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Millepora aff. *exaesa* (Cnidaria, Hydrozoa) Recorded in the Mesophotic Environment of Mount La Pérouse, Southwestern Indian Ocean—Expedition La Pérouse 2019

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In recent years, mesophotic coral ecosystems have been a growing topic of interest. These mostly unexplored habitats shelter a rich and unique biodiversity [1]. Within the context of global change, they might serve as a source for recolonization after disturbances in shallower reefs. *Millepora* species, also called fire corals, are important components of coral reefs, and can demonstrate very high local abundance [2]. Because of their calcium carbonate skeletons, *Millepora* hydrocorals can build large colonies and thus have ecological roles similar to scleractinian corals. Indo-Pacific *Millepora* species have widespread distributions observed from the surface to 40 m [2]; very few *Millepora* species have been recorded below 50 m, and usually from a few imprecise dredging samples [1,3–5]. During an expedition to Mount La Pérouse (Mascarene Plateau, Southwestern Indian Ocean) from 27 October to 5 November 2019, several *Millepora* colonies were recorded at depths from 59 to 67 m. The colony growth forms were somewhat distinct from the usual growth forms encountered in Réunion Island [6], where three species co-occur: *M. cf. exaesa* Forsskål 1775, *M. cf. platyphylla* Hemprich and Ehrenberg 1834 and *M. tenera* Boschma 1949. Colonies were either encrusting, with small digitations, or massive and unbranched (Figure 1), with numerous scattered vertical swellings of varied diameters and lengths, dome or column-shaped, digitate on top with dactylozooids in extension covering the entire surface like hairs, as is usual on *Millepora* colonies. Based on the shape of the protuberances, on the color and on the number of dactylopores per cyclosystem, these colonies show affinities with *M. exaesa*. These records are likely the world's deepest in situ living *Millepora* colonies ever reported. As we continue to explore more remote places and wider bathymetric depths, our knowledge of species distribution and endemism is being refined, as exemplified by the recent range re-extension of *M. cf. platyphylla* in the Eastern Pacific [7].



Figure 1. *Millepora* aff. *exaesa* at 65 m on Mount La Pérouse, Southwestern Indian Ocean. Photo credit: Laurent Ballesta/Andromède Océanologie.

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References

1. Loya, Y.; Puglise, K.A.; Bridge, T.C.L. *Mesophotic Coral Ecosystems*; Springer: Cham, Switzerland, 2019; p. 1003.
2. Lewis, J.B. Biology and ecology of the hydrocoral *Millepora* on coral reefs. *Adv. Mar. Biol.* **2006**, *50*, 1–55. [[PubMed](#)]
3. Cairns, S.D. Deep-water corals: An overview with special reference to diversity and distribution of deep-water scleractinian corals. *Bull. Mar. Sci.* **2007**, *81*, 311–322.
4. Wagner, D.; Kosaki, R.; Spalding, H.; Whitton, R.; Pyle, R.; Sherwood, A.; Tsuda, R.T.; Calcinai, B. Mesophotic surveys of the flora and fauna at Johnston Atoll, Central Pacific Ocean. *Mar. Biodivers. Rec.* **2014**, *7*, e68. [[CrossRef](#)]

5. Wells, J.W. Recent corals of the Marshall Islands. *Geol. Surv. Prof. Pap.* **1954**, *260*, 385–486.
6. Boissin, E.; Leung, J.K.; Denis, V.; Bourmaud, C.A.F.; Gravier-Bonnet, N. Morpho-molecular delineation of structurally important reef species, the fire corals *Millepora* spp, at Réunion Island, Southwestern Indian Ocean. *Hydrobiologia* **2020**, *847*, 1237–1255. [[CrossRef](#)]
7. Boissin, E.; Pogoreutz, C.; Pey, A.; Gravier-Bonnet, N.; Planes, S. *Millepora platyphylla* (Cnidaria, Hydrozoa) range extended back to the Eastern Pacific thanks to a new record at Clipperton Atoll. *Zootaxa* **2019**, *4668*, 599–600. [[CrossRef](#)] [[PubMed](#)]