

Inquiry into the efficacy and regulation of shark mitigation and deterrent measures

14 March 2017

Submission by the New South Wales Young Lawyers Animal Law Committee

Committee Secretary

Senate Standing Committees on Environment and Communications

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The NSW Young Lawyers Animal Law Committee (the **Committee**) is grateful for the opportunity to make a submission to the Senate Standing Committees on Environment and Communications (**Standing Committee**) in relation to its inquiry into the efficacy and regulation of shark mitigation and deterrent measures (the **Inquiry**).

The Committee commends the Federal Senate for recognising that the efficacy and regulation of shark mitigation and deterrent measures is an issue worthy of review and careful consideration in light of the importance of ensuring public safety while also giving appropriate weight to Australia's obligations under domestic and international environmental protection laws.

NSW Young Lawyers

NSW Young Lawyers is a division of The Law Society of New South Wales. NSW Young Lawyers supports practitioners in their professional and career development in numerous ways, including by encouraging active participation in its 16 separate committees, each dedicated to particular areas of practice. Membership is automatic for all NSW lawyers (solicitors and barristers) under 36 years and/or in their first five years of practice, as well as law students. NSW Young Lawyers currently has over 15,000 members.

The Committee comprises a group of over 400 members interested in animal welfare and laws regulating the treatment of animals. The Committee aims to raise awareness and provide education to the legal profession and wider community, while increasing understanding about the importance of protecting animals from abuse and neglect. A common theme amongst Committee members is a passion and desire to use their legal skills and the law to help improve the lives of animals.

Terms of Reference

In these submissions the Committee provides comments to the Standing Committee in relation to the terms of reference in bold below:

- a. research into shark numbers, behaviour and habitat;
- b. the regulation of mitigation and deterrent measures under the Environment Protection and Biodiversity Conservation Act 1999, including exemptions from a controlled action under section 158;**
- c. the range of mitigation and deterrent measures currently in use;**

- d. emerging mitigation and deterrent measures;
- e. bycatch from mitigation and deterrent measures;
- f. alternatives to currently employed mitigation and deterrent measures, including education;
- g. the impact of shark attacks on tourism and related industries; and
- h. any other relevant matters.

Discussion

A – Research into shark numbers, behavior and habitat

The Committee does not propose to comment in detail on research into shark numbers, behavior and habitat, as they do not fall within the scope of the Committee’s expertise. However, the Committee considers that such research is invaluable and should inform decisions regarding shark mitigation and deterrent programs.

B – The regulation of mitigation and deterrent measures under the Environment Protection and Biodiversity Conservation Act 1999, including exemptions from a controlled action under section 158

Background

The Committee observes that the objects of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (the **EPBC Act**) include:

- to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance;
- to promote the conservation of biodiversity; and
- to assist in the co-operative implementation of Australia's international environmental responsibilities.¹

Under the EPBC Act, matters of national environmental significance include listed threatened species and ecological communities. A number of shark species are listed threatened species under the EPBC Act.²

¹ Environment Protection and Biodiversity Conservation Act 1999 (Cth), section 3.

² Department of the Environment and Energy, 2017. EPBC Act List of Threatened Fauna. <https://www.environment.gov.au/cgi-bin/sprat/public/publicthreatenedlist.pl?wanted=fauna>

Under the EPBC Act, a recovery plan may be made so as to guide actions to help a particular listed threatened species recover. At present, recovery plans have been made for shark species including the Grey Nurse Shark (*Carcharias Taurus*) (a critically endangered species), the Whale Shark (a vulnerable species) (*Rhincodon typus*) and the White Shark (*Carcharodon carcharias*) (a vulnerable and migratory species).

Additionally, in 2012 Australia introduced its second National Plan of Action for the Conservation and Management of Sharks (**National Plan**),³ which focuses on the activities of fisheries. The National Plan identifies how Australia will manage and conserve sharks, and acknowledges that Australia's approach to conserving and managing sharks should be 'guided by the principles of ecologically sustainable development, with an emphasis on applying a precautionary approach in the absence of comprehensive information'.⁴

The EPBC Act provides that no person may take any action that has, will have or is likely to have a significant impact on a listed threatened species, listed threatened ecological community or listed migratory species without prior approval.⁵ In addition, prior approval must be obtained in respect of any action in a Commonwealth marine area (or outside a Commonwealth marine area but within the Australian jurisdiction) that has, will have or is likely to have a significant impact on the environment in a Commonwealth marine area. Accordingly, any shark mitigation and/or deterrent measures undertaken by Australian State and Territory governments and departments that have, will have or are likely to have a significant impact on listed threatened shark species or other listed threatened species are subject to the EPBC Act.

The Committee notes that shark mitigation and deterrent programs in Australia are generally directed towards three key species, being White Sharks, Bull Sharks (*Carcharhinus leucas*) and Tiger Sharks (*Galeocerdo cuvier*), of which the White Shark is listed as a vulnerable and migratory species, as noted above. However, there is evidence of the potential for other listed threatened species to be significantly impacted by shark mitigation and deterrent programs, as discussed further below.

Exemptions under section 158

Under section 158 of the EPBC Act, the Minister for the Environment (the **Minister**) may grant a specified person an exemption from the requirement to conduct an environmental assessment and/or obtain approval

³ National Plan of Action for the Conservation and Management of Sharks,
<http://www.agriculture.gov.au/SiteCollectionDocuments/fisheries/environment/sharks/sharkplan2-final/sharkplan2-action.pdf>.

⁴ National Plan of Action for the Conservation and Management of Sharks, III.

⁵ *Environment Protection and Biodiversity Conservation Act 1999* (Cth), sections 18 and 20.

in relation to a specified action only on the grounds that the Minister satisfied that it is in the national interest that the requirement not apply in relation to the person or the action. Section 158(5) provides that in determining the national interest, the Minister may consider Australia's defence or security or a national emergency, but this does not limit the matters the Minister may consider. The legislation does not further define the term 'national interest'.

The Committee observes that to date the Minister has granted exemptions under section 158 to:

- the State of New South Wales, and those acting on behalf of the State of New South Wales, in relation to the New South Wales North Coast Shark Meshing Trial undertaken in accordance with the *Management Plan/or the NSW North Coast Shark Meshing Trial* (14 November 2016) pursuant to an exemption notice dated 16 November 2016 (**NSW Meshing Exemption**);
- the State of Western Australia, and those acting on behalf of the State of Western Australia, in relation to the deployment of fishing gear in Western Australian state waters to catch a shark posing an imminent threat to public safety as defined in the Western Australian Department of Fisheries Guidelines for up to three days, pursuant to an exemption notice dated 2 October 2014 (**WA Fishing Exemption**); and
- the State of Western Australia, and those acting on behalf of the State of Western Australia, in relation to the setting of up to 72 baited drum lines each with a single approximately size 25/0 hook in Western Australian state waters, and management of those lines until 30 April 2014, pursuant to an exemption notice dated 10 January 2014 (**WA Drum Line Exemption**).

The Committee notes that in the Minister's Statement of Reasons in respect of the NSW Meshing Exemption, the Minister broadly refers to three primary reasons for the determination that the grant of the exemption was in the national interest, being:

1. "the urgent and imminent threat from shark interactions to human life",⁶ citing statistics purporting to show a recent increase in shark interactions;
2. national economic impacts stemming from the alleged negative impact of shark interactions on the North Coast of New South Wales' tourism industry; and

⁶ Department of the Environment and Energy, 'Statement of reasons for granting an exemption under section 158 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth)', 16 November 2016.
http://epbcnotices.environment.gov.au/_entity/annotation/b16072da-8bb6-e611-b33d-005056ba00a7/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1488230872103

3. that the proposed research outcomes for the NSW State Government's meshing trial are an important benefit and will be in the national interest in helping to design future shark mitigation strategies throughout Australia.

The Minister's Statements of Reasons for the WA Fishing Exemption and WA Drum Line Exemption also cite the grounds of public safety and the protection of the Western Australian tourism industry as primary reasons for the granting of the exemptions.⁷

The Committee submits, however, that the grant of each of the exemptions was not justifiable, on the basis that:

1. the grant of the exemptions constitutes an abrogation of duties and responsibilities under domestic and international law;
2. there was insufficient evidence in each case to demonstrate that the granting of the exemption was in the national interest as required under section 158; and
3. the Minister did not have sufficient regard to the objects and principles of the EPBC Act or appropriately weigh those objects and principles against the perceived risks associated with decisions not to grant the exemptions.

The Committee will address these issues in the sections below.

Abrogation of duties and responsibilities under domestic and international law

As noted above, the White Shark is listed as a vulnerable species and is protected under both domestic and international law. In Australia, the White Shark has been afforded protection under the EPBC Act from capture, killing or other forms of endangerment since 1999. This listing was based on a number of factors, including evidence of a declining population, its life history characteristics and limited local distribution and abundance⁸.

⁷ Department of the Environment and Energy, 'Statement of reasons for granting an exemption under section 158 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth)', 15 November 2014.

http://epbcnotices.environment.gov.au/_entity/annotation/5c1f3124-7362-e511-9099-005056ba00a8/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1488506329197

⁸ Department of Environment, 'White Shark' <http://www.environment.gov.au/topics/marine/marine-species/sharks/whiteshark>.

In 2002, a recovery plan was made for the White Shark in response to findings that suggested a significant decline in the size of the White Shark populations in Australian waters.⁹ When reviewed, the lack of supporting evidence as to the recovery of White Shark numbers provided no reason to alter the Great White Shark's current status as vulnerable under the EPBC Act. In 2012, the National Plan was released and outlined how Australia would manage and conserve sharks to ensure that they meet international conservation obligations.

At an international level, the White Shark is listed in the Convention on International Trade in Endangered Species of Fauna and Flora (CITES)¹⁰ and the Convention on Migratory Species (CMS).¹¹ Australia is a party to both. These instruments place limitations on the trade of White Shark products and help reduce the number of sharks killed through commercial and recreational fishing activities. The White and the Tiger Sharks are also classified as 'vulnerable to extinction' and 'near threatened' by the International Union for the Conservation of Nature (IUCN).¹²

Despite domestic and international protection, the Committee is of the view that the Minister has exercised an unfettered discretion to grant exemptions under domestic legislation to authorise the killing of both the White Shark and Tiger Shark. While there are provisions of the EPBC Act in addition to section 158 that contemplate exemptions for actions that involve the killing, injuring, taking, trading, keeping or moving of listed threatened species on the grounds that the actions are in the national interest, the Committee considers that such actions should be reasonably necessary to prevent a risk to human health or to deal with an emergency involving a serious threat.¹³

The exemptions outlined above were granted without adequate public consultation, were inconsistent with scientific research and represent a significant undermining of intended objects and governmental responsibilities under both domestic and international law. Furthermore, research illustrates that sharks do not pose the serious public safety that is often suggested and as such the public interest argument relied upon in the grant of the exemptions is not justified.

⁹ Department of Environment, note 10.

¹⁰ Convention on International Trade of Endangered Species, opened for signature 3 March 1973, 993 UNTS 243 (entered into force 1 July 1975). Two shark species were first added to Appendices II in 2003 and that 8 additional species were added in 2013. The effect of the entry of the Great White Shark commenced 14 September 2014, two months before the commencement of the Western Australian drum line program the subject of the WA Drum Line Exemption.

¹¹ Convention on the Conservation of Migratory Species of Wild Animals, opened for signature 23 June 1979, 1651 UNTS 333 (entered into force 1 November 1983). Shark species were listed in 2010 at the sixteenth session of the Conference of the Parties in Cancun, Mexico.

¹² I Fergusson, L.J.V Compagno and M Marks, *Carcharodon carcharias and Galeocerdo cuvier*, (2014). IUCN Red List of Threatened Species. Version. <www.iucnredlist.org>.

¹³ *Environment Protection and Biodiversity Conservation Act 1999* (Cth), part 13.

To the contrary, current evidence indicates that both the White Shark and the Tiger Shark are threatened by human activities and are therefore in need of greater protection due to their pivotal role in their ecosystem as apex predators.¹⁴ Research commissioned by the Western Australian Government, and conducted in 2013, concluded that due to the environmental impacts of shark control activities, it was not recommended that either shark nets or drum lines be introduced into Western Australia.¹⁵

Shark culling programs may mean the removal or substantial reduction of a shark species from the marine ecosystem and could have far-reaching consequences, including altering prey populations and potentially triggering entire community or ecosystem level changes.¹⁶ Already populations of Great White Sharks have been severely reduced in most regions where they occur.¹⁷ In fact, it is estimated that the population of Great White Sharks and Tiger Sharks may have decreased by up to 79% and 65% respectively since 1986.¹⁸ In Australia, a decline in catch per unit effort in various programs coupled with game fishing statistics indicates that Great White Shark numbers have been declining over time, even though they are protected.¹⁹

The far-reaching environmental impacts that shark programs have on other marine fauna is recognised in domestic legislation.²⁰ In NSW, for example, shark control programs are listed as a Key Threatening Process under both the Fisheries Management Act 1994 (NSW) and the Threatened Species Conservation Act 1995 (NSW) as the programs have been identified as adversely impacting two or more threatened species.²¹

The Committee submits that, having regard to the matters discussed above, to grant any person an exemption from the requirement to undertake an environmental impact assessment and/or obtain approval in relation to programs for the killing of the White Shark (and their associated problems of bycatch) is in direct opposition with the objects of the EPBC Act to provide for the protection of the environment, promote the

¹⁴ Environmental Defenders Office, 2013 'Australia's sharks need protection and conservation management' EDO <http://edowa.org.au/assets/Newsletters/EDOWA-March-2013-Newsletter.pdf>. Smithsonian National Museum of Natural History, 2016 'Great White Shark' <https://ocean.si.edu/great-white-shark>. Shark Savers, Wild Aid, 2016 'Sharks' role in the oceans' <http://www.sharksavers.org/en/education/the-value-of-sharks/sharks-role-in-the-ocean/>.

¹⁵ R Pierce, note 4.

¹⁶ Environmental Defenders Office, note 17.

¹⁷ Alison Kock and Ryan Johnson, 'White Shark abundance: not a causative factor in numbers of shark bite incidents' (2011) WWF South Africa Report Series, 7.

¹⁸ Alison Kock and Ryan Johnson, note 20.

¹⁹ Alison Kock and Ryan Johnson, note 20.

²⁰ Daryl McPhee, 'Likely effectiveness of netting or other capture programs as a shark hazard mitigation strategy in Western Australia' (2010) Department of Fisheries, Perth, Western Australia No. 108, note 9, 10.

²¹ Daryl McPhee, note 9, 10.

conservation of biodiversity and to assist in the co-operative implementation of Australia's international environmental responsibilities.

Furthermore, the grant of exemptions in relation to existing lethal programs would not appear to be guided by the principles of ecologically sustainable development or supported by the application of the precautionary principle. The principles of ecologically sustainable development as enunciated in the EPBC Act include:

1. that decision making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
2. if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
3. the principle of intergenerational equity - that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations; and
4. the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making²².

The Committee considers that it is inappropriate in circumstances where it is not clear that the actions the subject of an exemption are in the national interest to circumvent the approval and assessment requirements under the EPBC Act, which would require the Minister to take into account the precautionary principle and have regard to the other principles of ecologically sustainable development that inform the EPBC Act. Furthermore, the Committee submits that the Minister should exercise its powers under the EPBC Act consistently with the principles of ecologically sustainable development except where it would not be proper to do so.

Lack of research supporting an argument of public safety

Research indicates that although the number of sharks is declining globally, the number of 'shark attacks' appears to be increasing.²³ While this is in part due to an increasing number of people who reside in coastal areas and use the water,²⁴ it also appears to be a result of the way the term 'shark attack' is employed.

²² Environment Protection and Biodiversity Conservation Act 1999 (Cth), section 3A.

²³ Daryl McPhee, note 9, 5. John G. West, 'Changing Patterns of shark attacks in Australian Waters' (2011) *Marine and Freshwater Research* 62, 744.

²⁴ Daryl McPhee, note 9, 5.

The term 'shark attack' does not draw any distinction between minor events and fatal incidents.²⁵ For example, bites from non-threatening sharks like the Wobbegong, which have accounted for 5.5% of all shark attacks in Australia since 1990, are not distinguished from more serious bites by other species of sharks, yet all events are labelled 'shark attacks'.²⁶ The term 'shark attack' is even used to include events where there is no physical contact with a person.²⁷

According to one study, reclassifying 200 identified shark attacks as sights and encounters rather than an attack, reduces the number of reported shark attacks in NSW by 18.5%.²⁸ A full application of this new classification therefore offers a new perspective on shark attacks and reduces the total number of potential shark attacks recorded in NSW by 72% between 1900 and 2009, by 94% between 1959 and 2009 and by 96% between 1979 and 2009.²⁹ This reclassification provides a more accurate and helpful story to the public and places demand for policy responses in proper context.³⁰

Additionally, observations of sharks in proximity to human swimmers in the ocean have demonstrated that sharks do not usually take an interest in people. Sightings by NSW Fisheries staff have revealed that bull sharks regularly swim close to, but ignore hundreds of human swimmers in Sydney Harbour.³¹ Similarly, in Cape Town, South Africa, the Shark Spotters program has reviewed more than 1,100 sightings of Great White Sharks swimming around surfers and near bathers. This story repeats itself in Port Stephens, where shark biologist Barry Bruce has studied juvenile Great White Sharks that consistently ignore people in the nearby surf.³²

These observations not only point to the need for a greater public education effort on the subject of shark behaviour towards humans, but also demonstrate the lack of scientific evidence that supports exempting protection of the White Shark and Tiger Shark on the basis of public safety.

Lack of research demonstrating negative impacts on tourism and related industries

The Committee does not consider that there is sufficient evidence that shark interactions are, or are likely to, impact upon Australian tourism to the extent that they are a detriment to the national interest. The

²⁵ Christopher Neff and Robert Hunter, 'Science, policy, and the public discourse of shark attack: a proposal for reclassifying human-shark interactions' (2013) *Journal of Environmental Studies Science* 3, 68.

²⁶ Christopher Neff and Robert Hunter, note 27, 68.

²⁷ Christopher Neff and Robert Hunter, note 27, 68.

²⁸ Christopher Neff and Robert Hunter, note 27, 70.

²⁹ Christopher Neff and Robert Hunter, note 27.

³⁰ Christopher Neff and Robert Hunter, note 27.

³¹ Christopher Neff and Robert Hunter, note 27, 70.

³² Christopher Neff and Robert Hunter, note 27.

Committee considers that reports of negative impacts upon the tourism industries in New South Wales, Queensland and Western Australia are frequently anecdotal and are not evidence based.³³

The Toronga Conservation Society Australia, which releases annual reports on shark encounters in Australian waters, reports that the worst year for shark encounters in the last five years was 2015, with five encounters including a fatality occurring in the month of June³⁴. Notwithstanding this, figures from Tourism Australia show that tourism into the country showed no decrease in numbers in that period and there was an 8.2% increase in tourism from 2014³⁵.

While the Minister has cited reports of reductions in wages from retail surf outlets in the area of the trial the subject of the NSW Meshing Exemption as well as reductions in membership numbers and financial contributions to Surf Life Saving Clubs, the Committee submits that there is insufficient evidence of a connection between those reports and shark encounters.

Public sentiment

The overwhelming majority of Australians do not support lethal control measures for reducing the risk of shark attacks. Using the words of the Review – Western Australia Shark Mitigation Drum Line Program 2013-14, 'science alone will not provide the basis for the development of public policy, rather it informs public policy'.³⁶

Public policy must also be informed by public opinion: in most cases there ought to be some correlation between the public's professed preferences and public policy.³⁷ The Committee submits that existing lethal programs, including the programs conducted under the WA Drum Line Exemption and the NSW Meshing Exemption, are disconnected from the opinions and values of the public in relation to sharks, and this disconnect cannot be justified on any other ground that could properly form the basis for the development of public policy.

³³ ABC News, 2015. 'Shark inquiry to focus on tourism' 2 September, <http://www.abc.net.au/local/stories/2015/09/02/4304732.htm>

³⁴ Taronga Conservation Society Australia Australian Shark Attack File Annual Report Summary for 2015, <https://taronga.org.au/conservation/conservation-science-research/australian-shark-attack-file/2015>

³⁵ Tourism Australia *Arrivals Archive* <http://www.tourism.australia.com/statistics/arrivalsarchive.aspx#July%2015>

³⁶ Government of Western Australia, Department of Premier and Cabinet, pg. 8.

³⁷ Martin A, Hindmoor A., Gibbons A. 2013. Is policy congruent with public opinion in Australia?: Evidence from the Australian Policy Agendas Project and Roy Morgan, Australian Political Studies Association.

A number of public opinion polls have been conducted regarding shark control programs, all of which demonstrate that the overwhelming majority of the public do not support the policy which underlies lethal programs. The Committee observes the following:

- According to a 2014 poll, the majority of Australians do not fear sharks, feel safe in the sea, and do not support killing sharks to make the beach safer. Furthermore, 83% of Australians have not changed their recreational activities in the ocean because of the risk of shark attack and 82% believe that people enter the water at their own risk.³⁸
- A Patterson Research Group FlashPoll of 300 people, carried out with a random sample of Perth residents, found 63% opposed the Western Australian drum lines policy and only 21% were in favour.³⁹
- A West Australian online poll of 4600 participants found that 82% did not support the measures of the Western Australian Government.⁴⁰
- A study of 557 ocean users in Western Australia found that the majority of ocean users were against lethal control methods and strongly supported strategies related to ocean users developing awareness of sharks and the ocean and changing their own practices.⁴¹

This public opposition led to several protests around Australia in February 2014 in relation to the program the subject of the WA Drum Line Exemption. It was estimated that 6,000 people attended a protest in Cottesloe, Perth and 2,000 in Manly, Sydney.⁴² Separate events were held in at least 10 locations across the nation, from the NSW central coast to Adelaide, Melbourne, Hobart, and Broome.⁴³ There were also a number of

³⁸ Sydney Morning Herald. 2014. Shark cull: 80% of Australians opposed, poll finds, 28 January.

<http://www.smh.com.au/environment/shark-cull-80-of-australians-opposed-poll-finds-20140128-31jtr.html>.

³⁹ West Australian. 2014. Most against shark kill plan: poll, 22 January. <https://au.news.yahoo.com/thewest/regional/south-west/a/20930744/most-against-shark-kill-plan-poll/>.

⁴⁰ West Australian. 2014 Majority say no to killing great whites. <http://www.washarkattacks.net/great-white-poll.php>.

⁴¹ Gibbs L. Warren A. 2014. Killing Sharks: cultures and politics of encounters of the sea, *Australian Geographer*. 45:2, 101-107.

⁴² ABC News. 2014. WA shark cull: Thousands rally at Cottesloe beach as catch-and-kill protests ramp up. 2 February.

<http://www.abc.net.au/news/2014-02-01/shark-protests-wa-catch-and-kill-perth/5232480>.

⁴³ Sydney Morning Herald. 2014. Thousands protest at Manly over WA shark cull. 2 February

<http://www.smh.com.au/environment/conservation/thousands-protest-at-manly-beach-over-wa-shark-cull-20140201-31tiy.html#ixzz36B8BlwiS>.

strongly supported social media campaigns and online petitions.⁴⁴ The Environmental Protection Agency received 23,000 submissions during a one month consultation period⁴⁵ with 12,000 submissions from scientific and other experts presenting reasons to end the culling program.⁴⁶

Proposed test for a determination under section 158

The Committee submits that, having regard to the matters discussed above, the decisions to grant the WA Drum Line Exemption and the NSW Meshing Exemption would appear to have been based not on well-reasoned policy grounds but on a perceived need to be seen to be responding to recent fatalities resulting from shark interactions.

The Committee's view is that in circumstances where a decision must be made under section 158 regarding a controlled action in connection with a listed threatened or migratory species, the assessment of the exemption application should involve mandatory consideration of the principles of ecologically sustainable development and animal welfare issues and the appropriate balancing of those matters against competing interests.

The Committee submits that the following test is appropriate for determining whether the grant of an exemption under section 158 of the EPBC Act, in relation to a proposed action that has, is likely to have or will have a significant impact on a listed threatened species, is in the national interest:

1. the impacts of the proposed action on any listed threatened species must be identified, having regard to the objects of the EPBC Act, the principles of ecologically sustainable development and any animal welfare concerns; and
2. any identified conflicts with the objects of the EPBC Act and the principles of ecologically sustainable development and impacts on animal welfare must be considered in light of the harm to the national interest sought to be avoided or benefit to the national interest to be gained by granting the exemption, ensuring that:
 - a. the objects of the EPBC Act and the principles of ecologically sustainable development are considered and adhered to the fullest extent possible;

⁴⁴ Perth Now. 2014. Thousands join online campaign against shark cull in WA. 27 November.

<http://www.perthnow.com.au/news/western-australia/thousands-join-online-campaign-against-shark-cull-in-wa/story-fnhocx03-1226769694262>.

⁴⁵ ABC News. 2014. WA shark cull: EPA rules out assessment despite 23,000 public submissions. 12 March.

<http://www.abc.net.au/news/2014-03-12/epa-rules-out-shark-cull-assessment/5315032>.

⁴⁶ The Conversation, 2016. More shark nets for NSW: why haven't we learned from WA's cull? 13 October.

<https://theconversation.com/more-shark-nets-for-nsw-why-havent-we-learned-from-was-cull-66985>

- b. any compromise to the objects of the EPBC Act, the principles of ecologically sustainable development or animal welfare is necessary to avoid the harm or achieve the benefit (in the sense that it will be effective in avoiding the harm, and there are no alternatives to achieve the same end that would have less of an impact on animal welfare; in other words, encroachments on animal welfare should be the minimum necessary to achieve the proposed outcome);
- c. any compromise to the objects of the EPBC Act, the principles of ecologically sustainable development or animal welfare is reasonable and proportionate to the ends sought to be achieved. This means that at a minimum the benefits to the national interest of granting the exemption should outweigh the compromise to the objects of the EPBC Act and any animal welfare harms, the benefits must be significant, and the animal welfare detriment cannot be unacceptable; and
- d. the proposed action the subject of the exemption can be, and will be, executed and controlled in a way that meets high animal welfare standards and avoids unacceptable animal welfare outcomes.

C – The range of mitigation and deterrent measures currently in use

The Committee observes that the following mitigation and deterrent measures are currently in use in Australian jurisdictions including New South Wales, Western Australia and Queensland:

1. shark meshing programs;
2. drum lines and other catch and kill programs;
3. shark tagging.

Shark meshing programs

Shark meshing programs are employed in Australian jurisdictions including New South Wales, Western Australia and Queensland. These programs involve the use of shark nets, which, despite common public misunderstanding, do not create an enclosed area within which beach goers may bathe safely or a barrier to sharks but function by catching and killing sharks in the area.

The nets used in the New South Wales Shark Meshing (Bather Protection) Program and the North Coast Shark Net Trial are fishing nets 50 metres long and six metres deep, which are suspended in water 10 to 12

metres deep, within 500 metres of the shore.⁴⁷ The nets are equipped with acoustic warning devices with the aim of alerting dolphins and whales.

Critics of shark nets observe that one of the key problems with the nets is that a significant number of non-target species, including listed threatened and migratory species, are caught in them and killed as a result⁴⁸. In recognition of this issue, the NSW Shark Meshing Program SMP is listed as a key threatening process by the Fisheries Scientific Committee (convened under the *Fisheries Management Act 1994* (NSW)) and the Scientific Committee (convened under the *Threatened Species Conservation Act 1995* (NSW)) because it adversely affects threatened species, populations or ecological communities and could cause species, populations or ecological communities that are not threatened to become threatened.

This is supported by recent data. The NSW North Coast Shark Meshing Trial Report for the period from 8 December 2016 to 7 January 2017 (the first month of the trial) reports that during that period a total of 42 individuals across 12 species were caught. Of these, 28% (12 individuals) were deceased. The Report for the period from 8 January 2017 to 7 February 2017 (the second month of the trial) indicates that during that period 72 individuals across 11 different species were caught in the nets. Of these, 44% (32 individuals) were deceased. The deceased species included two target animals, being a Bull Shark and a White Shark, manta rays, great hammerhead sharks, green turtles, a bottlenose dolphin, and various species of non-target sharks⁴⁹.

Further, the NSW Shark Meshing (Bather Protection) Program 2015-16 Annual Performance Report (**NSW Meshing Report**) indicates that during the 2015-2016 year, 86% of the total 748 marine animals caught in shark nets were threatened, protected, or non-target species. A total of 364 marine animals died as a result of being caught in the nets⁵⁰. The trigger point for the objective of 'minimising the impact on non-target species and threatened species' was tripped for Common Dolphins and Hawksbill Turtles.

The Committee submits that the efficacy of shark meshing programs is still in question. In New South Wales, shark nets have been used since 1937. It is argued that where shark nets are in use there has been

⁴⁷ Department of Primary Industries, North Coast shark net trial <http://www.dpi.nsw.gov.au/fishing/sharks/management/shark-net-trial>

⁴⁸ Smithsonian National Museum of Natural History, 2016 'Great White Shark' <https://ocean.si.edu/great-white-shark>. News.com.au, 2017. 'Rise in by-catch killed in NSW shark nets' 17 January, <http://www.news.com.au/national/breaking-news/rise-in-bycatch-killed-in-nsw-shark-nets/news-story/54ec860d5ef3cc391bd26cea47d4aa01>. ABC News, 2017. 'North coast shark net trial criticised as bycatch almost doubles in second month' 9 February, <http://www.abc.net.au/news/2017-02-09/shark-net-bycatch-almost-doubles-in-second-trial-month/8255310>.

⁴⁹ <http://www.dpi.nsw.gov.au/fishing/sharks/management/shark-net-trial/report-jan-feb>

⁵⁰ NSW Shark Meshing (Bather Protection) Program 2015-16 Annual Performance Report, pg iii http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0010/693028/2015-16-SMP-Annual-Performance-Report.pdf

a decrease in fatalities from shark interactions, with the NSW Meshing Report observing that, as at the date of the Report, there had been no fatalities at a netted beach for 60 years⁵¹.

However, it is important to note that in the years since 1937, there have been many changes that have resulted in incomplete data sets. The number of beaches with shark nets, the methods of deploying nets and data collection and record-keeping practices have changed. In addition, the Australian population and tourism industry have grown, resulting in more people in the water and beaches being used for a range of different activities. Emergency response times and medical technologies have improved and advanced, which may account for a decrease in fatalities from shark interactions.

The Committee considers that the impact of meshing programs on non-target species, including listed threatened and migratory species, is in direct contradiction to the of the EPBC Act as well as State based legislation and Australia's obligations under international agreements. Given that the effectiveness of meshing programs has not been proven despite decades of operation, the Committee does not support their continued use and submits that funds directed towards such programs would be better employed on the research and engagement of alternative mitigation and deterrent measures with scientifically proven results

Drum lines

Examples from around the world suggest that the measureable effect of lethal controls on the overall number of fatalities from shark interactions is questionable⁵². To the contrary, in those locations where lethal control measures appear to have led to a reduction in fatalities, improved emergency service response times and medical technology are thought to be more likely contributing factors⁵³.

Internationally, marine and ecological scientists have voiced their concerns over the lack of a sound scientific basis for the Western Australian government's shark baiting and destruction program⁵⁴. The Committee notes that more than 250 eminent scientists and researchers signed submissions made to the EPA in response to the Western Australian program, in which it was claimed that the program would be ineffective in protecting beach-goers, and detrimental to the ecosystem.

51 NSW Shark Meshing (Bather Protection Program 2015-16 Annual Performance Report.

52 R Pierce, 'Shark Focus: the past and future of worlds sharks, skates and rayes' (2006) 49 The Shark Trust <http://sharktrust.org/shared/shark_focus_archive/shark_focus_49.pdf>.

53 R Pierce, note 4.

54 Gibbs, L. and Warren, A., 2014. 'Killing Sharks: cultures and politics of encounter and the sea'. Australian Geographer, 45(2), pp.101-107.

The results of a report released in 2016 and produced by the Shark Monitoring Network in respect of a seven year project using shark detection receivers from Ningaloo to Esperance in Western Australia indicated that White Shark movement was uncoordinated, therefore making it difficult to predict when humans may encounter them⁵⁵. Commentators suggest that the results of the study support the position that individual White Sharks do not habituate certain areas, with the effect that culling one White Shark in a particular area will not make sharks less numerous in that area. Further, reviews of lethal control programs implemented in Hawaii (which resulted in the destruction of 4668 sharks between 1959 and 1976) found that culling programs ‘do not appear to have measurable effects on the rate of shark attacks’⁵⁶.

Indeed, the drum line program the subject of the WA Drum Line Exemption was discontinued in September 2014 following a recommendation from the Environmental Protection Authority that the program should cease.

Some scientists argue that lethal measures may have the result of attracting greater numbers of dangerous shark species such as White, Tiger and Bull sharks to particular areas due to the disruption to the ecosystem that they can cause⁵⁷.

Accordingly, the Committee submits that proponents of lethal measures cannot demonstrate that they protect human life in any meaningful way, with the effect that they fail to satisfy the primary objective of shark mitigation and deterrent programs, being the prevention of harm to human life.

D – Emerging mitigation and deterrent measures

The Committee submits that there are a range of emerging mitigation and deterrent measures that should be considered in detail as alternatives to existing lethal management methods.

These methods are as follows:

1. **Shark spotters programs.**
2. **Aerial surveillance.**

⁵⁵ Perth Now, 2016. White shark report proves drum lines did not make WA beaches safer - Greens. 7 April. <http://www.perthnow.com.au/news/western-australia/white-shark-report-proves-drum-lines-did-not-make-wa-beaches-safer--greens/news-story/102898a8992b279000d7f0f50f445eb8>

⁵⁶ Wetherbee, B., Lowe, C. and Crow, G., 1994. ‘A review of shark control in Hawaii with recommendations for future research’. Pacific Science 48, pp.95-115; Daryl McPhee, ‘Likely effectiveness of netting or other capture programs as a shark hazard mitigation strategy in Western Australia’ (2010) Department of Fisheries, Perth, Western Australia No. 108, 10.

⁵⁷ The Conversation, 2014. ‘Why we’re opposing Western Australia’s shark cull: scientists’. 4 July. <https://theconversation.com/why-were-opposing-western-australias-shark-cull-scientists-28653>

3. **Electric shark deterrent.**

4. **Eco-barrier:** The Eco-Shark barrier is a product made from flexible nylon that provides an enclosed swimming area.⁵⁸

E – Bycatch from mitigation and deterrent measures

The Committee has discussed this issue above under the heading ‘Shark Meshing Programs’. The Committee considers that there is an unacceptable level of bycatch of non-target species, including listed threatened species, arising from current mitigation and deterrent measures, which is in direct conflict with the objects of the EPBC Act and Australia’s obligations under international agreements and law.

F – Alternatives to currently employed mitigation and deterrent measures, including education

The Committee does not support lethal measures on the basis that it is not satisfied that the proponents of existing programs have appropriately balanced animal welfare concerns and the principles of sustainability and conservation against competing interests. Further, the Committee is not satisfied that lethal measures can be implemented in accordance with high animal welfare standards and considers that the potential for non-target species (including listed threatened and migratory species) to be harmed is, as discussed above, unacceptable.

The Committee considers that the resources being directed towards existing programs would be better directed towards researching and implementing alternative, scientifically proven solutions. The Committee submits that, having regard to the objects of the EPBC Act, the impact on non-target threatened species of the lethal measures discussed above, and that one of the key target species of existing programs is the White Shark, itself a listed threatened and migratory species, the following alternative measures should be considered and employed:

1. **Public education:** Public education campaigns that develop ocean users’ awareness of sharks and urge them to change their own practices, acknowledging that deep waters are the territory of sharks, not humans.

⁵⁸ Eco Shark Barrier, <http://www.ecosharkbarrier.com.au/the-product/>

2. **Early warning systems:** The increase and further development of warning systems. Adoption of programs similar to Cape Town's Shark Spotters which would, additionally, provide employment opportunities in coastal communities.
3. **Research:** Further investment in shark behaviour research.
4. **Digital detection systems:** Research into and development of digital detection systems that provide protection from sharks⁵⁹.
5. **Personal deterrents.**
6. **Capture and translocation:** Only if necessary, capture and translocation (whilst seeking to minimise distress to the animals).
7. **Response times:** Improving the response times of Emergency Services, Council Lifeguards and Surf Life-Saving clubs.
8. **Local Council involvement:** Involving Local Councils in emergency planning and response.

South Africa and Hawaii have successfully implemented programs centred on coexistence between humans and sharks, as opposed to the destruction of endangered sharks.⁶⁰ For instance, the innovative Shark Spotters program in Cape Town utilises a comprehensive flag warning system to minimise the 'already small risk' of a shark attack. In addition, Shark Spotters runs a public awareness campaign and contributes to ongoing research on shark behaviour⁶¹.

The ALC agrees with the primary objective of existing programs, being the protection of human life, but submits that implementing the alternative measures listed above is more likely to be effective than existing measures in achieving this objective. These alternatives also have the benefit of not compromising on the welfare of animals or preservation of the natural environment, and so are consistent with the values held by many Australians.

⁵⁹ Shark Mitigation Services (SMS) is developing a digital float that uses solar devices to detect sharks, and sends an alert to lifeguards via satellite: see <http://www.smh.com.au/environment/animals/digital-detection-system-aims-to-save-swimmers--and-sharks-20140526-zrnwt.html>.

⁶⁰ 21st Century Shark, 2008. [TV program] National Geographic Channel, 30 December 2008.

⁶¹ Save Our Seas Foundation, 2014. Shark Spotters, South Africa, http://saveourseas.com/projects/shark_spotters_za.

G – The impact of shark attacks on tourism and related industries

The Committee has discussed the impact of shark attacks on tourism and related industries above. The Committee does not consider that there is sufficient evidence that reports of shark interactions in Australian waters have, or are likely to have, a significant adverse effect on Australian tourism and related industries.

Concluding Comments

NSW Young Lawyers and the Committee thank you for the opportunity to make this submission. If you have any queries or require further submissions please contact the undersigned at your convenience.

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