

Project Update: April 2011

In Guatemala, humpback whales are the focus of the recent development of an unregulated whale watch industry. This is of concern at multiple levels. A straightforward impact of unregulated activities is the increased likelihood of vessel strikes and disruption of whale behavior. Less obvious risks include an impact on breeding activities. The low frequency sound emitted by boats can interfere with the low frequency sound of the whale's song. Since whale song plays a crucial part in breeding, low frequency sound interference can impact breeding. Therefore, the identification of singing areas can be used to identify critical locations for the whales where boat traffic should be restricted.

Surveys for the project were conducted from October 2009 to April 2010, which is a time frame where whales have been reported to be observed and tourist boats are actively working in the area. I conducted monthly boat surveys along a 150-km stretch of southern Guatemala, an area with intense whale-watching activity.

During surveys, a total of nine undergraduate students from Universidad del Valle and Universidad de San Carlos participated as observers and helped to collect data in the field. They were students interested in pursuing Marine Biology as a career. The experience has strengthened their commitment to marine biology and conservation efforts. In fact, two of them are currently doing their thesis work on marine mammals under my supervision. Grecia Mendez (Fig. 1) is doing her thesis on manatee genetics at Universidad del Valle; and Oscar Machuca is studying manatee behavior at Universidad de San Carlos.



Fig. 1. Grecia Mendez, an undergraduate student at Universidad del Valle, helping to collect data in one of the boat surveys conducted along the Pacific Coast of Guatemala. Photography taken by Ester Quintana-Rizzo.

In addition to the participation of undergraduate students, three local fishermen helped to conduct the boat surveys. Their participation was important to raise awareness about the environment. Some of the local fishermen have been involved in the harpooning of dolphins to use their meat as shark bait. The activity is illegal. Their participation in the research helped them gain a better appreciation for the animals and the marine resources.

With the help of the team of student volunteers and local fishermen, I was able to conduct a total of 27 surveys during the study with approximately 277 h of search time. Although the study focused on humpback whales, other cetaceans were also sighted. Those species included bottlenose dolphins, spotted dolphins, and false killer whales. Humpback whales were observed in groups ranging from 1 to 4 individuals. Small calves were observed in 31% of the whale groups. Calving and mating signaling (whale singing) are important activities in whale-watching areas. Preliminary analysis of acoustic recordings indicates that singing occurred in approximately 85% of the survey area. This overlaps with the areas where whale-watching activities occur. In fact, singing seems to be affected by the presence of boats following the whales. On occasion, I observed whale-watching boats following whales at a distance less than 20 m. (Fig. 2). Further analysis will help to identify critical locations for the whales where boat traffic should be restricted.



Fig. 2. Two whale watching boats following a mother and calf humpback whale at a distance of approximately 50 m. The proposed whale-watching regulations state that only whale-watching boat can observe a whale at a time and the minimum distance of observation is 100 m from whales. Additionally, whale-watching boats are not permitted to follow mothers with calves. Photography taken by Ester Quintana-Rizzo.