

2016 SMALL GRANT IN AID OF RESEARCH

THE CONTRIBUTION OF INDIVIDUAL TRAITS IN SHAPING THE BOTTLENOSE DOLPHIN SOCIETY THAT FORAGES COOPERATIVELY WITH ARTISANAL FISHERMEN

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SUMMARY REPORT

In Laguna, southern Brazil, some individuals of a bottlenose dolphin population (*Tursiops truncatus*) forage in cooperation with artisanal fishermen. The social structure of this dolphin population is coupled to this specialized foraging tactic, in which social modules are defined by individuals that often or rarely forage in cooperation with fishermen. However, other individual traits might also underlie this social structure, but their effects are yet to be quantified. In this study, we aim to tease apart the contributions of other ecological, biological and behavioral traits in modulating the social relationships in different foraging and non-foraging contexts. The grant awarded by SMM was used to fund field work, mainly to biopsy sampling. We collected skin samples of Laguna's bottlenose dolphins to estimate genetic relatedness and determine sex using molecular analyses. We estimated the relative-frequency of participation in the cooperative foraging tactic with artisanal fishermen for each individual, pairwise home-ranges overlap and age-classes. To identify and quantify the influence of individual traits on the social structure, we used a Multiple Regression Quadratic Assignment Procedure (MRQAP). To test the effect of genetic relatedness ($n = 12$) and sex ($n = 30$), we used subsets of the original data. Using a dataset containing age, home range overlap and frequency of participation in the cooperative foraging tactic ($n = 34$), we found that home range is the strongest structural factor, explaining up to 50% of the observed variation in associations. However, we emphasize that home range is highly correlated with the cooperative foraging tactic. To test for affiliations (i.e. true social preferences), we created generalized affiliation indices (GAI) to remove the effects of significant structural factors. We found affiliations only outside the cooperative foraging context, suggesting that dolphins tend to associate because of the cooperative foraging tactic, and not only when performing it. This suggests that dolphins consistently seen together are more likely to be actively seeking one another (a true social preference) rather than being passively assorted due to the use of the same specialized foraging tactic.

My colleagues and I are very grateful to the Society for Marine Mammalogy for the confidence, and for supporting our efforts to understand the underlying mechanisms that drives the structure of this bottlenose dolphin society. The manuscript with all our findings is in preparation for submission in a high impact journal.