SOCIETY FOR MARINE MAMMALOGY: SMALL GRAND IN AID OF RESEARCH (2020)

Project title

Whale watching effect on the body condition of Southern Right Whale, *Eubalaena australis*, on its reproductive area at Península Valdés, Chubut, Argentina

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Project summary

Globally, whale watching (WW) has become very important in recent decades, producing great economic, as well as social and cultural benefits for the local communities, regions and even countries where it takes place [1, 2]. Since it is a non-lethal activity, could be wrongly considered that it has no effect on individuals [1-3]. However, it has been shown that certain levels of exposure to this activity have consequences at the individual level (i.e., short term effect) and, therefore, could influence population parameters (i.e., long term effect), such as the rate of survival and reproduction [4, 5].
Whale watching in Puerto Pirámide, Argentina, started in 1973, but the long-term effects that this activity could have on the population have not been evaluated. Recent studies have indicated that individuals could be tolerant to the presence of boats since no significant differences in the animal's behavior with and without the presence of boats have been detected, however, significant differences in respiration rate (RR) have been detected [13]. These differences in RR could lead to unfavorable changes, with an increase in metabolic rates in the presence of boats and long-term consequences on population parameters. In this context, the main objective of this proposal was analyzed the long-term effect that WW boats could have on the body condition (BC), and consequently on reproduction, of whales in Península Valdés area using non-invasive methods, such as photogrammetry and observation of behaviors. Using an unmanned aerial vehicle (UAV), we took photographs and videos of the whales exposed to different anthropogenic disturbance scenarios. The photographs are useful to identify each whale with their particular callosity pattern and estimated their body condition that then will be related to the respiration rate (videos). Extrapolating to the reproductive season we will estimate how whale watching pressure influences whales in energetic terms. These results will be useful for the enforcing authority to make the activity sustainable over time.

Research goals

Determine the long-term consequences that the WW boats would have on the population of the Southern Right Whale, *Eubalaena australis*, which reproduce and breed in the Península Valdés area.

Particular objectives:

1. Determine the exposure rate of whales to WW boats.
2. Determine the relationship between RR and BC in different scenarios of anthropogenic disturbance.
3. Determine the critical body condition of the females that can compromise their reproductive rate.
4. Predict the exposure to tourist boats needed to significantly reduce reproductive rates of whales through an energy consumption model

Results

The exposure rate could not be obtained given that the photographs from the whale watching boats were not obtained given logistic problems with the whale watching companies' photographers. This objective is pending for the following seasons.

Were obtained 2153 photographs and 22:24hs of video (9:17hs taken in impacted scenario and 13:07hs taken in a control scenario) of whales into the Golfo Nuevo during the 2021 breeding season. Until the moment, were process 1860 photographs to obtain the whale´s body condition and ID data. The videos were not analyzed until now.

The critical body condition and exposure rate to tourist boats that compromise the reproductive rate will be determined after obtaining the average body condition (BC) and respiration rate (RR) when the photographs processing ends.

This project is still active, and we are working to obtain the results soon as possible, probably for the end of this year. Once the statistical analyzes are completed, a report will be prepared to be presented to the government authorities and talks and presentations will be organized in the city of Puerto Pirámides to comment on the results obtained. All the publications produced will have due recognition to The Society for Marine Mammalogy.

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