Plasticity or chimerism? Color polymorphism in *Montipora verrilli* / *M. patula*

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Phenotypic variation in reef building corals is poorly understood. For example, color polymorphism is known in *Montipora verrilli* Vaughan 1907, and *M. patula* Verrill 1864; two corals that are challenging to distinguish and are of uncertain taxonomic status. Using morphological data, Maragos (1977) and Veron and Stafford-Smith (2000) describe these as separate species; however, Fenner (2005) does not. Molecular markers (ITS, ATP-6, COI, CYT-B, and 16S) fail to resolve these species, and no quantitative skeletal microstructure differences have been found to date (Forsman et al. 2010). In addition, AMOVA tests using ITS data from Forsman et al. (2010) failed to differentiate between *M. patula* and *M. verrilli*, or individual colonies; therefore, this marker is not likely to be informative (data not shown).

Despite the taxonomic uncertainty of the colony pictured here, we report a photographic observation from Kewalo, O'ahu (21.288187, -157.865054; 9 m depth), of color polymorphism within a single coral colony (Fig. 1) that is likely the

result of phenotypic plasticity, though chimerism between colonies cannot be ruled out and has been reported previously in this genus (Work et al. 2011). Although no visible fusion line is obvious (Fig. 1D), a broad range of sedentary clonal marine invertebrates are known to fuse early post-settlement and can form transient or permanent chimeric colonies (Rinkevich and Weismann 1987; Grosberg et al. 1996; Hughes et al. 2004). The outcome of such fusions can range from simple joining of ad-

Fig. 1 A Color polymorphism in a colony of *Montipora verrilli* / *M. patula*; B–D Close-up views of the color transition zone

jacent colonies (Rinkevich and Weismann 1987) to germline parasitism (Stoner and Weismann 1996), but are typically restricted to closely-related individuals by a highly polymorphic self/nonself recognition system (Grosberg and Hart 2000), although they can also show ontogenetic shifts in fusion-rejection thresholds (Wilson and Grosberg 2004). Like color morphs of *Galaxea fascicularis* found in Okinawa, Japan (Hidaka and Yamazato 1985), both purple and orange colonies of *Montipora verrilli* / *M. patula* have been observed in the same environment; however, there are no records to date of the same colony displaying this color variation. We observed two colonies with this color polymorphism within two meters of each other at the same site. When genomic tools become available for this species complex, further research is warranted to determine whether this within-colony color variation is a result of individual phenotypic plasticity (e.g. from cultivation or transplantation experiments) or a fusing of genetically distinct purple and orange individuals (e.g. from genetic or genomic data).

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