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Acoustic behaviour of different clusters of common dolphin (*Delphinus delphis*) in the South of Samos Island, Greece.

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Abstract (300 words max):

The social and cooperative nature of dolphins is well documented, while little is reported on the behavioural and ecological factors driving group dynamics within subpopulations. Common dolphins (*Delphinus delphis*) are highly vocal animals, producing click trains, burst pulses and whistles. Previous studies have identified the importance of whistles for communication, but there is a lack of research on the ways group dynamics affect common dolphin vocalisations. This study investigates the different acoustic behaviour of the common dolphin subpopulation inhabiting the Southern waters of Samos Island in the Central Aegean Sea (Eastern Mediterranean Sea). This subpopulation of 51 individuals was divided using association analysis by gregariousness in SOCPROG. Results indicated 6 different clusters (modularity = 0.419) that could be differentiated within the subpopulation. The clusters ranged in size from 5 to 11 individuals. As per the acoustic data, a total of 2,010 whistles were analysed and classified into different whistle types (*Upsweep*, *Downsweep*, *Flat*, *Convex*, *Concave* & *Multiloop*). A *Chi-Square* Test was used to identify the most common whistle type in each cluster. The most significant ($p < 0.05$) whistle types were *Flat* for Clusters 1 and 3, *Upsweep* for Clusters 2 and 4 and *Downsweep* for Clusters 5 and 6, indicating that different cluster formations impact the type of whistle produced. This may be linked with the strong fission-fusion bonds dolphins create for improved foraging, breeding, offspring protection and defence of territory and warrants further research. These preliminary results represent a baseline for further studies researching the correlation between social network structures and habitat use in this study area. The subpopulation studied is one of the remaining strongholds for this endangered population and as such this research is extremely useful for cetacean management actions in the Aegean Sea.