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Giants of Baja California's Coastal Lagoons: linking sustainable tourism to biodiversity and conservation

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<https://storymaps.arcgis.com/stories/10ca0e02402440b1b9f0a113b1accb89>



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Abstract:

The El Vizcaino Biosphere Reserve is located in Baja California Sur, Mexico. This vast protected area is renowned for its biodiversity and ecological significance, particularly as a critical habitat for the Eastern subpopulation of the North Pacific Gray Whale. This project explores the perception and sustainability of the whale-watching industry in Guerrero Negro, and its role in conservation efforts. Through stakeholder interviews and analysis of management plans and specific research, the study examines the success of conservation strategies and the potential for increased tourism in the region. The end product, an informational StoryMap created using ArcGIS Pro, aims to promote ecotourism while fostering a deeper understanding of the importance of proper management and collaboration among stakeholders in preserving this unique marine environment. The project's success will be measured by its ability to engage a wider audience and facilitate the connection between ecotourism and conservation in El Vizcaino Biosphere Reserve.

Background:

The El Vizcaino Biosphere Reserve is located in Mulege, Baja California Sur, and it is one of Mexico's largest natural protected areas. Because of its size, great biodiversity, and the ecological services it provides, it represents one of Mexico's greatest conservation challenges. The two sanctuaries located in this reserve are the Laguna Ojo de Liebre and Laguna San Ignacio, which are considered ideal for gray whales (*Eschrichtius robustus*) to mate, breed and as their calving grounds. The Whale Sanctuary of El Vizcaino contains the most important breeding grounds of the Eastern subpopulation of the North Pacific Gray Whale. Its protection is linked with helping the species recover after near-collapse due to excessive commercial whaling.

The commercial whale-watching industry emerged in 1955, throughout the Southern California shoreline, when the gray whale was recovering from low numbers due to an intense whaling era. Currently, with 13 million participants around the world and \$2.1 billion in revenue, the industry has grown significantly. While it benefits conservation and local economies,

improper practices can harm whales, so education and adherence to guidelines and policies are essential to mitigate those risks.

Whale watching in Mexico was uncontrolled by the 1970s, until the establishment of Marine Protected Areas (MPAs) helped provide the context for the establishment of local laws and enforcement to control boat traffic, fishing gear and nets used in the lagoons, as well as pollution from local settlements and industrial degradation of the surrounding land areas. The MPA also closed some sensitive gray whale habitats entirely to tourism, providing zoned protection, which many researchers and MPA practitioners believe is a good way to manage whale watching. The specific objectives of the Ojo de Liebre Lagoon according to the Management Plan, are to preserve the ecosystem as a safe refuge for the gray whale, ensuring the habitat is suitable for their breeding and rising young; provide a field for scientific research and study of the gray whale's reproductive and rearing habitat; and promote the sustainable use of ecosystems, as well as the connectivity and their elements in the Protected Natural Area.

Research questions:

- How do the different stakeholders perceive the whale watching industry? (Fishermen, local agents, people not related to tourism industry, owners, non-locals)
- How sustainable is the whale watching industry? How do stakeholders define sustainability?
- What is the carrying capacity of Guerrero Negro if the amount of tourism increases?
- What role does tourism play in conservation?
- How successful has the El Vizcaino Biosphere Reserve been as a means for conservation through proper management of ecological services?

Defined end product:

<https://storymaps.arcgis.com/stories/10ca0e02402440b1b9f0a113b1accb89>

Informational Story Map using ArcGIS Pro of the Vizcaino Biosphere Reserve, emphasizing the whale watching industry in Guerrero Negro to promote ecotourism. This includes pictures and videos for tourists who are interested in whale watching activities in Guerrero Negro. The goal is to engage a wider audience about this unique part of the world, and create a connection between ecotourism and conservation through proper management and collaboration between the different stakeholders.

Methodology for achieved end product:

I traveled to Guerrero Negro, Baja California Sur, Mexico, to understand and analyze the whale watching industry. I met with local business owners, fishermen, tourists, and scientists to learn about their perception of whale watching tourism, and their perspective on conservation and sustainability. I was able to gather important information about how this industry supports them economically, and how feasible it would be to increase the number of tourists during peak season (December-April). In addition, I read many scientific papers about the ongoing scientific research happening in Baja California Sur in regards to the gray whale, as well as the different Management Plans and Climate Change Action Plans done by the Mexican government to examine in more detail the success of these administrative strategies.

Measure of success:

I created a QR code that will lead to the story map to be used as desired by locals to increase tourism in Guerrero Negro. In the long term, the goal is to share the access of the stray map to other groups of interest, such as local agencies, local government, and US agencies. This website has general information about the gray whale, which includes their biology, ecology, and behavior; as well as the history of whale watching and the establishment of the Marine Protected Area. This aims to engage a wider audience that may not be familiar with this species and their long road to recovery, after near-collapse, due to whaling. This project will link ecotourism to conservation through proper management.

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