

Submission to the Senate Environment and Communications References Committee.

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Dealing with the Terms of Reference in turn:

*The environmental, social and economic impacts of large-capacity fishing vessels commonly known as 'supertrawlers' operating in Australia's marine jurisdiction, with particular reference to:*

***(a) the effect of large fishing vessels on the marine ecosystem, including:***

The introductory statement to this review, quoted as the first sentence above, identifies that the subject is *"large-capacity vessels commonly known as 'supertrawlers'"*. This review is therefore focused on trawling and not the generic issues relating to larger vessels involved in non-trawl fishing, such as long-lining and trapping. In many non-trawl fisheries the benefit of greater capacity, which invariably equates to larger vessels, can be counter-balanced by the ability of smaller vessels to quickly access a variety of smaller ports and/or to quickly unload disproportionately high-priced fresh product, such as live coral trout, lobsters or abalone or sashimi-grade tuna. These specific advantages of market access for small vessels with limited catches of high-priced product are not relevant to off-shore trawl fisheries. Accordingly, what follows is, unless otherwise stated, selectively related to vessels in offshore trawl fisheries.

Additionally, as the introduction gives emphasis to 'large-capacity' vessels and not just those with greater fishing power (larger nets or faster towing speeds) differentiation between vessels that have larger capacity to process bigger catches must be distinguished from those that merely have greater ability to accumulate catches. The efficiency of the production of quality product on, or from, a smaller vessel with a bigger engine towing a larger net will be considerably different to that of a larger vessel with similar or reduced catching capacity but greater processing capability and increased range.

***(i) impacts on fish stocks and the marine food chain,***

All effective fishing has an impact on fish stocks: the removal of even a single fish by definition constitutes localised depletion. Some impact of fishing is a reality. The challenge is to optimise the positive outcomes from the impacts of fishing (more and better seafood) and minimise the negative. Obviously sustainability of the total food chain (control of the level of exploitation and of seriously negative impacts) must be paramount. Then under the reasonable assumption that Australia's natural resource management is capable of ensuring that some extraction can be accommodated within the constraints of total ecosystem sustainability the fundamental question for this review becomes determination of how vessel size impacts the way in which the assessed sustainable harvest can be most effectively and efficiently accumulated and delivered.

The aim of the management of fishing as a means of providing seafood for human sustenance, nutrition and enjoyment is to remove optimum quantities of components of stocks from aquatic environments. 'Optimum' levels must be constrained by an unshakable commitment to ecosystem sustainability but it must also accommodate Australia's growing need for seafood: Australia's population is growing and the NHMRC tells us that as individuals we need to eat 40% more fish, and yet we already import the bulk of our seafood from countries that are less effective and conservative fisheries managers.

As stated above the objectives of fisheries management are to ensure that what is removed is sustainable and that the effect of the methods used for its removal is compatible with society's expectations for ethical behaviour, animal rights and ecosystem sustainability, including interactions with the broad marine food-chain. The effectiveness of fisheries management primarily depends on the commitment of governments as the regulators. In most well-managed fisheries scientists have a key role as the advisors on the most efficient and effective ways of achieving society's objectives.

The world's fisheries are increasingly well-managed. Exceptions are primarily the result of governance failure, such as in developing countries where compelling issues of survival of coastal communities can dominate broader strategic objectives and in regions, such as the waters of the European Union, where international agreement over shared stocks is essential, but elusive. Australia's fisheries management is not constrained by either.

Australia has achieved tremendous success in the conservative management of fish stocks in recent years (from approximately 40% of species in Commonwealth managed fisheries being assessed as overfished in 2004 to none being subjected to overfishing in 2014). This success has been based on commitment to three fundamental principles; first, appreciation that sustainability of fishing activities and the underlying resource base is paramount and achievable, second, elimination of truly destructive fishing practices and strict control of fishing that causes even localised damage to underlying ecosystems and third, strict control of catches, including of by-catch and incidentally impacted species. But Australia has a very poor record in developing new fisheries and reducing our reliance on imports from countries with less conservatively managed resource use.

Management measures based on controlling catch and minimising unwanted impacts of fishing effort have been fundamental to Australia's success in conserving stocks. Where effort controls have continued to be necessary (for example to protect spawning or nursery areas or seasons) it is obvious that compliance with such measures can be more efficiently obtained when the implications of the numbers and types of vessels are included in compliance planning.

As the purpose of the current review is to consider the anticipated outcomes specifically attributable to larger (presumably as compared to smaller) trawlers it is imperative to focus on the basis of the differentiation between the attributes of larger and smaller vessels in trawl fisheries. Here one fundamental characteristic of trawling is paramount; trawling is a relatively loosely selective technique that can efficiently target multiple species but seldom takes catches of only one species or even taxonomic group (relatively large numbers of species are the norm). A secondary consequence of this lack of specificity is that total catches commonly have to be large to support the economic viability of the operation (discussed further under (c) below). The relative large catches landed episodically (individual trawls are usually hauled on-board ever few hours) necessitate considerable available space and labour to facilitate sorting and processing.

There are two primary advantages of larger vessels that are fundamental to the efficiency of the delivery of more and better quality seafood to consumers from off-shore trawl fisheries; first, more species, including incidental catches, can receive specific processing thus reducing, or even totally eliminating, discards and waste, and second, catches, most importantly larger ones, can be processed to higher standards. This has been most obviously demonstrated in the jack-mackerel fishery off Tasmania where the production of a product suitable for direct human consumption on board the 'supertrawler' can be compared to products predominantly suitable only for fish-meal from smaller vessels. In relation to the quality of product from 'supertrawlers' both domestic demand for quality seafood and international experience are compelling: 'frozen at sea' is internationally accepted as the benchmark for quality processed seafood.

Additional major advantages of smaller numbers of larger vessels come from the relative ease and cost of ensuring appropriate compliance, including the capacity of larger vessels to accommodate on-board observers and more sophisticated remote compliance-monitoring systems. Even if there were to be greater numbers of larger vessels than smaller ones the basis of enforcement (monitoring capability) would still be better.

Basic scientific and economic principles determine that provided the underlying catching techniques used by vessels are not biased towards the use of more destructive techniques (and this is more easily controlled if the number of vessels is less and monitoring is improved) and the total allowable catch (TAC) is based on sustainability and not catching capacity the primary "effect of large fishing vessels" is the ability to have more effective and efficient accumulation of higher quality seafood.

***(ii) bycatch and interactions with protected marine species;***

Bycatch is an issue in virtually all trawl fisheries. It is naturally more easily and efficiently managed in fisheries with fewer but larger vessels. It is certainly more easily monitored and assessed if the total number of vessels is less (as it would obviously be if the same total allowable catch of target species is to be taken by a smaller number of vessels) and if all vessels are capable of carrying adequate numbers of compliance officers when needed.

Larger vessels tend to have more capable and versatile electronics and gear handling systems. Such systems have many advantages, including that they can facilitate more precise detection of fish stocks and description of contents of schools and more selective targeting of them; under such conditions the percentage of unwanted bycatch will be less. A larger vessel will also usually represent a more stable work-platform which is a significant factor in minimising accidents, including unusual and unanticipated large catches, and in ameliorating the impacts of those which may occur. Being larger also provides more space for researchers as well as compliance observers. Although not always the case larger vessels (or at least those with larger financial reserves) tend to have greater capacity to develop gear modifications that minimise unwanted bycatch (again the larger work-platform is a factor).

Assuming that larger capacity vessels actually have greater on-board processing capability (as outlined above) the meaning of 'bycatch' can be influenced. Additional processing capability can enable previously unwanted species to be transformed into a marketable product to the benefit of both vessel operators and seafood consumers (as happened when Australia's east coast prawn-trawlers began carrying extra ice and keeping calamari, octopus

and other species that had previously been discarded as 'trash-fish'. Many such species are now regarded as delicacies that not only expand the culinary experience of Australians but can often bring higher prices to fishers than traditionally targeted species).

When bycatch has been assessed to be a problem Australia has an excellent record of developing technologies and practices to minimise interactions. Examples include turtle exclusion devices in prawn-trawl nets and the reduction of sea-bird interactions in tuna long-lining. Larger platforms are generally more suitable for technological research and development and usually for experimentation with, and implementation of, new technologies.

'Interactions with protected marine species' are easily projected into emotive responses from the Australian public and thus must be particularly carefully managed. Many of these interactions have been successfully managed in numerous fisheries. Here one attribute of larger vessels is critical: larger vessels are able to work further from the coast where the relative abundance of numerous protected marine species, for example sea lions and seals, is less and hence interactions are relatively reduced.

One aspect of the interactions between fishing by larger vessels and marine protected species that has been almost completely ignored is the assessment on the total marine food chain, and human interaction with it, of the impact of the growing numbers of many of these species, in particular the apex predator marine mammals likely to be encountered in oceanic environments. Marine mammals consume many times the total Australian commercial fish catch in Australian waters (consumption by seals and sea-lions alone is already more than four times the total Australian commercial fish catch, and anticipated to amount to six times commercial catches by 2035). The rapidly increasing biomass of several of these species is resulting in considerable change to the abundance of many prey species and the composition of the total marine food-chain. Direct interaction (per tonne of fish taken) with marine mammals will commonly be proportionately less in offshore waters.

***(b) current research and scientific knowledge;***

Much of the debate on 'supertrawlers' in Australia has been based on ill-informed opinion projected through social media: very little of it has been founded on sound research and science. This is not because there is not enough science available but rather because populist opinion has been largely driven by advocacy and not evidence-based assessment. The input and impact of sound fisheries science have both been a great deal less than necessary to balance the debate. Most of Australia's fisheries scientists, and certainly those with actual experience with managing fishing, work for government agencies. As a result they have not been prominent in media debates. Commonwealth fisheries scientists have unfortunately been particularly disproportionately absent.

Fisheries management for conservation purposes is actually extremely easy; the necessary science is relatively straightforward. The tremendous improvement in the outcomes of Australia's fisheries management in the last decade (discussed above) constitutes compelling evidence of the adequacy of the available data and knowledge to enable conservative management of our fisheries resources. Australia unquestionably has the ability to manage fisheries effectively. There should be no concern at all with the ability to manage a fishery with a small number of vessels. If data are deficient for any fishery in which large- and small-capacity vessels might be employed, larger vessels generally represent the more appropriate platform for data collection.

Australia's greatest deficiency in scientific knowledge to support sustainable seafood supply is in support of the sustainable development component of our overarching principle for

natural resource management, ESD. Our total capture-fisheries production has continued to decline over the last decade. In spite of our growing dependence of imports (fish has been identified by the Australian Government as the major failing in our quest for food security) no major new fisheries have been developed in this same period. Opportunities for significant new capture fisheries are limited and disproportionately restricted to offshore waters that have been too remote to be economically exploited by Australia's traditional vessels, which have been small. If we are to make a responsible contribution to minimising our seafood imports while sharing the world's limited fish stocks equitably and to meet the challenges of a growing global human population we have little alternative to the development of new fisheries in offshore waters. No alternative to the use of larger trawlers and super-seiners in such waters is apparent.

***(c) social and economic impacts, including effects on other commercial fishing activities and recreational fishing;***

The social and economic impacts of the controlled use of large-capacity vessels in Australia will be overwhelmingly positive. The magnitude of the benefits will be largely determined by the extent to which fisheries production can be increased by new fisheries that take advantage of presently underutilized resources and/or increases in the total yield and quality of products resulting from improved processing in existing fisheries. Additional benefits for seafood consumers (the great majority of the Australian population) can be anticipated to arise from more efficient capture and better processing at sea of species where total catches are already tightly constrained under existing management (i.e. better quality product from the same TAC), for example blue grenadier.

Provided catches by larger vessels of stocks that are exploited in existing fisheries are accommodated under scientifically justified catch quotas and restrictions, presumably by open and competitive quota transfer to such vessels, there will be limited negative impact on existing total commercial activities. Of course there will be the usual issues associated with competitive transfer of fishing rights between vessels but these will not be inherently different to current practices. The transfer of rights is logically simplified if the number of vessels is less. It is likely that in the longer term total catches from at least some existing fisheries may be able to be increased if efficiencies in total mortality result from gear developments or bycatch improvements which are likely to be more efficient on larger vessels.

Provided a strategic and broad assessment is taken the impact of the increased use of large-capacity commercial vessels on total recreational fishing should also be positive. Current opposition by the recreational fishing community to 'super-trawlers' is not founded on holistic assessment of the strategic and long-term interests of the broader community or even the interests of the average recreational fisher. This opposition had been catalysed by the very narrow interests of localised recreational fishing groups. Many in these groups have been unfortunately misled by shallow interpretation of possible impacts of localised depletion of food for one apex predator, southern bluefin tuna, that is targeted in selected local areas. As the science of predator-prey relationships is complex and relationships vary greatly in time and space, even when comparing the same species, generalisations must be treated with caution. However, several principles relevant to the current debate should be born in mind: southern bluefin tuna are distributed over huge areas of the southern Indian and Pacific oceans; they have a very opportunistic diet that varies greatly in time and space and if populations of one food source decline naturally or are depleted by natural fluctuations, fishing or other predators they adapt their preferences. Local depletion of a managed number

of prey items is most unlikely to have a significant impact on the well-being of the threatened southern bluefin tuna resource, certainly nowhere near the impact of the direct targeting of the tuna themselves.

Not only has the issue of localised depletion been grossly distorted in the recent debates but it does not appear logical to restrict the catching of underutilized prey species in the broad region so that anglers can increase the perceived efficiency of their targeting of an already overfished, or even threatened, species in one or two locations! Southern bluefin tuna stocks are not below optimum levels because their food is being depleted (they are actually growing faster now than when the fishery for them expanded after the Second World War so food is more than adequate); they are low because of excessive targeting. Targeting of southern bluefin tuna by anglers is increasing rather dramatically. Furthermore, larger trawl vessels are disproportionately capable of effectively exploiting small pelagic species in offshore areas and those distant from areas that may be given conservation or allocation priority for whatever reason (smaller vessels that cannot process at sea are restricted to areas closer to the coast). If Australia were to structure its regulatory arrangements of fisheries based on the possible but unsubstantiated localised depletion of an underutilised component of the food of a species deliberately targeted in another fishery which is not particularly conservatively managed, then gross inefficiency, and probably even chaos, will dominate.

Although the management of Australia's total recreational fishery might be considered to be outside the mandate for the current review strategic consideration of that total fishery does impact the principles that relate to the term of reference of "*effects on other commercial fishing activities and recreational fishing*". The right of recreational fishers to a share of the total Australian fish resource has been accepted but the amount of the total resource that should be allocated to anglers has not been determined. Recreational fishers' claims to a prominent share have been largely founded on the estimation that approximately 20% of Australians fish at least once a year. In the current absence of determination of what the share of the resource that should be allocated to that 20% a proportionate process would appear reasonable. Whether or not that share is more or less than 20% the total biomass allocated to recreational use could be expected to be increased if the total commercial catch increases (20% of a big amount is more than 20% of a small one). As the recreational catch in Australia already exceeds 20% of the combined commercial and recreational catch it would be in recreational fishers' interests to have commercial catches of species for which anglers do not compete directly with commercial fishers, increased. Species such as small pelagics in offshore waters that are largely inaccessible to recreational users represent an outstanding example of ones that could be increasing targeted by commercial fishers for benefit to both groups: anglers do not target them and increased landings of them could not only increase seafood supply for all Australians, including anglers who buy fish, but would also increase the total entitlement of recreational users under the principle that 20% of the population should be entitled to 20% of the harvest.

***(d) the effectiveness of the current regulatory framework and compliance arrangements;***

The overall effectiveness of Australia's fisheries management framework has been confirmed by continued improvement in fisheries management outcomes, including the virtual elimination of overfishing in Commonwealth managed fisheries in the last decade (discussed above). While compliance will always be an issue for both commercial and recreational resource users Australia continues to make considerable progress; education of resource users being fundamental to success. It is essential to the continued success of both regulation and

compliance that management and public education related to it is based on transparent adherence to evidence-based decision making that is consistent with the long-term strategic interests of conservation and sustainable use of resources (ESD). The need for ecosystem sustainability and an increased commitment to seafood security require that the regulatory framework be modified to give even greater support to evidence-based decision making consistent with broad strategic assessments. This must include a responsibility to counter poorly-informed social-media campaigns of sectoral and localised interests that are inconsistent with the available evidence (science) and contrary to Australia's broader and long-term strategic interests.

The recent successes of Australia's fisheries management are primarily the result of regulating total catches within a regulatory framework of harvesting only conservative fractions of total resources. The data available on many of the fisheries for which the management successes have been achieved were much less than ideal, but successful outcomes were obtained. The data available on the resources that could be targeted by 'super-trawlers' are better than those for numerous other successfully managed fisheries. The available data would be greatly improved by structured sampling of precisely monitored catches. Furthermore, the catch to be taken by these trawlers (within a TAC) has been agreed to be a very conservative percentage of the total resource. Even more importantly, the larger vessels to be used greatly increase the relative ability to supervise the monitoring of catches and impacts (at least two observers can be carried on each vessel) and collection of scientific information relevant to evidence-based decision making. TACs could be adjusted in response to the outputs from quality monitoring and research.

***(e) any other related matters.***

Although taking a more strategic approach to our fisheries management framework is central to many of the issues discussed above there is an even more strategic matter that has been completely absent from the recent debate on 'super-trawlers'. This is the issue of sovereignty and custodianship of Australia's marine realm and the resources therein.

Australia's inadequately considered response to the public demonising of very large fishing vessels (super-trawlers and super-seiners) has resulted in disproportionate restriction of fishing activities to coastal waters. This has limited development of new fisheries in more remote regions of our EEZ, particularly in the southern oceans, and effectively eliminated participation in high-seas fisheries and internationally managed ones (such as the western and central Pacific tuna purse-sein fishery to our north which produces a catch of more than ten times Australia's total fisheries production). Of even greater strategic significance than the obvious diminution of our options for seafood security is that this failure isolates Australia from participation as an equal in the international management of the highly-migratory and remote resources that surround Australia.

Failure to develop our offshore fisheries also means that much of the outer-area of Australia's EEZ remains underexploited. Under a strict interpretation of the Law of The Sea as it relates to underutilised resources, this leaves these areas available to other nations to research and subsequently exploit. While such an interpretation appears unlikely to

influence access rights at present the increasing global shortage of seafood may well alter perspectives, particularly under international trade agreements with global fishing nations such as China and other Pacific-rim countries.

Even if the exclusivity of access to Australia's EEZ is not compromised the abundance of highly migratory, or even mobile, species within our zone can be significantly impacted by fishing adjacent to our boundaries. If we are not actively involved in fisheries for those species our influence on their conservation and management, including regulation of total abundance which includes our zone (overfishing of shared migratory species outside our zone reduces the abundance within our zone), is greatly reduced.

By not participating fully in offshore fishing we are effectively gifting our rights to shared resources to other nations. Australia increasingly sees itself as a major player in international diplomacy and yet it continues to progressively isolate itself from participation as an equal in the management of oceanic fisheries resources, even those that impact our own seafood supply. This is the more surprising at a time of accelerating human population growth and increasing global concern for food security and in particular seafood supply. Our lack of commitment to offshore resource use and management is a major factor in the increased domination of the seafood we consume by imported product.

Australia has embraced technology and innovation in most of its food production. Seafood is the only major food category for which we are not self-sufficient and yet we are refusing to adopt the obvious strategies and technology to address the problem. By allowing distorted claims about 'supertrawlers' to stifle the development of 'processing at sea' we are effectively expressing a wish to remain technologically disadvantaged.