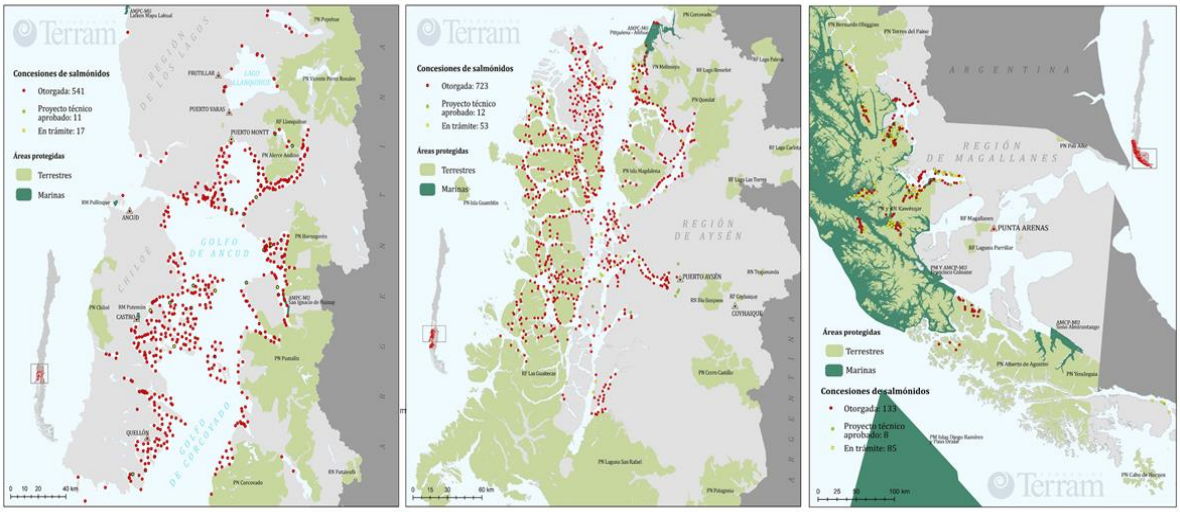
BRIEFING:
PROBLEMS WITH THE SALMON INDUSTRY IN CHILEAN PATAGONIA
January 2022

1. The salmon industry's exponential growth over the last 30 years

Salmon farming has established itself as one of the most important and profitable economic activities in Chile and it is now the second largest national export. Nearly all production takes place in the channels and fjords of the Los Lagos, Aysén, and Magallanes Regions. The industry's presence in Chilean Patagonia for more than three decades has profoundly transformed the region (Bustos et al., 2019) and significantly altered sociocultural dynamics and local economies to the detriment of traditional activities and ways of life. This activity's productive phase at sea is carried out in farming centers. For these to operate, an aquaculture concession must be granted for the use and exploitation of a portion of the coast. Currently, almost 1,400 salmonid farming concessions have been granted in these three southern regions.

In the industry's first few decades, and to a lesser extent until 2010, concessions were granted solely and exclusively using a supply-demand logic in which all legally available space was handed over. The only requirement was that the solicited concession be located within Areas Appropriate for Aquaculture (AAA), which were defined without any scientific or technical basis (Tecklin, 2014). The sector's productive growth involved displacing previous actors in these areas, such as fishermen and beachcombers, among others, as well as the establishment of property rights on aquaculture concessions, which transformed socio-environmental relations and subjected marine cycles to salmon production cycles (Bustos & Prieto, 2019).

Salmon farming concessions granted in the Los Lagos, Aysén, and Magallanes Regions



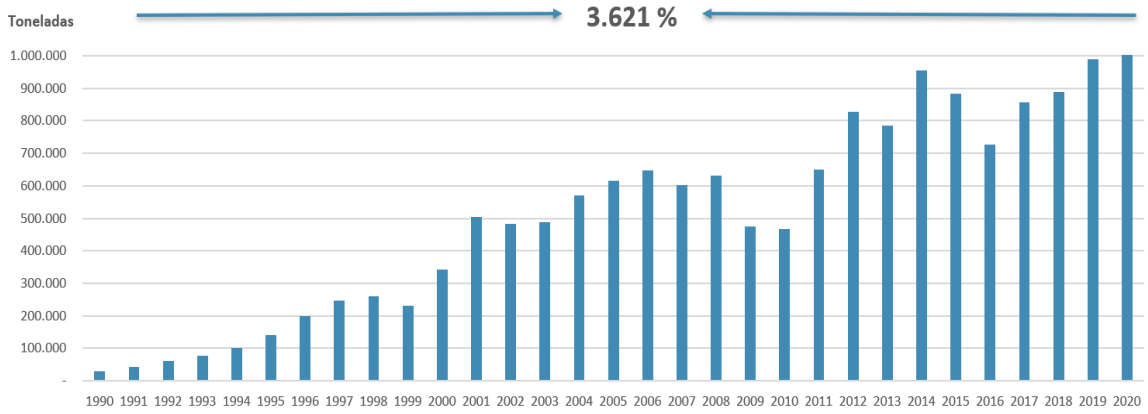
Source: Graphic by Terram based on information available in the SUBPESCA Map Viewer.

The initial unregulated and uncontrolled growth of salmon farming led to a major crisis from 2007 to 2010 in the Los Lagos and Aysén Regions due to the Infectious Salmon Anemia (ISA) virus, which caused mass fish die-offs and huge economic losses and layoffs in the sector. In response to this problem, important legal and regulatory changes were made to environmental and health regulations, which introduced various joint or coordinated sanitary management measures in terms of stocking, harvesting, and fallowing, as well as the establishment of sanitary firewalls. In addition

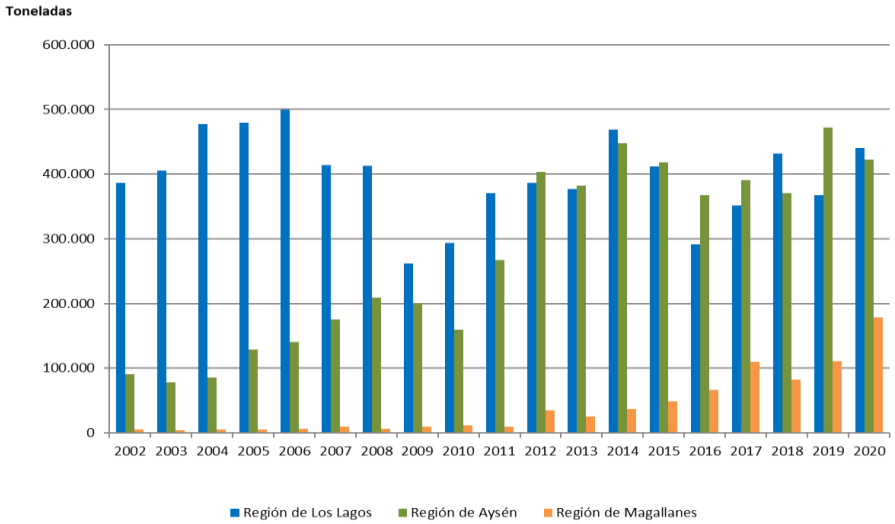
to these measures, a legal prohibition on granting new concessions in the Los Lagos and Aysén Regions was established in 2010 in order to territorially organize salmon farming concessions, which lasted until 2020.

Nonetheless, prohibiting the granting of new concessions did not impede the industry from increasing production in an uncontrolled fashion, which it achieved by modifying technical projects and requesting increases to the biomass of fish produced. In other words, given the impossibility of the industry's expansion via new concessions, it sought to continue growth by increasing the numbers of tons of fish to be produced in the same areas that were already granted. In 1990, salmon production was around 29,000 metric tons. In 2020, production reached 1,043,000 tons, which means an increase of around 3,621%. This is equivalent to 117% growth every year over the last 30 years, which helps us conceptualize the significant environmental impact of this activity on the marine coastal ecosystems of the Los Lagos, Aysén, and Magallanes Regions.

Graphic 1. Production of farmed salmonids in Chile from 1990 to 2020 (in metric tons)



Graphic 2. Total salmonid harvests in aquaculture centers by region, from 2002 to 2020 (in metric tons)



Source: Graphics by Terram based on information contained in Sernapesca's Annual Statistical Reports and information obtained via the Transparency Portal.

Salmon are an exotic, carnivorous species and their intensive production requires an artificial food supply, therapeutic treatments, disinfectants, anti-fouling paints, and infrastructure for the use of raft cages, among other needs. As such, this economic activity has a number of environmental impacts, which can be analyzed in greater detail and are summarized generally in the following table:

Summary of the main impacts of salmon farming

1. Impact of increased organic matter and oxygen demand on coastal ecosystems
2. Impact of nutrient loading on the composition and quantity of phytoplankton
3. Impact of antibiotic use on biodiversity, microbial resistance, and human health
4. Disease transfer between natural and farmed populations
5. Impact of microbe use on coastal food webs and biodiversity
6. Impact of anti-fouling paint compounds on benthic habitats
7. Impact of disinfectant compounds
8. Impact of salmon escapes
9. Impact of aquaculture on native mammals, birds, and fish
10. Impact of organic and inorganic wastes on the freshwater cycle
11. Impact of solid wastes on the cleaning of sea floors and beaches in aquaculture zones

Source: Terram, based on Buschmann, Niklitschek, and Pereda (2021).

2. Salmon concessions in protected areas

In an apparent paradox, practically all salmon production occurs in the regions with the largest expanse of protected areas in Chile. Today, 90% of the surface area of the National System of Natural Protected Areas (SNASPE) is found in the Los Lagos, Aysén, and Magallanes Regions. In recent years, numerous efforts have been made to establish Chilean Patagonia as a global model

for conservation, including the donation of 400,000 hectares by Tompkins Conservation in 2018 and the incorporation of 985,000 hectares of public lands to create the Patagonia Route of Parks.

Over the last decade, several marine protected areas have been created in these southern regions, including the Pitipalena-Añihue and Tortel Coastal Marine Protected Areas for Multiple Uses (AMCP-MU) in Aysén; and the Diego Ramírez Islands and Drake Passage Marine Park and Seno Almirantazgo AMCP-MU in Magallanes. These represent a significant increase in the marine area that is officially protected for conservation purposes.

Unfortunately, the creation of these protected areas has not prevented hundreds of salmon farming concessions from operating within or adjacent to Patagonia's protected areas, seriously jeopardizing the goal of conservation for which these areas were created. This situation has been allowed due to weak regulations regarding the protection of these areas, as well as administrative malpractice by the institutions responsible for granting salmon concessions in protected areas, which have granted authorizations for these farming centers to operate without increased environmental considerations.

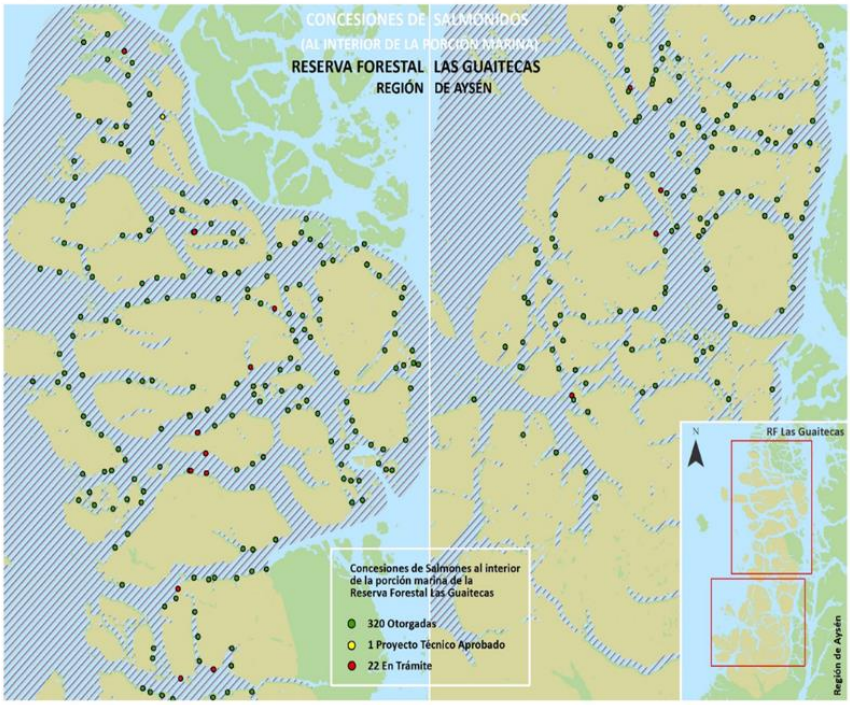
Categories of protected areas and the situation of aquaculture within their borders

National Parks	Prohibited (Article 158 of LGPA)
Natural Monuments	Prohibited (Article 158 of LGPA)
Marine Parks	Prohibited (legal definition of LGPA)
Marine Reserves	Prohibited (legal definition and Article 67 of LGPA)
National Reserves	Permitted (Article 158 of LGPA)
AMCP-MU	Permitted (not explicitly regulated)
Nature Sanctuaries	Permitted (not explicitly regulated)

Salmon farming prohibited Salmon farming permitted

As a result, drastic situations can be seen today, such as that of Las Guaitecas Forest Reserve in the Aysén Region, which, according to information obtained as of January 2020, has 320 concessions granted in its marine area. Another alarming case is that of the Kawésqar National Reserve in the Magallanes Region, where, as of June 2020, 65 salmon farming concessions had been granted and more than 100 concessions were in the process of being approved.

Salmon farming concessions in Las Guaitecas Forest Reserve as of January 2020



Source: Graphic by Terram based on information available in the SUBPESCA Map Viewer.

To address this problem, a group of congress members, following a petition from more than 60 of the country's territorial and environmental organizations, presented a bill (Bulletin No. 14,712-21) in November 2021 to prohibit concessions within protected areas of any category. In December 2021, a group of senators presented another bill with the same objective (Bulletin No. 14,758-21). The processing of these bills has not been without complications, and there has been strong pressure from the salmon industry to stop both initiatives, whose arguments are based mainly on the impact on jobs associated with the industry if the bills are approved.

3. Impact of the salmon industry on the labor market

Regarding labor, the jobs generated by the salmon industry are known to be highly unstable in the face of environmental and health crises, like those caused by the ISA virus in the Los Lagos and Aysén Regions (2007-2010) and the red tide in Chiloé (2016.). Nonetheless, the industry's impact on the labor market continues to be, without a doubt, one of its most obscure aspects. For this reason, it is not frequently addressed by NGOs and centers of study, most likely because it is difficult to access updated information on the subject. This can be seen, for example, in the lack of knowledge about the quantity and quality of direct and indirect jobs (fishing net workshops, maritime and land transport, etc.) offered by the salmon industry, which prevents us from comparing them with jobs lost in other activities affected by salmon aquaculture, such as tourism, artisanal fishing, or conservation.

One notable recent effort to address this issue is the National Institute of Human Rights (INDH) report "*Industria salmonera en Chile y derechos humanos: Evaluación de Impacto Sectorial" ("The salmon industry in Chile and human rights: Sectoral Impact Assessment"*) published in 2020.

Among other issues, this document confirms the existence of multiple violations of labor rights and other human rights in labor contexts related to the salmon industry, which vary depending on the phase of salmon production. In the seawater phase, for example, one of the most concerning aspects is the shift system in fattening centers, which can require shifts of up to 14 days in a row, or other similar arrangements. These shifts can affect the family life and mental health of workers due to isolation. Regarding work at processing plants, abuse was noted in the subcontracting system and the practice of offering task- or project-based contracts for continuous or recurrent work, thus violating the rights to vacation, severance, and unionization.

However, one of the most serious aspects of this issue is the high level of accidents and occupational illnesses linked to the salmon industry, especially for divers, which reveals the low occupational safety standards and the lack of adequate protocols in this productive sector. From 2004 to 2017, it was calculated that 32 people died while performing diving tasks for salmon companies. In 2021 alone, 14 workers died performing various jobs, in farming centers, processing plants, and maritime transport. The incidents, among others, allow us to understand that the gravity of the salmon industry's negative impacts in Chile goes beyond environmental and health issues, extending into sociocultural and occupational concerns that must be addressed, investigated, and widely disseminated. This is of utmost importance in order to achieve future regulatory changes, considering that local development and the loss of jobs have been the most frequent arguments made by the salmon industry to oppose and hinder any attempts to strengthen the legislation and environmental standards that regulate its activities.

Bibliography

Buschmann, Alejandro, Niklitschek, Edwin & Pereda, Sandra (2021). *Acuicultura y sus impactos en la conservación de la Patagonia Chilena*. En *Conservación en la Patagonia Chilena: Evaluación del conocimiento, oportunidades y desafíos.* PP.367-387.

Bustos, Beatriz, Délano, Josefina, & Prieto, Manuel. (2019). *"Chilote tipo salmón". Relaciones entre comodificación de la naturaleza y procesos de producción identitaria. El caso de la región de Los Lagos y la industria salmonera.* Estudios atacameños, (63), 383-402. https://dx.doi.org/10.22199/issn.0718-1043-2019-0026

Bustos-Gallardo, Beatriz, & Prieto, Manuel. (2019). *Nuevas aproximaciones teóricas a las regiones-commodity desde la ecología política*. *EURE (Santiago)*, *45*(135), 153-176. https://dx.doi.org/10.4067/S0250-71612019000200153

Tecklin, David. (2015). *La apropiación de la costa chilena: ecología política de los derechos privados en torno al mayor recurso público del país*. En: Prieto, Bustos & Barton (Eds.) *Ecología Política en Chile: Naturaleza, propiedad, conocimiento y poder.* Santiago: Editorial Universitaria. PP. 121-142.