

# Early life history of the cold-water coral *Caryophyllia huinayensis* from the Chilean Fjord Region

## Cold-water corals (CWC) build complex, 3D-habitats...

... for diverse benthic invertebrate and fish communities. In spite of their importance, little is known on their reproductive biology. In the Patagonian fjords of Chile, three caryophylliid CWC abound: *Desmophyllum dianthus*, *Tethocyathus endesa* and *Caryophyllia huinayensis*. This study reports first *in situ* and *in vitro* observations of the early life history of the latter species along with *in vitro* growth data of juvenile *C. huinayensis*.

## After collection from Comau Fjord *C. huinayensis* was maintained (> 1 yr)...

... in a closed-circuit aquarium system (Temperature: 12.5 °C, Salinity 32, pH 8,  $\Omega_{Arg} > 1$ , fed with *Artemia salina* nauplii). When larvae were visible through the translucent tissue, parents were kept individually in cages. Planulae released from the coral were placed in 100  $\mu\text{m}$  gauze-screened containers (Fig. 1). Daily pictures were taken under a microscope through the container glass.



Fig. 1: 100  $\mu\text{m}$  gauze-screened glass container (2x1x0.5 cm).

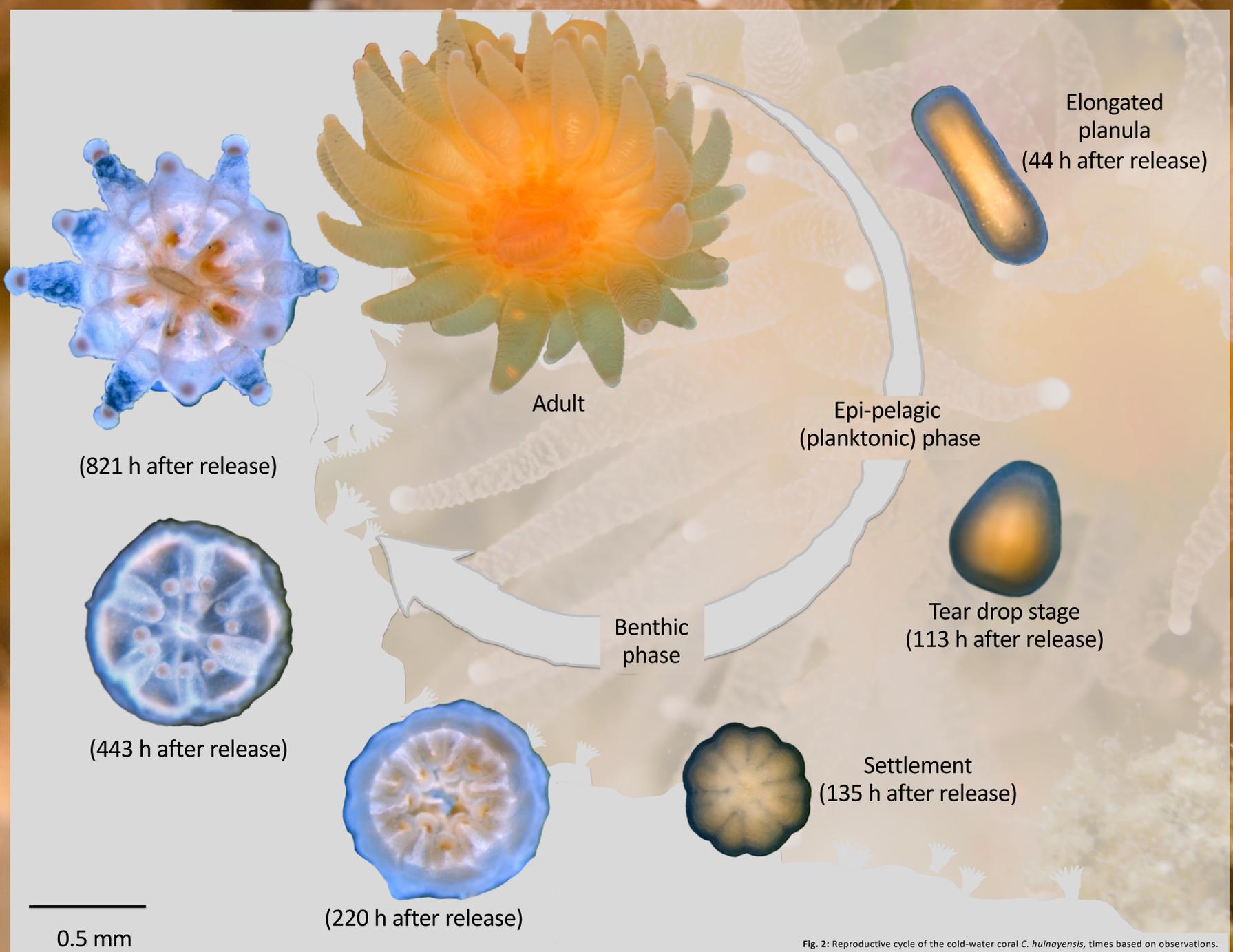


Fig. 2: Reproductive cycle of the cold-water coral *C. huinayensis*, times based on observations.

## *C. huinayensis* is a brooder (Fig. 2)...

- 620  $\mu\text{m}$  large orange planulae may swim with a velocity of  $230 \mu\text{m s}^{-1}$  (move from tentacle tip to mouth within  $< 1$  min)
- After release, larvae are negatively buoyant, crawl along the substrate and settle between two and 16 days.
- Recently settled juveniles increased their basal disc diameter with a rate of  $10 \mu\text{m d}^{-1}$ . After 30 months recruits gain  $4.22 \pm 0.03 \text{ mm yr}^{-1}$  in diameter and reach the mean size observed for adults in the field after three years.
- Research on early life history of CWC is important to understand larval dispersal and connectivity of populations threatened by changing climate and increasing eutrophication by expanding salmon farming operations.



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