



SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY

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## Shape-shifting coral evade identification

The evolutionary tendency of corals to alter their skeletal structure makes it difficult to assign them to different species. Researchers writing in the open access journal BMC Evolutionary Biology have used genetic markers to examine coral groupings and investigate how these markers relate to alterations in shape, in the process discovering that our inaccurate picture of coral species is compromising our ability to conserve coral reefs.

Zac Forsman led a team of researchers from University of Hawaii at Manoa's Hawaii Institute of Marine Biology who carried out the molecular studies. He said, "Our study represents important progress towards understanding the evolution and biodiversity of corals, and provides a foundation for future work. As coral ecosystems are increasingly threatened, we need to understand how many groups exist that can interbreed rather than judging potential for extinction by just looking at groups according to their shape alone".

Skeletal shape is currently used to differentiate coral species. According to the authors, this can make them notoriously difficult to tell apart as shape can change independent of reproductive isolation or evolutionary divergence, the factors most commonly understood to define 'species'. By studying the genetic characteristics of corals at several regions of the genome, Forsman and his colleagues were able to confirm many morphological species groupings, while finding evidence that appearances are very deceiving in a few groups; some corals were genetically indistinguishable despite differing in size and shape, such as branching and massive corals, whereas some corals with similar appearance had deep genetic divergence. The authors said, "Our analysis of multiple molecular markers reveals previously unrecognized cryptic patterns of species diversity within the coral genus *Porites*. Our approach shows that morphological characters previously thought capable of delineating species must be re-examined to accurately understand patterns of evolution, and biodiversity in reef-building coral".

The authors' research will be very useful in aiding efforts to understand and preserve coral biodiversity. According to Forsman, "Currently used species definitions are likely to be misleading and confound attempts to identify, understand, and conserve coral biodiversity or to recognize its loss".

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*Porites lobata* (yellow) and *P. compressa* (bluish-purple) from Maui. These corals have a very distinct appearance, yet they are difficult to distinguish genetically. They may be recent or hybrid species, or colony morphology could be a polymorphic trait. Photo by Zac Forsman