



IN THIS NUMBER

- How is the common hake doing in Chile? **1**
- Red squid (cuttlefish) stock assessment evaluation model was presented by IFOP at a workshop at the South Pacific Fisheries Management Organization **2**
- Abate Molina scientific vessel's crew is trained in automatic defibrillators use and first aid **3**
- IFOP Important contribution to jack mackerel stock assessment in the South Pacific Regional Fisheries Management Organization: **4**
- Novel research on Krill fishery in Climatic Change context **5**
- IFOP participates in the Seminar "Innovating with data: strengthening public auditing" **6**



How is the common hake doing in Chile?

ABATE MOLINA SHIP SET SAIL TO INVESTIGATE IT AND WHEN THE SCIENTIFIC CRUISER RETURNS, IT WILL HAVE DETAILS.

Yesterday, July 24th, Abate Molina scientific vessel set sail from Valparaíso's Port to investigate common hake's current status.

The cruise's general objective headed by marine biologist Esteban Molina, is to carry out a hydroacoustic survey, between Coquimbo Region northern limit and Los Ríos Region, to determine common hake stock.

Esteban Molina referred to the study carried out by IFOP on this resource "It is of great importance, since it allows to know in situ common hake stock " health's state " in aspects as relevant as demographic structure and reproductive condition".



The professional explained details about it "Common hake stock remains in a delicate condition, since it is still in overexploited category. Biomass, abundance and demographics information provided by this study is a great importance input for management decision-making in this resource and its fishery."

The cruise will take place between July 24th and August 25th, 2022 (33 days). In it, samples will be obtained that allow identifying and assigning echotracas corresponding to common hake, common hake biological samples to characterize its



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Esteban Molina, chief hake cruiser

demographic and reproductive structure. Quantify and characterize the accompanying fauna present in identification fishing hauls. And at each bio-oceanographic station, water column physical profiles, zooplankton and ichthyoplankton meteorological data and samples .

Daniela Díaz Guisado, IFOP linkage executive management international cooperation, development and strategic planning issues advisor referred to the ship's departure "This cruise is an important part of IFOP research work on an annual basis and implies a high degree of effort from crew and researchers who will be sailing for 33 days, and of many more people who make it possible for the cruise to develop" "Today we wanted to come and greet them and wish success on this trip".

Red squid (cuttlefish) stock assessment evaluation model was presented by IFOP at a workshop at the South Pacific Fisheries Management Organization

On July 21st, the first part of red squid (cuttlefish) assessment workshop was telematically held at South Pacific Fisheries Management Organization (SPRFMO).

Ignacio Payá from IFOP, presented a paper on the application of a state space model of surplus production in continuous time, known as SPiCT. This is the first exercise that integrates catch data and abundance indices (CPUE) of the fleets that fish in SPRFMO area and in the exclusive economic zones of Chile and Peru, which corresponds to FAO's area 87.

Work's details can be seen at <https://doi.org/10.13140/>



RETURN

Abate Molina scientific vessel's crew is trained in automatic defibrillators use and first aid

During July, Abate Molina Scientific Vessel Crew carried out 2 practical workshops on First Aid and Automatic Defibrillator use (part of the Vessel's equipment).

An AED, or automated external defibrillator, is an electronic device that allows heart rhythm examination and determine if an electric shock application is necessary in people who are in cardiac arrest or, as taught in the course, people who do not respond, do not breathe and have no pulse.

Those who find themselves in these emergency situations require immediate attention, since heart stops providing blood to the brain as well as to other organs and can cause death in minutes, which is why the successful incorporation of this device to BC Abate Molina, It means an invaluable contribution if a situation like the one described above arises.

This training was organized by Training and Prevention Areas belonging to Human Resources Department jointly with Marine Operations Department (DOM), included an online course and practical workshops on board of Abate Molina Scientific Vessel in which both crew such as Researchers and Technicians from Oceanography and Environment Departments, Direct Assessments and Management Areas and Oceanography Sections, thus trai-



RETURN



RG.2.2.18924.85126. There were also 2 presentations from China, one on surplus production model application and the other on sample sizes. sampling minimums and coverage percentages. Peru presented the biological considerations that should be included in an evaluation model.

Having people trained in AED use and in First Aid can mean the difference between life and death, especially in the context of research cruises where first aid is very relevant, given the distance from medical care centers. For this reason, the commitment to learning in the course is very relevant when it comes to knowing how to perform in an emergency, as indicated by Abate Molina Scientific Vessel's Captain Mr Enrique Quiero, "the need to train us is articulated from the crew itself, for the same reason they performed the course in a very participatory manner in the practical workshops, which were very clear and instructive for all participants".



ning all those who operate and/or use the ship in the different research cruises.

In this regard, Patricio Herrera, Marine Operations Department Head indicates that "the course was very useful, since it allows the entire Ship's crew as well as a good part of researchers who frequently embark, to have the knowledge and ability to help their colleagues in case of an emergency.

IFOP Important contribution to jack mackerel stock assessment in the South Pacific Regional Fisheries Management Organization:

Face-to-face participants of jack mackerel workshop. From left to right and bottom to top: Pablo Couve, Jonathon Pincay, Ignacio Payá, Carolina Lang, Tiffany Vidal, Ricky Amoroso, Niels Hintzen, Jennifer Briones, Aquiles Sepúlveda, Dan Ovando, Maite Pons, James Ianelli, Martin Pastoors, Lee Qi (photo credit: report of the 2022 jack mackerel benchmark workshop (scw14)).

During July, review and improvement workshop ("benchmark") of estimating abundance and biologically recommended catch for horse mackerel



RETURN



Face-to-face participants of the jack mackerel workshop. From left to right and bottom to top: Pablo Couve, Jonathon Pincay, Ignacio Payá, Carolina Lang, Tiffany Vidal, Ricky Amoroso, Niels Hintzen, Jennifer Briones, Aquiles Sepúlveda, Dan Ovando, Maite Pons, James Ianelli, Martin Pastoors, Lee Qi (photo credit: report of the 2022 jack mackerel benchmark workshop (scw14)).

in the South-Pacific Regional Fisheries Management Organization (SPRFMO) procedure was held in Seattle. The workshop had a total of 53 participants, including 3 independent experts, and was held in a hybrid format (face-to-face and remote). The Chilean delegation that attended in person was headed by IFOP researcher Ignacio Payá, and included the participation of Carolina Lang IFOP researcher., Aquiles Sepúlveda INPESCA director, and Pablo Couve doctoral student. This delegation work was complemented by several researchers telematic contribution from IFOP and INPESCA, and administrators from Fisheries and Aquaculture Undersecretariat.

The main topic discussed during the workshop was the impact of the improvements made by IFOP in individual growth estimation, natural mortality and the proportion of mature fish at age. IFOP research lasted around 4 years and have now been officially incorporated into OROP-PS scientific advisory process. This new information led to the conclusion that jack mackerel stock is more productive than previously thought, with faster individual growth and higher

abundance levels. This allows us to reaffirm that the stock condition has recovered to levels greater than the maximum sustained yield, and that this fishery precautionary management has been successful. This recovery is a first concrete step to improve the management of the ecosystem where this resource lives.

The final estimates with updated data until 2022 will be made this September at OROP-PS annual meeting of OROP-PS scientific committee, which will be held in the city of Seoul in South Korea.

Novel research on Krill fishery in Climatic Change context

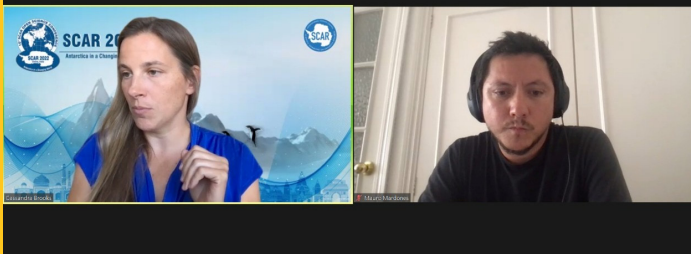
THIS RESEARCH WAS PRESENTED AT THE SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH 2022 ANNUAL CONFERENCE.

Between August 1st and 10th, 2022, the annual Scientific Committee on Antarctic Research Conference (SCAR) was held, which this year was organized by the Ministry of Earth Sciences (MoES), of the Indian Government in online mode.

Researchers from the Resources Evaluation Department, from IFOP's Fisheries Research Division participated in this event.

The conference has become SCAR's main activity supporting its mission to promote and facilitate international Antarctic and Southern Ocean science. These biennial meetings are fertile ground for exchange of the latest and





sis on data analysis and visualization and the application of integrated models to understand the dynamics of exploited marine populations.

IFOP participates in the Seminar “Innovating with data: strengthening public auditing”

At Universidad Adolfo Ibáñez (UAI) facilities in Viña del Mar, the Seminar “Innovating with data: strengthening public control” was held, an event organized by national fishery and aquaculture service (SERNAPESCA), Government Lab Public Innovators Network, an agency of the State of Chile, dependent on the Ministry of Finance and this higher education institution, in order to disseminate research and initiatives, SERNAPESCA together with UAI, have developed based on science data and image processing for fishing and aquaculture control.

In this context and introductory mode, María Paz Hermosilla, Director of UAI Government Laboratory, Diana Krüger, UAI School of Government Dean and Esteban Donoso, SERNAPESCA National Sub Director, presented.

Continuing the presentations with the work corresponding to “Cargo reports analysis to find fraudulent fishing vessels” project, by Dr. Sebastián Moreno, UAI academic. And then with the project “Video



RETURN



“Applying integrated stock assessment models to diagnose exploitation status and population variables in Antarctic Krill.”

Mauricio Mardones^{1,2,3,6}, César A. Cárdenas^{4,6}, Francisco Santa Cruz⁴, Lucas Krüger^{4,6}, Lorena Rebolledo^{3,4}, Andrea Piñones^{3,5,6}

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greatest results in Antarctic research and a place where future collaborations are born.

Mauricio Mardones, IFOP researcher explained that “The presentation was part of the doctoral thesis work that I am doing at Universidad de Magallanes within the framework of Antarctic and Sub-Antarctic Sciences Program jointly with the Chilean Antarctic Institute, in which César Cárdenas (UMAG-INACH) is the Thesis director. My thesis project focuses on developing aspects related to the evaluation of strategies for Krill fishery management in a Climatic Change context in the Southern Ocean. In particular for this conference, progress was made in the development of models that integrate environmental and ecological components to the assessment of the Antarctic Krill stock in the Antarctic Peninsula”.

This talk will be available on the SCAR page during this week. (<https://scar2022.org>)

Mauricio Mardones is a Resource Assessment Department researcher and is currently working on methodological approaches for benthic and demersal fisheries within the department, with an empha-



analysis to detect anaerobic seabeds in salmon farming centers", which was presented by Dr. Miguel Carrasco, also an UAI academic .

The seminar ended with a discussion panel moderated by Javiera Miranda, Government Laboratory Public Innovators Network's Coordinator , dependent on the Ministry of Finance, in which María Paz Hermosilla (UAI), Constanza Silva, Sub Director (S) of Aquaculture participated from SERNAPESCA, Esteban Donoso (SERNAPESCA), and Catalina Gutiérrez, Head of Agile Consulting of Government Laboratory, state agency.

The event was broadcast via streaming and had a great turnout with a very par-

ticipatory virtual public diversity which made various inquiries to the exhibitors online. Meanwhile, various representatives associated with the sector attended presencially and on behalf of IFOP's Executive Director Jaime González Information Technology Department 's head assisted (DTI), and Gonzalo Muñoz, General Coordinator, attended representing its Sampling Management Department.

Jaime González, information technology department's head explained "Although issues related to auditing are addressed during the program, it can be pointed out that data science in conjunction with innovative technologies allows addressing diagnoses, proposals and solutions that can also be research oriented. The activity is an invitation to continue developing innovative tasks, either from scratch, replicating and/or adapting different techniques associated with data science".

About the event, Gonzalo Muñoz, said that "this type of progress will undoubtedly be of great support to control work, complementing and expanding its actions, so necessary to achieve adequate surveillance and control in the areas addressed, fishing and the environment, and at the same time it visualizes how this type of information can contribute to different organizations and their different roles, like ours, in the sense of helping us in advising decision-making for the sector".

