Int. J. Aquat. Biol. (2018) 6(4): 198-201
ISSN: 2322-5270; P-ISSN: 2383-0956
Journal homepage: www.ij-aquaticbiology.com

Case Report

The curious case of the missing face: Death of California sea lion by Dungeness crab trap

Rif S. El-Mallakh*[1], Michael Hartman[2]

[1]Department of Psychiatry and Behavioral Sciences, University of Louisville School of Medicine, Louisville, Kentucky, USA.
[2]Eugene, Oregon, USA.

Abstract: Marine mammals frequently interact with human detritus due to their proximity to shores and shared target foods. Sea lions have been known to attempt to obtain bait inside crab traps. A case is described in which the pattern of decomposition of a California Sea Lion, *Zalophus californianus*, suggests that it likely became entangled and drowned while attempting to get Dungeness crab trap bait. This represents the first case of California Sea Lion death related to interaction with a crab trap.

Article history:
Received 5 August 2018
Accepted 25 August 2018
Available online 25 August 2018

Keywords: California Sea Lion, *Zalophus californianus*, Dungeness crab, *Metacarcinus magister*, Crab traps.

Introduction

Marine mammals not infrequently wash up on beaches. Routine examinations of these corpses can be instructive as to what stressors these animals experience and the circumstances that can kill them (Stroud and Roffe, 1979). Deaths related to interactions with human detritus are not uncommon (Carretta et al., 2017). Pinnipeds are frequently victims of fishing nets and only rarely are associated with shellfish traps (Woodley and Lavigne, 1991). California sea lion injury and death have not been previously associated with the expanding Dungeness crab (*Metacarcinus magister*) fishery despite anecdotal observations that sea lions attempt to get crab trap baits (https://www.youtube.com/watch ?v=wrXWqXroHsw or https://www.youtube.com/ watch?v=NKTydoUJ1g4).

Case Report

On 22 July 2017, after one of the highest tides of the year, the carcass of a juvenile male California sea lion (*Zalophus californianus*) was noted to have washed up on Gleneden Beach, on the central Oregon coast (Figs. 1-3). The animal was examined within 12 hours of being washed up on the beach, but autopsy was not performed because the authors were not authorized to remove the carcass and the Oregon Marine Mammal Stranding Network declined to investigate. The carcass was about 2 m long and mostly in a moderate degree of decomposition (level 3) (Fig. 1), but with a skeletonized head with a clear demarcation (level 5) (Fig. 2) (coding according to Moore, 2013).

Discussion

The differential level of degradation of the body suggests that the head and the remainder of the body were exposed to different environments. Crabbing activities were notable off of Gleneden Beach around that time. We deduce that the sea lion attempted to obtain the bait inside of the trap (since it is unlikely that the sea lion was attempting to eat the crabs (Lowry et al., 1991), as they have been observed to do (https://www.youtube.com/watch?v=wrXWqXroHsw and https://www.youtube.com/watch?v=NKTydoUJ1 g4), but became trapped and drowned. Juvenile sea lions, as the one described here, are much more likely to be victims of entanglement (Stewart and Yochem, 1987). We suspect his struggles resulted in disconnection of the buoy, so that the trap was lost. About 10% of all Dungeness traps are lost by the fishermen, and they generally continue to catch crabs (Breen, 1987). With a population of hungry crabs

*Corresponding author: Rif S. El-Mallakh
E-mail address: rselma01@louisville.edu
DOI: https://doi.org/10.22034/ijab.v6i4.517

Figure 1. The carcass of a California sea lion, *Zalophus californianus*, within 12 hours of washing up on Gleneden Beach, Oregon. The overall state of decomposition is moderate (level 3). The skeletonized head (level 5) can be seen at right.

Figure 2. A close up showing a skeletonized skull with a missing jaw bone and fractured zygomatic arches. The level of decomposition of the skull is 5, with a fairly clear demarcation between the two states of decomposition.

trapped in the trap, the sea lion's flesh within their reach was totally removed. Other parts of the body may have been in close enough proximity to the crab trap to also be skeletonized, such as one of the front flipper (Fig. 3). The rest of the body decomposed at a slower rate, and experienced typical scars, such as a

Figure 3. The left front flipper, showing the different levels of decomposition. The rostral edge of the flipper is skeletonized (level 5), while the remainder of the flipper is in an early state of breakdown (level 2).

bite from a cookie-cutter shark (Fig. 1) (Hayashi et al., 2015; Ebert et al., 2015). Ultimately, the body drifted away from the trap and was brought to the beach by one of the highest tides of the year.

Obviously, these are just deductions. We do not actually have direct evidence for this scenario. However, it is quite difficult to find an alternate explanation for this pattern of differential tissue degradation. This interpretation strongly suggests that even large animals, such as this juvenile sea lion, can potentially drown due to relatively small traps, such as Dungeness crab traps.

References

Breen P.A. (1987). Mortality of Dungeness Crabs caused by lost traps in the Fraser River Estuary, British Columbia. North American Journal of Fisheries Management, 7(3): 429-435.

Carretta, J.V., Muto, M.M., Greenman, J., Wilkinson, K., Lawson D., Viezbicke J., Jannot J. (2017). Sources of human-related injury and mortality for U.S. Pacific west coast marine mammal stock assessment, 2011-2015. https://swfsc.noaa.gov/publications/TM/SWFSC/NOAA-TM-NMFS-SWFSC-579.pdf

Ebert D.A., Pien C., Kamikawa D.J. (2015). Confirmation of the cookiecutter shark, *Isistius brasiliensis*, from the eastern North Pacific Ocean (Squaliformes: Dalatiidae). Marine Biodiversity Record, 8:e118.

Hayashi T., Higo E., Orito H., Ago K., Ogata M. (2015). Postmortem wounds caused by cookie-cutter sharks (*Isistius* species): an autopsy case of a drowning victim. Forensic Science and Medical Pathology, 11(1): 119-121.

Lowry M.S., Stewart B.S., Heath C.B., Yochem P.K., Francis J.M. (1991). Seasonal and annual variability in the diet of California sea lions *Zalophus californianus* at San Nicolas Island, California, 1981-86. Fishery Bulletin, 89(2): 331-336.

Moore M.J., van der Hoop J., Barco S.G., Costidis A.M., Gulland F.M., Jepson P.D., Moore K.T., Raverty S., McLellan W.A. (2013). Criteria and case definitions for serious injury and death of pinnipeds and cetaceans caused by anthropogenic trauma. Diseases of Aquatic Organisms, 103: 229-264.

Stewart B.S., Yochem P.K. (1987). Entanglement of pinnipeds in synthetic debris and fishing net and line fragments at San Nicolas and San Miguel Islands, California, 1978-1986. Marine Pollution Bulletin, 18 (6, Suppl B): 336-339.

Stroud R.K., Roffe T.J. (1979). Causes of death in marine mammals stranded along the Oregon coast. Journal of Wildlife Disease, 15(1): 91-97.

Woodley T.H., Lavigne D.M. (1991). Incidental capture of Pinnipeds in commercial fishing gear. International Marine Mammal Association, Inc., Technical Report No. 91-01. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.9.1659&rep=rep1&type=pdf