

Study quantifying parachute science in coral reef research shows it's 'still widespread'

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By analyzing 50 years' worth of coral reef biodiversity studies, researchers reporting in the journal *Current Biology* on February 22 have quantified the practice of "parachute science," which happens when international scientists, typically from higher-income countries, conduct field studies in another, typically lower-income country, without

engaging with local researchers. They found that institutions from several lower-middle- and upper-middle-income countries with abundant coral reefs produced less research than institutions based in high-income countries with fewer or in some cases no reefs. They also found that host-nation scientists (scientists from the nations where field research was conducted) were not included in authorship on studies almost twice as often when those studies were conducted in lower-income countries.

"Unfortunately, for decades, it was the norm for researchers from high-income nations and wealthy institutions to engage in parachute science practices and build successful academic careers because of that. It's only recently that people started discussing about unfair research practices in [marine science](#)," says first author Paris Stefanoudis, a postdoctoral researcher in zoology at Oxford University. "There wasn't any quantifiable evidence for it before now."

Part of the difficulty in quantifying parachute science is that it can take on a variety of different forms depending on the researchers and the country in question.

"As a person of color from a large ocean state, I've definitely experienced parachute science," says coauthor Sheena Talma, who is the Science Program Manager at Nekton Foundation in the UK and is from the Seychelles. "Some researchers apply for funding and only approach the local scientists once they've already got their grant. I've also seen researchers only take on partners in the host country just to make getting a permit easier."

To identify trends in parachute science, the researchers analyzed publication metrics from the database Scopus for 50 years of warm-water coral [reef](#) biodiversity-related research. First, they looked at which countries were publishing these studies around the world and compared this to the amount of coral reef habitat in each of those countries.

"One thing that was notable was that of the top ten countries with the most reef publications, only two were not high-income nations—and two of them (Canada and Germany) don't have any coral reefs at all," says Stefanoudis. "That is a clear example of Western intellectual colonialism regarding an ecosystem that is predominantly affecting people's lives in the tropics."

Another sign of parachute science is when a coral reef study conducted in a certain country does not include any authors from that country. The researchers found that to be the case in 22% of studies conducted in Australia. But the effect was even more pronounced when the country where the fieldwork took place was lower income: studies in lower-income countries like Indonesia and the Philippines excluded local authors about 40% of the time. The researchers found a similar pattern when it came to research leadership (defined as publications where the first and/or senior author was from the host nation), with two-thirds of Australian studies led by Australian researchers, but only approximately 30% of Indonesian and 40% of Philippine studies led by local scientists.

"Parachute science is clearly still widespread in marine science, but it benefits nobody in the long run," says Stefanoudis. "For researchers in host nations, it creates and perpetuates dependency on external expertise and hinders local research efforts. But for scientists conducting research overseas too, ineffective collaborations and unbalanced partnerships exclude them from a wealth of knowledge and practical skills that host nation scientists have. Thus, true and meaningful collaborations should be actively encouraged and not seen as a tick-boxing exercise.

While parachute science is difficult to combat due to its massive historical legacy often linked to colonialism, the researchers provide a list of suggestions for scientists conducting research in other countries, including liaising with local governments, co-designing a research agenda with host nation researchers and stakeholders, partnering with

early-career researchers, and sharing data to promote knowledge exchange. However, they also hope that their work will lay a foundation for more detailed guidelines for academic, research, and funding institutions to eradicate parachute science practices in the future.

"Parachute science is complex, multilayered, and historical. The solution is not only about including more local scientists in publications, but about building relationships, developing knowledge-exchange activities, and having mutual trust and respect between all parties," says Talma. "Local scientists have a lot to offer foreign researchers, and building those partnerships enables skill sharing and empowers people on the ground to continue the work once the foreign scientists leave."

More information: *Current Biology*, Stefanoudis et al.: "Turning the tide of parachute science" [www.cell.com/current-biology/f ... 0960-9822\(21\)00062-2](https://www.cell.com/current-biology/fulltext/S0960-9822(21)00062-2) , DOI: [10.1016/j.cub.2021.01.029](https://doi.org/10.1016/j.cub.2021.01.029)

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