The role of Experiential Learning on Haitian fishing communities' motivation to protect marine megafauna in Haiti's Baraderes-Cayemite Marine Protected Area.

El papel del Aprendizaje Experiencial en la motivación de las comunidades pesqueras haitianas para proteger la megafauna marina en el Área Marina Protegida Baraderes-Cayemite de Haití.

Le rôle de l'apprentissage par l'expérience sur la motivation des communautés de pêcheurs haïtiens à protéger la mégafaune marine dans l'aire marine protégée de Baradères-Cayemites en Haïti.

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EXTENDED ABSTRACT

The Baraderes/Cayemite area is a unique marine ecosystem located in both the Nippes and Grand'Anse Regions of Haiti. A key biodiversity area, this Marine Protected Area (MPA) was officially established in 2017 and is managed by Haiti's National Protected Areas Agency (ANAP). The MPA is (87,621.5) hectares in size. Approximately 100,000 fishers, their families, and other locals reside in this area where fishing is the main source of food and income, along with agriculture and trade.

This ecologically diverse area includes habitats like coral reefs, mangroves, and seagrass beds that support a variety of marine life, including a deep-water nursery for critically endangered oceanic whitetip sharks, nesting sites for critically endangered sea turtle populations, endangered whale sharks and manatees, and the near threatened spotted eagle rays. Other marine megafauna species caught in this MPA include blunt nose six-gill shark, green sea turtle, short-finned pilot whale, Atlantic devil ray, yellow stingray and the scalloped hammerhead shark. The most common fishing methods used to catch and kill these marine megafauna species are gill nets, seine nets, traps, handline fishing, and spears. They are caught either as a victim of incidental bycatch or directed hunts.

Since 2007, Haiti Ocean Project has been working with local communities in this southern Haiti MPA to find sustainable solutions to protect their endangered and imperiled marine megafauna through education, conservation, and research. Haiti Ocean Project has been a co-manager of the Baraderes-Cayemite MPA with the Haitian government since 2019.

In this MPA, overfishing and charcoal production are two of the highest-ranking threats to biodiversity, making marine megafauna some of the most at-risk marine species in these waters. In such a rural area with limited resources and extreme poverty, the impacts of overfishing are devastating (Canavire-Bacarreza, 2023). The direct use of mangroves for charcoal production is responsible for large-scale habitat removal and degradation, which degrades fish nursery and feeding areas (Dayal et al., 2022).

According to Schill et al (2020) the combination of unsustainable fishing and poverty has led to a significant strain on marine resources in this part of Haiti. This is occurring throughout the entire coastline of Haiti and resulting in all marine megafauna being a potential food source, including the Baraderes-Cayemite MPA. These species, some of which are critically endangered, are caught and killed by fishers, youth, women and the entire community, at sea, near shore and along the coast. Additionally, some of these marine megafauna species, such as the very large whale sharks and Atlantic devil rays, are also killed out of fear. This is due to many reasons which include: poverty (Kashyap, 2023), desperation, lack of

education about marine conservation and ocean related topics (Report offers Roadmap 2011), limited resources, unemployment, and opportunity.

Historically, the local populations residing in the Baraderes-Cayemite MPA had no connection to marine megafauna other than as a species they either caught, consumed, or feared. They could not and did not understand or value these species from a conservation perspective. While the Haiti Ocean Project team had been educating these local populations on the importance of protecting all marine megafauna in their waters, it was very evident at the onset that presenting information was not enough to change the fisher mindsets. It required hands-on learning which then directly connected these individuals to the species they were maiming, killing, consuming and selling. This was accomplished through the experiential learning cycle, developed by David A. Kolb, an American educational theorist (Kolb, 2015).

According to Kolb, Experiential Learning Theory works through a four-stage learning cycle involving four separate learning styles. These learning styles include (a) concrete experience, (b) reflective observation, (c) abstract conceptualization; and (d) active experimentation. Experiential learning is incorporated in all of Haiti Ocean Project's education, conservation, and research involving marine megafauna in the Baraderes-Cayemite MPA. Haiti Ocean Project uses a multi-layered approach which begins with classroom learning, conducted through formal classes or workshops. After the information is presented, direct learning begins.

Many successful programs were developed through this four-stage learning cycle. These programs include fisher sea turtle rescue and release, shark catch and release, marine mammal identification, youth education and engagement, and community involvement. Two significant incidents involving the rescue of a juvenile whale shark and juvenile female manatee spotlighted the success of this hands-on learning approach with the MPA.

The use of the Experiential Learning Theory in Haiti with regards to protecting marine megafauna has been extremely successful. It has altered mindsets and views. For local Haitians, it has helped to change minds, attitudes, and perceptions about marine megafauna. The benefit has been the reduction in the directed take (killing) of marine megafauna.

Since incorporating the Experiential Learning Theory in their marine conservation work in the Baraderes-Cayemite MPA, Haiti Ocean Project has confirmed 22 marine megafauna species in these waters, some of which are found in shallow waters and others identified in the open ocean. A notable mention is the sperm whale, which has been observed in Haiti year-round and often seen in the deep waters in this MPA. While not yet confirmed, anecdotal information from fishers have identified the presence of smalltooth sawfish and lemon sharks within the boundaries of the Baraderes-Cayemite MPA.

There have been other important achievements resulting from Haiti Ocean Project's Experiential Learning work in the Baraderes-Cayemite MPA and elsewhere in Haiti. The Nippes Department of Haiti waters are a confirmed nursery for the critically endangered oceanic whitetip sharks. In 2024 and bolstered by the field work and data collection of Haiti Ocean Project, the IUCN Marine Mammal Protected Areas Task Force Independent Review Panel designated the Golfe de la Gonâve (Gulf of Gonave) as an Area of Interest (AoI): stating the potential this area may have towards enhancing the local conservation status of marine mammals in the region. Also in 2024, a rescued adult female nesting Hawksbill from Petit Trou de Nippes became first satellite tagged sea turtle in Haiti history. The impact of teaching Haitians about marine education through direct learning has greatly contributed to conservation of these marine megafauna species.

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