SOCIETY FOR MARINE MAMMALOGY: 2021 SMALL GRANTS IN AID OF RESEARCH – GRANT SUMMARY REPORT

PROJECT TITLE: Mother-calf interactions in Humpback whales: investigations on nursing, swimming and vocal behaviors

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In humpback whales, the calf accompanies its mother right after birth and is rarely far from her until they separate permanently at weaning. This strategy provides benefits for both individuals. Indeed, the mother can pursue other crucial activities (e.g., moving to an adequate zone) while caring for her calf and ensuring her breeding success. The calf has permanent protection from its mother against predators and benefits from continuous maternal care for survival. Mother-calf (MC) interactions in humpback whales have long been poorly documented, mainly due to the challenges in tracking whales in their natural environment. The objective of our research project is to comprehensively investigate such interactions through the use of innovative methods involving 1) animal-borne multi-sensor tags (CATS tags and Acousonde tags) placed on mothers and calves and 2) recent signal processing methods to extract information from these tags. Tags enable remote, fine-scale investigation of the behaviors of whales along with their vocalizations thanks to their integrated depth sensor, 3D accelerometer, and hydrophone. The Society for Marine Mammalogy funding supported the realization of the 2022 tagging campaign off Sainte Marie, Madagascar (21 outings). We were able to tag 13 calves with CATS tags during that year. These deployments were critical as, along with accelerometry data, they provided video datasets that were used for more accurate behavioral studies. Nine out of the 13 deployments were all exploitable. Due to logistical constraints, we could not perform simultaneous tagging (tag on the mother and the calf simultaneously). However, with the data collected since 2013, our current dataset already consists of 57 exploitable deployments composed of 37 deployments on calves (25 Acousonde deployments and 13 CATS deployments) and 20 deployments on mothers (All Acousonde). Twelve Acousonde deployments correspond to 6 mother-calf pairs (i.e., six simultaneous deployments on mother and calf). From our dataset, we determined the duration of suckling events (nursing from the calf's perspective), their rate, and partially their spatial and activity contexts from a larger sample than in the few previous studies. We found the first evidence of suckling occurring at night in humpback whales. We were also able to describe some of the strategies used by MC pairs to mitigate the difference in swimming performance and need by studying their activity time budget. Finally, we obtained the first results regarding the difference in vocal sounds emitted by the mothers and the calves. The findings of this study will be subdivided into at least two papers to be submitted to peer-reviewed international scientific journals. Results regarding suckling behavior will also be presented at the upcoming 3rd Edition of the Humpback Whale World Congress (March 2023, Dominican Republic, http://www.hwwc.mg). Ultimately, the findings will be compiled as a thesis to fulfill the awardee's Ph.D. degree, expected to be due in September 2023.