SUSTAINABLE FISHERIES MANAGEMENT IN SW ATLANTIC:

A SCIENTIFIC APPROACH

MARCH 4TH, 2021

Scientific knowledge and advice for conservation and sustainable management within the Falkland Islands fisheries

Alexander Arkhipkin

Falkland Islands Government

Stanley

FALKLAND ISLANDS

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INTRODUCTION

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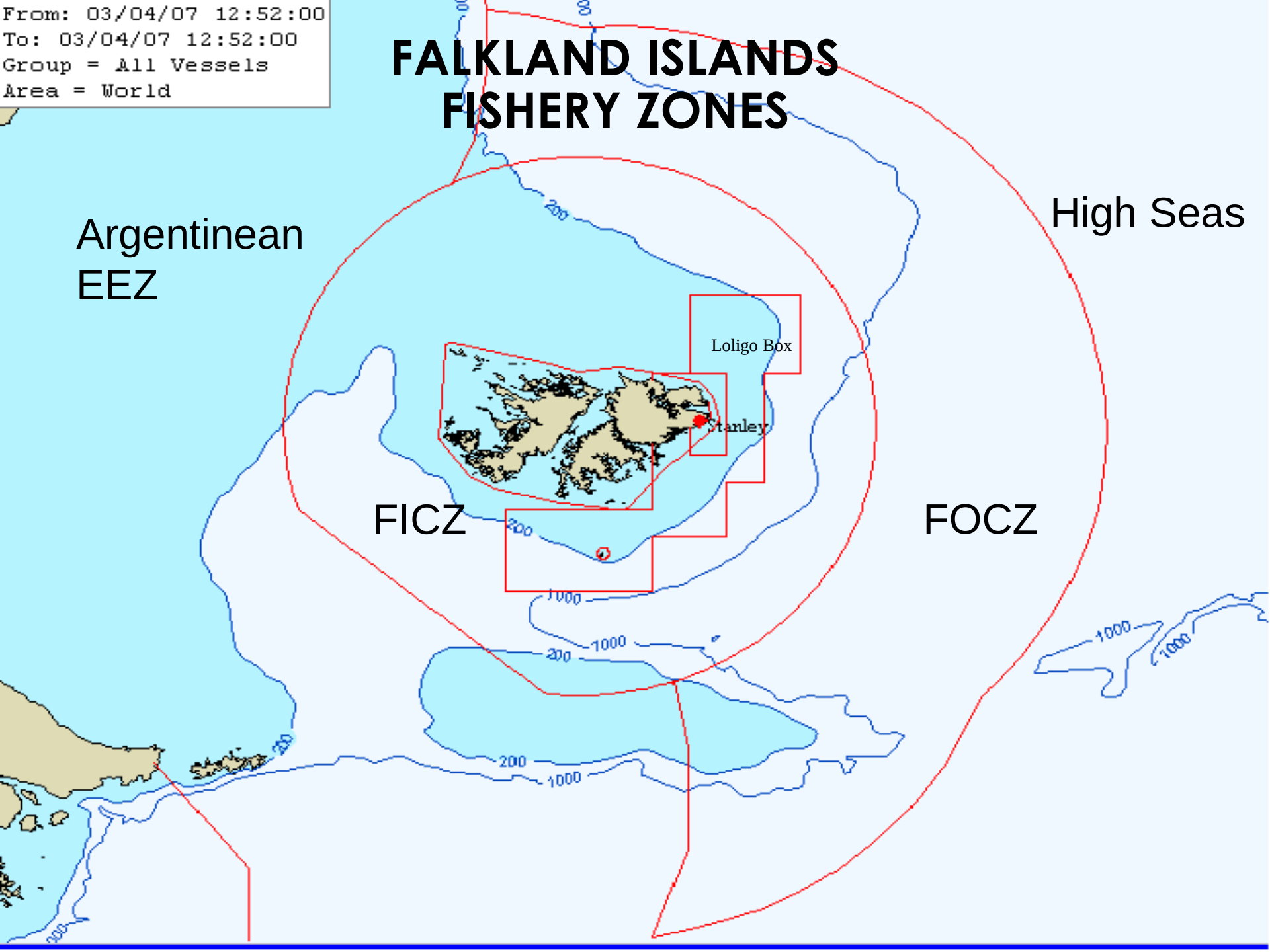
LOCATION: SOUTHWEST ATLANTIC


From: 03/04/07 12:52:00
To: 03/04/07 12:52:00
Group = All Vessels
Area = World
FALKLAND ISLANDS
FISHERY ZONES
Argentinean
EEZ
High Seas
Loligo Box
Stanley
FICZ
FOCZ
200
1000

KEY SECTOR: FISHERIES

Current GDP Contribution: £60.4m

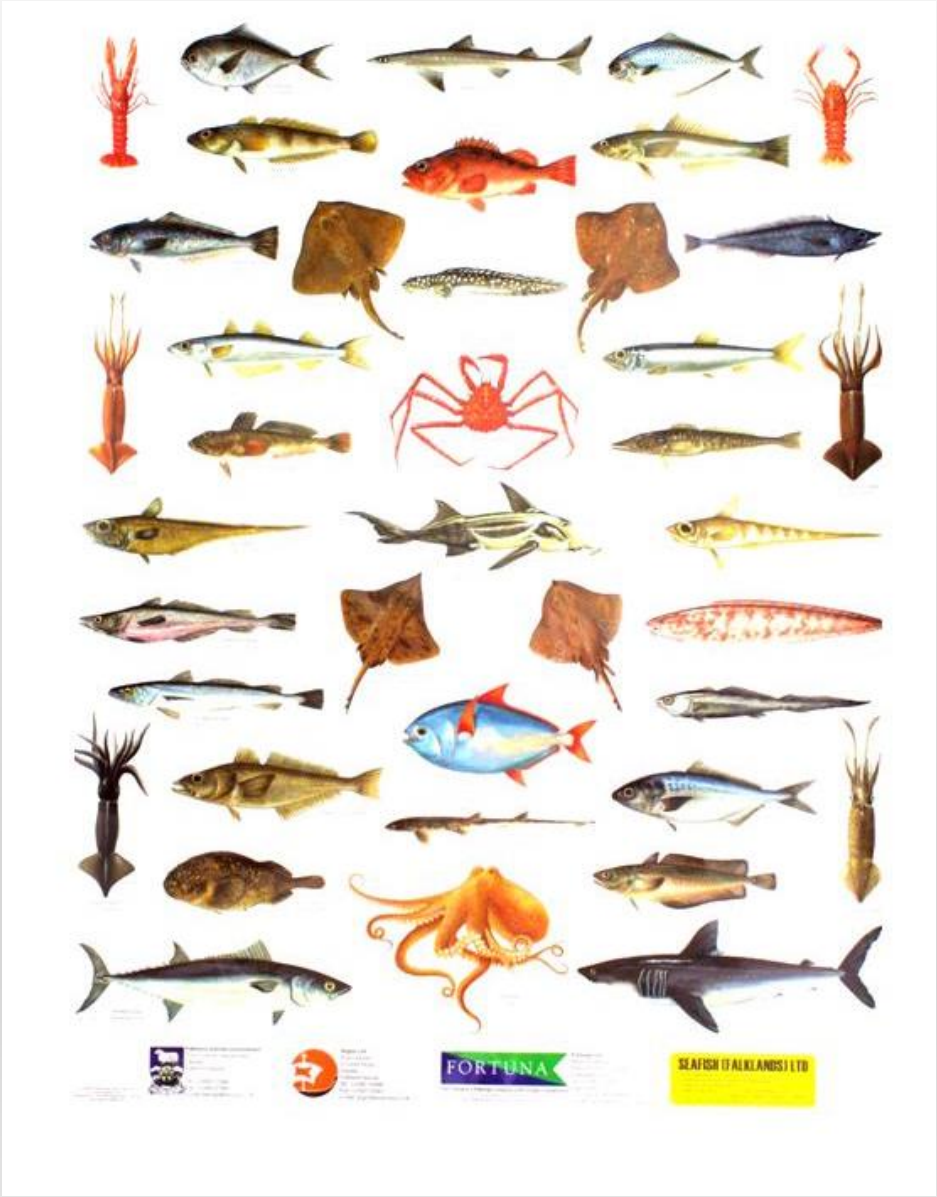
The largest economic sector in the FI economy following the establishment of a fisheries conservation zone in 1987.

Property rights in fishery introduced in 2007 - Individual Transferable Quota (ITQ).

- One of the best managed fisheries in the world
- 7% of total FIG operating budget spent on scientific research and fisheries protection (£4.3m)
- Modest fishery but significant squid production in global terms

Limited onshore fisheries activity on the Islands

COMMERCIAL SQUID AND FISH



- Straddling stocks

  'Shared with Argentina' and other South American countries

  Migrate into the Falkland waters seasonally

- Domestic stocks

  Live in Falkland waters all their life

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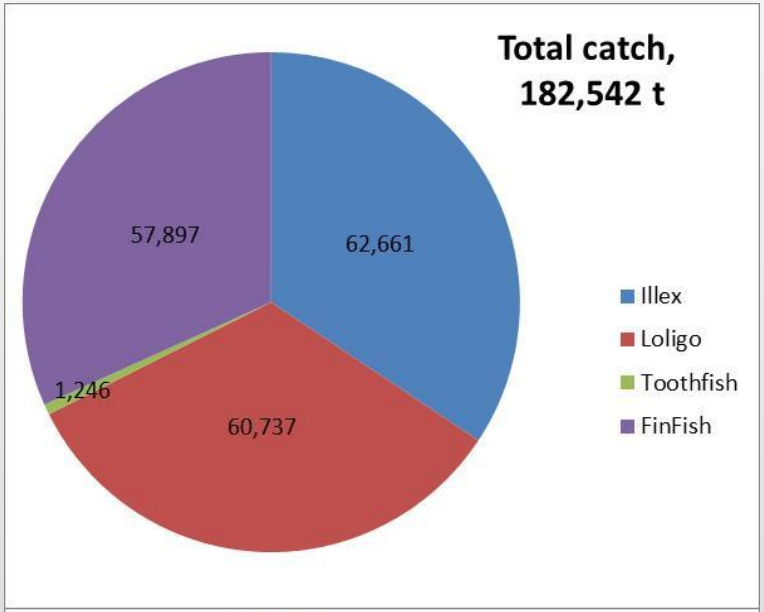
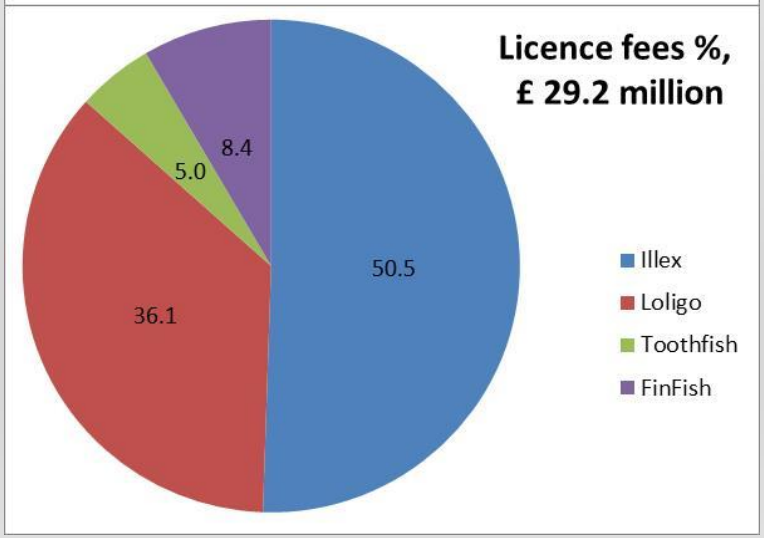
TOTAL CATCH AND LICENCE FEES 2020





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FINDINGS

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Studies of Life cycles and their implications for fisheries management

Case of the Patagonian longfin squid *Doryteuthis gahi*

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PATAGONIAN LONGFIN SQUID

- Short (annual) life cycles
- High growth rates
- Multi-cohort population structure
- Weak biomass-recruitment relationship
- Susceptible to inter-annual environmental changes, resulting in substantial biomass fluctuations

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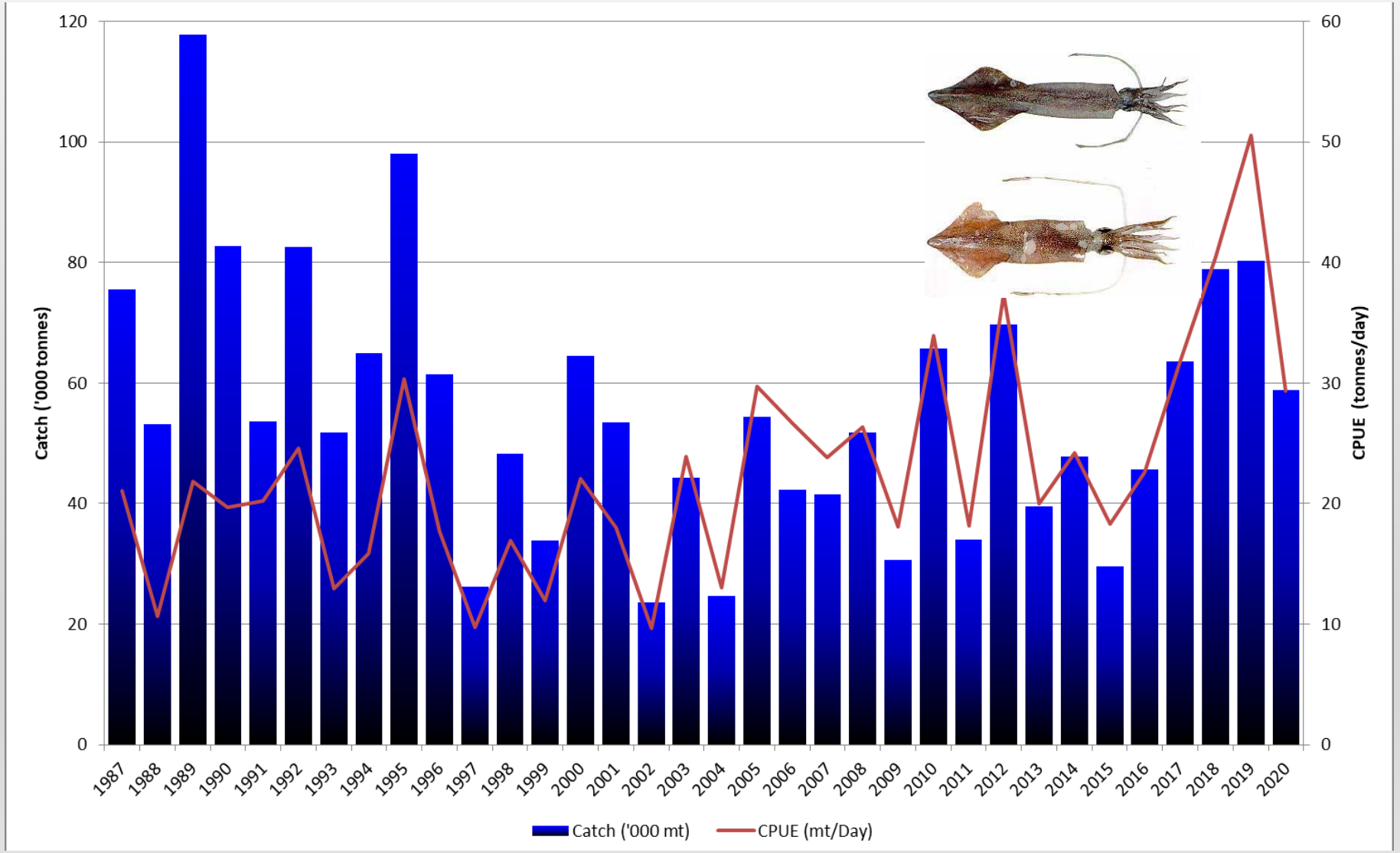
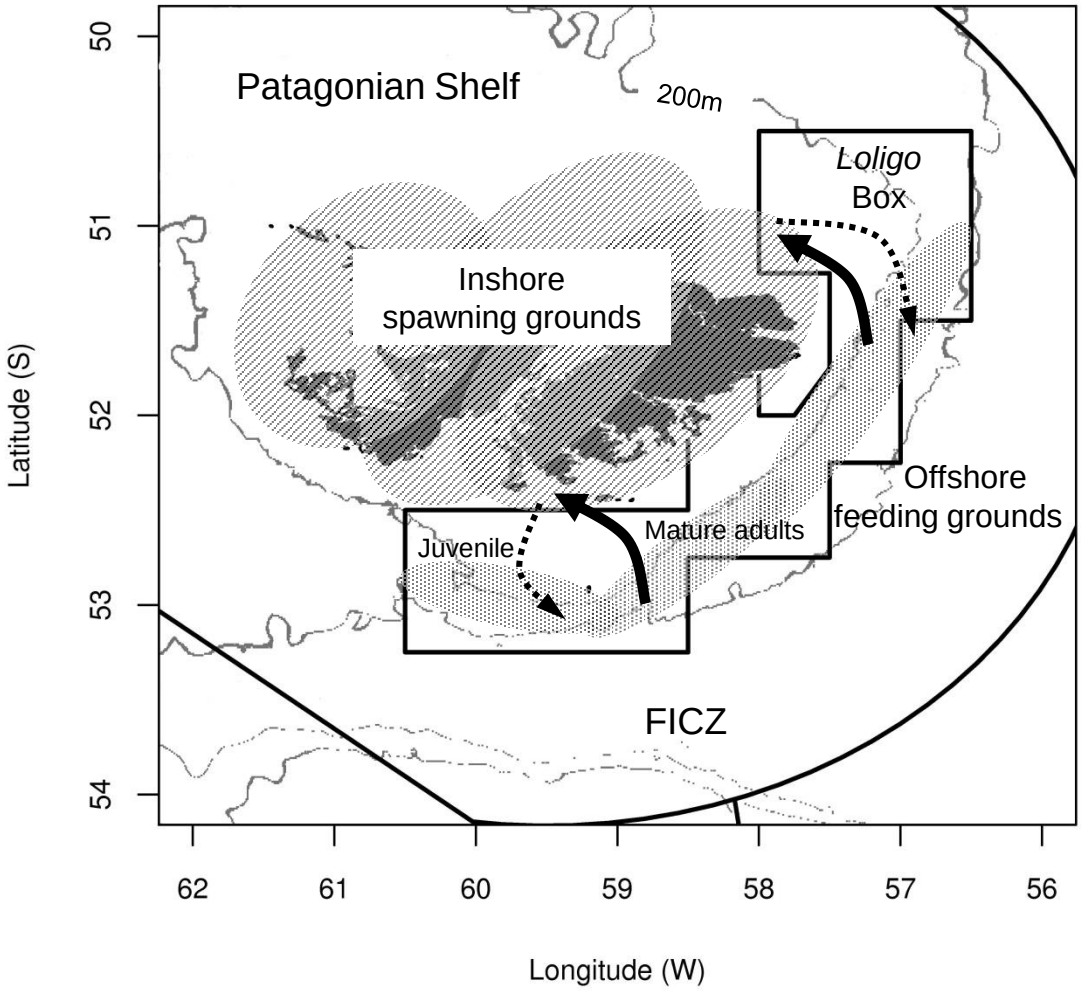
D.GAHI CATCHES IN FI ZONES



DOMESTIC SQUID STOCK – *D. GAHI*



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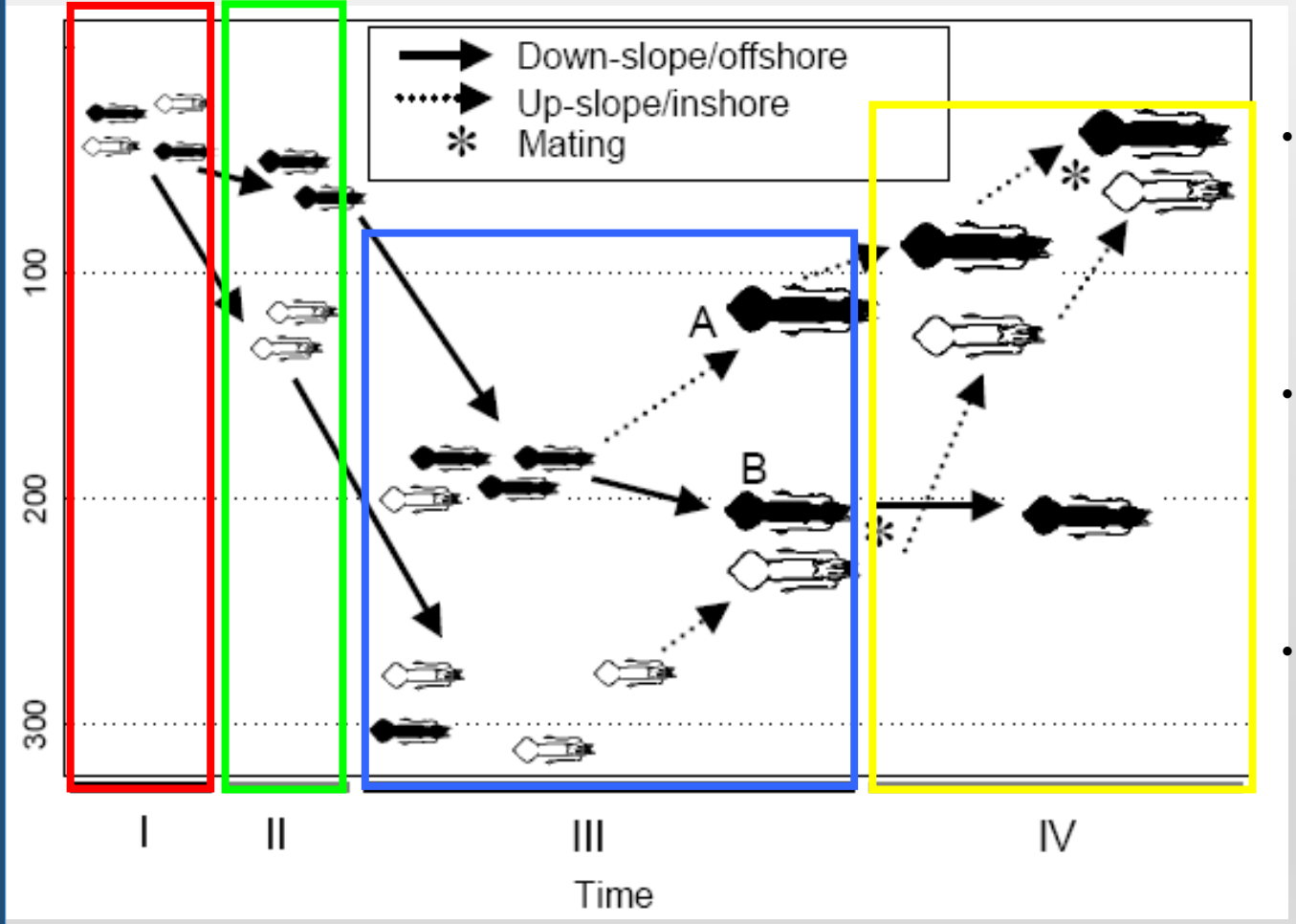
ONTOGENETIC PERIODS



- (I) juveniles and small immature squid on the nursery grounds (sex ratio 1:1);
- (II) immature squid during their offshore migrations to the feeding grounds (prevalence of females);
- (III) large immature and maturing squid during their offshore feeding period (prevalence of males); and
- (IV) large maturing and mature squid during their inshore pre-spawning migrations (equality or slight prevalence of females).

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MANAGEMENT MEASURES IN THE *D. GAHI* FISHERY

Conservation measure	*In form of*
• Temporal restrictions	• early closure or changing the time of the fishery season
• Spatial restrictions	• areas temporally or permanently closed for fishing

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MANAGEMENT MEASURES IN THE *D. GAHI* FISHERY

Conservation measure	*Conservation target*
1. Closure of the fishery on the nursery grounds (period I)	1. To allow small squid to feed and grow to commercial size
2. Restrictions for fishing during period II	2. To allow small immature females to pass through the fishing grounds to their offshore feeding grounds
3. Restrictions for fishing during period III	3. To conserve the spawning stock biomass at the required level
4. Restrictions for fishing during period IV	4. To allow large mature females to pass through the fishing grounds to their inshore spawning grounds

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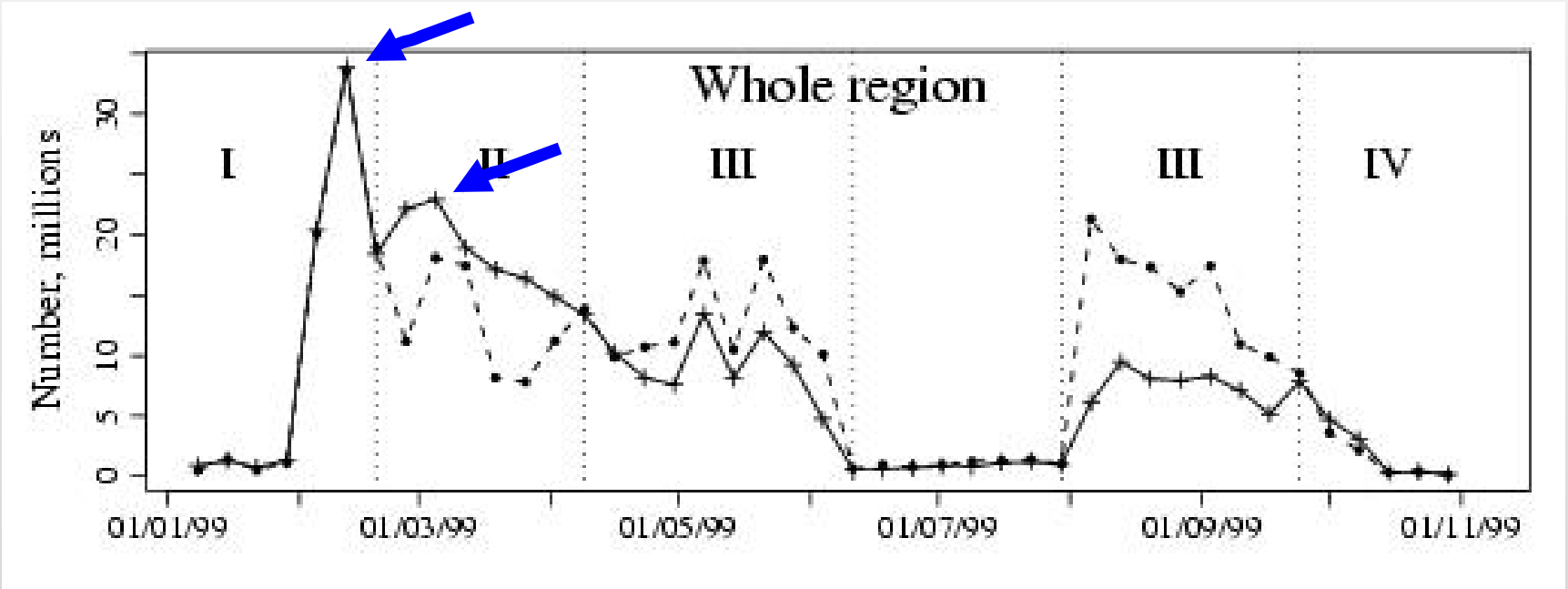
CONSERVATION MEASURE – PERIOD I



In 1999 about 30% of the total number of the squid caught during the whole year were taken as rather small, immature individuals during the first 6 weeks of fishing (February- beginning of March) just in the northern part of the *Loligo box.*

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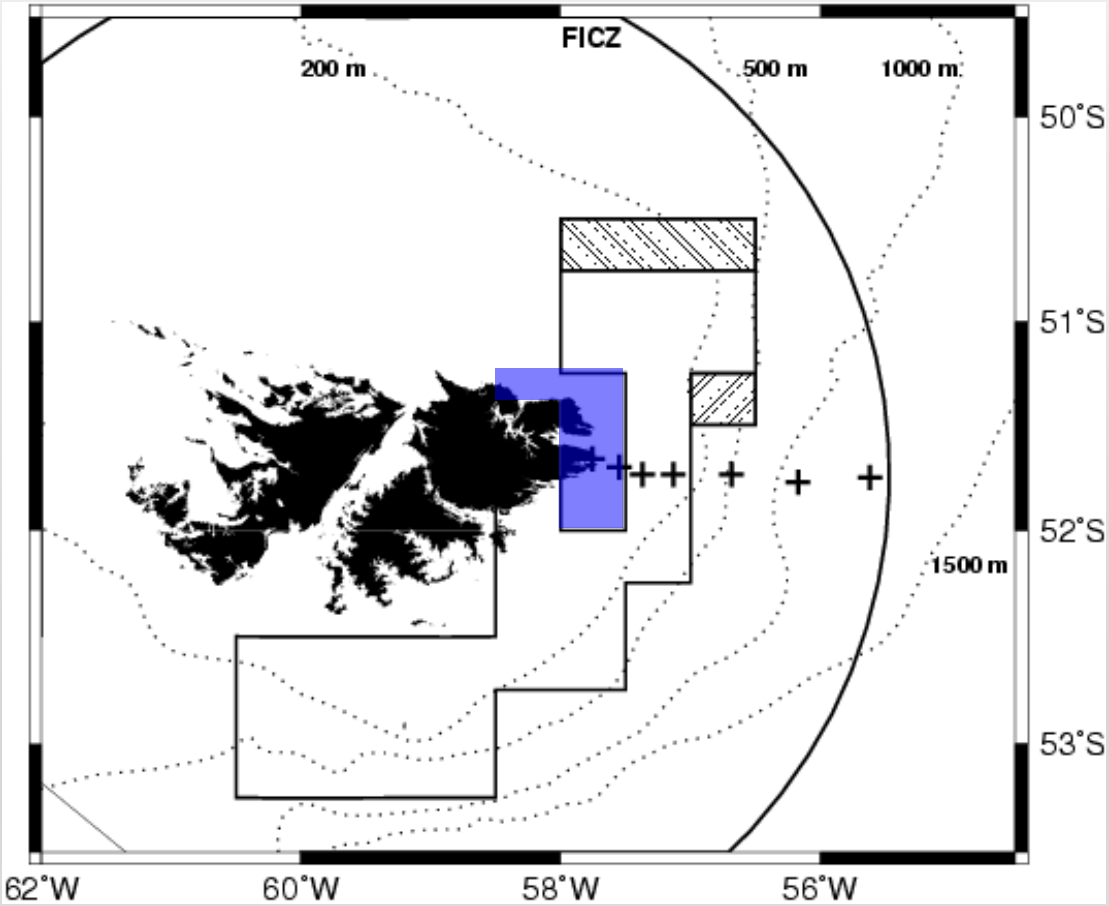

Closure of the fishery on the nursery grounds since 2000 prevented catches of small and immature squid, allowing them to continue feeding and growing and so contributed to a good fishery later in the season

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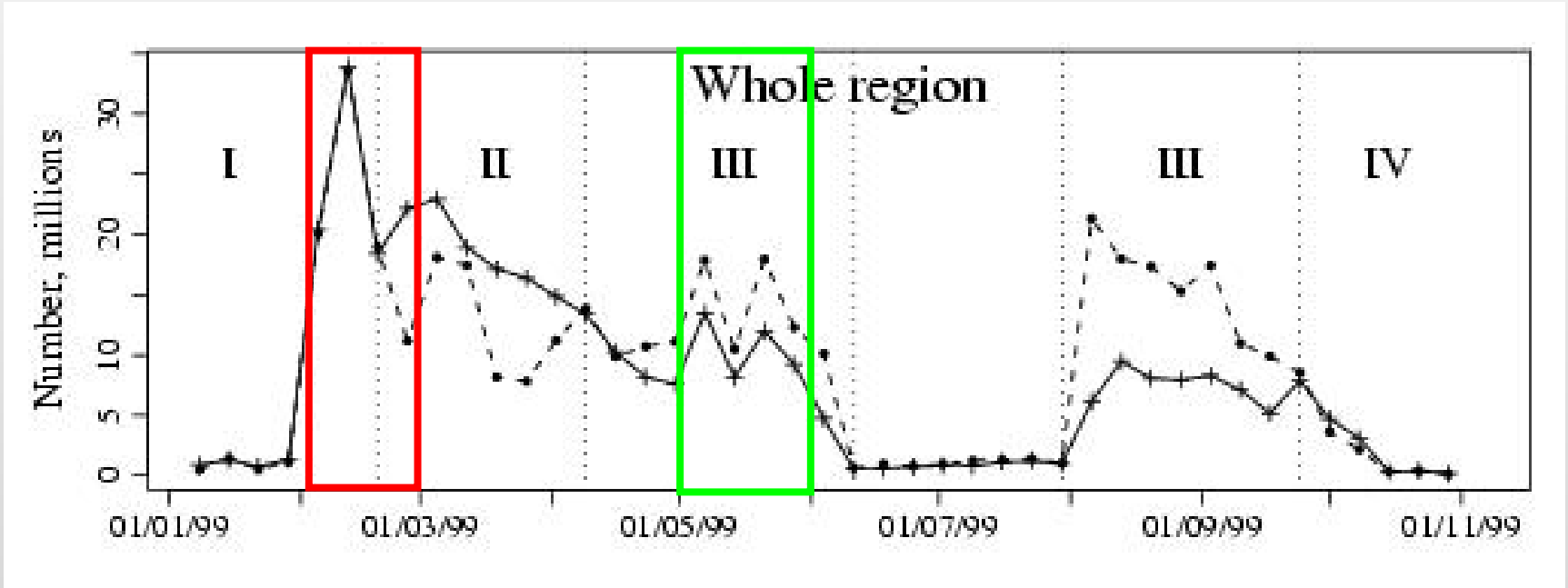
CONSERVATION MEASURE – PERIOD II



Since 2003, fishing is not allowed during the period II for both cohorts (February and May), preventing potential over-exploitation of the stock before their arrival onto their common feeding grounds

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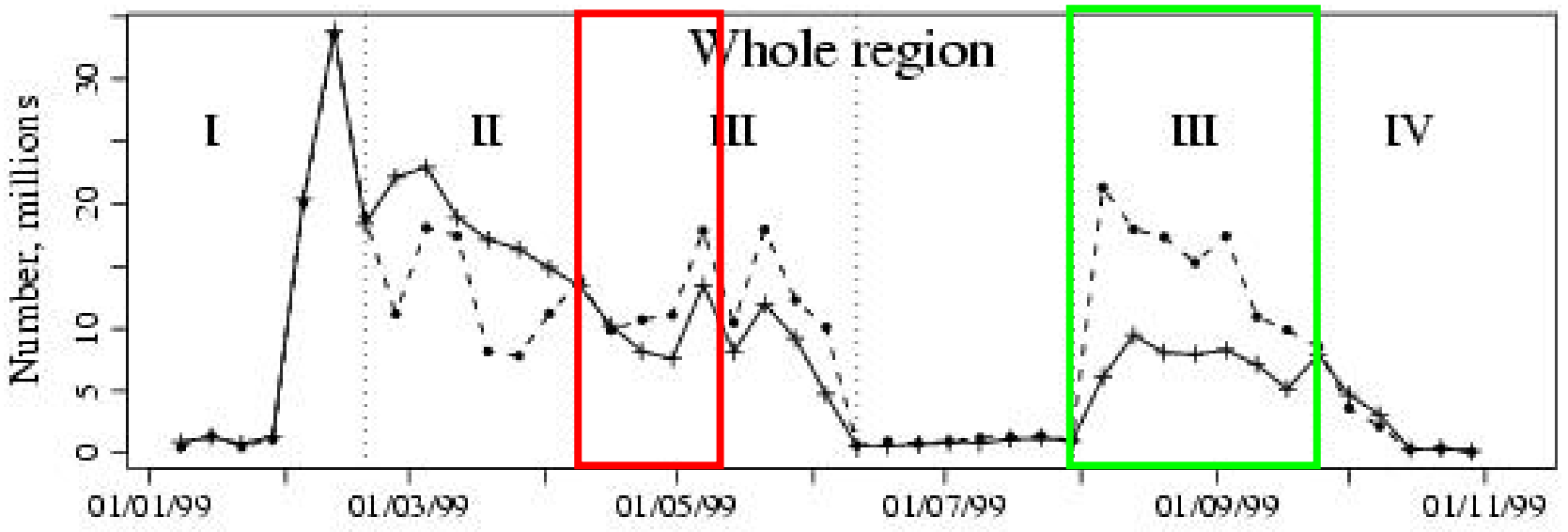
CONSERVATION MEASURE – PERIOD III



When in-season estimations of stock size (assessed by the DeLury depletion method) show that the stock approaches a certain minimum escapement level (10,000 mt for each cohort), then temporal restrictions, in form of **earlier closure** of the fishing season, may be recommended and implemented.

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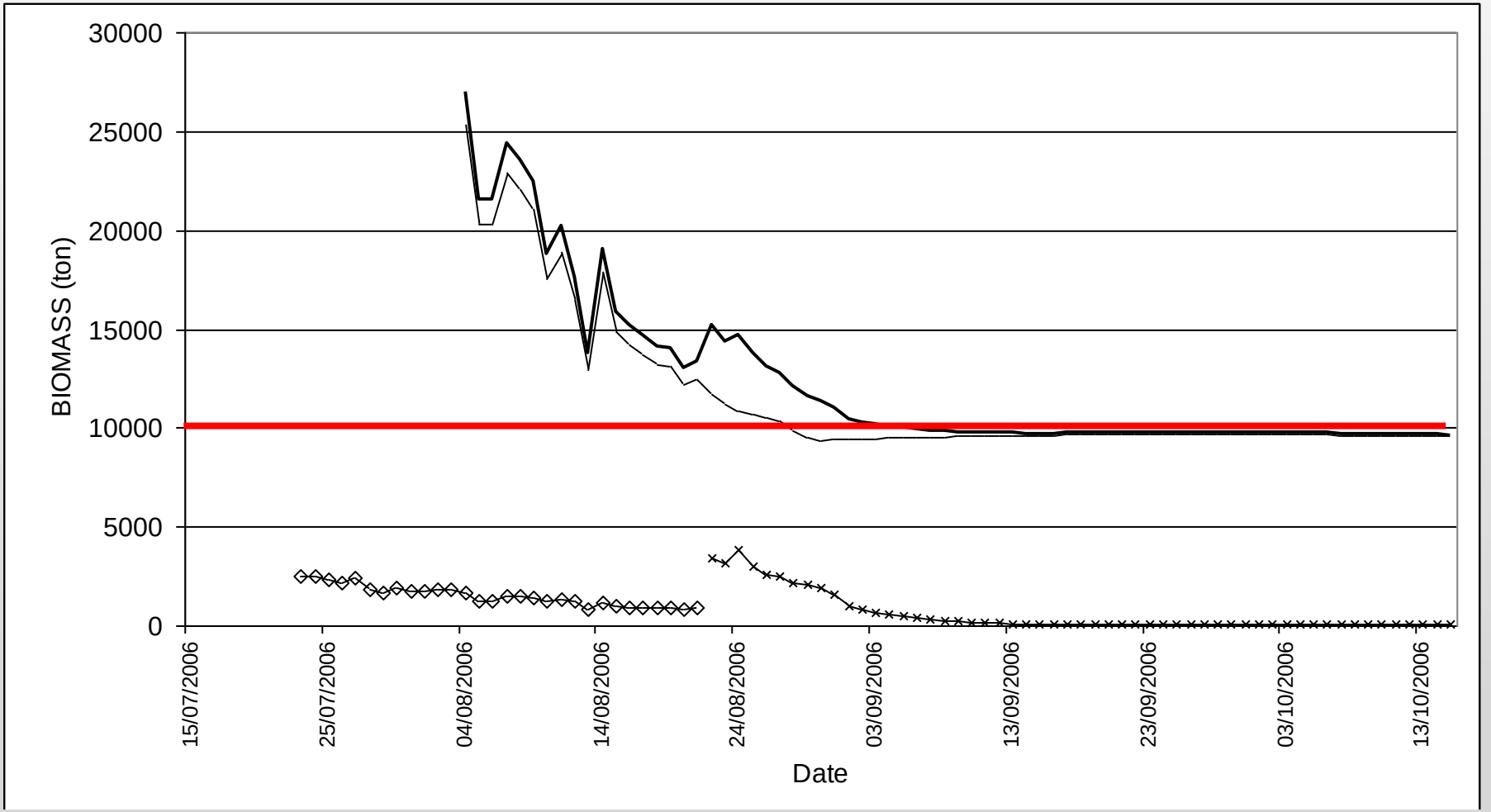
DeLury biomass estimate during fishing season



One week warning about early closure of the fishery

The threshold biomass is 10,000 t

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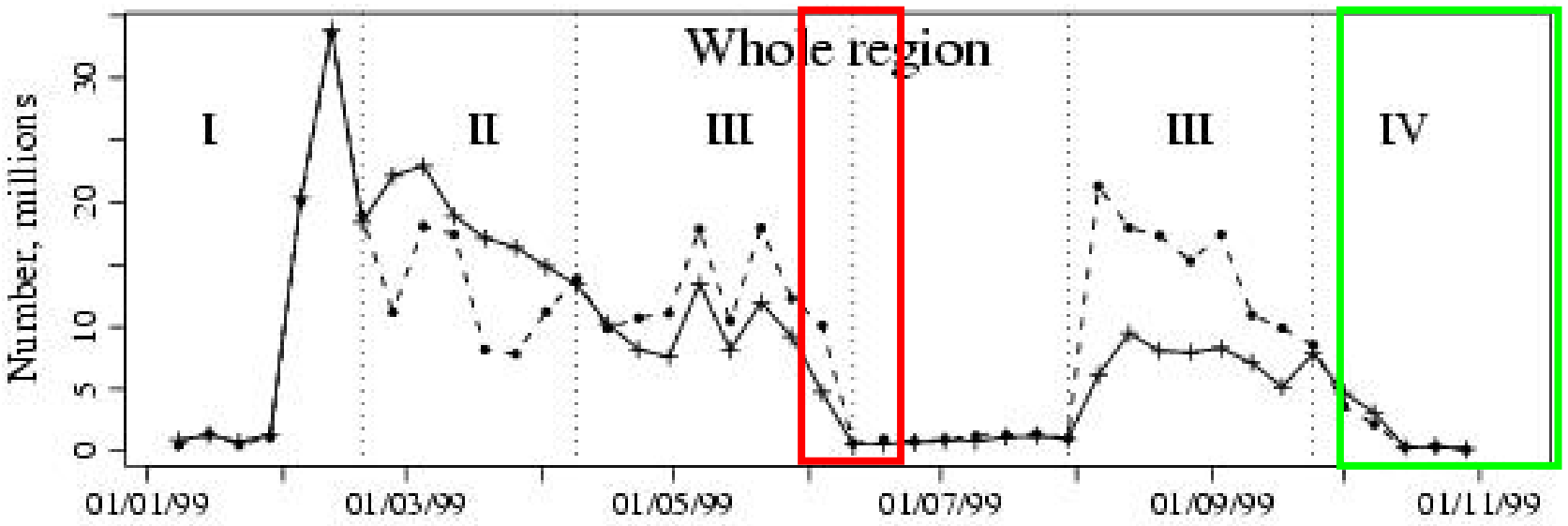
CONSERVATION MEASURE – PERIOD IV



Since 2003 (first season) and 2005 (second season) , fishing is not allowed during the period IV for both cohorts (May and October).

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Establishment of temporary Marine protected areas (MPA)

Patagonian toothfish *Dissostichus eleginoides*

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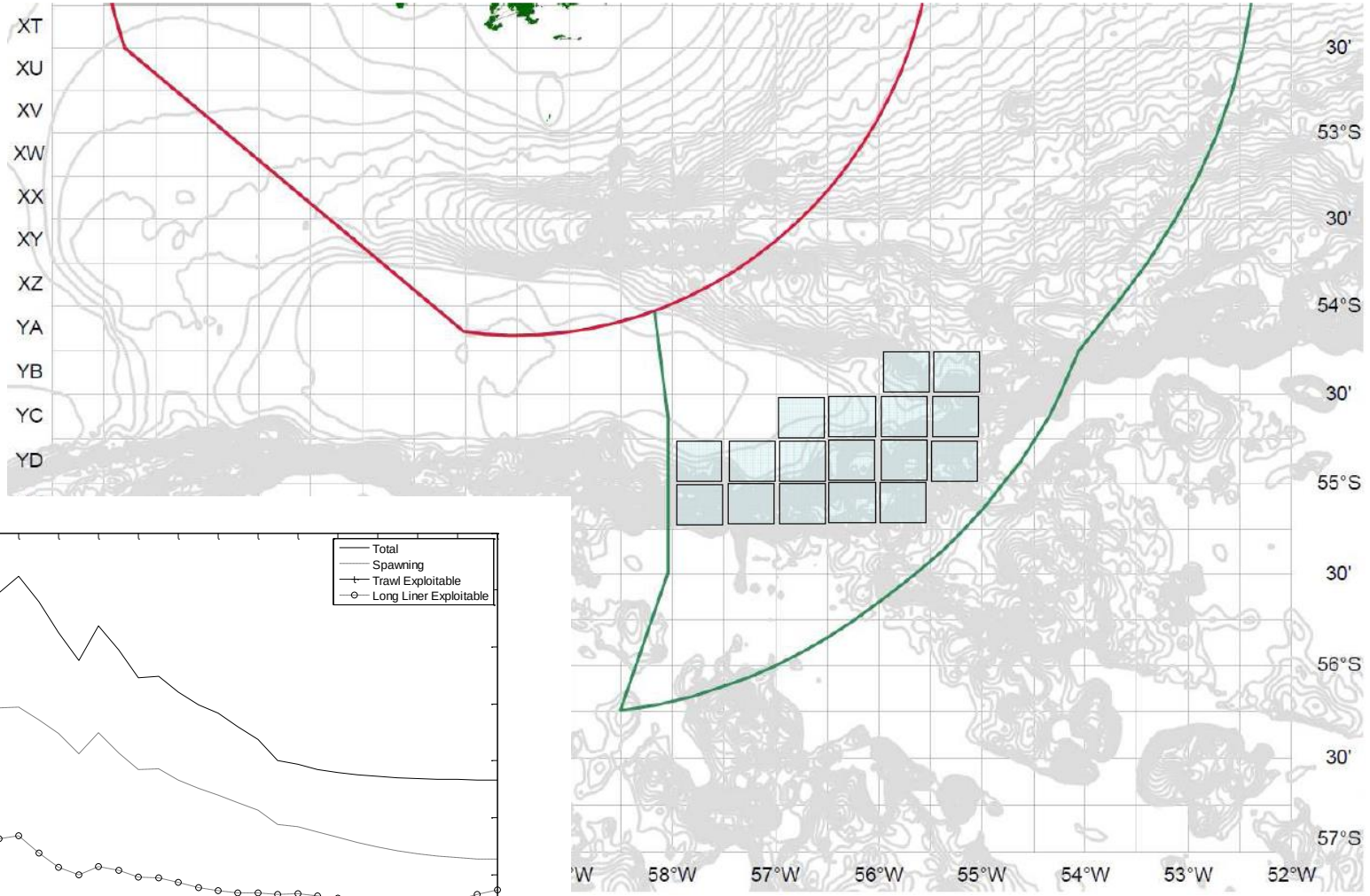
Fishing ban for toothfish spawning

1 July – 31 August (since 2005)



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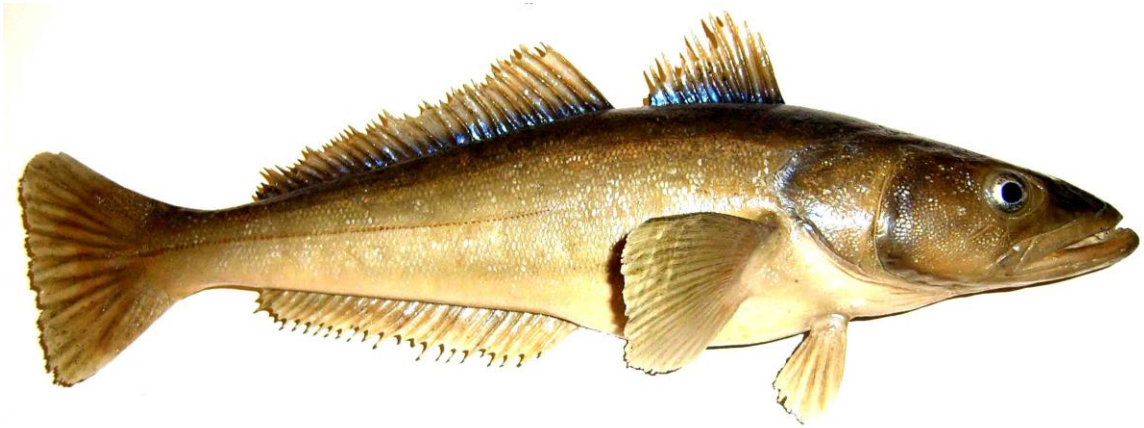
Marine Stewardship Council

Certified sustainable seafood

MSC Certification Toothfish (completed 2014)

CFL - Fisheries



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BIRD MORTALITY MITIGATION (TRAWLERS)

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SEAL MORTALITY MITIGATION
SEAL EXCLUSION DEVICE (SED)

- To prevent seal mortalities in the Loligo fishery in 2017, various SED types trialled to use in bottom trawls, with designs and SED dimensions incorporated into License Conditions
- Every trawling vessel has to have an observer to monitor seal interactions with trawling gear
- Overall success in 2018: during 55 days of the second season fishery by 16 trawlers, about 10,000 sightings of seals were recorded, with 6 unfortunate casualties

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RESEACH NEEDS AND PRIORITIES

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WHAT TO DO TO MAKE THE RESOURCES SUSTAINABLE?

It looks like a simple task – do not overfish them!

- Regulate exploitation rate by 'precautionary approach' in establishing TAC and TAE
- Constantly monitor the stock status
- Ease the fishing pressure by appropriate fishing gear (mesh size, ground rope design etc)
- Protect the nursery grounds to allow the juveniles to grow

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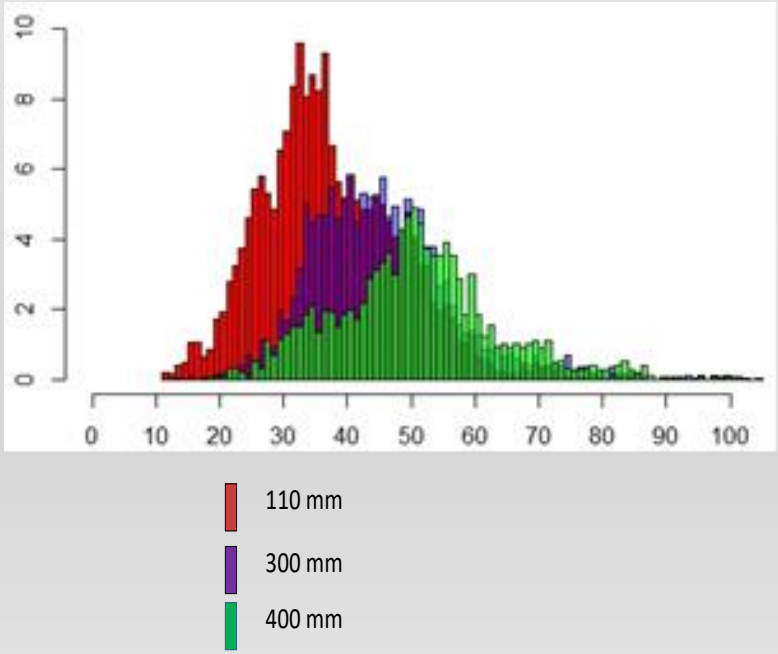
MAIN GOAL: TO MAKE THE RESOURCES SUSTAINABLE

To protect juvenile fish and unwanted bycatch of small undersized fish.

Mesh size trials

Rock cod, skates



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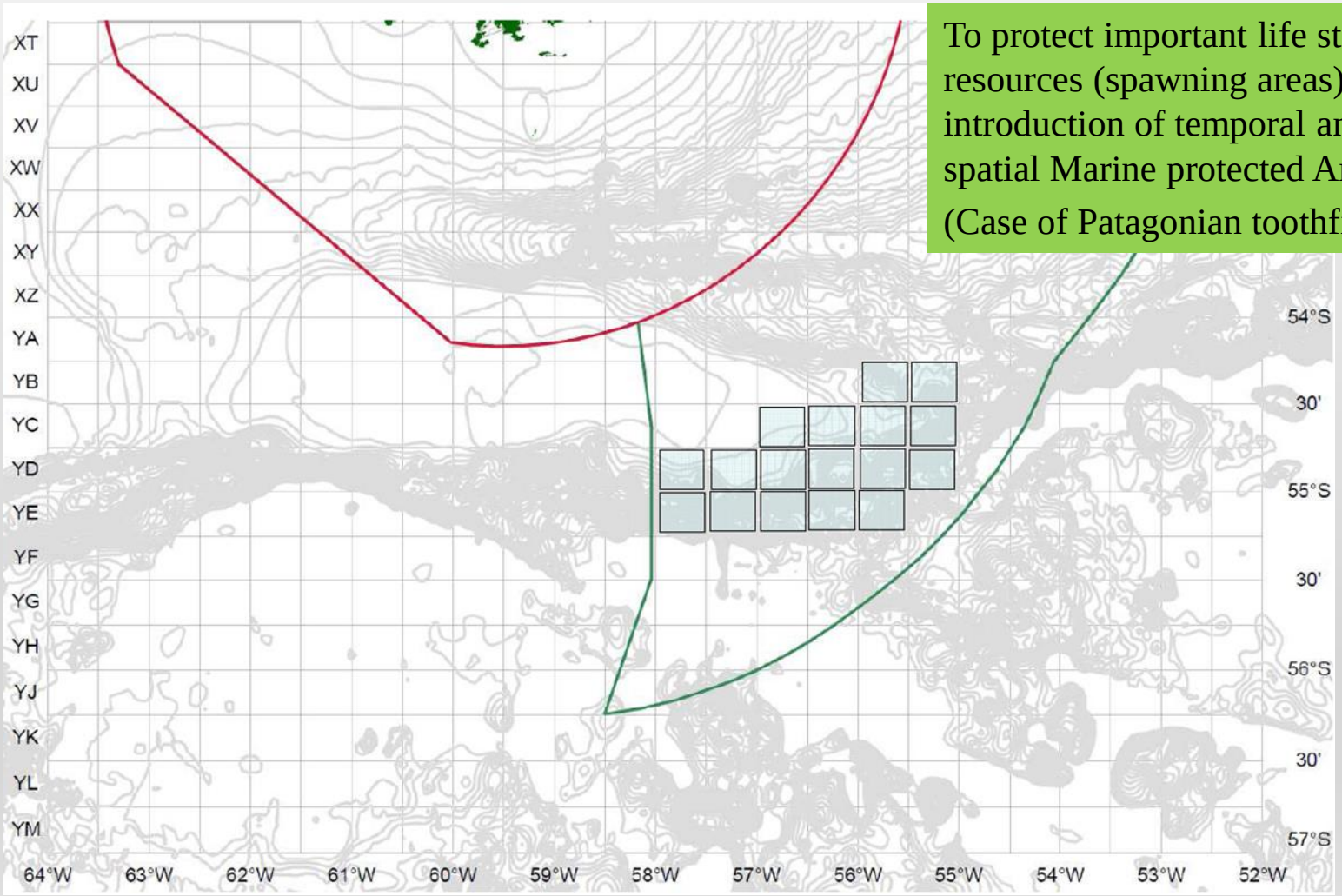
- Protect the nursery grounds to allow the juveniles to grow
- Protect spawning grounds to allow spawning animals to release their eggs

MAIN GOAL: TO MAKE THE RESOURCES SUSTAINABLE



To protect important life stages of resources (spawning areas) by introduction of temporal and spatial Marine protected Areas

(Case of Patagonian toothfish)