

Supplementary Information

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Infanticide in a mammal-eating killer whale population

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Supplementary Discussion S1

Implications of sexually selected infanticide in killer whales As the most extreme behavioural trait of sexual coercion¹ and result of sexual conflict, infanticide is thought to be a key driver fuelling arms races between the sexes, thereby resulting in the evolution of sex specific morphological traits²⁻⁴. In turn, these traits can be good indicators of male mating strategies. For example, large size in male odontocetes may be selected in physical competitions with other males (contest competition), for speed and agility to access females (scramble competition) and/or as a display to influence female choice⁵. Killer whales are highly sexually dimorphic with males up to 17% longer and 40% heavier than females. However, morphometric features and measurements differ between the sexes of distinct populations⁶⁻⁸, some of which have been proposed as distinct species⁹. This may be a sign that sexual conflict contributes to speciation as predicted by Rice¹⁰. However, if these and any observed differences in scarring rates are an indication of the degree of sexual conflict represented by different populations, it is then possible that their mating systems differ such as they do with morphologically distinct populations of spinner dolphin in the eastern Pacific¹¹. Although the mating strategies of most odontocetes are largely unknown, mammal species with large testes relative to body size typically utilize sperm competition as a mating strategy⁵. Large testes size is found in most terrestrial mammal species known to commit infanticide¹². It is also an indicator of promiscuity or polyandry¹³⁻¹⁴ – common mating strategies used by females to confuse paternity and therefore reduce risk of infanticide by males¹⁵⁻¹⁷. Killer whale males have large testes relative to body size¹⁸ but as females are well known for being pod leaders, Baird¹⁹ indicated that reproductive females in the WCT population may exercise choice by deciding which unrelated adult males are allowed to travel with them. Similarly, Barrett-Lennard²⁰ suggested that the absence of intra-pod matings in the northern resident killer whale population indicated that females exercise mate choice. On the other hand, our observations of infanticide indicate that morphological traits found only in male killer whales may be sexually selected for more reasons than influencing female choice and that the extent of mate choice by females in the WCT population may also be determined by the risk of coercion directed by unrelated males. If so, it is possible that killer whales may utilize a combination of mating strategies depending on the situation.

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