

# THE SIXTH EXTINCTION: The loss of the vaquita



## What is the sixth extinction?

Nowadays, the planet is on the edge of what scientists called the Sixth Great Extinction. This has been principally caused by climate change, which is in turn a consequence of human activity for their big emission of CO2 in the atmosphere, in the same way other activities like contamination, habitat destruction, overexploitation of natural resources (deforestation, fishing, etc.) and hunting, have grave repercussions in the biodiversity loss. Therefore the flora and the fauna which live in these regions become vulnerable for these modifications, a lot of times obligating them to migrate and altering the biologic cycle of that place, or completely extinguishing those species.

For this project, we decided to focus on an endemic species of Mexico: the vaquita (*Phocoena sinus*), which for a long time ago has been risked and currently is in critical peril.

Objective:

To show the different factors which damage our studying species, either socials or environmental.

Hypothesis:

The environmental factors and the vaquita surroundings factors will have a certain impact in its progressive extinction and they will present obstacles for its development. Furthermore a considerable part of the survey respondents are not conscious of the situation of the vaquita species.

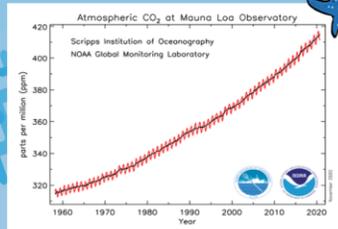
So, is it possible to save the Vaquita?, we'll find out.

## What's the quality of its habitat?

Because the species is endemic to the Gulf of California, it's important to know how that environment is doing.

### Temperature:

The Gulf of California isn't immune to the effects that climate change and global warming can cause, although there's not much data of the temperatures, it is important to highlight that an study estimates that in the year 2050 the temperature of the Gulf of California could increase 0.63 C° / 33.13 F°, it may not look like much, but 1 C° can make drastic changes for sure, and as we can see in the next graph, the CO2 emissions around the world have followed a positive slope since the 60s, with an increase of 131% in the last sixty years, and even in this year of confinement it has continued to rise, therefore it is not hard to imagine that the sea's temperature will keep increasing, in consequence, harming the vaquita, which requires lower temperatures, specially for their reproduction and giving birth.



Fuente: La National Oceanic Atmospheric Administration

### Fresh water:

Before, the Colorado River contributed with more than 50% of the fresh water that entered the Gulf of California, important for the healthy development of the species, until the Hoover Dam was built in 1935, reducing the flow of fresh water to 1% of the original flow. In order to measure the impact of the decrease in flow, we used data on the flow of the main rivers that flow into the Gulf of California, as well as a study on the reduction of mollusks, since these tend to be more prolific in the presence of fresh water.

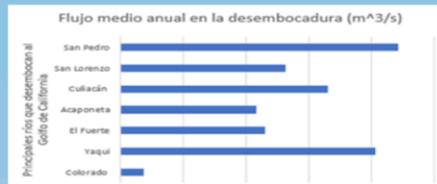
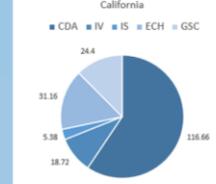


Figura 1. Localización de área de estudio y los sitios de muestreo en el Delta del Río Colorado.

### Densidad de moluscos (Ind m2) en el Golfo de California



Fuente de datos: Revista Ciencias Marinas vol.32 no.4 Ensenada dic. 2006

The Colorado River has become the river that contributes the least fresh water to the Gulf, and its impact on marine life is reflected in the density of the mollusks, especially in the area inside the red circle, which is exactly where the Colorado River flows into and where the Biosphere Reserve is located, habitat of the vaquita, we can see that only 31% of the mollusks are harbored there, compared to the southern zone, which has a higher density harboring 69% of the mollusks. This is due to the fact that the south does not depend on the Colorado River, since other channels supply it with the fresh water it requires, which is not the case for the north.

## How many Vaquitas are left in the world?



Graphic of our autorship based on data provided by the Federal Attorney for Environmental Protection

We can observe that in 1997 there was an increment of 253.12%, this is because since that year the government began monitoring the species with more regularity and entered in action some programs in favor of their protection, (creation of Biosphere Reserve), clearly it did not have a great impact and therefore it is factible to say that in almost thirty years the population has followed a negative slope into their extinction. Nowadays there are around only 10 vaquitas left.

## Accidental Fishing:

At the beginning of the last century the fishing for **Totoaba fish** had an exponential growth, and thus lasted until 1975, when it was restricted its fishing permanently in the Gulf of California, unfortunately illegal fishing continued (and has continued) an by the end of the 80's, both the Totoaba and Vaquita were in danger of extinction; this is because the fishing nets invaded the Vaquita's hábitat, getting accidentally caught in them.



Fuente: WORLD WILDLIFE FUND-MÉXICO

## Conclusions:

As we could observe, there are indeed alterations in the various factors that come into play in the life of the vaquita, and although totoaba fishing has decreased, it continues illegally and gillnets are still allowed, which poses a risk to these species, so it is still the main cause of death, hence the importance of taking drastic measures, perhaps returning the river is not so feasible, but we can ban the nets and do our bit to reduce the carbon footprint to curb the increase in sea temperature, otherwise, contemplating an average annual reduction of 36.6% by the year 2026 it will be completely extinct, affecting the food chains permanently since the species is both prey and predator in the food chain.

We even conducted a survey in which we asked how much knowledge they had about the situation of the vaquita, and, surprisingly 43.1% responded that they knew something, and 31.9% knew with certainty that it is critically endangered, but this leaves us with 25% who do not know about this extremely important issue, so it must be given greater diffusion.



In conclusion it may still be possible to save the species, but this will require the effort of not only the Mexico's government programs, but also the locals, and ideally we should all take action in slowing down the global warming, so the factors of this and many other species being endangered are reduced.

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