An unusual *Pocillopora* reef from the Late Miocene of Hispaniola

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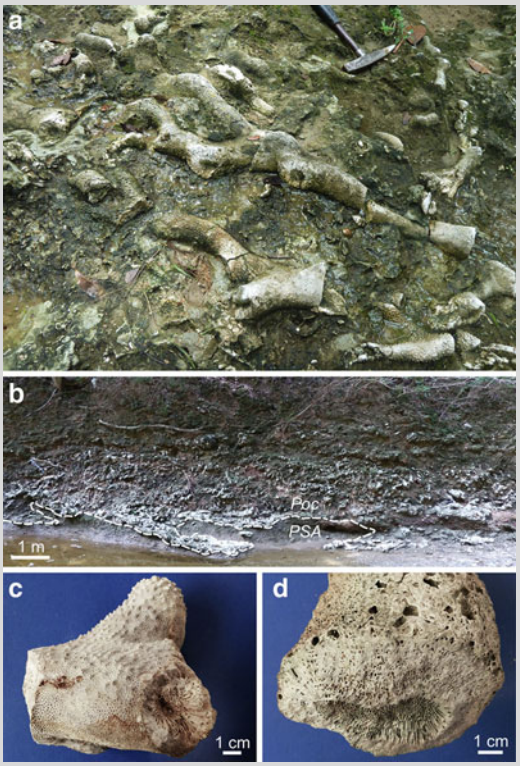

Fig. 1 **a** Robust-branching *P. crassoramosa* colonies in growth position, **b** Studied *P. crassoramosa* buildup incised by the Arroyo Bellaco river (*Poc Pocillopora* facies, *PSA Porites-Stylophora*-agariciid facies), **c** Detail of a coral branch showing the differences between *upper* and *lower* surface texture, **d** Growth increments in cross-section documenting asymmetric circumferential growth. The verrucae on this thick branch fragment are nearly removed due to boring and rasping bioerosion while the coral underside exhibits no traces of bioeroders

Pocillopora, a common reef coral in the present-day Indian Ocean, Red Sea, and Pacific Ocean, exhibits a wide range of environmentally controlled morphologic variation from submassive to bush-like upright-branching colony forms (Veron 2000). Herein, we report on extinct reef-building *P. crassoramosa* from the Messinian Cercado Formation of the Cibao Basin in the Dominican Republic (N 19°29′07.55″, W 071°14′47.78″; Maier et al. 2007) that has an unusual robust-branching growth morphology and horizontally disposed lifestyle—both not reported for recent *Pocillopora*.

Large branches of *P. crassoramosa*, many of which appear to be lying horizontally, are embedded in bioclastic silty marl (Fig. 1a) and form a 5-m-thick and 100-m-long buildup, which interfingers with an in situ coral thicket composed of upright standing, thin-branched *Porites* and *Stylophora* as well as plate-like agariciids (Fig. 1b).

Single *Pocillopora* colonies reach nearly 2-m-length and consist of up to 10-cm-thick branches (Fig. 1a). The undersurface of these branches is smooth while the upper surface exhibits bulbous outgrowths and is covered by wide-spaced verrucae (Fig. 1c). In cross-sections, the growth increments reveal asymmetric circumferential growth that is directed toward the textured side (Fig. 1d). Regrowth patterns such as changes in growth direction and/or shape are not observed. This indicates the horizontally lying branches are in place and implies a creeping mode of life. Accordingly, bioerosion was found preferentially on the upper sides of the corals (Fig. 1d).

It is assumed that the flat, spacious colony form is adapted for shallow, muddy bottoms because it is resistant to wave action and prevents the coral from sinking in the unstable substrate. The pronounced surface relief (Fig. 1c) may have favoured passive sediment removal due to steep gradients.

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Reef sites

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