



## IN THIS NUMBER

- Environmental Economics and Natural Resources Research Workshop **1**
- IFOP developed a course for Scientific Observers **2**
- Abate Molina: sailed off north for horse mackerel biomass quantification **2**
- IFOP researchers attend a fisheries bioeconomy course in Denmark **3**
- International Oceans Experts Board met in Abu Dhabi **4**



## Environmental Economics and Natural Resources Research Workshop

Researchers Camilo Torres (Economy Area) and Pedro Romero (Management Area), participated in the Environmental Economics and Natural Resources Sixth Research Workshop, held between March 21th and 22nd, 2019 in Universidad de Talca Postgraduate School offices in Santiago.

The workshop aim was to review advances in research carried out in Chile, in areas of Ecosystem Conservation and Weather Change, Fisheries and Aquaculture Economics, Environmental Economics and Energy, Economics of Atmospheric Pollution and Fisheries Regulation, Marine Products Markets Price Formation. In this instance, the Undersecretariat of Fisheries and Aquaculture (SUBPESCA), the Ministry of the Environment, Universities of Chile, Austral, Talca, Concepción, Biobío and Alberto Hurtado, among other national and foreign universities also participated. In addition, the important it was sponsored by Environment for Development (EfD).

On this occasion, Camilo Torres researcher in MSc fisheries economics presented the topic entitled



“Estimation of indirect employment associated with the fishing industry in Chile, 2016”, where by means of the Product Input Model application (Leontief, 1985), quantifies generated indirect employment by fishing extractive, aquaculture and manufacturing sectors related to these productive activities, for each region of the country.

While Mr. Pedro Romero presented “The allocation of a right of territorial use contributes to hydrobiological resources conservation?, the case of benthic resources management and exploitation areas (AMERB)”, where through the application of a counterfactual model, economic impact of administration measurements are evaluated.



### Comité editorial

Luis Parot D. / Director Ejecutivo  
Gabriela Gutiérrez V. / Periodista

### Diseño gráfico

Mario Recabal M. / Diseñador Gráfico Senior

## IFOP developed a course for Scientific Observers

On March 13rd and 14th, in Valparaíso, within the annual activities of ASIPA Project – Fisheries Monitoring highly migratory resources framework. Biological fishing aspects 2019, was held Scientific Observers Course.

Scientific Observers are technicians and professionals trained to collect data on fishing activities and biological samples of caught species, on board of vessels or at landing ports. Based on this information, IFOP scientists can generate knowledge and provide scientific advice required by fishing or aquaculture institutions of the country; in particular, the one that is required by the Fisheries and Aquaculture Undersecretariat, for our fisheries sustainable management.

Patricio Barría researcher and project leader referred about this course, “It is an activity that we are carrying out every year, with the purpose that people who work in the project can take knowledge of the program objectives and scientific and technical challenges, as well as, data and information requirements. In addition to emphasizing that fisheries highly migratory resources monitoring is crucial to be able to advise sectoral authority for fisheries regulation and normalization, based on a scientifically validated monitoring system, for which it is important to have quality assurance standards. quality.

Researchers and scientific observers reported on previous years activities. In this instance, results were analyzed, technical errors were identified and the modifications and changes introduced were explained. In addition, it is a space in which researchers explain data requirements for 2019, they are informed about sampling operational modifications plans, data collection protocols and forms and collection and biological samples treatment.

The Scientific Observers 2019 course is a collective instance where each project member has the opportunity to communicate to the team about their progress and difficulties in fulfilling their responsibilities. In this way, they explain to the group the work and adaptations they have made, with their successes and failures “.

Project researcher Hernán Miranda referred to this activity emphasizing the peculiarity that both Scientific Observers, as well as investigators, directors or invited personalities participate like exhibitors within



the course. Which makes this a real discussion workshop about difficulties and solutions experienced during the data collection. The synergy that we seek to produce among participants occurs in an almost natural way and we feel part of the co-construction of generated knowledge. In this context we must add that traceability or data collection traceability is an attitude and field Observers permanent activity, which shows responsibility and commitment degree with which they assume assigned tasks; still and in spite of difficulties that often exist in the field. Attitude that gives us confidence in collected information quality.

Oscar Guzmán, IFOP council president, highlighted “This type of activities is fundamental to developing the entire data collection system, it seems to me that it is an indispensable instance for all involved people in data collection from project managers to Scientific Observers, all agree on what needs to be done, considering in this way the number of errors in data collection is reduced and there is a better understanding of all interested parties “

## Abate Molina: sailed off north for horse mackerel biomass quantification

Research area considers resource’s evaluation between Arica (18° 25’LS) and Valparaíso (33° 30’LS)

A team of 27 professionals and technicians from Fisheries Development Institute (IFOP) embarked on Sunday, March 17th, at 6:30 p.m., at Valparaíso Port (Valparaíso Region) aboard (B / C) Abate Molina scientific vessel. The campaign will allow to quantify horse mackerel biomass, between the regions of Arica – Parinacota and Valparaíso, using the hydroacoustic method.

The project leader is José Córdova fishing engineer and the ship’s cap-





tain is Enrique Quiero, the research cruise will for 42 days.

#### Specific objectives

- To estimate horse mackerel stock size and its spatial distribution.
- To characterize and analyze in a temporal – spatial context, demographic composition and interannual variation of horse mackerel resource, through biological indicators
- Characterize and analyze the oceanographic conditions present at the research area and its relationship with the species spatial distribution.
- To determinate horse mackerel specimens stomach contents and to characterize trophic behavior in the area and study period.
- Ecosystemic information survey from acoustic cruises to support fisheries management based on the ecosystem. Phase II: Analysis in the temporal and spatial context of main species groups, present in acoustic echograms since 2003 up to date.

## IFOP researchers attend a fisheries bioeconomy course in Denmark

Between February 25th and March 1st, Camilo Torres (fisheries economics researcher) and Mauricio Ibarra (evaluation of fishery resources researcher) participated in “Bio-Economic Management Strategy Evaluation using FLBEIA” course, held in the International Council for the Exploration of the Sea (ICES) in Copenhagen, Denmark <https://www.ices.dk/news-and-events/news-archive/news/Pages/Using-FLBEIA.aspx>

FLBEIA is a reference in which a multi-stock and multi-fleet bioeconomic simulation model is constructed describing a fishery under a Management Strategies Assessment (MSE) approach. FLBEIA is a package or toolkit of the R software, called FLR.

The course’s objective was to train fisheries scientists and advisers in MSE approach analysis implementation using FLBEIA. It was organized in a series of sessions with an alternative emphasis on theoretical concepts and practical work. These sessions provided participants with the knowledge, skills and quantitative tools to undertake MSEs in their own fisheries



using FLBEIA. The course addressed management strategies evaluation, operational models preparation from monospecific studies with a fleet to multi-species with multiple fleets, the bioeconomic evaluation of management strategies for mixed short- and long-term fisheries, among other contents.

Camilo Torres referred to the importance of the course “According to the current regulation, fisheries management is necessarily associated with administrative measures establishment aimed at achieving conservation objectives and fishery resources sustainable use. It is expected that such measures, whether the restriction of catches or effort, have a positive effect on the stock, from the biological point of view. Along with the above, it is necessary to previously know the effect that such measures will have on the social and economic dimension of fishing. The bioeconomic modeling allows to incorporate indicators in these three areas, calibrate them from one or more ideal or potential states of the fishing activity and compare them with the current situation of the fishery. A working area of the IFOP Economics Section is the evaluation of different exploitation strategies related to the dynamics of catches and fishing effort, considering their effect on social and economic dimension of fisheries. In this context, training in FLBEIA use will be fundamental in achieving results in this area of economic research, particularly in the demersal crustacean fishery of Chile, which we are addressing. Learning advanced techniques in bioeconomic modeling will allow to enhance the current analysis, in order to advance towards an ecosystemic approach to fisheries management “.

Camilo added “It was an enriching experience from a personal and professional point of view, because these instances allow you to generate a link with researchers from other countries, learn about different fishing realities and how the integration of the social dimension is being addressed. economic in fishery management decisions “.



Mauricio Ibarra said “Each activity, in which it is feasible to know the international reality, is positive and enriching, since it is possible to have ideas on how to address certain management problems and what have been the different experiences in this regard.”

Mauricio Ibarra is a Fishing Engineer and a Master in Statistics. His areas of interest are statistical modeling and the evaluation of fishing resource populations. The last four years at IFOP he has worked as a researcher at Resource Evaluation Department, particularly in demersal crustaceans stock evaluation.

Camilo Torres is a Fishing Engineer and Commercial Engineer, has a Diploma in Economics and a Masters in Econometrics. His areas of interest are the bioeconomic modeling of fisheries and the applied econometric analysis. He has worked for the past four years as a researcher in the Economics Section of the Fisheries Evaluation Department at IFOP.

## International Oceans Experts Board met in Abu Dhabi

On March 3rd and 4th, in Abu Dhabi, United Arab Emirates, some thirty experts on various ocean topics, including Mauricio Gálvez Larach, Fisheries Engineer and IFOP Division Chief, met to identify solutions to Oceans related problems. Then they participated in the World Oceans Summit organized by the multinational media company The Economist Group in the same city between March 5th and 7th.

The High Level Expert Board for a Sustainable Oceanic Economy is an initiative promoted by Norway Prime Minister, Mrs. Erna Solberg and the President of the Republic of Palau, Mr. Tommy Esang Remengesau, Jr., which voluntarily convened 12 Prime Ministers and Presidents, among them President Sebastián Piñera.

Participating in this panel are Australia, Chile, Fiji, Ghana, Indonesia, Jamaica, Japan, Mexico, Namibia, Norway, Palau and Portugal, and their representation is done through members of respective Foreign Ministries, which in the case of Chile relies in Norway



ambassador Mr. Waldemar Coutts, who was Environment and Ocean Affairs Division (DIMA) director and was in charge of the Our 2015 Ocean conference.

“The objective of this High Level Experts Board is to build up a new and shared understanding of the current and potential state of the oceans economy and ecology, and to generate a set of policies, governance, technology and investment solutions aimed at catalyzing a truly sustainable oceanic economy. The Board will issue several documents by 2020, including a synthesis report with recommendations; a summary scientific report; and, a set of articles on matters such as contamination by plastics; production of animal protein in the oceans; ocean energy and mineral sources; financing, insurance and subsidies for the oceans; governance of the oceans; maritime security; tourism, among others “. <https://oceanpanel.org/index.html>

Gálvez explained “Chile was invited to participate in this initiative, in my opinion, because of the good relations and fluid contact that our country has with Norway, but also because in the last 10 years we have been a world leader in the conservation of the oceans. through the creation of Marine Protected Areas that cover about 43% of our jurisdictional waters, and by the fierce combat that we have given to illegal, unreported and unregulated fishing (INRR fishing).

My appointment as a member of the International Experts Group by our Foreign Ministry is a recognition to IFOP in the first place, as an institution that articulates the State’s advice on fisheries, aquaculture and marine conservation matters. Personally, it is a pride, but also a great responsibility, to participate in this group that is made up of renowned scientists from Australia, Norway, Japan, Portugal, Mexico, Denmark and the United States, among others. “

