Sea turtles play a key role in marine environments. Six out of the seven species of sea turtles globally are listed as vulnerable, endangered, or critically endangered on the IUCN Red List for decades. Despite protection measures, their populations continue to decline. Five of the species are found in the Canary Islands. However, their preservation is partly hindered by the local fishermen whose antagonism rises, since, according to them, the turtles bite their shrimp fishing traps open to extract the bait. Working together with the NGO “Innoceana”, which focuses on marine conservation and preservation, we want to help both turtles and fisherman, setting a strong example for how we can live in coexistence with our environment through sustainable innovation.

Context and Challenge:

In recent years, the number of sea turtles residing in southwestern Tenerife has decreased with the increase of anthropogenic pressures, such as the constant traffic of boats, the pollution of waters by illegal outlets, the disappearance of the seagrass which green turtles feed on, etc.

This area, known as the Teno-Rasca Marine Strip ZEC (ES7020017) covers the western side of the island and has recently drawn the attention of the world as it has been declared a Hope Spot by the Mission Blue organization and the first Whale Heritage Site in Europe by the World Cetacean Alliance. This area not only has a very important cetacean community, but its submarine bottoms also have a lot to offer.

According to distribution models, the Teno-Rasca marine conservation area is a favorable habitat for marine turtles. However, the progressive disappearance of seagrass, along with bad practices such as feeding by the tourism industry, may have caused a change in their diet. It is estimated that 90% of fish populations in the Canary Islands have disappeared, which would justify the loggerhead turtles search for easily accessible food in form of shrimp traps set out by the fishermen.

Documenting the behavior of protected species, such as marine turtles, is a crucial tool for establishing protection measures. There have been numerous studies on turtle captures in fishing gear, but there is no mention of the previously mentioned problem, as it is the fishing sector that suffers the damages. Only recently have they begun to collaborate in marine conservation, while the fisherman become more and more frustrated after finding yet another broken trap, resolving in decrease of income and economic instability.

This is where we come in. By accompanying the fishermen on their boats and the installing Go Pros equipped with special redlights for vision on the traps, we will monitor them and get never before acquired data regarding the issue in this area. By documenting the behavior of the turtles and identifying the species causing the conflict, as well as working with fishermen and understanding what drives the turtle’s behavior, we, together with the “Innoceana” team of marine scientists, will be able to make clear decisions on optimizing the traps. Additionally, we will identify the ideal locations for seagrass reforestation and other measurements to provide alternative opportunities of procuring food for the sea turtles.

About the NGO:

“Innoceana” is a Spanish association that aims to conserve and protect oceans through interdisciplinary collaboration, the union of biology and engineering, and innovation, in order to find effective and sustainable solutions. “Innoceana” advocates for accessible science and believes in education as a tool for change.
The organization has a long history of work in the area, collaborating with the “Guía de Isora” municipality since 2018. It has performed numerous hours of diving, monitoring the life and ecosystems present. “Innoceana” knows the underwater habitats and ecosystems covering them, as well as the needs of the Tenerife population, better than any other association. Their existing and established connections to the local organizations and fisherman will be crucial for the success of this project.

**Project Breakdown and Implementation:**

Our project is dedicated to promoting peaceful coexistence between humans and nature. By meticulously observing and analyzing groundbreaking data on turtles in action and seagrass reforestation locations, we aim to prove and make decisions on the design process. We are in the process of gathering information from scientists and fisherman in both the United States and Spain to gain a comprehensive understanding of sea turtles and the shrimp fishing process. With this knowledge, we can generate different design solutions and prototype and test them in use. Our primary objective during our stay in Tenerife is to test and identify the best design solutions to build multiple traps with the assistance of local fishermen and an NGO. In doing so, we not only aim to educate the local fishermen but to fully document and structure the process to share it with the world.

Partnering with “Innoceana” we will also launch a campaign and organize on-ground community events that address marine preservation needs and educate fishermen. We will also use social media platforms to create greater awareness and reach people all over the Canary Islands, thereby expanding our project. By using detailed documentation and garnering the support of local organizations, we can address the issue at the government level to secure future funding and share our knowledge with other NGOs worldwide. This initiative therefore has the chance to preserve turtles and secure a livelihood for fishermen worldwide.

**Aligning with international goals:**

Proposing a project whose main objective is to study the behavior of turtles when they detect the presence of shrimp traps in the waters of the Teno-Rasca ZEC in Tenerife in a collaborative, integrative and innovative manner, we are aligning with the Sustainable Development Goals 14 (Life Below Water) and 17 (Partnerships for the Goals) and the objectives of the Strategic Plan for Natural Heritage and Biodiversity (Law 42/2007).

By working together and for the fishermen, educating them about sustainable consumption and coexisting with nature through innovation, as well as securing parts of their income, we also partly align with the Sustainable Development Goals 8 (Decent Work And Economic Growth) and 12 (Economic Growth).

**Project Outcome and Effectiveness:**

The project aims to study the behavior of marine turtles in the presence of shrimp traps in a collaborative, integrated, and innovative way, based on a real-world problem. The goal is to bring about a change in mindset among all sectors and to establish a program that has permanent impact and can be replicated and integrated in other places all over the world.

The five main objectives of the project are to increase knowledge for effective conservation, involve all sectors of society in finding solutions, restore the relationship between fishing and marine turtles, raise awareness, and ensure that the program has lasting impact.