

# Two new porcelain crab species discovered

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*Polyonyx socialis* inhabits the compact tube-like shelters built by the polychaete worm, *Chaetopterus sp.*, often sharing it with the larger porcelain crab species, *Polyonyx heok*. Credit: T. Britayev and D. Martin

Two new porcelain crab species have been described in the *ZooKeys*

journal by scientists from the Smithsonian Tropical Research Institute (STRI) and the Institut für Tierökologie und Spezielle Zoologie der Justus-Liebig-Universität Gießen. One of the new species, *Polyonyx socialis*, was discovered in the South China Sea of Vietnam. The other, *Petrolisthes virgilius*, has a new identity, after initially being taken for a similar-looking species—*Petrolisthes tonsorius*—four decades ago in the Colombian Caribbean.

Porcelain [crabs](#) belong to a highly diverse family of marine crustaceans, distributed in the shallow waters of oceans worldwide. They also are known as "false crabs," because they evolved a crab-like form independently of true crabs. A relatively large number of porcelain crab species are symbiotic with other organisms, allowing scientists to tell a story of a long-time relationship between species from distantly related taxa.

"Most porcelain crabs live on the hard substrates of shallow waters like the surface of corals or rocks overgrown by algae, microbes and decaying material," said STRI research associate Alexandra Hiller, co-author of the papers. "Others live as symbionts of invertebrates like sponges, anemones, sea urchins, polychaete worms and other crustaceans."

The two recently described species are examples of these symbiotic porcelain crabs. *P. socialis* derives its name from the Latin word for "social" because it was found living with other organisms—including the larger porcelain crab species, *Polyonyx heok*—in the compact tube-like shelters built by the polychaete worm *Chaetopterus sp.* Its broad, flat walking legs and claw-bearing extremities appear to have been adapted for living tightly-attached to the worm tube walls and avoid being perceived as an obstacle for the other organisms.



Although initially mistaken for *Petrolisthes tonsorius* in the 1970s, the uncommon colors and atypical habitat of *Petrolisthes virgilius* led the scientists to corroborate through genetic analyses that it was a new species. Credit: Alexandra Hiller and Bernd Werding

Although initially mistaken for *P. tonsorius* in the 1970s, the uncommon colors and atypical habitat of *P. virgilius* —intertidal vermetid snail formations in the Colombian Caribbean—led the scientists to corroborate through genetic analyses that it was a [new species](#). As a symbiont, *P. virgilius* has evolved in tight association to its distinctive surroundings: a reef-like microhabitat exposed to wave action and consisting of snail shells cemented to each other and to a hard substrate.

Despite the relatively high number of known symbiotic porcelain crab species, such as *P. socialis* and *P. virgilius*, the researchers believe this aspect of their ecology could hinder their long-term survival, particularly in the shallow-water ecosystems where they typically occur. These habitats are often more vulnerable to climate change, ocean acidification and contamination.

"Symbiotic [species](#) are thought to be more vulnerable to [environmental challenges](#) than free-living organisms," said Prof. Dr. Bernd Werding, from the Institut für Tierökologie und Spezielle Zoologie der Justus-Liebig-Universität Gießen, and co-author of the studies. "Their fate depends on the [fate](#) of their host, which may also be affected by local and global conditions and abrupt changes."

**More information:** Alexandra Hiller et al, A new species of *Petrolisthes* (Crustacea, Anomura, Porcellanidae) inhabiting vermetid formations (Mollusca, Gastropoda, Vermetidae) in the southern Caribbean Sea, *ZooKeys* (2019). [DOI: 10.3897/zookeys.876.37244](https://doi.org/10.3897/zookeys.876.37244)

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