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Oscar Guzmán, Board of Directors Chairman passed away IFOP mourns his departure

With deep feelings of loss, we inform Fisheries Development Institute Board of Directors President Mr. Oscar Guzmán Fernández de cease, he was a Fisheries Execution Engineer, from Pontificia Universidad Católica de Valparaíso Marine Sciences School, with more than 45 years of experience in fisheries and aquaculture

re research. He had a Postgraduate Degree in Industrial Fishing Gear Design from the Tokai Regional Fisheries Research Laboratory, Tokyo, Japan.

He was a pioneer in scientific prospecting in Antarctica in 1967 and in marine science research.

In our Fisheries Division, he was in charge of Sampling Management Department. Jointly with those who shared the responsibility of conducting and managing that Department, he developed an entire organization system, collection's planning and control, data review and transmission derived from biological-fishing sampling; The Institute's scientific observers program was consolidated for fisheries studies and monitoring.

Those who knew him and were closest to him remember him as a very careful person in his work, and together with those who accompanied him in the Sampling Management Department, he promoted monitoring of the ISO-9001 quality management systems and precision. ISO-17025 implementation.

His permanent proactivity and initiative to improve management and data



collection processes were relevant contributions, allowing the Institute to achieve national and international recognition. He was a progressive and promoter of modern, agile and technological sampling management systems, at a collection system service, to achieve quality standards, field information quantity and timeliness required by different research programs. It also stood out for being an important international benchmark in terms of recognizing, valuing and developing on board scientific observers work, work that is often misunderstood and especially in their training, qualification and constant training.

In 2013, he organized the 7th International Fisheries Observers and Monitoring Conference, a seminar held for the first time in South America, in which more than 180 delegates from 26 countries met, in order to exchange knowledge and experiences around fisheries relevant fieldwork.

Luis Ariz, IFOP researcher, recalled “in 2016, in Management Areas Section we had a request to analyze and propose improvements to AMERB studies quality of information. The truth is that we did not have many ideas on how to face the issue. So, we spoke with Oscar, who generously gave us a couple of introductory classes, becoming our advisor, pioneering a process of designing an information quality system for the management areas.

With Oscar we build a productive working relationship and friendship. He was always committed to what he did, going beyond mere reports delivery ; He was generous in sharing his knowledge and criteria to face complex situations. I am grateful for having shared time with him, a simple person, who with his resilient attitude communicated optimism, encouraging him to get up and not let himself be overcome by adversity ”.

Oscar Guzmán, always showed special interest in technological innovation projects formulation and development, a sign of his permanent concern for innovation and curiosity in scientific matters.

As a husband and father, he was a caring and dedicated person always there for his family. He used to passionately express and defend his opinions and points of view.

He currently served as Board of Directors President and as Chilean A.G Fishing Professionals and Aquaculturists Association Studies Director.

A great professional, but above all a great person who has undoubtedly leaved a mark on those who shared and worked with him inside and outside the Institute.

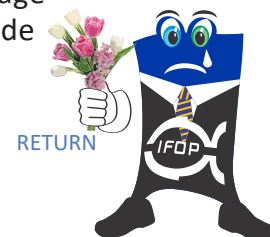
His departure is a great loss and we express our sincere condolences to his family.

Luis Parot Donoso
IFOP Executive Director

IFOP starts up a management areas conservation and care dissemination campaign

IT IS FOCUSED ON EDUCATING ABOUT ILLEGAL FISHING SERIOUS EFFECTS AND THE IMPORTANCE OF CARING FOR MARINE FORESTS

Fisheries Development Institute, through its Monitoring Program for Fisheries under Management Area Regime, carries out its annual dissemination activities aimed at artisanal fishermen organizations in charge of management areas. On this occasion, the importance of the monitoring carried out in the environmental and economic spheres for the sustainability of fisheries in Management Areas (AMERB) is made known through four posters.



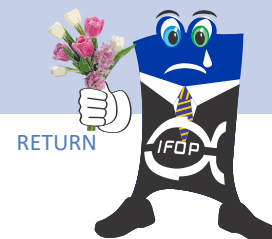
- Environmental Monitoring: its purpose is to know and interpret local level climatic effects (g. ENSO) (AMERB) and how this can help to make decisions of an administrative nature.
- Economic Monitoring: indicates profitability levels obtained by the regime and its level of contribution to fishermen income.
- Conservation of Marine Forests: mentions the role they play in maintaining diversity of marine species and sweeping actions on their ecosystems effects .
- Chilean Abalone resource Illegal Fishing in Management Areas : it relates the effects that illegal activity has had respect to total authorities granted quotas measuring its extractive and economic impact

The dissemination activity will focus on the country north-central area, where a total of 55 fishermen's organizations located between Valparaíso and Antofagasta regions will be visited, and will also take advantage of information gathering required for both monitoring.

The dissemination process will begin at the end of November 2020 and will continue during 2021 summer season.

Pedro Romero (pedro.romero@ifop.cl) and Eliana Velasco (eliana.velasco@ifop.cl), are researchers in charge of this initiative. Pedro Romero, is an agricultural and environmental economist, currently dedicated to Management Areas regime economic, social, organizational and institutional impact evaluation.

Eliana Velasco, is a Biologist, with emphasis on marine biology, as well as Agricultural Engineer, currently dedicated to research in habitat structuring species such as brown algae and the influence of regionally reported phenomena (e.g. ENSO) on AMERB climatological variability.



Abate Molina Scientific Ship set sail to evaluate Anchovy resource

BETWEEN ARICA, PARINACOTA AND ANTOFAGASTA REGIONS

On the night of Monday, November 23rd, Abate Molina scientific vessel set sail from Valparaíso's port, with Fisheries Development Institute professionals and technicians, to evaluate anchovy, the captain of the ship is Enrique Quiero and the head of the cruise is fisheries engineer Francisco Leiva

The cruise's general objective is to carry out hydroacoustic prospecting between Arica, Parinacota and Antofagasta Regions to evaluate anchovy stock present in the study area.

Specific objectives:

- To carry out 41 acoustic transects between Arica and the Pajoso bay (south of Antofagasta)
- To evaluate shore bias between Iquique's south and Tocopilla's north (between 21° and 22° LS) with a craft boat.
- To carry out a sufficient number of reconnaissance fishing sets to characterize anchovy stock
- To carry out oceanographic stations in designated study area (100)

Management Areas regime Economic Diagnosis

Benthic Resources Management and Exploitation Areas (AMERB) are a fisheries administration regime that assigns exclusive rights to use and exploit benthic resources (invertebrates and algae) to legally constituted Artisanal Fishermen Organizations (OPA). Since its inception, it has meant a relevant administrative change, which recognizes in fishermen's organizations their collaborative capacities to take on tasks of co-management, thereby favoring hydrobiological resources conservation and encouraging sustainable and environmentally friendly practices.

IFOP, in its advisory role to Fisheries and Aquaculture Undersecretariat (SSPA), for fisheries sustainable management, under precautionary and ecosystem approaches, has responsibility of providing timely and reliable data and information to this public agency, which is operationalized through permanent research programs execution, among which is "Fisheries Monitoring Program under Management Area Regime", which annually evaluates administration regime performance and prepares proposals for its continuous improvement, in which their economic situation has been studied and diagnosed.

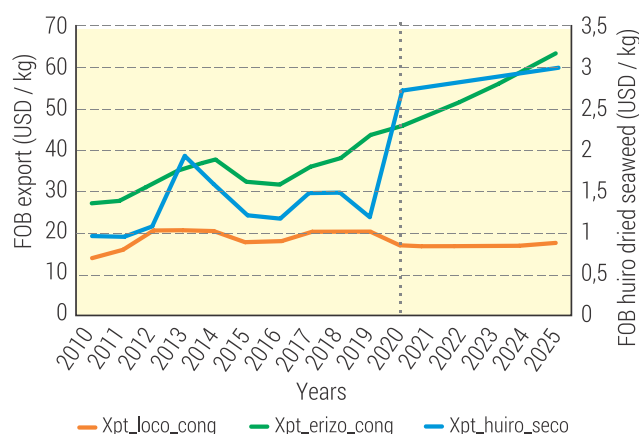
Of its main results, in general terms, the regime has been successful from the economic point of view, presenting a growth rate in its landings and gross income of the order of 6% per year for the last eight years; where 68% of the areas presented income above costs, being an activity that contributes to fishermen income and generates economic incentives necessary to favor conservation of natural capital corresponding to benthic resources.

However, the regime presents a set of difficulties associated with its economic development, such as a significant illegal activity presence, which in the case of the Chilean abalone resource (Concholepas concholepas), reaches levels equi-

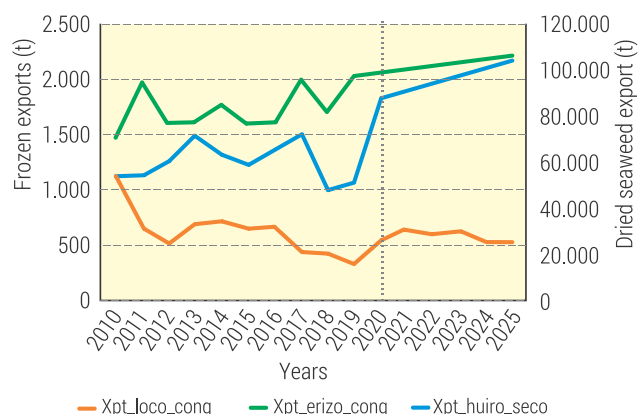


valent to extracting between 79% and 122% of the total allowable fees; the low expectations in the export markets for the main resources extracted, as a result of international competition, generate uncertainty in economic growth in the medium and long term. In this sense, the projections made for chilean abalone, hedgehog and huiros resources show growth rates in FOB price and export volume between -2% and 7% (see figure), a situation that may condition the development expectations of the regime, if its growth is sustained by the ups and downs of international demand.

Export price projection to 2025



Projection of exports to 2025



I understand that AMERBs are complex socio-ecological systems, it is necessary to analyze Management Area Regime considering different subsystems or factors that intervene in their development, in such a way that it facilitates deci-

sion makers in the application of precautionary approach and ecosystem, for the conservation and sustainable use of hydrobiological resources. In this way, in the study of the 2019 Monitoring Program, it is proposed to prepare a Development Strategy for the AMERB regime, focused both on the capabilities that users present (OPA), as well as the characteristics and potentialities they possess. the localities where they are located. The purpose of the strategy is to establish goals and objectives expected by the public administration, granting criteria that allow planning the actions required to fulfill this purpose, in addition to focusing public investment efforts on the generation of productive capital and the reduction of gaps that presents the artisan sector ascribed to the AMERB Regime.

To review the document, click on the following link:

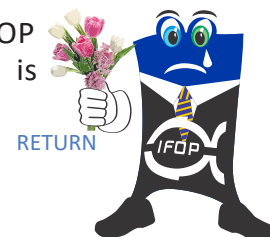
http://190.151.20.106/exlibris/aleph/a23_1/apache_media/8186D2JQYB8DRYB1VUE8GRSN6AEYTQ.pdf

By streaming: Wild fish sanitary situation evaluation and monitoring program results will be shown

IT IS ORGANIZED BY IFOP'S AQUACULTURE RESEARCH DIVISION

Tomorrow, Tuesday, November 24th, between 09:30 and 11:00, "2019 Wild and Feral Fish Sanitary Situation in fresh and sea water evaluation and monitoring scientific research program closing workshop", developed by (IFOP) Fisheries Development Institute Hydrobiological Health Department .

This research is part of IFOP permanent program which is



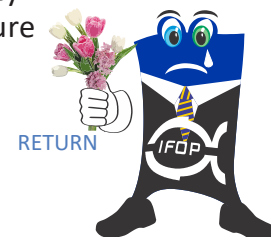
“The event, in particular, considers, in addition to results delivery research program present stage, presentations by Undersecretariat of Fisheries and Aquaculture (Subpesca) representatives, as well as Universidad de Concepción researchers, IFOP specified, adding that the workshop is open and will be held through the Meet platform. The event has limited capacity and requires prior registration.

Those interested should write to juancarlos.quintanilla@ifop.cl and / or paola.olmos@ifop.cl

Cooperation agreement was signed by Fisheries Development Institute and Directemar

On November 25th, 2020, Fisheries Development Institute (IFOP) and Maritime Territory and Merchant Marine General Directorate (Directemar) formalized an historic link between both institutions by signing a framework agreement for scientific technical cooperation. This agreement establishes general collaboration basis between DIRECTEMAR and IFOP, in research, extension, education and training.

Dr. Jaime Letelier Pino, Head of IFOP's Oceanography and Environment Department, explained “as a first collaborative action, a specific cooperation extension was signed in “interoperable Information System implementation, which systematizes and integrates fishing data , aquaculture and climatic change “FAO execution project and implementation carried out by IFOP within the framework of a GEF-FAO national project, mandated by SUBPESCA and Environment Ministry” Strengthening adaptation capacity in Chilean fishing and aquaculture sector to climatic change”.



executed as established by Fisheries and Aquaculture General Law (LGPA) agreement, through the Economy and Smaller Companies Undersecretariat, being its technical counterpart Fisheries and Aquaculture Undersecretariat (Subpesca).

The program's objective is to establish monitoring for wild and feral fish high-risk diseases (RAS) detection, present in freshwater, estuarine and seawater bodies, in those areas where fish productions have been established. salmonids at an industrial level, thus spanning from the La Araucanía Region to the Magallanes Region and the Chilean Antarctic. This considers both salmonid and non-salmonid species evaluation, with respect to exotic and endemic viral and bacterial pathogens detection in our country.

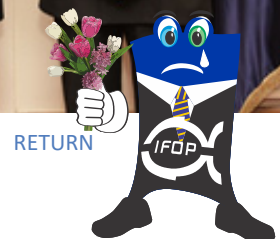
For VA Ignacio Mardones Costa Maritime Territory and Merchant Marine General Director , signing this agreement, “not only endorses an historic alliance between both organizations, but also allows future capabilities to increase, by generating interaction in those shared competence matters , allowing experiences exchange, useful information for a better functions fulfillment ”

Some agreement activities to be carried out are:

Algunas actividades a realizar en el convenio son:

- a) Research, training, extension;
- b) Joint publications Generation;
- c) Experts Exchange through talks, courses, seminars and boarding;
- d) Mutual information and data reporting exchange ;
- e) Feasibility of boarding staff dependent on DIRECTEMAR, on research cruises organized by IFOP.
- f) Cooperation for water samples collection oor other measurements of interest of Maritime Authority, considering IFOP developed projects research.
- g) Water samples and biological species laboratory analysis , according to DIRECTEMAR requirements.
- h) DIRECTEMAR staff Training in environmental and climatic change issues (mathematical modeling).
- h) Capacitación para el personal de DIRECTEMAR en temáticas ambientales y de cambio climático (modelamiento matemático).
- i) Maritime Authority support feasibility by mutual agreement between parties, to carry out operational and shipping activities for anchorages or taking samples acquired by IFOP.

- j) Other related contributions, such as experiences exchange in anchoring buoys or installation of environmental sensors in instruments owned by DIRECTEMAR or vice versa.



RETURN

IFOP will be using artificial intelligence in order to optimize fisheries research through fish images identification and classification

A modern system, based on artificial intelligence and implemented by Fisheries Development Institute, has successfully passed its pilot phase and is expected to enter a trial period during 2021.

This pilot system successfully identified and classified more than 80% of commercially important fish images that were entered into the Artificial Intelligence system.

Jorge Cornejo, Marine Sciences PhD and project manager, mentioned that “based on this achievement, it is expected to create an automatic fishing registration program. This program will use images obtained during fishing and unloading operations of main fisheries in southern central zone of the country. Given the large amount of image information that is obtained in each fishing operation and the number of fishing vessels in Chile, the proposed program helps to improve analysis and effective information use for research. In this way, the pilot program has managed to classify target fishery species and in the future it is expected to incorporate accompanying fauna classification. This will make it possible to modernize sampling and data collection management for fisheries monitoring studies”.

This Project was carried out for a year, and is part of the performance agreements that IFOP has with CORFO, Production and Promotion Corporation. IFOP workers Jorge Cornejo (head of IFOP Talcahuano), Judith Castillo, Guillermo Bendel, Aldo Poblete and Enrique Fernández, external advisor on artificial intelligence, participated in the project.

International “Management of Aquatic Resources with an Ecosystemic Approach” Seminar was inaugurated today

It is carried out via zoom and is transmitted simultaneously through Marine Sciences Chilean Society Facebook Live. The event brings together prominent panelists from the national and world science academy, who will present on how to It is making progress in the management of aquatic resources, with an ecosystemic approach.

This Tuesday, December 1st, International Seminar “Ecosystemic Approach Aquatic Resources Management: Advances, gaps and collaboration” was inaugurated, organized by Chilean Marine Sciences Society (SCHCM) and Chilean Fisheries Development Institute (IFOP).

The activity began with a Welcome Greeting from Fisheries Development Institute Director Luis Parot Donoso who appreciated the participation in the seminar and explained “this is a challenge that reflects concern for the environment, for the sustainability of the planet, of the ecosystems of life that exist in it. Which reflects a tremendous challenge for fisheries managers to find those tools that capture this ecosystem reality, but which is applied in practical terms to fisheries exploitation in each of our countries, the challenge is to do it now, not only taking care of human being interests, economic activity, social activity, entrepreneurship, but also doing it taking care of the ecosystem in which this resource must exist”.

The Chilean Marine Sciences Society president Marcelo Oliva explained “For a long time, we have been concerned about the need to generate scientific bases that allow us, as a Country, to face challenges involved in moving from an exploitation model,



management and administration of resources based on mono models specific to management based on an ecosystemic approach, an explicit mandate in Fisheries and Aquaculture General Law .

Thus, and during the XXX Congress of Marine Sciences (May 2010, Concepción), the Workshop “Ecosystemic approach in marine resources management” was held. In this first initiative, six presentations and an extensive round table were developed. Subsequently and during the XXXVII Marine Sciences Congress, held in Valparaíso in May 2017, the Symposium “Aquatic resources with an ecosystemic approach research and management” was held, an initiative of Doctors Eleuterio Yáñez (PUCV) and Dr. Luis Cubillos (UdeC), who on behalf of the Chilean Society of Marine Sciences (SCHCM) jointly with Fisheries and Aquaculture Research Council (CIPA) and Fisheries Development Institute (IFOP), convened a group of leading scientists who , based on their experience as researchers, from a multi-disciplinary point of view, allowed to highlight research and management with an ecosystem approach in Chile, identifying gaps and challenges.

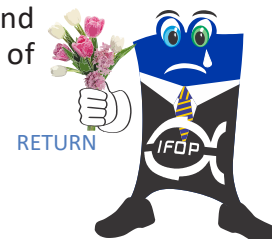
From that date until now, there have been important legal changes and new knowledge has emerged that warrant re-examining the situation and proposing various alternatives with a scientific and technological perspective that will support decision-making. In this sense, the Chilean Marine Sciences Society and Fisheries Development Institute are organizing the Symposium, which will update the state of knowledge on the matter, thus providing new information to consider in decision-making”.

At the inauguration, Dr. José Aguilar Manjarez, Fisheries and Aquaculture Officer, FAO Regional Office for Latin America and the Caribbean, participated with Management with an ecosystemic approach in aquaculture: a global vision, The presentation is developed on the basis for a critical examination of the use and integration of the Ecosystemic Ap-



proach to Aquaculture (EEA) and its possible evolution in the next decade. In addition, lessons learned from EEA experiences, opportunities and links between the Ecosystemic Approach to Aquaculture and the sustainable development agenda are highlighted. During the presentation, emphasis is placed on the spatial planning that has been developed as part of the EEA implementation efforts and the close links between this approach and initiatives such as “Blue Growth”, which constitute significant opportunities for the future of the approach. although their ability to address increasingly complex governance problems may be limited. Finally, it is deemed appropriate to reconsider the rationale behind the Aquaculture Ecosystemic Approach, taking into account ongoing developments within and outside the aquaculture sector.

Finally, the Director of the Chilean Marine Sciences Society and academic from tUniversidad de Magallanes, PhD. Claudia Andrade “extends the invitation to all the public, to participate in the transmissions of the international seminar, and makes a call to future generations of marine biologists and marine science researchers, as well as the members of the Marine Sciences Chilean Society, to become familiar with this issue, so that there is greater cooperation from all sectors to carry out the ecosystemic approach strategy, which promotes the conservation and equitable sustainable use of aquatic resources”



“Science to protect the sea”

Campaign Metro Valparaíso / Explora Valparaíso, Ministry of Science



Las Américas Station, Scientific Observers



Villa Alemana Abate Molina Station



Villa Alemana Otolitos Station



La Concepción Station "Knowing and Caring for Seafood From Chile"

IFOP Coquimbo Base, delivered 30 gifts for the young people of the Oscar Pereira Residence

