

Skin disease in endangered killer whales concerns scientists

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Scientists from SeaDoc Society, a UC Davis veterinary program, are concerned about gray patches observed on the skin of endangered southern resident killer whales. Credit: Joe Gaydos, UC Davis

Scientists studying endangered southern resident killer whales have

observed a strong increase in the prevalence of skin disease in this population.

In a study titled, "Epidemiology of [skin](#) changes in endangered Southern Resident killer whales (*Orcinus orca*)," published in *PLOS ONE*, researchers document a steady increase in the occurrence of highly correlated gray patches and gray targets on the whales' skin from 2004 to 2016. Despite not knowing the underlying cause, the study's authors are concerned.

After ruling out potential environmental factors, such as changes in [water temperature](#) or salinity, the authors hypothesize that the most plausible explanation is an infectious agent, and that increased occurrence of lesions may reflect a decrease in the ability of the whales' immune systems ability to combat disease.

This could pose yet another significant threat to the health of a southern resident killer whale population already facing a litany of challenges.

Thousands of photos, invaluable data

The research is led by wildlife veterinarian Joseph K. Gaydos, science director for the SeaDoc Society, a program of the School of Veterinary Medicine at the University of California, Davis.

Gaydos and a team of collaborators analyzed a vast collection of digital photographs spanning over a decade. The photographs, obtained by the Center for Whale Research for identification purposes, included nearly 20,000 individual whale sightings in the Salish Sea, providing invaluable data for remotely assessing health in these endangered animals.

Since 1976, the Center for Whale Research has been conducting photographic identification surveys of southern resident killer whales in

the Salish Sea, capturing clear images of each individual. During the evaluation of these images, biologists noticed transient and occasionally persistent abnormal skin changes in the whales. However, these skin changes had never been systematically characterized or tracked over time for these purposes.

The photos revealed six different skin disease syndromes. While none were associated with mortality, the steady increase in the two most common lesions was unexpected.



A killer whale surfaces in Rosario Strait in Washington state. Credit: Joe Gaydos/UC Davis

Understanding the occurrence and significance of skin changes in southern resident killer whales is crucial for assessing their overall health and potential impact on population recovery.

This small, endangered population of fish-eating salmon specialists roams coastal and inland waters from southeastern Alaska to California and are structured socially into three pods: J, K, and L.

The population is endangered, with fewer than 75 individuals remaining. Previous studies have focused on causes of mortality and body condition scoring, but little is known about the role of health in the lack of population recovery.

"Before we looked at the data, we had no idea that the prevalence of these skin lesions were increasing so dramatically," said Gaydos. "It's worrisome. Now we need to try and isolate the potential infectious agent."

Insight for an endangered species

While photographic identification provides a noninvasive approach for studying skin disorders and their epidemiology, it does not enable the identification of specific causes. Nonetheless, it offers valuable insights into the overall health of the animals, particularly when capture-release health assessments are not feasible.

This research represents a significant step forward in understanding the epidemiology of skin changes in southern resident killer whales. The findings emphasize the need for continued monitoring and research to unravel the causes and [health](#) implications of these skin changes, with the ultimate goal of contributing to the conservation and recovery of this endangered population.

In addition to the SeaDoc Society, the [collaborative effort](#) involved researchers from numerous institutions, including the Center for Whale Research, British Columbia's Animal Health Center, NOAA's Northwest Fisheries Science Center, San Diego Zoo Wildlife Alliance, SeaWorld Parks and Entertainment, the Vancouver Aquarium, Wild Orca, and others.

More information: Epidemiology of skin changes in endangered Southern Resident killer whales, *PLoS ONE* (2023).

[journals.plos.org/plosone/arti ... journal.pone.0286551](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0286551)

Provided by UC Davis

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