

The ecological consequences of group size in the Cardigan Bay bottlenose dolphins

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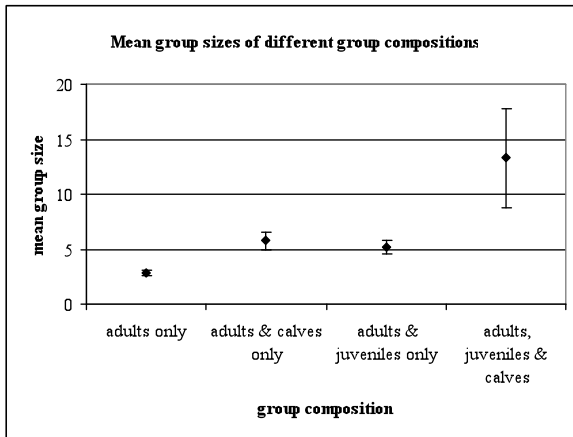
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Introduction

The size of bottlenose dolphin groups can vary widely. The question therefore arises “What factors are significant in influencing dolphin group size with respect to their ecology and habitat use?”.

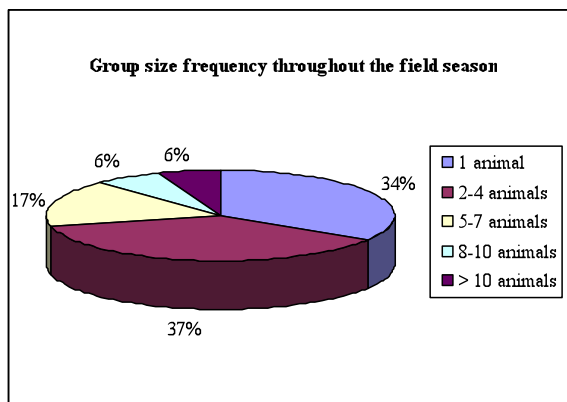
Methods

From May to September 2001 the ecology of a coastal population of bottlenose dolphins (*Tursiops truncatus*) in Cardigan Bay, West Wales, was studied using a combination of line transect and photo-identification methods. A total of 287 hours at sea was accumulated.



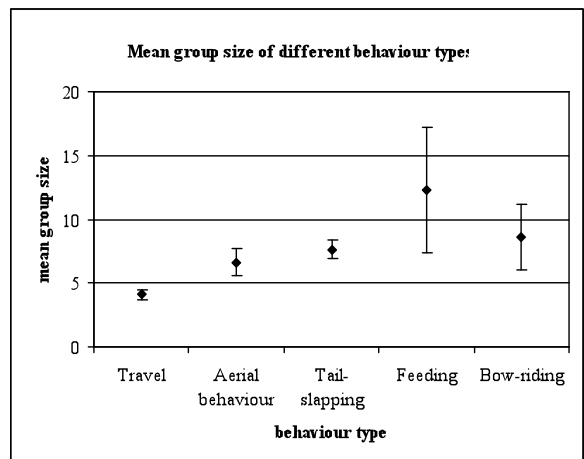
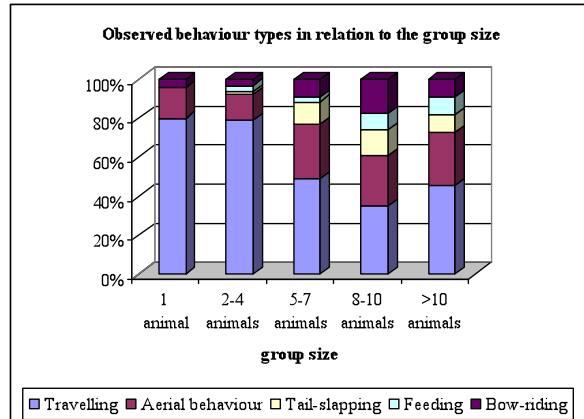
Mean group size

Groups consisting of adults, juveniles and calves ($n = 8$) showed significantly bigger group sizes than groups composed of adults only ($n = 105$) as well as adults and either calves or juveniles ($n = 8$ and 19, respectively) (Kruskal-Wallis, Tukey, $p \leq 0.001$).



Group size frequency

Groups between 1 and 4 animals accounted for 71% of all sightings. Less than four dolphins were encountered in at least 58% of all sightings in each month. Except for one group of 40 dolphins, groups observed were never larger than 15 individuals.



Relationship between behaviour and group size

Of all behaviour types observed on more than five occasions, animals travelling showed the smallest group sizes (4.1 ± 0.4 SE), while those engaged in surface-feeding had the biggest group sizes averaging 12.3 ± 4.9 SE individuals. This difference was statistically significant (Kruskal-Wallis, Tukey, $df = 4$, $p = 0.003$). On two occasions groups of more than ten dolphins were observed feeding on shoaling fish.

Conclusions

- Mean summer group size in southern Cardigan Bay is generally small.
- In larger groups it is more likely that all age classes are represented.
- Groups of travelling dolphins were significantly smaller than those of dolphins engaged in surface-feeding. Small groups can disperse widely to maximise foraging success, while large groups can be of advantage in co-operative hunting of shoaling fish.