

## CASE STUDY

# Crater wounds in marine mammals

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### INTRODUCTION

Small squaloid sharks, *Isistius* sp., have been suggested as the cause of crater wounds on large pelagic fishes and cetacea (Jones 1971). They have even been known to bite the rubber sonar domes of nuclear submarines. Commonly called the Cookie-cutter Shark, this animal has an oceanic, circumtropical distribution, and is usually found in open water at depths down to 3 500 m (Compagno 1984). The shark feeds using its specialized lips and pharynx to attach to the sides of large fishes, then, with saw-like lower teeth, bites out a plug of flesh leaving a "crater wound". Incomplete bites leave typical crescent-shaped wounds and scars.

Similar wounds and scars have been seen in a variety of other marine mammals stranded on the beaches around Sydney and brought to Taronga Zoo for treatment.

### CASE DESCRIPTIONS

**Leopard Seals (*Hydrurga leptonyx*):** Five of 13 Leopard Seals brought to Taronga Zoo between 1978 and 1987 showed one or more typical crater lesions 3-6 cm in diameter. Two of these animals had incompletely removed plugs of tissue hanging from crater wounds in the neck region, and one showed a typical crescentic lesion in the centre of the dorsal surface of the tongue. The loose plugs of tissue were easily removed under manual restraint with local anaesthesia, to facilitate healing. Healing of all wounds proceeded normally and was complete in about two months, leaving depressed circular scars.

**Elephant Seal (*Mirounga leonina*):** A single young female Elephant Seal showed one typical crater lesion, 5 cm in diameter.

**New Zealand Fur-seal (*Arctocephalus forsteri*):** One of three of these seals stranded between 1978 and 1987 showed three typical lesions, 3-6 cm in diameter. Of these, one lesion on the pectoral flipper was potentially very serious, as it had exposed the radius. It was necessary for the animal to undergo surgery several times to allow the wound to heal without complications.

**Dugong (*Dugong dugon*):** A single young male stranded and died soon after in Sydney Harbour in March 1980. It was severely anaemic at death and appeared to have drowned. Fifteen crater lesions showing varying degrees of healing with considerable scarring and

contraction were distributed over the body. These were full-thickness wound, about 4 cm in diameter. All were still open in the centre, with exposed muscle tissue, and were obviously infected, emitting a foul smell. Two wounds, with no evidence of scarring, were typical of recent bites, and one crescent-shaped wound, 3 cm across, was typical of an aborted bite. Toxaemia and blood loss as a result of the skin lesions were considered the main factors leading to the death of this animal.

### DISCUSSION

It is likely that the normally Antarctic Leopard Seals and Elephant Seals fall victim to the Cookie-cutter Shark when they reach the temperate waters off the Sydney coastline. This probably corresponds with the southern limit of the shark's distribution. Stranded Leopard Seals are usually in poor condition, although the bite lesions are quite fresh. Leopard Seals are opportunistic feeders, taking fish, birds and even stingrays, as evidenced by the frequent findings of stingray barbs in stranded animals. It is possible that their attempted feeding on Cookie-cutters might predispose to their being bitten. Certainly the occurrence of one lesion on the tongue and several in the neck region would suggest this.

The very large number of lesions on the Dugong indicate that the animal had spent considerable time in the open ocean, in contrast to the usual shallow water distribution. Certainly, in the case of the Dugong, there was little possibility of the Dugong having made the first approach.

### REFERENCES

- COMPAGNO, L. J. V., 1984. Sharks of the World. *F.A.O. Species Catalogue* 4 (1).
- JONES, E. C., 1971. *Isistius brasiliensis*, A squaloid shark, the probable cause of crater wounds on fishes and cetaceans. *Fisheries Bulletin, U.S. Dept. Commerce* 69: 791-98.