More than 200 new snails of the same genus described in a single study

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This is one of the 209 new species of the genus *Turbonilla* belonging to the family of *Pyramidelloidea*. Credit: Anselmo Peñas and Emilio Rolán

Two world experts in micro molluscs, Anselmo Peñas and Emilio Rolán, have made an unprecedented description in a scientific publication of a combined total of 209 snail species. Commissioned by the National Museum of Natural History in Paris, the study was unveiled in September in the French capital, and it covers the most new species from a single genus of any study to date.

"Never have so many species from a single genus, nor even from a single family, been described in one single study", Anselmo Peñas, lead author

of the collaborative monograph between the National Museum of Natural History (MNHN) in Paris and Spain's National Museum of Natural Sciences (MNCN-CSIC), and one of the world's leading experts on the *Pyramidelloidae* superfamily, tells SINC.

In 2000, the Paris museum commissioned Anselmo Peñas and Emilio Rolán to carry out the study on deep water *Pyramidelloidae* from the tropical waters of the South Pacific. This is the first study to have described 272 species of snails from the genus *Turbonilla*, which were discovered over the past 30 years during international ocean research campaigns in waters between 100 and 1,700 metres deep off New Caledonia, the Solomon Islands, Vanuatu, Fiji, Tonga and Polynesia.

The study has been published in volume 26 of the *Scientific Publications of the Paris Natural History Museum*, and has been described by its authors as "more than an achievement". "If there were a Guinness world record for Science, this would be one without a shadow of a doubt", say the experts, both of whom are retired and collectors of micro molluscs.

"This study has been harder and larger than others, and it has been a great challenge for us because it involved deep water material that was also from a region that we were not familiar with, and it also involved a large number of species, which made it even more complicated", Emilio Rolán, co-author of the monograph and a collaborator at the University of Santiago de Compostela, tells SINC.

Ten years of study

A decade of analysis, evaluations, comparisons, rulings out and contacts made with museums from all around the world made it possible to confirm the finding of 209 species new to science. "It's really incredible", says Peñas of the number of snails. Out of the remaining species studied, around 30 were already known and a further 33 did not

provide sufficient material to make it possible to describe them as new species.

"When the director of Malacology from the Museum of Paris told us there were a lot of species, we smiled, because we are old hands at this, and we thought there would be around 20 or 30 new species. The surprising thing was when we saw they were all different, with more and more turning up", explains Rolán.

"The novelty is not only in the description of so many species, but also in the fact that they all belong to a single genus, *Turbonilla*, to a single family", points out Peñas. According to the expert, so many species from a single genus have never been described before in a single study, not even in the 19th Century, when the largest number of species were described, nor during the 20th Century.

The difficulty of identifying *Pyramidelloidae*

Identifying molluscs from the *Turbonilla* genus is not as easy as it is for other families, such as the Conidae, the most numerous family of gastropod molluscs along with the *Pyramidelloidae*. Their lack of a radula (molluscs' 'teeth', which are used to identify the species) and their tiny, almost microscopic, size (less than 10 millimetres), made the authors' work harder and longer, requiring them to spend long periods at the Paris museum.

"Since there were so many and they were so small, it was impossible to separate them by sight alone, so we had to take photographs with an electron microscope and then arrange them. In total, there were 1,300 photos. It's been a huge job", explains Rolán.

Another distinctive feature of this family is parasitation: "It is known that the *Pyramidelloidae* feed off the body juices of other molluscs such

as the common mussel and sand mason worms, but we don't know how many *Pyramidelloidae* are mollusc parasites", says Peñas. Since they have no radula, these molluscs feed on others using a kind of trunk, which they stick into their soft juices.

The work of the two Spanish experts does not end here. This is the first part of their study, which over the next two years will lead to the publication of new studies on other genera in the same family that will be "almost as important as the first one".

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