

Research articleSubmitted: January 8th, 2018 - Accepted: May 4th, 2018 - Published: June 29th, 2018**New species and records of the pseudoscorpion genus *Acanthocreagris* from Italy (Pseudoscorpiones: Neobisiidae)**

Giulio GARDINI

Via Monte Corno 12/1, I-16166 Genova, Italy - giuliogardini@libero.it

Abstract

Three new species of the genus *Acanthocreagris* Mahnert, 1974 are described from Lombardy (*Acanthocreagris grottoloii* sp. n.) and Sardinia (*Acanthocreagris foghesa* sp. n. and *Acanthocreagris alguerensis* sp. n.). *Acanthocreagris sardoa* (Beier, 1959) and *Acanthocreagris agazzii* (Beier, 1966) are redescribed respectively on specimens from Sardinia and Venetian pre-Alps and a key to adults of the Italian species of the genus is provided.

Key words: Taxonomy, Lombard and Venetian pre-Alps, Sardinia.

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Introduction

The pseudoscorpion genus *Acanthocreagris* Mahnert, 1974 is represented in the Euro-Turanic areas (from northeastern Spain to Iran and Turkmenistan) by 40 epigeal or subterranean species (Harvey 2013), of which thirteen are known from Italian mainland, Sicily and Sardinia (Gardini 1998). Among the family Neobisiidae J.C. Chamberlin, 1930, the genus *Acanthocreagris* appears to be related to the genera *Roncocreagris* Mahnert, 1974 and *Balkanoroncus* Čurčić, 1975 and it is characterized by the presence of an evident galea on movable cheliceral finger, palpal trochanter with spiniform setae, rallum with blades decreasing in length (the distal ones laterally pinnate, the median and the proximal ones finely dentate or apparently smooth), sternites VI–VIII with two discal setae, sternite III of males with 2+2 (or 3+3) setae on tubercles along the genital opening, movable chelal finger longer than the fixed one, and telotarsus of leg IV with the tactile seta situated in the proximal half (TS = 0.21–0.38). The present work updates the revision of Italian species proposed by Gardini (1998), with the descriptions of three new subterranean species from Lombardy and Sardinia and the redescription of *Acanthocreagris sardoa* (Beier, 1959) and *Acanthocreagris agazzii* (Beier, 1966), previously known only on the type specimens, which are very probably lost and therefore not redescribed by Gardini (1998).

Material and methods

The specimens were cleared in 5% KOH solution at 30°C for few hours, washed in distilled water and temporarily mounted after dissection of palp, chelicera and leg IV in cavity slides with 60% lactic acid.

Each specimen was rinsed, after study, in distilled water and returned to a vial of 70% ethanol together with the dissected portions in glass capillary tubes.

All specimens were studied using an Olympus BHB compound microscope; drawings were made with the aid of a Nachet drawing tube.

Measurements are given in mm and proportions are given as length/breadth for carapace, chelicerae and pedipalps and as length/depth for leg.

Terminology and reference points for measurements largely follow Chamberlin (1931), the relative position of trichobothria along chelal axis is calculated following Gabbutt (1965) and the use of the terms rallum, antiaxial and paraxial follows Judson (2007).

Holotypes of the new species are deposited in the Muséum d'Histoire naturelle (Geneva, Switzerland: MHNG), paratypes and other specimens are in author's collection (Genoa, Italy: without acronym in the text).

Arrangement of the species follows the sequence of groups of species proposed by Gardini (1998).

Taxonomy

Acanthocreagris sardoa (Beier, 1959) (Figs 1–8)

Microcreagris sardoa Beier, 1959: 254, fig. 1

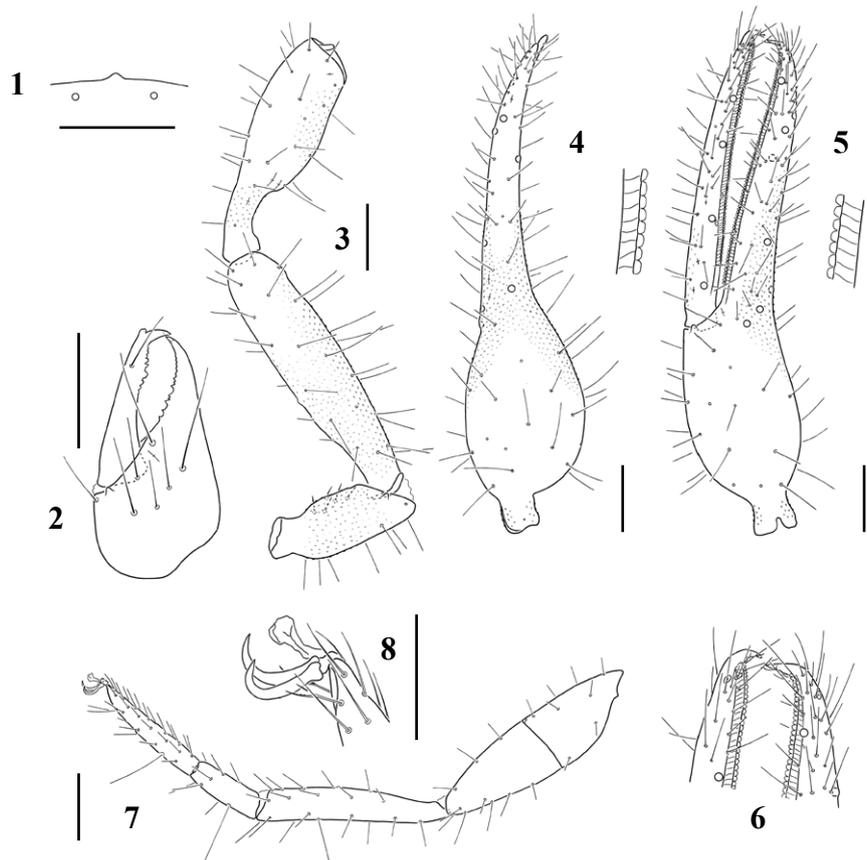
Acanthocreagris sp. A: Gardini 1998: 26

Material examined. 1 ♀, Sardinia, Nuoro Prov., Dorgali, Gurenoro, Grotta Pisanu 215 Sa/NU (40°17'56,40"N 9°33'05,30"E), 142 m, Mar 2009, P. Magrini leg.; 1 deutonymph, Sardinia, Nuoro Prov., Orani, Grotta di San Francesco 202 Sa/NU, 3 Feb 1985, G. Grafitti leg.; 1 ♂ (damaged specimen with broken chelae), Sardinia, Cagliari Prov., Armungia, Baccu Gospuru, Grotta Su Pittiolu de Gospuru 1865 Sa/CA (39°31'59,65"N 9°26'04,41"E), 121 m, 4 Jun 2003, J. De Waele leg.

Diagnosis (♂♀). A subterranean troglomorphic *Acanthocreagris* from Sardinia that differs from other Italian species of the genus in the following combination of characters: no eyes or eye-spots; movable cheliceral finger with dome-shaped galea, slightly squared apically; trochanter with 4 spiniform setae with simple and acuminate tips; pedipalpal femur length 0.67–0.85 mm (4.2–4.25 times as

long as broad), patella 0.61–0.74 mm (3.1–3.35 ×), chela with pedicel 1.21–1.50 mm (4.0–4.05 ×), movable finger 0.70–0.93 mm, ratio between pedipalpal femur and carapace 1.1.

Description of adults (♂♀). Carapace, chelicera, pedipalps and palpal coxae red-brown pale. Carapace 1.22–1.26 times as long as broad, without eyes or eye-spots, anterior margin with slightly prominent epistome, apically rounded (Fig. 1); 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively. Chaetotaxy of tergites I–X 6:6–8:7–10:9:9–10:10:10:10–11:10:7–9. Chaetotaxy of sternites II–X (♂): 22:20(10 of which along posterior margin of genital opening):12:12:12:12:12:13:11, genital atrium with 2+2 setae; median genital sac not seen; chaetotaxy of sternites II–XI (♀) 11:14:12:10:10:12:12:12:12:9; sternites III and IV (♂♀) each with 2 or 3 microsetae in front on each stigma, sternites VI–VIII with 2 discal setae; anal cone with 2+2 setae. Chelicera (Fig. 2) 1.85–1.9 times as long as broad, palm with 6 setae (7 setae in left chelicera of ♀); fixed finger with 12–15 subequal teeth and 5–6 distal denticles; movable finger with 9–12 teeth and a prominent tooth at level of *gs*; *gs* ratio 0.65–0.73, galea squat, slightly squared apically (Fig. 2), with 3 or 4 silk ducts;



Figs 1–8 – *Acanthocreagris sardoa* (Beier, 1959), ♀ from Grotta Pisanu, Dorgali: **1**, epistome of carapace; **2**, left chelicera, dorsal view; **3**, trochanter, femur and patella of left pedipalp, dorsal view; **4**, left pedipalpal chela, dorsal view; **5**, same, antiaxial view, with detail of teeth at level of trichobothria *isb/sb*; **6**, apex of chelal fingers, antiaxial view; **7**, left leg IV (without trochanter), antiaxial view; **8**, apex of telotarsus of leg IV, antiaxial view. Scale lines: 0.2 mm (1–7); 0.1 mm (8).

rallum with 7 blades, the three distal ones laterally pinnate, the two median ones serrate, the two proximal ones finely dentate; serrulae interior and exterior respectively with about 22 and 25 blades. Manducatory process with 3 setae. Coxal setae: pedipalp 6 or 7, I 4, II 5 or 6, III 4 or 5, IV 7; anterolateral process of coxa I sharp, apically pointed. Pedipalp (Figs 3–6): trochanter with granular surface, 2.75 times as long as broad, without tubercles on paraxial face, with 4 spiniform setae with simple and acuminate tips; femur 4.5 (♂) or 4.25 (♀) times as long as broad, with granular surface as in fig. 3; patella 3.25 (♂) or 3.35 (♀) times as long as broad, club elongate and granular on paraxial face, pedicel granular, ratio between club and pedicel 2.1 (♂) or 1.9 (♀); chela with pedicel 5.3 (♂) or 4.05 (♀) times as long as broad; hand of chela with pedicel 1.8 (♀) times as long as broad, granular surface as in figs 4–5; fixed chelal finger with 70–79 (♂♀) small contiguous teeth with dental canals (Figs 5–6), venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 6; movable chelal finger with 68–75 (♂♀) small contiguous, rounded teeth with dental canals (Figs 5–6) reaching back near *b*, the distal six teeth pointed; movable chelal finger with four sensilla, two of which subterminal (Fig. 6), the others just distal and proximal to trichobothrium *sb*, respectively (Fig. 5); trichobothria as in Figs 4–5, relative position of trichobothria along chelal axis: *et* 0.12–0.15/*it* 0.25–0.26/*est* 0.31–0.315/*ist* 0.395–0.40/*isb* 0.68–0.69/*ib* 0.82–0.84/*esb* 0.90/*eb* 0.94–0.95/*t* 0.23–0.24/*st* 0.39–0.395/*sb* 0.63–0.65/*b* 0.85–0.865; ratio between movable finger and hand of chela with pedicel 1.36 (♀); ratio between pedipalpal femur and movable finger 0.97 (♂) 0.91 (♀); ratio between pedipalpal femur and carapace 1.28 (♂) 1.12 (♀). Leg IV (♀) (Figs 7–8): femur + patella 3.68 times as long as deep, tibia 6.0 times, basitarsus 3.0 times, telotarsus 6.15 times as long as deep, tactile seta in the proximal half (TS = 0.30), ratio between basitarsus and telotarsus 0.6, subterminal seta furcate, slightly dentate, claws with a very small dorsal tooth (Fig. 8).

Measurements. Body length 2.2–2.5 (♂♀). Carapace 0.60–0.63 × 0.49–0.50 (♂) or 0.76 × 0.60 (♀). Chelicera 0.37 × 0.20 (♂) or 0.42 × 0.22 (♀); movable finger length 0.255 (♂) or 0.28 (♀). Pedipalp: trochanter 0.44 × 0.16 (♂) or 0.48 × 0.175 (♀); femur 0.67–0.81 × 0.16–0.18 (♂) or 0.85 × 0.20 (♀); patella 0.61–0.70 × 0.20–0.215 (♂) or 0.74 × 0.22 (♀); chela with pedicel 1.21–? × 0.28–0.30 (♂) or 1.50 × 0.37 (depth 0.33) (♀); hand with pedicel length 0.55–? (♂) or 0.68 (♀); movable finger length 0.70–0.83 (♂) or 0.93 (♀). Leg IV (♀): femur + patella 0.70 × 0.19; tibia 0.60 × 0.10; basitarsus 0.24 × 0.08; telotarsus 0.40 × 0.065.

Short description of deutonymph. See Gardini (1998: 26).

Remarks. *Acanthocreagris sardoa* was described on the basis of a single male from a cave on Mount Tuttavista

(40°22'51"N 9°38'16"E) near Galtelli, central-eastern Sardinia. The holotype was not traced by Gardini (1998) and it is thought to be lost. The above redescription of *A. sardoa* incorporates the original one of Beier (1959) and is based on a female from a cave near Dorgali—ca 9 km from the type locality—and of a male from a cave near Arnungia in southeastern Sardinia, 95 km from the type locality and belonging to a different karst complex. The species is phenetically similar to *A. agazzii* (Beier, 1966) from Venetian pre-Alps, but it maybe related to *A. foghesa* sp. n. from southeastern Sardinia. For comparison among the three species, see the Key and Remarks under *A. foghesa* and *A. agazzii*.

***Acanthocreagris foghesa* sp. n.** (Figs 9–16)

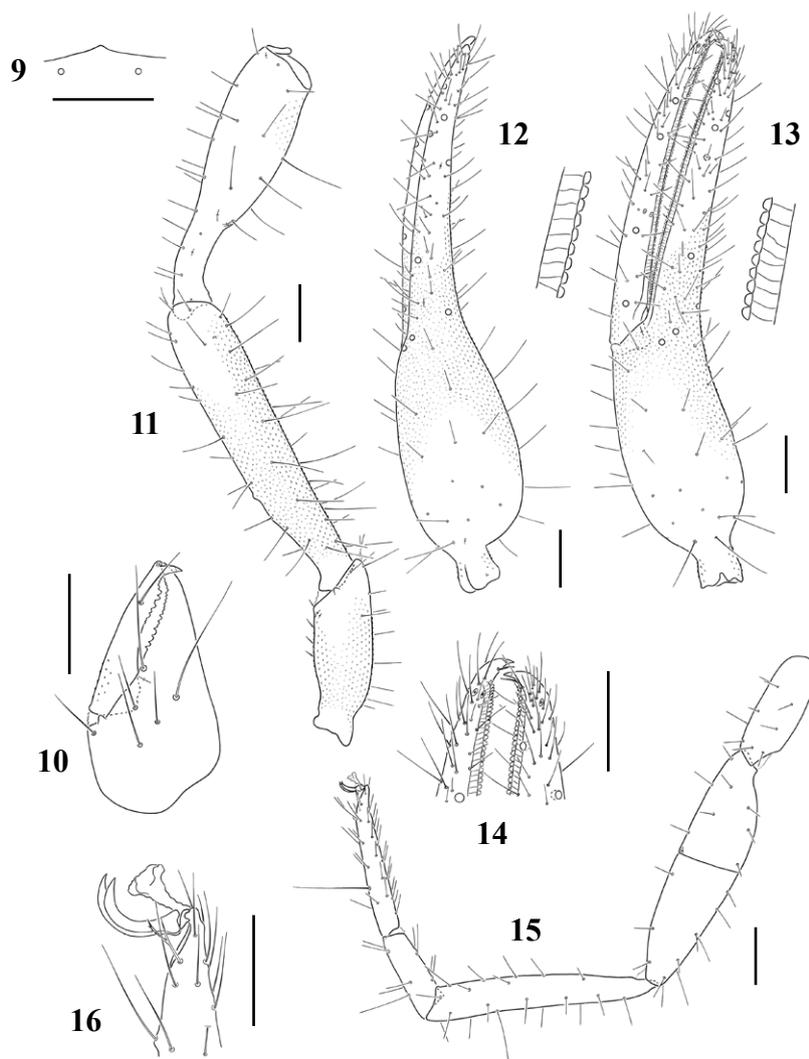
urn:lsid:zoobank.org:act:E0E60E92-D326-4F60-AAA7-AABA808F934B

Type material. Holotype ♀, Sardinia, Ogliastra Prov., Perdasdefogu, Fenugu, Grutta de Su Fenugu 1935 Sa/OG (39°42'01,19"N 9°24'23,54"E), 415 m, 29 Oct 2005, P. Marcia & E. Lana leg. (MHNG). Paratypes: 1 ♀, same data as for holotype, 21 Jan 1996, G. Prasciolu, G. Altea & G. Zanda leg. (Coll. G. Gardini, Genoa).

Diagnosis (♀). A subterranean troglomorphic *Acanthocreagris* from Sardinia that differs from other Italian species of the genus in the following combination of characters: no eyes or eye-spots; movable cheliceral finger with dome-shaped galea, slightly squared apically; trochanter with 4 spiniform setae, with simple and acuminate tips; pedipalpal femur length 1.14–1.28 mm (5.05–5.3 times as long as broad), patella 1.0–1.1 mm (3.8–3.9 ×), chela with pedicel 1.93–2.22 mm (4.75–5.05 ×), movable finger 1.11–1.26 mm, ratio between pedipalpal femur and carapace 1.3–1.45.

Etymology. *Foghesa* is called in the Campidanese Sardinian language the inhabitant (feminine, singular) of Perdasdefogu.

Description of adults (♀). Carapace, chelicera, pedipalps and palpal coxae red-brown pale. Carapace 1.16–1.24 times as long as broad, without eyes or eye-spots, anterior margin slightly prominent in the middle, without differentiated epistome (Fig. 9); 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively. Chaetotaxy of tergites I–XI 5–6:6:6–8:8:7:9:9:9:8:7. Chaetotaxy of sternites II–XI 8:14:12:11:12:12:11:11:10:7; sternites III and IV each with 3 microsetae in front on each stigma, sternites VI–VIII with 2 discal setae; anal cone with 2+2 setae. Chelicera (Fig. 10) 1.96 times as long as broad, palm with 6 setae; fixed finger with 12 subequal teeth; movable finger with 10 teeth, 2–3 of which prominent at level of *gs*; *gs* ratio 0.71, galea squat, slightly squared apically (Fig. 10), with 4 silk ducts; rallum with 8 blades, the three distal ones laterally pinnate, the three median ones serrate, the two proximal ones apparently



Figs 9–16 – *Acanthocreagris foghesa* sp. n., ♀ holotype: **9**, epistome of carapace; **10**, left chelicera, dorsal view; **11**, trochanter, femur and patella of left pedipalp, dorsal view; **12**, left pedipalpal chela, dorsal view; **13**, same, anti-axial view, with detail of teeth at level of trichobothria *isb/sb*; **14**, apex of chelal fingers, anti-axial view; **15**, left leg IV, anti-axial view; **16**, apex of telotarsus of leg IV, anti-axial view. Scale lines: 0.2 mm (9–15); 0.1 mm (16).

smooth; serrulae interior and exterior respectively with about 20 and 30 blades. Manducatory process with 3 setae. Coxal setae: pedipalp 6, I 4, II 6 or 7, III 4 or 5, IV 7 or 8; anterolateral process of coxa I sharp, apically pointed. Pedipalp (Figs 11–14): trochanter with granular surface, 3.09–3.25 times as long as broad, without tubercles on paraxial face, with 4 spiniform setae with simple and acuminate tips; femur 5.06–5.33 times as long as broad, with granular surface as in fig. 11; patella 3.84–3.93 times as long as broad, club elongate and weakly granular on paraxial face, pedicel smooth, ratio between club and pedicel 1.7–1.8; chela with pedicel 4.76–5.04 times as long as broad; hand of chela with pedicel 2.19–2.22 times as long as broad, with granular surface as in figs 12–13; fixed chelal finger with 81–92 small contiguous teeth with dental canals (Figs 13–14), venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 14; movable chelal finger with 81–86 small contiguous, rounded

teeth with dental canals (Figs 13–14) reaching back near *b*; movable chelal finger with four sensilla, two of which subterminal (Fig. 14), the others both just distal to trichobothrium *sb* (Fig. 13); trichobothria as in Figs 12–13, relative position of trichobothria along chelal axis: *et* 0.13–0.14/*it* 0.20–0.22/*est* 0.27–0.28/*ist* 0.35–0.37/*isb* 0.67/*ib* 0.82–0.85/*esb* 0.91/*eb* 0.95/*t* 0.22–0.23/*st* 0.34/*sb* 0.64–0.65/*b* 0.86–0.87; ratio between movable finger and hand of chela with pedicel 1.26–1.28; ratio between pedipalpal femur and movable finger 1.01–1.03; ratio between pedipalpal femur and carapace 1.32–1.45. Leg IV (holotype: figs 15–16): trochanter 2.66 times as long as deep, femur + patella 3.91 times, tibia 7.04 times, basitarsus 3.15 times, telotarsus 7.57 times as long as deep, tactile seta proximal the middle (TS = 0.34), ratio between basitarsus and telotarsus 0.59, subterminal seta furcate, slightly dentate, claws with a very small dorsal tooth (Fig. 16).

Measurements. Body length 2.4–2.9. Carapace 0.86–0.88

$\times 0.71\text{--}0.74$. Chelicera $0.49\text{--}0.51 \times 0.25\text{--}0.26$; movable finger length $0.33\text{--}0.36$. Pedipalp: trochanter $0.65 \times 0.20\text{--}0.21$; femur $1.14\text{--}1.28 \times 0.225\text{--}0.24$; patella $1.00\text{--}1.10 \times 0.26\text{--}0.28$; chela with pedicel $1.93\text{--}2.22 \times 0.405\text{--}0.44$ (depth $0.38\text{--}0.42$); hand with pedicel length $0.89\text{--}0.98$; movable finger length $1.11\text{--}1.26$. Leg IV (holotype): trochanter 0.40×0.15 ; femur + patella 0.88×0.225 ; tibia 0.81×0.115 ; basitarsus 0.315×0.10 ; telotarsus 0.53×0.07 .

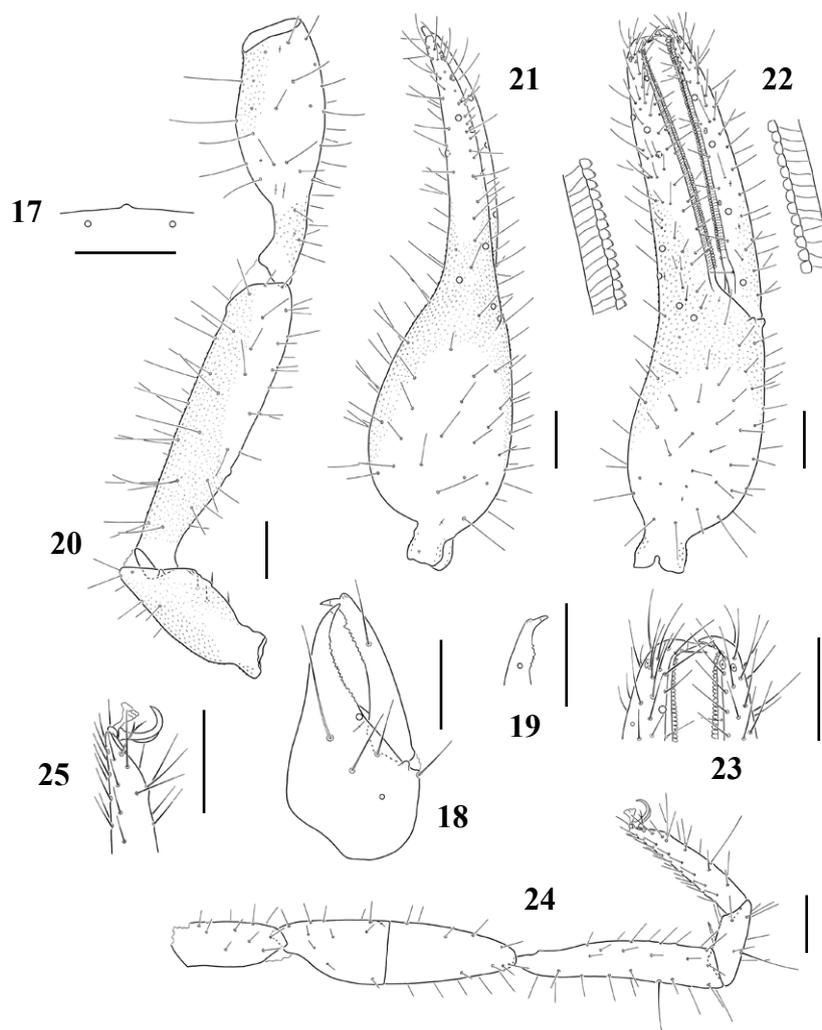
Remarks. *Acanthocreagris foghesa* sp. n. maybe related to the subterranean *A. sardoa*, occurring in the same geographical area but in different karst units, from which it differs in the stronger troglomorphic facies: length of pedipalpal femur $1.14\text{--}1.28$ mm ($5.05\text{--}5.3$ times as long as broad) in *A. foghesa* (♀), $0.67\text{--}0.85$ mm ($4.2\text{--}4.25 \times$) in *A. sardoa* (♂♀); length of patella $1.0\text{--}1.1$ mm ($3.8\text{--}3.9 \times$) in *A. foghesa* (♀), $0.61\text{--}0.74$ mm ($3.1\text{--}3.35 \times$) in *A. sardoa*

(♂♀); length of chela with pedicel $1.93\text{--}2.22$ mm ($4.75\text{--}5.05 \times$) in *A. foghesa* (♀), $1.21\text{--}1.50$ mm ($4.0\text{--}4.05 \times$) in *A. sardoa* (♂♀); ratio between pedipalpal femur and carapace $1.3\text{--}1.45$ in *A. foghesa* (♀), 1.1 in *A. sardoa* (♂♀).

***Acanthocreagris agazzii* (Beier, 1966) (Figs 17–25)**

Microcreagris agazzii Beier, 1966: 177, fig. 2

Material examined. 1 ♂, Veneto, Belluno Prov., Seren del Grappa, Col del Buratto, 1375 m, 8 Jun 2003, A. Fabri leg., digging in a sinkhole; 1 ♀, Veneto, Belluno Prov., Arsiè, Grotta dee Bornise 4582 V/BL, 670 m, 24 Apr 2007, D. Bianco & E. Piva leg.; 1 ♂, Veneto, Vicenza Prov., Cismon del Grappa, Vallone di Cancell'Alto (= Val del Termine), 1500 m, 3 Jul 2004, E. Piva leg.



Figs 17–25 – *Acanthocreagris agazzii* (Beier, 1966), ♀ from Grotta dee Bornise, Arsiè (unless otherwise stated): **17**, epistome of carapace; **18**, right chelicera, dorsal view; **19**, ♂ from Seren del Grappa: apex of movable finger of left chelicera, dorsal view; **20**, trochanter, femur and patella of right pedipalp, dorsal view; **21**, right pedipalpal chela, dorsal view; **22**, same, antiaxial view, with detail of teeth at level of trichobothria *isb/sb*; **23**, apex of chelal fingers, antiaxial view; **24**, right leg IV, antiaxial view; **25**, apex of telotarsus of leg IV, antiaxial view. Scale lines: 0.2 mm (17–25).

Diagnosis (♂♀). A subterranean troglomorphic *Acanthocreagris* from Venetian pre-Alps that differs from other Italian species of the genus in the following combination of characters: no eyes or eye-spots; movable cheliceral finger with rounded, dome-shaped galea; trochanter with 3 or 4 spiniform setae with simple and acuminate tips; pedipalpal femur length 0.86–1.07 mm (4.09–4.3 times as long as broad), patella 0.71–0.92 mm (2.88–3.2 ×), chela with pedicel 1.53–1.83 mm (3.73–4.1 ×), movable finger 0.87–1.05 mm, ratio between movable finger and hand with pedicel 1.15–1.3, ratio between femur and movable finger 0.95–1.0, ratio between pedipalpal femur and carapace 1.19–1.34; fixed and movable chelal fingers with 87–91 and 77–82 teeth, respectively.

Description of adults (♂♀): Carapace, chelicera, pedipalps and palpal coxae red-brown pale. Carapace 1.08–1.29 times as long as broad, without eyes or eye-spots, anterior margin with a weak, rounded epistome (Fig. 17); 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively, besides 1 or 2 “preocular” setae on each side. Chaetotaxy of tergites I–X 6:8:8–10:9–12:10–12:11–13:11–13:11–13:8–12:7–8. Chaetotaxy of sternites II–XI (♂): 20:17:14:10:13:18:16:15:14:7, genital atrium with 2+2 setae; median genital sac reaching sternite V; chaetotaxy of sternites II–XI (♀) 12:18:12:12:14:14:18:18:17:13; sternites III and IV (♂♀) each with 3 microsetae in front on each stigma, sternites VI–VIII with 2 discal setae; anal cone with 2+2 setae. Chelicera (Fig. 18) 1.82–1.92 times as long as broad, palm with 6 setae (rarely 7); fixed finger with 12–18 subequal teeth, movable finger with 10–13 teeth, of which a prominent one distal to *gs*; *gs* ratio 0.68–0.75, galea dome-shaped apically rounded, reduced in male (Figs 18–19), with 3 silk ducts; rallum with 8 blades, the four distal ones laterally pinnate, the two median ones serrate, the two proximal ones apparently smooth; serrulae interior and exterior with about 20 and 24 blades, respectively. Manducatory process with 3 (rarely 2) setae. Coxal setae: pedipalp 6 or 7, I 5 or 6, II 6 or 7, III 5 or 6, IV 7 or 8; anterolateral process of coxa I sharp, apically pointed. Pedipalp (Figs 20–23): trochanter with granular surface, 2.51–2.55 (♂) or 2.72 (♀) times as long as broad, without tubercles on paraxial face, with 3 or 4 spiniform setae with simple and acuminate tips; femur 4.09–4.24 (♂) or 4.28 (♀) times as long as broad, with granular surface as in fig. 20; patella 2.88–2.96 (♂) or 2.96 (♀) times as long as broad, club elongate and granular on paraxial face, pedicel granular, ratio between club and pedicel 1.9–2.1 [2.5 according to Beier (1966)] (♂) or 2.28 (♀); chela with pedicel 4.02–4.1 (♂) or 3.73 (♀) times as long as broad; hand of chela with pedicel 1.8–2.0 (♂) or 1.85 (♀) times as long as broad, granular surface as in figs 21–22; fixed chelal finger with 87–88 (♂) or 91 (♀) small contiguous teeth with dental canals (Figs 22–23), venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 23; movable chelal finger with 77–80 (♂) or 82 (♀) small contigu-

ous, rounded teeth with dental canals (Figs 22–23) reaching back near *b*; movable chelal finger with four sensilla, two of which subterminal (Fig. 23), the others with various positions along the finger: just distal to trichobothria *sb* and *st*, respectively (Fig. 22), or both closer to *sb* than to *st*; trichobothria as in Figs 21–22, relative position of trichobothria along chelal axis: *et* 0.13–0.15/*it* 0.24–0.32/*est* 0.29–0.35/*ist* 0.38–0.42/*isb* 0.67–0.70/*ib* 0.79–0.81/*esb* 0.88–0.90/*eb* 0.93–0.94/*t* 0.24–0.28/*st* 0.39–0.42/*sb* 0.63–0.66/*b* 0.86–0.87; ratio between movable finger and hand of chela with pedicel 1.17–1.29 (♂) or 1.15 (♀); ratio between pedipalpal femur and movable finger 0.95–0.99 (♂) 1.02 (♀); ratio between pedipalpal femur and carapace 1.19–1.34 (♂) 1.20 (♀). Leg IV (Figs 24–25): femur + patella 3.43 (♂) or 3.86 (♀) times as long as deep, tibia 5.39 (♂) or 5.21 (♀) times, basitarsus 2.6 (♂) or 3.1 (♀) times, telotarsus 5.12 (♂) or 5.20 (♀) times as long as deep, tactile seta in the proximal half (TS = 0.30–0.38), ratio between basitarsus and telotarsus 0.63–0.66, subterminal seta furcate, slightly dentate, claws with a very small dorsal tooth (Fig. 25).

Measurements. Body length 2.3–2.5 (♂) or 3.4 (♀). Carapace 0.67–0.72 × 0.59–0.65 (♂) or 0.89 × 0.69 (♀). Chelicera 0.42–0.43 × 0.225–0.23 (♂) or 0.49 × 0.255 (♀); movable finger length 0.29–0.30 (♂) or 0.35 (♀). Pedipalp: trochanter 0.49–0.51 × 0.195–0.20 (♂) or 0.60 × 0.22 (♀); femur 0.86–0.92 × 0.20–0.225 (♂) or 1.07 × 0.25 (♀); patella 0.71–0.77 × 0.22–0.26 (♂) or 0.92 × 0.31 (♀); chela with pedicel 1.53–1.58 × 0.38–0.39 (♂) or 1.83 × 0.49 (♀) (depth 0.36–0.38 ♂, 0.44 ♀); hand with pedicel length 0.71–0.79 (♂) or 0.91 (♀); movable finger length 0.87–0.93 (♂) or 1.05 (♀). Leg IV: femur + patella 0.72 × 0.21 (♂) or 0.85 × 0.22 (♀); tibia 0.62 × 0.115 (♂) or 0.73 × 0.14 (♀); basitarsus 0.26 × 0.10 (♂) or 0.31 × 0.10 (♀); telotarsus 0.41 × 0.08 (♂) or 0.47 × 0.09 (♀).

Remarks. *Acanthocreagris agazzii* was described on the basis of a single male—found under stone in a sinkhole—from Fondi di Campo Manderiolo (or Mandriolo, 45°58'N 11°22'E) near Ghertele, Asiago, Province of Vicenza. The holotype was not traced by Gardini (1998) and is thought to be lost.

Beier (1966) compared *A. agazzii* with *A. sardoa*. In spite of the geographical incompatibility, the two species are very similar: the most important characters to separate them are the shape of cheliceral galea (apically rounded in *A. agazzii*, squared in *A. sardoa*), the measurements of male and female pedipalps (femur length 0.86–1.07 mm in *A. agazzii*, 0.67–0.85 mm in *A. sardoa*; chela with pedicel 1.53–1.83 mm in *A. agazzii*, 1.21–1.50 mm in *A. sardoa*), the ratio between pedipalpal femur and carapace (1.20–1.35 × in *A. agazzii*, 1.11–1.12 × in *A. sardoa*) and the number of teeth of fixed and movable chelal finger, respectively (87–91 and 77–82 in *A. agazzii*, 70–79 and 68–75 in *A. sardoa*). The relative position of trichobothrium *ist* was proposed by Beier (1966) as a differential character

between *A. agazzii* (with *ist* just distal to middle of fixed finger) and *A. sardoa* (with *ist* more distal, closer to *it-est*). This character seems to be inconsistent, since the relative position of *ist* along the chelal axis is situated between 0.38 and 0.42 in both species.

Acanthocreagris agazzii maybe related to the subterranean *A. grottoloii* sp. n. from Brescia and Garda pre-Alps (see the Key and Remarks under the latter species).

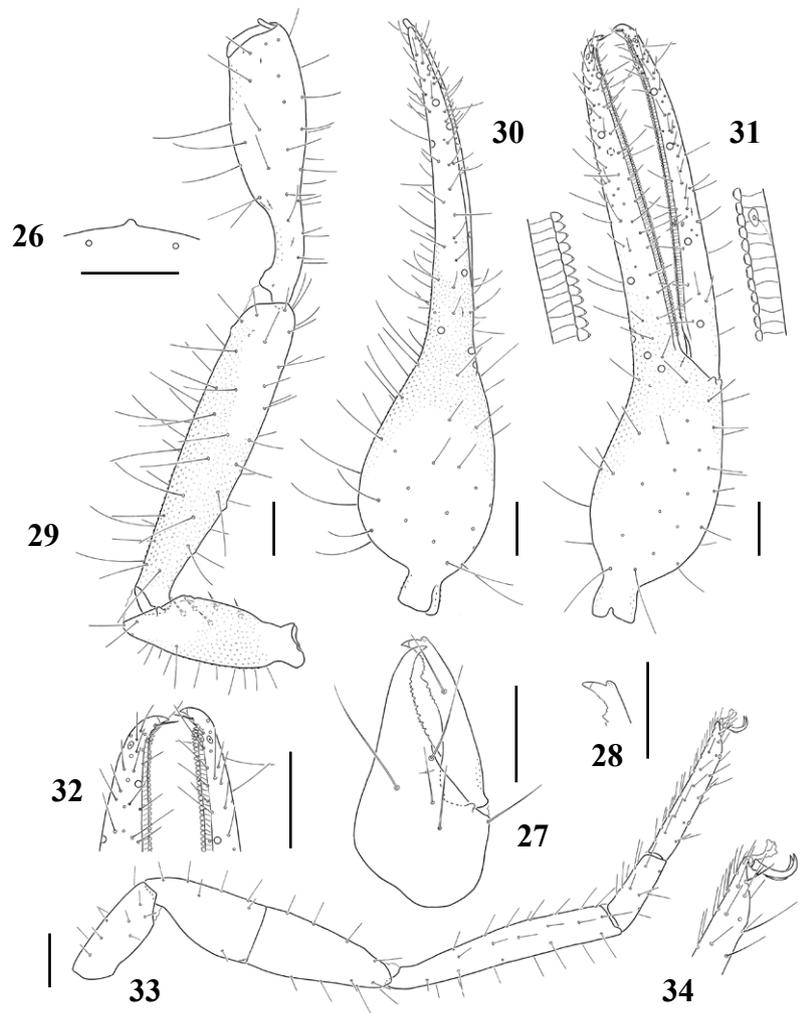
***Acanthocreagris grottoloii* sp. n.** (Figs 26–34)

urn:lsid:zoobank.org:act:AE8846CA-E921-4C5C-AB0F-514B7BB3D427

Type material. Holotype ♂, Lombardy, Brescia Prov., Vobarno, slope NW of Dosso Covolo (45°38'N 10°28'E), 350 m, 7 Maj 1992, D. Vailati leg., Mesovoid Shallow Substratum, (MHNG). Paratypes (all in Coll. G. Gardini, Genoa): 1 ♀, same data as for holotype, 12 Oct 1996, D. Vailati leg., Mesovoid Shallow Substratum; 1 ♂, Lom-

bardy, Brescia Prov., Concesio, Tampa del Ranzu 3 Lo/BS (45°37'25,43"N 10°13'26"E), 670 m, 4 Mar 2000, M. Grottolo leg.; 1 ♂, Lombardy, Brescia Prov., Casto, Val Regazzina (45°41'N 10°18'E), 490 m, 22 Apr 1994, M. Grottolo leg.; 1 ♀, Lombardy, Brescia Prov., Casto, Val Regazzina (45°41'N 10°18'E), 490 m, 4 Jun 1994, M. Grottolo leg.; 2 ♂, Lombardy, Brescia Prov., Magasa (45°46'N 10°37'E), Jun 1997, R. Sciaky leg.; 1 ♂, Lombardy, Brescia Prov., Cariadeghe, Serle, Bùs del Prà de Rent 96 Lo/BS (45°35'34,40"N 10°21'58,50"E), 830 m, 19 Feb 2011, L. Bodei leg.

Diagnosis (♂♀). A subterranean troglomorphic *Acanthocreagris* from Lombardy that differs from other Italian species of the genus in the following combination of characters: no eyes or eye-spots; movable cheliceral finger with rounded, dome-shaped galea; trochanter with 5 or 6 spiniform setae with simple and acuminate tips; pedipal-



Figs 26–34 – *Acanthocreagris grottoloii* sp. n., ♂ holotype (unless otherwise stated): 26, epistome of carapace; 27, right chelicera, dorsal view; 28, ♀ from Val Regazzina, apex of movable finger of right chelicera, dorsal view; 29, trochanter, femur and patella of right pedipalp, dorsal view; 30, right pedipalpal chela, dorsal view; 31, same, antiaxial view, with detail of teeth at level of trichobothria *isb/sb*; 32, apex of chelal fingers, antiaxial view; 33, right leg IV, antiaxial view; 34, apex of telotarsus of leg IV, antiaxial view. Scale lines: 0.2 mm (26–34).

pal femur length 1.0–1.25 mm (4.5–5.0 times as long as broad), patella 0.83–1.02 mm (3.4–3.7 ×), chela with pedicel 1.78–2.23 mm (3.9–4.5 ×), movable finger 1.13–1.37 mm, ratio between movable finger and hand with pedicel 1.37–1.48, ratio between femur and movable finger 0.82–0.91, ratio between pedipalpal femur and carapace 1.28–1.36.; fixed and movable chelal fingers with 99–107 and 88–98 teeth, respectively.

Etymology. Named in honour of Dr Mario Grotto, entomologist and biospeleologist of the Centro Studi Naturalistici Bresciani, Brescia.

Description of adults (♂♀). Carapace, chelicera, pedipalps and palpal coxae red-brown pale. Carapace 1.1–1.3 times as long as broad, without eyes or eye-spots, anterior margin with a rounded epistome (Fig. 26); 22 (rarely 23) macrosetae, anterior and posterior rows with 4 (rarely 5) and 6 macrosetae, respectively, besides 2 “preocular” setae on each side. Chaetotaxy of tergites I–X 6:6–7:7–8:7–8:9–10:10–11:10–12:10–12:9–11:7–8. Chaetotaxy of sternites II–XI (♂) 24–28:15–20:12–16:12–13:12–14:14–15:15:12–14:13–14:9, genital atrium with 2+2 or 3+3 setae; median genital sac reaching sternite VII; chaetotaxy of sternites II–XI (♀) 10:14–15:11:12–13:13–14:13–14:14–15:13–15:12–13:9–10; sternites III and IV (♂♀) each with 3 or 4 microsetae in front on each stigma, sternites VI–VIII with 2 discal setae; anal cone with 2+2 setae. Chelicera (Fig. 27) 1.95–2.05 times as long as broad, palm with 6 setae (rarely 5); fixed finger with 15–17 subequal teeth, movable finger with 8–12 teeth, of which a prominent one distal to *gs*; *gs* ratio 0.65–0.71, galea dome-shaped, apically rounded, reduced in male (Figs 27–28), with 2 silk ducts; rallum with 8 blades, the four distal ones laterally pinnate, the three median ones serrate, the proximal one imperceptibly serrate or apparently smooth; serrulae interior and exterior with about 20 and 30 blades, respectively. Manducatory process with 3 (rarely 4) setae. Coxal setae: pedipalp 6 or 7, I 4 or 5, II 5 or 7, III 5, IV 7 or 9; anterolateral process of coxa I sharp, apically pointed. Pedipalp (Figs 29–32): trochanter with granular surface, 2.8–3.0 (♂) or 2.8–2.9 (♀) times as long as broad, without tubercles on paraxial face, with 5 or 6 spiniform setae with simple and acuminate tips; femur 4.75–5.0 (♂) or 4.5–4.63 (♀) times as long as broad, with granular surface as in fig. 29; patella 3.45–3.74 (♂) or 3.40–3.44 (♀) times as long as broad, club elongate and slightly granular on paraxial face, pedicel slightly granular, ratio between club and pedicel 1.9 (♂) or 1.87–1.9 (♀); chela with pedicel 4.45–4.50 (♂) or 3.90–4.35 (♀) times as long as broad; hand of chela with pedicel 1.91–1.92 (♂) or 1.75–1.90 (♀) times as long as broad, granular surface as in figs 30–31; fixed chelal finger with 104–107 (♂) or 99–102 (♀) small contiguous teeth with dental canals, slightly pointed in the middle of finger (Figs 31–32), venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 32;

movable chelal finger with 94–98 (♂) or 88–92 (♀) small contiguous, rounded teeth with dental canals (Figs 31–32) reaching back near *b*, the distal six teeth pointed; movable chelal finger with four sensilla, two of which subterminal (Fig. 32), the others just distal to *sb* (Fig. 31); trichobothria as in figs 30–31, relative position of trichobothria along chelal axis: *et* 0.105–0.12/*it* 0.18–0.21/*est* 0.25–0.28/*ist* 0.33–0.36/*isb* 0.65–0.68/*ib* 0.79–0.83/*esb* 0.86–0.89/*eb* 0.89–0.94/*t* 0.19–0.22/*st* 0.34–0.38/*sb* 0.59–0.64/*b* 0.82–0.88; ratio between movable finger and hand of chela with pedicel 1.44–1.48 (♂) or 1.37–1.41 (♀); ratio between pedipalpal femur and movable finger 0.82–0.88 (♂) 0.90–0.92 (♀); ratio between pedipalpal femur and carapace 1.28–1.36 (♂) 1.34 (♀). Leg IV (Figs 33–34): trochanter 2.60–2.66 (♂) or 2.38–2.53 (♀) times as long as deep, femur + patella 4.17–4.26 (♂) or 3.90–3.96 (♀) times as long as deep, tibia 6.45–6.90 (♂) or 6.50–6.92 (♀) times, basitarsus 2.90–3.15 (♂) or 2.94–3.2 (♀) times, telotarsus 6.70–7.06 (♂) or 6.5–6.8 (♀) times as long as deep, tactile seta in the proximal half (TS = 0.30–0.34), ratio between basitarsus and telotarsus 0.55–0.60, subterminal seta furcate, slightly dentate, claws with a very small dorsal tooth (Fig. 34).

Measurements. Body length 2.7–3.0 (♂) or 3.2–3.3 (♀). Carapace 0.78–0.87 × 0.60–0.72 (♂) or 0.76–0.93 × 0.69–0.81 (♀). Chelicera 0.47–0.54 × 0.23–0.275 (♂) or 0.50–0.56 × 0.25–0.28 (♀); movable finger length 0.31–0.37 (♂) or 0.335–0.37 (♀). Pedipalp: trochanter 0.56–0.65 × 0.20–0.215 (♂) or 0.56–0.70 × 0.20–0.24 (♀); femur 1.0–1.19 × 0.21–0.235 (♂) or 1.02–1.25 × 0.225–0.27 (♀); patella 0.83–1.01 × 0.24–0.27 (♂) or 0.86–1.02 × 0.25–0.30 (♀); chela with pedicel 1.78–2.09 × 0.395–0.47 (♂) or 1.83–2.23 × 0.42–0.57 (♀) (depth 0.36–0.43 ♂, 0.39–0.51 ♀); hand with pedicel length 0.76–0.90 (♂) or 0.80–1.0 (♀); movable finger length 1.13–1.30 (♂) or 1.13–1.37 (♀). Leg IV: trochanter 0.36–0.39 × 0.135–0.15 (♂) or 0.38–0.43 × 0.15–0.18 (♀); femur + patella 0.81–0.94 × 0.19–0.225 (♂) or 0.82–0.99 × 0.21–0.25 (♀); tibia 0.71–0.86 × 0.11–0.125 (♂) or 0.75–0.90 × 0.115–0.13 (♀); basitarsus 0.26–0.315 × 0.09–0.10 (♂) or 0.28–0.35 × 0.095–0.11 (♀); telotarsus 0.47–0.53 × 0.07–0.075 (♂) or 0.49–0.58 × 0.075–0.085 (♀).

Remarks. *Acanthocreagris grottolei* sp. n. is related to *A. agazzii* from Vicenza and Belluno pre-Alps, from which it differs chiefly in the higher degree of troglomorphic modifications (femur 4.5–5.0 times as long as broad in *A. grottolei*, 4.1–4.3 × in *A. agazzii*; patella 3.4–3.7 times as long as broad in *A. grottolei*, 2.9–3.2 × in *A. agazzii*), in the number of spiniform setae of palpal trochanter (5 or 6 in *A. grottolei*, 3 or 4 in *A. agazzii*) and in the number of teeth on fixed and movable chelal fingers (99–107 and 88–98 in *A. grottolei*, 87–91 and 77–82 in *A. agazzii*, respectively). *A. grottolei* sp. n. and *A. agazzii* are vicariants in Brescia and Garda pre-Alps westwards and Vicenza and Belluno pre-Alps eastwards, respectively.

***Acanthocreagris alguerensis* sp. n.** (Figs 35–42)

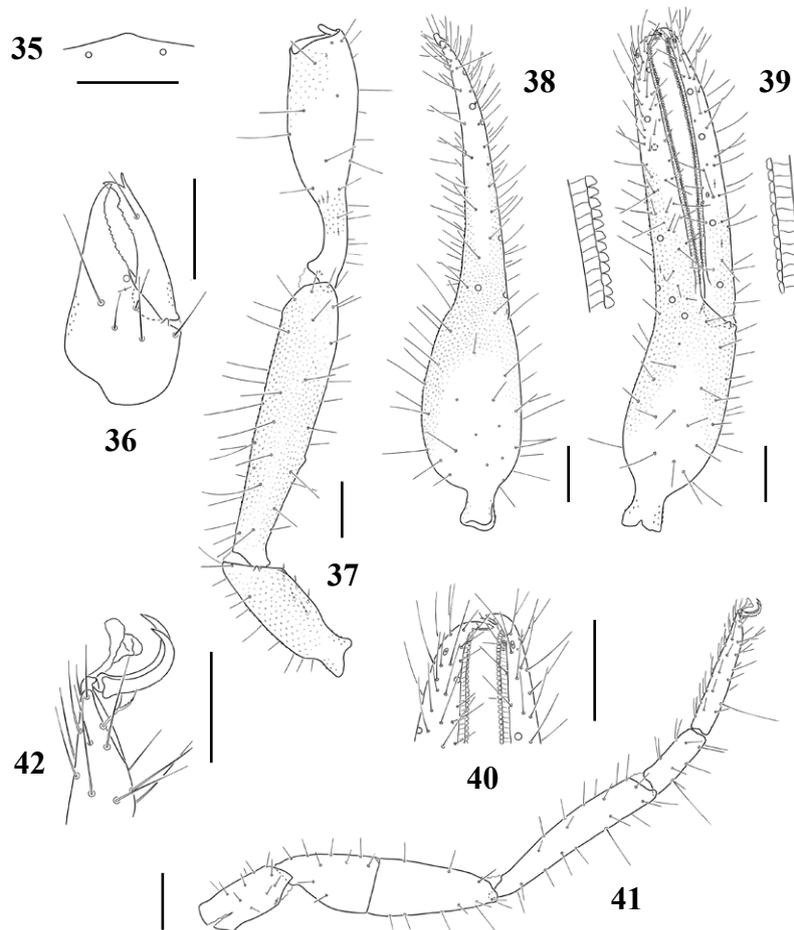
urn:lsid:zoobank.org:act:F079C805-78B6-426B-8071-B669BF3731A5

Type material. Holotype ♂, Sardinia, Sassari Prov., Alghero, Mount Las Piccas, Gruta del Perdut 2959 Sa/SS (40°38'11,40''N 8°15'36,50''E), 79 m, 26 Jan 2013, Gruppo Speleologico Alghero leg. (MHNG).

Diagnosis (♂). A subterranean troglomorphic *Acanthocreagris* from Sardinia that differs from other Italian species of the genus in the following combination of characters: no eyes or eye-spots; movable cheliceral finger with long, finger-shaped galea, apically simple; trochanter with 6 or 7 spiniform setae with simple and acuminate tips; pedipalpal femur without tubercles on paraxial face, 1.03 mm long (4.9 times as long as broad), patella 0.92 mm (3.55 ×), ratio between club and pedicel of patella 1.6, chela with pedicel 1.68 mm (4.65 ×); fixed and movable chelal fingers with 89 and 86 teeth, respectively.

Etymology. From “l’Alguer”, the name of the Sardinian city of Alghero in the local Catalan language.

Description of adults (♂). Carapace, chelicera, pedipalps and palpal coxae red-brown. Carapace 1.23 times as long as broad, without eyes or eye-spots, anterior margin slightly prominent in the middle, without differentiated epistome (Fig. 35); 21 macrosetae, anterior and posterior rows with 4 and 5 macrosetae, respectively, besides 2 “preocular” setae on each side. Chaetotaxy of tergites I–X 6:6:6:8:10:11:11:11:10:7. Chaetotaxy of sternites II–XI 20:17:12:12:16:15:13:11:11:7, genital atrium with 2+2 setae on tubercles; median genital sac not seen; sternites III and IV each with 2 or 3 microsetae in front on each stigma, sternites VI–VIII with 2 discal setae; anal cone with 2+2 setae. Chelicera (Fig. 36) 1.91 times as long as broad, palm with 6 setae; fixed finger with 10 subequal teeth, movable finger with 10 shabby teeth, of which a prominent one distal to *gs*; *gs* ratio 0.71, galea finger-shaped, apically simple, 0.03 mm long (Fig. 36), with 2 (?) silk ducts; rallum with 8 blades, the four distal ones laterally pinnate, the three median ones serrate, the proximal one apparently smooth; serrula exterior with about 32 blades. Manducatory process with 3 setae. Coxal setae: pedipalp 6



Figs 35–42 – *Acanthocreagris alguerensis* sp. n., ♂ holotype: **35**, epistome of carapace; **36**, right chelicera, dorsal view; **37**, trochanter, femur and patella of right pedipalp, dorsal view; **38**, right pedipalpal chela, dorsal view; **39**, same, antiaxial view, with detail of teeth at level of trichobothria *isb/sb*; **40**, apex of chelal fingers, antiaxial view; **41**, right leg IV, antiaxial view; **42**, apex of telotarsus of leg IV, antiaxial view. Scale lines: 0.2 mm (35–41); 0.1 mm (42).

or 7, I 5, II 6, III 5 or 6, IV 7; anterolateral process of coxa I sharp, apically pointed. Pedipalp (Figs 37–40): trochanter with granular surface, 3.05 times as long as broad, without tubercles on paraxial face, with 6 or 7 spiniform setae with simple and acuminate tips; femur 4.9 times as long as broad, gradually enlarged distally, with granular surface as in fig. 37; patella 3.54 times as long as broad, club elongate and weakly granular on paraxial face, pedicel granular, ratio between club and pedicel 1.63; chela with pedicel 4.66 times as long as broad; hand of chela with pedicel 1.97 times as long as broad, granular surface as in figs 38–39; fixed chelal finger with 89 small contiguous teeth with dental canals (Figs 39–40), venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 40; movable chelal finger with 86 small contiguous, rounded teeth with dental canals (Figs 39–40) reaching back near *b*; movable chelal finger with four sensilla, two of which subterminal (Fig. 40), the others just distal to trichobothrium *sb* (Fig. 39); trichobothria as in Figs 38–39, relative position of trichobothria along chelal axis: *et* 0.12/*it* 0.22/*est* 0.28/*ist* 0.38/*isb* 0.68/*ib* 0.83/*esb* 0.88/*eb* 0.93/*t* 0.22/*st* 0.37/*sb* 0.65/*b* 0.86; ratio between movable finger and hand of chela with pedicel 1.41; ratio between pedipalpal femur and movable finger 1.03; ratio between pedipalpal femur and carapace 1.30. Leg IV (Figs 41–42): trochanter 2.33 times, femur + patella 3.95 times, tibia 5.83 times, basitarsus 2.95 times, telotarsus 6.57 times as long as deep, tactile seta in the proximal half (TS = 0.27), ratio between basitarsus and telotarsus 0.61, subterminal seta furcate, slightly dentate, claws with a very small dorsal tooth (Fig. 42).

Measurements. Body length 2.4. Carapace 0.79 × 0.64. Chelicera 0.44 × 0.23; movable finger length 0.31. Pedipalp: trochanter 0.58 × 0.19; femur 1.03 × 0.21; patella 0.92 × 0.26; chela with pedicel 1.68 × 0.36 (depth 0.34); hand with pedicel length 0.71; movable finger length 1.0. Leg IV: trochanter 0.35–0.15; femur + patella 0.79 × 0.20; tibia 0.70 × 0.12; basitarsus 0.28 × 0.095; telotarsus 0.46 × 0.07.

Remarks. *Acanthocreagris alguerensis* sp. n. maybe related to *A. sandaliotica* Callaini, 1986 epigean species known from the same geographic area (north-western Sardinia) from which it differs chiefly in the evidence of troglomorphic modifications (no eyes in *A. alguerensis*, four eyes in *A. sandaliotica*; pedipalpal femur 4.9 times as long as broad in *A. alguerensis*, 3.7–4.2 × in *A. sandaliotica*; patella 3.54 times as long as broad in *A. alguerensis*, 2.5–2.7 × in *A. sandaliotica*; chela with pedicel 4.66 times as long as broad in *A. alguerensis*, 3.5–4.15 × in *A. sandaliotica*), in the number of spiniform setae of pedipalpal trochanter (6 or 7 in *A. alguerensis*, 3 or 4 in *A. sandaliotica*), in the absence of tubercles on paraxial face of pedipalpal femur (one tubercle in *A. sandaliotica*) and in the number of teeth on fixed and movable chelal fingers (89 and 86 in *A. alguerensis*, 67–72 and 56–65 in *A. sandaliotica*, respectively).

Key to adults of the *Acanthocreagris* species from Italy

1. Movable cheliceral finger with dome-shaped galea, apically rounded or slightly squared 2
- Movable cheliceral finger with long, finger-shaped galea, apically either simple or branched 9
2. Spiniform setae of the pedipalpal trochanter with simple and acuminate tips: *A. italica* (Beier, 1958) group 3
- Spiniform setae of the pedipalpal trochanter with shortly forked tip: *A. myops* (Simon, 1881) group. (Var. western Liguria, Lombardy: Como pre-Alps; epigean species) *A. myops* (Simon, 1881)
3. Four eyes, at least the anterior ones with convex lens 4
- No eyes 5
4. Larger: pedipalpal femur length 0.54–0.62 (♂) 0.59–0.68 (♀) mm, chela with pedicel 0.96–1.12 (♂) 1.14–1.20 (♀) mm, movable finger 0.58–0.66 (♂) 0.65–0.72 (♀) mm; pedipalp more slender: femur 3.0–3.4 times as long as broad, patella with longer club, ratio between movable finger and hand with pedicel 1.1–1.3; median genital sac extending as far as sternite VII. (Apulia: Gargano; epigean species) *A. italica* (Beier, 1958)
- Smaller: pedipalpal femur length 0.45–0.52 (♂) 0.47–0.58 (♀) mm, chela with pedicel 0.80–0.89 (♂) 0.83–1.05 (♀) mm, movable finger 0.43–0.50 (♂) 0.46–0.60 (♀) mm; pedipalp less slender: femur 2.8–3.2 times as long as broad, patella club more globular, ratio between movable finger and hand with pedicel 1.0–1.1; median genital sac attaining middle of sternite V. (Latium, Abruzzo, Molise, Basilicata, Calabria, Sicily; epigean species) *A. ruffoi* (Lazzeroni, 1969)
5. Subterranean species with larger and more slender pedipalp (♂♀): femur length 0.67–1.28 mm (4.1–5.3 times as long as broad), patella 0.61–1.1 mm (2.9–3.9 ×), movable finger 0.70–1.37 mm, ratio between movable finger and hand with pedicel 1.15–1.5; fixed and movable chelal fingers with 79–107 and 75–98 teeth, respectively 6
- Epigean species with smaller and less slender pedipalp (♀): femur length 0.64 mm (3.55 times as long as broad), patella 0.52 mm (2.4 ×), movable finger 0.53 mm, ratio between movable finger and hand with pedicel 0.9; fixed and movable chelal fingers with 57 and 52 teeth, respectively. (Apulia: Gargano and Murge; epigean species) *A. apulica* Callaini, 1986
6. Subterranean species from Sardinia; galea slightly squared apically 7
- Subterranean species from eastern pre-Alps; galea regularly rounded apically 8
7. Species with smaller and less slender pedipalp (♂♀): femur length 0.67–0.85 mm (4.2–4.25 times as long as broad), patella 0.61–0.74 mm (3.1–3.35 ×), chela with pedicel 1.21–1.50 mm (4.0–4.05 ×), movable finger 0.70–0.93 mm, ratio between pedipalpal femur and carapace 1.1. (Eastern Sardinia; subterranean species) *A. sardoa* (Beier, 1959)
- Species with larger and more slender pedipalp (♀): femur length 1.14–1.28 mm (5.05–5.3 times as long as broad), patella 1.0–1.1 mm (3.8–3.9 ×), chela with pedicel 1.93–2.22 mm (4.75–5.05 ×), movable finger 1.11–1.26 mm, ratio between pedipalpal femur and carapace 1.3–1.45. (Eastern Sardinia; subterranean species) *A. foghesa* sp. n.
8. Pedipalpal trochanter with 3 or 4 spiniform setae; pedipalp (♂♀) less slender: femur 4.1–4.3 times as long as broad, patella 2.9–3.2 ×; movable chelal finger length 0.87–1.05 mm, ratio between movable finger and hand with pedicel 1.15–1.3, ratio between femur and movable finger 0.95–1.0; fixed and movable chelal fingers with 87–91 and 77–82

- teeth, respectively. (Vicenza and Belluno pre-Alps; subterranean species) *A. agazzii* (Beier, 1966)
- Pedipalpal trochanter with 5 or 6 spiniform setae; pedipalp (♂♀) more slender: femur 4.5–5.0 times as long as broad, patella 3.4–3.7 ×; movable chelal finger length 1.13–1.37 mm, ratio between movable finger and hand with pedicel 1.35–1.5, ratio between femur and movable finger 0.80–0.90; fixed and movable chelal fingers with 99–107 and 88–98 teeth, respectively. (Brescia and Garda pre-Alps; subterranean species) *A. grottoloi* sp. n.
 - 9. Movable cheliceral finger with elongate, finger-shaped galea, apically simple: *A. lucifuga* (Simon, 1879) group 10
 - Movable cheliceral finger with elongate, apically 2–5 branched galea: *A. lanzai* (Beier, 1961) group 13
 - 10. No eyes; pedipalpal femur without tubercle on paraxial face 11
 - Four eyes; pedipalpal femur with a tubercle on paraxial face. (Northwestern Sardinia; epigeal species) *A. sandaliotica* Callaini, 1986
 - 11. Pedipalpal trochanter with 3 or 4 spiniform setae; species from mainland Italy with smaller and less slender pedipalp (♂♀): femur length 0.41–0.74 mm (2.75–4.1 times as long as broad), patella 0.36–0.60 mm (2.1–2.85 ×), chela with pedicel 0.71–1.28 mm (3.3–4.1 ×), ratio between club and pedicel of patella 2.1–2.9; fixed and movable chelal fingers with 40–77 and 39–70 teeth, respectively 12
 - Pedipalpal trochanter with 6 or 7 spiniform setae; species from Sardinia with larger and more slender pedipalp (♂): femur length 1.03 mm (4.9 times as long as broad), patella 0.92 mm (3.55 ×), chela with pedicel 1.68 mm (4.65 ×), ratio between club and pedicel of patella 1.6; fixed and movable chelal fingers with 89 and 86 teeth, respectively. (Northwestern Sardinia; subterranean species) *A. alguerensis* sp. n.
 - 12. Species from northwestern Italy with smaller and less slender pedipalp (♂♀): femur length 0.41–0.50 mm (2.75–3.3 times as long as broad), patella 0.36–0.40 mm (2.1–2.4 ×), chela with pedicel 0.71–0.79 mm (3.3–3.7 ×); fixed and movable chelal fingers with 40–50 and 39–43 teeth, respectively. (Western Liguria, Piedmont; epigeal species) *A. nemoralis* Gardini, 1998
 - Species from eastern pre-Alps with larger and more slender pedipalp (♂): femur length 0.74 mm (4.1 times as long as broad), patella 0.60 mm (2.85 ×), chela with pedicel 1.28 mm (4.1 ×); fixed and movable chelal fingers with 77 and 70 teeth, respectively. (Belluno pre-Alps; subterranean species) *A. serianii* Gardini, 1998
 - 13. No eyes 14
 - Four eyes. (Tuscany, Latium; epigeal species) *A. microphthalma* Callaini, 1986
 - 14. Epigeal species with smaller and less slender pedipalp (♂♀): femur length 0.40–0.53 mm (2.8–3.3 times as long as broad), patella 0.34–0.44 mm (2.1–2.4 ×), chela with pedicel 0.69–0.88 mm (2.9–3.7 ×); fixed and movable chelal fingers with 39–56 and 37–48 teeth, respectively; galea apically with 3 or 4 rami 15
 - Subterranean species with larger and more slender pedipalp (♂): femur length 0.59 mm (3.8 times as long as broad), patella 0.50 mm (2.85 ×), chela with pedicel 1.0 mm (4.0 ×); fixed and movable chelal fingers with 59 and 54 teeth, re-

- pectively; galea apically with 2 rami. (Eastern Liguria) *A. zoiai* Gardini, 1998
- 15. Pedipalpal femur mainly with one (rarely two) tubercle on paraxial face; carapace without subocular microsetae; ratio between club and pedicel of patella (♂♀) 2.2–2.6, chela with pedicel (♀) 2.9–3.6 times as long as broad. (Piedmont, Liguria, mainland Tuscany) *A. lanzai* (Beier, 1961)
 - Pedipalpal femur without tubercles on paraxial face; carapace with one subocular microseta on each side; ratio between club and pedicel of patella (♀) 2.1, chela with pedicel (♀) 3.4–3.7 times as long as broad. (Tuscany Archipelago: Elba and Giglio isl.) *A. focarilei* Gardini, 1998

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