The Efficacy and Regulation of Shark Mitigation and Deterrent Measures

Submission to: Senate Environment and Communications References Committee

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February 2017

As a commercial diver and fisherman with over 35 years of diverse experience I write this submission due to my ever-increasing concerns about policies governing management of and research into shark populations.

I began snorkelling at the age of 7 and was a keen spear fisherman and surfer for decades although I am currently no longer active in these sports. (partly due to increasing negative shark incidents)

I have a BSc. In marine science from Flinders University and have completed a number of years of marine research.

Over more than four decades I have spent tens of thousands of hours observing and studying the marine environment.

In recent years, particularly after my friends Peter Clarkson and Greg Pickering were attacked by white sharks, I have been researching shark attacks, shark behaviour and the possible factors influencing negative shark/ human interactions. I have also witnessed aggressive shark behaviour first hand but have luckily escaped serious injury…. so far.

I currently work as an abalone diver in the South Australian Central Zone Abalone Fishery.

THIS IS A MAJOR WORKPLACE SAFETY ISSUE FOR ME!

THE BAITING AND HARASSMENT OF SHARKS FOR TOURISM AND SCIENTIFIC RESEARCH

Despite legislation deeming the berleying, baiting, approach and harassment of white sharks illegal, governments grant exemptions and licences to tourism operators and scientists to conduct these activities. Despite years of research and observation, the level of conditioning of sharks by repeated berleying and baiting is still poorly understood and documented. However, case studies of activities involving the regular feeding of wild animals by humans and the associated conditioning have proven that negative effects are associated with this practice, including attacks on people!

DESPITE THIS THE SOUTH AUSTRALIAN GOVERNMENT LICENCES TWO TOURISM OPERATORS TO BERLEY AND BAIT WHITE SHARKS IN A “MARINE PARK SANCTUARY ZONE” AT NEPTUNE ISLANDS!

Official figures published by SARDI in December 2014 state that over 13 tonnes of baits and 9500 litres of berley were discharged by two shark cage operators, around divers suspended in cages at Neptune Islands, over a period of less than 12 months! This is despite an earlier report by CSIRO published in August 2011 urging the reduction of the use of berley and the size and amount of “teaser baits” used by the same cage diving operators! A third operator is not allowed to use baits and berley, presumably as part of a contradictory, harm mitigation strategy!

An acoustic tagging study published in “The Open Fish Science Journal” November 2015 proved that sharks regularly baited within inches of divers at Neptune Islands migrated in a matter of days to Liguanea Island, only a few kilometres from one of Port Lincoln’s most popular recreational and surfing beaches. Not surprisingly Fisheries Beach has a recent history of elevated numbers of

negative white shark incidents! Peter Clarkson lost his life in a shark attack involving multiple white sharks at a location no more than a days' swim for a white shark from the baiting sites at Neptunes!

Acoustic tagging studies have proven that white sharks baited for cage diving at Neptunes migrate around the surfing beaches of Western Australia and South Australia. A distressed white shark, acoustically tagged at Neptunes, was filmed beaching itself at Coronation Beach near Geraldton.

Recent satellite tagging in N.S.W. has proven white sharks migrate from there to waters around The Neptune Islands. White shark migrations have also been documented between New Zealand and Australia's East Coast and between Neptunes and New Zealand. (shark cage diving is now being conducted around Stewart Island in New Zealand despite controversy and public opposition)

In July, 2012 the W.A. Department of Fisheries published a media release "WA Says No to Shark Cage Tourism". Among other things this statement raised concerns about potential changes in behaviour patterns of white sharks exposed to shark cage diving! Other state governments like Tasmania have similar policies.

Everywhere shark cage tourism is conducted there is opposition to it and for obvious reasons! There is currently court action in progress in New Zealand aimed at stopping shark cage diving operations.

A search of uploaded You Tube footage will clearly show the type of aggressive behaviour solicited from white sharks within inches of divers in cages at The Neptune Islands. Sharks consume numerous baits! This can affect natural feeding behaviour and animal nutrition!

I personally live in fear of encountering these harassed and baited white sharks! White shark baiting for cage diving has greatly increased over the last decade, as has shark baiting for science!

Not surprisingly we are seeing increasing negative shark/ human/ vessel interactions and I believe baiting white sharks for cage diving, close to wetsuit clad divers, suspended in berley streams from boats, on a regular basis, is one of the reasons for this.

Before the expansion of the shark cage diving operator's activities at Neptunes abalone divers were able to dive there all day, without a cage and experience few, if any, negative white shark encounters. My friend of over 40 years, Greg Pickering, survivor of two shark attacks, used to snorkel and spearfish at Neptunes without incident. Due to the government policy allowing the regular baiting of white sharks around boats and divers in cages, no-one would dare dive at Neptunes outside of a cage now! In fact, boats that arrive at Neptunes are often quickly approached by white sharks without any berley or bait being discharged! This is not normal white shark behaviour!

Marketing the west coast of South Australia as the "White Shark Hot Spot" for Australia may bring in FIFO tourists that only go shark cage diving and then leave but what effects does this have on other coastal tourism operators and businesses in this region? How many divers, surfers, swimmers etc. avoid holidaying in this region due to the marketing of the three, white shark cage diving businesses? Cage diving has no future for expansion! Are white sharks that are regularly harassed and baited close to wetsuit clad divers more likely to approach, harass and bite people and their vessels when they migrate away from Neptunes? Shark attacks and incidents and images of aggressive white sharks snapping at baits and cages are not good publicity for regional businesses!

Recently established Marine Parks were marketed as greatly increasing the potential for marine tourism opportunities. The shark cage diving companies could transition into less invasive forms of marine tourism with greater potential for growth and expansion!

The temperate waters of South Australia have a much greater diversity of marine life than the Great Barrier Reef! This could be marketed instead of the aggressive behaviour of baited sharks!

MY RECOMMENDATIONS

Science has proven that white sharks migrate between the Australian states and New Zealand. White shark management policies and legislation should be made UNIFORM throughout Australian waters. Baiting and harassment of white sharks for tourism should be phased out and banned. Shark cage tourism operators should not be exempted from Shark Protection and Marine Park Sanctuary Zone and Fisheries Legislation. The limited financial gains to the community, no potential for industry growth and poorly understood, potentially long ranging and long term negative white shark behavioural effects, make shark cage diving a risky activity! A gamble responsible governments should not be allowing! The "PRECAUTIONARY PRINCIPLE" should always apply! The health, safety, and welfare of baited white sharks also needs to be taken into account. Marine Park Sanctuary Zone and Fisheries regulations designed to protect sharks, people and the environment should be respected, upheld and enforced! The Neptune Islands are definitely not a "Sanctuary Zone" for white sharks!

SHARK SCIENCE NEEDS TO BE PLACED UNDER SCRUTINY

The amount of scientific interference with sharks has increased exponentially during the last decade. Despite this we have many uncertainties, contradictions and more questions than answers arising from the resulting, disorganised, unstructured and often difficult to access archive of shark research data. Much of this shark research is impacted and influenced by corporate and political conflicts of interest.

I believe there are many improvements that can be made to the way shark research is being conducted! Better value outcomes and returns from the limited resources and millions of dollars invested in shark research and a more integrated and accessible body of knowledge could be achieved. How much of this research is conducted purely to increase a researcher's personal "h-index"?

New technologies have resulted in thousands of sharks being fitted with electronic tagging devices but the effects of these tags and the tagging process on a shark's behaviour and welfare are poorly understood! Despite this shark tagging programs continue to be sanctioned without necessary diligence and caution.

Pictures of dorsal fin damage from fin mounted devices like SPOT tags are freely available on the internet. Scientists assume that a shark with a tagging device bolted or clamped to its' dorsal fin behaves "naturally" but is this a fair assumption? As opposed to the tags attached via drilled holes and bolts through dorsal fins, can the supposedly less damaging and invasive clamp-on tags result in nerve damage and/ or compromised tissue perfusion to a shark's fin? If an attached tagging device and/ or the tagging process affects shark behaviour in poorly understood degrees of what value is the limited datum these tags provide? Examples of different degrees of, particularly, early post tagging behavioural reactions and associated problems have been officially documented!

Acoustic tags are either harpooned into a shark's flank or, more recently, stitched into the peritoneal cavity. The latter technique was developed due to the unreliable, physical nature of external tags due to issues such as detachment and biofouling. Damage to shark's skin and flesh and lesions at and around the barbed attachment site of external tags have been documented in a number of "misfortunate" animals! No-one can accurately determine mortality rates of animals associated with

particularly internal, acoustic tagging. Images freely available on the internet clearly show poor surgical techniques conducted without gloves and under non-sterile conditions! The internal tags have untested casings and contain lithium batteries with a life of approximately 10 years.

What happens when the lithium batteries expire and begin to degrade inside tagged animals or if an electronic fault or other issue causes casing failure? If the lithium batteries come into contact with a shark's internal organs it would become sick, suffer and ultimately die!

Before internal tagging, a shark is baited and hooked, often resulting in jaw damage. Such damage to joints or ligaments or infection can result in permanent deformity and/ or disability and possible future feeding impairment or mortality. The animal is then rolled over into a state of "tonic immobility". At this time an animal, such as a white shark (ram ventilator) or bull shark may become "anoxic" and stressed, potentially causing permanent injury and/ or impairment or even mortality. Published scientific research has proven, via blood testing, that the state of "tonic immobility" can result in stress responses in a shark! (Figures 1 & 2)

The frequencies emitted by acoustic, shark tags (69kHz 150-162db, Vemco V16) are virtually the same as those used in Dolphin Pingers (70kHz 145db) which are scientifically proven to alert dolphins to a potential threat such as a net. Audiograms suggest other marine animals such as seals and whales can hear this signal. There is a likelihood that a shark's prey can be alerted by the tag signal enabling them to evade predation (cat collar effect) and predators like killer whales can be alerted to the presence of a shark making it an easier target for predation (dinner bell effect). The effects of the acoustic tag and its' signal constantly pinging inside and/ or around a shark are not understood. Are these effects the same for every animal? I doubt it!

The combined effects of a number of acoustic tagging devices in one area on marine life such as dolphins and whales is also poorly understood. (locations like Ningaloo play host to hundreds of acoustically tagged animals). Is this acoustic "noise" and the tags themselves actually a form of marine pollution?

It is my belief that some unfortunate sharks have been fitted with more than one acoustic tagging device as well as a dorsal fin mounted device! (figure 3)

The acoustic receivers, deployed in arrays or singularly, detect acoustic tag signals from tagged animals that come within range of the receivers. Detection ranges are unpredictable and can vary with time and sea and weather conditions. Tag signals are not always successfully detected by receivers for many reasons, bio-foul, sea-state, ambient noise, attenuation, interference and aspect are a few of these. Potentially, tagged sharks may regularly frequent an area and not always be detected by receivers. Obviously acoustically tagged sharks can't be detected in most areas due to limited receiver localities! Acoustic data is not reliable and extremely limited. Without accessory information like three dimensional, physical and chemical oceanographic data, details of available food sources and physiological information about the sharks themselves such as stomach contents and fecundity, limited movement data from acoustic tags creates more questions than it delivers answers! No wonder shark "experts" can't even define population numbers despite all the tags and receivers that have been deployed! Despite extensive tagging studies one well known, government shark scientist was quoted as saying white shark movements were "like a bag of dropped marbles"!

Why do governments and the majority of shark scientists support the wholesale acoustic tagging of such large numbers of sharks? Limited research dollars and resources could be allocated to programs that generate more reliable and useful information.

It is my understanding that acoustically tagged white sharks were detected in the area prior to the attacks on both Jay Muscatt and Sean Pollard in late 2014. I was informed that one of the two white sharks caught immediately after Sean's attack had previously been tagged, possibly at Neptunes!

IS AN INJURED, STRESSED, HUNGRY AND HARASSED SHARK MORE LIKELY TO ATTACK A PERSON?

Figures 1 and 2 (note the lack of sterile procedures and hook injuries!)

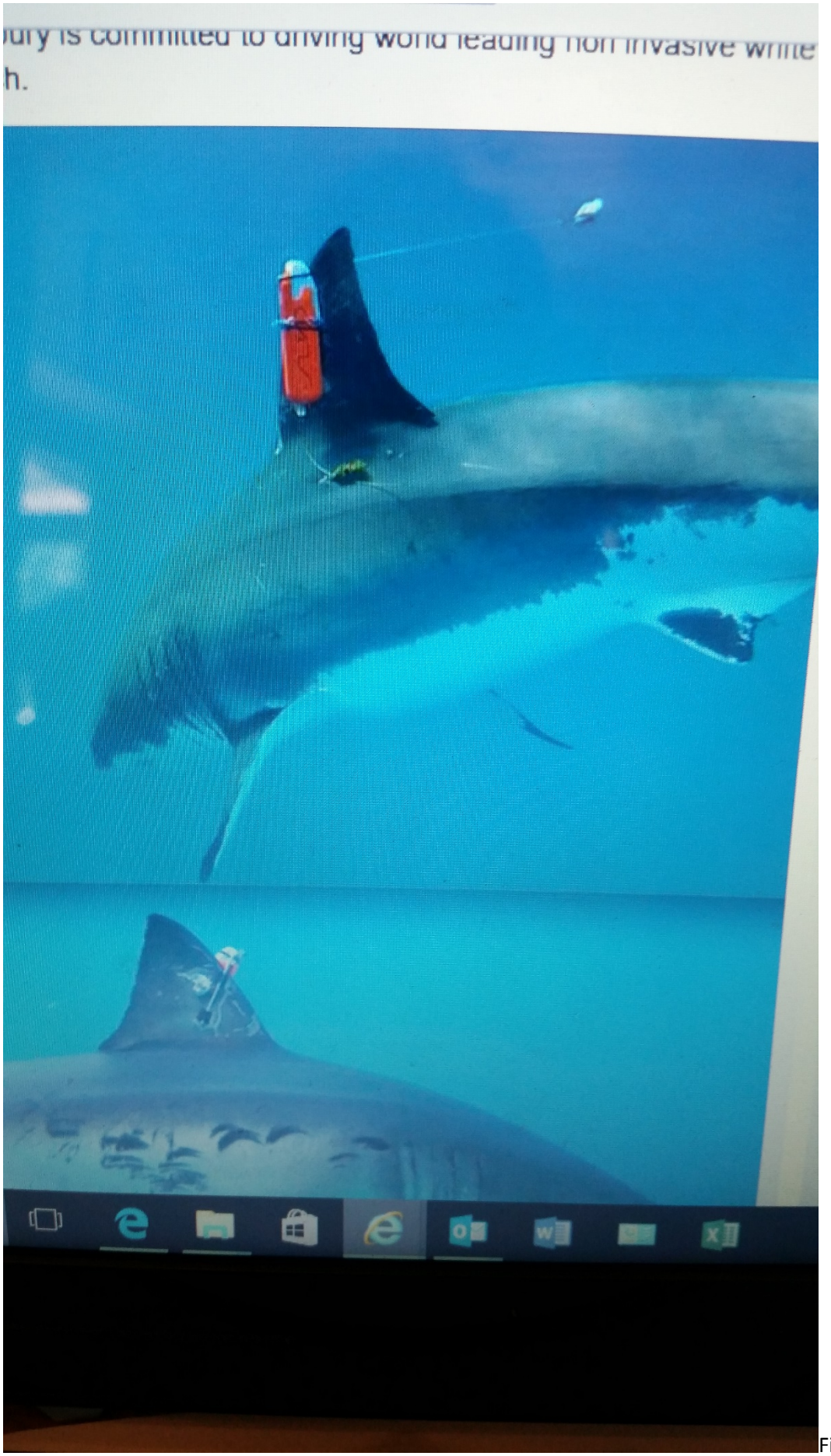
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Figure 3

Figure 3 (page 6)

(note the degrading, acoustic tag and the “clamp on” dorsal tag with snagged fishing line)

MY RECOMMENDATIONS

A single, national, uniform, independent ethics approval system needs to be established for shark research proposals, especially those that involve berleying, baiting and tagging! Current ethics approval processes are antiquated, disjointed and in desperate need of review! A suitably qualified and experienced veterinary surgeon should review any research proposal before an ethics approval is granted.

“Real time” shark detections from VR4 receivers or archival VR2 receiver data can-not be relied upon and should never be considered as a dependable shark warning system!

Future shark tagging should only be allowed in limited circumstances where it can be clearly proven that the tagging is necessary and the associated research has clear aims and objectives. Duplication and research “for the sake of it” should be identified and declined as part of the ethics approval process.

Any tagged animals must be immediately listed on a single register along with the details of the tagged animal and the attached tagging device(s). This must be a condition of any licence and/ or exemption granted and part of the ethics approval process. This register to be made readily available and accessible to all interested parties.

An article in “The Guardian” 14/1/2014 reported that a prominent shark researcher, associated with a cage diving operation at The Neptunes, threatened to with-hold his tagging data after a “catch and kill” order was issued for a tagged white shark under the Western Australian Government’s “Imminent Threat Policy”. As part of any researcher’s approval process it should be a condition that all their data, including photographic archives, DNA and tagging records, be uploaded to an integrated data base and made freely available to any interested parties! This will ensure that the best possible research outcomes and opportunities can be achieved from that integrated data base!

Any recaptured sharks implanted with internal, acoustic tags should have the devices removed. No further internal acoustic tags should be implanted in sharks as part of the ethics approval process.

Research proposals involving the hooking of sharks and “tonic immobility” of ram ventilators should be denied as part of the ethics approval process.

Less invasive methods of shark research should be encouraged like photo identification, public reporting and DNA sampling.

A national procedure for shark necropsies should be formulated and followed when specimens become available. Deceased or mortally injured sharks should be collected and used for research purposes whenever possible. If sharks are caught in relation to an attack or incident, independent, suitably qualified, forensic investigators should supervise any necropsies or other investigations. DNA should be collected from potential sources like teeth or tooth fragments and compared to the national data base in an effort to identify any shark or sharks responsible and their history. This is especially important if a coronial inquest is likely to be held!

A national, uniform, community information and warning procedure should be formulated and followed prior to any shark research, especially when it involves berleying and baiting.

THE USE OF MESH NETS AND DRUM LINES AS A SHARK MITIGATION AND DETERRENT TECHNIQUE

Despite mesh netting programs being in operation off Sydney beaches since 1937 and further nets being deployed off Wollongong and Newcastle in 1949 and Central Coast beaches in 1987 it appears that little has been done to define their effectiveness as a shark mitigation and deterrent measure.

We are now witnessing a North Coast shark meshing trial put in place in an attempt to gauge these net's effectiveness. So-called "smart" drumlines are also being "trialled". Scientists from NSW DPI are implementing this trial.

Large, dangerous sharks are being relocated if they remain alive and "viable" after capture. Immediately this action changes the operational procedures relative to the "traditional" shark meshing programs. Animals caught and released from drumlines add another potentially dangerous variable to this trial.

Sharks are being tagged "where safe and practical to do so" although the Management Plan does not state the type of tagging devices that will be used or the aims and objectives of this tagging! I am concerned about the release of injured and tagged animals despite relocation attempts! It is likely released animals will either return to the surfing beaches, injured and stressed, or eventually die from capture stress and/ or their injuries. How will scientists quantify and report on consequent mortality rates?

It seems to me that this trial, like much of the shark science being conducted, will result in ambiguous results and more questions than answers. Is this trial a wise and acceptable investment of taxpayer's money? Like much of the shark research involving invasive procedures, which usually generates ambiguous results, is this trial ETHICAL?

Then there is the bycatch! What a "can of worms" (or dead manta rays)! Surely after all the time mesh netting programs have been in operation the scientists and managers should have defined their effectiveness! This appears to be another example where the science and management has been poorly conducted and needs to be placed under scrutiny, especially when bycatch figures are considered!

MY RECOMMENDATIONS

Commercial shark fishing has been substantially reduced over the last two to three decades. Despite an inability of scientists to define shark number dynamics, reports I have heard from fishermen suggest a healthy recovery of many shark populations in Australia. An increase in the level of commercial shark fishing has the potential to reduce problem shark numbers with much less bycatch mortality than mesh nets and drumlines. At the same time this would create income and employment for regional communities as compared to the cost to the taxpayer associated with mesh net and drumline programs. Fishing operations could be carefully monitored and conducted sustainably. Commercial fishing operations could also be used as a cost-effective vehicle for research. Current, wasteful, expensive mesh netting programs could potentially be phased out and replaced by productive fishing. Seafood caught sustainably in Australia and branded as such, offsets imports of seafood produced unsustainably overseas.

"CLEVER BUOY" SONAR DETECTION SYSTEMS

From my knowledge of geophysics and extensive use of echo sounders I believe that the current "Clever Buoy" has been taken to market far too soon. Due to the dynamic nature of shoaling, surf beaches, sonar technology may never be suitable as a reliable shark detection system for such environments. The homogenous nature of a shark's body (apart from the teeth) combined with suspended sediment, seaweed and air bubbles common in surf beach water columns, along with rapidly changing water depths and interference from the sea bed, will make it near impossible to adapt sonar software and hardware to allow the reliable detection of sharks under all these potential variables and conditions.

The effects of sonar signals on animals like whales and dolphins needs to be further investigated by conducting an extensive environmental impact assessment!

Perhaps, for these reasons, the current, surf beach trials of "Clever Buoy" have been pre-emptive, destined to fail and a waste of investors capital?

PERSONAL SHARK DETERRENTS

Despite the research and development directed into these devices it seems that there is an inability to accurately determine their effectiveness and failings. Political and corporate conflicts of interest seem to play a role in this.

Of all the deterrents on the market "Shark Shield" seems to be the device with the most potential. I know a person involved in the design of the antenna system for the current devices and a person that had the marketing rights for "Shark Shield" for some years. Both these people swear that the device is effective. Ironically two people I know personally, who provided testimonials for "Shark Shield", Peter Clarkson and Greg Pickering, have both been the victims of shark attack. I understand Peter, who lost his life in the attack, was using a "Shark Shield" at the time of the attack but Greg was not on both the occasions he has been bitten. I believe that Paul Buckland, who also lost his life in a shark attack, was using a "Shark Pod", the precursor to "Shark Shield", at the time of his attack.

I have concerns about the potential health effects that long-term exposure to the fields generated by these devices could cause, especially the "Shark Shield" technology placed in surfboards, where the generated field may affect a male surfer's reproductive organs as he sits on his surfboard. I wonder how much thought and research has been directed into this aspect of these devices?

I have owned three versions of "Shark Shield", starting with the "Shark Pod". My latest version, a "Freedom 7", flooded through a charging terminal "O-ring". I am yet to have it replaced or repaired.

I noted that the directions for the "Freedom 7" suggest that the unit can be damaged or its' performance affected by excessive heat in a vehicle or sunlight which I believe to be a huge limitation, especially in a hot country like Australia! These devices need to be robust and reliable.

Whilst I believe that the field generated by these devices may deter a "curious" shark I doubt if it would stop an animal committed to an attack from distance. My "Shark Shield" creates peace of mind for my wife although I rarely use it due to the unpleasant feeling when I come into contact with the antenna and concerns about long term exposure to the field it generates. (my average diving day is 8 hours' bottom time)

As far as other personal shark deterrents go I believe that time will be their testing ground. Sadly, the circumstances of future shark attacks may provide their testimonials.

LIVE EXPORT PROTOCOLS

It is my understanding that animal carcasses are routinely thrown overboard from live export vessels. Reports indicate that sharks have been known to follow these ships. The consumption of these carcasses by migratory sharks and their passage, with live export ships into coastal ports, needs to be investigated. Animal carcasses should not be allowed to be disposed of from these vessels whilst at sea!

THE NEED FOR UNIFORM POST SHARK ATTACK PROTOCOLS AND WARNING SYSTEMS

What has been learned from the aftermath of shark attacks?

Makeshift signs erected at attack sites by members of the public, warning of an earlier shark attack, are often seen in media coverage.

A number of shark attacks have occurred after potentially dangerous sharks had been seen or detected in the area in days prior to an attack. Could these attacks have been avoided if warning signs and/ or other warning systems were in place to alert beach goers of a potential danger?

As mentioned earlier in this submission, due to the unreliable nature of acoustic and satellite tag detections, the fact that an unknown percentage of the shark population is tagged and details of tagged sharks are often poorly documented and/ or unobtainable, tag detection data can never be relied upon as a shark warning system.

Despite being left behind after a number of shark attacks, teeth and tooth fragments are not routinely sampled for DNA. Macquarie University has the ability to sample DNA from shark's teeth. Despite being a virtually free addition to the shark DNA data base, DNA sampling is not routinely conducted during a shark attack investigation. This information, especially if kept in an archive, could identify a shark responsible for an attack and its' history. Surely this is valuable information that could help us understand why some sharks attack humans! Why is this not routinely done?

When practical, acoustic receivers should be deployed as soon as possible after a shark attack in the area surrounding the attack site. Details of any acoustically tagged sharks detected should be documented. If acoustic receivers are not available, archival tag data should be accessed and any tagged sharks that may have been in the vicinity of a shark attack should be recorded as part of the investigative process.

If sharks remain in the location of an attack, a decision should me made whether to catch and relocate or necropsy them in order to determine if they were responsible for the attack. Setting drum lines could be considered even if no tagged sharks are detected. Any sharks caught immediately after an attack would have the potential to provide more useful and relevant information than animals randomly targeted by mesh nets or drumlines. In some cases, body parts and other evidence could be recovered if a shark responsible for an attack was caught. Bite dimensions and/or teeth samples from living animals should also be used to investigate attacks.

The type of shark deterrents and/ or warning systems being used at the time of any shark attacks and details of their use and possible failings should be documented.

Details of prevailing conditions and any other relevant observations at the time of the attack should be accurately documented

People exposed to the trauma of shark attacks including first responders, police, ambulance and hospital staff should be provided with follow up trauma counselling and support.

After a fatal shark attack on a spear fisherman off Yorke Peninsula I spoke with a police officer who advised me that she had no formal support network to offer people affected by the trauma of this attack. Ironically, to a degree, she was one of those people! She suggested that, as a respected, veteran diver, I contact several of the young divers that witnessed this horrific attack and offer them my support. I had previously been supporting my friend Greg Pickering after he survived a white shark attack. Greg was greatly assisted by counselling offered by the hospital that he attended in Perth after his attack. I have since become involved with a group called “The Bite Club” established by shark attack survivors as a support group. The peer support of this group has helped me deal with the trauma associated with my friends being attacked by sharks!

MY RECOMENDATIONS

A uniform, national shark attack response protocol should be formulated and put in place.

Wherever practical local police departments, fisheries officers, park rangers and/ or surf lifesaving clubs could be involved in erecting official warning signs at beaches where sharks had been recently seen and as soon as possible after shark attacks and incidents.

Fisheries research and compliance departments and/ or water police should have uniform, national shark attack response protocols formulated and in place. Post attack shark detection, capture and sampling techniques should be established and information collected and documented so any investigation can lead to an increased understanding of the factors associated with shark attacks and incidents. This information could help in the prevention of future attacks!

A comprehensive, national shark attack information register be set up and maintained and managed by a recognised government organisation like the CSIRO. This would help us better understand the factors contributing to shark attacks and incidents and in some cases, identify the animals involved and their history. Such a register should be made freely available to any interested parties.

Support services for those affected by the trauma associated with shark attack should be made easily and freely available. Governments need to provide increased funding to mental health services. Early intervention and on-going support for trauma victims is essential to reduce the incidence of post-traumatic stress disorder in our communities and allow trauma victims to return, as much as possible, to a functional life in society.

SUMMARY

The factors that may lead to increased negative shark incidents and attacks are still poorly understood. A combination of contributing factors are associated with all negative shark incidents and attacks!

My investigations have uncovered two major changes to shark/ human interactions that have occurred over the last ten to fifteen years.

The development of electronic tagging devices for scientific research has led to an exponential increase in the deployment of these devices over, particularly, the last decade. I have great concerns that these tagging devices and the tagging process are not only harming substantial numbers of animals but potentially contributing to negative and abnormal behaviour in some sharks.

Regulations and ethics approvals controlling the use and deployment of these tagging devices are in need of immediate scrutiny and upgrading!

Despite thousands of sharks being tagged, scientists appear to have gained a limited understanding of shark numbers and habits. Considering the potential and proven harm tagging programs can cause to animals and the costs involved in these studies, are they a wise investment of resources and funding?

Despite the apparent inability of scientists to predict and define shark numbers with any confidence, reports of white shark sightings and sightings of and encounters with, other potentially dangerous shark species are becoming more frequent in Australia. For this reason, I question if white sharks should still be deemed a “threatened species”? Shark sightings by experienced divers, surfers and fishermen are considered “anecdotal” by scientists and managers but I believe such observations should be taken seriously and used as an indication of shark numbers and behaviour. Community social media sites like the facebook page “West Coast Shark Alert Forum” document substantial numbers of reliable shark sightings! In recent times I am being approached by increasing numbers of people at boat ramps, including experienced, commercial fisherman, that take great delight in informing me of their encounters with white sharks. “You’re mad diving out there mate!!!” is a usual comment I am hearing! My friends and family have also been pressuring me to give up the job I love and have been involved in for over 35 years!

As white shark numbers increase the baiting of white sharks for cage diving has the potential to change the behaviour of increasing numbers of animals. The longer this activity is allowed to continue without a full understanding of its’ effects, the more long-term problems it has the potential to create!

I am concerned that some sharks which have been regularly baited for cage diving and/ or tagged, are much more likely to approach humans and their vessels, attack and/ or act aggressively towards them.

My experience has led me to conclude that the best policy with sharks is to protect their environment and wherever possible LEAVE THEM ALONE!

SHARKS ARE NOT CIRCUS ANIMALS AND/ OR LAB RATS AND SHOULD NOT BE TREATED AS SUCH!

I can provide links to scientific papers, media releases, imagery and other supporting evidence associated with the text of this submission on request.

Please feel free to contact me if required.

My email address