

Tiny roundworms carve out unique parasitic niche inside pseudoscorpion's protective covering

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In a parasitic first, a Baltic amber specimen has revealed that millions of years ago tiny worms known as nematodes were living inside of and feeding on the outer protective layer of pseudoscorpions. Credit: George Poinar Jr.

The early worm gets the arachnid, fossil research by an Oregon State University scientist has shown. In a parasitic first, a Baltic amber specimen has revealed that millions of years ago, tiny worms known as nematodes were living inside of and feeding on the outer protective layer of pseudoscorpions.

"This is very strange," said George Poinar Jr., who has a courtesy appointment in the OSU College of Science. "No other invertebrate-associated nematodes are known to have this detailed habit."

Findings were published in [Historical Biology](#).

Pseudoscorpions are a highly diverse lineage of arachnid, said Poinar, an [international expert](#) in using plant and animal life forms preserved in amber to learn about the biology and ecology of the distant past. Smaller than [scorpions](#) and lacking a stinger and tail, pseudoscorpions live in a range of habitats globally and are associated with a wide variety of parasitic organisms including nematodes.

Nematodes are among the planet's most abundant animals, "free-living" in water, soil and the Earth's crust in addition to parasitizing a large collection of plant and animal species.



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The fossil nematodes studied by [Poinar](#) show well-developed spear-type structures known as stylets. Similar to a hypodermic needle, a [nematode](#) uses its stylet to pierce cells and pull out food—in this case from the pseudoscorpion's hypodermis, part of the outer covering known as the integument.

"Aside from the stylets, and being able to determine that some females were still enclosing eggs, other pertinent characters are not clearly visible," Poinar said. "So I placed the nematodes in the established collective group genus *Vetus*, which was established in 1935 for fossil nematodes that could not be placed in any known extant family."

Age estimates of Baltic amber vary widely, Poinar notes, from 23 million years to 55 million depending on who is doing the estimating and which method is used.

"The fact that some nematodes were able to establish such unique parasitic associations as what we are seeing is very unusual," Poinar said. "It is hoped that this initial paper will spur researchers to follow up and find more about the systematic placement of these nematodes."

More information: George Poinar, Ectoparasitic nematodes developing in the integument of a Baltic amber pseudoscorpion, *Historical Biology* (2024). [DOI: 10.1080/08912963.2024.2341848](https://doi.org/10.1080/08912963.2024.2341848)

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