Submission No 71

MANAGEMENT OF SHARKS IN NEW SOUTH WALES WATERS

Organisation: Humane Society International (on behalf of Australian Marine Conservation Society and Greenpeace Australia Pacific)

Name: Ms Jessica Morris

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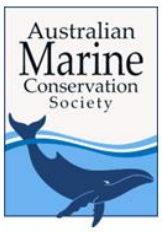

GREENPEACE

The Committee Manager
Committee on Investment, Industry and Regional Development
Parliament House
Macquarie St
Sydney NSW 2000

23rd October, 2015

Dear Sir/Madam

Re: Submission: Management of Sharks in New South Wales Waters (Inquiry)

Humane Society International (HSI), **Australian Marine Conservation Society** (AMCS) and **Greenpeace Australia Pacific** welcome the opportunity to provide this submission to the inquiry into the Management of sharks in New South Wales, on behalf of our Australian supporters.

Our organisations are among the foremost groups in Australia working on issues related to shark conservation and impacts of human activities on threatened marine wildlife; our efforts cover policy and legislative objectives at both Federal and state jurisdictional level and in international forums. We also work extensively on fisheries issues related to sharks, including target shark fisheries and sharks caught as bycatch. We have a long history of engagement in lethal shark control programs around Australia, particularly the Western Australian Government's efforts to introduce a drumline program in the State. Our organisations have a long-standing interest in the NSW Shark Meshing Program (SMP), and in particular, the HSI nomination of the SMP as a Key Threatening Process (KTP) under the NSW *Fisheries Management Act 1994* and the *NSW Threatened Species Conservation Act 1995* was successful.

Although there has been significant interest publicly and politically into the impact of lethal shark control programs on shark populations, no consideration of the issue is possible without also factoring the more hidden costs of such programs – the cost to dolphins, turtles, rays, whales and other species of threatened marine wildlife. HSI, AMCS and Greenpeace wish to emphasise that bycatch of non-shark marine wildlife in the SMP is as significant an issue as bycatch in NSW-managed fisheries, and the impact of the program on marine wildlife should be a point of consideration for the Inquiry.

Our groups wish to congratulate the NSW Government on the measured approach it has so far taken to the issue of human and shark interactions so far. We support the approach of scientific investigation into shark behaviour and abundance, and believe this rational

approach to an extremely emotional issue breeds debate that can lead to positive outcomes for human safety and the protection of marine wildlife.

However, we caution against the expectation of the creation of a zero-risk environment when entering the ocean. While the NSW Government can and should implement beach safety mechanisms, as is done when addressing issues such as drowning, it is not possible to mitigate the risk entirely. In addition, shark interactions are still rare events, but with the potential for such significant consequences for individuals, families and friends. There is no one perfect solution to keeping sharks and humans completely separated in the marine realm, and there should be no expectation of such. We therefore advise that the best approach is the combination of a suite of measures that serve to reduce the risk of interaction, but we must all accept that in almost all activities we undertake there is always an element of risk.

Given the status of many species of shark that are both targeted and taken as bycatch in the NSW SMP, it is necessary for the increased conservation of shark species, and the implementation of better management strategies and technologies for bather protection in NSW waters. We do not believe the debate needs to be framed as either protecting sharks or protecting humans from sharks. HSI, AMCS and Greenpeace strongly encourage investigation into how both objectives can be achieved within the same strategy, and look forward to ongoing participation in the NSW Government process to determine non-lethal solutions to the issue.

Our organisations welcome the opportunity to provide comment on the Management of Sharks in NSW. Please do not hesitate to contact Jessica Morris of Humane Society International at [redacted] or on [redacted] for further detail on any of the recommendations or comments made in the following submission.

Yours sincerely,

[redacted]

Jessica Morris
Program Officer
Humane Society International

On behalf of:

Australian Marine Conservation Society (AMCS)

Greenpeace Australia Pacific (Greenpeace)

a) The impact of shark attacks on tourism and related industries;

As conservation organisations, HSI, AMCS and Greenpeace are not best placed to provide comment on the impact of shark interactions on tourism and related industries. However, we offer the following general comments on this topic.

Sharks are top order predators that play an important role in the functioning of marine ecosystems. Shark incidences, although highly traumatic, are incredibly rare and the fact that shark populations are dwindling, and human populations have increased highlights this fact. Media reporting has been unhelpful in addressing the situation of a cluster of shark interactions in NSW; the perception from media outlets, as the majority of articles are prefaced by a picture of a white shark with jaws open, is that there is a veritable swarm of sharks sitting off the coast. Those attending the NSW Shark Summit, however, listened to presentations from shark scientists demonstrating quite reasonably that sharks inhabit marine ecosystems in close proximity to humans, and the majority of the time there is no contact. The scientists also emphasised that there was nothing unusual about shark abundances in NSW at this point in time. In conclusion, due to the high level of public awareness around sharks and shark bites, media interest and the resulting hype has amplified the negative way in which the public perceive the dangers of sharks.

A 2011 study by John G. West reiterates this fact showing that although there has been an increase in shark incidents per year over the last decade, this coincides with more people visiting beaches, greater access to the water, and higher popularity of water-based recreational activities, as there is no evidence of an increase in shark numbers. It is in fact likely that in some areas, tourism has benefitted from the presence of sharks in NSW waters as they represent part of a healthy ecosystem, and industries such as recreational diving thrives from the presence of grey nurse sharks and other shark species.

In addition, we believe an economic review of the value of sharks alive and their benefit to ecotourism versus their value dead, such as that undertaken for the sharks of Palau recently (see report at http://www.aims.gov.au/docs/media/news2011/20110502.html) would be a valuable step towards NSW's efforts to conserve and manage sharks.

b) Changes in shark numbers, behaviour or habitat;

There is substantial evidence supporting the case of a large reduction in the abundance of many shark species in NSW due to cumulative anthropogenic impacts. White sharks, species of hammerheads, school sharks and grey nurse sharks are all under threat and listed as protected under a range of NSW and Federal legislation. In particular, Catch Per Unit Effort (CPUE) rates from shark meshing, fisheries bycatch records and game fishing catch data can attest to this[1] [2] [3] [4].

Most species of sharks are characterized by low growth rates, late sexual maturity, and low fecundity. Such a life history leaves shark species vulnerable to mortality, as it makes shark populations more susceptible to decline and slow to recover after impacts from shark nets

[1] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/432792/Scalloped-hammerhead.pdf
[2] Issues paper for the White Shark (Carcharodon carcharias) Commonwealth Dept. of Env. 2013
[3] http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0017/212372/Gamefish-Monitoring-Final-Report---Fisheries-Final-Report-Series-No.94.pdf
[4] http://www.dpi.nsw.gov.au/research/areas/fisheries-and-ecosystems/wild-fisheries/outputs/2011/1664b

and fisheries. Even low levels of mortality through the shark meshing program may be enough to cause severe population declines in the caught species, particularly species such as the critically endangered grey nurse shark. Since 2010, 16 GNS individuals have been killed in nets in NSW, this is very concerning as the east coast GNS population could be as low as 1100 individuals[5].

The most recent scientific estimates of the east coast population of white sharks indicate the adult population falls between 750 - 1200 individuals. This is around the same population size of the critically endangered Grey Nurse Shark. In general, there is a limited amount of data on white shark population numbers, behaviour and habitat preferences. While greater understanding of these parameters will help inform the current debate, there should be no expectation of quick results from scientific study. While there were a large number of publicly reported 'increases' in white shark numbers in Western Australia, these anecdotal reports were not verified by scientists who work specifically on white sharks. A similar situation seems to be occurring in NSW, where opinion is given credence over evidence; again, during the NSW Shark Summit, some presentations focused on the lack of evidence of any kind of surge in white shark numbers.

Although white sharks have recently been branded as rogue man eaters by certain media outlets peer-reviewed studies conducted by CSIRO Scientists have stated that they are not witnessing any significant behaviour change in white sharks in NSW[6]. Data from tagging shows that white sharks are not permanent residents at any one site and the research confirms that white sharks are highly migratory, travelling thousands of kilometres up and down the Australian coast as well as across the Pacific Ocean to New Zealand. The implications of such population movements are unknown and as such, management is needed to ensure success of white shark populations in NSW. This is especially true for white shark nursery grounds which are prominent in NSW.

c) Adequacy of management strategies;

NSW lacks an understanding on the major causes of population decline of sharks such as commercial by-catch and by-product, shark meshing and recreational fishing. In order to recognise the long term impact each of these causes of population loss has on species we need more data and better management systems in place to reduce shark mortality. We have neither the catch data for each of the threats or a thorough enough understanding of the ecology of the species to map the impact of each threat into population trajectories of different species. NSW is lacking sufficient management strategies to deal with what are clearly the most threatening processes to shark populations, the NSW Shark Meshing Program being a prime example.

The NSW Shark meshing program (NSW SMP) has been listed as a key threatening process under the *Threatened Species Conservation Act 1995* since 2013, but 12 years later it has no threat abatement plan (TAP) in place, and we are little closer to removing shark meshing, or putting in place measures such as shortening the time nets are in the water, and taking nets out in areas critical to marine species.

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[5] http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=68751

[6] http://www.csiro.au/en/Research/Environment/Oceans-and-coasts/Sharks/White-shark-facts/When-sharks-meet-people

The Fisheries Scientific Committee recommended the NSW SMP for listing as a KTP in NSW due to its adverse effect on two or more threatened species, populations or ecological communities and due to the fact it could cause species, populations or ecological communities that are not threatened to become threatened. The fisheries scientific committee found that '*Captures of great white sharks, tiger sharks and the combined whaler sharks in the shark meshing program total 3670 for the 52 year period. The bull shark makes up a small proportion of the 2800 whaler sharks captured. Therefore at least 8000 sharks of other species have been captured in the last 52 years'* (1950-2002).

Their final recommendation also states that '*The shark meshing program adversely affects two shark species that are listed as vulnerable and/or endangered under the Fisheries Management Act 1994. The species are Carcharias taurus (Grey nurse shark) listed as Endangered and Carcharodon carcharias (Great white shark) listed as Vulnerable. Both species are also listed as threatened by the Commonwealth under the Environment Protection and Biodiversity Conservation Act 1999, the eastern population of the Grey nurse shark as Critically Endangered and the Great white shark as Vulnerable. The mesh nets have killed 373 grey nurse sharks and 526 great white sharks in the past 52 years. Significant decreases in these catches have been part of the evidence used to list both species as threatened in NSW'* (1950-2002).

Finally, the Committee states that, '*Species other than sharks are indiscriminately caught and often killed in the shark meshing program. These include Dugongs (Dugong dugon) and Loggerhead turtles (Caretta caretta) that are listed as Endangered Species, and Green turtles (Chelonia mydas), Leatherback turtles (Dermochelys coriacea), Humpback Whale (Megaptera novaeangliae) and Australian fur-seals (Arctocephalus pusillus doriferus) that are listed as Vulnerable Species in the NSW Threatened Species Conservation Act 1995 and under the Environment Protection and Biodiversity Conservation Act 1999.'*

It is alarming that 13 years since the Committees recommendations we are no closer to rectifying the higher number of marine species killed in the NSW SMP or the flow on effects to marine habitats. With the exception of the grey nurse shark, very little work has gone into protecting critical habitats for threatened NSW shark species. HSI recommends critical habitats be identified and protected for all other shark species listed as threatened under the Fisheries Management Act. A TAP should be put in place for the meshing program in the interim but the final overall objective for the NSW Government should be to remove lethal shark nets from NSW waters.

Data from the New South Wales program show that 22 grey nurse sharks (GNS) were caught and killed through the program between July 2002 and July 2013, and eight were released alive following entanglement. This may seem an insignificant catch number, however the fact that the east coast population has shown no recovery and the latest estimates of grey nurse shark numbers are considered to be less than 1365 individuals, shark control programs are rightly considered a principal threat to population recovery (RPGNS 2014, Cardno Ecology Lab, 2010). When 6 GNS were killed in the 2012-2013 season of the program, an extremely high number for a critically endangered species in a matter of months, no review of the nets was conducted and no strategy was put forward to minimise the impact to the species. Even though the impact of meshing on GNS populations has been recognised as substantial, nets are still currently acknowledged as one of the main threats to the recovery of the species (RPGNS 2014). This is in part due to the inadequacy

of the current trigger limit of the NSW meshing program, which should be adapted as part of NSW shark management to the requirements of individual species, such as GNS. Under current circumstances, removal of the shark nets would be the most expedient and effective action to promote the recovery of species such as the Grey Nurse Shark.

The Recovery Plan for Grey Nurse Sharks (2001) states that 'alternative non-lethal methods to beach meshing should be trialled in NSW and QLD… By minimising bycatch and researching alternatives to protective shark meshing nets, the Grey Nurse Shark will benefit, particularly if the population increases.'

If the objectives of the Recovery Plan for the Grey Nurse Shark are met by NSW, the number of GNS individuals in NSW waters would increase. Seeing a reduction in take from the beach meshing program by researching non-lethal alternatives and phasing out the nets is one of the goals of the Commonwealth Grey Nurse Recovery Team (RPGNS, 2014). Given the Critically Endangered listing under the EPBC Act, and the potential further damage to population size the threat these programs pose cannot be ignored.

Grey nurse are not the only species affected by the NSW Shark Meshing Program, Tiger sharks are one of the most captured shark species in shark control programs (Reid et al 2011). Tiger sharks are currently listed as near threatened by the IUCN and catch per unit effort of tiger sharks has diminished in the past two decades on the NSW coast (Reid et al 2011; Ferreira et al. 2014). This is a concern, as it implies changes to population size of sharks and the continual decrease in the proportion of large sharks suggests present impacts are unsustainable. Tiger sharks are known to congregate in large areas at certain times of the year, leading to the overestimate of population size, and making shark meshing programs more of a threat to individual sharks and the entire population (Ferreira et al. 2014).

Tiger sharks are apex predators and little is known about their patterns of residency and movement, meaning it is difficult to determine population sizes in areas such as NSW, and determine the connectivity among tiger shark populations such as between QLD and NSW (Ferreira et al. 2014). Recent evidence has emerged showing the importance of tiger sharks within an ecosystem. Tiger sharks are apex predators and have been negatively affected by anthropogenic activities such as over fishing and shark control programs. Continuing to have high numbers of tiger shark individuals, including many females, killed on nets is going to continue to put unnecessary pressure on tiger shark populations.

Non-target and endangered species such as common dolphins, dugongs, marine turtles and humpback whales have all been captured and killed in the meshing program in the past ten years. By the end of the 2014 meshing season, 7 dolphins had died in nets, including 2 indo-pacific humpback dolphins. Dugongs are rarely seen in NSW and the fact individuals of this species have been killed in nets is alarming. The Great Barrier Reef Marine Authority (GBRMPA) puts dugong populations at around 3% of their population size in the 1960's. The Recovery Plan for Marine Turtles 2003 urges catch rates in Shark Control Program's to be zero for loggerhead turtles and to no more than ten percent of current catch rates for green turtles, which is indicative of the stress meshing has on these populations. Considering each of the marine turtle species caught in the shark meshing are listed under state/territory, national and international laws and treaties; the sheer numbers taken over the life of the program and the numbers still taken, especially of the Loggerhead turtle, leaves no

doubt about the negative impact the shark meshing program is having on the long term survival prospects of these species.

There is significant concern over the impact that beach meshing has on cetaceans, other marine mammals and turtles. Our organisations recommend the Commonwealth work with the NSW government to put appropriate regulations in place to stem the adverse effect of shark meshing on these species. We also believe that the sustained threat the programs continue to pose to shark species and other marine species such as dolphins, whales, and marine turtles calls for a significantly more cautious management approach which would include not increasing the shark meshing program, or culling target species such as white sharks, with the best outcome for marine species being to remove nets from NSW waters.

Management strategies that could be further implemented by NSW revolve around listing species under the Fisheries Management Act. Although our groups applaud the work done by the Fisheries Scientific Committee in listing species such as the scalloped and great hammerhead, we feel that the approach of NSW to ignore species that are known to be data deficient, and ignore the precautionary principle leaves species such as the smooth hammerhead vulnerable to a large reduction in population size. NSW should have in place management actions for shark species where there are data deficiencies in indicating population size. If it is "reasonably suspected to be… affecting the species" as written in the Fisheries Management Act then in our view, this presents a clear case for reasonable management actions to ensure the endurance of shark species. Otherwise, in time, how will NSW deal with the growing number of shark species left without necessary protections? At the very least, the creation of a 'data deficient' category as found in the IUCN listing categories could help to identify species which require further research into their conservation status.

d) Measures to prevent attacks by sharks, including strategies adopted in other jurisdictions;

Despite heavy focus by media on shark incidents, the community at large remains understanding of the importance of protecting ocean users in addition to our unique marine ecosystems which includes apex predators such as sharks. In particular the community remains respectful of these species' right to exist in their habitat and we feel this is the frame in which technologies should be assessed and adopted in order to minimise the already unlikely event of a shark bite. The guiding considerations in choosing measures to focus on both effectiveness in reducing the risk of bites and other unwanted encounters and the impact on sharks and other marine species and marine ecosystems should be a focal point for NSW Shark management.

Shark meshing is not a solution for shark bites and the environmental awareness of the beach-going public has shifted in the many decades since NSW shark meshing program has been imposed. Ocean-users are now much more conscious of the need to not only protect themselves and fellow ocean users, but to protect the marine environment and respect the right of apex predators such as sharks to exist in their marine habitat. Given the shift in public perception on these issues, NSW should adopt a risk-management approach that encompasses and integrates a number of non-lethal options and strategies that build on the fact that the Government cannot guarantee public safety in the ocean.

Although we are pleased that the NSW Government has moved away from introducing more shark nets and is looking at alternative technologies, we have concerns that 'Smart Drumlines' may be introduced to areas within NSW. These drumlines have been lauded as a non-lethal technology, but there are very real concerns regarding their impact on marine life, as even though considered 'smart' they are basically drumlines like those placed in WA and which currently operate in Queensland. It would be very detrimental to populations of marine species if the NSW Government was to introduce a drumline component in addition to the Shark Meshing Program

The recent review by Cardno found that independent scientific verification of the 'Smart Drumlines' ability to catch white, tiger and bull sharks is needed before the NSW Government trials this technology. And it is well known that drumlines in WA, QLD and even in Reunion Islands where the 'Smart Drumline' was first trialled caught few if any white sharks. Our concerns are highlighted by the fact that between 2001 and 2010 more marine turtles were caught on Gold Coast drumlines than White Sharks, and no White sharks were captured during the WA drumline trial.[7] [8]

We have high concerns regarding post-release mortality for hammerhead sharks, a non-target species which only have a 50% survival rate after fighting on a fishing or drumline line. Two species of hammerheads are listed as threatened species in NSW and they are already one of the most caught shark species in the NSW Shark Meshing Program and Queensland Shark Control Program, which makes further impacts from 'Smart Drumlines' very alarming.

There may also be impacts on critically endangered grey nurse shark populations if 'Smart Drumlines' are to be rolled out further along the NSW coast. Critical grey nurse habitat occurs in areas such as Byron Bay and South West Rocks. There only being an estimated 1365 grey nurse sharks left on the East Coast, the consequence of losing even a handful of mature grey nurse individuals to mortality from drumlines is high.

There are a number of conventional strategies which have little or no ecological footprint and are a highly effective way of managing risk for surfers and other ocean-users. The recent review of technologies by Cardno approved the importance of detection programs such as Shark Spotters which operates in South Africa. This program was found to be the most successful solution to ensure beach safety by the review. A similar program could be effectively implemented in NSW using existing beach safety components such as lifeguards and aerial patrols. We urge the NSW Government to consider the full breadth of such strategies which include but are not limited to:

- Public education campaigns
- Aerial spotting such as fixed-wing aerial patrol
- Shark spotting (similar to the successful program in Cape Town, South Africa)
- Improving the response times of emergency services, Council Lifeguards and Surf Life-Saving clubs
- Involving Local Councils in emergency planning and response
- Reviewing beach patrolling strategies along the NSW coast line.

[7] http://www.abc.net.au/news/2014-09-11/wa-dumps-shark-drum-lines-after-epa-review/5737526
[8] Catch data from Queensland Shark Control Program 2001-2010

We feel that utilising mechanisms such as these would offer a greater benefit to ocean users, and marine species with the long term goal of such alternatives to remove the shark nets from the water permanently.

In conclusion, HSI, AMCS and Greenpeace welcome the NSW Governments plan to introduce non-lethal technologies for Shark Management in NSW however we feel more can be done to ensure the conservation of not only shark species, but a range of marine species and habitats against cumulative anthropogenic impacts. We again urge the Government to implement priority actions such as removal of shark nets, and provide further research into the factors currently threatening shark populations in NSW waters.

Yours sincerely,

Jessica Morris
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Tooni Mahto
Australian Marine Conservation Society

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Greenpeace Australia Pacific

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