

Discovering Diversity

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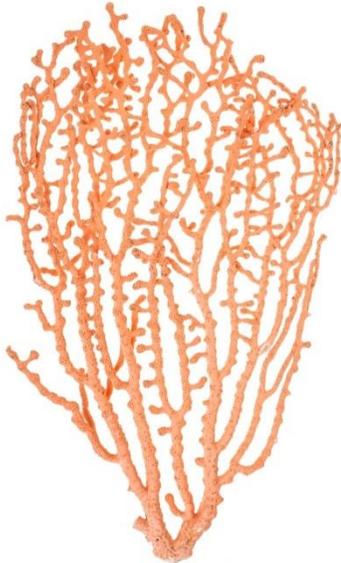
Part Two

Several specimens in the Royal BC Museum's invertebrate collection connect us to places where few others have ventured. An exquisite Bubblegum Coral takes us on a field trip to explore deep-water communities, a Hot Vent Tubeworm transports us to an offshore hydrothermal vent, and a delicate Cloud Sponge allows us to discover firsthand the giant, ancient glass sponge reefs.

Bubblegum Coral grows just two centimetres per year, but can reach more than two metres in size. This suggests that colonies can be very old. Given their ecological significance and slow growth, these corals may best be described as old growth trees of the sea.

Hot Vent Tubeworms live in the extreme conditions of hydrothermal vents. These vents are biological hotspots relative to adjacent deep-sea environments. But only *extremophile* species specially adapted to this unique habitat are able to survive. To survive, Hot Vent Tubeworms host symbiotic bacteria that convert sulfides (chemical compound of sulfur) into food. This process, known as chemosynthesis, allows the worms to thrive. The tubeworms

form extensive clumps, which, in turn, provide structure for other hot vent species, including scale worms, limpets, and spider crabs.



Bubblegum Coral (*Paragorgia arborea*) In the deep waters of the Northeast Pacific, this exquisite species of 'soft' coral rivals the splendour of any tropical, reef-building coral, and similarly provides habitat for other marine species. Credit: RBCM 991-00343-002



Hot Vent Tubeworm, (*Ridgeia piscesae*) These Hot Vent Tubeworms were collected from the Endeavour segment of the Juan de Fuca Ridge, located 300 km off the coast of BC. Along this ridge, 'black smokers' emerge from active spreading centers, as superheated, sulfur-rich water originating from below the Earth's crust mixes with cold ocean water. Credit: (RBCM 2014.104)

Renowned as one of the most unique living treasures within the ocean, Glass Sponge reefs were once believed to be extinct. Today, BC is the *only* place in the world where Glass Sponges form extensive reefs. These reefs are composed of sponges, with skeletons made entirely from silica (glass).



Cloud Sponge (*Aphrocallistes vastus*) While many species of Glass Sponge exist, only three are reef builders: the Cloud Sponge (*Aphrocallistes vastus*), the Chalice Sponge (*Heterochone calyx*), and *Farrea occa*. These species are characterized by fused skeletons that persist long after death, providing a framework for building vast, ancient reefs. The reefs provide a vital home for a diverse community of other marine invertebrates and fishes. Unfortunately, the reefs are also extremely fragile and particularly vulnerable to damage. Due to their slow growth, broken reefs may take up to 200 years to recover. Credit: RBCM 010-00074-001