Submission No 23

MANAGEMENT OF SHARKS IN NEW SOUTH WALES WATERS

Organisation: Southern Region SLSA Helicopter Rescue Service

Name: Mr Euan McKenzie

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Submission to the NSW Parliament 'Committee on Investment, Industry and Regional Development' for consideration in the:

'Inquiry into the management of sharks in NSW waters.'

By. Euan McKenzie, Aircrew Officer, Southern Region SLSA Helicopter Rescue Service.

Introduction.

In considering how recreational and professional, ocean users can best co-exist with sharks, I will draw upon my knowledge and experience in airborne surveillance roles and the collective aircrew experience gained over the last forty three years at the Westpac Lifesaver Helicopter, to explore the effective employment of helicopter patrols, for the prevention of shark attacks.

The Westpac Lifesaver Helicopter operates 365 days/year from our bases at La Perouse in Sydney and Moruya on the South Coast. Since 1973, we have provided rescue and surveillance helicopter services to the people of NSW through our parent organisation, Surf Lifesaving Australia. The 'action sequence' concept introduced here, describes how we deal with shark sightings that may become a threat to ocean users. Interpretation of the NSW DPI 2012 'Assessment of shark sighting rates by aerial beach patrols' will also be reviewed, with reference given to my practical experience and the collective wisdom of Lifesaver aircrew.

A shark patrol helicopter has identified a shark that may be a threat to swimmers, what happens next?

Action sequence.

Identify the shark, assess the threat.

Once the crew have identified a shark, they assess if it is, or may become a threat to swimmers and surfers. They consider its size, species, direction of travel and the lay of the land, in making this decision. Whilst crews will always err on the

side of caution, it is important that the 'action sequence' only be initiated when a threat is identified, to avoid the development of a 'cry wolf' syndrome.

Assigning patrol times to recognise periods of high shark threat, that coincide with high numbers of ocean users, significantly increases the effectiveness of a helicopter patrol. Low wind speed and clear skies favour increased penetration visibility of the water, making the sharks easier to spot. These conditions are also the more appealing times for ocean users to frequent the beach.

Warn ocean users by siren and/or PA system.

The sound of a siren blaring from a recognisable Lifesaver helicopter (ie. Red and Yellow) is synonymous with a shark threat in the area. The helicopter may have to move forward or back along the beach, to the location of threatened swimmers and surfers, in the execution of this action.

Communicate the threat.

Once the shark has been identified as a threat, the crew inform relevant Lifeguards, Surf Lifesavers and SLSA Communication Centres via the state wide SLSA radio network. A helicopter that does not have the capacity to access the network should not be used for shark patrols.

Herd the shark away from ocean users.

The helicopters downwash on the water can be used to drive the shark in any desired direction by manoeuvring the helicopter in a low and slow hover. I have seen this technique applied on several occasions and was most recently employed to drive a Bronze Waler shark away from a Junior Surf Carnival, following an attack on a nearby diver at Narrawallee NSW. The inability of fixed wing aircraft to manipulate the shark's direction of travel, is what sets the helicopter apart, as a far more effective solution.

Map the shark siting by time and location.

Should the need for dedicated shark patrol flights arise, our Surf Lifesaver Aircrew would photograph sharks with a GPS equipped camera. Photos with

embedded position information and a time/date stamp would be imported into a satellite mapping program that may be accessed remotely at any time for assessment by stakeholder representatives.

Collate and interpret the data.

Collation and interpretation of the data would aid in the identification of 'hot spots', which may give rise to a more dynamic patrol roster, that favours areas of higher probability. Relevant stakeholders would have access to weekly, monthly and annual reporting, as well as immediate incident reports.

Effectiveness of helicopter shark patrols.

A brief comparative analysis of shark attack data between Western Australia and NSW since 2012, reveals a drastic increase in attacks in NSW, whilst WA enjoys a steady decline in attacks (taronga.org.au). Whilst I concede that there are many contributing factors to shark attack statistics, the steady reduction in attacks correlates with the Western Australian Governments' expansion of helicopter shark patrols with Westpac Lifesaver WA. In the financial year 2013/14 Lifesaver Helicopters conducted 703 flight hours of patrol and identified 243 sharks (surflifesavingwa.com.au). In 2015 thus far, WA has had only one recorded attack and no fatalities, compared to the 13 attacks so far in NSW (taronga.org.au).

Another perceived hotspot for shark fatalities is South Australia. With only one attack and no fatalities, this year to date (taronga.org.au), the Westpac Lifesaver Helicopter in SA will fly in excess of 1000 hours of shark patrols this year (surflifesavingsa.com.au). South Australia has not experienced a shark fatality since the extended patrols started in 2013.

Despite the positive reflection on helicopter shark patrols being experienced by other states, the NSW Government has chosen to reject this indicative success, seemingly based only on a token NSW DPI flight trial and the findings of Robbins *et al.* (2012) report 'Assessment of shark sighting rates by aerial beach patrols'. The NSW DPI commissioned, 2010/11 Helicopter shark patrol trial engaged a

helicopter company with no prior shark patrol experience (Robbins *et al.* 2012) and concentrated patrols in the populated areas from Newcastle in the north to Wollongong in the south, despite this region not experiencing an open water shark fatality in the last fifty years (wikipedia.org).

The importance of contrast in aerial surveillance

For over twenty years, I have been a search and rescue aircrew member, operating out of helicopters and fixed wing aircraft and in that time it has been some form of contrast that has preceded the locating of a lost person or desired target. Be it an orange lifejacket contrasting against a blue ocean or the unnatural movement of a manmade object amongst the consistent motion of a natural environment. In the case of sharks, they are very easily spotted from a helicopter when their dark (moving) shadows are contrasted against the latte coloured (static) back drop of the shallower waters. The backlit areas of the shallower waters are a result of sunlight penetration to the sandy sea floor. This high penetration visibility zone also represents the area where the vast majority of ocean users congregate to swim and surf. In my view, Robbins *et al.* (2012) failed to recognise the importance of contrast in the undertaking of the shark patrol trial.

Methods used in the NSW DPI shark patrol trial that are potentially inconsistent with best practice for aerial shark detection include:

- The dummy trial in Jervis Bay was undertaken completely in deep water, not allowing the aircrews the benefit of contrast. This is also not reflective of the ocean profile where actual shark patrols would be undertaken or where the vast majority of ocean users congregate.
- The coastal aerial patrol flights were flown along an approximate line "500m seaward of the rear of the surfzone". This is in my view, to far out to sea and well away from most swimmers and surfers. For the aircrew to be able to identify sharks amongst the majority of the ocean users, they would be significantly hindered by reduced penetration visibility due to the increased angle between their eye line and the surface of the water.

This position does not represent the flight profile of an effective aerial shark patrol.

- The authors discounted the movement of sharks as being not significant. The dummy trial in Jervis Bay featured only static analogues. This is quite obviously not representative, as sharks never stop moving. In my experience the movement of any marine creature is usually the most obvious indicator of its presence, particularly when contrasted against static features of similar shape, such as submerged rocks.

Despite these constraints, helicopter crews performed quite well in the trial, sighting up to 57% more sharks than the more experienced fixed wing crews (Robbins *et al.* 2012).

Effective 'border to border' helicopter shark patrols for NSW.

The NSW Government has the unenviable task of developing effective shark mitigation strategies for over 2000km of coastline. With historical data showing a relatively even spread of attacks over the entire coastline (West, 2011) and a decentralised coastal population, there are no recognised hotspots of shark activity to focus efforts on.

Whilst our two existing Lifesaver Rescue Helicopters (Sydney and Moruya) are available for response to significant sightings and attacks, they would not be cost effective in an extended patrolling role. Therefore we propose to compliment their primary response capability with two light turbine patrol helicopters, one to be based at Ballina in the north and the second at our Moruya base, on the far south coast. We envisage designated 'patrol days' to include weekends, public holidays and school holidays. This equates to 193 days per year.

The Ballina based patrol helicopter would be airborne for up to two hours for each patrol day, covering the coastline south to Coffs Harbour and north to the Queensland border on alternate days. The Moruya based patrol helicopter would be airborne for up to six hours for each patrol day, covering Wollongong to Newcastle on every Patrol Day. South to the Victorian border and North to Coffs

Harbour would be covered on alternate patrol days. Both helicopters would be available to respond to significant sightings, incidents and attacks, 365 days/year. The end result being an effective border to border helicopter shark surveillance service for NSW.

Conclusion.

In considering the goal of shark attack mitigation strategies, I pose the question; Is this a matter of science or a matter of public safety? My fear is that a pure science based approach may not be in the best interests of public safety for all ocean users in NSW. Queensland, South Australian and Western Australian state governments continue to fund large scale helicopter coastal patrols, despite the significant costs involved. Why? Because it works!

Note: This document is submitted with the knowledge and support of the Southern Region SLSA Helicopter Rescue Service. However, the views expressed in this document belong to the author and may, in some cases, not be consistent with those of the Southern Region SLSA Helicopter Rescue Service.

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