

A Journey Into The Hidden Natural World – full captions for images

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Small Anemone

Small marine anemone. Zeiss Tessovar lens, Nikon camera.

© Michael Crutchley

2

Crustacean and Filter Feeders

A tiny marine crustacean alongside a colony of Bryozoan filter-feeders. On a strand of *Corallina officinalis* seaweed. Zeiss Tessovar lens, Nikon camera.

©Michael Crutchley

3

Butterfly wing

Detail of a wing from an Amazonian rainforest butterfly species. Ethically collected from UK-based captive breeding programme.

©Michael Crutchley

4

Cushion starfish

Underside of one of the arms of *Asterina gibbosa*. 2-4mm long. Zeiss Tessovar lens, Nikon camera. Low-angle dark-field illumination.

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5

Single-celled Algae

Group of *Diatom Coscinodiscus*. Image diameter 0.5mm. Zeiss Tessovar lens.

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6

Flatworm

Aquatic flatworm. Size 0.3-0.8mm long. Zeiss Tessovar lens, Nikon camera. Darkfield illumination.

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Foraminifera

The perforated chalky shells of these single-celled planktonic organisms. 0.05 – 0.5mm across. Zeiss Tessovar lens, Nikon camera. ©Michael Crutchley

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Hydra and Flatworm

Aquatic tentacled *Hydra*. Anchored by a single foot, the *Hydra* catches its prey with stinging tentacles around its mouth. These deliver a paralyzing neurotoxin. A nearby aquatic flatworm had

curled up into a ball. Specimen size 0.2mm. Zeiss Tessovar lens, Nikon DB10 camera. ©Michael Crutchley

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Obelia Hydroid

Aquatic hydrozoan in its polyp stage. The stinging tentacles catch prey which is fed down into a mouth at the centre of the tentacles. After digestion waste products are also expelled through the mouth. Zeiss Photomicroscope. Specimen <0.5mm in size. Variable Amplitude Contrast lighting using polarizer filter with oblique light to section. X40 final magnification. ©Michael Crutchley

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Limpet Radula

The marine limpet has a radula or tongue on which grows more than 100 rows of teeth. The teeth are made of an extremely strong mineral-protein composite which allows the limpet to scrape food off rocks and into their mouths. The teeth are so hard that the limpet scrapes rock off as well. Zeiss Photomicroscope adapted with Nikon camera. ©Michael Crutchley

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Marine Ragworm

Nereididae worm. Detail of the parapodia and setae structures that run down the worm's sides. Zeiss Tessovar lens. ©Michael Crutchley

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Medusa

The second and mobile stage of the life cycle of invertebrates in the aquatic *Cnidaria* family. Organisms in this family begin life as fixed polyps. The muscular umbrella-shaped body of the medusa pulses and propels the organism through the water. Specimen 6mm long. Zeiss Tessovar lens. ©Michael Crutchley

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Pilobolus fungi

On animal dung. The fruiting structure of the fungi forms a stalk with a black head or sporangium on the top. This holds the fungi spores. Pressure builds up in the subsporangial vesicle - the swollen part of the stalk just underneath the black head. This eventually ruptures and shoots the black sporangium up to 2 metres away from the stalk. El-Nikkor 50mm f2.8 enlarger lens, Nikon camera. ©Michael Crutchley

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Plankton and Plastic Pollution

A varied group of marine plankton. The pink-coloured strand in the centre of the photomicrograph is a microscopic fibre of plastic. A stark illustration of how plastic pollution has entered the marine food chain. X100 magnification. Zeiss Photomicroscope, adapted with Nikon camera.

©Michael Crutchley

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Marine Diatoms

A group of *Licmophora flabellata* sessile marine diatoms. These fan-shaped diatoms attach to seaweed via their stalks. They are photosynthetic single-celled algae with intricately patterned, glass-like cell walls. They form an important part of the base of both marine and freshwater food chains. X160 total magnification. Zeiss Photomicroscope with x16 lens, adapted with Nikon camera. 30 images stacked.

©Michael Crutchley

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Polychaete Worm Head

Detail of this marine worm showing the bristles that run down each side of its body. Over 10,000 species can be found in the polychaete class. Zeiss Tessovar lens, Nikon camera. 20 stacked images.

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Radiolaria Barbados

Marine protozoa which forms part of the zooplankton. These organisms have intricate and elegant mineral skeletons. Fossil examples have been found from as far back as the Cambrian period but living specimens exist in all earth's oceans to this day. Zeiss Photomicroscope adapted with Nikon camera.

©Michael Crutchley

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Snail Eggs

Laid by the Ramshorn snail. Zeiss Tessovar lens, Nikon camera.

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Moth Wing Trachea

Trachea in the wing of the Small Elephant Hawk Moth. The tracheas allow the insect to pump oxygen into its wings. The spiral structure visible inside the tubes prevents them from collapsing. Image 2mm across. Zeiss Tessovar lens.

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Snakelock Anemone

Detail of a Snakelock anemone's tentacles. Sample collected from a rockpool. Blue 450nm wavelength LED lighting with orange filter. Zeiss Tessovar lens, Nikon camera.

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Sponge Spicules

Microscopic structural elements found in most sponges that mesh together to form the sponge's skeleton. They can be calcareous, siliceous or made of spongin. They come in a myriad of different shapes. X160 magnification. Zeiss Photomicroscope, adapted with Nikon digital camera.

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Captions for Enlarged Images:

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Medusa

Sarsia gemmifera. A tiny member of the jellyfish family. Specimen 6mm long. Darkfield illumination. X5 microscope lens and bellows. Small sensor microscope dedicated camera.

©Michael Crutchley

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Seasquirt

A static filter-feeder. This specimen collected from Sea Kelp. These organisms are characterised by tubular openings called syphons. The seasquirt sucks in water laden with food particles via the large syphon at the top of its body. It then processes the food through its gut and expels the waste water via the smaller syphon on its side. Specimen 4mm high. Zeiss Tessovar lens, Nikon camera. ©Michael Crutchley

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Wasp Head

Darkfield illumination with added top light. 20 images stacked using Helicon Focus software. Zeiss Tessovar lens, Nikon camera.

©Michael Crutchley

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Sea Anemone

Diadumene lineata. Specimen 1-2mm in size. Photo taken in water. Flash lighting. Zeiss Tessovar lens, Nikon camera.

©Michael Crutchley

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Nudibranch

Polycera quadrilineata. A very tiny and delicate example of a marine gastropod mollusc. Commonly known as sea-slugs, the family is distinguished by their external gills which are mounted on their back. Specimen 2mm long. Zeiss Tessovar lens, Nikon camera.

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Vitamin C Crystals

Crystallised from a saturated solution in water. Zeiss Ultraphot microscope. Illumination via cross polarizing filters (above and below). X40 total magnification.

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