Photo-movement of coral larvae influences vertical positioning in the ocean

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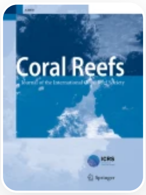

Coral Reefs

Aims and scope

Submit manuscript

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Abstract

Behaviour can have profound consequences for the dispersal potential of an organism. In the marine environment, larvae rely heavily on oceanic currents to migrate from one area to another. As oceanic currents are faster in the shallows, the vertical positioning of larvae during dispersal is a key factor regulating the distance individuals can travel. Up until now, the vertical positioning of coral larvae has been largely explained by buoyancy, as well as changes in physical and chemical cues. However, here we show that in larvae of coral *Pocillopora verrucosa*, vertical positioning is influenced by photo-movement. We examined the reaction to light of five coral species in the laboratory and found that only larvae of *P. verrucosa*, but not other species, displayed a positive photo-response (i.e. an accumulation of larvae close to the light source). This reaction was observed irrespective to the orientation of light from the top, bottom or side. In the field, *P. verrucosa* larvae accumulated in the top halves of transparent chambers at all depths (1, 7, 15 m), whereas such behaviour failed to occur in dark chambers. Our results demonstrate that light can play an important role for coral larvae to regulate vertical positioning during dispersal and provides a hypothesis that positive photo-movement might allow larvae to disperse further and contribute to the wide geographical distribution of *P. verrucosa* in the Indo-Pacific.

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Ethics declarations

Conflict of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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Supplementary Information

Below is the link to the electronic supplementary material.

Supplementary file1 (DOCX 719 KB)

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