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Would ending shark meat consumption in Australia contribute to the conservation of white sharks in South Africa?

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ABSTRACT

South African white sharks have disappeared from one of the world's aggregation 'hot spots'. This has led to speculation that unsustainable fishing of smaller shark species may have displaced white sharks by removing their primary food source. Most of the catch from these fisheries is exported to Australia to supply the domestic 'fish and chips' market so a link has been made between the disappearance of South Africa's white sharks and shark consumption in Australia. As cooked seafood is not properly labelled in Australia, consumers cannot readily distinguish between sustainable and non-sustainable seafood. Hence, a highly promoted campaign was recently initiated to encourage Australians to stop eating 'fish and chips' and as such save South Africa's white sharks. However, most of the consumed shark in Australia is sourced from sustainable domestic fisheries and encouraging Australian consumers to stop eating 'fish and chips' would not help South African white sharks as it would simply displace the issue. It would not address any South African sustainability concerns and would negatively impact a legitimate and sustainable Australian industry. Instead, we encourage the South African government to establish and enforce a governance system for sustainably managing sharks and the Australian government to legislate and enforce the accurate labelling of all types of seafood.

1. Introduction

White sharks (*Carcharodon carcharias*) occur worldwide, but they have relatively small population sizes due to their low biological productivity and position as apex predators (e.g. [1]). Population declines due to unmanaged fishing throughout much of their distribution have led white sharks to be protected in several nations and listed under international conventions.

In South Africa, the disappearance of white sharks from False Bay, one of the world's white shark 'hot spots', was initially attributed to the presence of two orcas (*Orcinus orca*), known predators of white sharks and other shark species [2]. The ongoing absence of white sharks from False Bay has now led to speculation that fishing of smaller shark species by a demersal longline fishery (DLF) operating in False Bay may have displaced them by removing their primary food source [3]. The fishery, in turn, exports most of its catch to Australia to supply part of the 'fish and chips' market, which typically sells shark flesh as 'flake'. The link between the disappearance of South Africa's white sharks and flake consumption in Australia has led to the initiation of a campaign encouraging Australians to stop eating flake, ostensibly to save False Bay's white sharks (https://sharkfreechips.com, [3]). The campaign claims that the DLF is not managed sustainably, causing South African shark populations to decline. The campaign further argues that Australia is indirectly contributing to unsustainable fishing practices in South Africa and calls for both South African and Australian consumers to start demanding 'shark free' fish and chips.

2. Understanding the complexity of the issue and potential impacts

In Australia, several domestic fisheries supply the 'fish and chips' market (e.g. [4,5]). However, as flake demand is not met by local production the balance is imported from a range of countries, including from South Africa [6]. To understand the potential impact of this campaign it is important to consider both components. The majority of the Australian shark catch that supplies the domestic fish and chips market is gummy shark (*Mustelus antarcticus)*, which, based on national assessments, is considered sustainable [7]. Australia's shark fisheries are not without sustainability concerns, in particular the longstanding difficulties in rebuilding the biomass of the overfished school shark,

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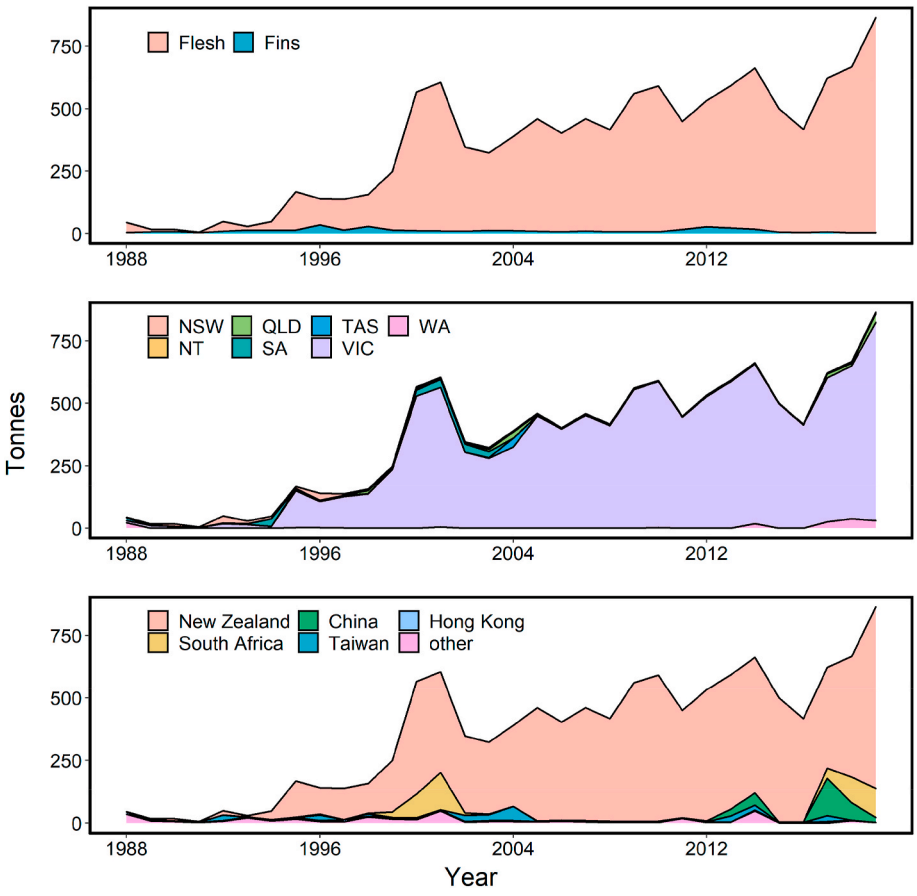

Fig. 1. Annual imports of shark commodities to mainland Australia by product type (top pane), importing State (centre pane, NSW, New South Wales; QLD, Queensland; TAS, Tasmania; WA, Western Australia; NT, Northern Territory; SA, South Australia; VIC, Victoria), and country/territory of origin (bottom pane). Source: Australian Bureau of Statistics, International Trade, Australia, Canberra. Bottom pane - 'other' comprises: Singapore (0.49%), Greece (0.4%), United States (0.34%), Fiji (0.29%), Indonesia (0.21%), Japan (0.14%), Philippines (0.14%), Papua New Guinea (0.1%), Argentina (0.1%), Spain (0.1%), New Caledonia (0.1%), India (0.09%), Malaysia (0.08%), Vietnam (0.08%), Australia (re-imports) (0.05%), Kiribati (0.04%), Republic of Korea (0.03%), American Samoa (0.03%), United Arab Emirates (0.02%), Uruguay (0.02%), Thailand (0.02%), Oman (0.01%), Bangladesh (0.01%), Maldives (0.01%), Chile (0.01%), Yemen (0.01%), Sri Lanka (<0.01%), Morocco (<0.01%), Tonga (<0.01%), Samoa (<0.01%), Egypt (<0.01%), Solomon Islands (<0.01%), Kenya (<0.01%), Brazil (<0.01%), Mexico (<0.01%), Canada (<0.01%), Kyrgyzstan (<0.01%), Peru (<0.01%), French Polynesia (<0.01%), Cocos (Keeling) Island (<0.01%), United Kingdom (<0.01%), Christmas Island (<0.01%), Vanuatu (<0.01%), Sudan (<0.01%), Cambodia (<0.01%), Nauru (<0.01%), Trinidad and Tobago (<0.01%), Pakistan (<0.01%), Gambia (<0.01%).

Galeorhinus galeus [7]. Nonetheless, Australia has invested heavily in research and monitoring over many decades [4] to support management practices. There has been a continuous research program on gummy and school sharks in place for over 70 years, and Australian fisheries are considered to be among the few 'bright spots' globally in regard to effective governance systems and sustainable levels of exploitation [8, 13].

Since 1988, 'shark flesh' (97%) has been the most imported shark product in Australia, with the remainder being 'shark fins' (Fig. 1). These commodities are mostly imported by the State of Victoria (94%) from over 50 countries and territories, but primarily from New Zealand (86%), followed by South Africa in recent years (4.9%). Based on the Australian Fish Names Standard, only gummy shark and rig (*M. lenticulatus*), a species that is mostly imported from New Zealand, should be sold as 'flake'. However, the standards are voluntary and seafood labelling regulations only apply to fresh or frozen seafood. Hence, flake mislabelling potentially occurs as there are no legal obligations to specify the species and country of origin when shark flesh, or any other sort of fish, is sold once it has been cooked [9]. The campaign against flake consumption is ultimately symptomatic of weak seafood labelling regulations.

3. Discussion of the key issues

Inaccurate labelling of shark commodities threatens global biodiversity [10], but it also undermines the effort and resources invested in those locations where the sustainable management of shark stocks has been achieved (see review of [8]). The notion that ending flake consumption in Australia may help False Bay white sharks is theoretically possible. However, it assumes that the False Bay shark catch would not be extracted, should the Australian consumer demand disappear. Given the current high connectivity in the world's food supply, including shark flesh, a more likely outcome is that it would simply be sold somewhere else within the global marketplace. In addition, as most of Australia's imported shark flesh is sourced from New Zealand, and a reduced Australia consumer demand would directly impact a supplier that has no sustainability issues.

Ceasing flake consumption in Australia could also have a negative net environmental effect if consumers shift their preference to other seafood choices. Australia already imports 70% of its seafood, much of this from developing countries [11], so a redirection of demand away from flake will likely be met by an increase in alternate imports. For gummy shark alone, domestic production currently exceeds 2000 tonnes annually [7], a far greater quantity than the average of 86 tonnes imported from South Africa over the last three years. Replacing domestic flake with imports effectively shifts the regulatory and management burden to another jurisdiction, potentially placing greater pressure on fisheries in countries that have less capacity and resources than Australia for sustainable management [12]. In addition, lack of domestic demand for flake would negatively impact a legitimate and sustainable Australian industry, both in an economic capacity but also in the social license these industries have developed over the years through improved and ongoing sustainable management practices.

Moreover, accuracy in reporting is an important core element that needs to be reinforced and reinvigorated. There needs to be due consideration of all facets of any argument and less bias in the key elements that are reported. Consumer perception can be readily distorted by inaccurate and biased reporting and this can lead to unintended consequences for fishing and related industries that strive for sustainability, effective governance, and improved social license.

4. Conclusions

A more holistic solution would require the South African government to establish and enforce a governance system for the sustainable harvest of commercial shark stocks, including a formal allocation to account for the reduction in food supply for white sharks. This would need to be combined with a requirement for the Australian government to legislate and enforce the accurate labelling of all types of seafood at each stage of consumption (raw and/or cooked). This would allow Australian consumers to make more informed decisions on what to consume and what to avoid, particularly for those types of seafood that are derived from sustainable fisheries. As this example shows, it is in the best interests of governments of developed nations like Australia to take decisive action to mitigate the trade of unsustainable seafood, lest their own fishing industries fall victim to conservation campaigns that, while well-intentioned, may trade one problem for another.

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CRediT authorship contribution statement

Matias Braccini: Conceptualization, Writing - original draft, Writing - review & editing. **Nick Blay:** Writing - original draft, Writing - review & editing. **Alastair Harry:** Writing - original draft, Writing - review & editing. **Stephen J. Newman:** Writing - original draft, Writing - review & editing.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.marpol.2020.104144.

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