Submission No 62

MANAGEMENT OF SHARKS IN NEW SOUTH WALES WATERS

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23 October 2015

The Chair,
Committee on Investment, Industry and Regional Development,
Parliament House,
Macquarie Street, Sydney NSW 2000

Subject: Management of Sharks in NSW Waters

Thank you for your invitation to comment to this inquiry. I am a biological oceanographer at UNSW and SIMS, and have considerable interest in the biology of sardine (Sardinops sagax) and the effects of the East Australian Current on plankton production. I believe these are important variables on the distribution of predatory fish, and draw your attention to the published work by CSIRO scientist Dr Alistair Hobday. In these papers (and others) he provides real-time fishing permits for southern bluefin tuna based on SST (sea surface temperature). The fishers can access this dynamic information while at sea, rather relying on simple geographic (latitudinal) regulations. The species distribution modelling (e.g. Brodie et al.) is based on sparse data sets, and includes generating "pseudo-effort", which will be necessary for an equivalent analysis of shark distributions (e.g. white shark south of the Tasman Front; tiger shark north of the Tasman Front; bullsharks, summer-estuarine visitors).

- Hobday, A. J. and K. Hartmann (2006). "Near real-time spatial management based on habitat predictions for a longline bycatch species." Fisheries Management and Ecology 13(6): 365-380.
- Hobday, A.J., Hartog, J.R., Timmis, T., and Fielding, J. 2010. Dynamic spatial zoning to manage southern bluefin tuna (Thunnus maccoyii) capture in a multi-species longline fishery. Fish. Oceanogr. 19(3): 243–253. doi:10.1111/j.1365-2419.2010.00540.x.
- Brodie, S, AJ Hobday, JA Smith, JD Everett, MD Taylor, CA Gray and IM Suthers. 2015. Modelling the oceanic habitats of two pelagic species using recreational fisheries data. Fisheries Oceanography 24: 463–477

An analysis of historical shark distribution and attacks would be useful, to distinguish the present "shark-weather" versus a general trend of "shark-climatology". Clearly the effect of increasing coastal use by NSW needs to be incorporated into these trends to ascertain if the trend is upwards.

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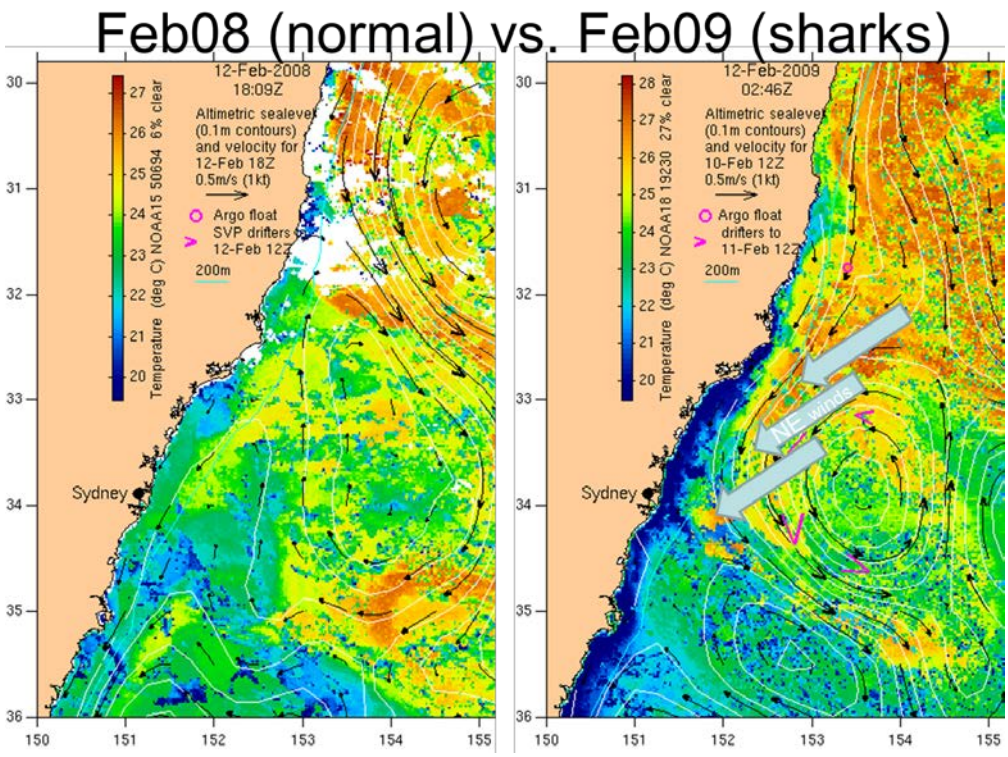
My interest in shark distribution and shark risk is based on the tragic events of late summer 2009, when in late February there were 2 shark attacks in 36 hours (in Sydney Harbour and off Bondi). The previous attack in the harbour was in 1963, and the previous attack off Bondi in 1929. Then there was a third attack 2 weeks later in March, and none in the local area since (apart from the current spate of shark attacks in 2015).
What was so unusual about late summer 2009? An inspection of that national IMOS data service, displayed in OceanCurrent (http://oceancurrent.imos.org.au/), reveals there was strong persistent upwelling in that month, compared to any other February before or since. In fact during late February 2009 Sydney was experiencing a heatwave, but with the persistent and characteristic NE winds, coupled with upwelling favourable currents offshore, the upwelling was so strong that marathon swimmers at Bondi had to be treated for hypothermia.



Why would cold coastal water increase the incidence of shark attack is unclear, and any such mechanism is unable to explain the recent spate of attacks in 2015. My personal opinion is that the oceanography of 2015 may be distinctively different, and that 2016 shark attack may return to background levels. My point is that the science behind these predator movements is immature, and we need a similar forecast as BoM provides for bushfire risk. An approach could include SST, and ocean colour, to provide a potential risk (red, orange, green) which would be refined with improved understanding and biological data (especially baitfish, or whales).

I hope this letter encourages the committee to incorporate oceanographic variation into their report

Yours sincerely,

[redacted]

Iain Suthers