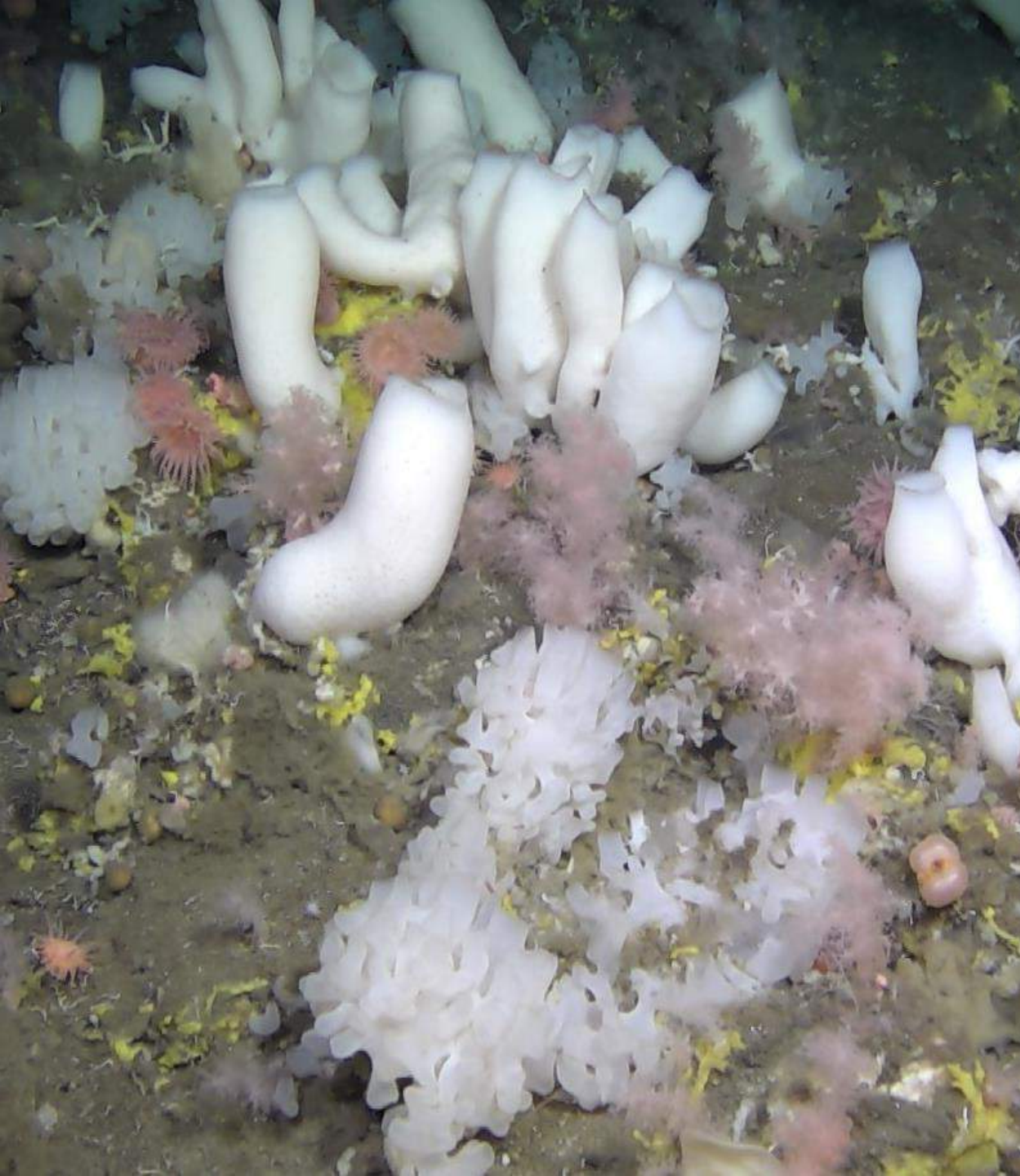
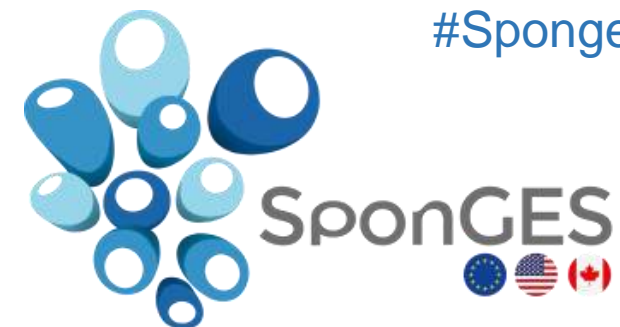


The importance of studying deep-sea sponges

Hans Tore Rapp, Ellen Kenchington, Shirley Pomponi,
Joana R Xavier
and the SponGES consortium

@DeepSea_Sponges
#SpongeThursday



Sponge

grounds

Areas where sponges dominate the megabenthic communities

up to 25 ind./m²

over 90% total invertebrate biomass

Widespread

Geographically - all oceans, all latitudes

Bathymetrically - 30 - > 3000 m depth

Geomorphological features – shelf and slope, oceanic ridges, seamounts, etc.

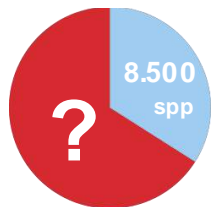
Arctic



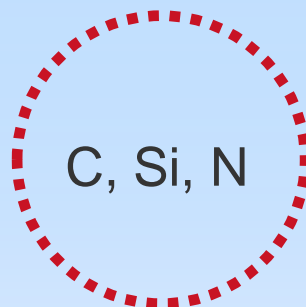
Antarctica

Ecosystem goods and services

goods



Diversity
reservoir



key for **nutrient cycling**
bentho-pelagic coupling
habitat and nursery for other species

BLUE BIOTECH



5000+

sponge-derived
compounds

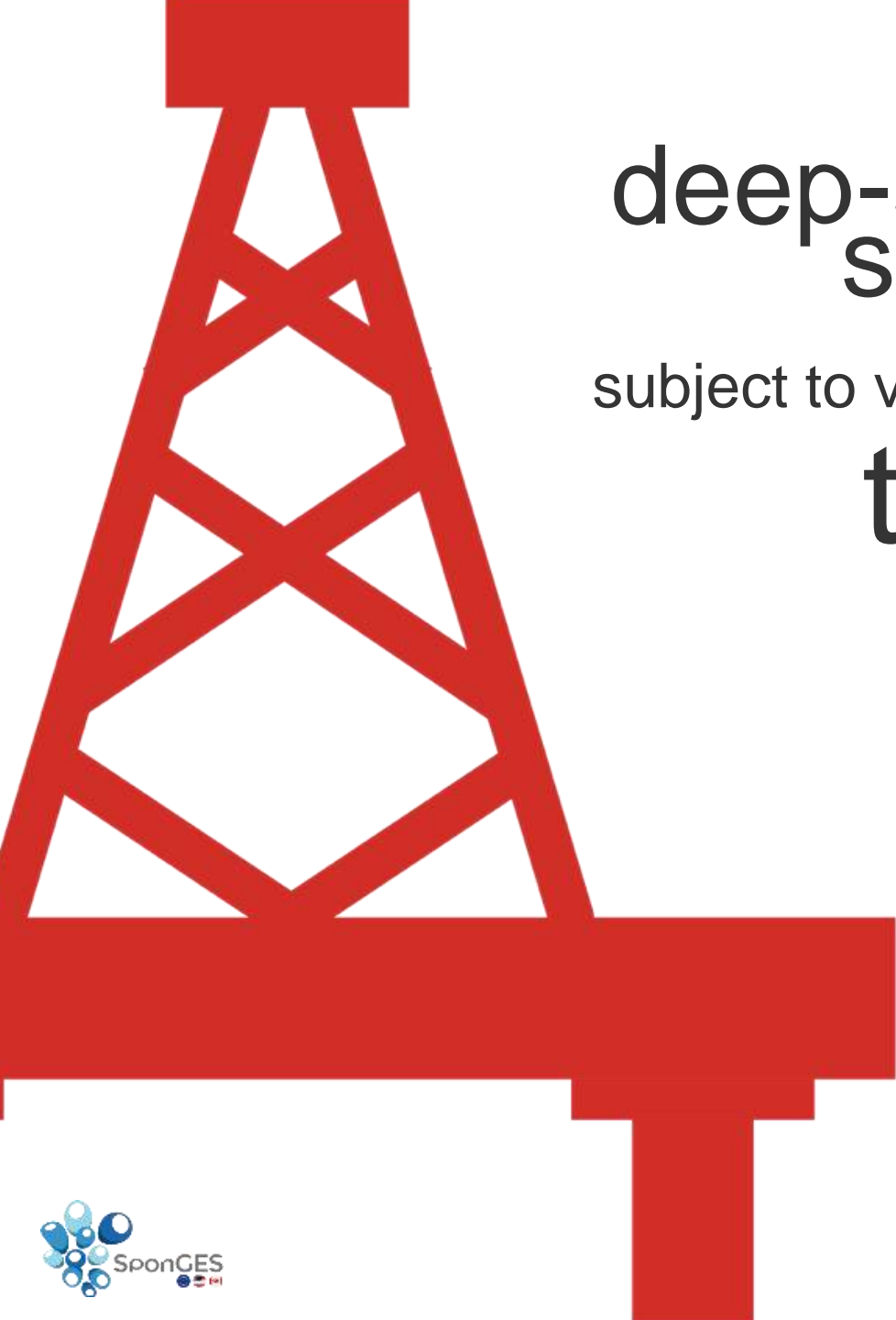
Biomaterials
collagen, biosilica

Biomimetic
inspiration

deep-sea sponges

subject to various

threats



however,

sponge

grounds

are amongst the

most

understudied

habitats

of the

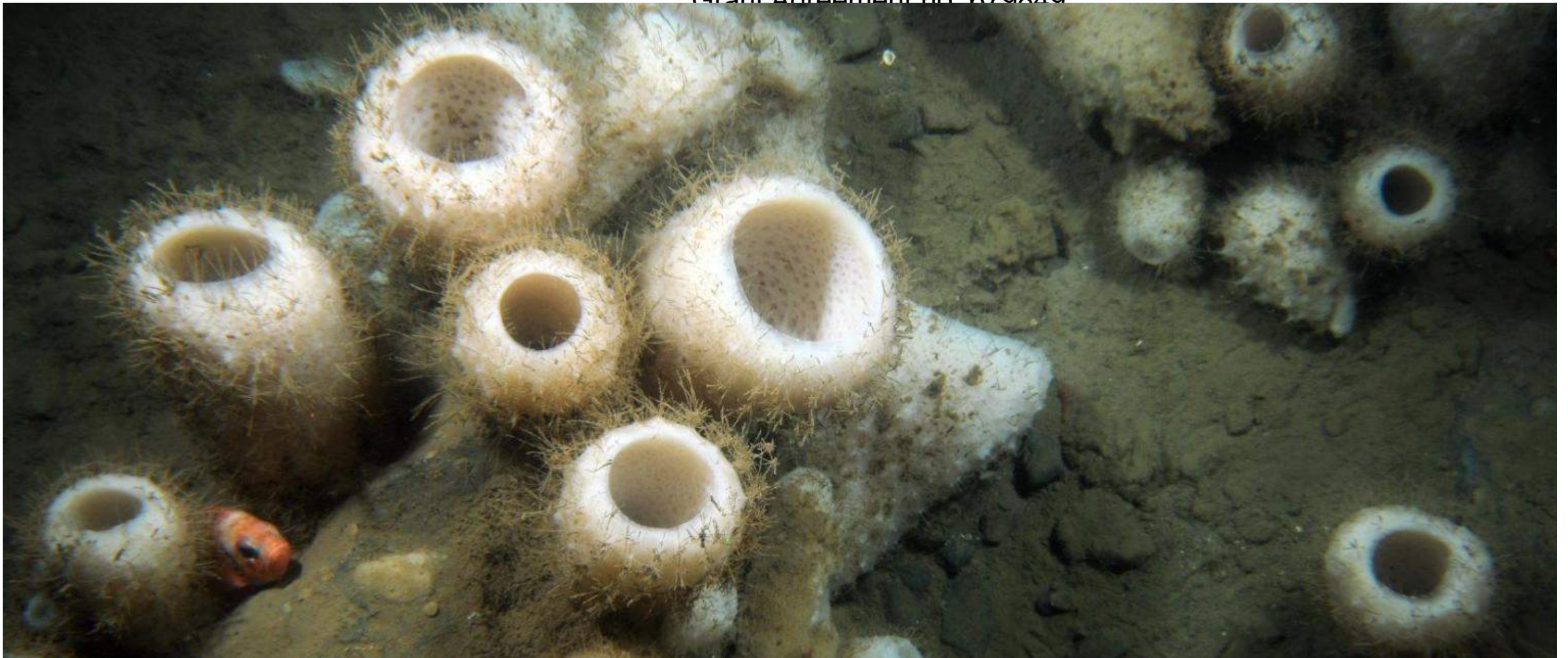
deep-sea



SponGES

Deep-sea Sponge Grounds Ecosystems of the North Atlantic: an integrated approach towards their preservation and sustainable exploitation

Grant Agreement no. 679849



The SponGES project

Horizon 2020 Framework Programme

Blue Growth: Unlocking the potential of Seas and Oceans

BG-01-2015: Improving the preservation and sustainable exploitation of Atlantic marine ecosystems

Coordination team:

Hans Tore Rapp (coordinator, University of Bergen, Norway)

Shirley Pomponi (co-coordinator, Florida Atlantic University, USA)

Ellen Kenchington (co-coordinator, Fisheries and Oceans Canada)

Joana Xavier (scientific project manager, University of Bergen)

Hege Høiland (financial project manager, University of Bergen)

Consortium: 20+ **EU**, **USA** and **Canadian** partners + FAO of the UN

Timeframe: 4 years (March 2016 – February 2020)

Budget: EC contribution ca. 10 M€ + considerable contributions from the partner institutions



SponGES

goals

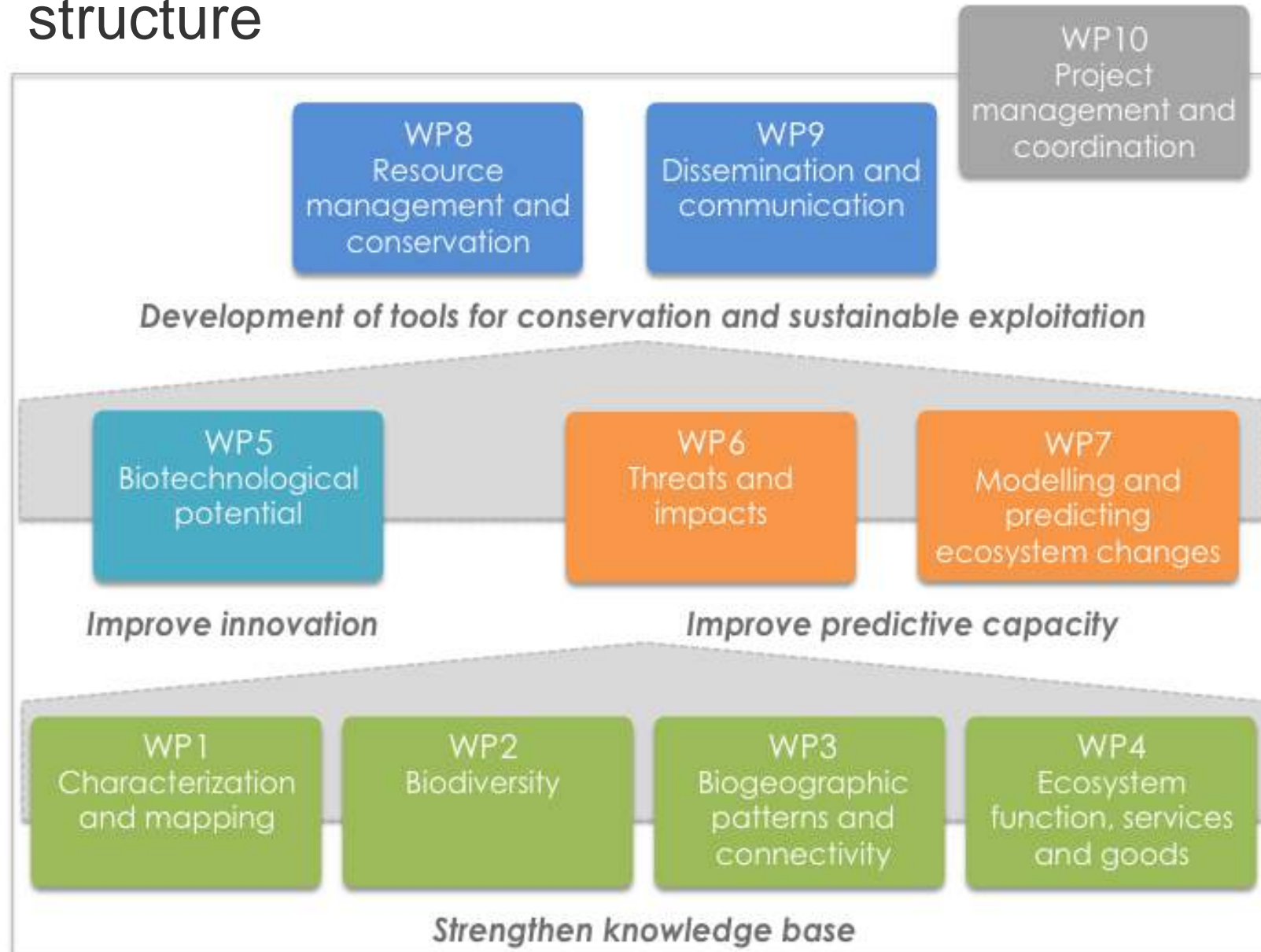
The overall objective of SponGES is to **develop an integrated ecosystem-based** concept for the **preservation and sustainable exploitation** of **vulnerable deep-sea sponge ecosystems** of the North Atlantic by:

- 1 - **Strengthening the knowledge-base** on North Atlantic sponge ground ecosystems by investigating their distribution, diversity, biogeography, function and dynamics (WP1-4)
- 2 - **Improving the capacity to model, understand and predict** threats and impacts and future anthropogenic and climate-driven changes to these ecosystems (WP6-7)
- 3 - **Improving innovation and industrial application** by unlocking the biotechnological potential of these ecosystems (WP5)
- 4 - **Advancing the science-policy interface and developing tools** for improved resource management and good governance of these ecosystems from regional to international levels across the North Atlantic (WP8-9)



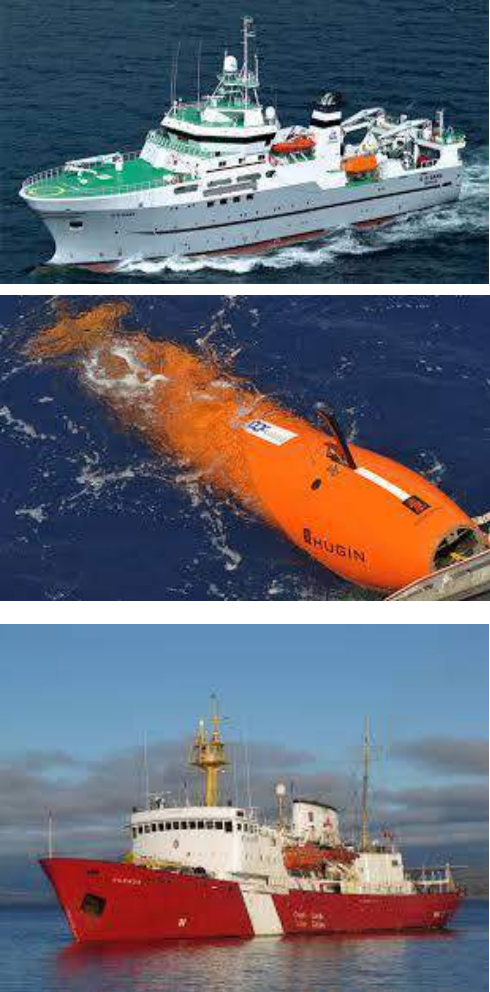
Project

structure



Transdisciplinary ocean exploration

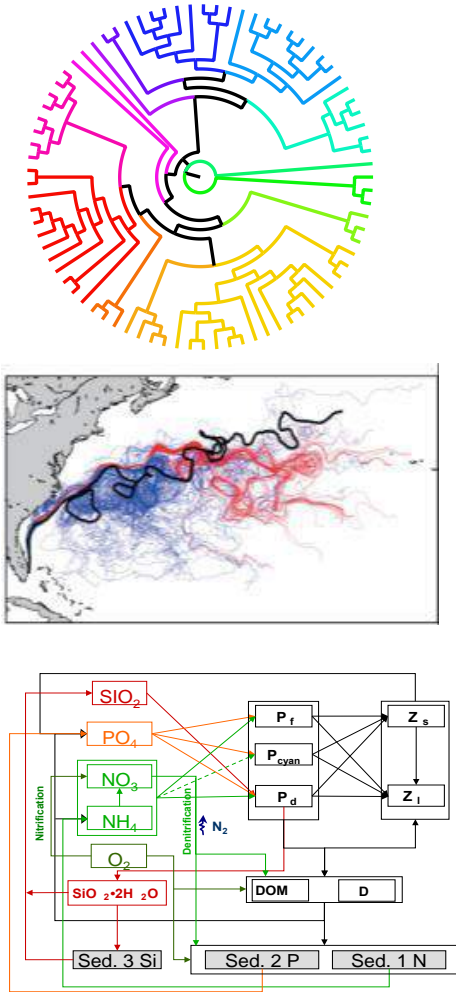
In the field



in-lab



in-silico



SponGES

Case Study Areas

CS1 - Flemish Cap

Boreal tetractinellid grounds
fisheries (trawl) – variable impact

CS2 - Schultz massif

Arctic mixed grounds
no known impact

CS3 - W Barents Sea

Boreal tetractinellid grounds
fisheries (trawl) – variable impact
oil and gas – unknown

CS4 - Avilés canyon

Temperate tetractinellid grounds
fisheries (gillnet, longline) – variable impact

CS5 - Le Danois bank

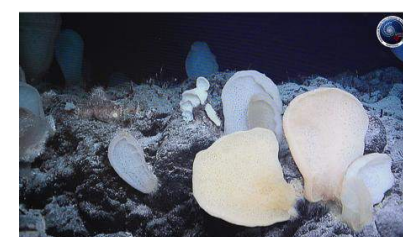
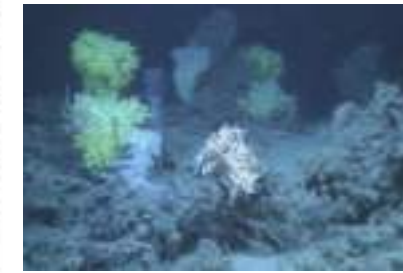
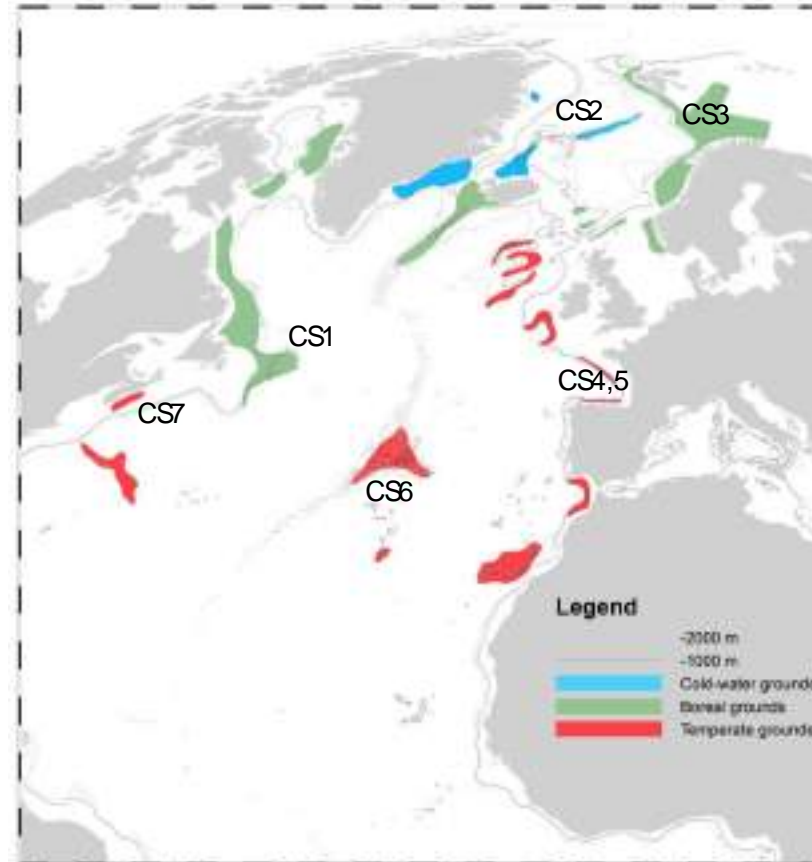
Asconema setubalense grounds
fisheries (gillnet, longline) – variable impact

CS6 - Condor seamount

Pheronema carpenteri + mixed grounds
fisheries (longline) – moderate impact

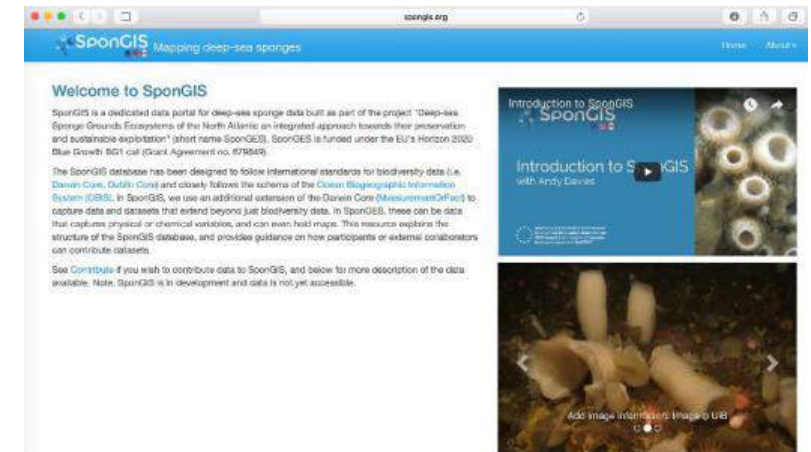
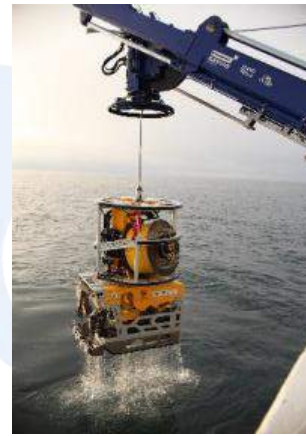
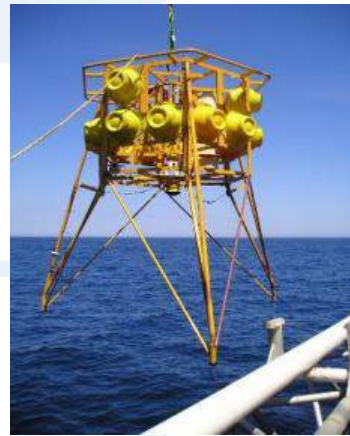
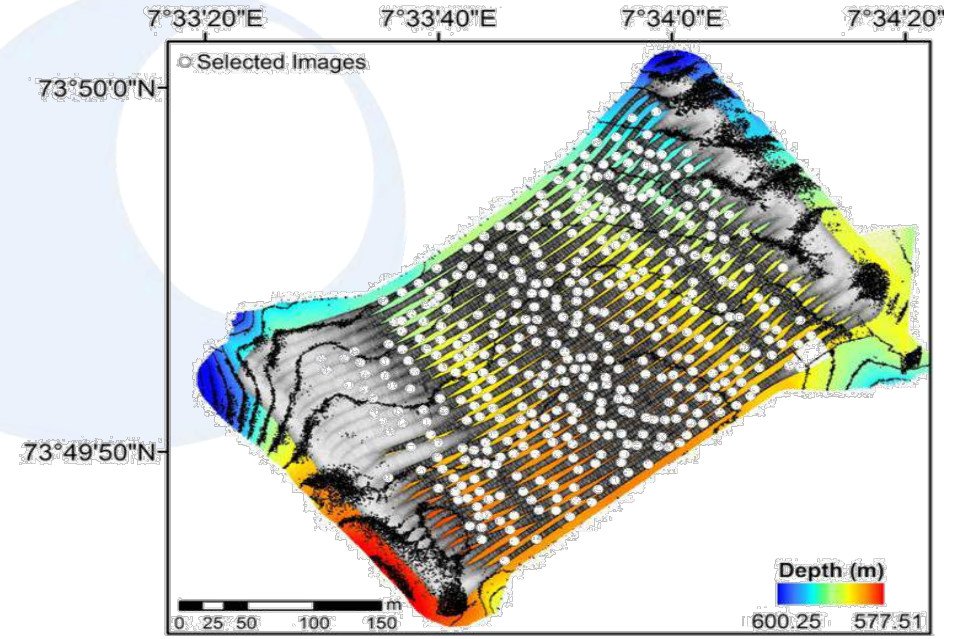
CS7 – Nova Scotia

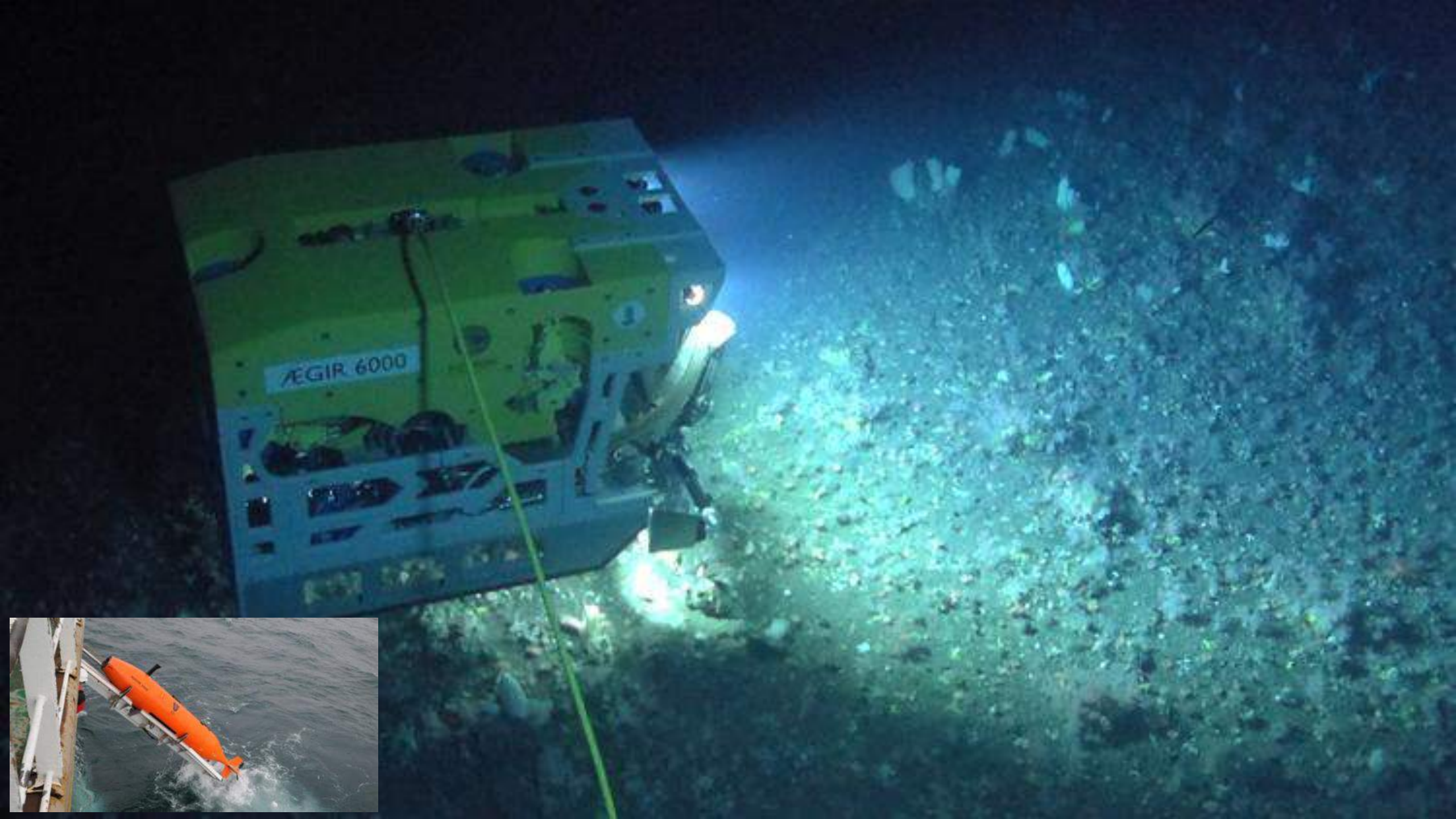
Vazella pourtalesii grounds
fisheries (trawl) – variable impact
some areas closed to fisheries



Ecosystem mapping and characterization

- ✓ Extensive data and samples collection
- ✓ Ecosystem characterization
 - Oceanographic (short and long temporal scales)
 - Geological
- ✓ Habitat mapping at multiple scales
- ✓ SponGIS data portal established





SponGES CS2

the **Schultz** massif

