

Improving Shark Welfare

By Kate Janice Makin

Introduction

Sharks have long been portrayed as indiscriminate predators who pose a serious threat to the life of any human who enters the sea. This perception dates back to Greek Mythology and has in recent times been reinforced by misrepresentation of sharks in western art and literature and by media sensationalism surrounding attacks on humans. In the 20th century, no single event caused more public concern about the "shark menace" than the release in 1974 of Peter Benchley's book *Jaws*, and the film that followed (Alston et al., 1987). Although there are only four species of shark that pose a serious threat to humans (white shark, tiger shark, bull shark and oceanic white-tip shark), generally all species are included in this stereotype (Gold and Springer, 1999).

Discussion

What are the welfare implications of this? The misunderstanding of sharks has had a significant and detrimental effect on their welfare. Beach netting or meshing is designed to reduce the threat and incidence attack on humans by placing a physical barrier between the shark and the human. This has been effective in many areas, however its effectiveness is not merely due to its function as a physical barrier, because more commonly sharks become entangled in the nets and die (Alston et al., 1987). In addition to this, many sharks are killed in retaliation to attacks on humans, because they are perceived as being dangerous or simply to demonstrate dominance over the supposed "terror of the deep" (Parker and Parker, 1999). The methods commonly used in these include spear guns fitted with explosive charges, darts that inject carbon dioxide into the shark's body cavity through a large hollow needle and conventional firearms (Alston et al., 1987). These methods are of serious welfare concern as they frequently do not kill the shark outright and often the injured shark will be clubbed or hacked to death (Parker and Parker, 1999).

Contrary to popular belief, it is highly unlikely that a person will be attacked by a shark. In a study of the incidence and outcomes of shark attack Cliff et al. (2001), confirmed that sharks do not represent a significant threat to humans. Their report analysed 86 consecutive shark attacks and recorded the nature, treatment and outcome of the victim's injuries. In this study it was revealed that on average there are only 49 confirmed shark attacks worldwide annually and that only six of these are fatal. Furthermore it was revealed that 81% of victims received relatively minor injuries that required only simple primary suture. It was also shown that in 80% of fatal attacks death occurred as a result of exsanguinating haemorrhage from a limb vascular injury. In addition to this it was suggested that some of these deaths could be prevented through appropriate trauma management including arrest of haemorrhage and early resuscitation with intravenous fluids. The article concluded that life-threatening injuries from shark attack are rare, especially when appropriate management of injuries is rapidly implemented. Findings such as these have the ability to shape individual and community perceptions of sharks and have the potential to enhance their welfare.

By investigating and understanding shark behaviour we can better understand the threat that sharks pose to humans. Cantara et al. (2001) studied the behaviour and hunting strategy of white sharks (*Carcharodon carcharias*) near a seal colony and found that individuals displayed predictable behavioural pattern while hunting. Using ultrasonic beacons they were able to demonstrate that each shark patrolled preferential areas of a predatory zone. All sharks entered the zone several times each day and remained in close proximity to it at all times. Activity within the zone was equal at all times of the day (i.e. day, night and twilight) and the sharks were observed to swim mostly parallel to the shore. This study is limited in that it describes the predatory behaviour of white sharks alone; no other species were included in the study. A further study by Cantara et al. (2001) assessed the effectiveness of using radio-acoustic-positioning (RAP) to monitor the movements of and behaviour of large

marine animals including sharks. By tagging sharks with beacons and telemetry transmitters they demonstrated that RAP could be used to provide precise information about the movement and position of sharks. It was shown that the system is able to accurately locate a tagged stationary shark, however, this system was only tested over a small area (1km²) and was shown to be less accurate when tracking moving sharks. It was also shown that RAP could be used to identify and describe specific behavioural activities such as feeding. These studies have demonstrated that shark behaviour can be predicted and that accurate methods are available for monitoring shark behaviour and movements. This knowledge and technology could be implemented to monitor shark behaviour and movements in popular swimming locations and areas where attacks are more frequent. This has the potential to improve shark welfare by reducing the perceived threat to humans and possibly replacing the need for beach netting.

Conclusion

These studies have significant welfare implications for sharks. By increasing our understanding of shark behaviour we can demonstrate that many commonly held beliefs about sharks and the danger represent are unsubstantiated. By eliminating these misconceptions and developing new methods for monitoring shark behaviour and movements we can enhance the welfare of sharks.

References

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