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Contribution to the knowledge of the Italian species of the genus *Cephennium* MÜLLER & KUNZE, 1822 (Coleoptera, Staphylinidae, Scydmaeninae)

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A b s t r a c t : Based on the study of museum and private collections of the genus *Cephennium* MÜLLER & KUNZE, 1822 and evaluating previously unpublished records from the estate of group specialist Claude Besuchet, 15 new species of the genus *Cephennium* (Staphylinidae, Scydmaeninae) from the northern Italian Alpine region are described and illustrated. In addition to the newly described species, 24 species already known from the region are presented with additional data and genital illustrations. The species are assigned to subgenera according the classification of SCHÜLKE & SMETANA 2015, OROUSSET 2017a and are presented in alphabetical order. The following species are described for the first time: *Cephennium friulicum* nov.sp., *C. giachinoi* nov.sp., *C. liguricum* nov.sp., *C. lombardum* nov.sp., *C. sanctisfaustini* nov.sp., *C. tarvisinum* nov.sp., *C. torrezomontis* nov.sp., *C. tremalzomontis* nov.sp., *C. vicentinum* nov.sp., *C. montiumliguriae* nov.sp., *C. peezi* nov.sp., *C. cavallomontis* nov.sp., *C. dolomitenum* nov.sp., *C. julicum* nov.sp. and *C. praealpinum* nov.sp. Thus, the genus comprises 39 named species within the study area. A table (catalog) of the species from the study area, with distribution information, is given. This study provides valuable insights into the Italian species of the genus *Cephennium*, focusing on the distinctive features, providing detailed descriptions and illustrations to aid in their identification. The work highlights the need for further comprehensive studies in this area, especially considering the significant number of undescribed species and the complexity of species delimitation within the genus.

K e y w o r d s : Coleoptera, Staphylinidae, Scydmaeninae, *Cephennium*, Italy, taxonomy, new species

Introduction

The genus *Cephennium* MÜLLER & KUNZE, 1822 is primarily distributed in the southern European region and the immediately adjacent western Palaearctic (such as Turkey and the Middle East) and is represented by almost 300 described species. In Italy, there are 49 known species, 35 in Greece, 41 in the Iberian Peninsula, and 48 in Turkey. This work represents a contribution to the knowledge of the Italian species of the genus *Cephennium* MÜLLER & KUNZE, 1822. Other contributions include the publications by MEYBOHM & ZANETTI 2014 as well as CASTELLINI 2011a and 2011b; further additional recent works could not be retrieved. It is noteworthy that there is no comparative treatment available for the Italian species, unlike the revisions of the Greek, Iberian, and Turkish species (ASSING & MEYBOHM 2021a, 2021b, 2021c). For the French species, there are several recent works on specific areas (OROUSSET 2017a, 2017b, 2018, 2019a, 2019b), as well as for Balkan

countries (STEVANOVIĆ 2011, 2014). Extensive studies of the genus *Cephennium* were conducted by the deceased specialist in Scydmaeninae and Pselaphinae, Claude Besuchet (Muséum d'Histoire Naturelle Genève), in the early 1960s. He produced detailed drawings of the aedeagi of almost all described and many then undescribed species (148!) and gave manuscript names ("i.l.") to the undescribed species. Detailed notes on the processed material, including its origin, accompany these drawings. Unfortunately, these comprehensive results were not published. These documents were handed over by Claude Besuchet, or after his death by his widow Betty, to Volker Brachat, and from him to Heinrich Meybohm. After digitization of this written material by Volker Assing, it is now also available to the authors of the present work as a makeshift. There remains the option of using these manuscript names or new names for the outstanding descriptions, with the authors opting for the latter in accordance with MEYBOHM 2014. Only material from the upper Italian region is processed, for the most part collected by the first author. On the one hand, the descriptions of the "i.l." species by Besuchet as well as further newly discovered species are made, and on the other hand, genital illustrations of all these available (already described) species are provided to enable a more comprehensive identification aid.

In addition, Heinrich Meybohm (from Großhansdorf, Germany) provided his material from Italy for processing within the scope of the present work.

Material and methods

The Material examined mentioned in this study is deposited in following collections:

TLMFTiroler Landesmuseum Ferdinandeum, Naturwissenschaftliche Sammlung, Hall in Tirol (Austria)
 NMSNaturmuseum Südtirol, Bozen (Italy)
 cGiaCollection Piermauro Giachino, San Martino Canavese (Italy)
 cMey.....Collection Heinrich Meybohm, Großhansdorf (Germany)

The morphological examinations and measuring were carried out on a MC3 (Wild) stereomicroscope. The studies of genital morphology and the illustrations were made using Olympus SZX 10 & Olympus BH-2 microscopes. Pictures were taken with the GH4 (Lumix) camera and Helicon Focus 8 as well as Adobe Photoshop CS6 software were used for the composition. The aedeagi are embedded in Euparal. The drawings by Claude Besuchet are additionally used to illustrate the aedeagi. "Body length was measured from the anterior margin of the labrum to the apex of the elytra and the length of the aedeagus from the apex of the median lobe to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect. When assessing the relative length of the parameres, the apical setae are not included" (adopted from ASSING & MEYBOHM 2021a). The coordinates of the collection sites are not listed on the labels of the individuals. They were measured using GPS in newer collections, and in older collections, they were obtained from geographical information systems (such as georeferenced aerial images) and are all recorded in the database of the Tyrolean state museum. Explanatory additions to data are indicated in square brackets.

Results

39 species are known from North Italian alpine regions to date, including 15 new species described in this paper.

Tab. 1: List of in this paper included species. The subgeneric assignments follow SCHÜLKE & SMETANA 2015 and OROUSSET 2017a.

	Species / subgeneric assignment	Distribution
	Subgenus <i>Cephennarium</i>	
1	<i>Cephennium apicale modestum</i> HOLDHAUS, 1905	Central Italy
2	<i>Cephennium carrarae</i> REITTER, 1884	Ligurian Apennines
	Subgenus <i>Cephennium</i>	
3	<i>Cephennium carnicum</i> REITTER, 1881	Southern Central Europe and northeastern Southern Europe
4	<i>Cephennium doderoi</i> BINAGHI, 1942	Western Alps
5	<i>Cephennium faillai</i> CASTELLINI, 2011	Endemic to the Bergamasque Alps between Lake Como and Val Camonica
6	<i>Cephennium friulicum</i> nov.sp.	Friuli-Venezia Giulia Region, from the Carnic Alps to the Trieste Karst
7	<i>Cephennium giachinoi</i> nov.sp.	Local endemic, in the Canavese landscape west of the Aosta Valley
8	<i>Cephennium helveticum</i> MACHULKA, 1930	Endemic species from Italy/western Lombardy and Switzerland/Ticino, between Lake Como and Lake Maggiore
9	<i>Cephennium horni</i> MACHULKA, 1933	Tuscan Apennines northward to the Bergamasque Alps and the Judikaric Alps west of Lake Garda
10	<i>Cephennium istriense</i> MACHULKA, 1932	Croatia (Istria) through Slovenia to the eastern part of the Italian region Friuli-Venezia Giulia
11	<i>Cephennium jureceki</i> MACHULKA, 1930	Lombardy, Veneto, northward up to the province of Trento
12	<i>Cephennium laticolle</i> (AUBÉ, 1842)	Southeastern France, western Switzerland, western Italy
13	<i>Cephennium lessinicum</i> MEYBOHM & ZANETTI, 2014	Northern Italy, endemic to the Monti Lessini
14	<i>Cephennium liguricum</i> nov.sp.	Italy, Ligurian Apennines
15	<i>Cephennium lombardum</i> nov.sp.	Endemic to the Bergamo and Brescia Prealps

	Species / subgeneric assignment	Distribution
16	<i>Cephennium majus</i> REITTER, 1881	Widely distributed in Europe
17	<i>Cephennium maritimum</i> REITTER, 1884	Italy, Ligurian Alps, and adjoining areas in western France
18	<i>Cephennium montanum</i> REITTER, 1884	Western Alps: Pennine and Ticino Alps
19	<i>Cephennium nicaeense</i> REITTER, 1881	Italy, Ligurian Alps, and adjoining areas in western France
20	<i>Cephennium reissi</i> MACHULKA, 1933	Bergamo Alps, Judicaria
21	<i>Cephennium rossii</i> CASTELLINI, 2011	Widely spread, from central Italy northwards to South Tyrol
22	<i>Cephennium sanctisfaustini</i> nov.sp.	Local endemic to the southernmost Brescian Prealps
23	<i>Cephennium settei</i> MEYBOHM & ZANETTI, 2014	Endemic Species of the Lessini Mountains
24	<i>Cephennium simile</i> REITTER, 1881	Western Alps to the Ligurian Apennines
25	<i>Cephennium stolzi</i> MACHULKA 1932	Endemic to the area between Lake Como and Lake Lugano
26	<i>Cephennium tarvisinum</i> nov.sp.	Endemic to the Venetian Prealps (hills east of the Piave) and Montello
27	<i>Cephennium tirolense</i> MACHULKA, 1930	East of the Adige Valley, areas of the Sette Comuni and the northern Monti Lessini
28	<i>Cephennium torrezzomontis</i> nov.sp.	Local endemic in the southern Bergamo Prealps: Monte Torrezzo on the left side of the Cavallina valley
29	<i>Cephennium tremalzomontis</i> nov.sp.	Local endemic of the Massifs de Refuge west of Lake Garda
30	<i>Cephennium vicentinum</i> nov.sp.	From Val Sugana and Monte Grappa southward to the Monti Berici
31	<i>Cephennium zoiai</i> CASTELLINI, 2011	Western Alps: from the Graian Alps to the Maritime Alps
	Subgenus <i>Geodytes</i>	
32	<i>Cephennium montiumliguriae</i> nov.sp.	Ligurian Alps
33	<i>Cephennium peezi</i> nov.sp.	Judicarien, Lake Garda, isolated record in South Tyrol (Brixen)

	Species / subgeneric assignment	Distribution
	Subgenus <i>Neocephennium</i>	
34	<i>Cephennium cavallomontis</i> nov.sp.	Endemic to Monte Cavallo (Carnic Prealps)
35	<i>Cephennium cyclonotum</i> HOLDHAUS, 1924	Endemic of the Euganean Hills
36	<i>Cephennium dolomitanum</i> nov.sp.	Dolomites and Carnic Prealps
37	<i>Cephennium julicum</i> nov.sp.	Julian Alps and the Karst areas adjacent to the east and south (Nanos, Trnovski gozd)
38	<i>Cephennium praealpinum</i> nov.sp.	Southern Carnic Prealps (karst plateau of Pradis and Clauzetto)
39	<i>Cephennium punctatum</i> MEYBOHM & ZANETTI, 2014	Distributed from the western area of Lake Garda eastwards to the Venetian Prealps

Taxonomy

Subgenus *Cephennarium*

Cephennium apicale modestum HOLDHAUS, 1905 (Fig. 88)

Material examined: Italy / Chieti: 3♂♂ 1♀ Maiella, Pretoro SW, Val del Foro valley, 1200 m, 42.1808°N, 14.1253°E, 4.6.2001, leg. & det. Kahlen. This subspecies is distributed in central Italy, the nominate form in southern Italy (Calabria).

Genitalia: Dorsal Fig. 88.

Cephennium carrarae REITTER, 1884 (Fig. 89)

Material examined: Italy / Genova, Ligurian Apennines: 2♀♀ Bargagli-Traso, Val Bisagno left valley slope, 300 m, 44.4416°N, 9.0845°E, 26.5.1993; 2♂♂ 4♀♀ Monte Fasce north slope, 600 m, 44.4134°N, 9.0311°E, 25.5.1993; 1♂ 2♀♀ Lumarzo-Pannesi, SE Mad. del Bosco valley, 350 m, 44.4163°N, 9.1333°E, 28.5.1993; 2♂♂ Canevale, Ronco, 300 m, 44.3836°N, 9.2694°E, 27.5.1993; 2♂♂ 2♀♀ Uscio-Calzinara, Monte Cornua north slope, 500 m, 44.4101°N, 9.1346°E, 26.5.1993; 4♂♂ Ruta, Val di Rio Bana, 220 m, 44.3440°N, 9.1744°E, 27.5.1993. Italy / Alessandria, Ligurian Apennines: 2♂♂ Marcarolo, surroundings of Tana del Lupo, 600 m, 44.5694°N, 8.7922°E, 30.12.2019. All specimens leg. & det. Kahlen. This species is distributed in the regions of Toscana, Liguria, and the southernmost part of Piemonte.

Genitalia: Dorsal Fig. 89.

Subgenus *Cephennium*

Cephennium carnicum REITTER, 1881 (Fig. 90)

Material examined: Italy / Udine, Julian Pre-Alps: 8♂♂ Val Venzonassa, Val di Rio Bruschie, Borgo Prabunello E, 670 m, 46.3317°N, 13.2094°E, 8.4.2007 and 27.4.2010; 1♂ 1♀ Val di Musi,

Casera Tanatcoda SW, 650-700 m, 46.3081°N, 13.2942°E, 2.9.2007; Italy / Udine, Julian Alps: 4♂♂ Altipiano del Montasio, 1700 m, 46.4178°N, 13.4442°E, 24.9.1998. All specimens leg. & det. Kahlen. This species is widely distributed in Central Europe and northeastern Southern Europe.

Genitalia: Dorsal Fig. 90.

***Cephennium doderoi* BINAGHI, 1942 (Fig. 91)**

Material examined: Italy / Biella: 2♂♂ 2♀♀ Cima di Bo, vicinity of Tre Laghi, 2025-2150 m, 45.7094°N, 8.0111°E, 17.6.1999; 1♂ Sanctuary of Oropa, W valley, 1250-1400 m, 45.6292°N, 7.968°E, 13.6.1999. Italy / Turin: 2♂♂ Ribordone N, Prascondù W, 1320-1350 m, 45.4536°N, 7.4992°E, 22.5.2010. Italy / Cuneo: 1♀ Colle di Tenda SW, Colletta N slope, 1880 m, 44.1486°N, 7.5575°E, 25.6.2008; 1♂ 2♀♀ Colle di Tenda NE, Val Cabainaira western drainage area, 1800-1850 m, 44.1547°N, 7.5672°E, 21.5.2005; 1♂ 1♀ Val Cabainaira left valley slope 300 m E Galleria di Napoleone, 1550 m, 44.16°N, 7.5783°E, 5.10.2009; 1♂ 3♀♀ Entracque SE, Vallone del Bousset, Gias d'Ischietto, 1350-1370 m, 44.1765°N, 7.4554°E, 22.6.2008; 4♂♂ 4♀♀ Entracque SW, S slope of Lago della Rovina, 1550-1580 m, 44.173°N, 7.3444°E, 28.6.2008; 1♂ 1♀ Entracque SW, Vallone Gesso della Barra, Piano del Praiet, 1800 m, 44.1392°N, 7.3628°E, 4.6.2009; 1♂ 2♀♀ Entracque SW, San Giacomo, campsite "sotto il faggio", 1210 m, 44.1768°N, 7.3869°E, 7.10.2009; 3♂♂ 1♀ Terme di Valdieri S, Vallone di Gesso della Valletta, Pian della Casa, 1800 m, 44.1586°N, 7.2722°E, 23.6.2008; 1♂ 1♀ Terme di Valdieri NE, Vallone di Gesso della Valletta right valley slope, confluence Vallone della Vagliotta, 1100 m, 44.2292°N, 7.3114°E, 3.6.2009 and confluence Vallone di Lourousa, 1350-1400 m, 44.2092°N, 7.2744°E, 8.10.2009; 1♀ Val Pesio, Pian delle Gorre, 1030-1050 m, 44.2144°N, 7.6605°E, 11.5.2010; 2♂♂ 4♀♀ Palanfrè, Val Garbella, 1650-1700 m, 44.1961°N, 7.4842°E, 26.5.2010. All specimens leg. & det. Kahlen. Italia / Biella: 7♂ 6♀♀ Santuario dell'Oropa, Tal W, 1250 m, 45.6292°N, 7.968°E, 20.5.2004, leg. V. Assing. Italia / Cuneo: 2♂ 1♀: Entracque, Lago della Rovina, 1550 m, 44.1761°N, 7.343°E, 28.6.2008, leg. V. Brachat; 1♂: Vallone Bousset, Gias d'Ischietto, 1350 m, 44.1764°N, 7.4554°E, 22.6.2008, leg. V. Brachat. France / Alpes Maritimes: 1♂: Castérino, Mont Agnelino, 2100 m, 44.088°N, 7.5314°E, 26.6.2008, leg. V. Brachat. All specimens rev. Kahlen, cMey.

Genitalia: Dorsal Fig. 91.

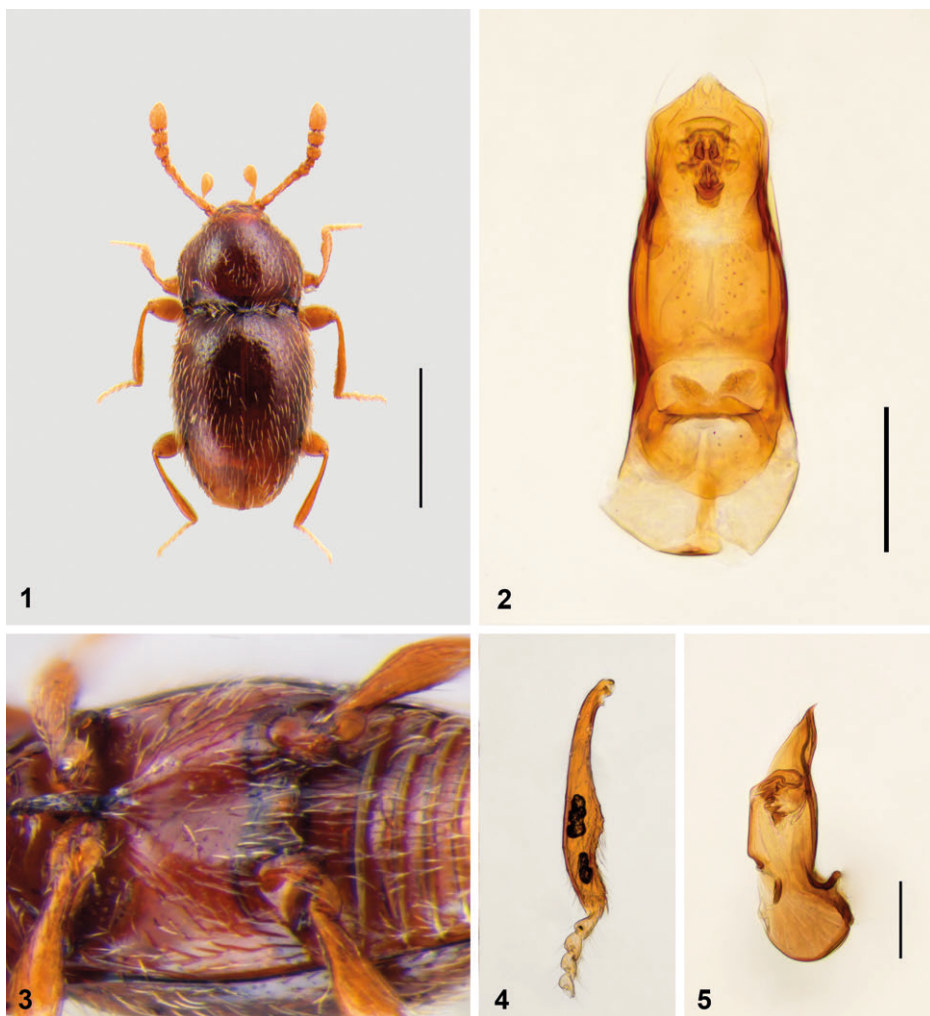
Besuchet mentioned in his unpublished notes, besides the nominate form, three subspecies with depicted genital drawings (internal sac structures): ssp. *alpinum* (Terme di Valdieri), ssp. *despectum* (Sanctuary Oropa), and ssp. *vesulinum* (Crissolo). Based on the available material, this can be considered as within the range of variation, and therefore, further details are not elaborated upon.

***Cephennium faillai* CASTELLINI, 2011 (Fig. 92)**

Material examined: Italy / Lecco: 4♂♂ Val Sassina, Parlasco, 700 m, 46.0180°N, 9.3440°E, 22.5.1975; 1♂ 2♀♀ Val Sassina, vicinity of Cortenova, 450-500 m, 45.9998°N, 9.3820°E, 21.5.1975. Italy / Bergamo: 1♂ Val Brembana, San Gallo, 600 m, 45.8658°N, 9.67°E, 4.6.1980; 2♂♂ Oltre il Colle, Val Parina, 900 m, 45.897196°N, 9.77589°E, 31.5.1980; 1♂ 2♀♀ Oltre il Colle, Zambra Alta, Val Luchera, 1180 m, 45.8972°N, 9.8008°E, 15.5.2022; 1♂ Oltre il Colle, Alpe Arera SW, 1620 m, 45.9185°N, 9.7929°E, 14.5.2022. All specimens leg. & det. Kahlen. Italia / Bergamo, Oltre il Colle: 1♂ Passo Crocetta, 1250 m, 45.8814°N, 9.7911°E, 4.6.1980; 1♀ Val Vedra, Pian Bracca, 1200 m, 45.9205°N, 9.783°E, 31.5.1980; 1♀ Val Finzel, 1050 m, 45.8872°N, 9.7847°E, 2.6.1980. Alle Ex. leg. H. Daffner, det. Kahlen, cMey.

Genitalia: Dorsal Fig. 92.

Literature citation: Holotype ♂: Lombardy, Valle Imagna, 1000 m, VIII. 1975, leg. & coll. Castellini; Paratypes: 2♀♀: same data; 1♂ 4♀♀: Lombardy, Oltre il Colle, 1000 m, VIII.1976, leg. & coll. Castellini (CASTELLINI 2011).



Figs 1-5: *Cephennium friulicum*. (1) male habitus holotype, scale bar (sb): 0.5 mm; (2) aedeagus dorsal view holotype, sb: 0.1mm; (3) ventral view of metaventricle; (4) male front tibia; (5) aedeagus lateral sb: 0.1mm (Figs 3-5 paratype).

***Cephennium friulicum* nov.sp. (Figs 1-5, 79)**

C. tergestinum BESUCHET i.l.

Type Material: Holotype ♂: Italy / Udine, Peonis N, Chiarpina, 200 m, 46.2675°N, 13.0478°E, 20.10.2001, leaf litter at the base of rocks, leg. Kahlen. / *Cephennium friulicum* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 6♂♂ 3♀♀: same data as holotype, leg. Kahlen (TLMF); 5♂♂ 2♀♀: Italy / Udine, Forgaria n.F. N, Monte Prat, surroundings of Pala d'Aga, 750 m, 46.2406°N, 12.9863°E, 19.10.2001, leaf litter at hedge, leg. Kahlen (TLMF); 1♂: Italy / Pordenone, Pradis di Sopra, Minerres, 600 m, 46.2599°N, 12.9111°E, 16.5.1982, under decaying white stump, leg. Kahlen (TLMF); 3♂♂ 2♀♀: same locality and date, leg. Kahlen (TLMF); 1♂: Italy / Pordenone, Poffabro, Val Colvera di Jouf, 450-500 m, 46.2014°N, 12.6925°E, 29.5.1984, sifted, leg. Kahlen (TLMF).

Type Material from collection Meybohm: Paratypes, all cMey: Italia / Pordenone: 1♂: Pradis di Sopra, Minerres, 600 m, 46.2599°N, 12.9111°E, 18.6.1981 and 1♂ Paludon, 600 m, 46.2555°N, 12.8858°E, 19.5.1982, leg. H. Daffner. Italia / Udine: 2♂♂: Portis, 250 m, 46.3572°N, 13.1396°E, 13.4.1979, leg. V. Brachat. All specimens det. Kahlen.

Information outside the type material: 1♂: Trieste, Carso, Lipizza, leg. Ravasini, coll. Besuchet (unpublished notes Besuchet).

E t y m o l o g y : The species name is derived from its predominant distribution area in the Friuli-Venezia Giulia region.

D e s c r i p t i o n : Habitus as in Fig. 1. Body length 1.07-1.15 mm. Body including appendages dark reddish-brown; shiny, moderately dense, long and weakly raised hair. Head shiny, unpunctuated, with eyes clearly protruding laterally and sharply delimited towards the back. Antennal segments 1 and 2 distinct, 3-7 very slightly longer than wide, 8 spherical and much smaller than 7, its three-part club sharply set off. Pronotum one-third wider than long (1.3 : 1), shiny with fine and widespread punctures, greatest width just before the middle, evenly strongly rounded towards the front, straight rounded converging narrower towards the back. In males, the centre of the pronotum is very weakly elevated before the base. Elytra narrower than long (1 : 1.3), shiny and compared to the pronotum with noticeably coarser, denser, and weakly rasp-like punctures; greatest width just before the middle, sides evenly rounded. The basal pits not exactly round, laterally and posteriorly flattened, tomentum cushion at the inner front edge. In males, the anterior half of the front tibiae is weakly thickened, with a distinct indentation towards their tip on the inner side (Fig. 4). Underside: ♂ Metaventricle weakly depressed, highly shiny, very finely and thinly haired, scarcely recognizable punctate (Fig. 3). Genitalia: Length 0.32 - 0.35 mm. Dorsal Fig. 2 & 79., lateral Fig. 5.

The drawing of the internal genitalia structures from Besuchet (Fig. 84) show only one layer of the spatial structure and is therefore incomplete pictured.

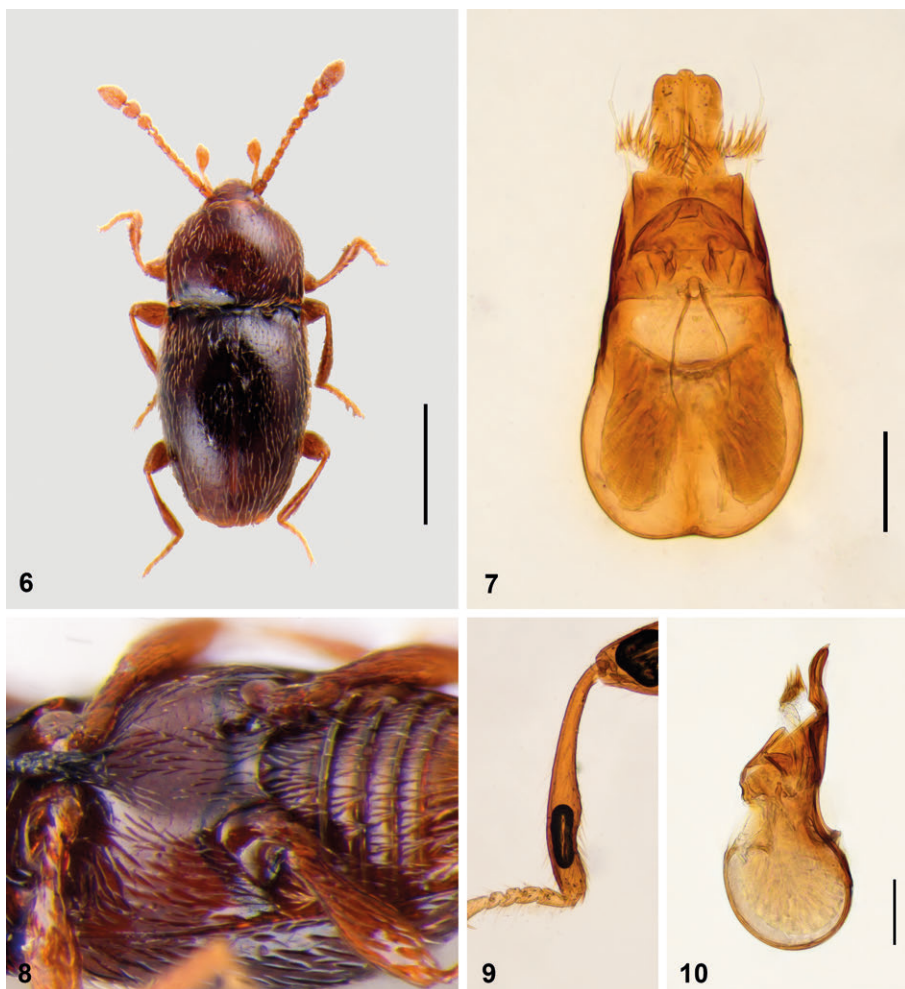
***Cephennium giachinoi* nov.sp. (Figs 6-10)**

Type Material: Holotype ♂: Italy / Torino, Alpi Graie, Castelnuovo Nigra N, Monte Calvo W-slope, 1150 m, 45.4632°N, 7.6878°E, 21.5.2010, beech leaf litter, leg. Kahlen. / *Cephennium giachinoi* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 29♂♂ 14♀♀: same data as holotype, leg. Kahlen (28♂♂ 13♀♀ TLMF, 1♂ 1♀ cGia).

E t y m o l o g y : The species is dedicated to the first authors longtime friend and specialist in ground and cave beetles Piermauro Giachino, who showed the first autor the discovery site, a natural beech forest in Castelnuovo.

D e s c r i p t i o n : The species is closely related to *Cephennium majus* REITTER, 1881, so it seems appropriate to present the description using differential diagnosis:

<i>Cephennium majus</i> REITTER, 1881	<i>Cephennium giachinoi</i> nov.sp.
Habitus as in Fig. 11. Body length ranges from 1.35 to 1.5 mm. The body is shiny dark brown, with appendages being lighter brown. The hair coverage is sparse, moderately long, and slightly erect.	Habitus as in Fig. 6. Body length ranges from 1.4 to 1.5 mm. The body is lighter brown, especially the head, pronotum, and appendages, which are notably lighter than the elytra; shiny, with denser, shorter, and almost appressed hair coverage.
The head is shiny, but with indicated fine punctation or micro sculpture, measuring 0.32 mm wide, with clearly laterally protruding eyes. Antennal segments 1 and 2 are longer than wide, the following segments are almost spherical or barely longer than wide, and the three-segmented club is weakly demarcated.	The head is more strongly shiny, unpunctured, narrower (0.28 mm wide), with slightly smaller, clearly laterally protruding eyes. Antennae are very similar, but the middle segments (especially segment 5) are distinctly longer than wide.
The pronotum is wider than long (1.3:1), shiny, with fine and widespread, but clearly discernible punctures. The greatest width is just before the middle, from where it converges straightly backwards, without basal bulging in males.	The pronotum is wider than long (1.3:1), shiny, with significantly finer and particularly more widespread punctures. The greatest width is just before the middle, from where it narrows almost straightly backwards, without basal bulging in males.
The elytra are narrower than long (1:1.35), moderately shiny, and with coarser, sometimes rasp-like punctures that are less widespread compared to those on the pronotum. There is an indicated wrinkled micro sculpture between these punctures. The greatest width is before the middle, with sides evenly rounded and strongly arched longitudinally and transversely. There are concave round basal pits, flattened outward, with very small tomentose tufts.	The elytra are slimmer (1:1.45), shiny, and with punctures that are hardly coarser but significantly denser compared to those on the pronotum, without micro sculpture. The greatest width is before the middle, with sides noticeably less rounded and longitudinally less arched. Also, there are significantly shallower basal pits at the centre with very small tomentose tufts.
In males, the front tibiae are slightly thickened in the apical half and inwardly angulate (Fig. 14).	In males, the front tibiae are not thickened in the apical half and are inwardly flatly incised (Fig. 9).
Underside: ♂ the metaventrite is flatly depressed, shiny, with very fine and widespread punctures within the impression. However, the margins are much coarser and denser in punctures. The entire surface is uniformly hairy (Fig. 13).	Underside: ♂ the metaventrite is moderately deeply depressed, shiny, with fine and widespread punctures and hair coverage across the entire surface (Fig. 8).
Genitalia: Length 0.4 mm. Dorsal Fig. 12., lateral Fig. 15.	Genitalia: Length 0.47 mm. Dorsal Fig. 7, lateral Fig. 10.

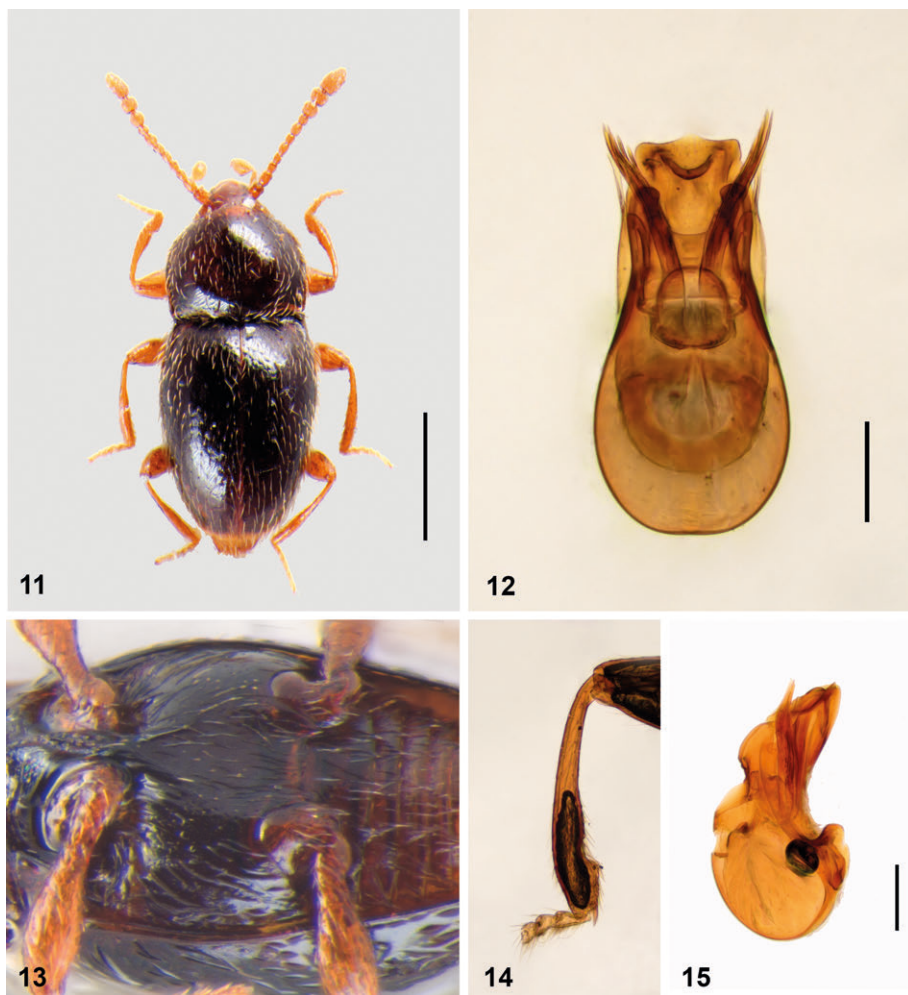


Figs 6-10: *Cephennium giachinoi*. (6) male habitus holotype, sb: 0.5 mm; (7) aedeagus dorsal view holotype, sb: 0.1 mm; (8) ventral view of metaventricle; (9) male front tibia; (10) aedeagus lateral, sb: 0.1 mm (Figs 8-10 paratype).

***Cephennium helveticum* MACHULKA, 1930 (Fig. 93)**

Material examined: Italy / Como: 2♂♂ 2♀♀ Cavargna, 1050 m, 46.0911°N, 9.117°E, 20.5.1975; 2♂♂ San Bartolomeo Val Cavargna, 900 m, 46.0836°N, 9.1521°E, 21.5.1975; 5♂♂ 2♀♀ Monte Bisbino S, Val della Colletta linker Talhang, Monti Albero del Cucco, 900 m, 45.8622°N, 9.0738°E, 4.4.2024, leg. & det. Kahlen. Switzerland / Ticino: 1♂ 1♀ Monti di Medeglia, 1100 m, 46.1996°N, 8.9651°E, collected by Focarile, determined by Besuchet; 2♂♂ 1♀ Monte Generoso, 1650 m, 45.9313°N, 9.0187°E, VII.1954 and 15.9.1955, leg. & det. Besuchet.

Genitalia: Dorsal Fig. 93.



Figs 11-15: *Cephennium majus*. (11) male habitus, sb: 0.5 mm; (12) aedeagus dorsal view, sb: 0.1 mm; (13) ventral view of metaventricle; (14) male front tibia; (15) aedeagus lateral, sb: 0.1 mm.

***Cephennium horni* MACHULKA, 1933 (Fig. 94)**

Material examined: Italy / Bergamo: 2♂♂ 4♀♀ Predore NE, Punta Alta S slope, 300 m, 45.6838°N, 10.0301°E, 9.4.2022; 2♂♂ 3♀♀ Monasterolo E, Val delle Colle left valley slope, 700 m, 45.7644°N, 9.9472°E, 7.5. and 6.11.2023, and 1♀ Val Torrezzo vicinity Rifugio F.lli Giudici, 750 m, 45.7544°N, 9.9478°E, 5.11.2023 (syntopic with *C. torrezomontis* nov.sp. at these sites). Italy / Brescia: 3♂♂ Brozzo E, 500 m, 45.7228°N, 10.2345°E, 31.5.1977; 2♂♂ Val Toscolano, Le Camerate, 300 m, 45.6740°N, 10.6156°E, 1.4.1983; all specimen's leg. & det. Kahlen; 1♂ Val Camonica, Borno, 850-900 m, 45.9496°N, 10.2075°E, [no date and collector], determined by Machulka as ssp. *montanellum* (syntype). Italy / Trentino: 2♂♂ 1♀ Malga Grassi vicinity, 1050-1200 m, 45.9197°N, 10.7864°E, 9.6.1974, leg. & det. Kahlen, and 2♂♂ 1♀ same locality, 9.6.1935, leg. Pechlaner, det. Machulka as ssp. *montanellum* (syntype); 1♂ 1♀ Ledro, Val Scaglia, 800-900 m, 45.8539°N, 10.7293°E, October 1914, leg. Reiss, det. Machulka as ssp.

montanellum (syntype); Ledro, Pian Puro, 700 m, 45.8628°N, 10.74°E, 24.4.1984, leg. & det. Kahlen.

The subspecies *C. horni horni* and *C. horni montanellum* are not distinguished here. Although the proportions and apices of the aedeagi are slightly different, they should fit within the range of variation. Even in Machulka's descriptions (MACHULKA 1933), only vague differences are depicted, which allow for this conclusion.

Cephennium horni MACHULKA, 1933 = *Cephennium horni montanellum* MACHULKA, 1933 **nov.syn.**

Genitalia: Dorsal Fig. 94.

***Cephennium istriense* MACHULKA, 1932 (Fig. 95)**

Material examined: Italy / Udine: Prepotto Bodigoi, 5♂♂ 1♀ Val Nestadiuzza, 130 m, 46.0636°N, 13.5083°E, 28.4.2000 and 25.4.2010; 2♂♂ 1♀ Val Nestadiuzza, 155 m, 46.0644°N, 13.5078°E, 3.5.1986 and 25.4.2010. All specimens leg. & det. Kahlen. Slovenia: 1♂ vicinity of Nova Gorica, 150-200 m, 45.9561°N, 13.6478°E, 9.5.1976, leg. & det. Brachat; 1♂ vicinity of Nova Gorica E, Izvir Lijaka vicinity, 100 m, 45.9597°N, 13.72°E, 3.11.2000; 3♂♂ 1♀ Grgar, Slatnagraben, 320 m, 46.0022°N, 13.6622°E, 10.4.1996; 1♂ Čepovanska dolina, Valley bottom by Stan, 450 m, 46.0122°N, 13.7344°E, 3.5.1989. All specimens leg. & det. Kahlen.

Genitalia: Dorsal Fig. 95.

***Cephennium jurecki* MACHULKA, 1930 (Fig. 96)**

Material examined: Widely distributed in the northern Italian regions of Veneto, Lombardy, and South Tyrol-Trentino (MEYBOHM & ZANETTI 2014). Numerous specimens are available from the provinces of Vicenza, Verona, Padova, Brescia, and especially Trentino (the species has not yet been reported from South Tyrol), collected by Kahlen, Daffner, Eckelt, Knabl, Pechlaner, Peez, Ratter, Reiss, Scholz, Strupi, Wörndle, Zschästak. Determinations are confirmed as reliably.

Genitalia: Dorsal Fig. 96.

***Cephennium laticolle* (AUBÉ, 1842) (Fig. 97)**

Material examined: Italy / Cuneo: 1♂ Colle di Tenda NE, Val Cabainaira left slope 300 m E Galleria Napoleone, 1550 m, 44.16°N, 7.5783°E, 5.10.2009, leg. & det. Kahlen. This species primarily has a western distribution (southeastern France, western Switzerland), from where several specimens are available.

Genitalia: Dorsal Fig. 97.

***Cephennium lessinicum* MEYBOHM & ZANETTI, 2014 (Fig. 98)**

Material examined: Italy / Vicenza: 3♂♂ 2♀♀ Monte Pasubio, Val Canale E, Malga dei Busi, 1000 m, 45.7682°N, 11.2081°E, 25.6.1983, leg. Kahlen; 1♀ Val Canale, 1100-1200 m, 45.7586°N, 11.1929°E, 11.6.1974, leg. Kahlen; 1♂ same locality and date, 14.6.1973, leg. Brachat; 1♂ same locality and date, 9.6.1932, leg. Pechlaner (syntype of *C. pechlaneri*, det. Machulka). 1♂: Italy / Verona, Selva di Progno, 570-650 m, 45.6117°N, 11.1387°E, [no date], leg. Bruno Kletler (syntype of *C. pechlaneri*, det. Machulka).

Genitalia: Dorsal Fig. 98.

Literature data: Referring to the numerous data from the Parco Regionale della Lessinia by MEYBOHM & ZANETTI 2014. From there: Holotype ♂ Parco Lessinia (VR), Val Fraselle 900 m, 45°39'50.70''N, 11°08'12.93''E, 11.5.2012, leg. Sette (Museo Civico di Storia Naturale di Verona).

Cephennium liguricum* nov.sp. (Figs 16-20, 80)C. discrepans* BESUCHET i.l.

Type Material: **Holotype** ♂: Italy / Genova, Ligurian Apennines, Passo del Faiallo N, 950 m, 44.4706°N, 8.6669°E, 8.5.2010, hazel leaf litter between rocks, leg. Kahlen. / *Cephennium liguricum* nov.sp. ♂ det. Kahlen / **Holotype** TLMF. **Paratypes:** Italy / Savona, Finale Ligure NW: 2♂♂ 1♀ Verezzi E, Cava del Colle, 250 m, 44.1656°N, 8.3169°E, 31.12.2018, litter under bushes between rocks, leg. Kahlen (TLMF); 1♂ Verezzi N, il Castellaro, 325 m, 44.1719°N, 8.31°E, 29.12.2018, leaf and branch litter, leg. Kahlen (TLMF); 1♂ Verezzi N, 250 m SE Torre Bastia, 320 m, 44.1747°N, 8.3086°E, 16.4.2019, dry leaf litter, leg. Kahlen (TLMF).

Non type material: 2♂♂: Emilia [Romagna], [Parma], Santa Maria Taro, leg. Fiori, coll. Besuchet; 1♂: Ruta [Liguria, Genova], leg. Dodero, coll. Besuchet (unpublished notes Besuchet).



Figs 16-20: *Cephennium liguricum*. (16) male habitus holotype, sb: 0.5 mm; (17) aedeagus dorsal view holotype, sb: 0.1 mm; (18) ventral view of metaventricle; (19) male front tibia; (20) aedeagus lateral, sb: 0.1 mm (Figs 18-20 paratype).

E t y m o l o g y : The species name derives from its predominant distribution in the Liguria region.

D e s c r i p t i o n : Habitus as in Fig. 16. Body length 1.15-1.2 mm. Body dark reddish-brown to blackish, appendages slightly lighter; glossy, hair sparse, moderately long, and almost appressed. Head glossy, unpunctured, with very prominent eyes on the sides. Antennal segments 1 to 7 slightly longer than wide, segment 8 distinctly smaller than segment 7 and rounded, followed by the distinctly separated three-segmented club. Pronotum wider than long (1.3:1), glossy with very fine and extremely widespread punctation, greatest width before the middle, converging straight towards the rear from here. Elytra narrower than long (1:1.36), glossy and with punctation as fine and widespread as that on the pronotum. Greatest width before the middle, sides evenly rounded. The centrally rounded, laterally flattened, extended basal foveae with a denser central tuft of hair. In males, the fore and middle tibiae are slightly thickened in their apical halves (Fig. 19). Underside: ♂ with metaventricle not impressed, flat, highly glossy, scarcely haired. Extensively fine and widespread punctured towards the edges and further towards the sides (Fig. 18) Genitalia: Length 0.32-0.35 mm. Dorsal Fig. 17 & 80., lateral Fig. 20.

***Cephennium lombardum* nov.sp. (Figs 21-25, 81)**

C. affabile BESUCHET i.l., = *C. breitianum* MACHULKA i.l.

Type Material: Holotype ♂: Italy / Bergamo, Bergamo Pre-Alps, Pizzo Arera vicinity, Val d'Arera right valley slope, karst, 1820-1850 m, 45.9281°N, 9.8°E, 27.5.2022, rhododendron litter, leg. Kahlen. / *Cephennium lombardum* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 2♂♂, same data as holotype, leg. Kahlen (TLMF); 1♂: Italy / Bergamo, Bergamo Pre-Alps, Presolana, Colle della Guaita N side, 1900 m, 45.9629°N, 10.0639°E, 12.7.1989, rhododendron litter, leg. Kahlen (TLMF).

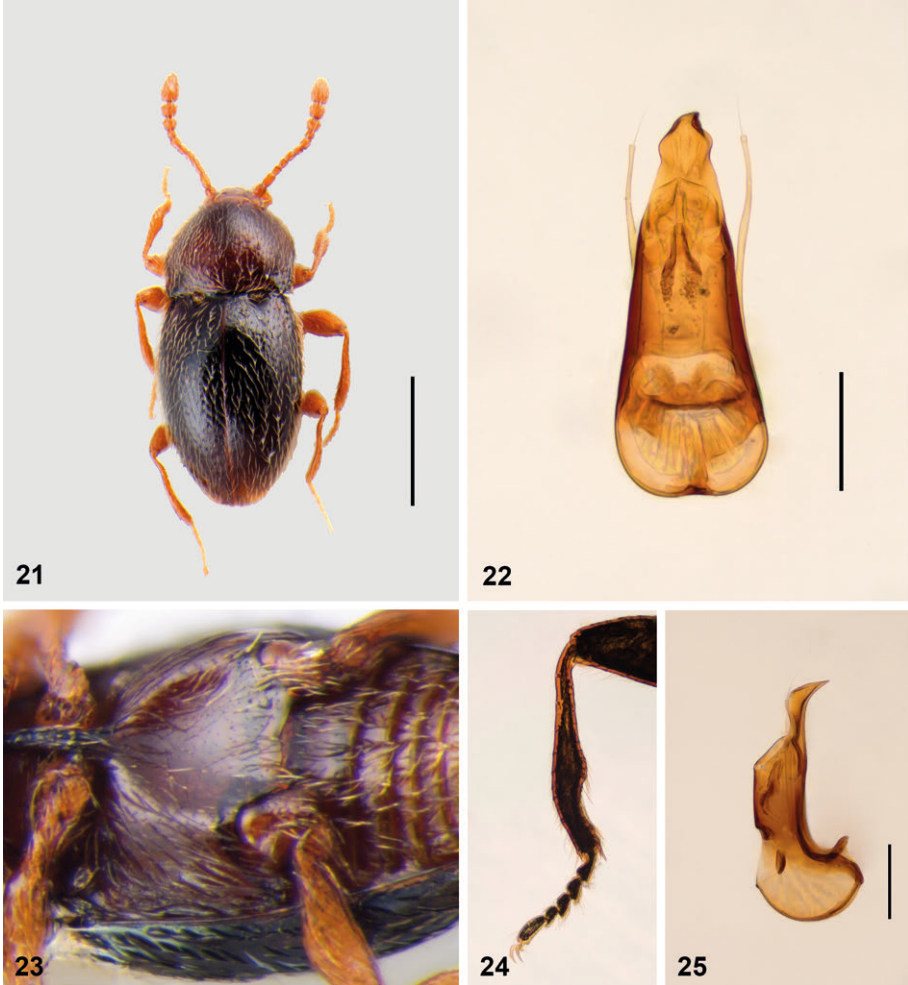
Type material collection Meybohm: Paratypes, all cMey: 1♂: Italia / Bergamo, Bergamo Pre-Alps, Presolana, Rifugio Albani, 1950 m, 45.9661°N, 10.0561°E, 11.7.1989, leg. V. Brachat. 1♂ 1♀: Italia / Brescia, Monte Guglielmo, 1920 m, 45.7558°N, 10.1683°E, 3.6.2003, leg. P. Wunderle. All specimens det. Kahlen.

Non type material: Brescia, Mt. Guglielmo, leg. Breit, det. Machulka: *C. breitianum* i.l. m.; 1♂ 1♀ coll. Mus. Frey, 1♂ 1♀ coll. Besuchet (Besuchet i.l.).

E t y m o l o g y : The species name derives from its occurrence in the pre-Alps of the Lombardy region.

D e s c r i p t i o n : Habitus as in Fig. 21. Body length 1.25 mm. Body dark brownish-black, head, pronotum, and appendages lighter than elytra; glossy, hair fairly dense, moderately long, and almost appressed. Head glossy, unpunctured, with large but hardly protruding eyes. Antennal segment 1 short, 2 distinct, 3 to 7 slightly longer than wide and scarcely differing in width, only the 8th segment rounded and smaller than the 7th, 9th segment hardly wider than long and thus the club weakly differentiated. Pronotum slightly wider than long (1.18:1), glossy with dense fine and visibly rugose punctation, greatest width just before the middle, rounded from here to the front, almost straight converging towards the rear, no humped elevation before the base. Elytra narrower than long (1:1.4), glossy and with much coarser, rugose, but more extensive punctation than the pronotum. Greatest width before the middle, sides evenly rounded. The basal foveae notably large in the middle between the suture and lateral margin and with tomentose tufts at the anterior edge. In males, the tibiae are quite distinctive: the thickened fore tibiae in the apical half are curved on the outer margin in the thickening and particularly rough here with coarse

granules, deeply incised on the inner margin and narrowed towards the apex. The long middle tibiae are slightly doubly curved and weakly thickened in their apical half. The also long hind tibiae are strikingly doubly curved, but hardly thickened in the apical two-thirds (Fore tibia Fig. 24, hind tibia see habitus Fig. 21). Underside: ♂ with metaventrite deeply impressed, glossy, smooth and very fine punctured in the centre, finely and sparsely hairy and very finely and extensively punctured towards the edges (Fig. 23). Genitalia: Length 0.32-0.33 mm. Dorsal Fig. 22, unpublished drawing Besuchet Fig. 81; lateral Fig. 25.



Figs 21-25: *Cephennium lombardum*. (21) male habitus holotype, sb: 0.5 mm; (22) aedeagus dorsal view holotype, sb: 0.1 mm; (23) ventral view of metaventrite; (24) male front tibia; (25) aedeagus lateral, sb: 0.1 mm (Figs 23-25 paratype).

***Cephennium majus* REITTER, 1881 (Figs 11-15)**

Material examined: Italy / Treviso: 5♂♂ 2♀♀ Cansiglio, Vallorch, 1200-1350 m, 46.0517°N, 12.3655°E, 14–16.6.1974. Italy / Vercelli: 1♀ Val Sesia, Scopello, Alpe di Mera N-side, 1200 m, 45.756°N, 8.0847°E, 22.6.1984. Italy / Torino: 1♂ Valchiusella, Issiglio, Bric di Muraglio N-slope, 550 m, 45.4402°N, 7.7454°E, 27.6.1984; 1♂ 3♀♀ Castelnuovo Nigra N, Monte Calvo W-slope, 1150 m, 45.4632°N, 7.6878°E, 21.5.2010 - here syntopic with *C. giachinoi* nov.sp. All specimens leg. & det. Kahlen.

This species is widely distributed in the central and eastern parts of Europe.

Habitus: Fig. 11, **Genitalia:** Dorsal Fig. 12., lateral Fig. 15. (See differential diagnosis of *C. giachinoi*).

***Cephennium maritimum* REITTER, 1884 (Fig. 99)**

Material examined: Italy / Imperia: 7♂♂ 8♀♀ Val Giara di Rezzo, 400 m, 44.0245°N, 7.8830°E, 25.9.2000. Italy / Savona: 2♂♂ 2♀♀ Andora, Graben NE San Pietro, 70 m, 43.9874°N, 8.138°E, 24.9.2000; 2♂♂ 2♀♀ Quiliano, Val Danè, valley floor N Faia, 180 m, 44.2775°N, 8.3711°E, 2.4.1988. All specimens leg. & det. Kahlen.

Material collection Meybohm: 8♂♂ 8♀♀ Italia / Savona, Erli, 280 m, 44.1369°N, 8.1021°E, 10.11.1997, leg. I. Wolf, det. Kahlen, cMey.

Genitalia: Dorsal Fig. 99.

***Cephennium montanum* REITTER, 1884 (Fig. 100)**

Material examined: Italy / Vercelli: 4♂♂ 2♀♀ Borgo Sesia, Monte Fenera W-slope, 700 m, 45.71°N, 8.3109°E, 18.6.1984, leg. Kahlen. Italy / Verbano-Clusio-Ossola: 5♂♂ Ornavasso, surroundings of Madonna del Boden, 450-500 m, 45.9608°N, 8.4017°E, 17.5.1975, leg. Kahlen; 1♀ Macugnaga, 1300 m, 45.9689°N, 7.9669°E, 1.9.1954, leg. Besuchet. Switzerland / Ticino: 1♀ Locarno W, Losone, 240 m, 46.1678°N, 8.7619°E, 21.9.1955, leg. Besuchet.

Genitalia: Dorsal Fig. 100.

***Cephennium torrezzomontis* nov.sp. (Figs 26-30)**

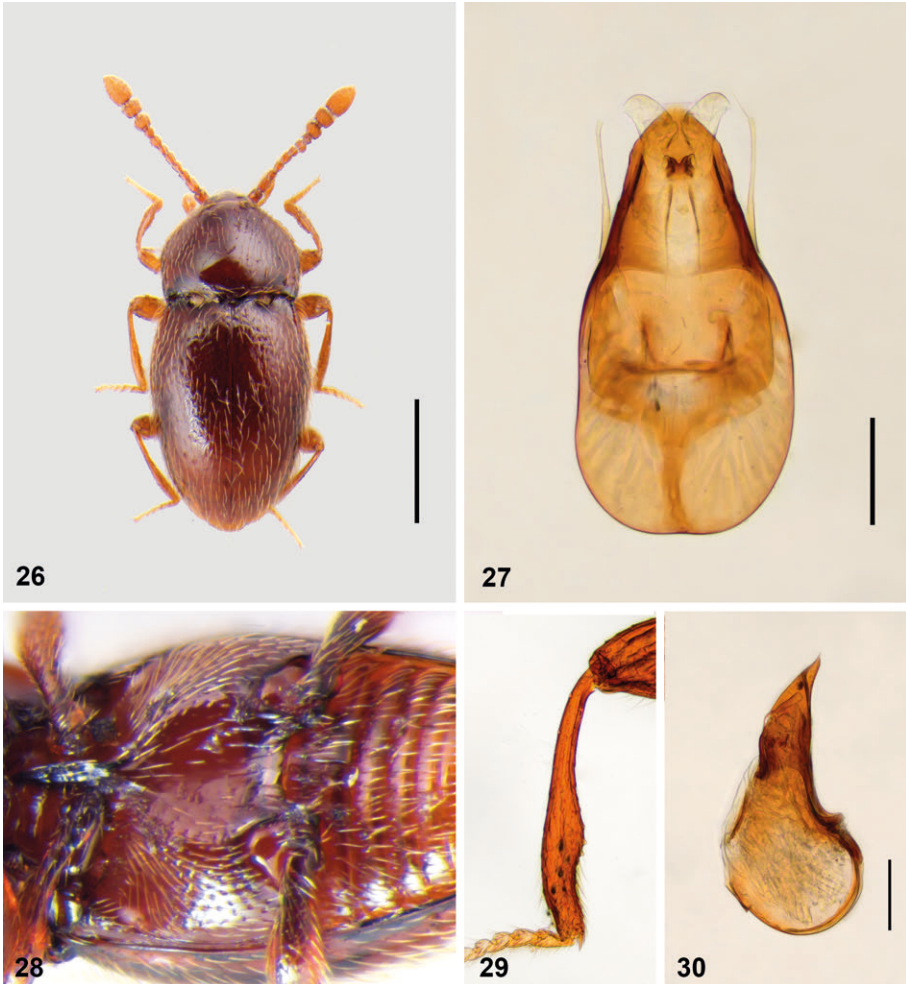
Type Material: Holotype ♂: Italy / Bergamo, Bergamo Pre-Alps, Monasterolo E, Val delle Colle left slope, 700 m, 45.7644°N, 9.9472°E, 7.5.2023, litter and roots among stones, leg. Kahlen. / *Cephennium torrezzomontis* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 3♂♂ 5♀♀: same data as holotype, leg. Kahlen (TLMF); 1♀: 6.11.2023, otherwise same data as holotype, leg. Kahlen (TLMF); 2♀♀: Italy / Bergamo, Bergamo Pre-Alps, Monasterolo E, Val Torrezzo valley floor, 650-670 m, 45.7561°N, 9.9453°E, 6.11.2023, litter and *Vinca* roots, leg. Kahlen (TLMF); 1♀: Italy / Bergamo, Bergamo Pre-Alps, Monasterolo E, Val Torrezzo Rif. F.lli Giudici vicinity, 750 m, 45.7544°N, 9.9478°E, 5.11.2023, litter and roots among coarse rubble, leg. Kahlen (TLMF).

Etymology: The specific name is derived from Monte Torrezzo on the orographic left side of the Val Cavallina, where the specified collecting sites are located.

Description: Habitus as in Fig. 26. Strikingly large, body length 1.33-1.4 mm. Body along with appendages dark reddish-brown, shiny, hair moderately dense, moderately long, and almost appressed. Head shiny, unpunctured, with small, very clearly laterally protruding eyes. Antennal segment 1 short, 2 1.5 times longer than wide, 3-5 weakly longer than wide, with the 5th segment distinctly larger than segments 3 and 4, 6 to 8 spherical, 7 distinctly larger than 6 and 8, the three-segmented club distinctly demarcated. Pronotum wider than long (1.3: 1), shiny with extremely fine and extremely widespread punctures, greatest width just before the middle, hardly narrowed straightly backwards from here, the lateral margin with an indicated notch, in the male the basal

bulge is straightly indicated. Elytra narrower than long (1: 1.35), shiny and with clearly coarser and less widespread punctures than on the pronotum, these punctures are partially connected with indicated wrinkles. Greatest width before the middle, sides evenly rounded. Small round basal pits with dense central tomentose tuft in the middle between suture and lateral margin, on which the humeral folds are strikingly long (almost 0.2 mm) and sharply keeled. In males, the apical third of the front tibiae is distinctly indented (Fig. 29). Underside: ♂ with metaventricle deeply impressed, shiny, smooth and unpunctured in the center, but coarse and densely punctured and hairy at the edges and outside (Fig. 28). Genitalia: Length 0.4 mm. Dorsal Fig. 27, lateral Fig. 30.

The species was found syntopic with the much smaller and therefore immediately distinguishable *C. horni* MACHULKA, 1933.



Figs 26-30: *Cephennium torrezomontis*. (26) male habitus holotype, sb: 0.5 mm; (27) aedeagus dorsal view holotype, sb: 0.1 mm; (28) ventral view of metaventricle; (29) male front tibia.; (30) aedeagus lateral, sb: 0.1 mm (Figs 28-30 paratype).

***Cephennium nicaeense* REITTER, 1881 (Fig. 101)**

M a t e r i a l e x a m i n e d : Italy / Cuneo: 1♂ Val Pesio, Pian dell Gorre, 1030-1050 m, 44.2144°N, 7.6605°E, 11.5.2010. Italy / Savona: 1♂ 1♀ Colle di Melogno W-side, 1000 m, 44.2292°N, 8.1914°E, 8.5.2010; 1♂ Colle di Melogno WSW, Bric Merizzo W-side, 1150 m, 44.2229°N, 8.1803°E, 28.9.2000; Colle di Melogno NW, Monte Settepani W, 1♂ ditch near Pian Marchia, 850 m, 44.2401°N, 8.1722°E, 9.5.2010, as well as 2♂♂ 2♀♀ ditch under Pian Marchia, 800 m, 44.2375°N, 8.1699°E, 17.4.2019. Italy / Imperia: 2♂♂ Passo della Teglia E, 1380 m, 43.9955°N, 7.8339°E, 26.9.2000, dry hazel branches, leg. Kahlen; 2♂♂ Passo di Fenaira N-side, 1250 m, 43.9903°N, 7.8476°E, 26.9.2000. All specimens leg. & det. Kahlen. France / Alpes-Maritimes: 2♂♂ 1♀ Col de Turini E, Vallon de Turini, 1200 m, 43.761°N, 7.4117°E, 27.6.2008, leg. Kahlen; 2♂♂ St. Martin Vesubie, 960-1100 m, 44.0667°N, 7.25°E, [collector not specified], det. Besuchet.

Genitalia: Dorsal Fig. 101.

***Cephennium reissi* MACHULKA, 1933 (Fig. 102)**

M a t e r i a l e x a m i n e d : Italy / Trentino: 1♀ Monte Pari, 1600-1990 m, 45.9059°N, 10.7662°E, 10.6.1936, leg. Pechlaner, det. Machulka & Besuchet. Italy / Lecco: 3♂♂ Cortenova surroundings, 450-500 m, 45.9998°N, 9.3820°E, 21.5.1975, leg. Kahlen; 1♂ 1♀ Parlasco surroundings, 700 m, 46.018°N, 9.3440°E, 21.5.1975, leg. Kahlen; 4♂♂ Grigna Settentrionale SE, Foppa dei Ger, 1600 m, 45.9493°N, 9.4062°E, 17.7.1997, leg. Kahlen; 1♂ Monte Resegone, surroundings of Rifugio Azzoni, 1840-1875 m, 45.8583°N, 9.4692°E, 31.5.2021, leg. Kahlen. Italy / Bergamo: 1♂ 3♀♀ Oltre il Colle, 1000-1150 m, 45.8905°N, 9.7689°E, [without date and collector], det. Machulka & Besuchet as syntypes of *C. reissi bergamascum*; 1♂ 1♀ Oltre il Colle, Zambra Alta, Val Luchera, 1180 m, 45.8972°N, 9.8008°E, 15.5.2022, beech leaf litter, leg. Kahlen; 1♂ Pizzo Arera SW, Alpe Arera, 1650-1700 m, 45.92°N, 9.8008°E, 1.6.1980, leg. Kahlen; 2♂♂ Monte Alben, surroundings of Pian della Mussa, 1300 m, 45.8792°N, 9.7603°E, 28.5.2022, leg. Kahlen; 2♂♂ Monte Venturosa S-ridge, 1850-1900 m, 45.9272°N, 9.6158°E, 26.5.2023, leg. Kahlen.

The subspecies *C. reissi reissi* and *C. reissi bergamascum* are not differentiated here because, according to the drawings by Besuchet (unpublished), they do not exhibit relevant distinguishing characteristics. Also, Machulka's descriptions (MACHULKA 1933) only depict vague differences, which should be attributed to variability.

Cephennium reissi MACHULKA, 1933 = *Cephennium reissi bergamascum* MACHULKA, 1933 **nov.syn.**

Genitalia: Dorsal Fig. 102.

***Cephennium rossii* CASTELLINI, 2011 (Fig. 103)**

M a t e r i a l e x a m i n e d : Italy / South Tyrol: 4♂♂ 10♀♀ Fennhals, 1000-1100 m, 46.2982°N, 11.1887°E, 23.5.1969, 26.8.1970, 9.5.1971, 7.10.1971; 1♀ Oberfennberg, 1150-1200 m, 46.283°N, 11.1731°E, 25.5.1969; 1♂ 3♀♀ Unterfennberg, 1000-1100 m, 46.2683°N, 11.1803°E, 25.5.1969 and 20.5.1970. Italy / Trentino: 2♂♂ 1♀ Monte Baldo, Val degli Archetti, 1400 m, 45.7894°N, 10.875°E, 15.6.1971. Italy / Verona: 1♂ Monte Baldo, Cima delle Pozzette, 2130 m, 45.7416°N, 10.8546°E, 18.6.2020. Italy / Vicenza: Monte Pasubio, Val Canale, 1100-1200 m, 45.7686°N, 11.1929°E, 12.8.1978. Italy / Chieti: 1♂ 1♀ Pretoro SW, Val del Foro Talgrund, 1200 m, 42.1808°N, 14.1253°E, 4.6.2001. All specimens leg. & det. Kahlen.

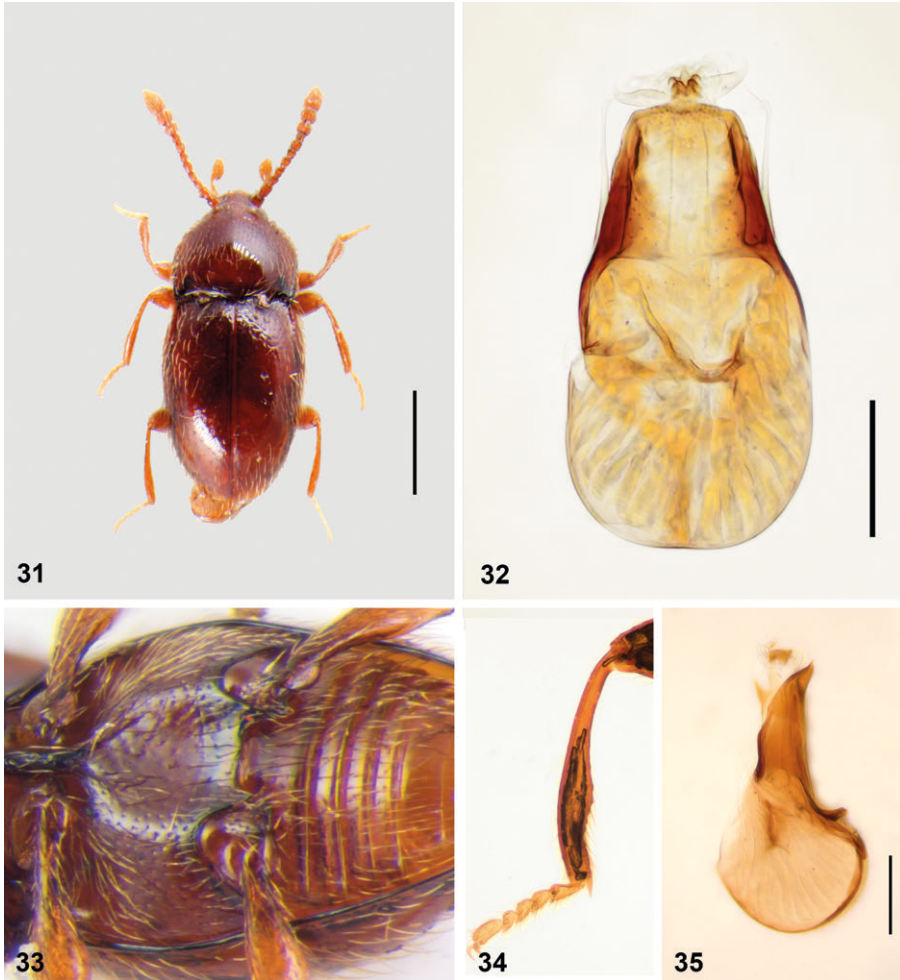
Genitalia: Dorsal Fig. 103.

Literature data: Referring to numerous data from the Parco Regionale della Lessinia by MEYBOHM & ZANETTI 2014. Data of the holotype ♂: Italy / Lazio: Monte Terminillo, 1300 m, 17.6.1976, leg. W. Rossi, coll. Castellini (CASTELLINI 2011).

***Cephennium sanctisfaustini* nov.sp. (Figs 31-35)**

Type Material: Holotype ♂: Italy / Brescia, Camignone, San Faustino, 290 m, 45.6144°N, 10.0797°E, 19.3.1981, ivy roots, leg. Kahlen. / *Cephennium sanctisfaustini* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 1 ♀: the same data as the holotype, leg. Kahlen (TLMF), 1 ♀ 18.3.2024 and 1 ♂ 3 ♀ 5.4.2024, leg. Kahlen (TLMF).

E t y m o l o g y : The species name derives from the locality near the small church of Saint Faustinus (historical bishop of Brescia).



Figs 31-35: *Cephennium sanctisfaustini*. (31) male habitus holotype, sb: 0.5 mm; (32) aedeagus dorsal view holotype, sb: 0.1 mm; (33) ventral view of metaventricle; (34) male front tibia; (35) aedeagus lateral, sb: 0.1 mm (Figs 33-35 paratype).

Description: Habitus as in Fig. 31. Body length 1.35 mm. Body including appendages uniformly reddish-brown; shiny, pilosity moderately dense, long, and slightly erect. Head shiny, unpunctuated, with eyes strongly protruding laterally. Antennal

segments 1 short, 2 - 7 varying in size, but all noticeably longer than wide, 8 spherical, smaller than 7, and its three-segmented, nearly parallel club distinctly, but not sharply demarcated. Pronotum one-third wider than long (1.3:1), shiny with extremely fine and widely spaced punctuation, greatest width in the anterior third, rounded from here to the front, straight and barely converging narrowed towards the rear, with very weak bulging elevation before the base. Elytra narrower than long (1:1.36), shiny, and in the anterior half with moderately dense, strong, and distinctly wrinkled punctuation, which becomes much finer and more widely spaced towards the tip in the posterior half; greatest width just before the middle, sides evenly rounded. Basal foveae round and deeply excavated, not flattened laterally, small tomentose cushions in the middle of the anterior margin. In the male, anterior tibiae slightly thickened, with weak indentation on the inner side in the apical third (Fig. 34). Underside: ♂ with metaventrite is shiny, sparsely haired in the centre, and more densely haired towards the sides, moderately impressed in the middle. In the centre of this notch, nearly unpunctured, punctures become clearer towards the bulging edges and are uniformly strong and moderately densely punctuated on the outer sides (Fig. 33). Genitalia: Length 0.35 mm. Dorsal view Fig. 32, lateral view Fig. 35.

***Cephennium settei* MEYBOHM & ZANETTI, 2014 (Fig. 104)**

Material examined: Italy / Trentino: 1♂ Val Rivotto, gorge below Rifugio Boschetto, 1200-1250 m, 45.6955°N, 11.1230°E, 12.7.1979. Italy / Verona: 1♂ 1♀ Val d'Alpone, ditch south of Castelvero, 400 m, 45.5542°N, 11.2075°E, 16.3.1985; 1♂ Val Squaranto, 200 m, 45.5219°N, 11.0704°E, 25.3.1978 and 9♂♂ 1♀ 17.3.1985. Italy / Vicenza: 1♂ 2♀♀ Grotta dell'Anguane surroundings, 600-650 m, 45.6435°N, 11.1962°E, 8.10.1982. All specimens leg. & det. Kahlen.

Genitalia: Dorsal Fig. 104.

Literature data: Referring to the numerous data from the Parco Regionale della Lessinia and elsewhere in the province of Verona by MEYBOHM & ZANETTI 2014. Data of the holotype ♂: Lessinia (VR) Vajo di Squaranto, 600 m, 45°35'30.92"N, 11°02'47.21"E, 9.12.2009, leg. Sette (Museo Civico di Storia Naturale di Verona).

***Cephennium simile* REITTER, 1881 (Fig. 105)**

Material examined: Italy / Lecco: 2♂♂ Morterone S, Passo di Palio - Bocchetta di Palio, 1380 m, 45.8653°N, 9.4875°E, 1.6.2021. Italy / Como: 7♂♂ 2♀♀ San Bartolomeo Val Cavargna, 900 m, 46.0836°N, 9.1521°E, 21.5.1975. Italy / Biella: 2♂♂ Val Sessera, Centrale Elettrica Zegna surroundings, 600 m, 45.6898°N, 8.1377°E, 19.6.1984. Italy / Verbano-Clusio-Ossola: 2♂♂ Val Anzasca, Molini, 500 m, 46.01°N, 8.186°E, 17.5.1975; 7♂♂ Ornavasso, surroundings of Madonna del Boden, 450-500 m, 45.9608°N, 8.4017°E, 17.5.1975; 4♂♂ Val Antrona, Prabernardo, 650-700 m, 46.0480°N, 8.1417°E, 19.5.1975; 1♂ surroundings of Lago di Antrona, 1050-1100 m, 46.0542°N, 8.0936°E, 19.5.1975. Italy / Torino: 2♂♂ Alpi Graie, Castelnuovo Nigra N, Monte Calvo W-Slope, 1150 m, 45.4632°N, 7.6878°E, 21.5.2010 (syntop with *C. giachinoi* and *C. majus*). All leg. & det. Kahlen. Switzerland / Ticino: 1♂ Locarno E, Quartino, 200 m, 46.1508°N, 8.8964°E, 6.9.1953; 1♀ Monte Ceneri, 555 m, 46.1403°N, 8.9053°E, 30.6.1954, both leg. & det. Besuchet.

Material collection Meybohm: Italy / Liguria: 3♂ 14♀♀ Santo Stefano d'Aveto, 1000 m, 44.5477°N, 9.4514°E, 9.7.1974, leg. V. Brachat; 1♀: Monte Maggiorasca, 1750 m, 44.5512°N, 9.4899°E, 9.7.1974, leg. V. Brachat; 1♂ 1♀: Rezzoaglio, 700 m, 44.5263°N, 9.3873°E, 10.7.1974, leg. V. Brachat; 1♂: Monte Penna, 1500 m, 44.4827°N, 9.4926°E, 8.7.1974, leg. V. Brachat; alle det. Kahlen, cMey. Italy / Toscana: 7♂♂, 4♀♀: Monte Altissimo N, Case delle Gobbie, 1100 m, 44.0629°N, 10.2344°E, 9.9.1998, leg. V. Assing, det. Kahlen, 4♂♂ 4♀♀ cMey, 3♂♂ TLMF.

Genitalia: Dorsal Fig. 105.

***Cephennium stolzi* MACHULKA, 1932 (Fig. 106)**

Material examined: 2♂♂: Italia / Como, Monte Bisbino S, Val della Colletta left Valley slope, Monti Albero del Cucco, 900 m, 45.8622°N, 9.0738°E, 4.4.2024, leg. & det. Kahlen.

Genitalia: Dorsal Fig. 106.

***Cephennium tarvisinum* nov.sp. (Figs 36–40, 82)**

C. lanceolatum BESUCHET i.l.

Type Material: Holotype ♂: Italy / Treviso, Farra di Soligo, Borgo Grotta, 215 m, 45.9119°N, 12.1181°E, 17.5.1985, leaf litter, leg. Kahlen. / *Cephennium tarvisinum* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 2♂♂ 1♀: same data as holotype, leg. Kahlen (TLMF); 2♂: Italy / Treviso, Guia, Costa Grande N slope, 250 m, 45.9039°N, 12.0639°E, 16.5.1985, leaf litter, leg. Kahlen (TLMF); 1♂ 1♀: Italy / Treviso, San Michele di Feletto, Grotta Landron surroundings, 100 m, 45.8834°N, 12.2377°E, 28.5.1986, leaf litter on gravel, leg. Kahlen (TLMF); 1♂: San Michele di Feletto, 3.10.1947, leg. Meggiolaro (NMS); 2♂: Italy / Treviso, Montello, Val di Cal Traversa, 180 m, 45.7985°N, 12.1361°E, 21.5.1985, leaf litter, leg. Kahlen (TLMF); 1♂: Italy / Treviso, Montello, Val di Bo del Gobbo, 150 m, 45.7939°N, 12.135°E, 21.5.1985, leaf litter, leg. Kahlen (TLMF). 1♂ 1♀: Italia / Treviso, Montello, Il Forame Eingangszone, 110 m, 45.8066°N, 12.1607°E, 24.5.1990, Laubstreu, leg. Kahlen (TLMF).

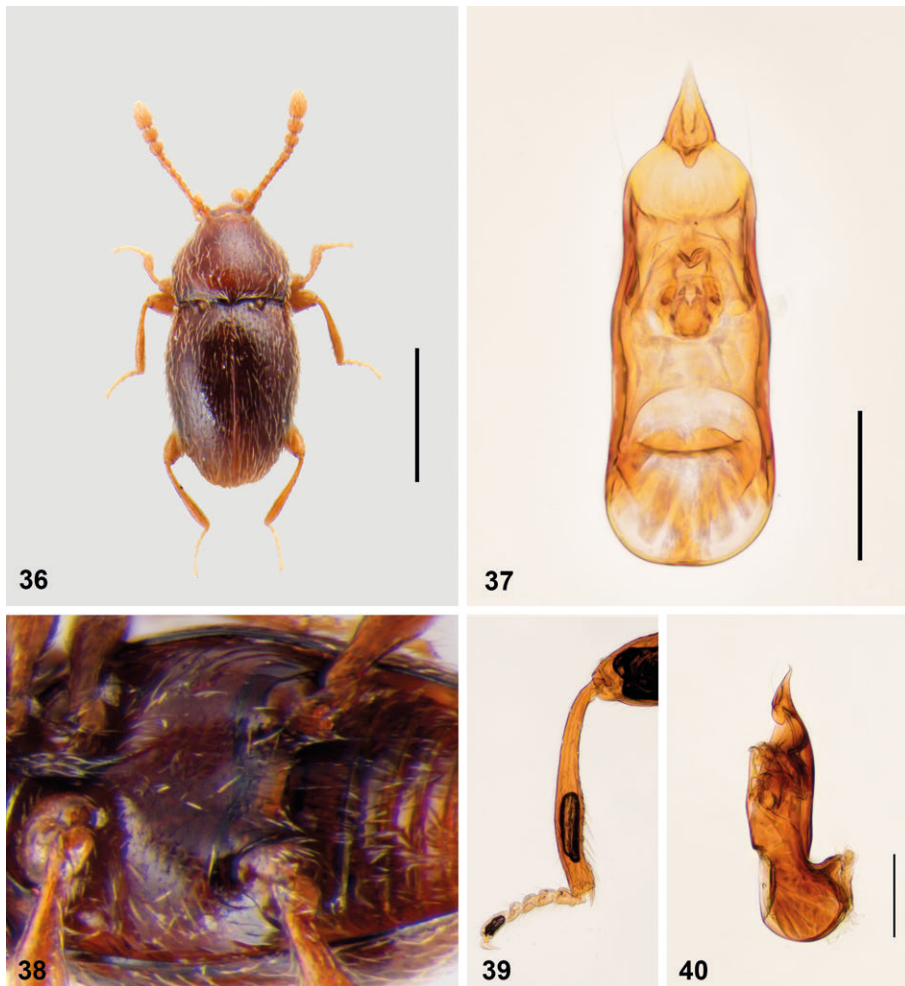
Type material collection Meybohm: Paratypes, all cMey: Italia / Treviso: 1♂: Valdobbiadene, 250 m, 45.9016°N, 11.9958°E, 11.6.1990, leg. H. Daffner; 1♂ 1♀: Valdobbiadene Saccol, Col Croset, 250 m, 45.8971°N, 12.0209°E, 2.5.1990, leg. H. Daffner; 1♀: Valdobbiadene, Pian de Farnè, 1100 m, 45.9250°N, 12.0278°E, 26.9.2013, leg. H. Meybohm; 3♂♂ 1♀: Refrontolo, 200 m, 45.9254°N, 12.2076°E, 3.5.1986, leg. V. Brachat; 1♂: Miane-Campea, 180 m, 45.9278°N, 12.1103°E, 26.5.1990, leg. H. Daffner; 1♂: Campea W, 240 m, 45.9206°N, 12.0870°E, 2.10.2013, leg. H. Meybohm; 1♂: Nervesa NW, Fiume Piave, 100 m, 45.8533°N, 12.1611°E, 2.10.2013, leg. H. Meybohm; 1♂: Montello, 1.5.1986, leg. V. Brachat. All specimens det. Kahlen.

Non type material: 2♂♂ 4♀♀: Treviso, Conegliano, San Michele di Feletto, leg. & coll. Sopracordevole; 5♂♂ 2♀♀: Conegliano, San Michele di Feletto, leg. & coll. Meggiolaro; 2♂♂ 3♀♀: Conegliano, San Michele di Feletto, leg. & coll. Bucciarelli; 2♂♂ 1♀: Conegliano, Grotta Andron, leg. & coll. Meggiolaro; 1♂ 4♀♀: Treviso, Montello, Bus del Frate, leg. & coll. Meggiolaro; 2♂♂ 5♀♀: Treviso, Montello, leg. & coll. Cadamuro or Burlini; 1♂: Treviso, San Pietro di Barbozza, leg. Raffone, coll. Besuchet; 2♂♂ 3♀♀: Belluno, Pieve d'Alpago, Val Cantuna, leg. & coll. Raffone; as well as other specimens from the mentioned localities in coll. Besuchet (unpublished notes Besuchet).

Etymology: The species name is derived from "Tarvisium," the Roman name for the province of Treviso (where most of the collection sites are located).

Description: Habitus as in Fig. 36. Body length 1.0–1.1 mm. Body and appendages dark reddish-brown; shiny, hair moderately dense, long, and appressed. Head shiny, unpunctured, with weakly protruding eyes on the sides. Antennal segments 1 and 2 distinct, 3–5 slightly longer than wide, 6–8 spherical, with segments 6 and 8 distinctly smaller than segment 7, the three-segmented club distinctly offset. Pronotum slightly wider than long (1.2:1), shiny with fine and widespread punctures, which are recognizable as slightly raspy towards the base, greatest width just before the middle, evenly rounded from here to the front, converging straight towards the back. In the ♂, the middle of the pronotum is very weakly elevated before the base. Elytra narrower than long (1:1.3), shiny and compared to the pronotum with significantly coarser (recognizable as raspy at the base of the pronotum) and denser punctures; greatest width before the middle (in the first third), sides more strongly rounded to the front, weaker to the back. The small basal pits, located in the middle between the suture and the lateral margin, with a filling tomentum pad. In the male, the front tibiae are slightly thickened in their apical half, with a noticeable notch

towards their tip on the inner side (Fig. 39). Underside: ♂ with metaventrite moderately depressed, shiny, sparsely hairy. Evenly fine and widespread punctured throughout (centre, marginal ridge, sides) (Fig. 38). Genitalia: Length 0.32-0.35 mm. Dorsal Fig. 37, along with unpublished drawing by BESUCHET Fig. 82; lateral Fig. 40.



Figs 36-40: *Cephennium tarvisinum*. (36) male habitus holotype, sb: 0.5 mm; (37) aedeagus dorsal view holotype, sb: 0.1 mm; (38) ventral view of metaventrite; (39) male front tibia; (40) aedeagus lateral, sb: 0.1 mm (Figs 36-40 paratype).

***Cephennium tirolense* MACHULKA, 1930 (Fig. 107)**

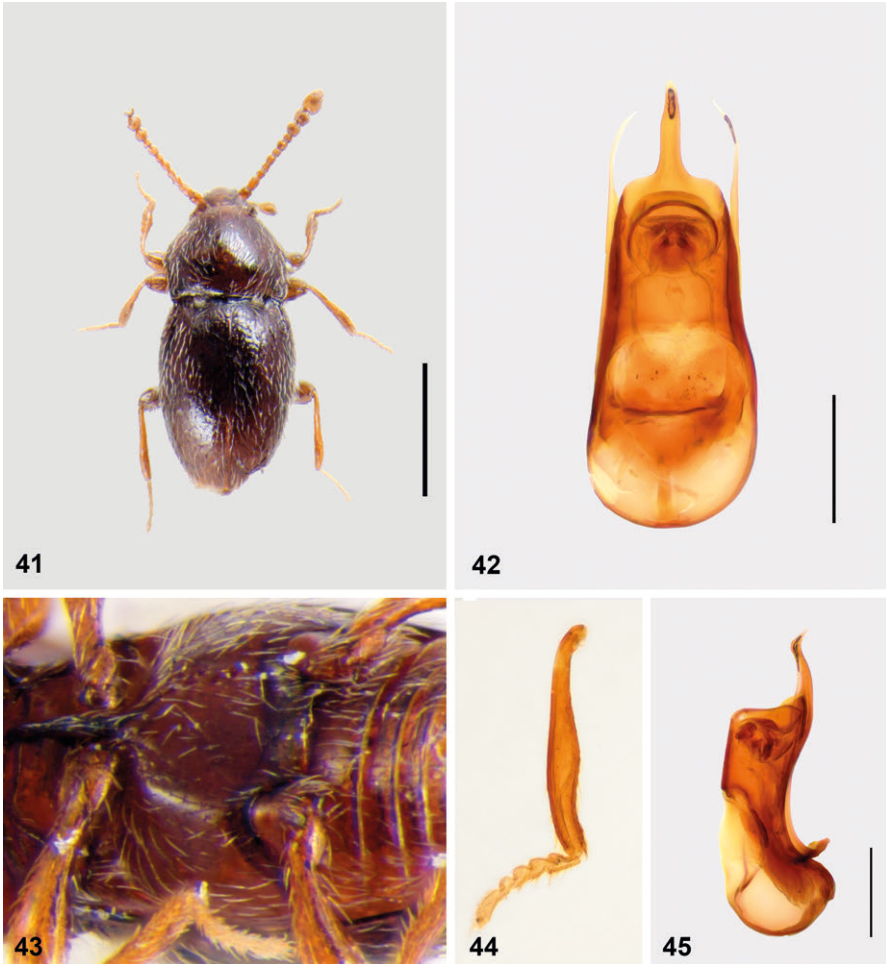
Material examined: Numerous specimens from the areas Sette Comuni and northern Monti Lessini / Monte Pasubio, in the two neighbouring provinces Trentino and Vicenza (collected by Kahlen, Pechlaner, Ratter, Strupi; det. Kahlen, Besuchet, Machulka).

Genitalia: Dorsal Fig. 107.

***Cephennium tremalzomontis* nov.sp. (Figs 41-45)**

Type Material: Holotype ♂: Italy / Trentino, Cima Tombea North Slope, 1900-1940 m, 45.8064°N, 10.6264°E, 4.7.1986, *Dryas* litter, leg. Kahlen. / *Cephennium tremalzomontis* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 1♂: Italy / Trentino, Monte Tremalzo West Slope, 1950-1970 m, 45.8414°N, 10.6982°E, 11.7.1978, litter, leg. Kahlen (TLMF); 1♂: same location, 2.6.2002, *Dryas* and *Globularia* litter, leg. A. Zanetti, det. Kahlen (cMey); 5♂♂ 1♀: same location, 29.5.2004, leg. V. Assing & P. Wunderle, det. Kahlen, 2♂♂ (TLMF), 3♂♂ 1♀ (cMey).

E t y m o l o g y : The species name derives from the predominant findings at Monte Tremalzo in the border region between Trentino-South Tyrol and Lombardy. Additionally, the species has been documented at Cima Tombea in the same area. According to current knowledge, it is considered a local endemic of the "Massifs de Refuge" in the area west of Lake Garda.



Figs 41-45: *Cephennium tremalzomontis*. (41) male habitus holotype, sb: 0.5 mm; (42) aedeagus dorsal view holotype; sb: 0.1 mm; (43) ventral view of metaventrite; (44) male front tibia; (45) aedeagus lateral, sb: 0.1 mm (Figs 43-45 paratype).

Description: Habitus as in Fig. 41. Body length 1.1-1.15 mm. Body reddish to dark brown; elytra darker than the rest of the body including appendages; shiny, sparsely hairy, long and almost appressed. Head shiny, unpunctuated, with weakly protruding eyes on the sides. Antennal segments: 1 short, 2 1.5 times longer than wide, 3-8 hardly longer than wide, different sizes among them, especially the spherical 8th smaller than 7th, its three-segmented club distinctly but not sharply demarcated. Pronotum slightly wider than long (1.2: 1), highly shiny with fine and weakly granular punctation, very sparse in the middle and denser towards the sides, widest just before the middle, evenly strongly rounded from there to the front, distinctly rounded converging narrowed towards the back, with very weakly bulging elevation in front of the base. Elytra narrower than long (1: 1.3), shiny and with significantly coarser granular punctation of varying density compared to the pronotum; widest just before the middle, sides evenly rounded. The basal grooves round, laterally weakly flattened extended, tomentum cushions at the inner front edge. In males, middle of foretibia distinctly thickened, with subsequent strong indentation towards its tip on the inner side (Fig. 44). Underside: ♂ Metaventricle shiny, sparsely hairy, moderately indented in the middle. In the center of this indentation finely and very sparsely punctate, denser and noticeably granular towards the bulging edges, again sparsely punctate on the outer sides (Fig. 43). Genitalia: Length 0.32 mm. Dorsal view Fig. 42, lateral view Fig. 45.

***Cephennium vicentinum* nov.sp. (Figs 46-50, 83)**

C. busulinii BESUCHET i.l.

Type Material: **Holotype** ♂: Italy / Trentino, Selva di Grigno, 300 m, 46.0142°N, 11.5953°E, 6.8.1978, leaf litter, leg. Kahlen. / *Cephennium vicentinum* nov.sp. ♂ det. Kahlen / Holotype TLMF. **Paratypes:** 5♂♂ 1♀: Same location as holotype, 10.6. and 6.8.1978, leg. Kahlen (TLMF); 2♂♂: Italy / Vicenza, Staro E, 500 m, 45.7259°N, 11.2324°E, 14.8.1978, leaf litter, leg. Kahlen (TLMF); 1♂: Italia / Vicenza, Monte Magrè, 400 m, 45.6826°N, 11.3376°E, 25.5.1985, roots under a tree stump, leg. Kahlen (TLMF); Italy / Vicenza, Monti Berici: 1♂ 2♀♀: Zovencedo S, Valle Liona right valley slope, 120 m, 45.4236°N, 11.4967°E, 27.10.1978; and 2♂♂: Zovencedo N, Monte Bernardo NE side, 300-350 m, 45.4361°N, 11.5022°E, 28.10.1978, leg. Kahlen (TLMF).

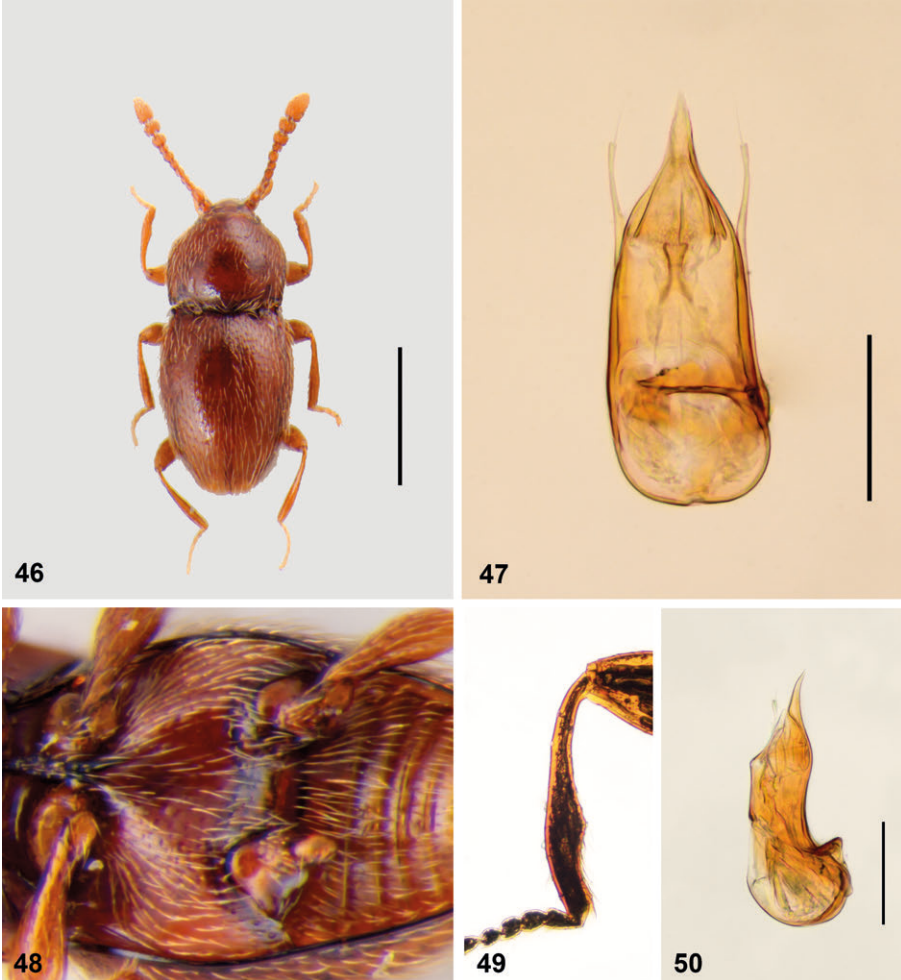
Type material collection Meybohm: **Paratypes**, all cMey: 3♂♂ 1♀: Italia / Trentino, Selva di Grigno, 300 m, 46.0142°N, 11.5953°E, 6.8.1978, leg. H. Daffner. 2♂♂: Italia / Vicenza, Staro E, 500 m, 45.7259°N, 11.2324°E, 14.8.1978, leg. V. Brachat. 1♂: Italia / Belluno, Schievenin, Fiume Tegerzo, 350 m, 45.9405°N, 11.8908°E, 25.5.1979, leg. V. Brachat. All specimen det. Kahlen.

Non type material: Possagno [Treviso, Monte Grappa] (unpublished notes Besuchet).

Etymology: The name derives from its occurrence in the greater area of the province of Vicenza.

Description Habitus as in Fig. 46. Body length 1.05-1.13 mm. Body including appendages uniformly medium brown, glossy, hair fairly dense, long, and slightly erect. Head glossy, unpunctured, with large but laterally only slightly protruding eyes. Antennal segment 1 short, 2 distinct, 3 to 7 hardly longer than wide, 7 enlarged, 8 small and rounded, and the club strongly set off from it. Pronotum wider than long (1.27:1), glossy with quite dense fine punctation and distinctly rugose towards the base, greatest width just before the middle, rounded from here to the front, almost straight converging towards the rear, with a suggested humped elevation before the base. Elytra narrower than long (1:1.3), glossy and with much coarser, rugose, but equally dense punctation as the pronotum. Greatest

width before the middle, sides more strongly rounded towards the front, less so towards the rear. The elytra are scarcely wider than the pronotum. The round basal foveae are flattened towards the sides, the tomentose tufts are very small and located at the inner anterior edge. In males, the fore tibiae are slightly thickened in the apical half and indented on the inner side (Fig. 49). Underside: ♂ with metaventricle deeply impressed, glossy, finely and extensively punctured in the centre, slightly coarser but denser towards the edges, and becoming equally widespread on the outer sides. Sparsely but long-haired (Fig. 48). Genitalia: Length 0.25 mm. Dorsal Fig. 47 and 83, lateral Fig. 50.



Figs 46-50: *Cephennium vicentinum*. (46) male habitus holotype, sb: 0.5 mm; (47) aedeagus dorsal view holotype, sb: 0.1 mm; (48) ventral view of metaventricle, (49) male front tibia; (50) aedeagus lateral, sb: 0.1 mm (Figs 48-50 paratype).

***Cephennium zoiai* CASTELLINI, 2011 (Fig. 108)**

Material examined: Italy / Turin: 4♂♂ Val Chisoletta, 700-900 m, 44.9815°N, 7.3261°E, 30.6.2021; 3♂♂ 1♀ Pugnello, north-facing ditch, 700-800 m, 45.2667°N, 7.3833°E, 25.6.1984, 27./28.10.1998; 1♂ Bibiana SW, ditch near Casa Guanta, 500 m, 44.7887°N, 7.2718°E, 25.10.1999. Italy / Cuneo: 1♂ Entracque SE, Costa Cornet, Vallone del Bousset Right valley slope, 1220-1240 m, 44.1906°N, 7.4485°E, 3.5.2008; 2♂♂ 4♀♀ Entracque SW, San Giacomo, campground "sotto il faggio", 1210 m, 44.1768°N, 7.3869°E, 7.10.2009 and 23.5.2010; 4♂♂ 2♀♀ Palanfrè SW, Gias del Chiot, 1550-1650 m, 44.195°N, 7.4897°E, 6.5.2008; 3♂♂ 4♀♀ Terme di Valdieri NE, Vallone Gesso della Valletta right valley slope, 1260 m, 44.2188°N, 7.2855°E, 2.6. and 9.10.2009. All specimens leg. & det. Kahlen. 1♂: Italia / Torino, Pugnello, nordseitiger Graben, 700-800 m, 45.2667°N, 7.3833°E, 25.6.1984, leg. V. Brachat, det. Kahlen (cMey).

Genitalia: Dorsal Fig. 108.

Literature data: Holotype ♂: Piedmont: Crissolo 1200 m, 13.8.1995, collected by Zoia, collection of Castellini; Paratypes: Piedmont: 3♂♂ 7♀♀ Crissolo 1200 m 13.8.1995, leg. Zoia, collection of Castellini, 1♂ Crissolo, 7./8.1924, leg. Dodero, collection of Museo Genova.

Subgenus *Geodytes*

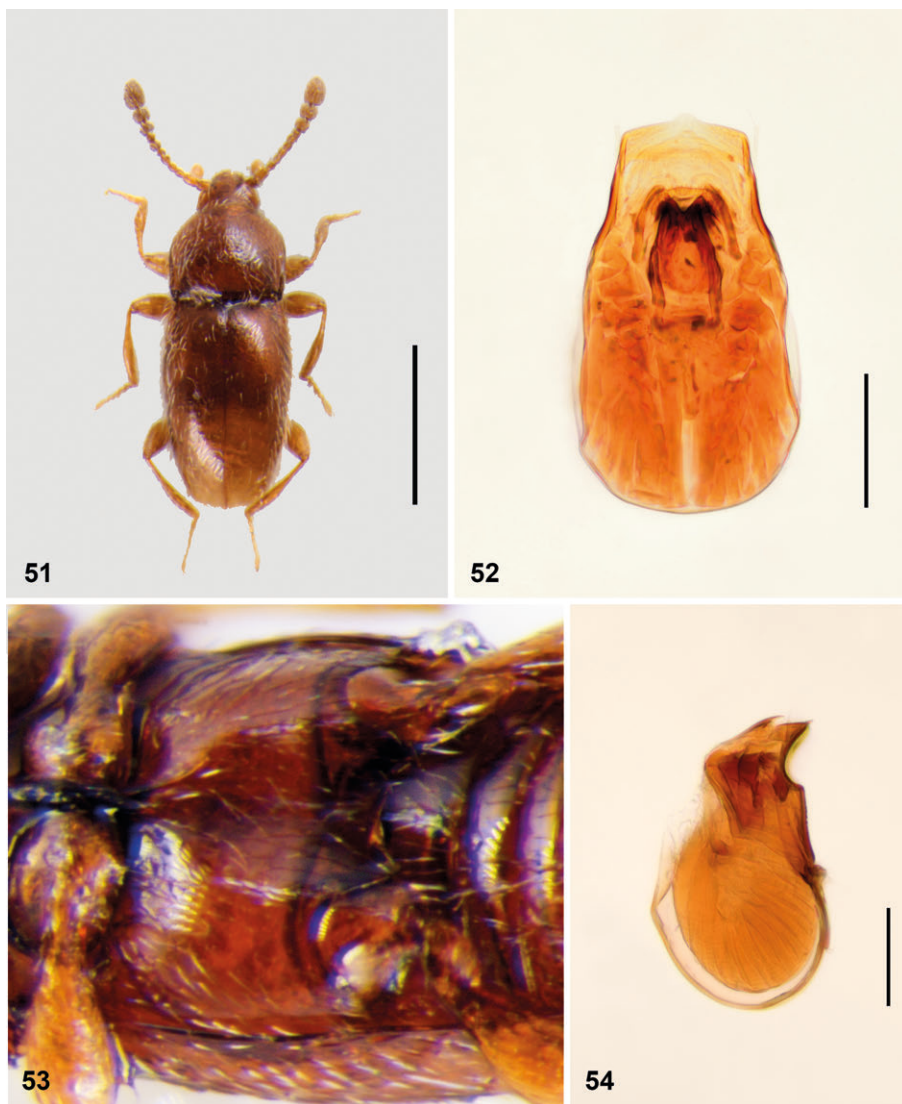
***Cephennium montiumliguriae* nov.sp. (Figs 51-54, 84)**

Type Material: Holotype ♂: Italy / Imperia, Val Giara di Rezzo, right slope of the valley, 600 m, 44.0106°N, 7.8631°E, 29.3.1988, roots, leg. Kahlen. / *Cephennium montiumliguriae* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 1♀: same data as holotype, leg. Kahlen (TLMF); 3♀♀: Italy / Imperia, Passo di Fenaira N side, 1250 m, 43.9903°N, 7.8476°E, 26.9.2000, soil and gravel between rocks, leg. Kahlen (TLMF); 1♂ 2♀♀: Italy / Savona, Quiliano W, Val Danè, bottom of the valley N Faia, 180 m, 44.2775°N, 8.3711°E, 2.4.1988, at the base of alder, leg. Kahlen (TLMF); 3♂♂: Italy / Savona, Colle di Melogno WSW, Bric Merizzo W side, 1150 m, 44.2229°N, 8.1803°E, 28.9.2000, roots in rock crevices, leg. Kahlen (TLMF); 2♂♂ 1♀: Italia / Savona, Colle di Melogno, 1000 m, 44.2346°N, 8.1919°E, 16.5.2016, leg. M. Kocian, det. Kahlen (cMey)

Etymology: The species name is derived from its distribution in the wooded mountains of the Ligurian Alps.

Description: Habitus as in Fig. 51. Body length 1.05-1.1 mm, body width 0.4 mm. Body slender, along with appendages light yellowish-brown; shiny, pilosity dense, moderately long, and slightly erect. Head shiny, laterally with individual fine hair-bearing points, instead of faceted eyes with a distinctly elevated and domed unstructured surface, from the upper edge of which individual hairs emerge, without elevation above the base of the antenna. Antennal segment 1 short, rounded, 2 1/3 times longer than wide, 3-6 nearly spherical, 7 and 8 broader than long, 8 substantially smaller than 7, the three-segmented club broadening towards the tip sharply demarcated from it. Pronotum 1.2 times wider than long, shiny, with fine and widespread punctures anteriorly and laterally, becoming denser and coarser towards the middle and posteriorly, the lateral margin increasing in width from the anterior quarter, sharp and distinct in the posterior two-thirds and weakly constricted very slightly straight towards the rear; basal pits indistinct and shallowly rounded towards the lateral margin. Elytra longer than wide (1.6:1), weakly but evenly rounded laterally, also rounded posteriorly; shiny and compared to the pronotum with fine punctures throughout, basal foveae very shallowly rounded and smooth, small tomentose patch at the anterior margin. In males, anterior tibiae weakly thickened, but without other distinctions. Underside: ♂ Metaventre shallowly depressed, strongly shiny, loosely, but long pilose over the entire surface, punctures faint and widespread in the depression and

on its lateral ridges among the pilosity, becoming clearer towards the extreme lateral margin (Fig. 53). Genitalia: Length 0.3 mm. Dorsal Fig. 52 and 84., lateral Fig. 54.



Figs 51-54: *Cephennium montiumliguriae*. (51) male habitus holotype, sb: 0.5 mm; (52) aedeagus dorsal view holotype, sb: 0.1 mm; (53) ventral view of metaventrite; (54) aedeagus lateral, sb: 0.1 mm (Figs 53-54 paratype).

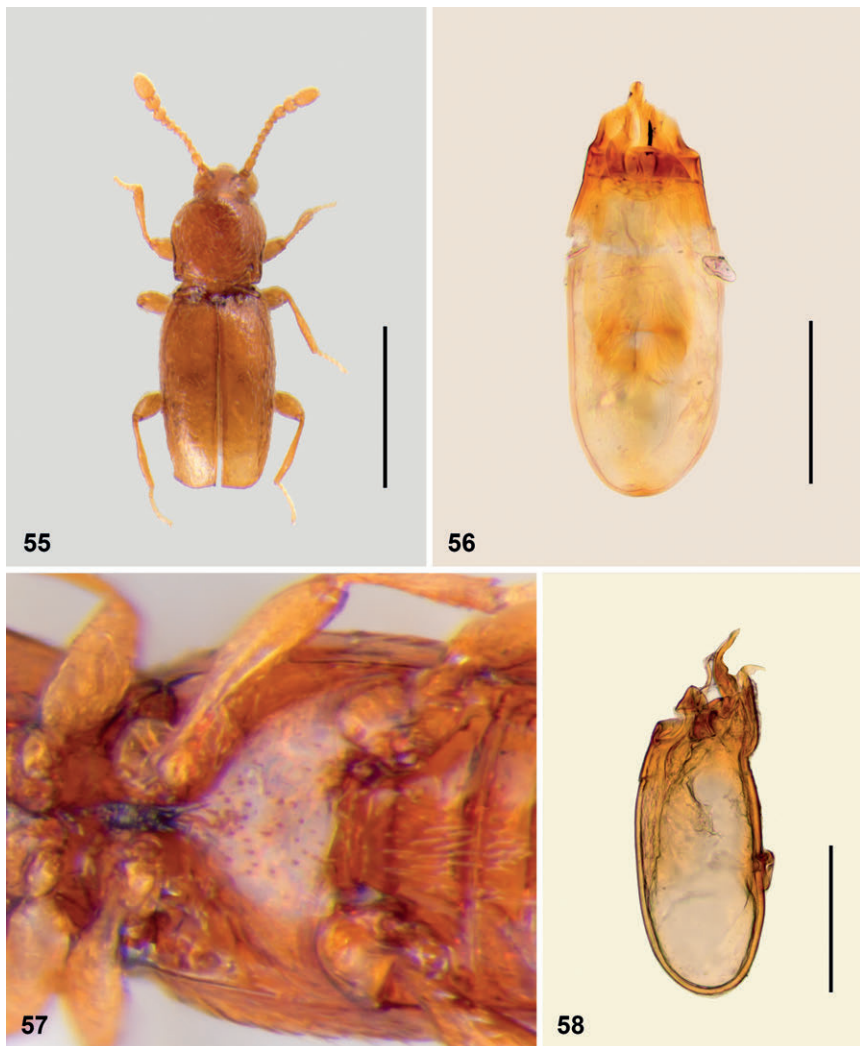
***Cephennium peezi* nov.sp. (Figs 55-58, 85)**

C. strupii BESUCHET i.l.

Type Material: Holotype ♂: Italy / Trentino, Baitoni, 375 m, 45.808°N, 10.5407°E, 11.6.1935, leg. Pechlaner. / *Cephennium peezi* nov.sp. ♂ det. Kahlen / Holotype (TLMF). Paratypes: 1♂: Italy / South Tyrol, Brixen/Mahr, 550-600 m, 46.6853°N, 11.6276°E, 10.6.1957, poplar mulch, leg. Peez (TLMF); 1♂ 4♀♀: same data as above, 6.6.1956 and 10.6.1957, leg. Peez (NMS); 1♂ 1♀: same data as above, 10.6.1957, leg. Peez (cMey).

Non type material: 1♂: Trentino, Monte Baldo, coll. Strupi; 1♀: Trentino, vicinity of Lake Ledro, coll. Strupi, 1♂ 1♀: coll. Strupi, coll. Besuchet; 1♀: Trentino, Arco, coll. Strupi, coll. Museum Frey (unpublished notes Besuchet).

E t y m o l o g y : The species is to be dedicated in grateful memory to the first authors teacher and closest collaborator over several decades, Alexander von Peez.



Figs 55-58: *Cephennium peezi*. (55) male habitus holotype, sb: 0.5 mm; (56) aedeagus dorsal view holotype, sb: 0.1 mm; (57) ventral view of metaventricle; (58) aedeagus lateral sb: 0.1 mm (Figs 57-58 paratype).

Description: Habitus as in Fig. 55. Body length 0.95-1.05 mm, body width 0.35-0.37 mm. Body slender and parallel, along with appendages light yellowish-brown; shiny, pilosity moderately dense, short, and appressed. Head shiny, unpunctured, with only an unstructured light area instead of faceted eyes and a shallowly bulging elevation above the base of the antenna. Antennal segment 1 short and rounded, 2 distinctly enlarged and nearly 1/3 longer than wide, 3-7 spherical, 8 broader than long and substantially smaller than 7, the three-segmented club sharply demarcated from it. Pronotum as long as wide, strongly shiny with extremely fine and very widespread punctures, the sides unbordered in the anterior curvature, sharply and distinctly bordered in the posterior two-thirds and slightly narrowed in this area; elongate triangular basal pits set off from the lateral margin by a distinct fold. Elytra much longer than wide (1.7:1), only very weakly rounded laterally, straightly truncated at the hind margin; shiny and compared to the pronotum with noticeably coarser and denser, but shallower punctures; the basal foveae broadened backwards and sideways, with slightly denser punctures at the margins, tomentose patch at the inner front edge. In males, anterior tibiae continuously weakly thickened, but without other distinctions. Underside: ♂ Metaventre only very shallowly depressed, almost flat, strongly shiny, extremely finely and widely punctured in the depression, bulge, and sides also strongly shiny and unpunctured, becoming distinctly punctured only at the extreme lateral margin (Fig. 57). Genitalia: Length 0.25 mm. Dorsal Fig. 56 and 85., lateral Fig. 58.

Subgenus *Neocephennium*

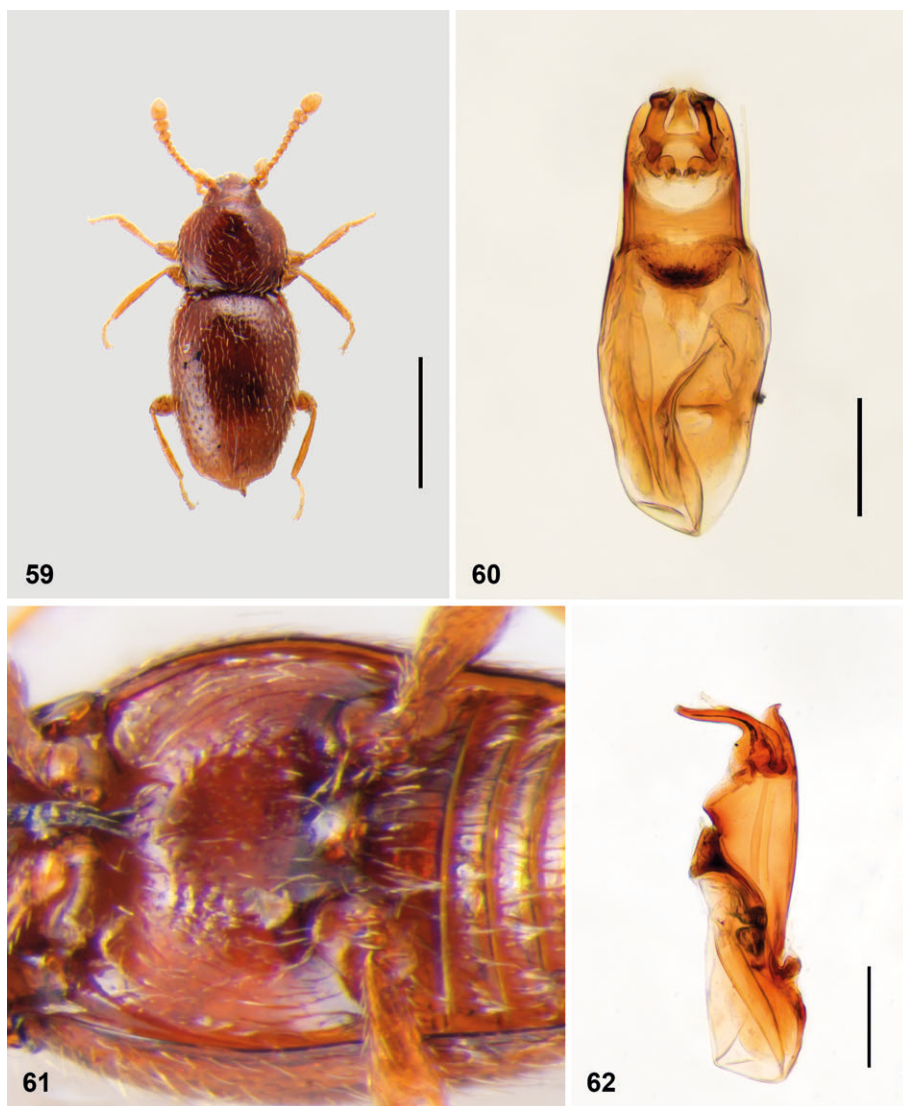
The species of this subgenus are primarily distinguished by features of the aedeagus, while they are hardly separable based on external characteristics, especially on the upper surface of the body. Therefore, the descriptions primarily focus on the relevant distinguishing features.

Cephennium cavallomontis nov.sp. (Figs 59-62)

Type Material: Holotype ♂: Italy / Belluno, Monte Cavallo, Casera Palantina, 1450-1500 m, 46.1194°N, 12.4743°E, 14.7.1934, lawn litter, leg. E. Pechlaner. / *Cephennium cavallomontis* nov.sp. ♂ det. Kahlen / Holotype (TLMF). Paratypes: 1♂ 1♀: Italy / Belluno, Monte Cavallo, Tambre [d'Alpago], 900-950 m, 46.1288°N, 12.4236°E, 9.7.1934, sifted from *Rhododendron* sp. leaf litter, leg. E. Pechlaner (TLMF); 6♀♀: Bosco del Cansiglio, 1000-1200 m, 46.0923°N, 12.4204°E, 11.7.1934, beech leaf litter, leg. E. Pechlaner (TLMF).

Etymology: The species name derives from its occurrence in the endemic-rich Monte Cavallo massif.

Description Habitus as in Fig. 59. Body length 1.2-1.25 mm. Body uniformly light reddish-brown and glossy, hair sparsely and moderately long, slightly erect. Head with scattered isolated punctures, pronotum finely and sparsely punctured, elytra scarcely coarser and denser punctured. Pronotum in males without basal bulge, elytra distinctly narrower. In males, the tibiae are inconspicuous, without markings. Underside: ♂ with metaventre glossy, moderately deeply incised, finely and sparsely punctured throughout the center, then almost abruptly coarser and very densely punctured at the edges, towards the outer sides the punctures become slightly finer and sparse. Hair sparse, short, and appressed (Fig. 61). Genitalia: Length 0.37 mm. Dorsal Fig. 60, lateral Fig. 62.



Figs 59-62: *Cephennium cavallomontis*. (59) male habitus holotype, sb. 0.5 mm; (60) aedeagus dorsal view holotype, sb. 0.1 mm; (61) ventral view of metaventrite; (62) aedeagus lateral, sb. 0.1 mm (Figs 61-62 paratype).

***Cephennium cyclonotum* HOLDHAUS, 1924 (Fig. 109)**

Material examined: Endemic to the Colli Euganei (Italy / Padova). 2♂♂ 2♀♀ Teolo E, Case Zuccato, 30–70 m, 45.3441°N, 11.6850°E, 2.6.1977; 2♀♀ Valsanzibio, 20–50 m, 45.2923°N, 11.7215°E, 1.6.1977; 3♂♂ 4♀♀ Monte Ventolone NW side, Calto Callegaro, 180–200 m, 45.2839°N, 11.7080°E, 19.5.1986; 1♀: Monte Vedevolo NE, surroundings of Laghetto di Laghizzolo, 300 m, 45.3142°N, 11.6722°E, 28.3.2012; all specimens leg. & det. Kahlen.

Genitalia: Dorsal Fig. 109.

***Cephennium dolomititanum* nov.sp. (Figs 63-66, 86)**

C. bucciarellii BESUCHET i.l.

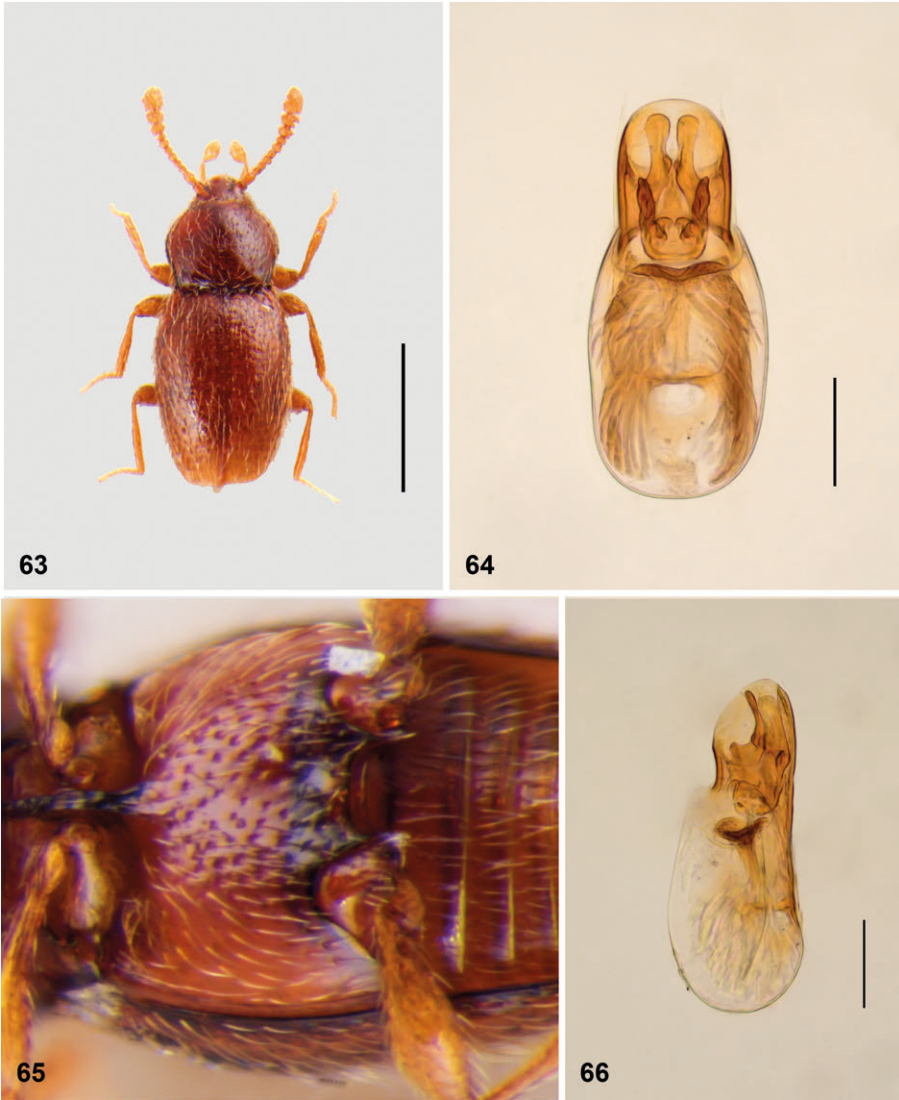
Type Material: Holotype ♂: Italy / Trentino, Selva di Grigno, 300 m, 46.0142°N, 11.5953°E, 10.6.1978, leaf litter, leg. Kahlen. / *Cephennium dolomititanum* nov.sp. ♂ det. Kahlen / Holotype (TLMF). Paratypes: 10 ♂♂: same data as holotype, leg. Kahlen (TLMF); 5 ♂♂: Italy / Trentino, Val Noana, Val Carbonere, 1200 m, 46.1242°N, 11.85°E, as well as Val Noana, surroundings of Rifugio Fontegghi, 1100 m, 46.1389°N, 11.8589°E, 3.6.1977, beech litter, leg. Kahlen (TLMF); 4 ♂♂ 3 ♀♀: Italy / Pordenone, Cansiglio, Col Brombolo SW slope, 1200 m, 46.0324°N, 12.4151°E, 17.6.1974, beech litter, leg. Kahlen (TLMF), 2 ♂♂ 1 ♀: Italia / Treviso, Miane-Campea, Carpena, 250 m, 45.9253°N, 12.1075°E, 26.5.1990, leaf litter, leg. Kahlen (TLMF).

Type material collection Meybohm: Paratypes, all cMey: Italia / Trentino: 3 ♂♂ 7 ♀♀: Val Noana, Val Carbonere, 1200 m, 46.1242°N, 11.85°E, 3./4.6.1977, leg. V. Brachat; 2 ♂♂ 1 ♀: Selva di Grigno, 300 m, 46.0142°N, 11.5953°E, 6.8.1978, leg. H. Daffner. Italia / Treviso: 1 ♂: Guia, 300 m, 45.9123°N, 12.0547°E, 16.5.1985, leg. H. Daffner; 1 ♀: Valdobbiadene, 250 m, 45.9016°N, 11.9958°E, 11.6.1990, leg. H. Daffner; 1 ♂: Valdobbiadene Saccol, Col Croset, 250 m, 45.8971°N, 12.0209°E, 2.5.1990, leg. H. Daffner; 2 ♂♂: Valdobbiadene, Pian de Farnè, 1100 m, 45.9250°N, 12.0278°E, 26.9.2013, leg. H. Meybohm; 1 ♂: Monte Cesen, Val Paula, 1450 m, 45.9435°N, 12.0263°E, 10.6.1089, leg. H. Daffner; 1 ♂: Monte Cesen, 1300 m, 45.9589°N, 12.0244°E, 4.10.2013, leg. H. Meybohm; 1 ♂: Cornuda, Castelcucco, Collalto, 300 m, 45.8396°N, 11.8971°E, 15.6.1990, leg. H. Daffner; 1 ♂ 1 ♀: Refrontolo, 200 m, 45.9254°N, 12.2076°E, 3.5.1986, leg. V. Brachat; 1 ♂: Campea W, 240 m, 45.9206°N, 12.0870°E, 2.10.2013, leg. H. Meybohm; 2 ♂♂: Bosco del Cansiglio, Val Vallorch, 1200 m, 46.0517°N, 12.3655°E, 16.6.1974, leg. V. Brachat; 1 ♀: Nervesa NW, Fiume Piave, 100 m, 45.8533°N, 12.1611°E, 2.10.2013, leg. H. Meybohm. Italia / Belluno: 1 ♀: Monte Faverghera, 1600 m, 46.0795°N, 12.3003°E, 6.11.1981, leg. H. Daffner; 2 ♂♂: Cansiglio, 1000-1200 m, leg. Stolz; 2 ♂♂ 3 ♀♀: Monte Grappa, Malga Piz, 1320 m, 45.8841°N, 11.8558°E, 6.10.2013, leg. H. Meybohm. All specimens det. Kahlen.

Additional information of non type material: Numerous records from various locations in the Bosco del Cansiglio area; Agordo, Feltre/Monte Pavione, Passo San Boldo, Possagno, Conegliano/San Michele di Fieletto, Montello (unpublished notes by Besuchet).

E t y m o l o g y : The specific name derives from its predominant occurrence in the Dolomites.

D e s c r i p t i o n : Habitus as in Fig. 63. Body length 1.05-1.1 mm. Body uniformly light reddish-brown and shiny, fairly dense and long hairs, somewhat erect. Head with individual isolated punctures. Punctures on pronotum and elytra equally strong, but more widespread on pronotum. The Pronotum is noticeably narrower than elytra in males and lacks a basal bump. In males, the tibiae are inconspicuous, without any particular features. Ventral side: ♂ with metaventrite shiny, almost flat, uniformly coarsely and densely punctured at the centre and its edges, becoming much finer and more widespread towards the outer sides. Hairs short and appressed (Fig. 65). Genitalia: Length 0.37 mm. Dorsal view Fig. 64 and 86., lateral view Fig. 66.



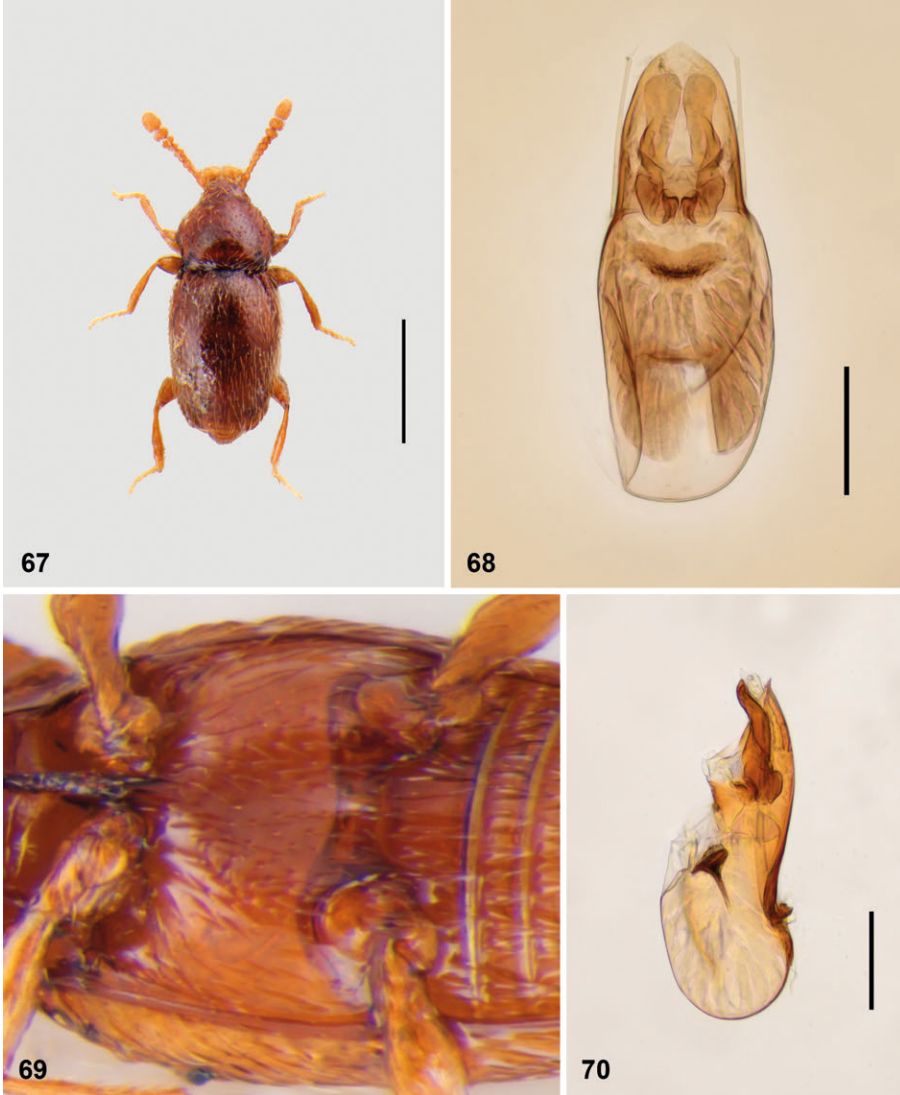
Figs 63-66: *Cephennium dolomitanum*. (63) male habitus holotype, sb: 0.5 mm; (64) aedeagus dorsal view holotype, sb: 0.1 mm; (65) ventral view of metaventricle; (66) aedeagus lateral, sb: 0.1 mm (Figs 65-66 paratype).

***Cephennium julicum* nov.sp. (Figs 67-70, 87)**

C. confusum BESUCHET i.l.

Type Material: Holotype ♂: Italy / Udine, [Julian Pre-Alps], Stregna, 350-400 m, 46.1244°N, 13.5778°E, 28.5.1983, leaf litter, leg. Kahlen. / *Cephennium julicum* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 2♂♂ 3♀♀: Italy / Udine, Julian Pre-Alps, San Leonardo SE, Pod Tamoran, 300 m, 46.1098°N, 13.5372°E, 6.12.2003, roots on gravel between blocks, leg.

Kahlen (TLMF); 1♂ 1♀: Italy / Udine, Julian Pre-Alps, Val Venzonassa, Val di Rio Bruschie, Bgo. Prabunello E, 670 m, 46.3317°N, 13.2094°E, 18.3.2008, Ostryo-Fagetum, leg. Kahlen (TLMF). Additional paratypes from Slovenia: Julian Alps: 1♂: Lake Bohinj [vicinity], 500-600 m, 46.27°N, 13.84°E, 22.6.1974, beech litter, leg. Kahlen (TLMF); 1♂ 1♀: Kamno/Vrsno, Malenšček valley, 700 m, 46.2292°N, 13.6489°E, 1.6.1990, beech litter, leg. Kahlen (TLMF); 1♂: Kamno E, Selišče, Volarja valley, 200-250 m, 46.2136°N, 13.6564°E, 2.11.2000, leaf litter, leg. Kahlen (TLMF); 1♂: Mount Matajur, Kuk, 1350 m, 46.2208°N, 13.5414°E, 26.10.1993, willow litter in crevices, leg. Kahlen (TLMF); 1♂: Waterfall above Idrijca, Roče, Kostanjevic valley, 500 m, 46.13°N, 13.8153°E, 26.4.2010, leaf litter on gravel, leg. Kahlen (TLMF). Karawanks: 1♂: Solčava, right



Figs 67-70: *Cephennium julicum*. (67) male habitus holotype, sb: 0.5 mm; (68) aedeagus dorsal view holotype, sb: 0.1 mm; (69) ventral view of metaventrite; (70) aedeagus lateral, (sb: 0.1 mm (Figs 69-70 paratype).

valley slope, 680-700 m, 46.4189°N, 14.6896°E, 26.6.1988, leaf litter, leg. Kahlen (TLMF). Banjšice: 1♂ 1♀: Grgar, Slatna valley, 320 m, 46.0°N, 13.6622°E, 10.4.1996, roots, leg. Kahlen (TLMF). Trnovo Forest: 2♂♂ 1♀: Čepovanska valley, bottom near Stan, 500 m, 46.0122°N, 13.7344°E, 3.5.1989, leaf and twig litter, leg. Kahlen (TLMF). Hrušica: 2♂♂: Planina, Planinska jama entrance, 540 m, 45.8198°N, 14.2455°E, 21.6.1975, leaf litter, leg. Kahlen (TLMF).

Type material collection Meybohm: Paratype: 1♂: Italia / Udine, Montefosca, 800 m, 46.1997°N, 13.4405°E, 31.10.1983, leg. V. Brachat, det. Kahlen (cMey).

Non type material: Numerous records from Slovenia: Julian Alps (Bled, Crna Prst, Kamno), vicinity of Nova Gorica, Nanos (unpublished notes Besuchet).

E t y m o l o g y : The species name is derived from its distribution centre which lies in the Julian Alps.

Description Habitus as in Fig. 67. Body length 1.05-1.12 mm. Body uniformly light reddish-brown and glossy, hair fairly dense and long, almost appressed, only inclined at the edge. Head glossy with isolated individual punctures; pronotum with coarser but widely spaced punctures, elytra distinctly finer and denser punctured, with indicated wrinkling in between. Pronotum in males without basal bulge, distinctly narrower than the elytra. In males, the tibiae are inconspicuous, without markings. Underside: ♂ with metaventre glossy, weakly depressed, loosely punctured in the centerline, then swelling denser towards the edges, the punctures towards the outer sides are abruptly set extremely fine and sparse. Hair sparse, short, and appressed (Fig. 69). Genitalia: Length 0.35 – 0.37 mm. Dorsal Fig. 68 and 87, lateral Fig. 70.

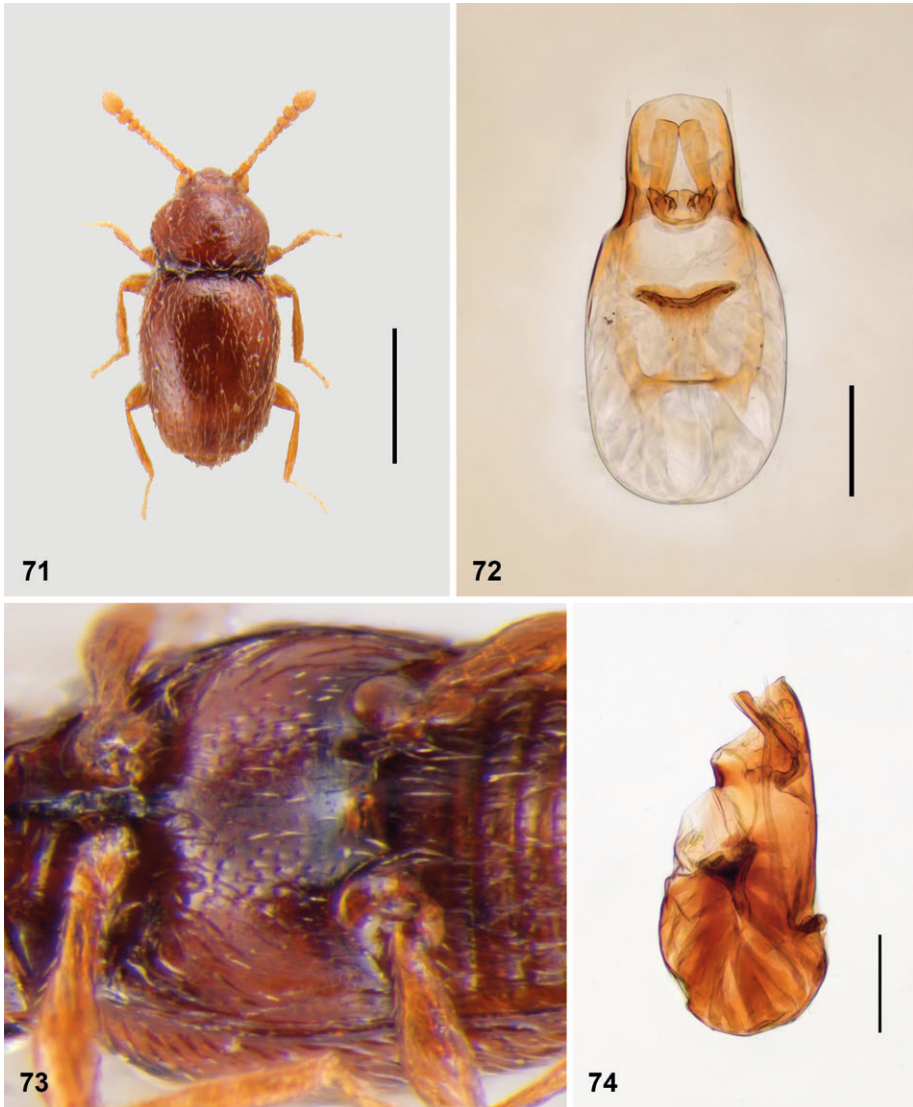
***Cephennium praealpinum* nov.sp. (Figs 71-74)**

Type Material: Holotype ♂: Italy / Pordenone, Pradis di Sopra, Mineres, 600 m, 46.2599°N, 12.9111°E, 25.10.1982, leaf litter, leg. Kahlen. / *Cephennium praealpinum* nov.sp. ♂ det. Kahlen / Holotype TLMF. Paratypes: 16♂♂ 10♀♀: same location as holotype, 25.10.1982, 30.5.1983, 28.5.1984, 2.6.1989, leaf litter, leg. Kahlen (TLMF); 2♂♂: Pradis di Sopra, Paludon, 600 m, 46.2555°N, 12.8858°E, 18.5.1982, *Vinca* roots, leg. Kahlen (TLMF); 4♂♂ 2♀♀: Italy / Pordenone, Castelnuovo d.F., Paludea, Val Molini, 300 m, 46.2054°N, 12.8887°E, 30.10.1982, leaf litter, leg. Kahlen (TLMF).

Type material collection Meybohm: Paratypes, all cMey: Italia / Pordenone: 3♂♂: Pradis di Sotto, 550 m, 46.2482°N, 12.8879°E, 18.-20.6.1981, leg. V. Brachat; Pradis di Sopra, Mineres, 600 m, 46.2599°N, 12.9111°E, 1♂ 18.6.1981, 1♀ 25.10.1982, 1♀ 18.6.1989, alle leg. H. Daffner; 1♂: Pradis di Sopra, Paludon, 600 m, 46.2555°N, 12.8858°E, 19.5.1982, leg. H. Daffner; 1♂: Paludea, Val Molini, 300 m, 46.2054°N, 12.8887°E, 30.10.1982, leg. H. Daffner; all det. Kahlen.

E t y m o l o g y : The specific name derives from its occurrence in the southern Carnic Prealps (karst plateau of Pradis and Clauzetto).

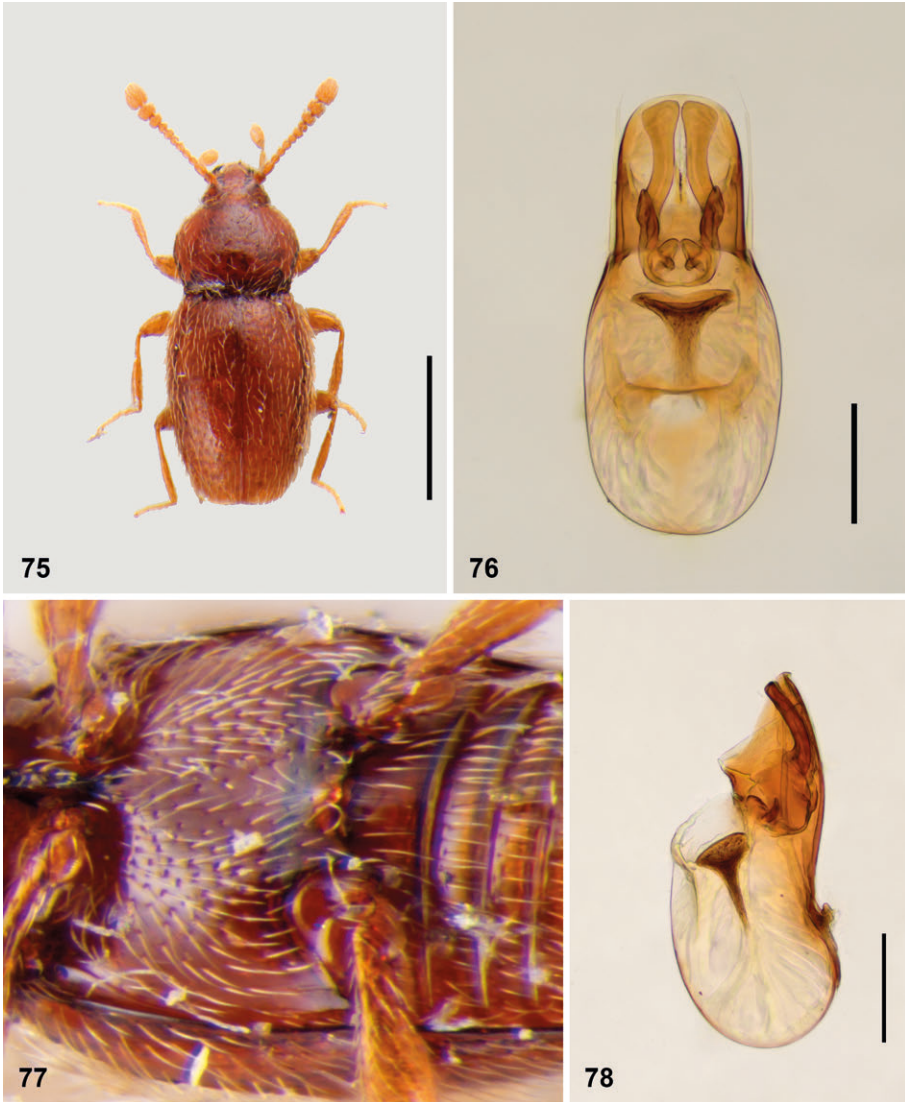
Description: Habitus as in Fig. 71. Body length 1.07-1.12 mm. Body uniformly light reddish-brown and shiny, dense and long hairs, fairly appressed. Head with particular isolated punctures, pronotum finely and extensively punctured, elytra only slightly coarser and denser punctured. Pronotum in males without basal bump, almost as wide as elytra. In males, the tibiae are inconspicuous, without any particular features. Ventral side: ♂ with metaventre shiny, weakly impressed, almost unpunctured in the centre of the midline. Increasingly coarser and moderately dense punctures towards the edges of the impression, punctures becoming significantly finer, much more extensive, and disappearing at the sides towards the outer sides. Hairs sparse, short, and appressed (Fig. 73). Genitalia: Length 0.37 mm. Dorsal view Fig. 72, lateral view Fig. 74.



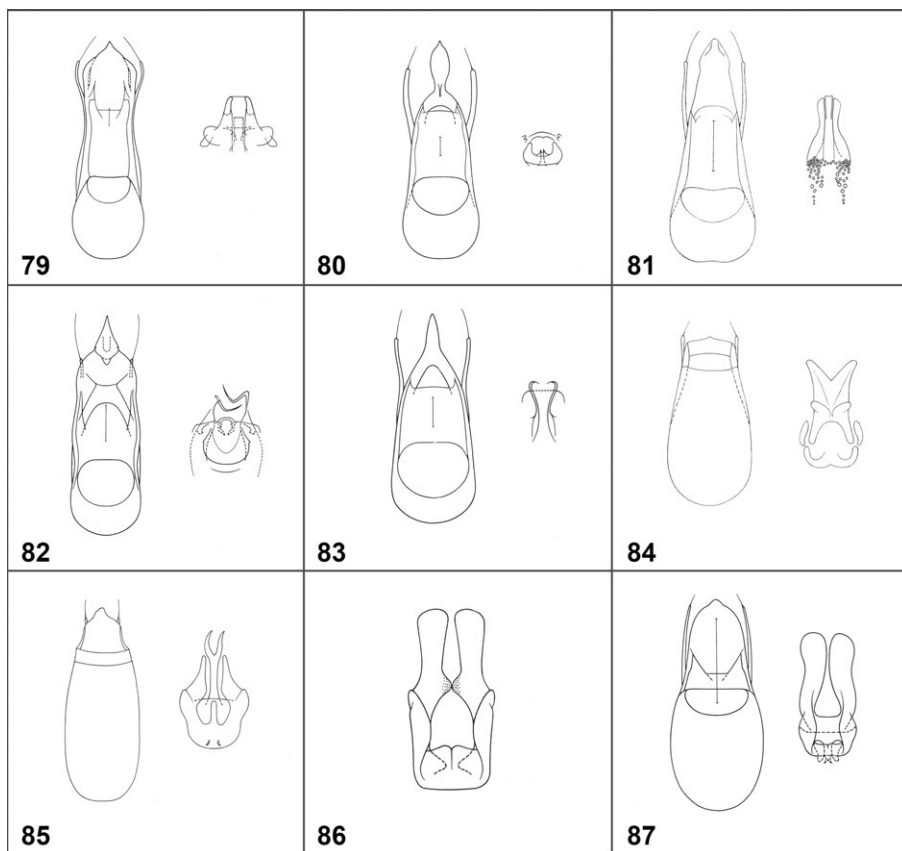
Figs 71-74: *Cephennium praealpinum*. (71) male habitus holotype; (72) aedeagus ventral view holotype; (73) ventral view of metaventricle; (74) aedeagus lateral (Figs 73-74 paratype).

***Cephennium punctatum* MEYBOHM & ZANETTI, 2014 (Figs 75-78)**

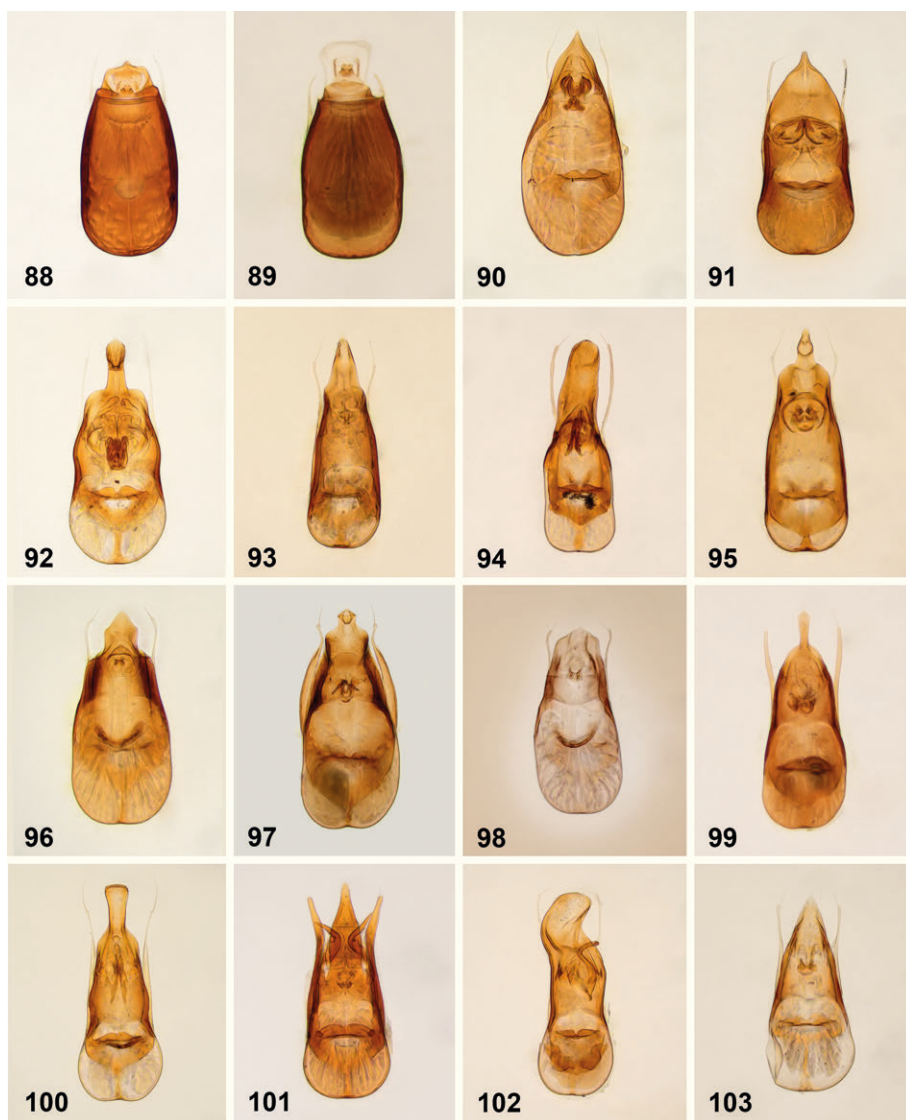
Material examined: Numerous specimens from the provinces of Brescia (western Lake Garda area), Verona (Monte Baldo), Trentino and Vicenza (Monte Pasubio massif, Monti Berici), Belluno and Treviso (Monte Grappa massif, eastward to the hills of Valdobbiadene); leg. Kahlen, historical material leg. Knabl and Pechlaner. Additional information from the province of Verona in MEYBOHM & ZANETTI 2014. Habitus Fig. 75, ventral side Fig. 77, Genital ventral Fig. 76, Genital lateral Fig. 78.



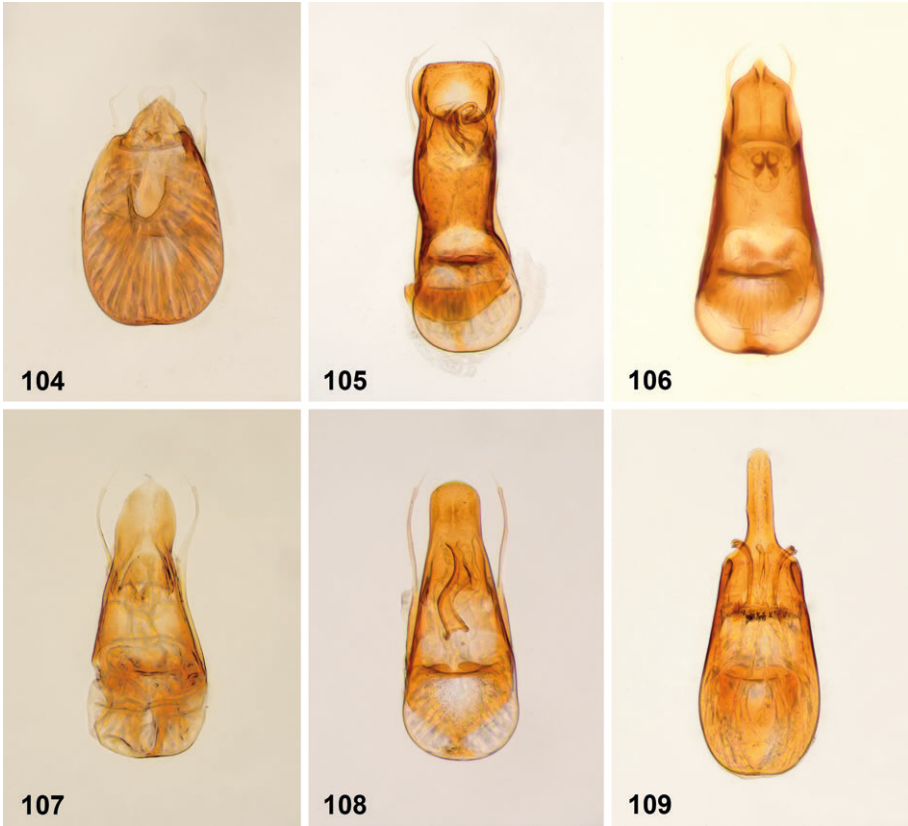
Figs 75-78: *Cephennium punctatum*. (75) male habitus, sb: 0.5 mm; (76) aedeagus dorsal view, sb: 0.1 mm; (77) ventral view of metaventricle; (78) aedeagus lateral, sb: 0.1 mm.



Figs 79-87: Drawings of aedeagi and internal structures (based on Besuchet unpublished). **(79)** *Cephennium friulicum*, **(80)** *C. liguricum*, **(81)** *C. lombardum*, **(82)** *C. tarvisinum*, **(83)** *C. vicentinum*, **(84)** *C. montiumliguriae*, **(85)** *C. peezi*, **(86)** *C. dolomitanum*, **(87)** *C. julicum*.



Figs 88-103: Dorsal view of aedeagi. (88) *Cephennium apicale modestum*, (89) *C. carrarae*, (90) *C. carnicum*, (91) *C. doderi*, (92) *C. faillai*, (93) *C. helveticum*, (94) *C. horni*, (95) *C. istriense*, (96) *C. jureceki*, (97) *C. laticolle*, (98) *C. lessinicum*, (99) *C. maritimum*, (100) *C. montanum*, (101) *C. nicaeense*, (102) *C. reissi*, (103) *C. rossii*.



Figs 104-109: Dorsal view of aedeagi. (104) *Cephennium settei*, (105) *C. simile*, (106) *C. stolzi*, (107) *C. tirolense*, (108) *C. zoiai*, (109) *C. cyclonotum*.

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We would like to express our gratitude particularly to Volker Brachat (Geretsried), in collaboration with Heinrich Meybohm (Großhansdorf) and Volker Assing (†), for providing the unpublished materials from Claude Besuchet. H. Meybohm kindly also made available the Italian *Cephennium* species preserved in his collection for examination. We also thank Petra Kranebitter from the South Tyrol Museum of Nature (Bozen) for providing the specimens belonging to the newly described taxa from the collection of Alexander von Peez.

Zusammenfassung

Nach der Untersuchung von Museumsbeständen der Gattung *Cephennium* MÜLLER & KUNZE, 1822 und der Auswertung bisher unveröffentlichten Aufzeichnungen aus dem Nachlass des Gruppenspezialisten Claude Besuchet werden 15 neue Arten der Gattung *Cephennium* (Staphylinidae, Scydmaeninae) aus dem norditalienischen Alpenraum beschrieben und abgebildet. Zusätzlich zu den neu beschriebenen Arten werden noch 24 aus der Region bereits bekannte Arten mit zusätzlichen

Daten und Genitalabbildungen dargestellt. Damit umfasst die Gattung 39 benannte Arten innerhalb des Untersuchungsraums. Die Arten werden der Untergattungseinteilung folgend SCHÜLKE & SMETANA 2015 und OROUSSET 2017a zugeordnet und in alphabetischer Reihenfolge dargestellt. Erstmals beschrieben werden folgende Arten: *Cephennium friulicum* nov.sp., *C. giachinoi* nov.sp., *C. liguricum* nov.sp., *C. lombardum* nov.sp., *C. sanctisfaustini* nov.sp., *C. tarvisinum* nov.sp., *C. torrezomontis* nov.sp., *C. tremalcomontis* nov.sp., *C. vicentinum* nov.sp., *C. montiumliguriae* nov.sp., *C. peezi* nov.sp., *C. cavallomontis* nov.sp., *C. dolomitum* nov.sp., *C. julicum* nov.sp. und *C. praealpinum* nov.sp. Eine Tabelle (Katalog) zu den Arten aus dem Untersuchungsraum mit Angaben zur Verbreitung wird erstellt.

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