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Porpoise Protection Program

The vaquita porpoise is a critically-endangered species endemic to the northern Gulf of California and is in imminent danger of extinction. Conservationists estimate that only between 6 to 10 vaquitas remain in the world, and the main threat to their survival is bycatch from commercial and illegal gillnet fisheries. Despite a number of attempts to discourage gillnet fishing, including a partial ban issued by the government in 2015 and a total ban issued in 2017, the vaquita population continues to dwindle. Sometimes, a movement is needed far more than a miracle. And it is precisely this interdisciplinary conservation movement that the critically-endangered vaquita porpoise needs so urgently.

There is a consensus among conservationists that the survival of the vaquita population hinges upon the permanent ban of gillnet fishing in the Gulf of California. However, enforcing this ban has serious economic, political, and social consequences on the surrounding community. The vaquita's endangerment is inextricably linked to the fishing of the totoaba, another endangered species highly valued in Mexican and Chinese markets. Since the banning of totoaba fishing under CITES, the demand for totoaba maw has only skyrocketed—and so has the motivation to hunt for it. According to the World Wildlife Fund, totoaba maw is a coveted commodity in the Chinese market due to a prevailing, false belief that its swim bladder has special medicinal properties. Moreover, local fishermen in Mexico are encouraged to hunt them to improve their financial situation: “Thousands of swim bladders are dried and smuggled out of

Mexico, often through the United States. Fishermen receive around \$4,000 for each pound of totoaba swim bladder, equivalent to half a year's income from legal fishing activities. It is this illegal trade that is currently driving the sharp decline in vaquita numbers.”

Our integrative strategy, unlike previous conservation efforts, involves conservationists and researchers working side by side—rather than from top to bottom—with local fishermen and community members to provide alternative livelihoods, leverage cutting-edge technologies, and build educational programming that strengthens solidarity for the vaquita’s protection.

Wellbeing

Our first order of business is to tackle the threat at its source: illegal gillnet fishing. However, it is important to realize that the livelihoods of many depend upon profits made from fishing—therefore, our priority is to cater to the fundamental, economic needs of our top *beneficiary*: the local community. The fishermen and residents of the towns that skirt the Gulf of California are also a major *partner*; the consent and cooperation of the community in eliminating totoaba trade and protecting the vaquita’s habitat are imperative.

There are two key *activities* that our program will organize to ensure the long-term prosperity of the this locality:

1. Repurposing Gillnets: Partnering with an organization that purchases nylon fishing nets and establishing a line of production for community members to clean, sell, and help manufacture the nylon nets into clothing that can be sold to a third party buyer. This activity is a source of *revenue*.
2. Conservation Task Force Training: Hiring fishermen as local guides and using their expertise for our program’s purposes, training them to maintain acoustic monitoring

equipment, safeguard the waters, and educate the town about vaquita and totoaba conservation. This activity is a type of *intervention*.

Our *value proposition* is to redirect fishermen to these alternative employment options that guarantee them with job security and economic stability. Profits made from selling nylon fishing nets and manufacturing nylon clothing will be reinvested as *surplus*, and the task force will serve as a steady *channel* for conservation services, communication, and information.

Biodiversity

Secondly, we are targeting gillnet fishing from both technology and legislative angles. One of the most crucial *resources* for our plan is pingers. A pinger is an acoustic deterrent device which broadcasts repeating bursts of sound within a defined frequency and volume range when immersed in water; the sound warns porpoises (and other cetaceans that use echolocation) that there is an object in their way, preventing them from getting entangled in nearby nets. Multiple pinger studies conducted around the world have demonstrated the efficacy of pinger technology to reduce cetacean-gillnet interactions. Both the equipment and manpower (specialized analysts and data storage banks will need to be paid for to process, store, and analyze this information) will need to be continuously funded by *stakeholders* (from private and public sectors), as they require constant maintenance and training.

The second part of our dual-action plan is to work with Mexican and Chinese governments to strongly enforce fishing regulations. The following reasons are why illegal trade is so widespread in the Gulf of California:

- Lack of strict regulation and monitoring by both Mexican and Chinese governments.
- Financial reward for totoaba catch far outweighs the risk of getting caught.

- Poverty and hunger of local fishermen increase the lure to engage in illegal trade.

Drafting and carrying out policies that address these drivers of illegal activities involve close collaboration between lawmakers, marine conservation organizations (such as NOAA Fisheries and Marine Mammal Commission), and community members. Harshening the punishment for violating these fishing restrictions, tightening customs checks in international travel, and increasing the surveillance of the vaquita habitat are actions that will dramatically suppress and stamp out illegal fishing.

Communities

Lastly, our proposal's educational programming will increase vaquita awareness and advocacy throughout the Gulf of California. This initiative will achieve the following four objectives:

- Teach the ecological importance of the vaquita and the totoaba in the Gulf of California's marine ecosystem (and debunk the myths associated with totoaba maw).
- Train individuals in the application and maintenance of conservation technology
- Teach sustainable fishing practices.
- Collect and analyze data gathered from conservation technology and community feedback.

Our responsive and inclusive educational plan will serve as the binding agent of our entire proposal, connecting the community directly with the conservation leaders, supporters, and researchers of the Porpoise Protection Program. Scholarships, employment opportunities, and other forms of compensation will incentivize participation in the program, further encouraging residents to engage in vaquita conservation.

To summarize, the Porpoise Protection Program (PPP) will have the following *enterprise* framework:

- Provide permanent, paid positions of PPP leaders, researchers, data analysts, marine rangers.
- Recruit community and outside volunteers.
- Gillnet Repurposing community service project: repurposing used gillnets as clothing material—profits will benefit local artisans and fishermen.
- Purchase and manage acoustic monitoring technology (pingers).
- Contact Mexican and Chinese governments to discuss an action plan to rehabilitate the vaquita.
- Implement educational programming.

We hope that the tasks and objectives of our Porpoise Protection Program outlined above are both actionable and sustainable. Our plan will offer economic opportunity for the local fishermen, habitat protection for the vaquita, and environmental education for community members, demonstrating how integrative ideas can work in tandem to transform a vicious cycle of poaching and bycatch into a virtuous cycle of job creation and community collaboration.