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## Ministry of Science's Seremi visits IFOP

María José Escobar, Science Technology Knowledge and Innovation Seremi (ministerial secretariat) for Coquimbo / Valparaíso macro zone; visited Fisheries Development Institute in Valparaíso, in the activity the authority met with Luis Parot Donoso IFOP Executive Director and with researchers who presented the main projects developed by the institute.

The Seremi said "The visit seemed wonderful to me, since it allowed me to know what they do, their projects, to know that their work is at national level with international standards, in addition the amount of data and information that IFOP handles and that are of high relevance for caring about our ocean; I want to emphasize that I am pleasantly surprised about IFOP's work"

IFOP Executive Director, added "the visit is a very significant step for us since it is very likely that CORFO technology institutes, which today depend effectively on CORFO, will in the future depend on the Sciences Ministry, so it is relevant to socialize 's work and the importance of this work at a national level in the monitoring of fisheries subject to commercial exploitation. It is very important



because of the need that the science that the Institute does is also reinforced in the medium and long term. It was a very good experience to meet Seremi, to know about her career and to be able to show her IFOP capabilities and facilities in Valparaíso"

Dr. Jaime Letelier Pino, Oceanography and Environment Department Head explained "The seremi visited IFOP Oceanography and Environment Department ,the Planctology laboratory where she got to internalize her knowledge about the laboratory activities, that is, planktonic species identification and also fish eggs and larvae such as anchovy and sardine. In the same



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way, she also learned about the activities and advanced equipment used by the institute in its annual sampling and in progress achieved through FAO project development “Interoperable Information System, which systematizes and integrates data on fisheries, aquaculture and climate change “: That the executed by the Institute ”

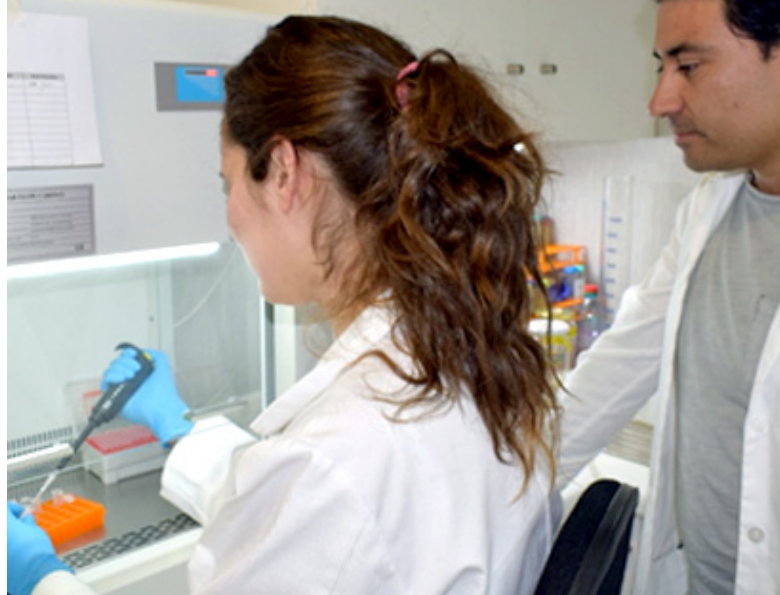
The researcher Carlos Techeira commented “It was a conversation instance to present in general terms part of the Institute work associated with research lines and innovation compatible with the new Ministry objectives and interests . Thus, in the field of benthic fisheries, the potential of the development of lines associated with the coupling of hydrodynamic models with biological components and social sciences to fisheries co-management policies was exposed ”

## UPLA and IFOP link research for fisheries management in Chile

**SPECIALISTS FROM BOTH INSTITUTIONS PROPOSE HIGHLY TECHNOLOGICAL PROGRAMS APPLICABLE TO MONITORING MARINE ECOSYSTEMS.**

With state-of-the-art technology, the Universidad de Playa Ancha generates research and proposes applied tools aimed at impacting relevant areas such as fisheries management and biodiversity in Chile.

By means of last generation sequencing techniques it is possible to detect the DNA footprint that organisms leave in the environment, opening a great opportunity for fisheries management, species identification on which there is little knowledge, detection of other extinct species, as well as invading organisms, pests or plagues recognition in various ecosystems.



This was stated by UPLA Disciplinary Department of Biology academic, Dr. Claudio Quezada, at the Fisheries Development Institute, where he explained Environmental DNA technique and realized its potential applications in marine environments for fisheries management and monitoring in the country.

“All living organisms leave DNA traces in the environment and through sophisticated latest generation techniques and sequencing, it is possible to detect this environmental evidence. Through genetic techniques it can detect the species identity in an aquatic community and their composition, that is, what is the proportion of species found in the environment. With this technique it is also possible to complement certain fisheries management such as hake, anchovy, tuna and other important economic resources for the country. Our research group has the capabilities to monitor where on our coasts these fisheries are, such as the reineta, hake, swordfish, among others,” said Dr. Quezada.

On the occasion, the academic said that Environmental DNA also allows locating the presence of benthic resources such as locust or other mollusks. “We can know certain fish populations dynamics , molluscs or other groups that are subject to conservation such as cetaceans. It is possible to identify where certain populations are moving or where they are concentrated. Having this information makes possible to generate appropriate management strategies and, therefore, make better use of the resources that make the populations sustainable and ultimately impact the economy.”

UPLA researcher applies this technique in Fondecyt Initiation 2018 project, whereby he takes samples of sediment witnesses at the bottom of Lake Chungará to determine DNA present there, with the aim of recording the colonization process of rainbow trout and its impact on native species.

Meanwhile, Dr. Patricia Zárate, a researcher at IFOP Oceanography and Environment Department, said that “as researchers and advisors we are always in search of innovative and accessible techniques to improve our knowledge and propose recommendations for resource





management and marine ecosystems . This technique has a high potential and application for marine biodiversity study , given its sensitivity to detect individual molecules allows to identify species in places that we cannot easily access. With just a sample of water we could confirm key species presence in marine ecosystem, so it is very useful to understand trophic plots and the relationship between species and their ecosystem, both commercial and threats”.

News ad photography : Upla /IFOP

## IFOP researchers show their salmon louse work results at the 1st Chilean Caligidosis Congress

On Friday, December 13th at Cumbres Hotel in Puerto Varas, the First Caligidosis National Congress was held, jointly organized by Universidad Austral de Chile Aquaculture Institute (Iacui), Intesal and INCAR. The Fisheries Development Institute (IFOP) was represented by leading researchers Margarita González, Claudia Spinetto and Loreto Ovalle, whom participated with oral presentations and posters.

### About researchers and their presentations

Dr. Margarita González presented the work **“Effects of anesthetic application for benzocaine fish on the condition of *Caligus rogercresseyi*”**

“This research’s objective was to determinate the effect on the condition of *C. rogercresseyi* after benzocaine exposure. This is because fish anesthetic is present during parasites from the fish collection, therefore, the study aims to end uncertainty about potential effects on the results and interpretation of susceptibility bioassays, among others. The results indicate that anesthetic use at recommended dosage does not produce harmful effects on the parasite. Only much higher concentrations than recommended can impair the parasite condition. This information is relevant to be considered when executing the bioassays, in order to limit negative effects derived from anesthetics use in the results and / or diagnoses ”

On the other hand, he presented the work in poster format **“Susceptibility of caligus rogercresseyi from native fish and cultivation center against hyposaline water treatment ”**



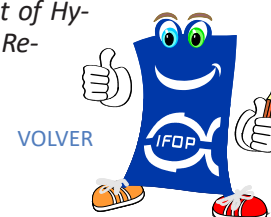
“This study aims to determinate hyposaline water effect on the condition of *C. rogercresseyi* from the Patagonian bass (*Eleginops maclovinus*) and cultivation center, because freshwater treatments are an alternative control of *Caligus rogercresseyi*, inspired by the Natural deworming occurred during fish migrations to estuarine waters. The results suggest that there is a differential susceptibility of *C. rogercresseyi* associated with the origin of the parasite, probably explained by the degree of exposure to salinity variations of different water bodies . This information can be useful for parasite in estuarine bodies of water management”.

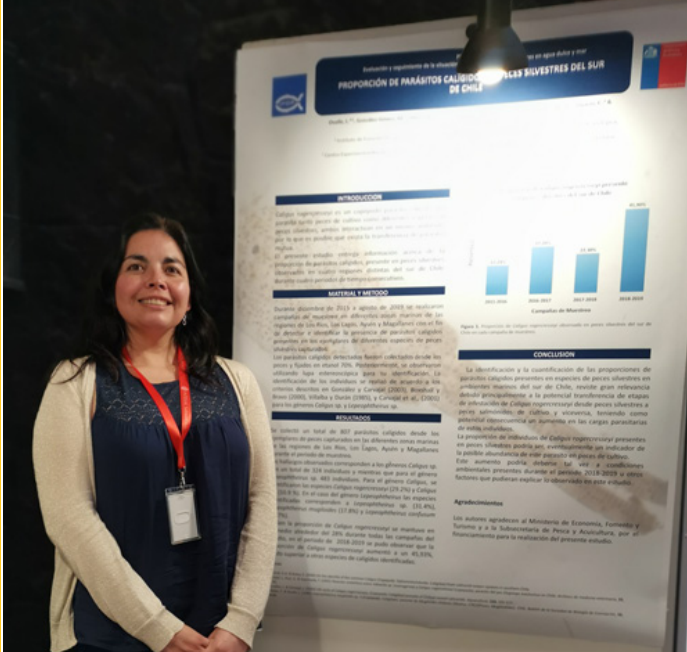
*Margarita González Gómez: Marine Biologist, Doctor of Aquaculture Sciences. She is currently a Researcher in the Hydrobiological Health Department of IFOP Aquaculture Research Division .*

Claudia Spinetto explained **Can the fish *hypsoablennius sordidus* be a predator of *Caligus rogercresseyi* ? : A doubt present for years!**

This design tries to evaluate *Hypsoablennius sordidus* “Cachudito” on *Caligus Rogercresseyi* predatory behavior. Four groups were contemplated: 1 Control (without food). 2nd Food Only *C. rogercresseyi*, 3rd Food only Pellet and 4th Food Mix of *C. rogercresseyi* and Pellet. Proving that *H. Sordidus* ingests the parasite apparently preferring instead of the pellet. It is intended to continue delving into the subject and assess their behavior by cohabiting with salt flats later.

*Claudia Spinetto Castro: Veterinary She currently works as a Researcher at the Hueihue Experimental Center (Ancud) of IFOP Department of Hydrobiological Health Aquaculture Research Division.*





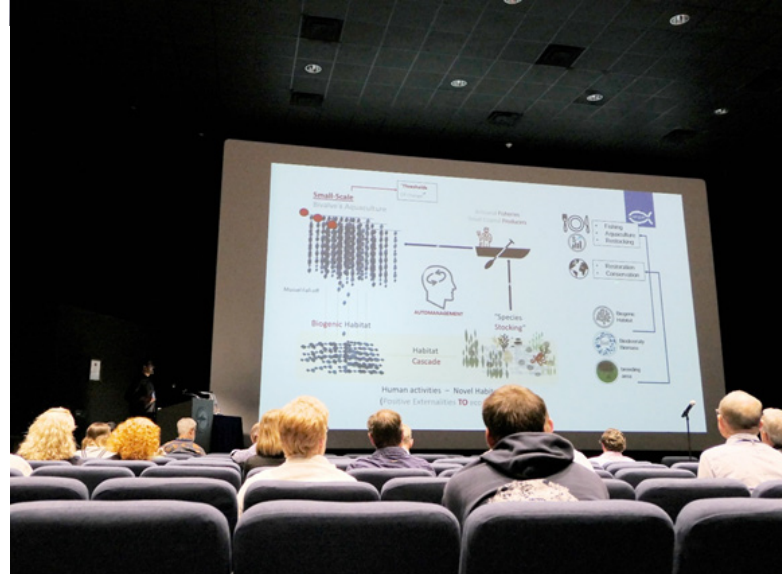
Loreto Ovalle on her Poster: **Caligid parasites proportion in wild fish of south Chile she explains**

"This research aims to deepen the knowledge related to presence and identification of parasites present in wild fish in different marine areas of the regions of Los Ríos, Los Lagos, Aysén and Magallanes between December 2015 and August 2019. Among the main results, it is described that the proportion of *C. rogercresseyi* remained around 29% of the total parasites during the execution of the study, increasing to 45.9 % during the years 2018-2019, being higher than other identified caligid species. The identification and quantification of the proportions of caligid parasites present in marine species of marine environments in southern Chile is of great relevance due to the potential transfer of *Caligus rogercresseyi* infestation stages from wild fish to farmed salmon fish and vice versa, having as a potential consequence an increase in the parasite loads of these individuals

*Loreto Ovalle Merino: Marine Biologist. she is currently a Researcher at IFOP aquaculture Hydrobiological Health Division Department*

## IFOP is part of stock improvement and restocking international symposium

With two presentations entitled "Small-scale aquaculture, emergent habitats and opportunities for stocking of targeted species" and "Restocking in Chile: identifying research gaps and implementation challenges for an ecosystemic approach" Department of Repopulation and Cultivation of the



Aquaculture Division researcher, Luis Henríquez, participated in the sixth version of the International Stock Enhancement and Sea Ranching Symposium (ISSESR 2019), held in the city of Sarasota, Florida (USA).

ISSESR corresponds to one of the most important international symposiums on stock improvement and restocking, which hosts a small group of selected researchers, mainly from the northern hemisphere and Asia, in this fisheries research area. Symposium's work high quality included the most advanced stock improvement techniques, aquaculture-assisted repopulation, habitat restoration, selection of optimal sites, genetic management, legislation and coastal socio-ecology within a marine communities comprehensive ecosystem management framework.

This symposium seventh version will take place in Chile, during November 2023, it will be organized by Fisheries Development Institute through the Repopulation and





Cultivation Department. Of course, it is expected to have national and international scientific community massive participation in an unprecedented event in applied marine sciences of our country, which appears as a reference in the area of fishing and aquaculture in the international community.

Luis A. Henríquez-Antipa He is a Doctor in Earth Sciences and a Senior Researcher in the Department of Restocking and Cultivation in Puerto Montt.

His research interests have been focused on small-scale co-cultivation of algae in invertebrates and their socio-ecological interactions.

## IFOP carries out a new manual on macroalgae crops

IT IS FREE AND SERVES AS EDUCATIONAL MATERIAL

The Fisheries Development Institute (IFOP) Repopulation and Cultivation Department has published the "Cultivation of macroalgae: Diversification of Small-scale Aquaculture in Chile" manual. The compendium is part of the results of the "Integral Program of Algae Aquaculture Development for Artisanal Fishermen" -stage 2, executed since 2018 in the Los Lagos region and in the Coquimbo region.

The state of the art of the cultivation of fourteen species of native macroalgae with potential to be cultivated in Small-scale Aquaculture in Chile (APE) by Artisanal Fishermen Organizations (OPA) and small fish farmers is presented. The macroalgae species were selected considering the level of progress in research and development in laboratory culture techniques, hatchery and suspended or bottom culture systems at sea.

This information represents a valuable contribution that aims to improve the knowledge of those who wish to diversify their productive activity by incorporating macroalgae into their crops.

The texts, photos and illustrations show the experiences carried out in different research projects executed by the IFOP and financed by the State of Chile.

## Scientific vessel analyze anchovy stock and common sardine between Valparaíso and Los Lagos regions.

THE SCIENTIFIC EXPEDITION WILL LAST 31 DAYS. IN 2019 7 CRUISES WERE MADE WITH A TOTAL OF 233 DAYS OF ANNUAL OPERATION

On January 4th at 11 p.m., Abate Molina scientific ship, from Fisheries Development Institute, (IFOP) sailed from Valparaíso's port to evaluate and characterize commons, through the hydroacoustic method, during the maximum recruitment period and during immediate fall.

There are sensors in Abate Molina that emit sound waves that bounce off shoals, producing a return echo, which generates graphs and color scale data according to individuals density, which allows biomass to be investigated. This technique is known as hydroacoustic evaluation.

The head of the Cruise is the fishing engineer Álvaro Saavedra, the captain of the ship is Takashi Abe, a staff of 28 professionals and technicians come along as well.

Research area is considered between (Pichidangui) and north of Caleta Mansa.



VOLVER