

Data-driven optimization of coral reef conservation and restoration in the age of AI

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If you want to win a Nobel prize, keep your eyes on the proverbial prize; dive in to the fullest extent and research a single protein, pathway, process. organism, etc. to the fullest extent imaginable. This is how science works, and this is how our collective capacity improves as a species. But if you want to save an ecosystem, does a myopic scientist's vision get the job done? I argue that we need a more holistic approach. Otherwise, we fall prey to what is transpiring now in the coral reefs field: the approach championed by the most successful scientists are those that are the most popular. Would it not be better to use the method with the highest probability of success given regional ecological characteristics and budgets? What might be trendy or work well in well-funded nations with highly degraded coral reefs, like the United States or Australia, may actually not be those best suited for places like Taiwan. I will discuss these topics, as well as how artificial intelligence trained with 40-50 years of coral reef data (my own included) could be leveraged to aid in decision support for coral reef conservation and restoration, a topic I felt strongly enough about to generate a funding call for the Coral Research and Development Accelerator Platform several years ago, a call that hopefully will support the research of some of you in the audience.