

Should nets and drumlines continue to be used to protect Australians from sharks?

What they said...

“There needs to be more drum lines immediately installed at Greenmount until the shark involved in the attack is found.”

Queensland Opposition Leader Deb Frecklington

“There's no such thing as a rogue shark. Unlike in the film Jaws nor in the early literature, there's no evidence sharks "get a taste for human flesh”

ABC Environment reporter Nick Kilvert.

The issue at a glance

On September 8, 2020, a 46-year-old Gold Coast real estate agent, Nick Slater, was fatally mauled by a shark while surfing at Greenmount Beach. <https://www.abc.net.au/news/2020-09-09/shark-attack-gold-coast-greenmount-nick-slater/12643548>

While there have been several fatal attacks in Queensland waters recently, no deaths have occurred off “protected” beaches such as Greenmount for more than twenty years. The beaches are protected mainly by shark nets and baited drumlines.

Queensland Opposition leader Deb Frecklington called for more drumlines to be installed and for the shark to be found. However, Fisheries Minister Mark Furner said that there would be no hunt for the shark responsible for Mr Slater’s death. Instead, reliance on the system of nets and drumlines would continue.

“We don’t hunt sharks, we put in material to protect swimmers,” Mr Furner told an ABC reporter.

Queensland Premier Annastacia Palaszczuk said that if improvements could be made to the Queensland program, they should be. <https://www.abc.net.au/news/2020-09-10/how-do-shark-nets-and-drum-lines-work-fatal-gold-coast-attack/12645488>

Background

Shark nets and drum lines

A shark net is a submerged net placed around beaches to reduce shark attacks on swimmers. The majority of Shark nets used are Gillnets which is a wall of netting that hangs in the water and captures the targeted sharks by entanglement. The nets in Queensland, Australia, are typically 186m long, set at a depth of 6 m, have a mesh size of 500 mm and are designed to catch sharks longer than 2m in length. Shark nets are not to be confused with shark barriers.

Shark nets do not offer complete protection but work on the principle of 'fewer sharks, fewer attacks'. They reduce occurrence via shark mortality. https://en.wikipedia.org/wiki/Shark_net

A drum line is an unmanned aquatic trap used to lure and capture large sharks using baited hooks. They are typically deployed near popular swimming beaches with the intention of reducing the number of sharks in the vicinity and therefore the probability of shark attack.

Drum lines are often used in association with shark nets, with the intent of killing sharks.

However SMART drum lines can be used to move sharks, which greatly reduces shark and bycatch mortality. The use of drum lines has been successful in reducing shark attacks in the areas where they are installed. The topic of shark culling has become an international controversy and sparked public demonstrations and vocal opposition, particularly from environmentalists, animal welfare advocates and ocean activists.

[https://en.wikipedia.org/wiki/Drum_line_\(shark_control\)](https://en.wikipedia.org/wiki/Drum_line_(shark_control))

Shark nets such as those in New South Wales are designed to entangle and kill sharks and other animals that pass near them. Reducing the local shark populations is believed to reduce the chance of an attack. Historical shark attack figures suggest that the use of shark nets and drum lines does markedly reduce the incidence of shark attack when implemented on a regular and consistent basis. The large mesh size of the nets is designed specifically to capture sharks and prevent their escape until eventually, they drown. Due to boating activity, the nets also float 4 metres or more below the surface and do not connect with the shoreline (excluding Hong Kong's shark barrier nets) thus allowing sharks the opportunity to swim over and around nets. Shark nets can cost A\$1 million or A\$20,000 per beach per year. https://en.wikipedia.org/wiki/Shark_net

History of shark nets

Shark net meshing was first devised by the New South Wales Fisheries in 1936, after a decade and a half of shark attacks off Sydney beaches. In March 1935, for example, two people - one at North Narrabeen and one at Maroubra - were killed by great white sharks in a single week. The meshing was never designed to enclose a piece of water as barrier nets would never survive a surf zone. Instead, it was designed to catch large dangerous sharks as they swam within range of the surf. At first, the catch was huge; over 600 sharks in the first year of operation, off just a few Sydney beaches. But over time, even without adjusting for the spread of the program across almost all Sydney beaches and into Wollongong and Newcastle, the catch declined. Today's New South Wales meshing annual average catch is 143 sharks, quite a number of which are released alive.

Nets were also deployed off certain beaches off KwaZulu-Natal (KZN, formerly Natal) South Africa, in 1952. https://en.wikipedia.org/wiki/Shark_net

Shark barriers https://en.wikipedia.org/wiki/Shark_barrier

A shark barrier (otherwise known as a 'shark-proof enclosure' or 'beach enclosure') is seabed-to-surface protective barrier that is placed around a beach to protect people from shark attacks. Often confused with shark nets, shark barriers form a fully enclosed swimming area that prevents sharks from entering (nets aim to reduce shark populations). Shark barrier design has evolved from rudimentary fencing materials to netted structures held in place with buoys and anchors. Recent designs have used plastics to increase strength, versatility and to reduce the environmental damage of bycatch.

Shark barriers work on the principle of excluding sharks from a designated swimming area. Shark barriers form an "underwater fence" from seabed-to-surface, beach-to-beach. Shark barriers are seen as a more environmentally friendly option as they largely avoid bycatch, however they cannot protect the same sized area as culling methods.

Shark barriers are not generally used on surf beaches because they usually disintegrate in the swell and so are normally constructed only around sheltered areas such as harbour beaches. It should be noted that where there are surf conditions at Hong Kong beaches, the swell is 'typically small'. Even if they were in place at surf beaches, they would not protect surfers who go some distance from shore.

The shark nets are more suitable for surf beaches as they can be anchored beyond the deepest sandbank and can be easily taken out of the water when ever any big swell is forecast.

Shark net and barrier use in different Australian states

New South Wales <https://www.dpi.nsw.gov.au/fishing/sharks/management/shark-meshing-bather-protection-program>

In New South Wales, Australia, 51 beaches are netted. The nets are maintained by the New South Wales Department of Primary Industries. The nets are generally 150 metres long, 6 m

wide and 'bottom-set' on the seabed in depths of 10 m. The nets can be 500 metres from the beach. The mesh is sized 50-60 centimetres. Nets are lifted every 24 to 48 hours for servicing so as to prevent rotting, to clean out debris and to remove dead sharks and other marine life. It is said that 35-50% of the sharks are entangled from the beach side. Acoustic 'pingers' have been fitted to the nets to warn off dolphins and whales and the nets are not in place in winter, the whale migration season. The Department states that the nets have 'never been regarded as a means of absolutely preventing any attacks', but help to deter sharks from establishing territories.

Shark meshing on Sydney beaches began in 1937 to reduce the numbers of sharks and thereby reduce the risk of shark attacks. Originally beaches from Palm Beach to Cronulla were meshed. In 1949 beaches in Wollongong and Newcastle were added, with Central Coast beaches added in 1987. Today 200 km of coastline are meshed. The nets are set for eight months of the year from September to April inclusive.

There have been trials of shark enclosures or barriers proposed for two northern New South Wales beaches - off Seven Mile Beach at Lennox Head and at Ballina's Lighthouse Beach. Neither proceeded because it was judged that conditions made them unworkable.

SMART (Shark-Management-Alert-in-Real-Time) drum lines are one of the measures currently being tested and trialled as part of the NSW Government's \$16M Shark Management Strategy.

The state-of the art- technology differs greatly from the operation of traditional drum lines as they are designed and operated to maximise the survival of sharks and other marine animals caught. Trials of SMART drum lines have been undertaken at multiple locations on the NSW North Coast by DPI scientists since December 2015.

<https://www.dpi.nsw.gov.au/fishing/sharks/management/smart-drumlines>

Queensland <https://www.daf.qld.gov.au/business-priorities/fisheries/shark-control-program>
In Queensland, Australia, drum lines are used in combination with shark nets. Queensland's Shark Control Program has been in place since the early 1960s. In Queensland's 2011/12 summer season there were 714 sharks caught, 281 above 2 metres in shark nets and drum lines. Since 1997, the program catches 500-900 sharks annually, including several shark species of conservation concern.

A fatal attack in Queensland occurred in January 2006 at Amity Point on North Stradbroke Island. The water at this location drops off to 30 metres depth, and bull sharks are known to frequent the area. Other beaches around the island were protected with drum lines at the time. In November, 2017, there was another fatal attack off Whitsunday Island. This is an area not protected by drum lines.

Western Australia <https://www.sharksmart.com.au/staying-safe/beach-safety-protection-initiatives/>

In 2017/18 the Western Australian Government provided Surf Life Saving WA (SLSWA) with nearly \$3.7 million for the delivery of shark mitigation strategies, which included funding for aerial patrols provided by SLSWA's Westpac Life Saver Rescue Helicopter. The Western Australian Government provides funding to SLSWA to operate two lifesaving helicopter services, the metropolitan based Westpac Lifesaver Helicopter and the South-West Lifesaver Helicopter.

The South-West service, based in Busselton, covers popular coastal destinations between Bunbury and Margaret River. Patrols are focused on weekends and public and school holidays between 1 September 2018 to 28 April 2019, including daily flights from 19 November to 3 February.

When a shark is sighted at an unpatrolled beach, the helicopter sounds its alert siren from the air. In addition, the crew are medically trained and equipped to assist in a real time emergency when needed.

Internet information

On December 23, 2018, The Courier Mail published a report titled 'Whitsundays tourism asked for drum lines to be removed from shark attack hotspot'

The report claims that Tourism Whitsundays' manager asked for the drum lines to be removed because of the bad publicity they were provoking.

The full report can be accessed at

<https://www.couriermail.com.au/news/queensland/queensland-government/whitsundays-tourism-asked-for-drumlines-to-be-removed-from-shark-attack-hotspot/news-story/ffdaac539e2601e1fea96c9c269cf186>

On December 14, 2018, the Australian Marine Conservation Society issued a media release titled 'Up to 92% of Sharks in Queensland Waters Gone'

The release gives statistics demonstrating the impact of commercial fishing on shark numbers and calling for reduced quotas, better monitoring and an end to culling.

The full text can be accessed at <https://www.marineconservation.org.au/up-to-92-of-sharks-in-queensland-waters-gone/>

On November 24, 2018, The Courier Mail published a report titled 'Whitsundays charter operator's plan to stop shark attacks' which details the use by some charter boat operators of shark repellent devices to help protect tourists in the water.

The full text can be accessed at

<https://www.couriermail.com.au/news/queensland/whitsundays-charter-operators-plan-to-stop-shark-attacks/news-story/50177c064c88e4f84d7c15ecef71efb>

On November 19, 2018, Whitsunday Times published an analysis titled 'Australia's horror shark statistics' which considered worldwide shark attack statistics over the last thirty years, focusing on the incidence and nature of attacks in Australian waters.

The full text can be accessed at <https://www.whitsundaytimes.com.au/news/horror-shark-attack-and-fatality-statistics-show-h/3580010/>

On November 9, 2018, Tourism Whitsundays issued a media release detailing the results of the 'expert panel' which had met to discuss the shark attack fatality which had occurred on November 5 and what actions could be taken immediately and long term to improve visitor safety.

The full text can be accessed at

<https://www.tourismwhitsundays.com.au/images/atwcorporate/mediareleases/November/Media-Release---181109-Tourism-Whitsundays-Update--9-November-2018.pdf>

On November 9, 2018, news.com.au published a news report titled 'Sharks in north Queensland are "bigger, fatter" than ever before' which details a meeting between Queensland's Tourism Minister, Kate Jones, Fisheries Minister, Mark Furner, local tourism operators and marine experts, as well as the Whitsundays council to discuss the recent spate of shark attacks.

The full text can be accessed at <https://www.news.com.au/national/queensland/news/sharks-in-north-queensland-are-bigger-fatter-than-ever-before/news-story/6203ff656a8449e02a7205a0fe284f0d>

On November 9, 2018, SBS News published a report titled, 'Queensland MP demands shark cull after Whitsunday attack' detailing the demands of LNP Member for the Queensland seat of Hinkler, Keith Pitt, that there be a shark cull in the region.

The full text can be accessed at <https://www.sbs.com.au/news/queensland-mp-demands-shark-cull-after-whitsunday-attack>

On November 9, 2018, neoskosmos.com, a news agency that reports on Greek citizens around the world, posted a report on the shark-related death of Dr Daniel Christidis. The report is titled 'Remembering Dr Daniel Christidis the victim of Whitsundays shark attack' The report includes a comment from a local fisherman claiming an increase in shark numbers.

The full text can be accessed at <https://neoskosmos.com/en/123845/remembering-dr-daniel-christidis-the-victim-of-whitsundays-shark-attack-2/>

On November 9, 2018, ABC News published a report titled 'Sharks "bigger and fatter" and numbers "out of control" in north Queensland, fisher says'

The report focuses on claims made by a local fisherman that the number of sharks in Queensland waters has grown dramatically.

The full text can be accessed at <https://www.abc.net.au/news/2018-11-09/shark-numbers-out-of-control-north-qld-commercial-fisher-says/10480520>

On November 9, 2018, Startsat60 published a report titled ' Should sharks be culled? Debate rages following death in Queensland' which considers a number of points of view on whether sharks should be culled in the Whitsundays.

The full text can be accessed at <https://startsat60.com/discover/food-and-drink/recipes/strawberry-and-pistachio-tart-recipe>

On November 8, 2018, ABC News published a report titled 'Shark population "explosion" needs culling "just like pigs and kangaroos", says Rob Katter' which details the demand for a shark cull from Katter's Australian Party (KAP) North Queensland MP Rob Katter.

The full text can be accessed at <https://www.abc.net.au/news/2018-11-08/just-like-pigs-and-roos-rob-katter-calls-for-shark-cull/10479232>

On November 8, 2018, The Courier Mail published a news report titled 'MP calls for open season on man-eaters'. The report details the demand from NLP member for Hinkler, Keith Pitt, that there be a shark cull at the Whitsundays.

The full text can be accessed at

<https://www.couriermail.com.au/news/queensland/queensland-government/mp-calls-for-open-season-on-man-eaters/news-story/0167873b13fa9b8636f4787cf6ae882e>

On November 8, 2018, The Courier Mail published a report titled 'Airlie business owners warn of economic slump as fear grips tourists'

The report details the concerns of some on the Whitsundays that the recent shark attacks will damage the islands' economies.

The full text can be accessed at <https://www.couriermail.com.au/news/queensland/airlie-business-owners-warn-of-economic-slump-as-fear-grips-tourists/news-story/d8fa2926a08ff384b5a840dd296b33fa>

On November 7, 2017, ABC News published a report titled 'Queensland tourism operators voice concerns after third Cid Harbour shark attack'

The report detailed the concerns of tourist operators that fear of shark attacks could harm the industry.

The full text can be accessed at <https://www.abc.net.au/news/2018-11-07/queensland-tourism-operator-concern-cid-harbour-shark-attacks/10470960>

On November 6, 2018, ABC Triple H published a report titled 'Changing human behaviour is the key to preventing shark attacks, experts say'

The report gives the view of a number of shark experts who argue that changing human behaviour is the best way of securing against shark attacks.

The full text can be accessed at <https://www.abc.net.au/triplej/programs/hack/drumlines-fail-to-protect-swimmers-in-whitsundays/10470812>

On October 9, 2018, The Australian Geographic published an analysis titled 'The truth behind the Whitsundays shark encounters' which gives the views of a number of shark experts on factors influencing the shark attacks of September, the impact of media treatment and the nature of the local reaction.

The full text can be accessed at

<https://www.australiangeographic.com.au/topics/wildlife/2018/10/experts-weigh-in-on-the-whitsundays-shark-encounters/>

On September 27, 2018, The Brisbane Times published a report titled 'Shark victim out of ICU as hooks pulled from Whitsundays waters' which detailed the release of the first Cid Harbour shark attack from hospital at the same time as the drum lines were taken out of the harbour.

The full text can be accessed at

<https://www.brisbanetimes.com.au/national/queensland/shark-victim-out-of-icu-as-hooks-to-be-pulled-from-whitsundays-20180927-p506bo.html>

On September 21, 2018, Scimex published a report titled 'Expert reaction: Second shark attack in the Whitsundays in 24 hours'

The report details the reactions of a number of shark experts to the second shark attack in Cid Bay.

The full text can be accessed at <https://www.scimex.org/newsfeed/expert-reaction-second-shark-attack-in-the-whitsundays-in-24-hours>

On August 16, 2018, Byron News published an analysis titled 'Australia's shark attack hotspots revealed' which gave statistics of the likelihood of shark attack at different places on the Australian coast.

The full text can be accessed at <https://www.byronnews.com.au/news/shark-attack-data-reveals-countries-and-places-peo/3493965/>

Arguments in favor of continuing to use nets and drumlines to protect against sharks

1. Shark numbers are increasing

Those who have called for the introduction of a shark cull off the Whitsundays and the permanent placement of drum lines in the area argue that these measures are needed in response to a dangerous increase in shark numbers.

Keith Pitt, the NLP Member for Hinkler and former assistant trade and tourism minister, has stated, 'I've had the local fishos telling me the sharks are in plague proportion. They are an apex predator and we should thin them.'

out. <https://www.thecourier.com.au/story/5746705/qld-govt-dismisses-mps-shark-cull-call/?cs=7>

The same claim has been made by Katter's Australian Party (KAP) North Queensland MP, Rob Katter, who has stated, 'I'm no expert on shark management, but I am an expert on listening to people and if you talk to people who have been going out there 30 years, whether they're from Cairns, Whitsundays, Townsville, whether they're recreational fisherman, whether they're professional fisherman, they tell you the same thing — that the numbers have grown, they've exploded in some areas where it was never like that before.'

<https://www.abc.net.au/news/2018-11-08/just-like-pigs-and-roos-rob-katter-calls-for-shark-cull/10479232>

Mr Katter disputes the claims made by marine experts that shark numbers are in decline. He states, 'It should be noted that just about every expert who gets rattled out by Fisheries or employed by the Government or any other scientist that's rattled out conveniently seems to contradict what's said by the commercial fishermen who spend all day out there on those seas observing what's going on.' <https://www.abc.net.au/news/2018-11-08/just-like-pigs-and-roos-rob-katter-calls-for-shark-cull/10479232>

Mr Katter's claims are supported by some commercial fishermen who maintain that shark numbers are in fact growing. Bruce Batch, one of Queensland's last remaining commercial shark fishermen, who has worked for the same fishery for almost 48 years, believes that environmental campaigns and a halving in commercial catch numbers by a former federal Labor government have increased Queensland's shark population.

Mr Batch stated, 'What surprises me is the fact that there isn't more [attacks] — when you actually talk to any commercial fishermen, these animals are now getting larger and larger by the year and they're educated to follow boats.'

<https://neoskosmos.com/en/123845/remembering-dr-daniel-christidis-the-victim-of-whitsundays-shark-attack-2/>

Mr Batch said there used to be a shark take of roughly 1,200 tonnes in Queensland but that was halved by the former federal Labor environment minister, Peter Garrett. Mr Batch also claimed that the problem had been compounded by the number of net-free and green zones in that had been established in Queensland waters. He stated, 'They sound like a good idea but they themselves [that is, fishing in these areas] were keeping a lot of the bull sharks in control.'

Every river and estuary along the coast is now nearly shut to commercial fishing and that has allowed those bull sharks to breed and increase and grow, to a stage where they now leave the estuaries and are going out into the wild and becoming a big problem.'

<https://www.abc.net.au/news/2018-11-09/shark-numbers-out-of-control-north-ql-commercial-fisher-says/10480520>

Mr Batch concluded, 'When you're out here on the water and you see the amount of sharks and the amount of large sharks, it's out of control and I don't know what the answer is. Talk to the guys that make their living out on the water — they've certainly got a different concept of what's going on than the guys who are sitting on their tiny seats in offices.'

<https://www.abc.net.au/news/2018-11-09/shark-numbers-out-of-control-north-ql-commercial-fisher-says/10480520>

2. There has been a spate of shark attacks in the Whitsundays causing injury and loss of life. Those who support a shark cull at the Whitsundays stress the unacceptable threat to human life that the sharks pose.

The recent spate of shark attacks in the Whitsundays has underlined for those seeking a cull the danger that these creatures represent to human life. On November 5, 2018, Dr Daniel Christidis, 33, was attacked at Cid Harbour in the Whitsundays region. Despite the best efforts from his friends and colleagues, the doctor died on his way to Mackay Base Hospital. It was the third serious shark mauling at Cid Harbour in two months. Tasmanian aged-care worker and mother of two, Justine Barwick, 46, was bitten on her left thigh while snorkelling in the same area on September 19 and underwent 18 hours of surgery. Melbourne schoolgirl, Hannah Papps, 12, received a life-threatening bite to her right leg while swimming in shallow water in Cid Harbour the following day. She lost her leg in the attack.

<https://thenewdaily.com.au/news/national/2018/11/06/whitsundays-shark-attack/>

Three attacks in the same area over such a short period of time have created a sense of threat within the Whitsundays and underlined the extent to which sharks can endanger human life.

Supporters of a shark cull argue that human life has to take precedence over marine life.

Keith Pitt, the NLP Member for Hinkler and former assistant trade and tourism minister, has stated, 'If it comes down to a choice between a child or an adult... and a shark, well I'm going with the people.' Referring to Daniel Christidis, a 33-year-old doctor working at Melbourne's Austin Health, who died after a shark attack while paddleboarding and swimming at Cid Harbour, Mr Pitt stated, 'We have another grieving family in Australia due to a fatal shark attack. I think that's unacceptable. I think it's time for action.'

<https://www.abc.net.au/news/2018-11-08/just-like-pigs-and-roos-rob-katter-calls-for-shark-cull/10479232>

The same point has been made by Katter's Australian Party (KAP) North Queensland MP, Rob Katter, who has stated, 'It's not something we celebrate as a party, I don't enjoy killing animals, but when it becomes a point of the humans versus the animals, if you want to distil it down to the real problem, someone's got to make the call to take those hard decisions.'

<https://www.thecourier.com.au/story/5746705/qld-govt-dismisses-mps-shark-cull-call/?cs=7>

Mr Katter concluded, 'Preventing people from being eaten while going for a swim is the kind of thing governments are meant to get right.'

<https://www.couriermail.com.au/news/queensland/queensland-government/mp-calls-for-open-season-on-man eaters/news-story/0167873b13fa9b8636f4787cf6ae882e>

Queensland shadow tourism minister, David Crisafulli, has similarly criticised members of the government for prioritising animal life over human life. He has stated, 'There's a movement by some of the lunatic green advocates to remove shark protection measures. I just shudder to think we live in a society where people value a human life less than that of an animal.' <https://www.townsvillebulletin.com.au/news/lunatic-mps-slammed-by-david-crisafulli-for-shark-action-plan/news-story/dd71406c35b508b7bbc5768c064e7d37>

3. Unless beachgoers can be reassured, the Whitsundays' tourist industry will be harmed. Among those who are calling for either a cull or the permanent placement of drum lines are politicians who are concerned about the impact news of the Whitsunday attacks will have on tourism in the Whitsunday region.

In 2005, Tourism Whitsundays indicated in a submission to the federal Parliament that tourism in the Whitsundays was a major component of the local economy employing around 34.4% of the total workforce. This figure did not include the many others employed in separate industries with the region that are dependent on tourism. These include supporting industries such as retail and others within the service sector. <https://tinyurl.com/ya4qjxhl>

A report published in the Financial Review of November 9, 2018, stated, 'With the region reliant on tourists each year, the tourism industry is petrified about the implications of global headlines focusing on the shark attacks in the Whitsundays. It was previously seen as safe for

jumping off boats and swimming.' <https://www.afr.com/news/politics/whitsundays-tourism-operators-reeling-after-recent-shark-attacks-20181109-h17p5t>

Queensland Tourism Industry Council chief executive, Daniel Gschwind, has argued that tourism authorities needed to 'take rational steps to minimise the risk' by being upfront with visitors.

Mr Gschwind stated, 'Operators are worried about this. It's not the sort of thing you want to be in the headlines for, but we are worried about the longer-term reputations and association of the reef with some primordial fear.' <https://www.afr.com/news/politics/whitsundays-tourism-operators-reeling-after-recent-shark-attacks-20181109-h17p5t>

Katter's Australian Party State Leader and Member for Traeger, Rob Katter has warned that media coverage of the shark attacks had spread globally and tourism operators were feeling the impact.

Mr Katter stated, 'We are starting to see reports that yacht charter and dive operators are seeing a major drop in forward bookings directly as a result of the shark attack coverage. If that flows through to other tourism sectors, that means the loss of big dollars in the North as they head into one of their important tourism periods.' <https://robkatter.com.au/tourism-hurting-in-north-after-shark-attacks/>

Mr Katter has urged that the state government supply substantial financial assistance to the region as a buffer against a tourism downturn. He has also argued that it needs to introduce culling of both crocodiles and sharks to protect and reassure potential tourists.

<https://robkatter.com.au/tourism-hurting-in-north-after-shark-attacks/>

A similar point has been made by Deputy Leader of the LNP, Tim Mander, who has also called for permanent drum lines to be reintroduced 'immediately' in the Cid Harbour area of Whitsunday Island in order to preserve the tourism industry and the region's celebrated beach culture..

Mr Mander has argued that it is important people feel protected in the water in order to safeguard the tourism industry in the Whitsundays. He has stated, 'If people feel that they can't swim safely then tens of thousands of jobs will be in jeopardy. The public deserves to feel safe and deserves to feel that the authorities are taking action.

People want to make sure there's not mass cullings of these marine creatures but at the same time it's about getting the balance right, so we've had nets and drum lines for years in Queensland because of our culture, our beach culture, it's who we are.'

<https://www.couriermail.com.au/news/queensland/state-government-told-to-install-drum-lines-around-cid-harbour/news-story/01182c28a2ff6b7f77cacef235081c1c>

4. Unlike much of Queensland, there is no shark control program in the Whitsunday area. Among those who have called for a shark cull and the establishment of permanent drum lines in the area are critics who have noted that, unlike much of Queensland, there have been no shark control measures put in place to protect those swimming off the Whitsundays.

Queensland's Shark Control Program (SCP) relies on nets or drum lines, or a combination of both, to minimise the threat of shark attack on humans in particular locations. The following locations are protected with nets and/or drum lines: Cairns, Townsville and Magnetic Island, Mackay, Capricorn Coast, Gladstone, Bundaberg, Rainbow Beach, Sunshine Coast, North Stradbroke Island and the Gold Coast. <https://www.daf.qld.gov.au/business-priorities/fisheries/shark-control-program/equipment-and-locations> In all, the SCP is in place at 86 beaches along the Queensland coast. However, neither nets nor drum lines have ever been installed in the Whitsundays. Critics have highlighted the unfairness of this.

The Queensland Opposition Leader, Deb Frecklington, is calling for drum lines to be in place at Cid Harbour permanently.

Frecklington has stated, 'We've seen three shark attacks, one ending in an absolute tragedy, and they don't have a shark control program, so obviously something more needs to happen.'
<https://www.abc.net.au/news/2018-11-08/just-like-pigs-and-roos-rob-katter-calls-for-shark-cull/10479232>

The Opposition leader expressed her dissatisfaction with the meeting called between the Queensland's Tourism Minister, Kate Jones, the Fisheries Minister, Mark Furner, local tourism operators and marine experts and the Whitsundays council
Frecklington dismissed the roundtable meeting as a talkfest and called for drum lines to be immediately rolled out at Cid Harbour.

The Opposition leader stated, 'Labor need to explain why one of the only areas of Queensland that does not have drum lines or netting is the Whitsundays, where there have been three tragic shark attacks in six weeks. So it is borderline negligent that (Premier) Annastacia Palaszczuk's only response to these terrible events in the Whitsundays is to call a meeting.'
<https://www.couriermail.com.au/news/queensland/queensland-government/mp-calls-for-open-season-on-man-eaters/news-story/0167873b13fa9b8636f4787cf6ae882e>

The Opposition environment spokesperson, David Criusafulli, has similarly stated, 'You can't cherry-pick science, and use science as the justification not to give one region, and one region only the protection they deserve.'

<https://www.mudgeeguardian.com.au/story/5748790/queensland-shark-response-to-be-discussed/?cs=9397>

Whitsunday MP Jason Costigan has also called for drum lines to be permanently set in popular spots in the Whitsundays.

Mr Costigan has stated, 'We need drum lines and nets off our popular swimming beaches in the Whitsundays like most other populated centres up and down the Queensland coast. It's about time we had the same levels of protections as other places.'

<http://www.973fm.com.au/newsroom/calls-for-drumlines-following-third-shark-attack-in-the-whitsundays>

Mr Costigan continued, 'I think we're flirting with danger when you compare us to other communities, from Alice Beach north of Cairns, down to Townsville, which is peppered with drum lines and nets and so forth, around Magnetic Island, the northern beaches of Mackay and you go all the way down to the Gold Coast and the Sunshine Coast, and we've got nothing in the Whitsundays - it's madness.'
<https://www.sbs.com.au/news/calls-for-permanent-drum-lines-after-whitsundays-shark-attack-victim-dies>

Mr Costigan asked, 'Why is it we have shark nets and drum lines stretching the coastline to cover and protect every major population centre in Queensland except the most notable tourism destination in the state that is the Whitsundays?'

<https://www.9news.com.au/2018/11/06/10/47/shark-attack-whitsundays-cid-harbour-madness-no-drumlines-mp-jason-costigan>

5. Culling is used to deal with other pest animals and animal management problems

Those who call for a shark cull argue there is no reason why sharks should be treated differently to other pest animals.

Katter's Australian Party (KAP) North Queensland MP, Rob Katter, has stated, 'Now if you had problems with pigs, kangaroos, wild horses, we manage them through culling, all types of effective means...'
<https://www.abc.net.au/news/2018-11-08/just-like-pigs-and-roos-rob-katter-calls-for-shark-cull/10479232>

Those who support culling argue it is an efficient method of removing animals that have either over-populated or pose a threat to human beings. Katter's Australian Party has a general policy of using culls to remove animals that may pose a risk to human populations.

Federal independent MP Bob Katter has campaigned for all Queenslanders to have the right to kill or remove deadly animals from their property. In January, 2012, Bob Katter called for Queenslanders to be able legally to remove bats from their properties. Mr Katter referred to scientific reports that have named bats as the origin of several viruses including SARS, Leptospirosis and Nipah virus. Flying foxes also spread the Hendra virus, which is usually fatal to humans, and has killed large numbers of horses.

<https://www.smh.com.au/national/katter-calls-for-flying-fox-cull-20120106-1pnf9.html>

In April, 2017, arguing in support of the Katter Australian Party's repeated call for a crocodile cull in Queensland, Renee Viellaris wrote, 'We already have government-approved culls of kangaroos, brumbies, wild pigs and rabbits because they affect the environment. Am I missing something here?' <https://www.couriermail.com.au/news/opinion/opinion-bob-katter-is-right-queensland-needs-a-crocodile-cull/news-story/7dec7389c359b777ff87c01acbce423>

Arguments against continuing to use nets and drumlines as protection against sharks

1. Neither culling nor increased commercial fishing will remove the threat of shark attacks. Opponents of culling programs, including netting and setting drum lines, argue that they are not effective measures to reduce the risk of human injury and death.

The marine conservation organisation, Sea Shepherd, states on its Internet site, 'Queensland... has used both shark nets and drum lines (baited fishing hooks designed to catch and kill anything that is unfortunate to be caught on the hook) since the 1960's.

Neither of these techniques have been proven to work as a shark safety measure, yet due to the decrease in shark bite fatalities at the beaches these measures have been installed at, some Australians have been calling for sharks to be killed in order for them to feel safe recreating in what is a wild and natural environment.'

The Sea Shepherd site argues that these supposedly protective measures have proved ineffective as the reduction in loss of life has more to do with improved medical treatment than with culling. Sea Shepherd's Internet site states, 'Those calling for these measures have ignored the fact that medical advancements have saved the lives of shark bite survivors and though there has been a reduction in fatalities at beaches where shark control measures have been installed, shark bites are still occurring at these so called "protected" beaches. In fact, 47 shark bites have occurred at beaches in New South Wales where a shark net has been installed, which sadly includes a fatality, while in Queensland, 16 shark bites have occurred at "protected" beaches, including another tragic fatality in 2006.'

<https://www.seashepherd.org.au/news-and-commentary/commentary/australian-s-have-lost-the-plot-when-it-comes-to-sharks.html>

Jonathan Clarke, from Sea Shepherd Australia, has spent months inspecting shark drum lines in Queensland. He said the drum lines were often left for days without bait, creating 'a false sense of safety' for swimmers... It's not even a false sense of safety, it's actually a placebo.'

<https://www.theguardian.com/australia-news/2018/sep/24/whitsundays-shark-attacks-occurred-in-swimming-no-go-zone-conservationists-say>

The ineffectiveness of culls as a means of protecting human life has also been pointed out by Professor Colin Simpfendorfer, a shark researcher at James Cook University. Professor Simpfendorfer has stated, 'The species that are normally responsible for these sorts of bites are animals that move over large distances. Bull sharks we know move all the way from the Great Barrier Reef down to New South Wales. Tiger sharks move thousands of kilometres every year.'

These animals are highly mobile so these very localised sorts of programs rarely work to actually reduce risks for swimmers.' <https://www.abc.net.au/news/2018-11-08/just-like-pigs-and-roos-rob-katter-calls-for-shark-cull/10479232>

The Queensland Fisheries Minister, Mark Furner, has similarly argued that culling is unlikely to prove effective. Mr Furner has stated, 'By no means would I support a shark cull. That's way over the top. There's no science or reason behind that. There would be no guarantees of safety by introducing a shark cull.'

<https://www.couriermail.com.au/news/queensland/queensland-government/mp-calls-for-open-season-on-man-eaters/news-story/0167873b13fa9b8636f4787cf6ae882e>

It has further been argued that increasing commercial shark fishing would not reduce the risk of human injury and death.

Daryl McPhee, associate professor and marine expert from Bond university, has explained that the sharks that pose a risk to swimmers are not the same species that commercial fishermen target.

Professor McPhee has stated, 'The three species most responsible for shark bites globally, for fatalities, [are] the white shark, the tiger shark and the bull shark. Around central Queensland there's not many white sharks, but there's tiger sharks and bull sharks, and those won't find a ready market. They're not particularly tasty, plus there's also an elevated risk of mercury in the flesh.' <https://www.abc.net.au/news/rural/2018-11-14/would-eating-more-shark-reduce-risk-attacks/10493736>

The same point has been made by commercial fisherman, Mark Savins, an active, targeted shark fisherman from Bowen in north Queensland, who has stated, 'We look for the species, the size and quality. There's a size problem, when sharks get bigger they get tougher. There's all different grades and types of shark, qualities in meat that start from ones that look great but can't eat, up to the ones we keep.' <https://www.abc.net.au/news/rural/2018-11-14/would-eating-more-shark-reduce-risk-attacks/10493736>

2. Education measures are a better option to protect human life

Opponents of culling and drum lines argue that shark encounters can be largely avoided without killing sharks if people behave in an appropriate manner. Education measures typically involve both local signage and other information sources to warn tourists and others of shark risks in a particular area together with a general education campaign to inform people of appropriate behaviour in and around the water to avoid shark attacks.

After its November 9 roundtable with local tourism operators, shark experts and the Whitsunday council, the Queensland government announced a shark amelioration strategy that focuses on education. The five-point plan includes: 250,000 towards scientific research into shark prevalence and behaviour in Cid Harbour; maintaining Cid Harbour as a no-swim zone until that assessment is complete; a high-profile education campaign to immediately educate locals and visitors about shark safety; development of a broader SharkWISE education campaign, similar to the successful CrocWISE campaign in north Queensland; and continuing to meet with industry stakeholders and experts to develop and progress responses. <https://www.brisbanetimes.com.au/politics/queensland/five-point-plan-not-drumlines-to-stop-shark-attacks-in-cid-harbour-20181109-p50f4k.html>

The importance of adequate signage and the relaying of local information can be seen in the two shark attacks that occurred in September, 2018. Daryl McPhee, an expert in unprovoked shark bites from Bond University, has stated, 'It [the second bite] was entirely avoidable, but clearly people weren't properly informed.'

<https://www.australiangeographic.com.au/topics/wildlife/2018/10/experts-weigh-in-on-the-whitsundays-shark-encounters/> The education program is intended to address this problem.

Fisheries Minister, Mark Furner, has noted that Cid Harbour will be a no-swim zone, with more than 70 signs already installed in the water warning against swimming.

The SharkWISE education program to be promoted by the Queensland government includes the following elements: Swim at patrolled beaches between the -flags and obey the lifeguard's advice and signage;

Avoid swimming at dawn and dusk as sharks are more actively hunting at these times

Always swim, snorkel or dive with a buddy

Be mindful of water conditions — don't swim in murky or unclear water as this can increase the potential of mistaken interactions with sharks;

Never clean fish or discard food scraps over the side of your boat at anchorages;

Don't forget to use on-board holding tanks while in anchorages — even black waste can attract fish, which in turn attracts predators;

Do not swim near or interfere with shark control equipment

<http://www.gbrmpa.gov.au/access-and-use/responsible-reef-practices/be-shark-smart>

The importance of this advice has been stressed by Barbara Wueringer, a zoologist and founder of Sharks and Rays Australia, a Queensland-based research organisation. Wueringer has noted that ill-informed human behaviour may be contributing to the shark risk in the Whitsundays. She has observed videos on social media where guests on privately chartered yachts were hanging large chunks of bait overboard and successfully attracting tiger sharks to their boats. <https://www.australiangeographic.com.au/topics/wildlife/2018/10/experts-weigh-in-on-the-whitsundays-shark-encounters/>

Wueringer stated, 'Their holiday fun actually conditions the sharks to associate yachts with food.' <https://www.australiangeographic.com.au/topics/wildlife/2018/10/experts-weigh-in-on-the-whitsundays-shark-encounters/>

3. Shark numbers are in decline

Opponents of shark culling claim such programs are based on ignorance of actual shark numbers, which are declining. Critics of culling argue that the measure places additional pressure on species already at risk.

On December 14, 2018, The Australian Marine Conservation Society (AMCS) issued a media release stating, 'The Australian Marine Conservation Society (AMCS) and Humane Society International (HSI) say Australians would be shocked to learn that in the past 55 years, shark populations have declined by up to 92% off the Queensland coast and from within the World Heritage listed Great Barrier Reef.'

<https://www.marineconservation.org.au/up-to-92-of-sharks-in-queensland-waters-gone/>

The release further stated, 'The steep decline is driven by commercial shark fishing compounded by fishery mismanagement by successive Queensland and Federal Governments. There has been chronic underreporting of threatened and endangered shark species caught since the Queensland Government abandoned an independent observer program in 2012. Earlier this year, the Federal Government also denied protection of the scalloped hammerhead shark, allowing it to be fished in the World Heritage listed Great Barrier Reef Marine Park.' <https://www.marineconservation.org.au/up-to-92-of-sharks-in-queensland-waters-gone/>

Dr. Leonardo Guida, Senior Shark Campaigner at AMCS has stated, 'Incredibly, commercial fishers can catch up to 120,000 sharks each year in our Great Barrier Reef. Those in the commercial sector who want to increase shark fishing quotas are simply ignoring the science... Sharks are critical to the Reef's health and resilience. This is something we must fix for the Reef right now. Quotas must be slashed. The independent observer program needs to be reinstated so that we can truly understand the impact commercial fishing has on sharks and

the Great Barrier Reef." <https://www.marineconservation.org.au/up-to-92-of-sharks-in-queensland-waters-gone/>

Regarding the shark culling program operated by the Queensland government, Nicola Beynon, Head of Campaigns at HSI, has stated, 'This is also more scientific evidence against the shark culling program that Queensland operates off its coastline. These long term declines put the dire situation for sharks into perspective and every effort must be put in place to protect sharks not kill them.' <https://www.marineconservation.org.au/up-to-92-of-sharks-in-queensland-waters-gone/>

The marine conservation organisation, Sea Shepherd, has stressed the impact that a severe decline in shark numbers has on marine environments. Its Internet site states, 'As the apex predators of the oceans, the role of sharks is to keep other marine life in healthy balance and to regulate the oceans. Studies are already indicating that regional elimination of sharks can cause disastrous effects including the collapse of fisheries and the death of coral reefs.' <https://www.seashepherd.org.au/apex-harmony/overview/shark-importance.html>

4. The Whitsunday tourist industry does not favour culling or permanent drum lines
Among the opponents of culling and permanent drum lines in the Whitsundays are key members of the local tourist industry. The region is renowned for its eco tourism and locals appear concerned that aggressive shark control measures will damage that reputation and provoke hostility from sections of the community concerned about shark safety. There is also concern among locals that permanent drum lines will consolidate the idea among potential tourists that the Whitsundays are a dangerous area.

In September, 2018, then general manager of Tourism Whitsundays, Natassia Wheeler, emailed Queensland Tourism Minister, Kate Jones's, policy adviser arguing for the removal of drum lines in the harbour due to negative media attention.

Mrs Wheeler, who is now chief executive of Tourism Whitsundays, emailed the policy adviser on September 24 asking: 'Is there anything you can do to have these (drum lines) removed? If you keep these drum lines in, you are going to keep catching sharks.'

The media attention will change from the attacks to the number and size of sharks caught in the Whitsundays, and then that it is an unsafe place to visit and swim.'

<https://www.couriermail.com.au/news/queensland/queensland-government/whitsundays-tourism-asked-for-drumlines-to-be-removed-from-shark-attack-hotspot/news-story/ffdaac539e2601e1fea96c9c269cf186>

Later Mrs Wheeler explained that Tourism Whitsundays was also concerned about the negative reactions it had received from people concerned about shark conservation.

Mrs Wheeler claimed she had received 'emails, threats (and) horrible phone calls' from people who mistakenly thought Tourism Whitsundays authorised them.

<https://www.couriermail.com.au/news/queensland/queensland-government/whitsundays-tourism-asked-for-drumlines-to-be-removed-from-shark-attack-hotspot/news-story/ffdaac539e2601e1fea96c9c269cf186>

One local woman, Kellie Leonard, wrote a similar open letter to the Queensland Premier, Annastacia Palaszczuk, stating, 'It would be a lot easier to advise tourists not to swim in the areas with mud bottoms, rather than scaring people by seeing sharks getting caught on drum lines, in what will always be a sharky area.'

<https://www.australiangeographic.com.au/topics/science-environment/2018/11/drum-lines-arent-the-answer-education-is/>

Local diving instructor Tony Fontes, who has lived in the area for 40 years, has claimed that while tourism operators and the government were divided, locals were resolute in their stance against drum lines.

Mr Fontes stated, 'The community at large is very much against the drum lines, this was clear following the back-to-back bites in September... The local politicians are calling for permanent drum lines and honestly, we're just trying to ignore them. We've moved beyond that, because we tried it and it didn't work. This is also because people know sharks are important and that we are able to keep swimmers safe without killing them.'

<https://www.australiangeographic.com.au/topics/science-environment/2018/11/drum-lines-arent-the-answer-education-is/>

Local plumber Matt Neal has stated, 'I think we need to be careful to be seen as responding sensitively, we can't have a knee-jerk reaction. Queensland is already seen as a bit redneck; I don't think we should contribute to that.'

<https://www.couriermail.com.au/news/queensland/airlie-business-owners-warn-of-economic-slump-as-fear-grips-tourists/news-story/d8fa2926a08ff384b5a840dd296b33fa>

5. People no longer want to have sharks killed

Popular opinion seems to have shifted substantially against shark culling and drum lines, so that, particularly in areas where these measures have not been traditionally employed, these measures do not meet with community acceptance.

Public polls conducted by ABC Brisbane, Channel 7 Brisbane, The Morning Show, the Courier Mail and Fairfax Media show the public is overwhelmingly against the Queensland Government's shark culling program.

The polls were conducted online in response to the first two shark attacks at Whitsunday Island on September 19 and September 20, 2018, after which the Queensland Government placed drum lines which resulted in the deaths of six sharks.

<https://hsi.org.au/newsroom/polling-shows-public-strongly-opposed-to-qld-shark-culling>

The Morning Show asked: Four sharks have been killed following two attacks that's left victims in hospital -- but do you think sharks should be culled? Ten percent of respondents voted 'Yes,' and 90 percent 'No' from 13,100 responses.

ABC Brisbane asked: Should sharks be culled in response to attacks on humans? 16 percent of respondents voted 'Yes,' and 84 percent 'No' from 9,100 responses.

Channel 7 Brisbane asked: Do you agree with catching and killing sharks? 23 percent of respondents voted 'Yes,' and 77 percent 'No' from 12,700 responses.

Courier Mail asked: Should sharks be culled in Queensland? 31 percent of respondents voted 'Yes,' and 69 percent 'No' from 552 responses.

Fairfax Media asked: Do you support the culling of sharks after an attack? Ten percent of respondents voted 'Yes,' and 90 percent 'No' from an unspecified number of responses.

Lawrence Chlebeck, Marine Campaigner at Humane Society International, has stated, 'These polls show the public does not want to see sharks culled in our oceans.'

<https://hsi.org.au/newsroom/polling-shows-public-strongly-opposed-to-qld-shark-culling>

It would appear that even the relatives of those who have suffered a shark attack do not necessarily support shark culls or drum lines. Mrs Barwick's husband Craig said he understood the government's response installing temporary drum lines after his wife was attacked and stated 'and in some ways I appreciate it. However we have to understand that while there have been two attacks in rapid succession, shark attacks are rare and sharks play an important role in the ecosystem of the Great Barrier Reef.'

<https://thenewdaily.com.au/news/state/qld/2018/09/27/shark-drum-lines-whitsundays-cid-harbour-attacks/>

Further implications

Popular attitudes toward shark attacks in Australia appear to be shifting with an increasing number of people believing that the shark is a valuable and vulnerable animal whose natural territory is the ocean and that people who enter the water do so at their own risk.

A comparative study published in August, 2017, examining popular attitudes toward sharks after serious shark attacks in Ballina, New South Wales, and Perth, Western Australia, revealed that only 15 percent of respondents in Ballina preferred lethal policy responses while in Perth the figure was 22 percent.

<https://onlinelibrary.wiley.com/doi/full/10.1111/conl.12407> The study's authors concluded, 'This first comparative study of coastal communities affected by shark bites... is the most conclusive evidence yet of a change in public opinion toward sharks.'

<https://onlinelibrary.wiley.com/doi/full/10.1111/conl.12407> The study further noted, 'It is clear that there is a disjuncture between public opinion and the policies implemented by the New South Wales and West Australian governments, which included lethal nets in New South Wales and shark hunts in Western Australia.'

<https://onlinelibrary.wiley.com/doi/full/10.1111/conl.12407> The study suggests that politicians are reacting to media reports of public opinion rather than the actuality.

The response both popular and political around the shark attacks in Cid Bay, Whitsunday Island conform to this pattern. Local tourist operators and local people appear to have objected to the drum lines that were installed after the first two shark attacks in September. Local diving instructor Tony Fontes, stated, 'The community at large is very much against the drum lines. This was clear following the back-to-back bites in September... The local politicians are calling for permanent drum lines and honestly, we're just trying to ignore them. We've moved beyond that...because people know sharks are important and that we are able to keep swimmers safe without killing them.'

<https://www.australiangeographic.com.au/topics/science-environment/2018/11/drum-lines-arent-the-answer-education-is/>

The desire for alternative solutions appears to be quite general. In the Ballina-Byron Bay area there was a spate of shark attacks in 2015-6 that provoked community and political concern. Interestingly, however, the current response has not been a lethal solution. In July, 2017, it was announced that ten new Smart drum lines were to be deployed at local beaches between Brunswick Heads and Broken Head. <https://www.echo.net.au/2017/07/shark-drumlines-deployed-byron-beaches/>

Smart drum lines alert operators to an animal caught on the line. The unit then sends an alert via phone, email and text to researchers with the location and the shark is tagged, relocated and released.

The Parliamentary Secretary for Northern New South Wales, Ben Franklin, stated, 'The New South Wales Liberal & Nationals Government is committed to protecting beachgoers across New South Wales and SMART drum lines are proving to be one of the most effective measures.'

The New South Wales Government's Shark Management Strategy is a science driven, innovative project designed to balance the need between shark bite mitigation and the protection of marine species.' <https://www.echo.net.au/2017/07/shark-drumlines-deployed-byron-beaches/>

Local tourism operators in the Whitsundays are showing a similar concern to develop non-lethal means of controlling sharks and protecting swimmers.

<https://www.couriermail.com.au/news/queensland/whitsundays-charter-operators-plan-to-stop-shark-attacks/news-story/50177c064c88e4f84d7c15ecec71efb>

On November 24, 2018, The Courier Mail reported that a Whitsunday bareboat charter company has equipped each of its 40 boats with shark deterrent devices in the wake of recent

shark attacks in Cid Harbour. The devices can be worn on a swimmer's ankle or attached to a boat ladder, giving a four metre by six metre protection zone for anyone within that area. Since May 2017, the Western Australian Government has offered a \$200 rebate for surfers and divers who buy an approved shark deterrent device, including the model being used in the Whitsundays and another device. The Western Australian government said they were the only devices independently tested and scientifically demonstrated to reduce significantly the risk of shark attack. <https://www.couriermail.com.au/news/queensland/whitsundays-charter-operators-plan-to-stop-shark-attacks/news-story/50177c064c88e4f84d7c15ecec71efb>

The need for further research, both in terms of effective shark control measures and shark repellents has been stressed by shark experts and recognised by governments. One of the areas where research is needed is in understanding shark behaviour and migration patterns. The apparent paradox of local fishermen in the Whitsundays claiming that shark numbers are increasing while shark experts claim their overall numbers are in dramatic decline would appear to be explained by local variation, that is, shark numbers in some areas may have grown, despite the fact that total shark numbers have fallen steeply. Effective research is needed to determine these local variations and what causes them so that humans using these waters can be adequately warned.