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Proposal of implementation of public policies to face harmful algal bloom (HAB) in sea of southern Chile.

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Abstract (300-word limit)

Harmful algal blooms (HAB) have occurred around the world at increasing frequencies in recent years and have caused severe and unfavorable consequences to ecosystems and public health under climate change (Ou et al.,2017). There is emerging evidence that climate change will impact coastal and offshore marine phytoplankton communities, and projections that this change may include increases in the frequency and severity of HABs (Wells et al., 2015). Climate change processes already are causing shifts in phytoplankton community composition, but the projections on climate, HAB effects, independent of other anthropogenic impacts, remain speculative. These pressures will be manifest as alterations in temperature, stratification, light, ocean acidification, nutrient inputs by anthropic activities and natural activities (precipitation). Absence of fundamental knowledge of the mechanisms driving HAB frustrates most hope of forecasting their future prevalence.

One of the variables that can be controlled is the reduction and control of the nutrients contributions from anthropogenic sources. It is important to know the N: P ratio and available minerals to analyze the HAB opportunism species and proliferation under certain conditions. Each HAB event worldwide is addressed with different country management policies according to their geographical distribution and technical resources for mitigation. In this paper we will analyze the Chilean case contemplating the public policies applied in HAB management, analyzing their strengths and weaknesses. Effective proposals will be proposed for better HAB events management, based on scientific and practical criteria.).

Methodology and Theoretical Orientation:

A complete study is made of the harmful algal blooms (HAB) in the South of Chile and the application of government policies to face the problem. The strengths and weaknesses are analyzed of the government management policies, proposing an efficient model of improvements in the HAB management.

Findings:

1) Create an Institution with exclusive dedication to HABs.
2) More sampling environmental stations should be placed in addition to the existing.
3) A rigorous plan will be implemented to identify emissaries in urban and rural areas.
4) A periodic sediments measurement system should be implemented in places with significant nutrient contributions.
5) The main maritime sites in the South of Chile should be modeled hydrodynamically, especially with HAB and their latent cysts.
6) A bivalve seafood nanobubbles treatment plant should be built to purify the seafood extracted by artisanal fishermen.
7) A strong aquaculture diversification policy should be implemented for Artisanal Fishing.

Conclusion and Significance:

1) Formation of a permanent autonomous institution exclusively in charge of combating HAB in a holistic way, integrating all the actors involved.
2) Implementation of a monitoring system for HAB, nutrients and sediment restoration.
3) A large bivalve seafood treatment plant should be built for the Artisanal Fishing sector.
4) A diversification should be made in Artisanal Fishing, towards a productive reconversion focused on a small-scale aquaculture not affected by HAB .

Image:

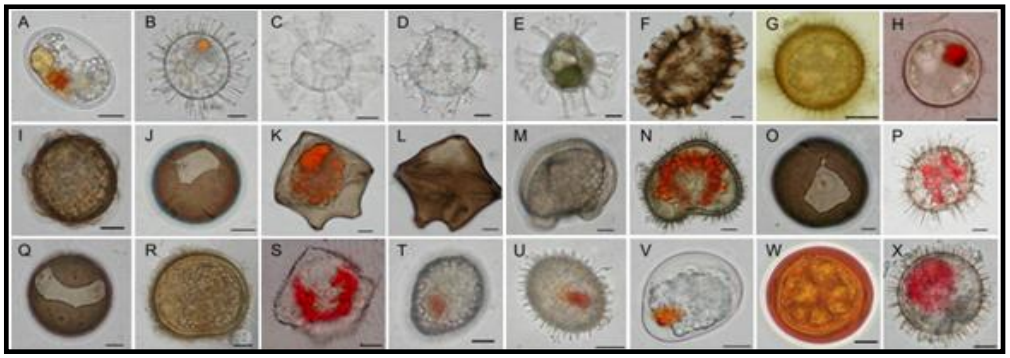
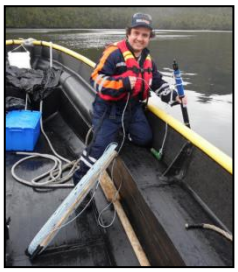


Figure 1.- Noxious microalgae cysts found in southern Chile (Díaz et al. 2011)



Biography (150-word limit)

MSc. Diego Ortiz is a Senior Multidisciplinary Professional (Engineer, Biologist, Researcher) expert in marine toxicology and environmental management. Consultant in Nanotech SpA specializing in aquaculture and enviroment projects, updating new production strategies to climate change on marine environment. Expert in environmental restoration. More than 13 years of experience in Chile and Abroad bring my expertise to the field and research level. I am a specialist in delivering solutions based on I+D+i, collaborating with many companies and researchers around the world. I am prepared and aware of the latest research to provide solutions from a scientific and practical point view as a multidisciplinary consultancy specialized in projects execution.

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