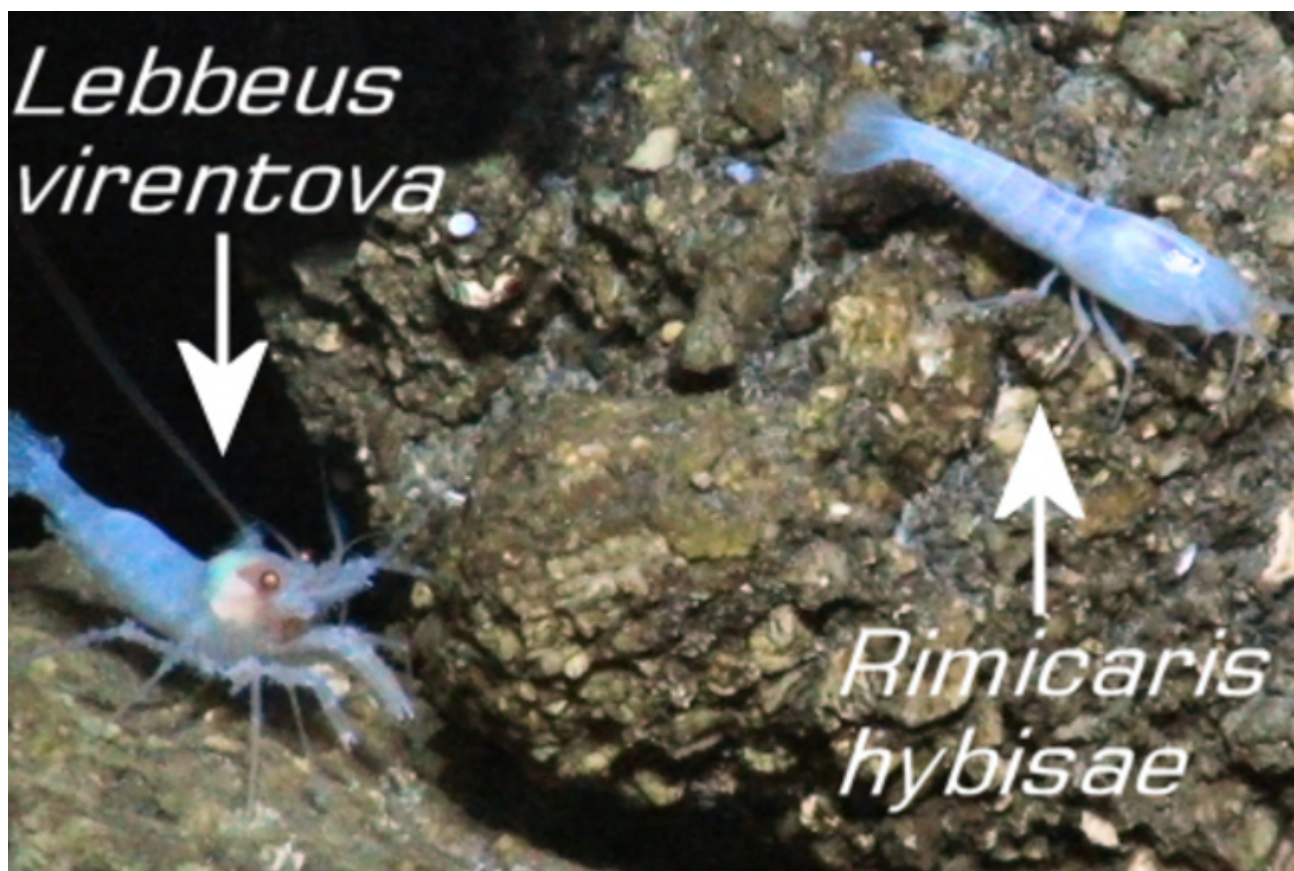


Extract from 'Exploring our oceans' MOOC



Deep-sea specimens collected during oceanic research expeditions may turn out to be species which are completely new to science. These collected specimens are carefully preserved for later analyse ashore.

If they turn out to belong to a previously unknown species, biologists then prepare and publish a formal description of that new species, comparing it with the other known species of that kind of animal, and highlighting how the new species is different (and therefore how it can be recognised from other species by other biologists in the future).

This usually involves examining specimens under a microscope and drawing the details of key body parts that can be used to tell species apart. It might be surprising to learn that we still draw specimens - but this is because drawings are usually clearer than photographs, particularly for specimens under the microscope where the depth of focus can be very narrow (a drawing allows us to show all the features present, which could not be shown in a single photograph). Sometimes we also need to use an electron microscope to examine very fine details of body parts.

In addition to examining the "morphology" (form and structure) of specimens, we also usually analyse some of their genetic code, to compare with other species and explore the "genetic family tree" (phylogenetics) of that kind of animal. At the moment, we don't sequence the entire genetic code of an organism to do this; instead we look at variations in particular portions of genetic code that are shared by

all animals - sometimes nicknamed the "barcode of life" - to see how closely they are related to other species of the same kind of animal.

The formal description of a new species also involves giving it its scientific name. The scientific name of an animal has two parts: the genus name, and the species name. A genus is a group of closely related species that share similar features. So if a new species belongs to an already known genus, then it takes that genus name. But it still needs a new species name.

At the Von Damm Vent Field in the Cayman Trough, there are two new species of shrimps that have recently been analysed and now formally described. These are a new species of the genus *Rimicaris* (Crustacea: Decapoda: Caridea: Alvinocarididae) from hydrothermal vent fields on the Mid-Cayman Spreading Centre in the Caribbean, and a new species of the genus *Lebbeus* (Crustacea: Decapoda: Caridea: Hippolytidae) from the Von Damm Vent Field, in the Caribbean Sea.

So how do we choose a new species name? Species names are derived from Latin and Greek, and traditionally describe a key feature of the species. For example, the scientific name of the spiny cockle, which we find around some southwest UK shores, is *Acanthocardia aculeata*. The genus name, "*Acanthocardia*", derives from a Greek word for "spine" (the "*Acantho-*" part) because the shell is spiny, and from the Latin word for "heart" (the "*-cardia*" part) because the two halves of the shell form a shape like a heart. The species name, "*aculeata*", comes from the Latin word for "sting", because the spines on the shell are sharply pointed. Victorian and earlier naturalists, who named many of the common species found in shallow water, were educated in Latin and Greek and simply described what they saw to name species.

A species name can also be used to indicate the geographical location where the species is found: for example *Vulcanolepas scotiaensis* is a new species of stalked barnacle recently found at deep-sea vents in the Scotia Sea of the Antarctic. And a genus or species name can also be used to commemorate a person: for example *Bobmarleya gadensis* is a genus and species of worm from deep-sea mud volcanoes in the Gulf of Cadiz, commemorating reggae singer Bob Marley.

There is a strict rule that those describing a new species cannot name it after themselves, but species names can be used to commemorate other scientists for their work. For example, the deep-sea brittlestar *Ophiactis tyleri* was named after Professor Paul Tyler for his many contributions to deep-sea biology.

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