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## IFOP Library receives book donations from former directors

On December 10, at IFOP headquarters in Valparaíso, the activity Letters that investigate, the power of scientific literature, was held as part of the celebration of IFOP's 60th anniversary.

During the ceremony, the generous donations of collections exceeding 100 titles on whales, contributed by the family of Sergio Basulto, former Director of IFOP between 1970-1973, were highlighted. In addition, the valuable historical material on diatoms, donated by the academic and researcher Vivian Montecino, who also served as Director of IFOP between 2006-2007, was highlighted.

At the same event, the presentation and launch of the book "Pre-Columbian Fishermen" by the prominent academic and fishing engineer Patricio Arana was held. The book tells the story of fishermen on the coasts of America, and is the result of more than 40 years of research work, which IFOP sponsored together with the PUCV.



Gonzalo Pereira, Executive Director of IFOP, explained "with deep respect and gratitude we received, at IFOP, an important donation of scientific books from the personal library of Vivian Montecinos and Sergio Basulto, both former Directors of IFOP. The intellectual legacy of both and the passion for knowledge lives on in these books that they give us today.

The importance of this donation is twofold. On the one hand, it allows us to preserve an invaluable legacy that, otherwise, could have been lost over time, but it also invites us to reflect on the function of books in our lives."



Editorial committee

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Vivian Montecinos referred to the activity “I collected these books throughout my scientific life and when I dismantled my laboratory I wanted to give them to someone who would find them useful, I learned about IFOP’s phytoplankton program, with harmful algal blooms. I thought that this research group had to have my books, but then we decided that they were better off in Valparaíso because the IFOP library is physically here, where they will be well cared for and for everyone to use.”

The librarian, Ghislaine Barría González, who together with Carmen Lasagna organized the event, highlighted the profound impact that the donation of books has on the community. “Each donated book represents a bridge between generations of researchers,” she said. “It allows the knowledge accumulated over the years to be accessible to new generations, facilitating research and the development of projects that can transform the understanding of the marine environment and its resources and symbolizes the commitment of the Former Directors of IFOP to scientific dissemination.”

## Zooplankton Digitization in Latin America: A New Look at 60 Years of Zooplankton in Chile in the Context of Climate Change

On December 10 and 11, 2024, at the IFOP headquarters in Valparaíso, the Workshop “Zooplankton Digitization in Latin America: A New Look at 60 Years of Zooplankton in Chile

in the Context of Climate Change” was held within the framework of the CORFO goal “Digital Plankton Library”, of the DPS (Sustainable Productive Development) project “Strengthening the Climate Change Monitoring System (SAPO)” and the IFOP-UV collaboration agreement. This event was organized by the zooplankton team of the Oceanography Section of IFOP, made up of Dr. Jessica Bonicelli, Dr. Katty Donoso, Francisca Osorio, Débora Albornoz, Yanara Figueroa and Constanza Sandoval, together with the collaboration of Dr. Johanna Medellín, professor at the University of Valparaíso (UV).

Gonzalo Pereira, Executive Director of IFOP, welcomed the participants of the Workshop and highlighted the great importance of the digitalization of historical zooplankton samples of IFOP, as well as the collaboration with other working groups.

During the Workshop, prominent researchers in the digitalization of plankton samples from Latin America, as well as from other countries around the world, met. The excellent work being done at IFOP with the ordering, organization, curation and digitalization of historical zooplankton samples, which have been collected since the 1960s throughout the Chilean sea, was highlighted. Likewise, collaboration networks were established and the scope, experiences and research work related to the automated analysis of digitalized zooplankton samples were made known.

We had the participation of leading researchers in the field of zooplankton sample digitalization. Dr. Rubén Escribano (IMO-UdeC), Dr. Johanna Medellín (UV), Patricia Ayón (IMARPE), Dr. Macarena Díaz-Astudillo (COPAS COASTAL-UBB), Dr. Marcelo Gutiérrez (COPAS COASTAL-UdeC), Dr. Pamela Fierro (IMO), Mauricio Díaz-Trombert (PUCV), Caroline Nguyen (La Rochelle Université), presented us with the scope, projections and work in the automated analysis of plankton.

In addition, the members of the Workshop organizing committee, Yanara Figueroa (IFOP), Francisca Osorio (IFOP) and Dr. Jessica Bonicelli (IFOP),





presented the progress in the curation of the samples and the first results of the research work that has been done at IFOP, using the automation methodology.

The Workshop was a success in terms of collaboration, learning and future projections, and it is intended to continue with the collaboration networks between IFOP and academia on the subject of Zooplankton digitalization, in order to resolve and relate the spatial and temporal changes that the zooplankton community has undergone, which in a context of climate change would help us understand and explain processes relevant to the fishing sector. It should be noted that these zooplankton samples from the historical IFOP collection represent a valuable source for the development of academic theses.

## Gender training sessions successfully completed in a capacity-building project for small-scale fisheries management in Chile and Mexico

The project is financed by the Chile-Mexico Fund and is executed by public institutes IFOP and IMIPAS, which incorporates the principles of gender equality, inclusion, aquaculture-fisheries technology training, and climate change.

Santiago, December 11, 2024.- A total of 17 people from the Fisheries Development Institute (IFOP) of Chile, together with the Mexican Institute for Sustainable Fisheries and Aquaculture Research (IMIPAS), were trained within the framework of the cooperation pro-

ject, which aims to develop co-management processes for small-scale fisheries, with an emphasis on benthic resources on Chiloé Island, Ancud Bay, in southern Chile; and in the towns of Celestún, Sisal, Progreso and Río Lagartos in Yucatán, Mexico, which incorporate the principles of gender equality, inclusion, aquaculture-fishing technology training and climate change.

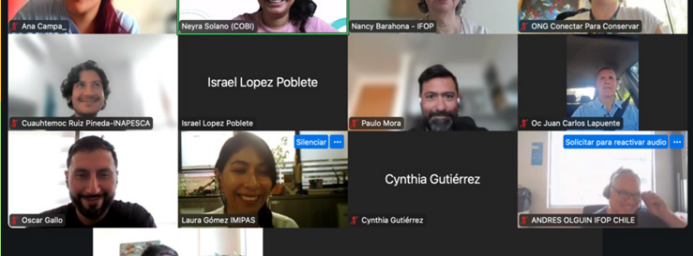
This initiative, which began its implementation last August, included three training sessions that were given by professionals from the Mexican non-governmental organization Comunidad y Biodiversidad A.C. (COBI), Neyra Solano and Ana Campa, both with extensive experience in gender and social justice, in which they addressed the following topics: links between gender, the fishing sector and marine conservation, women's work and the circle of invisibility; situations that lead to gender inequalities, how inequalities impact sustainability and conservation; strategies for incorporating the gender perspective; basic concepts on gender studies; foundations for gender work in fishing and conservation organizations; key elements for incorporating the gender perspective in the organization; development of projects with a gender perspective; inclusive and non-sexist communication in the fishing sector, among others.

In addition, in Mexico two semi-structured interview formats were carried out (one for women and one for men) to characterize the expressions of masculinity in the fishing sector and, in parallel, a survey was developed to evaluate the participation of women in the fishing value network, which will be applied in Chile in the following months. In Mexico, 47 interviews have already been applied to people from the fishing sector of Celestún and Progreso, located in the state of Yucatán.

Neyra Solano indicated that the present study will allow us to understand part of the social dynamics of these fishing communities and glimpse the possibilities of participation of women in the decision-making processes of sustainable fishing and aquaculture. "Identifying the differences and common points between regions







hing sector. This learning undoubtedly helps women and men to understand the role that gender plays in our work and family environments.” Finally, she indicated that training on gender issues allows us to “observe behaviors and patterns that perpetuate inequality; the need to make changes in language to create new realities by making women and men visible and assuming the responsibility of doing things differently.”

This project is funded by the Chile-Mexico Joint Cooperation Fund, the result of the Strategic Partnership Agreement signed between the Republic of Chile and the United Mexican States in 2006 and is managed by the Chilean Agency for International Development Cooperation (AGCID) and the Mexican Agency for International Development Cooperation (AMEXCID). Since its creation, this Fund has financed the execution of more than 230 initiatives.



and in turn between countries will be very useful to design a shared strategy that promotes equality at sea,” said Neyra Solano. “Sustainability cannot be achieved without gender equality, which is why training in this area is essential to understand how gender studies are linked to oceans and fisheries, and thus, from our organizations, we can incorporate actions that contribute to reducing gender gaps,” she added.

Meanwhile, the project director for the Chilean side, IFOP senior researcher Nancy Barahona Toledo, highlighted that gender training is a relevant pillar for the development of the project and was received with great interest by the work team. “Today, these trainings contribute to a transformative process where knowledge, techniques and tools are provided to develop skills and changes in people’s attitudes and behaviors. Societies need to be more inclusive and recognize the need to promote gender equality, which is achieved through training of this type, which will allow this knowledge to be transferred to the activities that we must carry out both in Chile and in Mexico with the artisanal fis-

## Workshop on Implementation of Management Strategy Evaluation based on OpenMSE: A Step Towards Sustainable Management of Fisheries Resources

The Hotel Palacio Astoreca in Valparaíso, Chile, was the setting for the “Workshop on Implementation of Management Strategy Evaluation based on the OpenMSE platform”, an event jointly organized by the Instituto Fomento Pesquero (IFOP) and the Subsecretariat of Fisheries and Aquaculture (SUBPESCA).

This workshop included the valuable participation of the distinguished Senior Scientist of Blue Matter Science Ltd., Mr. Quang Huynh, Ph.D., who is internationally recognized for his work in fisheries mo-





deling, assessment, and management. During the event, Mr. Huynh provided expert advice on Management Strategy Evaluation (MSE), addressing crucial issues such as the implementation of management strategies based on scientific data and the importance of stakeholder participation in the decision-making process.

### Interactive Talks and Workshops

Mr. Huynh led a series of interactive talks and workshops where key concepts were discussed and practical experiences in sustainable fisheries resource management were shared. These sessions allowed participants to delve deeper into the application of advanced tools and methodologies to ensure the sustainability of fisheries.

### Practical Applications and Success in the Region

A prominent example of the application of Management Strategy Assessment is the work carried out by IFOP, with the expert advice of researchers from Blue Matter Science, developers of OpenMSE. This work has focused on the assessment of the common hake fishery and the anchovy fishery in southern Peru and northern Chile. Thanks to this approach, management strategies have been developed and evaluated that aim to ensure the sustainability of the resource, protecting the biomass and guaranteeing the economic viability of fishing activity in the region, benefiting both fishermen and the marine ecosystem.

The activity also included the workshop on the Implementation of Management Strategy Evaluation based on the openMSE plat-

form for the southern hake fishery. This workshop discussed the main sources of uncertainty in the fishery and knowledge of the resource, as well as the catch control rules to be evaluated using openMSE, an R package designed to build operational models, analyze fishery data and perform management strategy evaluations (MSE) for a wide range of fisheries.

It included the participation of the international expert in MSE Quang Huynh (Blue Matter), members of the Scientific Committee on Demersal Resources in the Southern Austral Zone (CCT-RDZSA), the Management Committee (CM), the Undersecretariat of Fisheries and Aquaculture and IFOP.

### The Commitment of the National Fisheries Institutions

This meeting represents an important step for the national fisheries institutions, represented by the Institute for Fisheries Development (IFOP) and the Undersecretariat of Fisheries and Aquaculture (SUBPESCA) in their commitment to the responsible and sustainable management of Chile's fisheries resources. Collaboration with international experts such as Mr. Huynh reinforces the Chilean government's commitment to the conservation and sustainable management of marine resources.

### About Quang Huynh, Ph.D.

Quang Huynh is a Senior Scientist at Blue Matter Science Ltd. and holds a PhD in Fisheries. His career has focused on the conservation and management of fisheries resources at a global level. He has worked on various international initiatives, including the Commission for the Conservation of Southern Bluefin Tuna, where he played a fundamental role in the development of successful management strategies for this endangered species.

This workshop not only strengthens the technical capacity of professionals involved in fisheries management, but also reflects the joint effort to ensure a sustainable future for fisheries in Chile and the region.





## Workshop “Collection and analysis of information on Bio-oceanographic Conditions on the southern region of Peru – northern Chile

Between November 25 and 29, 2025, the Workshop on “Collection and analysis of information on Bio-oceanographic Conditions on the southern region of Peru – northern Chile (16°-26°S)” was held, organized by the Binational Group on Fisheries Oceanography and Modeling (GTB3) and made up of researchers from IFOP and IMARPE.

The workshop is within the framework of the GEF Humboldt II project, funded by UNDP, whose objective is to contribute to the joint management of the shared anchovy stock between both countries. IMARPE researchers Cinthia Arellano, Dante Espinoza, Cinthya Ramos and Fredy Cárdenas attended the event, while IFOP was represented by researchers Katty Donoso, Jessica Bonicelli, Juan Faúndez, Francisca Osorio and Adrián Bustamante.

A 30-year climatology was constructed at the workshop, based on temperature, salinity and oxygen data obtained during spring cruises. The climatology was able to capture coastal cooling and deoxygenation associated with upwelling, which cannot be differentiated in global databases. On the other hand, by crossing the egg databases with oceanographic data, it was possible to establish optimal environmental conditions for anchovy spawning.



The work group will continue to build climatologies for other months, adding new variables such as chlorophyll, and finally, generating spawning probability maps from environmental variables.

## IFOP researcher Pedro Romero Maltrana presents “Adaptive capacity of artisanal fishermen in the face of climate change through productive diversification processes”

On December 12 and 13, the School of Business and Economics of the Pontifical Catholic University of Valparaíso hosted the XXVI Annual Congress of Agrarian Economics, organized by the Association of Agrarian Economists (EAE). This prestigious event annually brings together leading specialists in environmental and agrarian economics from Chile.

In this edition, the researcher from the Institute for Fisheries Development (IFOP), Pedro Romero Maltrana, presented his work entitled “Adaptive capacity of artisanal fishermen in the face of climate change through productive diversification processes”. His research addresses the impact of productive diversification as a strategy to mitigate the adverse effects of climate change in coastal communities, contributing to the sustainability of the livelihoods of artisanal fishermen.

The study conceptualizes sustainable livelihoods as those that manage to maintain the well-being of communities, reduce their vulnerability to external factors and avoid the overexploitation of natural resources. Productive diversification represents a crucial tool to



## IFOP attends IV Meeting of Scientific Communicators

The Oceanic Culture Group of Chile (GT CO-CEAN) highlighted its participation in the IV Meeting of Scientific Communicators, which took place on December 12 at the Pontifical Catholic University of Valparaíso. Two of its members, librarian Ghislaine Barría González and graphic designer Mario Recabal Marambio, both from the Fisheries Development Institute (IFOP), presented innovative proposals.

Barría González spoke about a pilot web app that integrates eco-education and virtual games focused on oceanic culture, while Recabal Marambio presented a poster detailing the process of creating and disseminating this project. This meeting, organized by the Chilean Association of Journalists and Professionals for the Communication of Science (ACHIPEC), brought together prominent professionals in the field of scientific dissemination, promoting the exchange of knowledge and experiences in this field.



reduce the vulnerability of small-scale fishers. The proposed strategies include the exploitation of new fishery resources and the adoption of non-fishing-related activities, such as the development of local enterprises or migration to alternative economic sectors, adapting to the skills and opportunities available in each community.

Through the use of panel data econometric models with fixed effects and two-stage instruments, the research analyzed data from the period 1998-2020 to assess how exogenous shocks, such as climate variations and macroeconomic fluctuations, influence fishermen's diversification decisions. The results indicate that fishery diversification and related economic activities contribute to improving community income, mitigating the negative impacts of climate change. However, the study also highlights an inverse relationship between fisheries diversification and diversification into non-fisheries economic activities.

The congress not only allowed IFOP findings to be shared with researchers and academics from across the country, but also served as a valuable platform to strengthen ties around productive sustainability and natural resource management.



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## IFOP conducts training for Argentine researcher at the Hueihue Experimental Center

Dr. Yamila Rodríguez, researcher at the Marine and Coastal Research Institute (II-MyC) that depends on the National University of Mar del Plata and CONICET, carried out a two-week training stay in November, together with researchers from the Repopulation and Cultivation Department (RyC) of the Fisheries Development Institute (IFOP), Daniela Uribe, Karla Álvarez and Pablo Leal.

Since her doctoral training, Yamila has worked in the field of animal physiology, with special emphasis on its application to the nutrition of aquaculture species. Currently, she seeks to deepen her knowledge in the integral management of bivalve mollusk production, with a view to developing a new line of research at the Marine and Coastal Research Institute of Argentina, oriented to the nutrition of native bivalves to improve the quality of the seed obtained. The development of this line has the potential to contribute to the development of repopulation strategies for threatened native species in the region. In addition, as a professor at the Universidad Tecnológica Nacional – Facultad Regional Mar del Plata, Yamila plans to transfer the knowledge acquired during her stay to students.

Her stay at IFOP has represented a valuable opportunity to incorporate innovative techniques that can be adapted to the local context in Argentina, promoting the sustainable development of aquaculture and the conservation of biodiversity.

The work with Yamila was carried out in the Marine Environments and Resources Laboratory belonging to the Hueihue Experimental Center of IFOP, located on Chiloé Island. Dr. Pablo Leal, Semi-senior researcher at the Fisheries Development Institute, in charge of the Environments Laboratory,

indicated that “the activity focused on the production of seeds in hatchery, from the conditioning of breeders to the cultivation of larvae of two species of bivalve mollusks, the northern oyster (*Argopecten purpuratus*) and the clam *Ameghinomya antiqua*.” Dr. Rodríguez’s stay was complemented by the exchange of knowledge on related topics for the development of future collaborations between researchers from both institutions.

Additionally, Dr. Rodríguez learned about the work carried out by other groups of professionals within the Aquaculture Research Division of IFOP.





## IFOP researchers visit Pesquera Quintero S.A.

As part of the Descarte project, researchers Luis Adasme, Marcelo San Martín and Victoria Escobar visited Pesquera Quintero. The reception and coordination was in charge of Mr. Andrés Quintanilla, production manager, along with personnel from the fleet. The visit aimed to find out the opinion of fishermen regarding the use of mitigation measures established to reduce the incidental capture of birds and marine mammals.

This was the first of a series of visits that will be carried out to companies dedicated to capturing shrimp and prawns, with the intention of raising opinions and observations that allow the evaluation of the measures implemented, with the intention of improving them to achieve an effective reduction of the impact of fishing on the environment.



## IFOP researchers participate in FAO regional workshop to review the Analysis of the State of Fishery Stocks in Area 87

The FAO regional workshop to review the Analysis of the State of Fishery Stocks in Area 87 was held between November 25-29, 2024 in Santa Marta, Colombia. Dr. Carlos Montenegro S. Head of the Fisheries Research Division, MSc. Carlos Techeira T. Head (I) Department of Resource Assessment and Senior Researchers MSc. Mauricio Ibarra M. and Fernando Espíndola R. participated in this activity.

The objective of this workshop was to synthesize the estimates of the state of the stocks within the framework of a transparent and participatory assessment, considering the national fisheries research agencies of Chile, Peru, Ecuador and Colombia. It should be noted that these countries are those that correspond to Area 87.

Since 1971, FAO has published the analysis periodically, including updated summaries presented in the biennial FAO flagship report: “The State of World Fisheries and Aquaculture (SOFIA)”. Today, the fisheries sector is significantly different from that of the 1970s, the dominant stocks and the levels and modes of exploitation have changed, which led to the evolution of the tools and requirements for calculating and presenting information on global sustainability, including the need for transparency of the processes and the consideration of local knowledge.



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At the same time, parallel monitoring processes need to be connected and FAO considered it appropriate to implement a methodological update to estimate and report in a standard way the global state of stocks with broad participation of experts, maintaining the crucial integrity of the historical series.

**The objectives of the workshop were:**

- To introduce FAO methods regarding stock status and reporting processes.
- To advance the development of national-level stock reference lists.
- To present and discuss proposed new approaches to classifying and reporting on stock status.
- To identify options to improve the collection, assessment and reporting of stock status data and information at the national level.

The agencies that participated in the activity were: FAO, Food and Agriculture Organization of the United Nations; IFOP, Institute for Fisheries Development, Chile; IMARPE, Institute of the Sea of Peru; INVEMAR, Institute for Marine and Coastal Research, Colombia; and MPCEIP, Ministry of Production, Foreign Trade, Investments and Fisheries, Ecuador.

FAO consultant Omar Defeo referred to the workshop in terms of “The activity carried out in Santa Marta was a scientifically solid, objective and highly participatory exercise, which resulted in the generation of invaluable material for FAO and the region (Area 87) regarding the state of fishery resources.”

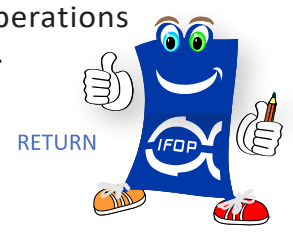
“The rigorous analysis carried out by the countries in the categorization of stocks in

Tiers, as well as in the evaluation of their state of exploitation, allowed for the first time the creation of a unique information base for Area 87. The number of stocks evaluated experienced a significant increase, expanding more than tenfold compared to the records previously considered by FAO for this area.”

Regarding IFOP’s contribution to the workshop, Dr. Defeo said: “The contribution of the IFOP team to the FAO fisheries workshop was highly significant and of great value for the objectives of the event. Their active and constant participation reflected a deep commitment to the issues addressed, standing out for their leading role in the discussions on the main topics developed during the meeting. This participatory approach not only strengthened the debates, but also promoted an enriching exchange of ideas and perspectives.”

“The team demonstrated excellence by presenting scientifically impeccable information, based on high-quality databases and extensive time series for each stock assessed. These data allowed the decisions taken at the workshop to be rigorously supported, providing a level of detail and reliability that was widely recognized by FAO.”

“The IFOP team also stood out for presenting information on the status of the stocks supported by high-quality numerical analysis and models, which were essential to justify the categorization of each stock into the corresponding Tiers. These technical and methodological contributions not only facilitated a clearer understanding of the dynamics of each resource, but also provided additional support for discussing management options discussed in the framework of the workshop. In summary, the IFOP team played a central role in the success of the workshop, providing solid knowledge, rigorous analysis and a constructive attitude that left a positive impression and a tangible impact on the deliberations and outcomes of the event.





## Leaders of management areas meet to discuss the challenges of collecting mussel seeds in AMERB

In Cochamó and Hornopirén, leaders of organizations that own management areas in the communes of Cochamó and Hualaihué gathered to participate in the dissemination workshops “State of mussel banks *Mytilus chilensis* and challenges of seed collection in Management Areas”. Professionals from the Management Area Monitoring Program and the Mussel Larvae Monitoring Program participated in the workshops, who presented the results of the evaluation of the state of mussel banks and the challenges addressed with local actors in 2023. In addition, the management area indicator platforms and the Endemic Seed dissemination platform were shown.

Miguel Espinoza Castro, president of the Hornopirén 1 artisanal fishermen’s union, commented “this activity allowed me to see the results of the work that was done last year. I found it interesting and it was very useful to understand what the law is, the decrees and what regulations should govern us. The activity alerted me to correct the errors we have as an organization and to function better in our management areas.”

Rosa Peranchihuay Castro, leader of the Mañihueico Huinay Coastal Marine Space for Indigenous Peoples (EMCPO), commented “the meeting allowed us to meet with actors in artisanal fishing and mussel farming, helping us to know how to work with the actors in fishing. We call

on artisanal fishermen to know that indigenous communities are open to working with them and we are not excluding them, but rather we integrate them into the EMCPO through the management plan that integrates all the actors in fishing.

Miguel and Rosa commented that their goal is to grow together, to develop because they all work in the same thing and hope to take care of their livelihood. “Current fishermen have grown up with the regulations and bans that help sustainability, with the Fishing Law, so we want to grow, but taking care.

