

Whale Sharks Field Research Protocol

Overview

Whale sharks gather in the waters off of Bahía de los Ángeles because the Bay is considered one of the most biologically productive areas in the Gulf of California. The morphology of the bay, localized upwelling, wind patterns, and temperature of the water make it the perfect habitat for whale sharks to congregate seasonally for feeding.

Whale sharks have been studied in Bahía de los Ángeles for many years. Community members have been involved in collecting data since 2008 and even earlier more informally, this is called community science. Based on some of this work by the community, a set of rules has been created called the “Code of Conduct” for safe interactions with whale sharks.

Different types of data have been collected over time, including ways of feeding, composition of diet, and population information (identification of individuals, population numbers, males vs. females, size, tracking, etc.).

Recently, (2021) Vanessa and her team were able to collect biological samples and satellite tag two whale sharks. Satellite tags can last up to three years so will be very important in understanding the life cycle and yearly movement patterns of whale sharks. This is the first-time whale sharks have been satellite tagged in the Pacific Ocean! Prior to this it had only been done in the Caribbean.

This research is important because whale sharks are an endangered species and much of their life history is unknown. This research is also important to the community because tourism focused on whale sharks to this area has increased tremendously, and therefore the need to manage the industry has also increased. It is now more important than ever, that scientists understand the population make-up and overall health of the whale sharks that migrate into the bay each year (June-December) so that the ecotourism industry can continue to prosper while whale sharks remain protected.

Vanessa and her group share their data in several ways – they share their data with an online platform called Whalebook which is a worldwide database. They share their information with Comisión Nacional de Áreas Naturales Protegidas (CONAP) and report any illegal activity they might see. Additionally, they work with CONAP to offer a Whale Shark refresher course which is required by the government for all captains and guides who work with whale sharks. They share information with locals (who are often part of the whale shark ecotourism industry or other local boat drivers) to share sightings and behaviors of whale sharks and let boat drivers know where to drive more slowly and keep an eye out for whale sharks.

Research Protocol

*Vanessa and her staff will be the only ones collecting real data during this experience. The priority here is for all students to have a chance to see and potentially swim with whale sharks.

- **Swimming w/ Whale Sharks. (Priority)**
 - Have students gear up on drive out.
 - Wetsuits on halfway.
 - Life vest (optional), mask, fins, and snorkel ready.
 - Review who will be partners and what order they will be ready to go.
 - **Ratio: 1 student: 1 adult only during this experience.**

- When whale sharks have been spotted have all students gear up and be ready to go.
 - Wetsuits fully on.
 - Life vest fully on (optional).
 - Anti-fog in masks & rinsed.
 - Masks & fins ready to go.
- The key is to listen to the boat guide and researcher – they will tell you when to enter the water.
 - Be ready to go! Gear on, student is geared up and ready to go.
 - Only enter the water when told to do so.
 - Only enter the water with a student when they are ready.
 - This experience can feel very overwhelming to the students. Encourage them to have a growth mindset!
- **Data Collection (Secondary):**
 - When the students have calmed down and everyone has had a chance (or a few chances) to swim with the whale sharks, or your boat is taking a break so other boats can have access to the whale sharks have student make observations.
 - Open science notebook to “Field Research: Whale Sharks” and fill out some information:
 - Observations they have made about whale sharks.
 - Have students try to estimate the length of a whale shark.
 - Ask the boat guide the length of the boat you are one as a reference point.
 - Questions they have made about whale sharks.
 - Is this an observational study or controlled experiment? How do you know?
 - How could the data Vanessa and her team are collecting be used to make a difference?

Potential questions to ask students throughout the data collection process:

- What observations/questions do you have?
- Why do you think the community of Bahia de los Angeles came up with a Code of Conduct for interactions with whale sharks?
- Do you feel like you are doing science right now? Why or why not?