

POSTER CONTRIBUTION

Correlation between phytoplankton abundance and whale shark feeding behaviour at Nosy Be (Madagascar)

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In the years 2017, 2018 and 2019 the feeding behavior of the whale shark has been studied off Nosy Be Island (Madagascar). In particular, the investigations involved the description of the behavioral modules of the whale shark and their relationship with the phytoplankton communities. In total, 65 phytoplankton samples were collected in the following four behavioural conditions: 0 - absence of whale sharks; 1 - presence of swimming whale sharks; 2 - presence of whale sharks in horizontal feeding; 3 - presence of whale sharks in vertical passive feeding; 4 - presence of whale sharks in vertical active feeding. All samples were immediately filtered and then frozen to be subsequently analyzed by HPLC to identify the total biomass and contribution of the different functional groups of phytoplankton. In total 8 phytoplanktonic taxa have been identified: Prasinophyceae, Dinoflagellata, Cryptophyceae, Primnesiophyceae, Pelagophyceae, Chlorophyceae, Cyanobacteria and Bacillariophyceae. Among them, Cryptophyceae were the most abundant. Our results seemed to highlight a certain correlation also between behavioral feeding intensity exhibited by sharks and the total biomass of phytoplankton. In particular, this appeared more evident with some groups of algae that might be involved in the release of the dimethyl sulfonio propionate (DMSP). This substance is produced by algal organisms in response to predation by zooplankton organisms. Since DMSP is a substance characterized by a strong odor, the results could demonstrate the fundamental role of smell in the identification of food sources by the whale shark, as confirmed for marine birds.