

Spatial and temporal trends in bryozoan zooid size and shape variability along latitudinal gradient in the North Atlantic

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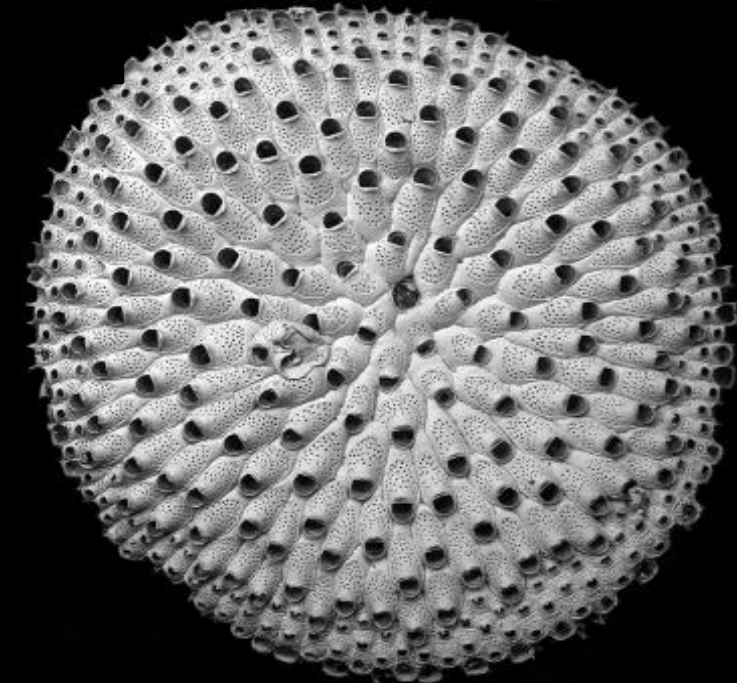
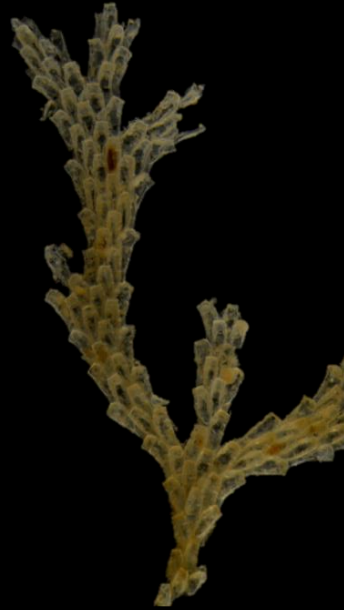
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Bryozoa



Bryozoa



Aim of the study

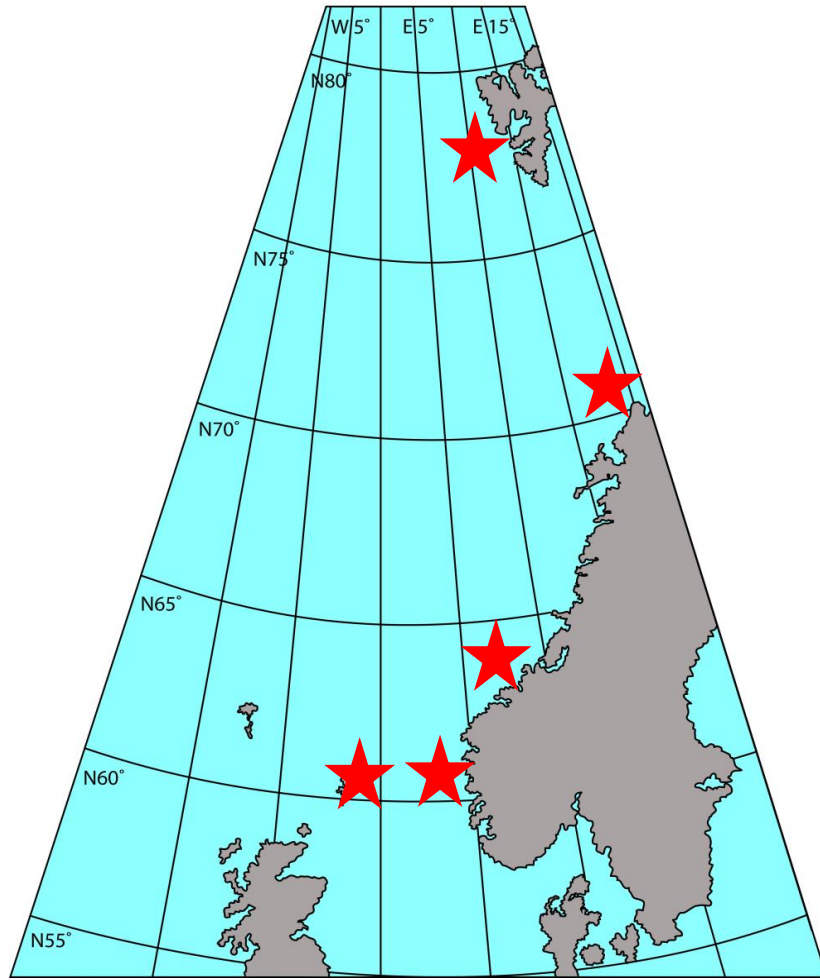
to verify the variability in zooid size in relation to temperatures and other environmental factors by analyzing

1. **size/ shape/ coefficint of variation** across wide latitudinal gradient (60-79°N) in the North Atlantic
2. **size/ shape** in temporary scale



1. Latitudinal trend in bryozoan zooid size

Study area



Area	average temp. [°C]
Svalbard fjords	>3
Tromsøfjord	6.7
Trondheimfjord	9.2
Fjords near Bergen	9.6
Eastern Shetland Basin	9.1



1. Latitudinal trend in bryozoan zooid size

Material and Methods

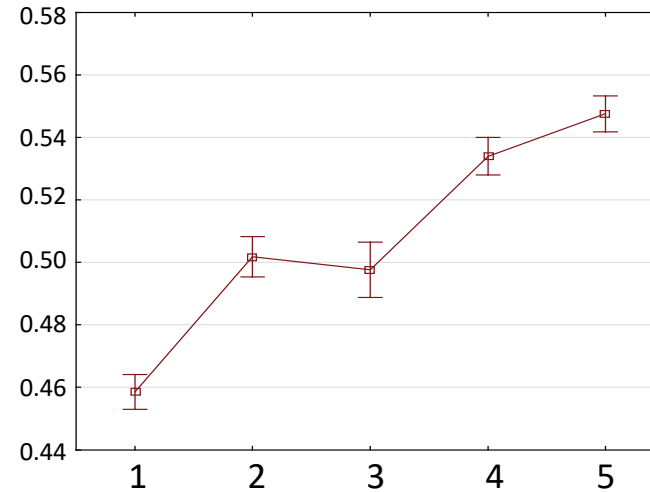
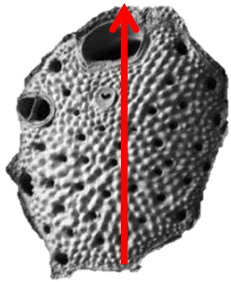
- Bryozoa encrusting stones, from shallow water (6-12m)
- 100 zooid for one species measured (20 zooids/ 5 colony)
- Zooids characteristic: size (length; area = length*width)
shape (length/width)
- Trends tested for species and for assemblages
of Bryozoa



1. Latitudinal trend in bryozoan zooid size

Results: bryozoan assemblages

length



□ Mean
| Mean ± 0.95 Conf. Interval

1 Eastern Shetland Basin
(60°N)

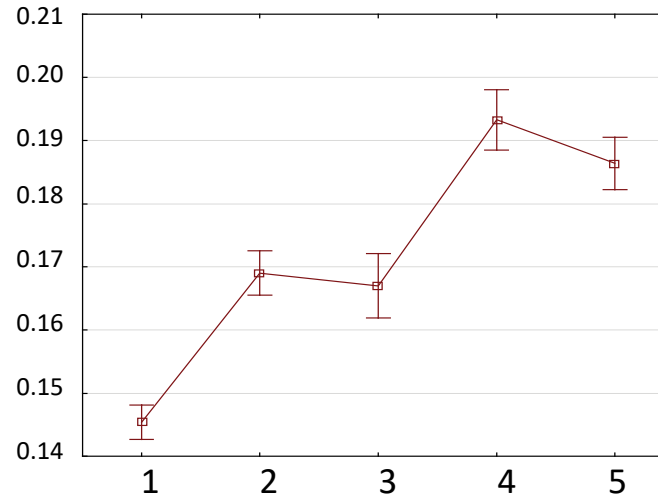
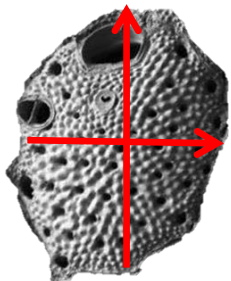
2 Fiords in vicinity of Bergen
(60°N)

3 Fiord in vicinity of Trondheim
(63°N)

4 Fiord in vicinity of Tromsø
(69°N)

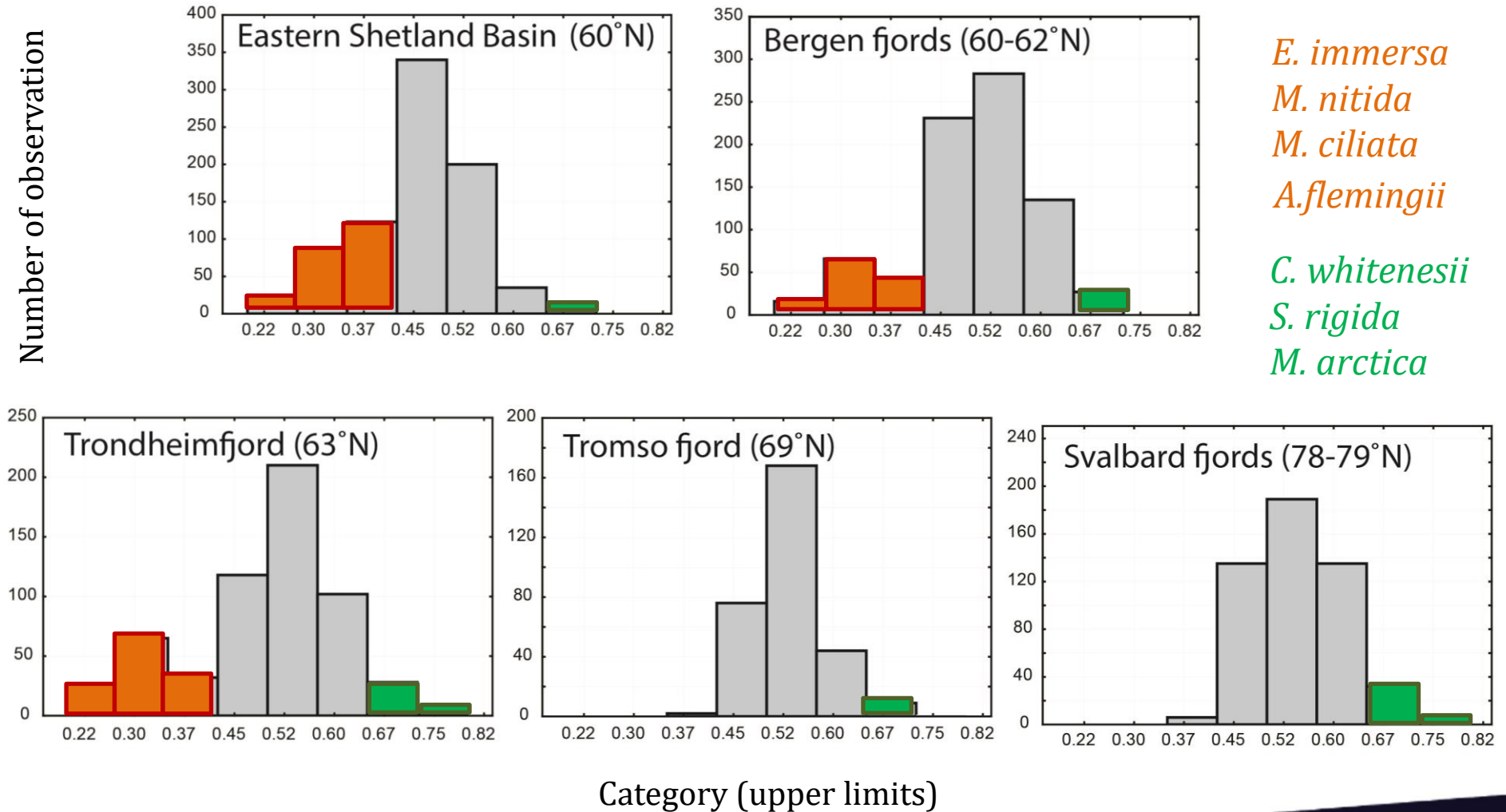
5 Fiord in vicinity of Svalbard
(78-79°N)

area



1. Latitudinal trend in bryozoan zooid size

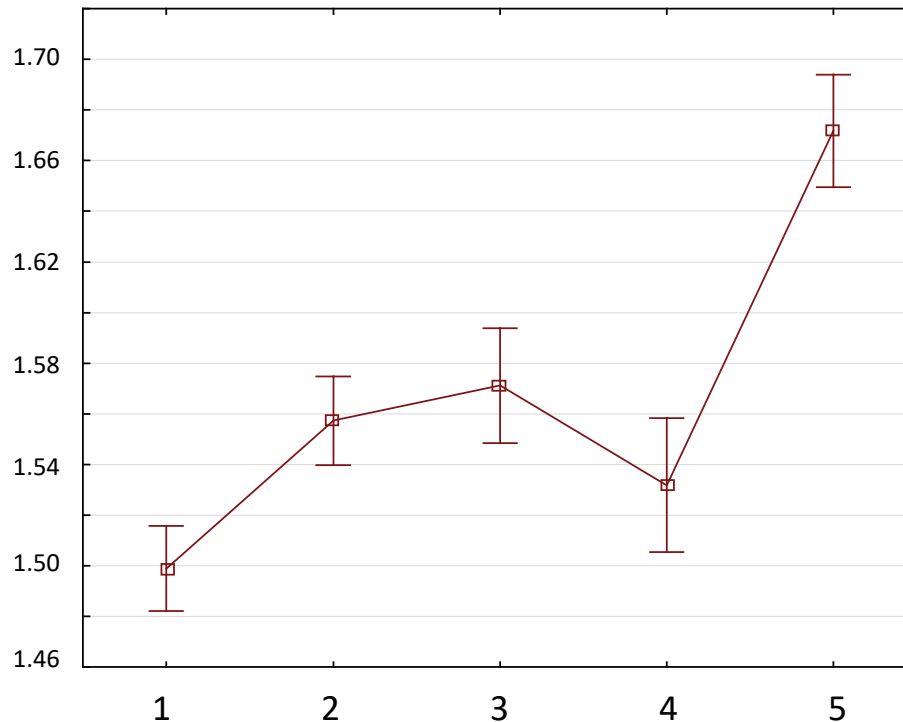
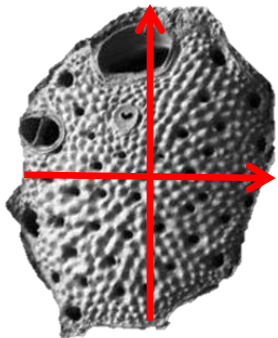
Results: bryozoan assemblages



1. Latitudinal trend in bryozoan zooid shape

Results: bryozoan assemblages

shape



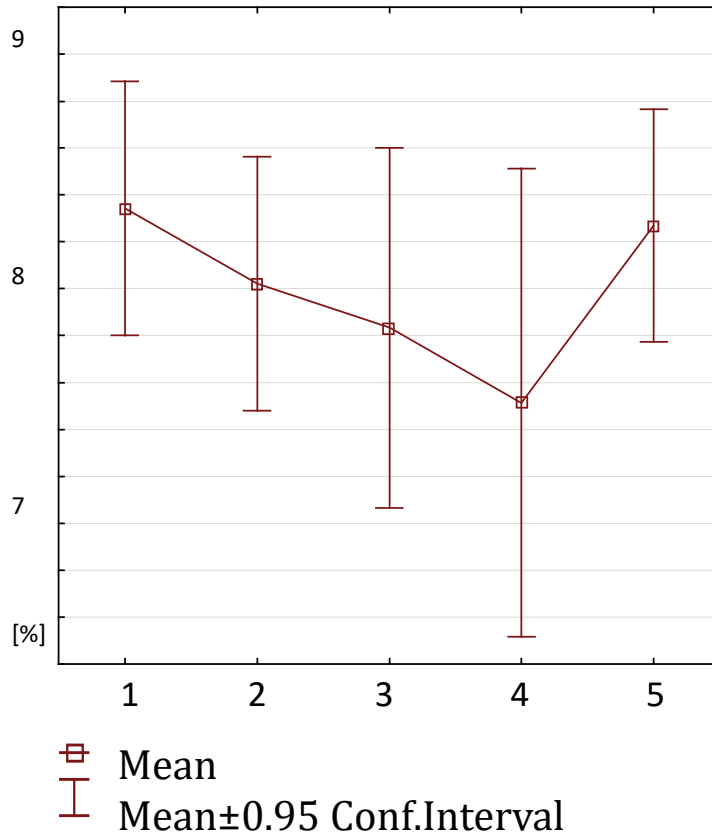
□ Mean
I Mean ± 0.95
Conf. Interval

- 1 Eastern Shetland Basin (60°N)
- 2 Fiords in vicinity of Bergen (60°N)
- 3 Fiord in vicinity of Trondheim (63°N)
- 4 Fiord in vicinity of Tromso (69°N)
- 5 Fiord in vicinity of Svalbard (78-79°N)



1. Latitudinal trend in bryozoan zooid coefficient of variation (CV)

Results: bryozoan assemblages



Lack of differences in CV

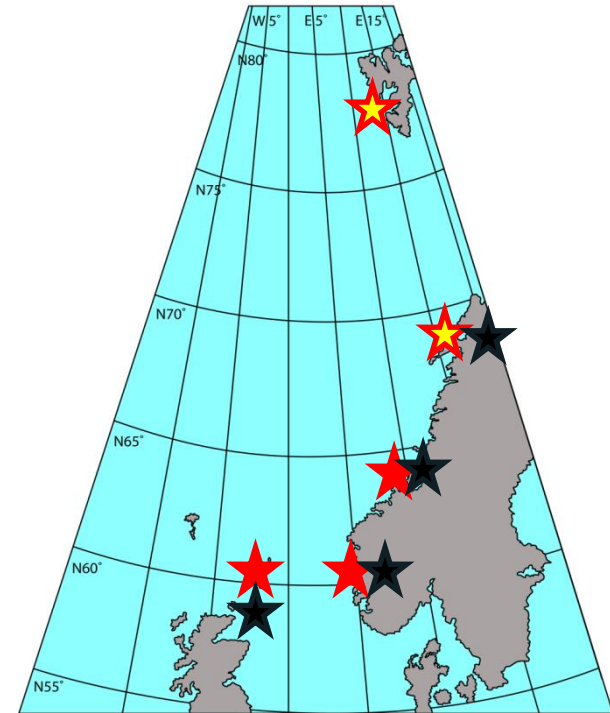
Signal might be flattened by:

- Rugosity on stones
- Differences in growth rate and longevity of investigated species

1. Latitudinal trend in bryozoan zooid size

Results: bryozoan species

- Nine species investigated
- Trends in local scale due to narrow range of occurrence
- Increasing trends for five species
- None pattern for four species

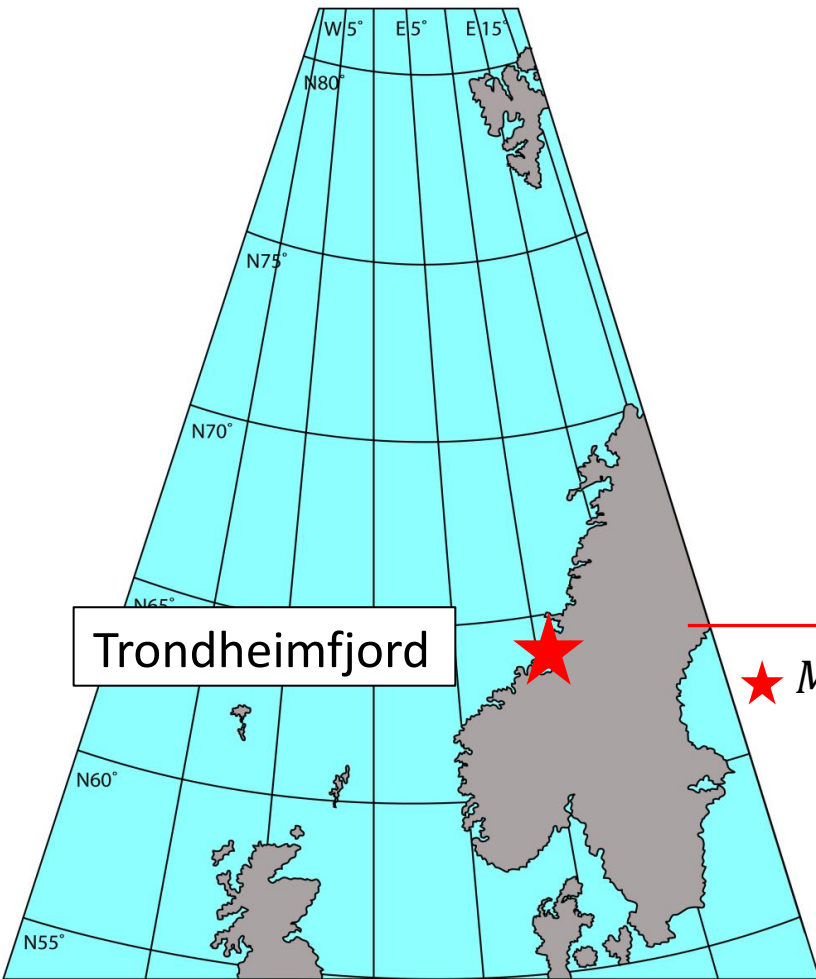


Range of occurrence for:

★ 6 species ★ 2 species ★ 1 species

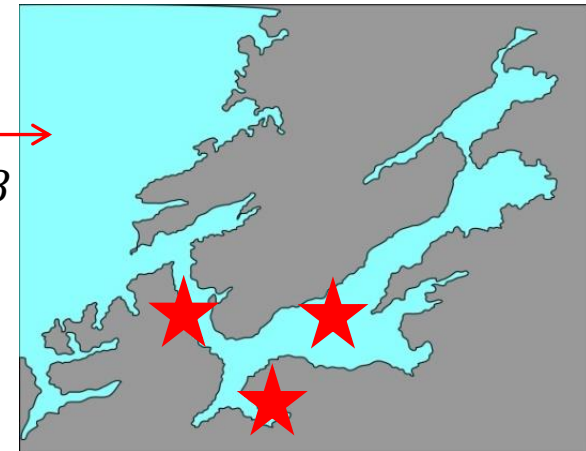
2. Temporal variation in bryozoan zooid size

Study area



year	Temp [°C]
1900-1930	7.8
1940	7.7
2008	9.5

★ *Material collected in 2008*



2. Temporal variation in bryozoan zooid size

Material and methods

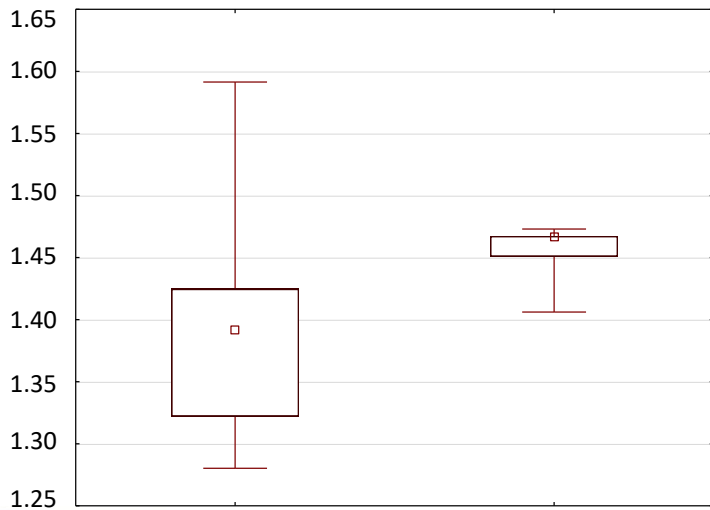
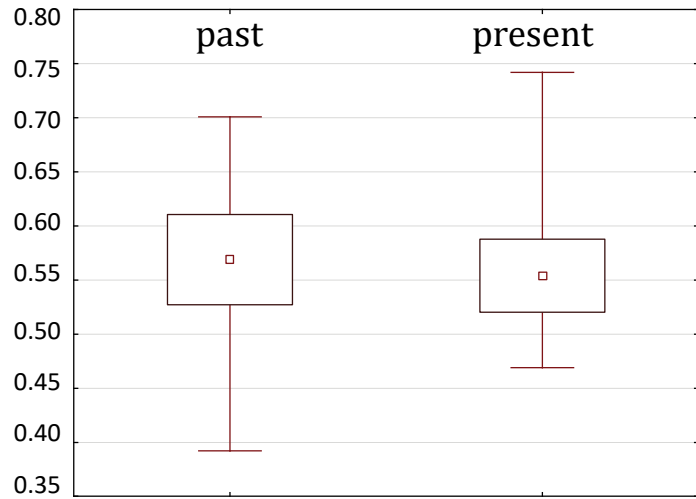
- Four encrusting species chosen for the comparison
- 100 zooid for one species measured (20 zooids/ 5 colony)
- Zooids characteristic: size (length; area =length*width) shape (length/width)
- Trends tested for particular species





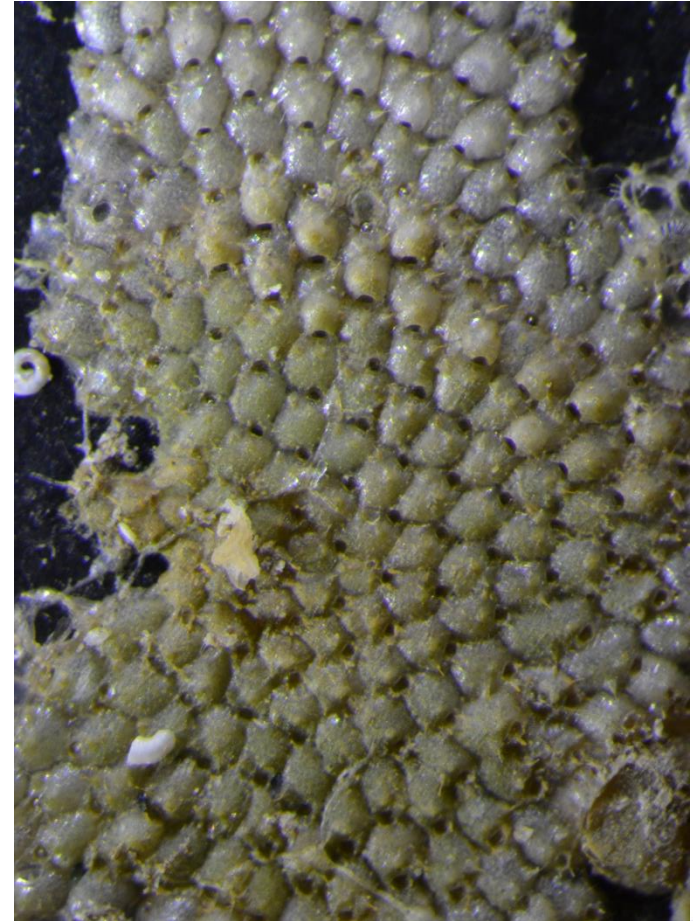
2. Temporal variation in bryozoan zooid size

Results



□ Median
□ 25%-75%
I Min-Max

Micriporella ciliata



Summary

Temperature range Type of gradient localities	Level: species or assemblages	Effect on size
3- 9.6°C latitudinal Scotland to Spitsbergen	Species- 9	Negative for 5 species None for 4 species
3- 9.6°C latitudinal Scotland to Spitsbergen	assemblages	Negative
7.7-9.5°C temporal Trondheim area	Species - 4	none

