Trials of low-cost, reproducible artificial habits provide potential solution to declining fishery yields

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In the Bay of Ranobe, Southwest Madagascar, declining fishery yields and degraded marine habitats provoke scramble competition between fishers, with further habitat destruction often resulting. The physical destruction of complex marine habitats results in greater fish scarcity, and a negative feedback loop that is difficult to reverse. To provide habitat for commercially important marine species, bolster local fishing yields and reduce fishing stress on coral bommies, a series of artificial habitats were constructed in 2016. In preliminary trials, 5 artificial structures comprising 21 tones of limestone and concrete tubing were constructed over 1,125m2 of barren sandy waters. Underwater visual census monitored colonisation of the structures. Within 6 weeks of construction, the artificial structures were utilised by seven target families of finfish, predominantly parrotfish, wrasse and surgeonfish, with declining abundance with distance from the structures. Squid, octopus, and unidentified juvenile fish were also observed within the habitats. While preliminary, these results suggest that artificial structures comprised of low-cost materials have the potential to provide viable habitats for commercially important species of fish in degraded ecosystems. These trials, the first in the region, offer a practical and reproducible solution to declining fishery yields and the loss of complex habitats in coastal systems.