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Abstract

Deep-sea corals fecundity assessment in southeastern Brazil

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In this study, we aim to determine the fecundity of the main Brazilian cold-water coral reef habitat forming species. The data presented are still preliminary and will be used later to estimate the corals reproductive effort along a bathymetric gradient over Brazil's southeastern continental slope. The fecundity was investigated through sequential cuts on the polyps of *Madrepora oculata* (Moc), *Solenosmilia variabilis* (Sva), *Lophelia pertusa* (Lpe) and *Enallopsammia rostrata* (Ero), followed by further histological preparations to reveal the female oocytes and make it possible to count those cells in a microscope and then assess it's reproductive stage. The number and size of the oocyte cells were also compared to the polyp's volume to investigate the possible relations of these variables with the species reproductive strategies. Colonies of Lpe collected in May 2017 presented most of the analyzed polyps with male or female gametes, reaching 7.665 oocytes in a single polyp, high number of oocytes compared to previous studies. The Sva species had the highest average fecundity rate so far, 12.307 (± 415) oocytes per cm^3. Lpe presented a mean of 4.201 (± 1.441) oocytes per cm^3. The Moc species presented 1.431 (± 19) oocytes per cm^3 whereas Ero presented a fecundity rate of 581 (± 23) oocytes per cm^3. In Moc, stage III oocytes reached a maximum diameter of 370 µm in a 0.017 cm^3 polyp. A 650 µm oocyte III was found in Ero in a polyp with 0.034 cm^3, the species presented the largest oocyte as it was also observed by previous study. Sva presented the maximum oocyte III of 150 µm in a polyp of 0.07 cm^3. Lpe presented oocyte III of maximum 100 µm and is the species that has larger polyps, fertile polyps reached up to 2.80 cm^3. The present study contributes to the refinement of information on the life strategies of those corals, helping to define better management actions for their conservation.