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Two new species of *Acanthocreagris* from Corsica and mainland France, and notes on some congeneric species (Pseudoscorpiones: Neobisiidae)

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Abstract
Two new species of the genus *Acanthocreagris* Mahnert, 1974 are described from Corsica (*Acanthocreagris cyrnea* **sp. n.**) and from the French department of Var (*Acanthocreagris heurtaultae* **sp. n.**). Specimens of *Acanthocreagris* cf. *foghesa* Gardini, 2018 and *Acanthocreagris ruffoi* (Lazzeroni, 1969) from Sardinia and Sicily, respectively, are described and depicted. *Acanthocreagris lanzai* (Beier, 1961) is newly recorded from Piedmont, *Acanthocreagris microphthalma* Callaini, 1986 from Marche and Umbria, *Acanthocreagris ruffoi* from Marche and Campania.

Key words: Taxonomy, faunistics, France, Italy.

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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 43 epigean or subterranean species, of which sixteen are known from mainland Italy, Sicily and Sardinia, and six from France and Corsica (Gardini 2018; World Pseudoscorpiones Catalog 2022).

Within the family Neobisiidae J.C. Chamberlin, 1930, the genus *Acanthocreagris* is related to the genera *Roncocreagris* Mahnert, 1974 and *Balkanoroncus* Ćurčić, 1975 and it is characterized by the presence of an evident galea on movable cheliceral finger, palpal trochanter with ventral 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 mostly 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).

In the present study two new subterranean species of *Acanthocreagris* from Corsica and mainland France are described, together with complementary descriptions of *Acanthocreagris* cf. *foghesa* Gardini, 2018 from Sardinia and *Acanthocreagris ruffoi* (Lazzeroni, 1969) from Sicily; new records are also added for some Italian and Corsican epigean species previously treated in the revision proposed by Gardini (1998). An updated distribution map of Italian, southeast French and Corsican species of *Acanthocreagris*, including both records reported in Gardini (1998, 2018) and in this paper, is represented in fig. 37.

Material and methods

The specimens studied were cleared by immersion in 70% lactic acid for a few hours/days, and then temporarily mounted after dissection of palp, chelicera and leg IV in cavity slides with the same medium. 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; for chelal hand both width and depth are given. Terminology and reference points for measurements largely follow Chamberlin (1931). The relative position of trichobothria along chelal axis and the ratio between the diameter of the distal opening of the patella (X) and the length of the inner margin of the patella (Y) are calculated following Gabbutt & Vachon (1965). The use of the terms rallum, antiaxial and paraxial follows Judson (2007). Holotypes of the new species are deposited in the Muséum nationale d'Histoire naturelle (Paris,

France: MNHN), paratypes and other specimens are in author's collection (Genoa, Italy: without acronym in the text). Arrangement of the species is in alphabetic order, as are the localities of examined specimens. T = tritonymph, D = deutonymph.

Taxonomy and faunistics

Acanthocreagris corsa Mahnert, 1974

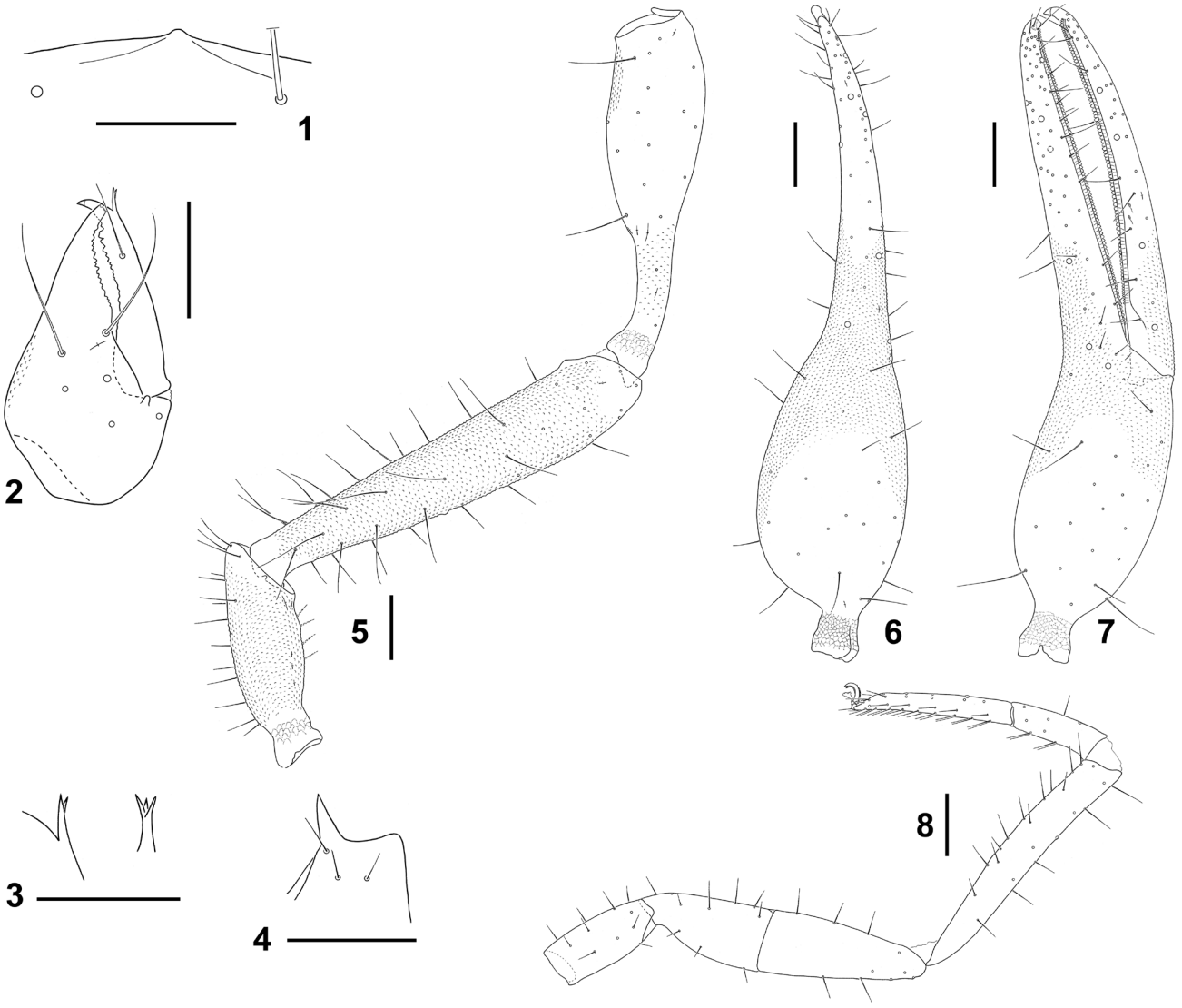
Material examined. FRANCE: *Corsica*: 2♂ 2♀, Cargese, Pancone (42°09'37"N 8°38'30"E), 450 m, 22 Apr 2014, S. Zoia leg.; 4♀, Evisa, Forêt d'Aitone, 900 m, 28 Maj 2002, R. Poggi leg., chestnut wood; 1♀, near Revinda (42°10'53"N 8°37'56"E), 140 m, 21 Apr 2014, S. Zoia leg.

Remarks. Eyed epigean species known only from central and southern Corsica (Fig. 37) (Mahnert 1974; Callaini 1986; Gardini 1998).

Acanthocreagris cyrnea sp. n.

Type material. FRANCE: *Corsica*: Holotype ♀, Patrimonio, Grotta di Punta Vecchiaia (42°43'02"N 9°19'28"E), 0 m, 7 Jul 2019, Ligue Insulaire Spéléologique Corse leg. (MNHN). Paratypes: 1 ♂ (with both galeae and left pedipalp broken) 1♀, Oletta, Massif de Castiglione, Grotte Cast 1 (42°39'30.35"N 9°17'53.81"E), 120 m, 27 Apr 2019, J. Lips leg. (Coll. G. Gardini, Genoa).

Diagnosis (♂♀)**.** A subterranean troglomorphic *Acanthocreagris* from Corsica that differs from other French and Italian species of the genus in the following combination



Figs 1–8 – *Acanthocreagris cyrnea* sp. n., ♀ holotype: **1**, epistome of carapace; **2**, right chelicera, dorsal view; **3**, galea of rigt movable cheliceral finger, dorsal (left) and antiaxial (right) view; **4**, anterolateral process of right coxa I; **5**, trochanter, femur and patella of right pedipalp, dorsal view; **6**, right pedipalpal chela, dorsal view; **7**, same, antiaxial view; **8**, right leg IV, antiaxial view. Scale lines: 0.2 mm (2, 4–8); 0.1 mm (1, 3).

of characters: no eyes or eye-spots; galea (♀) long, apically with three branches, reaching the apex of the cheliceral movable finger; trochanter with 4 spiniform setae with simple and acuminate tips; pedipalpal femur gradually clavate, length 1.20 (♂) or 1.23 (♀) mm, 5.33 (♂) or 5.12 (♀) times as long as broad; patella 1.02 (♂) or 1.09 (♀) mm, 3.84 (♂) or 3.89 (♀) ×, ratio between club and pedicel 1.73 (♂) or 1.66 (♀); chela with pedicel 1.95 (♂) or 2.0 (♀) mm, 4.81 (♂) or 4.44 (♀) ×; movable chelal finger 1.18 (♂) or 1.20 (♀) mm; ratio between movable finger and hand with pedicel 1.34 (♂) or 1.25 (♀), ratio between femur and movable finger 1.01 (♂) or 1.02 (♀), ratio between pedipalpal femur and carapace 1.36 (♂) or 1.38 (♀); fixed and movable chelal fingers with 99 (♂) or 96 (♀) and 90 (♂) or 87 (♀) teeth, respectively.

Etymology. It takes its name from Cyrnus or Cyrnos (adj.: Cyrneus, -a, -um), one of the sons of Heracles, tutelary deity of Corsica, who chose the island as his residence and from whom the island took its name (Herodotus, Historiae 1.167).

Description of adults (♂♀). Carapace, chelicera, pedipalps and palpal coxae red-brown. Carapace 1.62 (♂) or 1.56 (♀) times as long as broad, without eyes or eye-spots, anterior margin with slightly prominent and broadly rounded epistome (Fig. 1); 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively. Chaetotaxy of tergites I–X 6–7:7–8:7:8–9:8–9:9:9:10–12:10–12:9. Chaetotaxy of sternites II–XI (♂) 16:13:9:12:13:13:14:12:10:9, genital atrium with 3+3 setae; median genital sac reaching sternite V; chaetotaxy of sternites II–XI (♀) 11:12:6:14:15:17:16:15:11:8; 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. 2) 1.95 (♂) or 2.0 (♀) times as long as broad, palm with 6 setae; fixed finger with worn out teeth (♂) or 13 subequal teeth (♀), movable finger with worn out teeth (♂) or 10 (♀) teeth, of which the 3-4 distal larger; *gs* ratio 0.74 (♂) or 0.70 (♀), galea long, apically with three branches (♀; both galeae broken in ♂) (Fig. 3); rallum with 8 blades, the four distal ones laterally pinnate, the four proximal ones (apparently) smooth, of these the first shorter; serrulae interior and exterior with about 20 and 25 blades, respectively. Manducatory process with 3 setae. Coxal setae: pedipalp 7–8, I 5–6, II 6, III 5–6, IV 7; anterolateral process of coxa I sharp, apically pointed (Fig. 4). Pedipalp (Figs 5–7): trochanter with granular surface, 3.33 (♂) or 3.40 (♀) times as long as broad, without tubercles on paraxial face, with 4 spiniform setae with simple and acuminate tips; femur 5.33 (♂) or 5.12 (♀) times as long as broad, gradually clavate, with granular surface as in fig. 5; patella 3.84 (♂) or 3.89 (♀) times as long as broad, club elongate and slightly granular on paraxial face, pedicel granular, ratio between club and pedicel 1.73 (♂) or 1.66 (♀), ratio X/Y = 0.22 (♂) or 0.20 (♀); chela with pedicel 4.81 (♂) or 4.44 (♀) times as long as broad; hand of chela with pedicel 2.17 (♂) or 2.13 (♀) times as long as broad, elongated oval in dorsal view with a slightly convex paraxial profile, with granular surface as in figs 6–7; fixed chelal finger with 99 (♂) or 96 (♀) contiguous teeth with dental canals, venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 7; movable chelal finger with 90 (♂) or 87 (♀) contiguous teeth with dental canals (Fig. 7) reaching back near *b*, the distal 14 teeth pointed; movable chelal finger with four sensilla, two of which subterminal (Fig. 7), the others at the level of the tenth (♂) or the eighth and eleventh tooth (♀) from the trichobothrium *sb*; trichobothria as in figs 6–7, relative position of trichobothria along chelal axis (♀): *et* 0.11/*it* 0.20/*est* 0.25/*ist* 0.34/*isb* 0.63/*ib* 0.80/*esb* 0.86/*eb* 0.93/*t* 0.23/*st* 0.36/*sb* 0.65/*b* 0.86; ratio between movable finger and hand of chela with pedicel 1.34 (♂) or 1.25 (♀); ratio between pedipalpal femur and movable finger 1.01 (♂) 1.02 (♀); ratio between pedipalpal femur and carapace 1.36 (♂) 1.38 (♀). Leg IV (Fig. 8): trochanter 2.25 (♂♀) times as long as deep, femur + patella 3.86 (♂) or 4.34 (♀) times as long as deep, tibia 6.30 (♂) or 7.30 (♀) times, basitarsus 3.38 (♂♀) times, telotarsus 7.84 (♂) or 6.71 (♀) times as long as deep, tactile seta in the proximal half (TS = 0.23–0.29), ratio between basitarsus and telotarsus 0.60–0.65, subterminal seta furcate or trifid, slightly dentate, claws with a very small dorsal tooth.

Measurements (mm). Body length 2.6 (♂) or 3.0 (♀). Carapace 0.88 × 0.54 anteriorly (♂) or 0.89 × 0.57 anteriorly (♀). Chelicera 0.48 × 0.245 (♂) or 0.52 × 0.26 (♀), movable finger length 0.32 (♂) or 0.35 (♀). Pedipalp: trochanter 0.65 × 0.195 (♂) or 0.68 × 0.20 (♀); femur 1.20 × 0.225 (♂) or 1.23 × 0.24 (♀); patella 1.02 × 0.265 (♂) or 1.09 × 0.28 (♀); chela with pedicel 1.95 × 0.405 (♂) or 2.0 × 0.45 (♀) (depth 0.385 ♂, 0.415 ♀); hand with pedicel length 0.88 (♂) or 0.96 (♀); movable finger length 1.18 (♂) or 1.20 (♀). Leg IV: trochanter 0.36 × 0.16 (♂) or 0.35 × 0.155 (♀); femur + patella 0.87 × 0.225 (♂) or 0.89 × 0.205 (♀); tibia 0.82 × 0.13 (♂) or 0.84 × 0.115 (♀); basitarsus 0.305 × 0.09 (♂♀); telotarsus 0.51 × 0.065 (♂) or 0.47 × 0.07 (♀).

Remarks. Two species of the genus *Acanthocreagris* are currently known from Corsica, *A. corsa* Mahnert, 1974 and *A. aelleni* Mahnert, 1978: the first eyed and epigean (see above), the second, described on a male from the Cave of Sisco, anophthalmic with moderate adaptive characters to the subterranean environment. These species have the chelicera galea apically branched, with two or four branches (*A. corsa*), or with two branches (*A. aelleni*). *Acanthocreagris cyrnea* sp. n. is to be related to *A. aelleni*, from which it differs chiefly in the higher degree of troglomorphic modifications (comparisons between males): length of pedipalpal femur 1.20 mm (5.33 times as long as broad) in *A. cyrnea*, 0.79 mm (4.45 ×) in *A. aelleni*; length of patella

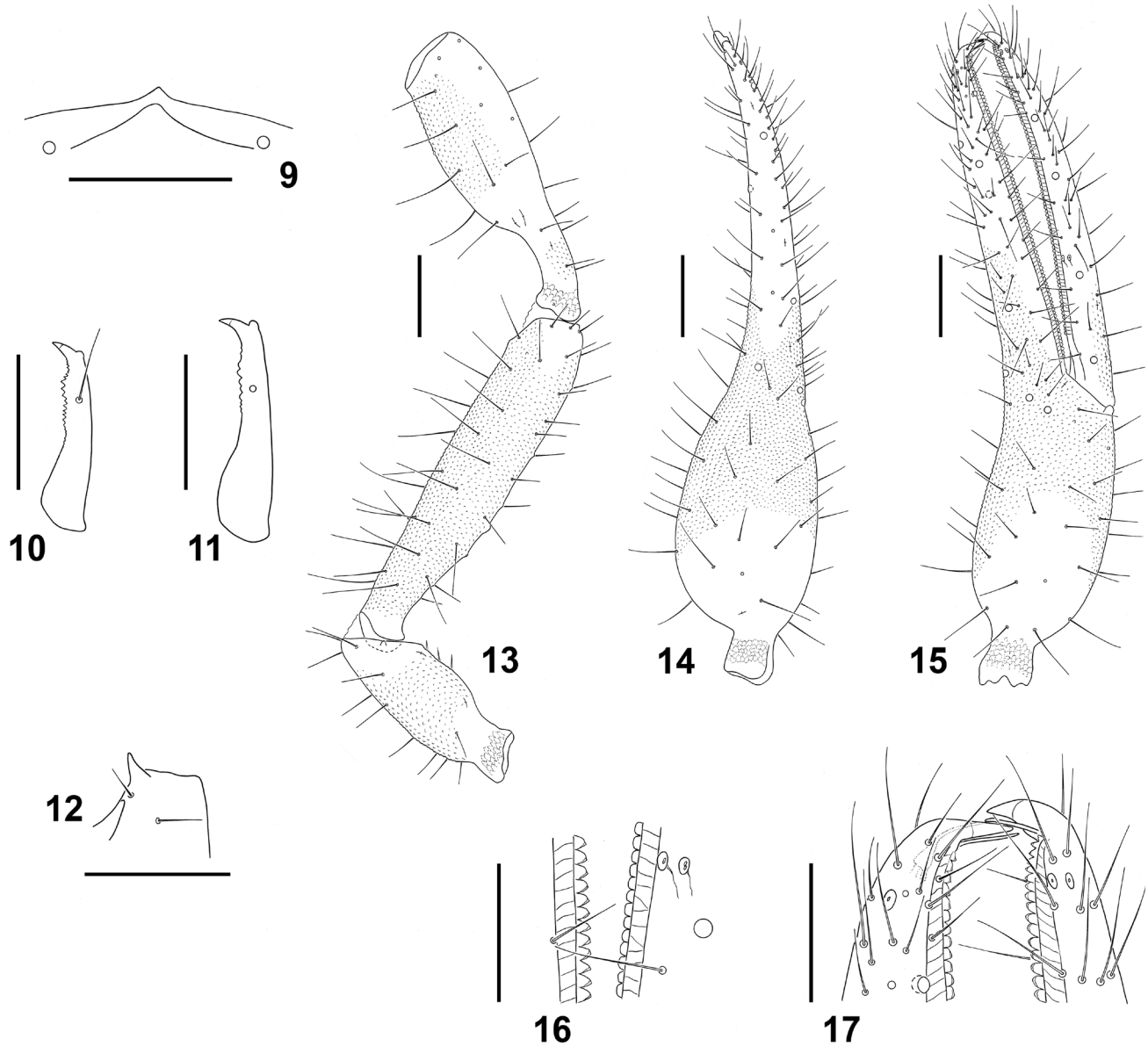
1.02 mm (3.84 ×) in *A. cyrnea*, 0.68 mm (3.04 ×) in *A. aelleni*; ratio between club and pedicel 1.73 in *A. cyrnea*, 2.09 in *A. aelleni;* length of chela with pedicel 1.95 mm (4.81 ×) in *A. cyrnea*, 1.42 mm (4.32 ×) in *A. aelleni*; ratio between pedipalpal femur and carapace 1.36 in *A. cyrnea*, 1.18 in *A. aelleni*. The relative position of trichobothrium *isb* along chelal axis is 0.63 in *A. cyrnea* (♀), ca 0.72 in *A. aelleni* (♂).

Acanthocreagris cf. *foghesa* Gardini, 2018

Acanthocreagris sardoa: Gardini 2018: 20 (in part: Armungia, Grotta Su Pittiolu de Gospuru)

Material examined. ITALY: *Sardinia*: *Nuoro Prov*.: 2♂ 5♀, Baunei, Baccu Istirzili, Grotta Stirzili 50 Sa/NU, 17 Feb 2013, C. Onnis leg. *Sardinia*: *Cagliari Prov*.: 1 ♂ (damaged specimen with broken chelae), 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.

Description of adults (♂♀) **from Sardinia, Baunei, Grotta Stirzili**. Carapace, chelicera, pedipalps and palpal coxae red-brown. Carapace 1.6 (♂) 1.67 (♀) times as long as broad, without eyes or eye-spots, anterior margin slightly prominent in the middle, with a weak epistome



Figs 9–17 – *Acanthocreagris* cf. *foghesa* Gardini, 2018, ♂ Grotta Stirzili, Baunei (unless otherwise stated): **9**, epistome of carapace; **10**, movable finger of right chelicera, dorsal view; **11**, ♀, same; **12**, anterolateral process of right coxa I; **13**, trochanter, femur and patella of right pedipalp, dorsal view; **14**, right pedipalpal chela, dorsal view; **15**, same, antiaxial view; **16** detail of teeth at level of trichobothrium sb, antiaxial view; **17**, apex of chelal fingers, antiaxial view. Scale lines: 0.2 mm (10–15); 0.1 mm (9, 16–17).

(Fig. 9); 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively. Chaetotaxy of tergites I–XI (♂♀) 6:6:6–7:8–9:8–9:9:11:11:11:10–11:8. Chaetotaxy of sternites II–X (♂): 18:9:8:12:13:12:12:12:6; median genital sac not seen; chaetotaxy of sternites II–X (♀) 14:12:6:12:12:12:12:12:10; sternites III and IV (♂♀) each with 3 (rarely 2) microsetae in front on each stigma, sternites VI–VIII with 2 discal setae; anal cone with 2+2 setae. Chelicera 1.9 (♂♀) times as long as broad, palm with 6 setae; fixed finger with about 17 worned out teeth; movable finger with 15 teeth, 2–3 of which prominent just distad of *gs*; *gs* ratio 0.70 (♂♀), galea squat, rounded or slightly square apically (Figs 10–11); rallum with 8 blades, the three distal ones laterally pinnate, the median one serrate, the four proximal ones apparently smooth, the first proximal blade shorter; serrulae interior and exterior respectively with about 20 and 25 blades. Manducatory process with 3 setae. Coxal setae: pedipalp 7, I 4, II 5–7, III 5, IV 6–7; anterolateral process of coxa I sharp, apically pointed (Fig. 12). Pedipalp (Figs 13–15): trochanter with granular surface, 2.9 (♂) or 2.95 (♀) times as long as broad, with 3–5 spiniform setae (also in the same specimen) with simple and acuminate tips; femur gradually widened in the proximal third, then parallel in the distal two thirds, 4.65 (♂) or 4.6 (♀) times as long as broad, with granular surface as in fig.13; patella 3.5 (♂) or 3.15 (♀) times as long as broad, club elongate and granular on dorsal and paraxial face, pedicel granular, ratio between club and pedicel 1.9 (♂) or 1.93 (♀), ratio X/Y = 0.28 (♂) or 0.31 (♀); chela with pedicel 4.6 (♂) or 3.8 (♀) times as long as broad; hand of chela elongated oval in dorsal view, with a slightly convex paraxial profile, 2.1 (♂) or 1.86 (♀) times as long as broad (with pedicel), with granular surface as in figs 14–15; fixed chelal finger with 80–81 contiguous teeth with dental canals (Figs 15–17), venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 17; movable chelal finger with 75–79 contiguous, rounded teeth with dental canals (Figs 15–17); movable chelal finger with four sensilla, two of which subterminal (Fig. 17), the others both just distal to trichobothrium *sb* (Fig. 16); trichobothria as in Figs 14–15, relative position of trichobothria along chelal axis (♂): *et* 0.12/*it* 0.23/ *est* 0.29/*ist* 0.37/*isb* 0.67/*ib* 0.82/*esb* 0.90/*eb* 0.95/*t* 0.25/ *st* 0.40/*sb* 0.65/*b* 0.87; ratio between movable finger and hand of chela with pedicel 1.34 (♂) or 1.21 (♀); ratio between pedipalpal femur and movable finger 0.94 (♂) or 1.0 (♀); ratio between pedipalpal femur and carapace 1.19 (♂) or 1.13–1.22 (♀). Leg IV: trochanter 2.35 (♂) or 2.3 (♀) times as long as deep, femur + patella 3.3 (♂) or 3.4 (♀) times, tibia 4.8 (♂) or 5.2 (♀) times, basitarsus 2.8 (♂) or 2.7 (♀) times, telotarsus 5.7 (♂) or 5.65 (♀) times as long as deep, tactile seta proximal the middle (TS = 0.31–0.36), ratio between basitarsus and telotarsus 0.55 (♂) or 0.65 (♀), subterminal seta furcate, slightly dentate, claws with a small dorsal tooth.

Measurements (mm). Body length 2.4 (♂) or 2.6 (♀). Carapace 0.74 × 0.46 anteriorly (♂) or 0.87 × 0.52 anteriorly (♀). Chelicera 0.405 × 0.215 (♂) or 0.465 × 0.24 (♀); movable finger length 0.265 (♂) or 0.315 (♀). Pedipalp: trochanter 0.505 × 0.175 (♂) or 0.504–0.56 × 0.184–0.19 (♀); femur 0.885 × 0.19 (♂) or 0.87–0.99 × 0.20–0.215 (♀); patella 0.755 × 0.215 (♂) or 0.74–0.82 × 0.235–0.26 (♀); chela with pedicel 1.54 × 0.335 (depth 0.31) (♂) or 1.48–1.66 × 0.385–0.435 (depth 0.35–0.415) (♀); hand with pedicel length 0.70 (♂) or 0.72–0.81 (♀); movable finger length 0.94 (♂) or 0.90–0.98 (♀). Leg IV: trochanter 0.315 × 0.135 (♂) or 0.33 × 0.145 (♀); femur + patella 0.69 × 0.21 (♂) or 0.765 × 0.225 (♀); tibia 0.60 × 0.125 (♂) or 0.675 × 0.13 (♀); basitarsus 0.225 × 0.08 (♂) or 0.27 × 0.10 (♀); telotarsus 0.40 × 0.07 (♂) or 0.425 × 0.075 (♀).

Short description of adult (♂) from Sardinia, Armungia, Grotta Su Pittiolu de Gospuru [according to Gardini (2018)]. Specimen in poor condition, with contracted opisthosoma and pedipalpal chelae partly broken. Carapace 1.55 times as long as broad, without eyes or eyespots, anterior margin with slightly prominent epistome, apically rounded; 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively. Chaetotaxy of tergites I–X 6:8:10:9:10:10:10:10:10:9. Chaetotaxy of sternites II–X 22:?:8:12:12:12:12:13:11; sternites III and IV each with 2–3 microsetae in front on each stigma, sternites VI-VIII with 2 discal setae; anal cone with 2+2 setae. Chelicera 1.85 times as long as broad, palm with 6 setae; fixed finger with 15 subequal teeth and 6 distal denticles; movable finger with 12 teeth and a prominent tooth at level of *gs*; *gs* ratio 0.65, galea squat, broadly rounded, with 3 or 4 silk ducts; rallum with 7 blades. Manducatory process with 3 setae. Coxal setae: pedipalp 7, I 4, II 6, III 4, IV 6–7; anterolateral process of coxa I sharp, apically pointed. Pedipalp: trochanter with granular surface, 2.75 times as long as broad, with 4 spiniform setae with simple and acuminate tips; femur gradually widened in the proximal third, then parallel in the distal two thirds, 4.5 times as long as broad, with granular surface; patella 3.25 times as long as broad, club elongate and slightly granular on paraxial face, ratio between club and pedicel 2.1; chela with pedicel about 5.35 times as long as broad; chelal hands broken; fixed chelal finger with about 70, movable chelal finger with 68 small and contiguous teeth with dental canals; movable chelal finger with four sensilla, two of which subterminal, the others just distad to trichobothrium *sb*, respectively; relative position of trichobothria along chelal axis: *et* 0.12/*it* 0.25/ *est* 0.315/*ist* 0.395/*isb* 0.69/*ib* 0.84/ *esb* 0.90/*eb* 0.94/*t* 0.24/*st* 0.395/*sb* 0.65/*b* 0.865; ratio between pedipalpal femur and movable finger 0.97; ratio between pedipalpal femur and carapace 1.28

Measurements (mm). Body length about 2.0. Carapace 0.63 × 0.405 anteriorly. Chelicera 0.37 × 0.20; movable finger length 0.255 (♀). Pedipalp: trochanter 0.44 × 0.16;

femur 0.81 × 0.18; patella 0.70 × 0.215; chela with pedicel about 1.5 × 0.28; movable finger length 0.83.

Remarks. *Acanthocreagris foghesa* was described by Gardini (2018) on the basis of two females from the Grotta Su Fenugu near Perdasdefogu, southeastern Sardinia. The above-described specimens from Grotta Stirzili near Baunei are dubitatively attributed to *A. foghesa* as they have, compared to this, a less marked troglomorphic facies (comparisons among females): length of pedipalpal femur 0.87–0.99 mm (4.35–4.6 times as long as broad) in *A.* cf. *foghesa*, 1.14–1.28 mm (5.06–5.33 ×) in *A. foghesa*; length of patella 0.74–0.82 mm (3.15 ×) in *A.* cf. *foghesa*, 1.0–1.1 mm (3.84–3.93 ×) in *A. foghesa*; ratio between club and pedicel 1.89–1.93 in *A.* cf. *foghesa*, 1.7–1.8 in *A. foghesa;* length of chela with pedicel 1.48–1.66 mm (3.8–3.85 ×) in *A.* cf. *foghesa*, 1.93–2.22 mm (4.76– 5.04 ×) in *A. foghesa*; ratio between pedipalpal femur and carapace 1.13–1.22 in *A.* cf. *foghesa*, 1.32–1.45 in *A. foghesa*. The differences in the structure of the rallum [see Gardini (2018) and the above description] are not considered as differential characters since, as already pointed out by Mahnert (1974), this is often variable even in the same population.

For comments concerning the male from the Grotta Su Pittiolu de Gospuru near Armungia, described above, see Remarks under *Acanthocreagris sardoa* (Beier, 1959).

The Grotta Su Fenugu near Perdasdefogu, type locality of *A. foghesa*, is about 42 km from the Grotta Stirzili near Baunei, and about 18 km from the Grotta Su Pittiolu de Gospuru near Armungia, each in karst complexes independent from each other (G. Grafitti, in litt.: January 19, 2022). The taxonomic status of the populations attributed to *Acanthocreagris* cf. *foghesa* from the caves near Baunei and near Armungia can be defined by examining further material both from the type locality of *A. foghesa* and from the cave near Armungia.

Acanthocreagris heurtaultae sp. n.

Type material. FRANCE: *Var*: Holotype ♂, Toulon, Évenos, Grotte de l'Homme Fère (= Baume Fère) n. 2053046 (43°11'30.42"N 5°54'56.34"E), 605 m, 11 Apr 1993, R. Sciaky leg. (MNHN).

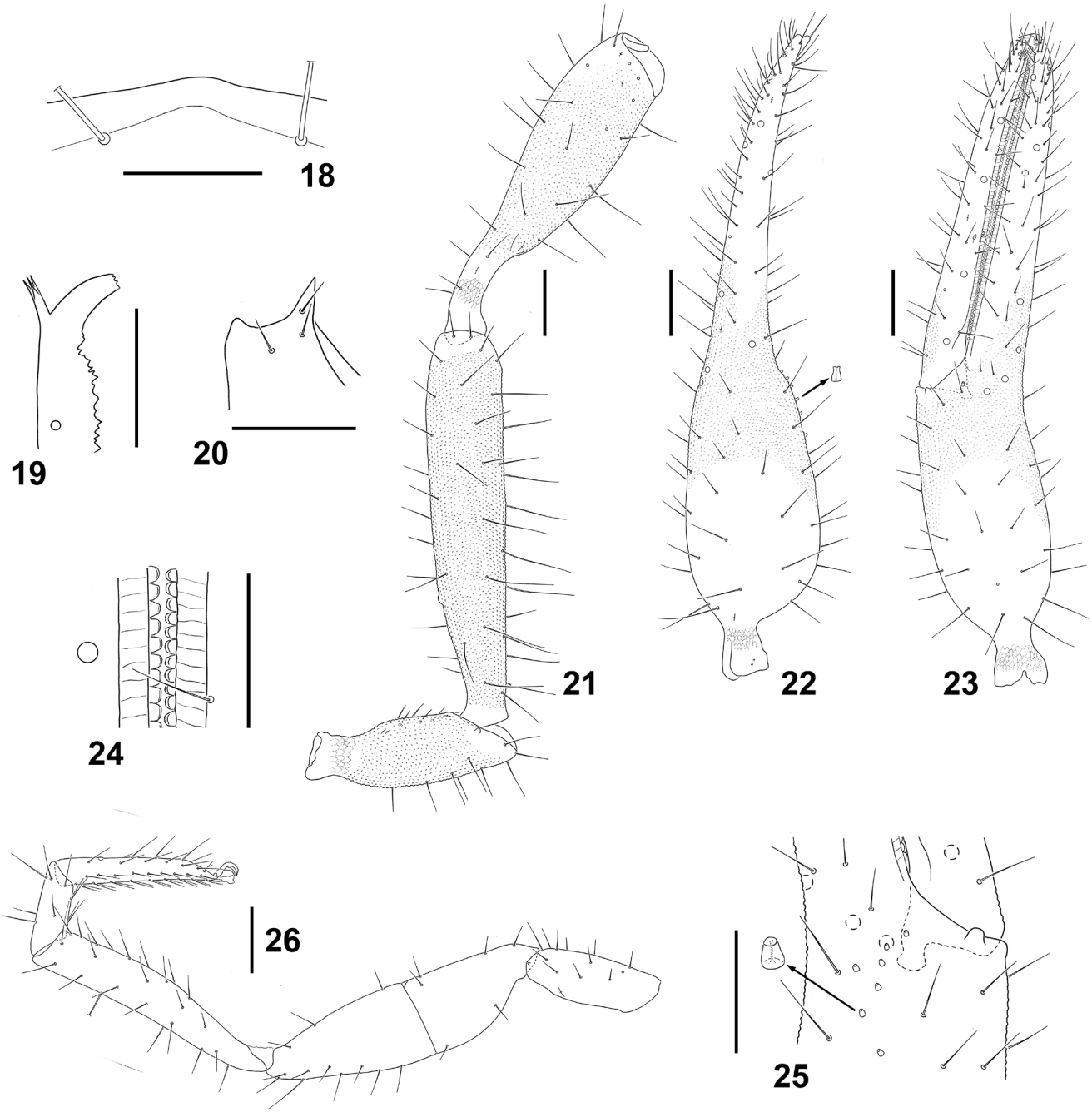
Diagnosis (♂)**.** A subterranean troglomorphic *Acanthocreagris* from south-eastern France that differs from other French and Italian species of the genus in the following combination of characters: no eyes or eye-spots; galea apically with three branches, not reaching the apex of the cheliceral movable finger; trochanter with 5 spiniform setae with simple and acuminate tips; pedipalpal femur length 1.16 mm, 5.15 times as long as broad; patella 1.04 mm, 4.0 ×, ratio between club and pedicel 2.3; chela with pedicel 1.89 mm, 4.90 ×; disto-antiaxial and disto-paraxial sides of chelal hand with one and seven prominent subcylindrical sensilla, respectively; movable chelal finger 1.07 mm; ratio between movable finger and hand with pedicel 1.16, ratio between femur and movable finger 1.08, ratio between pedipalpal femur and carapace 1.34; fixed and movable chelal fingers with 95 and 83 teeth, respectively.

Etymology. Dedicated to the late Jacqueline Heurtault (1936 – 2000), Professor at Muséum national d'Histoire naturelle of Paris, in memory of her competence, helpfullness and courtesy.

Description of adult (♂)**.** Carapace, chelicera, pedipalps and palpal coxae red-brown pale. Carapace 1.53 times as long as broad, without eyes or eye-spots, anterior margin slightly prominent, without epistome (Fig. 18); 24 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively, besides 1 "preocular" seta on each side. Chaetotaxy of tergites I–XI: 6:7:9:10:9:12:13:12:11:9:8. Chaetotaxy of sternites II–XI: 15:6:6:13:16:16:17:15:12:8, genital atrium with 2+2 setae; median genital sac not seen; 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 1.91 times as long as broad, palm with 6 setae; fixed finger with 19–21, movable finger with 17–19 subequal teeth; *gs* ratio 0.72, galea apically with three branches, not reaching the apex of the cheliceral movable finger (Fig. 19); rallum with 8 blades, the three distal ones laterally pinnate, followed by two blades briefly pinnate, one apparently smooth, one serrate and the proximal one apically briefly pinnate, the latter shorter; serrula exterior with about 27 blades. Manducatory process with 3 setae. Coxal setae: pedipalp 6, I 5, II 7, III 5, IV 7–8; anterolateral process of coxa I sharp, apically pointed (Fig. 20). Pedipalp (Figs 21–25): trochanter with granular surface, 3.15 times as long as broad, without tubercles on paraxial face, with 5 spiniform setae with simple and acuminate tips; femur gradually widened in the proximal third, then parallel in the distal two thirds, 5.15 times as long as broad, with granular surface as in fig. 21; patella 4.0 times as long as broad, club elongate and granular on paraxial face, pedicel granular, ratio between club and pedicel 2.3, ratio X/Y = 0.24; chela with pedicel 4.9 times as long as broad; hand of chela with pedicel 2.38 times as long as broad, elongated oval in dorsal view with a slightly convex paraxial profile, with granular surface as in figs 22–23; disto-antiaxial and disto-paraxial sides of chelal hand with one and seven prominent subcylindrical sensilla, respectively (Figs 22–23, 25); fixed chelal finger with 95 contiguous teeth with dental canals (Figs 23–24) , venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 23; movable chelal finger with 83 contiguous teeth with dental canals (Figs 23–24) reaching back near *b*; movable chelal finger with four sensilla, two of which subterminal (Fig. 23), the others distad *sb*, at the level of the 28th and 30th tooth; trichobothria as in figs 22–23, relative position of

trichobothria along chelal axis: *et* 0.11/*it* 0.22/*est* 0.29/*ist* 0.36/*isb* 0.70/*ib* 0.83/*esb* 0.91/*eb* 0.95/*t* 0.24/*st* 0.41/*sb* 0.67/*b* 0.86; ratio between movable finger and hand of chela with pedicel 1.16; ratio between pedipalpal femur and movable finger 1.08; ratio between pedipalpal femur and carapace 1.34. Leg IV (Fig. 26): trochanter 2.68 times as long as deep, femur + patella 3.58 times as long as deep, tibia 5.76 times, basitarsus 2.94 times, telotarsus 6.0 times as long as deep, tactile seta in the proximal half (TS = 0.28), ratio between basitarsus and telotarsus 0.62, subterminal seta furcate, claws with a small dorsal tooth.

Measurements (mm). Body length 2.5 (weakly contracted). Carapace 0.86 × 0.56 anteriorly. Chelicera 0.46 × 0.24, movable finger length 0.315. Pedipalp: trochanter



Figs 18–26 – *Acanthocreagris heurtaultae* sp. n., ♂ holotype: **18**, epistome of carapace; **19**, apex of movable finger of left chelicera with galea, dorsal view; **20**, anterolateral process of left coxa I; **21**, trochanter, femur and patella of left pedipalp, dorsal view; **22**, left pedipalpal chela, dorsal view, and detail of sensillum; **23**, same, antiaxial view; **24**, same, detail of teeth at level of trichobothrium st; **25**, left pedipalpal chelal hand and base of chelal fingers with sensilla, paraxial view, and detail of sensillum (granular surface of the hand omitted); **26**, left leg IV, antiaxial view. Scale lines: 0.2 mm (**20**–**23**, **25**–**26**); 0.1 mm (**18**–**19**, **24**).

0.63 × 0.20; femur 1.16 × 0.225; patella 1.04 × 0.26; chela with pedicel 1.89 × 0.385 (depth 0.36); hand with pedicel length 0.92; movable finger length 1.07. Leg IV: trochanter 0.39 × 0.145; femur + patella 0.86 × 0.24; tibia 0.75 × 0.13; basitarsus 0.28 × 0.095; telotarsus 0.45 × 0.075.

Remarks. Two species of the genus *Acanthocreagris* are currently known from southeastern France, *A. lucifuga* (Simon, 1879) and *A. myops* (Simon, 1881). *Acanthocreagris lucifuga* was described from the "grotte d'Esparron près Hyères" (probably Grotte du Bourg d'Esparron, Esparron-de-Verdon, Alpes de Haute-Provence) and subsequently recorded from epigean environments near Nice by Gardini (1998) and from the underground galleries of the Prince's Palace in Monaco by Lemaire & Raffaldi (2016). *Acanthocreagris myops* was described from Sospel (Alpes-Maritimes) and subsequently recorded from localities from western Liguria and Lombardy (Gardini 1998; see below under *A. myops*). Both species differ from *A. heurtaultae* sp. n., as well as for evident adaptive characters (presence of eyes, smaller dimensions and stubby appendages), in the shape of cheliceral galea (elongate galea with simple and acute tip in *A. lucifuga*, widely rounded galea in *A. myops*, elongate galea with branched tip in *A. heurtaultae* sp. n.) and for the sensillar structures on the chelal hand (without prominent subcylindrical sensilla both in *A. lucifuga* and in *A. myops*, with one and seven prominent subcylindrical sensilla on disto-antiaxial and disto-paraxial sides of chelal hand, respectively, in *A. heurtaultae* sp. n.). Moreover, *A. myops* has the spiniform setae of palpal trochanter with shortly bifide tips, while *A. lucifuga* and *A. heurtaultae* sp. n. have the spiniform setae with simple and acuminate tips.

The affinities of *Acanthocreagris heurtaultae* sp. n. are currently not conceivable, as indeed are not even those of *A. lucifuga* and *A. myops*, undoubtedly all well characterized species within the genus *Acanthocreagris* and probable endemites of western Alps.

Acanthocreagris italica (Beier, 1958)

Material examined. ITALY: *Apulia: Foggia Prov.*: 6♂ 5♀, 6 km NNE Apricena (41°48'17"N 15°30'36"E), 280 m, 4 Maj 2002, S. Zoia & F. Polese leg.; 14♂ 13♀ 12T, Foresta Umbra (41°48'17"N 15°58'32"E), 780 m, 3 Maj 2002, S. Zoia & F. Polese leg.; 1♀ 1D, Foresta Umbra (41°49'01"N 15°59'19"E), 760 m, 23 Apr 2019, G. Gardini & P. Gardini leg.; 5♂ 7♀, Vico del Gargano, Spiaggia di Calenelle (41°56'29"N 15°58'36"E), 5 m, 23 Apr 2019, G. Gardini & P. Gardini leg.; 1♂, Vieste, slope NE Monte Nicola, 250 m, 3 Maj 2002, S. Zoia & F. Polese leg.

Remarks. Epigean species known only from the Gargano promontory (Apulia) (Fig. 37), where it is common in the leaf litter of beech forest.

Gardini (1998) doubtfully referred to *Acanthocreagris italica* two nymphs (1T 1D) from Martina Franca in Apulian Murge (Taranto Prov.). I believe it was a misidentification, probably for *Acanthocreagris apulica* Callaini, 1986, however not verifiable as these specimens cannot be traced in the Gardini collection and must be considered lost.

Acanthocreagris lanzai (Beier, 1961)

Material examined. ITALY: *Piedmont: Alessandria Prov.*: 1♂ 1T, Bosio, Capanne di Marcarolo, 760 m, 28 Maj 2014, L. Galli leg., beech wood. *Liguria: Genoa Prov.*: 1♂, Genoa Quinto al Mare, W slope of Monte Moro along Rio San Pietro, 60 m, 2 Maj 2009, G. Gardini leg., under *Quercus ilex*; 2♀, Genoa Quinto al Mare, Monte Moro, 18 Mar 2019, M. Zinni leg., under *Erica* and *Quercus*; 1D, Ronco Scrivia, Borgo Fornari, 600 m, 12 Oct 2009, F. Carbonara leg., mixed wood; 1♀, Sestri Levante, Villa Scorza, 100 m, 29 Jul 2008, M. Capurro leg., garden with *Quercus pubescens*; 1♂ 2♀ 2T, Sestri Levante, Punta Manara, 140 m, 8 Maj 2018, G. Gardini & P. Gardini leg., *Quercus ilex* wood. *Liguria: La Spezia Prov.*: 2♀, Calice al Cornoviglio, Santa Maria, 470 m, 24 Feb 2019, P. Magrini leg.; 1T, Vernazza, 27 Oct 2015, F. Costa leg., under lemon in vineyard. *Liguria: Savona Prov.*: 1♂ 1♀, Urbe, Passo del Faiallo, 1073 m, 28 Aug 2001, M. Daccordi & M. Gallo leg.

Remarks. Epigean species known from the Ligurian-Piedmontese massif of greenstones (Pietre Verdi) in the West to the Tuscan-Emilian Apennines and the Apuan Alps in the East (Fig. 37). The species is newly recorded from Piedmont.

Gardini (1998) referred to *Acanthocreagris* cf. *lanzai* specimens from eastern Liguria (Cassana and Pignone) and Tuscan-Emilian Apennines (Codolo near Zeri), having slightly smaller dimensions and more sparsely granulated pedipalps. The examination of further specimens highlights a wide variability of these characters and suggests attributing all the material previously examined to *A. lanzai* as well.

Acanthocreagris microphthalma Callaini, 1986

Material examined. ITALY: *Marche: Ancona Prov.*: 2♀, San Vittore delle Chiuse, Gole della Rossa (43°24'12"N 12°58'03"E), 9 Dec 2011, S. Zoia leg. *Umbria: Perugia Prov.*: 1♂, Spoleto, Monte Martano, 23 Apr 2006, P. Magrini leg. *Umbria: Terni Prov.*: 1♂ 2♀, Orvieto, Titignano, 16 Feb 1992, P. Magrini leg.; 1♀, Orvieto, Titignano, entrance Pozzi della Piana 56 U/TR, 260 m, 6 Jun 2004, P. Magrini leg.

Remarks. Epigean species known from central Italy, from Tuscany to Latium (Fig. 37), newly recorded from Marche and Umbria.

Acanthocreagris myops (Simon, 1881)

Material examined. ITALY: *Lombardy: Lecco Prov.*: 1♂, Santa Maria Hoè, San Genesio, 700 m, 29 Apr 2005, R. Monguzzi leg., MSS.

Remarks. Eyed and epigean species of uncertain relationships, which shows a disjoint distribution range (Fig. 37): south-eastern France, western Liguria and Lombardy (Gardini 1998), of which only three sites are known, all from Monte San Genesio near Lecco (Airuno, Monte Crocione near Consonno and Santa Maria Hoè).

Acanthocreagris nemoralis Gardini, 1998

Material examined. ITALY: *Piedmont: Turin Prov.*: 1♀, Candia Canavese, Lago di Candia (45°19'12"N 7°53'34"E), 250 m, 25 Sep 2016, G. Gardini leg., mixed wood; 1♀, Pont Canavese, near Borgata Boetti, 500 m, 26 Sep 1995, G.B. Delmastro leg.; 1T, Turin, Villa della Regina, 280 m, 20 Aug 1997, G.B. Delmastro leg. *Liguria: Savona Prov.*: 1♂ 1♀, Finale Ligure, entrance Arma do Rian 25 Li/SV (44°11'58"N 8°18'51"E), 18 Feb 2020, P. Gardini leg., *Quercus ilex* wood; 1♀, Noli, Capo Noli, 16 Nov 2016, A. Minici leg.; 1T, Sassello, Foresta della Deiva, 500 m, 11 Jul 2007, E. Biancardi & L. Galli leg.

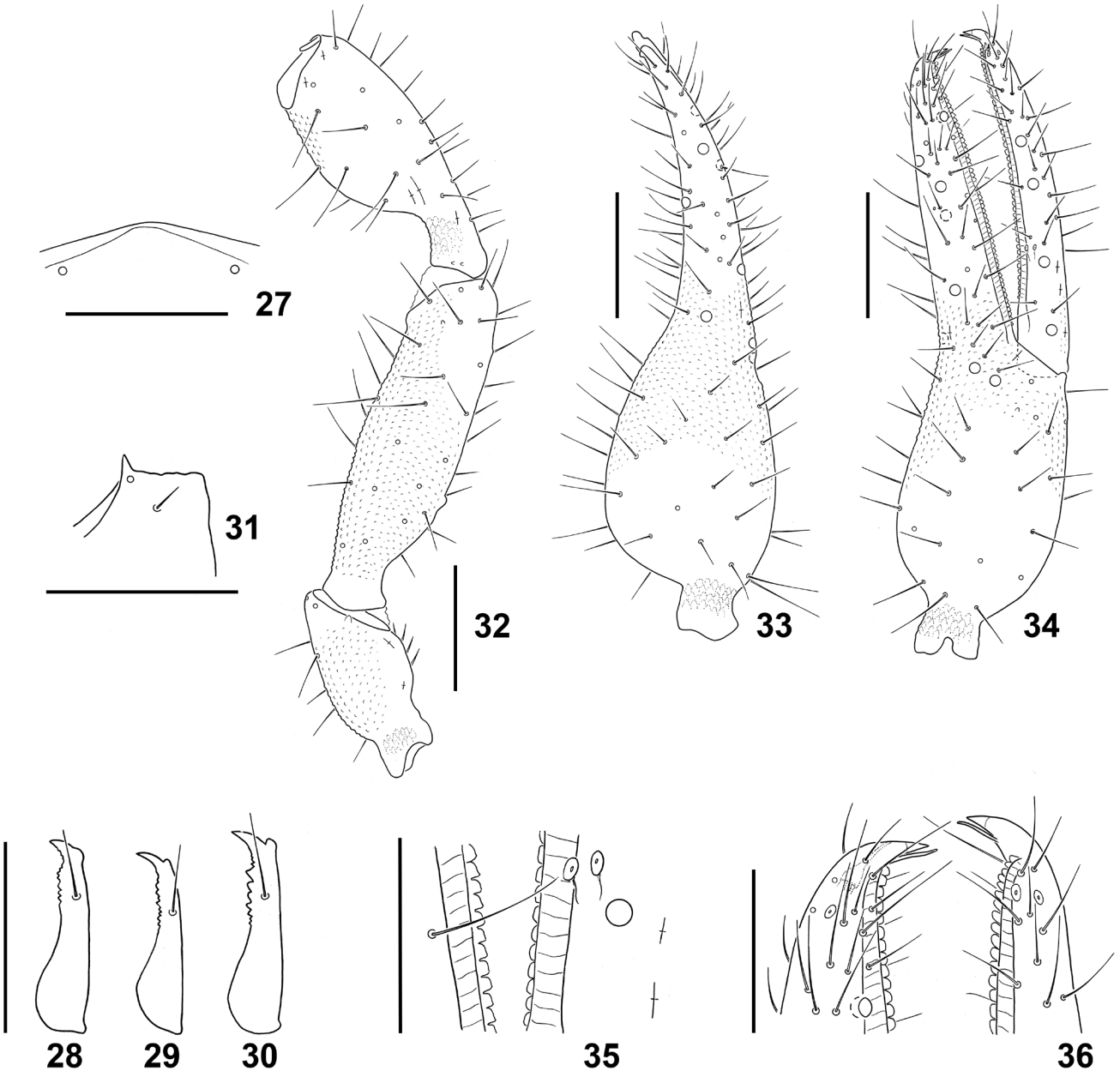
Remarks. Epigean species known from Piedmont and western Liguria (Fig. 37).

Acanthocreagris ruffoi (Lazzeroni, 1969)

Material examined. ITALY: *Abruzzo: L'Aquila Prov.*: 5♂ 6♀, Barrea, 1100 m, 3 Jul 1999, G. Osella leg., under *Corylus avellana*; 1♂ 3♀, Capestrano, Macchiozze di San Vito, 900 m, 19 Oct 1996, G. Osella leg., *Quercus* wood; 2♀, near Capestrano (42°15'31"N 13°46'31"E), 470 m, 21 Maj 2019, P. Gardini leg.; 1♂ 4♀, Collarmele, Forca Caruso, 1100 m, 9 Maj 1999, G. Osella leg., mixed wood. *Abruzzo: Chieti Prov.*: 1♂, Lama dei Peligni, 668 m, 5 Sep 2003, A. Pesce & A. Trotta leg. *Abruzzo: Pescara Prov.*: 5♂ 4♀ 1T, Carpineto della Nora, road to Voltigno, 1000 m, 29 Maj 1999, M. Zuppa leg., *Ostrya carpinifolia* wood; 2♂ 1♀, Carpineto della Nora, 6 Nov 1999, G. Osella leg.; 1♀, Carpineto della Nora, 600 m, 17 Apr 1999, G. Osella leg., *Ostrya carpinifolia* wood; 1♂ 2♀, Carpineto della Nora, 600 m, 24 Apr 1999, G. Osella & A. Zuppa leg., *Ostrya carpinifolia* wood; 1♂ 4♀, Civitella Casanova, 500 m, 28 Nov 1999, G. Osella leg., *Quercus* wood; 3♂, Capo Pescara, 19 and 29 Aug 1991, M. Riti leg.; 3♂ 2♀, Popoli, Capo Pescara, 17 Oct 1991, M. Riti leg.; 1♀, Popoli, 19 Apr 1991, M. Riti leg. *Abruzzo: Teramo Prov.*: 7♂ 6♀, Valle Castellana, near Macchia da Sole (42°45'41"N 13°33'36"E), 1150 m, 18 Jul 2014, S. Zoia leg., beech wood. *Campania: Caserta Prov.*: 2♂ 4♀ 1T, Caserta, Monte Pranzaturo (41°24'42"N 14°21'06"E), 1170 m, 8 Jul 2018, S. Zoia leg.; 1♀, Letino, Grotta dei Diavoli 600 Cp/CE, 17 Jul 2017, P. Magrini leg.; 4♂ 3♀, Letino, Grotta dei Diavoli 600 Cp/CE, 28 Jul 2019, P. Magrini leg.; 6♂ 5♀, San Gregorio Matese, Inghiottitoio Campo Braca 45 Cp/CE, 1000 m, 31 Aug 2018, P. Magrini leg. *Marche: Ancona Prov.*: 1♀, Genga, San Vittore, 19 Apr 2019, P. Magrini leg. *Molise: Isernia Prov.*: 11♂ 7♀, Collemeluccio, 850 m, 15 Sep 1993, G. Osella leg., mixed wood. *Sicily: Catania Prov.*: 1♂, Adrano, Grotta del Santo 1032 Si/CT, 1043 m, 4 Jun 2018, G. Nicolosi leg.; 1T, Grotta Nuovalucello 18 Si/CT, 10 Oct 1974, S. Brisolese & D. Caruso leg. *Sicily: Enna Prov.*: 1♂, 1♀, Sicily, Enna Prov., Agira, Riserva Vallone Piano della Corte, 6 Maj 2020, G. Nicolosi leg. *Sicily: Messina Prov.*: 1♂, 1♀, Graniti, Posto Leone (37°52'46"N 15°12'12"E), 340 m, 11 Mar 2011, C. Baviera leg., under *Olea* and *Quercus*; 1♀, Messina, Orto Botanico (38°11'32"N 15°32'47"E), 40 m, 25 Feb 2014, C. Baviera leg., under *Phytolacca americana*. *Sicily: Palermo Prov.*: 1♂, Isnello, Piano Zucchi (37°54'01"N 13°59'58"E), 1100 m, 18 Maj 2013, C. Baviera leg., under *Quercus ilex*. *Sicily: Ragusa Prov.*: 1♂, Giarratana, Lago di Santa Rosalia (36°57'59"N 14°46'13"E), 386 m, 2 Mar 2012, C. Baviera leg., under *Olea*. *Sicily: Syracuse Prov.*: 1♀, Buscemi (37°05'07"N 14°52'05"E), 655 m, C. Baviera leg., under *Olea* and *Quercus*; 4♂ 6♀, Noto, Fiume Anapo, Area Martin Pescatore (36°59'17"N 15°01'39"E), 400 m, 4 Maj 2014, C. Baviera leg., under *Quercus ilex*; 3♀, Pantalica, Valle dell'Anapo, 430 m, 6 Apr 2011, P. Magrini leg.; 1♀, Sortino, Sorgente Santa Sofia (37°09'03"N 15°01'01"E), 300 m, 26 Apr 2016, C. Baviera leg., under *Rubus* and *Hedera*.

Description of adults from Sicily (♂: Isnello, Piano Zucchi and Noto, Fiume Anapo; ♀: Pantalica, Valle Anapo and Noto, Fiume Anapo). Carapace 1.4–1.6 (♂♀) times as long as broad, with four refractive eyes, the anterior ones with flat lens, the posterior ones often reduced to eye-spots, all eyes with tapetum; anterior margin slightly prominent, without a distinct epistome (Fig. 27); 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively. Chaetotaxy of tergites I–X 6–8:8–9:10:10–11:11:11:11:10–11:11–12:7–8. Chaetotaxy of sternites II–X (♂): 16–19:11 (of which 2+2 setae on tubercles along the genital opening): 8:11:16:14:15:13:10; genital atrium with 2+2 or 2+3 setae; median genital sac reaching sternite VI; chaetotaxy of sternites II–XI (♀) 11:14:12:10:10:12:12:12:12:9; 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 (Figs 28–30) 1.8–1.85 (♂♀) times as long as broad, palm with 6 setae; fixed finger with 11–14 subequal teeth and few distal denticles; movable finger with 8–10 teeth, the distal ones more prominent; *gs* ratio 0.68–0.69, galea squat, rounded, more prominent in female (Figs

28–30); rallum with 8 blades, the two-three distal ones laterally pinnate, followed by one serrate blade, the four-five proximal ones apparently smooth, the first proximal blade shorter; serrulae interior and exterior respectively with about 11 and 22 blades. Manducatory process with 3 setae. Coxal setae: pedipalp 6 or 7, I 4, II 6, III 5, IV 7 or 8; anterolateral process of coxa I pointed (Fig. 31). Pedipalp (Figs 32–36): trochanter with granular surface, 2.15–2.35 (♂) or 2.2–2.35 (♀) times as long as broad,with 4 (rarely 5) spiniform setae with simple and acuminate tips; femur stocky, at the base with evident peduncle, 3.35–3.5 (♂) or 3.2–3.35 (♀) times as long as broad, with granular surface as in fig. 32; patella 2.45–2.55 (♂) or 2.4–2.5 (♀) times as long as broad, club slightly granular on disto-paraxial face, pedicel slightly granular, ratio between club and pedicel 2.05–2.2 (♂) or 2.0–2.3 (♀), ratio X/Y = 0.36–0.45 (♂) or 0.37–0.46 (♀); chela with pedicel 3.3–3.6 (♂) or 3.3–3.35 (♀) times as long as broad; hand of chela with pedicel 1.6–1.7 (♂) or 1.4–1.6 (♀) times as long as broad, granular surface as in figs 33–34;



Figs 27–36 – *Acanthocreagris ruffoi* (Lazzeroni, 1969), ♂ Noto, Fiume Anapo (unless otherwise stated): **27**, epistome of carapace; **28**, movable finger of right chelicera, dorsal view; **29**, ♂ Isnello, Piano Zucchi: movable finger of right chelicera, dorsal view; **30**, ♀ Noto, Fiume Anapo: same; **31**, anterolateral process of right coxa I; **32**, trochanter, femur and patella of right pedipalp, dorsal view; **33**, right pedipalpal chela, dorsal view; **34**, same, antiaxial view; **35**, detail of teeth at level of chelal fingers base, antiaxial view; **36**, apex of chelal fingers, antiaxial view. Scale lines: 0.2 mm (**27**–**34**); 0.1 mm (**35**–**36**).

fixed chelal finger with 50–56 (♂) or 50–60 (♀) contiguous teeth with dental canals (Figs 34–36), venom duct short, nodus ramosus subterminal, subterminal sensillum as in fig. 36; movable chelal finger with 48 (♂) 50–57 (♀) contiguous teeth with dental canals (Figs 34–36), of which 20 between the trichobothrium *t* and the finger tip; movable chelal finger with four sensilla, two of which subterminal (Fig. 36), the others just proximad or just distad to trichobothrium *sb* (Fig. 35); trichobothria as in Figs 33–34, relative position of trichobothria along chelal axis (♀): *et* 0.18–0.21/*it* 0.27/ *est* 0.35–0.36/*ist* 0.44–0.46/ *isb* 0.59–0.66/*ib* 0.71–0.77/ *esb* 0.83–0.88/*eb* 0.89–0.93/*t* 0.33–0.36/*st* 0.45–0.46/*sb* 0.67– 0.67/*b* 0.84–0.86; ratio between movable finger and hand of chela with pedicel 1.1–1.3 (♂) or 1.2–1.35 (♀); ratio between pedipalpal femur and movable finger 1.0 (♂♀); ratio between pedipalpal femur and carapace 0.9–1.1 (♂) or 0.9–0.95 (♀). Leg IV: femur + patella 2.75 (♂) or 2.9 (♀) times as long as deep, tibia 4.1 (♂) or 4.0 (♀) times, basitarsus 2.5 (♂) or 2.2 (♀) times, telotarsus 4.0 (♂) or 3.9 (♀) times as long as deep, tactile seta in the proximal half (TS = 0.26–0.27), ratio between basitarsus and telotarsus 0.62 (♂) 0.66 (♀); subterminal seta furcate, slightly dentate, claws with a very small dorsal tooth.

Measurements (mm). Body length 1.8–1.9 (♂) or 2.2–2.5 (♀). Carapace 0.50–0.54 × 0.32–0.35 anteriorly (♂) or 0.575–0.63 × 0.35–0.39 anteriorly (♀). Chelicera 0.275–0.29 × 0.15–0.155 (♂) or 0.30–0.32 × 0.16–0.175 (♀); movable finger length 0.18–0.20 (♂) or 0.205–0.215 (♀). Pedipalp: trochanter 0.29–0.32 × 0.135 (♂) or 0.315–0.34 × 0.135–0.155 (♀); femur 0.505–0.54 × 0.15–0.155 (♂) or 0.53–0.605 × 0.165–0.18 (♀); patella 0.415–0.45 × 0.17–0.175 (♂) or 0.43–0.50 × 0.18–0.20 (♀); chela with pedicel 0.865–0.94 × 0.26 (0.24–0.25 depth) (♂) or 0.935–1.06 × 0.28–0.315 (depth 0.245–0.28) (♀); hand with pedicel length 0.42–0.44 (♂) or 0.44–0.45 (♀); movable finger length 0.495–0.54 (♂) or 0.54–0.595 (♀). Leg IV: femur + patella 0.43 × 0.155 (♂) or 0.44 × 0.15 (♀); tibia 0.37 × 0.09 (♂) or 0.38 × 0.095 (♀); basitarsus 0.15 × 0.06 (♂) or 0.155 × 0.07; telotarsus 0.24 × 0.06 (♂♀).

Remarks. Epigean species known from central-southern Italy and Sicily (Fig. 37), *A. ruffoi* is newly recorded from Marche and Umbria.

The examined Sicilian specimens share most of the characters with the central and southern Apennines populations described by Lazzeroni (1969) and Gardini (1998), except for the shape of the patella, which in the former has a slender club: patella 2.45–2.55 (♂) or 2.4–2.5 (♀) times as long as broad in Sicilian specimens, 2.15–2.4 (♂) or 2.05–2.3 (♀) in mainland Italian specimens. The populations of Sicily are however considered conspecific to the apenninic ones, while the presence of *Acanthocreagris ruffoi* in Malta (Mahnert 1975, under *A. italica*) is probable, but to be confirmed.

The key to adults of the *Acanthocreagris* species from Italy proposed by Gardini (2018) must be modified as follows in the dichotomy relating to *A. ruffoi*:

Smaller: pedipalpal femur length 0.45–0.54 (♂) 0.47–0.605 (♀) mm, chela with pedicel 0.80–0.94 (♂) 0.83–1.06 (♀) mm, movable finger 0.43–0.54 (♂) 0.46–0.60 (♀) mm; pedipalp less slender: femur 2.8–3.5 times as long as broad, patellal club more globular, ratio between movable finger and hand with pedicel 1.0–1.35; median genital sac reaching sternite VI. (Marche, Umbria, Latium, Abruzzo, Molise, Basilicata, Calabria, Sicily; epigean species) ....*A. ruffoi* (Lazzeroni, 1969)

Acanthocreagris sandaliotica Callaini, 1986

Material examined. ITALY: *Sardinia: Sassari Prov.*: 1♀, Alghero, 10 km South of Alghero, 20 m, 16 Maj 2003, R. Poggi leg.

Remarks. Epigean species known up to now only from the type locality, Castelsardo (Callaini 1986; Gardini 1998), probable endemite of north-western Sardinia (Fig. 37).

Acanthocreagris sardoa (Beier, 1959)

Acanthocreagris sardoa: Gardini 2018: 20, figs 1–8 (in part: Dorgali, Grotta Pisanu; Orani, Grotta di San Francesco)

Material examined. ITALY: *Sardinia: Nuoro Prov.*: 1 ♀, Dorgali, Gurennoro, Grotta Pisanu 215 Sa/NU (40°17’56.40”N 9°33’05.30”E), 142 m, Mar 2009, P. Magrini leg.

Description of adults [♂: according to Beier (1959); ♀: according to Gardini (2018)]. Carapace, chelicera, pedipalps and palpal coxae red-brown pale. Carapace 1.22 (♂) or 1.37 (♀) times as long as broad, without eyes or eye-spots, anterior margin with slightly prominent epistome, apically rounded (Gardini 2018, fig. 1); 22 macrosetae, anterior and posterior rows with 4 and 6 macrosetae, respectively. Chaetotaxy of tergites I–X (♀) 6:6:7:9:9:10:10:11:10:9. Chaetotaxy of sternites II–XI (♀) 11:8:6:10:10:12:12:12:12:9; sternites III and IV (♀) each with 3 microsetae in front on each stigma, sternites VI-VII with 2 discal setae; anal cone with 2+2 setae. Chelicera (♀, Gardini 2018, fig. 2) 1.9 times as long as broad, palm with 6 setae (♂♀, 7 setae in left chelicera of ♀); fixed finger with about 12 teeth; movable finger with 9 teeth; *gs* ratio 0.73, galea squat, slightly squared apically, with 3 or 4 silk ducts; 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

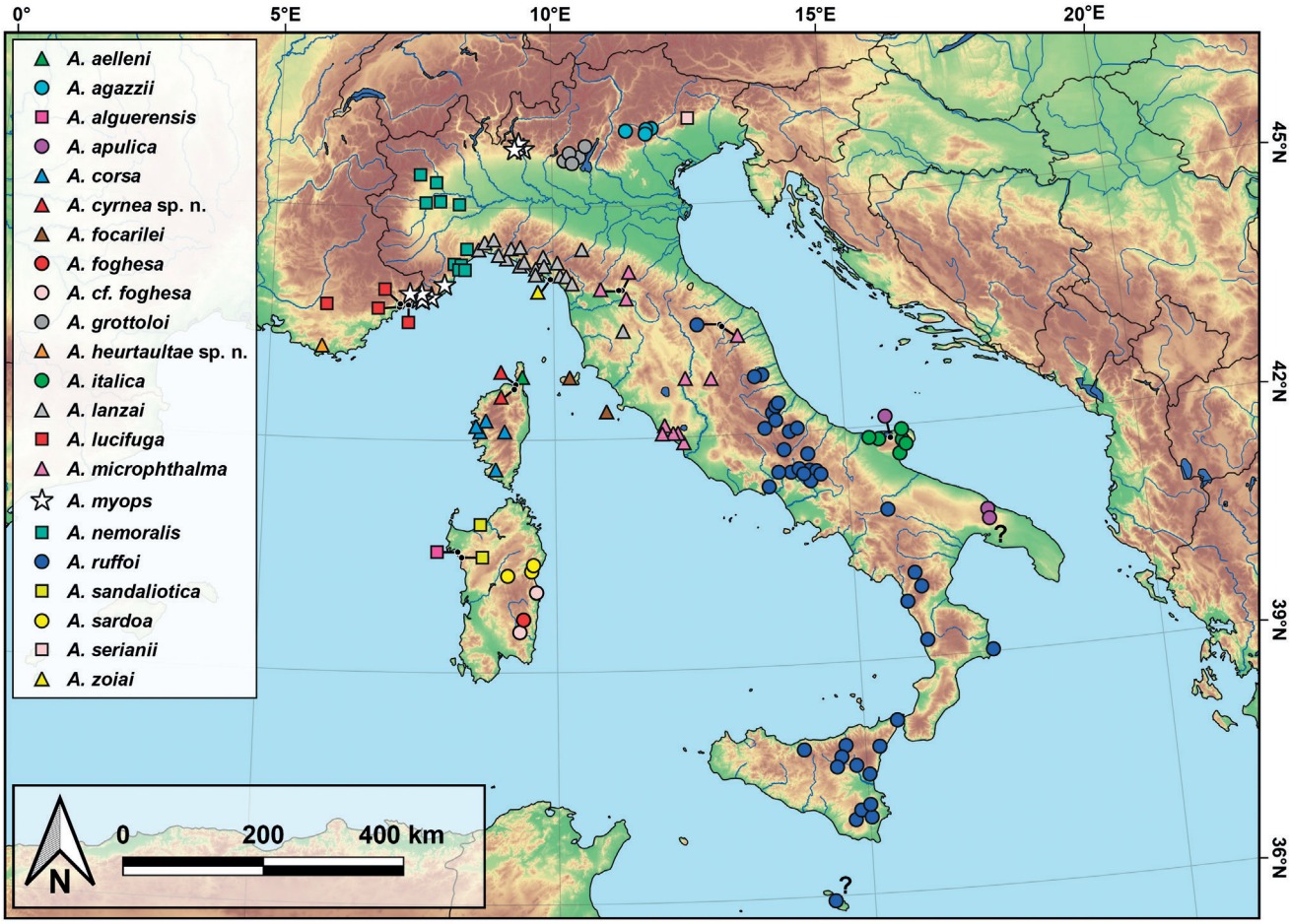


Fig. 37 – Map depicting known distribution of *Acanthocreagris* species from southeastern France, Italy, Corsica, Sardinia, Sicily and Maltese Archipelago (localities taken from Gardini 1998, 2018 and present paper).

process with 3 setae. Coxal setae: pedipalp 6, I 4, II 5, III 4–5, IV 7; anterolateral process of coxa I sharp, apically pointed. Pedipalp (Beier 1959, fig. 1; Gardini 2018, figs 3–6): trochanter with granular surface, 2.74 (♀) times as long as broad, without tubercles on paraxial face, with 4 spiniform setae with simple and acuminate tips; femur gradually widened in the proximal third, then parallel in the distal two thirds, 4.2 (♂) or 4.25 (♀) times as long as broad, with granular surface as in Gardini (2018, fig. 3); patella 3.1 (♂) or 3.36 (♀) times as long as broad, club elongate and granular on paraxial face, pedicel granular, ratio between club and pedicel about 2.1 (♂) or 1.88 (♀); chela with pedicel 4.0 (♂) or 4.05 (♀) times as long as broad; hand of chela with pedicel 1.8 (♂♀) times as long as broad, briefly oval in dorsal view, with a very convex paraxial profile; granular surface as in Gardini (2018, figs 4–5); fixed chelal finger with 79 (♀) small contiguous teeth with dental canals (Gardini 2018, figs 5–6), venom duct short, nodus ramosus subterminal, subterminal sensillum as in Gardini (2018, fig. 6); movable chelal finger with 75 (♀) small contiguous, rounded teeth with dental canals (Gardini 2018, figs 5–6) reaching back near *b*, the distal six teeth pointed; movable chelal finger with four sensilla, two of which subterminal (Gardini 2018, fig. 6), the others just distal and proximal to trichobothrium *sb*, respectively (Gardini 2018, fig. 5); trichobothria as in Beier (1959, fig. 1) and Gardini (2018, figs 4–5), relative position of trichobothria along chelal axis (♀): *et* 0.15/*it* 0.26/ *est* 0.31/*ist* 0.40/*isb* 0.68/*ib* 0.82/ *esb* 0.90/*eb* 0.95/*t* 0.23/*st* 0.39/*sb* 0.63/*b* 0.85; ratio between movable finger and hand of chela with pedicel about 1.3 (♂) or 1.36 (♀); ratio between pedipalpal femur and movable finger 0.95 (♂) 0.91 (♀); ratio between pedipalpal femur and carapace 1.11 (♂) 1.12 (♀). Leg IV (♀) (Gardini 2018, 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.

Measurements (mm). Body length 2.2 (♂) or 2.5 (♀). Carapace 0.60 × 0.49 (♂) or 0.66 × 0.48 anteriorly (♀). Chelicera 0.42 × 0.22 (♀); movable finger length 0.28 (♀). Pedipalp: trochanter 0.48 × 0.175 (♀); femur 0.67 × 0.16 (♂) or 0.85 × 0.20 (♀); patella 0.61 × 0.20 (♂) or 0.74 × 0.22 (♀); chela with pedicel 1.21 × 0.30 (♂) or 1.50 ×

0.37 (depth 0.33) (♀); hand with pedicel length 0.55 (♂) or 0.68 (♀); movable finger length 0.70 (♂) 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.

Remarks. Gardini (2018) redescribed *Acanthocreagris sardoa* (Beier, 1959) on the basis of a female from the Grotta Pisanu near Dorgali, central-eastern Sardinia, and a male—damaged, with broken chelae—from the Grotta Su Pittiolu de Gospuru near Armungia, southeastern Sardinia. Its redescription partially incorporated the original one of Beier (1959), based on a male from the cave Pozzo di Tuttavista 216 Sa/NU near Galtellì, about 9 km from Dorgali. The species was considered by Gardini (1998) phenetically similar to *A. agazzii* (Beier, 1966) from Venetian pre-Alps, but probably related to *A. foghesa*, described in the same paper (Gardini 2018) on two females from the Grotta de Su Fenugu near Perdasdefogu, southeastern Sardinia.

According to Gardini (2018), *Acanthocreagris sardoa* differs from *A. foghesa* in the lesser troglomorphic facies: length of pedipalpal femur 0.67–0.85 mm (4.2–4.25 times as long as broad) in *A. sardoa* (♂♀), 1.14–1.28 mm (5.06–5.33 ×) in *A. foghesa* (♀); length of patella 0.61–0.74 mm (3.1–3.35 ×) in *A. sardoa* (♂♀), 1.0–1.1 mm (3.84–3.93 ×) in *A. foghesa* (♀); length of chela with pedicel about 1.21–1.50 mm (4.0–4.04 ×) in *A. sardoa* (♂♀), 1.93–2.22 mm (4.76– 5.04 ×) in *A. foghesa* (♀); ratio between pedipalpal femur and carapace 1.10–1.12 in *A. sardoa* (♂♀), 1.32–1.45 in *A. foghesa* (♀). Also the shape of chelal hand—a character overlooked by Gardini (2018)—is different in the two species: briefly oval in dorsal view, with a very convex paraxial profile, in *A. sardoa* (Beier 1959, fig. 1; Gardini 2018, fig. 4), elongated oval, with a slightly convex paraxial profile, in *A. foghesa* (Gardini 2018, fig. 12). This last character cannot be evaluated in the male from the cave near Armungia, as both hands of its palps are broken, which makes its attribution to *A. sardoa* (Gardini 2018) uncertain, to be evaluated only with the examination of further material. The cave near Armungia is about 18 km from the type locality of *A. foghesa* and about 94 km from that of *A. sardoa*, each in karst complexes independent from each other (G. Grafitti, in litt.: January 19, 2022). The redescription of *Acanthocreagris sardoa* proposed above does not include the data relating to the male of Armungia and is therefore based only on the original description of *A. sardoa* (Beier 1959) and on that of the female from Dorgali (Gardini 2018). The male from the cave near Armungia is doubtfully attributed to *A. foghesa* and briefly described (see Remarks under *A.* cf. *foghesa*).

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