

Chapter 2

Human–shark interactions

2.1 The previous chapter noted one of the ways that humans interact with sharks, namely by harvesting sharks for meat and other products. The focus of this inquiry, however, is another type of interaction—instances where sharks bite humans without provocation, particularly encounters that result in injuries or fatality.

2.2 In examining this issue, the committee has received evidence from individuals recounting their personal encounters involving sharks, including people who have had a firsthand encounter that resulted in serious injury, accounts from family members of victims of fatal incidents, and other reports of fatalities. The committee was also aware of reports of these encounters published or repeated elsewhere.

2.3 During the course of this inquiry, a tragic shark bite incident occurred. In the days leading up to the committee's first Perth hearing, Laetitia Brouwer, a 17-year-old teenager who was holidaying with her family on the southwest of Western Australia, was surfing when she was bitten by a shark. Laetitia died from her injuries.

2.4 At the committee's hearing, the Chair offered the committee's sincere condolences to Ms Brouwer's family and friends, as well as noting that the committee's thoughts and sympathies are also with all those who responded to or are otherwise affected by this heartbreaking incident. The committee reiterates these sentiments.

2.5 The personal accounts considered by the committee are contained in the written submissions and transcripts of oral evidence taken at public hearings. Although they are referred to at times in this report, it would be difficult to do justice to these accounts in this report. Rather than reviewing extracts of this evidence in a report, it is preferable that readers review these accounts in their entirety.¹ In addition, the committee is mindful that the purpose of its inquiry was to examine the efficacy of shark mitigation and deterrent measures, not responses to specific shark bite incidents.

2.6 This chapter commences the report's examination of encounters between humans and sharks by presenting available statistics on such encounters. Given this inquiry is examining shark mitigation and deterrent measures, the chapter focuses on unprovoked shark encounters, utilising the definition used by Taronga Conservation Society Australia (TCSA) as being 'an incident where a shark is in its natural habitat

1 The committee received evidence from: Mr Dale Carr, who was bitten in August 2015 off Port Macquarie (see *Submission 26; Committee Hansard*, 2 May 2017, pp. 13–18); Mr Rick Gerring, whose brother Ben died in May 2016 as the result of a shark bite (*Committee Hansard*, 20 April 2017, pp. 46–50); and Dr Sharon Burden, whose 21-year-old son Kyle died in a shark bite incident in 2011 while boogie boarding near Bunker Bay (see *Committee Hansard*, 28 July 2017, pp. 17–33).

and has made a determined attempt to bite a human where that person is not engaged in provocative activities'.² This distinguishes unprovoked shark bites from provoked incidents, where a human 'attracts or initiates physical contact with a shark'.³

2.7 It is acknowledged, however, that some participants in the public debate about responses to shark bites do not consider the distinction between unprovoked and provoked encounters is useful. For example, Mr Fred Pawle stated:

...whenever divers, swimmers or beach goers disappear without any warning they are not counted in official shark death statistics, even as potential shark victims and, similarly, people who are in the water to catch or collect seafood are classified as having provoked the shark, which I find illogical. Unless you are there you cannot really say whether or not a shark has been provoked.⁴

2.8 In relation to the 2015 incident where a Tasmanian man who was diving for scallops with his daughter died from shark bite injuries, Mr Pawle commented: 'I do not know why collecting scallops can be classified as provoking a shark'.⁵

2.9 This report does not adopt consistent terminology when referring to human–shark interactions. Instead, terms such as 'interaction', 'encounter', 'bite' and 'attack' are used. Partly, this reflects the differences in the terminology used by witnesses, particularly when discussing the evidence they gave to the committee.

2.10 Although the commonly-used term 'shark attack' is occasionally used in this report and is included in the terms of reference for the inquiry, it is acknowledged that there is some debate about how the use of this term might influence public debate and the direction of policymaking (this issue is discussed at paragraphs 2.26 and 2.66).

Data on the incidence and frequency of shark encounters

2.11 Species of sharks that are considered dangerous to humans have presented a risk to people in coastal and maritime settings since ancient times. The number of people who frequent the ocean and the purposes for which they do so has changed over time, however. Over the course of the 20th century, increasing numbers of people frequented coastal areas for recreational purposes and activities such as surfing and diving became popular. Across Australia, large numbers of people now regularly enter waters that are home to sharks.

2 Taronga Conservation Society Australia (TCSA), 'Australian shark attack file', <http://taronga.org.au/conservation/conservation-science-research/australian-shark-attack-file> (accessed 2 December 2016).

3 Examples include when a person is bitten after grabbing a shark or while removing a shark from a fishing hook, interactions with spearfishers while spearing fish or the shark, and when a person steps on a shark. TCSA, 'Australian shark attack file'.

4 Mr Fred Pawle, *Committee Hansard*, 31 July 2017, p. 28.

5 Mr Fred Pawle, *Committee Hansard*, 31 July 2017, p. 28.

2.12 When considering the potential for the number of human encounters with sharks to have increased and to continue to increase, the following related factors provide some insight:

- the 'general worldwide trend towards more intense utilisation of coastal marine waters for...[recreational] activities'; and
- increasing population, which in turn leads to increasing numbers of people who use coastal waters for recreational purposes.⁶

2.13 Besides human population growth, other possible explanations for increases in unprovoked shark bite incidents could include 'an increase in abundance of shark species frequently implicated in unprovoked bites, and/or a natural or anthropogenic change in these species habitat use or behaviour'.⁷

2.14 Dr Leah Gibbs argued that 'spikes and declines in incidents are a function of numerous complex social and ecological factors', including shark population dynamics, conditions in the marine environment, human population change, ocean activities engaged in by humans and improvements in emergency response. Dr Gibbs added that these factors, 'many of which are very poorly understood and documented...then interact in very complex ways'.⁸

2.15 It was noted, however, that the frequency of shark incidents has not kept up with the significant increase in Australia's population over several decades. Mr Leon Deschamps explained:

...in the 1950s, 1960s and 1970s, we were looking at a population of 10 million to 12 million people in Australia. We are now at 24 million people. Those shark attacks haven't doubled. We have doubled the population—a population that is now more involved in water sports, more involved in diving. When you went on a holiday 20 years ago, not every kid had goggles and a snorkel. We do now. We explore the water, thanks to Jacques Cousteau and others. We get out there and get amongst it. We spend more time than ever in the water. That explosion in population does not translate.⁹

2.16 Mr Deschamps also argued that the frequency of shark bites needs to be considered over a long period before it could be assessed whether the frequency of incidents has increased. Mr Deschamps reasoned that, over a 100–150 year timeline, recent figures on shark bites are 'infinitesimal'.¹⁰

6 TCSA, 'Australian shark attack file'. This research was referred to by Ms Amanda Elizabeth Morgan during her evidence (see *Committee Hansard*, 28 July 2017, p. 1).

7 D McPhee, 'Unprovoked shark bites: are they becoming more prevalent?', *Coastal Management*, vol. 42, 2014, p. 485.

8 Dr Leah Gibbs, *Committee Hansard*, 31 July 2017, p. 1.

9 Mr Leon Deschamps, *Committee Hansard*, 28 July 2017, p. 28.

10 Mr Leon Deschamps, *Committee Hansard*, 28 July 2017, p. 28.

2.17 The following paragraphs discuss available data on shark encounters, including fatalities and injuries. Before doing so, however, it is useful to highlight evidence given by Dr Christopher Neff on how he approaches discussions and analysis of data on shark encounters. Dr Neff emphasised that shark bites 'is a highly emotive topic' and '[y]ou are not dealing with data; you are dealing with people's lives'. Dr Neff added:

In the past decade that I have spent researching this topic and doing a masters and a PhD on the politics of shark attacks, whether it is individuals or communities, they are deeply affected...People are not data points. They are real people whose lives have been affected.¹¹

2.18 These sentiments notwithstanding, it is necessary to review data to understand the overall frequency and nature of shark encounters. According to data collected by the TCSA, in the last 50 years there have been 47 fatalities in Australia arising from unprovoked shark bites (an average of 0.9 per year).¹² Data for 2014 to November 2017 is at Table 2.1.

2.19 In addition to the statistics on unprovoked attacks in Table 2.1, provoked attacks between 2014 and 2016 resulted in four fatalities and 22 injuries. For the year 2017 up until 27 October, two provoked incidents (of which one resulted in injury) have been recorded.¹³

2.20 According to the International Shark Attack File, which is managed by the Florida Museum of Natural History, Australia recorded the second highest number of shark attacks between 2005 and 2014 globally, behind the United States of America.¹⁴ Small geographical areas in Australia can also rank highly in international comparisons, particularly when spikes in shark encounters are experienced. The Mayor of Ballina Shire Council remarked that from 8 February 2015 to July 2016, surfers on beaches in Ballina, New South Wales 'were involved in nine per cent of the world's shark attacks and interactions'.¹⁵

11 Dr Christopher Neff, *Committee Hansard*, 17 March 2017, p. 1.

12 TCSA, 'Australian shark attack file', <http://taronga.org.au/conservation/conservation-science-research/australian-shark-attack-file> (accessed 2 December 2016).

13 TCSA, 'Australian shark attack file annual report summary', 2014, 2015 and 2016, <http://taronga.org.au/conservation/conservation-science-research/australian-shark-attack-file> (accessed 31 October 2017).

14 Florida Museum of Natural History, 'World locations with the highest shark attack activity', www.flmnh.ufl.edu/fish/isaf/shark-attacks-maps-data/trends/world-highest-attacks/, 11 February 2015 (accessed 5 December 2016).

15 Cr David Wright OAM, Mayor, Ballina Shire Council, *Committee Hansard*, 2 May 2017, p. 19.

Table 2.1: Human–shark encounters, 2014–24 November 2017

State	2014				2015			
	Unprovoked			Provoked (fatal)	Unprovoked			Provoked (fatal)
	Fatal	Injured	Uninjured		Fatal	Injured	Uninjured	
NSW	2	1	0	0	1	8	5	0
QLD	0	1	0	1	0	1	3	0
SA	0	2	2	1	0	1	0	0
WA	0	2	0	1	0	2	0	0
VIC	0	0	1	0	0	1	0	0
TAS	0	0	0	0	0	0	0	1
NT	0	0	0	0	0	0	0	0
Total	2	6	3	3	1	14	7	1
	2016				2017 (to 24 November 2017)			
NSW	0	5	3	0	0	4	1	0
QLD	0	2	0	0	0	3	1	0
SA	0	0	0	0	0	0	1	0
WA	2	1	0	0	1	2	3	0
VIC	0	0	0	0	0	1	0	0
TAS	0	0	1	0	0	0	0	0
NT	0	0	0	0	0	0	0	0
Total	2	6	4	0	1	10	6	0

Note: In addition to the fatalities from incidents described as 'provoked', the following numbers of provoked incidents resulting in a person being injured or uninjured were recorded: 2014 = 9; 2015 = 10; 2016 = 9; 2017 (to 24 November 2017) = 2.

Source: Taronga Conservation Society Australia, 'Australian shark attack file annual report summary', 2014, 2015, 2016 and 2017, <http://taronga.org.au/conservation/conservation-science-research/australian-shark-attack-file> (accessed 27 November 2017).

Interpretation and analysis of data

2.21 The available data also suggest that the frequency of shark bites has fluctuated over time, although annual fatality rates appear to have declined compared to the first half of the 20th century. Mr John West, the coordinator of the Australian Shark Attack File, has made the following observations on these trends:

In the first half of the 20th century, there was an increase in the number of recorded shark attacks, culminating in a peak in the 1930s when there were 74 incidents...The number of attacks then dropped, to stabilise, 35 incidents per decade from the 1940s to the 1970s. Since 1980, the number of reported attacks has increased to 121 incidents in the past decade...There had been a decrease in the average annual fatality rate, which had fallen from a peak of 3.4 year in the 1930s, to an average of 1.1 year for the past two decades.

The number of fatal attacks relative to the number of total attacks per decade has also decreased over this period, from 45% in the 1930s to 10% in the past decade.¹⁶

2.22 CSIRO's submission noted that '[a]s in other areas of the world, the overall number of shark attacks has gradually increased over the last few decades in Australian waters'. CSIRO added:

Various studies have attributed this overall increase to a rise in human population...Some studies note that although the number of attacks has increased the rate of attack (being the number of attacks per time spent by people in the ocean) has decreased...Many different factors contribute to the overall increase in shark attacks that are not related to shark numbers, including human population trends, changes in human population distribution and regional demographics, as well as variations in lifestyle and behaviour of people over time. However, it is important to note that clusters of shark attacks cannot be attributed to increases in human use of the ocean or sudden increases in overall shark population size as neither of these sufficiently change over such short periods of time.¹⁷

2.23 Similarly, the Fisheries Research and Development Corporation (FRDC) advised that the 'frequency of reported interactions between sharks and humans remains relatively low; however they are becoming more commonplace'. In considering this, however, the FRDC noted that the ability to quantify absolute numbers and identify real trends in human–shark interactions is impeded by 'multiple confounding factors'. In the FRDC's view, the resulting uncertainty 'has likely resulted in widespread conjecture about whether interaction rates are increasing or have remained stable'.¹⁸

2.24 CSIRO also submitted that it is not the case that shark bites are more likely to occur in locations where shark numbers are high. It explained:

There are, for example, high human-use areas where white sharks are abundant but where the incidence of shark attack is low. The Western Australia drumline program revealed a significant number of tiger sharks present in coastal waters off Perth, yet no attacks have been attributed to this species in the area since 1925 (Australian Shark Attack file data).¹⁹

2.25 Dr Leah Gibbs noted that 'people regularly encounter sharks without harm', with a survey of Western Australian ocean users revealing that almost 70 per cent of them had reporting having 'safe interactions with sharks at some point while using the

16 J West, 'Changing patterns of shark attacks in Australian waters', *Marine and Freshwater Research*, 2011, vol. 62, p. 745.

17 CSIRO, *Submission 33*, p. 10 (citations omitted). See also Professor Nic Bax, Senior Principal Research Scientist, CSIRO, *Committee Hansard*, 20 October 2017, p. 8.

18 FRDC, *Submission 34*, p. 3.

19 CSIRO, *Submission 33*, p. 10.

ocean'. Accordingly, Dr Gibbs argued that it should not be argued that sharks are inherently dangerous as 'the simple presence of sharks does not present an inevitable danger to people'.²⁰

2.26 The term 'shark attack' also attracted comment. Some submitters argued that the term is detrimental to debate about the issue of managing and deterring shark encounters. For example, the NSW Young Lawyers Animal Law Committee argued:

The term 'shark attack' does not draw any distinction between minor events and fatal incidents. 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'. The term 'shark attack' is even used to include events where there is no physical contact with a person.²¹

Risk of encountering a dangerous shark relative to other sources of harm

2.27 In discussing the frequency of human–shark interactions, the TCSA has emphasised that the number of shark encounters 'must be put into perspective', such as by contrasting the number of incidents that occur with the millions of beach visitations that take place each year.²² The relative infrequency of fatal shark attacks in Australian waters is also noted in information published by the Department of the Environment and Energy (DoEE).²³

2.28 Submitters and witnesses to this inquiry made other similar observations about the relative degree of risk compared to other activities that can result in death. For example, Sea Shepherd Australia cited TCSA data indicating that, over a person's lifetime the risk of being killed by a shark is one in 292,525, compared to a one in 3362 chance of drowning at the beach.²⁴

2.29 Continuing on this topic, representatives of Surf Life Saving Australia informed the committee about its experiences with coastal drowning deaths. Mr Shane Daw, the National Coastal Risk and Safety Manager for Surf Life Saving Australia, advised that over the past 12 months, on a national basis their organisation has 'recorded a 24 per cent increase in coastal drowning deaths on the previous year with 130 coastal drowning deaths'. He continued:

20 Dr Leah Gibbs, *Committee Hansard*, 31 July 2017, p. 2.

21 NSW Young Lawyers Animal Law Committee, *Submission 61*, p. 10.

22 TCSA, 'Australian shark attack file', <http://taronga.org.au/conservation/conservation-science-research/australian-shark-attack-file> (accessed 2 December 2016).

23 Department of the Environment and Energy (DoEE), 'Sharks in Australian waters', www.environment.gov.au/marine/marine-species/sharks (accessed 2 December 2016).

24 Sea Shepherd Australia, *Submission 57*, pp. 30–31.

We know that in the past 12 years that we have had 1,190 deaths related to either drowning or shark attacks... We know that 26 of those deaths were as a result of a shark attack, a shark fatality. We further know that, over the 12 years, a total of 265 shark incidents have taken place. Out of those, 26 were fatal, but those non-fatal shark incidents or encounters also included where there was no injury sustained, so it can be an attack to a board or something of that nature. So we do know that has been happening. There have been approximately 22 shark-related incidents on an annual basis and we know from drowning death incidents that there have been, roughly, an average of 97 occurring per year.²⁵

2.30 Other comparisons about the relatively low risk of a shark fatality or injury were also made. For example, Ms Natalie Banks from Sea Shepherd Australia noted the higher number of annual road deaths²⁶—data published by the Bureau of Infrastructure, Transport and Regional Economics indicate that in 2016 there were 1300 road deaths across Australia.²⁷ Ms Banks observed:

Around the world, globally, five to six people die from shark incidents. When we get in a car we do everything we can to minimise the risk. There is a risk to getting in a car. We put a seatbelt on, we do not drive under the influence, we do not speed—all those things. The same could be said of going to interact with a natural, wild marine environment: we do what we can to minimise the risk. It is a very small risk but it is there and we can do more to minimise the risk.²⁸

2.31 Mr Daw added that any beachgoer encounters 'a possibility of a shark encounter of some sort, because that is the environment that they live in'. However, he further added that this knowledge:

...needs to be balanced with the fact that we know, with all due respect, more people will die driving to the beach than will be taken by a shark. We know that in all the aquatic environments around Australia there are approximately 300 drownings every year and we are averaging one to two shark attack deaths a year. So it is a matter of balancing that with an understanding of the potential risk. Probably the issue that we are facing is: how do you do that without being seen to be downplaying or dismissing it?²⁹

25 Mr Shane Daw, National Coastal Risk and Safety Manager, Surf Life Saving Australia, *Committee Hansard*, 16 March 2017, p. 9.

26 Ms Natalie Banks, Chief Advisor, Sea Shepherd Australia, *Committee Hansard*, 20 April 2017, p. 13.

27 Bureau of Infrastructure, Transport and Regional Economics, *Road deaths Australia, December 2016*, https://bitre.gov.au/publications/ongoing/rda/files/RDA_Dec_2016.pdf (accessed 15 June 2017).

28 Ms Natalie Banks, Sea Shepherd Australia, *Committee Hansard*, 20 April 2017, p. 13.

29 Mr Shane Daw, Surf Life Saving Australia, *Committee Hansard*, 16 March 2017, p. 11.

2.32 Mr Dale Carr, who suffered a shark bite in 2015, noted that for fatal events that do not involve sharks, such as drownings and road accidents, the effects on close family members of the person involved 'are just as compelling as a shark attack'. However, he considers that the public 'become numb' to such reports.³⁰

Public awareness and fear of sharks

2.33 The previous section repeated observations made by submitters and witnesses who, while acknowledging that shark-related fatalities are tragic, noted that the risk of injury or death from shark encounters is significantly lower than the risk associated with many other activities, including everyday activities and other recreational ocean-based activities. Discussing this evidence is not intended to downplay the distressing and sometimes tragic nature of shark attacks; rather, it provides context for considering whether, and if so why, there is a heightened public awareness of and interest in sharks. It also provides a starting point for considering how appropriate and effective policies can be developed with the limited resources available for promoting public safety in all aspects of life.

2.34 Associate Professor Daryl McPhee considered the infrequent nature of shark attacks relative to other causes of death when suggesting how to respond to the issue of shark encounters. He stated that 'we should not lose sight of the fact that unprovoked shark bites does cause human fatalities and life changing injuries', with 'obvious flow on effects to friends and families of those bitten'. He added, however, that '[w]e should also not lose sight of the fact that unprovoked shark bite is an extremely infrequent event, and available data clearly demonstrates that drowning at surf beaches represents a much more substantial source of fatalities, and physical injuries from surfing itself are frequent and often serious'. Finally, Associate Professor McPhee noted that even with a 'clear increasing trend' of shark attacks globally and in Australia, 'the probability of an unprovoked bite is still low'.³¹

Primal fear

2.35 Despite the significantly higher number of drowning deaths that occur each year compared to shark-related fatalities, it was hypothesised that shark attacks capture greater interest among the public because of a primal fear humans have of sharks. For example, Mr Shane Daw from Surf Lifesaving Australia explained:

With sharks there is that primal fear. People are very scared of sharks. They are not afraid of drowning, they are not afraid of getting caught in a rip current and they are not afraid of getting stung by a bee. *Jaws* has a lot to answer for, I guess.³²

30 Mr Dale Carr, Member, Bite Club; Beyond the Bite, *Committee Hansard*, 2 May 2017, p. 16.

31 Associate Professor Daryl McPhee, *Submission 58*, p. 2.

32 Mr Shane Daw, Surf Life Saving Australia, *Committee Hansard*, 16 March 2017, p. 12.

2.36 Evidence received from Professor Jessica Meeuwig supports this view. Professor Meeuwig commented:

Professor EO Wilson of Harvard University, perhaps one of the most transformational thinkers about evolutionary biology, famously stated that we are both fearful and fascinated by our monsters. By monsters he meant lions, tigers and indeed sharks. He pointed out that we are fearful because in our lower brains from our deep evolutionary history we understand that we are potentially prey, but we are fascinated because we also understand that by learning about these animals we can avoid being prey. We have this dichotomy, so every time there is an incident with a lion, a tiger, a bear or a shark there is this complete media frenzy, there is a massive amount of discussion and we do not know exactly what to do with it.³³

2.37 Associate Professor McPhee remarked that people fear 'what is immediate' and 'what we cannot control'. Associate Professor McPhee explained that risks associated with various activities such as driving, consuming alcohol and smoking 'are not fears over an evolutionary period we have been exposed to and respond to'. In developing this point, he remarked that 'a teenager does not necessarily fear smoking because it is not going to kill them today...[y]et getting into the water in an area where there have been shark bites there is potentially an immediate effect, and it will be feared'. Associate Professor McPhee further commented that the risk of shark bite is distinguished from other risks that can be controlled to a greater extent; for example, the risk of death from drowning can be mitigated by becoming a better swimmer. Associate Professor McPhee remarked:

We cannot mitigate the risk of a shark bite by being a better swimmer or a better surfer. In fact it is the opposite. Become a better swimmer or a better surfer and you would generally spend more time in the water.³⁴

2.38 Mr John Heaton noted that the father of an individual who died after a shark attack in Ballina in 2008 told him that every subsequent attack brings back memories of his son's death. Mr Heaton also pointed to a broader issue of surfers struggling to handle shark incidents, even when they are not directly affected:

For a lot of people, I think the following sums it up: 'After three long months of driving up to my local beach and just staring at the water, I started to understand I was running out of excuses for not going surfing.' My friend...eventually sought help from his local GP, who told him, 'I have never handed out as many referrals to psychologists in my life in such a short amount of time for both male and female surfers.'³⁵

33 Professor Jessica Meeuwig, *Committee Hansard*, 20 April 2017, p. 36.

34 Associate Professor Daryl McPhee, *Committee Hansard*, 2 May 2017, p. 36.

35 Mr John Heaton, *Committee Hansard*, 2 May 2017, p. 2.

Effects of popular media and news reporting

2.39 As noted above, it is considered that humans have a primal fear of sharks that makes us more fearful of sharks than other animals or activities that carry a higher risk of death or injury. In addition, it was noted that it is difficult to not be cognisant of the risk of encountering a shark when at the beach. For example, Mr Kim Allen submitted that:

In Australia, the beach is so much a way of life for so many people, sharks have always been in the back of people's minds.³⁶

2.40 Evidence presented to the committee indicates it is widely considered that the depiction of sharks in films which utilise the fear of sharks for entertainment, such as the series *Jaws*, have a negative influence on public views on sharks. For example, Associate Professor McPhee provided the committee with a paper in which he wrote that the *Jaws* movies epitomise the image of sharks in the popular media 'as omniscient killers of humans'.³⁷

2.41 Mr Allen advised that the *Jaws* films have been broadcast on television following shark incidents.³⁸

2.42 As the previous section demonstrated, many submitters consider statistics reveal a disproportionately high fear of sharks among the public compared to the actual degree of risk involved. In light of this, many witnesses agreed that, due to the need to 'sell papers', much of the media coverage of shark issues in Australia is sensationalised. Accordingly, it is considered that news reporting of shark issues might have a role in encouraging, or at least not challenging, public concerns about beach safety and negative views on shark conservation.³⁹

2.43 Humane Society International (HSI) submitted that 'due to the high level of public awareness around sharks and shark bites, and media interest, the resulting shark attack hype has amplified the negative way in which the public and tourists perceive the dangers of sharks'.⁴⁰ Similarly, Mr Colin Buxton, a representative of Coolum and

36 Mr Kim Allen, *Submission 47*, p. 7.

37 D McPhee, 'Unprovoked shark bites: are they becoming more prevalent?', *Coastal Management*, vol. 42, no. 5, 2014, p. 479; provided as Associate Professor Daryl McPhee, *Submission 58*, Attachment 1, p. [4].

38 Mr Kim Allen, *Submission 47*, p. 7.

39 See, for example, Ms Belinda Atkins, Manager, Projects and Programs, Sydney Coastal Councils Group, *Committee Hansard*, 16 March 2017, p. 3; Mr Brendan Donohoe, Northern Beaches Branch President, Surf Life Saving Australia, *Committee Hansard*, 17 March 2017, p. 24; Cr Simon Richardson, Mayor, Byron Shire Council, *Committee Hansard*, 2 May 2017, p. 27; Mr Chad Buxton, Marine Scientist and Volunteer, Sunshine Coast Environment Council, *Committee Hansard*, 2 May 2017, p. 72; and Ms Amanda Elizabeth Morgan, *Committee Hansard*, 28 July 2017, p. 5.

40 Humane Society International (HSI), *Submission 43*, pp. 24–25

North Shore Coast Care, who has researched newspaper reporting of shark matters in Queensland over time, stated:

I suggest that the public, over a long period of time, has been conditioned through media to fear sharks. There are a couple of things that have been consistent in the newspapers that I have read during this research. Shark stories are almost exclusively front-page news. Almost inevitably that is the number one thing, suggesting that sharks sell papers. The other thing is to look at the captions that are used to describe these articles. There were some consistent adjectives used in these captions. Those were 'killer', 'invasion', 'deadly', 'savages', 'horror', 'danger', 'terror' and 'vicious'. This is how we are portraying sharks in the media and that has been consistent over time, so what are we reporting here?⁴¹

2.44 The argument that consumption of news reporting has influenced negative views about sharks among the public was reinforced by evidence from Dr Christopher Neff. Dr Neff explained that, as part of a survey he conducted into shark bite prevention policies and beach safety, members of the public were asked about the amount of media coverage they had consumed regarding recent shark bite incidents. Dr Neff advised that 'there was a statistical correlation between levels of fear and how much media they had seen'. He added:

The level of media coverage in both Ballina and WA, specifically, was about 80 per cent. So 80 per cent of all respondents who had a high level of fear had seen a high level of media—between eight and 10 stories...It is having a significantly detrimental impact on the way people view the ocean and how they look at risk. If you hear it 17 times a day then it is going to increase your risk perception.⁴²

2.45 Ms Amanda Elizabeth Morgan remarked that people 'are entitled to know what is happening, especially when it happens in their area'; however, in her view the frequency of shark bites is not put into perspective with the reporting 'done in a way that gives the impression that they are more frequent than they are'. In explaining her concerns about the approach taken by the media, Ms Morgan commented on reporting of shark sightings, rather than shark incidents:

When you use words like 'sharks lurking off WA beaches' it gives the impression that they are doing something wrong or having a sinister demeanour. However, a shark is just swimming in its environment. If you used that same analogy with humans, where they were eating lunch or just walking past something, it would be ridiculous. However, when we put it onto sharks people seem to accept it.⁴³

41 Mr Chad Buxton, Admin Officer/Volunteer, Coolum and North Shore Coast Care, *Committee Hansard*, 31 July 2017, p. 18.

42 Dr Christopher Neff, *Committee Hansard*, 17 March 2017, pp. 3–4.

43 Ms Amanda Elizabeth Morgan, *Committee Hansard*, 28 July 2017, p. 5.

2.46 In addition to the language used in news reporting, submitters were critical of the associated imagery utilised. The Sunshine Coast Environment Council (SCEC) remarked that 'the practice of using stock photos of great white sharks for any shark attack story...is irresponsible and needs to stop'.⁴⁴

2.47 An example that particularly provoked the ire of those who consider media reporting is damaging the public debate about sharks is an image published in the 8 June 2016 edition of *The West Australian*. The image, which dominated the front page, depicted two children being chased by a shark under the headline: 'Will it take this?'. Dr Sharon Burden described this front page as 'reckless and harmful' and evidence of a strategy of publishing 'biased, hyperbole designed to frighten and divide the public rather than informing and providing balanced evidence'.⁴⁵

2.48 The Chief Executive Officer of the Australian Hotels Association (WA), who also commented on that front page, stated:

In the context of Western Australia, when those images and those types of fear-based images are used, they do not help a rational debate around this issue. I think they exacerbate fear within the community and they lend support to an irrational argument. That type of imagery itself isn't particularly helpful.⁴⁶

2.49 Others approached the role and actions of the media from a different perspective. Mr Andrew Stark, Chief Executive Officer, Surfing Australia, noted that 'a shark attack and being eaten alive is terrible and it is horrific, and the media will always follow it'. Mr Stark suggested that the 'challenge with the media' relates to protecting victims and witnesses of shark attacks, particularly as 'a lot of them will suffer post-traumatic stress disorder, and the victims themselves, if they survive, need to cope with that'.⁴⁷

2.50 Survivors and witnesses of shark attacks, and other individuals in beach communities where shark attacks have occurred, gave evidence that provided revealing insights into this aspect of news reporting. Mr Donald Munro told the committee that, following Tadashi Nakahara's death at Shelly Beach, Ballina in 2015, he was asked to speak to the media on behalf of local surfers. Mr Munro provided the following description of this experience:

All of a sudden, I had world media focusing on me. In the end, I used to get disgusted with them, and I would say to them, 'If you're going to ask these questions of me, I'm not going to do the interview.' But they would still

44 Sunshine Coast Environment Council, *Submission 35*, p. 12.

45 Dr Sharon Burden, *Submission 73*, p. 4.

46 Mr Bradley Woods, Chief Executive Officer/Executive Director, Australian Hotels Association (WA), *Committee Hansard*, 28 July 2017, p. 9.

47 Mr Andrew Stark, Chief Executive Officer, Surfing Australia, *Committee Hansard*, 2 May 2017, p. 34.

ambush me...All they do is feed on the negative side of things. That is what sells media, unfortunately, more than positive things.⁴⁸

2.51 Mr Dale Carr, who survived a shark bite, told the committee that 'what really got me' is the invasion of privacy experienced by people who have suffered a shark bite, people who are supporting someone who has suffered a shark bite, and people in mourning after a fatal shark bite. Mr Carr stated:

In my situation...I had about three or four 24//7 media outlets out the front of my place while I was in ICU. A bloke was caught in a tree out the front of ward 1 with a long lens trying to take a photograph of me into ward 12. There were six additional security staff at Port Macquarie Hospital.⁴⁹

2.52 Evidence given by Dr Burden indicates that how the media handles shark victims varies and potentially has changed over time. Dr Burden stated:

On the day after Kyle, I was standing on the beach to talk to the press. I indicated in my statement at that time that the environment needed to be protected and I did not believe in hunting down the shark that had killed Kyle. That was prior to this becoming such a contentious issue. It was well handled by the media at the time. It was respectful. The media at that time treated us with great respect and we were very grateful for that. But I am saddened that over the years it then started to deteriorate—it all went pear-shaped.⁵⁰

2.53 Despite expressing criticism of particular actions by the media, Mr Carr indicated that the media can be influenced to provide more meaningful coverage of shark incidents. He explained:

Whether this is a reflection of me or not, I do not know, but when I was approached by one of the local television providers, Prime7, I told them I would only do a presentation with their organisation if they showed it over four nights. 'Firstly, you can have the attack story, that is fine.' That has happened. 'Secondly, I want you to talk about what happened afterwards. Thirdly, I want you to show that I was successfully able to go back to the place to thank those who helped me on the beach with their presence of mind. Fourthly, I want you to present, on the fourth night, me back in the water surfing. I want you to show the whole cycle of life of what happens. Don't just give me the same rhetoric of, "This is a shark attack," and then go find someone who supports the view of a producer.⁵¹

48 Mr Donald Munro, President, Le-Ba Boardriders; and Spokesperson, Lennox Head National Surfing Reserve, *Committee Hansard*, 2 May 2017, p. 6.

49 Mr Dale Carr, *Committee Hansard*, 2 May 2017, pp. 15–16.

50 Dr Sharon Burden, *Committee Hansard*, 28 July 2017, p. 18.

51 Mr Dale Carr, *Committee Hansard*, 2 May 2017, p. 16.

2.54 Others did not accept that media reporting has a negative influence on public views about sharks. For example, in response to questions about sustained newspaper reporting of shark incidents, Mrs Rebecca Clough stated that such coverage 'definitely hasn't contributed to my fear at all...[m]y fear was there from the start'.⁵²

2.55 Mr Fred Pawle, who has written extensively on shark bites for *The Australian*, argued that the public 'is becoming very desensitised to shark attacks'. Mr Pawle noted that fatalities become widespread news, however, stories on potential fatalities are, in his view, 'often buried and sometimes even ignored'.⁵³ Mr Pawle continued:

People throw around words like 'sensationalist' and just trying to beat up the story. The witness also said that shark stories are only front page news. They are not. The public is being desensitised. I make no apologies for the way tabloid newspapers approach this story and I give credit to the readers knowing that it is a sensational photo. It does instil fear in people but it does not stop people going to the beach and it does not send them out in boats with guns, nets and hooks wanting the kill the things. People are smarter than that.⁵⁴

2.56 Nevertheless, examples of shark incidents that did not result in injury yet received significant media attention can be found, such as an October 2017 story published on the front-page of *The Advertiser*.⁵⁵ Likewise, encounters that result in minor injuries, such as the shark bite incident in November 2017 at Avoca Beach on the New South Wales Central Coast, also often receive considerable media attention.⁵⁶

2.57 Some media coverage, however, attracted positive comment or otherwise is worthy of acknowledgement. For example, the Mayor of Ballina Shire Council commended the actions of the local media outlets in the area to shark bite incidents.⁵⁷

52 Mrs Rebecca Clough, *Committee Hansard*, 28 July 2017, p. 35.

53 Mr Fred Pawle, *Committee Hansard*, 31 July 2017, p. 25.

54 Mr Fred Pawle, *Committee Hansard*, 31 July 2017, p. 26.

55 'It was just like Jaws', *The Advertiser*, 23 October 2017, p. 1; L Walsh and J Pengelley, 'Dad saves teen as 4m shark moves in for kill', *The Advertiser*, 23 October 2017, p. 7. The initial reporting was followed the next day with B Harvey, 'Destroy the rogue shark before it takes a life, says dad who saved daughter', p. 7. An article published the following day also gave prominence to the 'rogue shark theory', which is not supported by scientific evidence (that theory and other myths and misconceptions about sharks are discussed in Appendix 3). However, it is noteworthy that an editorial published in *The Advertiser* observed that it 'is important to remember...that we are living among predators when we enter the sea'. The editorial concluded that white sharks 'deserve our wary respect as we seek to enjoy the water safely'. 'The call to cull', Editorial, *The Advertiser*, 24 October 2017, p. 16.

56 See, for example, J Houghton, 'Punch in the jaws saves doc', *Daily Telegraph*, 14 November 2017, p. 2.

57 Cr David Wright OAM, Mayor, Ballina Shire Council, *Committee Hansard*, 2 May 2017, p. 27

The November 2017 media coverage of members of the Brouwer family of which the committee is aware has also been respectful and is adding value to the public debate.⁵⁸

2.58 To understand better the effects that recent human–shark interactions and media reporting may be having on the behaviour of water users, such as surfers and divers, CSIRO suggested there would be benefit in undertaking a social survey. CSIRO argued that a social survey 'would assist in understanding the broader social impacts of shark attacks on these at-risk user groups and how to improve communication with at-risk water users in the future'.⁵⁹

Social media

2.59 Submitters and witnesses also commented on the implications of social media for the public's perception of the risk presented by sharks. Some of this evidence indicated that social media can be positive for public safety and informing the public about sharks more generally, provided the information made available is accurate. In relation to the distribution of information about shark sightings on social media, Ms Belinda Atkins, who represented the Sydney Coastal Councils Group, stated that:

I think it is good to have the information out there, as long as it is followed up with an engagement and education component so that, when people know where the incidents are, where the sharks have been sighted, they know what they can do to reduce risk to themselves.⁶⁰

2.60 Ms Atkins added:

I think social media is also a good way of providing information to the community—not just scare tactics but real information about sharks and their habitat—to really get the community to appreciate sharks and appreciate that they are going into the shark habitat and therefore they should take certain measures against those risks when they do water activities. It is a way that you can get to a lot of people at one given time to spread a specific message, whereas you may not get to a lot of people by other avenues.⁶¹

2.61 However, other evidence received by the committee highlighted the negative aspects and consequences of social media for public awareness of sharks. For example, Surf Life Saving SA submitted that the distribution of information about shark sightings via social media sites 'at times is inaccurate and the reports are often

58 See, for example, R Ardon and D Mercer, 'Laetitia's family in plea to save lives of surfers', *West Australian*, 7 November 2017, pp. 4–5.

59 CSIRO, Answers to questions on notice, 20 October 2017 (received 24 November 2017), p. 2.

60 Ms Belinda Atkins, Manager, Projects and Programs, Sydney Coastal Councils Group, *Committee Hansard*, 16 March 2017, p. 3.

61 Ms Belinda Atkins, Sydney Coastal Councils Group, *Committee Hansard*, 16 March 2017, p. 6.

not verified'. Surf Life Saving SA argued that this 'has caused the community to become concerned and sometimes overestimate the danger posed by sharks'.⁶²

2.62 Mr Andy Kent from Surf Life Saving NSW described social media as being 'a double-edged sword' for public safety and concerns about shark. He noted that some social media groups that are established enable members of the public to 'post information like "I've seen a shark here"', however, these reports can be of sharks such as bronze whalers, which 'are not a species which we really need to be worried about'.⁶³

2.63 Surf Life Saving Australia submitted:

The concerns held within the community, while valid, need to be balanced with understanding and knowledge. In many instances there is little balanced information relating to shark sightings and interactions, rather an emerging trend of creating fear and alarming people.⁶⁴

2.64 When asked about the utility of distributing information about sharks via social media, Dr Neff responded that such efforts 'cannot be used in isolation'. Dr Neff explained:

...you cannot say, 'Sharks are monsters, and there are 10 of them outside your beach,' and scare the bejesus out of everyone. You have to tie in your social media campaign with your public education campaign so that you are actually giving meaning to what they are reading, as opposed to elevating concerns and scaring everyone, because that can have a detrimental effect...⁶⁵

2.65 Finally, Surf Life Saving Australia advised that media reporting and the widespread distribution of information on social media about shark encounters has implications for its operations and resources. Its submission explained:

The organisation is cognisant of public concerns relating to shark interactions. With the growth in social media, live news feeds and a digitally enabled society, the community of today is far more connected than ever before. The awareness of sightings and interactions are far more widely known and available. Surf Life Saving is conscious of this, and, throughout many states this has had a significant impact with a call for increased lifesaving services response and management requirements.⁶⁶

62 Surf Life Saving SA, *Submission 10*, p. 2. See also Sunshine Coast Environment Council, *Submission 35*, p. 12.

63 Mr Andy Kent, Lifesaving Manager, Surf Life Saving NSW; Mr Brent Manieri, Australian Lifeguard Service Manager, Australian Lifeguard Service; Mr Shane Daw, National Coastal Risk and Safety Manager, Surf Life Saving Australia, *Committee Hansard*, 16 March 2017, p. 13.

64 Surf Life Saving Australia, *Submission 16*, p. 1.

65 Dr Christopher Neff, *Committee Hansard*, 17 March 2017, p. 4.

66 Surf Life Saving Australia, *Submission 16*, p. 1.

Use of the term 'shark attack'

2.66 As noted previously, some submitters expressed views on the use of the term 'shark attack'. In relation to media reporting, submitters argued that emotive language should be used less frequently and only when clearly warranted. For example, the SCEC submitted:

Words used to describe encounters are often emotive. Although underreported in media, most shark encounters are incidental and don't result in death or even injury. SCEC recommends news coverage uses the word 'encounter' instead of 'attack' unless warranted (unprovoked and injurious).⁶⁷

2.67 Dr Neff advised that approximately 75 per cent of people he surveyed (see paragraph 2.43) agreed that the phrase 'shark attack' was 'sensationalised'. Dr Neff advised that he had worked with Dr Bob Hueter from the Mote Marine Laboratory in Florida on new terms that differentiate between incidents that have not resulted in harm from those that resulted in injury or a fatality. Dr Neff explained that a paper he co-authored with Dr Heuter suggested the terms 'shark sighting' and 'shark encounters' would be appropriate for incidents that do not result in injury. The terms 'shark bites' and 'fatal shark bites' could be used for incidents that result in injury or death.⁶⁸

Impacts of incidents and fatalities on tourism and related industries

2.68 As many tourists are drawn to Australia's beaches, the potential damage to the tourism industry arising from unprovoked shark attacks and related concerns for public safety is occasionally cited in support of enhancing mitigation measures. For example, impacts on regional tourism were taken into account by the Environment Minister in his statement of reasons for granting the New South Wales Government an exemption from the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the first north coast shark meshing trial.

2.69 In correspondence to the DoEE about the trial, the New South Wales Department of Primary Industries (DPI) provided information on how shark attacks on the New South Wales north coast could affect tourism activity. DPI explained that over 11 million people visit the north coast each year, and the tourism industry in the area is 'worth more than \$3.4 billion annually to the national economy and supports around one in three jobs in the region'. DPI went on to observe that beaches and on-water activities are major contributors to tourist activity in that region:

...the Ballina-Byron Bay area of NSW is a major national and international recreation and tourism destination, and a gateway to the Gold Coast,

67 Sunshine Coast Environment Council, *Submission 35*, p. 12.

68 Dr Neff added that these suggested terms were 'adopted by the American Elasmobranch Society, the largest group of shark scientists in the world' and Surf Life Saving Australia. Dr Neff also expects that the terms are being considered by the people responsible for the Australian Shark Attack File. Dr Christopher Neff, *Committee Hansard*, 17 March 2017, p. 4.

Queensland and other regional locations. A primary driver of recreation and tourism in this region of Australia are the iconic surf beaches, offering a range of on-water recreation, tourism and sporting opportunities (swimming, surfing, surf schools, kayaking, kite surfing) and on-water events including Gromfest (young surfer competition), ocean swimming events, kite surfing competitions, amongst others.⁶⁹

2.70 The DPI then added:

The local community have raised concerns about the impact on the economy and tourism-related businesses since the 'spike' in shark attacks occurred...The heightened public media on the most recent shark events is likely to impact on Australia's reputation as a tourism destination, with flow on impacts to the regional and national economy, including jobs and growth. The NSW Government has already received reports of planned on-water events being rescheduled elsewhere from the Ballina-Byron Bay region.⁷⁰

2.71 Accounts of negative economic outcomes following shark-related fatalities and injuries were presented to the committee. This information covered tourism as well as other industries and economic activities which may be linked to tourism, such as those relating to retail and sport.

2.72 Surfing Australia argued that sharks attacks have 'without doubt negatively impacted surfing across sport, recreation and community through participation decline in attack and fatality regions'. It added that a 'serious downturn' has been experienced in 'industries related to surfing included surf retail, manufacturing and surf tourism'. Surfing Australia's submission explained:

There is strong evidence to show significant down turn of over 20% in participation and revenue of surf schools in the regions where attacks and fatalities have occurred. There is also clear evidence around the down turn in industries related like surf board manufacturing and surf retail. In some cases long term surf shops have been forced to close due to the direct impact of shark issues in their regions and surf board manufactures have indicated significant downturn in board sales in effected areas of up to 50%. Boardriders Clubs in affected areas have seen up to 50% decline in participation due to the shark issue. It is clear that the shark issue is having a serious negative impact in communities around Australia.⁷¹

69 Correspondence from Mr Scott Hansen, Director General, New South Wales Department of Primary Industries (DPI), to Mr Matt Cahill, DoEE, dated 14 October 2016, tabled by the DoEE, Supplementary Budget Estimates 2016–17, 21 October 2016.

70 Correspondence from Mr Scott Hansen, DPI, to Mr Matt Cahill, DoEE, dated 14 October 2016.

71 Surfing Australia, *Submission 20*, p. 1. For details of downturns in particular locations, see Mr Andrew Stark, Surfing Australia, *Committee Hansard*, 2 May 2017, pp. 30, 33–34.

2.73 The Ballina Chamber of Commerce advised that a survey of its members conducted in late 2015 indicated that it was 'mainly the tourism based businesses and surf industry businesses recording and experiencing downturns'. Nevertheless, the Chamber noted that 'if there is a part of any area under impact then it will affect everyone'.⁷² The Mayor of Ballina Shire Council commented that the 'local tourist trade experienced a very poor 2015 holiday period, and surf-related businesses and accommodation outlets suffered badly'.⁷³

2.74 The committee also received personal accounts of business confidence being affected by shark-related fatalities and injuries. For example, Mr Don Munro, who is the President of Lennox Head Ballina Boardriders, submitted:

Unfortunately my observations and advice indicate that impacts both socially and economically are being felt widely, with kids frightened to go in the water, and the thoughts of fewer domestic and international visitors weighing heavily on the minds of local businesses. The key difference in their behaviour being that once we had a respect for the ocean, but now our region has a fear of the ocean.⁷⁴

2.75 Mr Fred Pawle gave similar observations about the social and economic consequences. In his submission, Mr Pawle wrote:

While in Ballina in November, I was stunned to see the beautiful beaches there deserted on a pleasant, sunny, spring day. It's not just surfers who are abandoning this hot spot of shark sightings and attacks. These beaches were once magnets for hundreds of tourists. The Dunes, a nearby resort that once catered to large school groups and young travellers, has had to redefine itself as a wedding venue. The losses incurred by its owners are significant. The local surf shop, after losing a large proportion of its revenue in the initial downturn, has modified its stock to focus on surf fashion instead of equipment. As a result, a generation of kids in the area (and all around our coastline) who would have otherwise been drawn to the healthy, happy sports of surfing or surf lifesaving are now more easily distracted by less salubrious pursuits.⁷⁵

2.76 Evidence from other countries was also put forward. Global Marine Enclosures submitted that a study in Brazil 'calculated a \$20m economic loss in the coastal region of Recife following a shark attack'. Although Global Marine Enclosures acknowledged that a figure on the economic impact of shark attacks in Australia is not

72 Ballina Chamber of Commerce, *Submission 45*, p. 3.

73 Cr David Wright OAM, Mayor, Ballina Shire Council, *Committee Hansard*, 2 May 2017, p. 19.

74 Mr Don Munro, *Submission 39*, p. 1.

75 Mr Fred Pawle, *Submission 56*, p. 1. This evidence about changes to surf-related businesses shares some similarities with comments made by another witness on job losses in local surfboard manufacturers—see Mr John Heaton, *Committee Hansard*, 2 May 2017, p. 7.

available, it argued that the impact 'is likely to be significant as tourism is the largest economic driver in coastal regions'.⁷⁶

2.77 However, some submitters noted that there is limited evidence demonstrating economic consequences of shark encounters. Associate Professor Daryl McPhee considered that it is 'clearly plausible' that unprovoked encounters could have negative consequences for some businesses in the area where the encounters occurred. Nevertheless, he advised that he is not aware of any economic studies documenting these effects. Associate Professor McPhee reached the same conclusion on potential effects for overall tourism, namely that 'impacts on tourist numbers at a locality are plausible but to my knowledge have not been independently assessed'.⁷⁷

2.78 Other witnesses also commented on the lack of reliable information about the connection between shark bites incidents and overall tourism activity. In response to questioning about statistics on visitor number to Western Australia published by Tourism Research Australia, Mr Bradley Woods, Chief Executive Officer/Executive Director, Australian Hotels Association (WA), stated:

Yes, there has been growth, but the growth has not been at the same degree as national growth. The national visitation growth, particularly from Chinese visitors to Australia, has been substantially higher than Western Australia. We are not achieving the growth performance that we could be achieving. I'm just referring to the [Tourism Research Australia] research in that sense. Whether it is shark related, I have no evidence that we can find because there's just no work in that space.⁷⁸

2.79 In commenting on how to assess whether shark encounters affect tourism or economic activity more broadly, Associate Professor McPhee added that any 'redistribution of expenditure and activity within and between regional communities' would need to be taken into account as part of a 'credible economic study'. He explained:

A person is unlikely to cease spending all their money in an area, even if they change their leisure behaviour in response to a series of shark bites. They either substitute their expenditure for other activities in the same area or the same activity in another area (or most likely a combination of both). Economic activity may not be lost – rather it is redistributed. Anecdotal information from Western Australia is that after the series of shark bites in the greater Perth region, the sale of home pools increased, as did the patronage at some public pools. I stress that this is anecdotal information, but it is an example of the types of hypotheses that could be tested through economic studies.⁷⁹

76 Global Marine Enclosures, *Submission 31*, p. 4.

77 Associate Professor Daryl McPhee, *Submission 58*, p. 6.

78 Mr Bradley Woods, Chief Executive Officer/Executive Director, Australian Hotels Association (WA), *Committee Hansard*, 28 July 2017, p. 13.

79 Associate Professor Daryl McPhee, *Submission 58*, p. 6.

2.80 The submission from the Queensland Government's Department of Agriculture and Fisheries approached the relationship between shark encounters and tourism from a different perspective. It presented the following counterfactual statement which argued that the shark control measures used in the state support tourism, and the absence of those measures would have negative effects for the tourism sector:

Queensland's beaches are marketed locally and internationally as being safe with regard to shark attack. If Queensland did not maintain a shark control program there would be increased shark activity at popular beaches and possible fatalities with resultant tourist booking cancellations, and other negative economic impacts on regional economies.⁸⁰

2.81 HSI argued, however, that the replacement of lethal shark control measures such as those used by the Queensland Government with non-lethal measures (the various lethal and non-lethal measures are discussed in subsequent chapters) would support the tourism sector. It explained:

We recognise that tourism may benefit from the restoration of public confidence in beach safety and a reduction in shark attacks. We consider that the implementation of effective non-lethal shark mitigation and deterrence measures would support the tourism industry by achieving these outcomes.⁸¹

2.82 Others expressed scepticism about or directly challenged claims of negative economic consequences from shark encounters. For example, Sea Shepherd Australia submitted:

Comments, opinions and beliefs are not independent and are not evidence based. More to the point, there is no source data that supports the assertion that the tourism industry is affected by shark encounters.⁸²

2.83 Similarly, the NSW Young Lawyers Animal Law Committee (ALC) argued 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'.⁸³ The ALC's evidence on the impact of shark bites on tourism instead centred on published data. The ALC noted that national figures on inbound tourism published by Tourism Australia indicate an increase in tourist numbers of 8.2 per cent from 2014.⁸⁴ On regional effects, the ALC noted 'reports of reductions in wages from retail surf outlets' and 'reductions in membership numbers and financial contributions to

80 Queensland Department of Agriculture and Fisheries, *Submission 32*, p. 6.

81 HSI, *Submission 43*, pp. 24–25

82 Sea Shepherd Australia, *Submission 57*, p. 19.

83 NSW Young Lawyers Animal Law Committee, *Submission 61*, pp. 10–11.

84 NSW Young Lawyers Animal Law Committee, *Submission 61*, pp. 10–11. See also Sea Shepherd Australia, *Submission 57*, p. 23.

Surf Life Saving Clubs', but argued that 'there is insufficient evidence of a connection between those reports and shark encounters'.⁸⁵

2.84 One of the examples provided by Sea Shepherd Australia in its submission centred on the fatal shark attack that occurred in September 2014 at Byron Bay. Using information published by Destination NSW, Sea Shepherd argued that for the year ending March 2015, 'domestic and international travel to the Northern Rivers sub-region of the Far North Coast all increased'. Sea Shepherd added:

Travel to the area also significantly exceeded visits to regional New South Wales as a whole, with domestic overnight travel to the subregion up by 14.3% on the previous year, compared to a 4.1% increase to regional New South Wales. There was also a significant increase in expenditure in the sub-region for the year ending March 2015 across both domestic and international travellers, with domestic overnight travellers spending 13.5% more than the previous year.⁸⁶

2.85 On potential effects on the number of beach visitations, Sea Shepherd Australia argued that the available data 'does not in any way suggest that shark attacks are scaring residents and tourists away from the ocean'; rather, the data indicate that 'beach attendance has ebbed and flowed regardless of the shark control measures and shark encounters'.⁸⁷ One of the examples presented by Sea Shepherd Australia indicates that, in Western Australia, beach visitations increased at beaches where fatal shark attacks occurred. Sea Shepherd's submission explained:

...Bunker Bay, the scene of Kyle Burden's tragic death in November 2011, saw beach attendance increase nearly 34% the next year; from 89,783 in 2011/12 to 119,947 in 2012/13. Margaret River – which experienced a fatal shark attack at nearby Gracetown in August 2010 – saw beach attendance nearly double from 73,592 in 2009/10 to 140,047 in 2010/11. Busselton, which experienced a fatality at nearby Port Geographe Marina in March 2012, likewise saw an increase in beach attendance, more than tripling from 525 in 2011/12 to 1,658 in 2012/13.⁸⁸

2.86 Sea Shepherd Australia added that a survey of New South Wales and South Australian beachgoers conducted by researchers at Flinders University concluded that beachgoers 'don't choose beaches based on whether there are shark attack prevention measures in place'. Instead, 'the landscape/views, and popularity of the beach were the two principal drivers of beach choice'.⁸⁹

85 NSW Young Lawyers Animal Law Committee, *Submission 61*, pp. 10–11.

86 Sea Shepherd Australia, *Submission 57*, p. 25 (emphasis omitted).

87 Sea Shepherd Australia, *Submission 57*, pp. 23–24.

88 Sea Shepherd Australia, *Submission 57*, p. 23.

89 Sea Shepherd Australia, *Submission 57*, pp. 23–24.

2.87 Evidence given by representatives of Surf Life Saving NSW and the Australian Lifeguard Service also commented on the statistics available on beach visitations at patrolled beaches. They noted that the available data, 'whilst subjective', indicate that since the death of Tadashi Nakahara at Ballina in 2015, there has not been a discernible decrease in beach attendance'. This is 'despite all the, for want of a better word, hysteria that has been portrayed through the media about the region'.⁹⁰ It was also noted that overall membership numbers for lifesaving clubs in the area have been steady.⁹¹

2.88 The above observations notwithstanding, Mr Brett Manieri from the Australian Lifeguard Service added that visitations to certain unpatrolled beaches could have potentially declined. He explained:

It may be that we are seeing a continuation of not a great varying degree because swimmers and surfers had previously gone to unpatrolled locations. Quite a few of the beaches up there are patrolled locations and they are now moving to those locations and are swimming in the patrolled area and also at the netted location.⁹²

2.89 A New South Wales parliamentary committee considered the impact of shark attacks on tourism in a 2016 inquiry. In its report, that committee noted it had 'received no evidence suggesting that tourism or related industries (such as accommodation) had been affected on a state-wide level' by well-publicised shark attacks occurring in state waters.⁹³ However, at a regional level (the north coast and the mid north coast), the committee suggested the evidence available indicates that a cluster of shark attacks has a temporary impact on the activities that both tourists and residents undertake, and that this can have a consequent impact on local businesses. The committee concluded that further research is needed in this area.⁹⁴

2.90 Other factors relating to any relationship between shark encounters and tourism activity were also put forward in submissions.

90 Mr Brent Manieri, Australian Lifeguard Service, *Committee Hansard*, 16 March 2017, p. 12

91 Mr Andy Kent, Lifesaving Manager, Surf Life Saving NSW; *Committee Hansard*, 16 March 2017, p. 12

92 Mr Manieri referred to individuals living in the north coast of New South Wales who he knows now surf at netted areas. In addition, he noted that surf cameras at Lighthouse Beach, Ballina, indicate that surfers have moved to the netted, northern end of the beach. See Mr Brent Manieri, Australian Lifeguard Service, *Committee Hansard*, 16 March 2017, p. 16.

93 Legislative Assembly Committee on Investment, Industry and Regional Development, Parliament of NSW, *Management of sharks in New South Wales waters*, report 1/56, June 2016, p. 15.

94 Legislative Assembly Committee on Investment, Industry and Regional Development, *Management of sharks in New South Wales waters*, p. 22.

2.91 The Australian Marine Conservation Society (AMCS) argued that there are positive direct links between sharks and tourism, as interested tourists seek to see sharks in their natural environment. More generally, the AMCS argued that the role sharks play in maintaining a healthy marine environment is also beneficial for tourism.⁹⁵ The committee was also referred to tourism activity associated with a shark in Florida⁹⁶ and, outside of this inquiry, other environmental organisations have also suggested that eco-tourism would 'alter the way sharks are perceived'.⁹⁷

2.92 The Migaloo 2 Foundation, which offers marine educational activities using the yacht *Migaloo 2*, argued that negative effects of tourism from shark encounters can be linked to a mistaken belief in, and promotion of, lethal shark control measures that the Migaloo 2 Foundation consider are ineffective. It submitted:

The tourism industry has relied on fear and ignorance and active tourist operators to perpetuate the lie that Australia has shark nets so swimmer are safe, yet the current Shark net program does not net in an entire area as many people think. As this lie is exposed both locally and overseas tourist operators will instead need to rely on telling the truth to encourage tourists and people in general to visit their area.⁹⁸

2.93 Finally, some submitters commented on how the distribution of information about shark encounters could affect tourism. Returning to the topic of media reporting on shark encounters discussed previously, HSI submitted that the approach taken to reporting such events 'has not benefited tourism'. HSI argued:

The view espoused by media outlets is that there is a veritable swarm of sharks sitting off the Australian coast, this is not backed by science. The majority of these fear-mongering articles display a picture of a white shark with jaws open.⁹⁹

2.94 Mr Bradley Woods from Australian Hotels Association (WA) gave similar evidence regarding the impact of media reports that are widely distributed internationally. Mr Woods stated:

What we are concerned about is that sometimes, when these attacks occur, the international attention and the national attention could portray our beach line and our coastlines as unsafe destinations to the rest of the world. It's difficult, when we're marketing the attractiveness of the state from a tourism perspective, to then be countering the negativity of what are perceived to be unsafe beaches or coasts. Obviously, whilst each of these

95 Australian Marine Conservation Society, *Submission 38*, p. 10.

96 See Mr Tony Isaacson, DiveCareDare, *Committee Hansard*, 31 July 2017, p. 47.

97 Sea Shepherd Australia, 'Alternatives to drum lines and shark nets', www.seashepherd.org.au/apex-harmony/overview/alternatives.html (accessed 7 December 2016).

98 Migaloo 2 Foundation, *Submission 28*, p. 2.

99 HSI, *Submission 43*, p. 24.

deaths was tragic, in the context of the numbers over the last 17 years it is a balance, and there's a question there of what is realistic.¹⁰⁰

2.95 It was also suggested that the distribution of information about shark encounters via social media could similarly have negative implications for tourism and beach visitations over a wide geographic area. Surf Life Saving SA explained:

The example of this is sharks reported a significant distance from shore with community members then declining going to the beach even though there is no threat at that location. Many of these posts are shared overseas and interstate. We believe that this can cause a decline in beach visitation and have a knock on effect to tourism and local businesses.¹⁰¹

Anecdotal evidence regarding activities that may increase the risk of dangerous human–shark interactions

2.96 The final section of this chapter discusses anecdotal evidence received during this inquiry suggesting that certain activities may be placing other ocean users at heightened risk of encountering a dangerous shark.

Cage diving tourism

2.97 The activity most frequently referred to by witnesses and submitters is cage diving. Cage diving with white sharks is permitted in the Neptune Islands Group Marine Park in South Australia. The tourist operators use berley to attract sharks to viewing cages.¹⁰²

2.98 Concerns were expressed that cage diving conditions sharks to associate humans with food. For example, the Abalone Industry Association of South Australia (AIASA) submitted that berleying and teasing white sharks is essentially training white sharks that 'people in cages means food'.¹⁰³ Although abalone divers use motorised, submersible dive cages to protect themselves from sharks,¹⁰⁴ the AIASA believes the cage diving operations introduce risk. The AIASA explained:

Our number one concern is the use of teaser baits which sole purpose of use is to lure the shark closer to the thrill seeking tourist divers in the cage hanging from the boat. This thrill seeking is now an expectation of the tourists instilled by the two tourism operators permitted by the State Government. To keep the sharks coming back they are rewarded with

100 Mr Bradley Woods, Chief Executive Officer/Executive Director, Australian Hotels Association (WA), *Committee Hansard*, 28 July 2017, p. 7.

101 Surf Life Saving SA, *Submission 10*, p. 2.

102 Government of South Australia, *Submission 65*, p. 7.

103 Abalone Industry Association of South Australia, *Submission 70*, p. 2.

104 Government of South Australia, *Submission 65*, p. 5; Abalone Industry Association of South Australia, *Submission 70*, p. 1.

the chunk of meat on a rope lure from time to time. The same way humans have been training animals for 1000s of years.

We believe this practice is leading to [great white sharks] associating people in cages with food. Our work diving operation employs the use of underwater cages to provide protection from [great white sharks]. However our cages cannot be structurally built the same as they must be manoeuvrable and we need to work from them to harvest abalone. We allege that this practice is the reason why we are encountering a younger cohort of aggressive sharks buzzing us while we are working.¹⁰⁵

2.99 Mr Russell Morey, who is a commercial fisherman in Western Australia, also objected to cage diving. Mr Morey stated:

Cage diving would probably be the worst thing that has happened with great whites. You couldn't do a worse thing with a wild animal that's a top-end predator—putting humans in the water, in a cage, and feeding the sharks continuously in the same place, for the pleasure of a handful of people, endangering the rest of the people who get in the ocean. I would like to see those people get out of their cages. If there is no reason, if they're not an animal that will attack them, what's the cage for?¹⁰⁶

2.100 Others, however, suggested that cage diving can be regulated appropriately and ethical, depending on the use of bait. For example, Mr Blair Ranford stated that, in his view, when cage diving is 'done ethically, which is to say, with a very minimal amount of bait et cetera, I don't believe it increases my risk'.¹⁰⁷ Mr Tony Isaacson commented that the use of chumming for cage diving 'is quite controversial'. He suggested that, based on an expedition in which he participated, sharks appeared to have learnt to associate the boat with food. Mr Isaacson added, however, that cage diving can use other techniques, such as playing music, which are effective in attracting sharks.¹⁰⁸

2.101 CSIRO referred to research conducted at the Neptune Islands which indicated that sharks increased residency for a short amount of time in the area where cage diving occurred. The following explanation of the research project and findings was provided:

The Neptune Islands consist, largely, of a northern and a southern group of islands. The southern group does not get cage dived very often, so that was used as a control region. In the northern group, cage diving happens on a very regular basis. So we were able to look at differences between those

105 Abalone Industry Association of South Australia, *Submission 70*, p. 1.

106 Mr Russell Morey, *Committee Hansard*, 28 July 2017, p. 51.

107 Mr Ranford added that one of the locations used for cage diving is at a seal colony so 'the sharks are already there'. Mr Ranford stated the sharks are 'not meant to be fed baits, so if it's done well it's actually meant to be safe'. Mr Blair Ranford, *Committee Hansard*, 28 July 2017, pp. 64–65.

108 Mr Tony Isaacson, *DiveCareDare*, *Committee Hansard*, 31 July 2017, p. 50.

two groups. They're only 12 kilometres apart, I believe. Yes, we did see some differences and we do have a scientific publication on that...The main finding was that sharks do increase their residency in that area where shark diving is occurring...but it wasn't a substantial increase in time.¹⁰⁹

2.102 CSIRO subsequently advised that, to date, 'all published research on the effects of shark cage diving tourism on shark behaviour have been ecological in nature'. That is, a specific scientific investigation has not been undertaken into whether sharks are being conditioned to associate vessels and humans with food or to become more aggressive. Nevertheless, CSIRO referred the committee to findings that, based on the information currently available, suggested such responses were unlikely.¹¹⁰

2.103 The Government of South Australia submitted that it 'strictly regulates' cage diving activities undertaken in its jurisdiction. Furthermore, the Government submitted that '[t]here is no scientific evidence to suggest that the risk of shark attack to the general public is increased by shark-related tourism activities'.¹¹¹ This evidence was supported by CSIRO, which advised that:

It should be noted that, in the shark cage dive industry, they're fairly well regulated in that they do put out berley to attract sharks to the boat. The berley does not feed the sharks—it's tiny pieces of fish, oil and blood. It may increase the local fish population, but we don't know that. The industry is not permitted to feed the sharks. They do have teaser baits, and they make every effort not to feed the sharks those teaser baits. It's not a case of the industry actively attracting sharks through feeding them.¹¹²

2.104 Nevertheless, the South Australian Government advised that research in undertaken to monitor shark residency and that management of the cage diving industry would be reviewed 'should scientific evidence arise showing that this activity has created a risk for marine users'.¹¹³

109 Russell Bradford, Senior Experimental Scientist, CSIRO, *Committee Hansard*, 20 October 2017, p. 13.

110 CSIRO, Answers to questions on notice, 20 October 2017 (received 23 November 2017), p. 3. The research referred to by CSIRO is BD Bruce, *A review of cage diving impacts on white shark behaviour and recommendations for research and the industry's management in New Zealand*, Report for the Department of Conservation, New Zealand, 2015.

111 Government of South Australia, *Submission 65*, p. 7.

112 Russell Bradford, CSIRO, *Committee Hansard*, 20 October 2017, p. 14.

113 Government of South Australia, *Submission 65*, p. 7.

Fishing activities

2.105 Various submitters referred to sharks being attracted to fishing-related activities. Crayfishing is one particular type of fishing activity that was commented on. Mr Leon Deschamps remarked that, in his view, 'you would be a madman to surf at a crayfish break that has a bunch of pots on it'. Mr Deschamps added:

Near berley water, sharks are put into a feeding response. When you do the maths, there are a lot of pots. I have worked as a cray fisherman. As you probably well know, you are putting two to three kilos of bait into each pot. When you magnify that the volume of pots along the Western Australian coastline, that is a lot of bait in a limited amount of water.¹¹⁴

2.106 However, Mr Blair Ranford argued that whether crayfishing is linked to the risk of shark bite is unclear at present as scientific evidence on this matter does not exist. Nevertheless, it was suggested that crayfishing activities should be restricted in some areas as a precaution. Mr Ranford stated:

...in an area I surf in the south-west—Yallingup—it is not uncommon, as we get into September, October, November, to have upwards of 200 crayfish pots only 500 metres offshore from Yallingup main break, one of the main surfing breaks. I've worked on a cray boat in the past. You're looking at an average of one to 1½ kilos per pot. So in this particular area you are looking at probably 250 kilos of bait in the water 500 metres offshore of one of the south-west's premier surf breaks. It's not a case of saying that we're trying to stop crayfishing; we're simply saying that it should, by, I guess, sheer common sense, be excluded from areas that—like the Ngari Capes Marine Park is designated—are set aside as special surfing reserves. I just think having 250 kilos of bait sitting off the back of a popular surf break can't make sense, and it does concern all the surfers.¹¹⁵

2.107 Others dismissed the suggestion that crayfishing resulted in higher risk. Mr Morey asserted that the idea that surfers should not surf near crayfish pots because of a heightened risk of sharks is 'complete nonsense'. Mr Morey reasoned that sharks 'only eat mammals, and they eat large fish'. Therefore, Mr Morey argued that the craypots and the small fish used for bait would not be of interest to a white shark.¹¹⁶

2.108 Mr Ian Wiese commented on the annual salmon migration that occurs in the waters off the south west of Western Australia in March to April each year. Mr Wiese commented that sharks follow salmon schools, and filming of the area indicated that catch and release recreational fishing attracts sharks. Mr Wiese suggested that this 'creates a dangerous situation that is inadequately understood and managed at present'.

114 Mr Leon Deschamps, *Committee Hansard*, 28 July 2017, p. 29.

115 Mr Blair Ranford, *Committee Hansard*, 28 July 2017, p. 64.

116 Mr Russell Morey, *Committee Hansard*, 28 July 2017, p. 51.

Mr Wiese argued that the processing of salmon on beach should be banned to avoid carcasses being disposed of in the water.¹¹⁷

2.109 Finally, this section reports the evidence received by the committee regarding trophy hunting. Mr Deschamps referred to trophy hunting incidents that have occurred at Shark Bay, Western Australia. In describing these incidents, Mr Deschamps advised that it is currently legal to berley up to the renowned Monkey Mia dolphin beach. Mr Deschamps also noted that, as sharks are treated as fish rather than animals for the purposes of animal welfare legislation, sharks can be caught and skull-dragged.¹¹⁸ Mr Deschamps argued that, in his view, the combination of these factors places people at risk. Mr Deschamps explained:

At present, trophy hunters can come to our beaches and, thanks to sharks being removed as animals and turned into a fish, there is now no humane treatment laws for sharks. So you can catch a shark and skull-drag it up the beach on your quad bike. It can be a pregnant female with 80 pups in it. You can sit on it and then maybe feel good about pushing it back into the water for your Instagram photo because it swam away. Yes, you will get a thousand Instagram likes but you just maimed an animal. Not only did you maim that animal but you have now created a potential predator. You have created a potential predator on a beach where our tourism industry relies on having a positive relationship with sharks.¹¹⁹

2.110 Mr Deschamps referred to a specific incident in Shark Bay, Western Australia, during a recent school holiday period involving a trophy hunter. Mr Deschamps explained how, in his view, the actions of the trophy hunter endangered those nearby:

You can put berley in where our iconic Monkey Mia dolphins come to—where they bring their babies to the delight of 100,000 people every single year—and drag a shark through the shallows. In the last school holidays, our boat kayak business had a gentleman hire a kayak, take the kayak directly into the channel 150 metres from the Monkey Mia jetty, put a tuna head on, catch a tiger shark and then try to skull drag it into the shallows through swimming school children. That is legal! That is completely okay! Locals ended up cutting the fishing line. Can you imagine what that could do for our tourism industry? Can you imagine what that could do for the RAC Monkey Mia Resort and the millions they have put into renovations had that shark brushed against a child. It would not even need to bite a child. The guy was using gang hooks. It was utterly ludicrous.¹²⁰

117 Mr Ian Wiese, *Submission 72*, pp. 1–2, 18.

118 Sharks are not covered by Western Australian animal cruelty legislation as they are categorised as fish rather than animals (see *Animal Welfare Act 2002* (WA), s. 5(1)). The taking or unlawful possession of threatened species is protected by *Wildlife Conservation Act 1950* (WA) and, in Commonwealth areas, the EPBC Act.

119 Mr Leon Deschamps, *Committee Hansard*, 28 July 2017, p. 29.

120 Mr Leon Deschamps, *Committee Hansard*, 28 July 2017, p. 29.