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IFOP organizes Advanced International Colloquium "Fish mortality status due to FAN and its impacts in a changing environment"

INTERNATIONAL EXPERTS ATTENDING THIS EVENT: PER JUEL HANSEN (UNIVERSITY OF COPENHAGEN, DENMARK), THOMAS OSTENFELD LARSEN (TECHNICAL UNIVERSITY OF DENMARK), GUSTAAF HALLEGRAEFF (TASMANIA OF UNIVERSITY, AUSTRALIA), DON ANDERSON (WOODS HOLE OCEANOGRAPHIC INSTITUTION, UNITED STATES).

Guests: Paulina Artacho, Alejandro Clément.

On Thursday, October 10th, in Puerto Varas, the Advanced International Colloquium "Status of FAN fish mortality and its impacts in a changing environment" will be held. It is sponsored by COI-IPHAB (Intergovernmental Oceanographic Commission), as part of the GlobalHAB scientific agenda, with the support of the Chilea government through CORFO and with CREAN-IFOP collaboration, it will allow to comprehensively address knowledge gaps and to generate a synthesis of its current state linked to technological and scientific strategies, as well

as approaches to mitigate impacts. As a way to strengthen the relationship with the environment, part of the activities considered in this Colloquium, a set of talks aimed at decision makers, professionals, academics and the general public has been included.

You can watch the live broadcast

<https://www.facebook.com/1871967802832922/videos/1254975338037553/>

Among the topics that will be discussed we can mention:

- Panoramic vision: fish mortality mechanisms, ichthyotoxins, detection and identification methods and their standardization.
- Climatic change and fish killing algae.
- FAN monitoring management in the Chilean salmon industry.
- Distribution of HABf INDEX and salmon farming economic impacts analysis.

Leonardo Guzmán M, Aquaculture Division Head, explained "Algae blooms that cause fish mortality are a growing concern matter for socio-economic interests linked to sustainability and food security of shellfish and living resources. Fisheries and aquaculture development as part of coastal resources integrated management is particularly susceptible to ichthyotoxic events threat and their consequences. While



Editorial committee
Luis Parot D. / Executive Director
Gabriela Gutiérrez V. / Journalist
Graphic design
Mario Recabal M. / Senior graphic designer

these events are classified as “fish mortality,” there are associated impacts on other components of coastal marine ecosystems, including wild fish populations, benthic macrofauna and macrophytes. Apart from the aquaculture and fishing industry sector, algae that kill fish have not been adequately considered and the issue has not been systematically addressed in the scientific community worldwide.

Known ichthyotoxic marine microalgae are often identified as causative organisms, but taxonomic and biogeographic uncertainties persist in species distribution. The role of climate change that leads to environmental regimes changes and, therefore, to possible higher frequency, magnitude and biogeographic distribution of algal blooms that cause fish mortality; These changes pose a challenge to understand the ocean of the future. The environmental factors knowledge that drive the blooms dynamics, are not fully understood, and this has hindered to predictive models development for forecasting and risk assessment of fish mortality events. Even the proposed mechanisms

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Chileans participate in seminar to reduce bycatch in Argentina

RESEARCHERS CLAUDIO BERNAL OF THE INSTITUTE FOR FISHERIES DEVELOPMENT AND LUIS COCAS FROM THE FISHERIES AND AQUACULTURE UNDERSECRETARIAT.

On September 18th and 19th, at the Fisheries Research and Development National Institute (INIDEP), Mar del Plata, Argentina, a workshop was held to raise



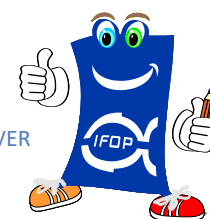
awareness and generate actions to reduce bycatch in fisheries in that country. The workshop included business chambers, captains associations, civil society organizations, government representatives belonging to the fisheries sector and scientific references of Argentina, as well as leading researchers in the reduction of discards from the United States and Portugal (EU).

The sectorialist of the Subsecretariat of Fisheries and Aquaculture of Valparaíso, Luis Cocas, and the senior researcher of Fisheries Development Institute (IFOP), Claudio Bernal, were invited to the activity, who presented on the integral and progressive approach to solve the problem of Discard and bycatch in Chilean fisheries.

These conferences were held within the framework of the Project “Protect marine biodiversity: Ecosystem Approach to Fisheries and Protected Areas”, which is executed by the Ministry of Environment and Sustainable Development, with FAO’s support. “This Project seeks to broaden the view on fishing activity by promoting the Ecosystem Fisheries Approach (EEP), contemplating not only the fishing resource but also the social and environmental aspects of the activity. In this sense, attending to the reduction of bycatch, through awareness raising, sharing successful examples and in an area of dialogue and debate, allows to improve knowledge of the treatment of the subject and strengthen the participatory approach sought from the Project.” Said Francisco Yofre, Officer in charge of FAO Argentina.

Subsequently, both professionals were invited to share their experiences with INIDEP researchers, an Argentine institute dedicated to research in fisheries and aquaculture in that country; They visited the work done in the area of technology where the use of new selectivity systems for fishing gear and also the development of new products from fish waste and bycatch are investigated.

“The experience was very positive, since we shared our process of in-



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vestigation and discard reduction with public sector professionals, research, fishermen and Argentine businessmen, in a very sincere dialogue atmosphere,” Bernal said.

In Argentina there is an interest in initiating a bycatch management and reduction process and sees in the Chilean approach a model that allows addressing this problem, highlighting the regulatory framework, work methodology and modern elements of control-incorporation, which was very motivating. For our part, we highlight the technical capabilities of Argentine colleagues, mainly in the area of fishing gear selectivity and search for added value of fishing, which through collaboration and exchange we can complement our progress and strengthen both processes,” noted Cocas.

IFOP has a outstanding participation Cleaning Iquique's Beach

Within the framework of the International Beach Cleaning Day, a work team from IFOP Iquique participated cleaning in Playa Huayquique, the activity was organized by the Chilean Navy.

Various institutions also attended among them; Pesquera Corpesca, Pesquera Camanchaca, Petrobras, Instituto del Mar, Ministry of Environment, Schools, ITI (Iquique International Port Terminal).

Eliana Escudero, head of IFOP Iquique headquarters explained “Our participation in this type of activities is important since the Fisheries Development Institute as the State’s scientific advisor, in fishing matters, aquaculture and marine ecosystems conservation, we must create people’s awareness and foster our oceans care, so affected by climatic change and unwanted elements accumulation.

In the activity garbage of all kinds, plastics, cigarette residues, decaying food, beverages and beer cans were collected, we hope to have contributed a little bit, to create awareness of the care of our oceans, much remains to be done ...

I hope that COP 25, of which we will be an important part, will reach agreements worldwide to address these issues.



I would like to congratulate the entire team that participated in beach cleaning; Vilma Astudillo, Bernardita Carvajal, Juan Cortes, Carlos Gaspar, Marianne Lichtenberg, Jayson Miranda, Marjorie Montecino, Yarely Montecino, Teresa Morales, Carolina Navarro, Víctor Quevedo, Diego Rojas, Juan Carlos Soto, Lans Urrutia, Sergio Varas, Antonio Yovich”.

IFOP Arica had a brilliant participation in the Science week organized by Explora

On Monday, October 7th, in Calle Colón between Sotomayor and 21 de Mayo in Arica, the Science Fair convened by Explora Regional Associative Program, executed by Universidad de Tarapacá was held.

During this activity framed in the National Science Week, different insti-



to bring science closer to students, an action that helps foster critical thinking, analysis and problem solving, key tools in creativity and innovation development especially in children and young people. In addition, he expressed his gratitude to Regional Headquarters officials, for their commitment in this activity, and made a call to more institutions to join in the important task of promoting science in the region of Arica and Parinacota ”.

IFOP Iquique was part of Explora Science Week participating with an interactive stand

THE ASSISTANTS COULD BECOME FISHERIES DEVELOPMENT INSTITUTE SCIENTISTS A FEW MINUTES

Explora Conicyt organized this science fair on Saturday, October 5th , in Buque Varado sector, in Cavanca Park, Iquique, this instance aims to carry out scientific dissemination in a fun way.

Eliana Escudero, IFOP Iquique’s headquarters Head explained “Our stand maintained a lot of concurrence throughout the day, due to the interest showed by both in children and adults to know more closely, our main pelagic resource, anchovy.

The Scientific Observers and researchers explained in simple words what we actually do, with this fish, giving children the opportunity mainly to extract their gonads, measure and weigh some specimens. Otoliths observation was also performed, in magnifying glasses, explaining the objective of extracting them. The Otoliths are calcareous structures that are found in the fish skull (middle ear) and whose function is balance, however, when growing in proportion to the fish leaves marks (concentric rings) that allow to determinate their age ”.

“I thank all the people who participated for their creativity, organization, their commitment: Carolina Navarro, Marjorie Montecino, Yarely Montecino, Marianne Lichtenerg, Lans Urrutia, Antonio Yovich, Jayson Miranda, Juan Cortes, Diego Rojas.



tutions such as the Environment SEREMI, Colleges, NGO groups, IFOP and different Departments and Faculties of Universidad de Tarapacá participated under the stand mode. The theme proposed for this year was “The Sun”. taking advantage of its axes: The Sun as Star, Solar Energy, The Sun and Life, Native Peoples and the Sun and its Transversal Axis.

In that context, Fisheries Development (IFOP) researchers and scientific observers from the Institute explained to all assistants, in a simple and didactic way, the effect of the sun on the vertical distribution of different marine species that inhabit the coasts of northern Chile. In addition, the workers took advantage of this instance, to transmit to the visitors the importance of taking care of the environment, and that it is everyone’s duty to collaborate in some way in this cause.

The IFOP stand, had numerous samples of marine organisms that are collected by the institution’s workers in their work aboard artisanal and industrial fishing vessels, a collection that was highlighted by the organization, very visited and appreciated by students and community in general.

Hernán Padilla, Head of IFOP Arica Headquarters, stressed out that “these types of instances allow us



It is very important for IFOP, especially in our city, to publicize and spread our work,"concluded Eliana Escudero.

Researcher Karen Belmar attends Cephalopods course in Mexico

Between September 23rd and October 4th, in Mexico, the course "Ecology and Biology of

Cephalopods" was held. From Chile, Karen Belmar Fisheries Development Institute researcher attended, she presented "The methodology and the main results of cuttlefish fishery monitoring in Coquimbo, Valparaíso and Biobío regions".

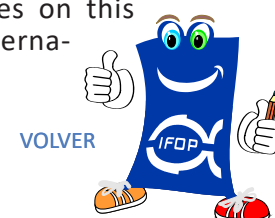
The course's objective was: to provide theoretical and methodological bases that allow to learn cephalopod mollusks biology, ecology and fisheries with emphasis on the American seas species. The search for relevant information analysis and criticism that allows theoretical concepts integration with real phenomena in teamwork or individually was encouraged.

Karen referred to the course "It was very important for me because all the biological aspects and the relationship with the environment of a fishing resource of great importance for Chile like cuttlefish and how these processes affect its biomass on our coasts were widely seen.



This is relevant to understand the resource dynamics in the artisanal and industrial fisheries of the country. The course was made up by researchers, doctoral students and master's students from Mexico, Costa Rica and me"

Karen Belmar Salinas, is a Marine Biologist. Her research line is related to fisheries and the search for a response to changes associated with environmental, fishery and biological factors that account for these variations. In addition to further research on cephalopods biology and reproduction, so during 2019 she has conducted several training courses on this topic, both nationally and internationally.



IFOP Talcahuano committed to regional science dissemination

Multiple activities have been carried out at IFOP Talcahuano; among them we can mention participation in beach cleaning, where Scientific Observers of Fisheries Development Institute, together with Hualpen school students, communal authorities and organizations, went to Caleta Lengua equipped with bags, masks and gloves and They removed about 480 kilos of plastic containers, cigarette residues and papers. In this way these wastes will no longer be in the area or end up at sea. This is an area very visited by locals and tourists.

On Saturday, October 5th, between 12 and 22 hours, the “Conce de Ciencia” festival was held at the Universidad de Concepción, a free community event organized by Explora Biobío and that was the activity to start the celebration National Science Week.

IFOP Talcahuano was part of this beautiful scientific initiative with a stand called “Guardians of the Sea” in which visitors were shown Fisheries Development Institute’s marine species collection, preserved in jars with alcohol and dissected species; for the community outreach program.

Base Chief Jorge Cornejo “thanked Observers Heraldo Álvarez and Danilo Oro, Researcher Ruth Hernández as they directed and answered all the questions and concerns of the participating community either from the exhibition or our institution.”

