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IFOP and CEPAN develop a book "From the Basin to the Subtidal. Biodiversity of Marine and Wetland Putemún Reserve".

IT IS FREE, DIDACTIC AND SERVES AS EDUCATIONAL MATERIAL

The Study and Conservation of Natural Heritage Center (CEPAN) and (IFOP) Fisheries Development Institute Department of Repopulation and Cultivation published the book "From the Basin to the Subtidal. Biodiversity of the Marine and Wetland Reserve of Putemún".

The official book launching was held on February 3rd in Chiloé, Castro city, Cultural Center. The joint initiative is aimed at the dissemination of the biodiversity area, providing descriptive elements designed so that the reader has an approach to physical-ecological knowledge, marine and bird species that inhabit the area identification and therefore, recognition and assessment of its natural wealth.

Scientific information on research and monitoring carried out for more than 10 years is presented, mainly

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DE LA CUENCA AL SUBMAREAL

BIODIVERSIDAD DE LA RESERVA MARINA Y HUMEDAL DE PUTEMÚN

by CEPAN and IFOP in the Putemún reserve wetland area, as well as numerous recent photographic records of aquatic, marine and terrestrial biodiversity. From the area current knowledge, where various ecosystems with difficult borders (basin, coastal wetland, marine reserve), are strongly connected in physical, ecological, as well as in terms of anthropic impacts, a



call is made to move towards a management and administration that incorporates and recognizes this high connectivity.

CALETAS DE LOS MOLLES AND PICHICUY BENTHIC MONITORING PROGRAM

Among IFOP yearly activities there is the main benthic fisheries Monitoring Program, a long-term diffusion plan that is being developed, whose main objective is to inform about scientific observers's work developed in different coves nationwide, such as monitored benthic resources.

This plan contemplates a progressive increase, in this context a dissemination experience was carried out in Pichicuy and Los Molles centers, located in northern Valparaíso Region. These places are visited by thousands of tourists during summer season, therefore, efforts were made with artisanal fishing representatives for the installation of banners and with gastronomic entrepreneurs for table covers delivery in various restaurants of both locations.

Informative table covers were gratefully welcomed by local entrepreneurs and tourists and will be available throughout the summer, so that people on their vacations can learn about IFOP work and at the same time this action makes much more pleasant waiting for their sea food that can be tasted in these coves.

Pablo Araya, scientist, Marine Science Bachelor and Marine Biologist in charge of this initiative, his research is focused on fisheries biological aspects of benthic resources, with high interest in connecting their fishing knowledge with the community.



TNC e IFOP organizan Talleres FishPath para las pesquerías de tiburones Mako y Azulejo en Chile

The Nature Conservancy (TNC), jointly with (IFOP) Fisheries Development Institute, organized several workshops aimed at the use of FishPath tool and process and data exploration and review for Mako Shark (*Isurus oxyrinchus*) and Blue shark (*Prionace glauca*) in Chile.

“FishPath is an interactive process, supported by an online tool, which allows fishery resource managers, fishermen and other actors in the fishery to identify, compare and discuss different fishery resource management options, in order to reach a capture strategy that helps the resource sustainability. The FishPath process and philosophy is based on the principle that each fishery requires an individualized approach to identify and solve existing challenges in a participatory way.

FishPath also includes identification and improvement of analysis and management capabilities aimed at the different actors involved in fishery. During the first workshop convened by IFOP and



VOLVER





TNC, the workshop group applied FishPath process and tool for the identification of data collection options, stock assessment and management measures more appropriate for the context of the mako and blue shark fishery "explained Natalio Godoy from TNC.

Dr. Patricia Zárate referred to the situation of mako and blue sharks "globally, the world's leading authority in charge of inventorying the conservation status of animal and plant species, known as the International Nature Conservation Union (IUCN) it has in their Red List of Threatened Species (Red Book) the mako shark as Endangered species and the blue shark as Nearly Threatened.

In Chile, blue and shortfin mako sharks are caught in a targeted manner in the northern part of the country, but also as associated fauna mainly with dorado fisheries, swordfish and small pelagics. The majority of caught sharks correspond to juveniles and there are no administration measures that regulate their capture and protect the sustainability of these resources in the long term.

For fisheries administration, it is essential to have reliable, trustful and timely information that allows to properly support adopted measures. In this context, the Highly Migratory Resource Fisheries Monitoring project carried out by IFOP has collected biological and fishery information on the target species swordfish (*Xiphias gladius*), and secondarily from the mako sharks (*Isurus oxyrinchus*) and blue shark (*Prionace glauca*) since 2001 in industrial longline fleets, and since 2002 in artisanal longline, spinel and gillnet fleets to the present ".

Regarding the workshop, Dr. Zárate commented "we learned how FishPath tool works to organize

and document the information of shark fishery in Chile. On this occasion, there was different actors participation in the area, including scientific observers, researchers from different institutions of the country and the Undersecretariat of Fisheries and Aquaculture, who completed a dynamic questionnaire about fishery characteristics, including biological attributes and life history of the species, operational characteristics of the fleets, socio-economic aspects, as well as the regulations and laws that affect this fishery. Subsequently, data from the Highly Migratory Resource Fisheries Monitoring project carried out by IFOP was explored.

After the first FishPath workshop, a technical group led by Dr. Ricardo Amoroso, an expert in fishery resources evaluation and an external consultant at TNC, focused on the review, organization and exploration of fisheries IFOP collected data, with in order to propose a system to unite various data sources and use them in evaluations, as well as to gain available data better understanding "

Dr. Ricardo Amoroso added " FishPath tool was developed with the search for solutions for fisheries with poor data in mind. The case of shark fisheries in Chile is a bit different from other fisheries, since there is a follow-up program carried out by IFOP that allows deeper investigation into the status of the resource. However, the review and consolidation of all available information in a participatory workshop is a critical stage in data evaluation of fisheries with poor data, since it allows identifying main uncertainties and areas of improvement in the monitoring system. From FishPath process, several days were dedicated to this work and at a later stage another joint workshop will be carried out between TNC, IFOP, and other actors in



which the analyzes suggested by the FishPath tool will be carried out to have a diagnosis of the resource state in order to guide management measures adoption ”.

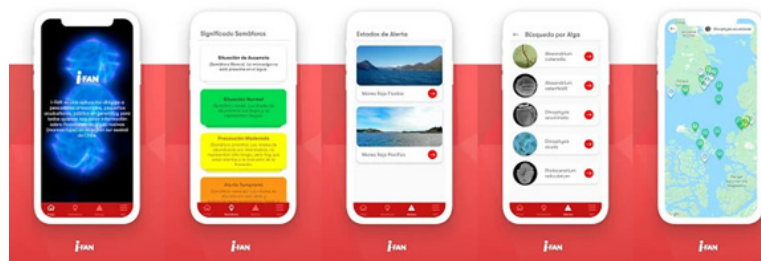
“We will continue working with FishPath tool and process thanks to the collaboration with TNC in order to deliver options to evaluate and manage the fishery, along with its advantages and disadvantages, incorporating recommendations that may include catch limits, gear restrictions or a set of other strategies and to indicate the direction that we must follow for the correct fishing administration of these resources ”concluded Dr. Zárate.

HARMFUL ALGAE: CREAN LAUNCHES ITS MOBILE PHONES APPLICATION UPDATE

THE I-FAN APPLICATION AVAILABLE IN GOOGLE STORE (ANDROID) AND APPLE STORE (IOS) IS FREE AND WILL NOTIFY USERS THROUGH MESSAGES ISSUED TO THEIR MOBILE PHONES, EVERY TIME AN AREA CONTEMPLATED IN MONITORING PROGRAMS (FJORD OR PACIFIC) IS UPDATED WITH MAIN HARMFUL TAXA ABUNDANCE VALUES.

Two years ago, Fisheries Development Institute (IFOP) launched i-FAN its mobile application wich aims to inform and alert Alexandrium catenella presence , main dinoflagellate associated with paralytic toxins poisoning in the country, constituting an early warning about Harmful Algae Blooms (FANs) of this microalgae in 223 stations distributed between Los Lagos and Magallanes regions and Chilean Antarctic belonging to the “ Chilean Fjords and Channels Red Tide Management and Monitoring Program ”.

As of Monday, February 24th, an i-FAN updated version is available for free download, which will incorporate 76 sampling points belonging to the “Management and Monitoring Program for Harmful Algal Blooms and Marine Toxins in the South Central Pacific Ocean from Chile (36 ° – 44 ° S) ”, which extends from the Biobío region to the Aysén region, with stations between 2 and 10 miles. In addition, it will incorporate other harmful taxa information such as Alexandrium ostenfeldii, Dino-



physis acuta, Dinophysis acuminata and Protoceratium reticulatum.

Pamela Carbonell Arias, CREAN researcher, explained that the application has a system that allows users to know through a color scale (white, green, yellow, orange and red) the alert state that is conditioned by main harmful taxa relative abundance associated with marine toxins (paralyzing and / or lipophilic) presence.

“By integrating both monitoring to our app, it allows users to know the status of the relative abundances of five harmful taxa, in more than 300 stations distributed between the regions of the Biobío to Magallanes,” said Pamela Carbonell.

Abate Molina set sail for horse mackerel research

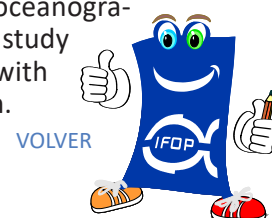
On March 16th , and for 42 days, Abate Molina scientific ship, set sail in order to research horse mackerel between Arica Parinacota and Valparaíso regions. The ship’s crew is made up by 27 people.

The Abate’s captain is Enrique Quiero and fishing engineer José Córdova as cruise head.

The research general objective is horse mackerel resource biomass quantification, between Arica and Parinacota – Valparaíso regions, using the hydroacoustic method.

Specific objectives are:

- To estimate horse mackerel stock size and its spatial distribution.
- To characterize and analyze in an spatial-temporal context, horse mackerel resource demographic composition and year-on-year variation, using biological indicators.
- To characterize and analyze oceanographic conditions present in the study area and their relationship with the species spatial distribution.





- To determine horse mackerel's stomach content and characterize specimens trophic behavior in the area and period of study.
- Ecosystemic information gathering from acoustic cruises to support ecosystemic-based fisheries management; Horse mackerel integrated analysis of trophic behavior oriented key species classification of low trophic level, according to the MSC standard.



Monitoreo vía Web de
biomasa y distribución de
algas pardas
FIC-R BIP 40013671



NEW TECHNOLOGIES FOR BROWN ALGAE CONSERVATION AND SUSTAINABILITY IN ATACAMA

THE PROJECT WILL ALLOW THE DEVELOPMENT OF A WEB GEOGRAPHICAL INFORMATION SYSTEM THAT CAN BE CONSULTED ONLINE WITH BROWN ALGAE BIOMASS AND DISTRIBUTION INFORMATION, WHICH WILL HELP FISHING AUTHORITIES AND MANAGEMENT COMMITTEES TO HAVE PERTINENT, ADEQUATE AND REAL-TIME INFORMATION TO ADEQUATELY EVALUATE MEASURES AND ACTIONS ESTABLISHED IN THE MANAGEMENT PLANS.

Considering brown algae fishery enormous social and economic importance in Atacama region and the need to incorporate new technologies and methodologies for its preservation, Universidad Católica del Norte (UCN), at its Coquimbo Headquarters, has dedicated in recent years important efforts for its conservation and fishery sustainability.

As a result of this UCN effort, between 2015 and 2017 it generated a remote evaluation model for macroalgal biomass based on an unmanned aerial vehicle (UAV) use and Geographic Information Systems (GIS), which allowed estimating available biomass and harvestable brown algae in limited times.

This new model, came to contribute to traditional biomass assessment methodologies, explains Mg. Eduardo Manzano Munizaga Coquimbo based UCN School of Risk and Environmental Prevention project and academic director.

This first initiative laid the foundations for FIC-R Atacama project "Brown algae biomass and distribution Web Monitoring" (FIC BIP 40013671), awarded by the UCN in 2018 and executed in three provinces of the region (Huasco, Copiapó and Chañaral) Undersecretariat for Fisheries and Aquaculture (SUBPESCA), the National Fisheries and Aquaculture Service (SER-NAPESCA) and Fisheries Development Institute (IFOP) support.

More information at the following link (page 42):

<https://www.flipsnack.com/DICOA/revista-idie-ucn-n-7/full-view.html>

