**Olfactory discrimination of aliphatic aldehydes, carboxylic acids and acetic esters in South African fur seals (*Arctocephalus pusillus*)**

Using a food-rewarded two-choice instrumental conditioning paradigm, the ability of five South African fur seals (*Arctocephalus pusillus*) to distinguish between members of three homologous series of aliphatic odorants was investigated. Aliphatic aldehydes, carboxylic acids and acetic esters with carbon chain lengths of C4 to C7 were employed. These classes of odorants are thought to differ in their frequency of occurrence in the marine environment. The results showed that the seals successfully reached the learning criterion with all stimulus combinations but one and thus were clearly able to discriminate between most of the odorant pairs presented. No significant correlation between discrimination performance and structural similarity in terms of differences in carbon chain length in either of the odorant classes was found. Furthermore, the results showed that none of the odorant classes was significantly better or poorer discriminated by the seals than the other two classes. However, the acetic esters yielded the lowest mean percentage of correct discriminations and failure to distinguish between a given odorant pair occurred only with this odorant class. The results support the notion that the sense of smell may play an important and hitherto underestimated role in foraging, social communication and reproductive behavior of this pinniped species. However, the results do not support the hypothesis that discrimination performance may correlate with the frequency of occurrence of stimuli in a species’ chemical environment.

Keywords: Acetic esters, Aliphatic aldehydes, *Arctocephalus pusillus*,Carboxylic acids, Discrimination ability, Olfaction