

PATTERN ASSOCIATION - A KEY TO RECOGNITION OF SHARK ATTACKS

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ABSTRACT

Investigation of a number of shark attacks in South Australian waters has led to recognition of pattern similarities on equipment recovered from the scene of such attacks. Six cases are presented in which a common pattern of striations has been noted.

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Key words: shark attack, serrated teeth, striation pattern

Shark attacks evoke fear within the general public due to the relative helplessness of humans against these marine predators. Although in absolute terms the incidence of shark attack is extremely low, there is considerable publicity attached to any attack. Australia, South Africa and North America have a relatively high risk of shark attack.¹

In the last 20 years South Australia has recorded 9 fatal shark attacks.² The species commonly associated with such attacks is *Carcharodon carcharias* or Great White Shark. In a number of cases a body has not been located but marine equipment has been recovered.^{3,4}

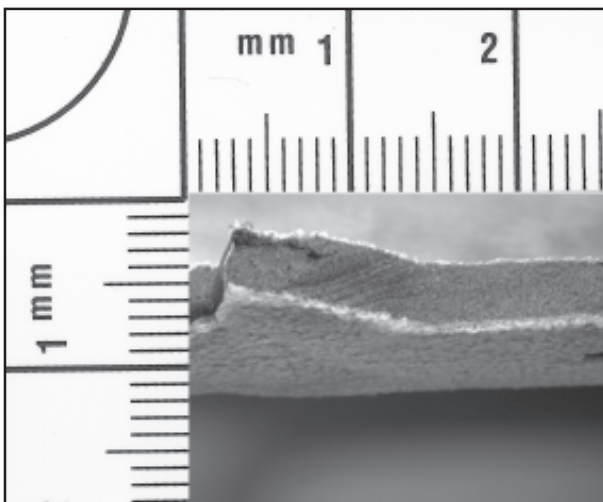


Fig.1: Wet suit

A review of the files at the Forensic Odontology Unit, University of Adelaide has revealed similar patterns on damaged equipment recovered in such cases, including wetsuits (Fig 1), lifejacket wires (Fig 2), surfboard leg ropes (Fig 3), sail-board yoke (Fig 4), diving weights⁴ (Fig 5) and a plastic fishing bucket (Fig 6). An eye-witness report in one case confirms that attack was by a Great White Shark.



Fig.2: Lifejacket wires

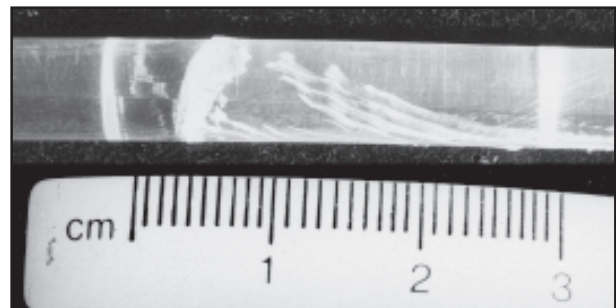


Fig.3: Surfboard leg ropes

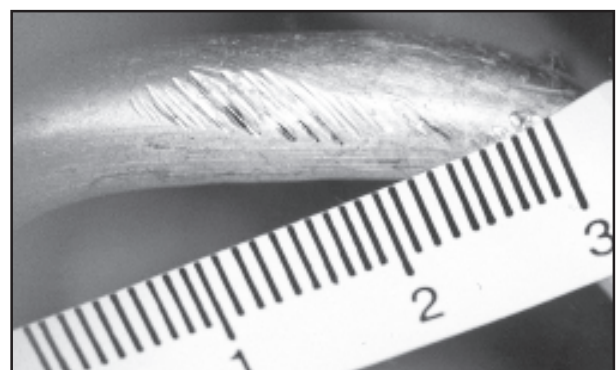


Fig.4: Sail board yoke

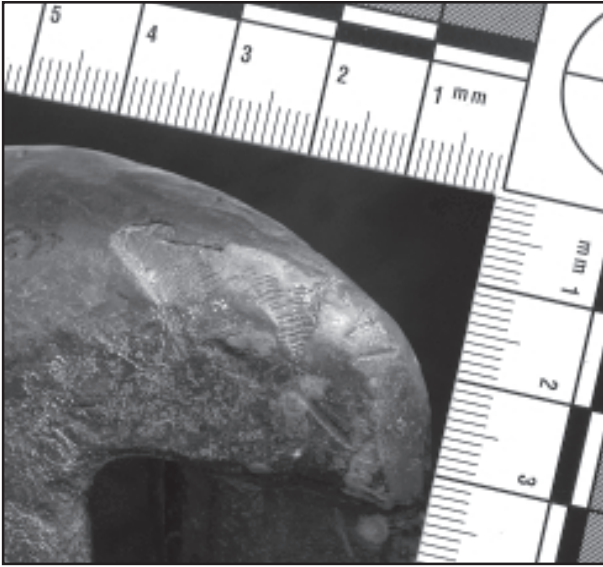


Fig.5: Diving weights

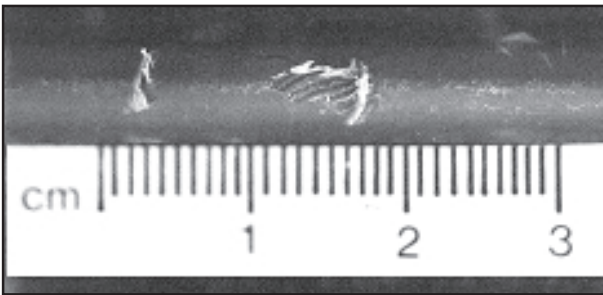


Fig.6: Plastic fishing bucket

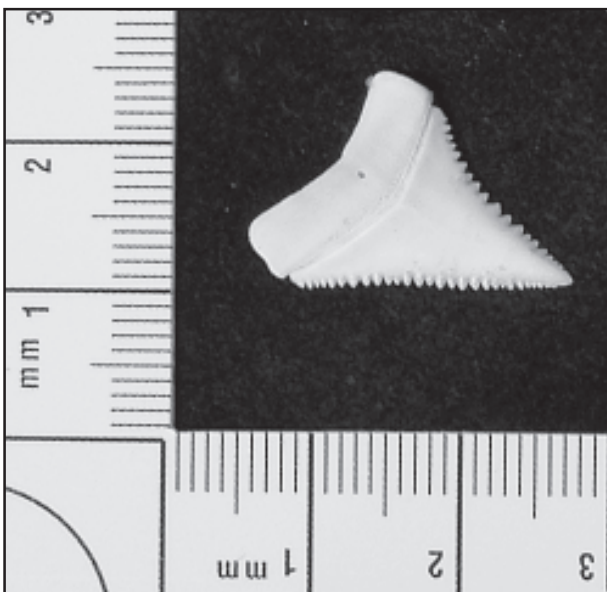


Fig.7: Serrations on a tooth of the Great White Shark

The appearance of striations in the objects involved in each attack is thought to be an indicator of serrations on the teeth (Fig 7) and the dragging movement of the shark’s dentition.

Many sharks other than *Carcharodon carcharias* also have serrated teeth.⁵ It is not known if species such as *Galeocerdo cuvier* (tiger shark) or *Carcharhius leucas* (bull shark), also noted for aggressive behaviour towards humans, would also produce similar striation marks.

In many cases of shark attack there is ample evidence of the damage that may result from the jaws of these creatures. However, when limited equipment is recovered following the disappearance of an individual, recognition of striation pattern marks may shed light on the manner of death.

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REFERENCES

1. Stevens JD ed. Sharks. Sydney: Golden Press Pty. Ltd.,1987:106-7.
2. Australian Shark Attack File, Taronga Zoo. www.zoo.nsw.gov.au/
3. Byard RW, Gilbert JD, Brown K. Pathological Features of Fatal Shark Attacks. *Am J Forensic Med Pathol* 2000;21:225-9.
4. Nambiar P, Bridges TE, Brown KA. Allometric Relationships of the Dentition of the Great White Shark, *Carcharodon carcharias*, in forensic investigations of Shark Attacks. *J Forensic Odontostomatol* 1991;9:1-16.
5. Last PR, Stevens JD. Sharks and Rays of Australia. CSIRO Australia, 1995:244,258.

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