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**Bottom fisheries closures introduced  
by Atlantic Regional Fisheries  
Management Organizations (RFMOs)  
and regulatory frameworks to facilitate  
sustainable resource utilization and  
conserve vulnerable marine  
ecosystems (VMEs)**

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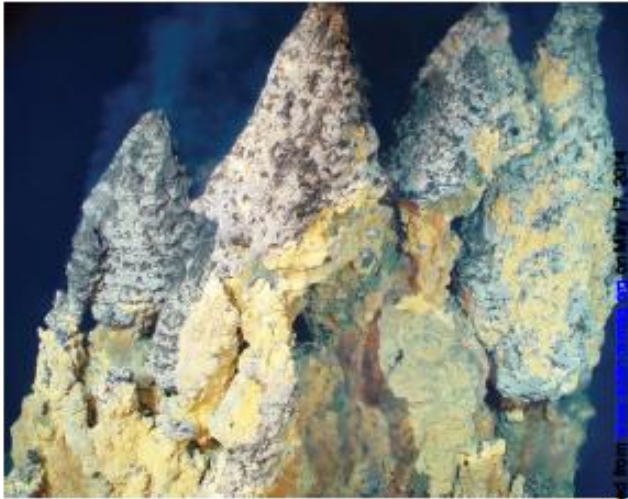
## A Call for Deep-Ocean Stewardship

The precautionary approach and collaborative governance must balance deep-ocean use and protection.

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Covering more than half the planet, the deep ocean sequesters atmospheric CO<sub>2</sub> and recycles major nutrients; is predicted to hold millions of yet-to-be-described species; and stores mind-boggling quantities of untapped energy resources, precious metals, and minerals (1). It is an immense, remote biome, critical to the health of the planet and human well-being. The deep ocean (defined here as below a typical continental shelf break, >200 m) faces mounting challenges as technological advances—including robotics, imaging, and structural engineering—greatly improve access. We recommend a move from a frontier mentality of exploitation and single-sector management to a precautionary system that balances use of living marine resources, energy, and minerals from the deep ocean with maintenance of a productive and healthy marine environment, while improving knowledge and collaboration.

We have an opportunity to make smart decisions now about the future of the deep ocean ahead of expanding and emerging uses—decisions that weigh benefits of use against both direct costs of extraction and external costs that include damage to sensitive and unknown ecosystems and their services that would be difficult to repair or replace.



Minerals from the deep. Active "smoker" chimneys precipitating iron, copper, and zinc sulfides from 290°C fluid in the Mariana Arc region, Western Pacific Ocean.

*Single-sector initiatives  
are insufficient  
...basically failures*

*Mengerink et al.*

*Science, 16 May 2014, 344:696-698*

Industrial fishing in the deep ocean is **moving inexorably deeper**; the mean depth of fishing activity has increased by 350 m since 1950 and is largely **unsustainable**, removing long-lived, low-productivity **species that cannot recover** on reasonable time scales. **Bottom trawling in effect "clear-cuts" hundred year-old fishes and thousand-year-old corals on seamounts and continental margins.** One fifth of the continental slope (4.4 million km<sup>2</sup>), which largely occurs below 200 m, has been trawled at least once and often multiple times. Only a few countries benefit briefly from the yield, but habitat loss is widespread and largely permanent in human time scales.

## Industry Lobbying Derails Trawling Ban in Europe

**BRUSSELS**—Les Watling, a marine biologist at the University of Hawaii, Manoa, loves visiting seamounts and studying the ecosystems of these underwater peaks. But these days he is spending time in a different setting, equally important to marine ecosystems: the European Parliament in Brussels. Watling is one of several scientists who have campaigned alongside environmental groups to influence two important votes

in October, when the Parliament voted to commit part of a €6.5 billion, 7-year aid package for Europe's fisheries industry to curbing overfishing and slowing the growth of the fishing fleet. But sources close to the negotiations on the trawling ban say that the environmentalists should expect to be disappointed by the upcoming vote. The sources say that opposition from the fishing industry and some members of the European Parliament (MEPs) has led to a watered-down regulation that would restrict bottom trawling practices but not end them.

Both battles show that the European Union is getting more serious about reforming its fisheries. According to the European Commission, 80% of Mediterranean stocks and 47% of Europe's Atlantic stocks are overfished, compared with only 21% for U.S. stocks. In 2011, the European Commission proposed an ambitious reform of its Common Fisheries Policy to curb overexploitation and make the industry more sustainable (*Science*, 22 July 2011, p. 396); it was approved by the European Parliament in February of this year.

The new aid package, the European Maritime and Fisheries Fund (EMFF), puts some of those goals into practice. A group of 14 marine scientists had sent MEPs an open letter—signed by 186 other researchers online—urging them to cut down on aid that encourages overfishing, including

Meanwhile, there has been opposition to the commission on deep-sea trawling, which uses heavy nets and gear along and bottom-set gillnets, which are seabed and retrieved after the types of fisheries, mostly bas

Spain, represent only about 1% of landings in the Northeast Atlantic. Scientists say they cause a great amount of ecological havoc, including bottom trawling and deep-water corals. The methods are not selective. About 40% of the catch consists of bycatch. And deep-sea species often have low reproduction rates, so collapsed populations take a long time to recover. About 100 scientists have signed a petition for the ban, released in June by the conservation nongovernmental organization Bloom. Watling says that he formulated in the past decade the benefits of a ban. "This is a brainer regulation," he says.

But the fishing industry says that a ban can be made sustainable through management measures, such as setting quotas or "freezing the footprint" of fishing—*that is, closing off deep-sea areas that are not yet fished to future boats.*

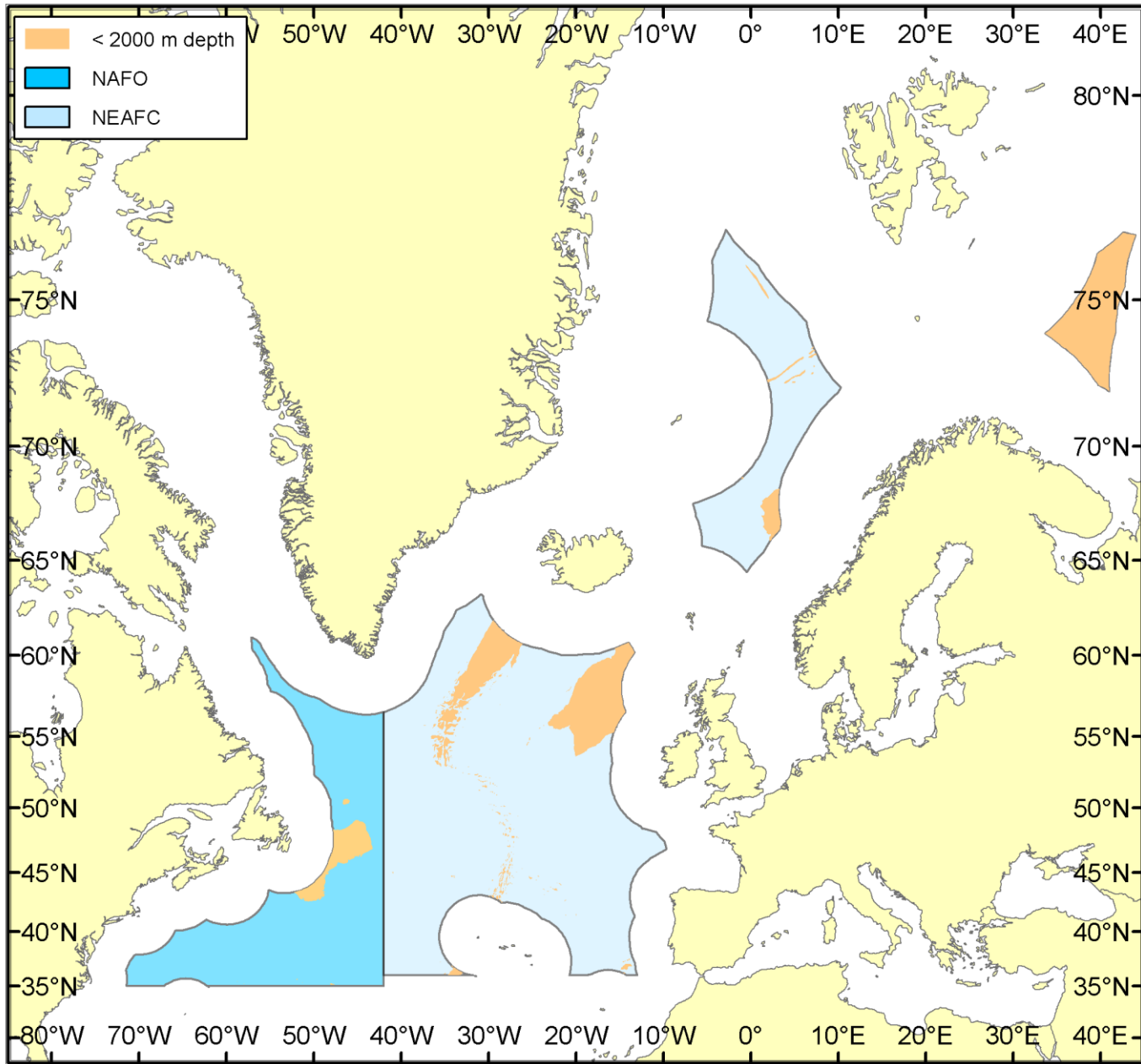
And some scientists have supported a ban as well. In a note on its website in June, Ifremer-funded fisheries research institutes at 26 sites in France, said that fisheries management has already failed to most overexploitation for the institute added that a ban on deep-sea trawling "does not appear necessary" because practices have reached "at least sustainable levels." The International



**Sea battle.** A French campaign poster calls deep-sea trawling a "weapon of mass destruction."

## Bloom foundation: *Deep-sea trawling is Weapon of Mass Destruction*





# Fishing regulations to protect VMEs and facilitate recovery of presumed reduced stocks

Most measures based on 'precautionary approach' thinking, utilizing scientific advice available from ICES or RFMO's own scientific advisory body

- Effort restrictions.
- Vessel licensing.
- VMS monitoring and improved data reporting.
- Total allowable catch (TACs) for selected species
- Closed areas to certain gears.
- Gill-net ban >200m (NEAFC)
- Port state control and blacklisting to reduce IUU fishing

**UNREGULATED FISHERIES ARE UNACCEPTABLE**

# Bottom fishing (VME) regulations

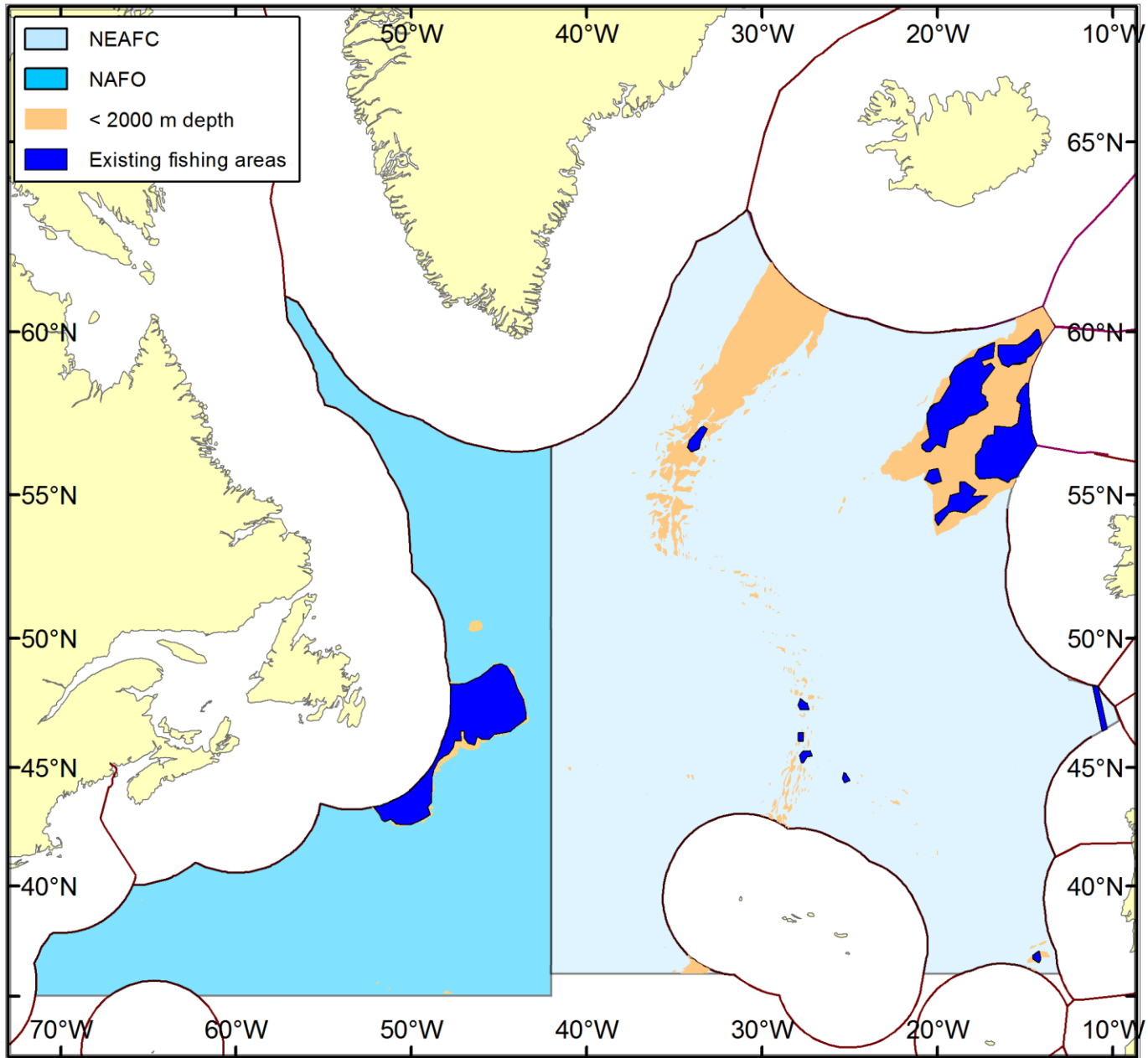
In closed areas: no fishing (other than by midwater gears)

In 'existing fishing areas': move-on rule applies, reporting, temporary closure if encounters with VMEs occur.

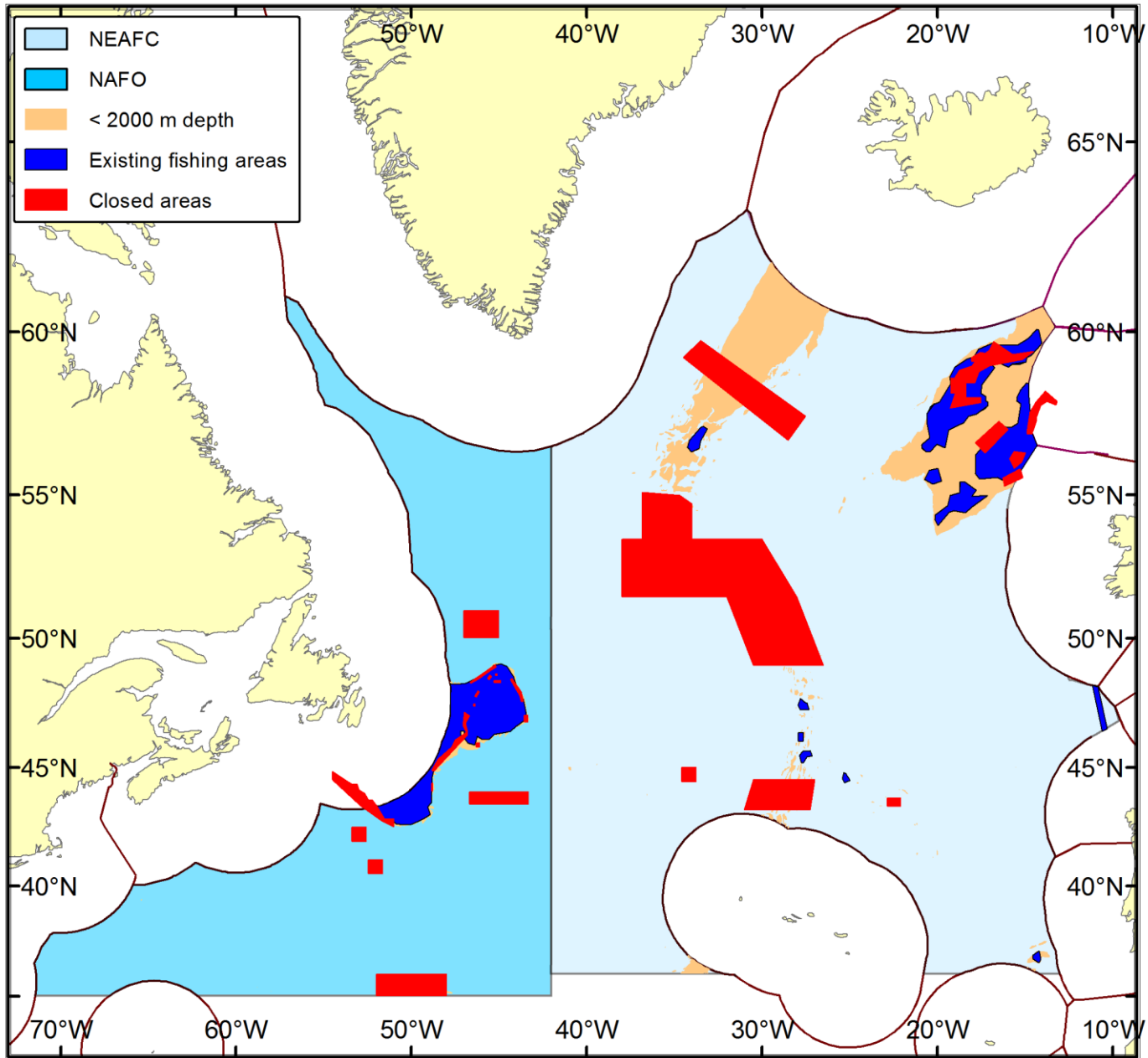
In 'new fishing areas': exploratory fishing plan, observers, move-on rules, temporary closures

**Encounter protocol**: an encounter with a VME indicator is defined in terms of a quantity of corals and sponges caught in a fishing operation.

**Move-on rule**: move away certain distance, report, temporary closure.







# NEAFC Regulatory area, area categories

	Existing fishing area	New fishing area	VME Closure area
South of Iceland (4.900.000km-sq)	0.9 %	91.9 %	7.3%
Norwegian Sea (326.000km-sq)		100%	
Arctic Ocean (275.000km-sq)		100%	

Closures south of Iceland are 54% of potentially fishable area < 2000m

# NEAFC recommendations for 2013 revisions

PECMAS , April 2014

VME regulations:

- Requirements for **pre-assessment** of exploratory fisheries proposals (in new fishing areas) elaborated and **strengthened**. Contents specifications of "Letters of Intent". LOT to be followed by a preliminary assessment of the known and anticipated impacts.

- ***"Exploratory bottom fisheries shall only commence after having been assessed by PECMAS and approved by the Commission."*** The role of ICES defined.

- **Move-on rule:** actions and area to be vacated clearly defined.

- **Secretary mandated to implement temporary closure.**

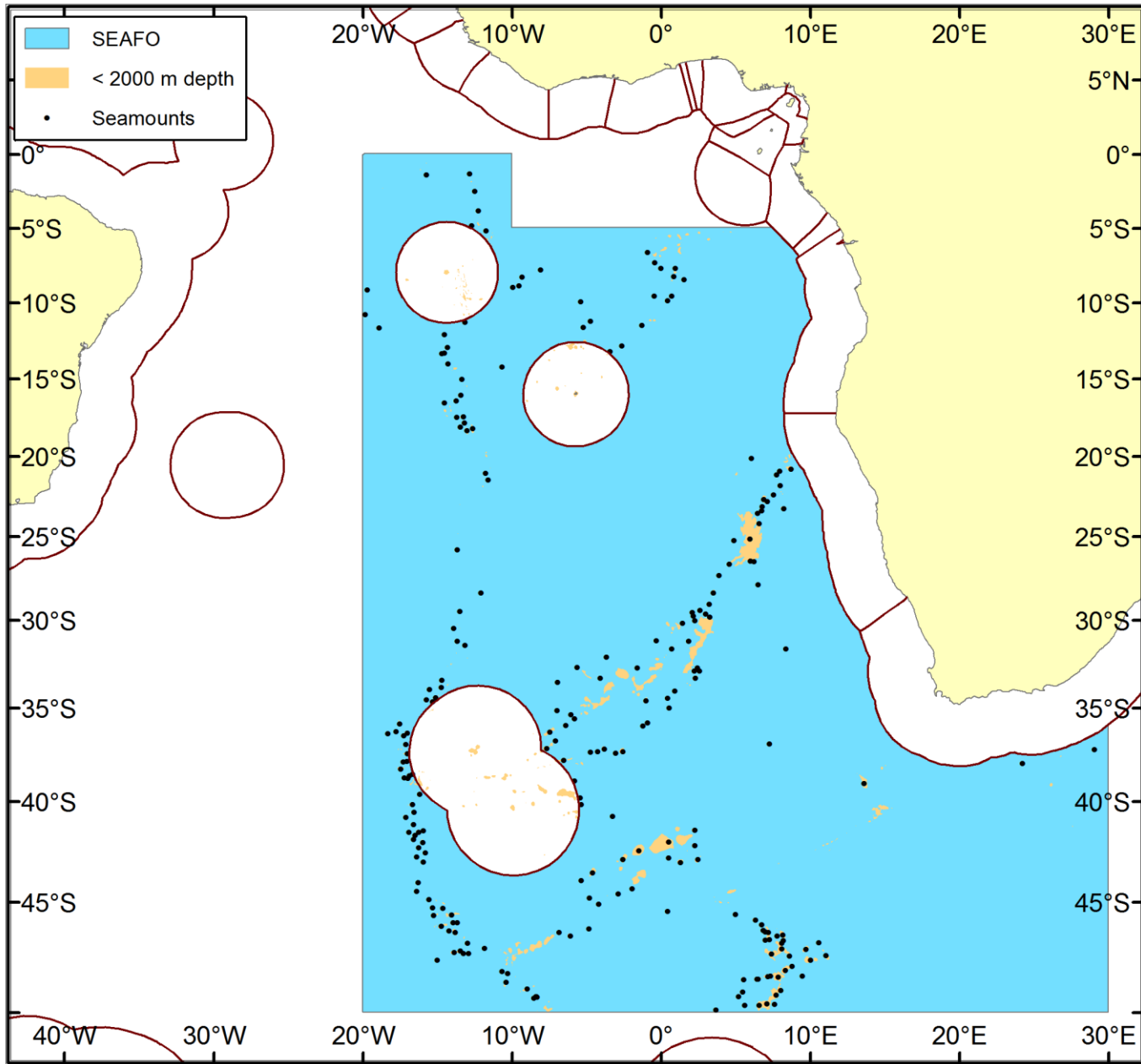
- **Closures in force until 31 Dec 2017 (!)**

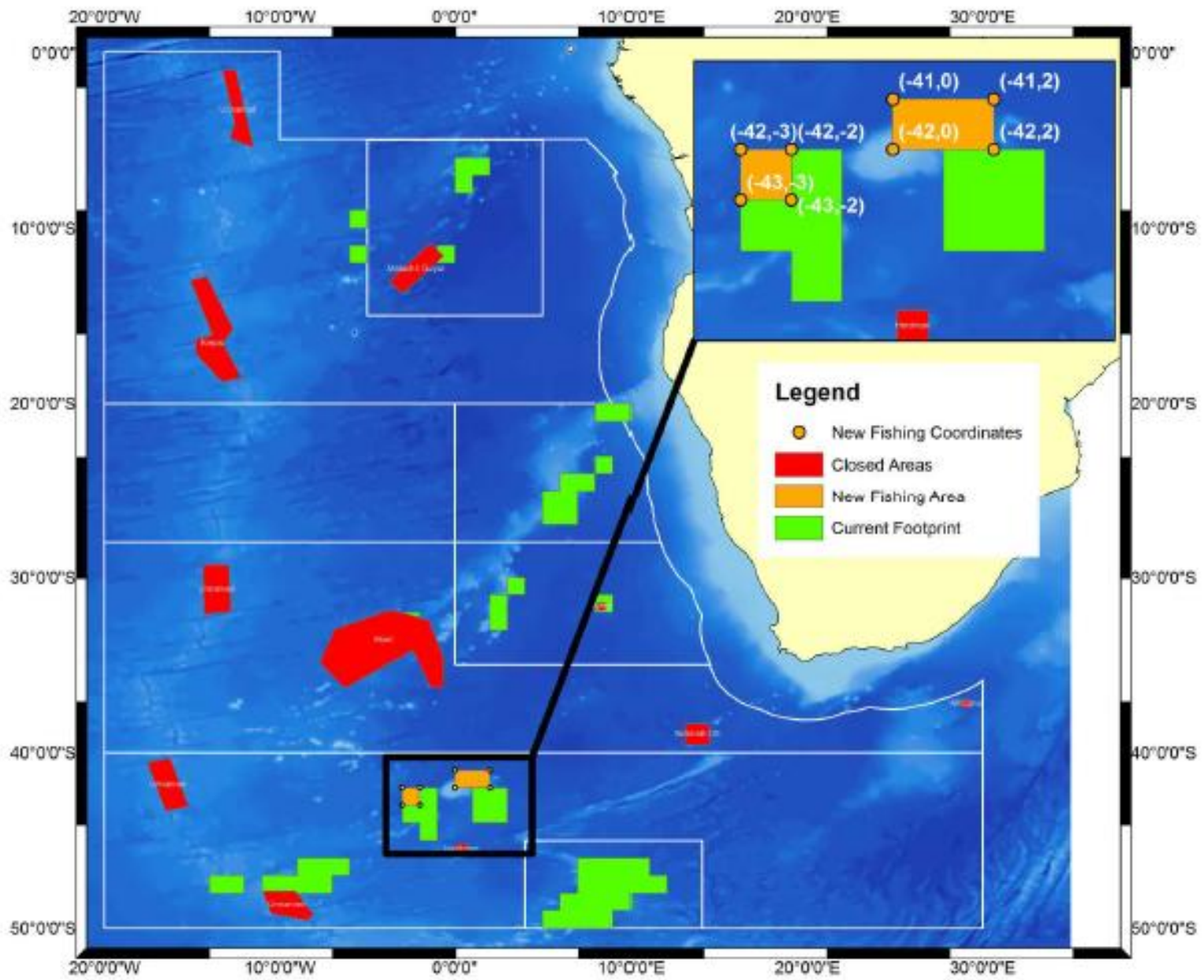
Closures:

Postponed until September meeting. ICES advice received.

Deep-sea stock regulations:

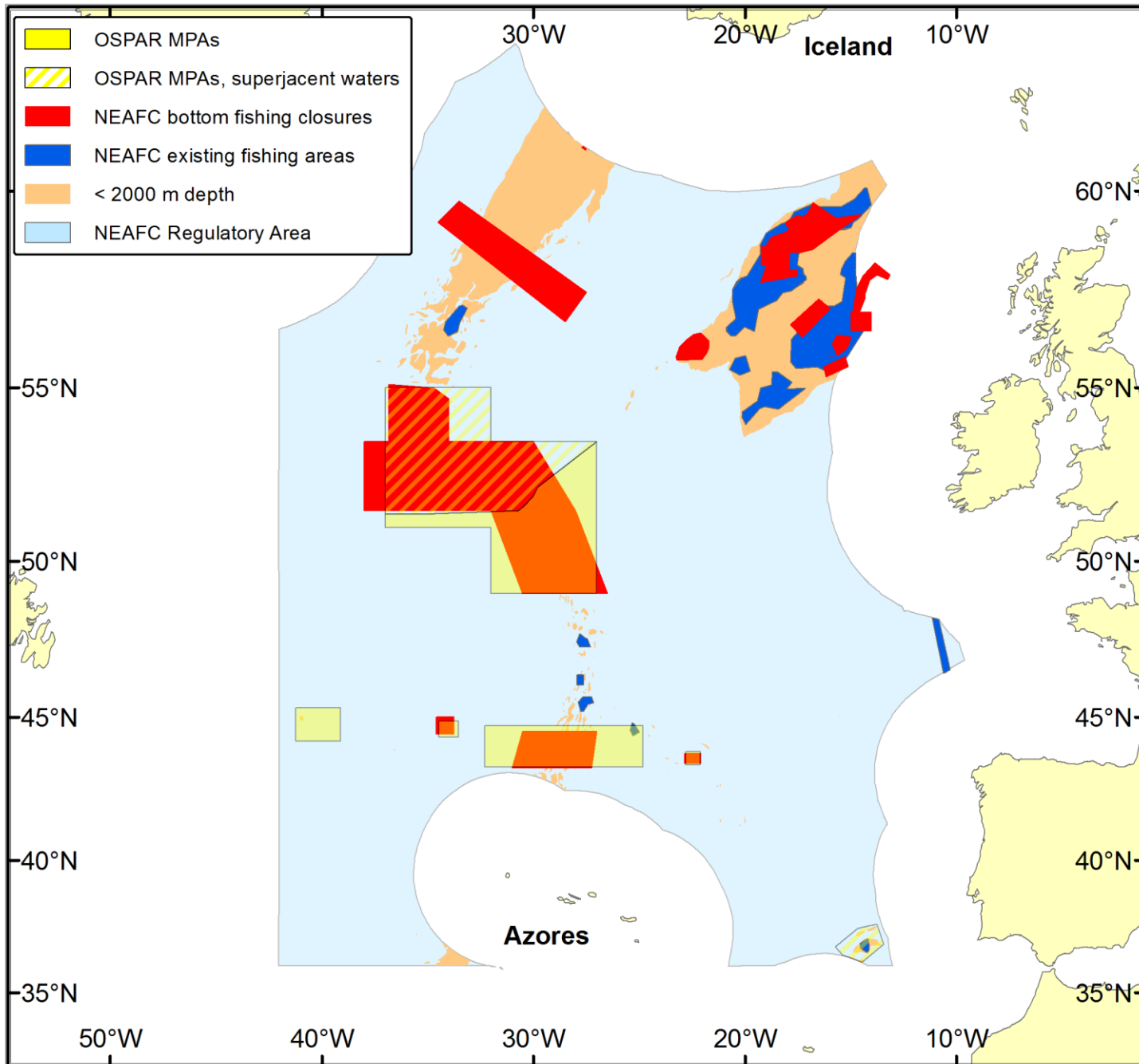
In place, but being revised. Effort data series being compiled.





# OSPAR MPAs

- introduced by Bergen Ministerial Meeting 2010
- Meant to protect against harmful activity in ‘superjacent waters’ and on seabed, incl. same targets as NEAFC.
- Management objectives being developed, but OSPAR has limited regulatory power.
- Management actions to be implemented by relevant intergovernmental bodies (NEAFC, ISA, IMO, ICCAT).
- NEAFC and OSPAR have MoU and “collective arrangement”



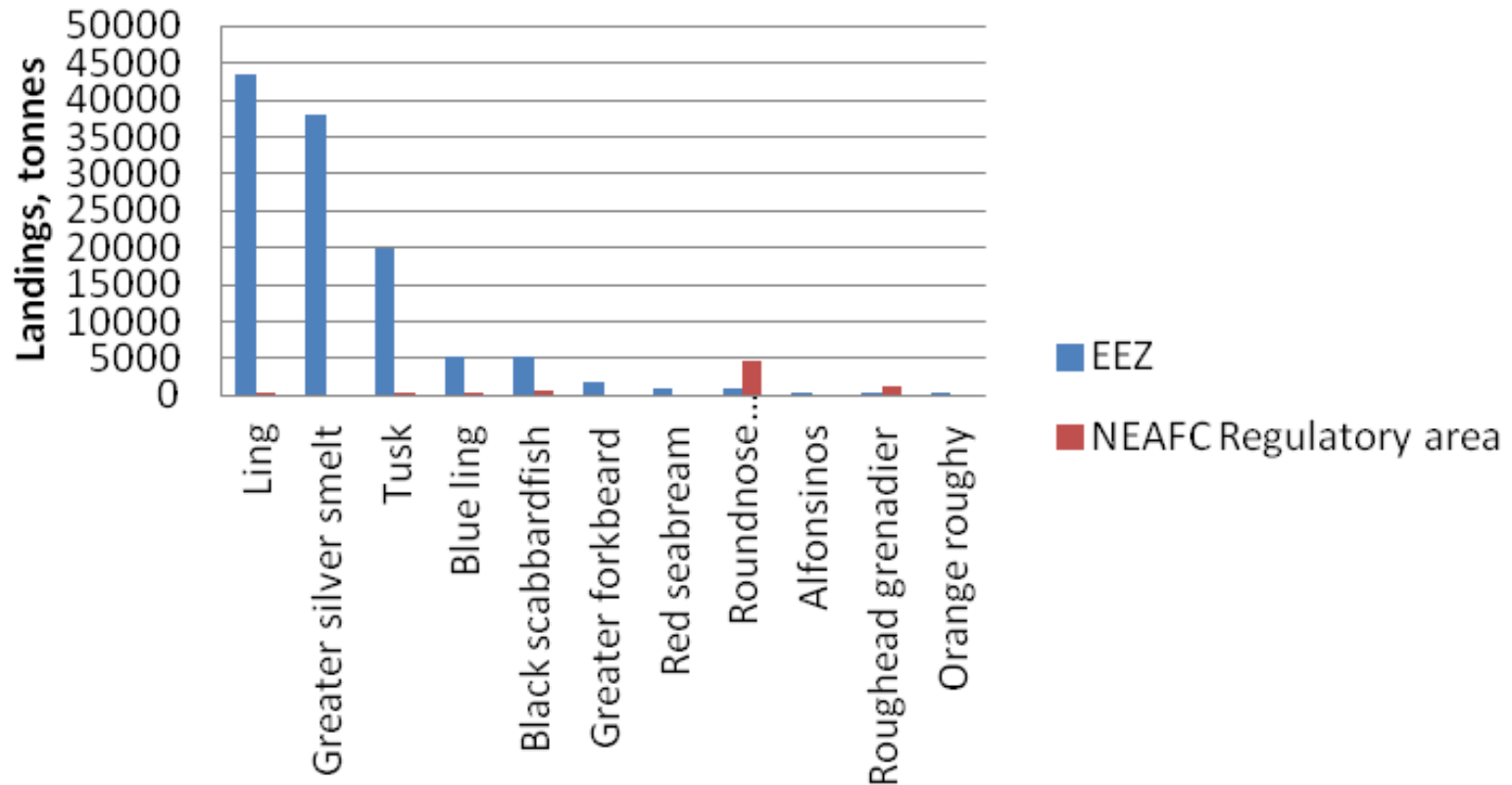
# IUCN MPA categories

	IUCN Category	Main objective or purpose
IA	Strict Nature Reserve	Managed mainly for science
IB	Wilderness Area	Managed mainly to protect wilderness qualities
II	National Park	Managed mainly for ecosystem protection and recreation
III	Natural Monument	Managed mainly for conservation of specific natural features
IV	Habitat/ Species Management Area	Managed mainly for conservation through management intervention
V	Protected Landscape/ Seascape	Managed mainly for landscape/ seascape conservation and recreation
VI	Managed Resource Protected Area	Managed mainly for the sustainable use of natural ecosystems

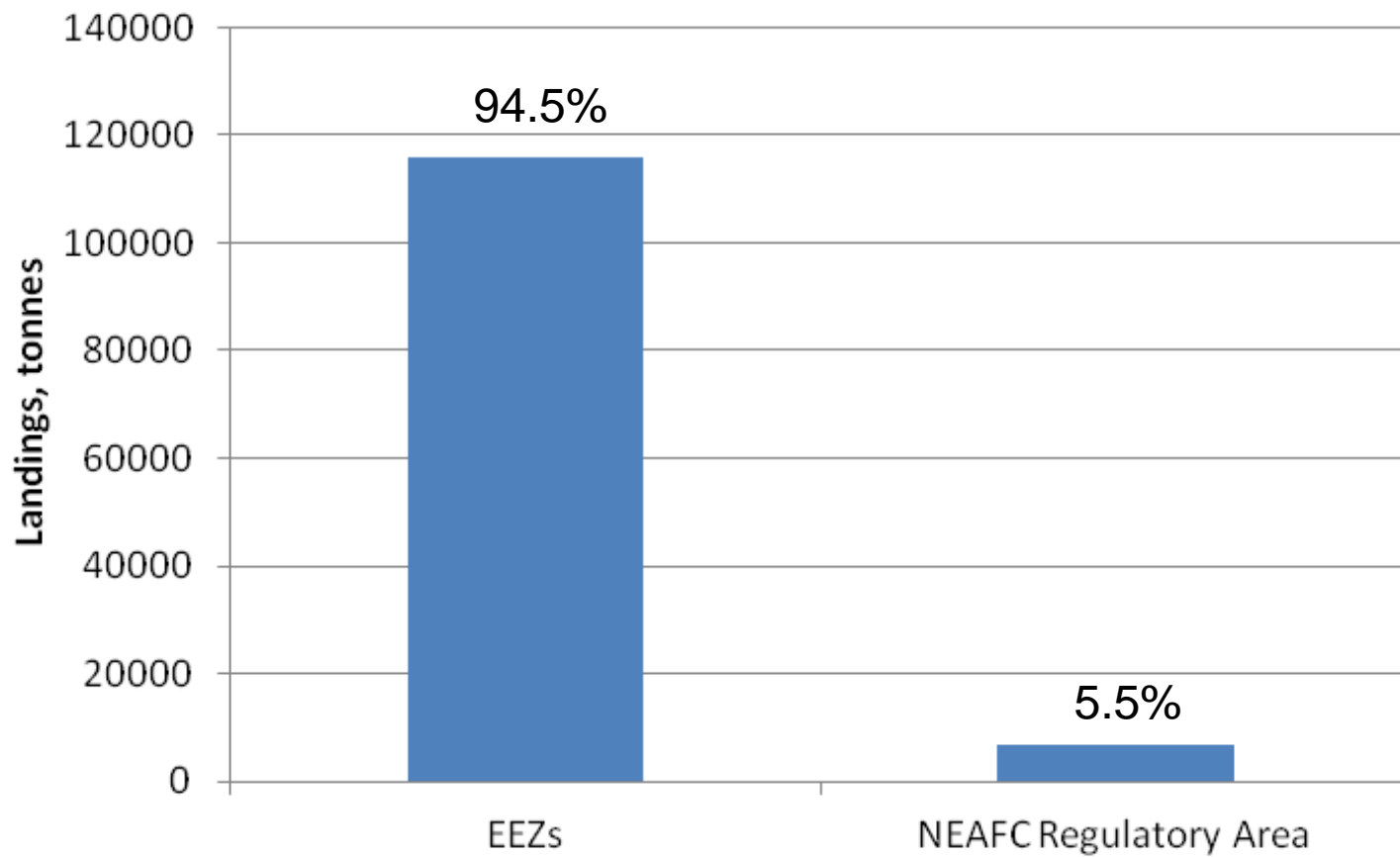
RFMO closures and other subarea categories satisfy many MPA criteria but are not recognised as MPAs



## 2013 landings of deepwater species

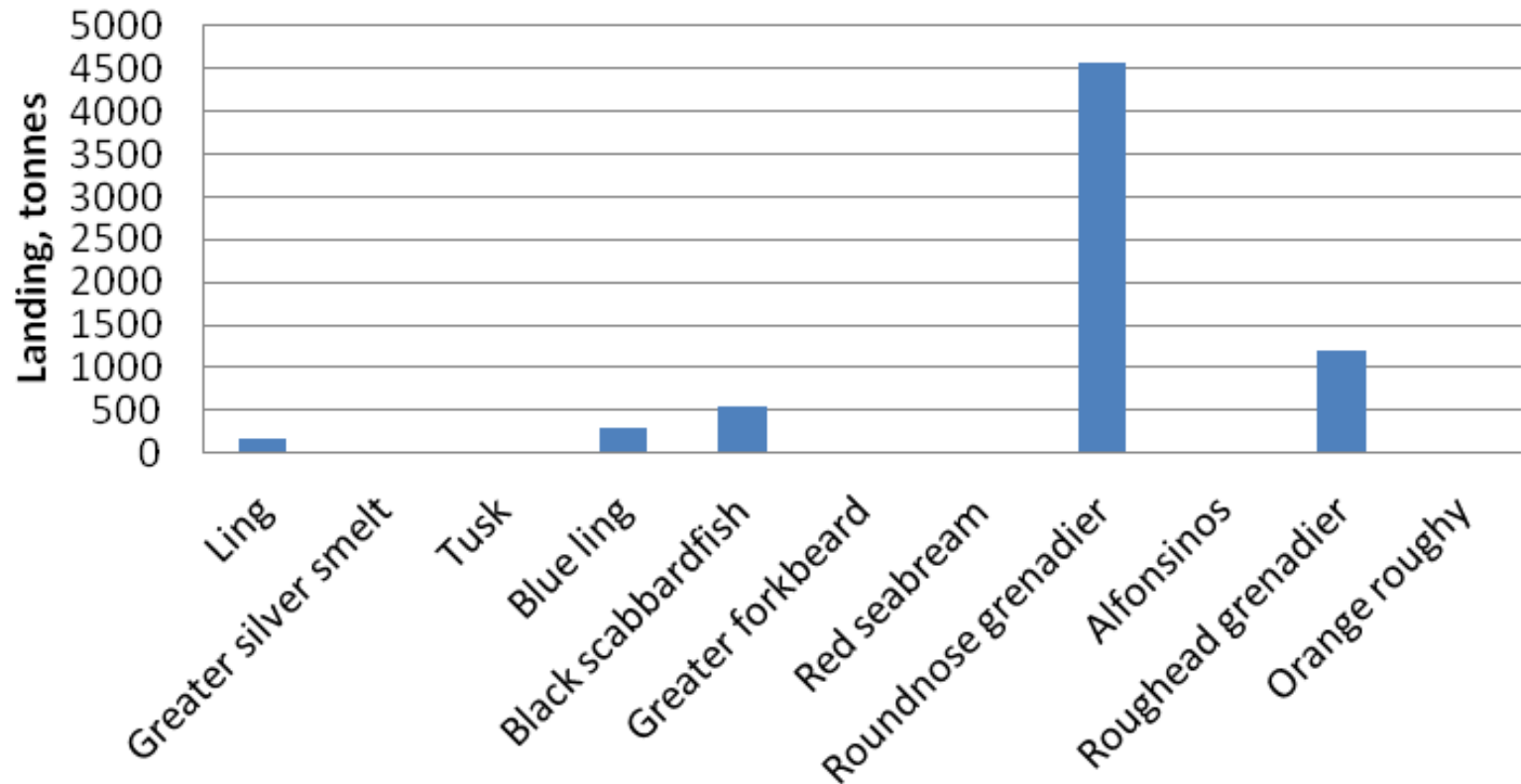


Landings of deepwater species in the ICES Area, 2013  
(ICES WGDEEP 2014)

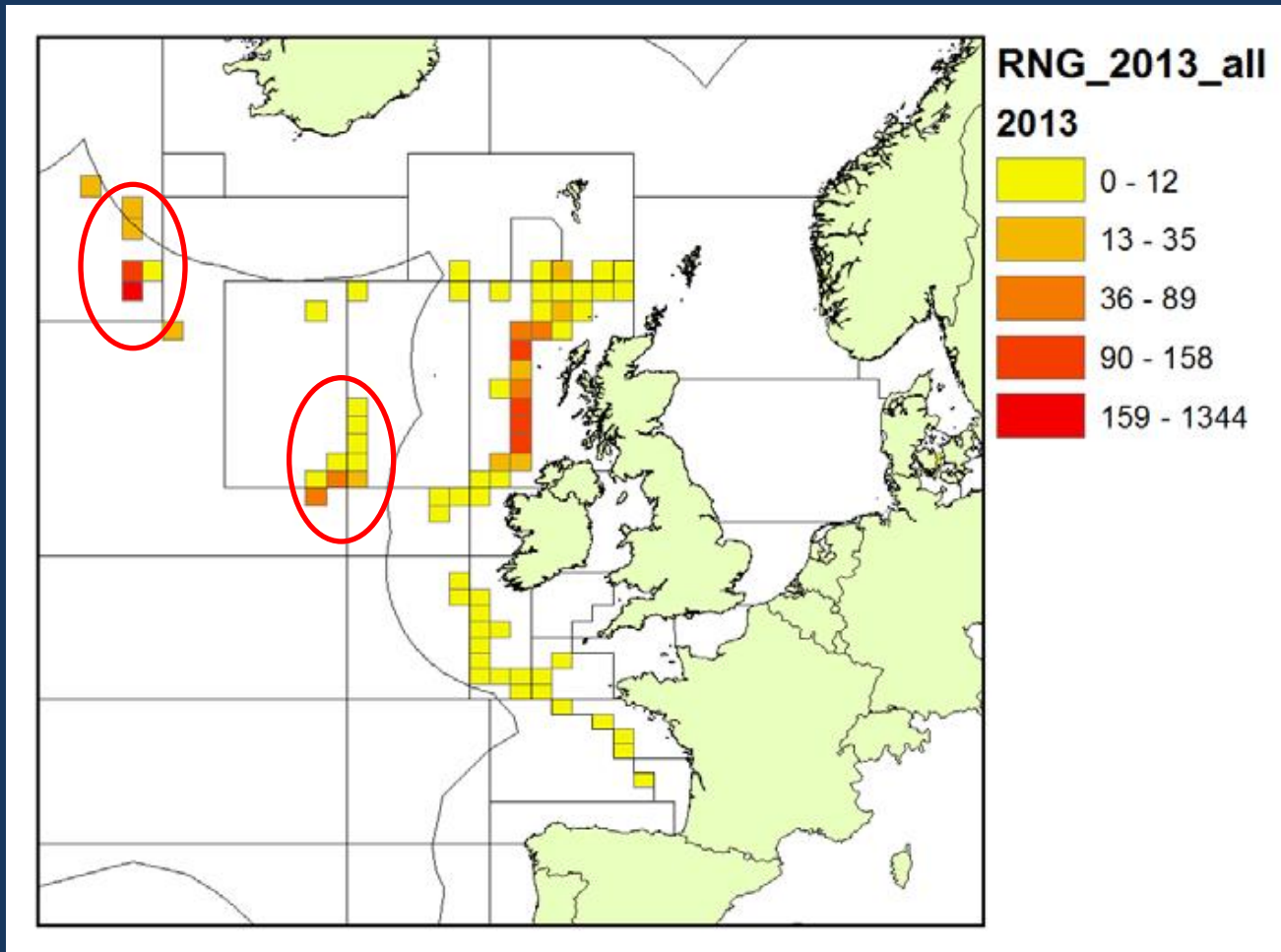


Landings of deepwater species in the ICES Area, 2013  
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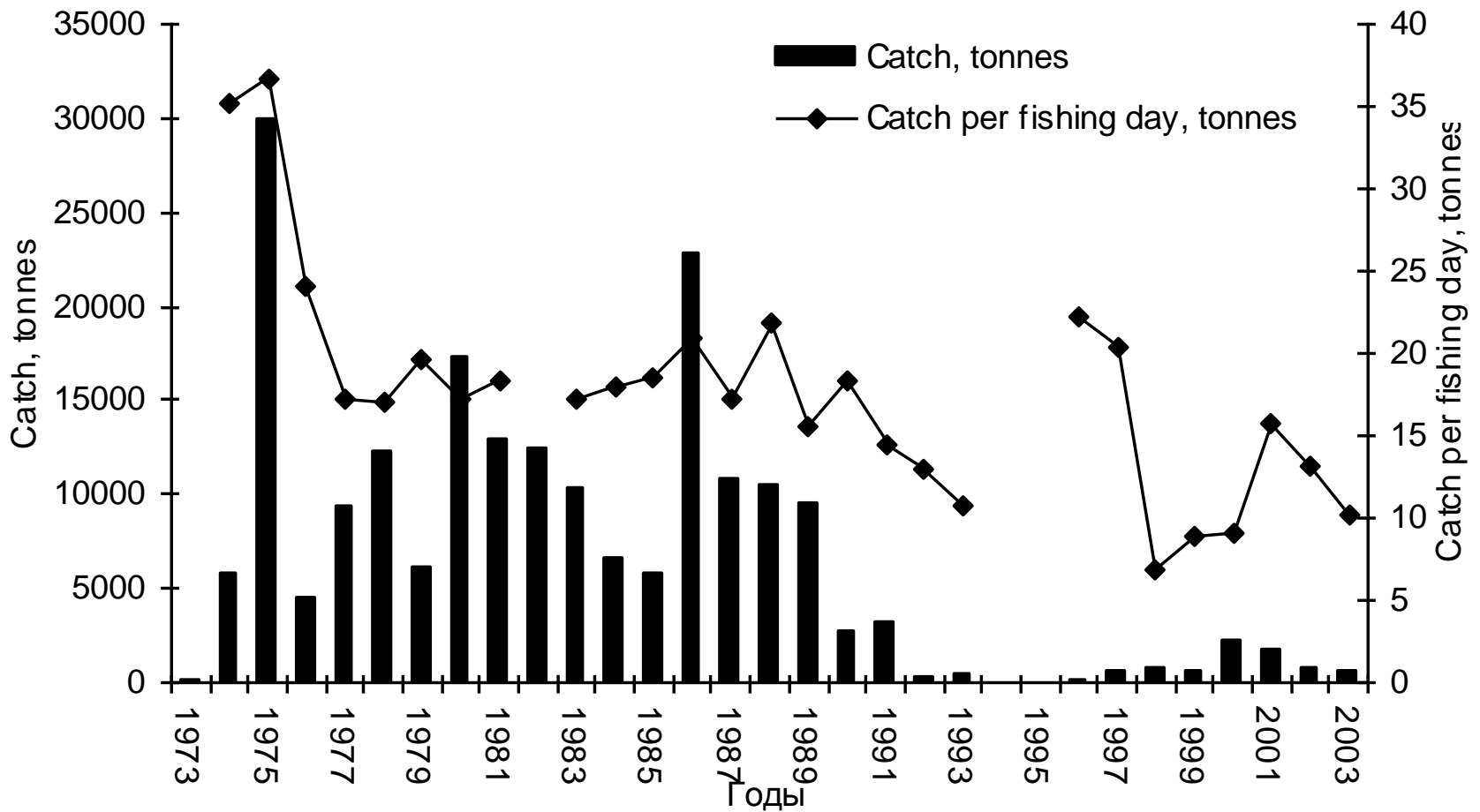
## 2013 Landings from NEAFC RA



Landings of deepwater species in the NEAFC Regulatory Area, 2013  
(ICES WGDEEP 2014)



Fishing areas in NEAFC RA: Hatton-Rockall & Reykjanes Ridge



Soviet/Russian catch and CPUE of roundnose grenadier on the Mid-Atlantic Ridge in 1973-2003 (Vinnichenko, 2002; Vinnichenko, Khlivnoy, 2004a).

## DSS licences (2010)

Faroe Isl.: 5  
EU : 34  
Norway: 11  
Russia: 10

but

Less than 10 vessels actually take part in the fisheries

(Based on VMS records)

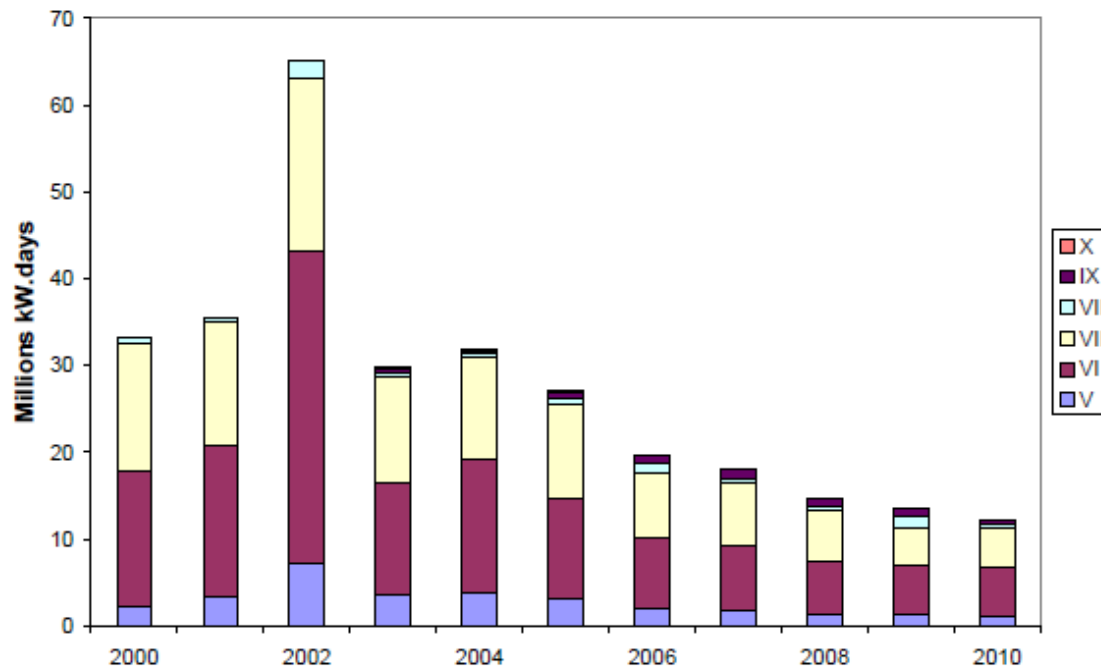


Figure 3. Deep-water fishing effort from EU vessels in Atlantic EU and non-EU waters of ICES Subareas V-X (from STECF 2011 data).

EU DW fishing effort (EEZ and ABNJ, but not Subarea XII)

# Success or failure?

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- At least for bottom fisheries in ABNJ, an adequate framework is in place in the most significant fishing areas.
- Most fisheries are being regulated and fishing activity has declined to low levels in the ABNJ (and are also declining inside EEZs. But DW fisheries still need close attention!
- Key measures were put in place by fisheries IGOs in response to regional scientific advice and UNGA calls, before and without high-seas MPAs and EBSAs.



# The most frequent claims

- Most VME closures are temporary (...in force until...), hence not true MPAs!
- Encounter thresholds (ridiculously) high. Will never happen!
- No encounters reported because there is an incentive to cheat and observer obligations are too limited!
- Temporary closures are voluntary!
- Pre-assessment requirements are too weak!
- Benthopelagic trawling, likely to have intermittent bottom contact, remain allowed in all area types (not SEAFO) and !
- Stock-specific measures are inadequate! (e.g. alfonsino in NAFO).



# FAO ABNJ project, 2014 –

1. Policy and legal frameworks for sustainable fisheries and biodiversity conservation in the ABNJ deep seas.
2. Reducing adverse impact on VMEs and enhancing conservation components of EBSAs.
3. Improved planning and adaptive management for DSF in the ABNJ.
4. Development and testing of a methodology for area-based planning.
5. Project monitoring and evaluation.

# CHALLENGES

- Assessment and monitoring of effectiveness.
  - Regional reconciliation of efforts.

• Compatible measures in Southwest Atl., and in areas with young/emerging RFMOs.

Compatible measures within EEZs