Occurrence of microplastics in brown shrimp on the Belgian part of the North Sea

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Goal

• To evaluate number of microplastics ingested by brown shrimp (Crangon crangon) from different locations in the Belgian part of the North Sea

• To investigate possible correlation between benthic plastic litter and ingested microplastics

Microplastics Method

• Sample: 5 shrimps + 3 blanks
• Acid destruction HNO₃: HClO₄ (4:1 v/v)
• 50ml acid / 10g tissue
• Detection: stereo microscope
• Verification of microplastics: hot needle

Benthic litter

• On each location: 15 min trawling
• 8 m shrimp beam trawl
• Litter identification based on CEFAS sheets
• Litter counts in items/km²

Results

Belgian Part of the North Sea

Sampling locations:

Microplastics in brown shrimp:

- Total number of Fibres: after blank subtraction
- Total number of Fibres: considering LOD values
- Plastic Film
- Average Number of Fibres

Benthic litter on BPNS:

- Benthic Litter (items/10² km²)
- Plastic Benthic Litter (items/10² km²)
- Fisheries related Benthic Litter (items/10² km²)
- Synthetic Fibers (items/10g tissue)
- Plastic film (items/10g tissue)

Concentration values for fibres (number / 10g tissue)

- RED fibre: 1.5
- BLUE fibre: 4.7
- BLACK fibre: 2.3

Conclusion

Ingested microplastics:

- large variation between samples and individuals
- mainly synthetic fibres!
- Average: 7 fibres ± 4/ 10g tissue
- some pieces plastic film
- 1 portion of brown shrimps (100g) of the BPNS can contain 30-110 synthetic fibres

Benthic litter on BPNS:

- mainly plastic litter!
- correlation with number of ingested microplastics in brown shrimp not clear yet

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