

What's killing killer whales? Orca report covering a decade of necropsies identifies threats

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A southern resident killer whale swims in the Salish Sea in 2018. An endangered species, this population of just over 70 individuals lives year-round off the coasts of Oregon, Washington and British Columbia. Credit: Joe Gaydos, UC Davis Sea Doc Society

Pathology reports on more than 50 killer whales stranded over nearly a decade in the northeast Pacific and Hawaii show that orcas face a variety of mortal threats—many stemming from human interactions.

A study analyzing the reports was published today (Dec. 2) in the journal *PLOS ONE*. The study findings indicate that understanding and being aware of each threat is critical for managing and conserving [killer whale populations](#). It also presents a baseline understanding of orca health.

The study was conducted by a team of marine mammal specialists led by a veterinary pathologist with the British Columbia Ministry of Agriculture and coordinated through SeaDoc Society, a Washington-based program of the University of California, Davis' School of Veterinary Medicine. The study received guidance and support from Canada's Department of Fisheries and Oceans and the United States' NOAA Fisheries, the two federal agencies that manage this species.

The whales include those from healthy populations as well as endangered species, such as the southern resident whales regularly sighted off the coasts of British Columbia, Washington and Oregon.

Of 52 whales stranded between 2004 and 2013, causes of death were determined for 42 percent. For example, one calf died from sepsis following a halibut hook injury. Another starved from a congenital facial deformity. Two whales died from the blunt force trauma of vessel strikes. Additional causes of death include infectious disease and [nutritional deficiencies](#).



This 18-year-old male southern resident killer whale, J34, was stranded near Sechelt, British Columbia on December 21, 2016. Postmortem examination suggested he died from trauma consistent with vessel strike. Credit: Paul Cottrell, Fisheries and Oceans Canada

'We can do better'

Despite there being no singular common cause of death, the study found a common theme: Human-caused deaths occurred in every age class—from juveniles to subadults and adults.

"Nobody likes to think we're directly harming animals," said SeaDoc Society Director Joe Gaydos, a wildlife veterinarian with the Karen C. Drayer Wildlife Health Center in the UC Davis School of Veterinary

Medicine. "But it's important to realize that we're not just indirectly hurting them from things like lack of salmon, vessel disturbance or legacy toxins. It's also vessel strikes and fish hooks. That humans are directly killing killer whales across all age classes is significant; it says we can do a better job."

Gaydos and lead author Stephen Raverty, a veterinary pathologist with the BC Ministry of Agriculture, co-developed a [standardized killer whale necropsy protocol](#) in 2004. Revised in 2014 with help from Judy St. Leger, a pathologist working for SeaWorld, this guide helped improve examinations of deceased whales.

"The results from systematic necropsies of dead killer whales in this review is unique and will establish critical baseline information to assess future mitigation efforts," Raverty said. "This work contributes to a better understanding of the impacts that ongoing human activities and environmental events have on killer whales."

The authors acknowledge the report is an incomplete picture of orca health and mortality. Necropsies can only be performed on [whales](#) found in an adequate state to receive them, and even then, the cause of death cannot always be determined. But the report offers one of the most comprehensive looks yet at the multitude of human and environmental threats affecting [killer whales](#) and can help inform strategies to better protect them.

More information: Raverty S, St. Leger J, Noren DP, Burek Huntington K, Rotstein DS, Gulland FMD, et al. (2020) Pathology findings and correlation with body condition index in stranded killer whales (*Orcinus orca*) in the northeastern Pacific and Hawaii from 2004 to 2013. *PLOS ONE* (2020). [journals.plos.org/plosone/arti...
journal.pone.0242505](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0242505)

Provided by UC Davis

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