

Leiðandi
vettvangur í tíu ár



Experience from the implementation of camera and electronic surveillance to monitor discards and bycatch in Chile

Luis Cocas, Fisheries Management Division, Under Secretariat for Fisheries and Aquaculture, Government of Chile



SJÁVARÚTVEGS
RÁÐSTEFNAN

Experience from the implementation of camera and electronic surveillance to monitor discards and bycatch in Chile



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Fisheries Management Division
Under Secretariat for Fisheries and Aquaculture
Government of Chile

Remote Electronic Monitoring in Fisheries, Iceland November 7th 2019



Undersecretariat
for Fisheries
and Aquaculture

Chilean Government

Contents

- General background of fisheries and its management in Chile
- Discard and bycatch regulations in Chile
- Electronic tools (EMS) to monitor fishing fleets' compliance with discard and bycatch regulations in Chile



REPUBLIC OF CHILE

120000 km² Territorial Sea

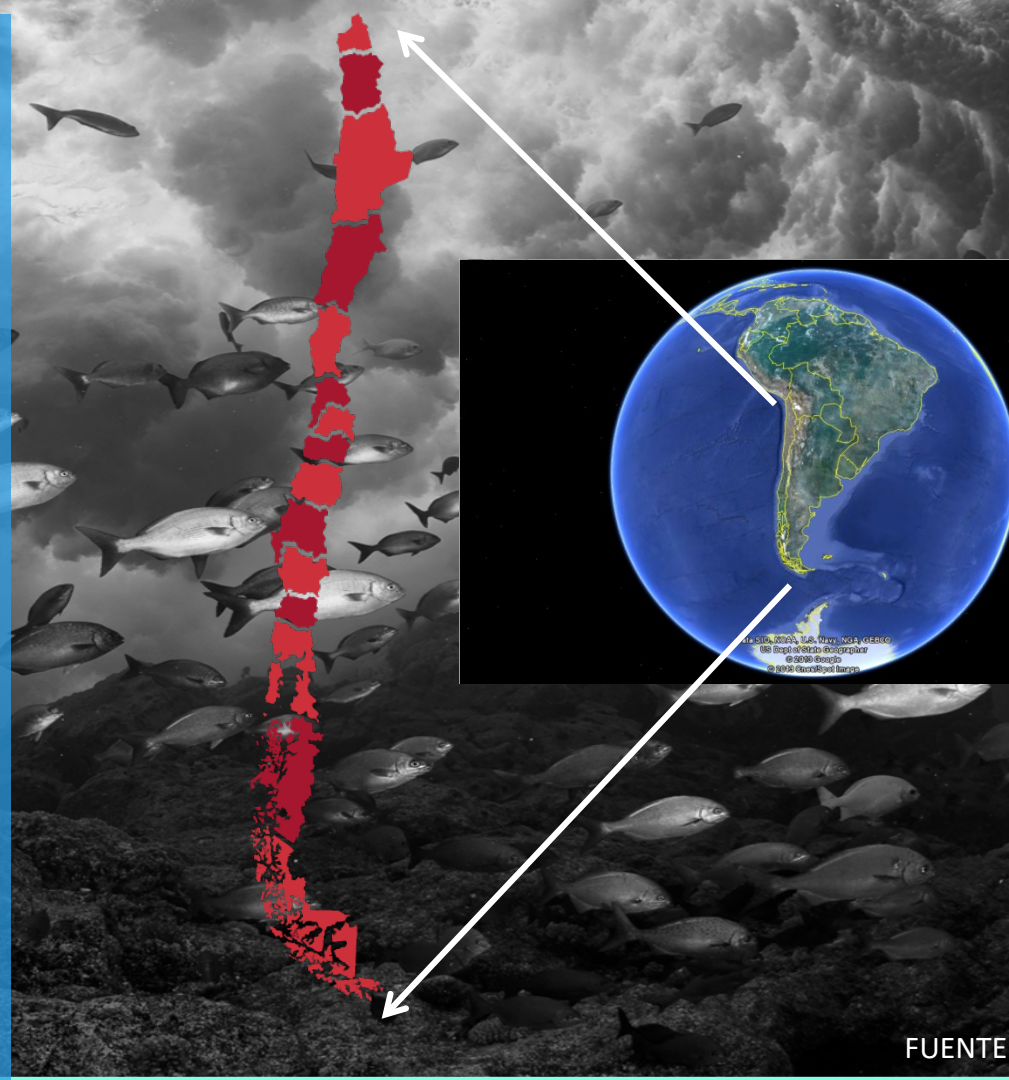
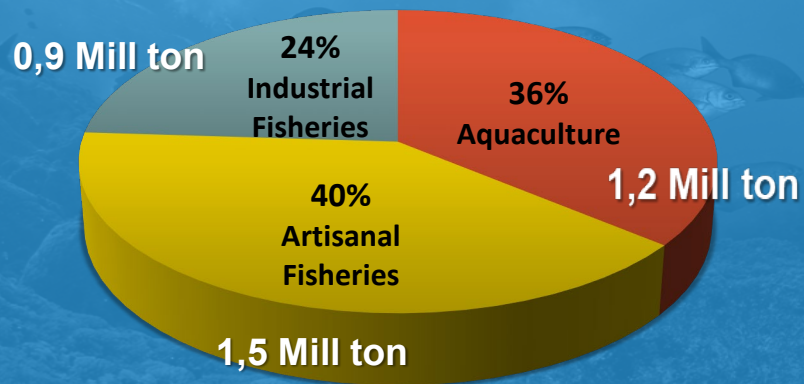
3,7 million de km² de EEZ (10th largest)

4400 km Seashore

24% coastal and ocean protected waters

Landings in 2018

3.600.000 metric tons



Fishing Users in 2018



91.353
Artisanal
fishermen



13.101
Artisanal boats
< 18 mt



869
Processing plants



465
Fishing harbors



53.147
Recreational
fishermen



3.700
Aquaculture facilities



2.076
Markets



5 Marine reserves
8 Marine parks
10 AMCP-MU



140
Industrial vessels

Agencies in charge of Fisheries and Aquaculture in Chile



Research



Private corporation founded in 1964. In charge of fisheries and aquaculture research. Provides information used for management decisions

www.ifop.cl

Regulates



Government agency founded in 1976, dependent on the Ministry of Economy. Regulates and manage fisheries and aquaculture through management policies, regulations and measures

www.subpesca.cl

Monitor compliance

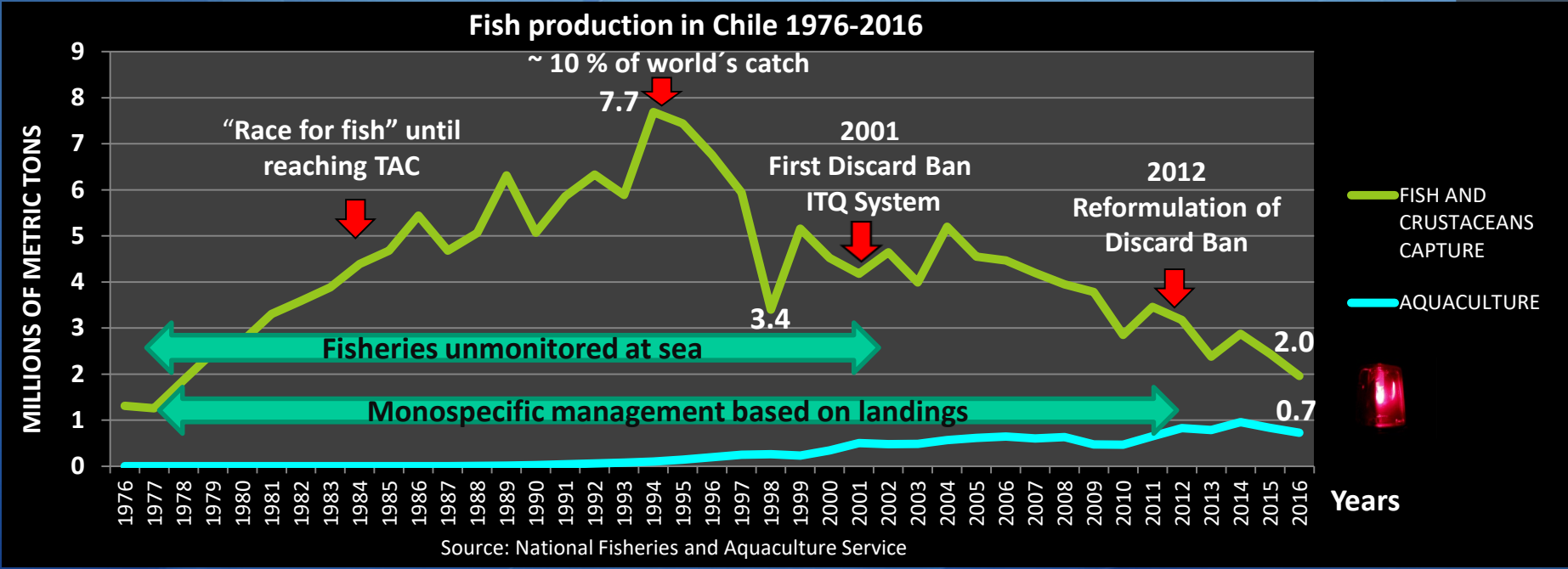


Government agency founded in 1978, dependent on the Ministry of Economy. In charge of monitoring compliance and enforcing fishery and aquaculture regulation

www.sernapesca.cl



Introduction of the concepts of discard and bycatch in Chilean fisheries legislation



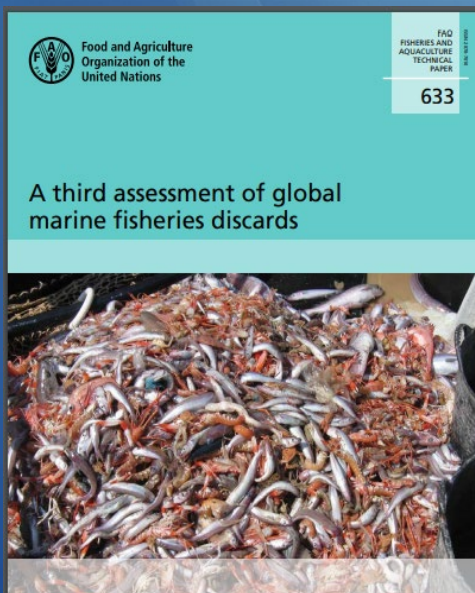
Management with a focus on target species not considering the wider ecosystem impacts of fisheries



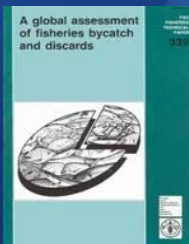
Discards were not effectively addressed as a source of fishing mortality



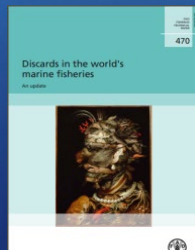
Assessment of global discards and bycatch 2010-2014, FAO



Pérez Roda, 2019



Alverson, 1994



Kelleher, 2005

- ≈ 9 million tons discarded annually in the period 2010-2014
- fishing interaction with:
 - 1 million seabirds
 - 8,5 million sea turtles → UNKNOWN MORTALITY?
 - 650,000 marine mammals
- Concern about adverse effects of discards and bycatch on fisheries sustainability and food security
- Monitoring the status and trends of discards and bycatch is the first step in the application of the ecosystem approach to fisheries management

to estimate temporal trends in discard levels. However, it is worth noting that new countries and regions start including in their legislation the words “bycatch” and “discards” as a sign of an emerging political will to mitigate the wasteful practice of discarding. Some examples are the European Union (reform of the Common Fisheries Policy of 2013), Chile (Borges *et al.* 2016) and Australia. Moreover, efforts are being made by RFMOs and RFBs in addressing bycatch and discard issues, but generally they only include commercial species (FAO, 2015).

Some policies around the world to manage discards

- **Iceland 1977** : Ban on discarding six primary commercial species, gradually expanded to all species including non marketable. Quota flexibility allows to reduce discards
- **Norway 1987** : First introduced discard prohibition for cod and hadock later in 2009 extended other commercial species. Some exceptions: invertebrates, seabirds, mammals
- **United States 1996** : Bycatch must be reduced to the extent practicable or, where it cannot be avoided, that mortality be minimized. Additionally (MMPAct) and the (ESAct) require zero mortality .
- **New Zealand 1996** : Prohibition to discard species subjected to the ITQ or MLS. Discarding is nevertheless allowed for species with high survival rates.
- **Chile 2001** : General prohibition of discards, with no distinction between species and sizes. Strong sanctions to offenders,.Compliance was not monitored, it was a failure
- **EU (CFP) 2013** : The landing obligation is only applicable to TAC-regulated species in the Atlantic and to species that have a MLS in the Mediterranean Sea. Implemented from 2015



The screenshot shows a webpage from the European Commission's Fisheries section. The page title is "Discarding and the landing obligation". The main content area is divided into sections: "Discarding", "Landing obligation", "Discard plans", "Exceptions", "By-catch provisions in closed areas", "Minimum sizes", and "Landing obligation in practice". There is a "Share" button and a search bar on the right. A news section at the bottom right features a headline: "28/10/2019 - North-East Atlantic coastal states reach agreement on mackerel, blue whiting and Atlantic-Scandinavian herring quotas for 2020". The page also includes a navigation menu on the left with options like "Home", "Policy", "Managing fisheries", and "Discards".

In 2012 the 2001' discard ban was reformulated

Concepts of discard and bycatch were incorporated along with sanctions to offenders and modern mechanisms for compliance control and for scientific monitoring



REPUBLICA DE CHILE
Ministerio de Economía,
Fomento y Turismo

MINISTERIO DE HACIENDA
OFICINA DE PARTES

RECIBIDO

L E Y N° 20.625

CONTRALORIA GENERAL
TOMA DE RAZON

25 SET 2012

RECEPCION

25 SET 2012

PROYECTO DE LEY:

"Artículo 1°.- Introdúcense las siguientes modificaciones a la Ley General de Pesca y Acuicultura, cuyo texto refundido, coordinado y sistematizado está contenido en el decreto supremo N° 436, del Ministerio de Economía, Fomento y Reconstrucción, de 1992:

1. Modifícase el artículo 2°, de la siguiente forma:

a) Sustitúyese el número 14 his) por el siguiente:

Sub. 7.

TOMADO RAZON

26 SEP 2012

Contralor General de la República

26 SEP 2012 - 16:14:38



GOALS

- ✓ Evaluate and reduce
- ✓ Transparency of fishing operations
- ✓ High levels of monitoring for compliance and science
- ✓ Accuracy of catch and discard data
- ✓ Involve stakeholders in policy development

Law N° 20625



Chilean approach for discards and bycatch

The concepts of discarding and incidental catch are introduced in the Fisheries Law along with a gradual process of research, reduction, and modern tools to control the fishing fleets

2012

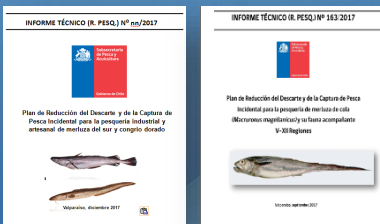
2017

2019



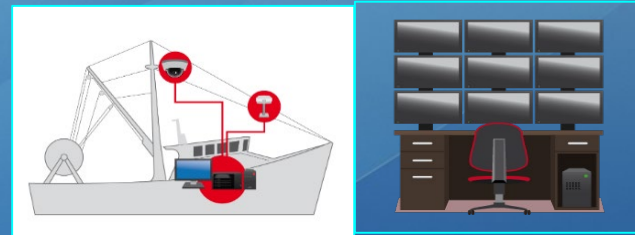
UNBIASED RESEARCH

To understand and evaluate the problem and determine its causes



PROGRESSIVE REDUCTION

Through compulsory fishery-specific reduction plans



MONITORING OF COMPLIANCE

Extensive monitoring by EMS and observers for compliance and scientific purposes



Results of discard research programs are public and available at www.ifop.cl
<https://www.ifop.cl/en/busqueda-de-informes>

INSTITUTO DE FOMENTO PESQUERO

HOME ABOUT US OUR TASK LIBRARY TRANSPARENT GOVERNMENT PRESS

IFOP > Project reports Search

Project reports Search

This listing includes completed projects, executed between August 1963 and November 2018.
Esto, en cumplimiento con la Ley General de Pesca y Acuicultura, N° 20.657, y su artículo 158 bis y 158 B, cuya vigencia es del 9 de febrero de 2013.

Research Division :
Pesquerías

Project Type :
Seguimiento

Species / Topic :
programa de investigación del descarte

Publication year :
2018

Search

* Press Search to update the results.

Downloads
Download 7-zip for 7z files | Download PDF viewer



Delivered transparency to the process and motivated spontaneous actions by fishers

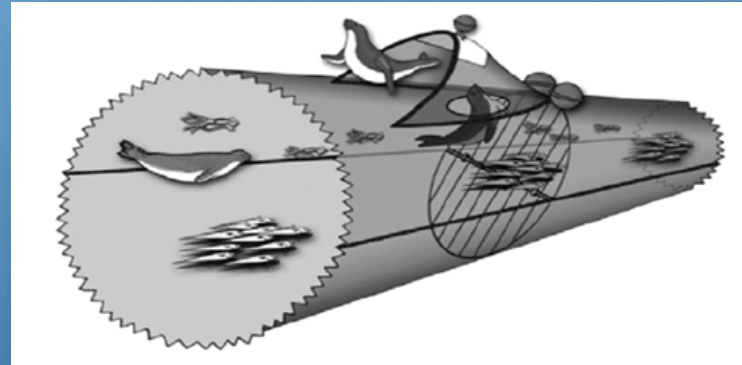


Allowed industry and stakeholders an early recognition of the problem

Some voluntary mitigation strategies adopted voluntarily by the industry



Excluder grids for jumbo squids and sea lions in hake fishery



Excluder devices for sea lions in trawler fleet



Flow scales for accurate accountability of discards
factory trawler fleet



New products made from previously discarded catch
Campaigns to increase fish consumption



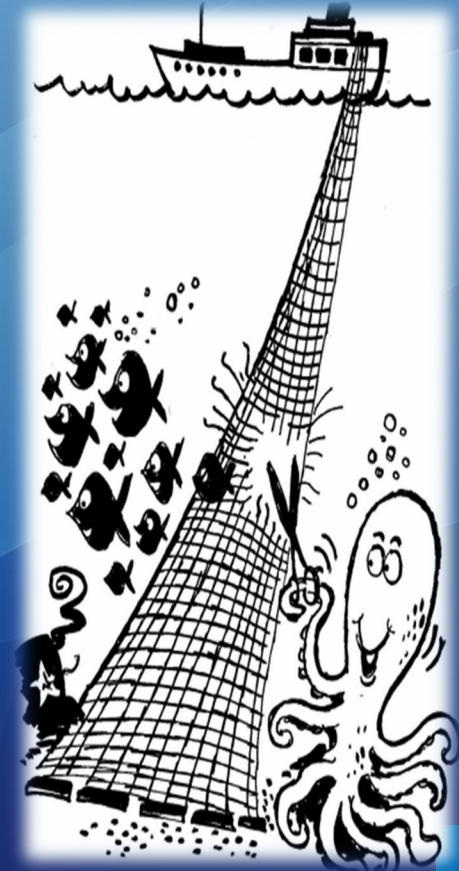
B

Reduction Plans for progressive elimination of discards and bycatch in each fishery

Once the research programs were finished, the law required the enactment compulsory fishery- based reduction plans

Plans must include:

- ✓ **Management measures and technological means** to reduce discard and bycatch
- ✓ **A continuous monitoring program** (science and compliance) to follow up, evaluate and improve the effectiveness of the Plans
- ✓ **A training program** for fishermen
- ✓ **A dissemination program** for fishermen and the community
- ✓ **A code of conduct:** good fishing practices
- ✓ **Government incentives** for innovation in systems aimed to reduce discards and bycatch



B

How the Reduction Plans were built?

RESEARCH INSTITUTION



FISHING MANAGEMENT COMMITTEE

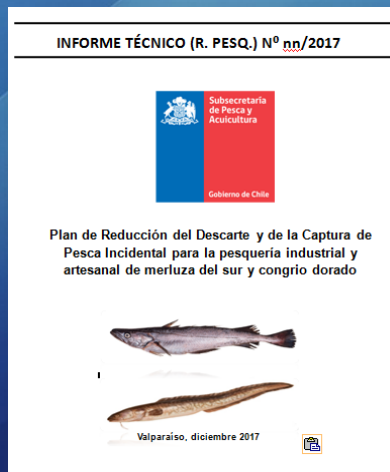


MANAGEMENT AGENCY



Consultative process for reduction proposals

- ✓ Top-down factors balanced with bottom-up factors
- ✓ Involvement of fishers and stakeholders in policy development
- ✓ Agreed and well-understood measures. Progressive application.
- ✓ Plan must be improved based on results (follow-up)



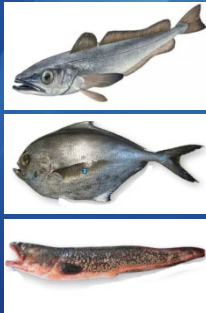
B

From 2019 onward, all fisheries subjected to Reduction Plans

Species caught are now submitted to one of 3 regimes

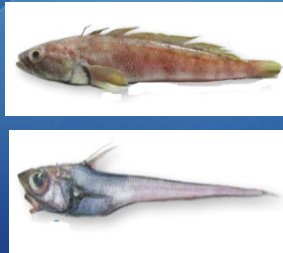
Prohibited Discard

Target species, species with TAC, commercial species



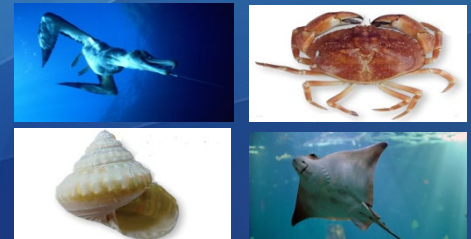
Authorized Discard

Unwanted catch of species without TAC or regulation



Mandatory Return

Bycatch, prohibited species, species not subject to exploitation



Handling protocols

Discards not authorized by plans are penalized!!



Once the Research Programs are finished and the Reduction Plans have been enacted

Exceptions to the sanctions for discarding are terminated!

Discarding is banned except for species authorized by each Reduction Plan
Penalties for not complying with the Plans are applicable to vessel owners and captains and vary depending on fleet (artisanal/industrial)



- ✓ Any prohibited discard **75000 USD**
Fines are increased depending on species and weight discarded
- ✓ Owner of the vessel that discarded **2500-25000 USD**
- ✓ Captain/skipper that discarded **2500-25000 USD**
- ✓ For operating without surveillance systems (EMS)
 - Vessel Owner **1500-25000 USD**
 - Captain **250 - 2500 USD**
- ✓ For omitting or giving false information on discards **250-25000 USD**

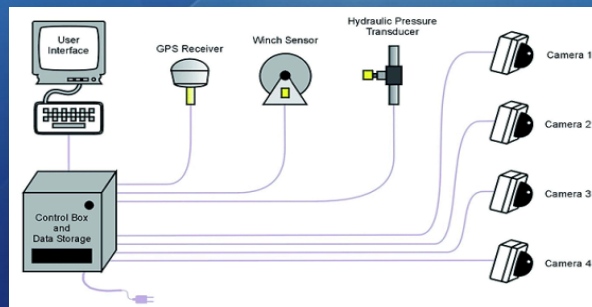
C

MONITORING, CONTROL AND SURVEILLANCE OF THE REDUCTION PLANS

Monitoring of compliance by EMS is entirely independent of observer coverage



- ✓ Vessels > 15 m shall install and keep operative EMS to detect, register and quantify discards & bycatch
- ✓ Installation and maintenance of surveillance systems is paid by vessel owners
- ✓ Discards & bycatch must be handled under approved protocols, functional to EMS
- ✓ Collection and processing of images held by the National Fisheries Service or certified external agencies
- ✓ Regulations on EMS have been issued considering the results of the research programs. They include:
 - Specific requirements by gear, fishery and vessel types
 - Rights and obligations of fishing users regarding EMS
 - Safeguards to prevent manipulation and interference EMS

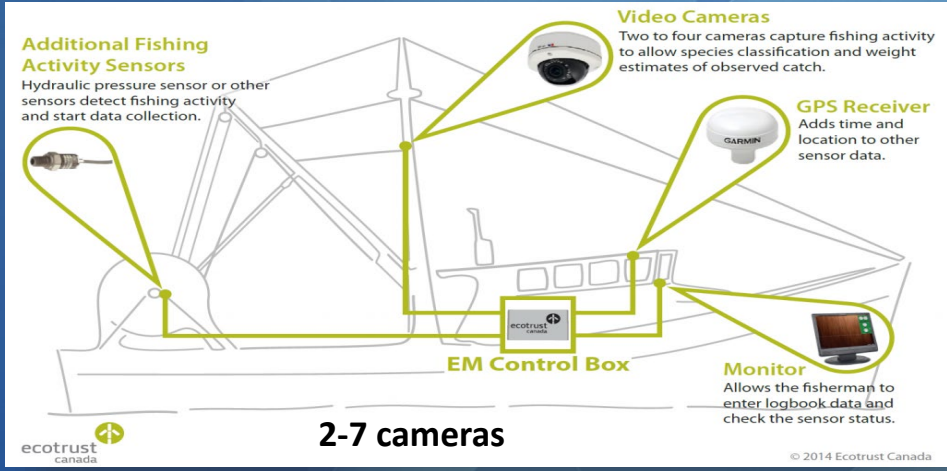


- Industrial fleet : first half 2020
- Artisanal fleet > 15m. in 2022





Components of the Surveillance System for discards and bycatch (EMS)



Modules currently in process of implementation

Recording and storage module



Information withdrawal module

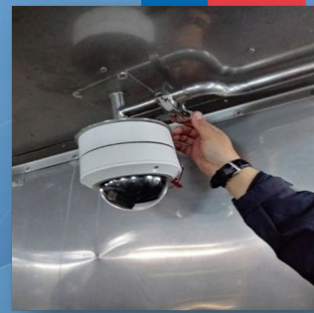


Monitoring module



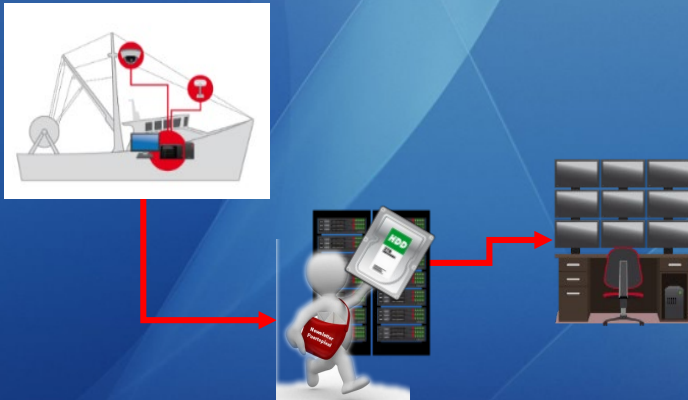
OBJECTIVES OF THE SURVEILLANCE SYSTEMS (EMS)

1. Control of compliance with reduction measures and prohibition of discard for some species.
2. Control species and amounts authorized to discard
3. Control of use of bycatch mitigation devices and handling protocols (seabirds, mammals and turtles)
4. Control compliance with other management measures (closures, fishing gears, etc.)



MAIN FEATURES OF SURVEILLANCE SYSTEMS (EMS)

- Systems operative during the entire fishing trip



- Automatic metadata and image generation, without third party intervention. Stored in Hard drive

- Analysis of a sample of fishing sets based on a risk assessment approach
- If a discrepancy is detected, the entire trip is audited to the cost of vessel owner

- Technical report prepared by Sernapesca with legal value

CAMERA SURVEILLANCE SYSTEMS (EMS) FOR DISCARD AND BYCATCH

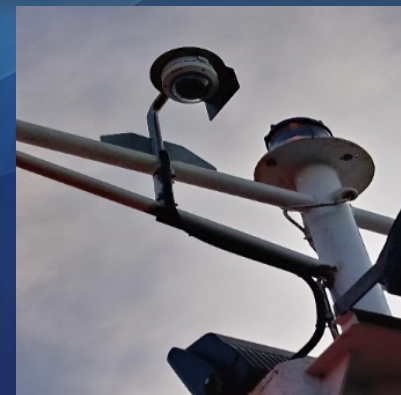
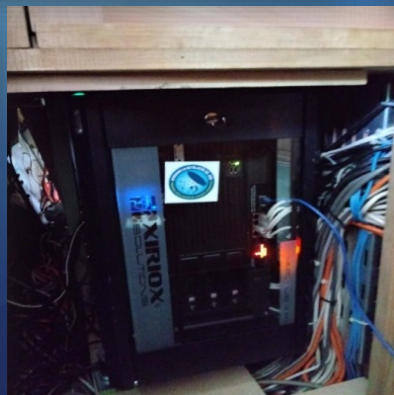
Implementation of the EMS as of September 2019

TOTAL N° of VESSELS	EMS STATUS	INSTALLATION PROGRESS	
140	Equipments sold	41	29%
	Equipments installed	20	14%
	Vessels without defined provider	79	56%
Vessels with certified IRD installation		2	1%

Industrial Fleet:
January 2020

Artisanal Fleet(≥ 15 m):
January 2022

FIRST IRD CERTIFICATION
GLOBALPESCA II
(28/08/2019)



ELECTRONIC LOGBOOK TO REPORT FISHING ACTIVITIES

CAPTAIN RECORDS
ESTIMATION OF
CAPTURE DISCARD
AND BYCATCH IN REAL
TIME

AS SOON THERE IS INTERNET CONNECTION THE
INFORMATION IS REMOVED

SERNAPESCA AND
VESSEL OWNER
ANALYZE
E LOGBOOK SENT



Movil App
Electronic
logbook

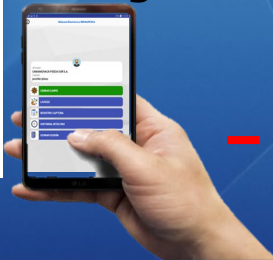
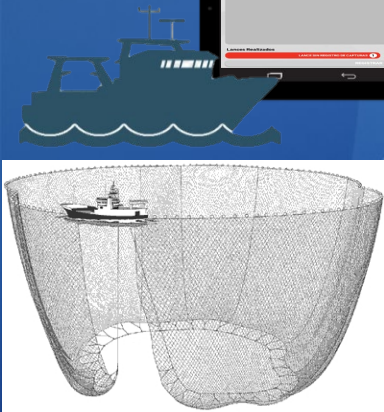


Logbook
web



ADM SERVERS AND
INFORMATION
STORAGE

INFORMATION IS
RECORDED DURING
FISHING OPERATION



Challenges ahead

Implement systems in the entire fleet

Link the information from different sources

Use the information for other purposes than control

Incorporate the artisanal fishing fleet (< 15m) into electronic monitoring with simplified and cheaper technology

Cultural challenges



Takk fyrir!!

Gracias!!

