

Crustaceans Associated with Cold Water Corals: A Comparison of the North Atlantic and North Pacific Octocoral Assemblages

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ABSTRACT. Crustaceans live on large colonial invertebrates for a variety of reasons, but in all cases must overcome the defenses of the host animal. We surveyed the crustaceans living on deep-sea octocorals collected during expeditions to the New England and Corner Rise seamounts (2003–2005) in the Northwest Atlantic and to the Aleutian Ridge (2004) in the North Pacific. Only a small number of crustacean species were found on octocorals in the Northwest Atlantic but a great many species, especially amphipods, were found on octocorals in the Northwest Pacific. We suggest that this disparity is due to both the differences in octocoral host dominance as well as differences in the available species pool between the two oceans.

Introduction

The anthozoan subclass Octocorallia comprises a large number of colonial species living in both shallow tropical as well as polar and deep-sea cold waters. Octocoral colonies are often quite large, and in many cases house symbionts belonging to multiple invertebrate phyla. Invertebrate symbionts of cold water octocorals have been documented in the North Atlantic by Buhl-Mortensen and Mortensen (2004 a, b, 2005), Watling (2010), Buhl-Mortensen *et al.* (2010), De. Clipelle *et al.* (2015), Schwentner & Lörz (2020), and on a global basis by Watling *et al.* (2011). To date, little is known about crustacean symbionts of cold water octocorals from the North Pacific Ocean.

In this paper we summarize what is known about crustaceans living on octocorals from samples that we have collected in the Northwest Atlantic and North Pacific Oceans augmented with information from published studies.

Materials and methods

Samples for this study were obtained from octocorals collected by remotely operated vehicles (ROVs) during expeditions on the New England and Corner Rise (NES&CR) Seamounts in the Northwest Atlantic (Fig. 1) during the years 2003–2005, and on the central part of the Aleutian Ridge (AR) in 2004 (Fig. 2). Samples from NES&CR were obtained with the submersible *Alvin* in 2003 and the ROV *Hercules* operated from the NOAA ship *R/V Ron Brown* during cruises in 2004 and 2005. Samples from the AR were obtained with the ROV *Jason II* operated from the *R/V Roger Revelle* in 2004. Most samples were obtained from bathyal depths (200–3500 m).

Whole octocoral colonies (in the case of small colonies, ca. 20 cm or less) or pieces of colonies were collected using the hydraulic manipulator of the ROV and the samples stored in moderately insulated bioboxes until the ROV was

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