

A graphic consisting of three overlapping, semi-transparent triangles pointing to the right. The triangles are colored red, teal, and light green from front to back.

Bimatox

Human Practice Travel Log

Human Practice
iGEM
2017

Dedicated to all the people that trust in us, and to those who with the cold of the winter of the south received us in their houses with hot food, heat from the stove and a smile. We could not have done this work without your help. Thank you.

Introduction

One of the most social and economic problematic in our country is the one that is produced by HABs (harmful algal bloom), and whose most recent record happened last year in 10th Region, Los Lagos: the red tide is a natural phenomenon where singled-celled microalgae multiply because of favorable environmental conditions, and there are noxious because produce toxins which affect human beings depending of their class: diarrheal, amnesic or paralytic, being last type the more dangerous and abundant in the last year event.

As a social problem, it results to be a phenomenon that affect directly to the people that depends of obtaining resources from the sea: artisanal fisherman, mussel farmers, business correlated, etc., but also affects the lifestyle of population where red tide is present, and the city's economic income.

In order to know in detail the different factors of social problem produced by red tide last year, we elaborated interviews for all the possible affecteds, knowing their points of view, work that is resumed in the next travel log, and is going to be explained in our wiki.

Background

News related to last red tide:

http://www.bbc.com/mundo/noticias/2016/05/160503_chile_marea_roja_catastrofe_alerta_sanitaria_ab

What is the red tide for which they declared a catastrophe in Chile? 4 May 2016

"Given this circumstance, the government of President Michelle Bachelet declared last Saturday as a catastrophe zone the coastal edge of the Los Lagos Region, which will allow mobilizing resources to support families affected by this situation.

"On Tuesday, more than 2,000 artisanal fishermen from Chiloé intensified protests that began Monday against the 100,000-peso bond per family (about US \$ 151) that the government has offered to compensate them for falling revenues."

http://www.bbc.com/mundo/video_fotos/2016/05/160510_video_marea_roja_chile_lp

Red tide: algae that are killing marine wildlife in Chile? 10 May 2016

"For about a week, fishermen have been protesting on Chiloé's island, in the south of Chile, because of the red tide in their waters and because of the help the government has offered them to compensate for the economic losses that this entails."

"While fishermen argue that the increase in algae is due to the dumping of 4,500 tonnes of rotting salmon into the sea, the government said experts dismissed a causal link between the two, pointing to factors such as climate change and global warming."

<https://economiatodos.cl/2016/05/12/la-catastrofe-de-chiloe-explicada-con-manzanitas/>

The catastrophe of Chiloé explained with manzanitas? By MATIAS GODOY MARK
12/05/2016

"On April 28, 2016 the Chilean Navy issued a disturbing news. The maritime authority detected 5 kilometers of stalks in the coasts of Playa Grande de Cucao, Huentemó and

Chanquin, belonging to the Chiloé archipelago, X Region of Los Lagos. The Navy determined as a cause of death of these animals a toxin of the red tide, and there are also indications of poison in some crabs and clams."

<http://www.elmostrador.cl/noticias/pais/2016/05/03/pescadores-de-chiloe-la-marea-roja-a-parecio-luego-que-se-vertieron-5-mil-toneladas-de-desechos-salmoneros-al-mar/>

Chiloé's fishermen: "The red tide appeared after 5 thousand tons of salmon waste were dumped into the sea" 3 May 2016

"The Chiloé's artisanal fishermen are up in arms, protest against the measures announced by the government to alleviate the effects of the fishing ban decreed in the area because of the red tide.

"The proposal of Region of Los Lagos' Governor, Leonardo de la Prida, we don't accept it. Quellón has stopped receiving millions of pesos by red tide and contingency. Here nobody lives with \$100 billion, estimates that should be \$400 thousand, but it is necessary to define for how long," said Denisse Alvarado, leader of the artisan fishermen of Quellón.

As we can see, at this point the people correlate the red tide with dumping of 4,500 tonnes of rotting salmon into the sea, but more important, there was a lack of help of the government to the people, or was insufficient. This added to the fishing ban caused a serious social problem, provoking protest in the affected zone.

Testimonials

Anonymous fisherman. Union worker Mar y Sol

"For months, we talk about 300 thousand pesos a month. Take the account throughout the year of how much is, right? And when the quotas came, they did not even buy the fishing quotas. So those are the... then already, we begin to lose hope, we doesn't even want to participate because they don't care anymore"

Héctor Koll, Union advisor Mar y Sol

"There's no way to explain it, and here with the red tide issue, was exactly the same. The figures didn't fit at all, none of them. People kept fishing and eating seafood because they had nothing left to eat. Yes, if you meet the laboratory, which is the main source that they have, you're going to be surprised.

So, with all of this, at least you must have a laboratory that worths it, and one who doesn't need to be "outsourcing" everything else, because at the end it's a results collage, brought by external laboratories without guarantees (...) there's little professionalism, a few samples were like: doing something here and then the result is assumed for 2 km beyond, an ideological falsification everywhere. And the same laboratories provide services to the state, accredited by Sernapesca.

What happened here wasn't trivial. GreenPeace arrives from outside and say: "Red tide is produced by the salmon shedding", three months after red tide had started, and right after it begun in Quellón, on the other side of the island.

There's no way, Greenpeace did that, and... there's no way to take off that thought from people's mind. Really, all of this in sum is a big social issue".

Elias Renca, Inspector and businessman

"I lost a lot of customers with the red tide of 2016. Apart from the Ancud strike, there were a couple of months when the situation was not regularized at sea (it was still present). I lost as a customer to Walmart and just starting in June we started to exchange products with them, but for the whole situation, Walmart preferred not to continue investing on the island."

"Now we work less, the sale fell by approximately 70%, and the situation has no turning back. People are afraid to eat fresh seafood. It's responsibility of the people too, for not eating in established establishments, places that use products that have been sampled by the Seremi de Salud."

Administrator of the commune of Quinchao

"From the social point of view, more than 1,000 people, from a universe of 7,500 to 7,300 people in the commune, 9 islands, all linked to the productive world of aquaculture. There is not much control over the people who practice this activity (artisanal fishermen in general). Approximately only 10% registered with their updated RPA, the remaining 90% goes to the municipality when these catastrophes occur. "

"There is no resource for investigation or to have an emergency fund by the municipality. For the event last year between 5 to 10 people in the commune received the benefit because of the red tide."

"There is no data on the number of people who stopped working on taking products from the sea because of the red tide. According to my point of view the process must be longer than the time of the red tide for a person to definitely change their source labor."

Alfredo Cárdenas Union worker orilleros of Chamiza

"When red tide was decreed to the entire X region and the entire coastal zone/Austral highway people were scared and did not consume seafood, being that in the area there was no red tide. We made a protest, but we were punished unjustly by the police. "

"In spite of everything we were able to bring teams of people who went to do studies at the beach. They analyzed samples, everything went positive. We did things for our people, a curanto (traditional food) for the people of the sector to lose their fear and thanks to this we gave people confidence, but we paid for all that ourselves."

"Until today it's difficult to sell seafood. It involves taking samples and analyzing them, taking them, giving them the answer, and by then seafood is spoiled and can not be sold. "

Andrés Cortés, @FAN consultant, company looking red tide detection using oceanographic prediction models

"We were able to predict the event of the year 2016, since November-December 2015 the satellite monitoring showed a high concentration of chlorophyll A in the part of the oceanic Chiloé, where there is no monitoring effort, the monitoring is towards the inland sea. With oceanographic models we could see the ocean currents and that "the red spot" could enter through the Chacao channel, and we "guessed" it, but we didn't know what species it was. It could also have been due to a concentration of macro algae, which also have chlorophyll A. More technical efforts are lacking to be able to predict the conditions and how they develop, we could predict how those "spots" will be dispersed.

Gabriel Alarcón, Sernapesca 's Civil Servant

"A lot of disinformation, a lot of people's annoyance, everything was very tense because of the barricades and the social upheaval by the issue of the red tide. At first the number of attentions increased from an average of 50-60 people to around 330 people per day; then there were people standing, people sitting on the stairs, outside waiting and when a lot of people get together they also cause annoyance both of the people who come for the first time and of the people who usually come because they take out a number and have to wait 2 or 3 hours to be served, we had to attend practically all, to serve so many people."

"There was everything, people who really worked, people who actually had surgery and who met the requirements but did not receive the benefit, unfortunately there are the least. There were also many people who came to register even if they did not work as extractors to see if they could opt for a benefit, deep down, they hoped that they would get bonuses. A lot of annoyance because the way in which the bonds were distributed was not the most appropriate, since many bonuses came to people who had not registered or worked "

"Mainly here in Ancud, the theme is diving, you work more in diving than in fishing: clam, everything that is seafood, crabs too. There are boats that work on the king crab, crabs, that's fishing. Mainly here the largest fleet mainly uses diving as a fishing gear. "

"For the issue of the red tide, what was done was that they went directly, as was a more critical issue, went directly to the boat to take samples and began to sample everything that could contain some degree of risk to human health, such as piure or filter fish that could concentrate some degree of toxin; to this day, users continue to bring the accreditations that their samples were taken by the health authority."

Francisco Barría, SEREMI worker

"Of course, the result arrives there, as the colleague said, it arrives there, the 30 meshes of these meshes, which are 150 kg, there are oysters. And the result reaches the barrier there, positive or negative, it arrives there. Then, if it is positive, we give the warning that it is necessary to confiscate all that product. And the person who came to do this sample without registering must have it in sight. (...) It must be denatured with a product, it can be chloramine, or petroleum, so that it is inedible for people or anyone."

"We take the samples only of the product, I mean let's say, this is the clam, we take 3kg and we put them inside the bag and the samples we identify them, for which it does the monitoring, it goes with the coordinates. And that's it, because the rest corresponds to the laboratory, back in Castro, in Quellón. We have a laboratory that looks for the red tide. Now let's go to Pudeto, we go there to a small plant, a lot of seafood is not going to come out because with the storm that was yesterday, then no ... But basically this is what we do"