Barcoding corals in the genus *Pocillopora*: geographically restricted cryptic diversity

**ABSTRACT**

**BACKGROUND:** Identifying coral species boundaries is challenging particularly in *Pocillopora*, a coral genus known to be highly phenotypically plastic.

**METHODS:** In this study we barcode 98 samples from Moorea with the mitochondrial ORF marker, and construct a haplotype network of all available ORF sequences.

**RESULTS:** Species names based on colony morphology vary wildly within and among mitochondrial haplotypes, while SEM images of skeletal microstructure agree more with genetic data. Several unique haplotypes are geographically restricted.

**CONCLUSIONS:** Phenotypic polymorphism and plasticity are likely to be underestimated in this genus. Locally restricted haplotypes may represent cryptic endemic species. Range-wide surveys and quantitative morphological work is needed to determine species boundaries in this important group of organisms.

**RESULTS**

- Species names based on colony morphology show high variation within and between mitochondrial haplotypes, while micromorphology is less variable within haplotypes and more different between haplotypes.

**DISCUSSION**

- Colony-level morphology, and nominal taxonomy, are highly variable within most haplotypes. Misidentification may partially explain this pattern, however in-situ voucher photos show a wide range of variation within haplotypes (Fig. 2).
- Some haplotypes are geographically restricted, while others occur over an enormous geographic range. The restricted haplotypes indicate that gene flow is extremely limited, and may represent isolated cryptic species.

**REFERENCES**

- Marti-Puig, P. (2011) Genetic and Morphology of the genus *Pocillopora* between the Hawaiian Archipelago and surrounding regions: Masters Thesis, Department of Biology, Ghent University, Belgium

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