



IN THIS NUMBER

- Dr. Jorge Mardones from IFOP, presented at of North Carolina University Wilmington, USA. **1**
- IFOP Scientific Observers are trained in the Conservation of Antarctic Marine Living Resources Commission **2**
- Abate Molina Scientific Vessel set sail to investigate horse mackerel between the Regions of Valparaíso and Los Lagos **3**
- Arica's Junior College Students visited the Fisheries Development Institute Regional Headquarters **4**
- Dr. Carlos Montenegro from IFOP attends FishPath workshop, developed in the US **5**
- IFOP researcher offered a talk about small-scale aquaculture to Liceo Bicentenario Insular de Achao students **6**
- IFOP Repopulation and cultivation, stands out by organizing 2 Symposiums in the XLII Marine Sciences Congress **6**
- IFOP Talcahuano, holds talks on caring for the ocean at Colegio San Vicente **8**
- General coordination meeting demersal crustaceans project 2023 **9**
- Great IFOP's participation in LACFC Latin America and the Caribbean Fisheries Congress in Mexico **9**
- Chilean Delegation participates in ACAP Advisory Committee Thirteenth Meeting **10**
- Successful work week in Aysén associated with the Small Pelagics and Benthic Crustaceans Monitoring Programs **11**



Dr. Jorge Mardones from IFOP, presented at of North Carolina University Wilmington, USA

During May, the Marine Sciences World Summit: Wind Energy, Floods, Toxins and Pollutants was held at North Carolina University Wilmington (UNCW).

This meeting objective was to discuss global problems such as renewable energy, climatic change and marine pollution with an integrated perspective between international scientists, politicians and leaders from different industries with a view to guaranteeing a future with safer and healthier coasts. Dr. Jorge Mardones from Harmful Algal Blooms Center (CREAN), Puerto Montt headquarters, was invited to this event, and presented the talk entitled: "Chilean aquaculture dealing with extreme Harmful Algal Blooms (HABs): Lessons and challenges in a changing weather". As explained by Dr. Mardones, Chile is a focus of global attention not only because of important mussels



Editorial committee

Gonzalo Pereira P. / Executive Director
Gabriela Gutiérrez V. / Journalist

Graphic design

Mario Recabal M. / Senior graphic designer

In this regard, Alex Oyarzo, one of the participants indicated that: “participating in this training is a great opportunity, not only to learn new methodologies, but also to learn more about the work that is carried out with Antarctic resources and interact with other colleagues from the area”.

On the same subject, Leonardo Caballero, Sampling Management Department Head (DGM), explained that “although our country is part of the Convention, fishing activity in that area has been sporadic, at any time it could increase and Chilean vessels would be required to carry accredited and trained scientific observers on board to collect biological, fisheries, oceanographic and CIAMT (bycatch of marine mammals and birds) data and information under the Convention established protocols . On the other hand, their participation also has a geopolitical and strategic component, with a view to positioning and having a scientific presence in these territories.

and salmonids aquaculture developed by our country, but also because of the strong economic and health impact produced by Harmful Algal Blooms (HABs) in the Patagonian fjord zone.

During the visit to North Carolina University Wilmington, USA, Dr. Mardones visited the “Algal Resources Collection (ARC)” one of the largest and most diverse collections of microalgae in the world. On that occasion, it was agreed with ARC researchers where to establish a future link with IFOP in order to manage joint research between both institutions.

IFOP Scientific Observers are trained in the Conservation of Antarctic Marine Living Resources Commission

Between June 5th and 6th, this training will be carried out, organized by Chilean Antarctic Institute and Universidad de Magallanes and will take place at UMAG. From the Human Resources Department Training area , 3 scientific observers application and registration was managed, they are; Gino Liche (aquaculture technician) Alex Oyarzo aquatic resources technician, Nelson Luna (fishing execution engineer).

For Chile and for Fisheries Development Institute, it is important that some of its most outstanding scientific observers, who in turn are part of Scientific Observers Program led by Fisheries and Aquaculture Undersecretariat and executed by the Institute, know about the Conservation of the Antarctic Marine Living Resources (CCAMLR) and the activities they carry out within the framework of cod, krill and other species that inhabit the Antarctic territory conservation of.



RETURN



Abate Molina Scientific Vessel set sail to investigate horse mackerel between the Regions of Valparaíso and Los Lagos

On Saturday, June 10th, Abate Molina scientific vessel set sail from Valparaíso's port to characterize and evaluate jack mackerel present between Valparaíso and Los Lagos Regions, using hydroacoustic methods, during the fall of this year.

The head of the cruise is José Córdova, fishing engineer and as the ship's captain is José Echeverría, who, accompanied by an expert team of professionals, technicians and the ship's crew, will carry out horse mackerel related studies.

The scientific cruise specific objectives are:

1

To characterize horse mackerel's population structure and its spatial distribution, considering attributes such as: abundance, biomass, sex, size and age, stages (juveniles and adults), among others.

2

To characterize jack mackerel aggregations in the area, study period and environment; also specifying accompanying fauna and its relative importance in identification sets.

3

Horse mackerel food supply characterization based on auxiliary information, such as environmental variables, echograms and plankton sampling in the study area.

4

To prepare and implement a continuous improvement research plan of hydroacoustic evaluations of pelagic resources: anchovy, common sardine, southern sardine and horse mackerel, as appropriate; that strengthen the estimates of the target species, according to the plan preparation identified priorities and the available budget.

3



Arica's Junior College Students visited the Fisheries Development Institute Regional Headquarters

Aiming to promote awareness of the importance of caring for our oceans and publicizing the outstanding work of the Fisheries Development Institute (IFOP) in fishing resources research, evaluation and conservation, Junior College's students had the opportunity to visit IFOP facilities on May 25th.

The visit, coordinated between IFOP and the school's educational team, provided students with an enriching and educational experience. During this activity, youngsters had the opportunity to learn first-hand about the work carried out by the institute in marine ecosystems investigation and monitoring

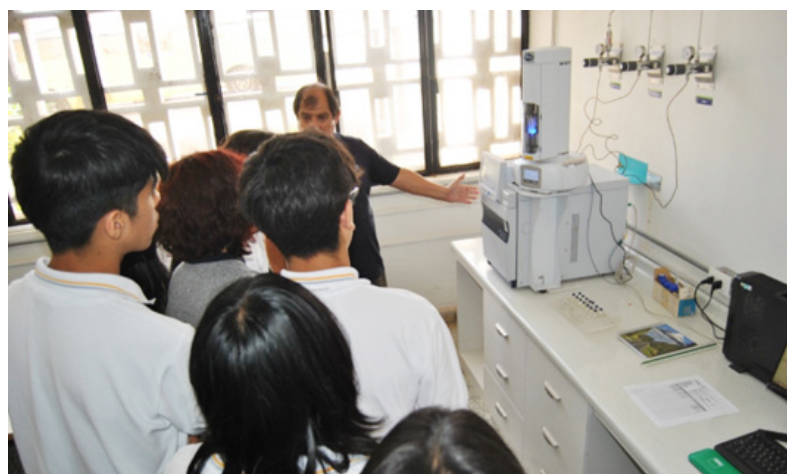
Hernán Padilla, Regional Headquarters head, highlighted this activity importance by stating: "Our main objective is to highlight in young people the importance of caring for our oceans and their hydrobiological resources, and provide background on our work in scientific advice, that allows an informed decision-making to the authorities in the field of fishing and aquaculture. We want to inspire these young people to become future "guardians of our oceans".

During the visit, students had the opportunity to interact with IFOP professionals, who explained to them methods used to study fishing resources and various studies carried out aimed at mitigating bycatch. In addition, practical demonstrations were carried out in the laboratory that allowed students to learn about some species and better understand the importance of monitoring to preserve marine biodiversity and ecosystems balance.

The students were enthusiastic and committed to the environmental cause, asking questions and actively participating in the proposed activities. The visit to IFOP provided them with a unique perspective on the importance of scientific research in the protection of our oceans and the positive impact that each indi-

vidual can have on the conservation and sustainability of marine resources.

Junior College and Fisheries Development Institute hope to continue strengthening this educational relationship and continue working together on future activities that promote environmental education and care for our oceans. This visit has left a significant mark on the students, who are now more aware of the importance of protecting and preserving our valuable marine resources for generations to come.



RETURN



Dr. Carlos Montenegro from IFOP attends FishPath workshop, developed in the US

THE FISHPATH HELPS FISHERIES ADVANCE ON THE PATH TO SUSTAINABILITY

The Nature Conservancy (TNC) and National Oceanic and Atmospheric Administration (NOAA) and Commonwealth Scientific and Industrial Research Organization (CSIRO) organized the FishPath Network Workshop 2023, which was held in Portland, Maine, US. This workshop is the second meeting of the members of the FishPath Network, designed to build capacity for the use of the FishPath tool and process.

This workshop was a combination of training sessions from TNC's FishPath core team and knowledge sharing among members of the FishPath Network that will better prepare participants to use FishPath.

Dr. Carlos Montenegro Silva, IFOP Fisheries Research Division head, who is also part of the FishPath FishPath advisory group, participated in this workshop.

According to Dr. Montenegro, "the workshop held in Portland was a great success, since it managed to bring together scientists and fisheries managers from different parts of the world, who were able to share their experien-

ces in the use of the FishPath tool. It is evident that FishPath tool, process and network are a tremendous opportunity for countries with different levels of management capacity, fisheries administration, data collection and modeling of socio-ecological systems associated with fisheries, to move towards understanding, research and management of fishing resources with a precautionary, ecosystemic and sustainable approach".

With the purpose that the world's fisheries are managed in a way that results in the conservation and good use of natural resources, while maintaining the supply of fishery products in a sustainable way and where local communities participate in decisions of management and conservation. To achieve this vision and overcome the challenges that fisheries face, FishPath was developed, a process that helps fisheries move along the path to sustainability. FishPath was initiated by a working group of experts under the Science for Nature and People Partnership (SNAPP) and subsequently refined and expanded by The Nature Conservancy, together with NOAA in the United States and the Commonwealth of Scientific and Industrial Research Organization of Australia (CSIRO).



RETURN



IFOP researcher offered a talk about small-scale aquaculture to Liceo Bicentenario Insular de Achao students

During May, on Quinchao island, Los Lagos Region, Sebastián Cook presented his 3 years work with students and teachers results, to Liceo Bicentenario Insular de Achao students

Sebastián Cook, researcher from Puerto Montt's Fisheries Development Institute (IFOP) Aquaculture Research Division Restocking and Culture Department, gave an explanatory talk for Liceo Bicentenario Insular de Achao students, presenting to the students some topics related to Small-Scale Aquaculture and also the work that the repopulation and culture team has carried out collaboratively for three years together with students and teachers within the "Comprehensive aquaculture development program for artisanal fishermen and aquaculture farmers framework on a small scale". This high school is a technical-professional establishment and has a specialty in aquaculture.

For Sebastián Cook, "it was important to discuss these issues with high school students, since a part of them are finishing their secondary education studies with a specialty in aquaculture, and this activity can become their livelihood as a main, complementary or eventual activity, but more importantly, each student could be a manager or promoter of small-scale aquaculture in their own localities".

The activity was carried out in the month of the sea context, requested by Marcelo Moya and Patricio Larco aquaculture specialty professors from the educational institution, , contemplating both a theoretical part and another in the field.

This talk allowed students to learn about new aquaculture concepts, both on a small scale and multitrophic aquaculture, creating a conversation space in which they could resolve their doubts regarding these issues.

IFOP Repopulation and cultivation, stands out by organizing 2 Symposiums in the XLII Marine Sciences Congress

Within XLII Marine Sciences Congress's framework held between May 22nd and 26th at Universidad de Los Lagos (Campus Chinchihue, Puerto Montt). Two symposiums were held with Fisheries Development Institute (IFOP). Repopulation and Culture Department's participation.

These symposia corresponds:

"Repopulation and restoration in Chile: Lessons and challenges", held on May 24th and coordinated by Dr. Francisco Cárcamo Vargas from repopulation and cultivation department.

"Current state of aquatic ecosystems in Los Lagos Region: Present anthropic effects and future climatic change", held on May 25th and coordinated by Dr. Luis Henríquez Antipa, from repopulation and cultivation department.

Regarding the first, it was made up of researchers from various institutions, including repopulation and cultivation, participating:

Dr. Francisco Cárcamo Vargas from IFOP repopulation and cultivation department, Puerto Montt. He presented *"National and international context for repopulation and restoration in aquatic environmentsdevelopment."*

Armando Rosson Villalobos from Bitecma Ltda. Consultant. Presented *"Experiences in gathering information, planting of invertebrates and brown algae of commercial relevance in AMERB"*.

Dr. Juan Manuel Estrada from Quintay Marina Research Center, Universidad Andrés Bello. He presented *"Advances in red sea urchin production for restocking and aquaculture."*

MSc. Ana María Mora from SECOS, CiCC and Universidad Santo Tomás, Santiago. He presented *"Repopulation of macroalgae in Chile: Biotechnological analysis and recommendations to achieve sustainability."*





Dr. Luisa Saavedra Löwenberger from the EULA Center from Universidad de Concepción and Packard Project. She presented *"Restoration of floating huiro forests as a nature-based solution to climatic change."*

Dr. Alejandra González Vázquez from the Department of Ecological Sciences of the Universidad de Chile. She presented *"Chimeras: Superalgae for the repopulation, mitigation and adaptation to climate change"*.

Denisse Torres Avilés from IFOP repopulation and cultivation, Coquimbo. She presented *"Repopulation experiences and semi-quantitative modeling of management actions for the restoration of Lessonia trabeculata forests in AMERB Chungungo B"*.

MSc. Carlos Velásquez Gallardo from IFOP's repopulation and cultivation department, Puerto Montt. He presented *"Improvement of river shrimp stocks in times of drought: Experience with Cryphiops caementarius juveniles in the semi-arid north of Chile"*.

The second symposium was attended by researchers from the IFOP Aquaculture Research Division:

MSc. Carolina Rösner Oyarzo from Environment Department, Chiloé. She presented *"Lakes with aquaculture in the south of Chile, what has happened to it?"*

Dr. Javier Paredes Mella from Harmful Algae Research Center, Puerto Montt. He presented *"Hotspots of HAB-forming species: Implications for aquaculture"*.

MSc. Gabriel Soto Soto from the Putemún Coastal Station, Chiloé. He presented *"IFOP's Oceanography Development: Tools Application for ecosystemic management in inland sea water bodies of Chiloé and Aysén"*.

Dr. Heraldo Contreras Cifuentes from the Putemún Coastal Station, Chiloé. He presented *"Diagnostic tools and prediction of the effect of aquaculture on sedimentary bottoms: Advances and research challenges"*.

Dr. Pablo Leal Sandoval from RyC, Puerto Montt. He presented *"Role and ecosystemic effects of small-scale multispecies aquaculture: Towards a high environmental level aquaculture"*.

Both symposiums were highly attended and allowed a flow of questions that enriched the conversations about each of the topics addressed. Highlighting an active and constructive discussion in which the attendees asked key questions about IFOP's role as an entity that provides information for the decision-making of the Government of Chile.

According to Francisco Cárcamo, the symposium "allowed, after many years, to bring together institutions



RETURN

and researchers who are developing repopulation and restoration actions, and to learn firsthand about the advances and multidimensional challenges of this type of actions. Both restocking and restoration can play a key role as conservation and artisanal fishery recovery strategies.”

On the other hand, Dr. Luis Henríquez highlighted 2 key aspects of the symposium “In a session open to the scientific community, the main results of major lines of study of the DIA were presented for the first time in a single session, which seek to demonstrate the state of the ecosystems in terms of oceanographic knowledge, impacts on the benthic ecosystem, toxic algae blooms, polycultures as mitigation and conservation strategies, in addition to the knowledge acquired on lake ecosystems.

This symposium will allow to unify knowledge acquired in all the investigations of the Division in order to determine the state of the marine and freshwater ecosystems under anthropic pressure and generate environmental strategies of productive value for the country”.

IFOP Talcahuano, holds talks on caring for the ocean at Colegio San Vicente

The Fisheries Development Institute (IFOP), Talcahuano headquarters, carried out a valuable dissemination initiative in collaboration with the San Vicente school, during June, the month of the environment. This activity is part of the Pelagic Discard project and its objective is to promote knowledge and the importance of the work carried out by IFOP in fisheries and aquaculture research in Chile through an ecosystem approach. Likewise, it seeks to stimulate student interest in science, bringing these tasks closer to the educational community, especially in those schools where a large part of their students come from families related to the fishing industry.



The dissemination activity was divided into two stages. First, there were talks for first cycle students. These talks were an introduction to IFOP’s work, followed by two presentations on marine fauna of Talcahuano area and the problem of marine pollution. Finally, there was a trivia and the delivery of incentives such as gifts for participation. The speakers in charge and organizers of the activity were Cristian Villouta and Danilo Oro from IFOP Fishing Development Institute, together with Barbara Navarrete, in charge of the environmental workshop, and Claudia Sánchez, in charge of the eco-sciences workshop, both teachers from the San Vicente School.

In the second stage, an educational exhibition was held in which the students could see; jars with marine fauna preserved in liquids, models of two types of purse-seine boats: one industrial and the other artisanal, and a didactic fish as well as various measuring instruments. This activity was aimed at second cycle students and some first cycle courses. During this part of the activity, the students were able to learn more about Chilean marine fauna, the collection of biological-fishing data and the different parts that make up the purse seine fishing gear. The stations were in charge of Katherine Pinto, Diego Mendoza and Bryan Muñoz from Fishing Development Institute.



General coordination meeting demersal crustaceans project 2023

On June 13th and 14th, the general coordination meeting for demersal crustaceans project 2023 was held at the IFOP's Talcahuano headquarters. The workshop was organized by the project team, made up of researcher Diana Parra, data manager Cecilia Bravo and the project manager Maximiliano Zilleruelo, supported by demersal discard monitoring researchers Victoria Escobar and Jorge Azócar, as well as Marco Troncoso, coordinator of the south-central zone of the Sampling Management Section.

The meeting convened people in charge of collecting information for demersal crustacean monitoring and demersal discard projects, made up of scientific observers from Coquimbo, Quintero and Talcahuano and the corresponding field coordinators.

The objective of the meeting was to carry out a joint review of all the data collection and sampling procedures in order to standardize them, make improvements and reduce errors. The meeting allowed clarifying specific doubts and detecting needs for reinforcement and training.

The meeting was a meeting point aimed at improving the activities and learning of all those involved, with presentations made by researchers, coordinators and scientific observers.

Great IFOP's participation in LACFC Latin America and the Caribbean Fisheries Congress in Mexico

From May 15th to 18th, 2023, LACFC Latin America and the Caribbean Fisheries Congress was held in Cancun, Mexico. This event was sponsored by important organizations such as American Fisheries Society (AFS), Food and Agriculture Organization (FAO), United States Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA), in addition to universities participation and NGOs from the entire region. On behalf of Fisheries Development Institute (IFOP), Carolina Lang Direct Assessments Department researcher, together with Fisheries Assessment Department researcher Claudio Bernal wo participated remotely online.

The congress relevance relies in the fact that it brings together the international scientific community interested in fisheries management and fisheries sustainability and, based on research's presentation, worldwide current status is discussed and analyzed, along with future challenges. Which demand the stocks's condition , new research technologies and climatic change.

Carolina Lang presented a paper titled: 'Do environmental forcings improve understanding of jack mackerel spawning ground dynamics in the Southeast Pacific Ocean?'. This research was carried out in collaboration with researchers Villy Christensen from British Columbia University, Úrsula Cifuentes from Universidad de Concepción and Juan Quintana from Chilean Meteorological Directorate.

This research aim is to determinate how environment influences jack mackerel (*Trachurus murphyi*) eggs distribution and spawning habitat availability. Results suggest that eggs distribution changes are an adaptive species's response to local environmental fluctuations that affect suitable spawning areas availability. Findings highlight the need to study climatic change's impact on horse mackerel distribution and species reproductive timing.



RETURN



The Chilean delegation was represented by Marcelo García (Subpesca), Chile's focal point for ACAP, Luis Adasme from Fisheries Promotion Institute (IFOP) SBWG official member, and Verónica López (Oikonos NGO). In addition, in the Chilean group, Cristian Suazo from ATF Chile. During the meeting, advances and improvements that the country has had in terms of mitigation of incidental capture of seabirds in fishing operations (*) were provided.

The schedule had a large table which addressed SBWG11 different texts and documents presented in working document formats, as well as information documents. The themes were developed during the group's working sessions which were intensely debated in their deliberations.



Luis Adasme, Department of Fisheries Evaluation professional, pointed out that "participating in these instances is valuable for Chile and particularly for IFOP, since they allow knowledge exchange with other researchers in the area, learning about the the mitigation of the incidental capture of seabirds in fishing operations advances, as well as showing work and progress developed by Chile around this research line in line with the ecosystemic approach promoted by the current fishing law (LGP)".

Luis Adasme presented the work "By-catch rates and mortality of seabirds for trawling fleets in Chile, period 2015-2021" (*summary below), work that was very well received and valued by the entire working group.

RETURN



For his part, Claudio Bernal made a synthesis of Chilean southern hake factory discarding trawler fishery evolution, during 2015-2021 period, during which, from Discarding Law application it has been observed a significant reduction in their values, particularly during the last three years, estimated at less than 5% of the catch of species made by this fleet.

Chilean Delegation participates in ACAP Advisory Committee Thirteenth Meeting

ACAP 13th Advisory Committee Meeting (AC13) will take place during May 2023, in Edinburgh, Scotland, UK. These Seabird Bycatch Working Groups (SBWG11) and Population and Conservation Status Working Group (PaCSWG7) meetings precede AC13 and took place from Monday May 15th to Friday May 19th. On the other hand, on Sunday, May 14th, a data workshop on data entry into ACAP platform was held with all the delegations's high participation.

The meeting's objectives are to share work and research results, review some rules and procedures as well as plans and programs, and to begin the tenth meeting of Albatrosses and Petrels Conservation Agreement advisory committee (ACAP)'s preparation.

Successful work week in Aysén associated with the Small Pelagics and Benthic Crustaceans Monitoring Programs

During the past week, researcher, Karen Walker, in charge of the Central South Zone Small Pelagic Monitoring Program, and Paulo Mora, researcher of the Benthic Crustacean Fisheries Program, were working with their teams in Aysén.

On the occasion, Paulo Mora held two training days for artisanal fishermen from Puerto Aysén and Puerto Cisnes, representatives of the Crustacean and Crab Management Committee of the Aysén Region, within the framework of the GEF Technical Assistance Coastal Marine Governance.

Researcher, Paulo Mora, explained “it is important that Aysén Region developed projects have IFOP researchers’s support of. In particular, training workshops that were held for the members of management committee were very well received, and were considered very significant as support to enhance the work they do in preparing their management plans.”

Karen Walker held a methodological review workshop on pelagic fisheries, with the assistance of scientific observers and professionals from INDESPA and the Aysén Zonal Fisheries Directorate, which ended with a practical workshop for scientific observers led by Ramona Huilquira, scientific observer from Los Lagos Region.

In addition, Karen Walker, José Ojeda and Alejandra Lafon Head of the Aysén Headquarters, together with professionals from SERNAPESCA and Fisheries Zonal Directorate, visited Graneiros de Fiordo Austral plant in Puerto Chacabuco. There they were received by their Operations Manager Arturo Ramírez and held an interesting meeting on the operation of the plant and the artisanal sardine fleet in the Aysén Region.

Dr. Alejandra Lafon expressed “very grateful for the week’s work, I think it is very important to communicate our work in Aysén from the first source in the analysis, such as the researchers. I believe that this strengthens our interaction and dialogue with the users and with the team in the water, making our work more powerful.



[RETURN](#)