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## IFOP stand at Oceanic Fair was the most visited

On Friday, November 3rd and Saturday, November 4th, at Valparaíso's Ex-jail Cultural Center, Acción Azul Oceanic Festival was held, an NGO dedicated to oceanic culture protection and dissemination.

Fisheries Development Institute was part of the activity, with an interactive stand and Gonzalo Pereira Puchy Executive Director, participated in a blue economy's discussion in which he referred to IFOP's work and how the institute's research work develops, is of vital importance in our country economy, since it allows our marine and aquaculture resources sustainability.

The module at the fair allowed children and adults to learn in a practical and playful way about IFOP's research work in fishing and aquaculture.

The exhibition had a module on the conventional and satellite tagging program for



highly migratory animals, mitigation measures to reduce sea turtles and cetaceans bycatch swordfish gillnets, and information on ecology, life history and threats to sharks and sea turtles.



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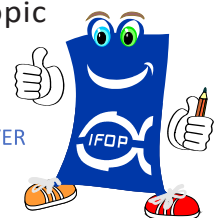


There was also a age and growth section with state-of-the-art magnifying glasses, where visitors could observe different fish species otolith rings, as well as a short talk about the most relevant aspects of this area of research, such as how to read otoliths, what fish's ages are used for, some otolith preparation techniques, among others.

The oceanography department presented its main used instruments to describe water masses and marine currents, and nets and magnifying glasses for capturing and observing zooplankton. People were also able to enter the Humboldt Current Alert, Prediction and Observation (SAPO) system, where they could observe establishment of positive El Niño anomaly off Peru and Chile, discuss climatic change, and to understand the importance to maintain real time oceanographic information networks.

The oceanography laboratory belonging to Oceanography Department and Environment (DOMA) showed the importance and use of scientific equipment in carried out sampling by the Institute around the country. For this, scientific equipment was shown to the public such as; CTD oceanographic probes, capable of reaching up to 6000 meters deep, recording environmental parameters such as temperature, salinity, oxygen, fluorescence and pressure throughout the water column. On the other hand, drifting buoys were shown, which are capable of indicating the surface movement of ocean currents and inferring the intensity of the wind. In addition, the audience was taught the method of capturing water at certain depths, a method that it is more than 160 years old and is still valid today.

From the plankton laboratory of Oceanography and Environment Department (DOMA), people of all ages were able to learn about zooplankton and see these organisms under a stereoscopic magnifying glass, which are di-



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verse and of great importance as they are fish's main foods, marine mammals and marine invertebrates. They were also able to observe eggs and larvae of commercially important fish, mainly anchovy and common hake.

Another attraction was Laudita turtle, a corporeal leatherback turtle that greeted visitors and became the star of the stand, because of her friendliness everyone wanted a photo with her.

## Flanders Marine Institute International Cooperation Head visits Abate Molina scientific ship

On Friday, November 3rd, Ann Katrien, in charge of Flanders Marine Institute (VLIZ) international cooperation, visited Abate Molina scientific vessel, in Valparaíso, and was received by IFOP's Director, Gonzalo Pereira Puchy, by José Echeverría vessel's Captain, they gave him a ship's tour and explained what each of the scientific equipment is used for, he learned about the laboratories, the spaces that the ship has and that make it possible for workers to be on board for long periods of time.

Ann Katrien expresó "el Abate Molina es muy conocido a nivel mundial por el trabajo de investigación que hace, por la constancia por las grandes distancias que recorre para mí fue un gran honor poder visitarlo"

Pereira referred to Ann Katrien's visit "is in charge of international cooperation at Flanders Belgium Marine Research Institute, we have had a collaboration agreement with this institute since April 2022, for a year and a half it has been a very fruitful relationship, since



that 6 IFOP professionals have carried out internships in Belgium, in areas in which it has allowed us to learn about their work, to improve ourselves, to train ourselves and to exchange experiences, they carry out activities similar to ours, Ann's invitation to the ship occurs in the context of a visit by Flanders delegation to Belgium, including with its Minister of Foreign Affairs who are going to visit Puerto Montt and Punta Arenas, therefore this is a way to further strengthen the cooperation ties between our two institutions. "

Ann Katrien expressed "Abate Molina is well known worldwide by its research work, for perseverance and great travelled distances, for me it was a great honor to be able to visit this ship."

## IFOP delegation participates in scientific cruise in Peru

Its objective was international knowledge exchange about El Niño phenomenon and climatic change.

Between October 30th and November 3rd, an IFOP delegation made up of doctors Jaime Letelier and Gastón Vidal together with oceanographer Hernán Reyes participated in an oceanographic cruise





aboard Carrasco ship, with professionals from Sea of Peru Institute (IMARPE), Environmental Defense Foundation (EDF), researchers from Ecuador and United States.

During the activity, two oceanographic stations were carried out, marine currents were measured and a hydrographic survey was carried out.

## IFOP Executive Director meets with Peruvian Sea Institute Scientific Executive Director

On November 6th, Gonzalo Pereira, Fisheries Development Institute Executive Director, visited the Peruvian Sea Institute (IMARPE), in Callao, Peru. He met with its Scientific Executive Director, Renato Guevara. At the meeting, they discussed SAPO EDF initiative support and its strengthening's importance in El Niño phenomenon current circumstance presence on Chilean and Peruvian coasts. Likewise, they agreed on the need to strengthen cooperation between both institutions regarding information exchange on southern Peru and northern Chile pelagic fisheries in El Niño's presence, among other common interest matters.



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## IFOP's Repopulation and Cultivation Department carries out oyster splitting in small-scale aquaculture, in Chungungo B management area

The splitting is done to generate greater growth in the oysters. The lanterns are changed when they are already dirty, so that the organism has greater access to food, which helps the optimal development of the oysters.

The Repopulation and Cultivation Department team from Fisheries Development Institute (IFOP) carried out, together with Los Castillo organization, the development of its Small-Scale Aquaculture (APE) of Japanese oyster (*Crassostrea gigas*).

Within the framework of stage VII of the "Comprehensive Aquaculture Development Program for Artisanal Fishermen and Small-Scale Aquaculturists". The repopulation and cultivation team sought to fulfill its objectives of developing APE pilot crops; and carry out dissemination and transfer actions to support the development of the APE, through technical assistance to the Organization of Artisanal Fishermen (OPA) of Chungungo, Los Castillo.

On January 20th, 2023, 12,000 Japanese oyster seeds of approximately 0.5 cm in length were sown. These seeds were produced by Cultivos NANAUKU of Tongoy and then transferred to Chungungo, where they were initially sown in 3 cultivation lanterns with a 4 mm mesh opening due to the size of the seed. These lanterns were transferred to the cultivation lines at AMERB Chungungo B, where monitoring has been carried out in which the members of OPA themselves keep track of the variables, through the purchase of measuring instruments.

At the end of September, growth monitoring was carried out and an average size of 6 cm was recorded. The splitting was carried out in mid-October and the harvest is expected to take place at the beginning of the summer season.

The researcher in charge, Msc(c) Denisse Torres, indicates that "the support and transfer has been improving, partly as a result of a more active participation of artisanal fishermen organization, demonstrating management empowerment, who are developing more activities and even carrying out a work plan associated with the APE."



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## Southern Science Node and public services identify priority lines of research for aquatic ecosystems of Aysén and Magallanes

In the context of the process of energizing Roadmap in science, technology, knowledge and innovation – a planning instrument for the year 2030 – Southern Macrozone 17 public institutions linked to the marine and freshwater ecosystems met, in simultaneous meetings that took place in Coyhaique and Punta Arenas.

Austral Macrozone has a large maritime surface, made up of fjords, channels, continental waters and important marine protected areas. These ecosystems are key to global change, marine conservation and economic activities such as fishing, aquaculture and tourism. At the same time, they are critical for the development of economic, recreational, and cultural activities and for the identity of indigenous and coastal communities.

In this context, it is urgent to generate information and knowledge about aquatic ecosystems that allow their characterization, to provide updated information, face events that impact the communities life's quality and to provide background information for decision-making, promoting sustainable development of these territories.

In this way, Nodo Ciencia Austral collaborative network proposed generating spaces for participation with public institutions whose work is related to aquatic ecosystems to identify and highlight lines of research with territorial relevance.

17 public services Representatives participated in "Building a Roadmap in Aquatic Ecosystems of the Southern Macrozone: "Institutional Vision workshop" that was carried out simultaneously in Coyhaique and Punta Arenas during October 31th morning. In this instance, public actors worked in groups to dialogue and identify gaps, opportunities, challenges and interest topics to their institution, which demand the participation



of actors in the science, technology, knowledge and innovation (CTCI) ecosystem.

In this context, Nodo Ciencia Austral, director Dr. Juan Carlos Aravena, highlighted that from this collaborative network "we are convinced that we must work collaboratively and interdisciplinary among those who make up the science and technology ecosystem, and with that spirit we convene this meeting between public actors linked to aquatic systems. In the Roadmap we were in charge of this area, we needed to meet, discuss, plan and build together around the priority lines of these ecosystems. Today in this workshop we were able to learn from the demands of these sectors and we have confirmed the needs for coordination and articulation between all actors. With these meetings, we continue to strengthen the Nodo Ciencia Austral network."

This work is led by two of the Node associated institutions. Fisheries Development Institute (IFOP) and CEQUA Foundation Regional Center, with the purpose of updating and energizing the CTCI Roadmap, modifying the "Fisheries and Aquaculture" program. identified in previous stages by a new program called "Aquatic Ecosystems".

Along these lines, Alejandra Lafon, Head of IFOP's Aysén headquarters, commented: "many institutions and activities are developed around aquatic ecosystems, and many times actors do not talk. Each one sees them from their own angle or regulations, therefore, in this meeting what is being seen is that there are many similarities, there are



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many meeting points, which is vital to identify, highlight and that the different actors know each other and communicate. Realize that this is happening in order to move forward in defining priority lines."

For her part, Ximena Gallardo Zonal Fisheries Director in Magallanes, thanked Nodo Ciencia Austral for opening such a space, "where we are recognizing new realities and needs around aquatic ecosystems." She added that "although as public services we are clear about our gaps from the territory, we are now faced with a new reality, maritorio, despite its riches, has high complexities, and today it puts us in several public services, not only those associated with fishing, but also those linked to land and science, to work collaboratively and effectively to face regulatory, supervisory and knowledge-based challenges."

Meanwhile, professional Eduardo Barros from Nodo Ciencia Austral concluded that "with the amount of input that was collected in this workshop, a cooperative, collaborative science with territorial relevance can be planned, asking ourselves what research agenda is needed in ecosystems. aquatic areas of the Aysén and Magallanes regions and Chilean Antarctica?"

To these workshops with public services, new spaces will be added with actors from academia, NGOs and other institutions that develop research in the southern regions. Subsequently, with economic activities representatives, thus seeking to have a comprehensive view of all the actors that interact in aquatic ecosystems.

It should be noted that, seeking to contribute to decentralization and equity in matters of CTCI, Nodo Ciencia Austral forms a broad collaborative work network made up of ten Austral Macrozone institutions: Universidad de Magallanes, Universidad de Aysén, Patagonia Center for Ecosystems Research (CIEP), Chilean Antarctic Institute (INACH), Patagonia Campus of Universidad Austral of Chile, Magallanes Museum Network, Cape Horn International Center (CHIC), Fisheries Development Institute (IFOP), Aysén Regional Museum and Center for Quaternary, Fire-Patagonia and Antarctic Studies (CEQUA). An initiative financed by the National Research and Development Agency (ANID).

## IFOP Arica Stands Out in Plaza Colón's International Day against Climatic Change Commemoration

In a collaboration to face environmental challenges, Plaza Colón emerged as activities committed to climate awareness epicenter. Last October 24th. Seremi de Medio Ambiente (Enviroment Ministerial Secretariat) organized an event that brought together various government and private entities with the purpose of raising community awareness about climatic change and proper waste management.



From 9:30 a.m. to 12:00 p.m., this city square came to life with the active participation of Water General Directorate (DGA), Energy Regional Ministerial Secretariat (SEREMI Energía), Environment Regional Ministerial Secretariat (SEREMI MMA), and with Fisheries Development Institute (IFOP) notable presence.

The different institutional stands eloquently presented climatic change effects and inadequate waste management on local biodiversity repercussions. Students from State CFT, Rancagua Regiment School, Escuela Francia and Escuela Chile Norte actively participated, as did general public, in this enriching educational experience.





Among exhibitors, Fisheries Development Institute scientific observers Patricio Muñoz, Daniel Fuenzalida and José Videla, stood out by presenting an interesting stand with a sample of hydrobiological resources, which made it possible to graphically reveal climatic change effects on some marine species life history and distribution present in the region. The above was very well received by the attendees.

This event highlights collective commitment towards building a more sustainable future. Both the organization and attendees expressed their gratitude for commitment shown during the activity, underlining the importance of continuing to work hand in hand to address environmental challenges that affect our community and regional biodiversity.

## IFOP's Outstanding participation in international symposium

Between November 6th and 10th, State of the art of habitat monitoring international symposium was held in Concepción. This event aims to share and review current best practices related to habitat monitoring and research, to better inform marine resource management approaches based on marine ecosystems.

Fisheries Development Institute's Direct Evaluations Department Participants were: Víctor Catasti, José Córdova, Francisco Leiva, Adrián Ibieta, Luis La Cruz, Javier Legua.

**Session:** *Environmental variables and oceanographic mechanisms or fish spatio-temporal distribution associated processes.*

Topics related to South Pacific environmental data acquisition and monitoring were addressed: Using multidisciplinary information to better understand fish spatio-temporal distribution



changes in response to habitat variability; Propose hypotheses that could reconcile different points of view related to understanding factors that drive fish spatial distribution and discuss data needed to have a better understanding of changes in fish habitat and spatial distribution of fish throughout their life cycle in response to future anthropogenic climatic change.

**IFOP presented:**

José Córdova y Víctor Catasti.

Horse mackerel spatio-temporal distribution and its spatial indicators and density index in northern Chile.

Víctor Catasti, José Córdova, Bernardo Leiva y Milena Pizarro

Horse mackerel Distribution and its association with environmental variables in northern Chile.

**Session:** *Modeling, indexes and relevant indicators to improve pelagic and deep-sea species habitat monitoring.*

Environment related Issues were addressed as an important factor that controls pelagic and deep-sea species distribution and habitat. One approach to habitat monitoring is through identification of indicators that allow parameterizing distribution control variables and to determine marine resources potential habitat.







## IFOP presented:

Javier Legua, René Vargas, Adrián Ibieta, Manuel Rojas, Jairo Gutiérrez, Luis La Cruz y Sergio Lillo

Southern Hake target strength In situ measurements (*Merluccius australis*) in Aysén Region Inland Sea, Chile.

Francisco Leiva, Eleuterio Yáñez y Felipe Sánchez

ENSO Effect on juvenile and adult anchovy habitat (*Engraulis ringens*) in northern Chile (18°25 S-25°00 S).

**Session:** *Habitat monitoring Technologies and methods available*

Technologies and methods developed for habitat monitoring emerge as crucial starting points for our understanding of oceanographic and ecosystemic processes involved in fisheries studies. Acoustic methods (passive and active) are widely used in fisheries research and often provide relevant information that could not be obtained otherwise. Some examples

of technologies and methods are: ecogenomic sensors, electronic monitoring on fishing vessels, autonomous platforms and vehicles, scientific echo sounders. A large number of these technologies are already in use or under development.

## IFOP presented:

Luis La Cruz, Felipe Sánchez, Sergio Lillo, Adrián Ibieta, Jairo Gutierrez, Jorge Castillo, Álvaro Saavedra y Francisco Leiva

Fish length measurements using EK80 echo sounder: echo sizes anchovy distribution in Atacama Region, Chile 2023.

## IFOP scientists train at the Ocean Research Institute in Germany

Between October 24TH and 27TH, professionals Osvaldo Artal and Camila Soto trained at the GEOMAR Helmholtz Center for Ocean Research Institute in Kiel, Germany.

GEOMAR is the lead institution for the DITTO digital twin programme, which hosts several Ocean Decade projects and will enable ocean professionals, including scientific users, to create their own local or themed digital twins of “their ocean problem” using standard workflows.

Osvaldo explained “GEOMAR’s training main objective is to familiarize ourselves with all aspects related to DITTO and digital twins and the advances in issues related to climate change and its impact on mixing processes, coastal upwelling, biogeochemistry and basin ventilation. We met with Florian Schütte from the Department of Physical Oceanography, with Arne Biastoch from the Department of Ocean Dynamics, and with Andreas Oschlies from the Department of Biogeochemical Modeling.





Osvaldo added “the main activities we carry out are:

This instance will serve as a rapprochement between both institutions, to internationalize and to expose numerical modeling within IFOP Aquaculture Division Environment Department development. In this way, we will be able to evaluate our strengths and challenges in the short and medium term.”

Presentation to GEOMAR researchers about IFOP’s work and role of the as an advisory body to the State and support to decision-making bodies.

Exhibition of our advances, developments and challenges in numerical modeling, ocean observation systems, the atmosphere, and data science. Which mainly focus on estuarine circulation, fjord dynamics, mixing processes and biogeochemistry.

GEOMAR presented the current state of digital twins in the world, focused on the advances developed at GEOMAR, such as the aforementioned digital twin of Cabo Verde. They showed us their advances in studies of mixing processes, coastal upwelling, biogeochemistry and basin ventilation.

Working groups for the integration of IFOP into the DITTO program, as well as to explore future collaborations in international projects and inter-institutional agreements.

Finally, mention that we hope to establish ties with GEOMAR researchers to explore common lines of research (which ideally result in scientific publications) and participate in future international projects.”

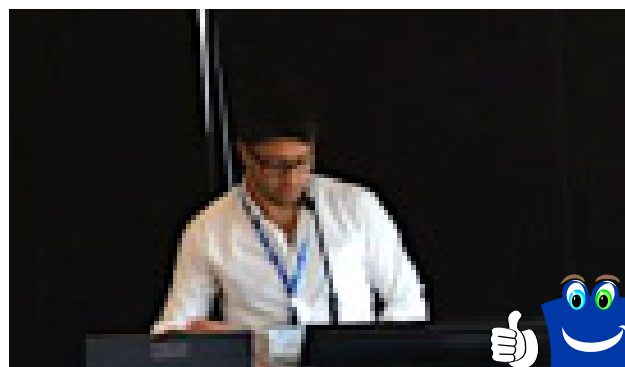
Camila Soto-Riquelme has an Oceanography Master’s degree from Universidad de Concepción and Osvaldo Artal has a Doctor in Physical Sciences from Universidad de Concepción.

Both professionals focus on research into the dynamics of Patagonian fjords and estuarine systems using numerical models and oceanographic-atmospheric observation systems.

## IFOP researchers attended international PICES conference as guests, which was held in the city of Seattle, USA

Doctors Javier Paredes and Jorge Mardones were invited as plenary speakers to the International PICES conference that took place between October 20th and 27th, 2023 in Seattle, United States. Researchers presented two talks: the first talk titled “Patagonian fjords dealing with extreme Harmful Algal Blooms (HABs): Lessons and challenges in a climatic change” was held in a session “Oceanographic, Ecological and societal impacts arising from extreme weather and climate events in coastal regions” and the second talk “Mitigation of harmful algal blooms by the Chilean salmon industry revisited” was presented at “GlobalHAB International workshop on solutions to control HABs in marine and estuarine Waters”workshop .

The Harmful Algal Bloom Mitigation Workshop culminates with an international report issued by GlobalHAB UNESCO in which both researchers participate as authors.



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## Dr. Carlos Montenegro Silva from IFOP, participates in CCAMLR Scientific Committee 42nd meeting

Between October 16th and 20th, 2023, Dr. Carlos Montenegro Silva, IFOP Fisheries Research Division Head, participated as a member of the Chilean delegation in CCAMLR 42nd Scientific Committee meeting (Antarctic Marine Living Resources Conservation Commission), which was held in Hobart, Australia.

The Antarctic Marine Living Resources Conservation Commission is an intergovernmental organization established by an international convention. The Commission, assisted by the Scientific Committee, is responsible for developing necessary measures for Southern Ocean surrounding Antarctica marine life's the conservation.

Convention Negotiation was initiated by Consultative Parties Antarctic Treaty alarmed by scientific reports expressing concern that uncontrolled fishing for Antarctic species, especially krill, could cause irreversible damage to other species populations in the Antarctic marine ecosystem. After a series of diplomatic and scientific meetings, the Conservation of Antarctic Marine Living Resources Convention was established at a special meeting in Canberra, Australia, on May 20th, 1980 and signed by 17 countries, including Chile. Today the Commission has 27 member states and 10 acceding states to the treaty.

Currently, fisheries targeting toothfish also known as bacalao (*Dissostichus eleginoides*), Antarctic toothfish (*Dissostichus mawsoni*), icefish (*Champsocephalus gunnari*) and Antarctic krill are carried out in the Convention Area. (*Euphausia superba*). These fisheries management is carried out adopting a precautionary approach, and management objectives seek to find a balance between conservation and rational use of resources and preserving pre-existing ecological relationships.

CCAMLR Members national scientific programs research activities results were analyzed at the Scientific Committee 42nd meeting. In addition, it became aware of programs to collect the data necessary for Southern Ocean effective management, including elements such as fisheries monitoring, scientific observers on board fishing vessels, and ecosystem and marine waste monitoring programs.

Additionally, the Scientific Committee's five working groups intersectional work was reported, which are:

- Ecosystem Monitoring and Management Working Group (WG-EMM)
- Fish Stock Assessment Working Group (WG-FSA)
- Statistics, Assessments and Modeling Working Group (WG-SAM)
- Fisheries-Related Incidental Mortality Working Group (WG-IMAF)
- Acoustic Surveys and Analysis Methods Working Group (WG-ASAM)



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## IFOP workers participated in dissemination activities of Quellón and Melinka Ports institutional work

During October, researchers, coordinators, and scientific observers of the Monitoring Program for main benthic fisheries and Larval Monitoring Program for mytilids carried out various dissemination actions, among which stand out; workshops participation, radio interviews, talks at schools in the area and negotiations with local municipality to participate in the V version of Melinka town hedgehog festival. All this with the support of colleagues Andrea Ruiz and Lorena González from the Guaitecas artisanal fishing office.

The first activity consisted of showing IFOP's work in Quellón port, for this institutional and specific benthic monitoring program presentations were made in a workshop organized by the groups that make up the "ECMPO Wafo Wapi" that were in charge of Ancud headquarters head Vivian Pezo and benthic researcher Pablo Araya, who analyzes data collected by monitoring in the southern area of Los Lagos Region and in Aysén, an opportunity in which dissemination material prepared by IFOP was delivered to communities representatives and guests at the workshop.

In Aysén Region, dissemination included a visit to schools in the towns of Melinka and Repollal, where participatory techniques were developed, showing institutional videos on topics related to benthic resources and IFOP's carried out work by scientific observers in the area. Consultations were made about contents delivered and institutional material prepared for the school community was given as a prize, which generated an enriching experience of knowledge transmission. The radio interview was conducted on the local station "La Voz del Ciprés" where topics related to IFOP's work in the area were discussed and the community was invited to participate in the hedgehog festival.

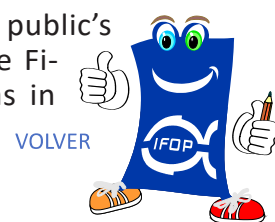
Without a doubt, the event that attracted the most attention was IFOP's institutional stand

presentation at the V version of the traditional "hedgehog festival" organized by Melinka illustrious municipality. The organization and preparations of the stand were possible thanks to the joint efforts of Fisheries and Aquaculture divisions, who carried out necessary arrangements for the logistics required by the event. These linkage initiatives at the local level have great relevance and are ideal for transmitting to the public IFOP's valuable contribution in the task of our marine resources care and preservation. On the other hand, they are necessary to strengthen ties with local community, especially all in isolated places where joint work has been carried out for decades.



The hedgehog festival brought together the entire local community, especially those who carry out productive tasks around this valuable resource. He highlighted the great enthusiasm in participating in traditional contests, such as the largest "paipa" (the largest diameter urchin captured in the area) and who was the fastest in the female and male genders. He also highlighted marine gastronomy, trivia and contests. suitable for all ages, where IFOP officials actively participated, being part of the jury in different competitions, highlighting our local scientific observers participation, Damaris Rain and Valentina Águila, who were in charge of measuring the largest hedgehogs in the Guaitecas, taking the prize for a specimen that reached 12 cm. diameter.

It was satisfying to witness public's interest in IFOP's work Leslie Figueroa field coordinator was in





## Liceo Bicentenario de Valparaíso carries out a pedagogical visit to Fisheries Development Institute

On October 23rd, students from Liceo Bicentenario de Valparaíso toured IFOP's facilities, were received by researchers from Fisheries Development Institute and were shown scientific work carried out in the various laboratories that the institution has. The tour included the Otolith laboratory, where young people learned what they are and what they are for, as well as the importance of being able to calculate the age of fish through them.

They also explored the plankton and oceanography laboratory, where boys and girls used magnifying glasses and microscopes to take a look at the microcosm that exists in a drop of seawater. In addition, they had an approach to oceanographic equipment that is capable of measuring and taking samples at more than a thousand meters of depth and even state-of-the-art micro marine buoys.

charge of organizing the activities, in addition to giving prizes to whoever answered questions related to the institutional work in the area, for her part Daniel Triviño scientific observer answered concerns, distributed posters of main benthic resources monitored by the program to those who visited the stand, while researchers Pablo Araya and Macarena Herrera answered questions about biological topics and natural events that affect seafood in southern Chile. A great success was the magnifying glass that allowed us to show the first stages of the life cycle of the hedgehog and other benthic resources.

We appreciate local IFOP's team welcome, where we were also able to visit modern sea urchin processing plant facilities by Don Marco Aedo and another marble crab plant by Mrs. Elsa Puinao, both in Melinka. We hope to continue with joint interaction to continue contributing, learning and advising national fisheries research in the best possible way.



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Jorge Soto Delgado, Central Macrozone Science Seremi. explained “on this occasion we visited Fisheries Development Institute – IFOP Valparaíso, in the company of students from Liceo Bicentenario Marítimo de Valparaíso, where they were able to learn about scientific research they carry out in the area of marine sciences and aquaculture. Seeing a team of excellence and great human quality that gave us an instance that motivated each and every student to feel a unique interest in the scientific work they do at the center, was undoubtedly gratifying, and that is what we need, spaces where we generate curiosity and wonder about scientific developments to future generations. Without a doubt, our scientific research centers and institutes opening to the school community are the spaces we need.”

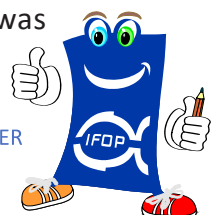


Dr. Jaime Letelier Pino, IFOP’s Oceanography and Environment Department Head added “today we received 25 students from Liceo Bicentenario who visited Age and Growth, Plankton and Biodiversity laboratories and had close experiences with turtles, marine plankton, They carried out experiments and received gifts from IFOP. They learned in a playful way to bring closer the marine science that is carried out in Chile. At the Institute we believe that this type of action carried out by the IFOP Fisheries Research Division is necessary to generate rapprochement with the community and be able to inspire a greater number of students to follow the path of science.

Jorge Moreira Jara, science innovation and environment coordinator, for Valparaíso and Juan Fernández’s SLEP explained “I want to thank the activity carried out today by IFOP to Valparaíso’s Bicentenario establishment, since in this activity children were able to tour its facilities and learn more about the beautiful work performed at this center, they are also instances where we bring students closer to science and that makes them see them from other perspectives, 7th grade children were fascinated with the visit and very happy with the reception they received, so we hope that these activities continue to take place to bring more students closer to science”

## IFOP participates in Natural Resources and Environment Economics Ninth Annual Meeting organized by NENRE Efd-Chile

Fisheries economics researcher Camilo Torres Almuna, MSc. (Economy Section), participated in the Economics of Natural Resources and the Environment Ninth Annual Research Meeting, held between October 19th and 20th in hybrid format, the event was organized by Environment for Development (EfD), <https://si->



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tes.google.com/view/nenre-efdchile/workshop-2023.

The purpose of the meeting was to review research's advances carried out in Chile, in Fisheries and Aquaculture Economics, Environmental Economics and Energy areas, Ecosystem Conservation and Climatic Change, Economics of Atmospheric Pollution in Fisheries Regulation and Price Formation in Marine Products Markets. In this instance, the Undersecretariat of Fisheries and Aquaculture (SSPA), the Environment's Ministry, University of Gothenburg, Sweden, Catalonia Polytechnic University, Spain and Universidad de Concepción, Talca, among others, also participated.

On this occasion, Camilo Torres fisheries economics researcher, MSc., presented the work entitled "Heterogeneous companies and international trade: Effects of the ISA virus on employment generation and firms concentration in Chilean salmon industry", where together with economist Jorge Bravo, PhD., from Universidad de Chile, provided new information on ISA virus effects (ISAv) on Chilean salmon farming sector in 2007, both in the generation of employment and in firms concentration levels. For the article, data were used during the period January 2004 to December 2014, and based on a non-stationary dynamic panel model, it was estimated how changes in sanitary conditions (ISAv) affected salmon companies concentration levels, depending on species produced and their products exports destination countries, reducing industry's direct jobs generation. Furthermore, the model's results were applied in a policy exercise, which allowed estimating the long-term effect of the presence of ISAv in Chilean salmon industry.

Finally, researcher Torres referred to the instance as a favorable space for knowledge transfer and methodologies updating, because national and foreign researchers attend, with whom very enriching days of discussion are developed. On this occasion, during the various sessions, the importance of economic aspects in the use and management of natural resources was highlighted, as well as for compliance and oversight of public policies.



## IFOP acted as spokesperson for the Chilean delegation at the XI meeting of the Scientific Committee of the South Pacific Regional Fisheries Organization (OROP-PS)

For the second consecutive year, the researcher from the IFOP Resource Assessment Department, Ignacio Payá, acted as spokesperson for the Chilean delegation at the XI meeting of the Scientific Committee (SC) of the South Pacific Regional Fisheries Organization (OROP-PS). The meeting took place from September 11th to 16th in Panama City, Panama. The Chilean delegation was chaired by Aurora Guerrero and was made up of a total of 13 members.

Ignacio Payá indicated that the role of being spokesperson consists of transmitting, arguing and substantiating the scientific position of the Chilean delegation on the Scientific Committee different to-





pics which include: horse mackerel fishery, squid fishery (cuttlefish), deep-sea fisheries, impact on vulnerable marine environments and ecosystemic approach to fisheries. In the case of horse mackerel fishery, the main topics were stock structure, stock evaluation, stock status, biologically acceptable catch (catch quota), and the implementation of the evaluation of management strategies. While in the squid case (cuttlefish) fishery, main topics were different morphs genetics (sizes that squid reach), fishing effort, relative abundance indices and different stock evaluation models.

IFOP also cooperated, through researcher José Zenteno, as a reporter for the deep-sea fishing group.

## IFOP Scientific Observers receive training in animal biodiversity and biological collections

On September 26th, the first course, of several that will be developed, on animal biodiversity and biological collections was held at the Coquimbo headquarters by professional Catalina Merino Yunnissi, Collections Administrator, Invertebrate Zoology Area of the National Museum of History Natural. This course was framed within the agreement signed between the IFOP and the National Museum of Natural History of Santiago.

The activity included Scientific Observers participation from Demersal Crustacean Monitoring project and Discard Project. The objective was to

provide information about the importance and role of biological collections for the registration and conservation of our biodiversity. country. Information was provided on specimens collection, preservation techniques, registration of information and appropriate materials for labeling, preparation and shipping of specimens. The training also covered the topic of conservation of biological collections, techniques to preserve biological material in perpetuity as fundamental activities of the museum.

Due to the spatial and taxonomic bias that exists in biological collections, it is vitally important that these cooperation agreements exist between institutions to add to the inventory and thus to the heritage of biological collections in Chile.



Continuing with the training aimed at Scientific Observers, on September 27th and 28th, 2023, chondrichthyan identification and biology course was held by Professor Francisco Concha Toro, from Universidad de Valparaíso Marine Sciences and Natural Resources Faculty. In which general chondrichthyans biology and reproduction concepts were reviewed, as well as a look at taxonomy and identification. It focused mainly on demersal chondrichthyan species present in crustacean fishery catches. This course is the first of several that consider reinforcing the topic of species identification necessary for Scientific Observers in order to transmit new knowledge, develop new skills and new tools to improve the quality of information collection.

