

Australian shark-cull plan draws scientists' ire

Baited hooks in Western Australia could damage vulnerable white shark populations.

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13 December 2013

Western Australia's plan to start culling sharks in a "more aggressive" attempt to prevent attacks on humans could severely damage populations of threatened great whites, experts say. It is also based on an antiquated approach to the problem, shark researchers say, and seems to contradict the scientific advice given to the region's government just last year.

"My immediate reaction is disgust", says George Burgess, a noted shark researcher at the Florida Museum of Natural History in Gainesville. "This is an archaic response to this kind of a problem, and one most scientists thought had seen its day decades ago."

The total number of shark attacks is extremely low. One 2011 study found an average of 1.1 fatalities per year in Australia over the past 20 years.¹

But after a number of high-profile attacks in Western Australia — six of them fatal in the past two years — the government of the region said earlier this week that it would start deploying 'drum lines' 1 kilometre offshore of popular beaches in January. These lines consist of a baited hook hanging from a float that is anchored to the sea bed, with the aim of catching and killing sharks. In addition, 'management zones' will be set up around some beaches, and any large shark venturing into these zones will be killed.

Scientific objections to such a programme of culling sharks centre on the fact that in order to reduce attacks, a substantial number of animals will have to be removed, which will have a serious impact on the survival of already threatened species in the region. "If they take enough sharks out of the water, sure it's going to reduce shark attacks," says Burgess. "If you get all of them out of the water you'll never have a shark attack again."

Three species of shark are responsible for most attacks on humans: the great white shark (*Carcharodon carcharias*), which is rated as a species vulnerable to extinction by the International Union for Conservation of Nature, the tiger shark (*Galeocerdo cuvier*), which is rated as near-threatened, and the bull shark (*Carcharhinus leucas*), which is also rated as near-threatened.

A report prepared for the government of Western Australia last year by Daryl McPhee, a fisheries researcher at Bond University in Gold Coast, Australia, warned that control programmes would have "potential implications for the populations of any currently threatened marine species" and could also pose a risk to dolphins. It concluded that: "Due to the environmental impacts of shark control activities, it is not recommended that either shark nets [or] drum-lines be introduced into Western Australia."

Globally, only three major shark control programmes are currently in operation that use drum lines, nets or a combination of the two. Two of them are in Australia (in Queensland and New South Wales) and the other is in KwaZulu-Natal in South Africa. But the announcement of a new programme in Western Australia has again focused debate on the controversial practice, not least because the region is thought to be migration route for great whites.

Alison Kock, a shark-control researcher and a marine biologist with the Shark Spotters programme, which aims to spot and alert water users to sharks off the Cape Peninsula in South Africa, said in an e-mail to *Nature* that the KwaZulu-Natal programme has "undeniably reduced the risk" of shark attacks. But this has come at an environmental cost. Culling, she says, is not an appropriate response to



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A tiger shark caught off the coast of Queensland, in eastern Australia, in a practice that is now to be applied to the seas surrounding Western Australia as well.

shark attacks, and “the targeted culling of a threatened species, like the white shark, is especially environmentally irresponsible”.

Shark attacks often attract huge publicity, but the risk of death from these animals is low compared to other causes of death. For comparison, according to the Australian Bureau of Statistics, 1,522 people died in transport accidents in Australia in 2011, 1,845 died in falls and several died after being bitten by dogs (the exact number is concealed to protect individual confidentiality).

However, an increasing human population and an increase in the number of people taking to the water for recreation has pushed up the overall number of shark attacks in Australia from 6.5 per year in the 1990s to 15 per year in the 2000s.

“We need to consider that we’re visitors to that marine environment,” says Burgess. “The question it comes down to is more of a moral choice: are we willing to alter the natural system to the point of breakage, at least in terms of particular species, for the safety of a human who is invading that foreign world?”

Nature | doi:10.1038/nature.2013.14373

References

1. West, J. G. *Mar. Freshwater Res.* **62**, 744–754 (2011).