



**Title:** 'Tubeworm convolutions'

**Description:** The intricacies of a blue tubeworm colony

**Photographer's name:** Noelle Bennett

**Where and when:** Muzz's Cove, Pelorus Sound. March 2021.

**Sustainability:** I'm sure we've all taken a walk along a rocky shoreline at low tide at some point. We've probably all noticed strange white concrete-looking tubes that cover some of the rocks. But how often have we actually stopped to look at them or even wonder what they are. This image is the result of me doing just that – that's one of the pleasures of being a photographer – you learn to stop and look.

Those weird contortions that the white tubes seem to be going through are so strange and abstract. They are actually triangular in cross section. The base is cemented to the rock whilst the ridge running the full length at the top acts as protection. Unwary fingers or feet that are rubbed across these soon discover that they are sharp - sharp enough to cut. But they are providing protection for what? Well, each tube contains a bright blue 'tubeworm'. When submerged, the tubeworms put out a fan of dark blue tentacles to trap wafting food particles. They retract their tentacles during low tide or when they feel threatened so these strange tubes give them a place to retreat to. If you look at the tubes carefully you may notice a flat black plug at the tube opening. If that is present, then a live worm is 'at home', safely sealed inside the tube where it is dark and cool. Tubeworms are known as 'sessile' creatures - or in other words, creatures that anchor and remain in one spot for their entire life.

Food has to come to sessile animals if they are going to survive – bad real estate choice leads to starvation. The tubeworm's tentacles filter the organic particles from the water column, but actually it's the microbes that live within the tubeworm that process these particles and in turn those microbes support the survival of the tubeworm. The microbes live in specialised cells in the tubeworm's body, and their 'metabolisation' gives the tubeworm the nutrition it needs to carry on gathering the food particles for the microbes. Ecologists call this 'symbiosis' – both partners depend on each other – it's just one of many ways that plants, animals and in this case, microbes, are connected

with one another.

Tubeworms are some of the ocean's most prolific creatures. They are thought to have some of the longest lifespans of any creatures on earth, more than 250 years.

**Photographer's notes:** Taking the time to check out the seemingly uninteresting can be so rewarding as I discovered with these tubeworms.

**Photo specs:** This image is presented as a triptych to help the viewer appreciate the intricacies of these tubeworm structures. This individual image was focus-stacked using 50 images taken at two unit increments to ensure the whole of the tubeworm structure was in sharp focus. Technical specs: The image was taken using a Panasonic DC-G9 camera and a Panasonic Leica DG Macro-Elmarit 45mm f/2.8 macro lens. Exposure details - 1/160 sec at f3.5 with an ISO of 200 and a focal length of 45mm (90mm full frame equivalent).

**Digital specs:** 8321 x 6169 pixels (51.33MP) @ 300dpi

**Key words:** worms, tubeworms, blue tubeworm, microbes, filter feeding, Pelorus Sound, symbiosis, long life span, triptych, Noelle Bennett, Ecosystems Photography, sustainability.

**Price:** \$300 (incl. GST) for use of the digital image. Visit [www.ecosystemsphotography.com/sales](http://www.ecosystemsphotography.com/sales) for details & to order, or to get a quote if you would like a high-quality print.

**Donation:** The price includes a \$100 donation to a sustainability organisation or project of your choice, or otherwise to *iNaturalist NZ – Mātaki Taiao* – <https://inaturalist.nz>.

We recommend that the donation goes to *iNaturalist NZ* because they are supporting a wide variety of community-led biodiversity monitoring programmes throughout New Zealand, including for the intertidal habitats featured in this series of photographs. *iNaturalist* receives species records from citizen scientists, maps the data, and shares the information so that it can be used by scientists, policy makers, and the public. They invite everyone to submit photographs and will find an expert to help by identify the plants and animals in the photographs.

*iNaturalist NZ* need funds to maintain a database for monitoring long term trends in biodiversity in places like the intertidal where the chitons pictured here were found.

**Image ref:** NB#010 (please use this reference in all orders and correspondence).

**Noelle Bennett**  
9 December 2021