

## Green Pill Millipede

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### Why in News?

*A new study has revealed the self-cleaning mechanism of the green pill millipede (*Arthrosphaera lutescens*), demonstrating advanced hydrophobic properties similar to the 'lotus effect'.*

- **Scientific Name** - *Arthrosphaera lutescens*.
- **Family** - Arthrosphaeridae.
- **Kingdom** - Animalia.
- **Habitat** - Decaying organic matter and vegetable waste in moist forest ecosystems.
- **Distribution** - Endemic to Western Ghats, Primarily Munnar (Idukki) and Nelliampathy (Palakkad), Kerala.
- **Appearance** - Vibrant green, small pill-shaped body.
- **Defense** - Unlike other millipedes that use chemical defenses, pill millipedes (Order Sphaerotheriida) rely on rolling into an armored, impenetrable ball.
- **Self-cleaning mechanism** - It has a complex surface filled with microscopic "peaks and valleys".
- This uneven structure, along with tiny hair-like projections and a water-repellent coating, allows water droplets to bead up and roll off easily, thereby removing dirt particles and microbes.
- The mechanism closely resembles the well-known "lotus effect", where surfaces naturally clean themselves.
- The exoskeleton acts like a highly evolved natural system that resists contamination even in muddy conditions.



- **Ecological importance**

- **Ecosystem Indicator** - Reflects the health of the Western Ghats ecosystem.
- **Regional Variation** - Colours of pill millipedes vary across Western Ghats regions.

- **Scientific Importance**

- **Bio-inspired design** - The millipede's surface structure could inspire new water-repellent materials for industries like textiles, coatings, and packaging.
- **Durability** - Its shell is mineral-rich, lightweight, and strong, offering insights into sustainable material engineering.

- **Threats** - Deforestation, climate change, and human encroachment.

- **Conservation value** - Protecting this species preserves biodiversity and supports ongoing biomaterial research.

## Reference

[The Hindu | Green Pill Millipede](#)