

# Costly risk or venomous snack? A review of records of varanid predations on bark centipedes

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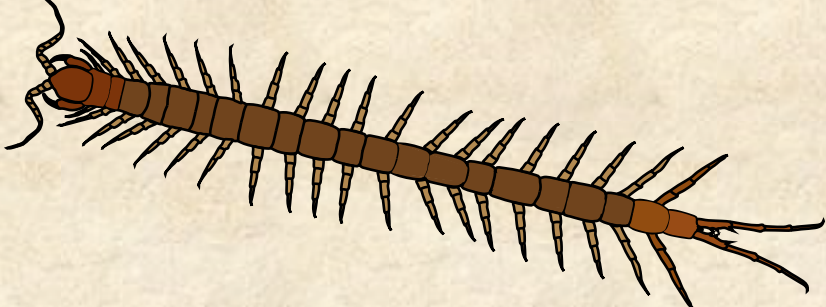
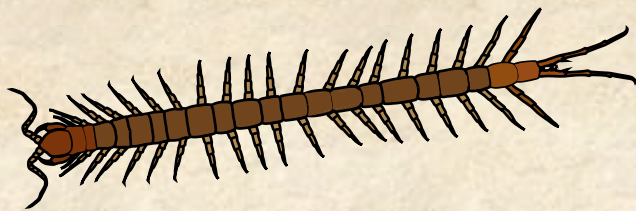
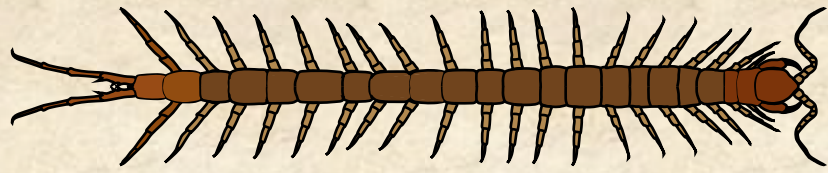
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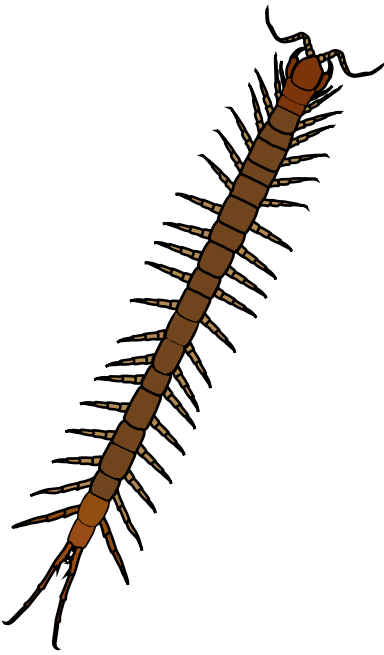


## Varanids

**Monitor lizards** are squamate reptiles belonging to the family Varanidae, **currently comprising 88 species**. They are carnivorous, diurnal lizards of mostly large body sizes that feed through scavenging and opportunistic predation on both invertebrates and vertebrates. Their diet consists of a wide range of animals comprising of annelids, insects, crustaceans, mammals (including even echidnas and bats), fish, reptiles, amphibians, and birds. Conspecific predations also occur.

With such a large dietary range the inclusion of chilopods is not surprising. In this work, we present **a review on bark centipedes (Scolopendromorpha)** in the diet of varanid species, based on documentation from literature (Table 1).

**Table 1.** A summary of documented cases of varanids (*Varanus* spp.) feeding on bark centipedes (Scolopendromorpha). SC – stomach contents; AF – analyses of faeces; DO – direct observation.

Monitor Lizard species	Bark centipede species	Lizard life stage	Type of observation	Locality
	<i>Cormocephalus pygmaeus</i>	–	SC + AF	Sri Lanka
	<i>Otostigmus cavalcanti</i>	–	SC + AF	Sri Lanka
	<i>Rhysida</i> sp.	Adult	DO	Sri Lanka
	<i>Rhysida longipes</i>	–	SC + AF	Sri Lanka
	<i>Scolopendra</i> sp.	Juvenile	SC	India
	<i>Scolopendra hardwickei</i>	Adult	DO	Sri Lanka
	<i>Scolopendra morsitans</i>	–	SC + AF	Sri Lanka
	<i>Scolopendra subspinipes</i>	–	SC + AF	Sri Lanka
	Scolopendromorpha	–	SC + AF	Sri Lanka
<i>V. bengalensis</i>	<i>Cormocephalus pygmaeus</i>	–	SC + AF	Sri Lanka
<i>V. bengalensis</i>	<i>Otostigmus cavalcanti</i>	–	SC + AF	Sri Lanka
<i>V. bengalensis</i>	<i>Rhysida</i> sp.	Adult	DO	Sri Lanka
<i>V. bengalensis</i>	<i>Rhysida longipes</i>	–	SC + AF	Sri Lanka
<i>V. bengalensis</i>	<i>Scolopendra</i> sp.	Juvenile	SC	India
<i>V. bengalensis</i>	<i>Scolopendra hardwickei</i>	Adult	DO	Sri Lanka
<i>V. bengalensis</i>	<i>Scolopendra morsitans</i>	–	SC + AF	Sri Lanka
<i>V. bengalensis</i>	<i>Scolopendra subspinipes</i>	–	SC + AF	Sri Lanka
<i>V. bengalensis</i>	Scolopendromorpha	–	SC + AF	Sri Lanka
<i>V. brevipennis</i>	Scolopendromorpha	–	SC	Australia
<i>V. caudolineatus</i>	Scolopendromorpha	–	SC	Australia
<i>V. cerambonensis</i>	Scolopendromorpha	Juvenile	SC	Indonesia
<i>V. eremius</i>	Scolopendromorpha	–	SC	Australia
<i>V. exanthematicus</i>	Scolopendromorpha	Juvenile	SC + AF	Senegal, Ghana
<i>V. giganteus</i>	Scolopendromorpha	–	SC	Australia
<i>V. glebopalma</i>	Scolopendromorpha	–	SC	Australia
<i>V. gouldii</i>	Scolopendromorpha	–	SC	Australia
<i>V. griseus griseus</i>	Scolopendromorpha	–	–	Africa
<i>V. indicus</i> grp.	Scolopendromorpha	Adult	SC	USA
	Scolopendromorpha	–	SC	Papua New Guinea, Pacific Islands
<i>V. nebulosus</i>	<i>Scolopendra</i> sp.	–	SC	Malaysia
	<i>Cormocephalus dentipes</i>	Adult	DO	Singapour
<i>V. mitchellii</i>	Scolopendromorpha	–	SC	Australia
<i>V. panoptes</i>	Scolopendromorpha	–	SC	Australia
<i>V. prasinus</i> grp.	Scolopendromorpha	Adult	SC	–
<i>V. primordius</i>	Scolopendromorpha	–	–	–
<i>V. rosenbergi</i>	Scolopendromorpha	–	SC	Australia
<i>V. rudicollis</i>	Scolopendromorpha	–	SC	Malaysia
<i>V. salvadorii</i>	Scolopendromorpha	–	SC	Papua New Guinea
<i>V. salvator</i>	Scolopendromorpha	–	SC	Asia



Female *Scolopendra dehaani* with juveniles

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## Bark centipedes

These myriapods (Chilopoda: Scolopendromorpha) are considered to be a **dangerous prey** thanks to their venom. They are able to inflict precise bites near the head of their prey, which allows the venom to work faster. Additionally, when they hunt, they are able to use up to eight or more pairs of legs to grasp their prey. All these features create a portrait of a **potential threat to many animals** of similar (or even larger!) size. Up to date, numerous cases of **reptiles and amphibians** being preyed upon have been documented.



*Varanus bengalensis* feeding on *Scolopendra hardwickei*

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## Interactions

Some **varanids** are resistant to different types of venoms and toxins – these lizards **prey on dangerous animals** such as scorpions, toads or snakes. Their potential resistance to scolopendrial venom makes them dangerous predators (noteworthy that it applies to various life stages, including juveniles; Table 1). To date, bark centipedes have **not been documented** preying on monitor lizards.

## Why to eat bark centipedes?

Hunting dangerous prey can be **profitable for monitor lizards**. Asides from being a rich source of energy, it has recently been shown in other lizards that increased consumption of *Scolopendra* sp. by juvenile *Shinisaurus crocodilurus* (Shinisauridae) promotes growth and **maintenance of gut microflora homeostasis**. Furthermore, since *Scolopendra* spp. are not such rare elements in the varanid diet (Table 1), this may suggest a **potentially positive effect on their fitness**.

## References

