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AGEING EARLY LIFE STAGES OF *Octopus vulgaris* EFFECT OF TEMPERATURE



Background - AIMS



Wild and cultured populations of common octopus (*Octopus vulgaris*) have a high economic value worldwide

Survival of the species during its planktonic early life: critical for the population success. Still low survival in captivity

We planned a comparative analysis of wild and cultured paralarvae of **similar age** (gene expression, physiology, biochemistry, larval behavior, ecology)



Understanding early stages in the wild and the optimization of culture conditions

Aim – Age estimation of wild paralarvae in *O. vulgaris*

The samples

52 **wild** paralarvae caught in NW Atlantic

- Oceanographic vessel of IEO
- Sampling: Multinet 200 μm , 2m diameter.
Hauls of 15 min, 2 knots, at 10-20m depth



37 paralarvae (0-22 days) **reared at 14°C**

Similar temperature than wild samples

33 paralarvae (0-30 days) **reared at 21°C**

Optimal culture temperature

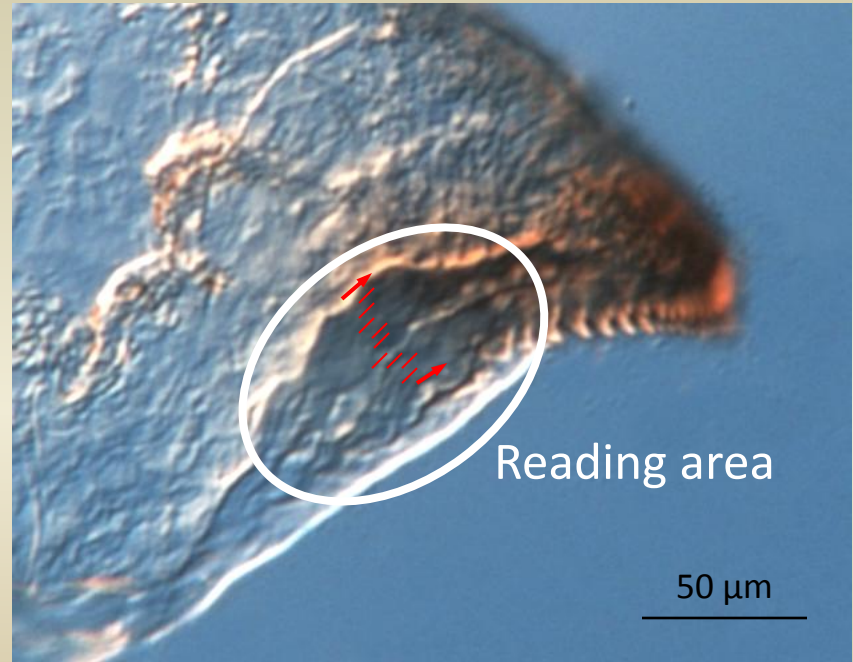


Age estimations

Daily increments validated in beaks of early stages up to 98 days old

- Transmitted light 400X, DIC-Nomarski
- Two readings. Precision calculated by Coefficient of Variation (CV-Campana, 2001)

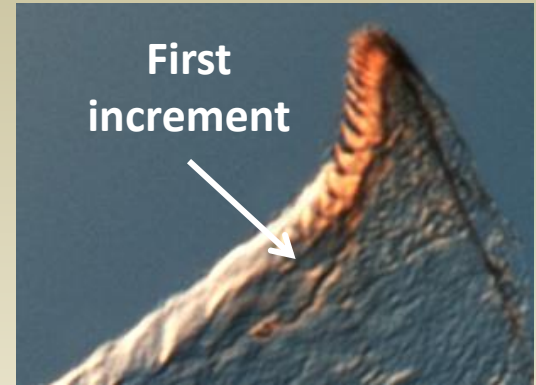
Paralarvae set	Mean CV
Cultured 21°C (N=33)	6.71
Cultured 14°C (N=37)	5.24
Wild (N=52)	4.73



RESULTS - Beak reading improvements

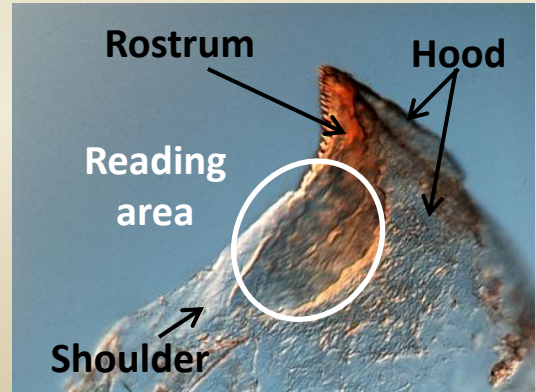
Identification of the **first increment**

- Hatchlings showed 1-3 increments:
mean values of 1.6 increments at 14°C
and 1.7 increments at 21°C

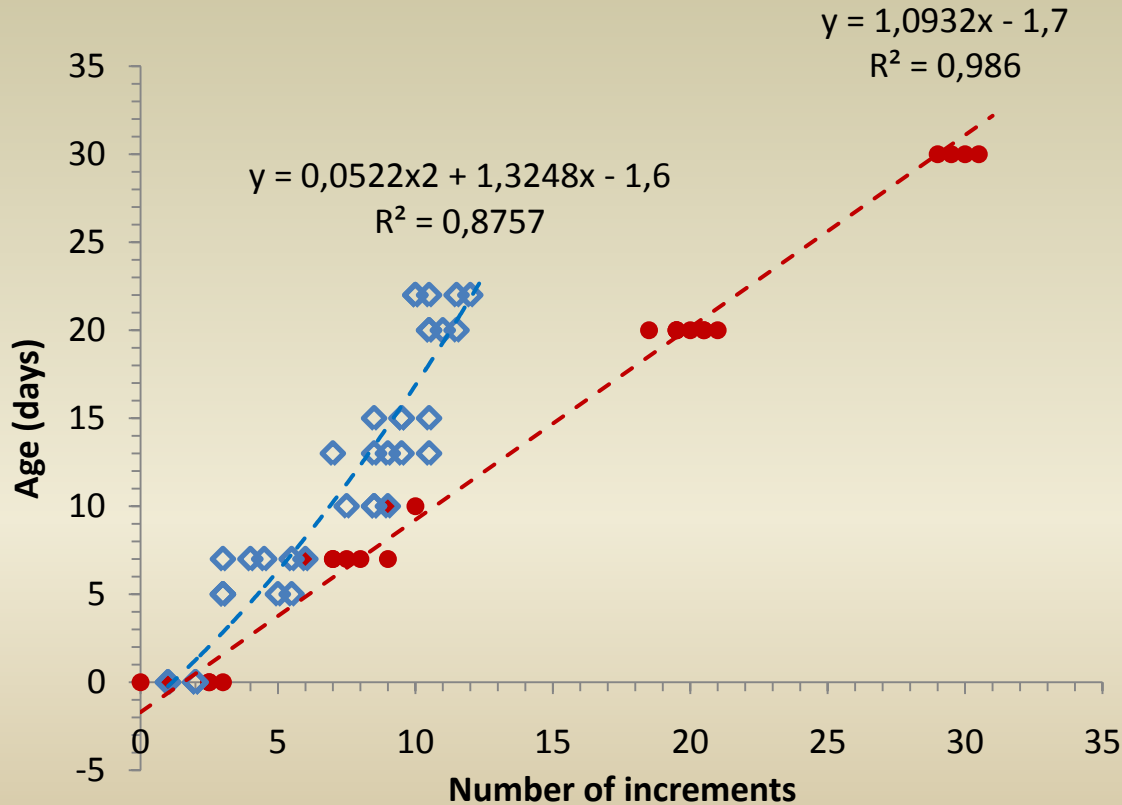


Delimitation of **reading area**:

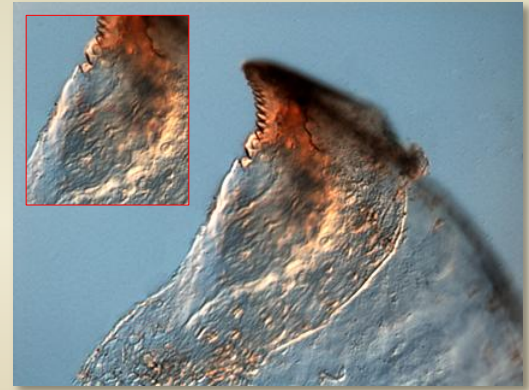
- Located in the Rostrum, joined to the Hood in early stages
- Shoulder out of the reading area



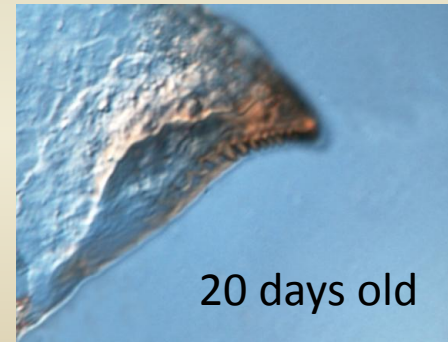
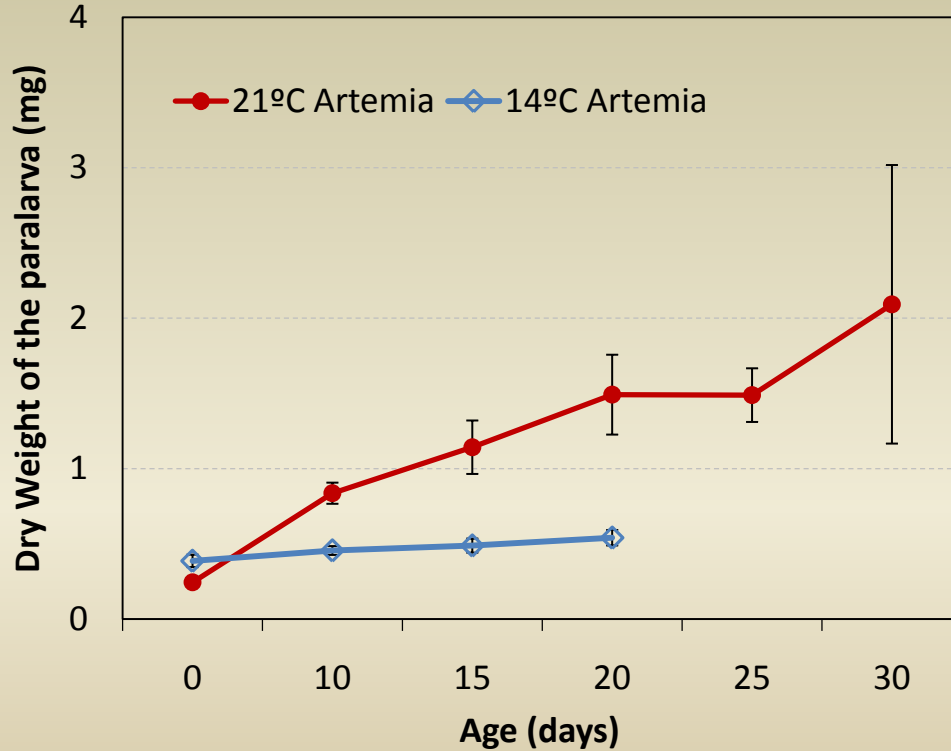
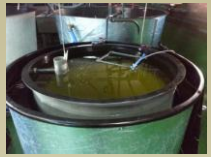
RESULTS - Beak increments in captivity

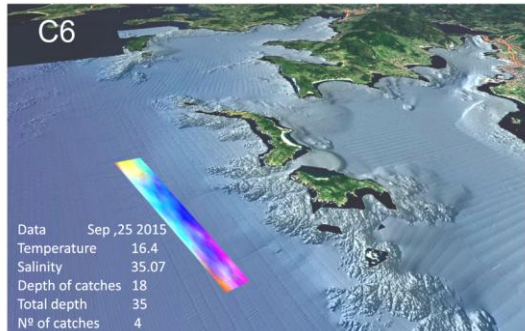
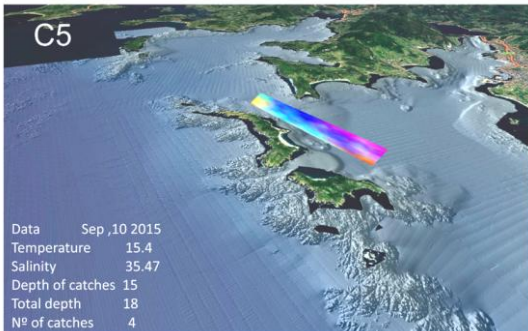
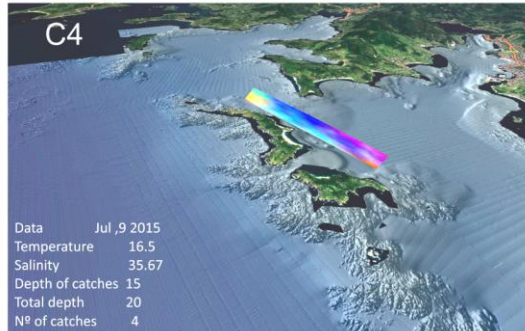
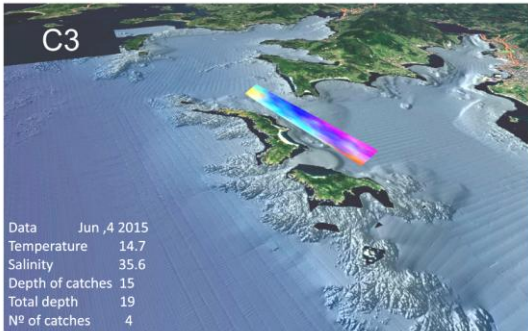
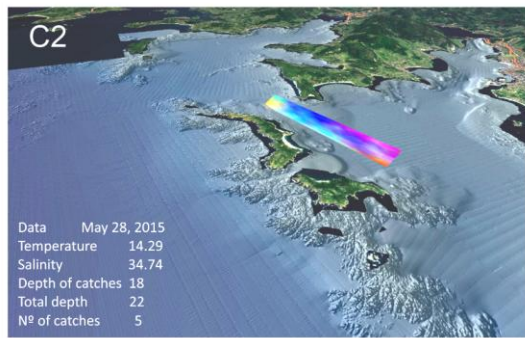
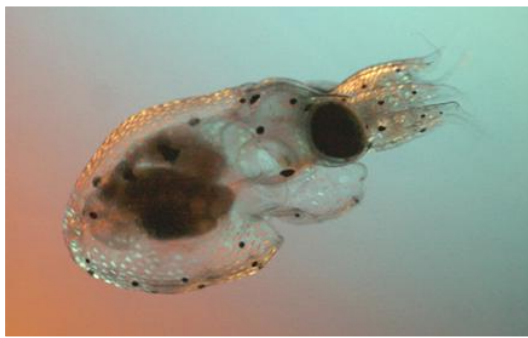


- Optimal (21°C) = 1 increment/day
- ◇ Cold (14°C) <1 increment/day



Growth in captivity





Mean environmental data for all the capture locations:

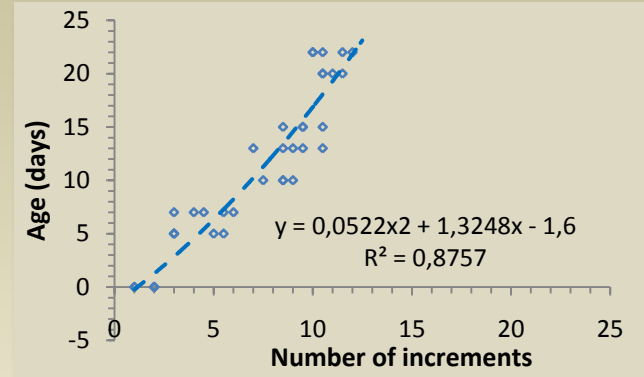
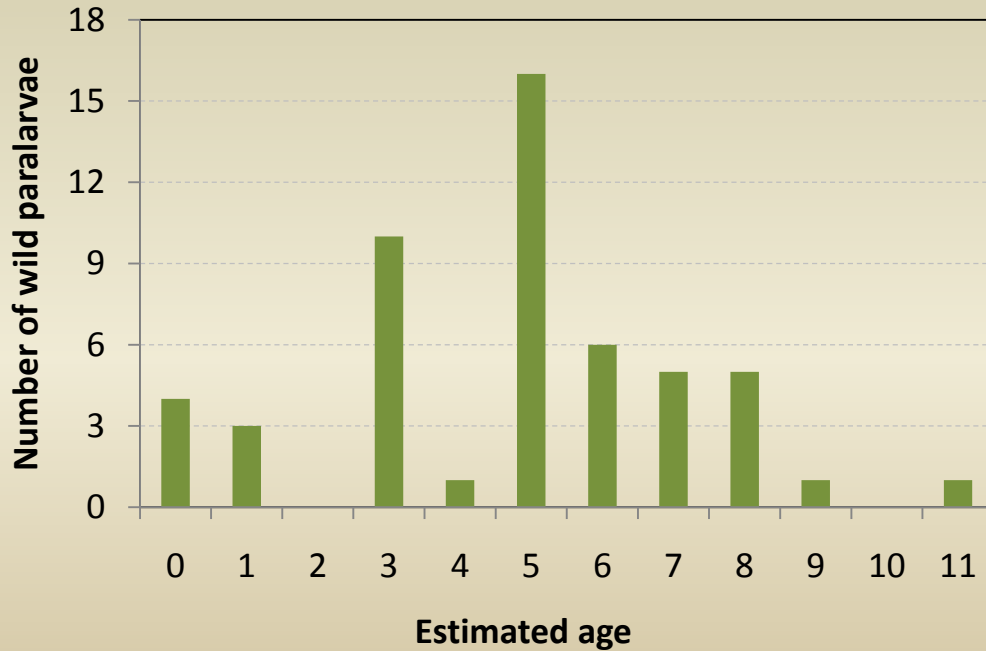
DEPTH (m)	18.5
TEMPERATURE (°C)	14.3
SALINITY (‰)	35.6

Captures during spawning season:

May - September 2015

Ages of wild paralarvae

Estimated according results
obtained at 14°C

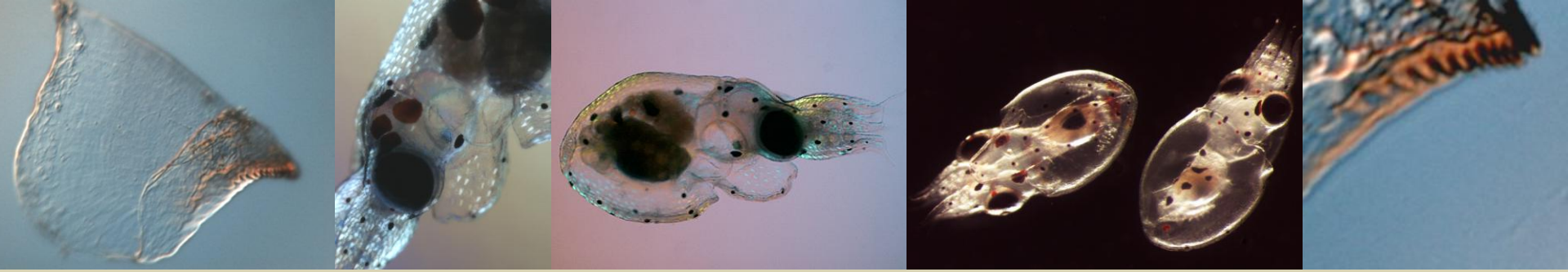


SUMMARY & CONCLUSIONS



- Beaks of paralarvae reared at cold waters (14°C) showed age underestimation with <1 increment/day in beaks, but at optimal temperature displayed daily increments. Several hypothesis are feasible:
 - Overlapping of increments when growth slow down, as observed in experiments at 14°C,
 - Periodicity is daily in culture at 21°C but it may change with water temperature

Next steps - laboratory experiments to cover the thermal range of wild early stages



Thanks for your attention



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