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Cerema

vnf Voies navigables de France

Can we use benthic invertebrates communities to monitor the effects of dredging activities on navigated rivers ?

Pouvons nous utiliser les communautés d'invertébrés dans le suivi des effets d'opérations de dragages sur les voies navigables ?

Introduction

With an increase reaching **+40 % in twenty years**, waterways navigation tends to become stable in France around 53 millions metric tons of merchandise transported per year. The use of waterways present a lot of advantages and some risks which must be studied.

Maintenance dredging could strongly affect aquatic ecosystem throught local **decrease of oxygen** concentration and **increase of turbidity** caused by sediment resuspension.

This study investigated potential collateral impacts of dredging operation on invertebrates communities.

Materials and Methods

1 studied site = 2 stations = 24 samples

An « upstream station » as reference (unimpacted)

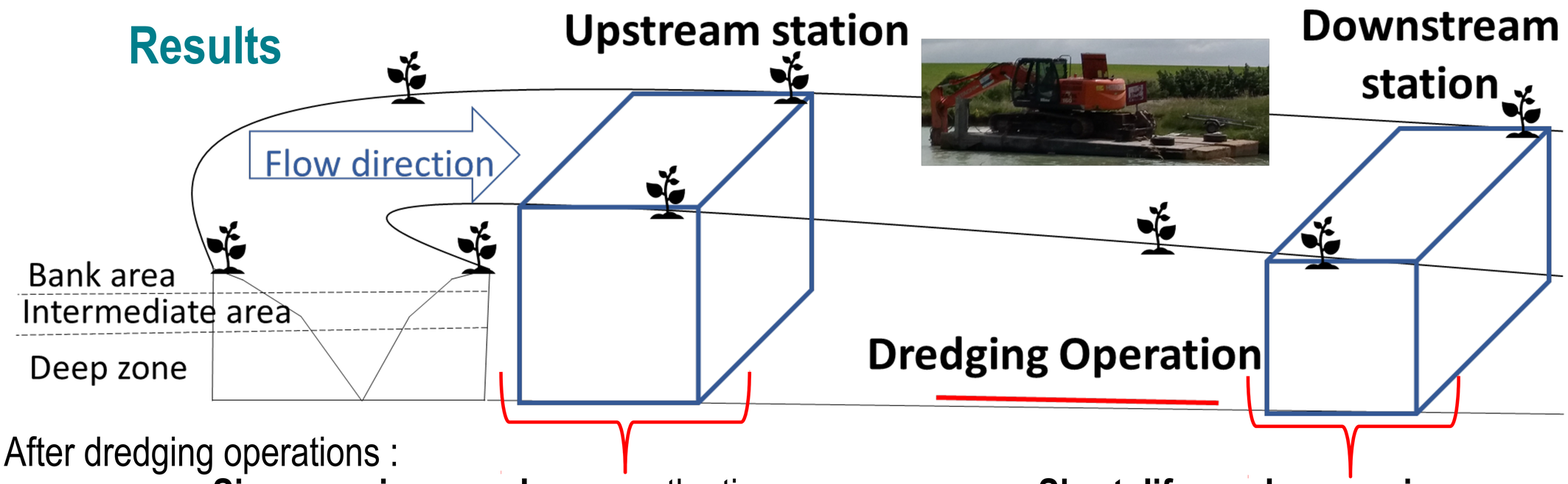
A « dowstream station » as a pottentially impacted stration

12 samples on each station in different deep and habitat.

4 studied sites located on Seine watershed

Invertebrates are identified at genus level in order to calculate ecological indicators and grouped according their functionnal traits like alimentation mode, life cycle time or size.

Results



After dredging operations :

- **Size organisms evolves** over the time
- Population of *Chélicorophium curviuspinum* are stable or decreases
- **Short life cycle organisms** appear to be favored *(p-value = 0,03)*
- Size of organisms trait do not evolve
- *Chélicorophium curviuspinum* **increases significantly** *(p-value = 0,03)*

No clear effect have been observed on **diversity indices** and **total density**.

Discussion/Conclusion

Describing global pattern of response of invertebrate community to dredging operations seems difficult. Several hypothesis can explain it :

- Invertebrates communities **are localy adapted**
- The impacts are masked by **seasonal dynamics** or by **others pressures**
- Spans of dredging operation are **too small to be visible.**

Chélicorophium curviuspinum

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