

## VIEWPOINT

## When Science Places Threatened Species at Risk

Jessica J. Meeuwig<sup>1</sup>, Robert G. Harcourt<sup>2</sup>, & Frederick G. Whoriskey<sup>3</sup><sup>1</sup> Centre for Marine Futures, School of Animal Biology and Oceans Institute, University of Western Australia, Crawley, WA, 6009, Australia<sup>2</sup> Australian Animal Tagging and Monitoring System-Integrated Marine Observing System, Department of Biological Sciences, Macquarie University Sydney NSW, 2109, Australia<sup>3</sup> Ocean Tracking Network, Department of Biology, Dalhousie University, 1355 Oxford Street, Halifax, NS, B3H 4R2, Canada

### Correspondence

Jessica J. Meeuwig, Centre for Marine Futures,  
School of Animal Biology and Oceans Institute,  
University of Western Australia, Crawley, WA,  
6009, Australia.

Tel: +61-400-024-999; fax: +61-8-6488-7278.

E-mail: jessica.meeuwig@uwa.edu.au

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The State Government of Western Australia (WA) implemented a policy of “imminent threat” in 2014 whereby large sharks in proximity to bathing beaches can be subjected to a kill order. This follows a history of “catch-to-kill” orders in WA, with most other Australian jurisdictions also having the ability to instigate hunts. Similar provisions also exist in other jurisdictions including Egypt, Mexico, Réunion Island, Russia, and the Seychelles.<sup>1</sup> The WA policy was implemented despite the State’s Environmental Protection Authority rejecting lethal shark hazard mitigation programs on the grounds that such a program’s threat to recovering populations of white sharks was uncertain and its safety benefits unclear.<sup>2</sup> Critically, the major target of the imminent threat policy is the white shark, a species protected as Endangered under the Australian *Environmental Protection and Biodiversity Conservation Act* (1999).

It is of great concern to us that the latest shark identified as an imminent threat was a white shark acoustically tagged for research: the animal’s presence in the area was only known because it had been tagged for science and there was no evidence that it had posed a threat to public safety. This imminent threat policy undermines the important and far-sighted shark tagging research

programs undertaken in Western Australia (WA), elsewhere within Australia, and globally. Tagging generates critical information that underpins our understanding of shark distribution, movements, and behavior, providing important insights into their ecology and the health of marine ecosystems. White shark populations are depleted, and tagging-derived information is essential to meet regulatory requirements for their management and conservation.

The use of information from a tagged research animal to locate and kill it destroys the very premise of the research, and can have catastrophic consequences at multiple levels. First, by killing tagged animals, we immediately lose the real-time early warning system that representative tagged animals provide by informing managers of the presence of the tagged species. Second, in the long term, we lose information that may help us predict the likely presence of dangerous species and enact proactive mitigation in advance of their likely presence. Third, it is difficult, dangerous, and costly to capture and tag these animals. Scientists will be much less likely in the future to try and tag the sharks as part of long-term scientific investigations if the information is used to kill animals. There is immense professional investment in

these research programs, and many scientists will feel individually and professionally responsible for aiding lethal actions. Finally, telemetry networks that support this research, such as the Ocean Tracking Network (OTN) and the Australian Animal Tagging and Monitoring System-Integrated Marine Observing System (AATAMS-IMOS) are built on and owe their efficacy to cooperation between hundreds of scientists and multiple partner agencies. This cooperation is built on the recognized benefits to both the research community and the public of open access to data and shared infrastructure. Action such as that taken by the Western Australian government to target and kill tagged animals has the capacity to undermine the trust necessary for these extensive, complex, valued, and highly informative collaborations. Many white shark tagging programs have developed as long-term cooperative programs between private industry (e.g., cage diving) and research organizations. The investment in these collaborations is now placed directly at risk with industry fearing that by tagging sharks, they help increase the likelihood that their sharks might be destroyed, thereby directly harming their industry. As a consequence, some partners will no longer register with OTN or AATAMS-IMOS for fear of such consequences.

Globally, telemetry networks are expanding with significant investment and capability across national boundaries. With these enhanced networks, sharks have been recorded traversing immense distances and crossing international boundaries on an ever increasing basis. For instance, telemetry has shown that a tagged white shark from South Africa crossed the Indian Ocean to WA and then returned to South Africa, a previously unsuspected transoceanic migration. Similarly, researchers thousands of kilometers away in different states or countries have

marked many of the tagged sharks recorded in WA. Therefore, local decisions to destroy tagged individuals within any single jurisdiction may have consequences in jurisdictions far beyond the authority of the decision maker. Lethal shark hazard mitigation programs exist in two Australian States (New South Wales and Queensland), KwaZulu-Natal (South Africa), Réunion and the Seychelles, with extension of lethal programs being considered in other jurisdictions. These locations also often support tagging programs or are visited by animals tagged in other areas.

The new information derived from telemetry combined with other biological knowledge suggests that shark-human interactions are largely random and rare events as sharks move through their habitats. Kill orders such as the one in WA are shortsighted, misdirected, target a political rather than an actual need, and block investment in knowledge generation. There is a serious need to ensure that science done through the tagging and tracking of animals is not used to generate contrary and morally questionable outcomes, particularly for threatened species. Ultimately, we improve ocean safety through enhanced knowledge rather than undermining the very basis of that knowledge by killing tagged research animals.

- (1) Neff, C. (2014) Human perceptions and attitudes towards sharks: examining the predator policy paradox. Pages 107–131 in E.J. Techera and N. Klein, editors. *Sharks: conservation, governance and management*. Earthscan Routledge, London & New York.
- (2) Western Australian Shark Hazard Mitigation Drum Line Program 2014–2017, Report 1527, <http://edit.epa.wa.gov.au/EPADocLib/Rep%201527%20Shark%20Drumline%20PER%20110914.pdf>. Accessed September 2014.

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