

Abstract

This thesis represents a crucial step towards aiding the survival of marine life in the Gulf of San Jorge. It provides a comprehensive template for mapping vessel Automatic Identification System (AIS) data, applicable worldwide. By harnessing this information, a more accurate assessment of areas posing high risks to cetaceans can be obtained. Once these areas are identified, further research can be conducted to devise strategies for reducing vessel traffic in these zones, thereby mitigating ship and marine animal collisions.

The literature review encompasses various whale species, along with their global populations. It is evident that whale hunting has exerted a substantial impact on these populations. Over the past 150 years, the northern Pacific whale population has witnessed a decline of 62,858 individuals. Cetaceans play a pivotal role in providing food for plankton and indirectly sequestering CO₂. Despite their positive impact on humans, humans themselves contribute two significant negative effects on marine animals: underwater noise pollution and the threat of vessel collisions. Among the most perilous areas for marine life are the Hellenic Trench, the habitat of sperm whales, and the coasts of Florida and Georgia, where the North Atlantic right whale resides.

One potential solution to this problem is the segregation of ships and whales, necessitating a comprehensive understanding of whale and vessel locations. This thesis outlines a comprehensive procedural framework for mapping shipping routes using historical AIS data obtained from Spire Global, employing the QGIS software program.

The vessels within the dataset were categorized into nine groups: unknown vessels, miscellaneous vessels, tankers, tugboats, fishing vessels, cargo ships, law enforcement vessels, pilot boats, and pollution control vessels. Following the mapping of these diverse vessel types, it is evident that the Gulf of San Jorge is inundated with fishing vessels and tankers. This observation is expected, given the presence of two Single Point Mooring buoys near Comodoro Rivadavia and Caleta Olivia. These buoys serve as terminals for the transfer of oil to and from ships.

Since the whale data was not available at the time of writing this thesis, a final outcome cannot be presented yet. However, the behaviour of the ships has been explained and mapped out. The maps presented in this thesis serve as a starting point for the protection of cetaceans in the area of Comodoro Rivadavia, Argentina. This project can be used as a model in other regions worldwide.