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## Individual and group behavioural reactions of small delphinids to remote biopsy sampling

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## Abstract

Biopsy sampling is an effective technique for collecting cetacean skin and blubber samples for various biological studies. However, determining the impact of this research practice is important, as it may vary between sites, species and equipment used. We examined the short-term behavioural reactions of four small (160–278 cm in length) delphinid species (Stenella longirostris, S. attenuata, Tursiops aduncus and Peponocephala electra) to remote biopsy sampling in the vicinity of the island of Mayotte (12°50'S, 45°10'E, SW Indian Ocean). Two scales of behavioural reactions were considered: i) the behavioural reaction of the individual, and ii) the reaction of the focal group to which the targeted individual belonged. Three main categories of behavioural responses were defined on the basis of character and duration: low, moderate and strong. This study underlines that biopsy sampling induces moderate reactions in individuals. No inter-specific variations of responses, at the scale of the individual or focal group, were observed. In other words, smaller delphinids were not more reactive than larger ones. No effect of group size was observed on the strength of behavioural reactions. However, it was clear that biopsy success during sampling sessions was higher in species with large group size. Finally, in the spinner dolphin (S. longirostris), we investigated whether initial behavioural state affected the level of reaction. Resting and socialising groups showed a stronger response than milling and travelling groups. This study confirms the limited impact of remote biopsy sampling in small delphinids, especially in the spinner dolphin. However, as a precautionary approach, wherever possible, biopsy sampling of milling and travelling dolphins may be preferable.

Keywords: animal welfare, behavioural impact, dolphins, group reactions, individual reactions, remote biopsy sampling