

Rendell, L.E., Matthews, J.N., Gill, A., Gordon, J.C.D. and Macdonald, D.W. 1999. Quantitative analysis of tonal calls from five odontocete species, examining interspecific and intraspecific variation. **Journal of Zoology** 249: 403-410.

**ABSTRACT:**

Whistle vocalizations of five odontocete cetaceans, the false killer whale *P. crassidens*, short-finned pilot whale *G. macrorhynchus*, long-finned pilot whale *G. melas*, white-beaked dolphin *L. albirostris* and Risso's dolphin *G. griseus*, were analysed and summarized quantitatively. Recordings were acquired from a number of locations and encounters. Significant differences were found between species and, to a lesser extent, between locations. The calls of the two pilot whale species are distinct despite their close relatedness, and similar size and morphology. This may be due to selection pressures to maintain distinctiveness. The variance was partitioned into between-species, between-location (within species) and within-location factors. For the frequency variables, variation between-species is high relative to variation between locations. Thus geographic variation is a relatively minor effect, compared to the many processes which cause interspecific differences. The within-location component includes such factors as social context, behaviour and group composition. This component is of a similar magnitude to the between-species component, indicating that whistles vary considerably with these factors. Significant between-location differences may be attributable to these confounding factors. For whistle duration, most of the variation occurred within location. There is less significant variation in duration across species compared with the frequency measures. This study highlights the need to collect samples across all potential strata whenever possible, and provides a framework for future, more comprehensive work.