

Hyas spp. crabs and sea anemones—new species associations from Svalbard

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In the literature, there is a large amount of evidence on mutual and commensal associations between actinurians and decapods (see Ross 1983 and references therein). Among all these studies, only Davenport (1962) and Schrieken (1965) dealt with *Hyas* spp. Their work, however, was performed in aquaria and concerned only young crab individuals (Davenport 1962) and a single sea anemone species—*Tealia felina* (Linnaeus, 1767) (= *Urticina felina*) (Davenport 1962; Schrieken 1965). Here, we describe the association of mature *H. araneus* (Linnaeus, 1758) and *H. coarctatus* Leach, 1816 with *Cribrinopsis similis* Carlgren, 1921, *Hormathia nodosa* (Fabricius, 1780) and *Urticina crassicornis* (O.F. Mueller, 1776), which to our knowledge are reported for the first time. The associations were recorded during the summers of 2011 and 2012 on the rocky bottom of an Arctic fjord—Isfjord (Spitsbergen Island, Svalbard Archipelago) at 10–15 m depth.

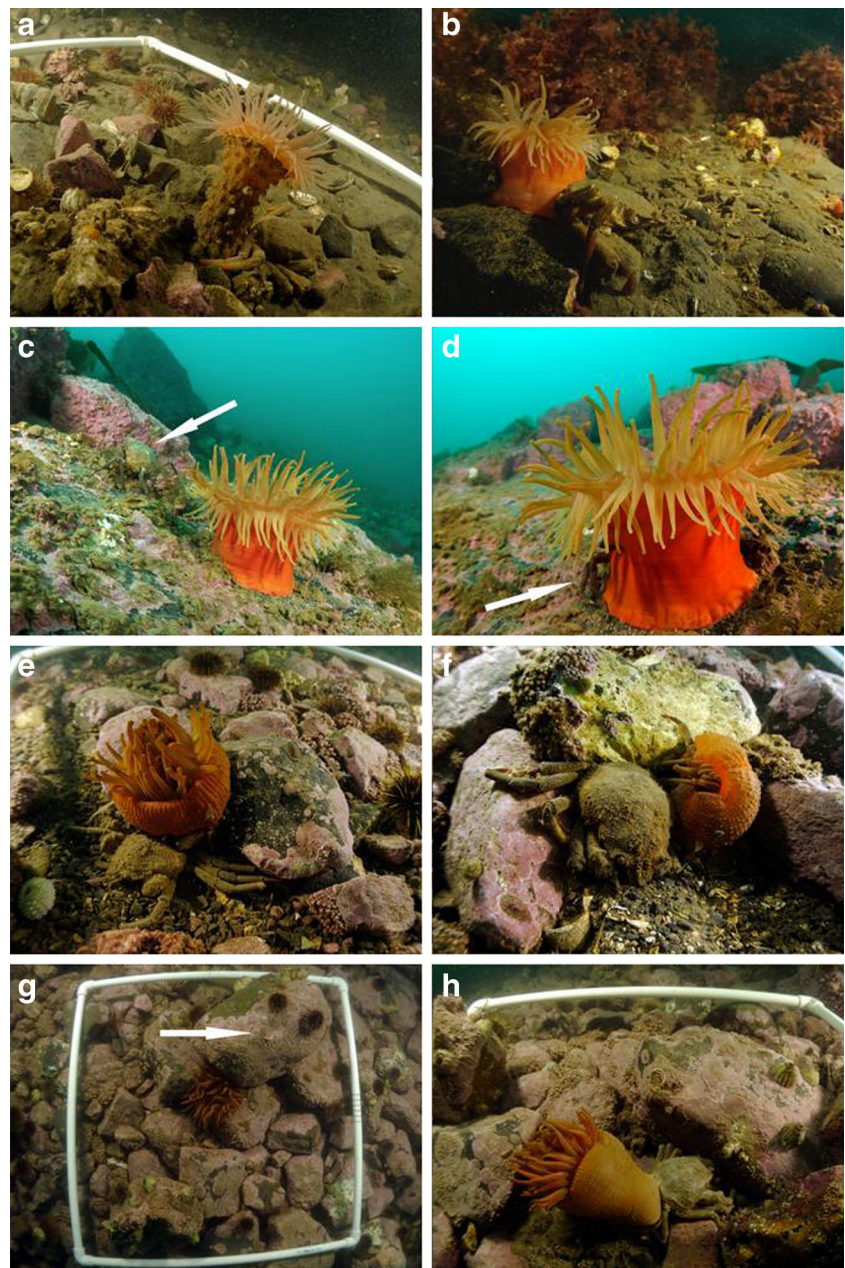
Direct underwater observations (Fig. 1a–h) indicate that the crabs were in contact with sea anemones for several minutes. When approached by a diver, the crabs did not escape from the anemone but got closer to it. On one specific occasion, removing the rock, marked in Fig. 1g with an arrow, revealed a large (~5 cm diameter of the pedal disc) specimen of *C. similis* attached to the crab by its verrucae (Fig. 1h).

Although sufficiently large sea anemones such as *Urticina* sp. have occasionally been noted in the past to feed on these crabs in this area (Gulliksen and Svensen 2004), it seems instead that the crabs, while avoiding contact with the tentacles, are searching for protection from predators (e.g. bottom-dwelling fish, octopus) as previously reported for other decapods, including those closely related to *Hyas* spp. (Ross 1983). More studies are needed to verify and confirm whether these associations have just a short-term facultative commensalistic character.

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Fig. 1 A subset of pictures showing *Hyas coarctatus* (a, b, e, f), *H. araneus* (c, d, h) and *Hormathia nodosa* (a), *Uriticina crassicornis* (b, c, d), and *Cribrinopsis similis* (e, f) before removing the stone (g) and after (h)



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