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ETBF Longline Tuna Fishing Industry Submission

In response to

FSANZ Proposal 1019 - Carbon Monoxide as a processing aid for fish

Note: this Submission is made on behalf of Directors of the principal tuna longline fishing and seafood processing companies based in Mooloolaba, Queensland. The companies represented supply around 70% of tuna, swordfish and mahi-mahi caught in the Commonwealth Eastern Tuna and Billfish Fishery (ETBF) and sold domestically and for export:

De Brett Seafood Pty Ltd

4 Seas Pty Ltd

Walker Seafoods Pty Ltd

Whan & Boxsell Pty Ltd

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Introduction

The Directors of De Brett Seafood Pty Ltd, 4 Seas Pty Ltd, Walker Seafoods Pty Ltd, and Whan & Boxsell Pty Ltd (The Consortium) welcome the opportunity to present this submission in response to FSANZ proposal 1019. We strongly support the proposal to ban the use of Carbon Monoxide (CO) as a processing aid for fish; and the accompanying draft food regulatory measure.

The Consortium recognises and welcomes the strong alignment between our own seafood business priorities and practices, and FSANZ' regulatory objectives and goals. In particular, FSANZ primary objectives of protection of public health and safety; provision of adequate information to enable informed food consumption choices; and the prevention of misleading or deceptive conduct¹ are also critically important business objectives for the Consortium.

From FSANZ Proposal 1019 we note that agencies responsible for enforcing the Australia New Zealand Food Standards Code (the code) have consistently regarded the treatment of fish with CO gas as unacceptable under the code.

We agree with FSANZ that current wording in the code is not clear enough to achieve its desired purpose. We also recognise the inherent challenges of ensuring that the Code is enforced effectively, and appreciate FSANZ' efforts to advise seafood processors and distributors, advice from AQIS to seafood importers, and at least one food safety presentation to a NSW Seafood Conference in 2005.

Despite current FSANZ requirements that CO not be used as a seafood processing aid, and reminders and advice as described above; as well as a similar position from leading food safety regulators internationally, the use of CO as a processing aid remains widespread, particularly in imported products.

The key issues for the Consortium with respect to CO and related processing treatments are:

- Ongoing large scale importation of CO treated tuna, swordfish and other products purported to be fresh, that are not clearly labeled as CO treated, or otherwise not accurately labeled, is seriously disadvantaging the Australian fishing industry, both financially, and from a reputational perspective;
- Regulatory standards that ensure safe levels of CO are present in tuna products, whether domestically produced or imported, must be clear and consistently applied. **Products that do not meet these standards should not be available on the Australian market**, and there should be a high risk of detection for illegal/unsafe practice;
- Permitting the sale of tuna, swordfish and other products that are CO treated or treated with the equivalent tasteless smoke and passed off to consumers as fresh, has real potential to seriously undermine the premium quality reputation of true sashimi grade tuna;
- Misleading consumers, or taking advantage of their lack of knowledge, will undermine the fundamentally important trust between high quality seafood providers, and the fish buying public. This has serious market and financial implications for honest seafood providers and their suppliers;

¹ Described in Section 18 of the Food Safety Australia and New Zealand Act 1991. See <http://www.foodstandards.gov.au/scienceandeducation/publications/annualreport/fsanzannualreport20082009/ouraccountability09/ourrolesandpriorities.cfm>.

- Trust between seafood suppliers and consumers, particularly in the realm of product quality and food safety, is fundamentally important and very fragile. For high quality fresh products that require careful handling from capture to consumption this relationship is even more important. Seafood is often (wrongly) blamed for food safety incidents.
- For safe food, and for accurate and honest consumer labeling, there must be strong alignment between actual product quality, supporting regulatory/policy arrangements, and accurate and honest product labeling.

In supporting the FSANZ proposal, the Consortium recognise the benefits from a greater degree of certainty in relation to acceptable use of CO in fish processing; opportunities to ensure less ambiguity in the code; and prospects for improved enforcement of the code.

The Consortium also notes that the Sydney Fishmarket (SFM), the largest market of its kind in the Southern Hemisphere, has also made a submission to Proposal 1019 seeking that CO processing not be permitted. In addition SFM, and the Chair of the NSW Seafood Industry Council, have endorsed this submission².

Most importantly, FSANZ Proposal 1019 offers the hope that consumers will be protected from deceptive and unsafe seafood processing practices; and can enjoy premium quality, sustainable Australian tuna products sold at a fair price.

Key Issues

The section below addresses primary issues for the Consortium arising from the FSANZ proposal and related CO treatment issues. Overall, the most valuable outcome for industry would be a well defined, scientifically robust, and equitable (covering domestic, imported, and exported products) regulatory framework to manage CO treatment, including tasteless smoke processes.

Food Safety

Food safety is a critically important priority for seafood professionals and the number one concern for the Consortium with respect to the regulation and management of CO processed tuna. There is a public perception that seafood is high risk and surveys suggest that food safety is of the utmost important to consumers³. Seafood frequently gets the blame for food related illness and it is absolutely critical that seafood suppliers - and retail outlets as the face of the industry - are trusted by consumers.

There are real benefits from maintaining such a trusted position, including more market stability in difficult times, price stability, protection against product replacement by other proteins/meats; and optimum return from a given sustainable harvest level, within acceptable environmental impacts.

² Refer to separate SFM Submission. Also pers. comm. A Bodsworth, G Turk, B Skepper, 11 February 2013.

³ Overview of the Australian Fishing and Aquaculture Industry: Present and Future. FRDC Report prepared by Ridge Partners Pty Ltd. March 2010.

The Consortium notes that large quantities of CO treated tuna, swordfish and other products are currently imported from countries such as Indonesia, the Philippines, Vietnam and Thailand. It is likely that a substantial amount of this product is not handled appropriately during the capture and processing stages. In combination with CO treatment that can successfully mask poorer quality fish, this situation significantly increases food safety risks (e.g. Table 1. below⁴).

Table 1: causes and consequences of seafood spoilage.

Spoilage consequences	Cause
Reduced Shelf Life	From bacteria, enzymes and oxidation
Off flavours and smells	Breakdown of tissue from bacteria and enzymes
Taints	Off flavours that arise from contamination during handling and preparation
Reduced quality	Deterioration of the visual, physical and chemical characteristics of seafood by bacteria and enzymes
Food poisoning	Predominantly from contamination by bacteria

These risks are compounded if fish are caught in warmer waters and post capture seafood handling practices are less advanced. This is likely to be the case with much of the imported CO treated tuna entering Australia. In such circumstances captured tuna may die many hours before being removed from the water with histamine formation already underway before the fish is brought onboard the vessel. The condition can be further aggravated by some tunas that generate heat, resulting in internal temperatures exceeding environmental temperatures⁵.

The United Nations Food and Agriculture Organisation (UN FAO) have also noted that risk assessment processes underpinning food safety arrangements are highly variable internationally. There is variable adoption of contemporary good practice, including significant variation in food safety screening procedures⁶. Science based risk assessments are not used in some regions, and/or screening procedures are not up to date or best practice.

Market Impacts

Demonstrably sustainable seafood such as tuna produced by the ETBF is increasingly well regarded in domestic and international markets. There are price premiums for sustainable seafood, with eco-labeling and third party sustainability accreditation increasingly important for market access and to underpin prices.

⁴ Department of Fisheries Western Australia. *Guidelines for Seafood Retailers* (2000)

⁵ See

<http://www.fda.gov/downloads/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/Seafood/FishandFisheriesProducts/HazardsandControlsGuide/UCM252400.pdf>.

⁶ Food and Agriculture Organisation of the United Nations . (2009). International Seafood Trade: challenges and opportunities. FAO Symposium 1-2 February 2007, Akureyri, Iceland. . Rome: FAO Rome.

Whilst there is broad recognition that aquaculture product is more likely to dominate the seafood commodity market; there is also recognition of increasing high value opportunities for high quality wild caught product in niche markets⁷.

Australia's fishing industry is ideally placed to contribute to this growing domestic and international demand. Our clean green, sustainable wild catch seafood is a premium product and one which the industry is increasingly well positioned to capitalize on. The Consortium notes that:

- Fisheries are Australia's fifth largest food producing primary industry⁸.
- Australia exports \$1.5b of edible seafood and imports \$2.1b of edible seafood.⁹
- Australia's commercial seafood production only provides approximately 35 per cent of domestic demand¹⁰.
- Seafood is the fifth most valuable protein source for Australians¹¹.

In recent years, major domestic retailers such as Coles and Woolworth have invested substantially in audit processes to ensure sustainability and quality of their seafood products. These outlets are attracted to long shelf life products that present well. In this context there are substantial risks that genuinely fresh locally sourced product has been and will continue to be displaced by imported CO treated products, or mis-labeled domestic products.

Meeting very stringent environmental and health and safety regulations, seafood producers like the Mooloolaba longline fishing fleet and associated processors are world leaders. Whilst well positioned to benefit from increasing consumer awareness and education we remain severely disadvantaged by significantly less regulation and quality assurance in those countries importing large quantities of CO treated seafood products into Australia.

These CO treated imports, and a small amount of domestically treated product, are being mis-represented as very fresh, and high quality tuna for sashimi or for restaurant quality cooked tuna portions. This is having a dramatic impact on markets for locally sourced fresh tuna that has not been treated and/or is not deceptively labeled.

For example, currently the primary Mooloolaba based ETBF operators supply about ~30 tons of high quality fresh tuna, mahi mahi and Swordfish to the Melbourne and Sydney fishmarkets each month. Historically this

⁷ Food and Agriculture Organisation of the United Nations. (2009). International Seafood Trade: challenges and opportunities. FAO Symposium 1-2 February 2007, Akureyri, Iceland. . Rome: FAO Rome.

⁸ ABARE. 2010. Australian fisheries statistics 2009.

⁹ *Ibid*, p15.

¹⁰ Fisheries Research and Development Corporation. *Annual Report 2009-10*. 'Commercial seafood production' includes edible and non-edible products.

¹¹ http://adl.brs.gov.au/data/warehouse/pe_abares99010609/AC11.2_June_REPORT_11b.pdf.

has been ~100 tons per month. By comparison there is around 100 tons per month of CO processed “fresh” tuna imported from Indonesia, Philippines, Taiwan etc. These imports appear to be higher quality but are demonstrably less fresh than the local untreated fish.

In the absence of this imported CO treated product, these Mooloolaba businesses could consistently supply substantially more product to the domestic market. Some of this supply is currently exported to United States markets where it attracts a premium as fresh “untreated” product.

The Consortium accepts that part of the challenge lies in educating Australian consumers about how to buy good quality fresh tuna products, although notes that effective prohibition of deceptively labeled imported and domestically treated CO product will make this task significantly easier.

A Level Playing Field

To meet world’s best practice environmental sustainability, and high standards of food safety and hygiene, Australian seafood producers have high regulatory costs and very few government subsidies. Large quantities of CO treated tuna products are currently imported into Australia from countries with less developed food safety regulatory frameworks, lower regulatory standards, and lower management costs.

With significantly lower production costs (including regulatory), these inferior quality imports can be sold at substantially lower prices than local products. Without being able to effectively differentiate fresh high quality Australian product in the market place through appearance, and/or accurate labeling of both country of origin and processing treatments, Australian businesses cannot reasonably compete.

We also note that thousands of tons of seafood products are destroyed/rejected/retained at the borders of importing countries because of contravention of import regulations, and quality and food safety related issues¹². Some of this post harvest loss can be prevented with clear food safety regulations, and guidelines and consistent regulations and standards across borders. There are numerous benefits, not least of which is less waste and reduced harvest pressure on fish stocks and ecosystems.

A level playing field is also important to assist Australia to maintain industry capacity, enable more efficient production processes, and meet future food security requirements. The supply of reliable and sustainable high quality protein is a critically important global issue in the face of growing populations, reducing areas and fertility of arable land, and overfishing as a result of poorly managed commercial fisheries elsewhere in the world.

The Consortium notes Australia’s *National Strategic Rural Research and Development Investment Plan*, and its R&D focus supporting global efforts to double rural sector output over the next 30 years¹³. The Australian

¹² Food and Agriculture Organisation of the United Nations. (2009). International Seafood Trade: challenges and opportunities. FAO Symposium 1-2 February 2007, Akureyri, Iceland. . Rome: FAO Rome.

¹³ See http://www.daff.gov.au/_data/assets/pdf_file/0010/1918261/nsrrdip-investment-plan1.pdf

Government is also developing an integrated *National Food Plan*, looking at the whole food supply chain to protect Australia's food security, and to develop a strategy to maximise food production opportunities¹⁴.

We note that 52 per cent by value and more by weight of whole fish, of Australia's current imports of seafood come from three countries, Thailand (26 percent), China (14 percent) and Vietnam (12 percent).¹⁵ These exporters have much less impressive records for sustainable fisheries management than Australia. In a UN survey of responsible fishing nations, Australia ranked very highly at fourth out of the 53 countries surveyed. By contrast Thailand ranked at 42nd, China 22nd and Vietnam 45th¹⁶. By enabling large imports of less sustainable and deceptively labeled CO treated product, Australian consumers and the fishing industry are significantly disadvantaged.

Tasteless Smoke Processing

Whilst the Consortium recognise the commercial benefits of improved product presentation and longer shelf life associated with processing methods described generically as filtered smoke, or tasteless smoke, we have two major concerns with current FSANZ approval of this processing method.

The first is the obvious risk that fish treated this way appears to be fresher than it actually is. For tuna particularly this has serious food safety implications - particularly from Histamine pathogens. The FSANZ Proposal notes that histamine can reach high levels in CO treated tuna while the colour remains acceptable.¹⁷

This then raises an issue of trust between seafood suppliers and consumers. There is a very real risk that genuine fresh seafood providers will be guilty by association if consumers become less trusting of these products because of deceptive labelling, inferior product quality, and/or more serious consequences such as food poisoning.

Generally, people buying tuna in Australia "buy with their eyes". Consumers look for signs that are synonymous with fresh fish. For tuna cuts this is predominantly a translucent deeper crimson red. For the great majority of consumers this is how they identify and buy fresh tuna; and this is how fresh tuna is portrayed to consumers by retailers.

From discussion with FSANZ¹⁸ we understand that labelling requirements for tasteless smoked or similarly treated product are relatively relaxed, with the main requirement being that producers not mis-represent their product as fresh. Ironically this is exactly what appears to be happening. For example some producers,

¹⁴ See <http://www.daff.gov.au/agriculture-food/food/national-food-plan>

¹⁵ ABARE (2011). Fishery Status Reports 2010: Available at <http://adl.brs.gov.au/data/warehouse/fishstatus20109abff00101>.

¹⁶ Pitcher, T., Kalikoski, D., Pramod, G. & Short, K. 2009. Not honouring the code. *Nature*, 457, 658 - 9.

¹⁷ FSANZ Proposal 1019 with reference to Ludlow et al (2004).

¹⁸ Pers. comm. D Thomas and A Bodsworth p.m. 5 February 2013.

promote their brands using various cuts of tuna, mahi-mahi, and swordfish.¹⁹ It is unclear how this process actually extends the life of fresh fish? Does it not just mask product deterioration?

*“Our patented **Superfresh™** Flavourless Smoke system is an advanced, natural process that extends the life of **fresh** fish while maintaining the original **fresh** qualities. Moreover, when combined with our rapid freezing process the **Superfresh™** system maintains the taste, texture and eating quality of **fresh** fish.”* (Bold text is author’s emphasis).

Advice from within the fishing industry suggests that the great majority of CO processed tuna and other species treated this way are being presented and sold as fresh fish, marketed with the added commercial advantage of better appearance for longer, and increased shelf life.

We suggest there is almost no difference between processing fresh fish using CO gas, and similar treatment via tasteless smoke methods. For both processes, CO is the active ingredient, working to fix colour and mask normal product deterioration.

For example a submission to the US FDA on behalf of Hawaii Seafoods²⁰ provides composition details for Tasteless Smoke as:

- Carbon dioxide 7-25% - inert, no effect on product
- Carbon monoxide-7-30% - colour additive and fixative
- Aromatic Phenols 10ppb to 15.6ppm - little or no effect on product however proven carcinogens
- Hydrocarbons C2 to C10 - 2000 to 6000 ppm - little or no effect on product however proven carcinogens
- Nitrogen and Oxygen 45-86% - Nitrogen inert on product, Oxygen slight oxidative effect to surface of product
- Methane - little or no effect on product & not considered carcinogenic.

The above suggests the primary active chemical ingredient of the process is Carbon monoxide. As such we strongly suggest the "tasteless smoke" method is overwhelmingly used to introduce CO into the product.

It is also difficult for regulators to be sure that processors using a tasteless smoke process are not also treating fish with CO gas. This is likely to be a significant compliance risk where one process is authorised and the other not permitted.

At the very least, current labelling requirements in relation to tasteless smoke product are too ambiguous. They are contributing to deceptive and potentially dangerous labelling practices in relation to fresh tuna and CO treated, or tasteless smoke treated tuna products. It would be more accurate for labelling to state that

¹⁹ See <http://www.coralseafishing.com.au/Superfresh.html>.

²⁰ Hogan and Hartson Lawyers - GRAS Exemption Claim for Tasteless Smoke Processing. Submission to US FDA dated 18 February 1999. See also US FDA response letter at <http://www.fda.gov/Food/FoodIngredientsPackaging/GenerallyRecognizedasSafeGRAS/GRASListings/ucm154892.htm>

the product has been treated with CO to fix colour - or that “colour of this product has been artificially enhanced”.

In addition, a large proportion of the CO treated tuna products sold in Australia appear suitable for sashimi. Much of the product is marketed this way, including as unlabelled portions of “high grade fresh fish” in seafood retailers. In this context, labelling may not work well. Banning the sale of CO treated products is likely to be a more practical and effective strategy.

The suggestions and claims that CO/tasteless smoke treated tuna and other seafood products are fresh and high quality is clearly misleading, and a major concern for the Consortium. There are real risks from masking product deterioration in this way.

This is a major food safety issue, involving deception of consumers and/or retailers for commercial gain. As such, it is directly relevant to FSANZ’ regulatory objectives. It warrants prompt and decisive action to ensure consumer health and safety; and to protect the integrity of Australia’s seafood processing and marketing businesses and their valuable clean green reputation.

If there is a high degree of confidence, based on scientific evidence, that the tasteless smoke and/or CO treatment of fish is safe for consumers, including that products remain safe to eat for as long as their appearance suggests this, then such processing methods should be duly authorised for all seafood processors in Australia.

Seafood and Health

Part of the allure of fresh fish to consumers is its undisputed health and nutrition benefits. The National Health and Medical Research Council *Draft Australian Dietary Guidelines incorporating the Australian Guide to Healthy Eating* (Dec 2011) notes the need for Australians to increase consumption of seafood to meet health and nutrition needs:

Fish and other seafood are central foods in the cuisines of many traditional cultural and religious groups, and are popular foods in Australian society. Fish is nutritious, providing energy (kilojoules), protein, selenium, zinc, iodine, vitamins A and D (some species only), and long-chain omega-3 fatty acids. Evidence of the health benefits of fish consumption is consistently recognised in international dietary guidelines....

*Depending on age and sex, health benefits may be seen with consumption of 1.4–2.8 serves of fish per week (140–280g per week) for adults, with proportionately less for adolescents and children. To meet recommended food group intakes, **fish consumption will need to increase by more than 40 per cent, particularly for men.**²¹ [Author’s emphasis]*

Even though Australia’s fisheries are small compared to some, our fisheries still provide substantial benefits to the Australian community. The perverse consequences of regulatory and/or policy settings that make it

²¹ Draft Australian Dietary Guidelines incorporating the Australian Guide to Healthy Eating. Pp 51, 59.
<http://consultations.nhmrc.gov.au/files/consultations/n55draftaustraliandietaryguidelinesconsultation111212.pdf>

more difficult for sustainable Australian fisheries to compete with demonstrably less sustainable seafood imports continue to damage our fishing industry.

Regulatory Considerations

First and foremost the Consortium seeks clarity and consistency in regulations that deal with CO processing. Current ambiguity around labelling and food standards for CO and/or tasteless smoke treated products makes it complicated and inefficient to bring products to market, compete with imports in the absence of a level playing field, or maintain a consistent high value market niche for premium quality fresh tuna products.

The Consortium suggests that FSANZ make the acceptable standards for CO treatment very clear. For example if CO treatment is not permitted then it should be very difficult for imported CO treated product to enter Australia and/or be sold domestically. The penalties for such conduct must be substantial and the risk of detection very high. Imported tuna products should be required to possess an AQIS approved health certificate, just as Australian product is required to do for some export markets.

Similarly, there should be an agreed, safe, evidence based benchmark for the level of CO that is permissible in treated products. This should apply irrespective of the processing method (e.g. whether product is CO gassed directly, or treated with tasteless smoke variants). In essence, if it really is safe and appropriate to consume CO treated product, then suppliers should be able to process and supply product accordingly, with minimal regulatory burden.

The result would be a safe product that consumers can be confident of. Producers can plan their business to meet clear standards, and maintain their premium reputation and business performance.

Similarly, ongoing consultation with the seafood industry, as fostered by this FSANZ submission process, is a key step in developing and maintaining efficient, safe and fair food handling and export management requirements. Reducing red tape, at an agreed level of risk, will also promote innovation to develop practical and cost effective seafood handling, processing and marketing practices.

In its recent response to the National Food Plan Issues Paper, Australia's National Seafood Industry Alliance (NSIA) recognised the need for greater policy and regulatory cohesion across governments and portfolios, including the need to foster business security and innovation; encouraging the Australian fishing industry to realise sustainable seafood production opportunities.

Greater collaboration between industry and regulators to develop effective negotiating strategies enabling greater and sustained market access; and opportunities to provide policy advice to government and industry organisations about seafood safety and improved performance of sustainable Australian business are also highly desirable and clearly in Australia's national interest.

We agree with the FSANZ assessment that non-regulatory measures are unlikely to provide confidence that measures to prevent CO processing will be effective. In light of the real risks to consumers, and thus to industry's reputation, we strongly support a clear and formal regulatory response to this issue. We also recommend a careful risk based compliance and enforcement strategy targeted to domestic CO processing (and derivatives of this); and particularly to CO treated tuna imports.

We note availability of practical, unambiguous and cost effective screening techniques to ensure that CO processing is not being used in contravention of the code. The difference in observable CO concentration between treated and untreated products is substantial, offering a straightforward quantitative and confirmative testing method likely to be suitable for regulatory purposes²². FSANZ Proposal 1019 also notes that fish imported to the EU are routinely screened for CO treatment to determine import eligibility.

Although the treatment of fish with CO is not permitted in leading seafood production and export countries globally (e.g. EU, Japan, domestically in China, and Singapore); the Consortium have observed a steady increase in CO treated product coming into Australia.

We note that under section 3.5.1.2 of the Proposal, *The provision of adequate information relating to food to enable consumers to make informed choices*, FSANZ have not raised any issues. We are aware that Australia's NSIA is promoting the national adoption of country of origin labeling (CoOL) for all seafood products (2006 CoOL laws relate only to unprocessed products)²³. This is also relevant to regulatory practices to ensure consumers can differentiate inferior imported tuna products on the Australian market.

Submission End.

²² Anderson and Wu (2005). Analysis of Carbon Monoxide in Commercially Treated Tuna (*Thunnus* spp.) and Mahi-Mahi (*Coryphaena hippurus*) by Gas Chromatography/Mass Spectrometry . Washington: US Food and Drug Administration, Seafood Products Research Centre.

²³ See http://www.ntsc.com.au/pdfs/NSIA_submission_november2010.pdf.

Attachment A - Australia's Eastern Tuna and Billfish Fishery (ETBF)

The Commonwealth managed Eastern Tuna and Billfish Fishery is one of the largest commercial fisheries operating on Australia's east coast. It has a total Gross Value of Production (GVP) of around \$39 million per year²⁴ and makes a valuable contribution to communities from Cairns in Queensland, south to Eden in NSW. Around 75% of ETBF product is sourced from vessels fishing out of Mooloolaba in south eastern Queensland.

Regrettably, fisheries production values like GVP significantly under-represent both the overall economic value of commercial fisheries, and their socio-economic contribution. GVP values do not capture value adding activities, or the value arising from leverage through other fishing industry activities (e.g. onshore processing, repairs and maintenance, retail and restaurant sales). For example, a 2009 World Bank study²⁵ found that around 80 per cent of the total value of wild catch seafood production is created during activities throughout the processing and supply chain - that is after the GVP value is determined.

Under Australia's commonwealth, state and territory fisheries and environmental protection legislation, the ETBF is carefully managed to meet Ecologically Sustainable Development (ESD) objectives. This includes stringent management of target species like yellowfin and bigeye tunas under a recently introduced Individual Transferable Quota (ITQ) regime and related best practice multi species harvest strategy. There is also stringent management of bycatch or incidental catch, and the broader impacts of fishing on the marine environment are also carefully managed.

Importantly, Australian commercial fisheries like the ETBF have also been assessed by fisheries and environmental regulators against best practice sustainability criteria²⁶ and accredited as approved Wildlife Trade Operations under the national Environment Protection and Biodiversity Conservation (EPBC) Act.

Taken together all of these environmental management, auditing and accreditation processes represent best practice for commercial fisheries management. In 2009, the renowned journal *Nature* listed Australia as the 4th best fisheries management regime in the world after assessing fisheries management in 53 countries²⁷.

²⁴ AFMA 2011 - Fisheries at a Glance - ETBF. Available at <http://www.afma.gov.au/managing-our-fisheries/fisheries-a-to-z-index/eastern-tuna-and-billfish-fishery/at-a-glance/>.

²⁵ World Bank Report: The Sunken Billions: Economic justification for fisheries reform (2009). Available at <http://siteresources.worldbank.org/EXTARD/Resources/336681-1224775570533/SunkenBillionsFinal.pdf>

²⁶ Guidelines for the Ecologically Sustainable Management of Fisheries 2nd Edition. Available at <http://www.environment.gov.au/coasts/fisheries/publications/guidelines.html>

²⁷ www.nature.com/nature/journal/v457/n7230/full/457658a.html