HC-45. Cetacean bycatch mortality from strandings: the life table method

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Drift models allow stranding data to be used to estimate bycatch mortality in cetaceans. An alternative is the use of life tables, an ecological tool also used by the life insurance industry. We estimated overall annual mortality rate and annual mortality rate due to bycatch, using age data (1990-2010) for harbour porpoise (*Phocoena phocoena*) stranded in Scotland (N=360), and common dolphin (*Delphinus delphis*) (N=580), bottlenose dolphin (N=90) and harbour porpoise (N=150) in Galicia (NW Spain), plus cause-of-death data from porpoises in Scotland over the same period (N=550) and from strandings in Galicia during 1990-2023 (N = 3930, 560 and 340 respectively). Estimated average annual mortality rates were 18% (0.9% for annual bycatch mortality), 18% (2.3%), 14% (0.9%) and 12% (2.2%) respectively. In Galicia, the proportion of bycatch mortalities in stranded animals was markedly higher in 2021-2023 than the long-term average. In harbour porpoise, the figure rose almost threefold, equivalent to an annual bycatch mortality rate of 6.4%. Using the most recent population estimate (SCANS IV), this suggests that over 250 porpoises may die from bycatch every year along the Atlantic coast of the Iberian Peninsula, a number far higher than could be sustainable. We used simulations to generate confidence limits, and the ability of this method (or the use of raw age data) to detect changes in mortality rate over time, also its robustness to data limitations and biases (e.g. non-stationary age distribution, underrepresentation of young animals and deaths occurring far offshore), and suggest ways to improve the estimates. There was an increase in mortality rate in Scottish porpoises during 1990 to 2010, mainly driven by changes in juvenile mortality. Correcting for apparent underrepresentation of the youngest age classes, mortality rate increased but the year-to-year pattern was retained. A systematic approach to selecting animas for age determination is essential.