

SUMMARY

The **Barbados Velvet Worm** is a small, reddish-brown, invertebrate species endemic to the island of Barbados. This velvet worm is a part of the phylum Onychophora, an ancient lineage of terrestrial invertebrates, and is a nocturnal predator of small invertebrates. If one day you decide to overturn a few rocks in a generally undisturbed area, you may have a small chance of encountering them, as they are found in heavily shaded, moist areas. These invertebrates are so good at hiding that not much is known about their ecology or even their distribution.

Species: *Epiperipatus barbadensis* (Froehlich, 1962)

Family: Peripatidae (Velvet Worms)

Order: Euperipatoidea

Class: Udeonychophora



© Darren C. Browne, 2022

Barbados Velvet Worm *Epiperipatus barbadensis* (Froehlich, 1962)

SPECIES CHARACTERISTICS

The Barbados Velvet Worm (*Epiperipatus barbadensis*) is a small, cryptic invertebrate that is endemic to the island of Barbados. The species is recognizable by its elongated, caterpillar-like body covered in tiny, sensory bumps (papillae) which give the animal its characteristic plush, velvet-like texture (Blades 2024). Adult female onychophorans typically reach a total body length (or snout-to-tail length) of about 7.5-9.0 cm or 3.0-3.5" when fully extended, while males are generally smaller. Their soft bodies can be compressed to less than half of their actual maximum length (Pahl 2019).

Examined specimens have been recorded with 31 pairs of legs with the dorsal colouration being uniformly reddish-brown, while the ventral surface is a bit lighter (Froehlich 1962). The body bears a faint middorsal light line, and the skin is arranged in folds which are known as plicae, each bearing principal and accessory papillae (Froehlich 1962). The head has a pair of annulated antennae, small simple eyes, and paired oral papillae flanking the mouth. *Epiperipatus barbadensis*, as with other members of the Onychophora, has the ability to discharge a sticky, thread-like adhesive slime from the specialized oral papillae. The adhesive rapidly hardens into entangled protein fibres after ejection, and functions as both a method of capturing prey as well as a defence mechanism (Baer et al. 2019).

HISTORY

Up to date, the species is seldom encountered and cryptic in its habits. Encounters in the field are extremely uncommon. Velvet worms are frequently regarded as living representatives of an ancient evolutionary lineage that shares characteristics with both annelid worms and arthropods, making them of exceptional scientific interest (Monge-Nájera 2021).

Onychophorans were long believed to be entirely absent from Barbados on account of the island's isolation and dryness making it seem like *E. barbadensis* would be incompatible with the high and constant humidity required for survival (Pearce 1960). The first confirmed records of *Peripatus* on Barbados were made by the Rev. E.J. Pearce, who discovered specimens in leaf-mould at Codrington College, St. John, in 1960. These were subsequently described by Froehlich (1962) as a new subspecies, *Peripatus dominicae barbadensis*. The species' current designation as *Epiperipatus barbadensis* reflects subsequent taxonomic revisions. The collector himself, having found only two localities several miles apart, noted that the species appeared to be rarely encountered on island (Froehlich 1962).

HABITAT AND DISTRIBUTION

Epiperipatus barbadensis has an extremely restricted, and poorly documented habitat and distribution in Barbados. Known records indicate that the species can be found in moist, shaded microhabitats, particularly areas with decaying organic matter, leaf litter and conditions that have a consistently high humidity which is essential for onychophoran life and survival (Pearce 1960). The species' dependence on humid areas means its distribution is naturally constrained, and its range is likely to be limited by conditions like droughts, restricting activity to deeper, more humid refuges within the soil, in order to meet an adequate moisture levels (Pearce 1960).

Epiperipatus barbadensis belongs to the family Peripatidae, which has a broad circumtropical distribution spanning the Americas, equatorial Africa, and parts of Southeast Asia (Peck 1975). The genus *Epiperipatus* is distributed from northern South America through Central America and into the Caribbean, with Barbados representing one of the most isolated and easterly outposts of the genus in the Lesser Antilles (Peck 1975). Unlike most Caribbean islands, Barbados has no ancient land connection to neighbouring islands; its last emergence dates only to the late Pleistocene, and its terrestrial fauna is broadly characterised by accidental arrivals rather than relict populations (Froehlich 1962). Onychophorans are generally said to be highly sensitive to desiccation and are poor candidates for overwater dispersal which led early researchers to conclude that they were not, in fact, on Barbados. How the Barbados Velvet Worm (or its predecessors) colonized Barbados remains one of the most intriguing unanswered questions surrounding the species.

BEHAVIOUR

The Barbados Velvet Worm is a strictly nocturnal and photophobic species. It spends the majority of its time concealed beneath rocks, within soil crevices, and among decaying leaf litter; microhabitats that provide the consistently high levels of humidity essential for its survival (Oliveira and Mayer 2012; Pearce 1960; Kyle Remy, 2026. [Personal Observation: Unreferenced](#)). Specimens of *E. barbadensis* are typically encountered during daytime only by removing layers of leaf litter or soil. During surveys in 2025, specimens were recorded at multiple representative microhabitats across a single survey site (Remy 2026). This demonstrates that where several suitable microhabitat exist, local densities may be relatively high despite the species being so rare on the island (Kyle Remy, 2026. [Personal Observation: Unreferenced](#)).

Growth and Reproduction- Like other velvet worms, *Epiperipatus barbadensis* is expected to grow through a series of periodic moults, shedding its outer cuticle as it increases in size (Ruhberg 1985). Members of the family Peripatidae are generally viviparous, giving birth to live young rather than laying eggs (Oliveira and Mayer 2012; Ruhberg 1985). Consequently, important aspects of the species' life history, including its lifespan, growth rate, reproductive behaviour, and developmental stages, remain unknown.

Foraging and Diet- The Barbados Velvet Worm is carnivorous, feeding on small invertebrates such as insects, worms and other soft bodied arthropods encountered within the leaf litter and soil microhabitat (Peck 1975). Prey is immobilized using the slime ejected from the oral papillae, then the prey's cuticle is pierced, and digestive enzymes are then introduced, liquefying the prey's internal tissues, which are subsequently consumed.

Anti-Predator Responses— When disturbed, individuals of *E. barbadensis* respond primarily by attempting to move away rapidly, and individuals have been observed discharging their adhesive slime defensively when threatened (Kyle Remy, 2026. [Personal Observation: Unreferenced](#)). This slime represents the species' most remarkable anti-predator adaptation (Baer et al. 2019). The secretion is non-toxic but highly adhesive, capable of entangling potential predators or threats. The species' strongly cryptic habits, preference for concealed microhabitats, and sensitivity to disturbance all further reflect a lifestyle shaped by the need to avoid predation (Pearce 1960; Peck 1975). Potential predators likely include insectivorous birds, reptiles, amphibians, and other carnivorous invertebrates. Invasive alien species should be closely monitored to determine the extent to which they contribute to population declines through predation, competition for resources, and habitat disturbance.

INTERACTIONS WITH HUMANS

Since the Barbados Velvet Worm is primarily nocturnal and spends most daylight hours concealed within sheltered microhabitats, there isn't much interaction between them and us humans. Adding to this, the animal is already exceptionally difficult to find in the wild, meaning that the chance of encountering it during everyday activities is extremely rare (Pearce 1960; Kyle Remy, 2026. [Personal Observation: Unreferenced](#)). The earliest known records of the species being encountered by the Barbadian public came only at somewhat rare times when the Barbados Velvet Worm was occasionally uncovered in gardens and brought in for identification, with most finders being struck by the creature's dissimilarity to anything they had seen before and unable to determine what it was (Tucker 1941). Most Barbadians are still unaware of the Velvet Worm's existence on the island, and it currently features in neither local conservation discourse nor public environmental education (Kyle Remy, 2026. [Personal](#)

Observation: Unreferenced). Human activities have nonetheless had an indirect impact on the species throughout habitat modification and land conversion. The clearance of moist vegetation and disturbance of leaf litter and soil microhabitats associated with residential and agricultural development reduces the availability of sheltered, humid areas where the Barbados Velvet Worm depends on for its survival (Pearce 1960).

The unusual adhesive slime has attracted biomaterials research. Baer et al. (2019) demonstrated unique fibre-forming properties. This remarkable adhesive secretion has attracted international scientific interest because of its potential applications in the development of sustainable biomaterials and bio-inspired adhesives.

CONSERVATION STATUS AND THREATS

Epiperipatus barbadensis has not been formally assessed by the IUCN Red List and its population size, distribution, and long-term trends remain largely unknown. The species is nevertheless considered one of Barbados' least-studied endemic animals and may be vulnerable owing to its apparent dependence on humid microhabitats and its potentially restricted distribution.

The principal threats are likely to include habitat loss and degradation associated with land development, vegetation clearance, soil disturbance, and the removal of leaf litter and decaying wood. Because velvet worms are highly susceptible to desiccation, prolonged droughts and changes in rainfall patterns associated with climate change may further reduce the availability of suitable habitat.

The lack of ecological information itself represents a significant conservation challenge. Additional surveys are required to determine the species' distribution, habitat requirements, population status, and conservation needs. Increasing public awareness of the Barbados Velvet Worm would also help promote protection of the moist terrestrial habitats (such as the Turner's Hall Woods and numerous Gullies) on which the species depends.

REFERENCES

Baer, Alexander, Stephan Schmidt, Georg Mayer, and Matthew J Harrington. 2019. "Fibers on the fly: multiscale mechanisms of fiber formation in the capture slime of velvet worms." *Integrative and Comparative Biology* 59 (6):1690–1699. doi: <https://doi.org/10.1093/icb/icz048>.

Blades, Connor. 2024. "Endemic velvet worms could help develop sustainable plastics. Biodiversity Barbados." Ministry of the Environment and Beautification, accessed February 19. <https://biodiversity.gov.bb/endemic-velvet-worms-could-help-develop-sustainable-plastics/>.

Froehlich, Claudio G. 1962. "A *Peripatus* from Barbados." *Boletim da Faculdade de Filosofia, Ciências e Letras, Universidade de São Paulo. Zoologia* 24 (24):325–333.

- Monge-Nájera, Julián. 2021. "Onychophorology, the study of velvet worms, historical trends, landmarks, and researchers from 1826 to 2020 (a literature review)." *Uniciencia* 35 (1):210–230. doi: <http://dx.doi.org/10.15359/ru.35-1.13>
- Oliveira, Ivo, De Sena Read, V. Morley St. J., and Georg Mayer. 2012. "A world checklist of Onychophora (velvet worms), with notes on nomenclature and status of names." *ZooKeys* (211):1. doi: <https://doi.org/10.3897/zookeys.211.3463>.
- Pahl, M. 2019. "Care and Husbandry of *Epiperipatus barbadensis*". Arthroverts.org. <https://arthroverts.org/wp-content/uploads/2019/10/Onychophora.pdf>.
- Pearce, E. J. . 1960. "The occurrence of *Peripatus* on Barbados." *Journal of the Barbados Museum and Historical Society* 28:2–3.
- Peck, Stewart B. 1975. "A Review of the New World Onychophora with the Description of a New Cavernicolous Genus and Species from Jamaica." *Psyche: A Journal of Entomology* 82 (3-4):341–358.
- Remy, Kyle. 2026. Distribution of Barbados Velvet Worm in Barbados. Undergraduate Student Project. Department of Biological and Chemical Sciences. The University of the West Indies, Cave Hill, Barbados. Supervisor: Darren Browne.
- Ruhberg, Hilke. 1985. *Die Peripatopsidae (Onychophora)*. Ökologie, Chorologie und phylogenetische Aspekte. Hamburg: Zoologisches Institut und Zoologisches Museum, Universität Hamburg. <https://www.schweizerbart.de/publications/detail/isbn/9783510550234>.
- Tucker, Richard William Ethelbert. 1941. "An interesting creature." *Journal of the Barbados Museum and Historical Society* 8:129–131.

Did You Know?

The fibre derived from velvet worm slime has stiffness (4.4 GPa) comparable to that of Nylon® and a tensile strength (~102 MPa) similar to that of annealed titanium of the same diameter.



Authors: Kyle Remy¹ Darren Brown¹, and Linton Arneaud¹

¹ The University of the West Indies, Cave Hill Campus
Faculty of Science and Technology
Department of Biological and Chemical Sciences

29th July, 2025
