Recent threats on coastal ecosystems by new pollutants: a multiple trace elements study

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Introduction

Some previously poorly studied trace elements can now be considered as chemical pollutants further to the recent modification of their production and uses.

Bioindicators:
- monitoring of the ocean health status;
- pollutants biologically accessible.
1\textsuperscript{st} objective:

Some previously poorly studied trace elements can now be considered as chemical pollutants further to the recent modification of their production and uses.

- potential use of *Paracentrotus lividus*, *Posidonia oceanica* and *Mytilus galloprovincialis* as bioindicators;
Sampling strategy:

- spatial variability (Marseille, Calvi, Naples)
- seasonal (March, June, November) and interannual variability;
- trace element distribution in organism tissues.
2nd objective:

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- bioconcentration and the biomagnification processes;
- potential use of *Paracentrotus lividus*, *Posidonia oceanica* and *Mytilus galloprovincialis* as bioindicators;
Bioconcentration and biomagnification pathways

Paracentrotus lividus

Posidonia oceanica

Mytilus galloprovincialis

suspended matter

sea water

sediment
3rd objective:

Some previously poorly studied trace elements can now be considered as chemical pollutants further to the recent modification of their production and uses.

- dynamics of absorption and excretion of selected elements in experimental mesocosms;
- bioconcentration and the biomagnification processes;
- potential use of *Paracentrotus lividus, Posidonia oceanica* and *Mytilus galloprovincialis* as bioindicators;
4th objective:

Some previously poorly studied trace elements can now be considered as chemical pollutants further to the recent modification of their production and uses.

- cartography of the seagrass bed health status of PACA and Corsica coasts (trace element, biometry, stable isotopes and C:N:P; collaboration with the IFREMER);
- dynamics of absorption and excretion of selected elements in experimental mesocosms;
- bioconcentration and the biomagnification processes;
- potential use of *Paracentrotus lividus*, *Posidonia oceanica* and *Mytilus galloprovincialis* as bioindicators;
Sampling strategy:

- 42 sites sampled in April 2007
5th objective:

Some previously poorly studied trace elements can now be considered as chemical pollutants further to the recent modification of their production and uses.

- lepidochronological analyses.
- cartography of the seagrass bed health status of PACA and Corsica coasts (trace element, biometry, stable isotopes and C:N:P; collaboration with the IFREMER);
- dynamics of absorption and excretion of selected elements in experimental mesocosms;
- bioconcentration and the biomagnification processes;
- potential use of *Paracentrotus lividus*, *Posidonia oceanica* and *Mytilus galloprovincialis* as bioindicators;
Conclusion:

- Biodiindicators for trace element pollution;
- Environmental accessibility and bioamplification;
- Contamination dynamics;
- Cartography of the seagrass bed health status;
- Lepidochronological analysis.
Laboratory analyses

Analytical steps:
- homogeneous sample
- acidic digestion in a microwave oven
- measures:
  - inductively coupled plasma mass spectrometer
  - Hg analyser
Lepidochronology

- similar to dendrochronology;
- relate past trace element pollution of the environment