Monitoring of macro- and mega- gelatinous organisms at large spatio-temporal scales

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CONTEXT

Now = increasing concern for marine resources management and protection

In Europe: the Marine Strategy Framework Directive (MSFD) is building and aims at Good Environmental Status of marine waters for 2020

→ requires a monitoring program and the use of adequate indicators

MSFD has an ECOSYSTEMIC approach and is divided in 11 descriptors.

Where does « Plankton » fit?

→ D1 (biodiversity)
→ D2 (non indigenous species)
→ D4 (food web)
→ D7 (hydrographical conditions)

PROBLEMATIC

As we know, plankton = complex spatio-temporal dynamic
→ challenging to understand
+ few plankton monitoring (and mostly coastal ones)
+ no real monitoring of macro- and mega- gelatinous organisms

= Lack of consideration at the political level (MSFD, …)

<u>We are missing an important part of the ecosystem!</u>

- **Jellyfish are not trophic « dead end »! → Strong top-down impacts. If not considered = Big bias in food-web models *(Hamilton, in Nature 2016)***
- **Also increase of blooming events → important economic impacts**

→ Need for data and monitoring at large spatio-temporal scales!

PROPOSED SOLUTION

A common protocol at the European scale taking advantage of the trawling device on recurrent fishery surveys

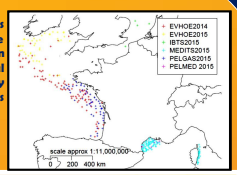
→ Cost-effective
→ Time effective
→ Potential for gaining regular observations over large spatio-temporal scales
→ No other sampling design can compete in regards to these advantages

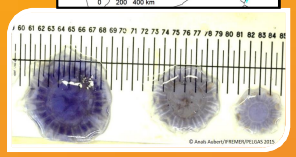
Protocol = tested in France in 2014/2015 and currently on use on several fishery cruises (Ifremer)

<u>Results:</u>

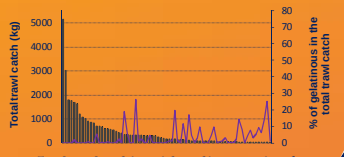
→ Organisms collected in good state in general, allowing taxa identification
→ Abundances of gelatinous species and/or taxa
→ Size-spectra measurements of gelatinous taxa in several fish surveys
→ First reflexion on sampling strategy (high gelatinous densities when fish catches are low)

Map of stations where the protocol has been tested for several IFREMER fishery surveys





Picture « out-of-water » of the Cnidaria species *Cyanea lamarckii*



Total trawl catch in weight and its proportion of gelatinous organisms per station for PELGAS and EVHOE surveys in 2015

For more details:
Aubert et al. A cost effective methodology for the monitoring of gelatinous zooplankton taking advantage of fishery trawl surveys for the MSFD but also to fill the data gap *(in prep.)*

WHAT'S NEXT? Why should you care as a scientist ?

- **Convince UE (DG MARE) to promote jellyfish monitoring onboard funded stock assessment surveys**
- **Contribute to the indicator development for the MSFD for gelatinous organisms → to ensure their monitoring and consideration through political/management funds**
- **These type of data= not from dedicated scientific surveys but constitute valuable information which can assist hypothesis driven science on gelatinous organisms which suffers from a lack of data and knowledge**

Literature cited:
Hamilton G. 2016. The secret lives of jellyfish. Nature, 531, 7595,. p. 432-434

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