

CASE SERIES

California Sea Lion (*Zalophus californianus*) and Harbor Seal (*Phoca vitulina richardii*) Bites and Contact Abrasions in Open-Water Swimmers: A Series of 11 Cases

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Objective.—To review cases of bites and contact abrasions in open-water swimmers from California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina richardii*).

Methods.—Open-water swimmers from a San Francisco swimming club were questioned about encounters with pinnipeds (seals and sea lions) that resulted in bites or contact abrasions. When possible, wounds were documented with photographs. Medical follow-up and treatment complications were also reviewed.

Results.—From October 2011 to December 2014, 11 swimmers reported bites by a sea lion (n = 1), harbor seal (n = 7), or unidentified pinniped (n = 3). Ten of the encounters occurred in San Francisco Bay; 1 occurred in the Eld Inlet, in Puget Sound, near Olympia, WA. None of the swimmers were wearing wetsuits. All bites involved the lower extremities; skin was broken in 4 of 11 bites and antibiotics were prescribed in 3 cases. One swimmer, who was bitten by a harbor seal, also had claw scratches. A treatment failure occurred with amoxicillin/clavulanate in another swimmer who was bitten by an unidentified pinniped; the wound healed subsequently with doxycycline, suggesting an infection with *Mycoplasma* spp. There were no long-lasting consequences from any of the bites. The majority of cases occurred at low tide, and bumping of the swimmer by the animal before or after a bite was common, but no clear tide or attack pattern was identified.

Conclusions.—Bites and contact abrasions from sea lions and harbor seals are reported infrequently in open-water swimmers and typically involve the lower extremities. Because of the risk of *Mycoplasma* infection, treatment with a tetracycline is recommended in pinniped bites with signs of infection or serious trauma. Attempting to touch or pet sea lions or seals is inadvisable and prohibited by the Marine Mammal Protection Act. Swimmers should leave the water as soon as possible after a bite or encounter.

Key words: swimming, animal bites, marine mammals, pinnipedia, California sea lions, harbor seals

Introduction

The popularity of open-water swimming continues to increase,^{1–3} and swimmers are at risk of contact with marine life. Bites from pinnipeds (seals and sea lions) in humans have been reported in the popular media^{4,5} and in online medical websites.^{6,7} One newspaper account reported that 14 swimmers were bitten by a single sea lion in San Francisco Bay over the course of 4 days in November 2006.⁵ Pinniped bites and their complications have also been reported in the medical literature in hunters, divers, and marine mammal workers,^{8–18} but

medical reports of bites in recreational swimmers are lacking.

In this case series we outline 11 encounters with pinnipeds in open-water swimmers during a 3-year period. Two types of pinnipeds, the California sea lion (*Zalophus californianus*; Figure 1) and the harbor seal (*Phoca vitulina richardii*; Figure 2), are common in the western United States and were involved in the encounters. When possible, wounds are documented by photographs. Medical follow-up and treatment complications are also discussed.

Methods

All cases involved swimmers from the San Francisco Dolphin Swimming and Rowing Club. The organization,

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Figure 1. California sea lion (*Zalophus californianus*). Photo: The Marine Mammal Center.

established in 1877 and now with more than 1300 members, is home to a large group of recreational swimmers who swim in the San Francisco Bay year-round and without wetsuits. The authors of this report are also members or have working knowledge of the club. Tracking of pinniped encounters at the Dolphin Club began after the first encounter mentioned in this report (October 2011) and continued through December 2014. When cases came to the attention of the authors, individual swimmers were approached for an interview.

Each swimmer was asked to openly describe the encounter to the best of his or her memory, without a specific questionnaire or collection device. In general, the authors asked follow-up questions as needed regarding the time and date of the encounter, the location of the encounter, the type of animal involved, the behavior of both animal and swimmer during the encounter, the nature of the injury itself, treatment, and subsequent wound healing or complications.

Data were collected retrospectively, and swimmers provided all information at their convenience, in person or by e-mail, including information about treatment and medical follow-up. Medical records were not reviewed.



Figure 2. Harbor seal (*Phoca vitulina richardii*). Photo: The Marine Mammal Center.

If the swimmer could not recall sufficient details about the animal involved, the animal was classified as an “unidentified pinniped.”

Tide, water temperature, and other data for the time of each encounter were obtained from National Oceanic and Atmospheric Association websites.^{19,20} General data pertaining to regional rainfall, water salinity, and domoic acid concentrations were obtained from additional online and other sources.^{21–28}

Results

A synopsis of the cases is provided in the [Table](#); additional case details are outlined in the [supplemental Appendix](#). Both the Table and the Appendix provide reference to corresponding figures ([Figures 3–7](#)).

In all cases, swimmers were swimming without wetsuits. All bites occurred in the San Francisco Bay, with the exception of 1 bite that occurred in the Eld Inlet, in Puget Sound, near Olympia, WA (swimmer from San Francisco visiting the area). The first pinniped encounter in this series occurred in October 2011. The last encounter was in August 2013, with no further encounters noted through the end of 2014. Skin was broken in 4 cases (cases 1, 6, 7, and 8). Antibiotics were prescribed in 3 cases (cases 1, 7, and 8). Wound or blood cultures were not obtained in any case. One swimmer (case 3), who was bitten by a harbor seal, also had claw scratches. A treatment failure occurred with amoxicillin/clavulanate in another swimmer (case 8); the wound healed subsequently with doxycycline. Wound healing was complete in all cases.

The water temperatures (range, 13.2°C [55.8°F] to 15.7°C [60.3°F]) and air temperatures (range, 10.6°C [51.1°F] to 16.6°C [61.9°F]) during the encounters did not appear to be atypical for San Francisco Bay or Puget Sound.¹⁹ The majority of cases occurred at low tide, and bumping of the swimmer by the animal before or after a bite was common, but no clear tide or attack pattern was identified. Additional details pertaining to regional rain patterns,^{21,22} water salinity,^{19,23–26} and domoic acid concentrations in sampled shellfish^{26–28} can be found in the Appendix; no clear abnormalities in these variables that were likely to have contributed to the pinniped encounters mentioned in this report were identified.

Discussion

From our data, unprovoked bites from pinnipeds in recreational swimmers appear to be relatively rare. Eleven cases were reported in a 3-year period, and several cases likely involved the same harbor seal. In 2 of the cases, the bites can be attributed at least partially to human behavior; in 1 case fish bait was thrown in the

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