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Impact of the Morbillivirus epizootic on the social structure of the population of long-finned pilot whales of the Strait of Gibraltar, Spain

Two hundred thirteen long-finned pilot whales (*Globicephala melas*) were estimated to live in the central part of the Strait of Gibraltar from 1999 to 2006 using photo-identification data. This study showed that most individuals were resident in summer with a stable long-term social structure. In 2006-2007 an epizooty of Morbillivirus epizootic killed more than 20% of the population.

The aim of this study was to determine the impact of the Morbillivirus epizootic on the social structure of long-finned pilot whales of the Strait of Gibraltar between 2007 and 2011.

One hundred eighty three individuals were identified, belonging to 37 different clusters that included 1 to 13 individuals. Within these clusters, 22 individuals died during the epizootic and 3 animals died after 2007. These dead individuals belonged to 18 (48.6%) different clusters only. However, thirty two clusters (86.5%) showed an evolution in their social structure after the epizootic.

Twelve scenarios were established based on: (1) the existence of dead individuals in the cluster, (2) the number of individuals leaving a cluster, (3) the destination of the departing individuals, forming a new cluster by themselves or with other animals.

Regarding clusters with dead animals, the most common scenarios were (a) one individual leaving a cluster and joining other whales (n=10) and (b) three or more individuals leaving a cluster and joining other whales (n=9).

In the absence of deaths in the cluster, the most common scenarios were (a) one individual leaving a cluster and joining other whales (n=7), (b) three or more individuals leaving a cluster and forming a new cluster by themselves (n=4), and (c) three or more individuals leaving a cluster and joining other whales (n=3).

This study shows that Morbillivirus epizootic had an impact on the social structure of long-finned pilot whales in the Strait of Gibraltar. The analysis of the following years should reveal if this new social structure is stable through time.

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