Do different developmental stages of *Periphylla periphylla* vary in distribution?

– A study of two Norwegian fjords –

VAMPIRES IN THE FJORDS

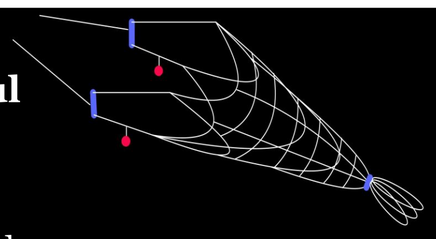
Deep in the western Norwegian fjord, large amounts of the jellyfish *P. periphylla* are thriving. Living for up to 30 years, and spawning all year around, these long-lived creatures can dominate fjords on the western coast – and almost no one knows about them. We investigated the abundance and depth stratification of different sexes and developmental stages in Masfjorden and Fensfjorden. Our main questions were:

(1) Which developmental stages of *P. periphylla* can be found and how does it correspond with the depth stratification and abundance of the adults?
(2) How does the composition of sexes and developmental stages change in Masfjorden compared to Fensfjorden?

Sampling in Masfjorden and Fensfjorden. The fjords are connected by a shallow sill

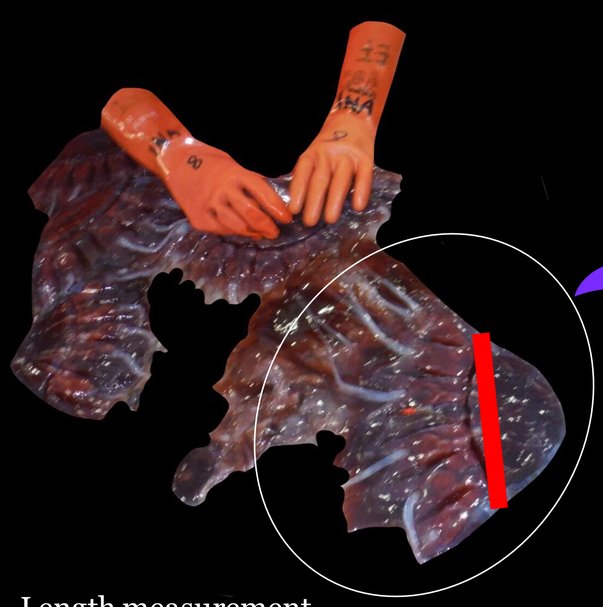
IMMATURE AND ADULT STAGES

Multisampler & Periphylla haul



Multisampler down to 300 m for depth stratified samples. Periphylla hauls are sampled from 50 – 150 m above seabed .

Individuals ≥ 1 cm were weight, length measured and sexed. The sex was determined according to Jarms et al. 2002, as female, male and immature.



Length measurement by coronal diameter (red line).

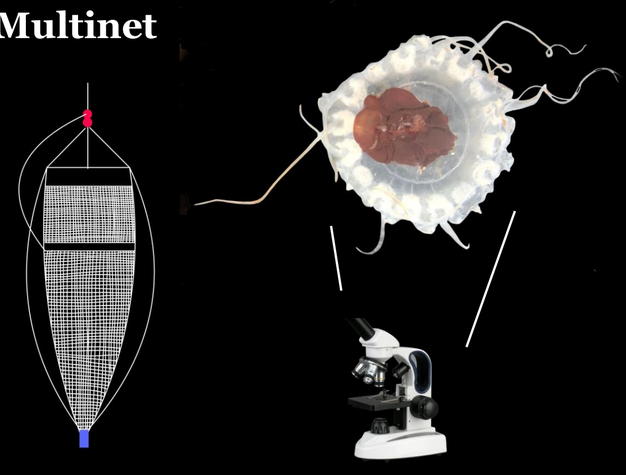
Placement of gonads under coronal lappets

Female gonads

Male gonads

PLANKTONIC STAGES

Multinet



Individuals sampled with Multinet WP-3 was stage determined. Only later planktonic stages has a pigmented umbrella.

PLANKTONIC RESULTS

- Fensfjorden: 39 planktonic individuals
- Masfjorden: No planktonic stages

RESULTS

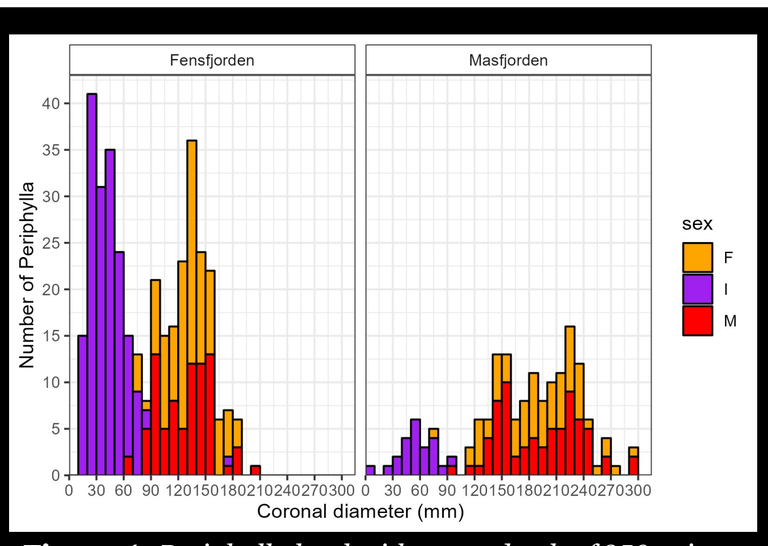


Figure 1: *Periphylla haul with mean depth of 350 m in Fensfjorden(left) and Masfjorden (right).*

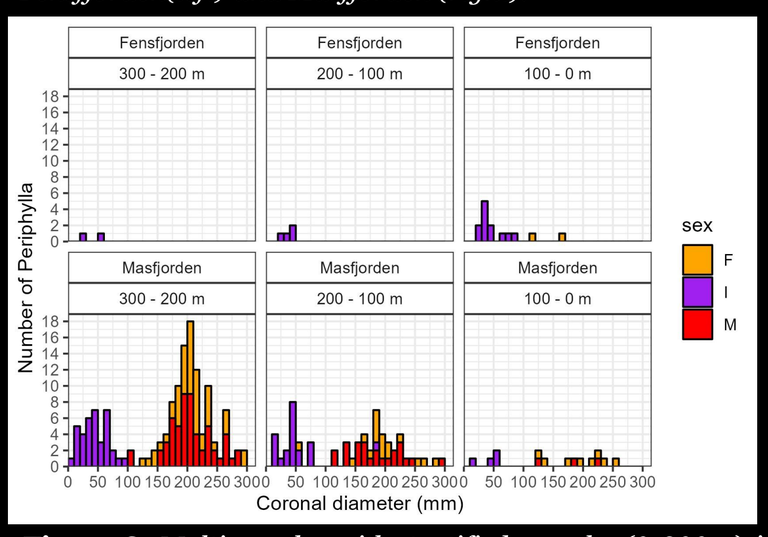


Figure 2: *Multisampler with stratified samples (0-300m) in Fensfjorden(upper) and Masfjorden (lower).*

- Fensfjorden has a population much deeper than Masfjorden (*Figure 1*).
- Masfjorden has larger individuals and much less immatures (*Figure 2*).
- There are more female individuals in Fensfjorden than male.

CONNECTION AND FUTURE PROJECTS

- Difference in deep-water renewal might be the main factor causing variability in size distribution between Masfjorden and Fensfjorden populations.
- Masfjorden: shallow sill depth leads to less exchange of clear North Atlantic deep water and more murky Norwegian coastal water (less saline, less oxygen, higher light attenuation), which might explain the abundance of *P. periphylla* in shallower depths.
- Fensfjorden: a deeper, less murky and clearer fjord than Masfjorden. With better water exchange, clear North Atlantic water will be present. Light can penetrate deeper, which might shift the light comfort zone of *P. periphylla* to higher depths.
- Only pigmented planktonic stages were identified, however earlier planktonic stages might have been present. Due to these stages being unpigmented the identification was not possible.
- A significant difference between male and female was not found in any of the fjords.

FUTURE PROJECTS

- Identification of early planktonic stages
- Egg diameter measurement to identify fecundity
- Age determination according to size and weight

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SCAN ME