

{rokbox title=| Schematic representation of the process employed for the selection of relevant publications retrieved from Web of Science (WoS) and Scopus :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-review-sponge-mediated-aguilo-2026-thumb-et-al.jpg|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-review-sponge-mediated-aguilo-2026-et-al.jpg{/rokbox}

Antonella Schiavo, **Joseba Aguilo Arce**, Roberta Trani, Pere Ferriol, Caterina Longo, 2026. [A review of sponge-mediated restoration: From population recovery to enhancing ecosystems.](#)

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Abstract: Marine sponges perform key functional roles – filter feeding, nutrient cycling and habitat provision – that underpin the structure and functioning of diverse benthic ecosystems. However, their abundance and diversity are increasingly threatened by human activities and climate change. This review examines current knowledge on the potential of sponge reintroduction as a tool to mitigate the effects of environmental stressors, overexploitation and habitat degradation. Three main goals to restoration are identified: the recovery of sponge populations, the facilitation of other taxa, and restoration of habitats. Porifera support ecosystem recovery by enhancing the growth of seagrasses and macroalgae, stimulating mangrove roots development, and promoting coral recruitment and coral rubble consolidation. Moreover, sponge taxa provide protective benefits to coexisting species by deterring predators. The survival and growth rates of transplanted sponges vary depending on the species, habitat conditions and the transplantation methods. Overall, the findings highlight the dual role of Porifera in restoration, both as target species for population recovery and as ecosystem engineers that facilitate the recovery of marine communities. Importantly, empirical evidence is scarce: only 19 studies (covering 27 sponge taxa, predominantly *Demospongiae*) met our inclusion criteria, and geographic and methodological biases limit generality. Their ability to influence ecosystem functioning nonetheless underscores their value in marine restoration initiatives.

Keywords: Porifera, Restoration, Facilitation, Habitat, Population, Literature review.