# Micropredator and parasites: an indicator for the status of angelsharks?

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Although parasitism represents the most frequent consumer strategy, they are usually not considered as conservation targets. There is, however, increasing evidence that parasites are extremely diverse and play key roles in ecological and evolutionary processes. In addition, they have been used as indicators for ecosystem change and to illustrate the ecology of their hosts. It is yet to be explored whether host-parasite interactions can be used as an indicator for the vulnerability of angelshark *Squatina squatina* populations.

Recently, novel associations were documented from parasites and a micropredator with elasmobranchs in the Canary Islands based on long-term (10-year) observations in their natural habitat. The marine leech *Stibarobdella macrothela* and the isopod *Aegapheles deshaysiana* were regularly observed taking blood meals from *S. squatina*, while the marine leech *Branchellion torpedinis* was rarely encountered preying on *S. squatina* and the marbled electric ray *Torpedo marmorata*. No noteworthy aspects were observed in the attachment area, the behaviour, and the apparent fitness of the hosts and preys.
These findings provided useful information about biologic diversity and the relationship of marine leeches and an isopod with *S. squatina* and *T. marmorata* in the Canarian Archipelago, and are relevant for the future conservation management of these species. Future research challenges include the assessment of:
- The prevalence and intensity of parasites and micropredators in the angelshark population.
- Parasites and micropredators selectivity (single-host or multihost), and their relation with intrinsic and current vulnerability of angelsharks.
- Evidence of host-parasite co-extinction.

Keywords: *squatina squatina*; *aegapheles deshaysiana*; *branchellion torpedinis*; *stibarobdella macrothela*; isopod; marine leech