Monograph
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Revisions of Holocnemus and Crossopriza: the spotted-leg clade of Smeringopinae (Araneae, Pholcidae)

Bernhard A. HUBER
Zoological Research Museum Alexander Koenig, Bonn, Germany.
Email: b.huber@leibniz-zfmk.de

Abstract. The genera Holocnemus Simon, 1873 and Crossopriza Simon, 1893 are revised. Together with Stygopholcus Kratochvíl, 1932 (revised recently) and the newly described genus Maghreba gen. nov., they constitute the spotted-leg clade within the northern clade of Smeringopinae. Males and females in this group are characterized by dark marks on the leg femora and tibiae. The native area of the spotted-leg clade ranges from northern Africa and the Mediterranean to Central Asia and NW India. A morphological cladistic analysis suggests that Holocnemus is paraphyletic while Crossopriza is monophyletic, but morphology seems only partly adequate to resolve phylogenetic relationships convincingly. The genus Holocnemus includes four species, all of which are redescribed: H. pluchei (Scopoli, 1763); H. reini (C. Koch, 1873) comb. nov. (transferred from Pholcus); H. caudatus (Dufour, 1820); and H. hispanicus Wiehle, 1933. The genus Maghreba gen. nov. includes eight species from NW Africa: M. aurouxi (Barrientos, 2019) gen. et comb. nov. (transferred from Holocnemus; redescribed, female newly described) and seven newly described species. The genus Crossopriza includes six previously described species (of which five are redescribed), and 18 newly described species. The Madagascan C. nigrescens Millot, 1946 is synonymized with C. lyoni (Blackwall, 1867). All new species are described on the basis of both sexes.

Keywords. Taxonomy, sexual dimorphism, synanthropic, stridulation, gynander.

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Introduction

The subfamily Smeringopinae Simon, 1893 was originally restricted to Africa, the Mediterranean, and the Middle East up to Central Asia and India. A few species have followed humans around the globe and are widely known due to their close association with houses and other constructions. Among these, *Smeringopus pallidus* (Blackwall, 1858) and *Crossopriza lyoni* (Blackwall, 1867) remain largely restricted to tropical and subtropical regions, while *Holocnemus pluchei* (Scopoli, 1763) has been spreading to more temperate regions (Huber 2012; herein).

Most representatives of Smeringopinae are medium-sized to large species (mean male carapace width 1.8 mm; mean male tibia 1 length 12.4 mm). Of approximately 650 Pholcidae C.L. Koch, 1850 species with a male carapace width of less than 1 mm, only one is a representative of Smeringopinae (Huber 2021b). The relatively large size, together with the relatively exposed life-style of many species explains that the group includes some of the oldest names in Pholcidae. In fact, *Holocnemus pluchei* was the very first pholcid spider to be formally described. Nevertheless, the systematics of the subfamily has long been very poorly known. Ten years ago, only 56 nominal species were ‘known to science’ (Huber 2011b), many of them with names yet unidentifiable using the existing literature.

Starting in 2012, I have tried to alleviate this situation with a series of taxonomic revisions and cladistic analyses. The first two monographs dealt with the southern clade of Smeringopinae, the Sub-Saharan sister-genera *Smeringopus* Simon, 1890 and *Smeringopina* Kraus, 1957 (Huber 2012, 2013). The third and fourth monographs focused on the West Asian and SE European genera *Hoplopholcus* Kulczyński, 1908 and *Stygopholcus* Kratochvíl, 1932 (Huber 2020; Huber et al. 2021). The remaining genera (except for the small Seychellois endemic genus *Cenemus* Saaristo, 2001) appeared like the most problematic. Wiehle’s (1933) meticulous struggle (and failure) to find a convincing morphological distinction between *Crossopriza* Simon, 1893 and *Holocnemus* Simon, 1873 testifies both to the long history of the problem and to its intricacy. Making things even worse, new material collected over the last decades in northwestern Africa (mainly Morocco) has complicated the situation further. These Moroccan and Algerian species (one of which was recently described as *Holocnemus aurouxi* Barrientos, 2019) seemed intermediate between *Holocnemus* and *Crossopriza* yet distinct from both. Molecular data have not so far resolved the phylogeny of this group, mainly because of insufficient taxon-sampling (Dimitrov et al. 2013; Eberle et al. 2018).

The present paper was originally intended to terminate this series on Smeringopinae and to finally clarify the systematics of *Holocnemus*, *Crossopriza*, and the mysterious northwest African taxa. However, the available data allowed only a first step, i.e., a detailed redescription of all previously described species and the description of new species currently available in collections. A second step clearly has to follow: a step, in which phylogenetic relationships can finally be resolved convincingly. The present paper presents a first comprehensive morphological cladistic analysis of *Holocnemus* and *Crossopriza*, but this is included primarily in order to point out characters that appear phylogenetically informative. Parts of the cladogram are unstable and thus neither convincing nor final. A more convincing solution will probably require the use of genomic data.

With now 158 species, Smeringopinae is still a relatively small subfamily, but one in which (1) almost all species are diagnosable, (2) most species have been included in phylogenetic analyses, and (3) distribution and diversity patterns can be described with reasonable accuracy.

Material and methods

This study is based on the examination of over 3500 adult specimens deposited in the 41 collections listed below. Taxonomic descriptions follow the style of recent publications on Smeringopinae (e.g.,
Huber 2020; Huber et al. 2021; based on Huber 2000). Measurements were done on a dissecting microscope with an ocular grid and are in mm unless otherwise noted; eye measurements are ± 5 μm; diameters of femora were measured at half length. Photos were made with a Nikon Coolpix 995 digital camera (2048 × 1536 pixels) mounted on a Nikon SMZ 18 stereo microscope or a Leitz Dialux 20 compound microscope. CombineZP (https://combinezp.software.informer.com/) was used for stacking photos. Drawings are partly based on photos that were traced on a light table and later improved under a dissecting microscope, or they were directly drawn with a Leitz Dialux 20 compound microscope using a drawing tube. Cleared epigyna were stained with chlorazol black. The number of decimals in coordinates is supposed to give a rough indication about the accuracy of the locality data: four decimals means that the collecting site (or cave entrance) is within about 10 m of the indicated spot; three decimals: within ~100 m; one decimal: within ~1 km; one decimal: within ~10 km. Distribution maps were generated with ArcMap ver. 10.0. For SEM photos, specimens were dried in hexamethyldisilazane (HMDS) (Brown 1993), and photographed with a Zeiss Sigma 300 VP scanning electron microscope. SEM data are presented within the descriptions but are usually not based on the specific specimen described. The same is also often true for other illustrations, implying that no differences were seen between the described and the illustrated specimen. The exact origins of the illustrated specimens are given in the figure legends. Larger series of specimens were often split into two vials (with two registry numbers); unless otherwise noted, the first vial contains the males, the second vial contains the females and juveniles.

The numerical cladistic analyses were done using NONA ver. 2 (Goloboff 1993), Pee-Wee ver. 2.8 (Goloboff 1997), and TNT ver. 1.1 (Goloboff et al. 2004, 2008). The matrix is shown in Appendix 1; it can be downloaded at http://www.pholciidae.de/matrices.html; terminal taxa and characters scored are given in Appendices 2 and 3. Of the 40 characters, 38 are binary; the two non-binary characters (37, 40) are treated as non-additive. Cladogram analysis was done with Winclada ver. 1.00.08 (Nixon 2002). See Cladistic analysis section below for details of the analyses.

Institutional abbreviations

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<thead>
<tr>
<th>Abbreviation</th>
<th>Institution</th>
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<tr>
<td>AMNH</td>
<td>American Museum of Natural History, New York, USA</td>
</tr>
<tr>
<td>AMS</td>
<td>Australian Museum, Sydney, Australia</td>
</tr>
<tr>
<td>BMNH</td>
<td>Natural History Museum, London, UK</td>
</tr>
<tr>
<td>BPBM</td>
<td>Bishop Museum, Honolulu, Hawai, USA</td>
</tr>
<tr>
<td>CAS</td>
<td>California Academy of Sciences, San Francisco, USA</td>
</tr>
<tr>
<td>CBSU</td>
<td>Collection of Biology of Shiraz University, Iran</td>
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<tr>
<td>CEM</td>
<td>Collection Eduardo Morano, Toledo, Spain</td>
</tr>
<tr>
<td>CJL</td>
<td>Collection Jørgen Lissner, Aarhus, Denmark</td>
</tr>
<tr>
<td>CJVK</td>
<td>Collection Johan Van Keer, Kapelle-op-den-Bos, Belgium</td>
</tr>
<tr>
<td>CMK</td>
<td>Collection Marjan Komnenov, Skopje, Macedonia</td>
</tr>
<tr>
<td>CPO</td>
<td>Collection Pierre Oger, Waret l’Evêque, Belgium</td>
</tr>
<tr>
<td>CRB</td>
<td>Collection Robert Bosmans, Gent, Belgium</td>
</tr>
<tr>
<td>CRBA</td>
<td>Biodiversity Resource Center of the University of Barcelona, Spain</td>
</tr>
<tr>
<td>HECO</td>
<td>Hope Entomological Collection, Oxford, Great Britain</td>
</tr>
<tr>
<td>HISR</td>
<td>Hellenic Institute of Speleological Research, Iraklion, Greece</td>
</tr>
<tr>
<td>MACN</td>
<td>Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina</td>
</tr>
<tr>
<td>MCN</td>
<td>Museu de Ciências Naturais, Porto Alegre, Brazil</td>
</tr>
<tr>
<td>MCP</td>
<td>Pontificia Universidade Católica do Rio Grande do Sul, Porto Alegre, Brazil</td>
</tr>
<tr>
<td>MCZ</td>
<td>Museum of Comparative Zoology, Cambridge, USA</td>
</tr>
<tr>
<td>MELN</td>
<td>Museo Entomologico, S.E.A., León, Nicaragua</td>
</tr>
<tr>
<td>MGAB</td>
<td>Muzeul Național de Istorie Naturală Grigore Antipa, Bucharest, Romania</td>
</tr>
<tr>
<td>MHNG</td>
<td>Muséum d’histoire naturelle, Genève, Switzerland</td>
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Results

Cladistic analysis

Using NONA with hold/100, mult*200 (or hold/10; mult*10.000), and amb- for the matrix in Appendix 1 and equal character weights resulted in a single most parsimonious cladogram with a length of 60 (Ci = 70; Ri = 90) (Fig. 1). The implicit enumeration algorithm in TNT (using a matrix from which the 18 species with identical coding to other taxa had been deleted) resulted in a single tree with the identical topology. Successive weighting in NONA (with the consistency index as weighting function) also resulted in the same single most parsimonious cladogram.

Implied weighting in Pee-Wee (which resolves character conflict in favor of the characters that have less homoplasy) was used with various settings of the constant of concavity (conc = 1–6) to explore the stability of different clades under different weighting regimes. Differences to the tree shown in Fig. 1 occurred only with conc = 1 and conc = 2. Both settings resulted in the same two most parsimonious cladograms that shared a noteworthy feature: Hoplopholcus was placed inside the spotted-leg clade, as sister to Stygopholcus. As a result, Maghreba gen. nov. was no longer sister of Stygopholcus but either sister of Holocnemus hispanicus or in a trichotomy with H. hispanicus and Crossopriza. Other than that, the main results were similar to those using equal character weights and successive character weighting: non-monophyly of Holocnemus; monophyly of Hoplopholcus,
Fig. 1. Single most parsimonious cladogram of the spotted-leg clade resulting from analyses of the matrix in Appendix 1 using equal character weights and successive character weighting. Only unambiguous character changes are shown. See Appendix 3 for differences in analyses using implied character weighting with conc =1 and 2.
Stygopholcus, Maghreba gen. nov., and Crossopriza. The cladogram shown in Fig. 1 is preferred because it does not require a regain of the retrolateral trichobothrium on tibia 1 (which the Pee-Wee cladograms do). All differences of the Pee-Wee cladograms are detailed in Appendix 3 (see characters 3, 4, 14, 17, 28, 29, 31, 34).

**Taxonomy**

Class Arachnida Lamarck, 1801  
Order Araneae Clerck, 1757  
Family Pholcidae C.L. Koch, 1850  

**Holocnemus** Simon, 1873

*Holocnemus* Simon, 1873: 48 (type species: *Aranea pluchei* Scopoli, 1763).


**Remark**

*Holocnemus* is an artificial non-monophyletic group (see Relationships below) that is here maintained for the lack of a convincing better solution. The four included species can be weakly diagnosed by sharing the synapomorphies of the spotted-leg clade (i.e., spotted legs and prolateral hump on the procursus) while maintaining the plesiomorphic long abdomen. A comprehensive description of a non-monophyletic genus appears of little value. The type species *H. pluchei* is unique in many ways and may eventually end up in its own monotypic genus. The species description below will thus probably serve the entire genus. For the other three species, I also refer to the redescriptions below.

**Relationships**

There is strong evidence that the four species currently included in *Holocnemus* are part of the spotted-leg clade of Smeringopinae, together with the genera *Crossopriza, Maghreba* gen. nov., and *Stygopholcus*. Beyond that, however, relationships continue to be obscure. All available evidence suggests that *Holocnemus* as currently construed is not monophyletic. The cladistic analysis places the type species *H. pluchei* as sister to all other representatives of the spotted-leg clade, and the other species...
Fig. 3. Known distributions of *Holocnemus reini* (C. Koch, 1873) comb. nov. and *H. caudatus* (Dufour, 1820). Light blue: dubious records; see Distribution section for details. Abbreviation: TL = type localities (the type locality of *H. reini* is not exactly known; see text for details).

in a paraphyletic comb (Fig. 1). Support for several of these nodes is weak, however, suggesting that a genomic analysis (in preparation) may well propose a different view of relationships. For that reason, no formal taxonomic changes are implemented here.

**Distribution**

The type species *H. pluchei* is widely distributed around the Mediterranean, and has relatively recently expanded towards the north and east and to other continents (Fig. 2). The other three species are restricted to the western Mediterranean: *H. reini* to northwestern Africa (Fig. 3), *H. caudatus* and *H. hispanicus* to the Iberian Peninsula (Figs 3–4).

**Natural history**

See individual sections on natural history below.

**Composition**

Currently four nominal species. The species number of this ‘group’ is not likely to change substantially (or not at all) in the future, considering the size of the spiders, their relatively overt life-style (compared to most other Smeringopinae), and their geographic distribution.

**Identification key**

1. Female with enlarged palps (Figs 29–30), with median process on sternum (Figs 31, 58); male with pair of distinctive processes on distal bulbal sclerite (Figs 24, 26) ........ *H. pluchei* (Scopoli, 1763)
   - Female with regular thin palps, without median process on sternum; males with very different distal bulbal sclerites (Figs 66–68, 139–141) ...................................................... 2

2. Sternum in male and female unmodified (i.e., without marginal indentations); male cheliceral apophyses with one modified hair each (Figs 142, 150); procursus ventral sclerite not covered retrolaterally by membrane (Fig. 138); distal bulbal sclerite trapezoidal in prolateral view (Figs 139, 154); epigynum with two long, anteriorly converging pockets (furrows) (Figs 133–134, 162) ..........
   - Sternum in male and female with distinct marginal indentations (Figs 81, 112); male cheliceral apophyses with 2–3 modified hairs each (Figs 64, 82–83, 115); procursus with distinctive retrolateral membrane partly covering ventral sclerite (Figs 63, 117); distal bulbal sclerite triangular in prolateral view (Figs 66, 92); epigynum with pair of pockets in different arrangement (Figs 69, 96, 99, 128) ...
   ................................................................................................................... *H. hispanicus* Wiehle, 1933

3. Wide distances between male cheliceral apophyses (70–80% of cheliceral maximum width) and between female epigynal pockets (> 0.5 mm) ......................... *H. reini* comb. nov. (C. Koch, 1873)
   - Small distances between male cheliceral apophyses (50–60% of cheliceral maximum width) and between female epigynal pockets (< 0.4 mm) ......................... *H. caudatus* (Dufour, 1820)

**Holocnemus pluchei** (Scopoli, 1763)

Figs 2, 5–6, 13–58

*Aranea pluchii* Scopoli, 1763: 404.
*Aranea rivulata* Forsskål, 1775: 86. Synonymized with *Pholcus pluchii* by Simon 1866: 122 (but: Simon 1873).

*Pholcus impressus* C.L. Koch, 1837: 99, pl. 137 fig. 313. Synonymized with *H. rivulatus* by Simon 1873: 49.

*Pholcus barbarus* Lucas, 1846: 237, pl. 15 fig. 1, 1a–f. Synonymized with *H. rivulatus* by Simon 1873: 49.

Aranea rivulata – Forsskål 1776: 7, pl. 24 fig. f.
Aranea pluricha? (question mark in original publication) – Rossi 1790: 134.
Pholcus pluricha – Simon 1866: 122, pl. 2 fig. 11.

Misidentifications
Pholcus rivulatus – L. Koch 1875: 25 (specimens from Massaua: Crossopriza sp. juveniles; see Distribution below).
Pholcus rivulatus – Leardi in Airaghi 1902: 348 (India; identity unclear; see Distribution below).
Holocnemus pluricha – Roewer 1960: 40 (Afghanistan; identity from Rig-Revan: Pholcus sp.; for other specimens, see Crossopriza ibnsinai sp. nov.).

Diagnosis
Easily distinguished from all other known Smeringopinae by enlarged female palps (Figs 29–30), by median process on female sternum (Figs 31, 58), and by pair of distinctive processes on male distal bulb sclerite (Figs 24, 26); also by shape of procursus (Figs 20–22; distinct prolateral proximal process, short distal ventral sclerite), by female external and internal genitalia (Figs 27–28, 36–42; epigynum anteriorly with pair of sculptured areas; internal ventral arc with pair of strong pockets), and by heavily sclerotized female pedicel opposing pair of small sclerites on abdomen (Fig. 32).

Type material
Syntypes of Aranea pluricha
SLOVENIA • Unknown number; “Carniola” [part of present-day Slovenia], possibly Idria [Scopoli’s place of residence at the time]; ~46.00° N, 14.03° E; 1759–1762; G.A. Scopoli leg.; probably lost.
Syntypes of *Aranea rivulata*
EGYPT • Unknown number; Cairo; ~30.0° N, 31.2° E; probably 1762; P. Forsskål leg.; probably lost.

Syntypes of *Pholcus impressus*
GREECE • 4 ♂♂; Peloponnesse, Nafplion (“Nauplion”); 37.57° N, 22.81° E; date unknown; [F.J.?] Schuch leg.; probably lost.

Syntypes of *Pholcus barbarus* (examined)
ALGERIA • 4 ♂♂, 4 ♀♀, + juvs (possible syntypes); near Algiers; 36.75° N, 3.05° E; 1839–1842; P.-H. Lucas leg.; with two labels: “Algerie, Lucas, *Holocnemus rivulatus* Forsk. sub barbarus Type” and “*Holocnemus rivulatus* Forsk (sub barbarus) type, Algerie, Lucas”; MNHN.

Syntypes of *Pholcus ruralis*
ALGERIA • Unknown number (possibly only 1 ♂); locality not specified; possibly 1856; Gray and Clarck leg.; probably lost.

Material examined
Arranged from West to East and (within longitudes) from North to South.

USA – California • 1 ♂; Sonoma County, Petaluma; 38.224° N, 122.626° W; 15 Jul. 2002; C.E. Griswold leg.; on house; CAS 9027116 part • 1 ♀; Napa County, Lake Hennessey, below Lom Dam; 38.48° N, 122.38° W; 11 May 1985; L. Vincent leg.; CAS 9027422 • 1 ♀; Los Angeles County, Diamond Bar; 34.03° N, 117.80° W; 23 Sep. 1999; C. Yang leg.; CAS 9027418 • 1 ♀; Orange County, Yorba Linda; 33.889° N, 117.812° W; 2 May 2000; S. Clayton leg.; CAS 9027393 • 1 ♀; San Diego County, northern end of Harbison Canyon; 32.811° N, 116.844° W; 250 m a.s.l.; 7 Jul. 2012; under stones and wood panels in scrubland; A. Schönhofer leg.; SMF.

ARGENTINA – Mendoza • 1 ♀; Mendoza; 32.89° S, 68.84° W; 900 m a.s.l.; 30–31 Mar. 1965; H. Levi leg.; MCZ. – San Luis • 1 ♂; Naschel; 32.915° S, 65.375° W; Feb.–Mar. 1962; A. Luchini leg.; MACN 19955. – La Pampa • 1 ♂; Rancul; 35.07° S, 64.68° W; Jan. 1975; Maury leg.; MACN 20101 • 1 ♀; Santa Rosa [de Toay]; 36.62° S, 64.29° W; date and collector unknown; MACN 20039. – Buenos Aires • 1 ♂; Carlos Casares; 35.62° S, 61.36° W; 27 Feb.–2 Mar. 1980; collector unknown; MACN 20087 • 1 ♂, 2 ♀♀, 2 juvs; Buenos Aires, Cerrito; 34.60° S, 58.38° W; 19 Sep. 1972; C. Cesari leg.; in basement; MACN 20080.

PORTUGAL – Faro • 2 ♂♂, 1 ♀; Silves [Munic.], Norinha; 37.198° N, 8.400° W; 14 Sep. 1969; A. Senglet leg.; MHNG.

SPAIN – Extremadura • 1 ♂; Cáceres, Jarandilla [de la Vera]; 40.126° N, 5.658° W; 22–23 Aug. 1969; A. Senglet leg.; MHNG. – Castilla-La Mancha • 2 ♂♂, 4 ♀♀, 9 juvs; Toledo, Escalona del Alberche; 40.167° N, 4.400° W; 14 Jun. 1969; A. Senglet leg.; MHNG. – Andalucía • 6 ♂♂, 7 ♀♀, 2 juvs; Córdoba, Palma del Río; 37.70° N, 5.28° W; 26–27 Jun. 1969; A. Senglet leg.; MHNG • 2 ♂♂, 2 ♀♀; Córdoba, Peñarroya; 38.30° N, 5.27° W; 30 Jun. 1969; A. Senglet leg.; MHNG • 2 ♀♀; Cádiz, Algodonales; 36.88° N, 5.40° W; 19 Jul. 1969; A. Senglet leg.; MHNG • 3 ♂♂, 2 ♀♀, 5 juvs; Málaga, Estepona; 36.43° N, 5.15° W; 24–26 Jul. 1969; A. Senglet leg.; MHNG • 2 ♀♀; Málaga, Valle de Abdalajis; 36.93° N, 4.68° W; 28 Jul. 1969; A. Senglet leg.; MHNG • 4 ♀♀; Málaga, Antequera; 37.02° N, 4.56° W; 1–2 Aug. 1969; A. Senglet leg.; MHNG • 3 ♂♂, 5 ♀♀; Málaga, Torre del Mar; 36.75° N, 4.10° W; 27 Jul. 1969; A. Senglet leg.; MHNG • 2 ♀♀; Granada, Ugijar; 36.96° N, 3.05° W; 15 Jul. 1971; A. Senglet leg.; MHNG • 3 ♀♀; Granada, Huéneja; 37.176° N, 2.948° W; 16 Jul. 1971; A. Senglet leg.; MHNG • 1 ♀; Sevilla; 37.39° N, 5.98° W; 16 Jun. 1953; A. Comellini leg.; MHNG. – Region of Murcia • 1 ♂; Caravaca [de la Cruz]; 38.104° N, 1.860° W; 5 Jul. 1971; A. Senglet leg.;
MHNG • 1 ♂; San Pedro del Pinatar; 37.83° N, 0.78° W; Sep. 1984; G. Hormiga leg.; USNM • 1 ♂; Fortuna, Cueva Las Magras; 38.29° N, 1.143° W; 30 Jan. 2006; "ACP" leg.; CRBA 1146. – Valencian Community • 4 ♂♂, 3 ♀♀; Valencia, La Albufera; 39.30° N, 0.33° W; 16 Jun. 1971; A. Senglet leg.; MHNG • 1 ♂; Castellón, N of L'Alcora; 40.09° N, 0.199° W; 30 May 2010; S. Huber and A. Schönhofe leg.; at stone walls; SMF. – Catalonia • 1 ♂; Barcelona, Gelida; 41.44° N, 1.86° E; 14 Jun. 1971; A. Senglet leg.; MHNG • 2 ♂♂, 1 ♀, 3 juvs; near Barcelona, Cerdanyola [del Vallès]; 41.49° N, 2.14° E; 7 Dec. 2004; D. Dimitrov leg.; SMF 56746.

FRANCE – Pyrénées-Orientales • 1 ♂, 2 ♀♀; Banyuls; 42.48° N, 3.13° E; date and collector unknown; MNHN Ar 13337 • 2 ♂♂, 3 ♀♀ (3 vials); same locality as for preceding; 9–20 May 1952; A. Comellini leg.; MHNG • 1 ♀; same locality as for preceding; no further data; MHNG. • 1 ♀; Cerbère; 42.62° N, 3.165° E; 11 May 1952; A. Comellini leg.; MHNG. – Var • 1 ♂, 1 ♀; Bormes-les-Mimosas ("Borns"); 43.15° N, 6.34° E; Jul. 1960; O. Kraus leg.; SMF 24800. – Gard • 3 ♀♀; Aigues-Mortes; 43.57° N, 4.19° E; 8 May 1952; A Comellini leg.; MHNG. – Corsica • 1 ♂, 1 ♀; Propriano; 41.67° N, 8.91° E; 29 May 1971; A. Senglet leg.; MHNG • 1 ♂, 7 ♀♀, 1 juv.; Ponte Leccia; 42.463° N, 9.207° E; 19 Sep. 1952; Kahmann leg.; SMF 8799, 8800 • 1 ♀; Biguglia; 42.62° N, 9.44° E; 30 m a.s.l.; 2 May 1952; Kahmann leg.; SMF 8801.

BELGIUM – East Flanders • 1 ♂; near Gent; 51.10° N, 3.70° E; Jul. 2004; B.A. Huber leg.; ZFMK Ar 12608.

GERMANY – Nordrhein-Westfalen • 1 ♂, 4 ♀♀, 6 juvs; Bonn, Botanical Garden (?) ("Treibhaus"); 50.724° N, 7.091° E; Nov. 1967; E. Kullmann leg.; ZFMK Ar 5219. – Rheinland-Pfalz • 1 ♀; Hatzenport; 50.2265° N, 7.4108° E; 80 m a.s.l.; 26 Sep. 2014; B.A. Huber leg.; among wooden boards outside of building; ZFMK Ar 12304 • 1 ♂; Mainz, Draisberghof; 50.724° N, 7.091° E; Nov. 1967; E. Kullmann leg.; ZFMK Ar 5219. – Hamburg • 1 ♂; Hamburg Mitte, Hamm; 53.5481° N, 10.0381° E; 25 m a.s.l.; 6 Jun. 2019; B.A. Huber leg.; in building; ZFMK Ar 22292.

AUSTRIA – Vienna • 1 ♂, 3 ♀♀ (in pure ethanol); Brigittenau; 48.2283° N, 16.3710° E; Aug. 2001; B.A. Huber leg.; at windows in attic (fifth floor); ZFMK G64 to G66.

ITALY – Sardinia • 1 ♂; S. Pietro; 40.717° N, 8.550° E; 15 Aug. 1960; E. Kullmann leg.; ZFMK Ar 10705 • 1 ♂; Castelsardo; 40.91° N, 8.71° E; 11 Jun. 1958; E. Kullmann leg.; ZFMK Ar 10746 • 1 ♀; Lago Bunnari; 40.716° N, 8.634° E; 11 Apr. 1952; collector unknown; SMF 9273 • 1 ♂, 2 juvs; Ozieri; 40.58° N, 9.00° E; 23 Sep. 1968; A. Senglet leg.; MHNG • 2 ♂♂, 1 juv.; Terralba; 39.72° N, 8.63° E; 4 Aug. 1960; E. Kullmann leg.; ZFMK Ar 10696 • 1 ♂, 1 ♀, 1 juv.; Muravera, Nuraghe; 39.318° N, 9.531° E; 19 Aug. 1960; E. Kullmann leg.; ZFMK Ar 8214 • 4 ♂♂, 5 ♀♀, 2 juvs; Sardinia, no further data; SMF RII 6384. – Apulia • 2 ♂♂; south side of Monte Gargano near Manfredonia; 41.638° N, 15.890° E; 60 m a.s.l.; 7 Apr. 2006; A. Schönhofe and J. Hillen leg.; under stones in cultivated field, Opuntia field, native rock; SMF. – Sicily • 1 ♂; Syracuse, Viale Ermocrate; 37.07° N, 15.27° E; 18 Aug. 1993; B.A. Huber leg.; ZFMK Ar 5217 • 1 ♂, 1 ♀; Syracuse, Theatre; 37.074° N, 15.279° E; 18 Aug. 1993; B.A. Huber leg.; ZFMK Ar 5218.

CROATIA • 1 ♂; Karlovac, Ogulin; 45.266° N, 15.233° E; 320 m a.s.l.; 9 May 2010; J. Altmann and J. Meier leg.; in room; SMF • 6 ♂♂, 1 ♀; Ploče; 43.05° N, 17.43° E; 21 May 1972; A. Senglet leg.; MHNG • 1 ♂; Dubrovnik, Mt Srđ slopes; 42.65° N, 18.10° E; 0–400 m a.s.l.; 21 Apr. 1971; J. Murphy leg.; MMUE Murphy #5477.

BOSNIA AND HERZEGOVINA • 1 ♂; Popovo-Polje, Zavala; 45.266° N, 15.233° E; 320 m a.s.l.; 9 May 2010; J. Altmann and J. Meier leg.; in room; SMF • 6 ♂♂, 1 ♀; Ploče; 43.05° N, 17.43° E; 21 May 1972; A. Senglet leg.; MHNG • 1 ♀; Dubrovnik, Mt Srđ slopes; 42.65° N, 18.10° E; 0–400 m a.s.l.; 21 Apr. 1971; J. Murphy leg.; MMUE Murphy #5477.
HUBER B.A., Revisions of Holocnemus and Crossopriza

18.308° E; 400 m a.s.l.; 26 May 2014; B.A. Huber and M. Komnenov leg.; under rocks; ZFMK Bal10, Bal19.

MONTENEGRO • 1 ♂, 4 ♀♀; Podgorica, Velje Brdo, Megara Cave; 42.463° N, 19.199° E; 17 Feb. 2010; M. Komnenov leg.; CMK • 2 ♂♀; Podgorica, Ljubovići; 42.433° N, 19.255° E; 21 Apr. 2011; M. Komnenov leg.; artificial tunnel; CMK.

ALBANIA • 1 ♀; Kulla ë Lumës (“Kula Lums”); 42.098° N, 20.418° E; 1918; collector unknown; SMF RII 3726 • 1 ♂, 1 juv.; Durrës; 42.33° N, 19.45° E; 26 May 1993; P. Stoev and C. Deltshev leg.; NMNHS • 1 ♂; Përmet, near Petrani; 40.208° N, 20.419° E; 12 May 1995; B. Petrov and P. Stoev leg.; artificial gallery; NMNHS.

NORTH MACEDONIA • 1 ♀; Gevgelija; 41.14° N, 22.50° E; 10 Jul. 1956; Lamel leg.; HECO.

BULGARIA – Blagoevgrad • 1 ♂, 1 ♀, 1 juv.; Blagoevgrad; 42.014° N, 23.097° E; 380 m a.s.l.; 2 Aug. 2005; P. Jäger leg.; SMF 40643 • 6 ♀♀; N foothills of Krupnishna Planina Mt Range, ~0.2 km NNE of Krupnik; 41.850° N, 23.125° E; 375 m a.s.l.; 12 Aug. 2005; A. V.Gromov leg.; ZMMU • 1 ♂, 2 ♀♀; Sandanski; 41.566° N, 23.280° E; 28 Jul. 1972; A. Senglet leg.; MHNG • 1 ♂, 3 ♀♀; ~0.5 km S of Banya; 41.873° N, 23.528° E; 825 m a.s.l.; 11 Aug. 2005; A. V. Gromov leg.; ZMMU. – Pazardzhik • 2 ♂♂, 1 ♀; Panagyuriste; 42.505° N, 24.186° E; 720 m a.s.l.; 1 Jul. 1997; S. Lazarov leg.; NMNHS. – Ruse • 1 ♂, 2 ♀♀; Byala; 43.46° N, 25.74° E; 2013; collector unknown; MGAB.

GREECE – Ionian Islands • 1 ♂; Corfu, Agios Stephanos; 39.79° N, 19.81° E; 26 May 1999; A. Russell-Smith leg.; ZFMK Ar 22293 • 1 ♂, 1 ♀; Corfu, Loutses; 39.786° N, 19.880° E; 20 Sep. 1972; A. Senglet leg.; MHNG • 3 ♂♂, 1 ♀; Corfu, Agios Mathaeos; 39.495° N, 19.872° E; 18 Sep. 1972; A. Senglet leg.; MHNG • 1 ♂, 1 ♀; Pantocrator, Spilaio Katsama near Strinilas; 39.744° N, 19.839° E; 650 m a.s.l.; 12 May 1974; B. Hauser leg.; MHNG • 1 ♂, 3 ♀♀; Lefkada, W of Mikros Gialos; 38.64° N, 20.69° E; 25 May 1995; A. Russell-Smith leg.; ZFMK Ar 22294 • 8 ♂♂, 3 ♀♀; Cephalonia, Sisia; 38.10° N, 20.66° E; 29 May 1987; J.A. Murphy leg.; MMUE Murphy #A231 • 1 ♂, 2 ♀♀; same collection data as for preceding; reared from eggs; MMUE Murphy #15938 • 1 ♂; Cephalonia, “Patra”; date unknown; SMF • 1 ♂; Cephalonia, “Castle Hill”; 19 May 1987; J.A. Murphy leg.; MMUE Murphy #15013 • 1 ♂, 1 ♀; Cephalonia, no further locality data; 21 May 1987; J.A. Murphy leg.; MMUE Murphy #16161. – Epirus • 1 ♀, 1 juv.; Igoumenitsa; 39.50° N, 20.27° E; data unknown; F. Sauer leg.; SMF. – Central Macedonia • 1 ♂; Yerakini (“Gerakina”); 40.27° N, 23.45° E; 14 Apr. 1978; J.A. Murphy leg.; stony area; MMUE Murphy #6830 • 2 ♂♀; “Halkidiki”; 6 Apr. 1978; J.A. Murphy leg.; MMUE Murphy #6709. – Eastern Macedonia and Thrace • 1 ♂; Limni Vistonis (“Limni Bouroú”); 41.05° N, 25.10° E; Sep. 1984; collector unknown; SMF. – Thessaly • 2 ♂♂, 2 ♀♀; Larissa, “Omólion (Tembe)”; 39.88° N, 22.58° E (coordinates between Omolio and Tempi); 17 Jun. 1970; A. Senglet leg.; MHNG • Central Greece • 1 ♂; Euboea, Lichada/Istiaia; 38.9° N, 23.0° E (coordinates between Lichada and Istiaia); 30 Aug. 1972; A. Senglet leg.; MHNG • 3 ♂♂, 9 ♀♀, 2 juvs; Phthiotis, Tragána; 38.62° N, 23.12° E; 21 May 1968; A. Senglet leg.; MHNG • 2 ♂♂, 2 ♀♀, 1 juv.; Phthiotis, Theologos/Atalanti (Glyphada); 38.62° N, 23.10° E (coordinates between Theologos and Atalanti); 20 Jun. 1970; A. Senglet leg.; MHNG • 1 ♂, 1 ♀; Phthiotis, near Maleasina; 38.62° N, 23.22° E; 21 May 1968; A. Senglet leg.; MHNG • 1 ♂, 2 ♀♀; Boeotia, “Topólia/Thiva”; 38.32° N, 23.32° E (coordinates of Thiva); 25 Aug. 1970; A. Senglet leg.; MHNG • 1 ♂; Euboea, Kato Steni; 38.571° N, 23.825° E; 2 Sep. 1972; A. Senglet leg.; MHNG • 1 ♂, 1 juv.; Northern Sporades, Skyros Island; 38.90° N, 24.56° E; 22 Mar. 1958; Schelkopf leg.; SMF. – Attica • 5 ♂♂, 4 ♀♀ (partly used for SEM); Daphni/Athens; 38.013° N, 23.636° E; 23 Jun. 1970; A. Senglet leg.; MHNG • 1 ♂, 1 ♀; same locality as for preceding; 19 Jun. 1968; A. Senglet leg.; MHNG • 2 ♀♀, 1 juv.; Athens,
Akropolis; 37.971° N, 23.727° E; date and collector unknown; SMF RII 3724 • 4 juvs; same locality as for preceding; May 1926; F. Roewer leg.; SMF • 3 ♂♂, 2 ♀♀; Athens, near Koropi; 37.900° N, 23.867° E; 19 Mar. 2007; A. Schönhofer leg.; under stones in olive grove and phrygana; SMF • 1 ♂; Vari, Spiliaío Nympholyptou; 37.858° N, 23.802° E; 25 Feb. 2018; N. Fytrou and E. Zenzefyli leg.; HISR 3042 • 3 ♂♂, 1 juv.; near Var, “Havara”; 27 Jun. 1954; P. Strinati leg.; MHNG. – Pełoponnese • 2 ♂♂, 4 ♀♀; Tripolis; 37.51° N, 22.37° E; Jun. 1926; F. Roewer leg.; SMF • 1 ♂, 5 ♀♀; Gulf of Argolis, Kandia (“Argolid, Kandia”); 37.52° N, 22.96° E; 12 Aug. 1970; A. Senglet leg.; MHNG • 1 ♂, 2 ♂♂, 1 juv.; NE of Gytheio (“Yithion”); 1977; Kinzelbach leg.; SMF 37616 • 1 ♂; Laconia, Pyrgos Diroú; 36.625° N, 22.380° E; 18 Aug. 1970; A. Senglet leg.; MHNG. – North Aegean • 2 ♂♂; Chios, Emboria Beach; 38.355° N, 26.143° E; 8 May 2006; A. Russell-Smith leg.; in public fountain; ZFMK Ar 22295. – South Aegean • 4 ♀♀; Paros, Naousa; 37.12° N, 25.24° E; 21 Jun. 1968; A. Senglet leg.; MHNG • 2 ♂♂; Paros, Parikia E., “Moni Aghii Anarghii”; 37.08° N, 25.16° E; 10 Aug. 2006; R. Bosmans leg.; on walls; CRB • 2 ♂♂, 2 ♀♀; Naxos, Chalkio (“Chalkis”); 37.063° N, 25.482° E; 27 Jun. 1968; A. Senglet leg.; MHNG • 2 ♂♂; Karpathos, near Pigadia; 35.51° N, 27.20° E; Apr. 1963; Kinzelbach leg.; SMF 15489 • 2 ♂♂, 1 ♀; Rhodes, “rocca di Lindos”; 36.091° N, 28.088° E; 2 Jul. 1996; F. Gasparo leg.; ZFMK Ar 22296. – Crete • 1 ♀; Chania, Azogires Palaeochora; 35.272° N, 23.719° E; 4–6 Aug. 1970; A. Senglet leg.; MHNG • 1 ♂; Chania, Sougia; 35.25° N, 23.81° E; 9 Oct. 1999; A. Senglet leg.; MHNG • 3 ♂♂, 24.05° E; date and collector unknown; SMF RII 3725 • 1 ♂, 1 ♂♂; Chania, Akrotiri, Kuramo Caves; 35.579° N, 24.143° E; May 1926; F. Roewer leg.; SMF • 1 ♀; Chania, Georgioupoli; 35.36° N, 24.26° E; 9 Jun. 2005; W. Schedl leg.; ZFMK Ar 22297 • 1 ♀; Chania, edge of Lake Kourna; 35.33° N, 24.28° E; 28 May 1993; A. Russell-Smith leg.; dense scrub, under stone; ZFMK Ar 22298 • 1 ♂, 3 ♀♀; Chania, Kournas; 35.327° N, 24.279° E; 10 m a.s.l.; 23 Mar. 2007; A. Schönhofer leg.; under stones, mostly open terrain; SMF • 1 ♂, 1 ♂♂; Chania, Grambousa, Spiliaío Agiou Ioanni Prodromou; 5 Mar. 1995; K. Paragamian leg.; HISR 1773 • 1 ♂, 1 ♀, 2 juvs; Chania, Hora Sfákon (“Sfákia”); 35.20° N, 24.14° E; 17 Jul. 2009; H. Eikamp and U. Kluge leg.; SMF • 1 ♂, 1 ♂♂; Rethymno, Choumeri/Perama; 35.35° N, 24.26° E; 9 Jul. 2005; W. Schedl leg.; ZFMK Ar 22297 • 1 ♀; Rethymno, Anogia; 35.24° N, 24.87° E; 11 May 2006; H. Eikamp and U. Kluge leg.; SMF 56588 • 3 ♂♂, 3 juvs; Rethymno, Mpali, Anonymo Spiliaio (National Road); 2 Nov. 2003; K. Foteinakis and K. Paragamian leg.; HISR 2428 • 1 ♂, 4 juvs; Heraklion, Gournes; 35.32° N, 25.28° E; 3 May 2008; H. Eikamp and U. Kluge leg.; SMF • 1 ♀; same locality as for preceding; 15 May 2010; K. Eckl leg.; SMF • 1 ♂, 2 ♀♀; Heraklion, Rodia (“Rogdia”); 35.365° N, 25.020° E; 26 Jul. 1970; A. Senglet leg.; MHNG • 2 ♂♂, 2 ♀♀; Heraklion, Knosssos; 35.30° N, 25.16° E; 25 Jun. 1970; A. Senglet leg.; MHNG • 3 ♂♂, 1 ♀♀; Heraklion, Malia; 35.29° N, 25.46° E; 8 Jul. 1970; A. Senglet leg.; MHNG • 1 ♂; same locality as for preceding; 11 May 2008; H. Eikamp and U. Kluge leg.; SMF • 2 ♂♂, 1 ♂; Heraklion, Charakas; 35.01° N, 25.12° E; 24 Jul. 1970; A. Senglet leg.; MHNG • 1 ♂, 1 ♀; Heraklion, Marathos, Arkalospioloi; 35.245° N, 24.968° E; 24 Dec. 2000; K. Paragamian leg.; HISR 1971 part • 1 ♂, 6 juvs; Heraklion, Kastri; 35.00° N, 25.37° E; 7 May 2008; H. Eikamp and U. Kluge leg.; SMF • 1 ♂; Heraklion, Kastri, Keratokambos; 35.000° N, 25.375° E; 14 May 2006; H. Eikamp and U. Kluge leg.; SMF 56589 • 1 ♂; Lasithi, Platí; 35.205° N, 25.44° E; 17 Dec. 2006; H. Eikamp and U. Kluge leg.; SMF • 1 ♂; Lasithi, Atisganoispilos; 35.205° N, 25.618° E; 16 Apr. 2003; F. Gasparo leg.; ZFMK Ar 22299 • 1 ♂, 2 ♀♀, 1 juv.; Lasithi, Agía Fótia; 35.02° N, 25.87° E; 6 Jul. 2007; H. Eikamp and U. Kluge leg.; SMF 57161 • 2 ♀♀; Lasithi, Bembonas, Tripti Mt.; 35.1° N, 25.9° E; 10 May 2009; K. Eckl and H. Eikamp leg.; SMF • 5 ♀♀; Lasithi, Exo Mouliana; 35.17° N, 25.99° E; 18 Jul. 1970; A. Senglet leg.; MHNG. – TURKEY – Çanakkale • 1 ♂, 1 juv.; Kavak River, near bridge of road Keşan-Gallipoli (“Gelibolu”); 40.60° N, 26.876° E; date and collector unknown; SMF • 1 ♂; Truva, “84/15”; 39.95° N, 26.24° E; date and collector unknown; SMF. – İzmir • 1 ♂; Vişneler, “Fetrek-2 Cave”; 38.346° N, 27.421° E; 310 m a.s.l.; 5 Jun. 2009; Y.M. Marusik leg.; ZFMK Ar 5469 • 1 ♂, 1 ♀; Çiğli (airport); 38.516° N, 27.013° E; 15 Apr. 1973; A Vigna leg.; MHNG • 1 ♂; “Agamennon”; 10 May 1975; C. Bisuchet and I. Löbl leg.; MHNG. – Aydın • 3 ♂♂, 4 ♀♀; Güzelçamlı; 37.695° N, 27.163° E; 105 m a.s.l.; 7 Jun.
2009; Y.M. Marusik leg.; ZFMK Ar 5215. – Bursa • 2 ♀♂, 1 juv.; Göürke, Uludağ Univ. Campus; 40.226° N, 28.869° E; 420 m a.s.l.; 2–3 Jun. 2009; Y.M. Marusik leg.; ZFMK Ar 5468. – Muğla • 1 ♂, 1 ♂ ♀; Dalyan to Kaunos (“Cavnos”) path; 36.82° N, 28.61° E; 18 May 1997; A. Russell-Smith leg.; ZFMK Ar 22300 • 1 ♂; Marmaris; 36.85° N, 28.26° E; Sep. 1973; C. and E. Supper leg.; MHNG. – Antalya • 1 ♂; Xanthos ruins; 36.356° N, 29.318° E; 7 Mar. 1977; Kinzelbach leg.; SMF 37622 • 1 ♂ (in pure ethanol); Kemer District, Çıralı; 36.399° N, 30.475° E; 10 m a.s.l.; 3 Aug. 2016; H. Öztürk leg.; in building; ZFMK Tur64 • 1 ♂; İbradi District, Altınbeşik Mağarası; 37.039° N, 31.631° E; 660 m a.s.l.; 23 Jul. 2016; H. Öztürk leg.; among rocks near cave entrance; ZFMK Ar 22301 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Tur46 • 1 ♂, 3 ♀♂; Alanya Kalesi, above Kleopatra beach; 36.539° N, 31.992° E; 2 Nov. 2013; S. Huber leg.; ZFMK Ar 22302 • 1 ♂, 1 ♀; Alanya District, Cüceler Mağarası; 36.489° N, 32.276° E; 270 m a.s.l.; 31 Jul. 2016; H. Öztürk leg.; among rocks near cave entrance; ZFMK Ar 22303. – Mersin • 1 ♂; Anamur District, Kösübükü Astım Mağarası; 36.127° N, 32.760° E; 130 m a.s.l.; 29 Jul. 2016; H. Öztürk leg.; in cave near entrance; ZFMK Ar 22304 • 1 ♂; NE of Silifke, above Narlıkuyu; 36.45° N, 34.10° E; 24 Apr. 2012; J. Altmann and J. Meier leg.; maquis; SMF • 2 ♀♂, 1 juv.; İçel Narlıkuyu; 36.44° N, 34.11° E; 5 May 1994; “L.M.” leg.; in rubbish by restaurant; WML • 1 ♂, 1 ♀; Taş Obası (cave); 37.079° N, 34.928° E; 24 Aug. 2007; A. Topçu leg.; NOHUAM. – Nevşehir • 2 ♂♂; Özoskan; 38.81° N, 34.84° E; 16 Jun. 1993; C. Felton leg.; WML. – Diyarbakır • 2 ♀♂; Çermik (“Germik”); 38.13° N, 34.95° E; 27 Jul. 2004; T. Dan leg.; ZFMK Ar 5216.

CYPRUS – Limassol • 1 ♂, 1 ♀, 1 juv.; Pissouri; 34.67° N, 32.70° E; 27 Apr. 1982; J. Murphy leg.; beach litter; MMUE Murphy #12617. – Famagusta • 2 ♀♂, 3 juvs; Fig Tree Bay, “Cave 1”; 35.01° N, 34.06° E; 23 Oct. 1996; P. Strinati leg.; MHNG.

GEORGIA – Tbilisi • 1 ♂; Tbilisi, Dighom I; 41.778° N, 44.701° E; 17 Jul. 2019; Karalashvili, Seropian and Kramer leg.; ZFMK Ar 21279. – Kakheti • 2 ♂♂, 3 ♀♀, 5 juvs; Sighnaghi; 41.621° N, 45.918° E; 9 Jul. 2019; Karalashvili and Kramer leg.; on houses; ZFMK Ar 21372, Ar 21373 • 1 ♂; Lagodekhi National Park; 41.847° N, 46.284° E; 9 Jul. 2019; Karalashvili and Kramer leg.; forest; ZFMK Ar 21261 • 1 ♂, 1 ♀, 2 juvs; Vashlovani National Park, bungalows near border to Azerbaijan; 41.111° N, 46.647° E; 26–27 Jul. 2019; Karalashvili and Kramer leg.; steppe; ZFMK Ar 21569, Ar 21570.

SYRIA • 1 ♀, 1 juv.; Latakia, ruins of Ugarit, Ra’s as-Samra, creek N of Tell Ugarit; 35.602° N, 35.783° E; 4 Mar. 1979; R. Kinzelbach leg.; SMF • 4 ♀♂, 3 juvs; Jayrud (“Djeroud”); 33.807° N, 36.742° E; 1911; H. Gadeau de Kerville leg.; in house; MNHN • 1 ♂; between Hamaa and Aleppo, “Kaha al Suban” (locality not identified); 500 m a.s.l.; 9 Apr. 1982; collector unknown; SMF.

LEBANON • 1 ♂; Antelias; 33.92° N, 35.59° E; May 1952; K. Christiansen leg.; MCZ 34059.

ISRAEL • 3 ♀♀, 1 juv.; Ahihud, E Akko[n]; 32.91° N, 35.17° E; 10 Apr. 1987; W. Heinz leg.; SMF • 1 ♀; Haifa Distr., Karmiya Ridge, Mt Carmel; 32.7185° N, 35.0065° E; 280 m a.s.l.; 17 Sep. 2013; B.A. Huber, S. Aharon and E. Gavish-Regev leg.; among rocks; ZFMK Ar 22305 • 1 ♀ (in pure ethanol); Haifa Distr., Mt Karmel, Oren Cave; 32.7145° N, 34.975° E; 70 m a.s.l.; 17 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; in cave; ZFMK Isr57 • 2 ♀♂, 1 ♀; N of Teverya (“Tiberias”); 32.80° N, 35.52° E; stony meadow; 4 Mar. 1975; H. Levi, G. Levy, and G. Tsabor leg.; MCZ 34062 • 1 ♂, 1 ♀; Northern Distr., Mt Berenice, S of Teverya; 32.777° N, 35.541° E; -120 m b.s.l.; 16 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; among rocks; ZFMK Ar 22306 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Isr39 • 1 ♂, 1 ♀; Northern Distr., near Afula, HaGilbo’a Reserve; 32.52° N, 35.38° E; 300–500 m a.s.l.; 7 Apr. 1987; W. Heinz leg.; SMF • 1 ♀; Nof Yam; 32.19° N, 34.81° E; 17 Feb. 1968; collector unknown; AMNH • 1 ♂; Judea and Samaria Distr., Memorial Ha-Biq’a, NE Peza’el [Fatsa’el]; 32.0524° N, 35.4589° E; -210 m b.s.l.; 15 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; in cave; ZFMK Ar 22307 • 1 ♀; near Ramla, Kibbuz
Gezer; 31.88° N, 34.92° E; 11 Aug. 1984; H. Feldmann leg.; indoors on ceiling; AMNH • 1 ♀; Central Distr., Modi'in; 31.8951° N, 34.9618° E; 160 m a.s.l.; 8 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; among rocks; ZFMK Ar 22308 • 1 ♂, 2 juvs; near Ramallah, Bayt Ghur al-Tahta; 31.895° N, 35.080° E; 6 Apr. 1987; W. Heinz leg.; SMF • 1 ♂; Judea and Samaria Distr., 'En Perat, Nahal Perat [Prat]; 31.833° N, 35.303°–35.31° E; 260–300 m a.s.l.; 15 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; among rocks; ZFMK Ar 22309 • 1 ♂; Jerusalem; 31.77° N, 35.21° E; Apr. 1952; Khuri leg.; MCZ 34064 • 2 ♂♂, 2 ♀♀; 21 km E of Jerusalem, Jericho Road, wadi in hills; 23 Feb. 1975; H.W. Levi and G. Levy leg.; MCZ 34067 • 1 ♂, 3 juvs; Hebron, Beit Kahlil; 31.57° N, 35.07° E; ~800 m a.s.l.; 30 Apr. 1987; W. Heinz leg.; SMF • 6 ♂♂, 2 ♂♀, 3 juvs; Dead Sea, Ein Feshkha; 31.716° N, 35.452° E; 27 Feb. 1975; H. Levi, P. Amitai, and G. Levy leg.; MCZ 34061 • 1 ♂, 1 ♀; Southern Distri., Nahal Dawid (David), 'En Gedi; 31.47° N, 35.39° E; -250 to -300 m b.s.l.; 10 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; among rocks; ZFMK Ar 22310 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Isr59 • 1 ♂, 2 ♀♀; Southern Distri., Nahal Boqeq, W of 'En Boqeq; 31.1992° N, 35.3571° E; -350 m b.s.l.; 8 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; among rocks; ZFMK Ar 22311 • 1 ♂; Southern Distri., NW of 'En Tamar, Nahal Zin; 30.991° N, 35.347° E; -340 m a.s.l.; 9 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; among rocks; ZFMK Ar 22312 • 1 ♂, 1 ♀; Negev, Mash'abei Sadeh, Golda Park; 31.0185° N, 34.7645° E; 340 m a.s.l.; 6 Sep. 2011; P. Jäger leg.; stony desert, under stones; SMF • 1 juv.; Negev, Mash'abei Sadeh, 1.5 air km S of Golda Park; 31.0026° N, 34.7576° E; 340 m a.s.l.; 7 Sep. 2011; P. Jäger leg.; sand dunes, stony desert, under stones; SMF • 2 ♂♂, 4 ♀♀, + juvs; Sede Boqer; 30.85° N, 34.78° E; Jan. 1987; V. and B. Roth; MCZ 34069 • 1 ♂, 3 ♀♀; Sede Boquer, 1.9 air km W of Midreshet Ben Gurion; 30.8554° N, 34.7642° E; 530 m a.s.l.; 8 Sep. 2011; P. Jäger leg.; stony desert, bushes, under stones; SMF • 1 ♀ (in pure ethanol); same collection data as for preceding; SMF • 2 ♀♀; same collection data as for preceding; 3 Sep. 2011; SMF • 1 ♂; Sede Boqer, 2.9 air km W of Midreshet Ben Gurion, Wadi Hawarim; 30.8476° N, 34.7550° E; 500 m a.s.l.; 4 Sep. 2011; P. Jäger leg.; under stones; SMF • 2 ♂♂, 1 ♂, 2 juvs; Sede Boqer, Ein Avedat, 3.3 air km W of Midreshet Ben Gurion; 30.8486° N, 34.7492° E; 400–480 m a.s.l.; 4 Sep. 2011; P. Jäger leg.; shrubs, under stones, in small caves; SMF • 6 juvs; same locality as for preceding; 6 Sep. 2011; P. Jäger leg.; stream with water, reed, shrubs, under stones; SMF • 1 ♂; Southern Distri., Har 'Ayit; 30.1042° N, 35.0527° E; 470 m a.s.l.; 11 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; in deep crevice; ZFMK Ar 22313 • 1 ♂; Southern Distri., Samar; 29.8342° N, 35.0215° E; 100 m a.s.l.; 11 Sep. 2013; B.A. Huber, S. Aharon, and E. Gavish-Regev leg.; in building; ZFMK Ar 22314.

JORDAN – Balqa • 1 ♂, 1 juv.; Fuhais [Fuhays]; 32.010° N, 35.768° E; Apr. 1980; F. Krupp and W. Schneider leg.; SMF; – Madaba • 2 ♀♀, 2 juvs; Mt Nebo; 31.77° N, 35.73° E; Jul. 1989; E. Hyazin leg.; MRAC 169974 • 2 ♂♂, 1 juv.; Hammamat az-Zarqa’ Ma’in, hot springs, 150 m to Dead Sea; 31.608° N, 35.610° E; 14 Mar. 1977; R. Kinzelbach leg.; SMF • 1 ♂, 2 ♀♀; Wadi Mjib; 31.465° N, 35.578° E; -380 m b.s.l.; 14 Sep. 2013; B.A. Huber leg.; ZFMK Ar 22315. – Kerak • 2 ♂♂, 2 ♀♀; Wadi Hasā; 31.004°–31.014° N, 35.494°–35.506° E; -330 to -250 m b.s.l.; among rocks; 14 Sep. 2013; B.A. Huber leg.; ZFMK Ar 22316 • 2 ♂♂, 2 ♀♀ (in pure ethanol); same collection data as for preceding; ZFMK Isr53. – Ma’an • 2 ♂♂, 1 ♂; Petra; 30.324° N, 35.447° E; 900–950 m a.s.l.; 13 Sep. 2013; B.A. Huber leg.; among rocks; ZFMK Ar 22317 • 1 ♂, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Isr37. – Aqaba • 1 ♂; Wadi Rām; 29.7405° N, 35.4574° E; 830 m a.s.l.; 12 Sep. 2013; B.A. Huber leg.; among rocks; ZFMK Ar 22318 • 1 ♂, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Isr52 • 1 ♂; Wadi Rām; 29.683° N, 35.450° N; 9 Apr. 2004; J. Altmann leg.; SMF.

MOROCCO – Béni Mellal-Khénifra • 1 ♂, 1 ♀ (in pure ethanol); Imi n’Ifri; 31.724° N, 6.972° W; 1070 m a.s.l.; 26 Sep. 2013; B.A. Huber leg.; in building; ZFMK Mor105. – Drâa-Tafilalet • 2 ♂♂, 3 ♀♀, 1 juv.; Midelt; 32.68° N, 4.73° W; 19 Dec. 1986; V. and B. Roth leg.; CAS • 1 ♀; 22 km N of...
Figs 5–12. Live specimens and webs. 5–6. Holocnemus pluchei (Scopoli, 1763); male and female from Morocco, Imi n’Ifri. 7–8. Holocnemus reini (C. Koch, 1873) comb. nov.; male from Morocco, near Tilamizene; female from Morocco, W of Tamtetoucht. 9–10. Maghreba amezyan gen. et sp. nov., male and female from Morocco, between Lakhssas and Bouizzakarne. 11–12. Maghreba amezyan gen. et sp. nov., pair in spotted web, and detail of web with silk puffs, SW of Ida Ougnidif.
Errachida, between Sefrou and Tanout ou Filal; 32.04° N, 4.42° W; 24 Dec. 1986; V. and B. Roth leg.; CAS 9027138.

ALGERIA – Médéa • 2 ♂, 1 ♀; Médéa; 36.26° N, 2.75° E; date unknown; P.-H. Lucas leg.; MNHN. – Algiers • 1 ♀; Algiers; 36.75° N, 3.05° E; 3 Nov. 1948; B. Malkin leg.; AMNH • 4 ♂, 4 ♀, + juvs (possible syntypes of Pholcus barbarus Lucas); near Algiers; 36.75° N, 3.05° E; date unknown (between 1839 and 1842); P.-H. Lucas leg.; MNHN. – Tozeur • 2 ♀; Tozeur; 33.92° N, 8.12° E; Jul. 1972; E. and C. Supper leg.; MHNG.

TUNISIA – Jendouba • 2 ♂, + juvs; “Tabarca (Khroumirie)”; ~36.9° N, 8.7° E; 1907; H. Gadeau de Kerville leg.; MNHN • 1 ♂, 3 ♀, 1 juv. (2 vials); Ayn Darahim (“Ain-Draham”); 36.78° N, 8.69° E; 1899; G. Seurat leg.; MNHN. – Tunis • 1 ♂, 2 ♀, 1 juv.; Carthago; 36.86° N, 10.33° E; 11–12 Oct. 1948; B. Malkin leg.; AMNH • 1 ♀; La Marsa; 36.89° N, 10.32° E; Jul. 1972; E. and C. Supper leg.; MHNG. – Gabès • 1 ♂; Gabès; 33.88° N, 10.10° E; 20 Mar. 1961; Walch leg.; SMF 24801. – Beja • 1 ♂, 1 juv.; Beja; 36.73° N, 9.19° E; 23 Mar. 2006; A. López and C. Ribera leg.; CRBA 1271. – Kairouan • 1 ♂, 2 ♀; Djebel-Trozza; 35.56° N, 9.59° E; 1932; F. Santschi leg.; MHNG. – Keft • 1 ♂, 1 ♂, 1 juv.; El Kef; 36.17° N, 8.70° E; Jul. 1972; E. and C. Supper leg.; MHNG.

LIBYA – Al Marqab • 1 ♀; Leptis Magna; 32.63° N, 14.29° E; 18–26 Aug. 1948; B. Malkin leg.; AMNH. – Al Jabal al Akhdar • 2 ♂, 2 ♀; Al Bayda (“El Baida”); 32.765° N, 21.743° E; 23 Jul. 1979; C. Goodnight and N. Barbash leg.; AMNH.

EGYPT – Dakahlia • 6 ♂, 6 ♀, 6 juvs; Mansoura (“Mansurah”); 31.04° N, 31.38° E; date unknown; I. Sörensen leg.; ZMUC. – Beheira • 3 ♂, 8 ♀, + juvs; Bir Hooker; 30.80° N, 30.35° E; 1901; J. Dewitz leg.; MNHN. – Cairo • 1 ♀; Maadi; 29.96° N, 31.26° E; further collection data on label unclear; MHNG • 1 ♀; Cairo [city]; 30.0° N, 31.2° E; date and collector unknown; SMF Roewer #4783. – Luxor • 2 ♂, + juvs; Luxor; 25.70° N, 32.65° E; 2 Nov. 1996; P. Jäger leg.; in house; SMF.

AUSTRALIA – Western Australia • 1 ♂; Morawa Motel; 29.217° S, 116.017° E; 23 May 1996; M.S. Harvey leg.; in building; WAM • 1 ♂, 1 juv.; West Swan, behind Caversham Wildlife Park; 31.850° S, 115.983° E; 17 May 1992; J.M. Wallock leg.; on building; WAM 99/1790 • 1 ♂; Maylands; 31.93° S, 115.90° E; 7 Jan. 1992; J.M. Wallock leg.; WAM 99/1579 • 1 ♀; same collection data as for preceding; 27 Dec. 1991; WAM 99/1578 • 1 ♂; East Victoria Park; 31.983° S, 115.900° E; 15 Jan. 1997; J.M. Wallock leg.; WAM 99/2097 • 1 ♂; same collection data as for preceding; 13 Sep. 1992; in house; WAM 99/1776 • 1 ♂; same collection data as for preceding; 19 Nov. 1994; WAM 99/1752. – South Australia • 1 ♂, 1 ♂, 1 juv.; Pondanna Outstation; 32.56° S, 135.55° E; 10 Dec. 1989; D. Hirst leg.; SAM 99/680 • 1 ♀; Flinders Range National Park, Orparana; 31.37° S, 138.73° E; Dec. 1984; B. Guerin leg.; SAM 99/679 • 1 ♂, 1 juv.; Erudine Station via Yunta; 31.43° S, 139.43° E; 22 Apr. 1980; J. McIntee leg.; SAM 99/678 • 1 ♂; Middleback Station; 32.94° S, 137.40° E; Oct. 1983; B. Guerin leg.; SAM 99/682 • 1 ♀; Mt Lofty Ranges, Hawthorndene; 35.02° S, 138.63° E; 18 Jan. 1992; L.N. Nicolson leg.; in garden; SAM 99/683 • 2 ♀, 2 juvs; Stoneleigh Park near Meningie; 35.70° S, 139.35° E; Mar. 1969; A.W. Forbes leg.; SAM 99/684 • 1 ♂, 2 juvs; Murray Range near Kingston; 34.2° S, 140.3° E; 17 Dec. 1978; M.R. Gray leg.; AMS • 2 ♂, 6 ♀, 4 juvs; near Pryap; 34.45° S, 140.50° E; 2–9 Jun. 1990; L.N. Nicolson leg.; SAM 99/670 • 1 ♂, 6 ♀, 2 juvs; 7 km W of Loxton; 34.45° S, 140.50° E; 20 May 1990; L.N. Nicolson leg.; shed and house verandah; SAM 99/662 • 1 ♂; Loxton; 34.45° S, 140.57° E; 11 Jun. 1990; L.N. Nicolson leg.; in house; SAM 99/669. – Queensland • 1 ♂; south side of Lake Broadwater; 27.35° S, 151.098° E; 1–15 Nov. 1984; V. Wood leg.; buildings; QMB S49733 • 2 ♀; SW of Dalby, Lake Broadwater; 27.35° S, 151.10° E; 9 Dec. 1987; J. Gallon leg.; cottage; QMB S14509 • 1 ♂; Texas; 28.85° S, 151.17° E; date unknown; Harvey and Katzman leg.; in building; WAM. – New South Wales • 1 ♂, 1 ♂; Duntrone Station; 31.03° S, 143.04° E; Oct.–Nov. 1980; D. Hirst leg.; SAM 99/655 • 1 ♀.
Figs 13–19. Holocnemus pluchei (Scopoli, 1763). 13–15. Male from Israel, S of Teverya (ZFMK Ar 22306); left palp, prolateral, dorsal, and retrolateral views. 16. Male from Israel, Samar (ZFMK Ar 22314); ocular area, clypeus, and chelicerae, frontal view. 17–19. Male from Israel, S of Teverya (ZFMK Ar 22306); spines on femur 1, tibia 1, and femur 2 (right legs, retrolateral views). Scale bars = 0.5 mm.

Redescription

**Male** (Israel, ZFMK Ar 22306)

**Measurements.** Total length 6.0, carapace width 2.3. Distance PME–PME 220 μm; diameter PME 140 × 150 μm; distance PME–ALE 70 μm; diameter AME 125 μm; distance AME–AME 25 μm. Leg 1: 45.4 (12.9 + 1.1 + 12.7 + 16.4 + 2.3), tibia 2: 8.1, tibia 3: 6.0, tibia 4: 7.2; tibia 1 L/d: 42; femora 1–4 diameters: 0.46, 0.39, 0.37, 0.38.

**Color** (in ethanol). Carapace ochre-yellow, posterior part of ocular area brown; clypeus not darkened; sternum dark brown to black; legs ochre-yellow, with darker rings on femora (subdistally) and tibiae (proximally and subdistally), with oval to elongate black marks on femora and tibiae; abdomen ochre-gray, with dark and whitish marks dorsally and laterally; ventrally with distinct black median band, partly disrupted, with three parallel longitudinal marks behind gonopore.

**Body.** Habitus as in Fig. 5. Ocular area slightly raised; each secondary eye with small accompanying elevation (Fig. 43). Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified (contra Calbacho-Rosa et al. 2019b; see Discussion), only rim more sclerotized than in female. Sternum wider than long (1.5/1.1), unmodified (i.e., without indentations as in *H. caudatus* and *H. reini*). Abdomen cylindrical, dorso-posteriorly weakly angular. Gonopore with four epiandrous spigots (Fig. 55). ALS with one widened spigot and one pointed spigot; PMS with two pointed spigots (Fig. 56).

**Chelicerae.** As in Fig. 16; see also Huber (1995: figs 1a, 4a; 2000: fig. 14); with pair of frontal lateral apophyses, each with one large modified cone-shaped hair (Fig. 54); distance between tips of modified hairs: 390 μm; without proximal frontal protrusion; lateral stridulatory ridges distinct (Fig. 47), distances between ridges ~12 μm.

**Pals.** As is Figs 13–15; coxa with rounded retrolateral hump (not a distinct apophysis); trochanter barely modified (slightly protruding ventrally); femur curved towards dorsal, distally widened but without ventral protrusion, proximally with prolateral stridulatory pick, without retrolateral transversal line, with prominent retrolateral proximal process; femur-patella joints only slightly shifted toward prolateral side; tibia large compared to femur, tibia-tarsus joints shifted toward retrolateral side; tarsal organ capsulate (Fig. 51); tarsus without macrotrichia; precursus (Figs 20–22) straight, dorsal hairs not or only slightly curved upwards; proximally on prolateral-venal side with prominent process free of hairs (arrow in Fig. 20), precursus tip with strong but short ventral sclerite, membranous elements on dorsal and prolateral side, and 4–5 hair-like transparent processes on retrolateral side (Fig. 49); genital bulb (Figs 23–26) with simple basal sclerite connected to distal (main) sclerite; distal sclerite with two distinctive processes; sperm duct opening on membranous area on prolateral side at basis of distal bulbal sclerite (arrow in Fig. 50).

**Legs.** With single ventral rows of spines on femur 1 (~31), tibia 1 (~38) and femur 2 (~14) (Figs 17–19); without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; retrolateral trichobothrium present on all tibiae; tarsal pseudosegments indistinct and irregular (cf. Fig. 35) except 2–3 distally; all tarsal organs capsulate with simple round rim (Fig. 53).
Figs 20–28. Holocnemus pluchei (Scopoli, 1763); male from Israel, S of Teverya (ZFMK Ar 22306), female from Georgia, Sighnaghi (ZFMK Ar 21373). 20–22. Left procurus, prolateral, dorsal, and retrolateral views; arrow: prolateral-ventral process. 23–26. Left genital bulb, ventral, prolateral, dorsal, and retrolateral views. 27–28. Cleared female genitalia, ventral and dorsal views; arrow: pair of sculptured areas; asterisks: pair of internal pockets. Abbreviations: bs = basal sclerite; ds = distal sclerite; vs = ventral sclerite. Scale bars: 20–26 = 0.3 mm; 27–28 = 0.5 mm.
**Male** (variation)
Tibia 1 in 95 males: 7.9–15.5 (mean 11.6) (mean tibia 1 length in 204 males in Jakob & Dingle 1990: 10.67); body length ~3.5–7.5. Most specimens with more or less distinct dark median band on carapace; sternum sometimes with distinct black radial marks; abdomen sometimes without dark marks, but always with white marks in distinctive pattern. Smaller males with fewer spines, often without spines on tibia 1 and femur 2. Distance between tips of modified hairs on cheliceral apophyses: ~280–390 μm. Gonopore with 4–5 epiandrous spigots.

**Female**
In general similar to male (Fig. 6) but palp with strongly widened distal segments (tibia and tarsus; Figs 29–30), without joints between tibia and tarsus; with strong median process posteriorly on sternum (Figs 31, 58) possibly acting against ventral process anteriorly on abdomen (Figs 38, 57; but see Discussion); with fewer but stronger stridulatory ridges (Fig. 48; see also Huber 1995; Huber 2021a: fig. 12), distances between stridulatory ridges ~13.5 μm; without spines on legs; dark marks on femora and tibiae (Fig. 34) often more distinct than in males; with strong anterior sclerite dorsally on pedicel possibly acting against pair of sclerotized areas anteriorly on abdomen (Fig. 32). Without stridulatory apparatus between carapace and abdomen. Tibia 1 in 140 females: 7.2–14.1 (mean 10.5) (mean tibia 1 length in 172 females in Jakob & Dingle 1990: 10.05); body length: ~4.0–8.0 mm. Epigynum as in Figs 36–39 and 57; main epigynal plate wide, weakly protruding, posteriorly whitish, anteriorly with pair of depressions ~280–300 μm apart, with sculptured cuticle (cf. Huber 1995: fig. 6c), median internal round element and pair of lateral internal triangular elements usually visible in uncleared specimens; posterior epigynal plate large but simple; large anterior plate in front of epigynum with pair of low humps and distinct anterior elevated rim (arrow in Fig. 38). Internal genitalia (Figs 27–28, 40–42) with elongate pore plates in transversal position narrowing medially, dorsal arc relatively simple, ventral arc with distinctive pair of lateral sclerotized pockets, medially widened, with ventral median process (pocket?). Spigots as in male.

**Natural history**
Together with *Pholcus phalangioides* (Fuesslin, 1775), *H. pluchei* is probably the best studied pholcid spider with respect to its biology. Much of what we know about *H. pluchei* has been studied in the USA and Argentina, i.e., using non-native populations. Whether they differ in any significant way from Mediterranean populations has never been studied. Data on egg numbers (see below) suggest that such differences may exist.

Around the Mediterranean, *H. pluchei* is ubiquitous in almost any habitat suitable for its web, including places fully exposed to the sun. Occasionally, *H. pluchei* lives in peripheral parts of webs of the araneid *Cyrtophora citricola* (Forsskål, 1775), together with the cobweb spider *Argyrodes argyrodes* (Walckenaer, 1841) (Blanke 1972; Hajer 1995; Leborgne et al. 1998; Hajer & Řeháková 2003). In Central Europe, where *H. pluchei* has been massively spreading over the last decades, it may be displacing *P. phalangioides*, at least in warm/dry/light parts of buildings, close to windows (Jäger 2000; Van Keer 2007). In the southwestern USA, *H. pluchei* is often the dominant spider on outside surfaces in urban areas around homes and other structures (Vetter et al. 2011). It sometimes occurs is high densities: up to 600 spiders were estimated to inhabit a 3 × 15 m juniper bush in California (Blanchong et al. 1995).

The usual web of *H. pluchei* is dome-shaped, as in most space-dwelling pholcids. A skeleton made of 1.2 μm fibrils is filled with 0.8–0.9 μm fibrils (Hajer & Řeháková 2003). Occasionally, webs are densely covered with silk puffs, a common behavior in Smeringopinae that interferes with a clear view of the spider. The fact that silk puffs are produced 3–4 days before molting and before egg-laying supports the view that puffs may protect the spider from visual predators when it is most vulnerable (Hajer & Řeháková 2003). Unusual spherical webs are built by females before egg-laying. Females remain in
these small spheres (diameter ~5 cm) until the spiderlings hatch, and females do not prey during this time (Sedey & Jakob 1998; Jäger 2000; Hajer & Řehákova 2003).

*Holocnemus pluchei* is facultatively group-living, i.e., several conspecifics of all sizes may share a web (Jakob 1991). Groups are constantly forming and disintegrating as the spiders move frequently among webs, depending on size, feeding status, and presence or absence of conspecifics (Jakob 2004). Surprisingly, small spiders in a group seem to pay a high prize for group living: they feed less than

**Figs 29–35. Holocnemus pluchei** (Scopoli, 1763). **29–30.** Female from Georgia, Sighnaghi (ZFMK Ar 21373); left palp, prolateral and retrolateral views. **31.** Female from Georgia, Sighnaghi (ZFMK Ar 21373); sternum, ventral (slightly frontal) view; arrow: posterior process. **32–33.** Female and male from Bulgaria, Blagoevgrad (SMF), showing modified female pedicel and pair of plates frontally on female abdomen (arrows). **34.** Female from Israel, Mount Karmel (ZFMK Ar 22305); left femur 3 ventral view. **35.** Female from Israel, S of Teverya (ZFMK Ar 22306); female tarsus, showing irregular pseudosegmentation. Scale bars: 29–33 = 0.5 mm; 34 = 0.2 mm; 35 = 0.1 mm.
Figs 36–42. *Holocnemus pluchei* (Scopoli, 1763). 36–37. Female from Georgia, Sighnaghi (ZFMK Ar 21373), abdomen and epigynum, ventral views. 38–39. Female from Jordan, Petra (ZFMK Ar 22317), epigynum lateral and ventral views; arrow: anterior process. 40–42. Female from Georgia, Sighnaghi (ZFMK Ar 21373), cleared genitalia, dorsal view with dorsal arc tilted backwards, ventral view, and regular dorsal view. Abbreviation: e = epigynum. Scale bars: 36 = 1.0 mm; 37–42 = 0.5 mm.
Figs 43–50. *Holocnemus pluchei* (Scopoli, 1763); male and female from Greece, Daphni/Athens (MHNG). 43. Left male ocular area, oblique view; arrows: ‘accessory lenses’. 44. Male clypeus, frontal-dorsal view. 45. Female ocular area and clypeus, oblique frontal view. 46. Detail of preceding figure. 47–48. Stridulatory files on male and female chelicerae. 49. Left procursus, retrolateral view. 50. Distal (main) sclerite of left genital bulb, prolateral (slightly distal) view; arrow: sperm duct opening. Abbreviation: vs = ventral sclerite. Scale bars: 43 = 30 μm; 44–45, 49–50 = 100 μm; 46–48 = 10 μm.
solitary siblings and larger companions, they tend to lose contests, and they are sometimes cannibalized (Gerhardt 1927; Jakob 1991; Jakob et al. 2000). The reason they join conspecifics may be the cost of building an own web: it takes a spiderling at least 5 days to feed enough to build a web (Jakob 1991), and webs are not recycled (Jakob et al. 2000).

**Sperm uptake** was described by Gerhardt (1927). First, a line of silk between the tips of legs 3 is moved against the gonopore until the sperm droplet emerges. Then the line with the drop is brought to the chelicerae from where it is taken up by the genital bulbs. In alternating movements, each bulb contacts the drop three times for approximately 30 s each. Within the bulb, sperm remains viable at least for several weeks (99.6% viable after two weeks; Cargnelutti et al. 2020).

Basic aspects of [courtship and copulation](#) have been described by Gerhardt (1927), Huber (1995), and Dutto et al. (2011). Both males and females (and juveniles) use their chelicerae to stridulate, but in different contexts. While male stridulation seems to have a luring function, female stridulation conveys a negative message, mainly to males (signaling non-receptivity), but also to other females and maybe even to other species (e.g., the web-invading *Pholcus phalangioides*) (Huber 1995; Dutto et al. 2011). The stridulation of juveniles has never been studied. Female stridulatory behavior has been found to be consistent, i.e., individual females differ consistently in the frequency of stridulating during consecutive inter-sexual encounters (Calbacho-Rosa et al. 2019a).

In copulations with virgin females, sperm is transferred during a first phase that is characterized by rhythmic simultaneous movements of the male palps (Cargnelutti et al. 2018). This is followed by a second phase where the palps remain inserted but seemingly immobile. The significance of this second phase is only partly understood. It might be a form of mate-guarding, and the duration of the immobile phase positively affected sperm viability in females (which decreased more rapidly in females than in males) (Cargnelutti et al. 2020).

Copulations with non-virgin females are common; they take longer (~40 vs 30 min; Kaster & Jakob 1997), and they follow a slightly different pattern. They start with non-rhythmic alternating movements of only partially inserted palps (only procursus inserted) during which sperm of previous males is partially removed (Calbacho-Rosa et al. 2013). Second males fertilize an average of ~65–83% of the eggs, but the actual values range from 0 to 100% (Kaster & Jakob 1997). Second-male sperm precedence depends on timing: it is strongest in the few hours after copulation (Calbacho-Rosa et al. 2010) (explaining the pattern of mate guarding; see below).

The projection on the female sternum has been interpreted as a structure that controls the intensity and range of male palpal movements during copulation (Calbacho-Rosa et al. 2019b). These authors support their conclusion mainly by the fact that the projection contacts the male clypeus at the moment of maximum palpal contraction. They exclude a stidulatory function (with the “pre-epigynum”) because the structures do not contact each other during intersexual interactions (but see Discussion).

The biological significance of the dorsal female modification (pedicel, abdomen) has never been studied (it has apparently not even been described before). It may function during abdominal twitching, a component of low-level aggressive interactions (Jakob 1991, 1994). Abdomen twitching was the only antagonistic behavioral component that differed between sexes, but it was males (that lack pedicel-abdomen modifications) that performed more twitches (Blanchong et al. 1995). Escalating fights involve the legs, and Johnson & Jakob (1999) found that 7–8% of spiders in natural populations were missing at least one leg, usually (in 86% of the cases) one of the anterior two pairs. However, leg loss does not significantly affect the male’s ability to compete over webs and prey (Johnson & Jakob 1999).
HUBER B.A., Revisions of *Holocnemus* and *Crossopriza*

Reports on **mate guarding** are somewhat contradictory. For Californian populations, Kaster & Jakob (1997) report the absence of guarding; Sedey & Jakob (1998) found that most females with eggs were initially accompanied by at least one male. In Argentinian populations, Calbacho-Rosa *et al.* (2010) observed post-copulatory mate guarding: males stayed close to females for approximately 12–24 hrs after copulation, and actively defended females (or rather their own investment) from intruding males. This does not seem to imply chivalrous behavior: males do not cede prey to females, and they win interactions as often as females do (Blanchong *et al.* 1995).

Females produce several **egg-sacs** per season, and Hajer & Řeháková (2003) reported a maximum of eight clutches in the lab. As usual in pholcids (Huber & Eberle 2021), larger females lay more eggs (and thus produce heavier clutches), but egg weight is not affected by female body size (Skow & Jakob 2003). Kaster & Jakob (1997), working on Californian populations, reported a mean clutch size of 33 (9–70), while Ahmed (2021), working on Egyptian spiders, reported a mean of 89. While Ahmed’s (2021) publication is flawed in many respects, this number is not unfeasible. A single egg-sac of a female from Croatia reported in Huber & Eberle (2021) was estimated at having 77 eggs.

While caring for an egg-sac, females are reluctant to remate, but occasionally they do, especially at a late stage of embryo development (Calbacho-Rosa *et al.* 2017). In order to mate, they have to temporarily suspend the egg-sac in the web, which supposedly carries some risk for the eggs, especially from (conspecific) predators (Calbacho-Rosa *et al.* 2017). Egg-sac carrying has also been shown to protect the eggs from fungi (Calbacho-Rosa *et al.* 2017), but this is not likely to have a significant effect during the relatively short time of mating.

**Developmental** time depends on food level, and well-fed spiders often reach maturity after five molts, while poorly-fed spiders usually need six molts (Jakob & Dingle 1990). However, spiders maturing after six molts are on average larger, irrespective of food level (Jakob & Dingle 1990). When legs were removed at the third instar, they were not regenerated (Johnson & Jakob 1999).

When **disturbed**, *H. pluchei* starts to move vigorously like many long-legged pholcids. However, the movement has been described as ‘bouncing’, different from the ‘whirling’ of *P. phalangioides* (Jackson *et al.* 1993). When bouncing, *H. pluchei* lifts and lowers the body by flexing and extending the femur-patella and tibia-metatarsus joints at an amplitude of 2–20 cm and at a rate of 5–10/s (Jackson *et al.* 1993). This is thought to protect the spider from visual predators, and it may also interfere with a predator’s movement in the web (Jackson 1992; Jackson *et al.* 1993). An alternative strategy is to leap out of the web and ‘play dead’ (Jackson *et al.* 1993).

**Distribution**

The original distribution of *H. pluchei* is the Mediterranean or part of it. Compared to some other synanthropic and anthropophilic pholcids, it has established permanent colonies in other regions relatively recently (Fig. 2). Surprisingly, this seems to have happened within a relatively short period of time around the world. For the USA, Vetter *et al.* (2011) did a survey among regional arachnologists and concluded that *H. pluchei* had been introduced in the San Francisco Bay area in the 1950s. The oldest South American records date back to the early 1960s (Argentina; see Material examined). By that time, the species was present in at least two provinces, suggesting that it may well have been introduced in the 1950s as well. The species is now very common in central Argentina as well as in Uruguay (Laborda & Simó 2008).

The oldest confirmed Central European and Australian records are also from the 1960s (Germany: 1962; South Australia: 1969; see Material examined section). Older records from the Netherlands (19th century) are dubious (van Helsdingen 2010). In Central Europe the species has been spreading massively since the 1990s (Van Keer & Van Keer 2001; Reiser & Neumann 2014) and has relatively recently reached
countries like Denmark (oldest record 2006; https://www.danmarks-edderkopper.dk/), Great Britain (oldest record 2004; https://www.britishspiders.org.uk/), and the Caucasus (Ponomarev et al. 2019). The oldest known record for Japan is from 2008 (Kumada 2021), suggesting that the introduction to Japan happened relatively recently.

L. Koch’s (1875) record for Massaua (Eritrea) is based on misidentified juvenile specimens of Crossopriza, presumably C. pristina (photos kindly provided by M. Tavano, 30 Jan. 2014). Leardi in Airaghi’s (1902) record for Mahé (India) could not be checked but it here also considered to be based on misidentified specimens.

**Holocnemus reini** (C. Koch, 1873) comb. nov.
Figs 3, 7–8, 59–96

*Pholcus reini* C. Koch, 1873: 113.

*Holocnemus caudatus* (misidentification) – Barrientos et al. 2019: 12.
*Crosopriza* sp. – Hajer & Řeháková 2003: 345–354.

**Remarks**
While Roewer (1955) considered *Pholcus reini* a nomen dubium (“nicht zu deuten”), Bonnet (1958) treated it as an available name. Platnick (2000), in his first online catalogue, adopted Roewer’s view, and *Pholcus reini* has been listed as a nomen dubium ever since (World Spider Catalog 2021). The single male type specimen is apparently lost. It is not in SMF, in contrast to the types of at least one other species collected during the same expedition and published in the same paper (*Ocypete fritschi* C. Koch, 1873, now *Eusparassus fritschi*). However, even though C. Koch’s (1873) original description does not provide any figure, it gives some details (size, ventral color pattern) that fit only two pholcid species known to be present in Morocco: *Holocnemus pluchei* and the species here interpreted to represent *Holocnemus reini*. Since C. Koch (1873) distinguished between *Pholcus barbarus* (now *H. pluchei*) and *P. reini*, it seems reasonable to assume that C. Koch’s name does not refer to *H. pluchei* but to the species treated here.

I have not seen the specimens of Barrientos et al. (2019) but since all newly examined Moroccan specimens were *H. reini* rather than the similar *H. caudatus*, the specimens of Barrientos et al. (2019) are regarded as misidentified. Vocher specimens of Hajer & Řeháková’s (2003) “*Crosopriza* sp.” were examined (see below).

**Diagnosis**
Easily distinguished from most known Smeringopinae (except *H. caudatus*) by deep indentations on sternum (Fig. 81; in males and females; deepest pair between coxae 4), by shape of procursus (Fig. 63; distinctive retrolateral membrane), by shape of genital bulb (Figs 66, 92; distal bulbal sclerite triangular in prolateral view, with one large and two small rounded processes); from known congeners and representatives of *Crosopriza* also by 2–3 modified hairs on each male cheliceral apophysis (Figs 64, 82–83; rather than one); from *H. caudatus* only by slightly wider distances between male cheliceral apophyses (70–80% of cheliceral maximum width) and between female epigynal pockets (> 0.5 mm).

**Type material**

**Holotype**
MOROCCO · ♂; Mtuga plateau (roughly in the area between Essaouira, Marrakesh, and Agadir); 1872; K. von Fritschi and J. Rein leg.; apparently lost.
Material examined

MOROCCO – Marrakesh-Safi • 9 ♂♂, 6 ♀♀ (partly used for SEM); near Tilamizene; 31.3500° N, 7.7645° W; 950 m a.s.l.; 11 Sep. 2018; B.A. Huber leg.; near ground; ZFMK Ar 22319 • 2 ♀♀, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Mor72 • 1 ♂, 1 ♀; High Atlas, near Asni; 31.24° N, 7.98° W; 1200 m a.s.l.; 12 May 1977; “PDH” leg.; BMNH • 1 ♂, 2 ♀♀; near Touffliit; 31.4715° N, 7.4332° W; 1465 m a.s.l.; 27 Sep. 2018; B.A. Huber leg.; among rocks near ground above ravine; ZFMK Ar 22320 • 1 ♂ (in pure ethanol); same collection data as for preceding; ZFMK Mor108 • 1 ♂; near Rakte; 31.033° N, 8.137° W; 1060 m a.s.l.; 12 Sep. 2018; B.A. Huber leg.; among rocks in dry riverbed; ZFMK Ar 22321 • 2 ♂♂, 1 ♀; N of Marrakesh, Oued Tensift; 31.69° N, 8.03° W; 9 Feb. 1996; J. Van Keer leg.; under stones; CJVK • 1 ♀; same locality as for preceding; in and along riverbed; 9 Feb. 1996; R. Bosmans leg.; CRB • 2 ♂♂, 2 ♀♀; near Irhoud (= Ighoud); 31.854° N, 8.873° W; 285 m a.s.l.; 29 Sep. 2018; B.A. Huber leg.; along river and among cacti; ZFMK Ar 22323 • 1 ♂; NE of Tamelelt [Tamallalt], El Kelaa des Sraghna; 32.055° N, 7.400° W; 590 m a.s.l.; 16 Apr. 2012; J. Van Keer leg.; stones in wasteland; CJVK. – Souss-Massa • 1 ♂, 1 ♀; S of Tizi n’Test at R203; 30.850° N, 8.375° W; 1580 m a.s.l.; 12 Sep. 2018; B.A. Huber leg.; among rocks near ground; ZFMK Ar 22322 • 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Mor75 • 1 ♂, 1 juv.; 80 km E of Taroudant, Oued Lemdad; 30.64° N, 8.38° W; 18 May 1939; Berland leg.; MNHN Ar 10313 • 1 ♂; N of Agadir, Imouzzer; 30.678° N, 9.493° W; 960 m a.s.l.; 10 Sep. 2014; S. Huber leg.; on and among cacti; ZFMK Ar 22326 • 1 ♀♀; N of Agadir, Imouzzer; 30.678° N, 9.483° W; 960 m a.s.l.; 8 Sep. 2014; S. Huber leg.; small cave near waterfall; ZFMK Ar 22327 • 1 ♂♀; Paradise Valley; 30.588° N, 9.528° W; 305 m a.s.l.; 13 Sep. 2018; B.A. Huber leg.; among rocks near ground; ZFMK Ar 22328 • 2 ♂♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor77 • 1 ♀; 7 km N of Agadir, Anza; 30.45° N, 9.65° W; 50 m a.s.l.; 3 Feb. 1996; R. Bosmans leg.; stones in Euphorbia vegetation; CRB • 1 ♂; N of Agadir, road Agadir-Alma; 30.486° N, 9.565° W; 440 m a.s.l.; 27 Nov. 2016; S. Huber leg.; ZFMK Ar 22329 • 4 ♀♀, 1 juv.; Agadir, path to Kasbah Hill; 30.430° N, 9.619° W; 110 m a.s.l.; 7 Sep. 2014; S. Huber leg.; ZFMK Ar 22330 • 1 ♂; same locality as for preceding; 60 m a.s.l.; 28 Nov. 2016; S. Huber

Figs 59–61. Holocnemus reini (C. Koch, 1873) comb. nov.; male from Morocco, near Tilamizene (ZFMK Ar 22319); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Figs 62–70. *Holocnemus reini* (C. Koch, 1873) comb. nov.; male from Morocco, near Tilamizene (ZFMK Ar 22319), female from Morocco, Al Kamoun (CAS 9027140). 62–63. Left procursus, prolateral and retrolateral views; arrow: retrolateral membrane. 64–65. Male chelicerae, frontal and lateral views. 66–68. Left genital bulb, prolateral, dorsal, and retrolateral views; arrow: sperm duct opening. 69–70. Cleared female genitalia, ventral and dorsal views; arrows: pockets. Abbreviations: bs = basal sclerite; ds = distal sclerite; vs = ventral sclerite. Scale bars: 62–63, 66–68 = 0.3 mm; 64–65, 69–70 = 0.5 mm.
560 m a.s.l.; 17 Apr. 2012; R. Bosmans leg.; stones in grassland; CRB • 2 ♂, 1 ♀; near El Ksiba, Kehf d’bouba; 32.5165° N, 6.0679° W; 1640 m a.s.l.; 24 Sep. 2018; B.A. Huber leg.; among rocks at cave entrance and near cave; ZFMK Ar 22336 • 1 ♂ (in pure ethanol); same collection data as for preceding; ZFMK Mor101 • 1 ♂, 3 ♀♀; near Sidi Ben Daoud; 32.5336° N, 6.1282° W; 700 m a.s.l.; 25 Sep. 2018; B.A. Huber leg.; among cacti and in small cave; ZFMK Ar 22337 • 1 ♂, 1 ♀; N of Imilchil, near R317; 32.300° N, 5.660° W; 1585 m a.s.l.; 25 Sep. 2018; B.A. Huber leg.; among rocks near ground in dry riverbed; ZFMK Ar 22338 • 1 ♂; SE of El Ksiba, near R317; 32.486° N, 5.942° W; 1315 m a.s.l.; 25 Sep. 2018; B.A. Huber leg.; among rocks in gorge; ZFMK Ar 22339 • 5 ♂♂, 4 ♀♀; Sources of l’Oum er Rbia; 33.051° N, 5.412° W–33.049° N, 5.411° W; 1270–1330 m a.s.l.; 21 Sep. 2018; B.A. Huber leg.; in small cave and among rocks above waterfall; ZFMK Ar 22342 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor99. – Drâa-Taïfialet • 1 juv. (in pure ethanol); Timoula; 31.791° N, 5.463° W; 2000 m a.s.l.; 19 Sep. 2018; B.A. Huber leg.; under rocks at roadside; ZFMK Mor93 • 1 ♂, 1 ♀; E of Tamtetoucht; 31.686° N, 5.521° W; 1775 m a.s.l.; 19 Sep. 2018; B.A. Huber leg.; at rocks near spring; ZFMK Ar 22340 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor94 • 8 ♂♂, 1 ♀, 7 juvs; N of Tinerhir, Tamtetoucht; 31.68° N, 5.54° W; 6 Dec. 1986; V. and B. Roth leg.; CAS 9027135 • 4 ♂♂, 4 ♀♀; W of Tamtetoucht; 31.659° N, 5.581° W; 1745 m a.s.l.; at rocks; 19 Sep. 2018; B.A. Huber leg.; ZFMK Ar 22341 • 1 ♀ (in pure ethanol); same collection data as

Figs 77–80. Holocnemus reini (C. Koch, 1873) comb. nov. 77–79. Female from Morocco, Al Kamoun (CAS 9027140); internal genitalia, ventral view, regular dorsal view, and dorsal view with dorsal arc tilted backwards. 80. Female from Morocco, near Tilamizene (ZFMK 22319); internal genitalia, dorsal view with dorsal arc tilted backwards. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
for preceding; ZFKM Mor95 • 1 ♂; SE of Zebzat; 32.625° N, 4.540° W; 1675 m a.s.l.; 20 Sep. 2018; B.A. Huber leg.; among rocks outside of cave; ZFKM Ar 22343 • 1 ♂, 1 ♀; near Tizi n’Tairhemt; 32.593° N, 4.540° W; 1855 m a.s.l.; 20 Sep. 2018; B.A. Huber leg.; among rocks in pine forest; ZFKM Ar 22344 • 1 juv. (in pure ethanol); same collection data as for preceding; ZFKM Mor97. – Rabat-Salé-Kénitra • 1 ♂, 2 juvs; 2 km N of Sidi Allal El Bahraoui, Forêt de la Maâmora; 34.03° N, 6.55° W; 8 Feb. 1996; R. Bosmans leg.; litter in Quercus suber forest; CRB • 1 ♂, 2 ♀; Oued Beht; 33.88° N, 5.93° W; 7 Feb. 1996; J. Van Keer leg.; Pinus plantation, stones; CRB. – Fès-Meknès • 1 ♂, 2 ♀; Sefrou; 33.83° N, 4.83° W; 25 Dec. 1986; V. and B. Roth; travertine falls; CAS 9027126 • 2 ♂♂, 3 ♀♀; NE of Bab Boudir; 34.0895° N, 4.1080° W; 1400 m a.s.l.; 23 Sep. 2018; B.A. Huber leg.; among rocks; ZFKM Ar 22345 • 1 ♂, 1 ♀; SW of Bab Boudir; 34.0618° N, 4.1317° W; 1570 m a.s.l.; 23 Sep. 2018; B.A. Huber leg.; among rocks; ZFKM Ar 22346 • 1 ♂, 1 ♀; Grotte Kef el Ghar (= Rhar); 34.4788° N, 4.2766° W; 600 m a.s.l.; 22 Sep. 2018; B.A. Huber leg.; among rocks outside of cave; ZFKM Ar 22347. – Tanger-Tetouan-Al Hoceima • 1 ♂, 1 ♀; El Araich (“Larache”), near Lixus; 35.20° N, 6.11° W; Sep. 1997; J. Hajer leg.; edge of phosphate mining pit; ZFKM Ar 22348 • 6 ♂♂, 6 ♀♀ (vouchers of Hajer & Řeháková 2003); same collection data as for preceding; ZFKM Ar 22349. – Laâyoune-Sakia El Hamra • 2 ♂♂, 2 ♀♀, 1 juv.; Laayoune, 40 km S of Tarfaya; 27.70° N, 12.95° W; 11 Feb. 2007; R. Bosmans leg.; stony desert, stones along road; CRB. – Sidi bel Abbès • 1 ♀; Mezaourou; 34.81° N, 0.62° W; 900 m a.s.l.; 23 May 1990; R. Bosmans leg.; clearing in Pinus halepensis forest, under stones; CRB. – Blida • 2 ♂♂, 3 ♀♀; Atlas Blidéen, W of Chréa, Pic. E Abdelkader; 36.42° N, 2.86° E; 1520 m a.s.l.; 20 Jun. 1987–9 May 1988; R. Bosmans leg.; open Cedrus forest with Berberis; CRB. – M’Sila • 1 ♀, 1 juv.; Djebel Maadid towards south; 35.80° N, 4.79° E; 1350 m a.s.l.; 29 Apr. 1988; R. Bosmans leg.; along river, under rocks; CRB • 2 ♂♂; M’Sila, Oultem; 35.12° N, 4.38° E; 600 m a.s.l.; 2 Nov. 1987; R. Bosmans leg.; under rocks in steppe; CRB. – Sétif • 1 ♀ (only cleared epigynum); N of Magra, along Oued Nakhar; 35.727° N, 5.161° E; 850 m a.s.l.; 2 Nov. 1988; R. Bosmans leg.; litter; CRB. – Batna • 1 ♀; S of Tazoult Lambese, road to Forêt de S’gag; 35.45° N, 9.11° E; 16 Oct. 1987; R. Bosmans leg.; stones along dry rivulet in grassland; CRB. – Biskra • 1 ♂, 2 ♀♀ (without abdomens), 19 juvs; Biskra; 34.84° N, 5.73° E; date and collector unknown; Simon collection #12283; MNHN Ar 10325. – Siliana • 1 ♂, 1 ♀; E of Makhtar [Mactaris]; 35.85° N, 9.22° E; 900 m a.s.l.; 23 Jan. 1995; R. Bosmans leg.; stones along oued; CRB. – Sidi Bouzid • 1 ♂, 1 ♀; Djebel Bou Hedma National Park; 34.5° N, 9.6° E; 25–29 Mar. 2001; U. Moldrzyk leg.; CRB. – Gafsa • 1 ♀; near Bou Omrane; 34.35° N, 9.11° E; 26 Mar. 2006; A. López and C. Ribera leg.; CRBA 1315. – Kebili • 2 ♂♂, 9 ♀♀, 8 juvs; “Nefzana” [presumably Nefzaoua]; 33.5° N, 9.0° E; date and collector unknown; Simon collection #4890; MNHN Ar 10338.

Redescription

**Male** (Morocco, near Tilamizene, ZFKM Ar 22319)

**Measurements.** Total length 6.7, carapace width 1.75. Distance PME–PME 120 μm; diameter PME 120 × 140 μm; distance PME–ALE 50 μm; diameter AME 100 μm; distance AME–AME 25 μm. Leg 1: 38.4 (11.7 + 0.8 + 10.0 + 13.6 + 2.3), tibia 2: 6.9, tibia 3: 5.5, tibia 4: 6.5; tibia 1 L/d: 47; femora 1–4 diameters: 0.31, 0.25, 0.22, 0.23.

**Color** (in ethanol). Carapace ochre-yellow; ocular area posteriorly with light brown V-mark; sternum dark brown; legs ochre-yellow, femora and tibiae with light tips and indistinct darker subdistal rings, with black lines on femora and (few) on tibiae, very few also on metatarsi; abdomen with distinct pattern of dark marks and whitish marks dorsally and laterally; ventrally with distinct black median band, partly disrupted, behind gonopore divided by two thin longitudinal light lines.
Body. Habitus as in Fig. 7. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified but rim more sclerotized than in female. Sternum wider than long (1.10/0.85), with distinct indentations between consecutive leg coxae and between coxae 4 (cf. Fig. 81). Abdomen strongly elongated beyond spinnerets, dorso-posteriorly pointed. Gonopore with seven epiandrous spigots (Fig. 93); ALS with one widened spigot and one pointed spigot (Fig. 94).

Chelicerae. As in Figs 64–65, with pair of low proximal frontal humps and pair of frontal lateral apophyses, each with two large modified cone-shaped hairs; distance between tips of modified hairs: 520 μm; several ‘regular’ frontal hairs with small but distinct processes at basis; lateral stridulatory ridges very fine (Fig. 84; distances between ridges: 2–3 μm), barely visible in dissecting microscope.

Palps. As is Figs 59–61; coxa with rounded retrolateral hump; trochanter barely modified; femur slightly curved towards dorsal, distally widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick (Fig. 86), with barely visible prolateral transversal line, without retrorotal proximal process; femur-patella joints shifted toward prolateral side; tibia very large compared to femur, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 62–63) straight, few hairs slightly curved upwards; tarsal organ capsulate (Fig. 87); proximally on prolateral side with strong hump free of hairs, procursus tip with distinctive flat membranous element retrolaterally (arrow in Fig. 63) covering proximal part of ventral sclerite, with dorsal transversal flap and complex retrolateral elements (Figs 89–91); genital bulb (Figs 66–68) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening in membranous area prolaterally at basis of distal sclerite (Fig. 92); distal sclerite with one large apophysis (fold) and two smaller apophyses on prolateral side; with indistinct retrolateral parallel ridges (Fig. 68).

Legs. Femur 1 with single row of ~24 ventral spines; without curved hairs; few vertical hairs; retrorotal trichobothrium of tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct and irregular except 4–5 distally.

Male (variation)
Tibia 1 in 73 males: 7.6–12.8 (mean 10.6). Chelicerae maximum width (N = 57): 0.56–0.80 (mean 0.67); distance between tips of cheliceral apophyses: 0.41–0.58; cheliceral apophyses sometimes with 3 modified hairs, sometimes asymmetric (2 and 3 hairs, respectively; Figs 82–83). Procursus length (N = 58): 0.82–1.16 (mean 1.03). Coloration of fresh specimens slightly variable, usually with dark median band on carapace. Posterior elongation of abdomen variably long, ~0.5–1.0 × distance pedicel–spinnerets. Gonopore with 6–8 epiandrous spigots.

Female
In general similar to male (Fig. 8) but without spines on legs; often with slightly longer dorsal abdominal elongation. Without stridulatory apparatus between carapace and abdomen; with fine cheliceral stridulatory ridges as in male (Fig. 85; distances between ridges ~3 μm). Tibia 1 in 53 females: 6.4–12.5 (mean 9.2). Epigynum as in Figs 71–76 and 96, main epigynal plate triangular to trapezoidal, weakly protruding; only posteriorly laterally strongly sclerotized; with pair of variably distinct pockets (distance between pockets 0.5–0.6); internal sclerotized arc and median round structure variably visible in uncleared specimens; posterior epigynal plate large but simple; pair of low but distinct elevations in front of epigynum. Internal genitalia (Figs 69–70, 77–80) with triangular pore plates converging anteriorly, dorsal arc simple and slender, ventral arc laterally strongly widened, medially strong, with simple median pouch.
Figs 89–96. *Holocnemus reini* (C. Koch, 1873) comb. nov.; male and female from Morocco, near Tilamizene (ZFMK Ar 22319). 89–91. Tips of right (89) and left (90–91) procursi, retrolateral and slightly distal views; arrow: retrolateral membrane. 92. Left genital bulb, prolateral view; arrow: sperm duct opening. 93. Male gonopore. 94. Male ALS. 95. Female spinnerets. 96. Epigynum; arrows: pockets. Scale bars: 89, 93 = 20 μm; 90–91, 94–95 = 10 μm; 92, 96 = 100 μm.
Natural history

This species lives in a variety of habitats, ranging from shady pine forests and river valleys to very dry arid slopes. Most specimens were found in sheltered spaces among and under rocks. The large webs (diameter ~30 cm) were often exposed to direct sunlight, but during the day the spiders rested on the shady rock surface. On some occasions, the species was present outside of caves while the caves were occupied by a different species (e.g., SE of Zebzat: *Maghreba aurouxi* gen. nov.; Grotte Kef el Ghar: *Micropholcus* sp.). On several occasions, *H. reini* was found on rocks very close to undescribed representatives of *Micropholcus*, occupying much the same microhabitat (Paradise Valley; Imi n’Ifri; near Ksiba). Near Sidi Ben Daoud, the spiders were extremely abundant in a very dense field of cacti. The domed webs transformed to distinct funnels that led into the barely accessible space among the cacti. High abundances were also reported by Hajer & Řeháková (2003), who observed “communities of up to several hundred individuals” (vouchers of their “*Crossopriza* sp.” were reexamined; see above).

Hajer & Řeháková (2003) also described web construction and the production of silk puffs, which were in principle identical to those of *H. pluchei* (see above). Unlike, *H. pluchei*, however, mated females built a more open spotted dome (rather than a sphere) within the main web and left this dome for attacking prey. Also, females tolerated the presence of males inside the dome and copulated repeatedly while still holding the egg sac. After the second molt of the spiderlings, females destroyed the dome and the spiderlings dispersed (Hajer & Řeháková 2003).

Distribution

The species is widely distributed in northwestern Africa, ranging from Morocco to Tunisia (Fig. 3). The MNHN has a female with a dubious label saying “Espagne”, while the original label is no longer readable.

**Holocnemus caudatus** (Dufour, 1820)
Figs 3, 97–128

*Pholcus caudatus* Dufour, 1820: 208, pl. 76 fig. 2a–b.


**Dubious records** (see Distribution below)


**Misidentifications**

Barrientos *et al.* 2019: 12 (see *H. reini*).

**Remark**

*Holocnemus acuminatus* Franganillo, 1925 from Spain, Málaga, is currently considered a nomen dubium (World Spider Catalog 2021). It is probably a synonym of *H. caudatus* but could also be a senior synonym of *H. hispanicus* Wiehle, 1933. The World Spider Catalog (2021) considers Franganillo’s (1925) publication in the Boletín de la Sociedad Entomológica de España as the original publication for this name. However, in that paper, Franganillo writes “*Holocnemus acuminatus* Frang.”, i.e., without
adding “sp. nov.” as he did in other occasions, suggesting that the species had been described before. In fact, in the introduction he cites a series of publications from which the listed records are taken. I suspect that *H. acuminatus* was originally intended to be described in Franganillo’s contribution to the Proceedings volume of the Tercer Congreso Científico Panamericano (Lima, 22 Dec. 1924–5 Jan. 1925), under the title “Arácnidos de Andalucía”. However, that proceedings volume was never published. Thus, *Holocnemus acuminatus* Franganillo, 1925 is here considered a nomen nudum.

**Diagnosis**

Easily distinguished from most known Smeringopinae (except *H. reini*) by distinct indentations on sternum (Fig. 112; in males and females; deepest pair between coxae 4), by shape of procursus (cf. Figs 62–63, 117; distinctive retrolateral membrane), by shape of genital bulb (cf. Figs 66–68; distal bulbal sclerite triangular in prolateral view, with one large and two small rounded processes); from known congeners and representatives of *Crossopriza* also by 2–3 modified hairs on each male cheliceral apophysis (rather than one; Fig. 115); from *H. reini* only by slightly smaller distances between male cheliceral apophyses (50–60% of cheliceral maximum width) and between female epigynal pockets (<0.4 mm).

**Figs 97–100.** *Holocnemus caudatus* (Dufour, 1820); male and female from Spain, Valencia, Montroy (MHNG). 97–98. Male chelicerae, frontal and lateral views. 99–100. Cleared female genitalia, ventral and dorsal views; arrows: pockets. Scale bars = 0.3 mm.
Type material

Syntypes
SPAIN • Unspecified number; Valencia, Mogente/Moixent (“Moxente”); 38.88° N, 0.76° W; date unknown; L. Dufour leg.; probably lost.

Material examined
SPAIN – Valencian Community • 1 ♂; Alicante, Cova del Rull near Val de Ebo; 38.812° N, 0.177° W; 475 m a.s.l.; 2–3 Jun. 2010; S. Huber and A. Schönhofer leg.; SMF • 6 ♂, 7 ♀, 1 juv.; Alicante, Elda; 38.48° N, 0.79° W; 19 Jun. 1971; A. Senglet leg.; MHNG • 3 ♂, 3 ♀; Valencia, Ayora; 39.06° N, 1.06° W; 20 Jun. 1971; A. Senglet leg.; MHNG • 4 ♂, 3 ♀; Valencia, Montroy; 39.34° N, 0.61° W; 22 Jun. 1971; A. Senglet leg.; MHNG • 8 ♂, 9 ♀; Valencia, Requena-Chera; 39.54° N, 1.02° W; 23 Jun. 1971; A. Senglet leg.; MHNG • 1 juv.; Castellón, Cabanes, “Aven d’en Soria”; 40.15° N, 0.05° E; 2 Jan. 1964; Nebot leg.; CRBA 1424. – Aragon • 3 ♂, 3 ♀; Teruel, Mora de Rubielos;

HUBER B.A., Revisions of *Holocnemus* and *Crossopriza*

40.25° N, 0.75° W; 5 Sep. 1971; A. Senglet leg.; MHNG • 12 ♂♂, 13 ♀♀; Teruel, Albarracin; 40.41° N, 1.44° W; 3 Sep. 1971; A. Senglet leg.; MHNG • 1 ♀, 1 juv.; Teruel, Aguaviva, along Río Bergantes; 40.82° N, 0.20° W; 500 m a.s.l.; 2 Apr. 1996; R. Bosmans leg.; maquis and *Pinus*; CRB • 2 ♂♂, 2 ♀♀, 1 juv.; Teruel (the label says “Lerida” but Castelnuò is not in Lérida), Castelnuò; 41.23° N, 0.36° W; 8 Jun. 1955; A. Comellini leg.; MHNG. – Castilla-La Mancha • 3 ♂♂, 6 ♀♀; Cuenca, Sta Cruz de Moya; 39.955° N, 1.255° W; 24 Jun. 1971; A. Senglet leg.; MHNG • 3 ♀♀, 3 juvs; Albacete, S of Tarazona de La Mancha, along Río Júcar; 39.25° N, 1.91° W; 600 m a.s.l.; 8 Apr. 1997; R. Bosmans leg.; degraded *Quercus ilex* forest; CRB • 1 ♂, 3 ♀♀, 3 juvs; Albacete, La Gineta; 39.11° N, 2.00° W; 28 Jun. 1971; A. Senglet leg.; MHNG. – Region of Murcia • 2 ♂♂, 5 ♀♀; Caravaca [de la Cruz]; 38.11° N, 1.86° W; 5 Jul. 1971; A. Senglet leg.; MHNG • 5 ♂♂, 9 ♀♀, 1 juv.; Bullas; 38.05° N, 1.67° W; 4 Jul. 1971; A. Senglet leg.; MHNG • 2 ♂♂, 2 ♀♀ (partly used for SEM); Mazarrón; 37.60° N, 1.32° W; 1 May 2001; J. Van Keer leg.; CJVK • 1 ♀; Mazarrón, Cueva del Agua; 37.576° N, 1.219° W; 18 Feb. 1983; C. Ribera leg.; CRBA 2088 • 5 ♂♂, 5 ♀♀; Alberca; 37.94° N, 1.14° W; 4 May 1930; H. Wiehle leg.; SMF 11442, 11443, 19430. – Catalonia • 2 ♂♂; Barcelona, Parque Natural del Garraf; 41.28° N, 1.84° E; 6 Sep. 2006; R. Bosmans leg.; CRB • 1 ♂; Lleida, Bor, Cova de la Fou de Bor; 42.339° N, 1.801° E; 28 Sep. 1965; C. Ribera leg.; CRBA 1409. – Andalusia • 1 ♂, 3 ♀♀; Granada, Puebla de

Figs 107–110. *Holocnemus caudatus* (Dufour, 1820). 107–109. Female from Spain, Valencia, Montroy (MHNG); internal genitalia, ventral view, regular dorsal view, and dorsal view with dorsal arc tilted backwards. 110. Female from Spain, Albacete, S of Tarazona de La Mancha (CRB); internal genitalia, dorsal view with dorsal arc tilted backwards. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
Redescription

Male (Granada, Trevélez, MHNG)

MEASUREMENTS. Total length 5.5, carapace width 1.6. Distance PME–PME 110 μm; diameter PME 110 × 130 μm; distance PME–ALE 50 μm; diameter AME 70 μm; distance AME–AME 25 μm. Leg 1: 33.4 (9.7 + 0.8 + 8.8 + 12.1 + 2.0), tibia 2: 6.3, tibia 3: 4.7, tibia 4: 5.7; tibia 1 L/d: 49; femora 1–4 diameters: 0.32, 0.24, 0.21, 0.22.

COLOR (in ethanol). Carapace ochre-yellow; ocular area, carapace pit and posterior median area light brown; sternum brown, with dark brown radial marks; legs ochre-yellow, without darker rings, with black lines on femora and (few) on tibiae; abdomen ochre-gray, with some dark marks dorsally and laterally; ventrally with distinct black median band, partly disrupted, with three parallel longitudinal marks behind gonopore.

BODY. Habitus very similar to H. reini (cf. Fig. 7). Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified but rim more sclerotized than in female. Sternum wider than long (1.05/0.85), with distinct indentations between consecutive leg coxae and between coxae 4. Abdomen strongly elongated beyond spinnerets, dorso-posteriorly pointed. Gonopore with six epiandrous spigots (Fig. 118); ALS with one widened spigot and one pointed spigot, PMS with two pointed spigots (Fig. 125).
CHELICERAE. As in Figs 97–98, with pair of low proximal frontal humps and pair of frontal lateral apophyses, each with two large modified cone-shaped hairs (Fig. 115); distance between tips of modified hairs: 320 μm; several ‘regular’ frontal hairs with small but distinct processes at basis; lateral stridulatory ridges very fine (Fig. 113; distances between ridges proximally ~1.5 μm, distally ~4 μm), barely visible in dissecting microscope.

PALPS. In general apparently indistinguishable from H. reini (cf. Figs 59–61); coxa with rounded retrolateral hump; trochanter barely modified; femur slightly curved towards dorsal, distally widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick (Fig. 116), with barely visible retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia very large compared to femur, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; tarsal organ capsulate (Fig. 121); procursus (cf. Figs 62–63) straight, few hairs slightly curved upwards; proximally on prolateral side with strong hump free of hairs, procursus tip with distinctive flat membranous element retrolaterally (arrow in Fig. 117) covering proximal part of ventral sclerite in retrolateral view, with dorsal transversal flap; genital bulb (cf. Figs 66–68) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening in membranous area prolaterally at basis of distal sclerite; distal sclerite with one large apophysis (fold) and two smaller apophyses on prolateral side; with indistinct retrolateral parallel ridges.

 LEGS. Femur 1 with single row of ~23 ventral spines; without curved hairs; few vertical hairs (Figs 119–120); retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct except 2–3 distally; tarsal organs capsulate, with round or slightly irregular rim (Figs 122–123).

Male (variation)
Tibia 1 in 82 males: 6.8–9.9 (mean 8.5). Chelicerae maximum width (N = 43): 0.46–0.62 (mean 0.55); procursus length (N = 46): 0.86–1.00 (mean 0.92). Coloration of fresh specimens very similar to H. reini (cf. Figs 7–8), with distinct pattern on abdomen. Ventral dark band on abdomen variably distinct, section behind gonopore with 2–4 longitudinal bands.

Female
In general similar to male (cf. Fig. 8) but without spines on legs. Without stridulatory apparatus between carapace and abdomen; with fine cheliceral stridulatory ridges as in male (Fig. 114; distances between ridges 3 μm). Tibia 1 in 103 females: 5.1–8.8 (mean 6.9). Epigynum as in Figs 101–106 and 127–128, main epigynal plate triangular to semicircular, weakly protruding; only posteriorly laterally strongly sclerotized; with pair of variably distinct pockets (distance between pockets 0.32–0.35); internal sclerotized arc and median round structure variably visible in uncleared specimens; posterior epigynal plate large but simple; pair of low but distinct elevations in front of epigynum. Internal genitalia (Figs 99–100, 107–110) with triangular pore plates converging anteriorly, dorsal are simple and slender, ventral arc laterally strongly widened, medially strong, with simple median pouch.

Natural history
The biology of this common Spanish spider has apparently been little studied. According to Wiehle (1933) it occupies similar habitats as H. hispanicus (i.e., wall niches, rock cavities, etc.). The domed web was described as having a surprisingly regular mesh; the size of the dome is similar to H. hispanicus (i.e., approximately 35–40 cm), but the silk puffs are not as close together as in H. hispanicus. Females lay up to 50 eggs per egg-sac and produce up to three egg-sacs per season (Wiehle 1933).
Distribution
Widely distributed in southern and eastern Spain (Fig. 3), where it occurs from sea level up to 2500 m a.s.l. (Albergue Universitario). I have not seen any specimens from central-western Spain (Castile and León, Extremadura, and Madrid), and consider all previous records from this region (Fernández Galiano 1910 in Ferrández et al. 2006; Barrientos & Ferrández 1982; Ferrández et al. 2006) dubious. I also follow Brignoli (1971a) in considering Simon’s (1873) statement about the presence of *H. caudatus* in Sicily as dubious to highly improbable.

*Holocnemus hispanicus* Wiehle, 1933
Figs 4, 129–162

*Holocnemus hispanicus* Wiehle, 1933: 241, figs 1, 2c, 4–6, 7a–b, 8.


Remark
Wiehle (1933) did not mention type specimens in the original description, and none of the presumed syntypes listed below is labeled as type. However, most or all of these specimens originate from the type locality, and most were collected in May 1930, which is the date mentioned in the original description. Wiehle kept and reared specimens for several generations, and some specimens listed under non-type material may actually be descendants of the specimens he collected in May 1930. Some were preserved between June and November 1930, suggesting that these may partly be specimens he collected in May 1930, partly the first reared generation that became adult in November and December 1930 (Wiehle 1933); these are listed under types. Several SMF labels seem to be erroneous: it seems very unlikely that specimens were collected in the field on exactly the same days that others were preserved after being reared in the lab (25 Apr. 1936, 15 Jun. 1936).

Diagnosis
Distinguished from nominal congeners and from representatives of *Crossopriza* by shape of procursus (Figs 136–138; distal prolateral transparent process, ventral sclerite proximally wide and partly membranous), by shape of distal bulbal sclerite (Figs 139–141; trapezoidal in prolateral view, with one rounded process on prolateral side), and by epigynum with anteriorly converging furrows and pair of internal sclerites usually visible in uncleared specimens (Figs 132–134); from the two only syntopic Smeringopinae (*H. pluchei*, *H. caudatus*) also by combination of: unmodified sternum in males and females, only one modified hair on each male cheliceral apophysis (Figs 142, 150), and slender female palp.

Type material (see Remark above)

**Syntypes**

SPAIN – Andalusia • 1 ♂, 1 ♀; Granada; 37.18° N, 3.59° W; May 1930; H. Wiehle leg.; MNHH Ar 10335 • 1 ♀; same collection data as for preceding; preserved on 25 Jun. 1930; SMF 19314 • 1 ♂; presumably same collection data as for preceding; preserved on 4 Nov. 1930; SMF 19313 • 1 ♀; mislabeled as “*Crossopriza semicaudata*”; same collection data as for preceding; preserved on 5 Nov. 1930; SMF 19311 • 1 ♀; same locality as for preceding; 1928; H. Wiehle leg.; SMF 19306 • 1 ♂; same collection data as for preceding; preserved on 19 Aug. 1930; SMF 19312.
Other material examined

SPAIN – Andalusia • 3 ♂, 5 ♀, 2 juvs; Granada; 37.18° N, 3.59° W; Jul. 1934; M. Schröder leg.; SMF 11472–73, 19309–19310, 19315 • 1 ♀; same locality as for preceding; 19 Jan. 1935; collector unknown; SMF 11476 • 1 ♂; same locality as for preceding; reared and preserved on 25 Apr. 1936; collector unknown; SMF 19307 • 1 ♂; same locality as for preceding; reared and preserved on 1 Apr. 1936; collector unknown; SMF 19305 • 1 ♀; Granada; 16 Aug. 1924; M.D. Leonard leg.; AMNH • 1 ♂, 2 ♀; Granada, Guadix (Paulencu de Guadix); 37.293° N, 3.168° W; 18 Jul. 1971; A. Senglet leg.; MHNG • 1 ♂, 4 ♀; Granada, La Calahorra (Ferreira); 37.174° N, 3.047° W; 17 Jul. 1971; A. Senglet leg.; MHNG • 4 ♀, 6 ♀; Granada, Huéneja; 37.176° N, 2.948° W; 16 Jul. 1971; A. Senglet leg.; MHNG • 1 ♂, 2 ♀; Granada, E of Guadix, Baza; 37.49° N, 2.79° W; field margin; 19 Feb. 1983; K. Thaler leg.; ZFMK Ar 22350 • 3 ♂, 5 ♀; Granada, Puebla de Don Fadrique; 37.958° N, 2.434° W; 1000–1200 m a.s.l.; 6 Jul. 1971; A. Senglet leg.; MHNG • 1 ♀; Granada, “Sierra Havana” (locality not identified); 1000 m a.s.l.; 29 Sep. 1953; collector unknown; SMF 8802 • 1 ♀; Granada, Sima Rica de Alhama; 37.055° N, 4.105° W; 1190 m a.s.l.; 10 Dec. 1983; C. Ribera leg.; CRBA 2062 • 1 ♂; Granada, Piñar, Cuevas de Pagarrecio; 37.442° N, 3.416° W; 1035 m a.s.l.; 25 May 2013; “GEG” leg.; CRBA 5132 • 1 ♀; Málaga, between Periana and Ventas Zafarrayas; 36.944° N, 4.131° W; 30 Oct. 1983; A. Russell-Smith; under stones in rocky fallow; ZFMK Ar 23882 • 1 ♂, 2 juvs; Málaga, 10 km N of Málaga, Rio Guadalmedina; 36.802° N, 4.435° W; 5 Apr. 1997; R. Bosmans leg.; stones in riverbed; CRB • 2 ♂, 15 ♀; Málaga, Antequera; 37.02° N, 4.56° W; 1–2 Aug. 1969; A. Senglet leg.; MHNG • 1 ♀; Málaga, Pizarra, along Rio Guadalhorce; 36.77° N, 4.71° W; 17 Dec. 1997; R. Bosmans leg.; grassland; CRB • 1 ♂, 1 juv.; Málaga, Fuengirola; 36.54° N, 4.63° W; 26 Jun. 1969; A. Senglet leg.; MHNG • 1 ♂, 1 ♀; Málaga, San Pedro de Alcántara; 36.494° N, 4.99° W; 23 Jul. 1969; A. Senglet leg.; MHNG • 1 ♂, 4 ♀; Málaga, Ronda; 36.74° N, 5.16° W; 20–23 Jul. 1969; A. Senglet leg.; MHNG • 3 ♂, 4 ♀; same collection data as for preceding; 21 Jun. 1969; MHNG • 1 ♀; Málaga, Ronda; 36.74° N, 5.16° W; 750 m a.s.l.; 12 Aug. 1991; R. Bosmans leg.; stones; CRB • 2 ♂, 5 ♀; Jaén, “Hinojares/Cazorla”; 37.72° N, 2.99° W–37.91° N, 3.00° W; 19 Jul. 1971; A. Senglet leg.; MHNG • 3 ♂, 5 ♀; Jaén, Sierra de Cazorla, El Sagreco; 37.946° N, 2.945° W; 22 Jul. 1971; A. Senglet leg.; MHNG • 1 ♀; Jaén, Cazorla, Ruta Río Borosa; 37.950° N, 2.947° W; 9 May 1919; A. Pérez leg.; ZFMK Ar 22351 • 1 ♀; Jaén, Santo Tomé, “Cueva GEV 2”; 38.031° N, 2.992° W; 31 Dec. 2006; collector unknown; CRBA 1636 • 1 ♂, 3 ♀, 1 juv.; Jaén, Navas de Tolosa; 38.285° N, 5.387° W; 400 m a.s.l.; 12 Apr. 1998; R. Bosmans leg.; stones in planted Pinus forest; CRB • 1 ♂; Jaén, Santiago de la Espada-Pontones, Cueva del Jabali; 38.118° N, 2.647° W; 1530 m a.s.l.; 14 Apr. 2002; “GEV” leg.; CRBA 3867 • 1 ♂, 2 ♀, 1 juv.; Jaén, Hornos, Sima Irene; 38.191° N, 2.784° W; 1090 m a.s.l.; 15 Feb. 2004; “GEV” leg.; CRBA 5013 • 1 ♂, 1 juv.; Jaén, Hornos, Sima Ives-E; 38.217° N, 2.711° W; 1060 m a.s.l.; 31 Oct. 2004; “GEV” leg.; CRBA 5028 • 2 ♀, 2 juvs; Córdoba, Villavicisosa; 38.076° N, 5.014° W; 29 Jun. 1969; A. Senglet leg.; MHNG • 1 ♂, 7 ♀, 1 juv.; Córdoba, Peñarroya; 38.30° N, 5.27° W; 30 Jun. 1969; A. Senglet leg.; MHNG • 1 ♂, 4 ♀; Sevilla, Cañada de la Sierra; 37.93° N, 5.76° W; 2 Jul. 1969; A. Senglet leg.; MHNG • 4 ♀, 3 ♀, 1 juv.; Sevilla, Rio Viar; 37.64° N, 5.84° W; 24 Jun. 1969; A. Senglet leg.; MHNG • 2 ♂, 3 ♀; Sevilla, Alcalá del Río; 37.517° N, 5.983° W; 22 Jun. 1969; A. Senglet leg.; MHNG • 1 ♂, 7 ♀, 1 juv.; Sevilla, Viuda; 37.38° N, 5.99° W; 2 Jul. 1999; T. Lyen leg.; in building; CAS 9027125 • 1 ♂, 3 ♀, 1 juv.; Sevilla, E of Ronquillo, Embalse de Cala; 37.71° N, 6.13° W; 6 Apr. 1994; R. Bosmans leg.; CRB • 1 ♂; Sevilla, El Ronquillo, Embalse Minilla; 37.677° N, 6.185° W; 7 Apr. 1994; R. Bosmans leg.; stones in Quercus suber forest; CRB • 1 ♂, 6 ♀, 4 juvs; same locality as for preceding [W of Ronquillo]; 5 Apr. 1994; R. Bosmans leg.; CRB • 1 ♂, 6 ♀; Huelva, Santa Olalla [del Cala]; 37.906° N, 6.230° W; 4 Jul. 1969; A. Senglet leg.; MHNG • 2 ♀, 1 juv.; Huelva, SW of Higuera de la Sierra; 37.83° N, 6.44° W; 400 m a.s.l.; 7 Apr. 1996; R. Bosmans leg.; litter and stones in Quercus suber forest; CRB • 18 ♂, 23 ♀ (partly used for SEM); Huelva, “Alajár/Aracena”; 37.88° N, 6.66° W–37.89° N, 6.56° W; 7 Jul. 1969; A. Senglet leg.; MHNG • 2 ♂, 3 ♀, 1 juv.; Huelva, S of Valverde del Camino; 37.555° N, 6.761° W; 270 m a.s.l.; 2 ♂, 4 ♀; Huelva, S de Cazorla, El Sagreo; 37.946° N, 2.945° W; 19 Feb. 1983; K. Thaler leg.; ZFMK Ar 22350 • 18 ♂, 23 ♀ (partly used for SEM); Huelva, “Alajár/Aracena”...
Figs 129–135. *Holocnemus hispanicus* Wiehle, 1933. 129–131. Male from Spain, Cáceres, Conquista de la Sierra (CRB); left palp, prolateral, dorsal, and retrolateral views. 132. Female from Spain, Málaga, Ronda (CRB); abdomen, ventral view. 133. Female from Spain, Granada, “Sierra Havana” (SMF 8802); epigynum, ventral view. 134. Female from Spain, Málaga, between Periana and Ventas Zafarrayas (ZFMK Ar 23862); epigynum, ventral view. 135. Female from Spain, Badajoz, SW of Zafra (CRB); detail of female left femora 3 and 4, retrolateral-ventral view. Scale bars: 129–134 = 0.5 mm; 135 = 0.2 mm.
Apr. 1997; R. Bosmans leg.; stones in *Eucalyptus* plantation; CRB. – **Region of Murcia** • 3 ♂♂, 3 ♀♀; Caravaca [de la Cruz]; 38.10° N, 1.86° W; 5 Jul. 1971; A. Senglet leg.; MHNG • 2 ♂♂, 1 ♀; W of Alhama de Murcia, Sierra Espuña; 37.856° N, 1.571° W; 1235 m a.s.l.; 4 Jun. 2010; S. Huber and A. Schönhofer leg.; *Pinus* forest, open slopes; SMF • 1 ♂; Jumilla, Sierra de las Nieves, Cueva del Portachuelo; 38.47° N, 1.32° W; 5 Apr. 1983; C. Ribera leg.; CRBA 2008. – **Castilla-La Mancha** • 3 ♂♂, 4 ♀♀; Ciudad Real, Fuencalciente; 38.406° N, 4.304° W; 3 Aug. 1969; A. Senglet leg.; MHNG • 1 ♂♂; Ciudad Real, Caracuel (Laguna); 38.828° N, 4.063° W; 4 Aug. 1969; A. Senglet leg.; MHNG • 1 ♂♂, 2 ♀♀, 3 juvs; Ciudad Real, Ciudad Real; 39.98° N, 3.93° W; 20 Apr. 2011; E. Morano leg.; CEM 1732 • 1 ♀; Ciudad Real, Daimiel, Tablas de Daimiel; 39.13° N, 3.70° W; 13 May 1984; C.M. Veiga and M.A. Ferrández leg.; CEM 1440 • 6 ♂♂, 6 ♀♀; Ciudad Real, Ruidera; 38.975° N, 2.890° W; 7–8 Aug. 1969; A. Senglet leg.; MHNG • 1 ♂♂; Ciudad Real, Campo de Criptana; 39.40° N, 3.12° W; 650 m a.s.l.; 13 Apr. 1998; R. Bosmans leg.; stones in open *Quercus suber* forest; CRB • 4 ♀♀; Albacete, Almansa; 38.87° N, 1.10° W; 950 m a.s.l.; 3 Apr. 1996; R. Bosmans leg.; stones in maquis; CRB • 9 ♂♂, 12 ♀♀, 9 juvs; Toledo, Escalona del Alberche; 40.167° N, 4.40° W; 14 Jun. 1969; A. Senglet leg.; MHNG • 1 ♂♂; Toledo, near Aranjuez, Sesena; 40.10° N, 3.70° W; 10 Jun. 1952; Franz leg.; SMF 19436 • 2 ♂♂, 6 ♀♀; Cuenca, Palomera; 40.067° N, 2.050° W; 27 Jun. 1971; A. Senglet leg.; MHNG • 1 ♂♂, 1 ♀; Guadalajara; 40.63° N, 3.15° W; Jun. 1907; collector unknown; MNHN Ar 10315. – **Extremadura** • 3 ♂♂, 2 ♀♀; Badajoz, Garbayuela; 39.05° N, 5.00° W; 17 Aug. 1969; A. Senglet leg.; MHNG • 2 ♂♂, 2 ♀♀; Badajoz, Puebla de Alcocer; 38.98° N, 5.26° W; 12 Apr. 1994; R. Bosmans leg.; among stones in grassland; CRB • 1 ♂♂; Badajoz, Peloche, Embalse de Garcia de Sola; 39.20° N, 5.16° W; 12 Apr. 1994; R. Bosmans leg.; CRB • 4 ♂♂, 3 ♀♀; Badajoz, Valdecaballeros; 39.24° N, 5.19° W; 18 Aug. 1969; A. Senglet leg.; MHNG • 3 ♂♂, 8 ♀♀, 4 juvs; Badajoz, Monesterio, Venta de Culebrin; 38.03° N, 6.22° W; 19 Jun. 1969; A. Senglet leg.; MHNG • 3 ♂♂; Badajoz, SW of Zafra, valley of Rio Bodiôn; 38.410° N, 6.425° W; 2 Apr. 1997; R. Bosmans leg.; stones; CRB • 1 ♂♂, 1 ♀; Cáceres, Conquista de la Sierra; 39.350° N, 5.735° W; 14 Apr. 1994; R. Bosmans leg.; open *Quercus suber* forest; CRB • 1 ♂♂, 4 ♀♀; Cáceres, Jarandilla [de la Vera]; 40.126° N, 5.658° W; 22–23 Aug. 1969; A. Senglet leg.; MHNG • 1 ♂♂, 1 ♀; Cáceres, Jerte; 40.22° N, 5.75° W; 24 Aug. 1969; A. Senglet leg.; MHNG. – **Castile and León** • 2 ♀♀; Ávila, El Barco de Ávila; 40.36° N, 5.52° W; 25 Aug. 1969; A. Senglet leg.; MHNG • 5 ♂♂, 4 ♀♀; Segovia, “Ayllón/Riaza”; ~41.36° N, 3.43° W (tentative coordinates between Ayllón and Riaza); 1 Sep. 1971; A. Senglet leg.; MHNG • 1 ♂♂, 1 ♀; Cáceres, Jerte; 40.22° N, 5.75° W; 24 Aug. 1969; A. Senglet leg.; MHNG. – **Portugal** – **Faro** • 1 ♂; Quarteira; 37.07° N, 8.10° W; Aug. 1982; J. Murphy leg.; MMUE Murphy #10374 • 4 ♀♀; Silves, Norinha; 37.20° N, 8.40° W; 14 Sep. 1969; A. Senglet leg.; MHNG • 3 ♂♂, 9 ♀♀; Barragem do Arrade; 37.238° N, 8.376° W; 16 Feb. 2006; R. Bosmans leg.; stones in *Pinus* forest; CRB • 2 ♂♂, 1 ♀; Monchique; 37.32° N, 8.55° W; 13 Sep. 1969; A. Senglet leg.; MHNG • 1 ♂♂; Odiaxere; 37.15° N, 8.66° W; 13 Feb. 2006; R. Bosmans leg.; stones in wet grassland; CRB • 1 ♂♂, 1 ♀; Salema, Boca do Río; 37.066° N, 8.825° W; 14 Feb. 2006; R. Bosmans leg.; stones around castle ruins; CRB. – **Beja** • 1 ♂; Moura, Sobral da Adiça; 38.03° N, 7.29° W; 27 Mar. 2013; J. Dolansky leg.; CJL 8784 • 3 ♂♂, 3 ♀♀; Serpa, [Rio] Guadiana; 37.98° N, 7.65° W; 1 Aug. 1971; A. Senglet leg.; MHNG • 1 ♂♂, 1 ♀; Mértola; 37.64° N, 7.66° W; 30 Mar. 2013; J. Dolansky leg.; CJL 8776 • 1 ♂♂, 1 juv.; São Teotónio W; 37.51° N, 8.72° W; 16 Apr. 2011; R. Bosmans leg.; CRB. – **Sétubal** • 3 ♂♂, 5 ♀♀; Santiago, Azinheira
Figs 136–145. *Holocnemus hispanicus* Wiehle, 1933; male from Spain, Cáceres, Conquista de la Sierra (CRB), female from Spain, Málaga, Ronda (CRB). 136–138. Left procursus, prolateral, dorsal, and retrolateral views; arrow: prolateral transparent process. 139–141. Left genital bulb, prolateral, dorsal, and retrolateral views. 142–143. Male chelicerae, frontal and lateral views. 144–145. Cleared female genitalia, ventral and dorsal views; arrows: pockets. Abbreviations: bs = basal sclerite; ds = distal sclerite; vs = ventral sclerite. Scale bars = 0.3 mm.

dos Barros; 38.07° N, 8.42° W; 2 Aug. 1971; A. Senglet leg.; MHNG. – **Leiria** • 1 ♀; near Grutas de San António; 39.537° N, 8.742° W; 1–3 May 1991; V.D. Roth leg.; CAS 9027123 • 1 ♂; Mira de Aire, near Gruta de Pena; 39.45° N, 8.71° W; 19 Apr. 2011; R. Bosmans leg.; CRB. – **Guarda** • 2 ♂♂, 3 ♀♀; Fornos de Algodres, Maceira; 40.69° N, 7.47° W; 9 Aug. 1971; A. Senglet leg.; MHNG. – **Bragança** • 6 ♂♂, 3 ♀♀; [Torre de] Moncorvo; 41.17° N, 7.05° W; 27 Aug. 1969; A. Senglet leg.; MHNG.

**Redescription**

**Male** (10 km N of Málaga, CRB)

**Measurements.** Total length 3.9, carapace width 1.4. Distance PME–PME 105 μm; diameter PME 100 × 130 μm; distance PME–AME 30 μm; diameter AME 80 μm; distance AME–AME 40 μm. Leg 1: 31.2 (9.0 + 0.6 + 8.1 + 11.4 + 2.1), tibia 2: 5.6, tibia 3: 4.2, tibia 4: 5.0; tibia 1 L/d: 54; femora 1–4 diameters: 0.21, 0.19, 0.17, 0.18.

**Color** (in ethanol). Carapace ochre-yellow; ocular area, carapace pit and posterior median area slightly darker, with brown V-mark behind ocular area; sternum brown, with dark brown radial marks; legs ochre-yellow, without darker rings, with black lines on femora and tibiae; abdomen ochre-gray, with some dark marks dorsally and laterally; ventrally with distinct black median band, partly disrupted, with three parallel longitudinal marks behind gonopore.

**Body.** Habitus similar to *H. caudatus* (cf. Fig. 7) but abdomen less elongated above spinnerets (rather as in *Crossopriza tiwi* sp. nov.; cf. Fig. 394). Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin (cf. Fig. 148). Clypeus unmodified but rim more sclerotized than in female. Sternum wider than long (1.00/0.70), unmodified, without indentations as in *H. caudatus* and *H. reini*. Abdomen slightly elongated, dorso-posteriorly angular. Gonopore with six epiandrous spigots (Fig. 161); ALS with one widened spigot and one pointed spigot (Fig. 159).

**Chelicerae.** As in Figs 142–143, with pair of frontal lateral apophysies, each with one large modified cone-shaped hair (Fig. 150); distance between tips of modified hairs: 310 μm; without proximal frontal protrusion; lateral stridulatory ridges distinct (Fig. 149); distances between ridges proximally ~14 μm, distally ~6 μm.

**Palps.** As is Figs 129–131; coxa with rounded retrolateral hump; trochanter barely modified; femur curved towards dorsal, distally widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, without retrolateral transversal line, without retrolateral proximal process; femur-patella joints slightly shifted toward prolateral side; tibia very large compared to femur, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; palpal tarsal organ capsulate (Fig. 155); procursus (Figs 136–138) straight, few dorsal hairs slightly curved upwards; proximally on prolateral side with strong hump free of hairs, with brush of hairs distal of hump, procursus tip with strong ventral sclerite slightly spiraling and proximally wide and partly semitransparent, on prolateral side with semitransparent pointed process (arrow in Fig. 137); genital bulb (Figs 139–141) with simple basal sclerite connected to distal (main) sclerite; distal sclerite large and mostly flat, with distinctive prolateral rounded process; sperm duct opening prolaterally (arrow in Fig. 154; not visible in dissecting microscope).

**Legs.** Femur 1 with single row of ~26 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct except 2–3 distally.

**Male** (variation)

Tibia 1 in 134 males: 6.1–11.8 (mean 8.7). Most specimens with pair of brown marks behind carapace pit, close to median line. Abdomen often higher posteriorly than anteriorly; posterior elongation of
abdomen variably long; abdomen usually with many whitish marks. Difference in diameter between femur 1 and other femora stronger in larger males (e.g., large male from Ronda with tibia 1 length of 10.2: femur 1 diameter 0.38; femora 2–4 diameters 0.29–0.31). Rarely with spines on femur 2 (only when leg 1 on corresponding side is missing). Distance between tips of modified hairs on cheliceral apophyses: ~285–375 μm.

Female
In general similar to male but without spines on legs, with stridulatory apparatus between carapace and abdomen consisting of pale processes posteriorly on carapace (distance ~0.66) and barely visible plates anteriorly on abdomen; with cheliceral stridulatory ridges similar to male but in much smaller file (Fig. 151; distances between ridges ~12 μm). Tibia 1 in 212 females: 4.3–10.4 (mean 7.5). Epigynum as in Figs 132–134, main epigynal plate bean-shaped, weakly protruding, with distinctive pair of furrows converging anteriorly (distance of closest/widest sections of furrows: ~240/440 μm), internal arc and pair of dark round structures usually visible in uncleared specimens; posterior epigynal plate large but simple, anterior median part usually lighter; pair of low but distinct elevations in front of epigynum. Internal genitalia (Figs 144–145) with elongate pore plates converging anteriorly, dorsal arc relatively simple [Wiehle’s (1933) “Receptaculum seminis” is just an elongated sclerotized fold along the dorsal arc], ventral arc mediadly widened and heavily sclerotized, with distinctive indentation posteriorly; apparently without median ventral pouch but with pair of small ventral processes.

Natural history
This species is common in wall niches, rock crevices, and under rocks, generally less exposed than H. pluchei (Wiehle 1933; Benhadi-Marín et al. 2013). The webs have a diameter of approximately 35–40 cm and a relatively regularly-woven inner dome. They are sometimes provided with small silk puffs, closer together than in webs of H. caudatus (Wiehle 1933). Males undergo six or seven molts before adulthood, females one more (Wiehle 1933). In southern Spain (Granada), adult males do not seem to overwinter (only females and juveniles were present in May; Wiehle 1933). Wiehle (1933) gave a brief description of copulation, and Senglet (2001) observed a case where a male almost completely destroyed the female web after mating. Egg-sacs contained approximately 20–25 eggs; mean egg diameter was 682 μm (Wiehle 1933). In two cases, Wiehle (1933) counted nine days from copulation to egg-laying, and 37 days from egg-laying to eclosion; females produced two egg-sacs per season; Senglet (1972) observed that H. hispanicus and Spermophorides petraea (Senglet, 1972) seem to compete for the same microhabitat; in Barco de Ávila, he suspected that S. petraea had largely replaced H. hispanicus; in Jerte, S. petraea seemed to prefer piles of rocks, while H. hispanicus occupied holes in rock walls.

Distribution
Widely distributed on the Iberian Peninsula (Fig. 4). I have not seen any specimens from north of approximately ~42.5° N, which agrees with the observation that the species seems to be absent from the Cantabrian Range (C.E. Prieto, pers. com., 9 Feb. 2021).

Maghreba gen. nov.
urn:lsid:zoobank.org:act:948E7573-BBF2-435C-BB9B-BDE8DE507173
Figs 9–12, 163–350

Type species
Maghreba amezyan gen. et sp. nov.

Diagnosis
Males are easily distinguished from other representatives of the spotted-leg clade of Smeringopinae by numerous details of the palp (coxa with distinct retrolateral-ventral process, Fig. 205; femur with
small dorsal apophysis, Fig. 205; procursus tip bent towards dorsal, Fig. 166; membranous transparent process accompanying ventral sclerite of procursus, Fig. 166; bulbal sclerite with deep retrolateral pocket, Fig. 169). Females are easily distinguished from *Holocnemus reini* (which occurs in the same geographic region) by the much shorter abdomen that is only weakly angular rather than pointed posteriorly (Figs 9–10, 195–202); females closely resemble certain representatives of *Crossopriza* (which shares at least parts of Algeria with *Maghreba* gen. nov.) and cannot be assigned with confidence to any of the two genera if not accompanied by males; usually the distance between the eye triads is larger in *Maghreba* gen. nov. than in *Crossopriza* (distance PME–PME usually ≥1.1 × PME diameter in *Maghreba* gen. nov. vs ≤1.1 in *Crossopriza*).

**Etymology**

The genus name is derived from the Maghreb, the western part of North Africa and the Arab World; gender feminine.

**Description**

**Male**

**BODY.** Total body length ~3.0–4.5; carapace width ~1.2–1.7. Carapace with deep central pit and pair of shallow furrows diverging from posterior side of pit toward posterior rim (cf. Figs 305, 319); ocular area slightly raised, eye triads relatively far apart (distance PME–PME usually 1.1–1.5 × PME diameter, in the slightly troglomorphic *M. kahfa* gen. et sp. nov. 2.1), each secondary eye (especially PME) accompanied by indistinct elevation (“pseudo-eyes”; cf. Huber 2009a), PME oval, AME large (~60–105% of PME small diameter). Clypeus high, unmodified. Abdomen oval, dorsally posteriorly usually slightly angular (e.g., Figs 9, 196, 258). Male gonopore with 4–6 epiandrous spigots (sometimes asymmetric: 2+3; Figs 316, 320–321), ALS with only two spigots each: one large widened spigot and one pointed spigot (cf. Figs 317, 329); PMS with two spigots each; PLS without spigots.

**COLOR.** In general ochre-yellow to light brown. Carapace mostly pale, with darker median mark, without lateral marks (Figs 195–202); sternum light to dark brown, with darker radial marks. Legs without or with indistinct darker rings, with oval to short longitudinal line-shaped dark marks on femora and tibiae, sometimes also a few on metatarsi (Figs 188–189, 206–207). Abdomen usually with distinct dorsal and ventral patterns: dark heart-mark and further dark and whitish marks dorsally and laterally, ventral median band variably distinct.

**CHELICERAE.** Chelicerae with one large modified (cone-shaped) hair on each cheliceral apophysis (Figs 170, 306, 323); usually with fine stridulatory ridges (Figs 307, 324), distances between ridges in *M. amezyan* gen. et sp. nov. and *M. aurouxi* gen. nov. ~3.5 μm; with more distinct ridges in *M. kahfa* gen. et sp. nov., apparently without ridges in *M. gharbija* gen. et sp. nov.

**PALPS.** In general as in Figs 203–205; coxa with distinct retrolateral-ventral process; trochanter barely modified, slightly protruding ventrally; femur widened distally, dorsal line straight except for small dorsal apophysis, with proximal retrolateral process, without or with very indistinct transversal dark line on retrolateral side, with stridulatory pick (modified hair) on prolateral side; femur-patella joints shifted toward prolateral side (arrows #3 in Fig. 203); tibia-tarsus joints shifted toward retrolateral side (arrows #4 in Fig. 205); palpal tarsus without dorsal macrotrichia, palpal tarsal organ capsule (Figs 311, 327); procursus dorsally with straight or weakly curved hairs; procursus (e.g., Figs 164–166, 309) with hairless prolateral process, without ventral ‘knee’, distally with ventral sclerite accompanied by membranous transparent to semitransparent process, procursus tip curved towards dorsal, with one or few transparent hair-like processes on retrolateral side (barely visible in light microscope); genital bulb (e.g., Figs 167–169, 310) with basal sclerite (bs in Fig. 169) connecting to tarsus; basal sclerite sometimes with distinct dorsal (slightly retrolateral) apophysis (e.g., Fig. 212); distal (main) bulbal sclerite with strong dorsal
process, variable number of ventral teeth, and large retrolateral pocket (arrow in Fig. 169); sperm duct opening in membranous area on prolateral side of distal bulbal sclerite (arrow in Fig. 310).

**LEGS.** Legs long and relatively thin, leg 1 length ~20–45, tibia 1 length ~6–12, tibia 2 longer than tibia 4 (~1.1–1.2 ×). Tibia 1 L/d usually ~50–65, 80 in the slightly troglomorphic *M. kahfa* gen. et sp. nov. Femur 1 usually thicker than other femora; femur 1 with one row of ventral spines (Fig. 206), rarely (in very small males) without spines; spines proximally gradually transforming into regular setae; spines never present on femur 2 or on tibia 1; legs without curved hairs; in most species with slightly higher than usual density of short vertical hairs prolaterally-dorsally on one or more tibiae; retrolateral trichobothrium in proximal position (at 2–4% of tibia length in tibia 1), prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudo-segments very indistinct except ~2–5 distally, proximally with indistinct irregular platelets rather than distinct rings. Tarsal organs of legs capsulate, with round or weakly undulating rim (Figs 313–315, 328).

**Female**

In general very similar to male; chelicerae with even less distinct and smaller stridulatory files or without stridulatory files (Figs 308, 325); legs slightly shorter than in male, without spines. Usually with pair of indistinct processes posteriorly on carapace (arrows in Figs 305, 319) acting against pair of poorly visible plates on abdomen. Epigynum usually consisting of large, simple anterior plate and short but wide posterior plate (e.g., Figs 175–178); anterior plate with pair of low pockets (pits) (Figs 318, 330), in some species with pair of variably distinct processes (e.g., Fig. 238); without bulging areas in front of anterior plate. Internal genitalia (e.g., Figs 179–181) with sclerotized arc that consists of dorsal and ventral parts (da and va in Fig. 179) and is variably visible in uncleared specimens; uterus externus sometimes with small median ventral structure (pouch or pocket?), sometimes visible as round structure in untreated specimens (e.g., Figs 178, 220); pore plates large, flat, widening towards median line, left and right plates usually clearly separated except in *M. kahfa* gen. et sp. nov. (Fig. 187); pores usually in groups rather than homogeneously distributed.

**Distribution**

Most records are from the Moroccan Atlas (Fig. 163), but the genus ranges into Algeria and may in fact be more diverse in the Algerian Atlas as well. A single male specimen from the Algerian Hoggar Mountains, Tamanrasset, In [Ain] Zbib (22.748° N, 5.575° E) deposited in CRB (shown in Fig. 163 but not formally described) suggests that the genus actually has a much wider distribution in NW Africa. The spiders have been found from sea level up to over 2000 m a.s.l.

**Relationships**

Together with *Holocnemus*, *Stygopholcus*, and *Crossopriza*, *Maghreba* gen. nov. is clearly a representative of the spotted-leg clade (Fig. 1) but beyond that relationships remain obscure. The sister-group relationship with *Stygopholcus* suggested by the cladistic analyses using equal character weights and successive character weighting is supported by a single homoplastic character and is thus unconvincing. Geographically, the genus is closer to *Crossopriza* with which it also shares a greater general similarity than with *Stygopholcus*. In fact, implied character weighting with conc =1 and conc = 2 suggested a trichotomy including *Maghreba* gen. nov., *Holocnemus hispanicus*, and *Crossopriza*. However, no synapomorphy has been found to support a sister-group relationship between *Maghreba* gen. nov. and *Crossopriza*, or between *Maghreba* gen. nov. and *H. hispanicus*.

**Composition**

The genus currently includes eight named species, all of which are treated below: seven new species plus *M. aurouxi* gen. nov. that is newly transferred from *Holocnemus*. In the examined collections, only
one further species was seen, represented by a single male specimen from Algeria deposited in CRB (see Distribution above). The palp of this species strongly resembles the Moroccan species described below; it is easily distinguished from all Moroccan species by the presence of two pairs of proximal processes on the male chelicerae; it further differs by a distinct subdistal dorsal process on the procursus and by strongly developed cheliceral stridulatory ridges.

Fig. 163. Known distribution of *Maghebra* gen. nov. A. Complete known distribution, including an undescribed Algerian species in CRB; the approximate extent of the Atlas Mountains is shown (1000 m altitude isolines, taken from https://www.britannica.com/). B. Known distributions of named species. Asterisk: specimens tentatively assigned to *M. aurouxi* gen. nov.
Natural history

Different species seem to prefer different microhabitats: some appear restricted to caves (twilight area and slightly beyond), others occupy sheltered spaces among and under rocks and small cavities in the ground, and some live quite exposed among the leaves of palms and other objects close to the ground. Webs usually consist of a domed sheet and are often modified at the center to include a further bell-shaped dome that is provided with silk puffs (Figs 11–12). At disturbance the spiders vibrate or run towards the back; whether this behavior is species-specific or not is unknown. For further details on individual species, see natural history sections below.

Identification key

1. Dorsally-directed tip of procursus short and wide (Fig. 245); distal bulbal sclerite ventrally with 3–4 large teeth and several tiny teeth (Figs 246, 248); epigynum triangular rather than semicircular (Fig. 251) .................................................................................. M. nkob gen. et sp. nov.
   – Dorsally-directed tip of procursus long and slender (e.g., Figs 166, 210); distal bulbal sclerite ventrally either with two or with many (~14) large teeth (e.g., Figs 167, 211); epigynum semicircular or oval rather than triangular (e.g., Figs 178, 218) ................................................................. 2

2. Distal bulbal sclerite ventrally with ~14 large teeth (Fig. 211); epigynum relatively short and wide, posteriorly slightly indented, medially lighter than laterally, with dark internal structure visible anteriorly in untreated specimens (Figs 218–220) ................................................................. M. saghro gen. et sp. nov.
   – Distal bulbal sclerite ventrally with two large teeth; epigynum different ........................................ 3

3. Procursus tip with dark process between ventral sclerite and transparent process (Figs 267, 336); epigynum with pair of small processes and dorsal arc of internal female genitalia without pair of posterior processes .................................................................................. 4
   – Procursus tip without process between ventral sclerite and transparent process; female genitalia different (i.e., either epigynum without processes or dorsal arc of internal female genitalia with pair of posterior processes; e.g., Figs 181, 303) ................................................................. 5

4. Ventral teeth on distal bulbal sclerite long (Figs 270, 273); female genitalia as in Figs 276–280, 282–284 .................................................................. M. gharbija gen. et sp. nov.
   – Ventral teeth on distal bulbal sclerite short (Figs 339, 342); female genitalia as in Figs 345–350 .... .................................................................. M. djabailija gen. et sp. nov.

5. Dorsal process of distal bulbal sclerite only slightly longer than ventral part (Fig. 232); epigynum with pair of large whitish processes (Fig. 238) .................................................................................. M. stifadma gen. et sp. nov.
   – Dorsal process of distal bulbal sclerite much longer than ventral part (Figs 167, 184, 295); epigynum with pair of small processes or without processes ................................................................. 6

6. Slightly trogloomorphic spider with reduced eye size (distance PME–PME = 2.1 × PME diameter) and very thin legs (male tibia 1 L/d 80); dorsal arc of internal female genitalia without or with very indistinct posterior processes (Figs 187, 194) ................................................................. M. kahfa gen. et sp. nov.
   – Eye size not reduced (distance PME–PME = 1.1–1.5 × PME diameter) and legs thicker (male tibia 1 L/d ~60–65); dorsal arc of internal female genitalia with small to distinct posterior processes (Figs 181, 303) ................................................................. 7

7. Large size (body size ~4.0, carapace width ~1.7), eye triads far apart (distance PME–PME = 1.5 × PME diameter); dorsal arc of internal female genitalia with small posterior processes (Fig. 181) .... .................................................................. M. amezyan gen. et sp. nov.
HUBER B.A., Revisions of Holocnemus and Crossopriza

Smaller size (body size ~3.0, carapace width ~1.2), eye triads closer together (distance PME–PME = 1.1 × PME diameter); dorsal arc of internal female genitalia with distinct posterior processes (Fig. 303) ............................................................ M. aurouxi (Barrientos, 2019) gen. et comb. nov.

Maghereba amezyan gen. et sp. nov.
urn:lsid:zoobank.org:act:CFA70C27-960B-436B-B01E-153F61575912
Figs 9–12, 163B, 164–181, 305–318

Diagnosis
Distinguished from known congeners by combination of: procursus with long and straight ventral sclerite and slender dorsally-directed tip (Fig. 166), distal bulbal sclerite with two ventral teeth of equal size and strongly protruding dorsal process (Fig. 167), epigynum without processes (Figs 175–178), dorsal arc of internal female genitalia with pair of small posterior protrusions (Fig. 181); from most congeners (except M. saghro gen. et sp. nov.) also by large body size and long legs (male tibia 1 length >11.0, female tibia 1 length >9.5).

Etymology
The species name is derived from the Berber name for Anti-Atlas, Atlas Amezyan; noun in apposition.

Type material
Holotype
MOROCCO – Guelmim-Oued Noun • ♂; between Lakhssas and Bouizakarne, “cave 1”; 29.2488° N, 9.7435° W; 1000 m a.s.l.; 15 Sep. 2018; B.A. Huber leg.; ZFMK Ar 22352.

Other material examined
MOROCCO – Guelmim-Oued Noun • 11 ♂♂, 14 ♀♀, 2 juvs (partly used for SEM); same collection data as for holotype; ZFMK Ar 22353, Ar 22354 • 1 ♀, 3 juvs (in pure ethanol); same collection data as for holotype; ZFMK Mor83 • 2 ♀♀, 1 juv.; same locality as for preceding (“Kef Hman, Tleta el Akhssas”); 26 Apr. 2000; Hernando leg.; CRBA 3738 • 3 ♂♂, 3 ♀♀, 3 juvs; “Cv de Tleta–Akhsas”, near Bouizakarne; 29.358° N, 9.754° W; 12 Mar. 2007; C. Ribera, Txasko, and A. Lopez leg.; CRBA.

Type material
Holotype
MOROCCO – Guelmim-Oued Noun • ♂; between Lakhssas and Bouizakarne, “cave 1”; 29.2488° N, 9.7435° W; 1000 m a.s.l.; 15 Sep. 2018; B.A. Huber leg.; ZFMK Ar 22352.

Other material examined
MOROCCO – Guelmim-Oued Noun • 11 ♂♂, 14 ♀♀, 2 juvs (partly used for SEM); same collection data as for holotype; ZFMK Ar 22353, Ar 22354 • 1 ♀, 3 juvs (in pure ethanol); same collection data as for holotype; ZFMK Mor83 • 2 ♀♀, 1 juv.; same locality as for preceding (“Kef Hman, Tleta el Akhssas”); 26 Apr. 2000; Hernando leg.; CRBA 3738 • 3 ♂♂, 3 ♀♀, 3 juvs; “Cv de Tleta–Akhsas”, near Bouizakarne; 29.358° N, 9.754° W; 12 Mar. 2007; C. Ribera, Txasko, and A. Lopez leg.; CRBA.

Assigned tentatively (see variation below)
MOROCCO – Souss-Massa • 9 ♂♂, 7 ♀♀; SW of Ida Ougnidif; 29.8348° N, 9.0247° W; 1380 m a.s.l.; 16 Sep. 2018; B.A. Huber leg.; small cave (rock shelter); ZFMK Ar 22355, Ar 22356 • 3 ♂♂, 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor85 • 3 ♂♂, 2 ♀♀; same locality as for preceding (“near Ait Baha”); 14 Mar. 2007; C. Ribera, Txasko, and A. Lopez leg.; CRBA • 1 ♂, 4 ♀♀; near Tafraoute; 29.681° N, 9.023° W; 1060 m a.s.l.; 13 Mar. 2007; C. Ribera, Txasko, and A. Lopez leg.; CRBA • 1 ♂; Ifri Tafounast–Tatawt–Taroudant; 30.058° N, 8.568° W; 22 Jul. 2006; Auroux, Comas, and Fadrique leg.; CRBA.

Description
Male (holotype)
Measurements. Total length 4.1, carapace width 1.7. Distance PME–PME 140 μm; diameter PME 120 × 130 μm; distance PME–ALE 20 μm; diameter AME 90 μm; distance AME–AME 20 μm. Leg 1: 44.8 (13.2 + 0.7 + 11.9 + 16.3 + 2.7), tibia 2: 7.9, tibia 3: 5.9, tibia 4: 6.8; tibia 1 L/d: 66; femora 1–4 diameters: 0.27, 0.24, 0.22, 0.20.

Color (in ethanol). Carapace pale gray, medially partly darker (brown V-mark behind ocular area; posterior part of pit darkened); sternum dark brown; legs ochre-yellow, with indistinct darker rings on
femora subdistally, patellae + tibiae proximally, and tibiae subdistally, tips of femora and tibiae whitish, with black lines on femora and tibiae, very few also on metatarsi; abdomen gray, with whitish marks dorsally and laterally, few indistinct darker marks posteriorly; ventrally with large brown mark in front of gonopore, median dark band and pair of lateral oval marks behind gonopore, dark brown area at spinnerets.

**Body.** Habitus as in Fig. 9. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin (cf. Fig. 305). Clypeus unmodified, rim not more sclerotized than in female. Sternum wider than long (1.15/0.85), unmodified. Abdomen slightly elongated, dorso-posteriorly weakly angular. Gonopore with five epiandrous spigots (Fig. 316); ALS with one widened spigot and one pointed spigot (cf. Fig. 317).

**Chelicerae.** As in Figs 170–171, with pair of frontal lateral apophyses, each with one large modified cone-shaped hair (Fig. 306); distance between tips of modified hairs: 440 μm; without proximal frontal protrusion; lateral stridulatory ridges fine (Fig. 307; distance between ridges ~2.5–3.0 μm) but clearly visible in dissecting microscope.

**Palps.** In general as in congeners (cf. Figs 203–205, 224–226); coxa with small retrolateral-ventral process; trochanter barely modified; femur not curved towards dorsal, distally widened and with very low rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), with very indistinct retrolateral transversal line, with distinct retrolateral-ventral proximal process and small but distinct dorsal process; femur-patella joints slightly shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; tarsal organ capsulate (Fig. 311); procursus (Figs 164–166) straight, some dorsal hairs slightly curved upwards; on prolateral side with distinct hairless hump; distally with small weakly sclerotized ventral flap; procursus tip strongly curved towards dorsal, with strong ventral sclerite, semitransparent to light brown process, and hair-like retrolateral process (Fig. 309); genital bulb (Figs 167–169) basal sclerite with indistinct dorsal apophysis; distal (main) sclerite large, with deep retrolateral pocket, strong dorsal process with very small teeth, ventral part with two ventral teeth, sperm duct opening on prolateral side in membranous basal area (arrow in Fig. 310).

**Legs.** Femur 1 with single row of ~30 ventral spines (Fig. 174); without curved hairs; with usual low number of short vertical hairs; retrolateral trichobothrium of tibia 1 at 2%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments irregular and indistinct except ~5–8 distally; tarsal organs capsulate with round to slightly irregular margins (Figs 313–315).

**Male** (variation)
Tibia 1 in 13 other males from type locality and other localities near Bouizakarne: 11.2–13.2 (mean 12.1). Distance between tips of cheliceral apophyses ~410–460 μm. Ventral abdominal pattern slightly variable (pair of lateral oval marks usually fused to median band); white abdominal marks variably distinct.

Males from SW of Ida Ougnidif differ very slightly in several respects and are therefore assigned tentatively (see also females below): slightly shorter legs (tibia 1 in 11 males 9.6–12.3, mean 11.0); slightly wider procursus (250 μm at half length, vs 210 μm in males from type locality); dorsal process of distal bulbal sclerite slightly larger (length 200 μm, vs 160 μm in males from type locality); distal section of ventral part of main bulbal sclerite more rounded; abdominal coloration slightly darker (including dark line around heart area).

Male from near Tafraoute (legs 1 missing) with slightly smaller dorsal process of distal bulbal sclerite (length 140 μm, vs 160 μm in males from type locality); slightly narrower procursus (190 μm, vs
Figs 174–181. *Maghreba amezyan* gen. et sp. nov.; male and female from Morocco, between Lakhssas and Bouizakarne (ZFMK Ar 22353, AR 22354). **174.** Male right femur 1, retrolateral view. **175–178.** Female abdomen and epigynum, ventral and lateral views. **179–181.** Cleared female genitalia, dorsal view with dorsal arc tilted backwards, ventral view, and regular dorsal view; arrows: posterior processes of dorsal arc. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars: 174 = 0.3 mm; 175–181 = 0.5 mm.
210 μm in males from type locality); distal section of ventral part of main bulbular sclerite more rounded; abdominal coloration slightly darker (including dark line around heart area).

Female
In general similar to male (Fig. 10) but without spines on legs. With poorly developed stridulatory apparatus between prosoma and abdomen: posterior carapace margin with pair of low processes (Fig. 305), and abdomen apparently with pair of areas with thicker cuticle (visible in shrunken abdomens). With fine cheliceral stridulatory ridges as in male but wider apart (~5–6 μm) (Fig. 308). Tibia 1 in 18 females from type locality and other localities near Bouizakarne: 9.9–12.4 (mean 11.1). Epigynum as in Figs 175–178, main epigynal plate triangular to semicircular, weakly protruding, without processes (in some females slightly angular in lateral view), medially weakly sclerotized; with pair of indistinct round pockets (Fig. 318; distance ~450 μm); internal sclerotized arc variably visible in uncleared specimens; posterior plate short and wide, simple; indistinct plate in front of epigynum, not elevated. Internal genitalia (Figs 172–173, 179–181) with triangular pore plates; dorsal and ventral arcs medially strongly sclerotized, ventral arc with very indistinct ventral process (pocket?) directly below (i.e., dorsal of) epigynal plate; dorsal arc with pair of small posterior protrusions (arrows in Fig. 181).

Females from SW of Ida Ougnidif differ very slightly and are therefore assigned tentatively (see also males above): slightly shorter legs (tibia 1 in 8 females 8.7–10.3, mean 9.6); epigynum with pair of very low whitish humps.

Females from near Tafraoute very similar to females from type locality but with shorter legs (tibia 1: 8.3, 8.9, 8.9), and with darker abdominal pattern. Female form Ifri Tafounast poorly preserved.

Natural history
At the type locality, this species was very abundant within the cave. In the entrance area, only juveniles were found, and no specimens were seen outside the cave nor in deeper parts of the cave (beyond approximately 10–15 m from the entrance). When disturbed, they vibrated and ran towards the rock, then dropped from the web if the disturbance persisted. Webs were sometimes provided with silk puffs. Near Ida Ougnidif, the spiders were resting very flat on the rock wall, on small mats of silk (diameter ~4 cm) that were mostly provided with silk puffs (Figs 11–12); from these small silk mats, larger domed sheets extended that were not set with silk puffs.

Distribution
Known from several localities in the Anti-Atlas, Morocco (Fig. 163B). Note, however, that all specimens other than those from near Bouizakarne are assigned tentatively.

Maghreba kahfa gen. et sp. nov.
urn:lsid:zoobank.org:act:3EA692AD-0EFD-4A81-82D0-421F5A261AC7
Figs 163B, 182–194

Diagnosis
Distinguished from known congeners by combination of: procursus with long and straight ventral sclerite and slender dorsally-directed tip (identical to M. aurouxi gen. nov., cf. Figs 290–292; very similar to M. amezyan gen. et sp. nov. but smaller), distal bulbular sclerite with two small ventral teeth of different sizes and strongly protruding dorsal process (Figs 182–185; very similar to M. aurouxi and M. amezyan), epigynum without processes (Fig. 191; unlike M. aurouxi), dorsal arc of internal female genitalia without or with very indistinct posterior protrusions (Figs 187, 194; unlike M. aurouxi and M. amezyan); from all congeners also by pore plates in female internal genitalia (Fig. 187; pores in groups, right and left sides not clearly separated) and by slight troglomorphism: reduced eye size
(diameter PME/distance PME–PME: 0.46; in other species: >0.60), thin legs (tibia 1 L/d: 80; in other species: <70), and long legs (male tibia 1 length/carapace width: 7.8; in other species 5.3–7.0).

**Etymology**

The species name is an adjective derived from the Arabian ‘*kahf*’ = ‘cave’.

**Type material**

**Holotype**


**Other material examined**


**Description**

**Male** (holotype)

**Measurements.** Total length 3.3, carapace width 1.3. Distance PME–PME 140 μm; diameter PME 65 × 80 μm; distance PME–ALE 25 μm; diameter AME 40 μm; distance AME–AME 40 μm. Leg 1: 10.3 + 0.5 + 10.2, metatarsus broken; tibia 2: 6.4, tibia 3: 4.8, tibia 4: 5.3; tibia 1 L/d: 80; femora 1–4 diameters: 0.18, 0.17, 0.17, 0.17.

**Color** (in ethanol). Carapace pale ochre to whitish, with light brown median Y-mark; sternum brown with dark brown radial marks; legs pale ochre-yellow, without dark rings, with very thin black lines on femora and tibiae (Figs 188–189); abdomen pale gray, with numerous whitish marks, few dark dorsal marks posteriorly only; ventrally with very indistinct spots in front of gonopore and between gonopore and spinnerets, only around spinnerets slightly more distinct dark mark.

**Body.** Habitus similar to *M. aurouxi* gen. nov. (cf. Fig. 260–261). Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, rim not more sclerotized than in female. Sternum wider than long (0.95/0.65), unmodified. Abdomen slightly elongated, dorso-posteriorly weakly angular.

**Chelicerae.** As in *M. aurouxi* gen. nov. and *M. stifadma* gen. et sp. nov. (cf. Fig. 233), with pair of low whitish proximal humps and pair of frontal lateral apophyses, each with one cone-shaped modified hair; distance between tips of modified hairs: 360 μm; lateral stridulatory ridges distinct, clearly visible in dissecting microscope.

**Palps.** In general as in *M. aurouxi* gen. nov. (cf. Figs 285–287); coxa with rounded hump and small but distinct retrolateral-ventral process; trochanter barely modified (low ventral rounded hump); femur not curved towards dorsal, distally widened and with very low rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), without retrolateral transversal line, with distinct retrolateral-ventral proximal process and distinct dorsal process; femur-patella joints shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus apparently identical to *M. aurouxi* gen. nov. (cf. Figs 290–292), some dorsal hairs slightly curved upwards; on prolateral side with proximal ridge followed by distinct
hairless hump at half length; distally with low ventral flap; procursus tip with strong ventral sclerite and semitransparent process, main branch strongly curved towards dorsal, with semitransparent hair-like process and wide tip divided by retrolateral ridge; genital bulb (Figs 182–185) basal sclerite with indistinct dorsal apophysis; distal (main) sclerite large, with deep retrolateral pocket, strong dorsal process without teeth, ventral part with two ventral teeth of different sizes, sperm duct opening not seen.

LEGS. Femur 1 with single row of ~25 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments proximally irregular and indistinct, distally ~5 fairly distinct.

Male (variation)
Tibia 1 in two other males: 7.8, 10.0. Abdomen shape variable, sometimes more globular. Dark pigment slightly variable (abdomen sometimes monochromous whitish).

Female
In general similar to male but without spines on legs, with pair of indistinct whitish (almost transparent) humps posteriorly on carapace, and pair of corresponding indistinct plates frontally on abdomen;

cheliceral stridulatory ridges not seen in dissecting microscope but apparently present (possible stridulatory pick present on palpal femur). Tibia 1 in four females: 8.8, 9.6, 10.8, 10.9. Epigynum as in Fig. 191, main epigynal plate triangular, weakly protruding, without processes; with pair of indistinct round pits (distance 330 μm); posterior plate short and wide, simple; indistinct plate (or brown area) in front of epigynum, not elevated. Internal genitalia (Figs 186–187, 192–194) with contiguous pore plates medially ‘dissolved’ into groups of pores; dorsal and ventral arcs both strongly developed, ventral arc with very indistinct ventral median process (pocket?).

Natural history
The specimens were found among rocks and on the cave wall (rather than under rocks) near the cave entrance but in complete darkness (J. Lips, pers. com. Jun. 2021).

Distribution
Known from several neighboring localities in the western-most High Atlas, Morocco (Fig. 163B).

**Maghreba saghro** gen. et sp. nov.
urn:lsid:zoobank.org:act:6CB9CA32-D460-48FA-BBA7-419353040F8F
Figs 163B, 195, 203–223

Diagnosis
Easily distinguished from known congeners by serrated ventral margin of distal bulbal sclerite (Figs 211, 213); also by combination of: procursus with short ventral sclerite (Fig. 210); epigynum short and wide, without processes (Figs 218–220), dorsal arc of internal female genitalia without pair of posterior protrusions (Fig. 222); from most known congeners (except *M. amezyan* gen. et sp. nov. and *M. kahfa* gen. et sp. nov.) also by long legs (male tibia 1 length >9.0; female tibia 1 length >8.5).

Etymology
The species name is derived from Djebel (Jbel) Saghro (see Distribution below); noun in apposition.

Type material
Holotype
MOROCCO – **Souss-Massa** • ♂; between Irherm and Tiferki, near road R106; 30.1406° N, 8.3337° W; 1745 m a.s.l.; 16 Sep. 2018; B.A. Huber leg.; among rocks and boulders; ZFMK Ar 22362.

Other material examined
MOROCCO – **Souss-Massa** • 2 ♂♂, 6 ♀♀; same collection data as for holotype; ZFMK Ar 22363, Ar 22364 • 2 ♀♀♀ (in pure ethanol); same collection data as for holotype; ZFMK Mor86 • 1 ♂, 2 ♀♀♀; SE of Tazenakht; 30.534° N, 7.020° W; 1200 m a.s.l.; 17 Sep. 2018; B.A. Huber leg.; along dry riverbed; ZFMK Ar 22365 • 3 ♀♀♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor89 • 1 ♀; between Tazenakht and Agdz, near road R108; 30.531° N, 6.923° W; 1365 m a.s.l.; 17 Sep. 2018; B.A. Huber leg.; under rock; ZFMK Ar 22366.

Description
**Male** (holotype)
**Measurements.** Total length 4.6, carapace width 1.65. Distance PME–PME 140 μm; diameter PME 110 × 130 μm; distance PME–ALE 30 μm; diameter AME 100 μm; distance AME–AME 25 μm. Leg 1: 39.1 (11.6 + 0.8 + 10.5 + 13.9 + 2.3), tibia 2: 7.3, tibia 3: 5.7, tibia 4: 6.4; tibia 1 L/d: 58; femora 1–4 diameters: 0.30, 0.24, 0.21, 0.22.

**Color** (in ethanol). Carapace pale ochre-yellow, medially darker (brown); sternum dark ochre, with darker radial marks; legs ochre-yellow, without dark rings, with black lines on femora and tibiae, very few also on metatarsi; abdomen gray, with distinct dorsal mark around heart area and indistinct dorsal and lateral marks; ventrally with large dark brown mark in front of gonopore, median dark band behind gonopore not reaching spinnerets, dark brown mark around spinnerets.

**Body.** Habitus as in Fig. 195. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified but rim more sclerotized than in female. Sternum wider than long (1.20/0.75), unmodified. Abdomen slightly elongated, dorso-posteriorly weakly angular.
CHELICERAE. As in Figs 214–215, with low frontal hump proximally and pair of frontal lateral apophyses distally, each with one large modified cone-shaped hair at tip; distance between tips of modified hairs: 580 μm; lateral stridulatory ridges very fine, barely visible in dissecting microscope.

PALPS. As is Figs 203–205; coxa with distinct retrolateral-ventral process; trochanter barely modified, slightly protruding ventrally; femur not curved towards dorsal, distally widened with very low rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), with barely visible retrolateral transversal line, with distinct retrolateral-ventral proximal process and small dorsal process; femur-patella joints slightly shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 208–210) with few hairs slightly curved upwards; on prolateral side with strong hairless hump, procursus tip strongly curved towards dorsal, with strong ventral sclerite and semitransparent process; genital bulb (Figs 211–213) basal sclerite with distinct dorsal apophysis; distal (main) sclerite large, with deep retrolateral pocket, distinct ventral serration; sperm duct opening not seen.

LEGS. Femur 1 with single row of ~25 ventral spines; without curved hairs; with more than usual vertical hairs on all tibiae (dorsally and laterally); retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments irregular, very indistinct.

Figs 203–207. *Maghreba sahro* gen. et sp. nov.; male from Morocco, between Irherm and Tiferki (ZFMK Ar 22363). 203–205. Left male palp, prolateral, dorsal, and retrolateral views; arrow 1: coxa apophysis; arrow 2: dorsal femur apophysis; arrows 3: femur-patella joints; arrows 4: tibia-tarsus joints. 206–207. Male femora 1 and 2. Scale bars: 203–205 = 0.5 mm; 206–207 = 0.3 mm.
Male (variation)
Tibia 1 in three other males: 9.3, 10.1, 10.5.

Female
In general similar to male but without spines on legs, with usual very low number of short vertical hairs on leg tibiae. With pair of very indistinct light humps posteriorly on carapace, corresponding plates frontally on abdomen not seen; with fine cheliceral stridulatory ridges as in male. Tibia 1 in nine females:

8.7–10.0 (mean 9.3). Epigynum as in Figs 218–220, main epigynal plate large relative to abdomen, wider than long, weakly protruding, without processes; medially weakly sclerotized except small brown plate anteriorly; with pair of variably distinct pockets (distance between pockets 500–530 μm); internal sclerotized arc and median round structure variably visible in uncleared specimens; posterior plate short and wide, simple; pair of indistinct narrow plates in front of epigynum, not elevated. Internal genitalia (Figs 216–217, 221–223) with elongated pore plates, contiguous and in transversal position; dorsal and ventral arcs medially strongly sclerotized, ventral arc with simple ventral process (pocket?) directly ‘below’ (i.e., dorsal of) epigynal plate.

Natural history
Between Irherm and Tiferki, this species was found among large rocks and boulders on a dry slope and in a small canyon; at the same place, *M. aurouxi* gen. nov. occupied a small cave. In other places, the spiders were found in washed-out sand cavities along a dry riverbed (SE of Tazenakht) and under a rock (between Tazenakht and Agdz).

Distribution
Known from three localities in the Djebel (Jbel) Saghro range of the Moroccan Atlas (Fig. 163B).

**Maghreba stifadma** gen. et sp. nov.
Figs 163B, 196–198, 224–242

Diagnosis
Distinguished from known congeners by distinctive pair of epigynal processes (Fig. 238); also by combination of: slender procursus (Fig. 229; in contrast to *M. gharbija* gen. et sp. nov.) with long dorsally-directed tip (in contrast to *M. nkob* gen. et sp. nov., *M. djabaliya* gen. et sp. nov.); distal bulbal sclerite with two short ventral teeth (Fig. 232; in contrast to *M. saghro* gen. et sp. nov., *M. nkob*, *M. gharbija*, *M. djabaliya*) and relatively short dorsal process (in contrast to *M. amezyan* gen. et sp. nov., *M. kahfa* gen. et sp. nov., *M. aurouxi* gen. nov.); epigynum only slightly wider than long (Fig. 239; in contrast to *M. saghro*); dorsal arc of female internal genitalia without pair of posterior processes (Fig. 236; in contrast to *M. aurouxi*); no troglomorphism (in contrast to *M. kahfa*).

Etymology
The species name refers to the type locality; noun in apposition.

Type material
Holotype
MOROCCO – Marrakesh-Safi • ♂; Setti-Fatma (= Sti Fadma); 31.221° N, 7.671° W–31.219° N, 7.669° W; 1600–1690 m a.s.l.; 11 Sep. 2018; B.A. Huber leg.; on overhanging rocks; ZFMK Ar 22367.

Other material examined
MOROCCO – Marrakesh-Safi • 5 ♂♂, 16 ♀♀, 1 juv.; same collection data as for holotype; ZFMK Ar 22368, Ar 22369 • 4 ♀♀, 1 juv. (in pure ethanol); same collection data as for holotype; ZFMK Mor71 • 1 ♀; Zaouia Sti Fatma; approximately 31.255° N, 7.675° W (label: 31.217, -7.700); 1 Dec. 1987; V.D. and B. Roth leg.; CAS 9027143 part • 5 ♂♂, 4 ♀♀; near Toufiht; 31.4715° N, 7.4332° W; 1465 m a.s.l.; 27 Sep. 2018; B.A. Huber leg.; under rocks in ravine; ZFMK Ar 22370 • 2 ♂♀, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Mor106 • 1 ♂, 3 ♀♀; Aît Barka; 31.49° N, 7.45° W; 1300 m a.s.l.; 6 Jun. 1999; R. Bosmans leg.; stones in *Pinus* forest; CRB • 5 ♂♂, 13 ♀♀; near Tizi n’Tichka; 31.3120° N, 7.3752° W; 2035 m a.s.l.; 27 Sep. 2018; B.A. Huber leg.; under rocks; ZFMK Ar 22371, Ar 22372 • 4 ♀♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor109.
Description

**Male** (holotype)

**MEASUREMENTS.** Total length 2.9, carapace width 1.2. Distance PME–PME 90 μm; diameter PME 80 × 100 μm; distance PME–ALE 25 μm; diameter AME 65 μm; distance AME–AME 20 μm. Leg 1: 22.7 (6.5 + 0.5 + 6.3 + 7.8 + 1.6), tibia 2: 4.1, tibia 3: 3.0, tibia 4: 3.5; tibia 1 L/d: 53; femora 1–4 diameters: 0.23, 0.18, 0.18, 0.18.

**COLOR (in ethanol).** Carapace pale ochre-yellow, medially darker brown (including posterior part of ocular area); sternum brown with darker and lighter radial marks; legs ochre-yellow, without dark rings, with elongate black marks on femora and tibiae; abdomen ochre-gray, with distinct dorsal mark around heart area and dorsal and lateral dark and whitish marks; ventrally with large dark brown mark in front of gonopore, pair of small marks behind gonopore, dark brown area at spinnerets.

**BODY.** Habitus as in Figs 196–197. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, rim not more sclerotized than in female. Sternum wider than long (0.90/0.55), unmodified. Abdomen slightly elongated, dorso-posteriorly weakly angular.

**CHELICERAE.** As in Figs 233–234, with pair of low whitish proximal humps and pair of frontal lateral apophyses, each with one cone-shaped modified hair; distance between tips of modified hairs: 330 μm; lateral stridulatory ridges very fine, barely visible in dissecting microscope.

**PALPS.** As in Figs 224–226; coxa with distinct retrolateral-ventral process; trochanter barely modified; femur not curved towards dorsal, distally widened and with very low rounded ventral protrusion, proximally with proliferal stridulatory pick (modified hair), without retrolateral transversal line, with distinct retrolateral-ventral proximal process and distinct dorsal process; femur-patella joints shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side;

![Figs 224–226. Maghreba stifadma gen. et sp. nov.; male from Morocco, Setti-Fatma (ZFMK Ar 22368); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.](image)
tarsus without macrotrichia; procursus (Figs 227–229) with few dorsal hairs slightly curved upwards; on prolateral side with low proximal ridge and more prominent hump (ridge) at half length, both hairless; with semitransparent ventral flap; procursus tip strongly curved towards dorsal, with distinct hair-like process, with strong and long ventral sclerite and semitransparent process; genital bulb (Figs 230–232) basal sclerite with distinct dorsal apophysis; distal (main) sclerite large, with deep retrolateral pocket, with two ventral teeth, without serration, short dorsal process, sperm duct opening not seen.

**LEGS.** Femur 1 with single row of ~20 ventral spines; without curved hairs; with barely more than usual vertical hairs on tibiae (only proximally); retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments proximally irregular and indistinct, distally ~5–10 fairly distinct.

**Male** (variation)
Tibia 1 in 17 males (including holotype): 5.5–7.0 (mean 6.2). Distance between tips of cheliceral apophyses ~320–370 μm. Ventral abdominal band variably distinct, median part sometimes quite ‘complete’, i.e., with three parallel bands, sometimes reduced to small irregular marks.

**Female**
In general similar to male (Fig. 198) but without spines on legs, with usual very low number of short vertical hairs on leg tibiae. With pair of indistinct whitish humps posteriorly on carapace, and pair of corresponding indistinct plates frontally on abdomen, the latter in some females not visible; with fine cheliceral stridulatory ridges as in male. Tibia 1 in 34 females: 5.0–6.7 (mean 5.7). Epigynum as in Figs 237–239, main epigynal plate trapezoidal, wider than long, weakly protruding, anteriorly with pair of distinct whitish processes, tips of processes variably rather rounded or pointed; with small brown median plate between whitish processes; with pair of indistinct round pits (distance 300–340 μm); posterior plate short and wide, simple; indistinct plate in front of epigynum, not elevated. Internal genitalia (Figs 235–236, 240–242) with elongated pore plates in transversal position, almost contiguous; dorsal and ventral arcs medially strongly sclerotized, ventral arc with very indistinct ventral process (pocket?) directly ‘below’ (i.e., dorsal of) small median plate between whitish processes.

**Natural history**
At Setti-Fatma, the spiders were abundant on the undersides of rocks, often very close to specimens of an undescribed species of *Pholcus* Walckenaer, 1805. Only juveniles had distinctly domed sheets, while older webs did not seem to have a clear shape. Some webs included a very narrow dome and had small whitish silk puffs. At disturbance, the spiders rarely vibrated but rather ran away and then dropped to the ground. Near Toufliht, most spiders were found under rocks on the ground of a ravine, while *Pholcus* occupied suitable niches higher on the rocks. Near Tizi n’Tichka, at over 2000 m a.s.l., the spiders were abundant under rocks on a dry slope.

**Distribution**
Known from several localities in the High Atlas, Morocco (Fig. 163B). All records are from between 1300 and 2035 m a.s.l.

*Maghreba nkob* gen. et sp. nov.
urn:lsid:zoobank.org:act:D21218A6-089B-4264-BE1A-7BF13DB40B52
Figs 163B, 199–202, 243–256

**Diagnosis**
Easily distinguished from known congeners by details of male palp (Figs 243–248; dorsally-directed tip of procursus short and wide, procursus ventral sclerite short, procursus ventral flap distinct; dorsal
process of distal bulbal sclerite only slightly longer than ventral part, ventral part with series of distinctive teeth) and epigynum (Fig. 253; triangular and relatively long, with pair of small processes).

Etymology
The species name refers to the type locality; noun in apposition.

Type material

Holotype
MOROCCO – Drâa-Tafilelet • ♂; E of Nkob; 30.861° N, 5.820° W; 995 m a.s.l.; 18 Sep. 2018; B.A. Huber leg.; at bases of palm trees; ZFMK Ar 22373.

Other material examined
MOROCCO – Drâa-Tafilelet • 2 ♂♂, 4 ♀♀; same collection data as for holotype; ZFMK Ar 22374 • 2 ♀♀, 1 juv. (in pure ethanol); same collection data as for holotype; ZFMK Mor91 • 1 ♂; “road Nekob-Mellal” [Nkob, Mlal]; 30.86° N, 5.80° W; 940 m a.s.l.; 22 Apr. 2012; R. Bosmans leg.; stones in palm yard; CRB • 1 ♂, 1 ♀; SW of Agdz; 30.6569° N, 6.5511° W; 1030 m a.s.l.; 17 Sep. 2018; B.A. Huber leg.; at bases of palm trees; ZFMK Ar 22375 • 2 ♀♀, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Mor90 • 2 ♂♂, 2 ♀♀; N of Alnif; 31.2884° N, 5.2611° W; 1090 m a.s.l.; 18 Sep. 2018; B.A. Huber leg.; at rocks in dry riverbed; ZFMK Ar 22376 • 2 ♀♀, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Mor92 • 2 ♂♂, 4 ♀♀; N of Errachidia; 32.0396° N, 4.4214° W; 1180 m a.s.l.; 20 Sep. 2018; B.A. Huber leg.; dry ravine, among rocks near ground; ZFMK Ar 22377 • 2 ♀♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor96.

ALGERIA • 2 ♀♀ (1 prosoma missing); Wil. Bechar, Taghit; 30.93° N, 2.03° W; 630 m a.s.l.; 3 Apr. 1989; R. Bosmans leg.; palm gardens; CRB.

Description

Male (holotype)

Measurements. Total length 3.2, carapace width 1.2. Distance PME–PME 100 μm; diameter PME 80 × 90 μm; distance PME–ALE 20 μm; diameter AME 75 μm; distance AME–AME 20 μm. Leg 1: 26.5 (7.7 + 0.5 + 7.2 + 9.3 + 1.8), tibia 2: 5.0, tibia 3: 3.8, tibia 4: 4.4; tibia 1 L/d: 58; femora 1–4 diameters: 0.20, 0.16, 0.14, 0.14.

Color (in ethanol). Carapace pale ochre-yellow, medially darker (brown; except ocular area); sternum ochre-yellow, darker posteriorly and with darker radial marks; legs ochre-yellow, without dark rings, with black lines on femora and tibiae, very few also on metatarsi; abdomen gray, with distinct dorsal mark around heart area and dorsal and lateral whitish marks; ventrally with large dark brown mark in front of gonopore, median dark band behind gonopore divided into three parallel bands, dark brown area at spinnerets.

Body. Habitus as in Figs 199–200. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, rim barely more sclerotized than in female. Sternum wider than long (0.85/0.60), unmodified. Abdomen slightly elongated, dorso-posteriorly weakly angular.

Chelicerae. Shape as in M. saghiro gen. et sp. nov. (cf. Figs 214–215), but smaller (maximum width: 460 μm) and pair of frontal lateral apophyses more cylindrical in lateral view (rather as in M. stifadma gen. et sp. nov.; cf. Fig. 234); distance between tips of modified hairs: 380 μm; lateral stridulatory ridges very fine, barely visible in dissecting microscope.
Figs 243–250. *Maghreba n kob* gen. et sp. nov.; male and female from Morocco, E of Nkob (ZFMK Ar 22374). **243–245.** Left procursus, prolateral, dorsal, and retrolateral views. **246–248.** Left genital bulb, prolateral, dorsal, and retrolateral views; asterisk: one or two additional small teeth present in males from N of Alnif and N of Errachidia. **249–250.** Cleared female genitalia, ventral and dorsal views. Abbreviations: bs = basal sclerite; da = dorsal apophysis; dp = dorsal process; pr = epigynal process; pt = procursus tip; vf = ventral flap; vs = ventral sclerite. Scale bars = 0.5 mm.
PALPS. In general similar to congeners (cf. Figs 203–205, 224–226); coxa with low retrolateral-ventral process; trochanter barely modified; femur not curved towards dorsal, distally widened and with low rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), without retrolateral transversal line, with distinct retrolateral-ventral proximal process and very indistinct dorsal process; femur-patella joints slightly shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 243–245) with few dorsal hairs slightly curved upwards; on prolateral side with two humps, both hairless; with semitransparent ventral flap; procursus tip strongly curved towards dorsal but ending abruptly, with strong but short ventral sclerite and semitransparent process; genital bulb (Figs 246–248) basal sclerite with dorsal apophysis; distal (main) sclerite large, with deep retrolateral pocket, with three ventral teeth and fine serration distally, short dorsal process, sperm duct opening not seen.

LEGS. Femur 1 with single row of ~28 ventral spines; without curved hairs; with more than usual vertical hairs on all tibiae (mostly prolaterally); retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments irregular and indistinct except ~3–5 distally.

Male (variation)
Tibia 1 in ten males (including holotype): 7.2–8.8 (mean 7.9). Distance between tips of cheliceral apophyses in larger males ~400–420 μm. Ventral abdominal band variably distinct, median part sometimes reduced to small irregular marks. Males from N of Alnif with one additional ventral tooth on distal bulbal sclerite (asterisk in Fig. 246); males from N of Errachidia with two additional teeth in same area.

Female
In general similar to male (Figs 201–202) but without spines on legs, with usual very low number of short vertical hairs on leg tibiae. With pair of whitish but distinct humps posteriorly on carapace, and pair of corresponding indistinct plates frontally on abdomen; with fine cheliceral stridulatory ridges as in male. Tibia 1 in nine females: 6.4–8.5 (mean 7.5). Epigynum as in Figs 251–253, main epigynal plate triangular, weakly protruding, with pair of very low processes (in some females barely visible), medially weakly sclerotized except small brown plate anteriorly; with pair of indistinct round pockets (distance 380–420 μm); internal sclerotized arc and median round structure variably visible in uncleared specimens; posterior plate short and wide, simple; indistinct plate in front of epigynum, not elevated. Internal genitalia (Figs 249–250, 254–256) with elongated pore plates, converging anteriorly, almost contiguous; dorsal and ventral arcs medially strongly sclerotized, ventral arc with very indistinct ventral process (pocket?) directly ‘below’ (i.e., dorsal of) dark median area of epigynal plate.

Natural history
Several records are associated with palms, but the species occurs in a variety of near-ground microhabitats. Near Nkob, most specimens were found at the bases of palm trees, but some also at the bases of other trees, under a dead palm trunk on the ground, and one specimen in a small stable made of mud. Near Agdz, the spiders built relatively large webs at the bases of palm leaves near the ground. They were very difficult to catch (i.e., possibly well protected from certain predators) because of the long spines on the hard palm leaves and because the spiders fled rapidly at the slightest disturbance. Near Alnif and Errachidia, the spiders were collected at large rocks at the side of a dry riverbed and among rocks and overhangs near the ground in a dry ravine.

Distribution
Widely distributed along the southern slopes of the eastern Moroccan and western Algerian Atlas range (Fig. 163B).
Maghreba gharbija gen. et sp. nov.
urn:lsid:zoobank.org:act:134E8E3D-7C0C-45ED-B2DD-78475A180514
Figs 163B, 257–259, 265–284

Diagnosis
Easily distinguished from known congeners by long teeth on distal bulbal sclerite (prolateral and ventral views; Figs 270, 273); from most species (except *M. djabalija* gen. et sp. nov.) also by small sclerite on procursus tip between ventral sclerite and transparent process (arrow in Fig. 267). From the geographically neighboring *M. amezyan* gen. et sp. nov. also by smaller size (carapace width: 1.3 vs 1.7; male tibia 1 length <9 vs >11; female tibia 1 length <8 vs >9); from the geographically neighboring *M. kahfa* gen. et sp. nov. also by larger eyes (AME diameter 95 vs 40 μm) and thicker legs (male tibia 1 L/d 60 vs 80).

Etymology
The species name is an adjective derived from the Arab ‘*gharbija’* = ‘western’.

Type material
Holotype
MOROCCO – Marrakesh-Safi • ♂; 4 km E of Ghazoua; 31.449° N, 9.688° W; 60 m a.s.l.; 29 Sep. 2018; B.A. Huber leg.; in small ravines; ZFMK Ar 22378.

Other material examined
MOROCCO – Marrakesh-Safi • 3 ♂♂, 10 ♀♀; same collection data as for holotype; ZFMK Ar 22379, Ar 22380 • 3 ♀♀ (in pure ethanol); same collection data as for holotype; ZFMK Mor111 • 3 ♂♂, 9 ♀♀; 8 km E of Ghazoua; 31.459° N, 9.646° W; 100 m a.s.l.; 29 Sep. 2018; B.A. Huber leg.; under rocks and at tree bases; ZFMK Ar 22381, Ar 22382 • 3 ♀♀, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Mor110 • 4 ♂♂, 1 ♀; Essaouira; 31.51° N, 9.75° W; 18 Dec. 1986; V. Roth leg.; CAS 9027136. – Souss Massa • 1 ♀; 12 km N of Agadir, 2 km E of Aourir [Awrir]; 30.496° N, 9.626° W; May 1939; L. Berland leg.; stones near river; CRB • 1 ♂, 3 ♀♀; Agadir; 30.4° N, 9.6° W; May 1939; L. Berland leg.; MNHN Ar 10321 • 1 ♂, 1 ♀; Agadir S; 30.37° N, 9.58° W; 16 Feb. 2007; R. Bosmans leg.; stones bordering salt marsh; CRB • 1 ♂, 1 juv.; Forêt d’Ademime; 30.32° N, 9.37° W; May 1939; L. Berland leg.; MNHN Ar 10312 • 1 ♀; same collection data as for preceding; Ar 10317 • 1 ♂, 3 ♀♀; Oued Massa; 29.89° N, 9.59° W; 20 m a.s.l.; 27 Apr. 2012; R. Bosmans leg.; in river bed, litter in *Eucalyptus* forest; CRB • 1 ♂; Tiznit; 29.70° N, 9.73° W; May 1939; L. Berland leg.; MNHN Ar 10329 • 1 ♂, 7 ♀♀; Aoulou; 29.866° N, 9.828° W; 10 m a.s.l.; 14 Sep. 2018; B.A. Huber leg.; between rocks near ground; ZFMK Ar 22383 • 3 ♀♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor79 • 1 ♂; Aoulou beach; 29.81° N, 9.83° W; 25 m a.s.l.; 26 Apr. 2012; R. Bosmans leg.; stony steppe; CRB • 1 ♂, 7 ♀♀; same collection data as for preceding; J. Van Keer leg.; CJVK • 3 ♀♀; 5 km E of Gourizim; 29.62° N, 9.95° W; 26 Apr. 2012; J. Van Keer leg.; stones in *Argania* steppe; CJVK • 1 ♀; same collection data as for preceding; R. Bosmans leg.; CRB • 2 ♂♂, 11 ♀♀; Gourizim; 29.631° N, 10.003° W; 20 m a.s.l.; 14 Sep. 2018; B.A. Huber leg.; between rocks near ground and in vertical bank of dry riverbed; ZFMK Ar 22384 • 4 ♀♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor80 • 1 ♂; Gourizim; 29.63° N, 10.00° W; 10 m a.s.l.; 26 Apr. 2012; J. Van Keer leg.; salt marsh, near sea; CJVK • 1 ♂, 2 ♀♀; between Gourizim and Mirleft; 29.61° N, 10.02° W; 9 Feb. 2007; R. Bosmans leg.; stones in flooded fields near coast; CRB • 1 ♂, 4 ♀♀; Mirleft; 29.57° N, 10.04° W; 25 m a.s.l.; 26 Apr. 2012; R. Bosmans leg.; litter and stones in valley near sea; CRB • 4 ♀♀; same collection data as for preceding; J. Van Keer leg.; CJVK.

81
Description

**Male** (holotype)

**Measurements.** Total length 3.9, carapace width 1.3. Distance PME–PME 120 μm; diameter PME 90 × 120 μm; distance PME–ALE 30 μm; diameter AME 95 μm; distance AME–AME 20 μm. Leg 1: 31.4 (9.4 + 0.5 + 8.6 + 11.0 + 1.9), tibia 2: 5.7, tibia 3: 4.2, tibia 4: 5.0; tibia 1 L/d: 61; femora 1–4 diameters: 0.21, 0.19, 0.18, 0.19.

**Color** (in ethanol). Carapace pale grey, medially partly darker (brown V-mark behind ocular area; posterior part of pit darkened); clypeus with pair of black vertical bands; sternum dark ochre, laterally lighter; legs ochre-yellow, without darker rings, with black marks on femora and tibiae (cf. Fig. 281), very few also on metatarsi; abdomen gray, with distinct dark pattern around heart area, indistinct whitish marks dorsally and laterally; ventrally with large brown mark in front of gonopore, three indistinct bands behind gonopore, dark brown area at spinnerets.

**Body.** Habitus as in Figs 257–258. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, rim not more sclerotized than in female. Sternum wider than long (1.0/0.6), unmodified. Abdomen distinctly elongated beyond spinnerets.

**Chelicerae.** As in Figs 268–269, with pair of frontal lateral apophyses, each with one large modified cone-shaped hair; distance between tips of modified hairs: 410 μm; with very low proximal frontal protrusion; lateral stridulatory ridges not visible in dissecting microscope.

**Palps.** In general similar to congeners (cf. Figs 203–205, 224–226); coxa with distinct retrolateral-ventral process; trochanter barely modified (low ventral rounded hump); femur not curved towards dorsal, distally widened and with very low rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), with very indistinct retrolateral transversal line, with distinct retrolateral-ventral proximal process and distinct dorsal process; femur-patella joints slightly shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 265–267) relatively short and wide, dorsal hairs barely curved; on prolateral side with proximal ridge followed distally by distinct hump, both hairless; distally with weakly sclerotized ventral flap; procursus tip with strong ventral sclerite, semitransparent process, and small apophysis in-between (arrow in Fig. 267); main branch strongly curved towards dorsal, distinctly bifid with thin semitransparent hair-like process; genital bulb (Figs 270–273) basal sclerite with dorsal apophysis; distal (main) sclerite large, with deep retrolateral pocket, strong dorsal process without teeth, ventral part with two distinctively long ventral teeth, sperm duct opening not seen.

**Legs.** Femur 1 with single row of ~30 ventral spines; without curved hairs; with higher than usual density of short vertical hairs on all tibiae (mainly proximally and prolaterally); retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments irregular and indistinct except ~3–5 distally.

**Male** (variation)

Tibia 1 in 19 males (incl. holotype): 6.3–8.6 (mean 7.2). Distance between tips of cheliceral apophyses ~390–410 μm. Ventral abdominal pattern slightly variable (three bands behind gonopore variably ‘complete’ or reduced to irregular marks); white abdominal marks variably distinct; abdomen in some males dorsally and laterally with dense pattern of dark (internal) abdominal marks. Retrolateral transversal line on palpal femur sometimes not visible.

**Female**

In general similar to male (Fig. 259) but without spines on legs; with stridulatory apparatus between prosoma and abdomen: distinct whitish processes on carapace and very indistinct light brown areas frontally on
HUBER B.A., Revisions of *Holocnemus* and *Crossopriza*

abdomen; dark clypeus marks usually more distinct than in male, sometimes fused to large mark including anterior part of ocular area; ventral abdominal bands usually distinct. Apparently without cheliceral stridulatory ridges as in male. Tibia 1 in 63 females: 5.0–7.5 (mean 6.2). Epigynum as in Figs 276–280, main epigynal plate semicircular, variably protruding, with pair of low processes; with pair of indistinct round

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**Figs 276–284.** *Magreba gharbija* gen. et sp. nov.; females from Morocco, 4 km E of Ghazoua (276, 278, 280–284; ZFMK Ar 22380) and from Morocco, Gourizim (277, 279; ZFMK Ar 22384). **276–279.** Abdomens, ventral and lateral views. **280.** Epigynum, ventral view. **281.** Right femur 2, ventral view. **282–284.** Cleared female genitalia, ventral view, regular dorsal view, and dorsal view with dorsal arc tilted backwards. Scale bars: 276–280, 282–284 = 0.5 mm; 281 = 0.2 mm.
pockets (distance ~360–390 μm); internal median round structure variably visible in uncleared specimens; posterior plate short and wide, simple; indistinct plate in front of epigynum, not elevated. Internal genitalia (Figs 274–275, 282–284) with elongated pore plates in transversal position, widening medially; dorsal and ventral arcs medially strongly sclerotized, ventral arc with indistinct ventral rounded pocket.

Natural history
The spiders were collected from webs close to the ground, among and under rocks (Aglou), in holes at the basis of river-banks (Gourizim, near Ghazoua), and at the basis of trees and in small piles of rocks (near Ghaoua). Webs usually consisted of a relatively large domed sheet and a dense, bell-shaped part directly attached to the rock. When disturbed, the spiders vibrated strongly and then retreated towards the back (i.e., towards the rock).

Distribution
Widely distributed along the coast where the Moroccan Atlas range meets the Atlantic Ocean (Fig. 163B).

Maghereba aurouxi (Barrientos, 2019) gen. et comb. nov.

Holocnemus aurouxi Barrientos in Barrientos et al. 2019: 5, figs 2–5, 13a–b (♂).

Diagnosis
Easily distinguished from known congeners by dorsal arc of internal female genitalia with pair of distinct posterior protrusions (Fig. 303); from the geographically neighboring M. nkob gen. et sp. nov. also by procursus with long and straight ventral sclerite and longer dorsally-directed tip (Fig. 292), distal (main) bulbal sclerite with two small ventral teeth of equal size and strongly protruding dorsal process (Figs 293–296), epigynum short, triangular to semi-circular (Figs 299–301); from the morphologically very similar M. amezyan gen. et sp. nov. also by smaller size (e.g., carapace width <1.5 vs >1.5; palpal tibia length: <0.95 vs >0.95); from the morphologically very similar M. kahfa gen. et sp. nov. also by stronger legs (male tibia 1 L/d 60 vs 80) and larger eyes (AME diameter 65 μm vs 40 μm).

Type material
Holotype (not examined, see Remark below)
MOROCCO – L’Oriental • ♂; Figuig, Beni Bassia, Ifri Lala Jama; 32.252° N, 3.159° W; 1105 m a.s.l.; 1 Jun. 2001; F. Fadrique and O. Escolá leg.; Museo de Zoología de Barcelona 2001-0424 (= Museu de Ciències Naturals de Barcelona).

Remark
I could not examine the type specimen because a loan request was denied (B. Caballero, pers. com. 19 Feb. 2021). However, Jorge Mederos kindly prepared photographs of the distinctive features and these were compared with newly collected specimens from three localities; see variation below.

Material examined
MOROCCO – Drâa-Taâfilalet • 7 ♂♂, 10 ♀♀ (partly used for SEM); SE of Zebzat; 32.625° N, 4.540° W; 1675 m a.s.l.; 20 Sep. 2018; B.A. Huber leg.; in small cave above road, near ground; ZFMK Ar 22385, Ar 22386 • 1 ♂, 3 ♀♀ (in pure ethanol); same collection data as for preceding; ZFMK Mor98 • 2 ♂♂; Boudenib, Kef Aziza; 31.94° N, 3.60° W; 9 Jan. 2000; C. Hernando leg.; CRBA 3638 • 2 ♀♀; same collection data as for preceding; CRBA 3639 • 1 ♀; same collection data as for preceding; CRBA 3736.
Assigned tentatively (see Distribution below)

MOROCCO – Souss-Massa • 2 ♂♂, 1 ♀; between Irherm and Tiferki at R106; 30.1406° N, 8.3337° W; 1745 m a.s.l.; 16 Sep. 2018; B.A. Huber leg.; in small cave-like shelter made of large rocks; ZFMK Ar 22387 • 1 ♂ (in pure ethanol); same collection data as for preceding; ZFMK Mor87.

Redescription

**Male** (ZFMK Ar 22385)

**Measurements.** Total length 2.8, carapace width 1.2. Distance PME–PME 130 μm; diameter PME 85 × 105 μm; distance PME–ALE 25 μm; diameter AME 65 μm; distance AME–AME 20 μm. Leg 1: 26.4 (7.6 + 0.5 + 7.3 + 9.2 + 1.8), tibia 2: 4.8, tibia 3: 3.7, tibia 4: 4.2; tibia 1 L/d: 61; femora 1–4 diameters: 0.19, 0.17, 0.17, 0.17.

**Color** (in ethanol). Carapace pale ochre to whitish, medially slightly darker; clypeus not darkened; sternum ochre with darker radial marks; legs pale ochre-yellow, without darker rings, with black lines on femora and tibiae (Figs 288–289); abdomen pale gray, with few small dark marks dorsally, many whitish marks; ventrally with diffuse dark marks anterior of gonopore and around spinnerets; with only two small dark marks between gonopore and spinnerets.

**Body.** Habitus as in Figs 260–261. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin (cf. Fig. 319). Clypeus unmodified, rim not more sclerotized than in female. Sternum wider than long (0.85/0.60), unmodified. Abdomen posteriorly rounded, high but not elongated beyond spinnerets.

**Chelicerae.** Very similar to *M. stifadma* gen. et sp. nov. (cf. Figs 233–234), with pair of frontal lateral apophyses, each with one large modified cone-shaped hair (Fig. 323); distance between tips of modified hairs: 380 μm; with very low proximal frontal protrusion; lateral stridulatory ridges fine (Fig. 324; distances between ridges 3.0–3.5 μm), poorly visible in dissecting microscope.

**Palps.** As is Figs 285–287; coxa with distinct retrolateral-ventral process (arrow in Fig. 287); trochanter barely modified (low ventral rounded hump); femur not curved towards dorsal, distally widened and with very low rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), without retrolateral transversal line, with distinct retrolateral-ventral proximal process and distinct dorsal process; femur-patella joints slightly shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; tarsal organ capsule (Fig. 327); procursus (Figs 290–292) with some dorsal hairs slightly curved upwards; on prolateral side with proximal ridge followed by distinct hump at half length, both hairless; distally with very low ventral flap; procursus tip with strong ventral selerite and semitransparent process, main branch strongly curved towards dorsal, with semitransparent hair-like process and wide tip divided by retrolateral ridge; genital bulb (Figs 293–296) basal selerite with dorsal apophysis; distal (main) selerite large, with deep retrolateral pocket, strong dorsal process without teeth, ventral part with two teeth of similar sizes, sperm duct opening in membranous area on prolateral side (arrow in Fig. 322).

**Legs.** Femur 1 with single row of ~27 ventral spines; without curved hairs; with slightly higher than usual density of short vertical hairs prolaterally on all tibiae; retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments irregular and indistinct except ~3–5 distally; tarsal organs capsule, sometimes with weakly undulating rim (Fig. 328).

**Male** (variation)

Tibia 1 in seven males from SE of Zebzat: 6.9–7.9 (mean 7.4); abdomen pattern slightly variable, some males with slightly more dark marks dorsally, with more ‘complete’ ventral pattern behind gonopore.
(three parallel bands). Males from between Irherm and Tiferki differ very slightly from those from SE of Zebzat: tip of procursus narrower; ventral teeth of distal bulb sclerite slightly smaller and closer together; dorsal process on distal bulb sclerite slightly narrower and longer in lateral views; tibia 1 in these two males: 7.1, 7.3. The holotype seems identical to the males from SE of Zebzat regarding the procursus, but more similar to the males from between Irherm and Tiferki with respect to the bulb. The two males from Boudenib are in very poor condition but their palps appear identical to those from between Irherm and Tiferki; tibia 1 in one of these males: 8.3 (missing in second male). Gonopore with 4–6 epiandrous spigots, sometimes asymmetric (2+3; Figs 320–321).

Female
In general similar to male (Fig. 262) but without spines on legs; with very indistinct stridulatory apparatus between prosoma and abdomen: barely visible whitish processes on carapace (arrow in Fig. 319) and light brown areas frontally on abdomen; without cheliceral stridulatory ridges but with rugose area proximally (Fig. 325). Tibia 1 in 11 females from SE of Zebzat: 5.9–8.2 (mean 7.1); in female from Irherm and Tiferki: 6.5. Epigynum as in Figs 299–301 and 330, main epigynal plate wider than long, triangular to semicircular, weakly protruding, with pair of very low processes; with pair of indistinct round pockets (distance ~310 μm); posterior plate short and wide, simple; indistinct plate in front of epigynum, not elevated. Internal genitalia (Figs 297–298, 302–304) with elongated pore

Figs 299–304. Maghreba aurouxi (Barrientos, 2019) gen. nov.; female from Morocco, SE of Zebzat (ZFMK Ar 22386). 299. Abdomen, ventral view. 300–301. Epigynum, lateral and ventral views. 302–304. Cleared female genitalia, ventral view, regular dorsal view, and dorsal view with dorsal arc tilted backwards; arrows: posterior processes on dorsal arc. Abbreviations: da = dorsal arc; po = pocket; va = ventral arc. Scale bars = 0.5 mm.
HUBER B.A., Revisions of Holocnemus and Crossopriza

plates in transversal position, widening medially; dorsal arc medially heavily sclerotized with distinctive posterior processes, ventral arc apparently without ventral pocket.

The females from Boudenib are larger and have much longer legs (tibia 1: 9.6, 10.1; missing in third female), and the epigynal humps are barely visible, but they share the distinctive posterior processes of the internal dorsal arc (one female cleared).

Natural history

All specimens were collected in caves or small cave-like shelters. Near Zebzat, the spiders were abundant in a shallow cave, with their domed webs close to the ground. They were hanging in their webs rather than sitting on the rock surface. Between Irherm and Tiferki, the spiders were only found in a small cave-like shelter of large rocks, while *M. saghro* gen. et sp. nov. occupied a more epigean microhabitat, i.e., spaces among and under rocks.

Distribution

The type locality and two further localities are in the eastern Moroccan Atlas (Fig. 163B). The specimens from between Irherm and Tiferki are from almost 500 km further west and therefore assigned tentatively.

**Maghreba djabaliya** gen. et sp. nov.

urn:lsid:zoobank.org:act:933904E7-301A-4E9E-8B07-7EE5D21DD8EA

Figs 163B, 263–264, 331–350

Diagnosis

Distinguished from most known congeners (except *M. gharbija* gen. et sp. nov.) by sclerite on procursus tip between ventral sclerite and transparent process (arrow in Fig. 336); from *M. gharbija* and other species also by the combination of: procursus with long and slightly curved ventral sclerite (Fig. 336); dorsal process of distal (main) bulbal sclerite only slightly longer than ventral part, ventral part with three teeth of different sizes (Figs 339–342); epigynum short trapezoidal and with pair of whitish processes (Figs 345–347).

Etymology

The species name is an adjective derived from the Arab ‘*djabaliya*’ = ‘mountain-dwelling’.

Type material

**Holotype**

MOROCCO – Marrakesh-Safi • ♂; NE of Tizi n’Test; 30.897° N, 8.339° W; 2075 m a.s.l.; 12 Sep. 2018; B.A. Huber leg.; among rocks near ground; ZFMK Ar 22388.

**Other material examined**

MOROCCO – Marrakesh-Safi • 3 ♂♂, 9 ♀♀; same collection data as for holotype; ZFMK Ar 22389, Ar 22390 • 3 ♀♀, 1 juv. (in pure ethanol); same collection data as for holotype; ZFMK Mor73 • 1 ♂, 1 ♀; Tizi n’Test; 30.87° N, 8.38° W; 2200 m a.s.l.; May 1939; L. Berland leg.; MNHN Ar 10341 • 1 ♂, 1 juv.; same collection data as for preceding; MNHN Ar 10342.

Description

**Male** (holotype)

**Measurements.** Total length 3.2, carapace width 1.3. Distance PME–PME 110 μm; diameter PME 95 × 115 μm; distance PME–ALE 25 μm; diameter AME 70 μm; distance AME–AME 20 μm. Leg 1: 25.3 (7.2 + 0.5 + 7.0 + 8.8 + 1.8), tibia 2: 4.8, tibia 3: 3.6, tibia 4: 4.2; tibia 1 L/d: 58; femora 1–4 diameters: 0.25, 0.22, 0.21, 0.21.
COLOR (in ethanol). Carapace pale ochre-yellow, medially partly darker (brown V-mark behind ocular area; posterior part of pit darkened); clypeus not darkened; sternum dark brown, with black radial marks; legs ochre-yellow, without darker rings, with black marks on femora and tibiae, few also on metatarsi; abdomen gray, densely covered with dark and whitish marks; ventrally with wide dark brown band, band behind gonopore divided by two light longitudinal lines.

BODY. Habitus as in Fig. 263. Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, rim not more sclerotized than in female. Sternum wider than long (0.90/0.65), unmodified. Abdomen posteriorly rounded, barely elongated beyond spinnerets.

CHELICERAE. As in Figs 337–338, with pair of frontal lateral apophyses, each with one large modified cone-shaped hair; distance between tips of modified hairs: 360 μm; with pair of light proximal frontal protrusions set with brushes of long hairs; lateral stridulatory ridges barely visible in dissecting microscope.

PALPS. As is Figs 331–333; coxa with distinct retrolateral-ventral process; trochanter barely modified (low ventral rounded hump); femur not curved towards dorsal, distally widened and with low rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), without retrolateral transversal line, with distinct retrolateral-ventral proximal process and distinct dorsal process; femur-patella joints slightly shifted toward prolateral side; tibia relatively long and slender, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 334–336) with dorsal hairs slightly curved; on prolateral side with proximal ridge followed distally by distinct hump, free of hairs; distally with small ventral flap; procursus tip with strong ventral sclerite, semitransparent process, and distinctive apophysis inbetween (arrow in Fig. 336), main branch strongly curved towards dorsal, with semitransparent hair-like process and simple tip; genital bulb (Figs 339–342) basal sclerite with dorsal apophysis; distal (main) sclerite large, with deep retrolateral pocket, strong dorsal process without teeth, ventral part with three teeth of different sizes, sperm duct opening in membranous area on prolateral side.

Figs 331–333. Maghreba djabalija gen. et sp. nov.; male from Morocco, NE of Tizi n’Test (ZFMK Ar 22389); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
LEGS. Femur 1 with single row of ~20 ventral spines; without curved hairs; with slightly higher than usual density of short vertical hairs prolaterally on tibiae 3–4; retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments irregular and indistinct except ~5–8 distally.

**Male** (variation)
Tibia 1 in six males (incl. holotype): 5.7–7.0 (mean 6.3).

**Female**
In general similar to male (Fig. 264) but without spines on legs; with indistinct stridulatory apparatus between prosoma and abdomen: barely visible whitish processes on carapace and light brown areas frontally on abdomen; cheliceral stridulatory ridges not seen. Tibia 1 in ten females: 5.4–7.2 (mean 6.0).

Epigynum as in Figs 345–347, main epigynal plate trapezoidal, weakly protruding, with pair of low processes; with pair of indistinct round pockets (distance ~340 \( \mu m \)); posterior plate short and wide, simple; indistinct plate in front of epigynum, not elevated. Internal genitalia (Figs 343–344, 348–350) with elongate pore plates in transversal position, widening medially; dorsal arc with distinctive median elements, ventral arc with indistinct ventral rounded pocket.

**Natural history**
The specimens were found under large rocks along a dry riverbed. They were very fast at escaping, very different from the otherwise similar *M. stifadma* gen. et sp. nov. at Setti-Fatma.

**Distribution**
Known from the Tizi n’Test area only, in the Moroccan High Atlas (Fig. 163B).

**Genus Crossopriza** Simon, 1893

Crossopriza Simon, 1893: 476 (type species: *Artema pristina* Simon, 1890).  

**Diagnosis**
Long-legged pholcids with spotted leg femora and tibiae (e.g., Figs 558, 577, 709), abdomen dorso-posteriorly often angular or pointed (e.g., Figs 394, 398, 699), females with paired stridulatory apparatus between carapace and abdomen (Figs 468, 595, 660, 797). Distinguished from similar genera (*Maghreba* gen. nov., *Stygopholcus*, *Holocnemus*) by combination of: male chelicerae with only one pair of modified (cone-shaped) hairs at tips of main cheliceral apophyses (e.g., Figs 598, 845, 859; in contrast to *Stygopholcus*, *H. reini*, and *H. caudatus*); male palpal coxa with rounded retrolateral hump, without distinct process (in contrast to *Maghreba*); male palpal femur without retrolateral proximal process (in contrast to *Stygopholcus* and *Maghreba*); male palpal femur without dorsal process (in contrast to *Maghreba*); male palpal tarsal organ capsulate (e.g., Figs 426, 602, 849, 862; in contrast to *Stygopholcus*); procursus usually with distinctive protolateral hump set with numerous hairs (e.g., Figs 357, 376, 616, 628); procursus tip not strongly bent towards dorsal (in contrast to *Maghreba*); procursus usually without transparent membranous process at tip (in contrast to *Maghreba*; present in *C. soudanensis*); genital bulb without slender dorsal process (in contrast to *Stygopholcus*); distal (main) bulbal sclerite without deep retrolateral pocket (in contrast to *Maghreba*).
Description

Male

**Body.** Total body length ~2.5–6.5; carapace width ~1.0–2.4. Carapace with deep central pit and pair of shallow furrows diverging from posterior side of pit toward posterior rim of carapace (cf. Figs 468, 595); ocular area slightly raised, eye triads relatively close together (distance PME–PME = 0.5–1.2 × PME diameter), each secondary eye (especially PME) accompanied by small elevation (arrows in Fig. 467; “pseudo-eyes”; cf. Huber 2009a), sometimes very distinct (i.e., reflecting light), e.g., in *C. miskin* sp. nov. PME oval; AME large (~70–110% of PME small diameter). Clypeus high, usually unmodified, in *C. sengleti* sp. nov. with rounded median process (Fig. 768), in *C. johncloudsleyi* Deeleman-Reinhold & van Harten, 2001 with pair of small hooked processes (Deeleman-Reinhold & van Harten 2001: fig. 14; Huber 2009a). Abdomen oval, dorsally posteriorly usually angular (Fig. 394), sometimes rounded (Fig. 476) or pointed (Fig. 699). Male gonopore with 4–6 epiandrous spigots (sometimes asymmetric: 2+3; Figs 420, 507, 606, 854), ALS with only two spigots each: one large widened spigot and one pointed spigot (Figs 424, 505, 607); PMS with two spigots each (Figs 424, 505, 607); PLS without spigots.

**Color.** In general ochre-yellow to light brown. Carapace mostly pale, with darker median mark, without lateral marks (cf. Figs 391, 481, 702); sternum light brown to dark brown, with darker radial marks. Legs without or with indistinct darker rings, with oval to short longitudinal line-shaped dark marks on femora and tibiae (cf. Figs 558, 577, 709), sometimes also a few on metatarsi, rarely on femora only. Abdomen usually with distinct dorsal and ventral patterns: dark heart-mark and further dark and whitish marks dorsally and laterally, ventral median band variably distinct, rarely absent (e.g., *C. sengleti* sp. nov.). Cave-dwelling species slightly lighter/paler (see *C. moqal* sp. nov.; *C. kittan* sp. nov.).

**Chelicerae.** Chelicerae with one large modified (cone-shaped) hair on each main cheliceral apophysis (Figs 598, 845, 859); main cheliceral apophyses usually in lateral position, in some species moved to frontal position; in latter case sometimes with additional pair of lateral apophyses (without modified hairs; e.g., Figs 731, 774, 814). With fine to distinct stridulatory ridges (Figs 421, 500, 599, 841), distances between ridges ~3.5–8.0 μm, sometimes variable within file (distances proximally larger than distally; see *C. sahtan* sp. nov., *C. maculipes*).

**Palps.** Coxa with rounded retrolateral-ventral hump, without distinct apophysis; trochanter barely modified, slightly protruding ventrally; femur distally widened, on ventral side usually protruding, without dorsal apophysis, without proximal retrolateral process, without or with indistinct transversal dark line on retrolateral side, with stridulatory pick (modified hair) on prolateral side (Fig. 842); femur-patella joints shifted toward prolateral side (arrows in Fig. 354); tibia-tarsus joints shifted toward retrolateral side (arrows in Fig. 356); palpal tarsus without dorsal macrotrichia, palpal tarsal organ capulates (Figs 426, 602, 849, 862); procursus dorsally with straight or weakly curved hairs; procursus with prolateral process set with numerous long hairs, without ventral ‘knee’, distally usually with ventral sclerite (absent in *C. miskin* sp. nov.), usually without membranous transparent process (present in *C. soudanensis*; Fig. 358), tip of procursus not curved towards dorsal, with one or more transparent hair-like or spine-like processes on retrolateral side (Figs 417, 506, 596, 847, 857); genital bulb with basal sclerite connecting to tarsus (bs in Fig. 361), and distal (main) sclerite often with distinctive set of prolateral (slightly ventral) apophyses and ridges (e.g., Figs 406, 440, 716, 789), without retrolateral pocket; sperm duct opening in membranous area on prolateral side of distal bulbal sclerite (arrows in Figs 419, 597, 848, 858).

**Legs.** Long and relatively thin, leg 1 length ~20–65, tibia 1 length ~5.5–18, tibia 2 longer than tibia 4 (~1.1–1.3 ×). Tibia 1 L/d usually ~50–80, >80 in the slightly truglomorphic *C. kittan* sp. nov. Femur 1 usually thicker than other femora; femur 1 with spines ventrally in one row, in very small males rarely without spines; spines proximally gradually transforming into regular setae; spines rarely present.
on femur 2 (C. sanaa sp. nov.); legs without curved hairs; with few short vertical hairs; retrolateral trichobothrium in proximal position (at 2–5% of tibia length in tibia 1), prolateral trichobothrium absent on tibia 1, present on other tibiae. Tarsal pseudosegments very indistinct except a few (~2–3) distally, proximally with indistinct irregular platelets rather than distinct rings. Tarsal organs of legs capsule, with round or weakly undulating rim (Figs 428–431, 863).

**Female**

In general similar to male; chelicerae either with indistinct and small stridulatory files (with slightly larger distances between ridges than in males; 4.0–8.5 μm) or without stridulatory files (Figs 422, 469, 501, 600, 843, 861); legs slightly shorter than in male, without spines. Usually with pair of variably distinct processes posteriorly on carapace (arrows in Figs 468, 595) acting against pair of variably distinct plates on abdomen (Figs 660, 797), absent in *C. johncloudsleyi*. Epigynum usually consisting of large, simple anterior plate and short but wide posterior plate; anterior plate usually with pair of distinct pockets, sometimes close together on median elevated ridge, sometimes more like furrows than pockets; epigynum usually without processes, only in *C. johncloudsleyi* with two pairs of distinct apophyses (Deeleman-Reinhold & van Harten 2001: fig. 11; Huber 2009a: fig. 30); without bulging areas in front of anterior plate. Internal genitalia with sclerotized arc that consists of dorsal and ventral parts (da and va in Figs 388, 447) and is variably visible in uncleared specimens; uterus externus sometimes with small median ventral structure (pouch or pocket?), sometimes visible as round structure in untreated specimens (e.g., Figs 463, 551, 612, 837); pore plates large, flat, of variable shape and position, pores either homogeneously distributed or in groups.

**Distribution**

All species except *C. lyoni* are restricted to an area that ranges from Mali to India and from Kenya to Kazakhstan (Fig. 351). The type species *C. lyoni* has expanded around the globe (Fig. 351), apparently since approximately the second half of the 19th century (see below).

**Relationships**

Together with *Holocnemus*, *Stygopholcus*, and *Maghreba* gen. nov., *Crossopriza* is an unambiguous representative of the spotted-leg clade, but beyond that the cladistic analysis provides only weak evidence for inter-generic relationships. Even the monophyly of *Crossopriza* is poorly supported by a single character of questionable strength (Appendix 3, char. 18). Within *Crossopriza*, a group of 14 species (including the type species) is reasonably well supported by two functionally related characters (medially-directed male cheliceral apophyses and medially positioned female epigynal pockets). Within this group, a further sub-group of eight species (again including the type species) share a second pair of male cheliceral apophyses. Finally, *C. lyoni* shares with three other species a ventral sclerite on the procursus provided with a retrolateral side branch (arrows in Figs 769, 788, 810, 828). The few remaining sister-group relationships suggested by the cladogram are either weakly supported or of little relevance, or both.

**Composition**

The genus now includes 24 named species, of which 18 are newly described. All named species are treated below except for *C. johncloudsleyi* which was redescribed in Huber (2009a). Several additional undescribed species are present in collections. The ZMMU has an undescribed species from Pakistan (N of Islamabad, 33.75° N, 73.06° E), which is not formally described because the only available male is in very poor condition. The ZFMK (Ar 22391) has two females from Iran (Hormozgan, Siyahu; 27.75° N, 56.34° E) that resemble *C. miskin* sp. nov. in habitus, size, and epigynum, but with the epigynal pockets wider apart. For other undescribed species that are very similar to species (re)described herein, see under *C. dhofar* sp. nov., *C. khayyami* sp. nov., and *C. maculipes*. 

100
Natural history
Most species have been collected in sheltered spaces under rocks, in small cavities of the ground, and in the twilight area of caves. A few species build their webs in more exposed habitats, among rocks and on plants (e.g., *C. tiwi* sp. nov.). Others are occasionally or regularly found in houses (e.g., *C. semicaudata*, *C. pristina*, *C. maculata*, *C. lyoni*). Little is known about the biology of *Crossopriza* beyond these basic microhabitat data (see individual natural history sections below). Only the cosmopolitan *C. lyoni* has been studied in some detail, including development and prey capture (see below).

Fig. 351. Known distribution of *Crossopriza* Simon, 1893. Orange: *C. lyoni* (Blackwall, 1867); blue: all other species (cf. Figs 352–353).

Fig. 352. Distribution of *Crossopriza* Simon, 1893; autochthonous species part 1 (cf. Fig. 353): species with main cheliceral apophyses in lateral position.
Identification

A key that works for both males and females proved difficult to construct. At the same time, a combination of geography (Figs 351–353) and diagnostic characters (mainly male palp, male chelicerae, female epigynal plate) usually makes identification relatively quick and easy.

**Fig. 353.** Known distribution of *Crossopriza* Simon, 1893; autochthonous species part 2 (cf. Fig. 352): species with main cheliceral apophyses in frontal position and epigynal pockets close together. The figure is split into two to avoid too much overlap; the split is not meant to reflect any natural grouping of species. The single record of *C. maculipes* from China is not shown (see text).
**Crossopriza soudanensis** Millot, 1941
Figs 352, 354–372

**Diagnosis**
Distinguished from known congeners by details of male palp (Figs 357–361; procursus tip with fringed transparent process; shape of distal bulbal sclerite); from the only geographically close congener (*C. illizi* sp. nov.) also by male chelicerae without modified hairs on frontal face (Fig. 362); from many congeners also by female genitalia (Figs 364–372; epigynum with elongate pockets; roundish pore plates far apart; similar to *C. illizi*).

**Type material**

**Lectotype** (examined; designated herein)
BURKINA FASO • ♂; Ouagadougou; 12.36° N, 1.52° W; Sep. 1937; J. Millot leg.; MNHN Ar 10520.

**Paralectotypes** (examined)
BURKINA FASO • 1 ♀; same collection data as for lectotype; MNHN Ar 10520.

MALI • 3 ♀♀, 2 juvs; Bamako; 12.63° N, 7.99° W; Oct. 1937; J. Millot leg.; MNHN Ar 10512 • 1 ♀; Sangha [Sanga]; 14.46° N, 3.30° W; Oct. 1937; J. Millot leg.; MNHN Ar 10518.

**Other material examined**
None.

**Redescription**

**Male** (lectotype)

**Measurements.** Total length 3.5, carapace width 1.45. Distance PME–PME 80 µm; diameter PME 100 × 140 µm; distance PME–ALE 50 µm; diameter AME 95 µm; distance AME–AME 20 µm. Leg 1: 42.0 (12.0 + 0.7 + 11.1 + 15.9 + 2.3), tibia 2: 7.5, tibia 3: 5.5, tibia 4: 6.1; tibia 1 L/d: 72; femora 1–4 diameters: 0.21, 0.18, 0.17, 0.18.

**Color** (in ethanol). Entire specimen very pale, bleached; original coloration (Millot 1941) apparently similar to other epigean congeners.

**Body.** Habitus similar to *C. sahtan* sp. nov. and *C. ghul* sp. nov. (cf. Figs 391, 481). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim more sclerotized than in female. Sternum wider than long (1.05/0.65), unmodified. Abdomen slightly elongated, dorso-posteriorly barely elevated, rounded.

**Chelicerae.** As in Figs 362–363, distally with pair of lateral apophyses provided with one large modified cone-shaped hair each; distance between tips of modified hairs: 390 µm; lateral stridulatory ridges fine but visible in dissecting microscope.

**Palps.** As in Figs 354–356; coxa with strong retrolateral hump; trochanter barely modified; femur small (relative to tibia), distally on ventral side widened, proximally with prolateral stridulatory pick, without retrolateral transversal line, without retrolateral proximal process; femur-patella joints slightly shifted toward prolateral side (arrows in Fig. 354); tibia-tarsus joints shifted toward retrolateral side (arrows in Fig. 356); tarsus without macrotrichia; procursus (Figs 357–358) short and straight, proximally on prolateral side with hump set with numerous hairs, dorsal hairs straight or curved downwards, procursus
tip with ventral sclerite with short dorsal branch, with distinctive process ending in fringed transparent membrane; genital bulb (Figs 359–361) with simple basal sclerite connected to distal (main) sclerite, connecting sclerite with ventral projection, sperm duct opening not seen; distal sclerite with retrolateral ridge, with two small prolateral apophyses and distal rim widely curved towards prolateral.

Legs. Femur 1 with single row of ~26 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

Female
In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of small whitish processes posteriorly on carapace and pair of small light brown plates anteriorly on abdomen. Tibia 1 in female from Ouagadougou: 9.1. Epigynum as in Fig. 366, main epigynal plate oval to semicircular, with pair of distinct elongate pockets (distance between pockets ~310 μm); posterior plate more strongly developed laterally than medially. The only female specimen from Ouagadougou was not cleared. Females from Mali possibly not conspecific with lectotype: very similar epigyna but pockets in female from Sangha slightly closer together (Fig. 367; distance ~250 μm), in females from Bamako considerably farther apart (Fig. 370; distance ~450 μm). Internal genitalia (Figs 371–372; specimen from Bamako) with almost round pore plates, simple dorsal and ventral arcs, ventral arc medially barely modified. Tibia 1 in 2 females from Bamako: 7.8, 8.7 (missing in other females from Mali).

Distribution
Known from three localities in Burkina Faso and southern Mali (Fig. 352).

Figs 354–356. Crossopriza soudanensis Millot, 1941; lectotype male from Burkina Faso, Ouagadougou (MNHN Ar 10520); mirror images of right palp, prolateral, dorsal, and retrolateral views; arrows: joints between femur and patella and between tibia and tarsus. Scale bar = 0.5 mm.
HUBER B.A., Revisions of Holocnemus and Crossopriza

Crossopriza illizi sp. nov.
urn:lsid:zoobank.org:act:8A2A2B20-5BD3-48A4-948C-E3EB160601F9
Figs 352, 373–390

Diagnosis
Distinguished from known congeners by shape of distal bulbal sclerite (Fig. 379; distinctive ridges on prolateral side), by male chelicerae with modified hairs on frontal face (Figs 382–383; also present but more distal in C. dhofar sp. nov.); from many congeners also by female genitalia (Figs 386–390; epigynum with elongate pockets; roundish pore plates far apart; similar to C. soudanensis).

Etymology
The species name refers to the type locality; noun in apposition.

Type material

Holotype
ALGERIA – Illizi • ♂; Iherir; 25.41° N, 8.41° E; 29 Dec. 1986; K. de Smet leg.; in Typha litter, among stones and grasses; ZFMK Ar 22392.

Other material examined
ALGERIA – Illizi • 2 ♂♂, 3 juvs; same collection data as for holotype; CRB • 1 ♂, 1 ♀, 3 juvs; Djanet, Aguelmane ti-n-Azzaret, “Adjé”; 25.83° N, 7.75° E; 17 Apr. 1979; J. Mertens leg.; CRB.

Figs 373–375. Crossopriza illizi sp. nov.; male from Algeria, Iherir (CRB); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Description

Male (holotype)

Measurements. Total length 3.6, carapace width 1.25. Distance PME–PME 80 μm; diameter PME 100 × 120 μm; distance PME–ALE 25 μm; diameter AME 90 μm; distance AME–AME 35 μm. Leg 1: 10.9 + 0.6 + 9.9, metatarsus damaged; tibia 2: 6.9, tibia 3: 5.1, tibia 4: 5.7; tibia 1 L/d: 70; femora 1–4 diameters: 0.18, 0.17, 0.16, 0.16.

Color (in ethanol). Carapace pale ochre-yellow, medially darker (brown; ocular area only posteriorly brown); sternum light brown with dark brown radial marks; legs pale ochre-yellow, without dark rings, with small black marks on femora and tibiae; abdomen pale ochre-gray, with small dark marks dorsally, especially at posterior tip; ventrally with large dark brown mark in front of gonopore, three longitudinal marks behind gonopore, and dark brown area at spinnerets.

Body. Habitus similar to C. tiwi sp. nov. (cf. Figs 393–394). Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, rim not more sclerotized than in female. Sternum wider than long (0.95/0.70), unmodified. Abdomen slightly elongated above spinnerets, dorso-posteriorly slightly pointed.

Figs 386–390. Crossopriza illizi sp. nov.; female from Algeria, Aguelmane ti-n-Azzaret (CRB). 386–387. Abdomen and epigynum, ventral views. 388–390. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
CHELICERAE. As in Figs 382–383, with pair of low whitish proximal humps, each provided with 5–6 small, modified (cone-shaped) hairs, and pair of frontal lateral apophyses, each with one large cone-shaped hair; distance between tips of modified hairs at tips of lateral apophyses: 370 μm; lateral stridulatory ridges fine but visible in dissecting microscope.

PALPS. As is Figs 373–375; coxa with rounded retrolateral-ventral hump; trochanter barely modified; femur slightly curved towards dorsal (dorso-distal line), distally widened and with distinct rounded ventral protrusion, proximally with prolateral stridulatory pick (modified hair), without retrolateral transversal line, without retrolateral-ventral proximal process, without dorsal process; femur-patella joints slightly shifted toward prolateral side; tibia strongly widened, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 376–378) straight, dorsal hairs not curved upwards; on prolateral side with proximal hump provided with numerous hairs; procursus tip with short ventral sclerite, distinctive semitransparent prolateral process, and membranous elements; genital bulb (Figs 379–381) with simple basal sclerite connected to distal (main) sclerite; distal sclerite flat and rectangular, with small dorsal process and distinctive prolateral ridges; sperm duct opening not seen (presumably in membranous prolateral field; asterisk in Fig. 379).

LEGS. Femur 1 with single row of ~22 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; retrolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

Male (variation)
Tibia 1 in two other males: 9.5, 9.6. Two males with many whitish marks on abdomen.

Female
In general similar to male but without spines on legs; with pair of prominent whitish humps posteriorly on carapace, and pair of corresponding indistinct plates frontally on abdomen; cheliceral stridulatory ridges not seen (very fine or absent). Tibia 1: 7.0. Epigynum as in Figs 386–387, main epigynal plate semicircular, wider than long, weakly protruding, posteriorly with whitish median area; with pair of grooves rather than pockets (distance ~ 330–400 μm); posterior plate short and wide, only laterally sclerotized; area in front of epigynum not elevated. Internal genitalia (Figs 384–385, 388–390) with large rounded pore plates; dorsal arc weak, ventral arc medially strongly developed, with distinctive pair of median sclerites and indistinct small pouch ventral of these sclerites.

Distribution
Known from two localities in south-eastern Algeria (Illizi Province) (Fig. 352).

Crossopriza sahtan sp. nov.
urn:lsid:zoobank.org:act:51F747A4-2F7D-4873-92BF-0D1939DDE70B
Figs 352, 391–392, 399–432

Diagnosis
Distinguished from known congeners by details of male palp (Figs 403, 406; procursus with two distal elements of similar shape; distal bulbal sclerite with single prolateral tooth); from the similar C. tiwi sp. nov. also by male chelicerae (Figs 404–405; distal apophyses closer together relative to width of chelicerae; proximal frontal processes more distinct) and by shape of epigynum (Figs 411–412; shorter, anteriorly not evenly curved).

Etymology
The species name refers to the type locality; noun in apposition.
Type material

Holotype

OMAN – Al Batinah South • ♂; mountain village above Wadi Sahtan; 3.220° N, 57.316° E; 950 m a.s.l.; 26 Mar. 2017; B.A. Huber leg.; among rocks in wadi; ZFMK Ar 22393.

Other material examined

OMAN – Al Batinah South • 3 ♂♂, 6 ♀♀; same collection data as for holotype; ZFMK Ar 22394 • 1 ♀, 3 juvs (in pure ethanol); same collection data as for holotype; ZFMK Om37. – Ad Dakhiliya • 1 ♂; Wadi Hoota near upper entrance of Al Hoota cave; 23.102° N, 57.311° E; 1000 m a.s.l.; 16 Feb. 2018; B.A. Huber leg.; ZFMK Ar 22395 • 1 ♂; Al Hamra; 23.123° N, 57.293° E; 670 m a.s.l.; 24 Mar. 2017; B.A. Huber leg.; cavities in rocks; ZFMK Ar 22396 • 3 ♂♂, 1 ♀; wadi N of Al Hamra; 23.128° N, 57.291° E; 680 m a.s.l.; 24 Mar. 2017; B.A. Huber leg.; cavities in rocks; ZFMK Ar 22397 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Om31 • 4 ♂, 4 ♀ (partly used for SEM); between Tanuf and Al Hamra, Al Ghubrat cave, lower entrance; 23.0718° N, 57.3680° E; 665 m a.s.l.; 15 Feb. 2018; B.A. Huber leg.; cave entrance area; ZFMK Ar 22398 • 1 ♂, 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Om103 • 1 ♂, 1 ♀, 1 juv.; same locality as for preceding; 18 Nov. 2001; H. Sattmann leg.; NHMW • 1 ♂, 1 ♀, 1 juv.; same locality as for preceding; 17 Nov. 2001; H. Sattmann leg.; NHMW • 2 ♂, 1 ♀; Wadi Ghul, ’site 2’; 23.233° N, 57.150° E; 1430 m a.s.l.; 15 Feb. 2018; B.A. Huber leg.; ZFMK Ar 22399 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Om106 • 2 ♂, 4 ♀; Izki, Jarnan Cave; 22.924° N, 57.764° E; 540 m a.s.l.; 24 Mar. 2017; B.A. Huber leg.; in cave and nearby overhangs; ZFMK Ar 22400.

Description

Male (holotype)

Measurements. Total length 5.5, carapace width 2.0. Distance PME–PME 110 μm; diameter PME 130 × 150 μm; distance PME–ALE 40 μm; diameter AME 100 μm; distance AME–AME 40 μm. Leg 1: 60.6 (17.9 + 0.8 + 15.1 + 23.6 + 3.2), tibia 2: 10.9, tibia 3: 7.6, tibia 4: 8.9; tibia 1 L/d: 66; femora 1–4 diameters: 0.33, 0.27, 0.24, 0.26.

Color (in ethanol). Carapace and clypeus ochre-yellow, anteriorly in median pit light brown; sternum dark brown with black radial marks; legs ochre-yellow, without darker rings, with many black lines on femora, few on tibiae, very few on metatarsi; abdomen ochre-gray, with dark marks dorsally, laterally, and posteriorly above spinnerets and with many whitish marks; ventrally with distinct black median band, partly disrupted, with three parallel longitudinal marks behind gonopore.

Body. Habitus as in Fig. 391. Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (1.2/0.9), unmodified. Abdomen slightly elongated, dorso-posteriorly angular. Gonopore with four epiandrous spigots (Fig. 420); ALS with one widened spigot and one pointed spigot, PMS with two pointed spigots (Fig. 424).

Chelicerae. As in Figs 404–405, proximally with pair of pale frontal conical protrusions, distally with pair of lateral apophyses provided with one large modified cone-shaped hair each; distance between tips of modified hairs: 345 μm; lateral stridulatory ridges distinct (Fig. 421; distances between ridges proximally ~8 μm, distally ~6.5 μm), clearly visible in dissecting microscope.

Palps. As in Figs 399–401; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory
pick, without retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; tarsal organ capsule (Fig. 426); procursus straight, proximal prolateral hump set with numerous long hairs, long dorsal hairs partly weakly curved upwards, procursus tip (Figs 402–403) with strong ventral sclerite and distinctive dorsal sclerite narrowing distally, with single hair-like process (arrow in Fig. 417); genital bulb (Figs 406–408, 418–419) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening basally on prolateral side (arrow in Fig. 419); distal sclerite with sharp retrolateral ridge and single pointed prolateral tooth.

**Legs.** Femur 1 with single row of ~40 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments except 2–3 at tip; tarsal organs capsule, with round or slightly irregular rim (Figs 428–431).

**Male (variation)**
Tibia 1 in 15 males (incl. holotype): 12.5–16.5 (mean 14.3). Smaller males with fewer spines on femur 1 (~30). Dark marks on abdomen always distinct but in variably ‘complete’ pattern.

**Female**
In general similar to male (Fig. 392) but without spines on legs; without stridulatory files on chelicerae (Fig. 422), corresponding hair on palpal femur only weakly modified (Fig. 423; slightly stronger than usual); with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of indistinct light brown or non-darkened plates anteriorly on abdomen. Tibia 1 in 18 females: 11.9–15.3 (mean 13.1). Epigynum as in Figs 412 and 432, main epigynal plate short but wide

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**Figs 399–401.** *Crossopriza sahtan* sp. nov.; male from Oman, above Wadi Sahtan (ZFMK Ar 22394); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
trapezoidal, weakly protruding; with pair of shallow pockets (rather furrows) ~365 μm apart; internal sclerotized arc and median round structure visible in uncleared specimens; posterior plate short but wide. Internal genitalia (Figs 409–410, 413–415) with large oval pore plates converging anteriorly, dorsal arc strong but simple, ventral arc with median pouch or pocket of variable size and unknown function.

**Natural history**

This species was sometimes abundant in cavities in and under rocks, sometimes in very dry environments (e.g., the very shallow Jarnan Cave). In one particularly suitable habitat above Wadi Sahtan (a large rock suspended above a small stream) the density was extremely high: approximately 100 large specimens and many small specimens were estimated on a rock surface of approximately 2 m². At Al Ghubrat Cave, the spiders were only found at the cave entrance, while the interior of the cave was occupied by *Artema ghubrat* Huber, 2019.

**Distribution**

Known from several localities in north eastern Oman (Al Batinah South and Ad Dakhiliya Provinces) (Fig. 352).

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**Figs 411–415.** *Crossopriza sahtan* sp. nov.; female from Oman, above Wadi Sahtan (ZFMK Ar 22394). 411–412. Abdomen and epigynum, ventral views. 413–415. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars: 411 = 1.0 mm; 412–415 = 0.5 mm.
Crossopriza tiwi sp. nov.
Figs 352, 393–395, 433–449

Diagnosis
Distinguished from known congeners by details of male palp (Figs 437, 440; procursus tip with short ventral sclerite and wide dorsal membranous element; distal bulbular sclerite with distinctive set of prolateral teeth and ridges); from the similar C. sahtan sp. nov. also by male chelicerae (Figs 438–439; distal apophyses wider apart relative to width of chelicerae; proximal frontal processes much less distinct) and by shape of epigynum (Fig. 446; longer, anteriorly evenly curved).

Etymology
The species name refers to the type locality; noun in apposition.

Type material

Holotype
OMAN – Ash Sharqiyah South • ♂; Wadi Tiwi; 22.801° N, 59.240° E; 60 m a.s.l.; 22 Mar. 2017; B.A. Huber leg.; ZFMK Ar 22401.

Other material examined
OMAN – Ash Sharqiyah South • 10 ♂♂, 7 ♀♀; same collection data as for holotype; ZFMK Ar 22402, Ar 22403 • 1 ♂, 3 ♀♀, 1 juv. (in pure ethanol); same collection data as for holotype; ZFMK Om26 • 1 ♂; 8 km NNW of Wadd; 22.6136° N, 59.2919° E; 430 m a.s.l.; 18 Feb. 2018; B.A. Huber leg.; ZFMK Ar 22404 • 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Om119 • 1 ♀; between Sur and Al Kamil; 22.463° N, 59.387° E; 90 m a.s.l.; 23 Mar. 2017; B.A. Huber leg.; in wadi; ZFMK Ar 22405 • 7 ♂♂, 6 ♀♀; between Sur and Al Kamil; 22.4646° N, 59.3881° E; 95 m a.s.l.; 18 Feb. 2018; B.A. Huber leg.; palm garden; ZFMK Ar 22406, Ar 22407 • 3 ♀♀, 2 juvs (in pure ethanol); same collection data as for preceding; ZFMK Om117. – Ash Sharqiyah North • 3 ♀♀; Wadi Bani Khalid, outside of Mukal (Moqal) Cave; 22.624° N, 59.097° E; 700 m a.s.l.; 22 Mar. 2017; B.A. Huber leg.; ZFMK Ar 22408.

Description

Male (holotype)
MEASUREMENTS. Total length 4.1, carapace width 1.7. Distance PME–PME 75 μm; diameter PME 130 × 150 μm; distance PME–ALE 30 μm; diameter AME 100 μm; distance AME–AME 20 μm. Leg 1: 49.7 (14.9 + 0.7 + 12.9 + 18.5 + 2.7), tibia 2: 9.1, tibia 3: 6.5, tibia 4: 7.7; tibia 1 L/d: 65; femora 1–4 diameters: 0.31, 0.25, 0.22, 0.24.

COLOR (in ethanol). Carapace ochre-yellow, anteriorly in median pit light brown; sternum dark brown with black radial marks; legs ochre-yellow, without darker rings, with black lines on femora and (few) on tibiae; abdomen pale gray, with some dark marks dorsally and posteriorly above spinnerets; ventrally with distinct black pattern, with three parallel longitudinal marks behind gonopore.

BODY. Habitus as in Figs 393–394. Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (1.2/0.8), unmodified. Abdomen slightly elongated, dorso-posteriorly angular.

CHELICERAE. As in Figs 438–439, with pair of latero-distal apophyses provided with one large modified cone-shaped hair each; distance between tips of modified hairs: 360 μm; lateral stridulatory ridges clearly visible in dissecting microscope.

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PALPS. As in Figs 433–435; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, with indistinct retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; procursus straight, with prolateral proximal hump set with many long hairs, long dorsal hairs not or only weakly curved, procursus tip (Figs 436–437) with strong ventral sclerite and further distinctive membranous and sclerotized elements; genital bulb (Figs 440–442) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening at basis of distal sclerite; distal sclerite with sharp retrolateral ridge and distinctive set of prolateral apophyses and ridges.

LEGS. Femur 1 with single row of ~40 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without macrotrichia; procursus straight, with prolateral proximal hump set with many long hairs, long dorsal hairs not or only weakly curved, procursus tip (Figs 436–437) with strong ventral sclerite and further distinctive membranous and sclerotized elements; genital bulb (Figs 440–442) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening at basis of distal sclerite; distal sclerite with sharp retrolateral ridge and distinctive set of prolateral apophyses and ridges.

Male (variation)
Tibia 1 in 16 males (incl. holotype): 9.9–13.1 (mean 11.3). Smaller males with fewer spines on femur 1 (~10–20). Abdomen often also with white marks. Ventral parallel marks on abdomen variably fused or separate.

Female
In general similar to male (Fig. 395) but without spines on legs, with small and poorly visible stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of distinct light brown plates anteriorly on abdomen. Tibia 1 in 17 females: 7.1–11.7 (mean 9.8). Epigynum as in Figs 445–446, main epigynal plate semicircular to

Figs 433–435. Crossopriza tiwi sp. nov.; male from Oman, Wadi Tiwi (ZFMK Ar 22402); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
triangular, weakly protruding, only posteriorly laterally heavily sclerotized; with pair of shallow furrows ~390 μm apart; internal sclerotized arcs visible in uncleared specimens; posterior plate short but wide. Internal genitalia (Figs 443–444, 447–449) with large oval pore plates converging anteriorly, dorsal arc strong but simple, ventral arc with median modification of unknown function.

**Natural history**

This species was often very abundant, both in villages (in and on abandoned buildings; in fairly exposed webs at the basis of banana and other plants) and in natural environments (under rocks, in small cavities). At Mukal Cave, it was only found outside the cave, while the cave itself was occupied by *C. moqal* sp. nov. Between Sur and Al Kamil, the species was abundant in a palm garden surrounded by large rocks; while large specimens were mostly restricted to the rocks, smaller specimens were also found on the palms, even among leaves of young palms, at least up to 1.5 m above the ground.

**Distribution**

Known from several localities in the Eastern Hajars of NE Oman (Fig. 352).

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**Figs 445–449.** *Crossopriza tiwi* sp. nov.; female from Oman, Wadi Tiwi (ZFMK Ar 22403). 445–446. Abdomen and epigynum, ventral views. 447–449. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
**Crossopriza dhofar** sp. nov.

urn:lsid:zoobank.org:act:52766710-5651-40D5-8657-3E484C5AB946

Figs 352, 396–398, 450–474

**Diagnosis**

Easily distinguished from all described congeners by details of male palp (Figs 453–457; procursus tip with ventral sclerite and two further pointed processes; bulbal sclerite with two simple pointed processes), by male chelicerae (Figs 458–459; modified hairs on frontal face), and female genitalia (Figs 460–466, 473–474; pair of large pockets; large internal median sclerite; pair of lateral internal sclerites) (see also Remark below).

**Remark**

A very similar undescribed species occurs in Yemen (Seyoun, 15.95° N, 48.78°E). It shares the distinctive configuration of the distal procursus and bulb elements as well as the presence of modified hairs proximally on the male chelicerae. However, the shapes and positions of these elements differ from *C. dhofar* sp. nov. The species is not formally described because the female is unknown. A single male specimen and one juvenile are deposited in ZFMK Ar 22409–10.

**Etymology**

The species name refers to the type locality; noun in apposition.

**Type material**

**Holotype**

OMAN – Dhofar • ♂; Ain Razad cave; 17.1301° N, 54.2364° E; 115 m a.s.l.; 22 Feb. 2018; B.A. Huber leg.; in cave; ZFMK Ar 22411.

**Other material examined**

OMAN – Dhofar • 1 ♂, 2 ♀♀; same collection data as for holotype; ZFMK Ar 22412 • 1 ♀, 1 juv. (in pure ethanol); same collection data as for holotype; ZFMK Om130 • 12 ♀♀, 3 juvs (partly used for SEM); Wadi Nahiz; 17.140° N, 54.123° E; 140 m a.s.l.; 21 Feb. 2018; B.A. Huber leg.; under rocks; ZFMK Ar 22413 • 1 ♀, 4 juvs (in pure ethanol); same collection data as for preceding; ZFMK Om125 • 1 ♂, 10 ♀♀; same collection data as for preceding; 26 Feb. 2018; Ar 22493 • 1 ♂, 2 juvs; same collection data as for preceding; ZFMK Om143 • 1 ♂, 3 ♀♀; Ain Athoom; 17.116° N, 54.369° E; 290 m a.s.l.; 28 Feb. 2018; B.A. Huber leg.; under rocks in wadi; ZFMK Ar 22414 • 1 ♂ (in pure ethanol); same collection data as for preceding; ZFMK Om148 • 4 ♀♀; Wadi Darbat; 17.09° N, 54.45° E; 200 m a.s.l.; 23 Feb. 2018; B.A. Huber leg.; ZFMK Ar 22415 • 1 ♂ (in pure ethanol); same collection data as for preceding; ZFMK Om132 • 1 ♀; Tayq Cave; 17.182° N, 54.534° E; 790 m a.s.l.; 23 Feb. 2018; B.A. Huber leg.; among rocks near cave; ZFMK Ar 22416 • 1 ♂ (in pure ethanol); same collection data as for preceding; ZFMK Om134 • 1 ♂; Wadi Shalyon; 17.1844° N, 54.9538° E; 360 m a.s.l.; 1 Mar. 2018; B.A. Huber leg.; among rocks in wadi; ZFMK Ar 22417 • 2 ♀♀; NE of Rawiyyah; 17.4733° N, 54.1195° E; 540 m a.s.l.; 27 Feb. 2018; B.A. Huber leg.; among palms near ground; ZFMK Ar 22418 • 1 ♂, 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Om145 • 3 juvs (in pure ethanol); E of Thumrait; 17.670° N, 54.163° E; 460 m a.s.l.; 27 Feb. 2018; B.A. Huber leg.; among rocks and in low palms near ground; ZFMK Om144 • 1 ♂, 2 ♀♀, 1 juv.; Shaat sinkhole, in wadis leading to sinkhole; 16.774° N, 53.587° E; 850 m a.s.l.; 24 Feb. 2018; B.A. Huber leg.; ZFMK Ar 22419 • 1 ♂, 2 ♀♀, 1 juv.; same collection data as for preceding; 25 Feb. 2018; Ar 23863.

**Description**

**Male** (holotype)

**Measurements.** Total length 3.3, carapace width 1.1. Distance PME–PME 80 μm; diameter PME 80 × 90 μm; distance PME–ALE 30 μm; diameter AME 75 μm; distance AME–AME 20 μm. Leg 1: 28.3
COLOR (in ethanol). Carapace ochre-yellow, with light brown median band including ocular area; clypeus not darkened; sternum densely covered with dark brown spots; legs ochre-yellow, without darker rings, with black marks on femora and (few) on tibiae; abdomen gray, with dorsal pattern of dark marks among many internal whitish marks; ventrally with distinct black pattern (disrupted median band), three longitudinal bands behind gonopore.

BODY. Habitus as in Fig. 396. Ocular area slightly raised. Shallow but wide thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (0.80/0.55), unmodified. Abdomen elongated and pointed above spinnerets.

CHELICERAE. As in Figs 458–459, with pair of distal lateral apophyses provided with one modified cone-shaped hair each, two pairs of large conical hairs frontally near median line, and pair of smaller modified hairs more proximally (slightly asymmetric); distance between tips of modified hairs on lateral apophyses: 405 μm; with distinct lateral stridulatory ridges.

PALPS. As in Figs 450–452; coxa with very low retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, without retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia large relative to femur; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 453–454) slightly curved towards ventral, short, long dorsal hairs not curved, with two strong humps proximally on prolateral side, ventral hump densely set

Figs 450–452. Crossopriza dhofar sp. nov.; male from Oman, Ain Razad cave (ZFMK Ar 22412); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
with long hairs; procursus tip complex, with ventral hinged sclerite accompanied by flat parallel sclerite, pointed dorsal sclerite, and median partly membranous elements; genital bulb (Figs 455–457) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with distinctive ventral process, smaller prolateral process, and partly semitransparent pointed tip.

**LEGS.** Femur 1 with single row of ~10 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments (except for 2–3 at tip).

**Male** (variation)
Tibia 1 in six males (incl. holotype): 6.4–9.9 (mean 8.2). Larger males with more spines of femur 1 (~23 in largest male); sternum sometimes uniformly dark, almost black; ventral abdominal pattern slightly variable, three longitudinal bands sometimes fused; frontal hairs on chelicerae slightly variable, but usually with two pairs of strong hairs and 1–3 more proximal pairs of smaller hairs, often asymmetric. Males from Shaat sinkhole with slightly shorter dorsal process at tip of procursus.

**Female**
In general similar to male (Figs 397–398) but without spines on legs, with very indistinct stridulatory files on chelicerae (Fig. 469; barely visible in dissecting microscope), and with stridulatory organ consisting of long hairs; procursus tip complex, with ventral hinged sclerite accompanied by flat parallel sclerite, pointed dorsal sclerite, and median partly membranous elements; genital bulb (Figs 455–457) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with distinctive ventral process, smaller prolateral process, and partly semitransparent pointed tip.

**LEGS.** Femur 1 with single row of ~10 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments (except for 2–3 at tip).

**Male** (variation)
Tibia 1 in six males (incl. holotype): 6.4–9.9 (mean 8.2). Larger males with more spines of femur 1 (~23 in largest male); sternum sometimes uniformly dark, almost black; ventral abdominal pattern slightly variable, three longitudinal bands sometimes fused; frontal hairs on chelicerae slightly variable, but usually with two pairs of strong hairs and 1–3 more proximal pairs of smaller hairs, often asymmetric. Males from Shaat sinkhole with slightly shorter dorsal process at tip of procursus.

**Female**
In general similar to male (Figs 397–398) but without spines on legs, with very indistinct stridulatory files on chelicerae (Fig. 469; barely visible in dissecting microscope), and with stridulatory organ consisting of long hairs; procursus tip complex, with ventral hinged sclerite accompanied by flat parallel sclerite, pointed dorsal sclerite, and median partly membranous elements; genital bulb (Figs 455–457) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with distinctive ventral process, smaller prolateral process, and partly semitransparent pointed tip.

**LEGS.** Femur 1 with single row of ~10 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments (except for 2–3 at tip).

**Male** (variation)
Tibia 1 in six males (incl. holotype): 6.4–9.9 (mean 8.2). Larger males with more spines of femur 1 (~23 in largest male); sternum sometimes uniformly dark, almost black; ventral abdominal pattern slightly variable, three longitudinal bands sometimes fused; frontal hairs on chelicerae slightly variable, but usually with two pairs of strong hairs and 1–3 more proximal pairs of smaller hairs, often asymmetric. Males from Shaat sinkhole with slightly shorter dorsal process at tip of procursus.

**Female**
In general similar to male (Figs 397–398) but without spines on legs, with very indistinct stridulatory files on chelicerae (Fig. 469; barely visible in dissecting microscope), and with stridulatory organ consisting of long hairs; procursus tip complex, with ventral hinged sclerite accompanied by flat parallel sclerite, pointed dorsal sclerite, and median partly membranous elements; genital bulb (Figs 455–457) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with distinctive ventral process, smaller prolateral process, and partly semitransparent pointed tip.

**LEGS.** Femur 1 with single row of ~10 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments (except for 2–3 at tip).

**Male** (variation)
Tibia 1 in six males (incl. holotype): 6.4–9.9 (mean 8.2). Larger males with more spines of femur 1 (~23 in largest male); sternum sometimes uniformly dark, almost black; ventral abdominal pattern slightly variable, three longitudinal bands sometimes fused; frontal hairs on chelicerae slightly variable, but usually with two pairs of strong hairs and 1–3 more proximal pairs of smaller hairs, often asymmetric. Males from Shaat sinkhole with slightly shorter dorsal process at tip of procursus.

**Female**
In general similar to male (Figs 397–398) but without spines on legs, with very indistinct stridulatory files on chelicerae (Fig. 469; barely visible in dissecting microscope), and with stridulatory organ consisting of long hairs; procursus tip complex, with ventral hinged sclerite accompanied by flat parallel sclerite, pointed dorsal sclerite, and median partly membranous elements; genital bulb (Figs 455–457) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with distinctive ventral process, smaller prolateral process, and partly semitransparent pointed tip.

**LEGS.** Femur 1 with single row of ~10 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments (except for 2–3 at tip).

**Male** (variation)
Tibia 1 in six males (incl. holotype): 6.4–9.9 (mean 8.2). Larger males with more spines of femur 1 (~23 in largest male); sternum sometimes uniformly dark, almost black; ventral abdominal pattern slightly variable, three longitudinal bands sometimes fused; frontal hairs on chelicerae slightly variable, but usually with two pairs of strong hairs and 1–3 more proximal pairs of smaller hairs, often asymmetric. Males from Shaat sinkhole with slightly shorter dorsal process at tip of procursus.
of pair of weakly sclerotized but distinct processes posteriorly on carapace (arrow in Fig. 468) and pair of light brown plates anteriorly on abdomen. Tarsal organ capsulate (Fig. 472); ALS with one widened spigot and one pointed spigot (Fig. 471). Tibia 1 in 36 females: 5.2–8.7 (mean 6.5). Epigynum as in Figs 462–463 and 473–474, protruding area in anterior part whitish, posterior part with triangular brown plate; with pair of light brown plates (250 μm apart); internal median sclerite (pouch?) clearly visible in untreated specimens; posterior plate short but wide. Internal genitalia (Figs 460–461, 464–466) with ovipore plates converging anteriorly, with pair of distinct lateral sclerites embedded in membrane, dorsal arc simple, ventral arc with strong median sclerite (pouch?) of unknown function.

Natural history
Most specimens were found on the undersides of rocks on the floor. In Wadi Nahiz, they shared this microhabitat with an undescribed Buitinga (generic assignment tentative) and an undescribed Micropholcus. Relatively few males were found (Wadi Nahiz: one male vs 24 females; all other localities combined: five males vs 22 females), suggesting that the species might be seasonal. At Ain Razad, this species shared a small cavity in the deepest part of a shallow cave with Smeringopus lineiventris Simon, 1890 and Artema dhofar Huber, 2019. At Shaat sinkhole, the spiders were found in small holes in the karstic rocks, sitting on small silk mats directly on the rock. In the desert NE of Rawiyyah and E of Thumrait, the spiders were found in rock crevices and hidden among the spiny leaves of palm bushes close to the ground.

Distribution
Widespread in the Dhofar Region of Oman, where it is the only known representative of Crossopriza (Fig. 352).

Crossopriza moqal sp. nov.
urn:lsid:zoobank.org:act:207D5CBF-F03A-4F86-AE29-7FAA4227D1B6
Figs 352, 475–478, 483–508

Diagnosis
Distinguished from similar congeners (C. kittan sp. nov., C. ghul sp. nov.) by details of procursus (Figs 486–487; ventral hump at basis of ventral sclerite; elongated membranous element at tip), and distal bulbal sclerite (Fig. 490; distinctive series of prolateral apophyses); from C. kittan also by more slender male cheliceral apophyses (Figs 488–489) and shorter epigynum (Fig. 496); from C. ghul also by smaller distance between pore plates in female internal genitalia (Fig. 494).

Etymology
The species name refers to the type locality; noun in apposition.

Type material
Holotype
OMAN – Ash Sharqiyah North •♂; Wadi Bani Khalid, Mukal (Moqal) Cave; 22.624° N, 59.097° E; 700 m a.s.l.; 23 Mar. 2017; B.A. Huber leg.; in cave; ZFMK Ar 22420.

Other material examined
OMAN – Ash Sharqiyah North • 5♂, 12♀, 1 juv. (partly used for SEM); same collection data as for holotype; ZFMK Ar 22421, Ar 22422 • 3♀ (in pure ethanol); same collection data as for holotype; ZFMK Om30.

Description
Male (holotype)
Measurements. Total length 3.1, carapace width 1.35. Distance PME–PME 80 μm; diameter PME 70 μm; distance PME–ALE 20 μm; diameter AME 70 μm; distance AME–AME 20 μm. Leg 1: 35.8
HUBER B.A., Revisions of Holocnemus and Crossopriza

(10.2 + 0.6 + 10.2 + 12.9 + 1.9), tibia 2: 6.9, tibia 3: 4.8, tibia 4: 5.3; tibia 1 L/d: 79; femora 1–4 diameters: 0.22, 0.19, 0.16, 0.17.

Color (in ethanol). In general paler than epigean congeners (i.e., slightly troglomorphic). Carapace ochre-yellow, anteriorly in median pit light brown; sternum ochre-yellow with brown anterior margins; legs ochre-yellow, without darker rings, with black lines on femora and (few) on tibiae; abdomen pale gray, with many indistinct internal whitish marks and few indistinct dark marks near spinnerets.

Body. Habitus as in Figs 475–476. Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified (but rim more strongly sclerotized than in female). Sternum wider than long (0.95/0.60), unmodified. Abdomen oval, dorso-posteriorly rounded, tapering at spinnerets. Gonopore with four epiandrous spigots (Fig. 507); ALS with one widened spigot and one pointed spigot, PMS with two small spigots (Fig. 505).

Chelicerae. As in Figs 488–489, with pair of latero-distal apophyses provided with one large modified cone-shaped hair each (Fig. 502); distance between tips of modified hairs: 430 µm; lateral stridulatory ridges indistinct (Fig. 500; distances between ridges ~6.5 µm) but visible in dissecting microscope.

Palps. As in Figs 483–485; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, with indistinct retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; tarsal organ capsulate (Fig. 503); procursus straight, proximal prolateral hump set with numerous long hairs, long dorsal hairs not or only weakly curved, procursus tip (Figs 486–487) with strong ventral sclerite and further distinctive membranous and sclerotized elements, with one hair-like

Figs 483–485. Crossopriza moqal sp. nov.; male from Oman, Moqal Cave (ZFMK Ar 22421); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
process on retrolateral side (arrow in Fig. 506); genital bulb (Figs 490–492) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening at basis of distal sclerite; distal sclerite with retrolateral ridge and series of distinctive prolateral apophyses.

**LEGS.** Femur 1 with single row of ~24 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments but with indistinct platelets.

**Male** (variation)
Tibia 1 in six males (incl. holotype): 8.7–10.3 (mean 9.6).

**Female**
In general similar to male (Figs 477–478) but without spines on legs, with rudimentary stridulatory files on chelicerae (Fig. 501; distances between ridges ~8.5 μm; not visible in dissecting microscope), and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of light brown plates anteriorly on abdomen. Tibia 1 in ten females: 7.8–10.0 (mean 9.0). Epigynum as in Figs 495–496 and 508, main epigynal plate semicircular, weakly protruding, only posteriorly laterally heavily sclerotized; with pair of pockets (shallow furrows) ~410 μm apart; internal sclerotized arcs clearly visible in untreated specimens; posterior plate short but wide. Internal genitalia

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**Figs 495–499.** *Crossopriza moqal* sp. nov.; female from Oman, Moqal Cave (ZFMK Ar 22422). 495–496. Abdomen and epigynum, ventral views. 497–499. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
(Figs 493–494, 497–499) with large oval pore plates converging anteriorly, dorsal arc wide but simple, ventral arc with indistinct median modification of unknown function.

**Natural history**

The spiders were found in the twilight area of the cave, in small exposed webs mostly close to the floor, rarely slightly higher; no spiders were seen in the deeper, very hot parts of the cave (beyond ~15 m from the entrance). Outside of the cave, suitable spaces among rocks were occupied by *C. tiwi* sp. nov.

**Distribution**

Known from type locality only (Oman, Ash Sharqiyah North; Fig. 352).

*Crossopriza kitten* sp. nov.

urn:lsid:zoobank.org:act:46030F38-742D-4B37-ADC2-D52F5B91570A

Figs 352, 479–480, 509–525

**Diagnosis**

Easily distinguished from similar congeners (*C. moqal* sp. nov., *C. ghul* sp. nov.) by longer epigynum (Fig. 522); also by details of procursus (Fig. 513; distinctive retrolateral apophysis), bulbal sclerite (Fig. 516; two prolateral apophyses connected by sclerotized ridge), slightly stronger male cheliceral apophyses (Figs 514–515), and by elongate pore plates converging and narrowing anteriorly (Fig. 520).

**Etymology**

The species name refers to the type locality; noun in apposition.

**Type material**

**Holotype**

OMAN – *Ad Dhahira* ♂; Ibri, Al Kittan Cave; 23.298° N, 56.511° E; 410 m a.s.l.; 25 Mar. 2017; B.A. Huber leg.; in cave; ZFMK Ar 22423.

**Other material examined**

OMAN – *Ad Dhahira* • 4 ♂♂, 7 ♀♀, 2 juvs; same collection data as for holotype; ZFMK Ar 22424, Ar 22425 • 3 ♀♀, 1 juv. (in pure ethanol); same collection data as for holotype; ZFMK Om34 • 1 ♂, 4 ♀♀, 1 juv. (4 vials); same locality as for holotype; 13 Jul. 2009; H. Steiner leg.; SMF • 1 ♂, 1 ♀; Ibri, near Al Kittan Cave; 23.310° N, 56.517° E; 390 m a.s.l.; 25 Mar. 2017; B.A. Huber leg.; under rock overhang; ZFMK Ar 22426 • 1 juv. (in pure ethanol); same collection data as for preceding; ZFMK Om35.

**Description**

**Male** (holotype)

Measurements. Total length 3.6, carapace width 1.4. Distance PME–PME 90 μm; diameter PME 90 × 100 μm; distance PME–ALE 20 μm; diameter AME 65 μm; distance AME–AME 30 μm. Leg 1: 45.5 (12.9 + 0.6 + 12.5 + 16.8 + 2.7), tibia 2: 8.4, tibia 3: 6.0, tibia 4: 6.7; tibia 1 L/d: 83; femora 1–4 diameters: 0.20, 0.19, 0.17, 0.18.

Color (in ethanol). In general paler than epigean congeners (i.e., slightly troglomorphic). Carapace ochre-yellow, anteriorly in median pit light brown; sternum with star-shaped dark median mark and slightly darker margins; legs ochre-yellow, without darker rings, with black lines on femora and (few) on tibiae; abdomen pale gray, with some indistinct dark marks above spinnerets; ventrally mostly monochromous, few darker specks near pedicel and near spinnerets.
BODY. Habitus as in Fig. 479. Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified but rim slightly more sclerotized than in female. Sternum wider than long (1.05/0.75), unmodified. Abdomen oval, dorso-posteriorly rounded, tapering at spinnerets.

CHELICERAE. As in Figs 514–515, with pair of latero-distal apophyses provided with one large modified cone-shaped hair each; distance between tips of modified hairs: 390 μm; lateral stridulatory ridges indistinct but visible in dissecting microscope.

PALPS. As in Figs 509–511; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, with indistinct retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; procursus straight, proximal retrolateral hump set with numerous long hairs, long dorsal hairs not or only weakly curved, procursus tip (Figs 512–513) with strong ventral sclerite and further distinctive membranous and sclerotized elements; genital bulb (Figs 516–518) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening at basis of distal sclerite; distal sclerite with retrolateral ridge and two distinctive prolateral apophyses connected by sclerotized ridge.

LEGS. Femur 1 with single row of ~28 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 2.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments but with indistinct platelets.

Male (variation)
Tibia 1 in seven males (incl. holotype): 10.0–12.9 (mean 11.7). Smaller males with fewer spines on femur 1 (~5–10). Abdomen often also with white marks.

Figs 509–511. Crossopriza kittan sp. nov.; male from Oman, Ibrī, Al Kittan Cave (ZFMK Ar 22424); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Figs 512–520. Crossopriza kittan sp. nov.; male and female from Oman, Al Kittan Cave (ZFMK Ar 22424, Ar 22425). 512–513. Left procursus tip, prolateral and retrolateral views; arrow: distinctive retrolateral apophysis. 514–515. Male chelicerae, frontal and lateral views. 516–518. Left genital bulb, prolateral, dorsal, and retrolateral views; arrow: sperm duct opening. 519–520. Cleared female genitalia, ventral and dorsal views; arrows: pockets. Scale bars: 512–513 = 0.2 mm; 514–520 = 0.3 mm.
Female
In general similar to male (Fig. 480) but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of distinct light brown plates anteriorly on abdomen. Tibia 1 in ten females: 8.9–11.5 (mean 10.5). Epigynum as in Figs 521–522, main epigynal plate semicircular to triangular, weakly protruding, only posteriorly laterally heavily sclerotized; with pair of shallow pockets 450 μm apart; internal sclerotized arcs clearly visible in untreated specimens; posterior plate very short but wide. Internal genitalia (Figs 519–520, 523–525) with large pore plates converging and narrowing anteriorly, dorsal arc weak and simple, ventral arc with round median modification of unknown function.

Natural history
This species was abundant in Al Kittan Cave, were it lived in exposed and relatively large webs (diameter 30–50 cm) close to the floor, while the ceiling was occupied by *Artema bahla* Huber, 2019; barely any other macroscopic life was observed in the dry cave. None of the two pholcids was found in the deeper parts of the cave, beyond approximately 10–15 m. The species was also found near the cave under a large overhang (or rock shelter), suggesting it is probably more widespread in the area and not bound to caves.

Figs 521–525. *Crossopriza kitten* sp. nov.; female from Oman, Ibri, Al Kittan Cave (ZFMK Ar 22425). 521–522. Abdomen and epigynum, ventral views. 523–525. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
**Distribution**

Known from two neighboring localities in north-eastern Oman (Ad Dhahira Province) (Fig. 352).

**Crossopriza ghul** sp. nov.

urn:lsid:zoobank.org:act:DBDAE29C-0C1C-4B8A-B062-0AB9790BEDA1

Figs 352, 481–482, 526–537

**Diagnosis**

Distinguished from the very similar *C. moqal* sp. nov. by distinctive set of apophyses prolaterally on distal bulbal sclerite (Fig. 528), by slightly wider distance between pore plates in female internal genitalia (Fig. 532), by pair of shallow epigynal furrows closer together (~365 μm apart), and by female internal median structure different (W-shaped structure in ‘valve’; no Y-shaped structure behind ‘valve’);

Figs 526–532. *Crossopriza ghul* sp. nov.; holotype male (ZFMK Ar 22427) and female from Oman, Wadi Ghul (ZFMK Ar 22428). 526–527. Left procursus, prolateral and retrolateral views. 528–530. Left genital bulb, prolateral, dorsal, and retrolateral views. 531–532. Cleared female genitalia, ventral and dorsal views. Scale bars = 0.2 mm.
from geographically closer *C. kittan* sp. nov. by apophyses prolaterally on distal bulbal sclerite and by relatively shorter epigynum (Fig. 534).

**Etymology**

The species name refers to the type locality; noun in apposition.

**Type material**

**Holotype**

OMAN – *Ad Dakhiliyah* • ♂; Wadi Ghul, ‘site 1’; 23.234° N, 57.150° E; 1440 m a.s.l.; 15 Feb. 2018; B.A. Huber leg.; ZFMK Ar 22427.

**Other material examined**

OMAN – *Ad Dakhiliyah* • 2 ♀; same collection data as for holotype; ZFMK Ar 22428 • 4 ♀♀ (in pure ethanol); same collection data as for holotype; ZFMK Om105. – *Al Batinah South* • 1 ♀; hill above mountain village above Wadi Sahtan; 23.218° N, 57.315° E; 980 m a.s.l.; 26 Mar. 2017; B.A. Huber leg.; ZFMK Ar 22429.

**Figs 533–537. Crossopriza ghul** sp. nov.; female from Oman, Wadi Ghul (ZFMK Ar 22428). 533–534. Abdomen and epigynum, ventral views. 535–537. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Scale bars: 533–534 = 0.5 mm; 535–537 = 0.3 mm.
Description

**Male** (holotype)

**Measurements.** Total length 2.6, carapace width 1.0. Distance PME–PME 70 μm; diameter PME 60 × 80 μm; distance PME–ALE 20 μm; diameter AME 65 μm; distance AME–AME 20 μm. Leg 1: 26.8 (7.5 + 0.5 + 7.6 + 9.5 + 1.7), tibia 2: 4.8, tibia 3: 3.5, tibia 4: 4.3; tibia 1 L/d: 76; femora 1–4 diameters: 0.16, 0.13, 0.13, 0.13.

**Color** (in ethanol). Carapace pale ochre-yellow, anteriorly in median pit light brown; sternum laterally light ochre-yellow, medially with wide, dark brown band; legs ochre-yellow, without darker rings, with black lines on femora and (few) on tibiae; abdomen pale gray, with few indistinct dark marks dorsally, mainly posteriorly above spinnerets, ventrally with darker marks near pedicel and near spinnerets and pair of indistinct longitudinal bands behind gonopore.

**Body.** Habitus as in Fig. 481. Ocular area slightly raised. Wide but shallow thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified (but rim more strongly sclerotized than in female). Sternum wider than long (0.80/0.55), unmodified. Abdomen oval, dorso-posteriorly slightly angular, tapering at spinnerets.

**Chelicerae.** As in *C. moqal* sp. nov. (cf. Figs 488–489) but smaller: maximum width 405 μm; distance between tips of modified hairs: 335 μm; stridulatory files clearly visible in dissecting microscope.

**Palps.** Proximal segments as in *C. moqal* sp. nov. (cf. Figs 483–485) but smaller: femur dorsal length 270 μm; tibia maximum length 570 μm; procursus tip (Figs 526–527) with strong ventral sclerite (more pointed in lateral view than in *C. moqal* sp. nov.), and further membranous and sclerotized elements (very similar to *C. moqal* sp. nov.); genital bulb (Figs 528–530) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening at basis of distal sclerite; distal sclerite with retrolateral ridge and several distinctive prolateral apophyses (arrangement different from *C. moqal* sp. nov.).

**Legs.** Femur 1 with single row of ~20 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments but with indistinct platelets.

**Female**

In general similar to male (Fig. 482) but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of light brown plates anteriorly on abdomen; sternum coloration as in male. Tibia 1 in three females: 6.0, 6.2, 7.2. Epigynum as in Figs 533–534, pair of pockets (shallow furrows) ~365 μm apart; internal median structure W-shaped.

Natural history

All specimens were collected by turning rocks on the ground in the wadi and on the hill.

Distribution

Known from two localities in the Hajar Mountains of north-eastern Oman (Fig. 352).

*Crooprisa ibnsinai* sp. nov.

urn:lsid:zoobank.org:act:7F98CE47-8276-444D-A2FC-E0B5BD965E1F

Figs 352, 538–554

*Holocnemus pluchei* (misidentification) – Roewer 1960: 40 (all specimens except juvenile from Rig-Revan, which is a *Pholcus*).
Diagnosis
Easily distinguished from geographically close species (C. maculipes, C. srinagar sp. nov., C. surobi sp. nov.) by male chelicerae with single pair of apophyses in lateral position (Fig. 543) and corresponding pockets on female epigynal plate far apart (Figs 548, 551); from some very similar species on the Arabian Peninsula (especially C. sahtan sp. nov., C. tiwi sp. nov.) by details of male palp (Figs 542, 545; ventral sclerite at tip of procursus long, much longer than dorsal element; distal bulbul sclerite with distinctive prolateral ridge and single apophysis) and by medially light epigynal plate with distinct semicircular internal median structure (Fig. 551).

Etymology
The name honors Ibn Sina (also known as Avicenna; ~980–1037), a Persian polymath, physician, astronomer, and thinker.

Type material
Holotype
UZBEKISTAN – Surkhandarya • ♂; Baison Distr., E foothills of Dzhetymkalyas Mt Range, ca 4.5 km SE of Sarykamys, Pul’kahkim River valley, Karadar Boundary; 38.0750° N, 67.4425° E; 705 m a.s.l.; 3 May 2002; A.V. Gromov leg.; ZMMU.

Other material examined
UZBEKISTAN – Surkhandarya • 1 ♀; same collection data as for holotype; ZMMU (together with holotype) • 1 ♀; Babatagh Mt Range, near Ak-Machit [Ak-Mechet’]; 38.032° N, 68.295° E; 12–20 Apr. 1994; O. Lyakhov leg.; ZMMU • 1 ♂, 1 ♂; Uzun Distr., E slope of Babatagh Mt Range, ~7 km W of Akmechet [Ak-Mechet’]; 38.05° N, 68.24° E; 1095 m a.s.l.; 1 May 2002; A.V. Gromov leg.; ZMMU.
– Choresmien • 2 ♂♂, 1 ♀, 1 juv.; Amudarya River middle flow, Kyzylkum Reserve, “cliff on tugai side”; 41.1° N, 61.9° E; 6 Apr. 1985; D.V. Logunov leg.; SZMN. – Navoiy • 2 ♂♂, 7 ♀♀; Bukhara Area, ~70 km W of Uch-Kuduk, Mynbulak hollow, near Dzhyra-Kuduk; 42.26° N, 62.86° E; 11 Sep. 1989; D.V. Logunov leg.; small cave in clayey cliff; SZMN.

TAJKISTAN – Chatlon • 1 ♂, 2 ♀♀; Gandzhino Vil.; 37.965° N, 68.560° E; 20 Apr. 1991; S. Ovtchinikov leg.; ZMMU • 2 ♀♀; same locality as for preceding (“near Gandzhino Vil.”); 19 Apr. 1990; S.L. Zonstein leg.; ZMMU • 1 ♂; same locality as for preceding; 13–15 Apr. 1986; S.L. Zonstein leg.; ZMMU • 2 ♀♀; same locality as for preceding; 7–12 Apr. 1987; S.L. Zonstein and A. Zor’kin leg.; ZMMU • 1 ♂, 2 ♀♀; Pandzh, Karatau Mt Range, Astana; 37.23° N, 69.11° E; 22 Apr. 1991; S. Ovtchinikov leg.; ZMMU.

TURKMENISTAN – Mary • 2 ♀♀; Kushka Distr., ~18 km S of Kyzylzhar Kordon, ~1 km ESE of Eloilandaz; 35.661° N, 68.837° E; 375 m a.s.l.; 7 Apr. 2002; A.V. Gromov leg.; saline soil; ZMMU.

KAZAKHSTAN – Chinkent • 1 ♂; Kyzylkum Distr., Kyzylkum Desert, Karaktau mountain massif, Karamola Mt; 43.5° N, 67.8° E; 8 Jun. 1989; A.A. Zyzizin leg.; ZMMU.

AFGHANISTAN • 1 ♀, 2 juvs; Sorkh-Kotal [Surkh Kotal], “bei Tehachmeh Cher”, “A361”; 36.006° N, 68.544° E; 10 Oct. 1957; K. Lindberg leg.; in pile of leaves; NHMG • 1 ♀, 1 juv.; Douchi [Doshi], “A465”; 35.61° N, 68.63° E; 11 Nov. 1957; K. Lindberg leg.; NHMG • 1 juv. (assigned tentatively); N of Pol-Khomri [Pol-e-Khomri], unnamed cave of “Tschachmeh Cher”, “A195”; 35.98° N, 68.544° E; 10 Oct. 1957; K. Lindberg leg.; NHMG • 2 juvs (assigned tentatively); Salang valley, Djebe1 os-Siradj [Jabal-os-Saraj], “A532”; 35.12° N, 69.23° E; 26 Jul. 1957; K. Lindberg leg.; NHMG.
Description

Male (holotype)

Measurements. Total length 4.0, carapace width 1.6. Distance PME–PME 55 μm; diameter PME 100 × 130 μm; distance PME–ALE 30 μm; diameter AME 90 μm; distance AME–AME 30 μm. Leg 1: 35.8 (10.2 + 0.7 + 9.6 + 12.9 + 2.4), tibia 2: 6.8, tibia 3: 5.6, tibia 4: 6.4; tibia 1 L/d: 56; femora 1–4 diameters: 0.26, 0.22, 0.21, 0.22.

Color (in ethanol). Carapace ochre-yellow, anteriorly in median pit with distinct brown mark; sternum brown with dark brown radial marks; legs ochre-yellow, without darker rings, with small black lines on femora only; abdomen gray, with whitish internal marks, with few and indistinct dorsal marks; ventrally with broken dark band, with indistinct parallel longitudinal marks behind gonopore.

Body. Habitus similar to C. sahtan sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim more sclerotized than in female. Sternum wider than long (1.2/0.7), unmodified. Abdomen slightly elongated, dorso-posteriorly angular to conical.

Chelicerae. As in Figs 543–544 (very similar to C. moqal sp. nov.), with pair of latero-distal apophyses provided with one large modified cone-shaped hair each; distance between tips of modified hairs: 430 μm; lateral stridulatory ridges clearly visible in dissecting microscope.

Palps. As in Figs 538–540; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, with indistinct retrolateral transversal line, without retrolateral proximal process but retrolateral-ventral

Figs 538–540. Crossopriza ibnsinai sp. nov.; male from Uzbekistan, near Dzhira-Kuduk (SZMN); mirror images of right palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
ridge with some slightly stronger hair-bases; femur-patella joints shifted toward prolateral side; tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 541–542) straight, narrowing distally, with low prolateral hump proximally set with numerous long hairs, followed distally by thick ridge, long dorsal hairs mostly straight or weakly curved, procursus tip with long ventral sclerite and two distinctive prolateral sclerites; genital bulb (Figs 545–547) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with retrolateral ridge, with distinctive prolateral transversal ridge and small apophysis on ventral semitransparent flap.

**LEGS.** Femur 1 with single row of ~20 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct and irregular, only at distal tip ~3–4 regular pseudosegments.

**Male** (variation)
Tibia 1 in seven males (incl. holotype): 7.2–9.7 (mean 8.8). Some males with distinct dark and whitish marks on abdomen; dark lines sometimes also on leg tibiae.

**Female**
In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of small but distinct light brown plates anteriorly on abdomen. Tibia 1 in 21 females:

**Figs 550–554.** Crossopriza ibisinai sp. nov.; female from Uzbekistan, near Dzhyra-Kuduk (SZMN). 550–551. Abdomen and epigynum, ventral views. 552–554. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
6.3–10.3 (mean 8.6). Epigynum as in Figs 550–551, main epigynal plate semicircular, barely protruding, medially posteriorly light, laterally heavily sclerotized with pair of large but narrow pockets (distance 560 μm); internal median structure visible in uncleared specimens; posterior plate light brown, short but wide. Internal genitalia (Figs 548–549, 552–554) with large elongate pore plates converging anteriorly, dorsal arc slender, ventral arc with median pouch-like modification.

**Distribution**

Widely distributed in Central Asia (Uzbekistan, Tajikistan, Turkmenistan, Kazakhstan, Afghanistan) (Fig. 352).

*Crosoopriza khayyami* sp. nov.

urn:lsid:zoobank.org:act:5EF0299D-0FBC-49BF-AFAA-F62087037056

Figs 352, 555–573

**Diagnosis**

Distinguished from named congeners with only one pair of apophyses laterally on male chelicerae (Fig. 562) by details of male palp (Figs 561, 564; procursus with ventral sclerite accompanied by strong flat sclerite; genital bulb distal sclerite strongly protruding ventrally, with distinctive set of prolateral apophyses); females differ from very similar species (*C. sahtan* sp. nov., *C. ibnsinai* sp. nov.) by details of epigynum and internal genitalia (Figs 567, 573; anterior epigynal margin evenly curved; distance between epigynal pockets). A very similar unnamed species is known from Iran, Kerman (see Remark below).

**Remark**

The CBSU has a very similar species from Iran (only 1 ♂, 2 ♀; Kerman: Jiroft, 28.519° N, 58.171° E; Jefriz, 29.492° N, 50.470° E) that shares the general distinctive shape of the bulbal process but is distinguished by a different configuration of the apophyses on this process and by several further minor details: presence of distinct prolateral sclerite on procursus tip; cheliceral apophyses more strongly bent inwards; and epigynal pockets rounder. A single male in SMF is probably conspecific with the specimens from Kerman, but the label information is dubious and possibly erroneous ("Anotalia: Taurus", no further data).

**Etymology**

The name honors Omar Khayyam (1048–1131), a Persian polymath, mathematician, astronomer, philosopher, and poet.

**Type material**

**Holotype**

IRAN – *Fars* ♂; Izad Khast; 31.52° N, 52.15° E (on accuracy of Senglet’s label coordinates see Remarks under *C. parsia* sp. nov.); 16 Aug. 1973; A. Senglet leg.; MHNG.

**Other material examined**

IRAN – *Fars* ♂; Izad Khast; 31.52° N, 52.15° E; same collection data as for holotype; MHNG • 2 ♂♀; Ghader-Abad [Qaderabad]; 30.35° N, 53.32° E [or rather 30.28° N, 53.27° E?]; 17 Aug. 1973; A. Senglet leg.; MHNG • 1 ♂, 5 ♀♀; Bishapour; 29.78° N, 51.58° E; 28 May 1974; A. Senglet leg.; MHNG • 2 ♂♀, 2 ♀♀; W of Dasht-e-Arjan [Dascht-e Aržan]; 29.68° N, 51.85° E; 3 Sep. 1975; A. Senglet leg.; MHNG • 1 ♂, 1 ♀; Shiraz; 29.62° N, 52.38° E; 2 Jun. 1974; A. Senglet leg.; MHNG • 1 ♂, 1 juv.; 35 km S of Shiraz, "Bahakisecula"; 29.34° N, 52.63° E; date unknown; Bilek leg.; NHMW 29568 • 2 ♂♀, 7 ♀♀ (2 vials); Firouzabad; 28.87° N, 52.53° E; 6 Jun. 1974; A. Senglet leg.; MHNG. – *Kohgiluyeh and Boyer-Ahmad* •
HUBER B.A., Revisions of Holocnemus and Crossopriza

4 ♂♂, 8 ♀; [S of] Yasudj [Yasudsch]; 30.60° N, 51.60° E; 26 May 1974; A. Senglet leg.; MHNG • 2 ♂♂, 1 ♀; “route de Yasudj”; 30.47° N, 51.50° E (the label says “Kohkiluyeh” but the coordinates indicate a point slightly outside of the province); 25 May 1974; A. Senglet leg.; MHNG • 1 ♂; Charam [Choram]; 30.73° N, 50.73° E; 23 May 1974; A. Senglet leg.; MHNG • 1 ♂, 4 ♀; “route de Charam”; 30.47° N, 50.83° E; 22 May 1974; A. Senglet leg.; MHNG • 1 ♀; Basht; 30.33° N, 51.25° E [or rather 30.36° N, 51.16° E? , the coordinates on the label indicate a point slightly outside of Kohkiluyeh]; 25 May 1974; A. Senglet leg.; MHNG. – Bakhtiyari • 2 ♂♂, 2 ♀; Kuhrang [Koolrang]; 32.47° N, 50.13° E; 19 Jun. 1974; A. Senglet leg.; MHNG. – Lorestan • 6 ♂♂, 9 ♀; Ma’amulan [Mamulan]; 33.33° N, 47.90° E [or rather 33.38° N, 47.96° E?]; 6 Aug. 1973; A. Senglet leg.; MHNG • 2 ♂♂, 2 ♀; Pol-e-Dokhtar [Pol-e-Dochtar]; 33.17° N, 47.73° E; 17 May 1974; A. Senglet leg.; MHNG • 1 ♂, 3 ♀; near Jelowgir; 32.95° N, 47.85° E; 17 May 1974; A. Senglet leg.; MHNG. – Hamedan • 7 ♂♂, 8 ♀; Hamedan; 34.77° N, 48.45° E; 29 Jul. 1973; A. Senglet leg.; MHNG • 1 ♂; Ganznameh/Hamedan [Ganjameh]; 34.73° N, 48.50° E [or rather 34.76° N, 48.44° E?]; 2100 m a.s.l.; 4 Jul. 1974; A. Senglet leg.; MHNG. – Kordestan • 3 ♂♂, 4 ♀; N of Sanandajd [Sanandadsch]; 35.47° N, 47.02° E; 22 Jun. 1975; A. Senglet leg.; MHNG • 4 ♂♂, 1 ♀; “Qellacê”; 35.35° N, 46.28° E; 15 Sep. 1975; A. Senglet leg.; MHNG.

TURKEY • 2 ♂♂, 1 ♀, 1 juv.; “on bank of rv. Zaps, Hakari-Baskale, 50K, Van”; 37.71° N, 44.05° E (these estimated coordinates are in Hakkari Province because the Great Zab river does not enter Van); 30 Aug. 1956; collector unknown; HECO.

Assigned tentatively (see Variation below)

IRAN – Yazd • 1 ♀; Shaddad; 32.294° N, 54.411° E; 2015; M.S. Tahami leg.; CBSU.

IRAQ • 1 ♂, 1 ♀; Amarah (“Amara, Mesopot.”); 31.83° N, 47.15° E; date and collector unknown; NHMW.

AFGHANISTAN • 10 ♂♂, 20 ♀; Herat; 34.33° N, 62.22° E; 15 Aug. 1975; A. Senglet leg.; MHNG.

Description

Male (holotype)

Measurements. Total length 4.1, carapace width 1.4. Distance PME–PME 90 μm; diameter PME 90 × 110 μm; distance PME–ALE 30 μm; diameter AME 85 μm; distance AME–AME 20 μm. Leg 1: 34.2 (10.1 + 0.6 + 9.3 + 11.9 + 2.3), tibia 2: 6.6, tibia 3: 5.1, tibia 4: 6.0; tibia 1 L/d: 64; femora 1–4 diameters: 0.23, 0.19, 0.18, 0.18.

Color (in ethanol). Carapace ochre-yellow, anteriorly in median pit light brown; sternum light brown with darker brown radial marks; legs ochre-yellow, without darker rings, with indistinct black lines on femora and (few) on tibiae (cf. Figs 558–559); abdomen pale gray, with whitish internal marks, without dark dorsal marks; ventrally with broken dark band, with indistinct parallel longitudinal marks behind gonopore.

Body. Habitus similar to C. sahtan sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, rim apparently as in female. Sternum wider than long (1.05/0.65), unmodified. Abdomen slightly elongated, dorso-posteriorly angular to conical.

Chelicerae. As in Figs 562–563, laterally much darker than frontally, with one pair of apophyses distally, each with one large modified hair at tip; distance between tips of modified hairs: 255 μm; lateral stridulatory ridges fine but visible in dissecting microscope.

Palps. As in Figs 555–557; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick,
with retrolateral transversal line, without retrolateral proximal process but retrolateral-ventral ridge with some small sclerotized processes (hair-bases?); femur-patella joints shifted toward prolateral side; tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 560–561) slightly curved towards ventral, strongly narrowing distally, with low prolateral hump proximally set with many hairs, long dorsal hairs mostly straight, only 2–3 hairs weakly curved, procursus tip with ventral sclerite accompanied by strong flat sclerite (prominent in retrolateral view; arrow in Fig. 561); genital bulb (Figs 564–566) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite without retrolateral ridge, with distinctive set of prolateral apophyses, with transparent prolateral structure of unknown function.

LEGS. Femur 1 with single row of ~20 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen except 1–2 at tip.

**Male** (variation)
Tibia 1 in 35 males from Iran and Turkey: 6.4–9.7 (mean 7.8). Males (and females) from some localities (e.g., Izad Khast, Pol-e Dochtar) seem to be significantly larger than specimens from other localities.

**Figs 555–559.** *Crossopriza khayyami* sp. nov., non-type male and female from Iran, Fars, Izad Khast (MHNG). 555–557. Left male palp, prolateral, dorsal, and retrolateral views. 558–559. Female femora 1 and 2, retrolateral views. Scale bars: 555–557 = 0.5 mm; 558–559 = 0.2 mm.
Figs 560–568. *Crossopriza khayyami* sp. nov., non-type male and female from Iran, Fars, Izad Khast (MHNG). **560–561.** Left procursus, prolateral and retrolateral views; asterisk: process that is larger in specimens from Afghanistan; arrow: distinctive sclerite parallel to ventral sclerite. **562–563.** Male chelicerae, frontal and lateral views. **564–566.** Left genital bulb, prolateral, dorsal, and retrolateral views; asterisk: ridge where specimens from Afghanistan have two additional small apophyses. **567–568.** Cleared female genitalia, ventral and dorsal views; arrows: pockets. Abbreviation: vs = ventral sclerite. Scale bars = 0.3 mm.
(e.g., S of Yasudsch, Mamulan) (small sample sizes). Some males with distinct dark and whitish marks on abdomen; dark lines on leg femora and tibiae variably distinct.

Specimens from Iraq and Afghanistan are assigned tentatively. The single male from Iraq appears identical in shape to the males from Iran but the female differs (see below); the male is also unusually large (tibia 1: 11.1). The males from Afghanistan show tiny but consistent differences in the procursus tip and in the bulbalar ventral apophyses (asterisks in Figs 561 and 564); they are also considerably larger than the males from Iran and Turkey (tibia 1 in 10 males: 9.6–11.4; mean: 10.9).

**Female**

In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of small but distinct light brown plates anteriorly on abdomen. Tibia 1 in 55 females from Iran and Turkey: 5.3–9.1 (mean 6.7). Epigynum as in Figs 569–570, main epigynal plate wider than long, weakly protruding, medially posteriorly light, anteriorly with variably distinct brown mark, laterally heavily sclerotized with pair of large pockets (distance ~290 μm); internal sclerotized arcs and simple median structure visible in uncleared specimens; posterior plate light brown, short but wide. Internal genitalia (Figs 567–568, 571–573) with large elongate pore plates converging anteriorly, dorsal arc strongly

**Figs 569–573.** *Crossopriza khayyami* sp. nov., female from Iran, Fars, Izad Khast (MHNG). 569–570. Abdomen and epigynum, ventral views. 571–573. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
widened laterally, ventral arc with small and simple median modification (not pouch or pocket) apparently asymmetric, with counterpart in dorsal arc also asymmetric (apparently not an artifact of preparation).

The single female from Yazd Province is assigned tentatively because the epigynal pockets are slightly closer to the epigynal margin and no male is available from this province. The single female from Iraq (not cleared) seems to have a more prominent median internal structure in the ventral arc; tibia 1: 8.6. In females from Afghanistan the epigynum is slightly longer (length/width: 0.51 vs 0.45 in females from Iran); they are also significantly larger (tibia 1 in 16 females: 8.3–11.2; mean: 9.9).

**Distribution**

Widely distributed in the Zagros Mountains of western and south-western Iran (Fig. 352). Specimens from Iraq and Afghanistan are assigned tentatively (see above).

*Crossopriza semicaudata* (O. Pickard-Cambridge, 1876)

Figs 353A, 574–607

*Pholcus semicaudatus* O. Pickard-Cambridge, 1876: 565.

*Crossopriza semicaudata* – Simon 1893: 477. — Wiehle 1933: 244, fig. 3b.

*Holocnemus semicaudatus* – Simon 1907: 5.

**Probable misidentification** (see Remarks below)

*Crossopriza semicaudata* – Denis 1945: 8, fig. 9.

**Remarks**

Pickard-Cambridge (1876) noted that this species was common in ruins near Cairo and Thebes (= Luxor) but did not specify the number of specimens actually available to him. The only specimen presumably originating from the type series I could locate is the lectotype below. The label says “lectotype” but this designation was never published; therefore, the lectotype is formally designated herein. The exact geographic origin of this particular specimen (Cairo or Luxor) is unknown.

Denis (1945) published a credible record from Egypt, Luxor, but I could not locate his specimens (they do not seem to be at the MNHN) and his only figure (of a palp) does not show *C. semicaudata*. Confusingly, this same figure appears again as figure 10 in Deeleman-Reinhold & van Harten (2001), supposedly showing the palp of *C. pristina* (which is also wrong).

The specimens from Chad below are here thought to originate from Bardaï, even though the labels say only “massif du Tibesti”. In 1965, the collector Max-Yves Brandily accompanied the ethnomusicologist Monique Brandily who made recordings in the Tibesti Mountains. According to the locality data attached to each recording (Centre de Recherche en Ethnomusicologie 2020) they worked in Bardaï in July and in October 1965.

**Diagnosis**

Easily distinguished from congeners by details of male palp (Figs 579–584; procursus with distinctive prolateral process, ventral sclerite with proximal ventral process; distal bulbal sclerite simple and flat, without ventral apophysis); also by male chelicerae (Figs 585–586; medially directed apophyses and enlarged hair bases) and female genitalia (Figs 587–593; epigynum short and wide as in *C. pristina*, but without distinct median internal structure and pore plates farther apart).
Type material

Lectotype (designated herein)
EGYPT • 1 ♂, examined; Cairo or Luxor (see Remarks above); label data: “*Phallicus (= Crossopriza) semicaudata* OPC, Egypt, Lectotype ♂, loan 3846, B 53619 [or 536A?]”; Jan.–Apr. 1864; O. Pickard-Cambridge leg.; HECO.

Other material examined
EGYPT • 3 ♀♀; Luxor; 25.73° N, 32.60° E; 2 Nov. 1996; P. Jäger leg.; SMF • 1 ♂; Luxor, near airport; 15 Nov. 1996; P. Jäger leg.; in house; SMF • 3 ♂♂, 4 ♀♀, 1 juv.; 5 km N of Aswan; 24.13° N, 32.89° E; 8 Jan. 1987; V. and B. Roth leg.; on sand dunes; CAS 9027139.

SUDAN • 1 ♂, 1 ♀; Kassala (Wilāyat Kassalā), New Halfa; 21.80° N, 31.37° E; 1 Aug. 2016; M. Siyam leg.; in house; ZFMK Ar 22430, Ar 22431 • 1 ♂, 1 ♀; Northern (Wilāyat as-Šamāliyya), Dongola; 19.17° N, 30.47° E; 9 Jun. 2016; M. Siyam leg.; ZFMK Ar 22432, Ar 22433 • 2 ♂♂, 2 ♀♀; River Nile (Wilāyat Nahr an-Nīl), Atbara; 17.70° N, 34.00° E; 29–31 Oct. 2016; M. Siyam leg.; in house; ZFMK Ar 22434 to Ar 22437 • 1 ♂; Khartoum (Wilāyat Ḫartūm), Khartoum; 15.6° N, 32.5° E; Nov. 1964; J.S. Cloudsely-Thompson leg.; MRAC 127505 • 1 ♀; same collection data as for preceding; Jan.–Mar.

Figs 574–578. *Crossopriza semicaudata* (O. Pickard-Cambridge, 1876); male from Egypt, 5 km N of Aswan (CAS 9027139), and female from Egypt, Luxor (SMF). 574–576. Left male palp, prolateral, dorsal, and retrolateral views. 577–578. Female right femora 2 and 3, dorsal views. Scale bars: 574–576 = 0.5 mm; 577–578 = 0.2 mm.
CHAD • 2 ♂♂, 6 ♀♀; Tibesti Mountains, Bardaï (see Remarks above); 21.35° N, 17.00° E; Jul.–Oct. 1965; Y. Brandily leg.; MRAC 132920 • 8 ♂♂, 33 ♀♀ (partly used for SEM); same collection data as for preceding; MRAC 132959 • 6 ♀♀, 16 juvs; same collection data as for preceding; MARC 132967.

Redescription

**Male** (Khartoum, MRAC 127505)

**Measurements.** Total length 3.4, carapace width 1.4. Distance PME–PME 80 μm; diameter PME 100 × 120 μm; distance PME–ALE 30 μm; diameter AME 95 μm; distance AME–AME 30 μm. Leg 1: 35.7 (10.3 + 0.6 + 9.4 + 13.3 + 2.1), tibia 2: 6.3, tibia 3: 4.7, tibia 4: 5.6; tibia 1 L/d: 59; femora 1–4 diameters: 0.20, 0.18, 0.17, 0.17.

**Color** (in ethanol). Carapace ochre-yellow; carapace pit anteriorly light brown; sternum brown with darker radial marks; legs ochre-yellow, without darker rings, with black lines on femora and tibiae (cf. Figs 577–578); abdomen ochre-gray, with few indistinct dark marks dorsally; ventrally with black median band, partly disrupted.

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**Figs 589–593.** Crossopriza semicaudata (O. Pickard-Cambridge, 1876); female from Egypt, 5 km N of Aswan (CAS 9027139). 589–590. Abdomen and epigynum, ventral views. 591–593. Female internal genitalia, dorsal view (with dorsal arc tilted backwards and epigynal plate accidentally flipped forward), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; po = pocket; va = ventral arc. Scale bars = 0.5 mm.
BODY. Habitus very similar to *C. sahtan* sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim more sclerotized than in female. Sternum wider than long (1.0/0.7), unmodified. Abdomen slightly elongated, dorso-posteriorly angular. Gonopore with four epiandrous spigots (Fig. 606); ALS with one widened spigot and one pointed spigot; PMS with two pointed spigots (Fig. 607).

CHELICERAE. As in Figs 585–586, distally with pair of frontal apophyses provided with one large modified cone-shaped hair each (Fig. 598); distance between tips of modified hairs 90 μm; with ~12 enlarged hair-bases on each side (Fig. 599); lateral stridulatory ridges distinct (Fig. 599; distances between ridges ~4.5 μm), clearly visible in dissecting microscope.

**Figs 602–607.** *Crossopriza semicaudata* (O. Pickard-Cambridge, 1876); male and female from Chad, Bardaï (MRAC 132959). **602.** Male palpal tarsal organ. **603–605.** Tarsal organs on female tarsi 1, 2, and 4. **606.** Male gonopore. **607.** Male spinnerets. Scale bars: 602–605, 607 = 10 μm; 606 = 20 μm.
PALPS. As in Figs 574–576; coxa with low retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, with very indistinct retrolateral transversal line, without retrolateral proximal process; femur-patella joints close together, barely shifted toward prolateral side; tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; tarsal organ capsule (Fig. 602); procursus (Figs 579–581) short and straight, proximally on prolateral side with strong hump set with numerous long hairs, dorsal hairs mostly straight, some weakly curved, procursus tip with ventral sclerite with proximal ventral process, distinctive prolateral process, and semitransparent retrolateral-dorsal flap; with hair-like process on retrolateral side (arrow in Fig. 596); genital bulb (Figs 582–584) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening on prolateral side (arrow in Fig. 597); distal sclerite simple and flat, with semitransparent ventral process, without retrolateral ridge, without prolateral apophysis or ridge.

LEGs. Femur 1 with single row of ~25 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments very indistinct, irregular except 1–2 at tip.

Male (variation)
Tibia 1 in 16 males (incl. lectotype): 8.3–12.1 (mean 10.0); lectotype smaller (carapace width 1.25), with shortest tibia (8.3) and fewer spines on femur 1 (~18). More recently collected specimens with distinct pattern of dark and whitish marks dorsally on abdomen (similar C. sahtan sp. nov., cf. Fig. 391); ventral pattern behind gonopore variably distinct, with 2–4 longitudinal bands often not clearly separate.

Female
In general similar to male but without spines on legs, without stridulatory files on chelicerae (Fig. 600), and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace (arrows in Fig. 595) and pair of small light brown plates anteriorly on abdomen. Tibia 1 in 46 females: 7.0–10.2 (mean 8.8). Epigynum as in Figs 589–590; main epigynal plate semicircular, medially protruding; with pair of large pockets close to median line (distance between pockets 40 μm); internal sclerotized arc variably visible in uncleared specimens; posterior plate relatively large but mostly weakly sclerotized except frontally laterally. Internal genitalia (Figs 587–588, 591–593) with oval pore plates, dorsal arc weakly sclerotized laterally, ventral arc medially barely modified.

Natural history
Several specimens were collected in houses, suggesting that this is at least partly a synanthropic species. At Dongola, spiders were collected from webs among palm trees (M. Siyam, pers. com., Apr. 2021).

Distribution
Widespread in NW Africa (Egypt, Chad, Sudan) (Fig. 353A).

\textit{Crossopriza pristina} (Simon, 1890)
\begin{verbatim}
Figs 353A, 608–624
\end{verbatim}

\textit{Artema pristina} Simon, 1890: 93.

\textit{Pholcus rivulatus} (misidentification) – L. Koch 1875: 25 (only specimens from Massaua, see Remarks below).


\textit{Crossoprisa [sic] pristina} – Wiehle 1933: 244, fig. 3a.
Misidentifications

Crossopriza pristina – Franganillo 1925: 33 (see H. hispanicus); 1926a: 49 (see C. lyoni); 1926b: 11 (see C. lyoni); 1926c: 70 (see H. hispanicus); 1936a: 46 (see C. lyoni); 1936b: 77 (see C. lyoni). — Deeleman-Reinhold & van Harten 2001: 195, figs 1–4, 7–10 (see C. sanaa sp. nov. and C. manakhah sp. nov.).

Remarks

L. Koch (1875) assigned two juvenile specimens from Massaua (Massawa) to “Pholcus rivulatus”, a name that was later synonymized with Holocnemus pluchei. Photos of these specimens (deposited in Museo Civico di Storia Naturale Giacomo Doria, Genova, Italy) were kindly provided by M. Tavano (Jan. 2014) and the relatively short and posteriorly angular abdomen strongly suggests that this is C. pristina rather than H. pluchei.

Timm (1976) illustrated the male palp without providing any data about the origin of the specimens. It seems likely that he used the specimens that L. Fage loaned to H. Wiehle in the 1930s (Wiehle 1933: 243, footnote) and that are now deposited in SMF. The labels with the SMF specimens do not specify the origin of the spiders. Considering the very large series of C. pristina from Massaua in MNHN, it seems likely that L. Fage took the specimens from that series rather than from the smaller type series from Aden. The SMF specimens below are thus thought to originate from Massaua.

The locality “Didi Davvs” (also published for Artema kochi in Aharon et al. 2014) is here thought to be a misspelling of Dire Dawa in Ethiopia. The collector, Barnum Brown, accompanied the so-called Dudley Expedition, which in 1920 conducted geologic surveys in Harrar Province between Harar and Jijigga. Brown was in Aden on June 16, 1920, and reached Addis Ababa on July 1, 1920 (Peter Purcell, pers. com., Dec. 2020). It is thus very plausible that he was in Dire Dawa on the days specified on the label (June 20–26).

Diagnosis

Easily distinguished from known congeners by details of male palp (Figs 617–618; short and thick procursus with short ventral sclerite and distinctive retrolateral process; distinctive distal bulbal sclerite), male chelicerae (Figs 621–622; low sclerotized humps near median line), and female genitalia (Figs 612, 623–624; short but wide epigynum as in S. semicaudata but with large median internal structure and pore plates closer together).

Type material

Syntypes

YEMEN • 1 ♂, 6 ♀♀, examined; Aden; 12.80° N, 45.03° E; 1889; E. Simon leg.; MNHN Ar 10511 (E. Simon collection number 10764).

Other material examined

ERITREA • 6 ♂♂, 21 ♀♀, 8 juvs; Massaua; 15.61° N, 39.44° E; date and collector unknown; MNHN Ar 10510 (E. Simon collection number 11428) • 2 ♂♂, 1 ♀♀; without collection data, presumably same collection data as for preceding (i.e., taken from MNHN Ar 10510 and loaned by L. Fage to H. Wiehle); SMF 19429/1, 19433/3 • 1 ♂, 1 ♀; Massaua; date unknown; L. Vincentini leg.; MRAC 131273, 131274.

ETHIOPIA • 1 ♂, 2 juvs; Dire Dawa (“Abyssinia: Didi Davvs”; see Remarks above); 9.60° N, 41.85° E; 1200 m a.s.l.; 20 and 26 Jun. 1920; B. Brown leg.; AMNH.
Redescription

**Male (Massaua, MNHN Ar 10510)**

**Measurements.** Total length 4.5, carapace width 1.6. Distance PME–PME 90 μm; diameter PME 120 × 140 μm; distance PME–ALE 35 μm; diameter AME 105 μm; distance AME–AME 40 μm. Leg 1: 49.1 (13.5 + 0.7 + 12.7 + 19.3 + 2.9), tibia 2: 8.5, tibia 3: 6.1, tibia 4: 6.9; tibia 1 L/d: 67; femora 1–4 diameters: 0.28, 0.23, 0.23, 0.23.

**Color** (in ethanol). Bleached specimen mostly pale ochre-yellow; carapace pit anteriorly light brown; sternum posteriorly slightly darkened, with radial marks; legs ochre-yellow, without darker rings, black lines on femora and tibiae barely visible; abdomen ochre-gray, with few indistinct dark marks dorsally; ventrally with distinct black median band, partly disrupted, with three parallel longitudinal marks behind gonopore.

**Body.** Habitus very similar to *C. sahtan* sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim more sclerotized than in female. Sternum wider than long (1.15/0.75), unmodified. Abdomen slightly elongated, dorso-posteriorly angular.

**Chelicerae.** As in Figs 621–622, proximally with low sclerotized humps near median line, distally with pair of frontal apophyses provided with one large modified cone-shaped hair each; distance between tips of modified hairs: 50 μm; lateral stridulatory ridges fine but visible in dissecting microscope.

**Palps.** As in Figs 608–610; coxa barely modified, with low retrolateral hump; trochanter barely modified; femur short, distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, retrolateral-ventral rim with row of sclerotized hair-bases, with indistinct retrolateral transversal line, without retrolateral proximal process; femur-patella joints very close together, not shifted toward retrolateral side; tibia very large relative to femur, tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 616–617) short and straight, proximally on prolateral side with strong hump set with numerous long hairs, dorsal hairs not curved, procursus tip with short ventral sclerite and distinctive dorsal and retrolateral processes; genital bulb (Figs 618–620) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening on prolateral-dorsal side at basis of distal sclerite (arrow in Fig. 619); distal sclerite with distinctive ventral process and prolateral ridge.

**Legs.** Femur 1 with single row of ~30 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; retrolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

**Male (variation)**

Tibia 1 in 11 males: 11.6–13.6 (mean 12.7). Specimens from Sudan (collected between 2013 and 2015) with distinct pattern of dark and whitish marks on abdomen (similar *C. sahtan* sp. nov., cf. Fig. 391),
Figs 608–615. Crossopriza pristina (Simon, 1890); male from Eritrea, Massaua (MNHN Ar 10510), syntype female from Yemen, Aden (MNHN Ar 10511). 608–610. Left male palp, prolateral, dorsal, and retrolateral views. 611–612. Female abdomen and epigynum, ventral views. 613–615. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
with distinct black lines on femora and tibiae, and with dark brown sternum. All other specimens are much older (100 years and more) and probably artificially pale.

Female
In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of indistinct light brown or non-darkened plates anteriorly on abdomen. Tibia 1 in 26 females: 10.0–13.6 (mean 11.9). Epigynum as in Figs 611–612, main epigynal plate short but wide, weakly protruding; with pair of shallow pockets very close to median line on both sides of median ridge (distance between pockets 40 μm); internal sclerotized arc and median round structure visible in uncleared specimens; posterior plate indistinct, short but wide. Internal genitalia (Figs 613–615, 623–624) with large oval pore plates in transversal position and close together, dorsal arc strongly sclerotized laterally, ventral arc with median pouch or pocket of unknown function.

Natural history
At the type locality (Aden), Simon (1890) collected this species in houses, together with “Artema mauricia” (= A. atlanta Walckenaer, 1837).

Distribution
Known from NW Africa (Sudan, Eritrea, Ethiopia) and the Arabian Peninsula (Yemen) (Fig. 353A).

Crossopriza manakhah sp. nov.
urn:lsid:zoobank.org:act:96A574A1-6DEA-42AF-9AF0-F88916EF8A04
Figs 353B, 625–642

Crossopriza pristina (misidentification) – Deeleman-Reinhold & van Harten 2001: 195 (part; see Remark under C. sanaa sp. nov.).

Diagnosis
Easily distinguished from known congeners by details of male palp (Figs 628–633; procursus with distinctive prolateral process; distal sclerite of genital bulb with two simple pointed processes); also by male chelicerae (Figs 634–635; pair of very strong medially-directed apophyses originating from dark sclerotized U-shaped area) and female genitalia (Fig. 639; epigynum triangular, with strong median ridge).

Etymology
The species name refers to the type locality; noun in apposition.

Type material
Holotype
YEMEN • ♂; 12 km NW of Manakhah, “1521”; 15.12° N, 43.68° E; 28 Aug. 2001; A. van Harten leg.; ZFMK Ar 22439.

Other material examined
YEMEN • 1 ♀; same collection data as for holotype; ZFMK Ar 22440 • 1 ♂; same locality as for holotype, “1742”; 27 Mar.–5 May 2002; A. van Harten leg.; ZFMK Ar 22441 • 1 ♀; “Manakah x Khamis Bani Sa’d”, “1428”; 15.12° N, 43.63° E; 3 Jul. 2001; A. van Harten leg.; ZFMK Ar 22442 • 1 ♀; Khamis Bani Sa’d, “788”; 15.18° N, 43.51° E; 11 Oct. 1999; A. van Harten leg.; NNMN • 1 ♀; same locality as for preceding, “760”; 27 Jul. 1999; A. van Harten leg.; NNMN • 1 ♂, 1 ♀; locality uncertain (Khamis Bani Sa’d area?), “960”; 1999; A. van Harten leg.; NNMN ARA 15212 • 1 ♂; near Sana’a, “564” (part); 15.3° N, 44.2° E; 3 Dec. 1998; A. van Harten leg.; NNMN • 1 ♂; Al Kawd [Al Kowd], “1195”; 13.09° N, 45.36° E; 16 Jan. 2001; A. van Harten leg.; ZFMK Ar 22443 • 1 ♀; Ja’ar, “1200”;

160
Remark
The coordinates of Khamis Bani Sa’d in Deeleman-Reinhold & van Harten (2001) are approximately 10 km W of Khamis Bani Sa’d (coordinates above). The actual collecting point is not clear.

Description
Male (holotype)
MEASUREMENTS. Total length 3.4, carapace width 1.3. Distance PME–PME 75 μm; diameter PME 90 × 105 μm; distance PME–ALE 30 μm; diameter AME 90 μm; distance AME–AME 30 μm. Leg 1: 33.2 (9.3 + 0.6 + 8.7 + 12.4 + 2.2), tibia 2: 5.6, tibia 3: 4.0, tibia 4 missing; tibia 1 L/d: 70; femora 1–3 diameters: 0.21, 0.18, 0.18.

COLOR (in ethanol). Carapace ochre-yellow, median pit anteriorly light brown; sternum brown, with black radial marks; legs ochre-yellow, without darker rings, with distinct black lines on femora and tibiae; abdomen ochre-gray, with distinct dark and white marks dorsally and laterally; ventrally with distinct black median band, partly disrupted, with two parallel longitudinal marks behind gonopore.

BODY. Habitus similar to C. sahtan sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (0.9/0.5), unmodified. Abdomen oval, dorso-posteriorly angular.

Figs 625–627. Crossopriza manakhah sp. nov.; male from Yemen, 12 km NW of Manakhah (ZFMK Ar 22441); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Figs 628–637. Crossopriza manakhah sp. nov.; male from Yemen, 12 km NW of Manakhah (ZFMK Ar 22441), female from Yemen, Ja’ar (ZFMK Ar 22444). **628–630**. Left procursus, prolateral, dorsal, and retrolateral views; arrows: distinctive prolateral process. **631–633**. Left genital bulb, prolateral, dorsal, and retrolateral views. **634–635**. Male chelicerae, frontal and lateral views. **636–637**. Cleared female genitalia, ventral and dorsal views. Abbreviation: vs = ventral sclerite. Scale bars = 0.3 mm.
CHELICERAE. As in Figs 634–635, with pair of strong frontal apophyses provided with one large modified cone-shaped hair each; distance between tips of modified hairs 60 μm; proximally partly whitish and slightly protruding; lateral stridulatory ridges fine but visible in dissecting microscope.

PALPS. As in Figs 625–627; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, with retrolateral transversal line, without retrolateral proximal process; femur-patella joints slightly shifted toward prolateral side; tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 628–630) slightly curved towards ventral, proximally on prolateral side with strong hump set with numerous long hairs, dorsal hairs not curved, procursus tip with short ventral sclerite, distinctive prolateral process, and further membranous processes; genital bulb (Figs 631–633) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with two simple processes.

LEGS. Femur 1 with single row of ~18 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

Male (variation)
Tibia 1 in three other males: 6.1, 7.7, 8.6. The only male from the three southern localities (from Al Kawd) with slightly different procursus tip: long transparent process shorter and prolateral process slightly less curved.

Figs 638–642. Crossopriza manakhah sp. nov.; female from Yemen, Ja’ar (ZFMK Ar 22444). 638–639. Abdomen and epigynum, ventral views. 640–642. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Scale bars = 0.5 mm.
Female

In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of barely visible plates anteriorly on abdomen. Tibia 1 in seven females: 6.3–7.0 (mean 6.7). Epigynum as in Figs 638–639, main epigynal plate roughly triangular, weakly protruding; with pair of shallow pockets close to median line on both sides of wide median ridge (distance between pockets 30 μm); internal sclerotized arc poorly visible in uncleared specimens; posterior plate large, widened laterally. Internal genitalia (Figs 636–637, 640–642) with relatively small crescent-shaped pore plates, dorsal arc strongly sclerotized, ventral arc only medially strongly sclerotized, apparently without median pouch or pocket.

Distribution

Known from several localities in western Yemen (Fig. 353B).

Crossopriza sanaa sp. nov.


Figs 353A, 643–663

Crossopriza pristina (misidentification) – Deeleman-Reinhold & van Harten 2001: 195 (part; see Remark below), figs 1–4, 7–9.

Remark

The redescription of C. pristina in Deeleman-Reinhold & van Harten (2001) is based largely on specimens from Sana’a that are here identified as C. sanaa sp. nov. However, in their “Studied material” section

Figs 643–645. Crossopriza sanaa sp. nov.; non-type male from Yemen, near Sana’a (NMNL); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
they also list specimens from Khamis Bani Sa’d and Little Aden. These represent a different species, *C. manakhah* sp. nov. Most of the figures in Deeleman-Reinhold & van Harten (2001) that are supposed to represent *C. pristina* do in fact represent *C. sanaa* sp. nov. The only exception is their figure 10, which is copied from Denis (1945), and which Denis thought represented *C. semicaudata* (which is also wrong).

**Diagnosis**

Distinguished from known congeners by details of male palp (Figs 646–651; procursus with strong ventral sclerite, distal bulbal sclerite with pointed dorsal and ventral tips and two prolateral apophyses), and by female genitalia (Figs 654–663; median ridge forming a ‘T’); from many congeners also by male chelicerae (Figs 652–653; relatively small apophyses pointing toward median line, no lateral processes).

**Etymology**

The species name refers to the type locality; noun in apposition.

**Type material**

*Holotype*

YEMEN • ♂; Sana’a; 15.350° N, 44.217° E; Jun. 1998; A. van Harten leg.; NMNL ARA 15023.

*Other material examined*

YEMEN • 3 ♂♂; Sana’a, Plant Protection Department; 15.350° N, 44.217° E; 19 May 1999; NMNL ARA 15213 • 3 ♀♀; same locality as for preceding; Dec. 1997; A. van Harten leg.; NMNL ARA 15215 • 5 ♀♀; same locality as for preceding; Jan. 1998; A. van Harten leg.; NMNL ARA 15214 • 1 ♂, 1 ♀; same locality as for preceding; Feb. 1998; A. van Harten leg.; MRAC 214308 • 1 ♂, 2 ♀♀; near Sana’a, “564”; 3 Dec. 1998; A. van Harten leg.; NMNL.

**Description**

*Male* (holotype)

**Measurements.** Total length 4.2, carapace width 1.6. Distance PME–PME 120 μm; diameter PME 105 × 120 μm; distance PME–ALE 40 μm; diameter AME 90 μm; distance AME–AME 40 μm. Leg 1: 32.9 (9.6 + 0.7 + 9.1 + 11.4 + 2.1), tibia 2: 6.4, tibia 3: 4.9, tibia 4: 5.6; tibia 1 L/d: 52; femora 1–4 diameters: 0.26, 0.24, 0.24, 0.24.

**Color** (in ethanol). Carapace ochre-yellow, median pit and posterior part of ocular area light brown; sternum mostly dark brown, laterally lighter; legs ochre-yellow, without darker rings, with elongate black marks on femora and tibiae; abdomen pale gray, with few indistinct dark marks dorsally, ventrally with darker marks near pedicel and near spinnerets and three indistinct longitudinal bands behind gonopore.

**Body.** Habitus similar to *C. ghul* sp. nov. and *C. sahtan* sp. nov. (cf. Figs 391, 481). Ocular area slightly raised. Wide and deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified but rim more strongly sclerotized than in female. Sternum wider than long (1.15/0.75), unmodified. Abdomen dorso-posteriorly slightly angular.

**Chelicerae.** As in Figs 652–653, with pair of converging apophyses close to median line, each with one strong modified (cone-shaped) hair at tip, distance between tips of modified hairs 80 μm; with very fine stridulatory ridges and pair of low but dark frontal lateral humps.

**Palps.** As in Figs 643–645; coxa with very low rounded retrolateral hump; trochanter barely modified; femur proximally with prolateral stridulatory pick (modified hair), without retrolateral process, with indistinct transversal retrolateral line, without dorsal process; distally widened, with low ventral
protrusion; femur-patella joints close together and shifted towards prolateral; tibia large relative to femur; tibia-tarsus joints shifted towards retrolateral; procursus (Figs 646–648) proximally with strong prolateral hump with many hairs, dorsal hairs barely curved, procursus tip with strong ventral sclerite, rounded prolateral lamella, and further distinctive partly membranous elements; genital bulb (Figs 649–651) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal

Figs 656–663. Crossopriza sanaa sp. nov.; females from Yemen, Sana’a (656–657, 660: NMNL ARA 15214; 658–659, 661–663: NMNL ARA 15215). 656–659. Abdomens and epigyna, ventral views. 660. Abdomen, frontal view; arrows: stridulatory plates. 661–663. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; e = epigynum; va = ventral arc. Scale bars: 656, 658, 660 = 1.0 mm; 657, 659, 661–663 = 0.5 mm.
sclerite with retrolateral ridge, two distinctive processes pointing in opposite directions and pair of distinctive prolateral apophyses.

LEGS. Femur 1 with single row of ~20 ventral spines, also femur 2 distally with ~10 stronger hairs in one ventral row; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without regular pseudosegments but with indistinct platelets.

Male (variation)
Tibia 1 in five males (incl. holotype): 8.9–11.0 (mean 9.6). Ventral dark band on abdomen variably complete (cf. female, Figs 656, 658).

Female
In general similar to male but without spines on legs, apparently without (or with extremely fine) stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of light brown plates anteriorly on abdomen (Fig. 660). Tibia 1 in eight females: 8.1–10.4 (mean 9.4). Epigynum as in Figs 656–659, main epigynal plate triangular, weakly projecting, with pockets very close together on both sides of median ridge (distance ~45 μm); internal arcs and median anterior structure variably visible in uncleared specimens; posterior plate short but wide, simple; with pair of small brown plates in front of epigynum, not elevated. Internal genitalia (Figs 654–655, 661–663) with pair of elongate pore plates converging and narrowing anteriorly, ventral arc with distinctive median cleft and ventral median process (pocket?).

Distribution
Known from type locality only (Yemen, Sana’a) (Fig. 353A).

Crossopriza kandahar sp. nov.
urn:lsid:zoobank.org:act:AC7041F8-BC5B-4600-A5E1-A8C05BE8673F
Figs 353A, 664–680

Diagnosis
Males are easily distinguished from known congeners by presence of small pair of apophyses frontally on male chelicerae (Fig. 669); also by details of male palp (Figs 668, 671; procursus tip with small dorsal flat process; distal bulbular sclerite with two large prolateral apophyses), and by shape of epigynum (Fig. 677; short and wide plate, pair of large pockets close together but not on median rim; similar to C. sengleti sp. nov.).

Etymology
The species name refers to the type locality; noun in apposition.

Type material
Holotype
AFGHANISTAN ♂; Kandahar Province, W of Kandahar; 31.62° N, 65.60° E; 1000 m a.s.l.; 31 Jul. 1975; A. Senglet leg.; MHNG.

Other material examined
AFGHANISTAN • 10 ♂♂, 15 ♂♂, 4 juvs (2 vials); same collection data as for holotype; MHNG.
Description

Male (holotype)

Measurements. Total length 5.3, carapace width 1.65. Distance PME–PME 70 μm; diameter PME 110 × 150 μm; distance PME–ALE 30 μm; diameter AME 95 μm; distance AME–AME 30 μm. Leg 1: 37.5 (10.8 + 0.7 + 10.3 + 13.3 + 2.4), tibia 2: 7.2, tibia 3: 5.6, tibia 4: 6.8; tibia 1 L/d: 61; femora 1–4 diameters: 0.26, 0.23, 0.22, 0.24.

Color (in ethanol). Carapace ochre-yellow, anteriorly in median pit light brown; sternum with many small brown spots partly arranged in radial marks; legs ochre-yellow, without darker rings, with small black lines on femora and (few) on tibiae; abdomen pale gray, with whitish internal marks and indistinct dark band posteriorly above spinnerets; ventrally with broken dark band, with three indistinct parallel longitudinal marks behind gonopore.

Body. Habitus similar to C. tiwi sp. nov. (cf. Figs 393–394). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (1.1/0.75), unmodified. Abdomen slightly elongated, dorso-posteriorly angular to conical.

Chelicerae. As in Figs 669–670, with two pairs of frontal apophyses; proximal pair small and simple; distal pair larger, at tip with one large modified cone-shaped hair each; distance between tips of modified hairs 180 μm; lateral stridulatory ridges clearly visible in dissecting microscope.

Palps. As in Figs 664–666; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, without
retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 667–668) straight, dorsal hairs not curved, prolateral proximal hump set with many hairs, procursus tip with strong ventral sclerite, small dorsal sclerite with prolateral-dorsal ridge, and membranous elements; genital bulb (Figs 671–673) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with retrolateral ridge and distinctive set of two prolateral apophyses and ridge.

**LEGS.** Femur 1 with single row of ~18 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

**Male** (variation)
Tibia 1 in 11 males (incl. holotype): 9.6–10.8 (mean 10.0). Some males with few indistinct dark marks dorsally on abdomen; ventral abdominal marks behind gonopore variable (2–4 parallel bands).

**Female**
In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of distinct light brown plates anteriorly on abdomen. Tibia 1 in 15 females: 8.1–10.0 (mean 9.1). Epigynum as in Figs 676–677, main epigynal plate triangular, short but wide, weakly protruding, only posteriorly heavily sclerotized; with pair of large pockets 80 μm apart; internal

Figs 676–680. *Crossopriza kandahar* sp. nov.; female from Afghanistan, W of Kandahar (MHNG). 676–677. Abdomen and epigynum, ventral views. 678–680. Female internal genitalia, dorsal view (with dorsal arc tilted backwards), ventral view, and regular dorsal view. Scale bars: 676 = 1.0 mm; 677–680 = 0.5 mm.
sclerotized arcs and median anterior internal sclerite visible in uncleared specimens; posterior plate light brown, short but wide. Internal genitalia (Figs 674–675, 678–680) with large oval pore plates converging anteriorly, pores arranged in groups, dorsal arc strong but simple, ventral arc with median sclerite (rather than pouch or pocket) of unknown function.

Distribution
Known from type locality only, in Afghanistan, Kandahar Province (Fig. 353A).

Crossopriza malegaon sp. nov.
urn:lsid:zoobank.org:act:964FF86C-7766-4DF0-9187-83D8CA7D0FAD
Figs 353A, 681–697

Diagnosis
Distinguished from known congeners by details of male palp (Figs 684–689; procursus tip with flat triangular ventral sclerite and simple dorsal elements; distal bulbal sclerite with prolateral sclerotized fold and weakly sclerotized ventral process), by armature of male chelicerae (Figs 690–691; one pair of small apophyses close to median line), and by female genitalia (Figs 692–697; epigynal plate strongly protruding, laterally whitish, median brown band widening anteriorly; pair of pockets close to median line; large roundish pore plates; ventral arc with elongated median modification).

Etymology
The species name refers to the type locality; noun in apposition.

Figs 681–683. Crossopriza malegaon sp. nov.; holotype male from India, 17 mi NE of Malegaon (CAS); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Type material

Holotype
INDIA – Maharashtra • ♂; 17 mi NE of Malegaon; 20.65° N, 74.65° E; 400 m a.s.l.; 15 Jan. 1962; E.S. Ross and D.Q. Cavagnaro leg.; CAS.

Other material examined
INDIA – Maharashtra • 1 ♀; same collection data as for holotype; CAS (together with holotype)

Description

Male (holotype)
MEASUREMENTS. Total length 3.0, carapace width 1.25. Distance PME–PME 70 μm; diameter PME 80 × 95 μm; distance PME–ALE 30 μm; diameter AME 70 μm; distance AME–AME 30 μm. Leg 1: 24.1 (7.1 + 0.5 + 6.5 + 8.6 + 1.4), tibia 2: 4.5, tibia 3: 3.4, tibia 4: 3.8; tibia 1 L/d: 54; femora 1–4 diameters: 0.19, 0.17, 0.15, 0.15.

Figs 694–697. Crossopriza malegaon sp. nov.; female from India, 17 mi NE of Malegaon (CAS). 694–695. Abdomen and epigynum, ventral views. 696–697. Female internal genitalia, ventral and dorsal views. Scale bars = 0.5 mm.
COLOR (in ethanol). Carapace pale ochre-yellow, medially light brown; sternum light brown with dark brown radial marks; legs pale ochre-yellow, without darker rings, with small black marks (mostly round to oval) on femora and tibiae, very few on metatarsi; abdomen pale ochre-gray, with small dark marks dorsally and laterally; ventrally with distinct black pattern, with three parallel longitudinal marks behind gonopore.

BODY. Habitus similar to C. tiwi sp. nov. (cf. Figs 393–394). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim more sclerotized than in female. Sternum wider than long (0.8/0.6), unmodified. Abdomen slightly elongated, dorso-posteriorly angular.

CHELICERAE. As in Figs 690–691, with pair of small frontal apophyses close to median line and strongly converging, barely visible in lateral view, each provided with one large modified cone-shaped hair; distance between tips of modified hairs 50 μm; lateral stridulatory ridges clearly visible in dissecting microscope.

PALPS. As in Figs 681–683; coxa with rounded retrolateral hump with sclerotized ridge; trochanter barely modified (weakly projecting ventrally); femur distally widened, with very low rounded ventral protrusion, proximally with prolateral stridulatory pick, without retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 684–686) straight, long dorsal hairs not or barely curved, prolateral proximal hump with many hairs, procursus tip with strong ventral sclerite and further membranous and sclerotized elements; genital bulb (Figs 687–689) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen, presumably prolaterally at basis of distal sclerite; distal sclerite without retrolateral ridge, with distinctive prolateral sclerotized fold and whitish ventral process.

LEGS. Femur 1 with single row of ~18 ventral spines; without curved hairs; with more than usual vertical hairs in one dorsal row each on tibiae 1 and 2; retrolateral trichobothrium of tibia 1 at 5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

Female
In general similar to male but without spines on legs; stridulatory files on chelicerae not seen; with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of indistinct light brown plates anteriorly on abdomen. Tibia 1: 5.4. Epigynum as in Figs 694–695, main epigynal plate almost round, strongly protruding, laterally whitish, median brown band widening anteriorly, posteriorly heavily sclerotized with pair of distinct pockets close to median line, 20 μm apart; internal sclerotized arcs not visible in uncleared specimen; posterior plate short but wide. Internal genitalia (Figs 692–693, 696–697) with large roundish pore plates, dorsal and ventral arcs weak, ventral arc with median modification (elongated pocket, duct, or fold?) of unknown function.

Distribution
Known from type locality only, in India, Maharashtra (Fig. 353A).

Crossopriza miskin sp. nov.
urn:lsid:zoobank.org:act:6AED4DF0-17D0-485D-8959-71FF61131A34
Figs 353A, 698–701, 706–725

Diagnosis
Easily distinguished from known congeners by details of male palp (Figs 711–713, 716; procursus tip very simple, without ventral sclerite; distal bulbal sclerite with distinctive set of prolateral apophyses); also by male chelicerae (Figs 714–715; two pairs of apophyses in distinctive positions), and by female
genitalia (Figs 719–720, 722; epigynum semicircular with large pockets close to median line; pore plates wide apart; ventral arc with elongate median modification); from most known congeners also by small body size (carapace width ~1.0–1.1) and by shape of abdomen (Figs 698–701; pointed elongation above spinnerets).

Etymology
The species name refers to the type locality; noun in apposition.

Type material

Holotype
OMAN – Ad Dhah(10,8),(993,990)(221,340),(306,351)ira ♀; near Miskin (between Ibri and Rusdak); 23.496° N, 56.838° E; 660 m a.s.l.; under rocks; 25 Mar. 2017; B.A. Huber leg.; ZFMK Ar 22445.

Other material examined
OMAN – Ad Dhahira • 2 ♀; same collection data as for holotype; ZFMK Ar 22446 • 1 ♀ (in pure ethanol); same collection data as for holotype; ZFMK Om36. – Al Batinah South • 1 ♂, 3 ♀, 1 juv.; wadi near Fasah; 23.303° N, 57.328° E; 660 m a.s.l.; 26 Mar. 2017; B.A. Huber leg.; under rocks; ZFMK Ar 22447 • 2 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Om39. – Ad Dakhiliya • 1 ♀, 1 juv.; between Al Rawda and Al Hayema; 22.880° N, 57.293° E; 690 m a.s.l.; 17 Feb. 2018; B.A. Huber leg.; ZFMK Ar 22448 • 2 juvs (in pure ethanol); same collection data as for preceding; ZFMK Om114.

Figs 706–710. Crossopriza miskin sp. nov.; holotype male from Oman, near Miskin (ZFMK Ar 22445) and female from Oman, wadi near Fasah (ZFMK Ar 22447). 706–708. Left male palp, prolateral, dorsal, and retrolateral views. 709–710. Female right femora 2 and 3, prolateral views. Scale bars: 706–708 = 0.5 mm; 709–710 = 0.2 mm.
Description

Male (holotype)

Measurements. Total length 3.0, carapace width 1.05. Distance PME–PME 60 μm; diameter PME 80 × 100 μm; distance PME–ALE 30 μm; diameter AME 70 μm; distance AME–AME 30 μm. Leg 1: 23.2 (6.5 + 0.4 + 6.2 + 8.4 + 1.7), tibia 2: 3.8, tibia 3: 2.7, tibia 4: 3.5; tibia 1 L/d: 59; femora 1–4 diameters: 0.17, 0.14, 0.13, 0.14.

Color (in ethanol). Carapace ochre-yellow, with slightly darker median band including ocular area; clypeus not darkened; sternum ochre-yellow with brown speckles; legs ochre-yellow, without darker rings, with black spots (rather than lines) on femora and (few) on tibiae (cf. Figs 709–710); abdomen pale gray, with dark lines around heart area and posterior median mark; ventrally with distinct black pattern (disrupted median band).

Body. Habitus as in Figs 698–699. Ocular area slightly raised. Shallow but wide thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (0.75/0.60), unmodified. Abdomen strongly elongated and pointed above spinnerets.

Figs 721–725. Crossopriza miskin sp. nov.; female from Oman, wadi near Fasah (ZFMK Ar 22447). 721–722. Abdomen and epigynum, ventral views. 723–725. Cleared female genitalia, dorsal view with dorsal arc tilted backwards, ventral view, and regular dorsal view. Scale bars: 721 = 0.5 mm; 722–725 = 0.3 mm.
CHELICERAE. As in Figs 714–715, with pair of frontal distal apophyses provided with one large modified cone-shaped hair each, and pair of lateral apophyses directed towards lateral; distance between tips of modified hairs 85 μm; lateral stridulatory ridges barely visible in dissecting microscope.

PALPS. As in Figs 706–708; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, without retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; procursus straight, prolateral proximal hump set with numerous long hairs, long dorsal hairs not curved, procursus tip (Figs 711–713) very simple, without (or with strongly reduced) ventral sclerite; genital bulb (Figs 716–718) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with retrolateral ridge and distinctive set of prolateral apophyses and ridges.

LEGS. Femur 1 with single row of ~20 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsi without macrotrichia; procursus straight, with numerous long hairs, long dorsal hairs not curved, procursus tip (Figs 711–713) very simple, without (or with strongly reduced) ventral sclerite; genital bulb (Figs 716–718) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with retrolateral ridge and distinctive set of prolateral apophyses and ridges.

Male (variation)
Tibia 1 in second male: 6.2.

Female
In general similar to male (Figs 700–701) but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of barely visible plates anteriorly on abdomen. Tibia 1 in six females: 4.1–4.9 (mean 4.4). Epigynum as in Figs 721–722, small relative to abdomen, main epigynal plate semicircular, weakly protruding; with pair of distinct pockets close together (25 μm apart); internal sclerotized arc and median anterior structure visible in uncleared specimens; posterior plate short but wide. Internal genitalia (Figs 719–720, 723–725) with large pore plates wide apart and converging anteriorly, dorsal arc simple, ventral arc with elongate median modification (pouch?) of unknown function.

Natural history
All specimens were found on the undersides of rocks on the ground, where they were extremely well camouflaged and barely visible unless they moved. However, small parts of the webs usually extended from below the rock, indicating the presence of a spider. In all localities, the species lived in close proximity with Artema bahla Huber, 2019; both species were sometimes found on a single rock, only 10–20 cm apart.

Distribution
Known from several localities in north-eastern Oman (Ad Dhahira, Al Batinah South, Dakhiliya) (Fig. 353A).

Crossopriza parsasp. nov.
urn:lsid:zoobank.org:act:03DA29E6-CDB9-46E6-82D7-DD5CA85571D9
Figs 353A, 726–744

Diagnosis
Distinguished from known congeneres by details of male palp (Figs 729–730, 733–735; long and slender procursus slightly curved towards ventral, with prolateral process accompanying ventral sclerite; distal bulbal sclerite with prominent ventral process and distinctive set of prolateral apophyses; palp similar to
C. *srinagar* sp. nov.), by male chelicerae (Figs 731–732; lateral apophyses prominent in frontal view, weakly protruding in lateral view), and by epigynum (Fig. 741; strongly sclerotized lateral elements; pockets close together).

**Etymology**
The species name is derived from the Old Persian name of Persepolis, ‘*pārsa*’; noun in apposition.

**Type material**

**Holotype**
IRAN – Fars • ♂; Persepolis; 29.983° N, 52.900° E (see Remarks below); 18 Aug. 1973; A. Senglet leg.; MHNG.

**Other material examined**
IRAN – Fars • 5 ♂♂, 7 ♀♀; same collection data as for holotype; MHNG • 1 ♂, 2 ♀♀; S of Fahlyān; 30.000° N, 51.583° E; 4 Sep. 1975; A. Senglet leg.; MHNG.

**Material assigned tentatively** (see Variation below)
IRAN – Fars • 6 ♂♂, 9 ♀♀; W of Dasht-e-Arjān [Dascht-e Aržan]; 29.683° N, 51.850° E; 3 Sep. 1975; A. Senglet leg.; MHNG • 1 ♀; “Aliābād”; 30.017° N, 53.000° E (see Remarks below); 9 Jun. 1974; A. Senglet leg.; MHNG • 4 ♀♀; “Barm-e-peere-Ghaibi” (see Remarks below); 28.898° N, 52.540° E; 29 May 2000; Y.M. Marusik and K. Elmi leg.; ZFMK Ar 5208. – Kohgiluyeh and Boyer-Ahmad • 4 ♂♂, 5 ♀♀; Charām [Choram]; 30.733° N, 50.733° E; 23 May 1974; A. Senglet leg.; MHNG • 1 ♀; “route de Yasudj”; 30.467° N, 51.500° E (see Remarks below); 25 May 1974; A. Senglet leg.; MHNG.

**Remarks**
The coordinates on A. Senglet’s original labels are usually to the nearest minute (i.e., ± 2 km), but in some cases the actual collecting spot seems to be even farther away than that. The type locality is possibly closer to ~29.93° N, 52.89° E (ruins of Persepolis).

There are several “Aliābād” in Fars, none of them close to the coordinates on the original label; maybe the collecting site was Haji Abad (29.99° N, 52.92° E).

The original coordinates of “route de Yasudj” define a spot in Fars Province, slightly outside of Kohgiluyeh and Boyer-Ahmad Province, but the label says Kohkiluyeh.

A locality with the name “Barm-e-peere-Ghaibi” is repeatedly cited in the arachnological literature (always referring to the same collecting event) but does apparently not exist (F. Mozaffarian, pers. com., Feb. 2021). The name possibly refers to Barm-e Peer, a small lake close to the Palace of Ardashir Pāpakan at approximately 28.898° N, 52.540° E. Alternatively, an anonymous referee suggested that it may refer to a shrine called “Pir-e Qeybi” in the vicinities of Shiraz (29.488° N, 52.497° E).

**Description**

**Male** (holotype)

**Measurements.** Total length 4.3, carapace width 1.7. Distance PME–PME 95 μm; diameter PME 105 ×130 μm; distance PME–AME 25 μm; diameter AME 100 μm; distance AME–AME 30 μm. Leg 1: 44.5 (12.9 + 0.7 + 12.0 + 16.4 + 2.5), tibia 2: 8.9, tibia 3: 6.1, tibia 4: 6.7; tibia 1 L/d: 75; femora 1–4 diameters: 0.23, 0.21, 0.20, 0.20.
COLOR (in ethanol). Carapace ochre-yellow, with distinct brown mark anteriorly in median pit; sternum dark brown to black; legs ochre-yellow, without darker rings, with small black lines on femora and (few) on tibiae; abdomen gray, with few and indistinct dorsal dark marks; ventrally with dark band limited to anterior and posterior part, absent from median part (behind gonopore).

BODY. Habitus similar to C. sahtan sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of shallow furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (1.1/0.7), unmodified. Abdomen slightly elongated, dorso-posteriorly angular to conical.

CHELICERAE. As in Figs 731–732, with two pairs of apophyses; lateral pair set with small sclerotized scales; median pair with one large modified cone-shaped hair each; distance between tips of modified hairs 70 μm; lateral stridulatory ridges clearly visible in dissecting microscope.

PALPS. As in Figs 726–728; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, without retrolateral transversal line, without retrolateral proximal process but some slightly stronger hair-bases on retrolateral-ventral ridge; femur-patella joints shifted toward prolateral side; tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 729–730) weakly curved towards ventral, with low prolateral hump proximally followed with thick ridge set with numerous long hairs, long dorsal hairs mostly straight or weakly curved, procursus tip with ventral sclerite accompanied by flat prolateral sclerite, with further membranous elements; genital bulb (Figs 733–735) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite without retrolateral ridge, with two distinctive prolateral apophyses and long ventral process.

Figs 726–728. Crossopriza parsala sp. nov.; non-type male from Iran, Persepolis (MHNG); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
LEGS. Femur 1 with single row of ~28 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct and irregular, only at distal tip ~2–3 regular pseudosegments.

**Male** (variation)

Tibia 1 in 12 males (incl. holotype): 9.9–12.4 (mean 11.3). Some males with few indistinct darker specks behind gonopore, but never with distinct dark pattern. All males other than those from type locality and from S of Fahlyān with slightly different procursus tip and slightly different processes on distal bulbal sclerite: in males from Dasht-e Arjān, the apophysis accompanying the ventral distal sclerite of the procursus is simple and weakly sclerotized (arrow in Fig. 738); the elements of the distal bulbal sclerite are slightly different in shape (Fig. 739). In males from Choram, the procursus tip appears intermediate between those from Persepolis and those from Dasht-e Arjān; the bulb appears identical to males from Persepolis. The chelicerae in all these males appear identical. They also share the ‘incomplete’ pattern ventrally on the abdomen, i.e., with almost no dark marks behind the gonopore.

**Female**

In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of small but distinct light brown plates anteriorly on abdomen. Tibia 1 in 21 females: 8.8–12.5 (mean 10.0). Epigynum as in Figs 740–741, main epigynal plate roughly triangular, barely

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**Figs 740–744.** *Crossopriza pars* sp. nov.; female from Iran, Persepolis (MHNG). 740–741. Abdomen and epigynum, ventral views. 742–744. Cleared female genitalia, dorsal view with dorsal arc tilted backwards, ventral view, and regular dorsal view. Scale bars = 0.5 mm.
HUBER B.A., Revisions of *Holocnemus* and *Crossopriza*

protruding, laterally posteriorly heavily sclerotized with pair of low depressions, medially with pair of pockets on both sides of median rim (distance 30 μm); internal median structure visible in uncleared specimens; posterior plate light brown, short but wide. Internal genitalia (Figs 736–737, 742–744) with large elongate pore plates converging anteriorly, dorsal arc slender, ventral arc medially widened and strongly sclerotized, apparently without pouch-like modification.

Females from S of Fahlyān, Dasht-e Arjān, “Aliābād”, and Choram appear identical to those from Persepolis. In females from “Barm-e-peere-Ghāibi” the lateral epigynal sclerites are less strongly developed.

**Distribution**

Known from several localities in Iran, Fars and Kohgiluyeh and Boyer-Ahmad Provinces (Fig. 353A).

*Crossopriza srinagar* sp. nov.

urn:lsid:zoobank.org:act:A0DF1162-C8E6-457B-B627-028E156551C6

Figs 353A, 745–764

**Diagnosis**

Distinguished from known congeners by details of male palp (Figs 749, 752; long and slender procursus slightly curved towards ventral; distal bulbal sclerite with prominent ventral process and distinctive set of prolateral apophyses; palp similar to *C. pars* sp. nov.), by male chelicerae (Figs 750–751; median pair of apophyses in rather lateral position, lateral pair accompanied by additional proximal pair of humps), and by epigynum (Fig. 758; relatively long, with pair of large pockets).

**Etymology**

The species name refers to the type locality; noun in apposition.

**Type material**

*Holotype*

INDIA – Jammu and Kashmir • ♂; Srinagar; 34.10° N, 74.80° E; 1800 m a.s.l.; 3 Sep. 1962; E. Kullmann leg.; ZFMK Ar 22449.

*Other material examined*

INDIA – Jammu and Kashmir • 1 ♀, 1 juv.; same collection data as for holotype; ZFMK Ar 22450.

PAKISTAN – Islamabad Capital Territory • 1 ♀; “N env. of Islamabad, National Park”; 33.75° N, 73.06° E; 800 m a.s.l.; 10 Jul. 2003; S.V. Ovchinnikov leg.; ZMMU. – Khyber Pakhtunkhwa • 1 ♀; 7 km NE of Gobor-o-Bakh [Gobor Bakth]; 36.117° N, 71.383° E; 1 Aug. 2004; S.V. Ovchinnikov leg.; ZMMU.

**Description**

*Male* (holotype)

**Measurements.** Total length 3.4, carapace width 1.4. Distance PME–PME 115 μm; diameter PME 100 ×110 μm; distance PME–ALE 50 μm; diameter AME 90 μm; distance AME–AME 40 μm. Leg 1: 29.0 (8.4 + 0.6 + 7.8 + 10.2 + 2.0), tibia 2: 5.3, tibia 3: 3.8, tibia 4: 4.4; tibia 1 L/d: 52; femora 1–4 diameters: 0.25, 0.20, 0.19, 0.21.
COLOR (in ethanol). Carapace ochre-yellow, anteriorly in median pit and posterior triangle light brown; sternum brown with dark brown radial marks; legs ochre-yellow, without darker rings, with black lines on femora and tibiae; abdomen pale gray, with some dark marks dorsally and laterally; ventrally with broken dark band, with two dark parallel longitudinal marks behind gonopore and lighter brown mark medially.

BODY. Habitus similar to C. sahtan sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (1.05/0.70), unmodified. Abdomen slightly elongated, dorso-posteriorly slightly angular.

CHELICERAE. As in Figs 750–751, with three pairs of processes: lateral apophyses slightly sculptured; indistinct frontal lateral humps (arrows in Figs 750–751); and large frontal medial processes, each with one large modified hair at tip; distance between tips of modified hairs 270 μm; lateral stridulatory ridges fine but visible in dissecting microscope.

PALPS. As in Figs 745–747; coxa with rounded retrolateral hump; trochanter barely modified; femur short, distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, with weak retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 748–749) long and slender, slightly curved towards ventral, narrowing distally, with low prolateral hump proximally set with many hairs, long dorsal hairs mostly straight, only 2–3 hairs weakly curved, procursus tip simple, with long ventral sclerite, prolateral-dorsal sclerite, and two small retrolateral sclerotized elements; genital bulb (Figs 752–754) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with retrolateral ridge, with distinctive set of two large prolateral apophyses and small ridge leading to prominent ventral process.

Figs 745–747. Crossopriza srinagar sp. nov.; holotype male from India, Srinagar (ZFMK Ar 22449); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Figs 757–764. Crossopriza srinagar sp. nov. 757–758. Female from India, Srinagar (ZFMK Ar 22450), abdomen and epigynum, ventral views. 759–760. Female from Pakistan, “N env. of Islamabad, National Park” (ZMMU), abdomen and epigynum, ventral views. 761–762. Female from Pakistan, 7 km NE Gobor-o-Bakh (ZMMU), abdomen and epigynum, ventral views. 763–764. Female from India, Srinagar (ZFMK Ar 22450), cleared female genitalia, regular dorsal view and dorsal view with dorsal arc tilted backwards. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
LEGS. Femur 1 with single row of ~18 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct/irregular except 1–2 at tip.

**Female**
In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of small but distinct light brown plates anteriorly on abdomen. Tibia 1 in female from type locality: 7.7. Epigynum as in Figs 757–758; main epigynal plate almost as long as wide, weakly protruding, with pair of large dark pockets (distance ~200 μm), anteriorly with light brown median part and ochre-whitish lateral parts, internal median structure visible in uncleared specimens; posterior plate brown, short but wide. Internal genitalia (Figs 755–756, 763–764) with large elongate pore plates slightly narrowing and converging anteriorly, dorsal arc with modified central area and widening laterally, ventral arc also with median modification, with indistinct ventral pocket (visible in lateral view only).

The two females from Pakistan have very similar but also slightly deviating epigyna; they are therefore assigned tentatively. Female from Islamabad with more evenly sclerotized anterior epigynal plate and pockets closer together (Figs 759–760; distance ~95 μm); tibia 1: 4.5. Female from 7 km NE Gobor-o-Bakh with relatively (and absolutely) wider anterior epigynal plate (Figs 761–762); distance between pockets ~200 μm; tibia 1: 5.6.

**Distribution**
Known from northern India (Jammu and Kashmir) and from specimens assigned tentatively from Pakistan (Islamabad Capital Territory, Khyber Pakhtunkhwa) (Fig. 353A).

*Crosopriza sengleti* sp. nov.
urn:lsid:zoobank.org:act:DE567373-B1F1-499F-8F93-33B3695DDCF5
Figs 353A, 765–782

**Diagnosis**
Easily distinguished from known congeners by modified male clypeus (Fig. 768; single median process); also by details of male palp (Figs 769–773; distinctive shapes of procursus tip and of ventral sclerite; distal bulbal sclerite with strong prolateral fold and small ventral pointed process), by male chelicerae (Fig. 774; distinctive position of small lateral pair of apophyses), and by epigynum (Fig. 779; wide median ridge).

**Etymology**
The species name honors Swiss arachnologist Antoine Senglet (1927–2015), who collected a large part of the specimens treated in this paper.

**Type material**

**Holotype**
IRAN • ♂; Fars, Seridjan (Serizjan); 28.967° N, 52.567° E (see Remark below); 30 Aug. 1975; A. Senglet leg.; MHNG.

**Other material examined**
IRAN • 1 ♀, 2 juvs; same collection data as for holotype; MHNG • 1 ♂, 1 ♀, 4 juvs; same locality as for holotype; 28.95° N, 52.55° E (see Remark below); 7 Jun. 1974; A. Senglet leg.; MHNG.
Remark
The coordinates on Senglet’s label in the type vial denote a site in the hills ~2 km NE of the village of Seridjan. The coordinates in the second vial are of the village itself, which was flooded when the Tangab Dam was built (~2003–2007) (F. Mozzaffarian, pers. com., Jun. 2021). This collecting site may thus no longer be accessible.

Description

Male (holotype)
MEASUREMENTS. Total length 4.0, carapace width 1.6. Distance PME–PME 90 μm; diameter PME 90 × 110 μm; distance PME–ALE 25 μm; diameter AME 85 μm; distance AME–AME 35 μm. Leg 1: 39.0 (11.3 + 0.7 + 10.5 + 14.1 + 2.4), tibia 2: 7.2, tibia 3: 5.3, tibia 4: 6.1; tibia 1 L/d: 66; femora 1–4 diameters: 0.23, 0.20, 0.19, 0.20.

COLOR (in ethanol). Carapace monochromous ochre-yellow; sternum laterally ochre-yellow, medially light brown; legs ochre-yellow, without darker rings, with distinct black lines on femora and (few) on tibiae; abdomen pale gray, with many internal whitish marks and few indistinct small dark marks posteriorly; ventrally without dark median band.

BODY. Habitus similar to C. sahtan sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus with light median process (arrow in Fig. 768), ~0.18 long; rim of clypeus slightly more sclerotized than in female. Sternum wider than long (0.10/0.75), unmodified. Abdomen oval, dorso-posteriorly slightly angular.

Figs 765–767. Crossopriza sengleti sp. nov.; non-type male from Iran, Fars, Seridjan (MHNG); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Figs 768–777. *Crossopriza sengleti* sp. nov.; non-type male and female from Iran, Fars, Seridjan (MHNG). **768.** Male ocular area, clypeus, and chelicerae; arrow: clypeus process. **769–770.** Left procursus, prolateral and retrolateral views; arrow: branch of ventral sclerite; asterisk: distinctive prolateral apophysis. **771–773.** Left genital bulb, prolateral, dorsal, and retrolateral views; arrow: retrolateral ridge. **774–775.** Male chelicerae, frontal and lateral views. **776–777.** Cleared female genitalia, ventral and dorsal views. Scale bars: 768 = 0.5 mm; 769–777 = 0.3 mm.
CHELICERAE. As in Figs 774–775, with two pairs of apophyses, lateral pair simple, pointing towards distal, median pair with one large modified cone-shaped hair each; distance between tips of modified hairs 105 μm; lateral stridulatory ridges fine but visible in dissecting microscope.

PALPS. As in Figs 765–767; coxa with rounded retrolateral hump; trochanter barely modified; femur distally only weakly widened, proximally with prolateral stridulatory pick, without retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 769–770) straight and slightly tapering towards distally, proximally on prolateral side with low hump set with numerous long hairs, dorsal hairs not curved, procursus tip with distinctly bifid and weakly sclerotized ventral sclerite, distinctive prolateral apophysis (asterisk in Fig. 769), and further membranous processes; genital bulb (Figs 771–773) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening not seen; distal sclerite with strong retrolateral ridge, with strong prolateral fold, and small and weakly sclerotized ventral pointed process.

LEGS. Femur 1 with single row of ~25 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 3%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

Figs 778–782. Crossopriza sengleti sp. nov.; female from Iran, Fars, Seridjan (MHNG). 778–779. Abdomen and epigynum, ventral views; arrows: pockets. 780–782. Cleared female genitalia, dorsal view with dorsal arc tilted backwards, ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
**Male** (variation)
Tibia 1 in second male: 9.0.

**Female**
In general similar to male but without spines on legs, apparently without stridulatory files on chelicerae, and with stridulatory organ consisting of pair of weakly sclerotized small processes posteriorly on carapace and pair of indistinct plates anteriorly on abdomen. Tibia 1 in two females: 8.5, 9.1. Epigynum as in Figs 778–779; main epigynal plate roughly triangular, weakly protruding; with pair of large pockets close to median line on both sides of wide median ridge (distance between pockets 30 μm); internal sclerotized arc medially visible in uncleared specimens; posterior plate indistinct, weakly sclerotized, short but wide. Internal genitalia (Figs 776–777, 780–782) with drop-shaped pore plates narrowing and converging anteriorly, dorsal arc simple, ventral arc medially strongly widened and sclerotized, apparently without median pouch or pocket.

**Distribution**
Known from type locality only, in Iran, Fars Province (Fig. 353A).

*Crossopriza lyoni* (Blackwall, 1867)
Figs 351, 702–705, 783–805

*Pholcus Lyoni* Blackwall, 1867: 392.


*Crossopriza stridulans* — Roth 1985: B33-1.
Justification of new synonymy

Even though the type material of *C. nigrescens* (a single juvenile specimen) is apparently lost, the name is here synonymized, for three reasons. First, all adult Madagascan specimens of *Crossopriza* studied are *C. lyoni* (Huber et al. 1999; Irie 2001; herein); second, the type of *C. nigrescens* was collected in a house, suggesting a synanthropic species; third, the character that Millot (1946) considered diagnostic (the dark coloration) varies considerably among specimens, even within a locality.

Diagnosis

Distinguished from known congeners by details of male palp (Figs 786–791; procursus ventral sclerite with transparent retrolateral branch; procursus tip with wide and rounded dorsal process; distal bulbal sclerite with distinctive row of apophyses on prolateral side); from the similar *C. surobi* sp. nov. (identical male chelicerae) also by shorter epigynum and elongate pore plates (Figs 794–795); from the similar *C. maculipes* also by male chelicerae (Fig. 793; lateral apophyses in lateral view long) and by female internal genitalia (Fig. 795; pore plates elongated).

Type material

**Syntypes of Pholcus lyoni**

INDIA • ♂♂, ♀♀ (unspecified number); Delhi; 28.6° N, 77.2° E; Meerut; 28.97° N, 77.70° E; and Agra; 27.2° N, 78.0° E; dates and collector(s) unknown; possibly lost.

**Syntypes of Crossopriza brasiliensis**

BRAZIL • 1 ♂, 1 ♀, 1 juv. (examined); Bahia, Paraguassú; 12.80° S, 38.87° W; date unknown; O. Leonards leg.; MNRJ 42313.

**Syntypes of Crossopriza mucronata**

ARGENTINA • 1 ♀, 1 juv. (examined); Santiago del Estero, Beltrán; 27.83° S, 64.06° W; date unknown; M. Birabén leg.; MLP 15800 • 1 ♀ (not examined) (see Huber et al. 1999); same collection data as for preceding; with P. Brignoli’s (unpublished) lectotype designation; MLP.

**Holotype of Crossopriza francoisi**

MADAGASCAR • ♂ (examined); Mahajanga, Maevatanana; 16.95° S, 46.83° E; Jul. 1945; J. Millot leg.; in bathroom; MNHN.

**Holotype of Crossopriza stridulans**

MADAGASCAR • ♀ (examined); Mahajanga, Majunga [= Mahajanga]; 15.71° S, 46.32° E; date and collector unknown; MNHN.

**Holotype of Crossopriza nigrescens**

MADAGASCAR • 1 juv.; Antsiranana, Ankarana Sud; 12.97° S, 49.14° E; 1945; J. Millot leg.; apparently lost (not found in MNHN).

**Tibiosa** spp.

VENEZUELA. See Huber & Villarreal (2020).

Other material examined

Arranged from West to East and (within longitudes) from North to South.

USA – California • 1 ♀; Orange County, Orange; 33.80° N, 117.85° W; 23 Feb. 2000; J. Coleman leg.; CAS 9027397. – New Jersey • 1 ♀; Somerset County, Neshanic; 40.498° N, 74.720° W; date unknown;
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E.S. Gaffney leg.; AMNH. – Texas • 1 ♂, 3 ♀; Brazos County, College Station; 30.63° N, 96.33° W; date unknown; R.G. Breene leg.; AMNH.

NICARAGUA • 2 ♂♂, 1 ♀; Ciudad de León; 12.43° N, 86.88° W; 10 Aug. 1995; L.F. Armas leg.; in house; MELN • 1 juv.; Managua, Laguna Xiloa; 12.209° N, 86.320° W; 13 Jul. 1995; L.F. Armas, J.M. Maes, and J.T. Goodwin leg.; MELN.

DOMINICAN REPUBLIC • 1 ♂, 1 ♀ (in pure ethanol); Barahona; 18.217° N, 71.100° W; 30 m a.s.l.; 9 Dec. 2007; B.A. Huber leg.; in building; ZFMK Hai103.

COLOMBIA • 1 ♂, 1 ♀; Meta, Puerto Lleras, Lomalinda; 3.305° N, 73.364° W; 300 m a.s.l.; Mar. 1994; B.T. Carroll, V. and B. Roth leg.; CAS 9027460 • 1 ♂, 2 ♀; same locality as for preceding; date unknown; Roth leg.; CAS 9027261 • 1 ♀; same locality as for preceding; May 1987; B.T. Carroll leg.; CAS 9027465.

VENEZUELA • approximately 40 ♂♂, 40 ♀; see Huber & Villarreal (2020).

BRAZIL – Mato Grosso • 1 ♂; Corumba; 19.01° S, 57.65° W; 21 Sep. 1956; C. Sincole leg.; under rocks; CAS 9027331. – Mato Grosso do Sul • 1 ♀; Upper Paraguay River, Porto Esperança; 19.61° S, 57.45° W; date and collector unknown; AMNH. – Minas Gerais • 1 ♂, 1 ♀, 1 juv.; Governador Valadares, Ibituruna; 18.845° S, 41.943° W; 9 Sep. 1982; L. Sorkin et al. leg.; in building; AMNH • 1 ♂; Governador Valadares, northern part of city; 18.84° S, 41.95° W; 1 Sep. 1982; L. Sorkin and C.E. de Assis Bandeira leg.; AMNH • 1 ♂, 5 ♀♀; Governador Valadares; 18.86° S, 41.95° W; 26 Mar. 1981; L. Sorkin and T. Spitzman leg.; ceiling in marketplace; AMNH • 2 ♀♀; Curvelo; 18.75° S, 44.43° W; 23 Oct. 1943; F. Pough leg.; AMNH. – Pará • 1 ♂, 1 ♀; Itaituba; 4.26° S, 56.00° W; 7 Dec. 1991; A.A. Lise leg.; MCN • 1 ♂, 3 ♀♀; Governor Pará; 04.26° S, 56.00° W; Oct. 1995; E. Galiano leg.; MACN Ar 20033. – São Paulo • several ♀♀ and juvs (not counted); Jaboticabal; 21.25° S, 48.32° W; 1979; W. and L. Miller leg.; MCZ.

PARAGUAY • 1 juv.; Boquerón, 19 km N of Filadelfia, Estancia Iparoma; 22.150° S, 60.034° W; 5. Oct. 1978; K.L. Anderson leg.; AMNH.

ARGENTINA – Chaco • 1 ♀; Resistencia; 27.45° S, 59.00° W; Oct. 1942; Freiberg leg.; MACN Ar 4347 • 1 ♀; Parque Nacional Chaco; 26.8081° S, 59.6075° W; 80 m a.s.l.; 11–13 Nov. 2007; C. Grismado et al. leg.; MACN Ar 13662. – La Rioja • 1 ♀; La Rioja; 29.41° S, 66.86° W; Apr. 1914; E. and P. Boman leg.; AMNH • 1 ♂, 1 ♀, 1 juv.; same locality as for preceding; 15 Apr. 1914; Boman et al. leg.; MACN Ar 4345 • 1 ♂, 3 ♀♀, 3 juvs; “Guayapa”; Patquia; 30.04° S, 66.88° W; Oct. 1963; E. Galiano leg.; MACN Ar 20118 • 3 juvs; same locality as for preceding (“Guayapa”); Oct. 1965; Maury leg.; MACN Ar 20033. – Santiago del Estero • 2 ♀♀; Santiago del Estero; 27.786° S, 64.266° W; Nov. 1966; E. Galiano leg.; MACN Ar 19949 • 4 ♀♀; same locality as for preceding; Aug. 1939; A. Prasen leg.; MACN Ar 4346 • 1 ♂; same locality as for preceding; 20 Sep. 1963; collector unknown; MACN Ar 20119. – Tucumán • 1 ♂, 4 ♀♀; San Miguel de Tucumán; 26.81° S, 65.22° W; 1–15 May 1950; M.L. Aczel leg.; AMNH.

GERMANY • 1 ♂, 2 ♀♀; see Bauer et al. (2016).

SENEGAL • 1 ♀; see Huber & Kwapong (2013).

THE GAMBIA • 1 ♂, 4 ♀♀; see Huber & Kwapong (2013).
MALI • 1 ♂; Bamako; 12.6° N, 8.0° W; May–Jun. 1977; W.S. Settle leg.; CAS • 1 ♂, 3 ♀♀, 2 juvs; Gao; 16.275° N, 0.050° W; 23–25 Nov. 1948; B. Malkin leg.; AMNH • 3 ♂♂, 9 ♀♀; see Huber & Kwapong (2013).

GUINEA • 6 ♂♂, 9 ♀♀; see Huber & Kwapong (2013).

SIERRA LEONE • 1 ♀; see Huber & Kwapong (2013).

IVORY COAST • 5 ♂♂, 14 ♀♀; see Huber & Kwapong (2013).

BURKINA FASO • 12 ♂♂, 9 ♀♀; see Huber & Kwapong (2013).

GHANA • 13 ♂♂, 13 ♀♀; see Huber & Kwapong (2013).

BENIN • 5 ♂♂, 12 ♀♀; see Huber & Kwapong (2013).

NIGERIA • 8 ♂♂, 28 ♀♀; see Huber & Kwapong (2013).

NIGER • 8 ♂♂, 28 ♀♀; see Huber & Kwapong (2013).

CHAD • 4 ♂♂, 1 ♂, 5 juvs; Bol; 13.46° N, 14.71° E; 9–15 Dec. 1978; A. Spielman leg.; MCZ • approximately 6 ♂♂, 13 ♀♀, + juvs; between Bongor (“Bougar”) and N’Djamena (“Fort Lamy”), “depression inondée de la Karaska”; 11.1° N, 15.1° E; Oct.–Dec. 1965; Y. Brandily leg.; MRAC 132894, 132896, 132897 • approximately 9 ♂♂, 12 ♀♀, + juvs; N’Djamena, Gardolé (“Fort Lamy”); 12.12° N, 15.04° E; 1 Nov. 1965; Y. Brandily leg.; MRAC 132914 to 132916 • 1 ♂, 3 ♀♀, 3 juvs; Bébédja; 8.68° N, 16.57° E; 1–10 Jul. 1977; G. Ruella leg.; MRAC 151455.

CAMEROON • 3 ♂♂, 5 ♀♀; Extrême-Nord, Yagoua; 10.34° N, 15.23° E; 1–5 Aug. 1971; F. Puylaert leg.; MRAC 143673 • 2 ♀♀; see Huber et al. (2014b).

GABON • 3 ♂♂, 1 ♀; see Huber et al. (2014b).

SUDAN • 1 ♂, 1 ♀; Khartoum; 15.55° N, 32.55° E; 1 May 2016; M. Siyam leg.; in houses; ZFMK Ar 22451, Ar 22452.

ETHIOPIA • 2 ♂♂, 8 ♀♀, 2 juvs (in pure ethanol); Southern Nations, Nationalities and People’s Region, Arba Minch, Nech Sar National Park; 6.0002° N, 37.5429° E; 1390 m a.s.l.; 19 Jun. 2011; M. Moradmand, V. Hula, and J. Niedobová leg.; in houses; SMF.

UGANDA • 3 ♀♀; see Huber & Warui (2012).

KENYA • 1 ♀; see Huber & Warui (2012).

TANZANIA • 1 ♂; Dar es Salaam; 6.82° S, 39.27° E; 25–26 Oct. 1995; D. Ubick leg.; in house; CAS.

ZIMBABWE • approximately 8 ♂♂, 16 ♀♀; Kariba; 16.52° S, 28.85° E; 10 Feb. 1995; W.J. Pulawski leg.; CAS • 4 ♂♂, 8 ♀♀, + juvs; Victoria Falls; 17.93° S, 25.83° E; 1–8 Feb. 1995; W.J. Pulawski leg.; CAS (4 vials) • approximately 3 ♂♂, 8 ♀♀; same locality as for preceding; 19–22 Dec. 1995; W.J. Pulawski leg.; CAS • 6 ♂♂, 6 ♀♀; same locality as for preceding; 29 Nov. 1996; W.J. Pulawski and V. Ahrens leg.; CAS.
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MADAGASCAR – Toliara • 1 ♂; Toliara; 23.35° S, 43.67° E; 17 Sep. 1993; W.E. Steiner and R. Andriamasimananana leg.; USNM • 1 ♀; 20 km N of Toliara “on Ferme d’Auberge rd”; 23.429° S, 43.830° E (the coordinates are not N but SE of Toliara); 200 m a.s.l.; 15–16 Dec. 1999; E.I. Schlinger and M.E. Irwin leg.; CAS.

SEYCHELLES • 1 ♀; Mahé, Bel Ombre; 4.6187° S, 55.3971° E; 30 m a.s.l.; 6 Mar. 2013; C. Hoareau leg.; on wall near buildings; ZFMK Ar 22453.

PAKISTAN • 2 ♂♂, 2 ♀♀♀; Lahore, University of the Punjab; 31.5° N, 74.3° E; Sep. 2013; collector unknown; ZFMK Ar 22454.

INDIA – Andhra Pradesh • 1 ♀; Deccan highlands; 14° N, 77° E; date and collector unknown; SMF RII/3735. – Delhi • 1 ♂, 3 ♀♀♀, 1 juv.; New Delhi, Russian Embassy; 28.593° N, 77.186° E; 1–2 May 1999; Y.M. Marusik leg.; ZFMK Ar 5206. – Haryana • 1 ♂; Kasauli; 30.1210° N, 76.4075° E; 240 m a.s.l.; 9 Mar. 2011; P. Jäger leg.; in house and surroundings, farmland; SMF. – Karnataka • 2 ♂♂, 2 ♀♀♀; Mysore; 12.30° N, 76.65° E; Dec. 1987; J. Murphy leg.; MMUE Murphy #15830, 15831. – Maharashtra • 1 ♀; Pune, Agharkar Research Institute; 18.520° N, 73.832° E; 2 Sep. 1992; G.W. Kendrick leg.; WAM 99/1489 • 2 ♀♀♀, 2 juvs; “Kirkoskarvadt, Distr. South Sathra”, probably Kirloskarvadi; 17.08° N, 74.42° E; date unknown; W. Bindermann leg.; SMF. – Punjab • 2 ♂♂, 4 ♀♀♀, 2 juvs; Patiala, University campus; 30.35° N, 76.45° E; 24–25 Jun. 1999; Y.M. Marusik leg.; ZFMK Ar 5205 • 1 ♂; same collection data as for preceding; 3–8 May 1999; ZFMK Ar 5201 • 2 ♀♀♀, 2 juvs; Patiala (“Patriala”); 30.35° N, 76.45° E; date and collector unknown; SMF RII/6617 • 1 ♂, 1 ♀; Balanda; 31.0441° N, 75.4265° E; 220 m a.s.l.; 9 Mar. 2011; P. Jäger leg.; in house, courtyard, and farm; SMF. – Rajasthan • 1 ♂, 1 ♀; Pushkar; 26.49° N, 74.55° E; 11 Nov. 1989; V. Roth leg.; in building; CAS. – Tamil Nadu • 1 ♀; Chennai (“Madras”); 13.07° N, 80.25° E; Aug. 1924; collector unknown; SMF Roewer #1148 • 1 ♂; 10 mi SW of Gudiyattam; 12.86° N, 78.80° E; 3 Apr. 1962; Ross and Cavagnaro leg.; CAS • 1 ♂, 1 ♀; Alagar[koil], 21 km NE of Madurai; 10.074° N, 78.215° E; 27–28 Dec. 1989; V. and B. Roth leg.; CAS • 1 ♂, 1 ♀; 80 km S of Madras, Mahabalipuram; 12.62° N, 80.19° E; 5 Mar. 1994; J.M. Waldock leg.; in house; WAM 99/1802 • approximately 6 ♂♂, 11 ♀♀♀; Vellore; 12.91° N, 79.13° E; date unknown; Löwenthal leg.; ZMUC • 1 ♀; Mandapam Camp; 9.28° N, 79.12° E; 5 Oct. 1957; H. Lemche leg.; ZMUC. – Uttarakhhand • 1 ♂, 1 ♀; Dehradun City, Forest Research Institute, campus and nearby; 30.342° N, 78.000° E; 660 m a.s.l.; 6–13 May 1999; Y.M. Marusik leg.; ZFMK Ar 5204 • 2 ♀♀♀; Dehradun Valley; 30.34° N, 78.00° E; ~700 m a.s.l.; 4–13 Aug. 1978; collector unknown; ZMUC. – West Bengal • numerous ♂♂ and ♀♀♀ (not counted); Kanchrapara; 22.93° N, 88.43° E; 1–12 Aug. 1944; M. Cazier leg.; AMNH.

NEPAL • 1 ♀; Kathmandu valley, Baneshwar, Ganaba-hal; 27.70° N, 85.32° E; 1350 m a.s.l.; 16–20 Aug. 1980; Martens and Schwaller leg.; SMF.

SRI LANKA • 4 ♂♂, 12 ♀♀♀; see Huber et al. (1999) and Huber (2019).

MYANMAR • approximately 10 ♂♂, 20 ♀♀♀; Rangoon; 16.806° N, 96.150° E; date unknown; Lövendal leg.; ZMUC.

THAILAND • 2 ♂♂, 1 ♀; Saraburi Province, 8 mi SE of Saraburi; 14.45° N, 100.95° E; 100 m a.s.l.; 28 Jul. 1962; Ross and Cavagnaro leg.; CAS • 2 ♀♀♀, + juvs; Bangkok (= Krung Thep), Chulalong University; 13.74° N, 100.53° E; 18–19 Oct. 1957; N. Meinikoth leg.; MCZ 76654 • 1 ♀; Lopburi Province, Khok Samrong District, Khao Wong Prachan; 14.9633° N, 100.7103° E; 600 m a.s.l.; 24 Jun. 2014; P. Schwendinger leg.; dry secondary forest with bamboo; MHNG • 1 ♂; Prachuap Khiri Khan Province, Reclining Buddha Cave; 11.864° N, 99.823° E; 70 m a.s.l.; 13 Mar. 2015; B.A. Huber
and B. Petcharad leg.; among rocks outside cave; ZFMK Ar 23880 • 1 ♂, 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Mal367.

LAOS – Vientiane • 1 ♀; Vang Vieng, Nam Song; 18.912° N, 102.456° E; 230 m a.s.l.; 12 Nov. 2009; P. Jäger and S. Bayer leg.; SMF • 1 ♂, 2 juvs; Sisathona Dist., Sapanthong Neua; 17.957° N, 102.629° E; 170 m a.s.l.; 26 Mar. 2011; L. Nophasead leg.; SMF. – Oudomxai • 1 ♂, 2 ♀; 4 km S of Oudomxai, Lipi provincial protected area; 20.653° N, 102.003° E; 870 m a.s.l.; 18 Apr. 2011; L. Nophasead leg.; SMF. – Bolikhamsai • 1 ♀, 1 juv.; Nam Kading National Protected Area; 18.341° N, 102.144° E; 23 Mar. 2011; P. Jäger and L. Nophasead leg.; disturbed secondary forest; SMF • 1 juv.; same collection data as for preceding; 25 Mar. 2011; SMF • 5 ♂♂, 13 ♀♀; see Jäger (2007) and Jäger et al. (2012).

CAMBODIA • 1 juv.; Banteay Meanchey, Sisophon, La Ang Chinchian 5; 13.5905° N, 102.9442° E; 16 Jan. 2017; H. Steiner leg.; ZFMK Ar 22455.

VIETNAM • 2 ♂♂, 1 juv.; Kien Giang Prov., Ha Tien, Da Dung mountain; 10.427° N, 104.476° E; 6 Jan. 2010; H. Steiner leg.; in cave; SMF • 1 ♂; Kien Giang Prov., Kien Luong, Nui Ca Danh mountain; 10.283° N, 104.565° E; 9 Jan. 2010; H. Steiner leg.; SMF • 1 ♀; Ho Chi Minh (“Saigon”); 10.81° N, 106.64° E; Nov. 1966–Feb. 1967; P. Fleischer leg.; MCZ.

CHINA • 2 ♂♂, 2 ♀♀; Guilin (“Kweilin”); 25.24° N, 110.18° E; 20 Jul. 1976; A. Jung leg.; CAS.

TAIWAN • 2 ♂♂, 1 ♀; Taichung, Tunghai University campus, near Tunghai Lake; 24.1815° N, 120.6086° E; 140 m a.s.l.; 17 Jun. 2013; B.A. Huber leg.; at building; ZFMK Ar 23881 • 1 ♂ (in pure ethanol); same collection data as for preceding; ZFMK Tai81.

JAPAN • 2 ♂♂, 1 ♀; Kagawa Pref., Mitoyo-shi, Yamamoto-chô; 34.18° N, 133.71° E; 7 Jan. 2000; Y. Ihara leg.; ZFMK Ar 5209.

MALAYSIA • 1 ♂, 6 ♀♀, 2 juvs; Kedah, Kedah Peak (Gunung Jerai), at foot of mountain; 5.8° N, 100.4° E; 6 Jan. 1985; J.A. Beatty leg.; on buildings; BPBM.

SINGAPORE • 2 ♂♂, 1 ♀; Pulau Ubin, near park headquarters; 1.403° N, 103.967° E; 20 m a.s.l.; 16 Feb. 2015; B.A. Huber, J. Koh, and D. Court leg.; in building; ZFMK Ar 23882 • 1 ♀ (in pure ethanol); same collection data as for preceding; ZFMK Mal233.

PHILIPPINES – Luzon • 1 ♂; Manila, Umbir; 14.37° N, 121.02° E; 27 Aug. 1950; collector unknown; MCZ 76679 • 1 ♂, 1 ♀; Batangas; 13.76° N, 121.06° E; 4 Aug. 1986; C.K. Starr leg.; in building; AMNH • 1 ♂; Rizal, Alabang; 14.42° N, 121.04° E; Sep. 1945; B. Malkin leg.; AMNH • 1 ♀; Lingayen; 16.02° N, 120.23° E; Jun.–Jul. 1945; R.B. Burrows leg.; AMNH • 1 ♂; Banaue; 16.919° N, 121.058° E; Jan. 1980; P. Schwendinger leg.; MHNG. – Leyte • 2 ♂♂, 2 ♀♀; Baybay; 10.68° N, 124.80° E; 3–6 Sep. 1984; C.K. Starr leg.; AMNH. – Mindanao • 2 ♀♀; Bukidnon Province, Central Mindanao University; 7.859° N, 125.051° E; 350 m a.s.l.; 10 Feb. 2014; B.A. Huber and E. Mondejar leg.; in building; ZFMK Ar 22456.

INDONESIA • 6 ♀♀ (2 vials); Papua, Merauke (“Merambe”); 8.49° S, 140.40° E; 1956/57; M. Monulphus leg.; P. Chrysanthus ded.; SMF.

PAPUA NEW GUINEA • 1 ♂; National Capital District; 9.45° S, 147.21° E; 23 Jul. 1985; D. Court leg.; NMM ARA 17485.

AUSTRALIA – Northern Territory • 1 ♂; Darwin; 12.45° S, 130.84° E; 20–31 Mar. 1945; B. Malkin leg.; AMNH • 1 ♂; Darwin, Alawa, Eileen St.; 12.377° S, 130.874° E; 23 May 1992; J.M. Waldock leg.;
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FEDERATED STATES OF MICRONESIA • 1 ♂, 1 ♀, 1 gynandromorphic specimen; Chuuk (“Truk”) Island; 7.45° N, 151.85° E; 10 Mar. 1969; Sabath leg.; MCZ 76633, 76634.

Redescription

Male (Guinea, ZFMK Ar 10456)

Measurements. Total length 6.5, carapace width 2.4. Distance PME–PME 140 μm; diameter PME 140 × 170 μm; distance PME–ALE 50 μm; diameter AME 130 μm; distance AME–AME 45 μm. Leg 1:
63.4 (18.7 + 0.9 + 17.6 + 22.7 + 3.5), tibia 2: 12.4, tibia 3: 9.2, tibia 4: 10.5; tibia 1 L/d: 70; femora 1–4 diameters: 0.36, 0.32, 0.28, 0.31.

**Color** (in ethanol). Carapace ochre-yellow; carapace pit anteriorly light brown; sternum dark brown; legs ochre-yellow, with indistinct darker rings subdistally on femora and tibiae, with black lines on femora and tibiae, patellae brown; abdomen ochre-gray, with whitish internal marks and some dark marks dorsally and laterally; ventrally with distinct black median band, partly disrupted, with three parallel longitudinal marks behind gonopore.

**Body.** Habitus as in Figs 702–703. Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, rim barely more sclerotized than in female. Sternum wider than long (1.7/1.0), unmodified. Abdomen slightly elongated, dorso-posteriorly angular.

**Chelicerae.** As in Figs 792–793, with two pairs of apophyses, lateral pair with 2–3 small processes (distinct in lateral view), median pair with one large modified cone-shaped hair each; distance between tips of modified hairs 80 μm; lateral stridulatory ridges fine but visible in dissecting microscope; distances between ridges: ~7.5 μm (Huber et al. 1999).

**Palps.** As in Figs 783–785; coxa with rounded retrolateral hump; trochanter barely modified; femur distally widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, retrolateral-ventral rim with row of projecting and sclerotized hair-bases, with barely visible retrolateral

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**Figs 783–785.** *Crossopriza lyoni* (Blackwall, 1867); male from Guinea, Kindia (ZFMK Ar 10456, see Huber & Kwapong 2013); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 1.0 mm.
Figs 786–795. Crossopriza lyoni (Blackwall, 1867); male from Guinea, Kindia (ZFMK Ar 10456, see Huber & Kwapong 2013), female from Japan, Yamamoto-chô (ZFMK Ar 5209). 786–788. Left procursus, prolateral, dorsal, and retrolateral views; arrow: branch of ventral sclerite. 789–791. Left genital bulb, prolateral, dorsal, and retrolateral views; arrow: retrolateral ridge. 792–793. Male chelicerae, frontal and lateral views. 794–795. Cleared female genitalia, ventral and dorsal views. Abbreviation: vs = ventral sclerite. Scale bars = 0.5 mm.
transversal line, without retrolateral proximal process; femur-patella joints slightly shifted toward prolateral side; tibia large relative to femur, tibia-tarsus joints shifted toward retrolateral side; tarsus without macrotrichia; procursus (Figs 786–788) straight, densely set with long hairs dorsally, few hairs slightly curved upwards; proximally on prolateral side with strong hump set with numerous long hairs and followed distally by thick sclerotized ridge, procursus tip with several distinctive elements: ventral sclerite with transparent retrolateral branch (arrow in Fig. 788), rounded dorsal sclerite, semitransparent prolateral pointed process, and pair of crescent-shaped retrolateral elements; genital bulb (Figs 789–791) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening

**Figs 796–802.** *Crossopriza lyoni* (Blackwall, 1867); females from Japan, Yamamoto-chô (796–798, 801–802; ZFMK Ar 5209) and from Guinea, Kindia (799–800; ZFMK Ar 10456, see Huber & Kwapong 2013). 796–797. Abdomen, ventral and frontal views; arrows: stridulatory plates. 798–799. Epigyna, ventral views. 800–802. Cleared female genitalia, dorsal view with dorsal arc tilted backwards, ventral view, and regular dorsal view; arrow: asymmetric median sclerite. Abbreviations: da = dorsal arc; e = epigynum; va = ventral arc. Scale bars: 796–797 = 1.0 mm; 798–802 = 0.5 mm.
not seen; distal sclerite with retrolateral ridge and distinctive set of one large and four smaller rounded prolateral apophyses.

LEGS. Femur 1 with single row of ~23 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct except 2–3 distally.

**Male** (variation)
Tibia 1 in 43 males: 11.5–18.0 (mean 14.5). Dark ventral band on abdomen variably distinct, section behind gonopore with 2–4 longitudinal bands. Small apophyses prolaterally on bulbal sclerite variably distinct, usually one large plus four small apophyses, rarely one large plus three or five small apophyses. Retrolateral branch on ventral sclerite of procursus slightly variable in shape.

**Female**
In general similar to male (Figs 704–705) but without spines on legs, with smaller and less distinct stridulatory files on chelicerae (sometimes not visible in dissecting microscope; distances between ridges: ~8.5 μm, Huber et al. 1999), and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of light brown plates anteriorly on abdomen (Fig. 797). Tibia 1 in 57 females: 9.2–15.5 (mean 12.5). Epigynum as in Figs 796–799, main epigynal plate short and wide, weakly protruding; posteriorly laterally strongly sclerotized, anteriorly weakly sclerotized, with variably distinct light brown median area; with pair of pockets very close to median line on both sides of median ridge (distance between pockets 30 μm), posteriorly barely protruding; internal sclerotized arc and median round structure visible in uncleared specimens; posterior plate short but wide. Internal genitalia (Figs 794–795, 800–802) with large elongate pore plates converging anteriorly, dorsal arc wide but simple, ventral arc medially slightly modified, with asymmetric sclerites (three females cleared), with simple median pouch.

**Gynandromorphic specimen**
Specimens that combine male and female morphological characters (sometimes in a left-right asymmetry) are extremely rare in pholcid spiders. The only previously known case was reported by Blackwall (1867), who described a specimen of *C. lyoni* from India that had a male left palp and a male left chelicera, but a female right palp, female right chelicera, and incompletely developed female genitalia (epigynum) on the right side. He noted that this was the only case of gynandromorphism among “many thousands”

of specimens of spiders studied. Surprisingly, the only gynandromorphic pholcid specimen I have ever seen (among roughly 50,000 specimens) is also a representative of *C. lyoni*. This specimen (from Chuuk Island, Micronesia), has a half epigynum (Figs 804–805; relatively normally developed on the left side), but an enlarged right palp that reminds of a penultimate instar male palp (arrow in Fig. 803). The right chelicera and the right femur are not modified, as would be expected from a penultimate instar male. Surprisingly, however, the female stridulatory apparatus between prosoma and abdomen appears fully and symmetrically developed on both sides (arrows in Fig. 805). Leg length is also symmetric.

**Natural history**

Surprisingly little is known about the biology of this large and widely distributed synanthropic spider. Strickman *et al.* (1997) give basic bionomic data for spiders collected in Thailand and held at 30°C: eggs were laid 4–6 days after copulation; a mean of 34 spiderlings (range: 5–54) hatched form each egg-sac 11–13 days after egg-laying; maturity was reached after only 74 days. Females were significantly heavier than males (mean weight 28.6 mg vs 17.6 mg). As soon as spiderlings started to eat (after the first molt), they were capable of overpowering a mosquito; prey was wrapped by ‘throwing’ silk with the hind legs, without rotating the prey. The prey was not bitten until the moment the spider started feeding, sometimes days after wrapping. No female was observed to eat her own eggs (as reported by Downes 1987). Observations on US populations give slightly to significantly higher numbers of eggs per egg sac (or spiderlings accompanying the female): 53–58 in Edwards (1993), and 72 in Guarisco & Cutler (2003). In Florida, Edwards (1993) observed a wide variety of insect prey in *C. lyoni* webs. For further observations, see Nandi & Raut (1985) (publication only partly seen) and Irie (2001) (in Japanese).

**Distribution**

The closest known relatives of *C. lyoni* (*C. maculipes, C. surobi* sp. nov., *C. sengleti* sp. nov.) live in an area that is mainly composed of Pakistan, Afghanistan, and Iran (Fig. 353), suggesting that *C. lyoni* originated from this region. It seems to have expanded from its original area at a time from which few records are available, so the early expansion is difficult to reconstruct. The earliest records from supposedly non-native regions date from the late 19th century (Myanmar; Thorell 1895) and the early 20th century (China; Strand 1907). Towards the east, *C. lyoni* may have reached the Philippines and Australia not before the 20th century (oldest records: 1940s). Towards the west, *C. lyoni* seems to have reached South America much sooner than North America: while the oldest record from Argentina dates from 1914, and the species was “not rare” in Bahia (Brazil) by the early 1930s (Mello-Leitão 1935), it may not have reached the USA before the early 1980s (Roth 1985, Edwards 1993). In Central Europe, the species appears to be slowly spreading since approximately 2000, but it is still largely confined to buildings (Van Keer 2007, Bauer *et al.* 2016).

Mysteriously, this synanthropic species is largely absent from the original area of distribution of *Crossopriza* (Fig. 351). Such a pattern is mirrored in some other synanthropic pholcids but remains unexplained (see Discussion).

*Crossopriza surobi* sp. nov.
urn:lsid:zoobank.org:act:6D67AB05-2114-445F-9217-35ED08B6B68F
Figs 353A, 806–822, 841–853

**Diagnosis**

Distinguished from known congeners by details of male palp (Figs 809–811; procursus ventral sclerite with strong retrolateral branch; procursus tip with strong dorsal process; distal bulbal sclerite with distinctive series of apophyses on prolateral side); from the similar *C. lyoni* (identical male chelicerae) also by longer epigynum and less elongated pore plates (Figs 816–819); from the similar *C. maculipes* also by male chelicerae (Fig. 815; lateral apophyses in lateral view long and pointed) and by female internal genitalia (Fig. 817; pore plates farther apart).
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**Etymology**
The species name refers to the type locality; noun in apposition.

**Type material**

**Holotype**
AFGHANISTAN – Kabul • ♂; SE of Surobi/Sarobi (“Sorubay”); 34.50° N, 69.87° E (see Remark below); 800 m a.s.l.; 6 Aug. 1975; A. Senglet leg.; MHNG.

**Remark**
The label coordinates (34°30’ N, 69°52’ E) are actually slightly outside of Kabul Province in Laghman Province. The actual collecting site might thus be slightly further west or northwest.

**Other material examined**
AFGHANISTAN – Kabul • 8 ♂♂, 8 ♀♀ (partly used for SEM); same collection data as for holotype; MHNG • 1 ♂, 3 ♀♀, 1 juv.; E of Kabul; 34.57° N, 69.48° E; 4 Aug. 1975; A. Senglet leg.; MHNG. – Wardak • 1 ♀; [between] Kabul [and] Shahabuddin; 34.33° N, 68.85° E; 12 Aug. 1975; A. Senglet leg.; MHNG • 1 ♀; NNE of Ghazni; 33.75° N, 68.57° E; 12 Aug. 1975; A. Senglet leg.; MHNG.

**Description**

**Male** (holotype)
MEASUREMENTS. Total length 4.2, carapace width 1.6. Distance PME–PME 100 μm; diameter PME 100 × 130 μm; distance PME–ALE 25 μm; diameter AME 90 μm; distance AME–AME 20 μm. Leg 1: 32.8 (9.2 + 0.6 + 8.9 + 11.9 + 2.2), tibia 2: 6.0, tibia 3: 4.3, tibia 4: 5.3; tibia 1 L/d: 64; femora 1–4 diameters: 0.22, 0.17, 0.17, 0.17.

Figs 806–808. *Crossopriza surobi* sp. nov.; non-type male from Afghanistan, SE of Surobi (MHNG); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Figs 809–817. Crossopriza surobi sp. nov.; non-type male and female from Afghanistan, SE of Surobi (MHNG). **809–810.** Left procursus, prolateral and retrolateral views; arrow: branch of ventral sclerite. **811–813.** Left genital bulb, prolateral, dorsal, and retrolateral views; arrow: retrolateral ridge. **814–815.** Male chelicerae, frontal and lateral views. **816–817.** Cleared female genitalia, ventral and dorsal views. Abbreviations: ds = dorsal sclerite; vs = ventral sclerite. Scale bars = 0.3 mm.
COLOR (in ethanol). Carapace ochre-yellow, anteriorly in median pit light brown; sternum with many small brown spots partly arranged in radial marks; legs ochre-yellow, without darker rings, with black lines on femora and (few) on tibiae; abdomen pale gray, with few indistinct small dark marks dorsally and posteriorly above spinnerets; ventrally with broken dark band, with indistinct parallel longitudinal marks behind gonopore.

BODY. Habitus similar to C. tiwi sp. nov. (cf. Figs 393–394). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim slightly more sclerotized than in female. Sternum wider than long (1.05/0.65), unmodified. Abdomen slightly elongated, dorso-posteriorly angular to conical. Gonopore with four epiandrous spigots (Fig. 852).

CHELICERAE. As in Figs 814–815, with two pairs of frontal apophyses; proximal pair in lateral position, pointed and directed towards lateral; distal pair directed towards median, at tip with one large modified cone-shaped hair each (Fig. 845); distance between tips of modified hairs 30 μm; lateral stridulatory ridges distinct (Fig. 841; distances between ridges ~4 μm), clearly visible in dissecting microscope.

PALPS. As in Figs 806–808; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick (Fig. 842), without retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia; tarsal organ capsule (Fig. 849); procursus (Figs 809–810) straight, prolateral


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proximal hump set with many hairs, long dorsal hairs not curved, procursus tip with flat dorsal sclerite (wide in dorsal view), strong ventral sclerite with distinctive retrolateral branch (Fig. 846), and brush of short hair-like processes on retrolateral side (Fig. 847); genital bulb (Figs 811–813) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening at basis of distal sclerite on prolateral-dorsal side (arrow in Fig. 848); distal sclerite with retrolateral ridge and distinctive set of prolateral apophyses and ridge.

LEGS. Femur 1 with single row of ~18 ventral spines; without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4.5%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments not seen.

Male (variation)
Tibia 1 in seven males (incl. holotype): 7.8–8.9 (mean 8.4). Some males also with whitish internal marks on abdomen.

Female
In general similar to male but without spines on legs, without stridulatory files on chelicerae (Fig. 843), and with stridulatory organ consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of small but distinct light brown plates anteriorly on abdomen. Tibia 1 in 12 females: 6.0–8.3 (mean 7.3). Epigynum as in Figs 819 and 853; main epigynal plate wider than long, weakly protruding, sclerotized area at posterior margin widening towards lateral; with median ridge with shallow pair of opposing pockets close together (distance 30 μm); internal sclerotized arcs and median anterior internal sclerite visible in uncleared specimens; posterior plate light brown, short but wide. Internal genitalia (Figs 816–817, 820–822) with large angular pore plates, dorsal arc simple, ventral arc stronger, with median sclerite asymmetric; apparently antisymmetric (only two females cleared; ‘left’ and ‘right’ sided).

Distribution
Known from four localities in eastern Afghanistan (Kabul and Wardak Provinces) (Fig. 353A).

*Crosophriza maculipes* (Spassky, 1934)
Figs 353B, 823–840, 854–865

*Ceratopholcus maculipes* Spassky, 1934: 361, figs 1–3.


Diagnosis
Distinguished from known congeners (see also Remarks below) by details of male palp (Figs 826–829; procursus ventral sclerite with distinctive retrolateral branch; procursus tip with dorsal sclerite; distal bulbal sclerite with two rows of apophyses on prolateral side); from similar species (*C. lyoni*, *C. surobi* sp. nov.) also by male chelicerae (Fig. 833; lateral apophyses in lateral view short and broadly truncated) and by female genitalia (Figs 834–835; epigynum longer than in *C. lyoni*; pore plates closer together than in *C. surobi*).

Remarks
The MHNG has a very similar species from Afghanistan (Nangarhar, NE of Djelalabad) that shares the distinctive dorsal sclerite distally on the procursus and has a possibly indistinguishable epigynum. It differs most clearly by the distal bulbal sclerite (prolateral view: only three apophyses in one row);
also slightly by the lateral cheliceral apophyses (more slender and longer in lateral view), by the shape of the retrolateral branch on the ventral sclerite of the procursus (smaller). The available specimens are also very small compared to most C. maculipes specimens (male chelicerae maximum width 580 μm; tibia 1 in three males: 7.7, 8.2, 8.3; in three females: 6.2, 6.6, 7.2). This species is not formally described because all available specimens are in very poor condition.

**Type material**

**Syntypes**

UZBEKISTAN • 2 ♂♂, 3♀♀, 2 juv.s, not examined; Tashkent; 41.3° N, 69.2° E; 1928; Civirko leg.; presumably in Zoological Institute, Russian Academy of Sciences, St Petersburg, Russia (repeated loan requests since 2013 were unsuccessful) • ♀♀, juvs, unknown number, not examined; Bukhara, Qorak’ol (“Karakul”); 39.50° N, 63.85° E; 1933; A. Alparov leg.; presumably in Zoological Institute, Russian Academy of Sciences, St Petersburg, Russia.

TAJIKISTAN • ♀♀, juvs, unknown number, not examined; Dushanbe (“Stalinabad”); 38.55° N, 68.77° E; 1933; A. Alparov leg.; presumably in Zoological Institute, Russian Academy of Sciences, St Petersburg, Russia.

TURKMENISTAN • 3♀♀, 2 juvs, not examined; Ashgabat; 37.94° N, 58.36° E; 1933; Melnikova leg.; presumably in Zoological Institute, Russian Academy of Sciences, St Petersburg, Russia.

**Material examined**

UZBEKISTAN – Samarqand • 3♂♂; Sovetabad Distr., near Dzham; 39.43° N, 66.41° E; 8 Jun. 1991; A.A. Zyuzin leg.; ZMMU. – Surondonay • 3♀♀; Uzun Distr., E slope of Babatagh Mt Range, ~6.5 km W of Akmechet; 38.0472° N, 68.2394° E; 905–1010 m a.s.l.; 28 Apr. 1995; S.V. Ovchinnikov leg.; ZMMU • 2♂♂, 1♀♀; same locality as for preceding; 4 May 2002; A.V. Gromov leg.; ZMMU • 3♀♀, 2♀♀; Kafirnaghan river valley, Ak-Mechet; 38.047° N, 68.240° E; 7 May 1994; S.V. Ovchinnikov leg.; in house; ZMMU • 1♂, 1♀♀, 1 juv.; Djarkuran [Dzharkuran] Town; 37.51° N, 67.41° E; 25 Apr. 1986; A.A. Zyuzin leg.; ZMMU • 1♂, 1♀♀, 3 juv.s; Uzun Distr., W foot of Babatagh Mt Range, ~13 km ESE of Denan, Argamchi canyon; 38.2128° N, 68.0531° E; ~630 m a.s.l.; 30 Apr. 2002; A.V. Gromov leg.; ZMMU. – Bukhara • 2♀♀; 33 km SE of Bukhara; 39.57° N, 64.72° E; 19–20 May 1994; A.A. Zyuzin leg.; ZMMU • 2♀♀, 1 juv.; Bukhara; 39.7761° N, 64.4330° E; 220 m a.s.l.; 20 Apr. 2002; A.V. Gromov leg.; buildings; ZMMU.

TAJIKISTAN – Dushanbe • 1♂, 1♀♀; Dushanbe; 38.55° N, 68.75° E; 28 Apr. 1986; S.L. Zonstein leg.; in building; ZMMU. – Khatlon • 1♂; Vaksh river valley, Tigrovaya Balka State Res., Korolevskai Dacha; 37.23° N, 68.38° E; 3 Aug. 2006; S.V. Ovchinnikov leg.; ZMMU • 1♂, 1♀♀, 1 juv.; Il’ichevsk Distr., near Gandzhino Vil., slope of Aktau Mt. Range; 37.965° N, 68.560° E; 850 m a.s.l.; 21 Apr. 1986; A.A. Zyuzin leg.; ZMMU • 2♂♂, 3♀♀; Kugitang [Kughitang], 5 km SW of Bazar-Tepe, office of Kugitang Reserve; 37.77° N, 66.38° E; 10–13 Jul. 1991; V.V. Dubatolov leg.; SZMN • 1♂, 1 juv.; Chardzhou Area, Amudarya Reserve, 140 km NW of Chardzhou; 39.65° N, 62.78° E; 11 May 1988; F. Zeelieev leg.; Kabakli tugai [kind of habitat], house; ZMMU. – Balkan • 1♀♀; Turkmenbash ("Krasnovodsk"); 40.02° N, 52.97° E; 4 Jul. 1929; collector unknown; house terrace, angle of window frames; ZMMU • 1♂, 1♀♀; same locality as for preceding; in basement; date and collector unclear (“15 iv, Müller-C. Ahriger”); ZMB 48587. – Mary • 1♂, 1♀♀; Zakhmet Vil.; 37.77° N, 62.53° E; 6 Apr. 1991; collector unknown; ZMMU.
AFGHANISTAN – Parwan • 2 ♂♂; N of Charikar; 35.167° N, 69.233° E [actual collecting site probably further west along Salang River]; 10 Aug. 1975; A. Senglet leg.; in small cave; MHNG. – Kabul • 1 ♀; SE of Sarobi/Surubi (“Sorubay”); 34.50° N, 69.87° E (label coordinates slightly outside of Kabul Province); 800 m a.s.l.; 6 Aug. 1975; A. Senglet leg.; MHNG. – Nangarhar • 7 ♂♂, 12 ♀♀ (partly used for SEM); Djelalabad; 34.42° N, 70.45° E (label: 34°30’ N, 70°33’ E); 8 Aug. 1975; A. Senglet leg.; in hotel; MHNG. – Kandahar • 1 ♂, 10 ♀♀; W of Kandahar; 31.617° N, 65.600° E; 31 Jul. 1975; A. Senglet leg.; MHNG.

PAKISTAN – Khyber Pakhtunkhwa • 1 ♂, 1 ♀; Peshawar, Forestry Campus of Agricultural University; 34.00° N, 71.54° E; 28 Jul. 2004; S.V. Ovchinnikov leg.; ZMMU • 2 ♂♂, 2 ♀♀; same collection data as for preceding; 14–26 Aug. 2005; ZMMU • 1 ♂; same collection data as for preceding; 4 Sep. 2004; ZMMU • 1 ♀; Chitral Distr., 7 km NE of Gobor-o-Bakh [Gobor Bakht]; 36.117° N, 71.383° E; 1 Aug. 2004; S.V. Ovchinnikov leg.; ZMMU • 1 ♂, 1 ♀; Kagan Valley, Shogran (= Sharan); 34.64° N, 73.46° E; 2400–3000 m a.s.l.; 21 Aug. 2005; S.V. Ovchinnikov leg.; ZMMU • 1 ♀; Orakzai, 4 km E of “Mangu”; 33.6° N, 70.7° E; 29 Aug. 2005; S.V. Ovchinnikov leg.; ZMMU • 9 ♂♂, 19 ♀♀; Sheringal; 35.275° N, 72.005° E; 1400 m a.s.l.; 6 Apr.–4 Oct. 2013; F. Perveen and N. Khan leg.; in building; ZFMK Ar 22457, Ar 22458. – Gilgit-Baltisan • 1 ♂; Gilgit; 35.92° N, 74.32° E; 23–24 Apr. 1976; V. Puthz leg.; SMF. – Balochistan • 2 ♂♂, 2 ♀♀; Quetta; 30.2° N, 67.0° E; 27 Jul. 2005; S.V. Ovchinnikov leg.; in hotel; ZMMU. – Punjab • 1 ♀ (assigned tentatively); Musa Khel, Namal gorge; 32.68° N, 71.79° E; 300 m a.s.l.; 28 Feb. 1963; E. Kullmann leg.; ZFMK Ar 22459.

WITHOUT LOCALITY DATA • 2 ♀♀ (possibly syntypes); “Ceratopholcus maculipes”, no further data; MNHN Ar 10548.

Redescription

Male (Uzbekistan, Ak-Mechet, ZMMU)

MEASUREMENTS. Total length 5.4, carapace width 1.9. Distance PME–PME 110 μm; diameter PME 120 × 140 μm; distance PME–ALE 30 μm; diameter AME 120 μm; distance AME–AME 20 μm. Leg 1: 42.4 (12.5 + 0.9 + 12.1 + 14.4 + 2.5), tibia 2: 8.3, tibia 3: 6.3, tibia 4: 7.6; tibia 1 L/d: 58; femora 1–4 diameters: 0.32, 0.27, 0.27, 0.28.

COLOR (in ethanol). Carapace ochre-yellow; carapace pit anteriorly light brown; sternum dark brown, with radial marks; legs ochre-yellow, without darker rings, with black lines on femora and tibiae; abdomen ochre-gray, with few indistinct dark marks dorsally; ventrally with distinct black median band, partly disrupted, with two parallel longitudinal marks behind gonopore.

BODY. Habitus similar to C. sahtan sp. nov. (cf. Fig. 391). Ocular area slightly raised. Deep thoracic pit and pair of furrows diverging from pit toward posterior margin. Clypeus unmodified, only rim more sclerotized than in female. Sternum wider than long (1.30/0.85), unmodified. Abdomen slightly elongated, dorso-posteriorly angular. Gonopore with five epiandrous spigots (Fig. 854); ALS with one widened spigot and one pointed spigot (Fig. 855).

CHELICERAE. As in Figs 832–833, with two pairs of apophyses, lateral pair with 2–3 small processes (distinct in lateral view), median pair with one large modified cone-shaped hair each (Fig. 859); distance between tips of modified hairs 50 μm; lateral stridulatory ridges fine (Fig. 860; distances between ridges proximally ~4 μm, distally ~3 μm), visible in dissecting microscope.

PALPS. As in Figs 823–825; coxa with rounded retrolateral hump; trochanter barely modified; femur distally strongly widened, with rounded ventral protrusion, proximally with prolateral stridulatory pick, retrolateral-ventral rim with row of sclerotized hair-bases, with barely visible retrolateral transversal line, without retrolateral proximal process; femur-patella joints shifted toward prolateral side; tibia large relative to femur, tibia-tarsus joints slightly shifted toward retrolateral side; tarsus without macrotrichia;
HUBER B.A., Revisions of *Holocnemus* and *Crossopriza*

tarsal organ capsulate (Fig. 862); procursus (Figs 826–828) straight, densely set with long hairs dorsally, few hairs slightly curved upwards; proximally on prolateral side with strong hump set with numerous long hairs and followed distally by thick sclerotized ridge, procursus tip (Figs 856–857) with several distinctive elements: ventral sclerite with retrolateral branch, dorsal sclerite, prolateral partly sclerotized element, and retrolateral brush of short hair-like structures; genital bulb (Figs 829–831) with simple basal sclerite connected to distal (main) sclerite, sperm duct opening on prolateral-dorsal side (arrow in Fig. 858); distal sclerite with indistinct retrolateral ridge and distinctive set of two prolateral sclerotized ridges, each with three rounded apophyses.

**LEGS.** Femur 1 with single row of ~22 ventral spines (Fig. 864); without curved hairs; few vertical hairs; retrolateral trichobothrium of tibia 1 at 4%; prolateral trichobothrium absent on tibia 1, present on other leg tibiae; tarsal pseudosegments indistinct except 2–3 distally; tarsal organs capsulate, with round to slightly irregular rims (Fig. 863).

**Male** (variation)
Tibia 1 in 40 other males: 8.0–14.1 (mean 11.8). Abdomen usually also with whitish internal marks; ventral dark band on abdomen variably distinct, section behind gonopore with 2–4 longitudinal bands. Small males with fewer spines on femur 1 (smallest measured male with ~12 spines). Apophyses on prolateral bulbal ridges variably distinct, sometimes only two on each ridge; separation of ridges and angle between ridges very consistent. Retrolateral branch on ventral sclerite of procursus slightly variable in shape; in single male from Turkmenbashi slightly tilted (proximal rim bent towards retrolateral).

**Female**
In general similar to male but without spines on legs, with fewer and very indistinct stridulatory ridges on chelicerae (Fig. 861; distances between ridges ~4.5 μm), and with stridulatory organ

**Figs 823–825.** *Crossopriza maculipes* (Spassky, 1934); male from Turkmenistan, 5 km SW of Bazar-Tepe (SZMN); left palp, prolateral, dorsal, and retrolateral views. Scale bar = 0.5 mm.
Figs 826–835. Crossopriza maculipes (Spassky, 1934); male and female from Turkmenistan, 5 km SW of Bazar-Tepe (SZMN). 826–828. Left procursus, prolateral, dorsal, and retrolateral views; arrow: retrolateral branch of ventral sclerite. 829–831. Left genital bulb, prolateral, dorsal, and retrolateral views. 832–833. Male chelicerae, frontal and lateral views. 834–835. Cleared female genitalia, ventral and dorsal views. Abbreviations: ds = dorsal sclerite; vs = ventral sclerite. Scale bars: 826–828 = 0.3 mm; 829–835 = 0.5 mm.
consisting of pair of weakly sclerotized but distinct processes posteriorly on carapace and pair of light brown plates anteriorly on abdomen. Tibia 1 in 63 females: 6.1–12.9 (mean 10.2). Epigynum as in Figs 836–837 and 865, main epigynal plate semicircular, weakly protruding; posteriorly laterally strongly sclerotized, anteriorly weakly sclerotized, ochre-yellow with light brown median area; with pair of pockets very close to median line on both sides of median ridge (distance between pockets 25 μm), posteriorly slightly protruding; internal sclerotized arc and median round structure visible in uncleared specimens; pair of oblique black lines originating from posterior epigynal margin variably visible or not, possibly depending on degree of external sclerotization (difference not visible in cleared specimens); posterior plate short but wide. Internal genitalia (Figs 834–835, 838–840) with large oval pore plates converging anteriorly, dorsal arc strongly sclerotized but simple, ventral arc medially slightly modified, with simple median pouch. In the single female from Musa Khel (Punjab) the median epigynal area carrying the pockets is barely protruding towards posterior; this specimen is therefore assigned tentatively.

**Natural history**

Several records are from buildings. Beyond that, nothing is known about the biology of this widespread species.

Figs 836–840. *Crossopriza maculipes* (Spassky, 1934); female from Uzbekistan, 6.5 km W of Akmechet (ZMMU). 836–837. Abdomen and epigynum, ventral views. 838–840. Cleared female genitalia, dorsal view with dorsal arc tilted backwards, ventral view, and regular dorsal view. Abbreviations: da = dorsal arc; va = ventral arc. Scale bars = 0.5 mm.
Figs 841–848. Crossopriza surobi sp. nov.; male and female from Afghanistan, SE of Surobi (MHNG).
Distribution
Widely distributed in Central Asia (Uzbekistan, Tajikistan, Turkmenistan), ranging into Afghanistan and Pakistan (Fig. 353B). I have not seen specimens from Iraq (contrary to what Najim & Al-Khazali 2019 imply in their acknowledgements); however, judging from the illustrations in Najim & Al-Khazali (2019), their specimens from Basrah province may be correctly identified. This suggests that the species is either also present in Iran or was somehow transported to Iraq. Sequences available in the Barcode of Life Data System (http://v3.boldsystems.org/) of two females collected in China (Hubei Province, Wuhan, in a building) are further evidence that the species has already spread far from its original distributional area.

Discussion
Sexual dimorphisms
A recent review of sexual dimorphisms in pholcid spiders (Huber 2021a) listed a wide range of characters that differ between males and females in this at first sight rather monomorphic family. Character mapping suggested more than 120 independent origins of sexual dimorphisms. The present paper adds further data to this list: a pair of sclerotized areas anteriorly on the abdomen of *H. pluchei* females, possibly acting against a strong anterior sclerite dorsally on the pedicel (Fig. 32); vertical hairs in slightly higher density on the tibiae of males than of females in some species of *Maghreba* gen. nov.; a second independent origin of distinct male clypeus modifications within *Crossopriza* (in *C. sengleti* sp. nov.; Fig. 768); and an indistinct difference in the degree of sclerotization of the clypeus rim in most representatives of the spotted-leg clade.

Except for this indistinct modification of the clypeus rim, and with the exception of the two species with distinct clypeus modifications (*C. johncloudsleyi*, *C. sengleti* sp. nov.), the clypeus in the spotted-leg clade is here generally described as being unmodified. This is true in the sense that males and females do not differ and that nothing ‘unusual’ can be seen in the light microscope. Interestingly, however, SEM images of both males and females show an area with a different cuticular texture centrally on the clypeus (e.g., Figs 44–46, 147, 416, 467, 594). Judging from the positions of similarly textured cuticle (e.g., on the carapace), these areas are here interpreted as muscle attachment sites. In *Holocnemus pluchei* males, this is what Calbacho-Rosa *et al.* (2019b) proposed to correspond functionally with the female sternum projection. An alternative that these authors did not consider is that the female sternum process might primarily function in a different context (i.e., not intersexual but intrasexual or allospecific). In this view, the contact between female projection and male clypeus might just be an occasional and relatively irrelevant by-product of the copulatory position. This interpretation is in line with the observation that male structures that obligatorily contact female structures during copulation are very unlikely to remain essentially unmodified (Eberhard 1985).

Sexual dimorphisms in the cheliceral stridulatory apparatus are common in Pholcidae and may either involve the presence vs absence of the stridulatory organ, or differences in the morphology of the files (size, distances between ridges, etc.) (Huber 2021a). Both kinds of dimorphisms occur in the spotted-leg clade. While males in this group do always have stridulatory ridges, females vary from strongly developed ridges (e.g., *H. pluchei*; Fig. 48) to entirely smooth cheliceral sides (e.g., *C. semicaudata*; Fig. 600). There seems to be a tendency in females of *Crossopriza*, *Maghreba* gen. nov., and *Stygopholcus* to reduce the files, i.e., the files get smaller, the ridges less distinct, and the distances between the ridges larger. However, an analysis of this character requires SEM images, which are available for only a limited number of species.

Male-female coevolution
In several groups of Pholcidae, males insert the tips of their cheliceral apophyses into corresponding cavities or pockets on the female epigynal plate (Kraus 1984; Huber 1999, 2003, 2005). The exact
significance of this interaction is unknown, but a strong grip or physical restraint appears implausible since the male chelicerae in Pholcidae are barely moveable against each other. In many or most cases, males may just use this system to achieve a correct position relative to the female before insertion of the copulatory organs (palps). Whatever the exact function, the result of this morphological interaction is a strong covariation between the distances of male and female structures. Figure 866 illustrates this covariation, but it must be noted that the distance between the female epigynal pockets is sometimes impossible to measure precisely. In general, I measured the point within the pocket that is supposedly contacted by the male cheliceral apophyses during copulation, but in the case of elongated pockets (or grooves) this is an approximate value. It must also be kept in mind that the values in Fig. 866 represent single individuals, i.e., intraspecific variation is ignored.

Distribution

The geographic distribution of Crossopriza lyoni is a further example of a rather mysterious trend in synanthropic pholcid spiders: they have spread over wide parts of the globe but are largely absent from the original areas of the respective genera. Good data for this supposed trend are difficult to obtain because for most synanthropic species the huge amount of published records has not yet been georeferenced. For C. lyoni, the map in Fig. 351 is a fairly comprehensive representation of the known distribution, and it is remarkable that there is not a single credible record from the area where the genus Crossopriza has its highest species diversity: NE Africa, the Arabian Peninsula, the Middle East, and Central Asia.

This phenomenon has been reported before for at least two other pholcid species. Artema atlanta Walckenaer, 1837 has a worldwide distribution similar to C. lyoni, but is almost entirely absent from the area where most congeneric species occur (Arabian Peninsula, Middle East, Central Asia) (Aharon et al. 2017). Psilochorus simoni (Berland, 1911) has been spreading in Europe since about a century (Fürst & Blandenier 1993) and is now common in houses in most of Europe and beyond (Bayram et al.

Fig. 866. Scatter diagram showing the correlation between the distances between the male cheliceral apophyses (tips) and the distances between the female epigynal pockets. Each dot represents one species (all known representatives of Holocnemus Simon, 1873, Maghreba gen. nov., and Crossopriza Simon, 1893).
2008; Paquin et al. 2010). In North America, the native area of the genus, *P. simoni* is a rare spider, known from only four specimens (three of them females) from four localities (in California and Oregon; Slowik 2009).

This trend is mysterious in the sense that it seems hard to imagine that synanthropic habitats in the native areas of the respective genera differ in some relevant aspect from those in other parts of the world. In theory, synanthropic habitats in the native areas might be preoccupied by congeneric species, but at least for *Artema* and *Psilochorus* this is quite clearly not the case. In *Crossopriza*, several species invade houses (e.g., *C. semicaudata*, *C. pristina*, *C. maculata*), but in at least some areas, *Crossopriza* appears entirely absent from buildings (e.g., Oman). Finally, it must be noted that the trend is certainly not absolute. At least one synanthropic pholcid does not follow the scheme: *Phyoecyclus globosus* (Taczanowski, 1874) is common in and around buildings all over Mexico and Central America, the native area of the genus (Valdez-Mondragón 2010).

**Acknowledgements**


**References**


Drensky P. 1939. Faunata na Paiatzite (Araneae) w Beulgaria. III. Podrazred Arachnomorphae; II klon Trionychia; semeystva: Urocteidae; Uloboridae; Sicaridae; Pholcidae; Eresidae. *Izvestiya na Tsarskite Prirodonauchni Instituti* v Sofia 12: 231–252.


Forsskål P. 1775. *Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium; quae in itinere orientali observavit Petrus Forskål*. Möller, Copenhagen [Hauniae].

Forsskål P. 1776. *Icones rerum naturalium, quas in itinere orientali depingi curavit Petrus Forskål*. Möller, Copenhagen [Hauniae].


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## Appendix 1. Data matrix for cladistic analysis.

Taxa are arranged as in the cladogram in Fig. 1. Terminals and characters are detailed in Appendices 2 and 3; “-” = non-applicable; “?” = unknown or coding ambiguous. This matrix is available online at www.pholcidae.de/matrices.html

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Appendix 2. Terminal taxa scored for the cladistic analysis, with origin and depository. Taxa are arranged as in the cladogram in Fig. 1.

Outgroups

_Smeringopus_ Simon, 1890; the coding for this genus is supposed to represent the plesiomorphic states, derived from the cladistic analysis in Huber (2012).

_Smeringopina_ Kraus, 1957; the coding for this genus is supposed to represent the plesiomorphic states, derived from the cladistic analysis in Huber (2013).

_Hoplopholcus patrizii_ (Roewer, 1962); Turkey, Kocain Mağarası, ZFMK Ar 20946. Turkey, Karain Mağarası, ZFMK Ar 20947.

_Hoplopholcus forskali_ (Thorell, 1871); Hungary, Molnár János Cave, ZFMK Ar 20936. Turkey, forest below Ferzene Mağarası, ZFMK Ar 20942.

_Hoplopholcus minotaurinus_ Senglet, 1971; Greece, Crete, Spilaio Milatou, ZFMK Ar 20889 and CJVK 2267.

_Hoplopholcus labyrinthi_ (Kulczyński, 1903); Greece, Crete, Spilaio Melidoniou, ZFMK Ar 20875.

Spotted-leg clade

_Holocnemus pluchei_ (Scopoli, 1763); Israel, S of Teverya, ZFMK Ar 22306. Georgia, Sighnaghi, ZFMK Ar 21373. Greece, Daphni/Athens, MHNG.

_Holocnemus reini_ (C. Koch, 1873) comb. nov.; Morocco, near Tilamizene, ZFMK Ar 22319. Morocco, Al Kamoun, CAS 9027140.

_Holocnemus caudatus_ (Dufour, 1820); Spain, Valencia, Montroy, MHNG. Spain, Granada, Trevélez, MHNG.

_Holocnemus hispanicus_ Wiehle, 1933; Spain, Conquista de la Sierra, CRB. Spain, Ronda, CRB. Spain, Huelva, “Alájar/Aracena”, MHNG.

_Stygopholcus photophilus_ Senglet, 1971; Greece, Crete, Episkopi, ZFMK Ar 22205. Greece, Crete, Choumerion/Pérama, MHNG.

_Stygopholcus absoloni_ (Kulczynski, 1914); Croatia, Balićevá špilja, ZFMK Ar 22195. Bosnia and Herzegovina, Zavala, MHNG. Bosnia and Herzegovina, Počitelj/Čapljina, MHNG.

_Stygopholcus skotophilus_ Kratochvil, 1940; Bosnia and Herzegovina, Illjina pećina, ZFMK Ar 22198. Montenegro, Pećina u Ivići, ZFMK Ar 22196.

_Maghreba amezyan_ gen. et sp. nov.; Morocco, between Lakhssas and Bouizakarne, ZFMK Ar 22353, Ar 22354.

_Maghreba kahfa_ gen. et sp. nov.; Morocco, Ifri Taghrart Wankrim, CPO.

_Maghreba saghiro_ gen. et sp. nov.; Morocco, between Irherm and Tiferki, ZFMK Ar 22363, Ar 22364.
Maghreba stifadma gen. et sp. nov.; Morocco, Setti-Fatma, ZFMK Ar 22368, Ar 22369.

Maghreba nkb gen. et sp. nov.; Morocco, E of Nkob, ZFMK Ar 22374.

Maghreba gharbija gen. et sp. nov.; Morocco, 4 km E of Ghazoua, ZFMK Ar 22379, Ar 22380.

Maghreba aurouxi (Barrientos, 2019) gen. et comb. nov.; Morocco, SE of Zebzat, ZFMK Ar 22385, Ar 22386.

Maghreba djabalija gen. et sp. nov.; Morocco, NE of Tizi n’Test, ZFMK Ar 22389, Ar 22390.

Crossopriza soudanensis Millot, 1941; Burkina Faso, Ouagadougou, MNHN Ar 10520. Mali, Bamako, MNHN Ar 10512.

Crossopriza illizi sp. nov.; Algeria, Iherir, ZFMK Ar 22392. Algeria, Aguelmane ti-n-Azzaret, CRB.

Crossopriza sahtan sp. nov.; Oman, above Wadi Sahtan, ZFMK Ar 22394. Oman, Al Ghubrat cave, ZFMK Ar 22398.

Crossopriza tiwi sp. nov.; Oman, Wadi Tiwi, ZFMK Ar 22402, Ar 22403.

Crossopriza dhofar sp. nov.; Oman, Ain Razad cave, ZFMK Ar 22412. Oman, Wadi Nahiz, ZFMK Ar 22413.

Crossopriza moqal sp. nov.; Oman, Mukal (Moqal) Cave, ZFMK Ar 22421, Ar 22422.

Crossopriza kittan sp. nov.; Oman, Ibbri, Al Kittan Cave, ZFMK Ar 22424, Ar 22425.

Crossopriza ghul sp. nov.; Oman, Wadi Ghul, ZFMK Ar 22427, Ar 22428.

Crossopriza ibnsinai sp. nov.; Uzbekistan, near Dzhyra-Kuduk, SZMN.

Crossopriza khayyami sp. nov.; Iran, Izad Khast, MHNG.

Crossopriza semicaudata (O. Pickard-Cambridge, 1876); Egypt, 5 km N of Aswan, CAS. Egypt, Luxor, SMF. Chad, Bardai, MRAC 132959.

Crossopriza pristina (Simon, 1890); Eritrea, Massaua, MNHN Ar 10510. Yemen, Aden, MNHN Ar 10511.

Crossopriza manakah sp. nov.; Yemen, 12 km NW of Manakah, ZFMK Ar 22439 to Ar 22441. Yemen, Ja’ar, ZFMK Ar 22444.

Crossopriza sanaa sp. nov.; Yemen, near Sana’a, NMNL.

Crossopriza kandahar sp. nov.; Afghanistan, W of Kandahar, MHNG.

Crossopriza malegaon sp. nov.; India, 17 mi NE of Malegaon, CAS.

Crossopriza miskin sp. nov.; Oman, near Miskin, ZFMK Ar 22445, Ar 22446. Oman, wadi near Fasah, ZFMK Ar 22447.

Crossopriza pars sp. nov.; Iran, Persepolis, MHNG.
Crossopriza srinagar sp. nov.; India, Srinagar, ZFMK Ar 22449, Ar 22450.

Crossopriza sengleti sp. nov.; Iran, Fars, Seridjan, MHNG.

Crossopriza lyoni (Blackwall, 1867); Guinea, Kindia, ZFMK Ar 10456. Japan, Yamamoto-chô, ZFMK Ar 5209.

Crossopriza surobi sp. nov.; Afghanistan, SE of Surobi/Sarobi, MHNG.

Crossopriza maculipes (Spassky, 1934); Turkmenistan, 5 km SW of Bazar-Tepe, SZMN. Uzbekistan, 6.5 km W of Akmechet, ZMMU. Afghanistan, Djelalabad, MHNG.
Appendix 3. Characters scored for cladistic analysis.

Prosome

1. Carapace lateral marks: (0) present; (1) absent. Dark lateral marks on the carapace seem to have been lost within Smeringopinae, uniting all representatives of the northern clade. They are present in *Cenemus* Saaristo, 2001 (not included in the present analysis), suggesting that this mysterious Seychellois genus may be basal within the northern clade.

2. Sternum indentations: (0) absent or shallow; (1) present, deep. Deep indentations of the sternum (Figs 81, 112) are unique for the sister species *Holocnemus reini* and *H. caudatus*.

Abdomen

3. Abdomen general shape: (0) cylindrical; (1) ventrally shortened. In the outgroup taxa *Smeringopus* and *Smeringopina* as well as in *Holocnemus pluchei* (and in *Cenemus*), the abdomen (pedicel to spinnerets, i.e., ventrally) is usually >2 times as long as the prosoma (pedicel to chelicerae frontal face). In *Hoplopholcus* and in most ingroup taxa, the abdomen is relatively shorter (usually ~1.5 times as long as prosoma, at least ventrally, i.e., discounting a dorsal elongation). The coding is problematic in *Holocnemus reini* and *H. caudatus*, where this value varies among specimens between 1.5 and 2.0. In the Pee-Wee analyses with conc = 1 and 2, *Hoplopholcus* is nested within the spotted-leg clade, i.e., the shortening of the abdomen occurs only once.

4. Abdomen posterior dorsal shape (in lateral view): (0) rounded; (1) angular to pointed. The plesiomorphic condition in Smeringopinae (and Pholcidae) is a posteriorly rounded abdomen. A more angular or even pointed abdomen (Figs 394, 699) occurs in many representatives of the spotted-leg clade and is here interpreted to unite all species except *H. pluchei*. Several reversals within the spotted-leg clade (*Stygopholcus*; some species of *Maghreba* gen. nov. and *Crossopriza*) and independent origins (e.g., *Cantikus* Huber, 2018; *Ixchela* Huber, 2000; *Metagonia* Simon, 1893; and *Priscula* Simon, 1893) suggest that this character is evolutionarily very flexible. In fact, one of the two most parsimonious cladograms using Pee-Wee with conc = 1 and 2 suggests three independent origins of an angular/pointed abdomen within the spotted-leg clade.

5. Epiandrous spigots at male gonopore: (0) two; (1) four or more. The outgroup taxa *Smeringopus* and *Smeringopina* share the reduction from four to two epiandrous spigots, which is clearly the derived condition (Huber 2013). Four epiandrous spigots is the plesiomorphic condition in Pholcidae. Thus, this is not a synapomorphy of *Hoplopholcus* + spotted-leg clade, as suggested by the cladistic analysis. Instead, this group is characterized by a tendency to increase spigot numbers, often to five or six (Figs 161, 320, 854), rarely up to seven or eight (Fig. 93; Huber 2020: fig.72).

6. Spigots on anterior lateral spinnerets (ALS): (0) seven to eight: one widened spigot, one pointed spigot, and five or six cylindrically shaped spigots; (1) two (one widened spigot and one pointed spigot). A reduction in the number of ALS spigots has happened many times independently in Pholcidae (e.g., Huber 2000, 2011a) and distinguishes the northern clade of Smeringopinae (and *Cenemus*) from the Sub-Saharan clade (*Smeringopus* and *Smeringopina*).

Male chelicerae

7. Stridulatory files: (0) absent; (1) present. The cladistic analysis suggests that stridulatory files are a synapomorphy of *Hoplopholcus* + spotted-leg clade. However, this may be an artifact of outgroup choice (cf. char. 5). The presence of stridulatory files in most Ninetinae and Arteminae suggests that the
alternative scenario is more plausible: that stridulatory files are plesiomorphic for Smeringopinae, and that the absence of stridulatory files is derived and unites *Smeringopus* and *Smeringopina* (cf. Huber 2012).

8. Club-shaped hairs on frontal face of chelicerae: (0) absent; (1) present. A field of ~10–40 club-shaped hairs on each frontal cheliceral face is a synapomorphy of *Stygopholcus* (Huber et al. 2021: figs 19, 27–28, 51, 63–64, 93–94, 119, 130, 132). Such hairs occur in some distantly related groups (e.g., *Blancoa* Huber, 2000; *Mecolaesthus* Simon, 1893; *Systenita* Simon, 1893; *Tupigea* Huber, 2000) (Huber 1997, 2000; Huber & Villarreal 2020) but not in other Smeringopinae.

9. Direction of main cheliceral apophyses: (0) towards distal; (1) towards median. The main cheliceral apophyses (i.e., those that carry one or more cone-shaped hairs at their tips) are originally directed towards distal (e.g., Figs 64, 268, 458). In a subgroup of *Crossopriza*, they have moved to a more frontal position and are directed towards median (e.g., Figs 585, 621, 774). This character is functionally related to character 38, which characterizes the same species group.

10. Additional pair of lateral apophyses: (0) absent; (1) present. Some of the species of *Crossopriza* in which the main cheliceral apophyses have moved to a more frontal position (char. 9) share an additional pair of lateral apophyses (e.g., Figs 774, 814, 832). These newly evolved apophyses never carry cone-shaped hairs at their tips.

**Male palp**

11. Retrolateral apophysis on coxa: (0) absent; (1) present. A distinct apophysis (rather than just a rounded hump) on the retrolateral (to ventral) side of the coxa characterizes all species of *Maghreba* gen. nov. Such an apophysis is common in Modisiminae (e.g., Huber 2000) but otherwise rare in Pholcidae.

12. Retrolateral process proximally on femur: (0) absent; (1) present. The cladistic analysis suggests that such an apophysis was lost in the ancestor of *Hoplopholcus* + spotted-leg clade but regained in *Stygopholcus* + *Maghreba* gen. nov.

13. Dorsal process on femur: (0) absent; (1) present. A small dorsal process proximally on the femur characterizes all species of *Maghreba* gen. nov. (e.g., Figs 205, 226).

14. Palpal tarsal organ: (0) capsulate; (1) exposed. A capsulate tarsal organ is plesiomorphic for Smeringopinae (and Pholcidae). In the cladogram in Fig. 1, an exposed tarsal organ evolved independently in the ancestors of *Hoplopholcus* and *Stygopholcus*. In the analysis with Pee-Wee (with conc = 1 and 2), the exposed tarsal organ is considered a synapomorphy unifying these two genera.

15. Dorsal hairs on procursus: (0) weakly or not curved; (1) strongly curved ‘upwards’. The hairs dorsally on the procursus are usually straight or weakly curved. In the northern clade of *Stygopholcus* (represented here by *S. absoloni* and *S. skotophilus*), these hairs are strongly curved ‘upwards’ (Huber et al. 2021: fig. 8).

16. Procursus general shape: (0) ‘regular’, i.e., not particularly long and curved towards ventral; (1) unusually long and curved towards ventral. Two species of *Crossopriza* share a very similar procursus that is slightly longer than usual and curved towards ventral (Figs 728, 747).

17. Procursus prolateral hump: (0) absent; (1) present. All representatives of the spotted-leg clade share a more or less distinct rounded hump on the prolateral side of the procursus (e.g., Figs 137, 629). Such a hump also occurs in some species of *Smeringopus* but is here not considered plesiomorphic for the
18. Hairs on procursus prolateral hump: (0) few hairs or hairless; (1) many hairs. A dense set of often longer than usual hairs on the prolateral hump of the procursus is currently the only known morphological synapomorphy of *Crossopriza*.

19. Procursus tip: (0) straight; (1) strongly bent towards dorsal. The main branch of the procursus is usually straight at its tip (e.g., Figs 63, 358), or slightly bent towards dorsal (e.g., Fig. 22) or ventral (e.g., Figs 138, 630). In all representatives of *Maghreba* gen. nov., the tip is strongly bent towards dorsal (e.g., Figs 166, 210, 229).

20. Branch on ventral sclerite of procursus tip: (0) absent; (1) present. Four species of *Crossopriza* (including the type species) share a retrolateral-dorsal branch on the ventral sclerite of the procursus (Figs 769, 788, 810, 828).

21. Membranous process at tip of procursus: (0) absent; (1) present. A membranous (often transparent) process at the tip of the procursus (next to the ventral sclerite; Figs 166, 210, 309, 358) is here considered to have evolved independently in *Hoplopholcus*, in *Maghreba* gen. nov., and in *Crossopriza soudanensis*.

22. Procursus dorsal sclerite: (0) absent; (1) present. A sclerotized process dorsally at the tip of the procursus unites *Crossopriza surobi* sp. nov. and *C. maculipes* (Figs 810, 828). Similar structures in *C. dhofar* sp. nov. and in *Stygopholcus photophilus* are considered to be convergent.

23. Retrolateral membrane on procursus tip: (0) absent; (1) present. A membranous flap that covers most of the ventral sclerite in lateral view (Fig. 63) unites *Holocnemus reini* and *H. caudatus*.

24. Slender dorsal process on genital bulb: (0) absent; (1) present. A transparent or weakly sclerotized dorsal bulbal process is a unique synapomorphy of *Stygopholcus* (Huber et al. 2021: figs 17, 117).

25. Dorsal pocket on distal bulbal sclerite: (0) absent; (1) present. A large and deep pocket dorsally on the distal bulbal sclerite (Figs 169, 213) is a unique synapomorphy of *Maghreba* gen. nov.

**Legs**

26. Spines on male femur 1: (0) absent; (1) present. Spines on the male femur 1 (very rarely also tibia 1 and femur 2) unite all genera of Smeringopinae except *Smeringopus* and *Smeringopina*. They are also absent in *Cenemus* (not included in the present analysis), which is further evidence for a basal position of this genus within the northern clade of Smeringopinae (cf. char. 1). Such spines have repeatedly evolved in distantly related taxa (e.g., *Modisimus* Simon, 1893; *Savarna* Huber, 2005; *Hantu* Huber, 2016; *Paramicromerys* Millot, 1946) (Huber 2021a).

27. Spine arrangement on femur 1: (0) in one row; (1) in two rows. In most Smeringopinae (and Pholcidae in general), spines on femur 1 (if present) are arranged in a single ventral row. In the northern clade of *Stygopholcus*, the spines are arranged in two rows (Huber et al. 2021).

28. Dark marks on femora and tibiae: (0) absent; (1) present. Distinctive dark lines or oval marks (Figs 34, 188–189, 206–207, 558, 577, 709) are characteristic of almost all representatives of the spotted-leg clade. They have been lost in the slightly troglomorphic species of the northern clade of *Stygopholcus* (Huber et al. 2021). In the analysis with Pee-Wee (with conc = 1 and 2), the marks are considered secondarily
lost also in *Hoplopholcus*. Such marks are rare in other pholcids. They also occur in *Smeringopus cylindrogaster*, a species originally assigned to *Crossopriza* (Huber 2009a).

29. Prolateral trichobothrium on tibia 1: (0) present; (1) absent. The plesiomorphic condition in Pholcidae is the presence of three trichobothria on each leg tibia: retrolateral, dorsal and prolateral. Only the prolateral trichobothrium of tibia 1 is sometimes lost, and this has happened repeatedly in Pholcidae (B.A. Huber, unpublished data). Within Smeringopinae, the cladogram in Fig. 1 suggests two independent losses: within *Hoplopholcus*, and in the ancestor of all species of the spotted-leg clade except *Holocnemus pluchei*. The analyses with Pee-Wee (with conc = 1 and 2) requires a regain within *Hoplopholcus* (which is why the alternative topology shown in Fig. 1 is preferred).

30. Short vertical hairs on male tibiae: (0) very few, as in female; (1) in higher density than in female. Short vertical hairs (Figs 119, 120) that may function as chemoreceptors (Foelix & Chu-Wang, 1973) occur in low densities on most leg segments of Pholcidae, mainly on the distal segments. In several pholcid taxa, males have many such hairs on the leg femora and/or tibiae (Huber 2021a). Within Smeringopinae, only some species of *Maghreba* gen. nov. and *Crossopriza malegaon* sp. nov. share this character. However, the density is not particularly high and the hairs are barely visible using a dissecting microscope.

31. Curved hairs on legs: (0) absent; (1) present. In Smeringopinae, curved hairs occur in *Smeringopus* and *Hoplopholcus*; they are absent in the spotted-leg clade. The optimization of this character is ambiguous; it is therefore not mapped on Fig. 1. In the analysis with Pee-Wee (with conc = 1 and 2), curved hairs originate independently in *Smeringopus* and *Hoplopholcus*.

32. Rim of leg tarsal organ: (0) round or slightly irregular; (1) strongly undulating. In most Smeringopinae, the rim of the capsulate tarsal organ on the legs is either round or slightly irregular (Figs 53, 122–123, 156, 863). In the northern clade of *Stygopholcus*, the rim is strongly undulating (Huber et al. 2021: figs 38, 75, 97).

**Female body**

33. Median process on female sternum: (0) absent; (1) present. A posterior median process on the female sternum (Fig. 31) is a unique autapomorphy of *Holocnemus pluchei*.

34. Paired stridulatory organ between carapace and abdomen: (0) absent; (1) present. Stridulatory devices between prosoma and abdomen have evolved repeatedly in Pholcidae (Huber 2021a). Paired organs on the dorsal side occur in several distantly related genera (e.g., *Trichocyclus* Simon, 1908; *Anopsicus* Chamberlin & Ivie, 1938; and *Aymaria* Huber, 2000). In Smeringopinae, this character unites a large part of the spotted-leg clade (*Crossopriza, Maghreba* gen. nov., *Stygopholcus*, and *Holocnemus hispanicus*). Within this group, it was secondarily lost twice (*Stygopholcus photophilus* and *Crossopriza johncloudsleyi*). The analysis with Pee-Wee (with conc = 1 and 2) suggests two independent origins in Smeringopinae: once within *Stygopholcus* and once in the ancestor of *Holocnemus hispanicus* + *Maghreba* gen. nov. + *Crossopriza*.

35. Female palp shape: (0) ‘regular’, i.e., thin; (1) strongly thickened. Within Smeringopinae, only *Holocnemus pluchei* has female palps with strongly thickened distal segments (tibia, tarsus) (Figs 29–30). A very similar thickening has independently evolved in the distantly related genus *Holocneminus* Berland, 1942 (Berland 1942; Deeleman-Reinhold 1995).
36. Sclerotized ventral ridge anteriorly on female abdomen: (0) absent; (1) present. Within Smeringopinae, only *Holocnemus pluchei* females have such a ridge/process (Fig. 38). The only pholcid species known to have a similar structure is the distantly related *Waunana modesta* (Banks, 1929) (Huber 2000: fig. 1114).

**Female genitalia**

37. Epigynal processes: (0) absent; (1) one pair; (2) two pairs. Most Smeringopinae lack epigynal processes. Some species of *Maghreba* gen. nov. share a pair of more or less distinct processes (e.g., Fig. 238). The epignum of *Crossopriza johncloudsleyi* with two pairs of prominent processes is unique in the spotted-leg clade.

38. Position of epigynal pockets: (0) lateral, opening towards ventral/anterior; (1) close to median line, on opposing sides of median ridge, opening towards lateral. A pair of pockets that corresponds to the male cheliceral apophyses seems to be plesiomorphic for Smeringopinae. In a subgroup of *Crossopriza*, these pockets have moved to a more median position and open towards lateral (e.g., Figs 587, 623, 719). This character is functionally related to character 9, which characterizes the same species group.

39. Shape of epigynal posterior margin: (0) straight; (1) medially protruding. In three species of *Crossopriza*, the posterior margin of the epigynal plate is slightly (*C. lyoni*) to distinctly (*C. surobi sp. nov.*, *C. maculipes*) protruding medially (Figs 798, 816, 834).

40. Paired pockets or pouches in female internal genitalia: (0) absent; (1) low; (2) deep and distinct. A pair of low internal pockets characterizes the genus *Hoplopholcus*. Within the spotted-leg clade, *Holocnemus pluchei* is unique in having a pair of deep conical pockets (Figs 40–42).