

Efforts to save whales from ship strikes in Southern California have been mostly ineffective

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Concern over whale ship strikes on the U.S. West Coast was first elevated in 2007 when four blue whales were killed over the course of several months by ships traversing the Southern California Bight. Those deaths resulted in NOAA declaring an “Unusual Mortality Event” and led to a voluntary Vessel Speed Reduction (VSR) program in the region later that year.

In the years since 2007, whale deaths from ship strikes have continued despite the VSR. Multiple analyses have now identified the S. California Bight as a region of especially high risk for ship strikes.

We implemented a mechanistic model of ship strike mortality to 1) more precisely quantify strike deaths in the region and 2) assess the effectiveness of the VSR from 2012-2018. The strike model uses information on whale size, movement and behavior, and ship data to estimate the mortality of blue, humpback and fin whales. These three listed species are at especially high risk of strikes.

To assess VSR effects, we re-sampled vessel speeds from times outside the period of VSR implementation and applied them to vessel tracks from times during the VSR. We also simulated mortality under hypothetical scenarios of higher VSR cooperation (up to 95%).

We estimated that an average of 8.9 blue, 4.6 humpback and 9.7 fin whales die from ship strikes during Jun-Dec each year in the study region. Distribution data was only available for humpback whales during Jan-Apr and we estimated that on average an additional 5.7 humpback whales die during those months each year.

There was low cooperation with the VSR during 2012-2018, leading to, at best a mortality reduction of 5%. The increased cooperation simulations suggested that 21-29% of whale deaths could be avoided if 95% of vessels adhered to the 10-knot speed request and the area covered by the VSR were expanded to key areas outside the shipping lanes.

To decrease the vessel strike-related whale mortalities in this region, we recommend expanding the VSR areas and increasing cooperation voluntarily, or considering mandatory speed limits if desired cooperation levels cannot otherwise be met.

Main Points

Voluntary speed reductions had minimal impact on whale deaths from 2012-2018 (maximum 5% reduction).

A previously unevaluated period from Jan-Apr revealed concerning levels (5.7 whales per year) of predicted humpback whale strike deaths.

Our model predicts that 95% cooperation with a 10-knot VSR in high-risk areas would decrease ship strike deaths in the region by 21-29%.

Mandatory VSR regulations may be necessary to reach high cooperation if voluntary efforts do not quickly reach at least 95% compliance..

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