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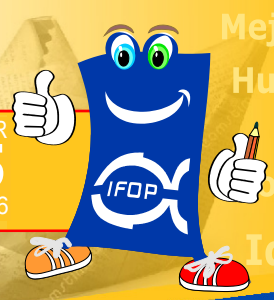

IFOP
INFORMATION
BULLETIN

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Luis Parot is the new Executive Director of IFOP

This is his second time leading the institution, having previously served from 2018 to 2022.

Luis Parot Donoso is a Fisheries Engineer (E) from the Pontifical Catholic University of Valparaíso, class of 1973, and holds an MBA. He has a distinguished professional and political career in the Valparaíso Region.

His professional life has been linked to the municipal sector, where he served as: Director of the Social Area, Director of Operations, and Municipal Administrator in the municipalities of Viña del Mar, Valparaíso, Villa Alemana, and Zapallar.

Between 2013 and 2014, he served on the Board of Directors of IFOP. And between 2018 and 2022, he was the Executive Director.

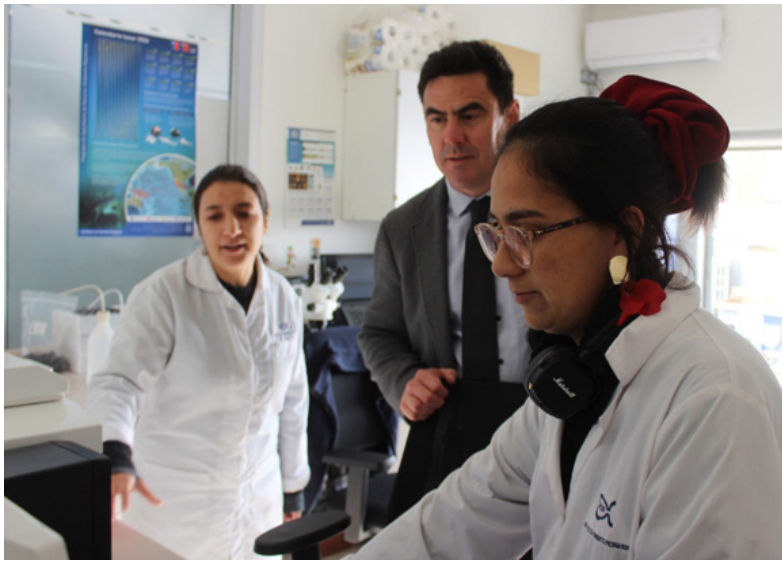
Parot spoke about his arrival as Director of IFOP: “From a professional standpoint, it has been a great challenge. I believe it is an institution that represents a world of work that I am passionate about. Everything related to aquaculture, fisheries, climate change, and monitoring is very exciting, a great stimulus, and a great challenge. From an emotional standpoint, it has been very intense due to the excellent reception I have received within the institution, which bodes well for a very good work environment.

I hope we can achieve the goals we have set for ourselves. We know the situation

Editorial commitee
Luis Parot D. / Executive Director
Gabriela Gutiérrez V. / Journalist

Graphic design
Mario Recabal M. / Senior graphic designer

is complex from a financial perspective, but we have needs to improve the quality, timeliness, and relevance of fisheries and aquaculture research in Chile. We need to build capacity, unity, and teamwork with the Undersecretariat of Fisheries. Fortunately, I have a close relationship with the Undersecretary, so I hope we can contribute to the growth of the institution and improve the quality of the advice we provide to the State of Chile."



Undersecretary of Fisheries and Aquaculture Visits IFOP, Valparaíso

On Friday, May 15, Undersecretary of Fisheries and Aquaculture Osvaldo Urrutia Silva visited the Fisheries Development Institute (IFOP) in Valparaíso. During his visit, he met with IFOP Executive Director Luis Parot Donoso and IFOP Chairman of the Board Gabriel Yany, where they discussed various topics and received presentations on the institute's main projects.

The Undersecretary also toured the Otolith Laboratory and the Planktology Laboratory of IFOP's Department of Oceanography and Environment. There, he learned about the laboratory's activities, including the identification of planktonic species as well as fish eggs and larvae such as anchovy and sardine. He also learned about the advanced equipment and activities the institute uses in its sampling.

Oceanographic Modeling Reveals Key Anchovy Egg and Larval Routes Between Peru and Chile

A binational workshop of the GEF Humboldt II project analyzed particle drift simulations and detected areas of high connectivity and retention along the coastal strip of southern Peru and northern Chile.

Lima hosted the workshop "Oceanographic Modeling and Larval Connectivity of Anchovy between Southern Peru and Northern Chile (16°–26°S)" from April 22 to 24, 2026. The activity, organized by the Binational Group on Fisheries Oceanography and Modeling of the GEF Humboldt II project, aims to provide scientific evidence for the joint management of the shared anchovy stock. Participants included researchers from IMARPE (Dr. Dante Espinoza, Cinthya Ramos, and Fredy Cárdenas) and IFOP (Dr. Katty Donoso, Dr. Jessica Bonicelli, Dr. Juan Faúndez, and Francisca Osorio).

During the meeting, trajectories of particles representing eggs and larvae were evaluated. These trajectories were simulated using OpenDrift and forced by daily currents from the CROCO-PISCES biogeochemical model. Preliminary results indicate that the greatest connectivity is concentrated in

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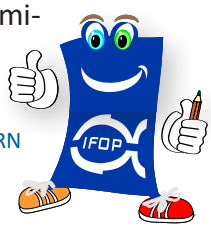

the coastal zone (0–50 km), from Punta Bombón (17.17°S) to Caleta Camarones (19.23°S). Additionally, areas of high local retention were identified at the Arica Elbow and in the bay north of Ilo (Peru). The predominant transport pattern was from Chile to Peru; under El Niño-related conditions, the flow increased slightly in the opposite direction (from Peru to Chile).

These findings help delineate potentially critical areas for anchovy reproduction and recruitment, key information for coordinating management measures between the two countries. The working group will continue refining the simulations and integrating new oceanographic scenarios to strengthen connectivity estimates along the Humboldt Current System.

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PUC Students Enhance Their Field Training with Visit to IFOP and the Research Vessel Abate Molina

On Monday, May 4, students from the Natural Resources Engineering program at the Pontifical Catholic University of Chile (PUC), specializing in Marine Systems/Sustainable Development, visited the Valparaíso facilities of the Fisheries Development Institute (IFOP). The purpose of the visit was to learn firsthand about IFOP’s work as an advisory body to the Undersecretariat of Fisheries and Aquaculture (SSPA).

During the visit, the students toured the research vessel Abate Molina and participated in presentations given by researchers and department heads from the Department of Oceanography and Environment (DOMA) and the Department of Economics and Statistics (DEE). These presentations focused on the role of science in the management and sustainability of marine resources.

In this regard, Dr. (c) Pedro Romero Maltrana, a researcher in the Management Areas Section of IFOP and instructor of the minor’s course, highlighted the importance of creating these types of training opportunities. In particular, he emphasized the value of students gaining firsthand knowledge of the

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research vessel's capabilities and infrastructure, as well as access to presentations by high-level specialists on how scientific evidence contributes to the SSPA's decision-making processes.

He also stressed that addressing the current challenges of the fisheries and aquaculture sector in Chile requires strengthening the training of professionals from diverse disciplines, capable of operating in an increasingly dynamic and complex environment.

Regarding the scope of the working group, established by the zonal director of the Undersecretariat of Fisheries, Marcos Soto Díaz, and including representatives from INDESPA, the Ministry of the Environment, academics from UNAP, researchers from CIAM, and Sernapesca, IFOP research proposals for 2027 were developed. These proposals focus on benthic monitoring and a technological platform for integrating regional environmental, fisheries, and small-scale aquaculture information. In the coming months, these proposals will be presented to the Regional Council for Climate Change (CORECC) and the Regional Government of Tarapacá (GORE).

IFOP Presents Results and Initiatives at the Regional Roundtable on El Niño and Climate Change

The heads of the Arica and Iquique regional offices, Claudia Molina and Hernan Padilla, accompanied by the Head of the Department of Oceanography and Environment (DOMA), Dr. Jaime Letelier, participated as active members in the second session of the regional roundtable on El Niño and Climate Change.

During this session, IFOP representatives presented the results of their monitoring of the 2026 El Niño event, which is currently developing and affecting the northern coast of Chile, impacting the availability of anchovy and jack mackerel, and consequently, both industrial and artisanal fishing activity in the region. Scientific evidence was presented thanks to the Ocean Alert, Prediction, and Observation System (S.A.P.O.) for fisheries resilient to climate change and El Niño.

Scientific Observers from Biobío and Los Ríos Strengthen Capacities in Sampling Applied to Benthic Fisheries at Workshop Held at IFOP Talcahuano

As part of the Benthic Fisheries Monitoring Project, nine scientific observers from fishing coves in the Biobío and Los Ríos regions participated in a training workshop held at the Fisheries Development Institute (IFOP) in Talcahuano.

The activity, organized by senior researcher Nancy Barahona Toledo, along with regional director Sergio Flores Claramunt and field coordinator Nelson Salas Jiménez, aimed to strengthen the technical skills of

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the participants, who play a key role in collecting information for the sustainable management of benthic resources.

The main session was led by Dr. Juan Carlos Saavedra Nievas, a statistician, who addressed field experiences, challenges in data collection, the strategic role of scientific observers and field coordinators, and the fundamentals of sampling theory. The event promoted best practices in data collection, directly contributing to the continuous improvement of field monitoring processes.

During the workshop, information requirements for 2026 regarding georeferencing were also defined, a topic presented by Óscar Gallo Alveal. Additionally, Nancy Barahona launched a new line of work focused on collecting data on waste generated in benthic fishing operations, with the aim of moving towards a more sustainable activity. The day concluded with the presentation of 2025 results by cove, highlighting the fishing activity of the benthic fleet and the data obtained through biological sampling.

Dr. Saavedra stated that "this workshop was a key space for linking statistical theory with the operational reality of the scientific observers and the field coordinator. Data representativeness is the basis of estimates, and this type of training ensures that the collected information is of the highest scientific quality, contributing to solid technical advice for decision-making in benthic fisheries."

The participants, meanwhile, highlighted the knowledge they acquired, from the conceptual perspective of sampling and its direct connection to their daily work, which is relevant to the generation of scientific information.

Finally, Nancy Barahona emphasized the importance of these types of opportunities "that facilitate direct interaction between researchers and scientific observers, with each contributing their experience and training, thus consolidating this activity, which is fundamental to the project, as is sampling."

This nationwide project, funded by the Ministry of Economy, Development and Tourism, is a key tool for generating scientific information to support decision-making in the management of benthic fisheries in Chile.

Chilean Scientist Presents at IFOP Workshop on Atacama Trench Exploration

Dr. Osvaldo Ulloa shared his experience on expeditions to depths of over 8,000 meters and the latest advances in the study of extreme ecosystems.

As part of the Benthic Fisheries Monitoring Project, a keynote address was given by Dr. Osvaldo Ulloa Quijada, professor at the University of Concepción and director of the Millennium Institute of Oceanography (IMO), at the Fisheries Development Institute (IFOP) in Talcahuano. The event was organized by senior researcher Nancy Barahona Toledo and Regional Director Sergio Flores Claramunt.

The researcher, renowned for his manned descents to the Atacama Trench—one of the deepest and least explored areas on the planet—presented the main milestones of his scientific expeditions, including his participation in the joint China-Chile JCATE 2026 mission.

During this latest expedition, led by the Institute of Deep-Sea Science and Engineering (IDSSE) of the Chinese Academy of Sciences and the IMO, Dr. Ulloa descended to a depth of more than 8,000 meters off the Mejillones Peninsula, reaching one of the most extreme points in the ocean.

In his presentation, he detailed the technical and human challenges involved in this type of exploration, from prior training to the operation of the submersibles, as well as sample collection and the

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performance of experiments in high-pressure environments. Through audiovisual recordings, he also presented some of the species observed at these depths. The area explored stretched from Pisagua to Caldera, encompassing more than 30 dives. The activities carried out there advanced the study of hadal ecosystems, key to understanding life in extreme conditions.

One of the highlights of his career is that Dr. Ulloa is the only person in the world to have descended in both submersibles capable of reaching the greatest ocean depths: the DVS Limiting Factor and the Fendouzhe.

The Regional Director of IFOP Talcahuano, Sergio Flores Claramunt, praised the event, stating that "this presentation brings high-level research of scientific relevance to our institution and its technical teams. He also expressed his gratitude to this distinguished researcher for generously and engagingly sharing his knowledge, as well as to our participating scientific observers." He concluded by emphasizing that "it was an important and interesting talk."

IFOP Participates in the 7th EXPOMAR in the Magallanes Region

As part of the celebration of Marine Month and its 62nd anniversary, IFOP is participating in the 8th EXPOMAR, organized by the Marine Biology program at the University of Magallanes. This interactive fair brings together public and private entities connected to the marine and environmental sectors. Its main objective is to showcase the actions and activities they carry out, demonstrating to visitors the wonders of our ocean and the importance of raising awareness about its conservation.

In the Magallanes Region, the Fisheries Development Institute (IFOP) conducts significant research programs that influence the decision-making of sector authorities on a monthly basis. In this context, professionals Claudia Zamora, Roberto Raimapo, and Pablo Salgado from the Aquaculture Research Division presented a booth showcasing IFOP's ongoing monitoring of marine toxins and harmful algal blooms (HABs). They indicated the locations of monitoring stations, the type of oceanographic data collected, and the collection of vectors and water samples for quantitative and qualitative analysis of harmful phytoplankton. Attendees had the opportunity to interactively observe, under a microscope, the dinoflagellate Alexandrium catenella, identified as the primary source of Paralytic Shellfish Poisoning (PSP). IFOP specialists also provided guidance on self-care measures.

Meanwhile, Alejandra Valdebenito, Juan Miranda, Alex Oyarzo, Cristian Vargas, and Eduardo Almonacid presented the research and monitoring programs of the Fisheries Research Division. Aquariums and fresh samples were designed featuring emblematic resources for artisanal and industrial fishing, such as the southern king crab (Paralomis granulosa), sea urchin (Loxechinus albus), and Patagonian toothfish (Dissostichus eleginoides), among others. The team of professionals provided attendees with information on the life cycle of these species, current management measures, and the dynamics of the fishery. They also explained the biological and fisheries indicators that IFOP monitors and that are used for decision-making within the fisheries management system.

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The fair was held in the covered courtyard of the Faculty of Sciences and Engineering on May 6th in Punta Arenas. Erik Daza, Head of the Campus, stated: "I am proud to highlight IFOP's participation for the eighth consecutive time in Expomar. This confirms the commitment of our professionals to promote the institution's role and strengthen the collaborative ties we have with the University of Magallanes. During this day, we set aside our usual responsibilities to carry out educational and outreach activities about IFOP's scientific work. We welcomed various delegations made up of students from preschool, secondary, and higher education, and we spoke with regional authorities and the general public. We are grateful for the support provided by the Executive Directorate and Technical Departments in making our participation in this event possible."

IFOP Transfers Northern Scallop and Japanese Oyster Seeds to Small-Scale Aquaculture Farmers in the Los Lagos and Los Ríos Regions

Between April 14 and 16, IFOP's Repopulation and Cultivation (RyC) team delivered seeds of key resources to strengthen Small-Scale Aquaculture (APE) in southern Chile.

The IFOP Repopulation and Cultivation team delivered seeds of northern scallop (Argopecten purpuratus) and Japanese oyster (Magallana gigas), produced at the hatchery of the Hueihue Experimental Center in Chiloé.

Seeds at the IFOP Hueihue Hatchery

This transfer represents the final stage of production in a controlled environment and is part of the objectives of the "Comprehensive Aquaculture Development Program for Artisanal Fishers and Small-Scale Aquaculture Farmers," implemented by IFOP with the Undersecretariat of Fisheries and Aquaculture (SUBPESCA) as its technical counterpart.

In this regard, the Program Director, Dr. Francisco Cárcamo, indicated that four APE initiatives were selected for this stage, representing diverse environmental, technological, and organizational contexts:

Beneficiaries and Projections

Cochamó (April 14): 16,000 Japanese oyster seeds were transferred to the Cascajal Seedling Workers' Cooperative, which seeks to diversify its aquaculture production in its AMERB (Area of Protected Natural Areas) in the Puchueguín sector, Cochamó commune.

Achao (April 15): 2,500 northern scallop seeds were delivered to the Achao Island High School. Professor Marcelo Moya, in charge of the aquaculture program, along with the students, placed the scallops in culture lanterns to complete the growth cycle on the school's land.

Corral (April 15): The Robalito Union received 8,000 Japanese oyster seeds. The organization already has experience in oyster farming and is currently developing an innovative polyculture system for mussels, algae, and oysters.

Maullín (April 16): 8,000 oyster seed were transferred to the center managed by aquaculturist Lucía Miranda, who leads the development of co-cultures of oysters and scallops in the Maullín River.

Strategic Importance

Sergio Mesa, technical counterpart, highlights the importance of this

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milestone for the sector, indicating that, as the Aquaculture Division of the Undersecretariat of Fisheries and Aquaculture, this Program is highly relevant because it has allowed us to advance in specific areas from the perspective of research, technology transfer, diversification, and training, all in support of the sustainable development of small-scale aquaculture. This current seed transfer will allow for the incorporation of more aquatic resources into the national aquaculture landscape and will provide training for artisanal fishers, artisanal fishing associations (APEs), and polytechnic high schools that offer aquaculture technician programs. This initiative is further complemented by another area we have been working on in conjunction with IFOP, which involves studying social skills, also known as soft skills (leadership, communication, organizational maturity), within artisanal fishing organizations, as this factor is crucial for the development of this sector.

Finally, the IFOP Repopulation and Cultivation team extends its gratitude to Cultivos Cholche for their support in the initial fattening of the seed in Hueihue Bay, and to AquaPacífico for the donation of cultivation lanterns to the high school.

IFOP Researchers Present at Brown Algae Technical Workshop in the Tarapacá Region

The technical workshop "Status of Brown Algae Fisheries in the Tarapacá Region: Resource, Fleet, Market, and Management Recommendations" was held at the end of April in the Océano Sur room of the Gran Cavancha Hotel in the city of Iquique. The workshop was organized by the Regional Directorate for the Arica and Parinacota, Tarapacá, and Antofagasta Regions, in conjunction with the Benthic Resources Unit of the Fisheries Administration Division of the Undersecretariat of Fisheries and Aquaculture.

This meeting brought together national and international experts, representatives from the artisanal fishing sector, academia, the Undersecretariat of Fisheries and Aquaculture (Subpesca), the National Fisheries Service (Sernapesca), the Chilean Navy, and researchers specializing in the study of macroalgae. The objective was to review the Tarapacá Region's Brown Algae Management Plan, developed by its respective Management Committee. Representing IFOP were the regional director of IFOP Iquique, Claudia Molina, the Field Coordinator, Carolina Navarro, and researchers Andrés Olguín, Pablo Araya, and Carlos Techeira.

Presentations included Raúl Madrid, representative of the Artisanal Fisheries Management Committee; Dr. Marcela Ávila; Dr. Omar Defeo (University of the Republic of Uruguay); Dr. Julio Vásquez; Dr. Erasmo Macaya; Gabriel Jerez and Juan Carlos Villarroel, professionals from the Undersecretariat of Fisheries and Aquaculture (Subpesca); and IFOP researchers Andrés Olguín, Pablo Araya, and Carlos Techeira.

On behalf of IFOP, Researcher Andrés Olguín presented "Fisheries

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Indicators for Brown Algae Obtained Through Continuous Monitoring: Benthic Fisheries Monitoring Program," while researchers Pablo Araya and Carlos Techeira presented their work to the attendees, titled "IFOP's Contributions to Brown Algae Monitoring to Advise Management" and "Research Requirements to Establish the Status of Brown Algae Fisheries and Benchmarks for Management," respectively.

The workshop was held over two sessions, morning and afternoon, and included a roundtable discussion. Thanks to the knowledge of the scientists and professionals, combined with the experience of the artisanal fishers, important conclusions were drawn, which will be incorporated into the respective management plan and subsequently disseminated among the users registered in the management plan.

Collaborative Scientific Study Addresses ASC Standard Requirement on the Risk of Wild Salmon Re-establishment in Chile

A collaborative effort between 16 Chilean salmon farming companies, Intesal, and IFOP to assess the risk of wild salmon re-establishment revealed a low presence of Coho salmon and an absence of Atlantic salmon.

The Chilean salmon farming industry has made significant progress toward international certification with a scientific study developed jointly by 16 companies in the sector, with technical management by the Salmon Technological Institute (Intesal) and execution by the Department of Hydrobiological Health (DSH) of the Fisheries Development Institute (IFOP). This study was developed within the framework of requirement 3.2.2 of the ASC standard, which addresses the need for scientific evidence to assess the environmental risk associated with the potential establishment of farmed salmon in natural ecosystems.

ASC is an independent, non-profit organization that sets the global standard for aquaculture products. To obtain and maintain ASC certification, certified sites must meet rigorous standards for biodiversity protection, water and energy use, fish welfare, and working and community conditions.

One of these requirements (identified as 3.2.2) relates to the potential impacts of salmon that may escape from fish farms and their ability to survive and reproduce in the wild, eventually forming permanent populations—a phenomenon known as feralization.

Until now, Chile operated under a mechanism known as a "Variance Request" (VR 271), which is essentially a temporary exception granted by ASC while sufficient scientific evidence on this specific issue is being gathered. The recent study provided concrete evidence supporting the low prevalence of Coho salmon and the absence of Atlantic salmon in the evaluated areas. Furthermore, genetic analyses were conducted to determine whether the specimens found originated from recent escapes or introductions made decades ago.

Unprecedented Collaborative Work

This achievement is the result of a unique collaborative effort in the sector. Following preliminary research between 2017 and 2022, a more comprehensive study was launched in 2023 for the period up to 2025. This research focused specifically on Atlantic and Coho salmon in southern Chile.

The study also identified, using a robust scientific methodology based on previous publications, critical areas where escaped specimens of both Coho and Atlantic salmon could establish themselves. However, during the study, only Coho salmon were captured in the wild, while no Atlantic salmon were found.

Furthermore, the reproductive capacity of these free-ranging populations was evaluated, revealing that

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a significant proportion of the Coho salmon exhibited reproductive abnormalities. This suggests that the risk of feralization depends not only on the presence of escaped fish but also on the existence of the necessary environmental conditions for successful reproduction. Furthermore, genetic analysis indicates that most of the captured Coho salmon are not recent escapees from fish farms, but rather populations that have existed in the wild for several generations.

"The approval of VR 271 demonstrates that when the industry works collaboratively and with evidence based on science, the most complex technical challenges can be addressed more effectively. This collective effort between 16 companies, Intesal, and IFOP not only allows us to technically fulfill a certification requirement, but also establishes a new standard of collaboration that is fundamental for future challenges," stated Alexander Jaramillo, Health and Safety Coordinator at Intesal.

"Undoubtedly, this collaboration not only contributes to maintaining this important international certification for Chilean salmon farming, but also allowed us to provide a scientifically based response regarding the potential risk of these species becoming feral in the areas where they are farmed. This is mainly supported by the absence of Atlantic salmon catches in the studied regions and the small number of Coho salmon specimens caught, which exhibited low reproductive activity. Maintaining this type of collaborative work, with its high technical and scientific level, will allow us to continue reducing the existing knowledge gaps regarding escapes of farmed salmonids in southern Chile," stated Juan Carlos Quintanilla, researcher at the IFOP's Department of Fish and Wildlife Research (DSH).

"At ASC, we value this study as a significant contribution to meeting requirement 3.2.2 of the standard, as it provides robust scientific evidence for assessing the risk of establishing farmed salmon in natural ecosystems. This type of research, developed with technical rigor and collaboratively between the industry and independent scientific entities, is fundamental to ensuring that certification decisions are based on verifiable and up-to-date data. At the same time, ASC will continue to promote continuous improvement, ongoing monitoring, and a proactive, science-based approach as key pillars for aquaculture, with farmed seafood certified according to the ASC Environmental and Social Standard," said Javier Unibazo, ASC Standards Team Leader.

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