

**A correlation study of the potential risk
factors associated with white shark
attacks in Western Australian waters**

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– Executive summary

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Fish for the future

Executive Summary

White Shark attacks have increased.

The incidence of White Sharks attacks (while still very low) has slowly increased over the past two decades at a rate faster than human population growth. This trend has been exceeded recently with an unprecedented number of attacks (5) occurring within the last year from September 2011. The Department of Fisheries has reviewed all the attacks recorded in Western Australia for the past 20 years and compared these with conditions at the time to identify any common patterns.

Summary of Outcomes.

Factors examined and patterns identified that can help inform ocean users about the relative risks they face when entering the water.

Higher Risk	Neutral	Lower Risk
Offshore (> 30 m from coastal shore)	Time of Day	Near Shore (< 30m from coastal shore)
Winter/Spring	Air Temperature	Summer/Autumn
Cooler Water (< 20oC)	Weather – light, rain and wind conditions	Warmer Water (> 22oC)
Deeper Water (> 5 m depth)		Shallow Water (< 5m depth)
Near whale carcasses and other potential attractants including seal/sea lion colonies		

Most White Shark attacks occur offshore.

Attacks are more likely to occur offshore, in deeper waters. Of the 26 shark attacks in Western Australia, only one has occurred close (< 30 m) to the shore. The highest number of attacks has occurred more than a kilometre offshore with SCUBA divers and snorkelers (44%) having the highest incidence followed by surfers and sea kayakers (37%). Swimmers, despite being the most numerous users of the ocean have comprised the smallest number of attacks.

White Shark attacks aren't site specific.

Attacks have occurred around most of the southern half of the Western Australian coast with the majority occurring in the greater Perth region down to Margaret River. This pattern is consistent with the distribution of water based activities around this part of the Western Australian coast.

The data do not show a clear increase in incidences of attack near seal and sea lion colonies. However, as White Sharks are known to attack seals and sea lions caution should be exercised in such locations.

White Sharks prefer cooler water.

Although overall water usage is highest during the summer and autumn, more shark attacks have occurred in winter and spring. This pattern is consistent with White Sharks being a temperate (cooler water) species. Relatively few attacks have occurred in waters above 22°C, most have occurred in waters below 20°C.

The winter and spring period also corresponds with whale migration season. While this may be coincidental, White Sharks are known to feed on whales so caution should be exercised near a whale carcass or other such attractant.

White Shark attacks can happen at any time of day.

There was no evidence to suggest that the risk of White Shark attack was greatly increased at dawn or dusk. Most attacks occurred in the middle of the day and data from tagged sharks show that they are active at all times.

Sharks don't care about the weather.

There is no specific pattern of weather conditions coinciding with higher levels of attack. The incidence of attacks is not limited to calm, overcast days.

Conclusion.

The evidence suggests the risk of attack by White Sharks remains very small, but it has increased slowly over the past two decades with an unprecedented number of attacks occurring during the 12 months from September 2011.

The relative risk of White Shark attack appears to be higher for activities undertaken further offshore from the coast, particularly when these are undertaken in cooler waters (< 20°C). Activities undertaken in shallow water close to the mainland, and especially when the water is relatively warm (> 22°C), appear to have the lowest relative risk. **There will, however, always be some risk of shark attack when undertaking activities in any marine waters.**

These findings will be used to assist future policy decisions on White Shark attacks, including the determination of factors that may constitute an imminent threat of attack. The findings will also form part of the community education campaign.