



<http://dx.doi.org/10.11646/zootaxa.4059.3.5>

<http://zoobank.org/urn:lsid:zoobank.org:pub:A5EB4A18-8386-41EB-99F5-115F24E7165C>

## A new species-complex within the trapdoor spider genus *Nemesia* Audouin 1826 distributed in northern and central Italy, with descriptions of three new species (Araneae, Mygalomorphae, Nemesiidae)

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### Abstract

Three new *Nemesia* Audouin 1826 species from northern and central Italy are named. They share a combination of sexual characters, not found in other described species. A new species-complex within *Nemesia* is here referred to as the apenninica group. Within the apenninica group, *N. apenninica* n. sp., *N. hastensis* n. sp., and *N. pedemontana* n. sp. differ in the morphology of the male palpal organ and the female spermathecae. The three species have different kinds of geographical distributions. While *N. apenninica* and *N. hastensis* have locally restricted and geographically separated distributions, the distribution of *N. pedemontana* overlaps with that of both of these species and extends widely in northern and central Italy. In its periphery, the distribution of *N. pedemontana* overlaps with that of species other than the apenninica group, e.g., *N. meridionalis* (Costa, 1835) in southern Italy and *N. manderstjernae* (L. Koch, 1871) and *N. carminans* (Latreille, 1818) in Liguria. Information on burrow structure, phenology and habitat are provided for all three new species. Some aspects of the behavior and feeding are discussed for *N. pedemontana* and *N. hastensis*.

**Key words:** Apennines, taxonomy, biodiversity, biogeography

### Introduction

Located in the heart of the Mediterranean biodiversity hotspot, nature in Italy is particularly rich. With over 58,000 species recorded, nearly 1/3 endemic, Italy has the highest biodiversity in Europe (Italian National Biodiversity Strategy 2010). The exceptionally high species diversity of the Italian flora and fauna is seen in most taxa including the order Araneae (Pantini & Isaia 2015). Although knowledge of the biological diversity and distribution in Italy is good for some groups of organisms (e.g., vascular plants and vertebrates), it is poor for most invertebrate groups (Stoch 2000, Blondel *et al.* 2010). One group of particularly poorly known invertebrates widely occurring in Italy are commonly referred to as *trapdoor spiders* (Moggridge 1873, 1874) which includes most species in the mygalomorph spider families Actinopodidae, Barychelidae, Ctenizidae, Euctenizidae, Idiopidae, Nemesiidae and some in other families. These are fossorial living spiders that construct mostly well camouflaged, hinged ‘trapdoors’ to close off the entrance of their lairs (generally an underground burrow). Because of their secretive life style and uniform morphology, trapdoor spiders have a reputation of being hard to find and difficult to study (Coddington 2005, Bond 2012).

Twenty-four Italian species, most in the genus *Nemesia* Audouin 1826 (family Nemesiidae) qualify as trapdoor spiders. *Nemesia* species are recurrently known from all Italian regions with the exceptions of Valle d’Aosta and Trentino-Alto Adige, both located in the far north. *Nemesia* is common in Europe south of the Alps, in the Mediterranean regions of North Africa and the Middle East and on virtually all Mediterranean islands large and