



Southern California Bight marine mammal density and abundance from aerial surveys 2008–2013

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We conducted 18 aerial surveys for marine mammals in the Southern California Bight around San Clemente Island from October 2008 to July 2013. Data were collected to obtain density and abundance estimates, as well as focal behavioral observations of marine mammals. The primary platform used was a Partenavia P68–C or P68–OBS (glass–nosed) high–wing, twin–engine airplane. A total of 76,989 km were flown with 2,510 marine mammal groups sighted. Nineteen marine mammal species were identified. Density and abundance estimates were made using line–transect methods and DISTANCE 6.0 software. Due to limited sample sizes for some species, sightings were pooled to provide four detection function estimates for baleen whales, large delphinids, small delphinids, and California sea lions. Estimates were limited to species observed at least 20 times during line–transect effort. For the May–October warm–water season, the estimated average numbers of individuals present were as follows: short–beaked common dolphins (8,520), long–beaked common dolphins (3,314), Risso’s dolphins (1,450), California sea lions (818), bottlenose dolphins (496), fin whales (137), and gray whales (6). During the November–April cold–water season, estimates were: short–beaked common dolphins (15,955), long–beaked common dolphins (6,440), California sea lions (1,454), Risso’s dolphins (993), bottlenose dolphins (290), gray whales (221), and fin whales (140). Several other species were observed for which sightings were too few to estimate numbers present and/or were seen only off effort: blue, Bryde’s, minke, humpback, sperm, Cuvier’s beaked, and killer whales; Pacific white–sided and northern right whale dolphins; Dall’s porpoise; and northern elephant and harbor seals.

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The effect of El Niño on euphausiid distributions and baleen whale foraging habitat

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In the California Current System, El Niño is often characterized by warm surface waters, onshore surface drift in opposition to upwelling, and a poleward shift of typically equatorward transport. The reduced productivity and altered circulation resulting from these changes can be expected to alter the conditions that determine the growth and position of local euphausiids, which are important prey for large baleen whales including blue, fin, and humpback. Euphausiid species composition is expected to shift under El Niño conditions, reflecting species–specific biogeographic affinities. Do these changes result in an El Niño–related contraction of baleen whale foraging habitat as defined by euphausiid spatial distributions? The CalCOFI time series of plankton collection provides a unique opportunity to answer this question for past El Niño events. Euphausiids were enumerated from CalCOFI summer samples in El Niño and neutral years. Pooled size as well as pooled and species–specific abundances were compared between years and among onshore, mid, and offshore zones in each year. Changes in euphausiid size, species composition, and distribution may provide a link between the local environmental expression of El Niño and its effects on large baleen whales.

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