Interspecific interactions between pilot whales and killer whales in Iceland

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INTRODUCTION

Interspecific interactions between marine mammals are little understood. However, species are going extinct at an unprecedented rate[1,2], species invasions are increasing[3], and climate change leads to major changes in ecosystems including the removal and addition of species[4]. Therefore, interactions between species are changing and it is vital to understand them in order to mitigate the effects of global environmental change.

Killer whales (*Orcinus orca*) are known to occur in the coastal waters around Vestmannaeyjar, South Iceland during summer. Long-finned pilot whales (*Globicephala melas*) were not commonly observed in the past but sightings have increased in recent years, with a corresponding increase in interactions with killer whales (Fig 1).

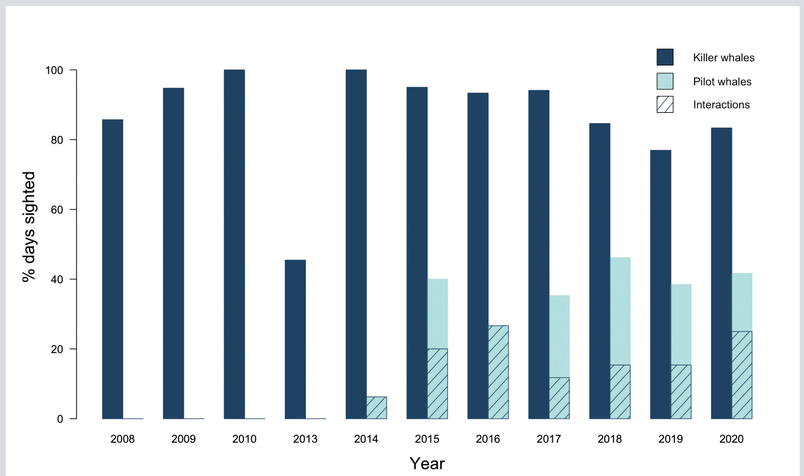


Figure 1: Percentage of days with killer whale (dark blue) and pilot whale (light blue) sightings in Vestmannaeyjar in July. Percentage of observations of interactions hatched.

REFERENCES

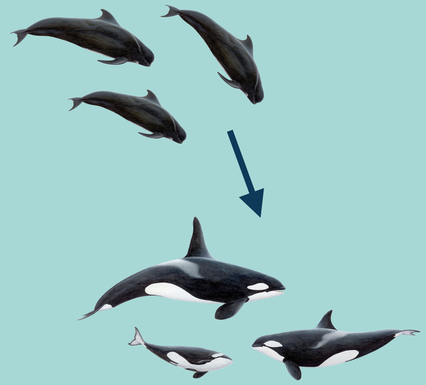
1. Ceballos, G. et al. (2015) Accelerated modern human-induced species losses: Entering the sixth mass extinction. Sci. Adv. 1, 9–13.
2. De Vos, J. M. et al. (2015) Estimating the normal background rate of species extinction. Conserv. Biol. 29, 452–462.
3. Cohen, A. N. & Carlton, J. T. (1998) Accerlerating Invasion Rate in a Highly Invaded Estuary. Science 279, 555–558.
4. IPCC (2014) Climate Change 2014 Synthesis Report. doi:10.1016/S0022-0248(00)00575-3
5. de Stephanis, R. et al. (2014) Mobbing-like behavior by pilot whales towards killer whales: a response to resource competition or perceived predation risk? Acta Ethol. 18, 69–78.
6. Curé, C. et al. (2012) Pilot whales attracted to killer whale sounds: Acoustically-mediated interspecific interactions in cetaceans. PLoS One 7, e52201.
7. Foote, A. D. et al. (2004) Whale-call response to masking boat noise. Nature 428, 32816–32816.
8. Holt, M. M. et al. (2009) Speaking up: Killer whales (*Orcinus orca*) increase their call amplitude in response to vessel noise. J. Acoust. Soc. Am. 125, EL27–EL32.

INTERACTIONS OBSERVED VARY

No visible interaction

In some cases both species are in the same general area but no visible interaction was observed between them.

Approach



In the majority of observations pilot whales approach killer whales, which tends to lead to one of two scenarios.

Disappearance

When pilot whales approach, the killer whales disappear from view.

Chase

When pilot whales approach, the killer whales flee at high speed and are chased by the pilot whales.

PROPOSED HYPOTHESES[5,6]

1. Pilot whales approach killer whales to compete for food resources.
2. Pilot whales approach killer whales in a mobbing, anti-predator behaviour

FUTURE RESEARCH – EFFECTS ON KILLER WHALES?

We are aiming to better understand the interactions by tracking groups of whales from land and tagging individuals.

Killer whales generally abandon a feeding event during these interactions and often expend high amounts of energy during avoidance
→ interactions could have significant energetic impacts

Acoustic cues seem to play an important role in the approach of pilot whales[6] and are likely to be important to the response of killer whales
→ we are planning playback experiments to test the role of acoustics in the interactions this summer

Killer whales have been shown to adapt their acoustic behaviour in response to anthropogenic disturbance[7,8] but responses to naturally occurring threats or disturbances have rarely been studied
→ the interactions provide a chance to study the response of a top predator to a threat
→ the results will have applications to other species and human disturbance (e.g. tourism, shipping, noise pollution)