



Revision of the *Histopona italica* group (Araneae: Agelenidae), with the description of two new species

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Abstract

During a large survey of agelenid spiders from different private and museum collections, a closer examination of material from all over Italy (including type material and fresh material) previously identified as *Histopona italica* Brignoli 1977, disclosed two new species for science, both belonging to the *italica* group. Based on the results of the present work, we describe *Histopona leonardoi* sp. n. and *H. fioni* sp. n. and revise the distribution pattern of *H. italica* group in Italy and Switzerland. Drawings and photographs of relevant structures and a table summary of the diagnostic characters allowing a fast separation of the species are provided.

Key words: taxonomy, endemic fauna, biogeography, Alps, Apennines

Introduction

According to Platnick (2012) the genus *Histopona* Thorell 1869 currently includes 18 valid species, two of them, *H. krivosijana* (Kratohvil 1935) and *H. palaeolithica* (Brignoli 1971) with undescribed males. Deeleman-Reinhold (1983) treated 17 of those species, grouping them into five species groups based on morphological characters. Later, Weiss & Rusdea (1998) revalidated *H. laeta* (Kulczynski 1897) and provided the description of the unknown male. Recently, Gasparo (2005) described *H. thaleri* Gasparo 2005 from Greece, including detailed taxonomical information and placing the new species in the *myops* group.

Concerning the phylogeny of the genus, Lehtinen (1967) placed *Histopona* into the tribe Tegenariini, together with *Hadites* Kezserling 1862, *Malthonica* Simon 1898, *Tegenaria* Latreille 1804 and *Pseudotegenaria* Caporiacco 1934. On the base of morphological and molecular evidence, Bolzern *et al.* (accepted) support Lehtinen's hypothesis, confirming the close phylogenetic relationship between *Histopona*, *Malthonica* and *Tegenaria*.

Most representatives of the genus are distributed in Southeastern Europe. Only *H. torpida* (C. L. Koch 1837) has a wider range of distribution, reaching France, Northern Europe and Russia (Le Peru 2007; van Helsdingen 2012). During a larger survey of agelenid spiders from different private and museum collections, a close examination of material from all over Italy (including type series and fresh material collected by MI and PP) previously identified as *H. italica* Brignoli 1977, disclosed two new species for science, both belonging to the *italica* group (*sensu* Deeleman-Reinhold 1983). Based on the results of the present work, we describe the two new species and revise the distribution pattern of the *H. italica* group.

The descriptions are based on detailed examination of morphological characters of genital structures which were found as discrete, allowing a clear separation of the species. Drawings and photographs of relevant structures and a summary of diagnostic characters, allowing a fast separation of the species, are provided.

Methods

The examined specimens are preserved in 70 % ethanol. Specimens are deposited at Museo Civico di Scienze Naturali “E. Caffi” di Bergamo, except when explicitly noted as being from one of the following: (NMB: Naturhistorisches Museum Basel; MSNVR: Museo di Storia Naturale di Verona; CG: private collections of Fulvio Gasparo; CI: private collection of Marco Isaia). Specimen data (including coordinates whenever possible) are also available electronically at <http://agelenidsoftheworld.myspecies.info> in Darwin Core (version 1.2.1) format.

For the morphological examination and the preparation of drawings, a Leica Stereomicroscope MZ12 (up to 110 x magnification) and MZ Apo with drawing tube were used. Most measurements were taken from digital pictures made with a Leica DFC320 camera and calculated with the program ImageJ 1.38x (<http://rsb.info.nih.gov/ij/>). Photographs were stacked using the program CombineZM (<http://hadleyweb.pwp.blueyonder.co.uk/CZM/News.htm>) and processed with Adobe Photoshop and Illustrator. For clearing the vulva, the dissected epigyne was placed into clove oil for several minutes. The descriptions of the bulb are given from a ventral view. Leg measurements were taken from the dorsal side. All measurements are given in millimetres. The colour description is based on ethanol preserved specimens. The nomenclature of morphological structures follows Jocqué & Dippenaar-Schoeman (2006) and Bolzern *et al.* (2008; 2010).

The following abbreviations are used: AER = anterior eye row; ALE = anterior lateral eyes; AME = anterior median eyes; ALS = anterior lateral spinnerets; CO = copulatory opening; EV = epigynal valve; FD = fertilization duct; latCD = lateral lobe of the copulatory duct; PMS = posterior median spinnerets; PER = posterior eye row; PLA = posterior lateral eyes; PME = posterior median eyes; PLS = posterior lateral spinnerets; R = radix; RTA = retrolateral tibial apophysis (used here as the sum of all structures in retrolateral position of the tibia of the male pedipalp); RTAd = dorsal branch of RTA; RTAl = lateral branch of RTA; RTAv = ventral branch of RTA; RC = receptaculum. The toponomastics and classification of the different sectors and sub-sectors of the Alps follow the recent partition of the Alpine chain (SOIUSA: Marazzi 2005).

Material is listed in geographical order (North to South, West to East). UTM coordinates and the corresponding geographic ones are given for freshly collected material (most of the material stored in Museums was labelled with localities only).

Taxonomy

Family Agelenidae C. L. Koch 1837

Histocona italica Brignoli 1977

Figures 1–2; 13–14; 21–22; 27

H. i. Brignoli 1977: 35, f. 14–15, 17–18 (Df, m misidentified = *H. leonardoi* sp. n.).

H. i. Deeleman-Reinhold 1983: 336, f. 18–19 (f).

H. i. Hänggi 1990: 163, f. 21a–b (m misidentified = *H. fioni* sp. n., f misidentified).

H. i. Trotta 2005: 160, f. 193–194 (m misidentified = *H. fioni* sp. n., f misidentified).

Type material. Holotype female: **ITALY: Lazio:** Roma: Colli Albani, Monte Cavo, 1♀ 5/V/1968, Brignoli P.M. (MSNVR).

Paratypes: **ITALY: Piemonte:** Cuneo: Maritime Alps, Val Pesio, Small lakes of Marguareis, 2100 m, 2♀ 7/1968, Osella G. (MSNVR). **Toscana:** Firenze: Borgo San Lorenzo, Polcanto, 1♀ 11/III/1972, Magini F. (MSNVR). **Marche:** Pesaro: Apecchio, Serra Val di Carda, 1♂, 1♀ 11/IV/1971, Bianchi R. (MSNVR). **Lazio:** Rieti: Amatrice, Monti della Laga, Capricchia, 1150–1300 m, 1♀ IX/1968, Osella G. (MSNVR). **Molise:** Campobasso: Bojano, 500–700 m, 1♀ 18/IX/1967, Minelli A. (MSNVR); Matese, Piani di Campitello, 1500 m, 1♀ 22/IX/1967, Minelli A. (MSNVR); Isernia: Roccamandolfi, 820 m, 2♀ 29/VI/1967, Riggio, Osella G. (MSNVR).

Other material examined. **ITALY: Piemonte:** Cuneo: Garessio, Trappa, UTMED50 32T 419066 4892581 (lon. 7.9874° lat. 44.1819°), riparian wood 600 m, 1♂, 1♀, 10/IV/2004, Beikes S. **Liguria:** Genova: Mezzanego, Ghiaiette, 850 m, UTMED50 32T 537328 4918352 (lon. 9.4868° lat. 44.4174°), beech wood, 1♂, 2♀, 31/X/2009–25/V/2010, 12♀ 25/V–18/VIII/2010, Lodovici O., Pantini P., Valle M.; Mezzanego, Forest of Monte Zatta, c/o ex.

Colonia Devoto, 1050 m, UTMED50 32T 537328 4918352 (lon. 9.4688° lat. 44.4174°), beech wood, 5♂, 4 ♀, 31/X/2009–25/V/2010, Lodovici O., Pantini P., Valle M. (NMB: 20773), 1♂, 4♀ 25/V–18/VIII/2010, 2♀ 25/V/2010 Lodovici O., Pantini P.; Propata, Monte Cremado, 1460 m, 2♂ 2/V–5/VI/1998, Cartasegna F., Pesce D. (CG); La Spezia: Varese Ligure, Passo Cento Croci, 1000 m, UTMED50 32T 549768 4918763 (lon. 9.6251° lat. 44.4204°), 2♂, 1♀ IV–VIII/1991, Cerbino R., Valle M., 1♂, 1♀ IX/1991–V/1992, Buttarelli G., Cerbino R., Pantini P., Valle M., 1♂, 2♀ VI–IX/1992, Pantini P., Valle M.; Savona: Bormida, SP 15 for Colla Melogno, 670 m, small stream, 1♀ 28/V/2001; Calizzano, Colle del Melogno, 1000 m, 2♀, 13/VI–12/VII/1999, Trotta A. (CG); Calizzano, Colla Melogno, 920 m, beech wood, 1♀ 28/V–17/VII/2001, 3♀ 18/7–10/X/2001; Calizzano, Rio dell’Uscio, 990 m, 1♀ 13/VI–12/VII/1999, Trotta A.; Sassello, Rio del Nido, 1000m, beech wood, 4♂, 1♀, 18/VII–10/X/2001. **Emilia Romagna:** Parma: Bedonia, Passo di Montevacà, 800 m, UTMED50 32T 548856 4931317 (lon. 9.6149° lat. 44.5335°), 2♂ IV–VIII/1991, Cerbino R., Valle M., 4♂ IX/1991–V/1992, Buttarelli G., Cerbino R., Pantini P., Valle M., 3♂, 2♀ XI/1992–IV/1993, Pantini P., Valle M.; Corniglio, Lagdei, 1320 m, fir wood, 9♂, 15/VII–7/X/1997, Fabbri R.; Tornolo, Tarsogno, 800 m, UTMED50 32T 549775 4921065 (lon. 9.6254° lat. 44.4411°), 1♂, 1♀ IV–VIII/1991, Cerbino R., Valle M., 1♂ IX/1991–V/1992, Buttarelli G., Cerbino R., Pantini P., Valle M., 2♀ 25/X/1992, Valle M., 2♂, 3♀ 1994, Pantini P., Valle M.; Piacenza: Bobbio, Passo Penice, 1100 m, UTMED50 32T 525987 4960430 (lon. 9.3285° lat. 44.7967°), wood, 1♂, 8♀ 20/V–20/VI/2001 (2♀ NMB: 20668), Pantini P., 2♀ 20/VI–31/VII/2001, Pantini P., 13♂, 8♀ 19/IX/2001–20/III/2002 Pantini P. (7♂, 6♀ missing number), 2♀ 26/IV–27/VI/2002, Pantini P.; Bobbio, road for Monte Penice, UTMED50 32T 525246 4959349 (lon. 9.3191° lat. 44.7870°), 1400 m, road margin, 1♀ 31/VII–19/IX/2001, Pantini P., 1♂ 19/IX/2001–20/III/2002; Modena: Guiglia, cave “Buco dell’Albero, ER-Mo 267, 585 m, 1♀ 9/X/2000. **Toscana:** Firenze: Marradi, Badia Valle, 430 m, 1♀ 23/IV/2003, Usvelli A.; Pistoia: Abetone, botanical garden “Le Regine”, 1275 m, 2♀ 2–29/VI/2003, Colombetta G. (CG). **Marche:** Ascoli Piceno: Montemonaco, Isola San Biagio, 990 m, mown meadow, 7♀ 23/VI–27/VII/2004, 1♂, 2♀ 1/IX–7/X/2004, Rismondo M., Fabbri R.; Macerata: Fiuminata, road to Passo Cornello, 600 m, 1♂, 1♀ VI–XII/1991, Buttarelli G., Ghilardi E., Pantini P. Valle M.; Sarnano, Colle, 550 m, mixed broadleaved wood, 2♀ 1/IX–7/X/2004, Rismondo M., Fabbri R.; Pesaro: Piobbico, Monte Nerone, 1300 m, 1♂ 18/IX/1992, Pantini P., Valle M. **Umbria:** Perugia: Nocera Umbra, Colle Aprico, slope of Monte Pennino, 700 m, 6♂ VI–XII/1991, Buttarelli G., Ghilardi E., Pantini P. Valle M., 1♀ I–VI/1992, 1♂, 1♀ VI–IX/1992, Pantini P., Valle M., 3♀ 14/VI/1992, Buttarelli G., Pantini P. Valle M.; San Giustino, Monte Moriccio, 900 m, 5♂ VI–XII/1991, 1♀ I–VI/1992, 2♂, 2♀ VI–IX/1992, 1♀ IX/1992–VI/1993, Pantini P., Valle M.; 2♀ San Giustino, Parnacciano, 700 m, 19♂, 6♀ VI–XII/1991, Buttarelli G., Ghilardi E., Pantini P. Valle M., 2♀ 13/VI/1992, 4♂, 4♀ VI–IX/1992, Pantini P., Valle M.; Sigillo, Piani di Monte, 1200 m, 3♂, 1♀ VI–XII/1991, Buttarelli G., Ghilardi E., Pantini P. Valle M., 3♂ I–VI/1992, 1♂ VI–IX/1992, Pantini P., Valle M. **Lazio:** Frosinone: Guancino, Vermicaro, Cave “Gnomo gnomo”, 1♂, 4/X/2003, Baroncini G.; Roma: Subiaco, Monti Simbruini, Campo Buffone, 6♀ 28/VII/2009, La Casella F. **Abruzzo:** Pescara: Carpineto della Nora: Gran Sasso, Voltigno, 1550 m, beech wood, 1♂ 12/X/2001, Marotta O., 2♂ 4/X/2002, Marotta O., Zuppa A.M.; Teramo: Isola del Gran Sasso d’Italia, Gran Sasso, 900 m, towards Lake of Pagliara, mixed broadleaved wood, 1♂ 3/X/2002, Marotta O., Carissimi D., 1♂ 26/X/2002, Marotta O., Matin K., 1♂ 7/X/2003, Marotta O.; Rocca Santa Maria, Monti della Laga, Ceppo, Pietralta, fir wood, 4♂, 1♀ 28/X/2001, Marotta O.; Rocca Santa Maria, Monti della Laga, Ceppo, road to Acquamorta, 1450 m, fir wood, 5♂, 3♀ 6/X/2002, 11♂, 5♀ 4/IX/2003, 8♂ 7/X/2003, Marotta O.; Rocca Santa Maria, Monti della Laga, Ceppo, towards Lago dell’Orso, beech wood 1650 m, 1♂ 13/III/2002, Marotta O., Zuppa A.M., 3♂ 6/X/2002, Marotta O.; Tossicia, Gran Sasso, Tozzanella, on the way to Colle Pelato, 1050 m, fir wood 6♂ 18/XI/2001, Marotta O., Matin K., 1♀ 27/VIII/2002, Marotta O., Di Marco C., 9♂ 3/X/2002, Marotta O., Carissimi D., 5♂ 26/X/2001, Marotta O., Matin K.; Valle Castellana, Monti della Laga, Ceraso, 655–850 m, mixed wood, 18♀ 25/VII/2001, Marotta O., Zuppa A.M., 1♂ 6/X/2001, 3♂, 2♀ 28/X/2001, 1♀ 7/VIII/2003 Marotta O. **Basilicata:** Potenza: San Severino Lucano, Santuario Madonna del Pollino 15♂, 2♀ VI/1989–V/1990, Valle M., 8♂, 7♀ VI/1990–VI/1991, Buttarelli G., Ghilardi E., Pantini P., Valle M., 1♂, 1♀ 1992, Pantini P., Valle M.; Viggianello, Piani di Ruggio, 1♀ VI–VIII/1989, 9♂, 3♀ IX/1989–V/1990, Valle M.; Viggianello, Visitone, 2♂ IX/1989–V/1990, Valle M. **Calabria:** Cosenza: Fagnano Castello, Lago Trifoglietti, 1050 m, UTMED50 32T 587837 4378173 (lon. 16.0223° lat. 39.5487°), 1♂ 24/VIII/2008, Valle M.; Reggio Calabria: Santo Stefano d’Aspromonte, 800 m, 1♂ 24/V/1990, Valle M.; Santo Stefano d’Aspromonte, Gambarie, 1300 m, 2♂ VI/1990–VI/1991, Buttarelli G., Ghilardi E., Pantini P., Valle M.; Santo Stefano d’Aspromonte, tra Gambarie e Montalto, 1500 m, 3♀ IX/1989–V/1990, Valle M. 1♀ VI/1990–VI/1991, Buttarelli G., Ghilardi E., Pantini P. Valle M. **REPUBLIC OF SAN MARINO:** Castello di Chiesanuova: Fosso di

Canepa, 250 m, 2♀ 12/VII–11/VIII/2010, Fabbri R.; Mulini, Fosso di Canepa, 300 m, wood 5♀ 28/IV–25/V/2010, 7♀ 13/VII–25/VIII/2010, Fabbri R.

Diagnosis. Males (Figures 1–2, 13–14) can be separated by the absence of a patellar apophysis (present in *torpida* group, except *H. vignai* Brignoli 1980), the plate-like and distally bifid elongated radix (absent in *myops*- and *strinatii* group) and the distally broadly rounded conductor. Females (Figures 21–22, 27) can be separated from other *Histopona* species by the glossy median indented posterior epigynal sclerite (much longer and with anterior margin only moderately indented in *torpida* group) with parallel margin, the unpaired “bursa copulatrix” (completely paired copulatory ducts in *myops*- and *strinatii* group) with anterior margin straight or convex and the broad lateral lobes of the copulatory ducts. See also Table 1.

Description. *Measurements of male (n=1, paratype from Apecchio):* carapace 2.95 long, 2.21 wide. Head region 1.06 wide; PER 0.64 wide. Chelicerae 1.24 long, 0.54 wide. Labium as long as wide or moderately wider than long. Gnathocoxa ratio width to length: 0.56. Sternum 1.55 long, 1.30 wide. Opisthosoma 2.28 long, 1.93 wide. Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length: 0.801. Leg measurements are reported in Table 2.

Measurements of female (n=1, paratype from Apecchio): carapace 2.95 long, 2.01 wide. Head region 1.10 wide; PER 0.66 wide. Chelicerae 1.25 long, 0.54 wide. Labium as long as wide or moderately wider than long. Gnathocoxa ratio width to length: 0.536. Sternum 1.52 long, 1.30 wide. Opisthosoma 3.33 long, 2.20 wide. Epigynal plate 1.01 long, 1.08 wide; atrium 0.23 long, 0.84 wide. Leg measurements are given in Table 2.

Eyes: in dorsal view both eye rows straight or slightly recurved; in frontal view AER and PER procurved, AER may be almost straight. Diameters: PME: 0.137–0.145; PLE: 0.143–0.145; AME: 0.084–0.086; ALE: 0.148–0.154. Distances: PME–PME about half diameter of PME or less; PME–AME less than diameter of PME; PME–PLE about half diameter of PME or slightly less; PME–ALE less than diameter of PME; AME–AME about half diameter of AME or slightly less; AME–ALE less than half diameter of AME. Clypeus height (measured under AME) less than or equal to 3 diameter of AME; clypeus height (measured under ALE) less than or equal to 1.5 diameter of ALE.

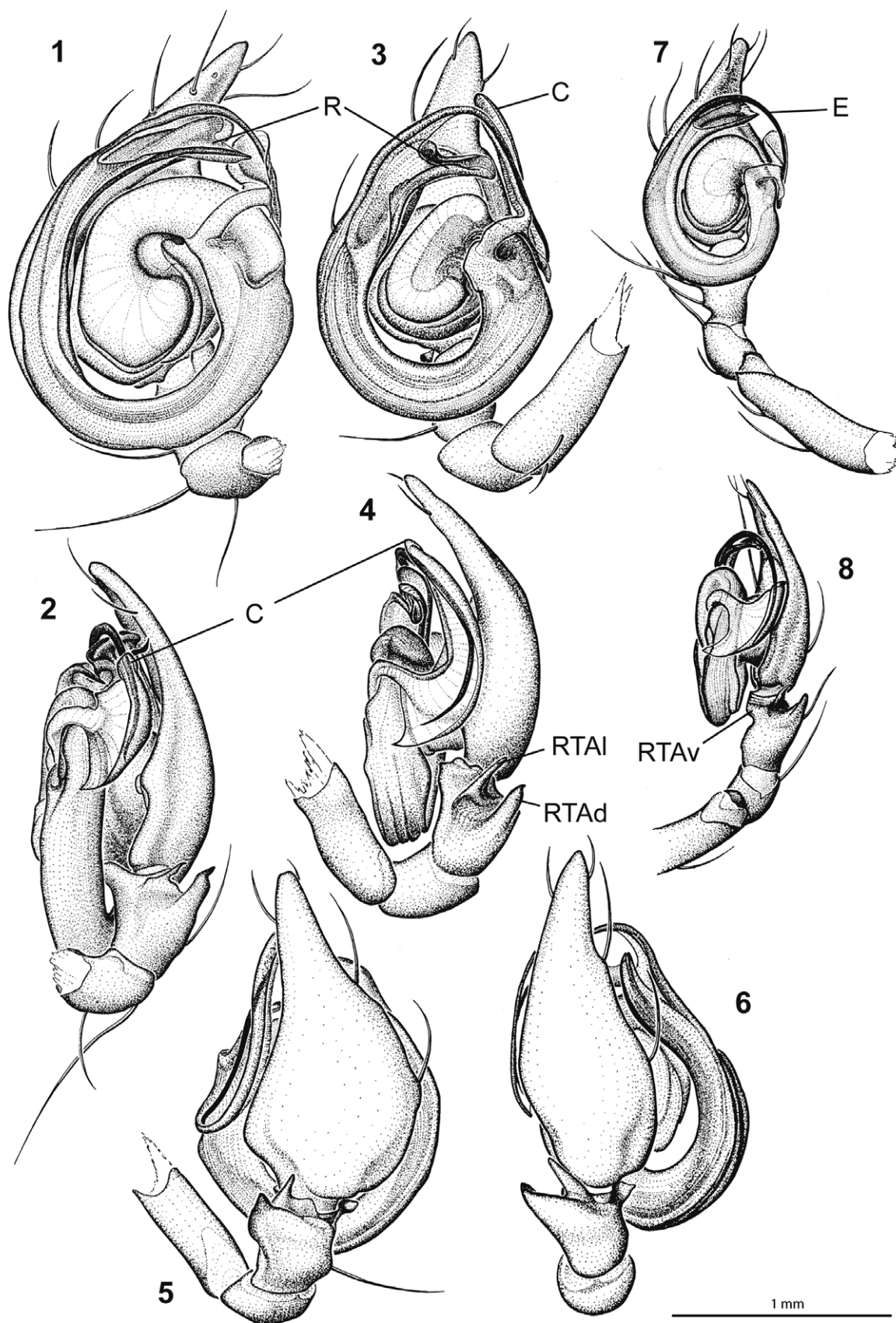
Coloration: carapace with broad, continuous dark margin; two longitudinal symmetrical darkened bands present on carapace; head region median with narrow dark band. Sternum without coloration pattern. Opisthosoma dark grey green; cardiac mark moderately pronounced; posteriorly with indistinct pattern of chevrons. Legs without coloration pattern.

Additional somatic characters: distal margin of labium straight or moderately concave. Plumose hairs present on carapace, legs and opisthosoma. Three promarginal teeth, the most proximal smallest; 5–6 retromarginal teeth, decreasing in size proximally. All trochanters notched. Tarsi I and IV with 7–8, tarsi II and III with 6–7 dorsal trichobothria. No trichobothria on palp tarsi or cymbium. Pale colulus divided into two separated plates, sometimes only recognizable as two hairy regions. PLS longer than all others with distal segment as long as basal segment; both darkened. PMS as long as ALS. ALS moderately darkened. The formulae of leg spination are listed in Table 3.

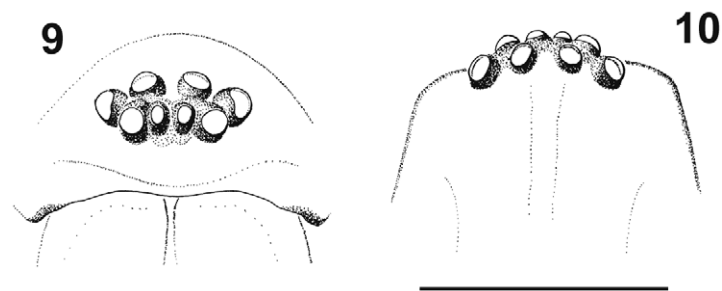
Male palp (Figures 1–2, 13–14): RTA with a large dorsal branch, distally pointed, strongly sclerotized and moderately stepped; lateral branch forming moderately sclerotized finger-shaped appendix; ventral branch forming rounded bulge-like appendix, protruding ventrodistally. Tegulum broad ring-shaped, distally dividing into a filiform embolus and a plate-like apophysis (radix) distally divided into a pointed and a more rounded projection. Embolus originating (free apex) at 11 o'clock position, distal tip between 2 and 3 o'clock position. Conductor lamella-like, distally broadly rounded and moderately elongated, laterally folded along the whole length; shorter than alveolus, distally reaching at least to alveolus margin; terminal end forming moderately sclerotized peak. Connection of conductor and tegulum membranous, band-like. Median apophysis and tegular apophysis absent.

Epigynum and vulva (Figures 21–22, 27): epigynal plate sclerotized, rectangular, posterior with distinct atrium; atrium anteriorly limited by strongly sclerotized, m-shaped margin of the epigynal plate with a posteriorly tapered median region; atrium posteriorly limited by a glossy sclerite (“epigynal valve”), median deeply indented with almost parallel margins; between anterior margin and posterior sclerite atrium covered by membranous white cuticula. Copulatory openings located at anteriolateral border of atrium. Copulatory duct first unpaired (“bursa copulatrix”), anteriorly straight or convex, then dividing into broad paired lateral lobes directing into strongly sclerotized convoluted receptacula; fertilization ducts very short.

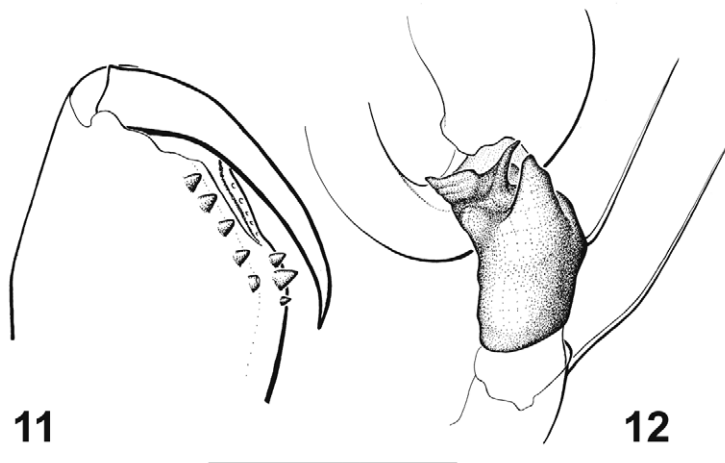
Distribution. Italy, from Maritime Alps to Aspromonte along the Apenninic chain.



FIGURES 1–8. Left male palp in ventral, dorsal, dorsolateral and retrolateral view. 1, 2. *Histopona italica* Brignoli 1977 (paratype, Marche); 3, 4, 5, 6. *H. fioni* **sp. n.**; 7, 8. *H. leonardo* **sp. n.** C: conductor; E: embolus; R: radix; RTA: retrolateral tibial apophyses; RTAd: dorsal branch of RTA; RTAI: lateral branch of RTA; RTAv: ventral branch of RTA.



FIGURES 9–10. *Histopona fioni* sp. n.: eyes in frontal and dorsal view. Scale = 1.0 mm.



FIGURES 11–12. Chelicerae and tibia with RTA of left male palp in dorsoretrolateral view. 11. *Histopona fioni* sp. n. 12. *H. leonardo* sp. n. RTA: retrolateral tibial apophyses; RTAd: dorsal branch of RTA; RTAl: lateral branch of RTA; RTAv: ventral branch of RTA. Scale = 1.0 mm (11) and 0.5 mm (12).

Ecology. Records of *H. italica* mostly refer to forest habitat (beech, mixed broadleaved and fir woods). The species occurs more rarely in mown meadows and caves. Elevation ranges from 250 (San Marino) to 1600 m (Abruzzo). Adults occur all over the year.

Histopona fioni sp. n.

Figures 3–6, 9–11, 15–16, 23–24, 28.

H. italica Hänggi 1990: 163, f. 21a (m misidentified).

H. italica Trotta 2005: 160, f. 193 (m misidentified).

Type material. Holotype male: **SWITZERLAND: Tessin:** Bustorgna, Mte. S. Giorgio, 950 m, UTMED50 32T 496358 5083796 (lon. 8.9530° lat. 45.9077°), ♂, 18/IX–3/X/1989, Hänggi A. (NMB: 02488 a; Hänggi 1992 sub *H. italica*).

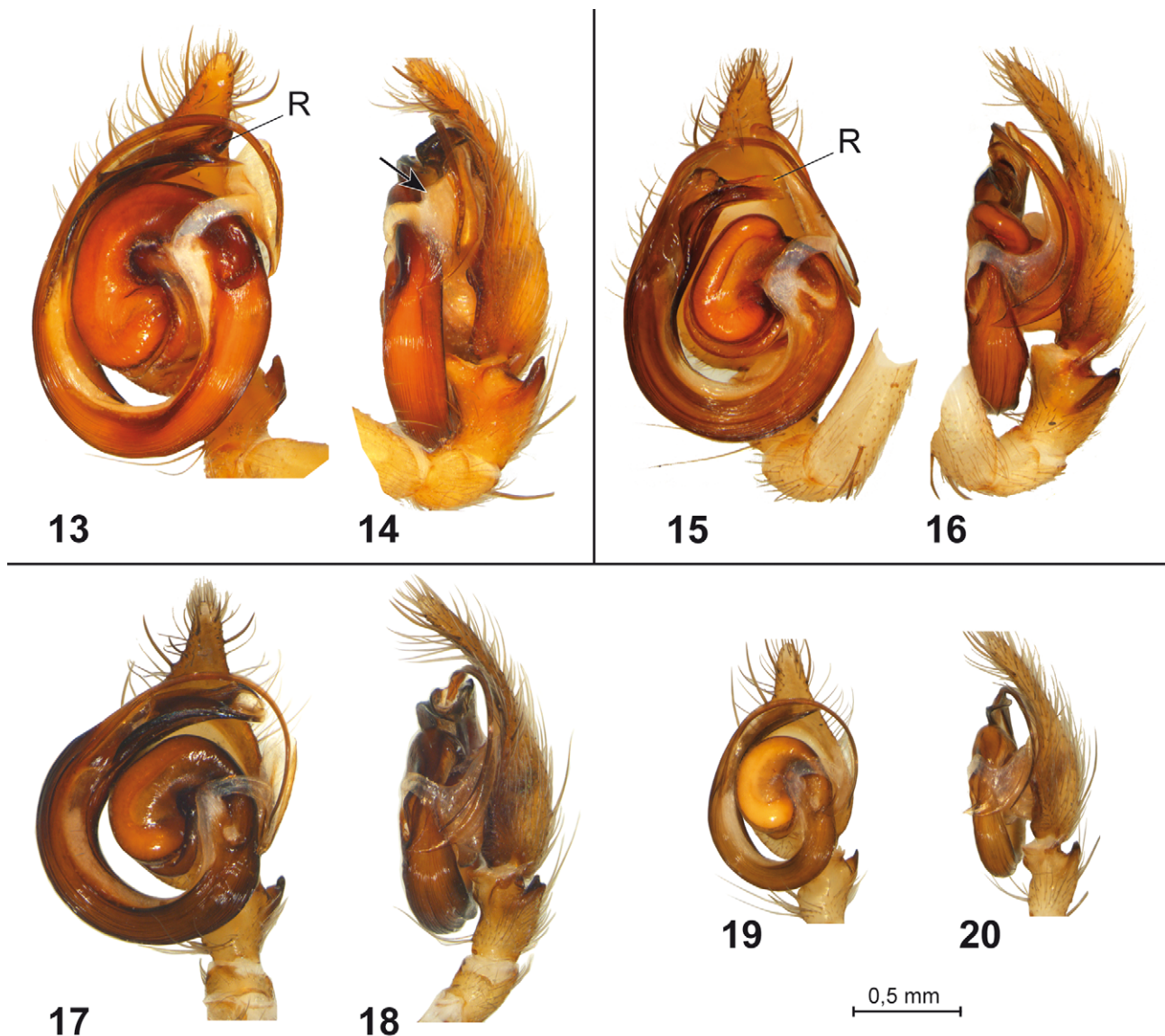
Paratypes: **SWITZERLAND: Tessin:** Bustorgna, Mte. S. Giorgio, 950 m, UTMED50 32T 496358 5083796 (lon. 8.9530° lat. 45.9077°), 3♂, 18/IX–3/X/1989, Hänggi A. (NMB: 20673; Hänggi 1992 sub *H. italica*); Paruscera, Mte. S. Giorgio, 1025 m, UTMED50 32T 496391 5083968 (lon. 8.9534° lat. 45.9092°), 1♂, 28/IX/1988, Hänggi A. (NMB: 02488 c; Hänggi 1992 sub *H. italica*); Mte. Generoso, Pree, 1030 m, UTMED50 32T 500869 5082904 (lon. 9.0112° lat. 45.8997°), 2♂, 5/IX/1989, Hänggi A. (NMB: 02488 b; Hänggi 1992 sub *H. italica*); V. di Scareglia, 1♂, 12/X/2005, Vicentini (NMB: 02488 e). **ITALY: Trentino-Alto Adige:** Trento: Arco, Monte Biaina, Western slope, locality Gorgghi, 1200 m, 2♀ 13/VII/1998, Vailati D.; Concei, Val Concei, Gaverdina, 1500 m, 1♂ 4/X/1986, Vailati D.; Condino, Monte Stigolo, 1550 m, 2♀ 12/XI/1997, Vailati D.; Rovereto, Cengio Rosso, 450 m, 1♀ 21/XI/1992, Vailati D.; Storo, Val d'Ampola, 650 m, 1♀ 5/V/1993, Vailati D. **Lombardia:** Bergamo: Ardesio, Valcanale, locality Braghina, 830 m, 1♀ 14/IV–18/V/2010, Zucchelli W.; Averara, Alpe Cul, UTMED50 32T 548073 5099121 (lon. 9.6213° lat. 46.0439°), 1990 m, alpine pasture, 2♂ 13/VIII–26/IX/2002, 1♀

23/V–20/VII/2003, 1♀ 20/VII–23/VIII/2003, 1♀ 19/X/2003–5/VI/2004, Lodovici O., Pantini P. (Isaia *et al* 2007 sub *H. italica*); Camerata Cornello, Monte Cancervo, 1800 m, UTMED50 32T 547801 5084927 (lon. 9.6163° lat. 45.9162°), rocky area, 1♂ 23/VII–27/VIII/2010, 1♂ 27/VIII–7/X/2010, Massaro M., Zucchelli W.; Camerata Cornello, Monte Venturosa, 1850 m, UTMED50 32T 547816 5085990 (lon. 9.6166° lat. 45.9258°), rocky area, 2♂ 10/VIII–9/IX/2009, 1♂ 23/VII–27/VIII/2010, Massaro M., Zucchelli W.; Camerata Cornello, Monte Venturosa, 1950 m, UTMED50 32T 547727 5086239 (lon. 9.6155° lat. 45.9280°), pasture, 3♂ 23/VII–27/VIII/2010, 1♂ 27/VIII–27/X/2010, Massaro M., Zucchelli W.; Camerata Cornello, Buffalora, 1100 m, UTMED50 32T 549373 5084292 (lon. 9.6366° lat. 45.9104°), beech wood 1♀ 15/VII–10/VIII/2009, Massaro M., Zucchelli W.; Camerata Cornello, Buffalora, UTMED50 32T 549133 5084660 (lon. 9.6335° lat. 45.9137°), 1150 m, bushy area in beech wood, 3♂ 4/VI–14/VII/2009, 1♂ 10/VIII–9/IX/2009, Massaro M., Zucchelli W.; Colzate, Baite Sedernello, 1200 m, 1♀ 17/VII/1988, Ravazzi C., Valle M. (Isaia *et al* 2007 sub *H. italica*), 1♂ 2/VIII/2001, Ferrario E., Pantini P., Pellizzoli E., Valle M.; Monasterolo del Castello, Val Torrezzo, 600 m, UTMED50 32T 573220 5067560 (lon. 9.9415° lat. 45.7577°), wood, 1♀ 6/VII–3/VIII/1995, 1♂ 19/IX–26/X/1995, 1♀ 9/V–19/VI/1996, Pantini P., Valle M. (Pantini 2000 sub *H. italica*); Oneta, slopes of Monte Alben, 2♀ 13/VI/1990 Valle M. (Isaia *et al* 2007 sub *H. italica*); Parzanica, Valle dei Foppi, wood, 550 m, UTMED50 32T 580465 5064643 (lon. 10.0341° lat. 45.7306°), 2♂ 10/VIII–19/IX/1995, 2♀ 9/5–19/VI/1996, Pantini P., Valle M. (Pantini 2000 sub *H. italica*); Premolo, in doline, South of B. ta Camplano, 1850 m, UTMED50 32T 563994 5085216 (lon. 9.8252° lat. 45.9175°), 1♂ 22/VII–1/X/2003 (Isaia *et al* 2007 sub *H. italica*); Premolo, 1850 m, UTMED50 32T 563999 5083688 (lon. 9.8250° lat. 45.9037°), rocky area, 1♂ 19/VI–22/VII/2003, 1♀ 1/X/2003–7/VII/2004, 1♂ 4/VIII–29/IX/2004, 1♀ 21/VI–21/VII/2005 (Isaia *et al* 2007 sub *H. italica*); Schilpario, road to Passo Campelli, 1750 m, UTMED50 32T 596371 5097461 (lon. 10.2451° lat. 46.0239°), moraine 1♀ 6/VI–26/VI/2007; Serina, Valpiana, 1♂ IV–V/1988, 1♂ 1988, Becci B., Pisoni R. (Isaia *et al* 2007 sub *H. italica*); Valgoglio, Val Sanguigno, 1000 m, UTMED50 32T 569394 5091553 (lon. 9.8957° lat. 45.9740°), beech and fir mixed wood 1♂, 2♀ 11/VI–15/VII/2009 (MSNVR), 4♂ 15/VII–11/VIII/2009, 4♂ 11/VIII–15/IX/2009, 2♂ 6/VII–7/VIII/2010, 4♂ 7/VIII–15/IX/2010, Massaro M., Zucchelli W.; Vigolo, Ronchi della Bratta, 850 m, UTMED50 32T 577754 5065587 (lon. 9.9994° lat. 45.7394°), spruce wood, 1♀ 18/VII–10/VIII/1995, 8♂ 10/VIII–19/IX/1995, 3♂, 1♀ 19/IX–26/X/1995, 3♀ 26/X/1995–20/II/1996, 2♂, 7♀ 20/II–2/IV/1996, 7♂, 3♀ 9/V–19/VI/1996, 2♀ 19/VI–8/VIII/1996, Pantini P., Valle M. (Pantini 2000 sub *H. italica*); Lecco: Casargo, Val Marcia, 1000 m, UTMED50 32T 532680 5098368 (lon. 9.4223° lat. 46.0381°), wood, 8♂ 25/VI–11/IX/2008 Massaro M., Zucchelli W.; Casargo, Val Foppone, 1600–1750 m, UTMED50 32T 534471 5097454 (lon. 9.4454° lat. 46.0297°), alpine pasture, 1♂, 1♀ 25/VI–11/IX/2008, 1♂ 13/VIII–14/IX/2009, Massaro M., Zucchelli W.; Pagnona, road to Alpe Vesina, 1400–1430 m, UTMED50 32T 530507 5102093 (lon. 9.3944° lat. 46.0717°), beech wood, 1♀ 26/III–1/V/1999, 2♂, 1♀ 1/V–9/VI/1999, 3♀ 9/VI–6/VII/1999, 1♂, 2♀ 6/VII–11/VIII/1999, 1♂ 11/VIII–8/IX/1999, Pantini P. (Isaia *et al* 2007 sub *H. italica*); Vendrogno, Mornico, 970 m, UTMED50 32T 526902 5098292 (lon. 9.3476° lat. 46.0376°), chestnut wood, 2♀ 14/IV–13/V/1999, 1♂ 13/V–9/VI/1999, 1♀ 9/VI–6/VII/1999, 1♂, 2♀ 6/VII–11/VIII/1999, Pantini P. (Isaia *et al* 2007 sub *H. italica*).

Other material examined. SWITZERLAND: Tessin: Bustorgna, Mte. S. Giorgio, 950 m, UTMED50 32T 496358 5083796 (lon. 8.9530° lat. 45.9077°), 3♂, 5–18/IX/1989, 3–30/X/1989, Hänggi A. (NMB: 20674–20675; Hänggi 1992 sub *H. italica*); Forello, Mte. S. Giorgio, 1095 m, UTMED50 32T 495925 5084377 (lon. 8.9474° lat. 45.9129°), 1♂, 05–18/IX/1989, Hänggi A. (NMB: 20679; Hänggi 1992 sub *H. italica*); Mte. Generoso, Pree, 1030 m, UTMED50 32T 500869 5082904 (lon. 9.0112° lat. 45.8997°), 3♂, 30/VII–12/VIII/1988, 25/VIII–5/IX/1989, 18/IX–7/X/1989, Hänggi A. (NMB: 20676–20678; Hänggi 1992 sub *H. italica*), **ITALY: Lombardia:** Bergamo: Entratico, I Moi, 1♂ (paratype of *Histopona italica*, misidentification), 5/IV/1957, Bonino.

Etymology. The species is dedicated to Fion Bolzern, firstborn of AB. The species epithet is a name in apposition.

Diagnosis. Males (Figures 3–6, 15) can be separated by the absence of a patellar apophysis (present in *torpida*-group, except *H. vignai* Brignoli 1980), the distally tube-like elongated radix (absent in *myops*- and *strinatii*-group, plate-like and distally bifid in *H. italica*) and the distally strongly elongated conductor (broadly rounded in *H. italica*). Females (Figures 23–24, 28) can be separated from other *Histopona* species by the glossy median indented posterior epigynal sclerite (much longer and with anterior margin only moderately indented in *torpida*-group) with strongly diverging margin (parallel in *H. italica*), the unpaired “bursa copulatrix” (completely paired copulatory ducts in *myops*- and *strinatii*-group) with anterior margin v-shaped (straight or convex in *H. italica*) and the narrow lateral lobes of the copulatory ducts (broad in *H. italica*). See also Table 1.



FIGURES 13–20. Left male palp in ventral, and retrolateral view. 13, 14. *Histopona italica*; 15, 16. *H. fioni* sp. n.; 17–20. *H. leonardoï* sp. n., large sclerotized (17–18) and small “normal” palps (19–20). Scale = 1.0 mm. R: radix. The arrow indicates the distinctly stepped connection between conductor and tegulum in *H. italica*.

Description. *Measurements and ratios of male* ($n=2$, holotype male and paratype male from Pagnona): carapace 2.93–3.27 long, 2.20–2.42 wide. Head region 1.17–1.29 wide; PER 0.61–0.78 wide. Chelicerae 1.35–1.44 long, 0.54–0.58 wide. Labium as long as wide or moderately wider than long. Gnathocoxa ratio width to length: 0.510–0.571. Sternum 1.54–1.73 long, 1.27–1.46 wide. Opisthosoma 2.96–3.75 long, 1.85–2.15 wide. Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length: 0.79–0.80. Leg measurements are given in Table 2.

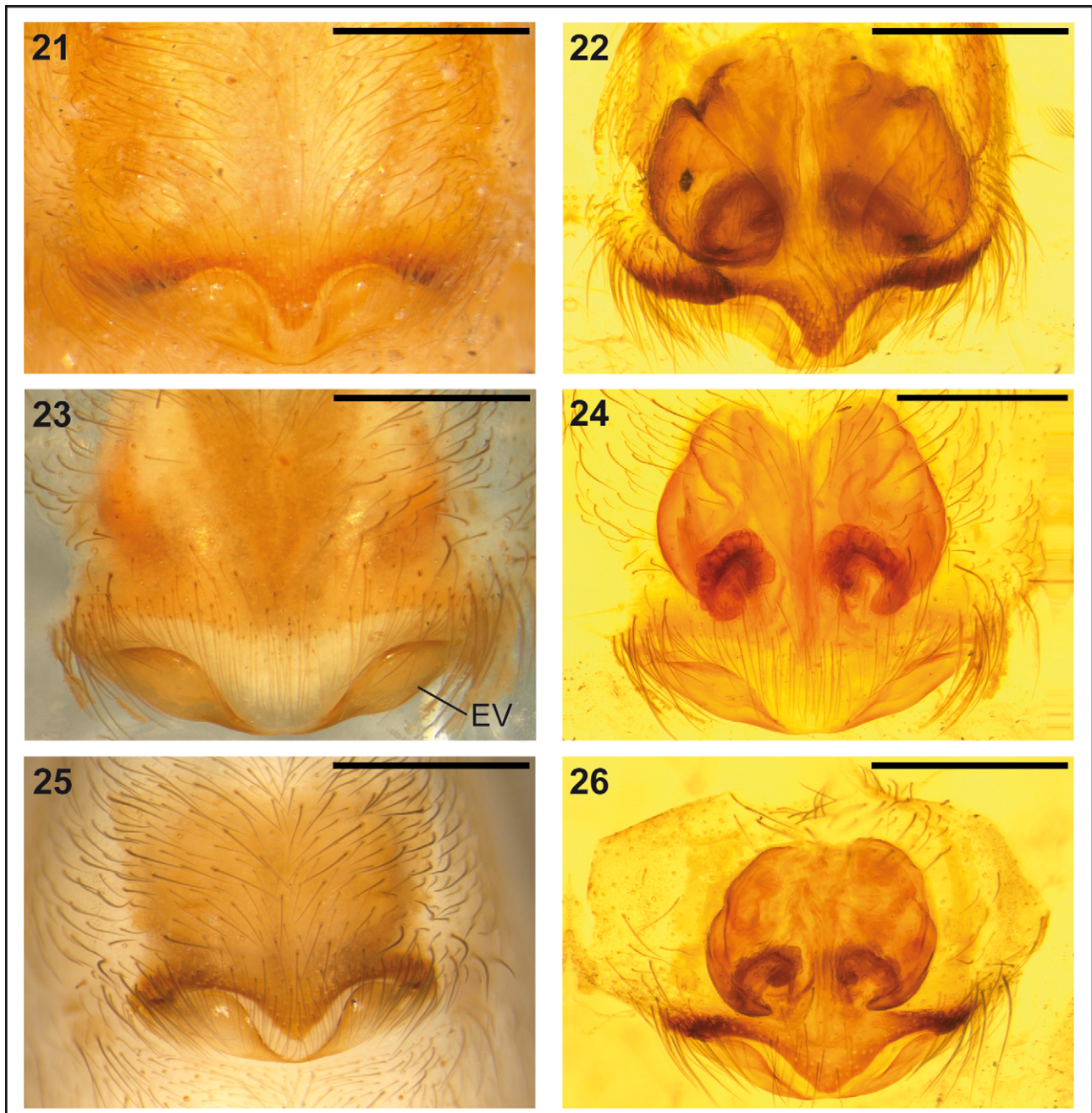
Measurements of females ($n=2$, paratypes from Pagnona and Rovereto): carapace 3.03–3.33 long, 1.95–2.24 wide. Head region 1.22–1.33 wide; PER 0.59–0.75 wide. Chelicerae 1.54 long, 0.68–0.69 wide. Labium moderately wider than long. Gnathocoxa ratio width to length: 0.62–0.64. Sternum 1.57–1.69 long, 1.25–1.40 wide. Opisthosoma 3.50–3.73 long, 2.27–2.42 wide. Epigynal plate 0.98–1.04 long, 1.04–1.10 wide; atrium 0.24–0.26 long, 0.89–0.98 wide. Receptaculum 0.19 wide. Leg measurements are given in Table 2.

Eyes: in dorsal view both eye rows straight or slightly recurved; in frontal view AER straight and PER procurved (Figures 9–10). Diameters: PME: 0.105–0.124; PLE: 0.105–0.143; AME: 0.060–0.086; ALE: 0.110–0.124. Distances: PME–PME equal diameter of PME; PME–AME less than diameter of PME; PME–PLE less than diameter of PME; PME–ALE equal diameter of PME or slightly less; AME–AME 0.5–1.0 times diameter of AME;

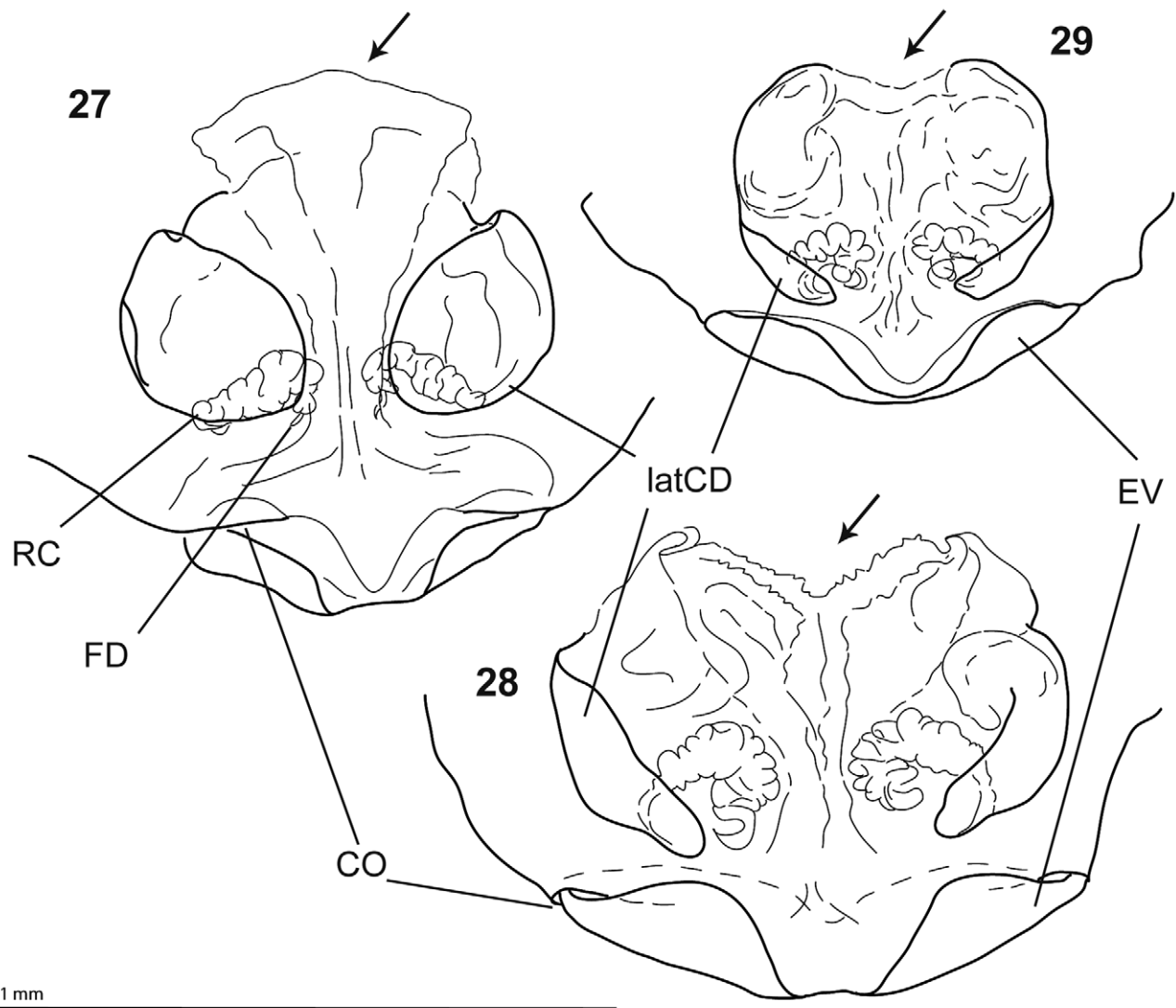
AME–ALE about half diameter of AME. Clypeus height (measured under AME) about 2.5–3.5 times diameters of AME; clypeus height (measured under ALE) about 1.5–2 times diameters of ALE.

Coloration: carapace with indistinct pattern only or not darkened. Sternum without coloration pattern. Opisthosoma dark grey green; cardiac mark moderately pronounced; posteriorly without pattern. Legs without colour pattern.

Additional somatic characters: distal margin of labium concave. Plumose hairs present on carapace, legs and opisthosoma. Three promarginal teeth, the second one from proximal biggest; 5–6 retromarginal teeth, all equal in size (Figure 11). All trochanters notched. Tarsi I, II and IV with 7–8 dorsal trichobothria and 6–7 on tarsus III. No trichobothria on palp tarsi or cymbium. Colulus moderately divided into two separated plates, sometimes only recognizable as two hairy regions. PLS longer than all others with distal segment as long as or slightly longer than basal segment, both pale. PMS as long as ALS. ALS pale. The formulae of leg spination are listed in Table 3.



FIGURES 21–26. Epigyne and vulva in ventral view. Vulva cleared with clove oil. 21, 22. *Histopona italica* (holotype); 23, 24. *H. fioni* sp. n.; 25, 26. *H. leonardoi* sp. n. Scale = 1.0 mm. EV: epigynal valve.



FIGURES 27–29. Schematic drawing of vulva in ventral view. 27. *Histopona italica*; 28. *H. fioni* sp. n.; 29. *H. leonardo* sp. n. CO: copulatory opening; EV: epigynal valve; FD: fertilization duct; latCD: lateral lobe of the copulatory duct; RC: receptaculum; Arrows indicate the posterior margin of the copulatory duct. Scale = 1.0 mm.

Male palp (Figures 3–6, 15–16): RTA with a large dorsal branch, distally pointed, strongly sclerotized and moderately stepped; lateral branch forming moderately sclerotized finger-shaped appendix; ventral branch forming bulge-like moderately ventrodistally protruding stepped appendix. Tegulum broad ring-shaped, distally dividing into a filiform embolus and a tube-like apophysis (radix), proximal with a moderately serrated margin. Embolus originating (free apex) between 10 and 12 o'clock position; distal tip between 3 and 4 o'clock position. Conductor lamella-like, distally strongly elongated, laterally folded along the whole length; longer than alveolus, distally reaching over alveolus margin; terminal end forming moderately sclerotized peak. Connection of conductor and tegulum membranous, band-like. Median apophysis and tegular apophysis absent.

Epigynum and vulva (Figures 23–24, 28): rectangular epigynal plate sclerotized, often with a distinct v-shaped pattern of paler cuticula, posterior with distinct atrium region; atrium anteriorly limited by weakly sclerotized, almost straight margin of the epigynal plate; atrium posteriorly limited by a glossy sclerite ("epigynal valve"), median deeply indented with strongly diverging margins; between anterior margin and posterior sclerite atrium covered by membranous white cuticula. Copulatory openings located at anteriolateral border of atrium. Copulatory duct first unpaired ("bursa copulatrix"), anteriorly v-shaped, then dividing into paired narrow lateral lobes directing into strongly sclerotized convoluted receptacula; fertilization ducts very short.

Distribution. Italy and Switzerland. Lombardian Prealps, from Lago Maggiore to Lago di Garda.

Ecology. Records of *H. fioni* sp. n. refer to forest and open habitats such as beech or fir woods and alpine pastures at moderately high elevation, from 800 to 1600 m. The species also occur in rocky areas at an elevation of 1800–2000 m. Adults are found preferably from spring to autumn.

***Histopona leonardoi* sp. n.**

Figures 7–8, 12, 17–20, 25–26, 29

H. italica Brignoli, 1977: 35, f. 14–15, (m misidentified).

Type material. Holotype male: **ITALY:** Piemonte, Cuneo: Acceglio, springs of Maira River, 1680 m, UTMED50 32T 335892 4926442 (lon. 6.9366° lat. 44.4726°), sparse larch wood, ♂ 4/VI/2009, Rosso M.

Paratypes: **ITALY:** Val d'Aosta: Aosta: Ayas, Champoluc, 1700 m, UTMED50 32T 401771 5076342 (lon. 7.7352° lat. 45.8336°), sparse larch wood, 1♂ 31/VIII/2007, 1♂ 15/VII/2009, Franco I. (CI); Gressoney-St. Jean, 2100 m, UTMED50 32T 409050 5067251 (lon. 7.8306° lat. 45.7528°), alpine praires 1♂ 7/IX/2007, Negro M. (CI, Negro *et al.* 2009 sub *H. italica*); Gressoney-La-Trinité, 1700 m, UTMED50 32T 407631 5079494 (lon. 7.8100° lat. 45.8628°), sparse larch wood, 1♂, 4♀ 30/VI/2006, Negro M. (NMB: 20853, Negro *et al.* 2009 sub *H. italica*); Gressoney-La-Trinité, Gabiet, 2458 m, UTMED50 32T 410779 5079371 (lon. 7.8506° lat. 45.8621°), alpine praires, 2♀ 20/VIII/2008, Negro M. (CI, Negro *et al.* 2010 sub *H. italica*). **Piemonte:** Moncerchio di Vallanzengo, Val Sessera, UTMED50 32T 428560 5058143 (lon. 8.0827° lat. 45.6731°), beech wood, 3 m, 2♀ 2/V/2009, 6♂ 5/IX/2009, 58♂, 1♀ 2/IX/2009 Franco I., Negro M.; 2♀ 2/V/2009, Franco I.; Cuneo: Acceglio, springs of Maira River, 1680 m, UTMED50 32T 335892 4926442 (lon. 6.9366° lat. 44.4726°), sparse larch wood, 1♀ 4/VI/2009, Rosso M. (CI); Entracque, Natural Park of Alpi Marittime, 1100m, UTMED50 32T 376018 4893859 (lon. 7.4487° lat. 44.1874°), beech wood close to Busset stream, 8♂, 5 ♀ 29/VI–9/VIII/2007, Wolf-Schwenninger, 2♀ 21/IX/2008, Isaia M., Paschetta M. (CI); Terme di Valdieri, Natural Park of Alpi Marittime, Vallone del Valasco, UTMED50 32T 358295 4895033 (lon. 7.2267° lat. 44.1947°), alpine pasture with sparse larch wood, 7♂, 1♀ 11/VII–27/VIII/2009, Isaia M., Paschetta M.; Natural Park of Alpi Marittime, Pian della Casa, 1473 m, UTMED50 32T 361775 4896277 (lon. 7.2699° lat. 44.2066°), alpine pasture, 1♂ 11/VII/2008, Isaia M., Paschetta M. (CI, Paschetta *et al.*, 2012 sub *H. italica*); Natural Park of Alpi Marittime, Piano del Valasco, UTMED50 32T 358300 4895039 (lon. 7.2267° lat. 44.1948°), alpine pasture with sparse larch wood, 8♂, 2♀ 27/VIII–23/IX/2009, Isaia M., Paschetta M. (MSNVR); Terme di Valdieri, Natural Park of Alpi Marittime, 1368 m, UTMED50 32T 362064 4896332 (lon. 7.2735° lat. 44.2071°), beech wood, 1♀ 29/VI/2009, Isaia M., Paschetta M. (CI); Vernante, Natural Park of Alpi Marittime, Palanfrè, 1370 m, UTMED50 32T 379547 4894524 (lon. 7.4926° lat. 44.1939°), beech wood, 1♀ 10/IX/2008, 2♀ 22/VI/2009, Isaia M., Paschetta M., 2♀ 2/VII/2010, Isaia M. (CI); Torino: Ribordone, Santuario Prascundù, 1400 m, 1♀ 28/IX/2004, Giachino P.M.; cave “Tuna del Diau, 1621 Pi/TO”, 1080 m, UTMED50 32T 350672 4979013 (lon. 7.1070° lat. 44.9488°), 1♂ 5/X/2002, Lana E. (CI, Isaia *et al.*, 2011 sub *H. italica*); Vistrorio, 1♀ V–VIII/1993, Giachino P.M.; Verbania-Cusio-Ossola: Varzo, cave “Grotta di San Carlo”, 1♀ 4/VI/1978, Casale A. (MSNVR, Brignoli, 1979 sub *H. italica*). **Liguria:** Genova: Mezzanego, Ghiaiette, UTMED50 32T 537328 4918352 (lon. 9.4688° lat. 44.4174°), beech wood 850 m, 2♀ 31/X/2009–25/V/2010, 1♂ 25/V–18/VIII/2010 Lodovici O., Pantini P., Valle M.; Mezzanego, Forest of Monte Zatta c/o ex Colonia Devoto, 1050 m, UTMED50 32T 535942 4917017 (lon. 9.4513° lat. 44.4055°), beech wood, 2♀ 31/X/2009–25/V/2010, Lodovici O., Pantini P., Valle M., 1♀ 25/V/2010, 5♂, 7♀ 25/V–18/VIII/2010 Lodovici O., Pantini P.; Propata, north slope of Monte Cremado, 1640 m, 1♀ 5/VI–12/VII/1988, Cartasegna F., Pesce D. (CG); Torriglia, Passo del Colletto, 1280 m, 1♀ 21/V–1/VII/1999, Pesce D. (CG); Torriglia, SE slope of Monte Duso, 1380 m, 1♀ 21/V–1/VII/1999, Cartasegna F. (CG); La Spezia: Varese Ligure, Passo Cento Croci, UTMED50 32T 549768 4918763 (lon. 9.6251° lat. 44.4204°), 1000 m, 4♂, 1♀ IV–VIII/1991, Cerbino R., Valle M., 2♂ VI–IX/1992, Pantini P., Valle M.; Savona: Sassello, Rio del Nido, 1000 m, beech wood, 4♂, 18/VII–10/X/2001; Sassello, Monte Beigua, 1000 m, 1♀ 17/VII/2001. **Lombardia:** Pavia: Santa Margherita di Staffora, Hotel Colletta, 1380 m, beech wood, 11♂ 31/VII–19/IX/2001, 4♂, 7♀ 19/IX/2001–20/III/2002, 1♀ 26/IV–27/VI/2002, Pantini P. **Emilia Romagna:** Parma: Bedonia, Passo di Montevacà, 800 m, UTMED50 32T 548856 4931317 (lon. 9.6149° lat. 44.5335°), 1♂ IX/1991–V/1992, Buttarelli G., Cerbino R., Pantini P., Valle M.; Piacenza: Bobbio, Passo Penice, 1100 m, UTMED50 32T 525987 4960430 (lon. 9.3285° lat. 44.7967°), wood, 6♀ 20/V–20/VI/2001 (3♀ NMB: 20536), 1♀

20/VI–31/VII/2001, 1♂ 31/VII–19/IX/2001, 2♂, 4♀ 19/IX/2001–20/III/2002, 1♀ 20/III–26/IV/2002 Pantini P.; Bobbio, road to Monte Penice, 1400 m, UTMED50 32T 525246 4959349 (lon. 9.3191° lat. 44.7870°), wood, 13♂, 1♀ 31/VII–19/IX/2001, road margin 1400 m, 5♂, 1♀ 19/IX/2001–20/III/2002, 1♀ 26/IV–27/VI/2002 Pantini P.

Other material examined. SWITZERLAND: Tessin: Centovalli, Lionza, 930 m, UTMED50 32T 470518 5112649 (lon. 8.6181° lat. 46.1667°), 1♂, 2♀, 6/VI/1989, 5/VII/1989, 11–25/VIII/1989, Hänggi A. (NMB: 02488 d, 20671–20672; Hänggi 1992, sub *H. italica*); Val Careccio, 2♂, 1♀, 29/IV–19/IX/1988, Pronini, P. (NMB: 20669–20670; Pronini 1989 sub *H. italica*). **ITALY: Piemonte:** Biella: Oropa, 1♂ 24/VIII/ 1972, Vigna Taglianti A. (MSNVR, paratype of *H. italica*, misidentification); Crissolo, Monviso, 1300 m, 1♀ VII/1967, Osella G. (MSNVR, paratype of *H. italica*, misidentification).

Etymology. The species is dedicated to Leonardo Pantini, firstborn of PP. The species epithet is a name in apposition.

Diagnosis. Males (Figures 7–8, 17–20) can be separated by the absence of a patellar apophysis (present in *torpida* group, except *H. vignai* Brignoli 1980), the distally spoon-like elongated radix (absent in *myops*- and *strinatii* group, plate-like and distally bifid in *H. italica*, tube-like in *H. fioni* sp. n.) and the distally broadly rounded conductor (strongly elongated in *H. fioni* sp. n.). Females (Figures 25–26, 29) can be separated from other *Histopona* species by the glossy median indented posterior epigynal sclerite (much longer and with anterior margin only moderately indented in *torpida* group) with moderately diverging margin (parallel in *H. italica*, strongly diverging in *H. fioni* sp. n.), the unpaired “bursa copulatrix” (completely paired copulatory ducts in *myops*- and *strinatii* group) with anterior margin concave (straight or convex in *H. italica*, v-shaped in *H. fioni* sp. n.) and the narrow lateral lobes of the copulatory ducts (broad in *H. italica*). See also Table 1.

Description. Measurements and ratios of male ($n=2$, holotype and paratype from Entracque): carapace 2.25–2.86 long, 1.54–2.05 wide. Head region 0.80–1.10 wide; PER 0.45–0.62 wide. Chelicerae 1.02–1.34 long, 0.46–0.56 wide. Labium as long as wide. Gnathocoxa ratio width to length: 0.508–0.543. Sternum 1.23–1.51 long, 1.05–1.25 wide. Opisthosoma 1.98–2.46 long, 1.00–1.35 wide. Ratio bulb length (laterally from cymbium base to conductor tip) to cymbium length: 0.670–0.749. Leg measurements are given in Table 2.

Measurements of females ($n=2$, Paratype females from Acciglio and Entracque): carapace 2.04–2.28 long, 1.38–1.63 wide. Head region 0.81–1.01 wide; PER 0.48–0.54 wide. Chelicerae 0.87–1.04 long, 0.45–0.49 wide. Labium as long as wide. Gnathocoxa ratio width to length: 0.56. Sternum 1.20–1.25 long, 1.00–1.08 wide. Opisthosoma 2.01–2.69 long, 1.35–1.81 wide. Epigynal plate 0.70–0.72 long, 0.76–0.78 wide; atrium 0.16–0.18 long, 0.67–0.70 wide. Leg measurements are given in Table 2.

Eyes: in dorsal view both eye rows straight or slightly recurved; in frontal view AER straight or slightly procurved, PER procurved. Diameters: PME: 0.103–0.128; PLE: 0.096–0.129; AME: 0.059–0.082; ALE: 0.109–0.130. Distances: PME–PME about half diameter of PME or slightly less; PME–AME about half diameter of PME or slightly less; PME–PLE about half diameter of PME; PME–ALE about half diameter of PME or slightly less; AME–AME about half diameter of AME or slightly less; AME–ALE less than half diameter of AME. Clypeus height (measured under AME) about 3 diameters of AME or slightly more; clypeus height (measured under ALE) about twice diameter of ALE or slightly less.

Coloration: Carapace with narrow, continuous dark margin; two longitudinal symmetric darkened rows of triangular dots present on carapace; narrow darkened band median at head region present. Sternum without pattern. Opisthosoma dark grey green; cardiac mark moderately pronounced; posteriorly with indistinct pattern of chevrons. Legs without color pattern.

Additional somatic characters: distal margin of labium weakly concave. Plumose hairs present on carapace, legs and opisthosoma. Three promarginal teeth, the second one from proximal biggest; 5–7 retromarginal teeth, all equal in size. All trochanters notched. All tarsi with 6–7 dorsal trichobothria. No trichobothria on palp tarsi or cymbium. Pale colulus, sometimes moderately darkened, divided into two plates. PLS longer than all others with distal segment as long as basal segment, both moderately darkened. PMS as long as ALS. ALS moderately darkened. The formulae of leg spination are listed in Table 3.

Male palp (Figures 7–8, 12, 17–20): RTA with a big dorsal branch, distally pointed, strongly sclerotized and moderately stepped; lateral branch forming moderately sclerotized finger-shaped appendix; ventral branch forming bulge-like moderately ventrodistally protruding stepped appendix, lateral with 2–3 small stepped bands. Tegulum broadly ring-shaped, distally dividing into a filiform embolus and an elongated, distally spoon-like apophysis (radix), terminally often with a transparent portion. Embolus originating (free apex) at 11 o'clock position; distal tip

between 3 and 4 o'clock position. Conductor lamella-like, distally broadly rounded and moderately elongated, laterally folded along the whole length; shorter than alveolus, distally not reaching over alveolus margin; terminal end forming moderately sclerotized peak. Connection of conductor and tegulum membranous, band-like. Median apophysis and tegular apophysis absent.

Epigynum and vulva (Figures 25–26, 29): rectangular epigynal plate sclerotized, posterior with distinct atrium; atrium anteriorly limited by strongly sclerotized, m-shaped margin of the epigynal plate with a posteriorly tapered median region; atrium posteriorly limited by a glossy sclerite (“epigynal valve”), median deeply indented with diverging margins; between anterior margin and posterior sclerite atrium covered by membranous white cuticula. Copulatory openings located at anteriolateral border of atrium. Copulatory duct first unpaired (“bursa copulatrix”), then dividing into narrow paired lateral lobes directing into strongly sclerotized convoluted receptacula; fertilization ducts very short.

Distribution. Italy and Switzerland (Tessin). All along the Western Alps and the Northern Apennine.

Ecology. Records of *H. leonardoi* **sp. n.** mostly refer to forest habitats (beech woods at an elevation of 1000–1500 m). The species also occurs at higher elevation in alpine pastures (maximum elevation reached at 2458 m Gabiet, Aosta Valley). In a few cases *H. leonardoi* **sp. n.** occurred in caves. Adults are preferably found from spring to autumn.

TABLE 1. Diagnostic characters for *Histopona italica* Brignoli 1977, *H. fioni* **sp. n.** and *H. leonardoi* **sp. n.**

Character		<i>H. italica</i> Brignoli 1977	<i>H. fioni</i> sp. n.	<i>H. leonardoi</i> sp. n.
Male palp	Ventral branch of retrolateral tibial apophysis (RTAv)	Strong protruding, distally rounded	Moderately protruding, distally stepped	Moderately protruding, distally with 2–3 small stepped bands
	Radix	One pointed and one rounded, plate-like end	Tube-like	Plate or spoon-like
	Conductor	Distally broad rounded and moderately elongated	Distally strongly elongated	Distally broad rounded and moderately elongated
	Connection conductor-tegulum	Distinctly stepped (arrow in Figure 14)	Continuous	Continuous
Epigynum and vulva	Anterior limitation of atrium	M-shaped margin of the epigynal plate with a posteriad tapered median region	Almost straight margin of the epigynal plate	M-shaped margin of the epigynal plate with a posteriad tapered median region
	Median margins of glossy posterior sclerite	Almost parallel	Strongly divergent	Divergent
	Shape of anterior part of copulatory duct (arrows in Figures 27–29)	Straight or moderately convex	Concave, v-shaped	Concave
	Lateral lobes of copulatory ducts	Very broad, distinct	Narrow, band-like	Narrow, band-like

TABLE 2. Leg measurements (mm) of *Histopona italica* Brignoli 1977, *H. fioni* sp. n. and *H. leonardoi* sp. n.

<i>Histopona. italica</i> Brignoli 1977						
Paratype male from Apecchio						
	fe	pa	ti	mt	ta	total
Palp	1.15	0.49	0.40	-	1.50	3.54
I	2.28	0.93	2.01	2.14	1.61	8.97
II	2.06	0.89	1.55	1.83	1.27	7.60
III	2.04	0.84	1.58	2.04	1.14	7.64
IV	2.68	1.01	2.26	2.94	1.43	10.32
Paratype female from Apecchio						
Palp	0.95	0.46	0.65	-	1.11	3.17
I	2.03	0.88	1.66	1.72	1.41	7.70
II	1.86	0.85	1.36	1.51	1.08	6.66
III	1.85	0.75	1.34	1.81	1.08	6.83
IV	2.30	0.88	2.01	2.60	1.40	9.19
<i>H. fioni</i> sp. n.						
Holotype male and paratype male from Pagnona (n=2)						
Palp	1.23–1.40	0.49–0.58	0.43–0.48	-	1.54–1.79	3.69–4.25
I	2.61–2.79	1.00–1.03	2.36–2.52	2.42–2.61	1.82–1.97	10.21–10.92
II	2.45–2.72	0.97–1.06	1.97–2.12	2.27–2.42	1.64–1.82	9.3–10.14
III	2.42	0.94	1.85	2.45	1.52	9.18
IV	3.06–3.33	0.97–1.00	2.67–2.85	3.42–3.64	1.85–1.97	11.97–12.79
Paratype females from Pagnona and Rovereto (n=2)						
Palp	1.18–1.23	0.49–0.60	0.51–0.85	-	1.05–1.26	3.23–3.94
I	2.64–2.75	1.09–1.15	2.30–2.50	2.24–2.50	1.67–1.85	9.94–10.75
II	2.45–2.60	1.00–1.06	1.94–2.10	2.15–2.25	1.58–1.60	9.12–9.61
III	2.36–2.42	0.94–0.96	1.82–1.96	2.31–2.36	1.30–1.31	8.73–9.01
IV	2.97–3.08	1.04–1.06	2.64–2.77	3.21–3.35	1.67–1.73	11.53–11.99
<i>H. leonardoi</i> sp. n.						
Holotype male and paratype male from Entracque (n=2)						
Palp	0.89–1.19	0.38–0.47	0.33–0.38	-	1.01–1.63	2.61–3.67
I	2.07–2.33	0.76–0.91	1.81–2.12	1.92–2.15	1.34–1.63	7.90–9.14
II	1.95–2.25	0.78–0.86	1.51–1.77	1.78–1.99	1.26–1.52	7.28–8.39
III	1.86–2.06	0.69–0.93	1.40–1.69	1.91–2.25	1.11–1.24	6.97–8.17
IV	2.42–2.73	0.78–0.92	2.09–2.42	2.71–3.15	1.44–1.58	9.44–10.8
Paratype females from Acceglio and Entracque (n=2)						
Palp	0.78–0.84	0.32–0.37	0.50–0.52	-	0.88–0.91	2.48–2.64
I	1.70–1.88	0.70–0.83	1.38–1.61	1.40–1.64	0.92–1.28	6.10–7.24
II	1.52–1.78	0.68–0.73	1.10–1.23	1.32–1.48	0.94–1.06	5.56–6.28
III	1.50–1.72	0.66–0.73	1.08–1.29	1.38–1.68	0.76–0.90	5.38–6.32
IV	1.94–2.25	0.74–0.79	1.62–1.92	2.04–2.45	1.02–1.19	7.36–8.60

TABLE 3. Spination of legs of *Histopona italica* Brignoli 1977, *H. fioni* **sp. n.**, *H. leonardo* **sp. n.** The formula gives the number of spines as follows: dorsal - prolateral - retrolateral - ventral; *p* indicates that the spine is paired (1*p* = 2 spines); *s* indicates the presence of a short and strong spine. A superscript “-” or “+” indicates that a lower or a higher number of spines have been occasionally observed at this position.

Leg	Species	fe	pa	ti	mt	ta
Palp	<i>H. italica</i>	3-0-0-0	2-0-0	1 ⁺ -2-0-0	-	-
	<i>H. fioni</i>	2 ⁺ -0-0-0	2-0-0	1 ⁺ -2-0-0 2-1+1 <i>p</i> -0-0 2-2 <i>p</i> -0-0	-	-
	<i>H. leonardo</i>	2-0-0-0	2-0-0	1 ⁺ -2-0-0	-	-
Leg I	<i>H. italica</i>	3 ⁺ -1 ⁺ -1-0	2-0-0	2-1-0-3 <i>p</i> 2-2-0-1+2 <i>p</i>	0-0-0-1+2 <i>p</i> +1 0-1-0-3 <i>p</i> +1	0
	<i>H. fioni</i>	1 ⁺⁺ -1 ⁺ -0 ⁺ -0	2-0-0	2 ⁻ -1 ⁺ -0-3 <i>p</i> 2-2-0-2 <i>p</i> +1	0-0 ⁺ -0-3 <i>p</i> +1	0
	<i>H. leonardo</i>	1 ⁺⁺ -1-0 ⁺ -0	2-0-0	2-1-0-1 <i>p</i> 2-2-0-1+1 <i>p</i> +1 2-2-0-1+2 <i>p</i> 2-2-0-1 <i>p</i> ⁺ +1	0-0-0-3 <i>p</i> +1	0
Leg II	<i>H. italica</i>	2 ⁺⁺ -1-1-0	2-0-0	1 ⁺ -2-0-1+1 <i>p</i> ⁺	0-2-0 ⁺⁺ -1+2 <i>p</i> +1 0-4-1-1+2 <i>p</i> +1	0
	<i>H. fioni</i>	3-1 ⁺⁺ -1 ⁺ -0	2-0-0	2-2-0 ⁺ -3 <i>p</i>	0-2-0 ⁺ -3 <i>p</i> +1	0
	<i>H. leonardo</i>	2 ⁺ -1-1-0	2-0-0	2-2-0-1+1 <i>p</i> +1 2-2-0-1 <i>p</i> +1 2-2-0-2	0-2-0 ⁺ -3 <i>p</i> +1	0
Leg III	<i>H. italica</i>	1 ⁺⁺ -1 ⁺ -1-0	2-0-0	1 ⁺ -2-2-2+1 <i>p</i>	1 ⁺ -3-3-3 <i>p</i> +1	0-0-1-1
	<i>H. fioni</i>	3-2-2-0	2-0-0	2-2-2-1+2 <i>p</i> 2-2-2-1 <i>p</i> +1+1 <i>p</i> 2-2-2-3 <i>p</i>	1-3-3-1 <i>p</i> +1+2 <i>p</i> +1 1-3-3-3 <i>p</i> +1	0-0-1-1
	<i>H. leonardo</i>	2 ⁺ -1 ⁺ -1-0	2-0-0	2-2-2-2+1 <i>p</i>	1-3-3-3 <i>p</i> +1	0-0-0 ⁺ -1
Leg IV	<i>H. italica</i>	2 ⁺ -1-1-0	2-0-0	2-2-2-1 <i>p</i> +1+1 <i>p</i> 2-2-2-2+1 <i>p</i>	1 ⁺ -3-3-4 <i>p</i> +1	0-2-2-2
	<i>H. fioni</i>	3-1 ⁺ -1-0	2-0-0	2-2-2-1+2 <i>p</i> 2-2-2-1 <i>p</i> +1+2 <i>p</i> 2-2-2-3 <i>p</i>	2-3-3-1 <i>p</i> +1+2 <i>p</i> +1	0-1 ⁺ -2-0 ⁺⁺
	<i>H. leonardo</i>	1 ⁺⁺ -1-1-0	2-0-0	2-2-1 ⁺ -2+1 <i>p</i>	2-3-3-3 <i>p</i> +1	0-2-2-2

Discussion

According to the identification key provided by Deeleman-Reinhold (1983), *Histopona italica* forms a single-species group within the genus. The two new species described in this work increase the membership of the *italica* group, which is defined for females by the presence of a glossy, median deeply indented posterior epigynal sclerite and by the unpaired copulatory ducts, and for males by the absence of a patellar apophysis and by the shape of the embolus, originating basal to the protruding radix.

During the examination of the material presented here, large differences in the size of the male palp could be observed, even between specimens from the same locality (e.g. 2♂ from Liguria, La Spezia: Varese Ligure, Passo Cento Croci). Within the examined specimens of *H. leonardo* **sp. n.**, two males appeared to be distinctly larger, the palps showing minor morphological differences (Figures 17–18). Likewise, Bolzern *et al.* (accepted) and Kraus (1955) observed high intraspecific variation in different species of agelenids, like *Malthonica picta* (Simon 1870) and *Tegenaria femoralis* Simon 1873. The absence of valid morphological characters (the only significant difference being the size) and the lack of concrete evidence (no different female forms found and syntopy of both

male forms - same locality and same time of the year) provide convincing support to consider the larger males as larger forms of the same species.

Records of species belonging to the *Histopona italica* group are known from large parts of Italy (from Calabria to Trentino, along the entire Appennine range, through the Western Alps up to the Lombardian Prealps) (Figure 30). In some cases, specimens of *H. italica* and *H. leonardoi* **sp. n.** were collected at the same locality. Accordingly, the known distribution of *H. italica* overlaps that of *H. leonardoi* **sp. n.** in the district of Maritime Alps and Northern Apennines, the first extending southwards along the Apennines and the latter northwards, along the Alps. It is likely that *H. leonardoi* **sp. n.** and *H. italica* may also occur in French Maritime Alps, but no direct evidence support the presence of this species in France.

Records of *H. fioni* **sp. n.** are only known from the Lombardian Prealps (Lombardia and southern Trentino in Italy and Tessin in Switzerland). Apparently, no overlap occurs between *H. fioni* **sp. n.** and *H. leonardoi* **sp. n.**, being separated by Lake Maggiore, at the border between Piemonte and Lombardia (Tessin Valley). The same separation is known to occur for *Coelotes pickardi tirolensis* (Kulczyn'ski 1906) and *C. pickardi pickardi* O. P.-Cambridge 1873 (Isaia & Pantini 2009) and for *Troglohyphantes lucifuga* Simon 1884 and *T. sciakyi* Pesarini 1989 (Isaia & Pantini 2010).

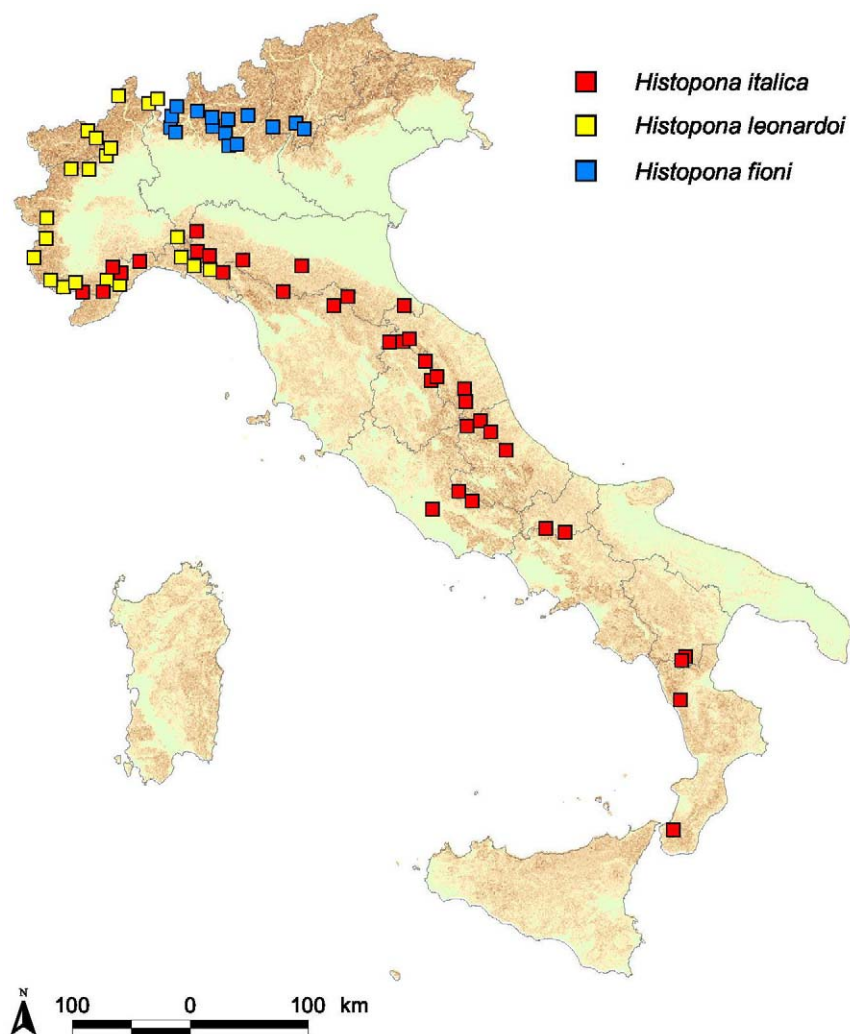


FIGURE 30. Distribution of *Histopona italica*, *H. fioni* **sp. n.** and *H. leonardoi* **sp. n.**

Misidentifications

Concerning the illustrations and citations provided in previous papers referring to *H. italica*, several misidentifications occurred, especially concerning material collected in Northern Italy.

During the examination of the type material, we identified one male of *H. leonardoi* **sp. n.** from Oropa (Piemonte, Province of Biella), one male of *H. fioni* **sp. n.** from Entratico (Lombardia, Province of Bergamo) and one female of *H. leonardoi* **sp. n.** from Crissolo (Piemonte, Province of Cuneo). Despite the lack of information about the sampling localities of the illustrated specimens, it is likely that the illustrations depicting the male in Brignoli 1977 (figures 14–15 page 37) refer to *H. leonardoi* **sp. n.** (presumably the paratype male from Oropa – it is worth to notice that within type material, this male was the only specimen with the left palp detached). Similarly, we examined the material from Varzo - Cave of San Carlo (Piemonte, Province of Verbania) cited in Brignoli 1979 and re-assigned it to *H. leonardoi* **sp. n.**

Deeleman-Reinhold (1983) illustrated the vulva of one paratype female of *H. italica* without giving any information about the sampling locality. The only detached epigyne found in the type material belongs to a specimen collected by G. Osella in Pesio Valley (Laghetti del Marguareis, Briga Alta, Province of Cuneo), that we clearly recognized as *H. italica*.

The male illustrated by Hänggi (1990: 162, figure 21a) from Tessin (Monte Generoso, CH) is in fact *H. fioni* **sp. n.**; on the other hand, the drawing of the female (Hänggi 1990: 162, figure 21b) illustrates a specimen from an unspecified locality in Northern Italy whose identification remains doubtful (“Eine Abbildung der Epigyne eines Weibchen aus Norditalien wurde mir von Herrn Dr. R. Maurer zur Verfügung gestellt und wird hier ergänzend angefügt” [“In addition, an illustration of the epigyne of a female specimen from Northern Italy has been provided by Dr. R. Maurer”] Hänggi 1990: 163). The same figure is also reproduced in Trotta 2005. Groppali *et al.* (1995) reported specimens from the Apennine of Pavia that were not examined in the present study. The identification of this material on a geographic basis is not possible, given the overlapping distributions of *H. italica* and *H. leonardoi* **sp. n.** in this area.

Material cited by Pantini (2000) from the Mountains of Sebino (Province of Bergamo) was re-examined and identified as *H. fioni* **sp. n.** Similarly, Isaia *et al.* (2007) reported material from Lombardia that was re-examined and assigned to the same species. Concerning the material from Piemonte cited in the same publication, specimens from Garesio (Province of Cuneo) were found to belong to *H. italica* and represent, together with the paratype from Val Pesio (cited in Brignoli 1977 and illustrated by Deeleman-Reinhold 1983), the most western records within the distribution range of this species.

Lambiase *et al.* (2007) reported specimens from Maritime Alps (Piemonte, Province of Cuneo) which is within the overlapping range of *H. italica* and *H. leonardoi* **sp. n.** This material was not examined and identification therefore remains doubtful. Material from several nearby locality cited in Paschetta *et al.* (2012) has been re-examined and assigned to *H. leonardoi* **sp. n.**

De Angelis & Fantoni (2008) report *H. italica* from Aosta Valley. Despite the fact that this material was not examined, it is likely that on geographical base this material belongs to *H. leonardoi* **sp. n.** Further material from Aosta Valley reported in Negro *et al.* (2009, 2010) was re-examined and re-assigned to *H. leonardoi* **sp. n.** Specimens reported in Isaia *et al.* (2011) for caves of Western Italian Alps refer to *H. leonardoi* **sp. n.**, as well.

Concerning Central Italy, Pesarini (2003) refers to specimens collected in Tuscany that are likely to be identified on geographical base as *H. italica*.

Acknowledgments

The authors would like to thank Leonardo Latella (Museum of Verona) for the examination of the type material and Ambros Hänggi for supporting this work substantially in different respects. Thanks to Thomas Erdin for providing the drawings. Thanks to Giuseppe Osella, Fulvio Gasparo, Roberto Fabbri, Alessio Trotta for sending material from their private collections. Thanks to Lily Berniker for the revision of the written English. Field work in the Natural Park of Alpi Marittime has been supported by the European Distributed Institute of Taxonomy, in the framework of the ATBI+M project (All Taxa Biodiversity Inventory + Monitoring). Specimen occurring in caves were collected in the frame of CAVELAB “From microclimate to climate change: caves as laboratories for the study of the effects of temperature on ecosystems and biodiversity”, a project funded by Compagnia di San Paolo and University of Torino.

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