

First records of *Spermophora kerinci* Huber, 2005 and *Triaeris stenaspis* Simon, 1892 (Arachnida: Araneae: Pholcidae, Oonopidae) in Austria

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Abstract

The pholcid spider *Spermophora kerinci* Huber, 2005 and the oonopid / goblin spider *Triaeris stenaspis* Simon 1892 are recorded from Austria for the first time. Both species were each collected with a single female specimen in tropical greenhouses in Vienna. *Spermophora kerinci* was found in a flower pot in the tropical house of the Haus des Meeres and *Triaeris stenaspis* was found in the butterfly house which is part of the palm house of the Hofburg (imperial residence). The specimens were sampled, stored in alcohol and identified in the laboratory. Both species are not native to Europe. *Spermophora kerinci* is of Indonesian / Asian origin and the pantropical *Triaeris stenaspis* is of African origin. Since in Europe both species are only known from greenhouses they must be regarded as introduced but not invasive alien species. *Triaeris stenaspis* is a spider species that reproduces through parthenogenesis, since no males have been found to date, neither in breeding experiments in the laboratory nor through extensive field surveys in the wild.

Keywords: arachnology, biodiversity, faunistics, greenhouse, introduced species

Zusammenfassung

Erstfunde von *Spermophora kerinci* Huber, 2005 und *Triaeris stenaspis* Simon, 1892 (Arachnida: Araneae: Pholcidae, Oonopidae) in Glashäusern in Österreich. Die Pholcide *Spermophora kerinci* Huber, 2005 und die Oonopide *Triaeris stenaspis* Simon 1892 werden erstmals für Österreich nachgewiesen. Beide Arten wurden mit jeweils einem weiblichen Exemplar in Tropengewächshäusern in Wien gesammelt. *Spermophora kerinci* wurde in einem Blumentopf im Tropenhaus des Haus des Meeres und *Triaeris stenaspis* im Schmetterlingshaus, das Teil des Palmenhauses der Hofburg ist, gefunden. Die Tiere wurden entnommen, in Alkohol gelagert und im Labor identifiziert. Beide Arten sind nicht in Europa beheimatet. *Spermophora kerinci* ist indonesischen / asiatischen und die pantropische *Triaeris stenaspis* afrikanischen Ursprungs. Da beide Arten in Europa nur aus Gewächshäusern bekannt sind, müssen sie als eingeschleppte, aber nicht invasive gebietsfremde Arten angesehen werden. *Triaeris stenaspis* ist eine Spinnenart, die sich offenbar ausschließlich durch Parthenogenese fortpflanzt, da bisher weder in Zuchtexperimenten im Labor noch durch ausgedehnte Feldstudien in freier Wildbahn Männchen gefunden wurden.

Introduction

Spermophora kerinci Huber, 2005 (**Fig. 1**) and *Triaeris stenaspis* Simon 1892 (**Fig. 2**) were collected with a single female specimen each, in tropical greenhouses in Vienna (**Figs. 3–4**). Both species were identified using the identification key in Nentwig et al. (2022). Additionally, the identification of both females was confirmed by comparing the epigynal features of the specimens with the corresponding figures in Huber (2005) and the photographs in Platnick et al. (2012). It is worth mentioning that the species *Spermophora kerinci* possesses six eyes instead of eight and can thus be easily distinguished from other pholcid spiders occurring in Europe. Both species are very small, the total body length of the female of *Spermophora kerinci* is 1.4 mm and of *Triaeris stenaspis* it is 1.7 mm. The specimens were deposited at the Natural History Museum Vienna (NHMW).

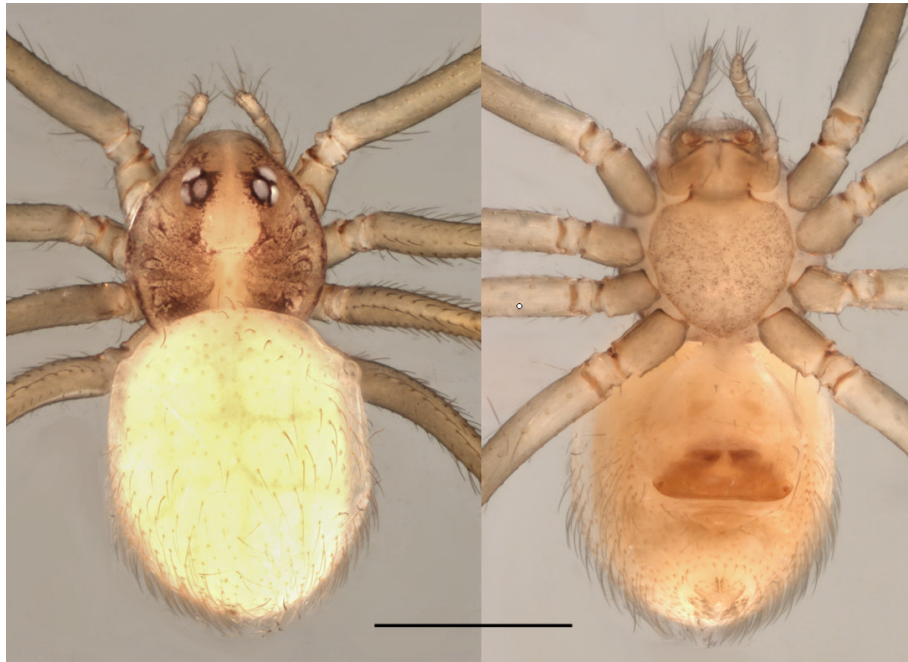


Fig. 1: *Spermophora kerinci*, habitus, dorsal view (left) and ventral view (right); scale bar is 0.5 mm. / *Spermophora kerinci*, Habitus, dorsal (links) und ventral (rechts); Skala ist 0,5 mm. 29.3.2022, © Ondřej Vaněk.



Fig. 2: *Triaeris stenaspis*, habitus, dorsal view (left) and ventral view (right); scale bar is 1 mm. / *Triaeris stenaspis*, Habitus, dorsal (links) und ventral (rechts); Skala ist 1 mm. 29.3.2022, © Ondřej Vaněk.

***Spermophora kerinci* Huber, 2005**

1 female, O. Vaněk leg. & det., 3 March 2022, Austria, Vienna, Mariahilf district, Haus des Meeres, aqua terra zoo - Tropenhaus, Fritz-Grünbaum-Platz 1, N 48°11'51.468", E 16°21'10.619", 205 m a.s.l., collected by hand in a flowerpot in this tropical greenhouse (**Fig. 3**), [NHMW-Zoo-AR 29618].

Distribution

Spermophora kerinci was first described by Huber (2005, figs. 22–26) from two Indonesian islands: Sumatra and Bali. Currently, these are the only records of the species from the wild (WSC 2022). Beyond its native distributional range, *S. kerinci* has been found in parts of Europe where it was inadvertently introduced, namely England / Britain (e.g. Snazell & Smithers 2007), Germany (e.g. Kielhorn 2009) and the Netherlands (Noordijk 2020).

Habitat

In the wild, *S. kerinci* is only reported from rainforests: it is indigenous on Sumatra where it was found in the Kerinci National Park in the leaf litter near a river, and on Bali it was collected in a disturbed rainforest (Huber 2005). Despite this scarce information, *S. kerinci* might ecologically be considered a species that inhabits the leaf litter layer of tropical forests (Noordijk 2020).



Fig. 3: Flowerpot in the tropical house of the Haus des Meeres in which the specimen of *Spermophora kerinci* was discovered. / Blumentopf im Tropenhaus des Haus des Meeres, in dem das Exemplar von *Spermophora kerinci* entdeckt wurde. 3.3.2022, © Ondřej Vaněk.

In Europe, *S. kerinci* is exclusively reported from greenhouses. In the United Kingdom, *S. kerinci* was first reported from the tropic biome at the Eden Centre near St. Austell in Cornwall, where specimens were sampled from leaf litter in a small plantation of cocoa and bamboo (Snazell & Smithers 2007). In Germany, the first specimens of *S. kerinci* were discovered on the root balls of potted *Costus*-plants in a hothouse in Berlin (Kielhorn 2009). In the Netherlands, specimens were recently found in a tropical greenhouse of the zoo in Emmen where they were collected from small webs under dead leaves lying on the ground (Noordijk 2020).

***Triaeris stenaspis* Simon 1892**

1 female, O. Vaněk leg. & det., 3 March 2022, Austria, Vienna, inner city district, butterfly house (part of the palm house), Hofburg, Burggarten, N 48°12'19.224", E 16°21'59.615", 180 m a.s.l., collected under a stone in this tropical greenhouse (Fig. 4) [NHMW-Zoo-AR 29619].

Distribution

According to Platnick et al. (2012) the pantropical *Triaeris stenaspis* is probably of West African origin. Currently, records of this species exist for North, Central and South America, the Caribbean, Europe, Iran, Taiwan, Australia and the Pacific Islands (WSC 2022); for a map of records see <https://www.gbif.org/species/2140406>. The species was introduced from the tropics to greenhouses, hothouses and similar tropical locations outside its natural distributional range (Platnick et al. 2012).

Triaeris stenaspis was first described by Simon (1892) from the Caribbean island of St. Vincent and was mentioned to occur in Venezuela as well. Just a few years later Simon (1896) was the first to discover the species in Europe: in the greenhouses of the Jardin de Plantes in Paris; since then, *T. stenaspis* has repeatedly been found in European greenhouses where it is meanwhile considered a well-established element of the exotic spider fauna living there; e.g. Jackson (1909): in a hothouse, Kielhorn (2008): in various greenhouses, Pfliegler (2014): in a tropical house, under leaf litter, Rozwalka et al. (2017): in an orchid house, under a stone, Rembold et al. (2020): in a greenhouse, Telfer (2020): in a butterfly house, in the litter layer beneath shrubs, Bloem & Noordijk (2021): in a tropical greenhouse, and Hänggi et al. (2021): in hothouses. In this latest study on the exotic spider fauna of nine Swiss hothouses, *T. stenaspis* was the species most often found and with the highest number of individuals (Hänggi et al. 2021).

Habitat

In the wild, *T. stenaspis* appears to be a ground-dwelling species living in the litter-layer of rainforests (Brescovit et al. 2019). However in Brazil, it was classified as an invasive alien species (Brescovit et al. 2019) and has been collected not only in forest litter, but also in natural caves, and further it is found with remarkable frequency on the grounds at urban parks. Brescovit et al. (2019) assumed that in its natural habitats this goblin spider belonged to the trophic guild of “litter stalkers”. The findings of Korenko et al. (2014), who studied the predatory behaviour and trophic niche of *T. stenaspis* in its microhabitats in the botanical garden of the Masaryk University in Brno, confirmed this assumption, since *T. stenaspis* did not build webs for prey capture but instead used the grasp-and-hold tactic. Furthermore, Korenko et al. (2014) assumed that *T. stenaspis* is a specialized predator of spring-tails.



Fig. 4: Sampling location in the butterfly house within the palm house of the Hofburg (imperial residence) where the specimen of *Triaeris stenaspis* was discovered. / Fundort im Schmetterlingshaus des Palmenhauses der Hofburg (Kaiserresidenz), wo das Exemplar von *Triaeris stenaspis* entdeckt wurde. 3.3.2022, © Ondřej Vaněk.

Parthenogenesis

The breeding experiments on *T. stenaspis* conducted in the laboratory by Korenko et al. (2009) showed that the studied population from the Czech Republic was parthenogenetic. In Brasil, Brescovit (2019) conducted an extensive field survey on *T. stenaspis* in the wild, without finding any males among the sampled females. Thus, Brescovit et al. (2019) concluded that parthenogenesis might actually be true for all known populations of this species. Korenko et al. (2009) showed that under laboratory conditions *T. stenaspis* is a parthenogenetic, eurychronous, iteroparous species with about 3 generations per year. Its parthenogenetic nature is also suggested to be the reason why *T. stenaspis* can easily maintain populations in greenhouses (Korenko et al. 2009, Bloem & Noordijk 2021). It is probably the only introduced spider in Europe reproducing itself exclusively by parthenogenesis (Korenko et al. 2009).

Introduced species

In Europe, *Spermophora kerinci* and *Triaeris stenaspis* must be considered as alien (non-native) species. All European records come exclusively from greenhouses or tropical houses due to the species special habitat requirements, i.e. mostly warm and extremely humid climate (Pfliegler 2014). Since its survival/establishment in the wild seems highly unlikely in Europe, DAISIE (2009) thus categorized *T. stenaspis* as an “introduced species”. The same status is true for *S. kerinci* (Nentwig et al. 2022). The most likely pathway for these species and many other introduced species is via “contaminant on plants” (Kobelt & Nentwig 2007, DAISIE 2009). For example, Telfer (2020) reported that *T. stenaspis* was recently recorded at a tropical butterfly house in Whipsnade Zoo, UK in which the trees and shrubs all originated from the Netherlands.

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