Trichopteran fauna of a hydrographic basin with a complex geological history (Umbria – Central Italy)

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Abstract – We set the first comprehensive inventory of Trichoptera species from the Topino River basin (Umbria, Italy), based on research carried out from 1947 to 2006 at 61 lotic sites (including rheocrenous and rheolimnocrinous springs and watercourses) and 1 lentic site (marsh). In total, 78 species and 5 subspecies from 17 families were collected. The species belong to several chorological categories. The inventory comprises 16 species and 5 subspecies endemic to the Italian fauna with *Rhyacophila italica*, *Drusus camerinus*, *Drusus improvisus* and *Allogamus ausoniae* limited to the central Apennines. The presence of *Beraeodes minutus* and *Erotesis baltica* in the Fonti del Clitunno and *Wormaldia pulla marlieri* in the Fergia River is noteworthy because they are rare species in Italy. Almost 60 years of research now allow us to draw a synthesis of Trichoptera diversity and distribution in light of the geological history at the drainage basin level.

Key words: Trichoptera / Topino basin / tectonics

Introduction

Research carried out from 1947 (Moretti, 1949) to 2005 (Cianficconi *et al.*, 2007; Todini *et al.*, 2009) on the Trichoptera fauna of the ten drainage basins of Umbria, Central Italy, allowed us to identify numerous lotic and lentic water bodies, and a variety of rheocrenous and limnocrinous springs in the Topino River basin (Fig. 1). From 1947 to 1953, further investigations were conducted by G.P. Moretti (Istituto di Zoologia dell'Università di Camerino) in the springs of the Topino River (Moretti, 1950, 1952; Scaramucci, 1948–49; Gianformaggio, 1949–50; Penna Rocchigiani, 1949–50), in the lake dell'Aiso (Moretti, 1952; Morroni, 1948–49; Ravagli, 1952–53), in the marsh di Colfiorito (Moretti, 1952) and in the spring Fonti del Clitunno (Moretti, 1949, 1952). Subsequently (1968–1996), research on the Trichoptera of the Topino basin was continued by G.P. Moretti and collaborators of the former Istituto di Zoologia dell'Università di Perugia and by collector Piero Salerno (Cianficconi *et al.*, 1994, 2000, 2006; Moretti *et al.*, 2006). The investigations were continued at sites previously studied (Di Giovanni *et al.*, 1992; Cianficconi *et al.*, 1998) and extended to other localities along the Topino River (Lipparelli, 1978–79; Montanucci, 1994–95; Cappelletti, 1997–98) and its tributaries, namely Rio Fergia (Farano, 1996–97),

Caldognola stream (Brunetti, 1994–95), Menotre River (Guidi, 1971–72; Fortini, 1987–88; Ricciolini, 2000–01; Todini, 2005), Chiona stream (Fucchi, 1995–96), Marroggia stream (Arena, 1990–91), the springs of Monte Subasio (Romozzi, 1989–90; Cardinali, 1992–93; Cianficconi *et al.*, 2006) and Fonti del Clitunno (Corvelli, 1972–73). Almost 60 years of research now allow us to draw a synthesis of Trichoptera diversity and distribution in light of the geological history at the drainage basin level.

Study area

The hydrographic basin of the Topino (1231 km²), in the central-eastern area of Umbria, Italy (Fig. 1), is characterized by numerous lotic ecosystems, including rheocrenous and limnocrinous springs (Fonti del Clitunno), running and still waters (Palude di Colfiorito). Many springs have been greatly modified to provide drinking water for humans and animals. Lago dell'Aiso is a small lake fed by artesian springs. The Topino River is 48 km long. It originates at 670 m a.s.l. on the eastern slopes of Mt. Pennino in the Bagnara springs. It flows on a calcareous substrate in a narrow valley between Mt. Pennino in the east, and Mt. Subasio in the west. The Topino River flows into the Chiascio River (at 174 m a.s.l.), which is a tributary of the Tiber River. The Topino

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Fig. 2. Hypothetical reconstruction of the Lacus Tiberinus in the present Umbrian region.

During the Late Pliocene, due to further tectonic events and climate deterioration, the erosion accelerated and the Tiberino Lake started to dry out, until about 1.5 million years ago it turned back into a fluvial-lacustrine environment. The western branch, due to several fractures, drained quite rapidly generating the river that is now the Umbrian section of Tiber River. The eastern branch of the lake (Valle Umbra) did not have a direct effluent and drained very slowly and incompletely.

In light of recent data, this scenario appears almost unreal, and four main sectors, each with its own evolution and sedimentary sequence, are recognized: (a) North Tiber Valley, (b) Perugia-Magione and Tavernelle-Pietrafitta minor basins, (c) Valle Umbra and (d) South Tiber Valley. The eastern branch of the Tiberino basin (Valle Umbra) evolved as an endorheic, isolated basin from the Pliocene to recent times, and two main depositional cycles are recognized (Coltorti and Pieruccini, 1997; Regione Umbria, 2005), where alluvial fan deposits, lacustrine deposits and swamp deposits alternate. The lower cycle, Pliocene in age, contains the Morgnano (Spoleto) vertebrate fauna (Pantaneli, 1886; Capellini, 1888; Cappuccino *et al.*, 2006), associated with the Triversa Faunal Unit (FU). The upper cycle was usually dated to the Early Pleistocene (Esu and Girotti, 1974, 1991; Coltorti and Pieruccini, 1997; Regione Umbria, 2005), until paleomagnetic data allowed us to extend it to the middle Pleistocene, at least in the Bevagna area (Bizzarri *et al.*, 2011). This evolution was strongly conditioned by morphological features. The Valle Umbra, lying in a NNW–SSE direction, was surrounded by calcareous mountains to the east,

by well-defined hills to the west and by a bowl-shaped rise on the south side. Waters had then (and still have) to follow the flat valley towards the north for more than 50 km, and to overcome a threshold at Torgiano, in order to flow into the Tiber River. The threshold slowed down the flow, while the whole valley deepened because of subsidence due to fractures. In the Late Pleistocene, the lake was split into several basins of different sizes, small lakes, marshes or swamps (Colacicchi, 2010).

In Roman times there were two lakes: Lacus Umber in the plain between Assisi, Spello and Bevagna, mentioned by the poet Propertius in the Elegie (IV, 1, 24), and Lacus Clitorius that occupied the south-eastern part of the valley and was fed by Maroggia, Clitunno and Teverone Rivers (Paolo Diacono Historia Longobardorum II,16) (Fig. 3). This lake became a marsh/swamp and dried out in Republican times. During the evolution of the basin, thick layers of detritus carried by rivers and torrents from the surrounding hills, sedimented in the valley. These deposits were laid down in the plain interbedded into fine clays deposited during slow sedimentation phases. Thus, several layers of more or less coarse sand and of very permeable pebbles stratified irregularly in the plain, among the impermeable clays. The permeable layers are now outcropping at higher altitudes on the valley sides, collecting rainwater and generating deep underground aquifers blocked by the upper layers of impermeable clays. This stratigraphic situation of the Valle Umbra, combined with retarded drainage, resulted in a multitude of different water bodies, both at the surface and at groundwater level (artesian springs; L. Aiso and L. Aisillo: Colacicchi, 2010).

The Topino River basin, due to the calcareous soil and the permeable rocks of the Apennines eastern ridges, is characterized by a very high number of springs of different morphology. The Topino River also originates from several springs. Most of them feed aqueducts providing water to several Umbrian areas. The most famous are the Flaminia spring, that, due to its oligomineral bicarbonate calcium water, is bottled and is known as Nocera Umbra water, and the Angelica spring, that is known as Acqua Santa, whose therapeutic properties were known in ancient times and whose water was exported to several Italian cities as well as to Germany, Portugal and Turkey (Sigismondi, 1956).

The Topino springs are also fed by the Colfiorito karst tableland (Lippi Boncambi, 1940). Permeable rocks allow a steady and often abundant flow even to other water-course (Menotre). The Fonti del Clitunno resurgence, where the Clitunno River rises near Campello sul Clitunno (Spoleto), are formed by underground karst water emerging through the detrital materials covering the base of the calcareous sides of the Campello mountains (Cattuto *et al.*, 1995). The plain of Valle Umbra and the valley from Foligno to Bevagna has become greatly urbanized with widespread agriculture since ancient Roman times. In the following periods, up to 1800, often terrible floods were observed. Therefore canalization and other anthropogenic activities have changed the

Fig. 3. Lacus UMBER, Lacus Clitorius and Via Flaminia at the beginning of Roman dominion (after Pietrangeli, 1953, modified).

pristine morphology of the water courses (Colacicchi and Bizzarri, 2008). For this reason, the downstream sections (hyporhithral, potamal) of the watercourses have not been examined in this paper.

Sampling sites

The sampling sites investigated from 1947 to 2005 (Fig. 1), are listed in detail below, including additional information on catchments, locations, altitudes and longitudinal zonation of sites (Illies and Botosaneanu, 1963). Trichoptera were collected either occasionally or seasonally. The aquatic stages (larvae and pupae) were collected with hand nets or tweezers according to the habitat and typology of the substrate and were either preserved *in loco* in formaline (7%) or partly reared in the laboratory until the emergence of the adults.

The adults were collected mainly during the day with an entomological net and a microaspirator in the surrounding vegetation. Only in recent times the specimens have been collected during the night with light traps (fluorescent or UV lamps). Some specimens were preserved in 70% ethanol and others were taken alive to the laboratory for dry conservation.

F. Topino (48 km, 670–174 m a.s.l.)

- 01: Spring La Vena, Acciano, 645 m a.s.l., *crenal*
- 02: Spring San Giovenale, 3 km upstream from Nocera Umbra, 475 m a.s.l., *crenal*
- 03: Spring Le Spugne, upstream from Busseto, 394 m a.s.l., *crenal*
- 1: Nocera Scalo, upstream from confluence with Caldognola 393 m a.s.l., *epirhithral*
- 2: Nocera Scalo, downstream from confluence with Caldognola 392 m a.s.l., detail below, including additional information on catchments, *rhithral*
- 3: Capannacce, upstream from confluence with T. Rio di Capodacqua, 392 m a.s.l., *epirhithral*

- 4: Poggio, downstream from confluence with T. Rio di Capodacqua, 368 m a.s.l., a valle abitato 374 m a.s.l., *metarhithral*

- 5: Valtopina, 348 m a.s.l., *metarhithral*

T. Chiona (14 km, 650–197 m a.s.l.)

- 1: (a) Spring del T. Chiona, downstream from Collepinio, 550 m a.s.l., *crenal*
- 2: (b) Spring del T. Chiona, downstream from Collepinio, 500 m a.s.l., *crenal*
- 3: (a) Downstream from Madonna di Copernieri, 489 m a.s.l., *hypocrenal*
- 4: 2 km downstream from site 1, *hypocrenal*
- 5: Fontecanale, Molinaccio, 456 m a.s.l., *hypocrenal*
- 6: (c) Spring del Chiona, downstream from Collepinio 450 m a.s.l. (East Subasio), *crenal*
- 7: Tributary of T. Chiona, 410 m a.s.l., *epirhithral*
- 8: Downstream from Collepinio, 1 km from site 3, 381 m a.s.l., *epirhithral*
- 9: 1 km from site 4, 377 m a.s.l., *epirhithral*
- 10: Passo della Paglia, upstream from confluence with F. Topino, 13 km from site 1, 197 m a.s.l., *metarhithral*

T. Rio Fergia (6.8 km, 540–442 m a.s.l.)

- 1: Spring 540 m a.s.l., *crenal*
- 2: Castello, 526 m a.s.l., *hypocrenal*
- 3: Boschetto, 513 m a.s.l., *epirhithral*
- 4: Boschetto, downstream from trout farm, 500 m a.s.l., *epirhithral*
- 5: Gaifana, 480 m a.s.l., *epirhithral*
- 6: Upstream from Molina, 450 m a.s.l., *epirhithral*

T. Caldognola (18 km, 800–392 m a.s.l.)

- 1: Rivolo sorgivo, Colle Montacchiello, 710 m a.s.l., *hypocrenal*
- 2: Maccantone, 468 m a.s.l., *epirhithral*
- 3: Isola, 443 m a.s.l., *epirhithral*
- 4: Ponte Parrano, 424 m a.s.l., *epirhithral*
- 5: Nocera Scalo, 392 m a.s.l., *epirhithral*

Fig. 4. Palude di Colfiorito, sampling sites: 1: Sinkhole, 2: Marsh near Sinkhole, 3: 'Chiaro', 4: 'Fontaccia', 5: Bird Observatory, 6: Ditch in SW, 7: Ex peat bog, 8: Canal under SS77 Val di Chienti, 9: Confluence of Formone Ditch, 10: Centre of marsh.

Sorgenti del Massiccio del Monte Subasio (Cianficconi *et al.*, 2006)

- 1: Fonte Bregno, Assisi, 1016 m a.s.l., *crenal*
- 2: Spring Fosso delle Piagge: Spello, 790 m a.s.l., *crenal*
- 3: Fonte Orbi, Spello, 700 m a.s.l., *crenal*
- 4: Fonte Vecchia, Spello, 690 m a.s.l., *crenal*
- 5: Fosso Trosceto, Spello, 597 m a.s.l., *hypocrenal*
- 6: Fonte S. Giovanni, Spello, 550 m a.s.l., *crenal*

F. Menotre (25.8 km, 850–256 m a.s.l.)

- 1: San Paterniano, 850 m a.s.l., *hypocrenal*
- 2: Celle, 700 m a.s.l., *epirhithral*
- 3: Ponte S. 3: Martino, 682 m a.s.l., *epirhithral*
- 4: Upstream from Rasiglia, 640 m a.s.l., *epirhithral*
- 5: Downstream from Rasiglia, 590 m a.s.l., *epirhithral*
- 6: Scopoli, 530 m a.s.l., *epirhithral*
- 7: Upstream from Ponte S. Lucia, 490 m a.s.l., *epirhithral*
- 8: Pale, 476 m a.s.l., *epirhithral*
- 9: Altolina, 298 m a.s.l., *metarhithral*
- 10: Vescia, 256 m a.s.l., *metarhithral*

Palude di Colfiorito (752 m a.s.l.) (Cianficconi *et al.*, 2000). Figure 4

- 1: Sinkhole
- 2: Marsh near Sinkhole
- 3: Chiaro
- 4: Fontaccia
- 5: Bird Observatory
- 6: Ditch in SW
- 7: Ex peat bog
- 8: Canal under SS 77 Val di Chienti
- 9: Confluence of Formone Ditch
- 10: Centre of marsh

Lago de L'Aiso (194 m a.s.l.) (Moretti, 1952; Di Giovanni *et al.*, 1992)

- 1: Lago de L'Aiso, Bevagna
- 2: Outlet, Bevagna

Fonti del Clitunno (225 m a.s.l.) (Fig. 5)

- 1: Spring brooks, 225 m a.s.l. along the banks
- 2: Deep Pond, 225 m a.s.l. invaded by submerged hydrophytes fed by bubbling springs emerging from the bed

T. Marroggia (30 km, 600–212 m a.s.l.)

- 1: Spring, La Costa, 600 m a.s.l., *crenal*
- 2: Crocemarroggia, 580 m a.s.l., *hypocrenal*
- 3: Downstream from S. Giacomo 266 m a.s.l., *epirhithral*
- 4: 5 km upstream from confluence with Teverone, Trevi 212 m a.s.l., *metarhithral* (without Trichoptera)

Inventory of the Trichoptera in the River Topino basin

In the following inventory, species are ranked according to the checklist of Italian Trichoptera (Cianficconi, 2006) and to the second edition of the Atlas of European Trichoptera (Malicky, 2004).

For each species the sampling sites are recorded with the corresponding number in Figure 1, the date of the samplings in chronological order, the number of adults and aquatic stages (l = larva, p = pupa) and the name of the collector. For published records, bibliographic data are given. (L) indicates the specimens collected with light traps. Specimens identified by Moretti are kept in the G.P. Moretti collection in the Biology section of the Dipartimento di Chimica, Biologia e Biotecnologie dell'Università di Perugia.

Rhyacophilidae

Rhyacophila albardana (Mc Lachlan, 1879)

Menotre: 2 – 18.II. 1971: 1 ♂, Mantilacci (Di Giovanni *et al.*, 2004); 2004–2005: 39 l, Todini; 5 – 2004–2005: 24 l, Todini.

Rhyacophila dorsalis acutidens (McLachlan, 1879)

Topino: 01 – VI.1997: 8 l; VII.1997: 32 l; X.1997: 36 l; 03 – VI.1997: 8 l; VII.1997: 12 l Cappelletti; 1 – 9.X.1994: 11 ♀, 5 p, 5 l; 29.XI.1994: 3 l; 3.VI.1995: 1 p, 1 l; 21.VII.1995: 5 p; 20.III.1996: 4 p, 7 l, Montanucci; 2 – 10.III.1995: 3 ♀; 21.V.1995: 1 p; 21.VII.1995: 1 ♀, 6 p; 10.VIII.1995: 2 ♀ (L), 13.X.1995: 1 ♂, 3 ♀; 20.III.1996: 4 p, 3 l, Montanucci; 3 – 8.X.1994: 1 l; 18.III.1995: 1 p, 3.VI.1995: 11 ♂, 1 p, 1 l; 21.VII.1995: 1 p; 25.VIII.1995: 2 ♂, 1 ♀ (L), Montanucci; 4 – 7.IX.1994: 2 ♂, 7 ♀; 20.XI.1994: 1 ♀; 12.III.1995: 5 p, 2 l; 21.VII.1995: 1 p; 23.VIII.1995: 11 ♂, 1 ♀, 1 p; 10.III.1996: 3 l, 4 p, Montanucci; 5 – 7.IX.1994: 4 ♀ (L); 22.IX.1994: 1 p, 1 l; 9.X.1994: 7 p, 4 l; 12.III.1995: 3 p, 3 l; 30.IV.1995: 1 ♀, 1 p ♂; 21.VII.1995: 1 p; 20.III.1996: 5 l, 1 p, Montanucci.

Chiona: 3 – 5.VIII.1996: 1 p ♂; 5 – 31.VII.1995: 1 ♀ (L), Fucchi.

Fig. 5. *Beraeodes minutus* (Linnaeus, 1751) and its habitat in Fonti del Clitunno: a, Fonti del Clitunno; b and c, adult ♂, length 4–5 mm; d = 3 pupal cases; e, larva, lateral view (length = 7.5 mm); f, larva without case, ventral view (length = 7.2 mm).

Fergìa: **1** – 15.X.1992: 4 ♂, 2 ♀; 3.XI.1992: 22 ♂, 2 ♀; 9.II.1993: 1 ♂, Salerno (Di Giovanni *et al.*, 2004); **4** – 16.IX.1997: 1 l; **5** – 16.IX.1997: 1 ♂, 1 ♀, Farano.

Caldognola: **2** – 5.VII.1995: 1 l, Brunetti; **3** – 26.VII.1994: 6 ♂, 5 ♀; 11.X.1994: 1 ♂; 1.IX.1995: 1 ♂, Brunetti; **4** – 26.VII.1994: 1 ♂, 8 ♀ (L); 1.IX.1995: 1 ♂, Brunetti.

Menotre: **2** – 2004–2005: 17 l; **8** – 2004–2005: 3 l, Todini.

Marroggia: **2** – 30.V.1989: 2 l; **3** – 27, 29, 30.VII.1988: 3 ♂, 1 ♀, 4 l, Arena (Di Giovanni *et al.*, 2004).

***Rhyacophila foliacea* (Moretti, 1981)**

Fergìa: **1** – 15.X.1992: 4 ♂, 2 ♀, 3.XI.1992: 22 ♂, 2 ♀; 9.II.1993: 1 ♂, Salerno (Di Giovanni *et al.*, 2004); **2** – 26.X.1996: 1 p ♂; 11.XII.1996: 1 p; 13.VI.1997: 1 l; **3** – 13.VI.1997: 1 p, 1 l; 6.IX.1997: 1 p; 16.IX.1997: 1 ♂, 6 p, 1 p ♂, 4 l; **4** – 11.XII.1997: 3 p, 1 p ♂; 16.IX.1997: 1 ♂, 5 p ♂, 4 l; **5** – 16.IX.1997: 16 ♂, 2 ♀, 2 p ♂, 3 p ♀, 1 p, 2 l; **6** – 23.VII.1997: 1 ♀. Farano.

Menotre: **1** – 14.X.1970: 1 ♂; 28.X.1970: 1 ♂; 30.III.1971: 1 p; 10.III.1971: 1 ♂; 19–28.IV.1972: 3 ♂, 1 ♀, Mantilacci (Di Giovanni *et al.*, 2004); 30.VII.1987: 1 ♂; 3.XI.1987: 7 ♂, 1 ♀; 18.V.1988: 1 ♂; 27.X.1988: 2 ♂, Cianficconi,

Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)); **2** – 2004–2005: 26 l, Todini; **4** – 20.X.1979: 3 ♂, 1 ♀, Cianficconi, Marinelli ([Di Giovanni et al., 2004](#)); 7.XII.1986: 3 l, 3 p; 3.IX.1987: 7 ♂ Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)); **5** – 30.VII.1987: 3 ♂, 1 ♀, 1 p; 20.X.1987: 1 ♂; 3.XI.1987: 6 ♂; 20.VII.1988: 4 ♂; 27.X.1988: 1 ♂, 1 ♀, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)); 2004–2005: 5 l, Todini; **6** – 28.X.1970: 1 ♂; 14.XII.1970: 1 ♂ 10.III.1971: 1 ♂, Mantilacci ([Di Giovanni et al., 2004](#)); **7** – 30.VII.1987: 3 ♂, 1 ♀, 1 p; 3.XI.1987: 6 ♂, 1 ♀; 26.IX.1988: 2 ♂; 27.X.1988: 3 ♂, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)); **8** – 9.V.1967: 1 ♂, Griselli ([Di Giovanni et al., 2004](#)); 2004–2005: 1 l, Todini; **10** – 27.X.1988: 2 ♂ Fortini ([Di Giovanni et al., 2004](#)).

***Rhyacophila italica* (Moretti, 1981)**

Topino: **3** – 18.III.1995: 11 ♂, Montanucci.

Chiona: **3** – 9.VIII.1995: 2 ♂ (L); 25.X.1995: 4 p ♂; 11.VI.1996: 1 p ♂; 5.VIII.1996: 2 p ♂, Fucchi; **4** – 31.VII.1995: 3 ♂, 1 ♀ (L), Fucchi; **5** – 31.VII.1995: 1 ♂ (L); 9.VIII.1995: 20 ♂ (L), Fucchi; **7** – 31.VII.1995: 1 ♀ (L), Fucchi.

Fergia: **2** – 16.III.1992: 2 p ♂, Salerno ([Cianficconi et al., 1994](#)).

Caldognola: **1** – 15.VII.1995: 1 ♂; **2** – 7.V.1995: 1 ♀, 1 p ♀; 8.VI.1995: 1 ♂; 19.VI.1995: 2 ♀; 5.VII.1995: 2 ♂, Brunetti.

Menotre: **1** – 16.VI.1985: 8 ♂, Moretti, Tucciarelli, Chiappafreddo; 28.XI.1986: 1 ♀, 1 l, Fortini ([Di Giovanni et al., 2004](#)); **3** – 18.V.1982: 1 ♀, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)).

Marroggia: **1** – 30.VII.1988: 1 ♀, Arena ([Di Giovanni et al., 2004](#)).

***Rhyacophila pubescens* (Pictet, 1834)**

Chiona: **3** – 5.VIII.1996: 1 p ♂, 3 l, Fucchi.

Menotre: **1** – 14.VII.1987: 1 ♂, Fortini; 30.VII.1987: 3 ♂; 3.XI.1987: 1 ♂, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)); **2** – 2004–2005: 4 l, Todini.

***Rhyacophila simulatrix* (McLachlan, 1879)**

Caldognola: **5** – 22.IX.1994: 15 p; 25.IX.1994: 1 ♂, 1 ♀, Brunetti.

***Rhyacophila tristis* (Pictet, 1834)**

Menotre: **1** – 18,19.V.1988: 2 ♂, 1 ♀, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)); **2** – 2004–2005: 15 l; **5** – 2004–2005: 1 l, Todini; **8** – 9.VI.1967: 3 ♂, 1 ♀, Griselli ([Di Giovanni et al., 2004](#)).

Glossosomatidae

***Catagapetus nigrans* (McLachlan, 1881)**

Topino: **02** – 28.III.1991: 3 l, Salerno ([Di Giovanni et al., 2004](#)).

Fergia: **1** – 9.II.1991: 2 l; 24.V.1991: 1 ♀; 17.VII.1991: 1 ♂, 1 ♀; 16.III.1993: 1 l, Salerno ([Cianficconi et al., 1994](#)); 4.III.1997: 1 p; 9.VII.1997: 1 p; 23.VII.1997: 63 ♂, 62 ♀, 1 p; **2** – 26.X.1996: 1 l, 1 p; 4.III.1997: 1 p; 5.V.1997: 1 p; 13.VI.1997: 35 ♀, 18 ♂, 1 p, 1 l; **3** – 9.VII.1997: 1 ♂, 1 ♀, Farano.

Menotre: **1** – 30.VII.1987: 9 ♂, 2 ♀, 7 l; 18.V.1988: 2 ♂, 1 ♀, 11 p, 10 l; 20.VII.1988: 2 ♂, 2 ♀, Fortini; 27.II.1972: 1 l; 22.IX.1972: 2 p, Guidi; **2** – 2004–2005: 6 l, Todini; **5** – 30.VII.1987: 1 l, Fortini; **8** – 9.VI.1967: 1 ♂, 1 ♀, Griselli ([Di Giovanni et al., 2004](#)).

***Agapetus nimbulus* (McLachlan, 1879)**

Fonte Orbi: 16.IV.1992: 1 l, Cardinali.

Menotre: **2** – 2004–2005: 9 l, Todini; **4** – 11.V.1987: 4 l, 553 p; 30.VII.1987: 3 ♂, 2 ♀, Fortini; **5** – 12.III.1987: 1 p, Fortini.

Clitunno: **1** – 24.III.1948: 198 p, 78 l; 5.V.1948: 1 ♂ Moretti ([Moretti, 1952](#)); 31.III.1952 – 20.IX.1952: 4 ♀, 2879 p, Casagrande ([Moretti, 1952](#)); 24.VII.1953: 1 ♂, 1 ♀, Bellini ([Di Giovanni et al., 2004](#)); 23 IV 1967 6 p, 1 l, Griselli ([Di Giovanni et al., 2004](#)); 18.IX.1972: 3 ♂; 15.X.1972: 7 ♂, 10 ♀; 19.XI.1972: 1 ♀; 23, 25.III.1973: 1 ♂, 1 ♀; 5.V.1973: 16 ♂, 16 ♀; 30.V.1973: 2 ♀; 30.VII.1973: 4 ♂, 4 ♀, Corvelli.

Hydroptilidae

***Stactobia caspersi* (Ulmer, 1950)**

Sorgente Fosso delle Piagge: 12.V.1992: 1 p; 11.IV.1993: 1 l, Cardinali.

***Oxiethira flavicornis* (Pictet, 1834)**

Lago de L'Aiso: **2** – XI.1991: 1 l, Di Giovanni ([Di Giovanni et al. 1992](#)).

***Hydroptila angulata* (Mosely, 1922)**

Topino: **2** – 10.VIII.1995: 2 ♀ (L), Montanucci; **4** – 23.VIII.1995: 3 ♀; **5** – 7.IX.1994: 24 ♂, 19 ♀ (L), Montanucci.

Palude di Colfiorito: **2** – 3.VIII.1994: 6 ♀ (L); **5** – 6.IX.1998: 2 ♀ (L), Cianficconi, Mazzerioli, Salerno ([Cianficconi et al., 2000](#)).

Lago de L'Aiso: **1** – 1952: 4 ♂, 6 ♀, Moretti ([Di Giovanni et al., 2004](#)).

***Hydroptila forcipata* (Eaton, 1873)**

Topino: 5 – 7.IX.1994: 16 ♂, 68 ♀ (L), Montanucci.

Palude di Colfiorito: 2 – 7.IX.1993: 1 ♂ (L), Cianficconi, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

***Hydroptila insubrica* (Ris, 1903)**

Chiona: 4 – 9.VIII.1995: 3 ♂ (L), Fucchi.

Menotre: 5 – 30.VII.1987: 5 ♂, 1 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 9 – 30.VII.1987: 5 ♂, 2 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004).

***Hydroptila martini* (Marshall, 1977)**

Clitunno: 1 – 3.VI.1952: 3 ♂, 41 ♀; 5.VIII.1952: 7 ♂; 24.VII.1953: 3 ♀; 15.X.1953: 1 ♂, 2 ♀; 19.V.1955: 2 ♂, 1 ♀, Bellini (Di Giovanni *et al.*, 2004); 20.IX.1952: 35 ♀, Casagrande (Di Giovanni *et al.*, 2004); 5, 6.VIII.1952: 13 ♂, 3 ♀, 31 p, 11 l; 23.V.1953: 148 ♂, 106 ♀; 23.VII.1953: 109 ♀; 15.X.1953: 1 ♂, 2 ♀, Moretti (Di Giovanni *et al.*, 2004); 30.IV.1973: 4 ♀, Corvelli (Di Giovanni *et al.*, 2004); 22.X.1973: 2 ♂, 4 ♀, Cianficconi (Di Giovanni *et al.*, 2004); 1.VI.1979: 6 ♂ 1 ♀, Moretti, Cianficconi, Tucciarelli, Marini (Di Giovanni *et al.*, 2004).

***Hydroptila occulta* (Eaton, 1873)**

Topino: 2 – 10.VIII.1995: 2 ♀ (L), Montanucci; 4 – 23.VIII.1995 2 ♀, Montanucci.

Chiona: 3 – 9.VIII.1995: 1 ♂ (L), Fucchi.

Clitunno: 1 – 3.VI.1952: 3 ♂, 40 ♀; 5.VIII.1952: 12 ♂, 8 ♀, Moretti (1952).

***Hydroptila ruffoi* (Moretti, 1981)**

Fonte Orbi: 19.V.1990: 6 ♂, 2 ♀, Romozzi.

***Hydroptila sparsa* (Curtis, 1834)**

Lago de L'Aiso: 1 – 1952: 1 ♂, Moretti (1952).

***Hydroptila tineoides* (Dalman, 1819)**

Menotre: 2 – 2004–2005: 9 l, Todini.

***Hydroptila uncinata* (Morton, 1893)**

Menotre: 5 – 2004–2005: 10 l; 8 – 2004–2005: 6 l, Todini; 9 – 30.VII.1987: 1 ♂, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004).

***Allotrichia pallicornis* (Eaton, 1873)**

Menotre: 7 – 30.VII.1987: 1 ♂, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 9 – 30.VII.1987: 1 ♂, 2 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004).

Philopotamidae***Wormaldia mediana* (McLachlan, 1878)**

Chiona: 3 – 9.VIII.1995: 1 ♂, (L) Fucchi; 4 – 31.VII.1995: 1 ♂ (L), Fucchi.

Fergia: 2–13.VIII.1992: 1 ♂, Salerno (Cianficconi *et al.*, 1994).

Menotre: 5 – 2004–2005: 2 l, Todini.

***Wormaldia occipitalis* (Pictet, 1834)**

Chiona: 3 – 9.VIII.1995: 1 ♂ (L), Fucchi; 5 – 9.VIII.1995: 1 ♂, 1 ♀ (L); 9.X.1995: 2 ♀ (L), Fucchi.

Menotre: 0 – 30.VII.1987: 1 ♀, Fortini; 1 – 20.X.1987: 1 ♂; 3.XI.1987: 1 ♂, 27.IV.1988: 2 ♂; 18.V.1988: 15 ♂, 5 ♀; 20.VII.1988: 4 ♂; 27.X.1988: 2 ♂, 1 ♀, Fortini; 4.VII.1989: 1 ♂, Cianficconi, Chiappafreddo (Di Giovanni *et al.*, 2004).

Marroggia: 1 – 10.XII.1986: 2 ♀, 2 l; 11.II.1987: 1 ♂; 21.VIII.1987: 1 ♂; 24.XI.1987: 1 ♀, 1 l; 1.X.1989: 1 ♂, 1 ♀, 2 l, Arena (Di Giovanni *et al.*, 2004); 3 – 9.III.1987: 1 ♀, 1 l Arena (Di Giovanni *et al.*, 2004).

***Wormaldia pulla marlieri* (Moretti, 1981)**

Fergia: 3 – 24.V.1991: 1 ♂, Salerno (Cianficconi *et al.*, 1994).

Hydropsychidae***Hydropsyche instabilis* (Curtis, 1834)**

Topino: 02 – 2.VII.1979: 2 ♀, Lipparelli.

Caldognola: 3 – 7.V.1995: 2 l; 15.VII.1995: 1 ♂; 5 – 26.VII.1994: 4 ♀; 7 – 26.VII.1994: 108 ♂, 453 ♀ (L), Brunetti.

Fergia: 2–17.VII.1991: 1 ♂, Salerno (Cianficconi *et al.*, 1994).

Menotre: 2 – 2004–2005: 8 l; 5 – 2004–2005: 35 l, Todini.

***Hydropsyche klefbecki* (Tjeder, 1946)**

Topino: 2 – 21.VII.1995: 11 ♂; 10.VIII.1995: 2 ♂ (L), Montanucci.

Menotre: 1 – 28.XI.1986: 1 l, Fortini; 2 – 2004–2005: 2 l Todini; 5 – 30.VII.1987: 2 ♂, 2 ♀, 1 p ♂, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 2004–2005: 1 l, Todini; 7 – 30.VII.1987: 2 ♂, 2 ♀, 1 p ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004).

Hydropsyche modesta (Navas, 1925)

Menotre: 5 – 2004–2005: 12 l, Todini.

Hydropsyche pellucidula (Curtis, 1834)

Topino: 2 – 20.III.1996: 3 l, Montanucci; 3 – 21.VII.1995: 1 ♂; 20.III.1996: 2 l, Montanucci; 4 – 23.VIII.1995: 9 ♀, 20.III.1996: 2 l, Montanucci; 5 – 1.IX.1995: 7 ♂, 9 ♀ (L); 20.III.1996: 2 l, Montanucci.

Menotre: 1 – 18.V. 1988: 1 ♂, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 16.VI.1985: 9 ♀, Moretti; 2 – 2004–2005: 3 l, Todini; 3 – 27.X.1971: 1 l; 27.X.1971: 1 l; 27.XII.1971: 1 l; 27.IV.1972: 1 l; 28.VI.1972: 1 l; 27.VII.1972: 1 l; Guidi; 4 – 7.XII.1986: 1 l, Fortini; 27.X.1971: 1 l; 27.XI.1971: 1 l, Guidi; 5 – 2004: 48 l, Todini; 8 – 2004–2005: 28 l, Todini; 9 – 11.V.1987: 1 l; 14.VII.1987: 1 l, Fortini; 10 – 27.XII.1971: 1 l; 27.III.1972: 1 p; 27.IV.1972: 1 l; 28.V.1972: 1 l; 27.VII.1972: 1 l; 27.VIII.1972: 1 l; 22.IX.1972: 1 l, Guidi.

Marroggia: 2 – 30.V.1989: 1 Arena (Di Giovanni *et al.*, 2004); 3 – 12.IV.1987: 2 ♂, 1 l; 26.IV.1988: 1 ♂, 1 ♀, 2 l, Arena (Di Giovanni *et al.*, 2004).

Hydropsyche spiritoi (Moretti, 1991)

Chiona: 9 – 31.VII.1995: 6 ♂, 10 ♀ (L), Fucchi.

Fergia: 2 – 22.VI.1991: 1 ♂, Salerno (Cianficconi *et al.*, 1994).

Hydropsyche tenuis (Navas, 1932).

Fergia: 3 – 19.VIII.1997: 1 ♂, 3 ♀ (L), Salerno.

Cheumatopsyche lepida (Wallengren, 1891)

Chiona: 10 – 16.IX.1996: 1 ♂, Fucchi.

Marroggia: 2 – 2.IV.1989: 1 ♀, 1 l, Arena (Di Giovanni *et al.*, 2004).

Polycentropodidae

Plectrocnemia conspersa (Curtis, 1834)

Chiona: 3 – 9.VIII.1995: 2 ♂ (L); 8.IX.1995: 1 ♂ (L); 16.IX.1996: 1 ♂, 1 p ♀, Fucchi; 5 – 9.VIII.1995: 1 ♂ (L), Fucchi.

Rio Fergia: – 3: 13.IX.1992: 1 ♀, Salerno (Cianficconi *et al.*, 1994).

Menotre: 3 – 2004–2005: 3 l, Todini.

Marroggia: 1 – 21.I.1990: 1 ♂, 3 l, Arena (Di Giovanni *et al.*, 2004).

Plectrocnemia geniculata corsicana (Mosely, 1930)

Topino: 01 – X.1997: 2 l, Cappelletti.

Chiona: 3 – 10.X.1995: 2 ♂ (L); 5.VIII.1996: 2 l, Fucchi.

Fonte Bregno: 10.VI.1992: 1 ♂; 24.IV.1993: 1 l, Cardinali.

Menotre: 1 – 18.V.1988: 1 ♂, Fortini; 5 – 20.VII.1988: 1 ♂, Fortini.

Polycentropus mortoni (Mosely, 1930)

Topino: 5 – 7.IX.1994: 1 ♂, 5 ♀, Montanucci.

Menotre: 4 – 7.XII.1986: 1 p, Fortini; 9 – 30.VII.1987: 1 ♂, Fortini.

Clitunno: 1 – 23.III.1973: 1 ♂, 2 ♀; 23.V.1973: 2 ♂, Corvelli (Di Giovanni *et al.*, 2004); 11.X.1953: 1 ♂, Casagrande; 11.X.1953: 1 ♂; 15.X.1953: 1 ♀; 23.V.1953: 2 ♂, Bellini (Di Giovanni *et al.*, 2004); 18.IX.1972: 1 ♂; 15.X.1972: 1 ♂, 4 ♀; 25.III.1973: 2 ♂, 1 ♀; 3.IV.1973: 1 ♂; 30.IV.1973: 1 ♂; 6.X.1973: 2 ♂; 21.X.1973: 3 ♂; 1.VI.1979: 1.VI.1979: 2 ♂, Moretti, Cianficconi, Marini (Di Giovanni *et al.*, 2004).

Marroggia: 1 – 8.III.1987: 1 ♂; 3 – 9.III.1987: 1 ♀, 1 l, Arena (Di Giovanni *et al.*, 2004).

Psychomyiidae

Psychomyia pusilla

Lago dell'Aiso: 2 – 6.VII.1952: 1 adult, Moretti (1952).

Lype reducta

Fergia: 2 – 22.VII.1991: 1 ♂, Salerno (Cianficconi *et al.*, 1994).

Fonte Orbi: 19.V.1990: 2 ♂, Romozzi.

Tinodes antonioi (Botosaneanu and Vigano, 1974)

Topino: 5 – 7.IX.1994: 1 ♀ (L), Montanucci.

Chiona: 3 – 9.VIII.1995: 43 ♀ (L); 16.IX.1996: 1 ♂, 1 ♀, Fucchi; 5 – 31.VII.1995: 1 ♂, 1 ♀ (L); 9.VIII.1995: 1 ♂, 3 ♀ (L), Fucchi.

Fergia: 1 – 23.VII.1997: 1 ♂, Farano.

Sorgente Fonte Vecchia: 28.IV.1992: 1 l; 05.V.1993: 1 ♂, Cardinali.

Sorgente del Fosso Trosceto: 12.V.1992: 1 ♂, 1 l; 11.IV.1993: 1 l, Cardinali.

Fonte S. Giovanni: 16.IV.1992: 1 l; 8.V.1993: 1 ♂, 1 l, Cardinali.

Menotre: 1 – 30.VII.1987: 1 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 2 – 2004–2005: 13 l, Todini; 5: 24.VII.1978: 1 ♂, Moretti, Cianficconi, Marinelli (Di Giovanni *et al.*, 2004); 8 – 2004–2005: 7 l, Todini; 9 – 30.VII.1987: 1 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004).

***Tinodes maclachlani* (Kimmins, 1966)**

Chiona: 3 – 11.VI.1996: 1 l; 5.VIII.1996: 4 l, Fucchi; 8 – 5.VIII.1996: 1 l, Fucchi.

Fergia: 1 – 17.VII.1991: 2 ♂; 21.VIII.1991: 1 ♂; 13.IX.1992: 1 ♂; 15.X.1992: 1 ♂, 1 ♀, Salerno (Cianficconi *et al.*, 1994); 2 – 26.X.1996: 1 l, Salerno.

Menotre: 2 – 2004–2005: 5 l, Todini.

Clitunno: 1 – 21.IV.1967: 4 ♂, Gammaitoni, (Di Giovanni *et al.*, 2004); 1.VI.1979: 1 ♂ Moretti, Cianficconi, Marini (Di Giovanni *et al.*, 2004); 23.V.1953: 1 ♂, Casagrande (Di Giovanni *et al.*, 2004); 15.X.1972: 1 ♂, 1 ♀, Moretti; 18.X.1972: 3 ♂, Corvelli; 30.IV.1973: 2 ♂, 1 ♀; 5.V.1973: 5 ♂, 1 ♀; 30.V.1973: 2 ♂, 1 ♀; 21.X.1973: 2 ♂, 3 ♀, Moretti; 1.VI.1979: 1 ♂, Cianficconi.

***Tinodes waeneri* (Linnaeus, 1758)**

Menotre: 5 – 2004–2005: 1 l, Todini.

Ecnomidae

***Ecnomus tenellus* (Rambur, 1842)**

Menotre: 5 – 17.VII.1991: 1 ♂, 1 ♀, Salerno.

Phryganeidae

***Agrypnia varia* (Fabricius, 1793)**

Palude di Colfiorito: 1 – 25.III.1996: 1 l; 6.V.1996: 1 l; 19.IV.1997: 1 l; 6.IX.1998: 1 ♀ (L), Mazzerioli, Salerno (Cianficconi *et al.*, 2000); 2 – 7.IX.1993: 1 ♂, 6 ♀ (L), Salerno, Tavone; 29.VI.1994: 2 ♀ (L), Cianficconi, Mazzerioli, Moretti, Salerno, Speciale; 3.VIII.1994: 1 ♂ (L), Cianficconi, Mazzerioli, Moretti, Salerno; 19.VI.1996: 1 ♀ (L); 6.VIII.1996: 1 ♀ (L) Mazzerioli, Salerno (Cianficconi *et al.*, 2000); 3 – 27.V.1998: 1 ♂, 1 p, Cianficconi, Corallini, Salerno, Tucciarelli (Cianficconi *et al.*, 2000); 5 – 19.VI.1996: 1 ♂, 1 ♀ (L); 6.VIII.1996: 2 ♀ (L); 10.VI.1998: 1 ♀ (L), Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

Brachycentridae

***Micrasema dolcinii* (Botosaneanu and Moretti, 1986)**

Menotre: 1 – 28.XI.1986: 1 p, Fortini; 30.VII.1987: 12 ♂, 3 ♀, Cianficconi, Chiappafreddo, Fortini; 11.V.1987: 153 l, Fortini (Di Giovanni *et al.*, 2004); 2 – 2004–2005: 21 l, Todini; 4 – 16.VI.1987: 1 ♂, 3 ♀ Fortini (Di Giovanni *et al.*, 2004); 5 – 24.VII.1978: 13 ♂, 7 ♀, Moretti and coll.; 16.VI.1987: 3 ♂, 2 ♀; 20.VII.1988: 25 ♂, 14 ♀, Fortini (Di Giovanni *et al.*, 2004); 2004–2005: 12 l, Todini; 7 – 14.VII.1987: 2 ♂, Fortini (Di Giovanni *et al.*, 2004).

***Micrasema minimum* (McLachlan, 1876)**

Menotre: 5 – 24.VII.1978: 4 ♂, Moretti (Di Giovanni *et al.*, 2004); 2004–2005: 1 l, Todini; 8 – 09.VI.1967: 1 ♂, 6 ♀, Griselli (Di Giovanni *et al.*, 2004).

***Micrasema morosum* (McLachlan, 1868)**

Menotre: 2 – 2004–2005: 19 l, Todini.

Limnephilidae

***Drusus camerinus* (Moretti, 1981)**

Menotre: 0 – 30.VII.1987: 1 l, Fortini; 04.VII.1989: 1 ♂, 1 l, Moretti, Cianficconi, Chiappafreddo, Speziali (Di Giovanni *et al.*, 2004); 1 – 3.XI.1987: 1 ♂; 27.IV.1988: 7 ♂, 1 ♀; 18.V.1988: 4 ♂, 1 ♀; 20.VII.1988: 2 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 5 – 4.VII.1989: 3 l, Moretti, Cianficconi, Chiappafreddo (Di Giovanni *et al.*, 2004); 7 – 29.V.1972: 1 ♂, 9 l, Guidi; 8 – 9.VI.1967: 1 ♂, Griselli (Di Giovanni *et al.*, 2004).

***Drusus improvisus* (McLachlan, 1884)**

Topino: 02 – 11.II.1951: 2 ♂, Moretti; 9.XI.1952: 1 ♀, Gianformaggio (Di Giovanni *et al.*, 2004); 6.I.1980: 6 l, Lipparelli.

***Limnephilus auricula* (Curtis, 1834)**

Palude di Colfiorito: 2 – 20.V.1951: 1 ♂; 21.VI.1951: 1 ♂, Moretti; 13.II.1984: 11 ♂, Zaganelli; 17.V.1984: 1 ♂; Pirisinu, 19.VI.1996: 1 ♀, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

***Limnephilus bipunctatus* (Curtis, 1834)**

Palude di Colfiorito: 1 – 19.VI.1996: 1 ♀, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); 2 – 7.V.1967: 1 ♂, 2 ♀, Cianficconi, Pirisinu, V.1979: 1 p, 1 l, Principato; 5.IV.1982: 2 ♂, 1 l, Zaganelli (Cianficconi *et al.*, 2000);

5 – 25.III.1996: 3 ♀, 1 l; 17.V.1998: 1 ♂, 1 p Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **7** – 20.V.1951: 4 ♂, 1 ♀, Moretti (Cianficconi *et al.*, 2000).

***Limnephilus flavicornis* (Fabricius, 1787)**

Palude di Colfiorito: **1** – 6.V.1967: 1 l; 09.V.1967: 2 ♂, 1 ♀, Cianficconi; 27.IV.1983: 5 ♂, 1 ♀, Mearelli; 6.V.1996: 1 p; 19.IV.1997: 4 ♂, 9 ♀; 17.V.1998: 11 ♂, 6 ♀, Mazzerioli, Salerno; 27.V.1998: 1 ♂, 1 p, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); 14.III.1999: 1 l, Cianficconi, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **2** – V.1979: 1 l, Principato; 6.V.1996: 6 ♀, 1 l, Mazzerioli, Salerno; **3** – 27.V.1998: 12 ♂, 9 ♀, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **5** – 25.III.1996: 1 ♂, 1 l; 17.V.1998: 3 ♂, 6 ♀ Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **7** – 21.VI.1951: 4 ♂, 16 ♀ (L), 10 ♂, 10 ♀, Moretti; 14.III.1999: 1 l, Corallini, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **9** – 9.IV.1997: 1 ♀, 1 p, 1 l, 9.XI.1998: 1 ♂, 2 ♀, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

***Limnephilus helveticus* (Schmid, 1965)**

Marroggia: **3** – 10.V.1987: 1 ♀, 1 l, Arena (Di Giovanni *et al.*, 2004).

***Limnephilus hirsutus* (Pictet, 1834)**

Palude di Colfiorito: **4** – 17.V.1998: 4 ♂, 1 ♀, 1 p, Mazzerioli, Salerno; 14.III.1999: 1 l, Cianficconi, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

***Limnephilus ignavus* (McLachlan, 1865)**

Palude di Colfiorito: **4** – 17.V.1998: 2 ♀, 1 p, 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **9** – 9.XI.1998: 1 ♀, Mazzerioli, Salerno; 14.III.1999: 1 l, Cianficconi, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

***Limnephilus lunatus* (Curtis, 1834)**

Chiona: **9** – 9.V.1995: 1 ♀, Fucchi; **10** – 25.X.1995: 1 ♂, 1 ♀ (L), Fucchi.

Menotre: **4** – 16.VI.1987: 1 ♂, Fortini (Di Giovanni *et al.*, 2004).

Palude di Colfiorito: **1** – 25.III.1996: 1 ♂, 1 ♀, 1 l; 17.V.1998: 2 ♂, 3 ♀; 10.VI.1998: 1 ♀, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **2** – 25.III.1996: 1 l; 6.V.1996: 1 ♀, 1 p, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **5** – 25.III.1996: 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **6** – 19.IV.1997: 1 ♀, 1 l, Mazzerioli, Salerno; **9** – 19.IV.1997: 3 ♂, 1 ♀; 17.V.1998: 3 ♂, 3 ♀; 10.VII.1998: 4 ♂, 1 ♀; 9.XI.1998: 4 ♀, Mazzerioli, Salerno; 14.III.1999: 1 l, Cianficconi, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

Clitunno: **1** – 18.VI.1961: 1 ♂; 1.V.1962: 18 ♂; 18.VI.1962: 4 ♀, Moretti, 10.V.1969: 1 ♀, Corvelli; 5.VI.1969: 1 ♀, Pirisinu (Di Giovanni *et al.*, 2004).

Marroggia: **1** – 2.II.1987: 1 ♂, 1 l; 8.III.1987: 1 ♂, 1 l; 27.III.1988: 2 ♀; 2.IV.1989: 1 ♂, 1 l, Arena (Di Giovanni *et al.*, 2004); **2** – 21.I.1990: 1 ♀, 1 l; 29.IV.1990: 1 ♂, 4 ♀, 4 l, (Di Giovanni *et al.*, 2004); **3** – 12.IV.1987: 6 ♂, 8 ♀, 6 l; 10.V.1987: 1 ♂, 1 l; 8.VI.1987: 1 ♂, 1 p; 29.I.1989: 2 ♂, 1 l, 3.III.1989: 1 ♂; 6.III.1989: 1 ♂, 1 l; 2.IV.1989: 1 ♂, 4 ♀, 1 l; 29.IV.1990: 6 ♀, 3 l; 4.VI.1990: 1 ♀, 1 l, Arena (Di Giovanni *et al.*, 2004).

***Limnephilus rhombicus reseri* (Malicky, 1985)**

Palude di Colfiorito: **1** – 25.III.1996: 3 ♂; 6.V.1996: 1 l; 19.IV.1997: 1 p, 1 l; 17.V.1998: 1 p, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **2** – V.1979: 1 l, Principato; 25.III.1996: 1 l; 6.V.1996: 2 ♂, 1 p, 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **5** – 6.V.1996: 1 p, 1 l, 1 p, Mazzerioli, Salerno; **8** – 25.III.1996: 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **9** – 19.IV.1997: 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

Clitunno: **1** – 8.V.1948: 6 ♂, 10 ♀; 2 l, 23.V.1953: 1 ♀; 1.VI.1962: 1 ♀, Moretti (Di Giovanni *et al.*, 2004); 19.IV.1955: 2 ♂, 1 ♀; 20.V.1958: 1 ♂, 1 ♀, Bellini (Di Giovanni *et al.*, 2004); 9–26.V.1964: 9 ♂, 19 ♀, Pucci (Di Giovanni *et al.*, 2004); 25.V.1964: 5 ♂; 9.V.1970: 105 l, Moretti, Cianficconi (Di Giovanni *et al.*, 2004); 14 – 31.III.1966: 6 ♂, 2 ♀, 1 p; 12.IV.1970: 1 ♂, 5 ♀; 9 – 23.V.1970: 13 ♂, 3 ♀; 15–16.IV.1973: 2 ♂, 1 ♀, Cianficconi (Di Giovanni *et al.*, 2004); 27.IX.1972: 1 ♀, Corallini (Di Giovanni *et al.*, 2004); 27.V.1981: 3 ♂, 9 ♀; 14. VI. 1981: 2 l, Chiappafreddo (Di Giovanni *et al.*, 2004); 15.IV.1971: 1 ♂, Sbrenna (Di Giovanni *et al.*, 2004).

Marroggia: **1** – 29.I.1989: 2 ♂, 2 ♀; 7.V.1989: 1 ♂, 1 ♀, 1 l, (Di Giovanni *et al.*, 2004); **2** – 29.I.1989: 4 ♂, 7 ♀, 6 l; 21.I.1990: 1 ♂, 1 l; 27.I.1991: 1 ♂, 1 l, (Di Giovanni *et al.*, 2004); **3** – 10.V.1987: 1 l; 2.IV.1989: 1 ♂, 1 l; 21.I.1990: 1 ♀, 1 l, Arena (Di Giovanni *et al.*, 2004).

***Glyptotaelius pellucidus* (Stephens, 1833)**

Topino: **03** – VII.1997: 4 l, Cappelletti

Palude di Colfiorito: **1** – 25.III.1996: 3 ♂; 6.V.1996: 1 l, 19.IV.1997: 1 p, 1 l; 17.V.1998: 1 p, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

***Grammotaulius nigropunctatus* (Retzius, 1783)**

Topino: **01** – I.1998: 4 l, Cappelletti

Palude di Colfiorito: **1** – 25.III.1996: 1 l; 6.V.1996: 1 l; 19.IV.1997: 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000); **2** – 16.IV.1967: 2 ♀, Gianotti; 7.V.1967: 5 ♂, Cianficconi, Pirisinu; **5** – 25.III.1996: 1 l; 6.V.1996: 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000);

10 – 10.III.1951: 1 l, Moretti, Secondari ([Cianficconi *et al.*, 2000](#)).

***Potamophylax cingulatus gambaricus* (Malicky, 1971)**

Topino: **01**–5.X.1979: 1 ♂, Lipparelli ([Di Giovanni *et al.*, 2004](#)); **1** – 9.X.1994: 11 ♂; 18.III.1995: 11 ♀, Montanucci; **2** – 18.III.1995: 1 ♀, Montanucci; **3** – 8.X.1994: 11 ♀; 29.XI.1994: 11 ♂, Montanucci; **4** – 20.XI.1994: 11 ♂; 12.III.1995: 2 ♀; 21.V.1995: 1 ♂, 1 ♀, Montanucci; **5** – 22.IX.1994: 6 p, 1 l; 9.X.1994: 2 ♂, 1 ♀, 5 p, 6 l; 21.VII.1995: 22 ♀, Montanucci.

Chiona: **1** – 17.III.1992: 1 ♂, 1 ♀, 1 l; 30.III.1993: 1 l, Cardinali; **2** – 17.III.1992: 1 l, Cardinali; **3** – 9.VIII.1995: 1 ♂ (L); 10.X.1995: 3 ♀ (L); 25.X.1995: 4 p ♂; 11.VI.1996: 5 l; 5.VIII.1996: 5 l; 16.IX.1996: 1 p ♂, 1 p ♀, Fucchi; **5** – 9.X.1995: 4 ♂, 2 ♀ (L), Fucchi; **6** – 19.IV.1993: 1 ♂, 1 l, Cardinali.

Fergia: **1** – 13–18.IX.1992: 2 ♂, 2 ♀ (L); 15.X.1992: 1 ♀ (L); 3.XI.1992: 6 ♀ (L); 16.III.1993: 5 l, Salerno ([Cianficconi *et al.*, 1994](#)); 21.I.1997: 1 l; 9.VII.1997: 1 p, 1 l; **3** – 13.VI.1997: 2 l; 9.VII.1997: 1 l; 6.IX.1997: 1 p; 16.IX.1997: 3 ♂, 2 ♀, 2 p ♂, Farano; **4** – 16.IX.1997: 3 ♂, 1 ♀, 1 p ♂, 1 p, Farano.

Caldognola: **1** – 7.V.1995: 1 l; **2** – 5.VII.1995: 1 p ♀, 3 p ♂, 5 ♂, 8 ♀; 10.X.1995: 3 ♀; 12.XII.1995: 1 l; **3** – 5.VII.1995: 1 l; 25.VII.1995: 1 l; 1.IX.1995: 1 ♂, 1 ♀, 1 l, Brunetti; **4** – 1.IX.1995: 5 ♂, 9 ♀, 3 p ♂, 1 p ♀, 13 l; 25.IX.1994: 1 ♂, 3 ♀, 1 l; 19.III.1995: 1 l; 7.V.1995: 7 l; 18.VII.1995: 24 l; 1.IX.1995: 7 ♂, 1 ♀, 1 p ♀; 12.X.1995: 1 ♀, Brunetti.

Fonte Orbi: 16.IV.1992: 1 ♂, 2 ♀, 1 l, Cardinali.

Sorgente del Fosso Trosceto: 12.V.1992: 2 ♀, 1 l; 8.VII.1992: 1 l; 24.X.1992: 1 l, Cardinali.

Menotre: **1** – 11.V.1987: 11, Fortini; **2** – 2004–2005: 25 l, Todini; **4** – 11.V.1987: 40 l; 14.VII.1987: 36 l; 3.IX.1987: 1 ♂, Fortini ([Di Giovanni *et al.*, 2004](#)); **7** – 11.V.1987: 1 l; 26.IX.1988: 1 ♂, Fortini; **8** – 2004–2005: 50 l, Todini.

***Halesus appenninus* (Moretti and Spinelli, 1981)**

Topino: **01** – VII.1997: 2 l, Cappelletti; **1** – 9.X.1994: 1 p ♀; 3.VI.1995: 6 l; 21.VII.1995: 3 l, Montanucci; **03** – 22.IX.1979: 1 ♂; 20.XI.1979: 1 ♂, Moretti, Lipparelli ([Di Giovanni *et al.*, 2004](#)); IV.1997: 12 l; I.1998: 4 l Cappelletti; **2** – 21.VII.1995: 11 ♂; 20.III.1996: 3 l, Montanucci; **3** – 8.X.1994: 12 ♂, 12 ♀, 2 l; 21.VII.1995: 2 l; 20.III.1996: 3 l, Montanucci; **4** – 12.III.1995: 11 ♂; 20.III.1996: 3 l, Montanucci; **5** – 9.X.1994: 2 p ♀; 12.III.1995: 1 l; 30.IV.1995: 1 l; 21.VII.1995: 1 ♂, Montanucci.

Chiona: **3** – 5.VIII.1996: 1 l, Fucchi.

Fergia: **2** – 9.VII.1997: 1 l Farano; **3** – 9.VII.1997: 1 l, Farano; **4** – 11.XII.1997: 1 p, Farano.

Caldognola: **1** – 26.VII.1994: 1 p, Brunetti; **2** – 25.VII.1995: 1 ♂, Brunetti; **4** – 1.IX.1995: 1 ♀, Brunetti; **5** – 22.IX.1994: 7 l; 25.IX.1994: 1 ♂, 1 p ♀, 19.III.1995: 1 l; 7.V.1995: 1 l; 1.IX.1995: 1 ♂, Brunetti.

Menotre: **2** – 2004–2005: 74 l, Todini; **4** – 11.V.1987: 6 l; 14.VII.1987: 1 l; 30.VII.1987: 1 l, Fortini; **5** – 11.V.1987: 6 l, Fortini; 2004–2005: 3 l, Todini; **8** – 2004–2005: 35 l, Todini; **9** – 11.V.1987: 1 l, Fortini.

Marroggia: **2** – 30.VII.1988: 8 ♂, 6 ♀; 1.X.1989: 1 ♂, 1 ♀, 1 l, Arena; **3** – 10.V.1987: 1 ♂, 1 l; 30.VII.1988: 1 ♂, 1 l, Arena ([Di Giovanni *et al.*, 2004](#)).

***Melampophylax melampus* (McLachlan, 1876)**

Chiona: **3** – 25.X.1995: 3 ♂, 1 ♀ (L), Fucchi.

***Stenophylax mitis* (McLachlan, 1875)**

Chiona: **1** – 30.III.1993: 1 ♂, 2 ♀, 1 l, Cardinali; **2** – 19.IV.1993: 1 ♂, 2 ♀, 1 l, Cardinali; **6** – 17.III.1992: 1 l, Cardinali.

Sorgente Fosso delle Piagge: 30.III.1993: 1 ♂, 2 ♀, 1 l, Cardinali.

Palude di Colfiorito: **4** – 14.III.1999: 2 ♂, 2 ♀, Cianficconi, Mazzerioli, Salerno ([Cianficconi *et al.*, 2000](#)).

***Stenophylax mucronatus* (McLachlan, 1880)**

Chiona: **3** – 8.IX.1995: 2 ♀ (L), Fucchi.

Palude di Colfiorito: **4** – 14.III.1999: 2 ♂, 2 ♀, Cianficconi, Mazzerioli, Salerno; **6** – 25.III.1996: 1 ♂, 3 ♀, Mazzerioli, Salerno ([Cianficconi *et al.*, 2000](#)).

***Stenophylax permistus* (McLachlan, 1895)**

Menotre: **5** – 2004–2005: 1 l, Todini.

Palude di Colfiorito: **4** – 14.III.1999: 3 ♂, 6 ♀, Cianficconi, Mazzerioli, Salerno ([Cianficconi *et al.*, 2000](#)).

***Micropterna fissa* (McLachlan, 1875)**

Menotre: **10** – 27.X.1988: 1 ♀, Fortini ([Di Giovanni *et al.*, 2004](#)).

***Micropterna nycterobia* (McLachlan, 1875)**

Topino: **01** – VII.1997: 4 l, Cappelletti; **03** – VII.1997: 20 l, Cappelletti.

***Micropterna sequax* (McLachlan, 1875)**

Sorgente Fonte Vecchia: 28.IV.1992: 1 ♂, 2 ♀, 1 l; 5.V.1993: 2 ♂, 1 p, Cardinali.

Palude di Colfiorito: 4 – 14.III.1999: 1 ♂, 1 l, Mazzerioli, Salerno (Cianficconi *et al.*, 2000).

***Micropterna testacea* (Gmelin, 1789)**

Chiona: 7 – 12.VI.1995: 1 ♀, Fucchi; 9 – 9.V.1995: 2 ♂, 3 ♀; 11.VI.1995: 1 ♀, Fucchi.

Caldognola: 2 – 7.V.1995: 1 ♀, Brunetti.

Marroggia: 1 – 29.I.1989: 3 ♀, Arena; 2 – 29.I.1989: 2 ♀, 2 l; 12.XI.1990: 1 ♂, 1 l, Arena (Di Giovanni *et al.*, 2004).

***Mesophylax aspersus* (Rambur, 1842)**

Menotre: 2 – 2004–2005: 4 l, Todini; 5 – 2004–2005: 3 l, Todini.

Lago de L'Aiso: 2 – XI.1991: 1 l, (Di Giovanni *et al.*, 1992).

Marroggia: 3 – 2.IV.1989: 1 ♂, 2 ♀, 2 l, Arena (Di Giovanni *et al.*, 2004).

***Allogamus antennatus* (McLachlan, 1876)**

Menotre: 0 – 30.VII.1987: 1 l, Fortini; 1 – 28.XI.1986: 1 l; 27.X.1988: 1 ♀, Fortini (Di Giovanni *et al.*, 2004); 3 – 7.XII.1986: 3 p; 12.III.1987: 1 l; 11.V.1987: 293 l, Fortini (Di Giovanni *et al.*, 2004); 2 – 2004–2005: 22 l, Todini; 5 – 11.V.1987: 160 l; 20.X.1987: 1 ♀; 27.X.1988: 4 ♀, Fortini (Di Giovanni *et al.*, 2004); 2004–2005: 1 l, Todini; 6 – 3.X.1970: 15 ♂, 22 ♀; 2.X.1972: 27.II.1972: 2 ♂, 2 ♀, 1 l, Celletti (Di Giovanni *et al.*, 2004); 27.III.1972: 1 l; 27.IV.1972: 1 l; 27.V.1972: 1 l; 28.V.1972: 1 l; 28.VI.1972: 1 l; 27.VII.1972: 1 l; 27.VIII.1972: 1 l; 22.IX.1972: 1 l; 2.X.1972: 1 ♂, Guidi (Di Giovanni *et al.*, 2004); 7 – 13.IV.1987: 1 l; 11.V.1987: 1 l; 14.VII.1987: 4 l, Fortini; 8 – 2004–2005: 26 l, Todini; 9 – 11.V.1987: 1 l, Fortini.

***Allogamus ausoniae* (Moretti, 1991)**

Topino: 2 – 21.VII.1995: 1 ♂, 2 l, Montanucci.

***Chaetopteryx gessneri* (McLachlan, 1876)**

Topino: 01 – IV.1997: 18 l; VI.1997: 6 l; VII.1997: 26 l; X.1997: 12 l; I.1998: 35 l, Cappelletti; 02 – 6.VII.1949: 1 ♂, 1 l, Moretti (Di Giovanni *et al.*, 2004); 9.X.1950: 4 p, Moretti, Cianficconi (Di Giovanni *et al.*, 2004); 22.XI.1950: 17 ♂, 3 ♀, Bellini (Di Giovanni *et al.*, 2004); 9–21.1950: 1 ♂, 17 l; 9.X.1952: 1 ♀, 49 p, 140 l, Gianformaggio (Di Giovanni *et al.*, 2004); 03 – 22.IX.1979: 3 p; 4.XII.1979: 1 ♂, 1 ♀, Lipparelli (Di Giovanni *et al.*, 2004); VI.1997: 16 l; VII.1997: 40 l; X.1997: 36 l, Cappelletti; 1 – 9.X.1994: 11 ♀, Montanucci; 4 – 20.X.1987: 2 ♂, 1 ♀, Cianficconi, Chiappafreddo (Di Giovanni *et al.*, 2004); 5 – 9.X.1994: 1 ♂, Montanucci.

Fergia: 1 – 3.XI.1992: 6 ♂, 1 ♀, Salerno (Di Giovanni *et al.*, 2004); 5.V.1997: 1 l; 23.VII.1997: 2 l, Farano; 2 – 13.VI.1997: 4 l; 9.VII.1997: 1 l; 3 – 13.VI.1997: 1 l; 9.VII.1997: 1 l, Farano.

Caldognola: 3 – 11.X.1994: 1 ♀, Brunetti.

Menotre: 1 – 3.XI.1987: 3 ♂, 2 ♀, Cianficconi, Chiappafreddo, Fortini, (Di Giovanni *et al.*, 2004); 4 – 20.X.1987: 2 ♂, 1 ♀, Cianficconi, Chiappafreddo, Fortini, (Di Giovanni *et al.*, 2004); 5 – 20.X.1987: 1 ♂, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004).

Clitunno: 1 – 30.XI.1964: 1 ♀; 9.X.1970: 1 ♂; 19.XI.1972: 2 ♂, 1 ♀, Moretti; 3.I.1970: 1 ♀, Pirisinu (Di Giovanni *et al.*, 2004); 9–18.XI.1970: 1 ♂, 1 ♀; 22.I.1972: 1 ♂, 1 ♀, Sbrenna (Di Giovanni *et al.*, 2004); 15.X.1972: 1 ♂, Corvelli.

Goeridae

***Silo mediterraneus* (McLachlan, 1884)**

Fergia: 1 – 24.V.1991: 1 ♂; 21.VI.1991: 7 ♂; 22.VII.1991: 1 ♂; 1.VIII.1991: 1 ♂, Salerno (Di Giovanni *et al.*, 2004); 21.I.1997: 1 l; 5.V.1997: 1 ♂, 1 p, 1 l; 9.VII.1997: 1 p; 23.VII.1997: 5 ♂, 1 p; 2 – 26.X.1996: 1 l; 5.V.1997: 1 ♀; 13.VI.1997: 5 ♂; 9.VII.1997: 1 p, 1 l, Farano.

Menotre: 2 – 2004–2005: 20 l, Todini; 3 – 27.III.1972: 1 p; 27.IV.1972: 1 l; 28.VI.1972: 1 l, Guidi; 30.VII.1987: 3 ♂, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 18.V.1988: 6 ♂, 1 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 4 – 7.XII.1986: 2 ♂, 1 ♀; 12.III.1987: 1 ♂, 3 ♀; 13.IV.1987: 4 ♀; 11.V.1987: 2 ♂, 2 ♀; 16.VI.1987: 3 ♂, 1 ♀; 30.VII.1987: 3 ♂, Fortini (Di Giovanni *et al.*, 2004); 27.IV.1972: 1 l; 27.VIII.1972: 1 p, Guidi; 5 – 11.V.1987: 2 ♂; 16.VI.1987: 2 ♂; 20.VII.1988: 1 ♂, Fortini (Di Giovanni *et al.*, 2004); 7.XII.1986: 2 ♂, 1 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 18.V.1988: 1 ♂, 1 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 20.VII.1988: 1 ♂, Moretti, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 2004–2005: 2 l, Todini; 6 – 27.III.1972: 1 p; 27.IV.1972: 1 l, Guidi; 7 – 11.V.1987: 1 ♂, 1 ♀, Fortini (Di Giovanni *et al.*, 2004).

Clitunno: 1 – 9.V.1948: 1 ♂, 77 p, 6 l; 31.III.1952: 136 ♂, 11 ♀; 20.IX.1952: 1 ♂; 23.V.1953: 8 ♂, 5 ♀; 15.X.1953: 202 ♂, 12 ♀; 11.V.1956: 15 ♂, 7 ♀; 21.IV.1967: 1 ♂; 27.V.1967: 35 ♂, 11 ♀, Moretti (Di Giovanni *et al.*, 2004); 19.IV.1955: 174 ♂, 83 ♀; 15.X.1958: 37 ♂, 12, Bellini (Di Giovanni *et al.*, 2004); 31.III.1952: 92 p, 8 l; 3.VI.1952: 93 p, 41 l; 6.X.1952: 12 p; 23.V.1953: 7 p; 24.VII.1953: 5 p; 20.IX.1953: 129 p, 14 l, Casagrande (Di Giovanni *et al.*, 2004); 23.IV.1967: 3 p, Griselli (Di Giovanni *et al.*, 2004); 16.IV.1972: 1 ♀; 9.III.1973: 4 ♂; 9.IV.1973: 5 ♂, Corvelli (Di Giovanni *et al.*, 2004); 18.IX.1972: 3 ♀; 15.X.1972: 34 ♂, 10 ♀; 9.III.1973: 4 ♂; 25.III.1973: 2 ♂; 9.IV.1973: 5 ♂;

30.IV.1973: 9 ♂, 3 ♀; 5.V.1973: 10 ♂, 2 ♀; 30.VII.1973: 1 ♂; 6.X.1973: 29 ♂, 7 ♀, Moretti.

Marroggia: 1 – 8.III.1987: 2 ♂, 4 ♀, 3 l; 12.IV.1987: 2 ♀, 2 l; 28.I.1988: 3 ♂, 2 ♀; 23.II.1988: 8 ♂, 3 ♀; 27.III.1988: 4 ♂, 2 ♀; 29.I.1989: 4 ♂, 2 ♀; 2.IV.1989: 3 ♂, 2 ♀, 2 l; 7.V.1989: 4 ♂, 1 ♀, 1 l; 1.X.1989: 2 ♀, 1 l; 11.XI.1989: 2 ♂, 3 ♀, 2 l; 24.III.1991: 51 ♂, Arena ([Di Giovanni et al., 2004](#)); 2 – 26.IV.1988: 9 ♂; 24.V.1988: 3 ♂, 6 ♀; 14.XI.1988: 1 ♀, 1 l; 29.I.1989: 4 ♀, 3 l; 6.III.1989: 1 ♂, 3 ♀, 3 l; 2.IV.1989: 36 ♂, 2 ♀, 2 l; 30.V.1989: 1 l; 1.VII.1989: 2 ♂, 1 ♀; 1.X.1989: 17 ♂, 18 ♀, 6 l; 11.XI.1989: 27 ♂, 11 ♀, 2 l; 21.I.1990: 1 ♂, 1 l; 29.IV.1990: 8 ♂, 23 ♀, 4 l; 4.VI.1990: 3 ♀, 1 l; 12.XI.1990: 1 ♀, 1 l; 27.I.1991: 1 ♀, 1 l; 24.III.1991: 3 ♂, Arena ([Di Giovanni et al., 2004](#)); 3 – 9.III.1987: 1 ♂, 1 l; 10.V.1987: 1 ♂, 1 l; 23.II.1988: 1 ♂, 1 l; 29.IV.1990: 1 ♀, 1 l, Arena ([Di Giovanni et al., 2004](#)).

Lepidostomatidae

Lepidostoma basalis (Kolenati, 1848)

Topino: 03–2.VII. 1979: 2 ♂, 10 ♀, Lipparelli ([Di Giovanni et al., 2004](#)).

Menotre: 1 – 6–15.VI.1979: 3 ♂, 10 l, Orecchini ([Di Giovanni et al., 2004](#)); 2 – 2004–2005: 5 l, Todini; 4 – 7.XII.1986: 3 ♀; 12.III.1987: 3 ♂, 3 ♀; 13.IV.1987: 1 ♀; 11.V.1987: 2 ♀, 86 l; 14.VII.1987: 6 ♂, 1 l, Fortini ([Di Giovanni et al., 2004](#)); 5 – 7.XII.1986: 1 ♂; 12.III.1987: 2 ♂, 9 ♀; 13.IV.1987: 2 ♂, 7 ♀; 11.V.1987: 293 l; 16.VI.1987: 1 ♂; 14.VII.1987: 3 ♂; 30.VII.1987: 3 ♂; 20.VII.1988: 11 ♂, 11 ♀, Fortini ([Di Giovanni et al., 2004](#)); 7 – 19.XII.1986: 2 ♂; 12.III.1987: 1 ♂, 1 ♀; 11.V.1987: 1 l; 16.VI.1987: 2 ♂, 2 ♀; 14.VII.1987: 2 ♂; 30.VII.1987: 1 ♂, Fortini ([Di Giovanni et al., 2004](#)); 8 – 16.VI.1985: 76 ♂, 1 ♀, Moretti, Tucciarelli, Chiappafreddo ([Di Giovanni et al., 2004](#)); 9 – 11.V.1987: 1 l, Fortini ([Di Giovanni et al., 2004](#)).

Lepidostoma hirtum (Fabricius, 1775)

Menotre: 5 – 30.IV.1972: 3 ♂; 10,13,22.V.1972: 3 ♂, 3 ♀, Sbrenna; 20.VII.1988: 3 ♀, Moretti, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)).

Crunoecia irrorata (Curtis, 1834)

Topino: 01 – 19.III.1975: 1 ♀, Lipparelli ([Di Giovanni et al., 2004](#)).

Chiona: 9 – 10.IV.1996: 1 l, Fucchi.

Fergia: 1 – 23.VII.1997: 4 ♂, 1 ♀, 1 p, 18 l, Farano; 2 – 13.VI.1997: 1 ♀ Farano.

Menotre: 0 – 30.VII.1987: 1 ♂, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)).

Leptoceridae

Mystacides azurea (Linnaeus, 1761)

Palude di Colfiorito: 2 – 7.IX.1993: 1 ♂ (L), Salerno, Tavone; 29.VI.1994: 1 ♀ (L), Cianficconi, Mazzerioli, Moretti, Salerno, Speciale ([Cianficconi et al., 2000](#)); 9 – 10.VII.1998: 2 ♂, 2 ♀, Mazzerioli, Salerno ([Cianficconi et al., 2000](#)).

Erotesis baltica (McLachlan, 1877)

Clitunno: 1 – 3.VI.1952: 3 ♂; 5.VIII.1952: 1 ♂; Moretti ([Di Giovanni et al., 2004](#)); 3.VI.1979: 1 ♀, Moretti, Cianficconi, Marini ([Di Giovanni et al., 2004](#)).

Leptocerus tineiformis (Curtis, 1834)

Palude di Colfiorito: 2 – 29.VI.1994: 1 ♂ (L), Cianficconi, Mazzerioli, Moretti, Salerno, Speciale ([Cianficconi et al., 2000](#)); 6.VIII.1996: 1 ♀ (L), Mazzerioli, Salerno ([Cianficconi et al., 2000](#)); 5 – 10.VI.1998: 2 ♀ (L), Mazzerioli, Salerno ([Cianficconi et al., 2000](#)).

Sericostomatidae

Sericostoma cianficconii (Moretti, 1978)

Menotre: 2 – 2004–2005: 11 l, Todini; 4 – 12.III.1987: 1 ♂, 1 ♀; 11.V.1987: 2 ♀, Fortini ([Di Giovanni et al., 2004](#)); 30.VII.1987: 1 ♂, Cianficconi, Chiappafreddo, Fortini ([Di Giovanni et al., 2004](#)); 5 – 5–15.VI.1972: 15 ♂, 10 ♀, Sbrenna ([Di Giovanni et al., 2004](#)); 12.III.1987: 3 ♂; 13.IV.1987: 3 ♂; 11.V.1987: 13 l, Fortini ([Di Giovanni et al., 2004](#)); 20.VII.1988: 1 ♂, 2 ♀, Moretti, Cianficconi, Chiappafreddo ([Di Giovanni et al., 2004](#)); 7 – 12.III.1987: 1 ♀; 11.V.1987: 1 l; 14.VII.1987: 1 l, Fortini ([Di Giovanni et al., 2004](#)).

Sericostoma pedemontanum (McLachlan, 1876)

Fergia: 1 – 22.VII.1991: 1 ♂, 5 ♀; 1.VIII.1991: 5 ♂; 21.VIII.1991: 3 ♂; 15.X.1992: 10 ♀; 3.XI.1992: 1 ♂, Salerno ([Di Giovanni et al., 2004](#)); 21.I.1997: 1 l; 5.V.1997: 1 p, 1 l; 23.VII.1997: 1 p, Farano; 2 – 26.X.1996: 1 ♀, 3 l; 13.VI.1997: 1 ♀, 3 l; 23.VII.1997: 3 ♂, 3 ♀; 3 – 09.VII.1997: 2 l; 5 – 16.IX.1997: 1 ♂ Farano; 6 – 13.VIII.1991: 5 ♂, 4 ♀ Salerno ([Di Giovanni et al., 2004](#)).

Caldognola: 4 – 26.VII.1994: 1 ♂

Fonte Orbi: 16.IV.1992: 2 ♀, 8.V.1993: 1 ♂, 3 ♀, 1 l Cardinali.

Sorgente del Fosso Trosceto: 12.V.1992: 2 ♂, 1 ♀, 1 p, 8.VII.1992: 2 ♂, 1 ♀, 24.X.1992: 1 l, 22.III.1993: 1 l, 11.IV.1993: 2 ♂, 1 ♀ Cardinali.

Fonte S. Giovanni: 16.IV.1992: 1 ♂, 2 ♀, 1 l, 8.V.1993: 1 l Cardinali.

Menotre: 0 – 30.VII.1987: 1 ♂, 1 ♀ Moretti, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 1 – 30.VII.1987: 2 ♂, 1 ♀ Cianficconi, Chiappafreddo Fortini, 04.VII.1989 (Di Giovanni *et al.*, 2004): 2 ♂ Moretti, Cianficconi, Chiappafreddo (Di Giovanni *et al.*, 2004); 2 – 20.VII.1988: 3 ♂, 1 ♀ Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 2004–2005: 52 l Todini; 5 – 20.VII.1988: 1 ♀ Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 2004–2005: 13 l Todini; 9 – 13.IV.1987: 1 ♂, 11.V.1987: 1 l, 14.VII.1987: 1 l Fortini.

Clitunno: 1 – 03.VI.1952: 1 ♂, 24.VII.1953: 2 ♂, 3 ♀, 15.X.1953: 2 ♂, 2 ♀ Moretti, Bellini (Di Giovanni *et al.*, 2004); 19.IV.1955: 2 ♂ Bellini (Di Giovanni *et al.*, 2004); 20.V.1958: 1 ♀ Giannotti, 28.VI.1964: 1 ♀ Tristaino, 05.V.1973: 1 ♂, 1 ♀, 6.X.1973: 1 ♀, 21.X.1973: 1 ♀, 15.X.1983: 2 ♀ Moretti.

Marroggia: 1 – 12.IV.1987: 1 ♂, 1 l, 21.VIII.1987: 5 ♂, 3 ♀, 24.XI.1987: 3 ♂, 2 ♀, 4 l, 27.III.1988: 1 ♂, 1 ♀, 24.V.1988: 1 ♀, 14.XI.1988: 1 ♀, 29.I.1989: 1 ♀, 1 l, 6.III.1989: 1 ♀, 1 l, 2.IV.1989: 1 ♂, 1 ♀, 7.V.1989: 3 ♂, 5 ♀, 1 l, 1.VII.1989: 1 ♂, 1 ♀, 1 l, 01.X.1989: 1 l, 1 ♀, 11.XI.1989: 2 l, 1 ♂, 1 ♀; 2 – 29.I.1989: 1 ♂, 2 ♀, 2 l, 06.III.1989: 1 ♂, 3 ♀, 3 l, 02.IV.1989: 2 ♂, 1 l, 30.V.1989: 1 ♂ Arena (Di Giovanni *et al.*, 2004).

Beraeidae

Beraea maurus (Curtis, 1834)

Fergia: 3 – 13.VI.1997: 2 ♂, 1 ♀; 4 – 16.IX.1997: 1 l Farano.

Clitunno: 1 – 03.VI.1952: 1 ♂, 23.V.1953: 2 ♂, 1 ♀, 25.V.1953: 2 ♂, 1 ♀ Casagrande (Di Giovanni *et al.*, 2004); 17.VI.1964: 1 ♀ Moretti, 27.V.1967: 7 ♂, 1 ♀ Griselli (Di Giovanni *et al.*, 2004); 18.IX.1972: 1 ♂, 30.IV.1973: 1 ♂ Corvelli.

Beraeodes minutus (Linnaeus, 1761)

Clitunno: 1 – 3.VI.1952: 2 ♂, 1 ♀, Moretti; 24.VII.1953: 2 ♂, Bellini; 30.IV.1973: 1 ♂, Corvelli, 1.VI.1979: 551 ♂, 107 ♀, Moretti, Cianficconi, Marini (Di Giovanni *et al.*, 2004); 27.V.1981: 16 p, 19 l, Bicchierai, Marini, Chiappafreddo (Di Giovanni *et al.*, 2004); 14.VI.1981: 288 ♂, 54 ♀ Bicchierai, Marini, Chiappafreddo (Di Giovanni *et al.*, 2004).

Beraemyia squamosa (Mosely, 1930)

Marroggia: 3 – 30.V.1989: 1 p ♂, 1 p ♀, Arena (Di Giovanni *et al.*, 2004).

Odontoceridae

Odontocerum albicorne (Scopoli, 1769)

Topino: 01 – 9–19.III.1979: 1 ♂, Lipparelli (Di Giovanni *et al.*, 2004); 03 – VI.1997: 4 l, Cappelletti; 1 – 9.X.1994: 1 l; 29.XI.1994: 6 l; 3.VI.1995: 1 ♂, 1 ♀, 9 p, 3 l; 21.VII.1995: 10 p, 2 l; 20.III.1996: 11 l, Montanucci; 2 – 18.III.1995: 1 l; 21.V.1995: 2 ♂, 4 l; 21.VII.1995: 3 p; 20.III.1996: 7 l, Montanucci; 3 – 8.X.1994: 5 l; 3.VI.1995: 4 ♂, 1 ♀, 16 p, 8 l; 20.III.1996: 5 l, Montanucci; 4 – 12.III.1995: 1 p; 21.V.1995: 1 ♂, 12 ♀; 21.VII.1995: 2 p ♀; 23.VIII.1995: 5 ♀, 1 p; 20.III.1996: 6 l, Montanucci; 5 – 7.IX.1994: 2 ♂, 1 ♀; 22.IX.1994: 6 p, 4 l; 30.IV.1995: 3 l; 21.VII.1995: 11 ♀, 5 l; 20.III.1996: 5 l; 21.VII.1995: 1 ♀, 1 p, 7 l, Montanucci.

Fergia: 1 – 22.VII.1991: 2 ♀; 13–21.VIII.1991: 29 ♂, 10 ♀; 18.IX.1992: 7 ♀, Salerno (Di Giovanni *et al.*, 2004); 21.I.1997: 1 ♂, 1 p, 1 l; 4.III.1997: 1 p, 1 l; 9.VII.1997: 1 l; 23.VII.1997: 1 ♂, 2 ♀, 1 p, 1 l; 2 – 13.VI.1997: 1 l; 9.VII.1997: 1 p, 1 l; 23.VII.1997: 8 ♂, 2 ♀, Farano; 3 – 13.VI.1997: 4 ♀, 1 p; 9.VII.1997: 1 ♂, 1 p; 16.IX.1997: 1 ♂, 1 p, Farano; 5 – 16.IX.1997: 1 ♂, Farano; 6 – 13.VI.1997: 1 ♂ Farano.

Caldognola: 3 – 5.VII.1995: 1 p, Brunetti; 4 – 26.VII.1994: 7 ♂, 57 ♀ (L), Brunetti; 5 – 22.IX.1994: 2 l; 18.VII.1995: 9 l, Brunetti.

Chiona: 3 – 9.VIII.1995: 1 ♂, 43 ♀ (L); 11.VI.1996: 2 l; 16.IX.1996: 2 l, Fucchi; 5 – 31.VII.1995: 3 ♂, 1 ♀ (L), Fucchi.

Menotre: 0 – 30.VII.1987: 1 ♂, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 1 – 11.V.1987: 1 l; 30.VII.1987: 5 ♂, 3 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 27.VII.1972: 1 l, Guidi; 3.VI.1978: 1 ♂, Orecchini (Di Giovanni *et al.*, 2004); 2 – 2004–2005: 43 l, Todini; 3 – 27.VIII.1972: 1 l, Guidi; 4 – 7.XII.1986: 1 ♀; 12.III.1987: 1 ♀; 30.VII.1987: 1 ♂, 2 ♀, Cianficconi, Chiappafreddo, Fortini (Di Giovanni *et al.*, 2004); 27.X.1971: 1 l; 27.XI.1971: 1 l; 27.I.1972: 1 l; 27.IV.1972: 1 l; 28.V.1972: 1 l; 27.VIII.1972: 1 l, Guidi; 5 – 2004–2005: 24 l, Todini; 7 – 12.III.1987: 1 l; 11.V.1987: 1 l, Fortini; 8 – 2004–2005: 12 l, Todini.

Discussion and conclusion

During the research carried out from 1947 to 2005 at 61 sampling sites and 51 habitat types, 6012 adults (3484 ♂ and 2528 ♀) and numerous aquatic stages were collected. In total, 83 taxa (78 species and 5 subspecies) were recorded (Table 1), including 16 species and 5 subspecies endemic to the Italian fauna. This inventory represents 18% of the species and 18.7% of the subspecies of the Italian Trichopteran fauna (416 species and 32 subspecies), that belong to 41 genera and 17 families of the 93 genera and 20 families known in Italy.

Table 1. Trichoptera inventory of the Topino River basin from 1951 to 2005.

Total sampling sites																					

Psychomyidae										
32	<i>P. pusilla</i> (Fabricius, 1829)	•	•	•	•	•	•	194	1	WPA
33	<i>L. reducta</i> (Hagen, 1868)	•	•	•	•	•	•	526–700	2	EUM
34	<i>T. antonii</i> (Botosaneanu and Viganò, 1974) (E)	•	•	•	•	•	•	456–690	7	ALAP
35	<i>T. macchlani</i> (Kimmins, 1966)	•	•	•	•	•	•	225–700	4	WEU
36	<i>T. vaeneri</i> (Linnaeus, 1758)	•	•	•	•	•	•	590	1	EUR
Ecnomidae										
37	<i>E. tenellus</i> (Rambur, 1842)	•	•	•	•	•	•	590	1	PAL
PHRYGANEIDAE										
38	<i>A. varia</i> (Fabricius, 1793)	•	•	•	•	•	•	752	1	CAE
Brachycentridae										
39	<i>M. dolcinii</i> (Botosaneanu and Moretti, 1986) (E)	•	•	•	•	•	•	490–850	1	APCS SI
40	<i>M. minimum</i> (McLachlan, 1876)	•	•	•	•	•	•	476–590	1	CEU
41	<i>M. morosum</i> (McLachlan, 1868)	•	•	•	•	•	•	700	1	EUR
Linnephilidae										
42	<i>D. camerinus</i> (Moretti, 1981) (E)	•	•	•	•	•	•	476–850	1	APPC
43	<i>D. improvisus</i> (McLachlan, 1884) (E)	•	•	•	•	•	•	475	1	APPC
44	<i>L. auricula</i> (Curtis, 1834)	•	•	•	•	•	•	752	1	EUR
45	<i>L. bipunctatus</i> (Curtis, 1834)	•	•	•	•	•	•	752	1	EUR
46	<i>L. flavicornis</i> (Fabricius, 1787)	•	•	•	•	•	•	752	1	PAL
47	<i>L. helveticus</i> (Schmid, 1965)	•	•	•	•	•	•	320	1	SEU
48	<i>L. hirsutus</i> (Pictet, 1834)	•	•	•	•	•	•	752–770	1	EUR
49	<i>L. ignavus</i> (McLachlan, 1865)	•	•	•	•	•	•	752–770	1	WPA
50	<i>L. lunatus</i> (Curtis, 1834)	•	•	•	•	•	•	225–752	5	WPA
	<i>L. rhombicus reseri</i> (Malicky, 1985) (E)	•	•	•	•	•	•	225–752	3	ALAP
51	<i>G. nigropunctatus</i> (Retzius, 1783)	•	•	•	•	•	•	645–752	2	PAL
52	<i>G. pellicidus</i> (Retzius, 1783)	•	•	•	•	•	•	394–850	2	SIE
	<i>P. cingulatus gambiaricus</i> (Malicky, 1971) (E)	•	•	•	•	•	•	348–850	7	APPE SI
53	<i>H. appenninus</i> (Moretti and Spinelli, 1981) (E)	•	•	•	•	•	•	320–710	6	APPE
54	<i>M. melampus</i> (McLachlan, 1876)	•	•	•	•	•	•	489	1	CEU
55	<i>S. mitis</i> (McLachlan, 1875)	•	•	•	•	•	•	450–790	3	MED
56	<i>S. mucronatus</i> (McLachlan, 1880)	•	•	•	•	•	•	489–770	2	SEU
57	<i>S. permistus</i> (McLachlan, 1895)	•	•	•	•	•	•	590–770	2	EUR
58	<i>M. fissa</i> (McLachlan, 1875)	•	•	•	•	•	•	256	1	EUR
59	<i>M. nycterobia</i> (McLachlan, 1875)	•	•	•	•	•	•	394–645	1	EUR
60	<i>M. sequax</i> (McLachlan, 1875)	•	•	•	•	•	•	690–770	2	EUR
61	<i>M. testacea</i> (Gmelin, 1789)	•	•	•	•	•	•	377–600	3	EUR
62	<i>M. aspersus</i> (Rambur, 1842)	•	•	•	•	•	•	194–700	3	EUM
63	<i>A. antennatus</i> (McLachlan, 1876) (E)	•	•	•	•	•	•	298–850	1	ALAP

Fig. 6. Large-scale geographical distribution patterns (Vigna Taglianti *et al.*, 1999) of the Topino basin Trichoptera species and subspecies (lower section of figure, (a) and distribution of taxa endemic to Italy (END, upper section of figure, (b). **a:** PAL, Palearctic; WPA, W-Palearctic; SIE, Sibero-European; CAE, Centralasiatic-European; CEM, Centralasiatic-European; EUM, Europeo-Mediterranean; EUR, European; WEU, W-European; SEU, S-European; CEU, C-European; MED, Mediterranean; EME, E-Mediterranean; WME, W-Mediterranean; End, Endemics. **b:** ALAP, Alpino-Apenninic; ALWA, W-Alpino-Apenninic; ALWA SI, W-Alpino-Apenninic-Sicilian; ALCA, Alpino-Central Apenninic; APPE SI, Apenninic Sicilian; APCS, Central-S-Apenninic; APCS SI, Central-S-Apenninic-Sicilian; APPS, S-Apenninic; APPS SI, S-Apenninic-Sicilian; TYRR, Tyrrhenian.

The families with the highest number of species are Rhyacophilidae with 6 species and 1 subspecies of *Rhyacophila* out of the 35 species and 4 subspecies present in Italy, Limnephilidae with 7 species and 1 subspecies of *Limnephilus* out of the 29 species and 1 subspecies present in Italy, 3 species of *Stenophylax* of the 6 species present in Italy, 4 species of *Micropterna* of the 8 species present in Italy and *Hydroptilidae* with 9 species of the 34 species of *Hydroptila* present in Italy.

The most widespread species include *S. pedemontanum* present at eight habitats, *T. antonioi* and *P. cingulatus gambaricus* (seven habitats), *Halesus appenninus*, *R. dorsalis acutidens* and *R. italica* found in six habitats.

With respect to ecology of the species, our inventory comprises euryoecious (e.g., *H. pellucidula*, *R. dorsalis acutidens*) as well as stenoecious species, e.g., madicole (*B. maurus*, *T. maclachlani*), crenobiont (*Catagapetus nigrans*, *Drusus camerunus*, *D. improvisus*, *Chaetopteryx gessneri*, *Crunoecia irrorata*), crenoxene (*S. mediterraneus*,

S. pedemontanum, *Odontocerum albicorne*) and epirithral species which are the most numerous.

In lentic waters we recorded various species of Limnephilidae, 12 of them in the Palude di Colfiorito. Seven of these species belong to the genus *Limnephilus*: *L. auricula* and *L. ignavus* are present in Umbria only at this site. Rare species were recorded in the Fonti del Clitunno (*E. baltica* and *Beraeodes minutus*; Fig. 5) and in the Topino River (*Wormaldia pulla marlieri*). The River Menotre is the richest system investigated (44 species including 9 endemics), followed by the Topino River with 23 species (including 8 endemics) and the Chiona River with 22 species (including 6 endemics). The elevation of the sampling sites ranges from 197 m (T. Chiona) to 1016 m a.s.l. (Fonte Bregno) for lotic waters sites and from 194 m (Lago dell'Aiso) to 770 m a.s.l (Palude di Colfiorito) for lentic waters sites.

With respect to geographical distribution patterns (Table 1, Fig. 6), 44% of the species are restricted to Europe, 24% are widely distributed (Palearctic, W-Palearctic,

Sibero-European, Centralasiatic-European, Centralasiatic-European-Mediterranean, Europeo-Mediterranean) and 6% are restricted to the Mediterranean. In total, 25% of the species are endemic to the Italian fauna, *e.g.*, Apenninic (*R. dorsalis acutidens*, *S. pedemontanum*), Central-S-Apenninic (*R. foliacea*, *Hydropsyche spiritoi*) and Central-Apenninic (*R. italica*, *Wormaldia mediana*, *W. pulla marlieri*, *D. camerinus*, *D. improvisus*, *Halesus appenninus*, *A. ausoniae*).

Based on our data the Trichoptera fauna of the Topino basin is of great systematic, ecological and chorological interest when compared with inventories of the nine other drainage basins in the region of Umbria. The numerous tectonic phenomena in central Italy from about 5.33 million years ago have played a fundamental role in shaping the geology and the variety of environments in the River Topino basin ranging from rheocrenous and limnocrenous springs to a variety of running and lentic waters. The numerous springs within the study area support a high Trichoptera diversity, and deserve particular attention within the framework of environmental management plans.

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