

**A SPONGE THAT CHEATS ON DIFFUSE MUTUALISM AMONG OTHER SPONGE SPECIES.** *Memoirs of the Queensland Museum* 44: 686. 1999:- The demosponge *Desmapsamma anchorata* is frequently found growing on other organisms, especially gorgonians and other sponges. For paired *D. anchorata* individuals of the same genotype and initial size, growth rates were lower and mortality rates were higher on carbonate substrata than they were on sponges of other branching species. The three sponge species that served as hosts in the experiments, *Iotrochota birotulata*, *Amphimedon compressa*, and *Aplysina fulva*, grow and survive better when they are intimately intertwined with each other, and do not therefore discourage other sponges from adhering to them. However, *D. anchorata* does not improve the quality of life for these species when it participates in associations with them. *Desmapsamma anchorata* grows many times more rapidly than the other species, and appears to accomplish this by skimping on skeletal quality such that it requires

to withstand physical disturbances. In the early stages of its growth on sponges of other species, *D. anchorata* does not decrease growth rates of its hosts, but as it continues to grow, it can entirely overwhelm the other sponges, smothering and killing enveloped tissue. The extreme fragility of *Desmapsamma anchorata* makes it vulnerable to being swept away by physical disturbance, and this prevents it from becoming a chronic hazard for the other sponges. Intimate association with *D. anchorata* may provide one benefit to other sponge species, which is to facilitate reattachment of loose fragments. Because *D. anchorata* is able to reattach to carbonate substrata within one day, fragments of other species to which it is attached are anchored for the few additional days that they require in order to establish their own stable attachments to solid substrata. □ *Porifera, mutualism, parasite, growth, mortality, asexual fragmentation.*

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