices (such as a rigid barrier) that prevent unwanted species from entering the codend section of the net, or they may be fitted with passive devices (such as open panels in the net) that allow unwanted species that are caught an opportunity to escape. Active devices tend to be mechanical structures that separate species by size, whereas passive devices rely exclusively on the behavioural characteristics of the unwanted species to recognise and use escape opportunities presented to them. A combination of these devices may also be used to increase selectivity.

This article reviews the creation of laws requiring the use of turtle excluder devices (**TEDs**) in prawn trawl fisheries. It focuses on the Queensland TED regulation under the *Fisheries Act 1994* (Qld) as it was in force in 2002 in the Queensland East Coast Trawl Fishery, and the interpretation given to it by the Southport Magistrates Court in *Smith (Queensland Fisheries Inspector) v Thompson and Brown* (unreported, Southport Magistrates Court, Queensland, Magistrate Mr L A Mellors, 30 August 2002, No 14318 of 2001 and No 14316 of 2001). Consideration is also given to the challenging task of drafting legislative requirements to use environmentally sound technology in fishing practices in light of inadequate scientific information, evidentiary burdens of proof and practical realities of commercial fishing operations.

BYCATCH MINIMISATION AND INTERNATIONAL APPROACHES TO PROTECT TURTLES

The problem of bycatch in commercial fisheries has been long recognised and its reduction is now a common and clear objective of numerous international fisheries instruments.[5] Since the mid-1990s, much attention has been focused on decreasing the fatal capture of so-called "characteristic marine megafauna", most notably seabirds, turtles and dolphins, during fishing operations such as longlining, prawn trawling and tuna purse seining. Turtles are particularly susceptible to being impacted by trawl operations because of their preference for foraging at depths and in locations where trawling is effective and their limited ability to outpace a trawled net. As turtles are air-breathing reptiles, if they remain caught in a net under water for a long period they will drown. It has been estimated that the Queensland East Coast Trawl Fishery catches around 5,000 turtles accidentally each year, although it

[2] For example, the use of driftnets of greater than 2.5 km is prohibited in the Australian Fishing Zone. It is also an offence for any person to engage in driftnet fishing activities outside Australian waters from an Australian boat and it is an offence for Australian citizens to engage in driftnet fishing activities outside Australian waters from any vessel. See ss 13(1), 13(4) and 13(2), *Fisheries Management Act 1991* (Cth).

[3] For example, s 21, *Fisheries (Scalefish) Rules 2001* issued under the *Living Marine Resources Management Act 1995* (Tas) prohibits the use or possession in Tasmanian waters of "graball" nets with a mesh size less than 105 mm.

[4] See eg *The Environmental Effects of Prawn Trawling in the Far-Northern Section of the Great Barrier Reef 1991-1996* (CSIRO Div of Marine Research, Cleveland, 1998); Bergmann M and Moore PG, "Mortality of *Asterias rubens* and *Ophiura ophiura* Discarded in the *Nephrops* Fishery of the Clyde Sea Area, Scotland" (2001) 58 *ICES Journal of Marine Science* 531; Broadhurst MK, "Modifications to Reduce Bycatch in Prawn Trawls: A Review and Framework for Development" (2000) 10 *Reviews in Fish Biology and Fisheries* 27; and Soldal AV, Engås A and Isaksen B, "Survival of Gadoids that Escape from a Demersal Trawl" (1993) 196 ICES Marine Science Symposium *Fish Behaviour in Relation to Fishing Operations* 122.

[5] See eg Article 61 para 4 and Article 119.1(b), UN Law of the Sea Convention; Article 18(3)(e)(f)(i) UN Fish Stocks Agreement; UNGA Resolution, "Large-Scale Pelagic Driftnet Fishing and its Impact on Living Marine Resources of the World's Oceans and Seas" (adopted 20 December 1991); and paras 6.2, 6.6, 7.2.2(g), 7.5.2, 7.6.9, 8.5, 12.10, 12.11, UN Food and Agricultural Organization Code of Conduct for Responsible Fishing 1995. See also Wold C, "The Status of Sea Turtles under International Environmental Law and International Environmental Agreements" (2002) 5 *Journal of International Wildlife Law and Policy* 11 at 35; Wallström M, "Reform of the Common Fisheries Policy", *A Sustainable Fisheries Policy – Expectations on Reform* (European Commission Speech 02/219, Brussels, 21 May 2002); and Bache SJ, "Turtles, Tuna and Treaties: Strengthening the Links between International Fisheries Management and Marine Species Conservation" (2002) 5 *Journal of International Wildlife Law and Policy* 49.

has also been estimated that more than 90% are released alive.[6] Released turtles are "assumed to be unharmed",[7] although their survival rate – including those released following the use of resuscitation techniques – has not been adequately studied.[8] The susceptibility of turtles to capture in trawling operations, and the threatened status of many turtle species worldwide, provided the impetus for the development of BRDs specifically designed to exclude turtles from trawl nets.[9] TEDs consist of an inclined or declined rigid or semi-rigid barrier located within the trawl net across its entire diameter through which turtles cannot pass. Upon reaching the barrier, turtles are guided to an opening in the top or bottom of the net out of which they escape. TEDs can virtually eliminate turtle mortality where they are fitted and used correctly.[10] However, although no turtle can proceed to the codend where a TED is used correctly,[11] a turtle may be hauled onboard dead if it gets its flipper caught in the net ahead of the TED, or alternatively if an already dead turtle is scooped by the trawl. A typical TED is illustrated in Figure 1.

The 1996 Inter-American Convention for the Protection and Conservation of Sea Turtles is the first comprehensive international legal measure to protect turtles.[12] The Convention, which entered into force on 2 May 2001, is intended to promote the protection, conservation and recovery of turtle populations in the Americas. The most notable and significant protection measure in the Convention is the requirement that TEDs be used with trawl nets. Specifically, each Party is to require shrimp (prawn) trawl vessels to use TEDs[13] "that are properly installed and functional".[14] The only permissible exceptions to this requirement are where vessels use nets that are retrieved manually or for which no TEDs have been developed,[15] where shrimp trawl vessels exclusively use other trawl gear "that has been demonstrated not to pose a risk of incidental mortality of sea turtles"[16] or where they operate "under conditions where there is no likelihood of interaction with sea turtles".[17] Each of these exceptions carries the following critical proviso: each Party allowing such an exception must provide to the other Parties "documented scientific evidence demonstrating the lack of such risk or likelihood".[18] These provisions embody the logic inherent in the precautionary principle, whereby a party seeking approval to undertake an activity for which some evidence exists suggesting that it may be harmful (in this case trawling without using a TED) is required to adduce evidence pointing to the

[6] Department of the Environment and Heritage, *Australia State of the Environment 2001: Coasts and Oceans* (2001) p 34. See also Poiner IR and Harris ANM, "The Incidental Capture, Direct Mortality and Delayed Mortality of Sea Turtles in Australia's Northern Prawn Fishery" (1996) 125 *Marine Biology* 813.

[7] Department of the Environment and Heritage, n 6, p 34.

[8] See eg Robins CM, Goodspeed AM, Poiner IR and Harch BD, *Monitoring the Catch of Turtles in the Northern Prawn Fishery* (Fisheries Research and Development Corporation Final Report, Canberra, 2002) p 38.

[9] See Gillespie A, "Wasting the Oceans: Searching for Principles to Control Bycatch in International Law" (2002) 17 *International Journal of Marine and Coastal Law* 161 at 179; and Bache SJ, "A Primer on Take Reduction Planning under the Marine Mammal Protection Act" (2001) 44 *Ocean and Coastal Management* 221 at 221.

[10] See Hon Warren Truss, "Turtles Protected in New Industry Devices" (Agriculture, Fisheries and Forestry Australia, Press Release, 13 April 2000); Robins et al, n 8, p 8; Day G and Eayrs S, "NPF Operators Make Gains in Bycatch Reduction … But Some Problems Remain!" (2001) (February) *Professional Fisherman* 18; Campbell M, "Industry Trials of TEDs in the Northern Prawn Fishery" (1998) (June) *Professional Fisherman* 12; and Brewer D, Rawlinson N, Eayrs S and Salini J, "Bycatch Reduction Devices can Benefit Prawn Fishers" (1997) (January) *Professional Fisherman* 12.

[11] However, juvenile turtles may proceed through to the codend if the minimum bar spacing on a TED is too large. Further, there are currently no requirements to install TEDs in the smaller "try nets" used by many trawl operators to gauge the efficiency of the much larger major trawl nets. Try nets trypically have a shorter shot duration than the main nets.

[12] Wold, n 5, at 47. Reprinted in (2002) 5 *Journal of International Wildlife Law and Policy* 163. The Convention has been ratified by Venezuela, Peru, Brazil, Costa Rica, Mexico, Ecuador, the Netherlands, Honduras and the United States.

[13] For the purposes of the Convention, TEDs are defined as devices "designed to increase the selectivity of shrimp trawl nets in order to reduce the incidental capture of sea turtles in shrimp fishing operations": Annex III(2).

[14] Annex III(3).

[15] Annex III(4)(a). This subsection continues: "A Party allowing such exception shall adopt other measures to reduce the incidental mortality of sea turtles that are equally effective and that do not undermine efforts to achieve the objective of this Convention, such as limits on tow times, closed seasons and closed fishing areas where sea turtles occur."

[16] Annex III(4)(b)(i).

[17] Annex III(4)(b)(ii).

[18] Annex III(4). Annex III(5) provides that any Party may comment upon information provided by a Party pursuant to Annex III(4) and, where appropriate, the Parties "shall seek guidance" from the Consultative and Scientific Committees set up under the Convention "to resolve differences of view".

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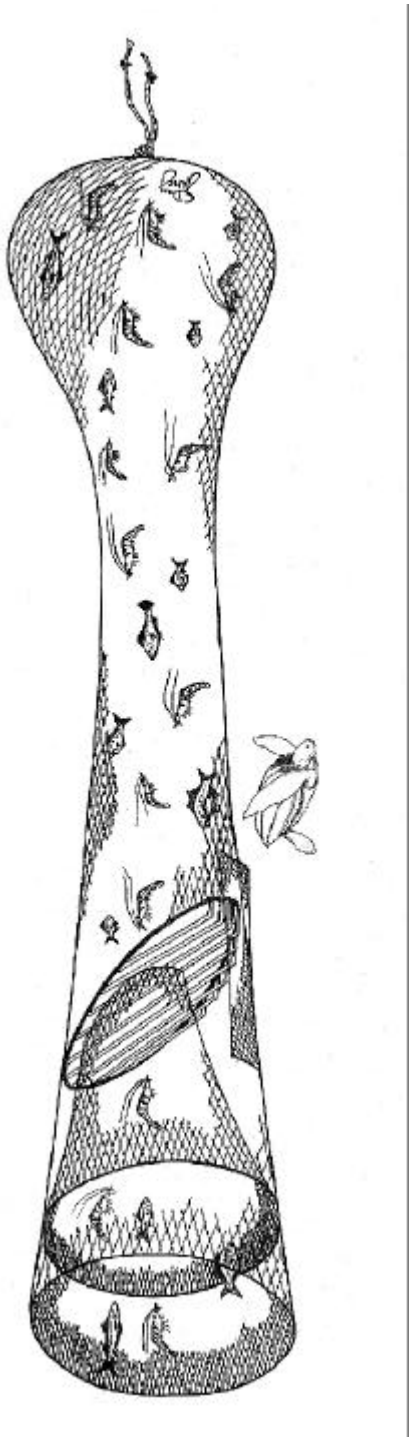

Figure 1: Super shooter TED[19] (view figure horizontally)

[19] Illustrated by Garry Day, Australian Maritime College.

unlikelihood of harm occurring or the likely occurrence of only negligible harm.[20] The remaining exceptions to the TED requirement are where approved scientific research is being conducted[21] and where the "presence of algae, seaweed, debris, or other special conditions, temporary or permanent, make the use of TEDs impracticable in a specific area".[22] This last exception contains the strict proviso that "other measures" shall be adopted "to protect sea turtles in the area in question, such as limits on tow times"; that "only in extraordinary emergency situations of a temporary nature" may a Party be allowed to apply this exception "to more than a small number" of vessels; and further that a party allowing this exception shall provide to the other Parties "information concerning the special conditions and the number of shrimp trawl vessels operating in the area in question".[23] The Convention is currently the only international legal document that requires signatory nations to use TEDs. Notwithstanding this, the "TED Convention" is not without criticism due to its focus on the use of TEDs with little emphasis placed on the adoption of other conservation and enforcement measures.[24]

The negotiation process that led to the Inter-American Convention was influenced by the early use of TEDs in the United States and the decision of the United States in 1989 to prohibit the import of shrimp caught in fisheries without turtle conservation standards equivalent to domestic measures.[25] Where trawling operations in a foreign prawn fishery impact with turtles, the use of TEDs, together with "credible enforcement effort and sufficient penalties", is required in order for the fishery to be certified to export prawns to the United States.[26] The large consumption of imported prawns in the United States resulted in this trade embargo having significant extraterritorial effect. Domestic fisheries management arrangements in countries that wished to export their prawn products to the United States were revised to require the use of TEDs. For example, the United States law hastened the introduction of requirements for the use of TEDs in Australia's Northern Prawn Fishery for which United States certification was sought and subsequently granted.

The most recent international accord designed to protect sea turtles from fishing activities is the 2000 Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia.[27] Similarly, there is also the 1999 Memorandum of Understanding Concerning Conservation Measures for Marine Turtles of the Atlantic Coast of Africa.[28] Both these memoranda were adopted pursuant to Article IV(4), Convention on the Conservation of Migratory Species of Wild Animals.[29] Although neither of these memoranda specifically mention the use of TEDs, the Conservation and Management Plan of the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia,[30] adopted on 23 June 2001, provides that an activity which signatory nations should undertake is to "[d]evelop and use gear, devices and

[20] See Gullett W, "Environmental Protection and the 'Precautionary Principle': A Response to Scientific Uncertainty in Environmental Management" (1997) 14 EPLJ 52 at 59-61. The precautionary character of the TED use exception provisos is reinforced by the first part of Annex III(4) which states that exceptions can only be allowed "in accordance with the best available scientific evidence".
[21] Annex III(4)(c).
[22] Annex III(4)(d).
[23] Annex III(4)(d)(i)(ii)(iii).
[24] Bache SJ, "International Bycatch Policy: Options for Sea Turtle Conservation" (2000) 15 *International Journal of Marine and Coastal Law* 333 at 348-350.
[25] See Bache, n 24, at 340.
[26] Bache, n 24, at 341.
[27] Reprinted in (2002) 5 *Journal of International Wildlife Law and Policy* 193. The Memorandum of Understanding has been signed by nine countries: Australia, Comoros, Iran, Myanmar, Philippines, Sri Lanka, Tanzania, the United States and Vietnam. The first round of consultations was convened in Perth in October 1999. Another international accord designed to protect marine turtles is the 1996 Memorandum of Agreement between the Government of the Republic of the Philippines and the Government of Malaysia on the Establishment of the Turtle Island Heritage Protected Area. Reprinted in (2002) 5 *Journal of International Wildlife Law and Policy* 157.
[28] Reprinted in (2002) 5 *Journal of International Wildlife Law and Policy* 189.
[29] 3 June 1979. Reprinted in 19 ILM 15.
[30] Reprinted in (2002) 5 *Journal of International Wildlife Law and Policy* 199.

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techniques to minimise incidental capture of marine turtles in fisheries, such as devices that effectively allow the escape of marine turtles".[31]

BYCATCH MINIMISATION IN AUSTRALIA

In every Australian jurisdiction fisheries management plans are developed under the mantle of "sustainability".[32] In Queensland, for example, fisheries management plans are formulated "having regard to the principles of ecologically sustainable development" (**ESD**).[33] Specifically, marine resources are to be harvested so as to ensure that they are "used in an ecologically sustainable way".[34] The implementation of the broad sustainability objective is reflected in an array of regulations placed on commercial fishers including quotas, size limits, area restrictions, period restrictions and the type of fishing gear that can be used. However, due to the broad scope of the ESD principles and the imprecise way in which they are typically included in legislation, the development of specific environmental management measures to achieve ESD can result in tensions in the application of the concept in a variety of discrete cases.[35] The challenges for fisheries management include the balancing of precautionary objectives (eg maintaining stock viability) and economic objectives (eg maximising economic efficiency in the exploitation of fisheries resources).[36] Notwithstanding such difficult decisions, in the fisheries context, the overarching concept of sustainability is taken to embrace the objective of bycatch minimisation. As such, bycatch reduction is entrenched in the policy[37] and legal[38] setting in Australia as one of the central planks of fisheries management.

The problem of bycatch is well recognised in Australia with most attention having been focused on trawling and longline activities. It has been reported that bycatch in prawn and scallop trawling operations in northern Australia ranges from four to fifteen times the weight of targeted species.[39] Some unwanted species may be sold as byproduct, but in many cases "trash fish" are discarded at sea.[40] Species discarded after being hauled onboard in this manner typically have high mortality rates. Fishing operations that result in high take of unwanted species have obvious implications for the sustainability of such species and species which prey on them. The loss of such biomass may also have an economic value that goes unrecognised.[41]

Although the objective of reducing bycatch is accepted by commercial fishers and regulators, there may be disagreement about the manner in which it should be achieved in a particular fishery. The formulation of specific fisheries management measures that meet bycatch reduction objectives is compounded by the great variance in fisheries. Differences in fisheries may be observed in, among

[31] Objective 1, Programme 1.4, Activity (a).

[32] Gullett W, Paterson C and Fisher E, "Substantive Precautionary Decision-Making: The Australian Fisheries Management Authority's 'Lawful Pursuit' of the Precautionary Principle" (2001) 7 *Australasian Journal of Natural Resources Law and Policy* 95 at 133. Lynch refers to the "sheer saturation of ESD throughout [Australian] fisheries legislation": Lynch A, "Legislating for Ecologically Sustainable Development: The Fisheries Act 1994 (Qld)" (1995) 2 *James Cook University LR* 82 at 107.

[33] Section 25(3), *Fisheries Act 1994*.

[34] Section 3(1), *Fisheries Act 1994*.

[35] Crosthwaite K and Gullett W, "Balancing Short Term Impacts and Long Term Interests in Fisheries Management Decisions: Justice v Australian Fisheries Management Authority" (2002) 2 (June) *National Environmental LR* 39 at 40.

[36] Gullett et al, n 32, at 132.

[37] See eg *Australia's Oceans Policy* (1998) and the *Commonwealth Policy on Fisheries Bycatch* (2000).

[38] For example, s 3(1)(b), *Fisheries Management Act 1991* requires, in relation to fisheries management obligations under the Act, "regard" to be had to the "impact of fishing on non-target species".

[39] Robins J, Eayrs S, Campbell M, Day D and McGilvray J, *Commercialisation of Bycatch Reduction Strategies and Devices within Northern Australian Prawn Trawl Fisheries* (Fisheries Research and Development Corporation Report No 96/254, 2000) p i.

[40] For example, it has been reported that less than 5% of the 30,000 to 60,000 tonnes of bycatch caught each year in the Northern Prawn Fishery is retained for commercial purposes. See Pender PJ, Willing RS and Ramm DC, *Northern Prawn Fishery Bycatch Study: Distribution, Abundance, Size and Use of Bycatch from the Mixed Species Fishery* (Fishery Report No 26, Department of Primary Industry and Fisheries, Northern Territory, 1992).

[41] Nicholls D and Young T, "Australian Fisheries Management and ESD – The One That Got Away" (2000) 17 EPLJ 272 at 288; and Young T, "Putting Sustainability into Practice – The Queensland Fisheries Management Debate" (2001) 18 EPLJ 381 at 392.

other things, the biological characteristics of targeted species,[42] the presence or absence of seaweed, sponges or other aquatic organisms that can foul fishing gear, the relative preponderance of associated species which may be impacted by fishing activities, previous harvest levels, fishing gear efficiency, and the amount of active or latent fishing effort. These differences necessitate individualised management arrangements for each fishery to best enable the achievement of environmental and economic objectives. Also, fishing practices within some large fisheries such as the Queensland East Coast Trawl Fishery are diverse due to the different areas and trawl methods used for different target species.[43] Bycatch reduction in one fishery may be achieved by the use of BRDs, yet in other fisheries strict area and period restrictions may be necessary in addition to the use of BRDs to avoid impacts of fishing operations with known congregations of threatened species.

One challenge for fisheries management is that any new requirement for gear modification aimed at reducing bycatch may meet opposition from fishing operators if the new requirements are perceived to, or actually, reduce the take of targeted species and thus impact on profits.[44] Such regulations may be susceptible to legal challenge for impermissibly giving undue effect to environmental objectives at the expense of economic efficiency objectives.[45] As a result, extensive stakeholder consultation and participation in new fisheries management arrangements is commonplace in Australia.[46] Public involvement in decision-making aims to ensure a transparent deliberative process in the development of new regulations in order to increase public acceptability of, and compliance with, new management arrangements. Support for new management arrangements may be increased where managers are responsive to stakeholder concerns about the transition to stricter legal requirements. For example, fisheries managers may delay or restrict any requirements for gear modification[47] or allow fishers to be actively engaged in the achievement of bycatch reduction targets by allowing them, in recognition of their expertise, to develop their own BRDs provided they meet fisheries management objectives. The latter approach may be adopted to foster innovation by industry to develop new and potentially more efficient BRD technology.[48] Such flexible arrangements for the introduction of new fisheries regulations are common where they are

[42] Including, but not limited to, size, abundance and reproductive rates of targeted species, schooling behaviour and location of target species within the water column, and relative population strengths of predator and prey species.

[43] For example, there are different trawl processes used for vessels targeting prawns and scallops and there are also different rigs used to target prawns in shallow and deep water.

[44] See Eayrs S and Bose S, *An Assessment of TED Performance in the NPF Banana Prawn Fishery* (Final Report, Australian Fisheries Management Authority Project No RO1/0228, December 2001) p 14 (reproduced in part in Eayrs S and Bose S, "TED Performance Measured During NPF Banana Prawn Season" (2002) (October) *Professional Fisherman* 17-18); and Bache, n 24, at 335.

[45] Economic objectives are included in the Queensland principles of ESD under s 3(3), *Fisheries Act 1994*. Likewise, s 3(1)(c), *Fisheries Management Act 1991* provides that "maximising economic efficiency in the exploitation of fisheries resources" is an objective that the Australian Fisheries Management Authority (**AFMA**) must pursue. The Federal Court of Australia considered the ambit of this objective in *Bannister Quest Pty Ltd v Australian Fisheries Management Authority* (1997) 77 FCR 503 at 511-521. See Gullett et al, n 32, at 117.

[46] A recent example of extensive, and at times vitriolic, stakeholder involvement in new fisheries arrangements was in relation to the process leading to the declaration of new marine parks in Victoria under the *National Parks (Marine National Parks and Marine Sanctuaries) Act 2002* (Vic). See Phillips, J, "Governance Issues Influencing the Success of Marine Protected Areas and the Management of the Surrounding Seas" (Conference presentation, World Congress on Aquatic Protected Areas, Cairns, 17 August 2002). See also s 3(1)(d), *Fisheries Management Act 1991* which provides that AFMA must, in the performance of its functions, ensure "accountability to the fishing industry and to the Australian community in AFMA's management of fisheries resources".

[47] For example, in 2000, the mandatory use of TEDs in the Northern Prawn Fishery was required only after the completion of the first two weeks of the fishing season. The regulation came into force on 15 April 2000, two weeks after the commencement of the season: Direction No NPFD 30 (since repealed) for the Northern Prawn Fishery Management Plan 1995 issued under the *Fisheries Management Act 1991*, 16 November 1999, cl 2.

[48] For example, operators may be granted a scientific permit to trial devices that do not meet TED specifications, particularly in the first few seasons in which they are required. See eg Direction No NPFD 51 (since repealed) for the Northern Prawn Fishery Management Plan 1995 issued under the *Fisheries Management Act 1991* 14 February 2001, cl 6.1 and Day G, *At-Sea Testing and Assessment of the John Thomas Olsen Bigeye Turtle Excluder Device as an Approved TED for Australia's Northern Prawn Fishery* (Australian Maritime College, 2000) p 3.

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developed following the input of legislative management advisory committees which typically have strong industry representation.

Nevertheless, the reduction of bycatch produces economic benefits for fishers. Benefits include, among other things, trawl and processing efficiency achieved by lowered fuel costs and the increased duration trawls may be deployed due to a reduced mass to be towed, reduced damage to nets caused by large animals, quicker sorting times, as well as improved product quality achieved by less damage to prawns caused by turtles and stingrays caught in the net.[49] Further, where BRDs are aimed at reducing the take of unwanted juveniles of the target species, they also help to ensure the viability of the fishery indefinitely.[50] There is also evidence that the use of BRDs, including TEDs, may increase catch of targeted species.[51] Nonetheless, many fishers remain reluctant to use TEDs because of a perception that they can reduce the take of targeted species and the hazard they may pose to deck crew when nets are hauled onboard.

THE AUSTRALIAN REGULATORY APPROACH TO PROTECT TURTLES

Separate from specific regulatory measures regarding fishing gear requirements that minimise impacts on them, all six Australian turtle species are protected generally by virtue of their listing under Commonwealth law as threatened species in one of the recognised categories.[52] For example, turtle species are listed as "endangered" or "vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**). As such, they are afforded a degree of protection from human interference. For example, a person is liable to a penalty of up to $550,000 for taking an action that has, or will have, or is likely to have, a significant impact on a listed endangered[53] or vulnerable[54] species. Also, for example, a person is guilty of an offence punishable by imprisonment for up to two years and a fine of up to $110,000 for recklessly taking an action that results in the death or injury of a member of a listed endangered or vulnerable species where the member is in or on a Commonwealth area[55] or where a person takes, trades, keeps or moves a member of a listed endangered or vulnerable species where the member is in or on a Commonwealth area.[56] However, these offences do not apply to incidental capture of listed marine species that is as a result of an "unavoidable accident"[57] or where capture is validly exercised pursuant to traditional fishing rights.[58] Further, the Minister for Environment and Heritage may issue a permit under s 201, EPBC Act authorising the permit holder to take an action specified in the permit without breaching the provisions[59] where the Minister is satisfied that the impact of the specified action on a member of the listed threatened species concerned is incidental to, and not the purpose of, the taking of the action.[60] This may occur, for example, for commercial fishing activities licenced under an accredited management plan where the holder of the fishing permit undertakes to take all reasonable steps to minimise the impact of fishing on that species and that the fishing will not adversely affect the

[49] Eayrs S, Buxton C and McDonald B, *A Guide to Bycatch Reduction in Australian Prawn Trawl Fisheries* (Australian Maritime College, 1997) p 4; and Bache, n 24, at 335.
[50] Eayrs et al, n 49, p 5.
[51] Eayrs et al, n 49, p 5; Eayrs and Bose, n 44; Day G and Campbell M, "Another Year of TED and BRD Tests in the Northern Prawn Fishery" (1999) (September) *Professional Fisherman* 18; Day G, "Prawn Industry Continues to Test BRDs in Northern Australia" (1998) (May) *Professional Fisherman* 18; and Broadhurst MK and Kennelly SJ, "Reducing By-catch while Increasing Commercial Prawn Catches" (1996) (July) *Professional Fisherman* 24.
[52] Sections 178(1) and 179, EPBC Act.
[53] Section 18(3), EPBC Act. The penalty for a body corporate is a maximum of $5,500,000.
[54] Section 18(3), EPBC Act. The penalty for a body corporate is a maximum of $5,500,000.
[55] Section 196 EPBC Act. Section 196A provides a strict liability offence (without the element of recklessness) for the same action punishable by a fine up to $55,000.
[56] Section 196B, EPBC Act. Section 196C provides a strict liability offence (without the element of recklessness) for the same action punishable by a fine up to $55,000. Likewise, it is also an offence to recklessly kill or injure a listed migratory or marine species in a Commonwealth area: ss 211 and 254, EPBC Act.
[57] Section 198(i), EPBC Act.
[58] See eg s 201(3)(c), EPBC Act and s 8, *Torres Strait Fisheries Act 1984* (Cth).
[59] Section 201(2), EPBC Act.
[60] Section 201(3)(b), EPBC Act.

conservation status, survival or recovery of the species.[61] Where no such accreditation exists, it is possible for a fisher to be prosecuted for such interference with turtles notwithstanding full compliance with any licence conditions.[62]

In addition to the creation of various offences for interactions with turtles, the EPBC Act requires attention to be focused on the adequacy of management arrangements. For example, a "recovery plan" must be prepared for each threatened species.[63] Despite this requirement, no recovery plan currently exists for any species of marine turtle. However, a draft recovery plan has been prepared for all six species of marine turtles.[64]

In addition to their status as either "endangered" or "vulnerable" under the EPBC Act, all species of marine turtles are "listed marine species"[65] and as such there are additional offences for interference with them. It is an offence to take, trade, keep or move a member of a listed marine species without approval.[66] A person is liable to imprisonment for up to two years and/or a fine of up to $110,000 for taking an action that results in the death or injury of a member of a listed marine species in a Commonwealth area.[67] Further, a "wildlife conservation plan" may be prepared for listed marine species.[68]

Various pieces of State law afford additional protection to turtles, such as where offences are created for approaching them. An example is s 11(1), *Conservation and Land Management Regulations 2002* (WA) which provides that: "A person in a vessel or aircraft must not, without lawful authority, herd, chase, interfere with the movement of, or otherwise prevent the free movement of, a … marine turtle … in a marine reserve." The penalty for this offence is $2,000 although s 11(2) provides that "[a] person does not contravene subregulation (1) if the person is in a vessel that is underway and fauna are riding in or on the bow wave of the vessel".

PROTECTION OF TURTLES FROM FISHING OPERATIONS

Separate from any period or area restrictions which might be imposed on fishing operations where high interaction with turtles is expected, the most specific legal measure available to protect turtles from fishing operations is to require the use of specific BRDs in trawl nets. The first mandatory TED requirement was in the Queensland East Coast Trawl Fishery which required the use of TEDs from 1 May 1999. However, the most detailed research and trialing of TEDs has taken place in Australia's most valuable fishery, the Northern Prawn Fishery. The use of TEDs became compulsory in the Northern Prawn Fishery on 15 April 2000,[69] resulting in a reduction in sea turtle mortality from around 2,000 per year to 30 per year.[70] TEDs are also required in the Torres Strait Fishery[71] and the Shark Bay Prawn Fishery.[72] Some prawn trawl fisheries which have some interaction with turtles,

[61] See ss 208A, 222A and 265, EPBC Act.

[62] Note that in some fisheries, such as the Northern Prawn Fishery and the Torres Strait Prawn Fishery, fishers are required to record interactions with turtles and other protected species. See for example reg 32, *Fisheries Management Regulations 1992* made under the *Fisheries Management Act 1991*.

[63] Section 269(1), EPBC Act. Recovery plans must provide for the research and management actions necessary to stop the decline of, and support the recovery of, the listed threatened species "so that its chances of long-term survival in nature are maximised": s 270(1), EPBC Act.

[64] See Environment Australia, *Report on the Operation of the Environment Protection and Biodiversity Conservation Act 1999 2000-01* (Canberra, December 2001) p 18.

[65] Section 248(2)(g), EPBC Act.

[66] Sections 254B and 255, EPBC Act.

[67] Section 254, EPBC Act.

[68] Section 285(1)(b), EPBC Act.

[69] Direction No NPFD 30 for the Northern Prawn Fishery Management Plan 1995 issued under the *Fisheries Management Act 1991*, 16 November 1999. The current regulation is provided in Direction No NPFD 60 for the Northern Prawn Fishery Management Plan 1995 issued under the *Fisheries Management Act 1991*, 28 February 2002.

[70] Northern Prawn Fishery Management Advisory Committee, *Northern Prawn Fishery Bycatch Action Plan 2002*, pp 3 and 7.

[71] Torres Strait Fisheries Management Notice No 60 issued under s 35(1)(a), *Torres Strait Fisheries Act 1984*, 21 February 2002.

[72] TEDs were required in one of the two nets deployed on trawl vessels in the Shark Bay Prawn Fishery in the 2000 and 2001 season. Thereafter they were required in both of the twin rigged nets. See Department of Fisheries WA, *Application to*

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such as the Exmouth Gulf Prawn Fishery,[73] currently do not have TED requirements, although some fisheries are developing approaches whereby TEDs will be introduced in upcoming fishing seasons.

The measures contained in the EPBC Act for the protection of native species can also be used to protect turtles from the threat posed to them by fishing operations. An identifiable activity which threatens a native species such that it could cause an already listed threatened species to become more endangered,[74] or that adversely affects two or more listed threatened species, can be recognised as a "key threatening process".[75] Where a key threatening process is recognised, a "threat abatement plan" may be prepared.[76] On 4 April 2001, "Incidental catch (bycatch) of Sea Turtle during coastal otter-trawling operations within Australian waters north of 28 degrees South" was listed as a key threatening process under s 183, EPBC Act by virtue of the last abovementioned category. The Minister for Environment and Heritage concluded that otter trawl operations might adversely affect Loggerhead, Flatback and Olive Ridley Turtles.[77] This decision appeared to be made partly in recognition of the absence of mandatory TED requirements in every fishery north of 28°S. As such, it is possible that this key threatening process could be delisted under s 184(1)(b), EPBC Act if TED use is mandated throughout all trawl fisheries north of 28°S with appropriate enforcement measures, thus arguably rendering such trawl operations not a key threatening process.

Another layer of legal protection for turtles effectively is provided in Pt 10, EPBC Act which requires the preparation of strategic assessments for all Commonwealth managed fisheries and Pt 13A which provides an approval process for the export of marine resources. From 11 January 2002 the export controls previously implemented through the *Wildlife Protection (Regulation of Imports and Exports) Act 1982* (Cth) have been implemented under the EPBC Act by virtue of the *Environment Protection and Biodiversity Conservation Amendment (Wildlife Protection) Act 2001* (Cth) to ensure that exported marine resources are harvested in accordance with ESD principles. The objective of the export approval process is "to ensure that any commercial utilisation of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way".[78] The export approval and strategic assessment provisions in the EPBC Act are a result of the commitment to provide more scrutiny of fisheries management arrangements given by the Commonwealth Government in December 1998 when it released *Australia's Oceans Policy*. The Oceans Policy is Australia's premier policy document for offshore areas. Among other things, it provides the "framework for integrated and ecosystem based planning and management for all of Australia's marine jurisdictions".[79] In 2001 the document *Guidelines for the Ecologically Sustainable Management of Fisheries* was prepared by Environment Australia to assist the preparation of environmental assessments of fisheries under Pt 10, EPBC Act and the export of native species under Pt 13A. The *Guidelines* require, among other things, that fisheries management regimes meet the following principle:

> Fishing operations should be managed to minimise their impact on the structure, productivity, function and biological diversity of the ecosystem.

Environment Australia for the Shark Bay Prawn Fishery Against the Guidelines for the Ecologically Sustainable Management of Fisheries for Continued Listing on Section 303DB of the EPBC Act 1999 (April 2002) p 79. Note that the use of TEDs in the Shark Bay Prawn Fishery will not be required during periods of high weed: p 79.

[73] The Department of Fisheries WA intends to require the entire fleet to use BRDs in 2003 to reduce take of Leatherback Turtles, Green Turtles, Loggerhead Turtles, Flatback Turtles and Hawksbill Turtles. See Department of Fisheries WA, *Application to Environment Australia for the Exmouth Gulf Prawn Fishery Against the Guidelines for the Ecologically Sustainable Management of Fisheries for Continued Listing on Section 303DB of the EPBC Act 1999* (April 2002), pp 82-85.

[74] Section 188(4)(b), EPBC Act.

[75] Section 188(4)(c), EPBC Act.

[76] Section 270A(1), EPBC Act. See also ss 270B and 271(1), EPBC Act.

[77] Environment Australia, *Incidental Catch (Bycatch) of Sea Turtles During Coastal Otter-trawling Operations in Australian Waters North of 28°S* (advice to the Minister for the Environment and Heritage from the Threatened Species Scientific Committee on a public nomination of a Key Threatening Process under the *Environment Protection and Biodiversity Conservation Act 1999*) http://www.ea.gov.au/biodiversity/threatened/ktp/ottertrawl.html viewed 26 February 2003.

[78] Section 303BA(1)(d), EPBC Act. Note that exemptions can be provided under s 303DB.

[79] Commonwealth of Australia, *Australia's Oceans Policy* (1998) Environment Australia, p 2.

This principle is expanded by the adoption of the following two objectives:

> Objective 1
>
> The fishery is conducted in a manner that does not threaten bycatch species.
>
> Objective 2
>
> The fishery is conducted in a manner that avoids mortality of, or injuries to, endangered, threatened or protected species and avoids or minimises impacts on threatened ecological communities.[80]

The implementation of these objectives requires, among other things, the collection of reliable information on the composition and abundance of bycatch and endangered, threatened and protected species, assessments of the impact of fisheries on endangered, threatened and protected species, and that management responses ensure that there are "measures in place to avoid capture and/or mortality of endangered, threatened or protected species". Further, it is expected that management responses, "considering uncertainties in the assessment and precautionary management actions", demonstrate a "high chance of achieving" objective 2.[81]

Although the *Guidelines* do not specify that TEDs must be used for trawl fisheries that have impacts on turtles, they do provide that Commonwealth managed fisheries, and other fisheries for which export approval is sought, must demonstrably be conducted in an ecologically sustainable manner. In this regard, the use of TEDs is an obvious management response to the risk of turtles being captured in trawl fisheries and as such is a matter relevant to the strategic assessment of fisheries. Where operations in a fishery impact with turtles, Environment Australia considers actions to manage this impact, including the use of TEDs, research on the viability and effectiveness of using TEDs in the fishery and other management responses such as a code of conduct for handling turtles that are brought on board or the spatial and temporal closure of fishing grounds near rookeries or known high levels of turtles.[82] However, if TEDs are not used in circumstances where fatal interaction with threatened species of turtles occur and this is considered to be a failure to demonstrate ecologically sustainable development practices in the operation of the fishery, this would not necessarily mean that export approval will be denied or that the fishery will not be permitted to operate. This is because the strategic assessment process undertaken by Environment Australia is not an approval process but stands as a separate environmental management process that is largely independent from the actual fisheries management agency in question – either the Australian Fisheries Management Authority at the Commonwealth level or an equivalent State fisheries management agency. In this regard, the strategic assessment requirements under the EPBC Act provide an additional environmental assessment of the conduct of fishing operations and thus operate as a *de facto* increased measure of legal protection for turtles by providing a process for identifying any perceived deficiencies in a management regime's turtle protection measures. This is notwithstanding the fact that the assessment requirements under the EPBC Act have not been interpreted as necessarily requiring specific protection measures such as the use of TEDs.

THE QUEENSLAND REGULATORY APPROACH TO PROTECT TURTLES FROM PRAWN TRAWL OPERATIONS

Although the use of TEDs became compulsory in the Queensland East Coast Trawl Fishery on 1 May 1999, they were not required in all areas. Their use was progressively expanded to daytime and inshore trawling and, since 1 January 2002, apply to all areas in Queensland with the exception of river beam trawls. However, as in the Northern Prawn Fishery, TEDs were trialled by many operators before they became mandatory.

Section 51(b) of the Fisheries (East Coast Trawl) Management Plan 1999 (Qld), issued under the *Fisheries Act 1994*, provides that TEDs are prescribed as an additional condition to which a licence under which a trawl net is used is subject. Specifically, the licence condition is that the use of the net

[80] Environment Australia, *Guidelines for the Ecologically Sustainable Management of Fisheries* (2001) p 8.
[81] Environment Australia, n 80, pp 8-9.
[82] Personal communication, Margaret Tailby, Director of the Sustainable Fisheries Section, Environment Australia, 3 March 2003.

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"must achieve the purpose of a TED".[83] Prior to 6 December 2002, there were two options for complying with this requirement. The first way in which compliance was, and still is, assumed is if a "recognised TED" is used with the net.[84] The requirements for a recognised TED stipulate the dimensions of a rigid or semirigid barrier that must be fitted within the net and the dimensions and location of an opening through which turtles will be steered to escape. In 2002 the provision was as follows:

> 55 Requirements for recognised TED
>
> (1) A recognised TED must consist of a barrier and an opening that allows turtles to escape immediately after being taken in the net.
>
> (2) The barrier must consist of a rigid or semirigid inclined barrier of bars attached to the net's circumference that acts to steer turtles through the opening.
>
> (3) The bars must be no more than 12 cm apart.
>
> (4) The opening must –
>
> (a) be immediately forward of the top of the barrier; and
>
> (b) have a minimum taut measurement of –
>
> (i) 76 cm across the widest part of the net; and
>
> (ii) 38 cm across the perpendicular to the measurement under subparagraph (i) at its midpoint.

The dimensions of the barrier and opening are the same as the TED requirements in the Northern Prawn Fishery. Yet the design of a standard TED suitable for use in all fisheries has so far remained elusive due to the differing fisheries practices in Australian trawl fisheries. Prior to the revision of the Queensland regulations in December 2002, the second way in which compliance with s 53(1) was assumed was if "another device" was used with the net "if the use achieves the purpose of a TED".[85] Section 52 provides that "[t]he purpose of a TED is to allow turtles to escape immediately after being taken in the net".[86] The exception allowed fishers to develop their own methods for excluding turtles "immediately". A heavy onus was placed on fishers who chose to utilise this exception to experiment with devices because they were expected to comply with the provision but could not be sure if they were in compliance in the absence of scientific testing or accreditation processes for their devices. A problem that emerged in the Queensland East Coast Trawl Fishery, which became the subject of dispute in *Smith (Queensland Fisheries Inspector) v Thompson and Brown* (unreported, Southport Magistrates Court, Queensland, Magistrate Mr LA Mellors, 30 August 2002, No 14318 of 2001 and No 14316 of 2001), is that operators of many hundreds of fishing vessels took this second method of compliance to mean that devices that differed greatly from recognised TEDs could be used in the fishery notwithstanding the absence of a mandatory scientific testing or certification process for such alternate devices to determine their effectiveness in excluding turtles.

TED LITIGATION

The case of *Smith (Queensland Fisheries Inspector) v Thompson and Brown* was the first time a TED requirement was legally tested in Australia. Two commercial fishers licensed to fish in the Queensland East Coast Trawl Fishery were alleged to have breached their licence conditions for failing to have fitted to their nets a "recognised TED" as required by section 55 of the management plan. In both cases the fishers had no recognised TEDs fitted to their nets, but they did have fitted a different form of BRD, namely a "John Olsen Bigeye", which they submitted was a "soft TED" which achieves the purpose of a recognised TED. This "device" consists of a hole cut into the top part of the net through which fish can escape. It is usually a long way forward of the codend and has a flap or guiding panel below to prevent loss of targeted species. It is common for flotation devices to be

[83] Section 53(1), Fisheries (East Coast Trawl) Management Plan.
[84] Section 54(1), Fisheries (East Coast Trawl) Management Plan (since repealed).
[85] Section 54(2), Fisheries (East Coast Trawl) Management Plan (since repealed).
[86] Section 52, Fisheries (East Coast Trawl) Management Plan.

fitted to the top of the opening and weights to be fixed to the bottom of the opening to enable the hole to remain open during the trawls to maximise bycatch reduction. Neither defendant used such aids.

The Queensland Fisheries Service does not consider that bigeye devices enable turtles to escape "immediately". In recognition of the alleged non-compliance with the TED requirements by as many as 250 vessels in the 500 vessel fishery,[87] on 2 January 2002 the Queensland Department of Primary Industries issued a press release in which it stated that operators should cease using bigeyes to achieve the purpose of TEDs in their nets because "they do not facilitate the immediate escape of captured turtles after they enter the net".[88] This was based on the assumption that turtles would not be excluded "immediately" because these devices "required the turtle itself to locate the opening and exit the net, rather than being guided by the device to the opening in the net".[89] Bigeyes were designed as a BRD specifically for fish due to their ability to swim and locate openings rather than for turtles which possess poorer swimming ability and tire easily. Further, they were not designed to exclude fish but to *reduce* their capture.

The case would be decided on whether the prosecution could adduce sufficient evidence that the device the respondents used would not enable turtles to escape "immediately" and thus be out of compliance with the "TED use" requirement. This presented the logical impossibility of proving a negative proposition,[90] albeit on the test of "beyond reasonable doubt". As a matter of logic, no amount of observational evidence of turtles escaping through bigeyes promptly after being caught could establish conclusively that bigeyes enable turtles to be excluded immediately in all cases. To compound the challenge the prosecutors faced, there was insufficient observational evidence. Testing had been conducted on an experimental version of the John Olsen Bigeye in the Northern Prawn Fishery under a scientific permit system to determine its suitability as an "approved TED" for that fishery. This experimental device caught three turtles and subsequently failed to qualify as an approved TED under this testing protocol.[91]

Expert opinion was provided on turtle reactions to approaching trawl nets and their behaviour once caught in them in light of water flow dynamics in trawls under tow. The prosecution presented evidence that turtles typically try to swim away from an approaching trawl net and tire as they do so and can then be overtaken by the net and captured. The issue then was whether tired turtles, with an intelligence level considered to be lower than that of fish, could see and recognise the bigeye hole and have the ability to swim forward faster than the trawl and escape. If turtles cannot outpace the trawl then they would be unable to reach the escape opening. Expert evidence was led indicating that bigeye holes would not remain open during the process of trawling without the aid of weights or flotation devices. Although the trawl vessels in the Queensland East Coast Trawl Fishery normally operate at a speed of two to three knots, the evidence that could be presented was largely for vessels trawling in excess of three knots. This was because most scientific testing that has been conducted on trawl and bigeye efficiency has concentrated on trawl dynamics in the largest prawn fishery, the Northern Prawn Fishery, where vessels operate at a greater speed due to different target species and net configurations and greater vessel power and size. The lesser speed of the defendants' vessels possibly increased the likelihood of, but did not ensure, that the bigeye holes would remain open. It also presented turtles with a reduced trawl speed to overcome in order to use the escape opening.

Defence evidence that was led pointing to the effectiveness of the bigeye device, such as the absence of turtles in nets fitted with bigeyes, was not reliable because there was no way to verify if there had been turtle interactions on the trawls in question. Even if such interactions could be verified, it would be unlikely that there would have been enough interactions to be statistically conclusive.

[87] *Smith (Queensland Fisheries Inspector) v Thompson and Brown* (unreported, Southport Magistrates Court, Queensland, Magistrate Mr LA Mellors, 30 August 2002, No 14318 of 2001 and No 14316 of 2001) at 46.
[88] Department of Primary Industries, "Turtle Excluder Devices Now Compulsory" (Press Release, 2 January 2002).
[89] Department of Primary Industries, n 88.
[90] See Gullett, n 20, at 60.
[91] Day, n 48. Tests have also been conducted in the United States using live farmed turtles. Nevertheless, this device also failed the US testing process for TED certification. See *Smith (Queensland Fisheries Inspector) v Thompson and Brown* (unreported, Southport Magistrates Court, Queensland, Magistrate Mr LA Mellors, 30 August 2002, No 14318 of 2001 and No 14316 of 2001) at 11 and 60.

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Further, some interactions may not have been reported, particularly in the absence of a fisheries agency or independent observer program.

The key issue that needed to be decided – whether the device used would enable turtles to escape "immediately" – required, as a matter of statutory interpretation, consideration to be given to the length of time that may be allowed to pass during which turtles can locate and use the escape opening. Where "immediately" has been used in legislation, courts have been reluctant to give it a literal construction because it would not permit any time to elapse.[92] In most cases where "immediately" is used it relates to the making of a positive human act and cannot be used "as imposing an obligation to do what is impossible".[93] As such, courts have typically interpreted it to mean as immediately as the circumstances permit.[94] In Queensland fisheries legislation, "immediately" has been interpreted to mean "as soon as reasonably possible or practicable".[95] Where this involves the doing of a human act, such as returning to the sea fish caught in excess of quota, it does not require that it be done instantly, "but within such requisite time as is reasonable for the doing of the act".[96] For example, in *Riley v Fuchs* [2001] QDC 085, McGill DCJ considered that the word "immediately" in s 89(1), *Fisheries Regulation 1995*[97] must be interpreted:

> in the light of its plain intention to preserve the life of fish caught incidentally, and in these circumstances … the word "immediately" to be given any sensible operation must be interpreted so as to mean, as far as possible within a sufficiently short time to enable the fish to survice.[98]

The TED use exception did not, however, relate to the doing of a human act; rather, turtles must perform the act necessary. The jurisprudence indicates that the word "immediately" must be given a workable meaning, but the cases do not shed light on what is a reasonable period of time that can elapse to enable a turtle to perform the requisite act. The question then, it would seem, is one of determining a reasonable length of time within which turtles can escape from trawl nets through "bigeyes" – if indeed they are physically able to.

On the whole of the evidence, Magistrate Mr LA Mellors concluded:

> I am not satisfied beyond a reasonable doubt that the Prosecution have proven reasonable doubt that the defendants' nets will not release a turtle "as soon as reasonably possible or practicable".[99]

The magistrate did not determine whether the device the defendants used released turtles "immediately" but rather concluded that the prosecutors did not meet the required level of proof, particularly in terms of trawl dynamics of vessels such as the defendants' which operate at the slow trawl speed of two to three knots. Had the offence been made out, the defence of honest and reasonable mistake may have been available to the defendants on the grounds that they had honestly, but mistakenly, believed that their bigeye devices would enable turtles to escape immediately. The wording of the TED use exception had presented prosecutors with the arguably impossible task of discharging the burden of proving beyond reasonable doubt, without the aid of detailed specific scientific tests, that the actual devices used by the defendants would not enable turtles to escape immediately. It would be a costly burden on prosecutors to conduct a rigorous scientific testing program to determine the ability of the defendants' device, as configured in their nets, to exclude turtles when it was designed for a substantially different purpose. Further, any such testing program would not be statistically conclusive unless it consisted of numerous tests which replicated the at-sea

[92] *Loizos v Carlton and United Breweries Ltd* (1994) 94 NTR 31 at 34 per Kearney J.
[93] *Alexiardi v Robinson* (1861) 175 ER 1237 at 1240 per Cockburn CJ.
[94] *Alexiardi v Robinson*, n 93, at 1240 per Cockburn CJ. See also Pearce DC and Geddes RS, *Statutory Interpretation in Australia* (Butterworths, Sydney, 2001) pp 301-302.
[95] *David Thomas Hyland v Anthony Steven Shane Loader* (unreported, District Court, Bundaberg, Wolfe DCJ, 8 September 1997, Appeal No 53 of 1997) at 12. The case concerned s 28(1) (since repealed) *Fisheries Act 1994* which provided an offence for taking in excess of quota if fish were not "immediately put back".
[96] *David Thomas Hyland v Anthony Steven Shane Loader*, n 95, at 10.
[97] "(1) A person using fishing apparatus must not allow a part of the apparatus containing fish to be out of the water other than to immediately remove the fish from the apparatus."
[98] *Riley v Fuchs* [2001] QDC 085 at [11] per McGill DCJ.
[99] *Smith (Queensland Fisheries Inspector) v Thompson and Brown* (unreported, Southport Magistrates Court, Queensland, Magistrate Mr LA Mellors, 30 August 2002, No 14318 of 2001 and No 14316 of 2001) at 62.

conditions of the defendants' nets. This would require the use of live wild turtles with a high chance of causing turtle mortality and stress. Such a testing program for a device unlikely to be successful in excluding turtles would be inconsistent with the sustainable management of threatened species. It would also not resolve the question of the length of time that should be ascribed to the word "immediately" in this context.

The decision enabled the two vessels in question to continue to use bigeye devices as TEDs even though a strong case had been put showing the unlikelihood of turtles being able to outpace the trawl and locate and use the hole that might not be open. As such, the decision exposed a loophole in the TED regulations. Effectively, fishers in the Queensland East Coast Trawl Fishery did not need to use recognised TEDs if they used devices that *possibly* could allow turtles to escape notwithstanding the absence of any scientific accreditation process for the use of such devices. Therefore the effect of the TED use exception led to an unintended result that was inconsistent with the legislative objective of reducing bycatch.

The decision prompted revision of the TED regulations. In September 2002 the Queensland Fisheries Service released a *Marine Fisheries Regulatory Impact Statement (RIS)*, which is the required public consultation process for any proposed amendment to fisheries regulations.[100] Among other things, the amendment, which was accepted and entered into force on 6 December 2002, repealed the exception to the recognised TED use requirement and revised the dimensions for recognised TEDs.[101] The revisions are welcome for closing the loophole exposed in the decision and for clarifying the requirement that commercial trawl fishers must use recognised TEDs. The revised regulations avoid the need for judicial determination of the length of time that may be permitted for a turtle to escape from a trawl net "immediately" to avoid liability for the trawl operator. The only area that may require judicial clarification is the question of how to determine if a TED is not "used" correctly (such as where it is not fitted properly). Where non-use of TEDs is permitted in other fisheries, such as where the existence of kelp and sponges render them unusable, or where turtles are absent,[102] then there is a need for legislative or judicial clarification of the level of evidence needed to justify such exceptions. Australian fisheries law, including the EPBC Act strategic assessment process, has not been drafted to this level of detail. By repealing the section in the regulations that enabled TED use to be avoided, the revisions have enabled the accreditation process of the Queensland East Coast Trawl Fishery for export of prawns to the United States to commence. Had the TED use exception not been repealed, the fishery would not have satisfied the requirements for accreditation because the loophole enabled fishers to use unproven turtle exclusion devices.

CONCLUSION

The challenge presented to drafters of fisheries regulations is that they must develop laws that give effect to statutory objectives that are usually imprecise and at times in tension. The laws must operate effectively across a fishery that may possess significant variations in ecosystem dynamics and level and type of fishing effort. They must also operate effectively in the absence of sufficient surveillance resources. This challenge is compounded by the continual refinement in the policy grounds for

[100] See ss 33 and 39, *Fisheries Act 1994*.

[101] 55 Requirements for recognised TED

(1) A recognised TED must consist of a barrier and an opening that allows turtles to escape immediately after being taken in the net.

(2) The barrier must consist of a rigid or semirigid inclined barrier of bars attached to the net's circumference that acts to steer turtles through the opening.

(3) The bars must be no more than 12 cm apart.

(4) The opening must–

(a) be immediately forward of the edge of the barrier that is closest to the cod-end of the net; and

(b) have a minimum taut measurement across the widest part of the net –

(i) for a net that is used in a beam trawl net no longer than 5 m – 50 cm; or

(ii) for another net – 60 cm; and

(c) have a minimum taut measurement across any other part of the net of 50 cm; and

(d) have at least 1 taut measurement of at least 76 cm.

[102] For example, the South Australian Spencer Gulf Prawn Fishery.

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fisheries management, as evidenced by the expanding content requirements of ESD principles and ever changing dynamics of fishing activity, such as the amount and location of fishing effort and developments in fishing techniques.

The decision in *Smith (Queensland Fisheries Inspector) v Thompson and Brown* is instructive because it highlights the difficulty of enforcing the use of BRDs where regulations are drafted poorly. The problem exposed in the case is that allowing too much flexibility in the ways in which compliance with regulations can be achieved can enable legislative objectives to be completely undermined. To be effective, any management arrangement that requires the use of certain types of BRDs must be enforceable. This requires consideration to be given during the drafting process to the level of proof that will be required if compliance will be tested. If exemptions to the mandatory use of recognised TEDs are desired, they should be strictly circumscribed, as envisaged by the 1996 Inter-American Convention for the Protection and Conservation of Sea Turtles. It is submitted that some physical specifications for alternate devices must be determined so that they bear some resemblance to proven devices.

Fisheries management in Australia neatly illustrates the challenges that exist when attempts are made to translate sound and rationally developed environmental policies in a multiple use environment in which effective surveillance and compliance cannot be ensured. This case has shown that environmental objectives can be undermined, and legal uncertainty created, where a high level of industry stakeholder involvement in the development of fisheries law creates the impetus for the adoption of flexible arrangements for the implementation of regulations. The need for any such flexible arrangements must be balanced against the need to ensure that they are workable and can be upheld in court as they were intended. They must take into account problems created by scientific uncertainty concerning species interaction with fishing gear which necessarily forms part of the required evidentiary burden. Fisheries law is one area of law where the rule of law should be strengthened rather than diminished.